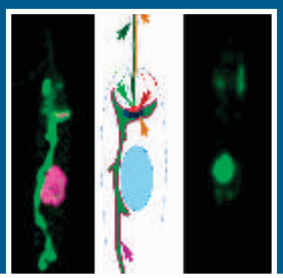
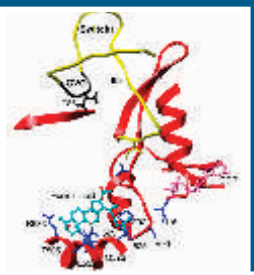
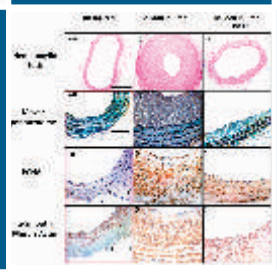
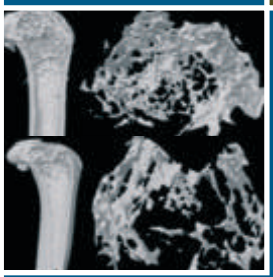
ISSN 0972-1789

वार्षिक प्रतिवेदन
ANNUAL REPORT
2013-14









CSIR-Central Drug Research Institute, Lucknow

o-vk-v-i-&d:Unh; vk"kf/k vuq|ku laLFkku

CSIR - CENTRAL DRUG RESEARCH INSTITUTE

Sector 10, Jankipuram Extension, Sitapur Road, Lucknow – 226 031

THRUST AREAS OF RESEARCH

1. Malaria and other Parasitic Diseases

- Development of new drugs/drug combinations as therapeutic interventions for malaria, leishmaniasis and filariasis;
- Establish novel target based drug assay protocols for identification of new leads;
- Knowledge generation on parasite biology and host parasite interactions.

2. Reproductive Health Research, Diabetes & Energy Metabolism

- Development of novel agents for fertility regulation (male/female) and management of endocrine disorders through modern drug design, scientific validation of traditional remedies and generation of new knowledge

3. Tuberculosis and Microbial Infections

- Simplification and shortening of treatment for drug-sensitive tuberculosis and search of new treatments for MDR-TB
- Development of new drugs for bacterial, fungal and viral (HIV and JEV) infections and tuberculosis.

4. CVS, CNS and Related Disorders

- Development of new target based drugs to alleviate CVS, CNS and related disorders;
- Carry out excellent basic research to delineate the molecular mechanisms of these pathologies so as to identify suitable targets for drug discovery, as well as to analyze the possible mechanism(s) of action of the candidate drugs.

5. Cancer and Related Areas

- Creation of appropriate platform for interdisciplinary collaborative research;
- Creation of knowledge base in cancer biology;
- Lead identification/optimization to obtain drug-like molecules.

6. Safety & Clinical Development

- Pre-clinical, clinical development and commercialization of new generation affordable drugs for diseases of national importance and international relevance;
- Creation of center of excellence in the field of Clinical trials, Regulatory toxicology, Safety pharmacology, Pharmaceutics and Pharmacokinetics & metabolism and catering to the needs of pharmaceutical industries.

वार्षिक प्रतिवेदन
ANNUAL REPORT
2013-14

CSIR-Central Drug Research Institute, Lucknow

वै.औ.अ.प. – केन्द्रीय औषधि अनुसंधान संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

CSIR - CENTRAL DRUG RESEARCH INSTITUTE
(COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH)

Sector 10, Jankipuram Extension Sitapur Road, Lucknow – 226 031
Phone: 91 522 2772450, 2772550, 2771960
Fax: 91 522 2771941, 2771942, 2771970, 2772793
Website: www.cdriindia.org

Editorial Board

Published by Mr. Vinay Tripathi, Senior Principal Scientist, S&T Management Unit on behalf of Director,
CSIR-Central Drug Research Institute, Lucknow

Printed at Army Printing Press, 33, Nehru Road, Sadar Cantt., Lucknow. Phone: 0522-2481164, 6565333
Fax: 0522-2480543 Email: armyprintingpress@gmail.com

HIGHLIGHTS OF ACHIEVEMENTS

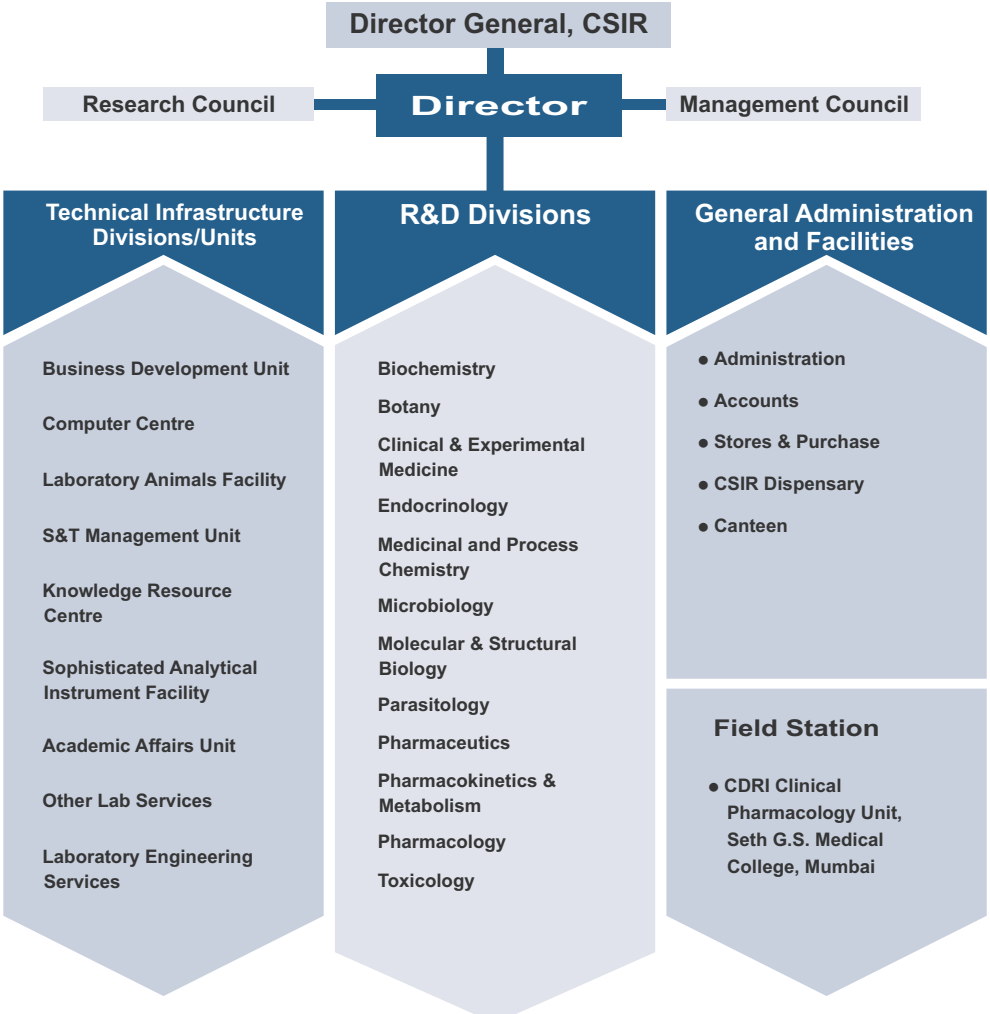
◆ **Technology Licensed to Industry (2013)**	:	**1** (l-Ephedrine and Pseudoephidrine)
◆ **Publications in SCI Journals (2013)**	:	**300** (298)
- Average Impact Factor	:	**3.39** (3.20)
- Publications with >5 Impact Factor	:	**27** (22)
◆ **Patents (2013)**		
- Filed Abroad	:	**13** (6)
- Filed in India	:	**13** (6)
- Granted Abroad	:	**15** (7)
- Granted in India	:	**4** (5)
◆ **Ph.D. Thesis Submitted (2013)**	:	**65** (60)
◆ **Grant-in-Aid Projects Initiated (2013)**	:	**24** (31)
◆ **Total External Budgetary Resources** (anticipated for 2013-14) ₹ in Crore	:	**15** (17.44)

Provisional data as on 01/02/2014, Previous year data is given in bracket

THE CHARTER

- Development of new drugs and diagnostics;
- Cellular and molecular studies to understand disease processes and reproductive physiology;
- Development of contraceptive agents and devices;
- Systematic evaluation of medicinal properties of natural products;
- Development of technology for drugs, intermediates and biologicals;
- Dissemination of information in the field of drug research, development and production;
- Consultancy and development of technical manpower.

ORGANIZATIONAL STRUCTURE



CONTENTS

अनुसंधान उपलब्धियाँ

अन्य गतिविधियाँ

निदेशक की कलम से

यह अत्यंत सौभाग्य का अवसर है कि मैं सीएसआईआर–सीडीआरआई जैसे औषधि अनुसंधान में अग्रणी संस्थान के वार्षिक प्रतिवेदन 2013–14 की भूमिका लिख रहा हूँ, जिससे मैं स्वयं विगत चार दशकों से जुड़ा हुआ हूँ और वर्षों से जिसके विकास का साक्षी रहा हूँ। ऐतिहासिक छत्तर मंजिल पैलेस में वर्ष 1951 में थोड़े से वैज्ञानिकों एवं चंद प्रयोगशालाओं के साथ राष्ट्रीय महत्व की बीमारियों पर अनुसंधान हेतु ''उत्कृष्टता का केन्द्र'' बनाने के स्वप्न एवं नवीन और सुलभ स्वास्थ्य रक्षा उपलब्ध कराने तथा भविष्य के नेतृत्वकर्ताओं को तैयार करने के मिशन के साथ स्थापित इस संस्थान ने विगत वर्षों में तीव्रगति से प्रगति के सोपान चढ़े है।

आगे बढ़ने से पूर्व मैं अपने पूर्ववर्ती निदेशक डा. टी.के. चक्रवर्ती को हार्दिक धन्यवाद देना चाहूँगा जिन्होंने पिछले पाँच वर्षों में संस्थान को विश्व स्तरीय अनुसंधान संस्थान में रुपांतरित करने के सर्वाधिक चुनौती भरे दौर में अत्यधिक संयम और स्नेह से अपना नेतृत्व प्रदान किया। उनके नेतृत्व में संस्थान ने अनुसंधान की गति को बनाए रखते हुए बहुत कम समय में वर्तमान परिसर में स्थानान्तरित होने का कीर्तिमान स्थापित किया। संस्थान के बुनियादी ढाँचे को मजबूत करने के अतिरिक्त उन्होंने संस्थान को भविष्य में नेतृत्व प्रदान करने के लिये युवा और वरिष्ठ दोनों ही पीढ़ियों की सहभागिता सुनिश्चित की। परिणामस्वरूप संस्थान ने उच्च प्रभाव गुणक वाले प्रकाशन, पेटेण्ट फाइल करने और सम्मान और पुरस्कारों के रूप में प्रशंसा प्राप्त करना जारी रखा। मानव संसाधन और बुनियादी ढाँचे के विकास में उनकी सतर्कता एवं सावधानीपूर्वक बनाई गई योजनाओं ने संस्थान को प्रभावशाली स्थिति में लाकर खड़ा कर दिया। उन्होंने परियोजना प्रबन्धन, बजट मॉनीटरिंग, व्यापार विकास और अन्तर–संस्थान सहयोग को गति प्रदान कर दी। मुझे संतोष है कि वर्ष 2013–14 के दौरान संस्थान ने अपने मेण्डेट के सभी क्षेत्रों में उत्तम कार्य निष्पादन जारी रख कर उदाहरण प्रस्तुत किया। प्रारंभिक गणना के अनुसार वर्ष 2013 के दौरान हमने 3.39 औसत इम्पैक्ट फैक्टर सहित 300 शोध पत्र प्रकाशित किये जो इस संस्थान के इतिहास में सर्वाधिक है। प्रकाशनों की सूची में >5 इम्पैक्ट फैक्टर सहित 27 प्रकाशन और इम्पैक्ट फैक्टर 4 से 5 के बीच में 34 प्रकाशन सम्मिलित हैं। इम्पैक्ट फैक्टर 41.30 सहित दो पेपर्स ''केमिकल रिव्यूज'' में प्रकाशित हुए। इसी अवधि के दौरान भारत में 13 तथा विदेशो में 13 पेटेण्ट फाइल किये गए और 4 भारतीय और 15 विदेशी पेटेण्ट स्वीकृत हुए। 65 शोध छात्रों ने पीएचडी हेतु अपने शोध प्रबन्ध प्रस्तुत किये और शोध कार्य हेतु 81 शोध छात्रों ने संस्थान में प्रवेश लिया। कुल 7.20 करोड़ रुपयों की अनुमोदित लागत के साथ 24 नई अनुदान प्राप्त परियोजनाएं प्रारंभ की गई। बीते वर्ष ने हमको बहुत से आनंददायक क्षण प्रदान किये जिसमें प्रतिष्ठित पुरस्कार जैसे एफएनए, एफएनएएससी, राष्ट्रीय महिला जैव वैज्ञानिक पुरस्कार, सीएसआईआर और इन्सा युवा वैज्ञानिक पुरस्कार इत्यादि सम्मिलित हैं।

मैं सभी वैज्ञानिको और छात्रों को बधाई देता हूँ जिन्होंने संस्थान को सम्मान दिलवाया और आने वाले वर्षों में इससे और अधिक की आशा करता हूँ। यह हर्ष का विषय है कि इस दौरान सीडीआरआई उत्पादों में से एक ''सहेली'' – जो ''मुख से ली जाने वाली गर्भ निरोधक गोली'' है और एचएलएल लाइफ केयर लिमिटेड, तिरूअनन्तपुरम द्वारा विपणित की जाती है, को एबीपी न्यूज़ और वर्ल्ड ब्रांड कांग्रेस द्वारा फार्मास्युटिकल सेक्टर में ब्रांड एक्सिलेंस अवार्ड प्रदान किया गया है। थॉमसन इन्टेग्रिटी (2013) द्वारा तैयार की गई रिपोर्ट के अनुसार संपूर्ण सीएसआईआर में विभिन्न चिकित्सा उपचार के क्षेत्रों में डिस्कवरी रिसर्च पर सीएसआईआर–सीडीआरआई प्रथम स्थान पर है। ये उपलब्धियाँ स्तरीय कार्य–निष्पादन के लिये न केवल नए कीर्तिमान स्थापित करती हैं बल्कि धीरे–धीरे युवा पीढ़ी में उत्साह और विश्वास भी उत्पन्न करती हैं जिससे वे अपने वाले वर्षों में संस्थान को इससे भी आगे और अधिक ऊँचाइयों पर ले जा सकें।

सीएसआईआर–सीडीआरआई के नए लीड अणुओं ने उद्योगों को आकर्षित करना जारी रखा। प्रतिवेदित वर्ष के दौरान ऐल्केम लेबोरेट्रीज़ लिमिटेड मुम्बई, पैनेशिया बायोटेक लिमिटेड नई दिल्ली, एचएलएल लाइफ केयर लिमिटेड तिरुअनन्तपुरम, नियोमेड, कनाडा, सिम्पेक्स फार्मा प्रा. लि. नई दिल्ली ने गोपनीयता अनुबन्ध के अंतर्गत सीडीआरआई लीड मॉलीक्यूल्स पर अपने डेटा को पुनरीक्षित किया। पैनेशिया ने एण्टीथ्रॉम्बोटिक लीड्स पर रूचि प्रदर्शित की। विभिन्न आर्थिक अवरोधों के बावजूद संस्थान में लागू 12वीं पंचवर्षीय योजना की नेटवर्क परियोजनाएं जिनमें सीडीआरआई नोडल लैब के रुप में 5 और सीडीआरआई सहभागी प्रयोगशालाओं के रूप में 16 परियोजनाओं में सम्मिलित है जिनमें महत्वपूर्ण प्रगति हो रही है। बीता हुआ वर्ष अनुसंधान एवं विकास के आधारभूत ढाँचे, प्रशासनिक सुधार, गुणवत्तायुक्त मानव श्रम शक्ति, स्मॉल मॉलीक्यूल एक्स रे सुविधा सहित नई बड़ी सुविधाएं, 700 MHz NMR, रोबोटिक कम्पाउंड लाइब्रेरी, हाई रेज़ोल्यूशन कॉन्फोकल माइक्रोस्कोप, बायाकोर, माउस एवं रैट्स के लिये ऑक्ज़ी–मैक्स CLAMS, ट्रान्सजेनिक ऐनिमल्स की सुविधाएं स्थापित कर संस्थान को सशक्त बनाने का साक्षी रहा है। छः नए वैज्ञानिकों ने संस्थान में कार्य भार ग्रहण किया। मैं संस्थान में उनके उज्जवल भविष्य की कामना करता हूँ। औषधि अनुसंधान के क्षेत्र में अग्रणी रहने के लिये अनवरत आधुनिकीकरण और आधारिक संरचना और गुणवत्तायुक्त मानव शक्ति को सम्मिलित करना संस्थान की सर्वोच्च प्राथमिकता रही है। हम भाग्यशाली हैं क्योंकि नए उत्तदायित्व वहन करने के लिये युवा उत्साही मानव संसाधन हमारे पास हैं। संस्थान की मानव संसाधन नीति जो बदलती हुई चुनौतियो का सामना करने के लिये ''दृढ़तापूर्वक विकसित, पुनरीक्षित और स्वयं की सक्षमता को अद्यतन रखने की परिकल्पना'' के साथ तैयार की गई थी, स्टाफ सदस्यो के कार्य निष्पादन पर महत्वपूर्ण प्रभाव डाल रही है। आने वाले वर्षों में संस्थान प्री क्लीनिकल आधारिक संरचना को मजबूत बनाने पर बल देगा और औषधीय विकास के नियामक दिशानिर्देशों के अनुपालन सहित ''उत्कृष्टता के केन्द्र'' के रूप में अपनी छवि का निर्माण करेगा।

विश्व पर्यावरण दिवस पर, संस्थान ने ''हरित प्रांगण'' तैयार करने के लिये ''एक वृक्ष गोद लें'' अभियान चलाया। मुझे प्रसन्नता है कि बड़ी संख्या में सीडीआरआई स्टाफ, छात्रों और अन्य संस्थानों ने पौधों को अंगीकार किया। हमारे संस्थान के सौन्दर्यीकरण के हमारे प्रयास में योगदान के लिये मैं सभी को हार्दिक धन्यवाद देता हूँ।

संस्थान के सभी स्टाफ सदस्यों और छात्रों को उनके मूल्यवान योगदान के लिये मैं धन्यवाद देता हूँ और मुझे विश्वास है कि आने वाले वर्षों में स्थान को और अधिक ऊँचाइयों पर ले जाने के लिये वे और अधिक श्रमपूर्वक कार्य करना जारी रखेंगे।

एस पुरी

17 फरवरी, 2014

(एस के पुरी)

FROM THE DIRECTOR'S DESK

It is indeed a great privilege to write preface for the Annual Report 2013-14 of the CSIR-CDRI, a premier drug research Institute with which I have been associated for nearly four decades and witnessed its rise and rise through the years. Beginning with a handful of scientists and laboratories in 1951 in historical Chattar Manzil palace with a vision to be a 'Centre of Excellence' in the research on diseases of national importance and mission to develop innovative and affordable healthcare as well as future leaders, this Institute has made great strides over the years.

Before proceeding further, I would like to convey heartfelt thanks to my immediate predecessor Dr. TK Chakraborty, who led this Institute for the last five years with great passion at a most challenging period of its metamorphosis into world class research institute. Under his leadership, Institute shifted to its present campus in a record time while retaining pace of research. Apart from strengthening the institute's Infrastructure, he ensured participative leadership with both younger and senior generations on the board. As a result, Institute continuously performed well in terms of high impact factor publications, filing of patents, getting accolades in the form of honours & awards etc. His meticulous planning towards 'Human Resource and Infrastructure Development' has brought this Institute to a dominant position. He also streamlined project management, budget monitoring, business development and inter-institutional collaboration activities.

Coming back to the performance of the Institute during the year 2013-14, I have great satisfaction to note that the Institute continued its exemplary performance in all aspects of its mandate. As per the preliminary count, during the year 2013, we have published 300 research papers with average IF of 3.39 which is an all time high in the history of this Institute. Publication list includes 27 publications with IF>5 and 33 publications with IF between 4 to 5. Two contributions have been published in 'Chemical Reviews' having IF 41.30. Further, during the same period, 13 patents each have been filed in India & abroad and 4 Indian and 15 foreign patents have been granted.

Sixty five research scholars submitted their dissertations for the award of Ph.D. degree and about 81 research scholars joined the Institute to pursue their research interests. Twenty four new Grant-in-Aid projects have been initiated with a total approved cost of Rs. 7.20 Cr. The year bygone had also given us a lot of cheerful moments including prestigious awards like FNA, FNASc, National Women Bio scientists Award, CSIR and INSA Young Scientist Awards etc. I take this opportunity to congratulate all the scientists and students who brought laurels to the Institute and anticipate more and more in the coming years. It is also pleasing to note that during the year, one of the CDRI product “Saheli – an Oral contraceptive pill”, marketed by the HLL Lifecare Limited, Thiruvananthapuram has received 'Brand Excellence Award in Pharmaceutical Sector' by ABP news and World Brand Congress. According to the report generated by the Thomson Reuters Integrity (2013), CSIR-CDRI stands at 'Number One' position in the entire CSIR on discovery research in various therapeutic areas. These achievements not only set new bar for standard performance, but also instil enthusiasm and confidence in the younger generation to take the bar to further heights in the years ahead.

CDRI's new lead molecules continued to attract industries. During the year, Alkem Laboratories Limited, Mumbai, Panacea Biotec Ltd., New Delhi, HLL Lifecare Limited, Thiruvananthapuram, NEOMED, Canada, Simpex Pharma Pvt. Ltd., New Delhi reviewed the data on CDRI lead molecules under secrecy agreements. Panacea has shown interest on Antithrombotic leads. The 12th Five Year Plan Network projects, being implemented in the Institute including 5 as CDRI Nodal Lab and 16 as CDRI participating labs, are making significant progress despite severe financial crunch. The year bygone has also witnessed further strengthening of R&D infrastructure, administrative reforms, recruitment of quality manpower, establishment of new major facilities including Small molecule X-ray facility, 700 MHz NMR, Robotic Compound Library, High Resolution Confocal microscope, Biacore, Oxymax CLAMS for mouse & rat, Transgenic Animals. Six new scientists joined the Institute. I wish them a bright career in the Institute. Incessant modernization of infrastructure and engagement of quality manpower remains a top priority of the Institute to be a front runner in the area of drug research. We are fortunate to have young enthusiastic human resource to take up new responsibilities. The Institute's new HR policy with a vision “persistently develop, revise/update competency profiles to meet changing demands” evolved to address the manpower related issues is making significant impact on the performance of the staff members. In the coming years, Institute will emphasise towards strengthening of pre-clinical infrastructure and build its image as a Centre of excellence in the drug development compliant to all the regulatory guidelines.

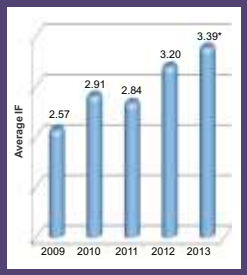
On the World Environment Day, Institute launched 'Adopt a Tree' drive to make it a Green campus. I am happy to note that large number of CDRI staff, students and other Institutes adopted plants. I convey my whole hearted thanks to all of them for joining our initiative to beautify our surroundings.

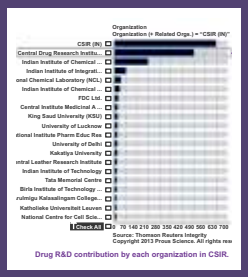
I thank all the staff and students of the institute for their valuable contributions and am confident that they shall continue to work even harder during the years ahead to take it to greater heights.

(SK Puri)

February 17, 2014

Performance Report





Drug R&D contribution by each organization in CSIR.

CSIR-Central Drug Research Institute, Lucknow

Performance Report : Overview

During the year 2013-14, the Institute showed sustained performance in all aspects of its mandate including drug R&D, new knowledge generation, human resource development and societal activities. The institute continued to explore business development opportunities for new leads/candidate drugs by collaborating with industry, academia, government organizations, funding agencies and foreign organisations in order to have a more productive partnership from an early stage of development. Technology for l-Ephedrine and Pseudoephedrine has been transferred to BVM Pharma Limited, Greater Noida. BIRAC has approved the joint funding of the project on further development of CDR914/K058 as Rapid Fracture Healing Oral Drug (first of its kind in the world) with Enem Nostrum Remedies Pvt Ltd, Mumbai. 12th Five year plan Network projects showed significant progress despite of financial crunch. Twenty four new Grant in Aid projects, funded by different funding agencies, worth of Rs. 7.2 Cr, have been initiated. Steady progress has been seen in the further development of potential lead molecules in the area of thrombosis, cancer, diabetes & dyslipidemia, tuberculosis, osteoporosis. Institute yet again raised the bar of quality of publications. In 2013, as per the preliminary count, CDRI has published 300 research papers with average Impact Factor 3.39 which includes 27 publications with IF>5 and 33 publications with IF 4-5. Two contributions have been published in 'Chemical Reviews' having IF 41.30. Another paper is published in Angew Chem (IF 13.73). Further, during the same period, 13 patents have been filed each in India & abroad. Received grant for 4 Indian and 15 foreign patents. Sixty five research fellows submitted their Ph.D. thesis. Several of CDRI scientists received prestigious honours and awards including Fellowship of INSA and NASI, National Women Bioscientists Award, Young Scientist Awards instituted by CSIR and INSA. In terms of external budgetary resources, in the year 2013-14, so far, Institute has generated ECF of Rs. 12.88 Cr and LRF of 1.01 Cr. A comprehensive report on the performance of the Institute in 2013 and comparative analysis is given in the ensuing pages:

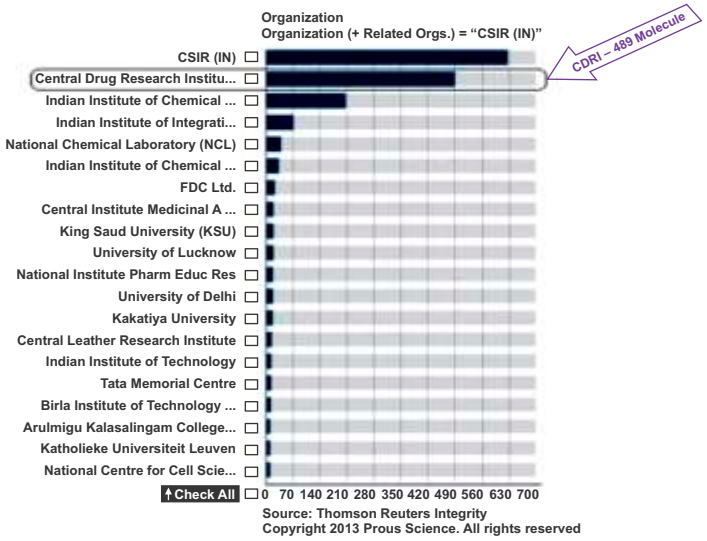
Technology Transferred in 2013

l-Ephedrine and Pseudoephedrine (Bronchodilator)

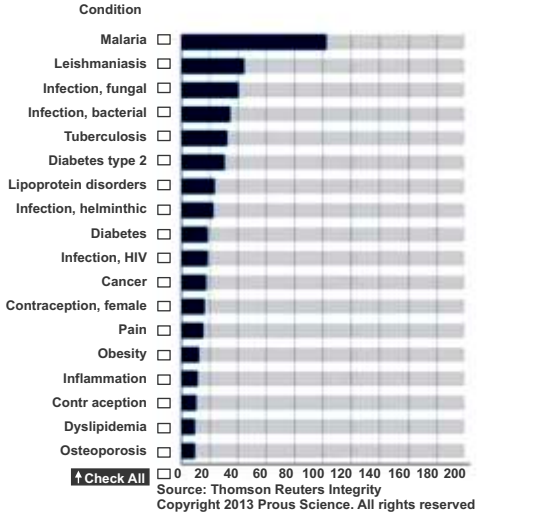
Licensed to: BVM Pharma Limited, 312-313, 3rd floor MSX Tower-2nd Alpha commercial, Belt Sector, Alpha-01, **Greater Noida**

Thomson Reuters Integrity Report (2013): CSIR-CDRI stands at Number ONE position in the entire CSIR on discovery research in various therapeutic areas

Report generated using Thomson Reuters Integrity on discovery research in various therapeutic area under CSIR and contribution of each institute under CSIR



Drug R&D contribution by each organization in CSIR.



Drug R&D activity by CDRI into various conditions / therapeutic area

PROGRESS IN THE DEVELOPMENT OF CANDIDATE DRUGS AND NEW LEADS

2.1 Candidate Drugs under Advance Stages of Development

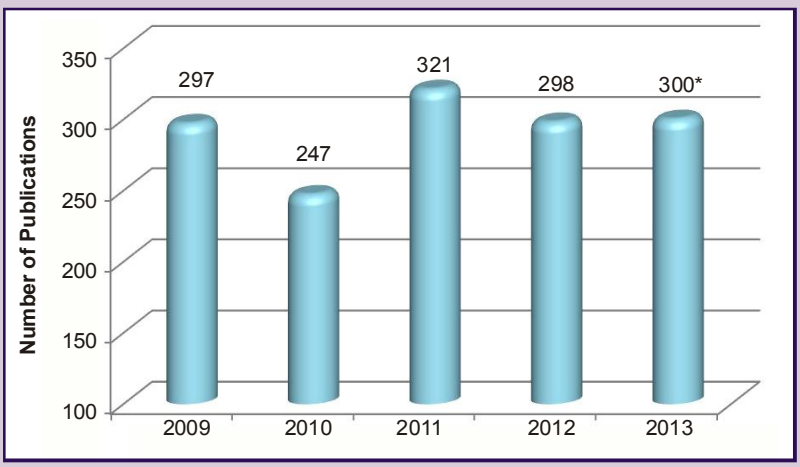
Diseases / Disorders	Candidate Drugs	Clinical Status	Licensees & Collaborators
Malaria	**97-78** Antimalarial	Phase-I Clinical pharmacokinetic studies has been completed in 16 healthy male volunteers at PGIMER, Chandigarh in collaboration with IPCA. The Phase-I Clinical Trial Multiple dose studies at PGIMER, Chandigarh to commence pending procurement of the formulation from IPCA.	IPCA Lab., Mumbai
Diabetes & Dyslipidemia	**CDR134D123** Anti-hyperglycemic	Awaiting clearance from DGCCRAS New Expert committee for inclusion of the plant in the Extra Ayurvedic Pharmacopia to avail marketing permission in herbal mode.	TVC Sky Shop Ltd., Mumbai
	CDR134F194 Anti-hyperglycemic	The process of formulation of CDR134F194 in a GMP certified company is in progress. The Phase- I Clinical trial to be initiated soon at KEM Hospital & Seth GS Medical College.	

2.2 Potential New Leads

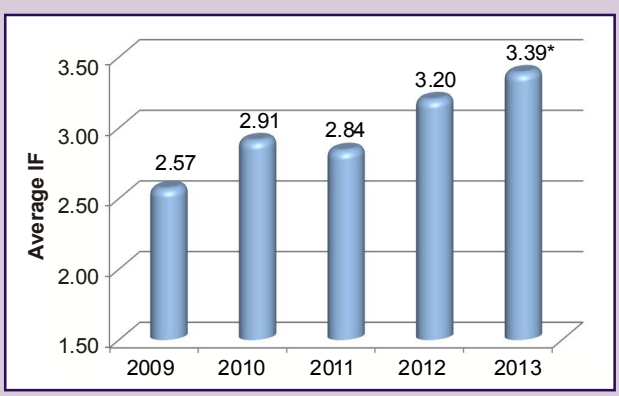
Diseases / Disorders	Lead & Efficacy	Current Status	Licensees & Collaborators
Osteoporosis	**CDR914K058** Osteogenic	BIRAC has approved the joint funding of the project with Enem Nostrum Remedies Pvt. Ltd., Mumbai	Kemxtree, USA
	S007-1500 Rapid fracture healing	Mechanism of action studies show that compound stimulates osteoblast differentiation by activating ER/BMP2 signaling pathway. PK studies are in progress. It is safe in Single Dose Toxicity Studies in Rat and mice by oral route (50,100 mg/kg bw)	Open for licensing
Cancer	**S007-1235** Anti-leukemic	Compound found Cytotoxic to T315I BCR-ABL mutant leukemia patient samples as well as CD133+ colon cancer stem cells, with higher efficacy than salinomycin. Target identified as PTX sensitive GPCRs. Confirmation of target ongoing	Open for licensing
	S-009-131 (Anticancer)	Oral administration resulted in regression of tumours induced by HeLa cell xenografts in nod SCID mice. Inhibited proliferation of HeLa and C33A by inducing apoptosis & arresting cell cycle	Open for licensing
Thrombosis	**S007-867** Antithrombotic	Platelet-collagen interaction inhibition by this chiral compound led to inhibition of platelet adhesion and aggregation. It exhibited potential antithrombotic efficacy in various experimental models of thrombosis with nominal increase in the bleeding time. Safety pharmacology and toxicity studies have found it safe. It is a first in class approach for potential anti-platelet molecule.	Under negotiation
	S002-333 Antithrombotic	This is yet another prototype to prevent platelet collagen interaction and potential anti-platelet racemic molecule. Safety studies conducted so far have demonstrated it to be safe.	
Diabetes & Dyslipidemia	**CDR267F018** Antidyslipidemic	This standardised fraction from mangrove fruit has potent anti-dyslipidemic activity in various animal models of Dyslipidemia having both preventive and curative potential. The compound has been found safe in Monkey toxicity studies and have been recommended by the MOES project steering Committee for filing IND.	Open for licensing
	CDR914K058	Compound showed protection against dex-induced insulin resistance. In db/db mice K058 induced robust glucose clearance, drastically improved lipid profile, eliminated hepatic steatosis, protected pancreatic beta cells against diabetes-induced apoptosis and induced browning in white adipose tissue. Detailed mechanistic analysis revealed that K058 is the first in class orally active small molecule adiponectin mimetic. Patent has been filed	Open for licensing
Tuberculosis	**S006-830** Anti-tuberculosis	Compound did not show genotoxicity (Ames test), non-specific antimicrobial activity (against G+/G- bacteria and fungi) and appreciable binding to the human kinome (456 kinases). It showed mild inhibition of hERG channel and CYP2D6; and moderate inhibition of 4 out of 22 GPCRs. Initial studies with enantiomers have shown that one of them is a more potent inhibitor of M. tuberculosis in terms of reduction in intracellular CFU)	Being developed under OSDD

*Provisional data as on 31-01-2014

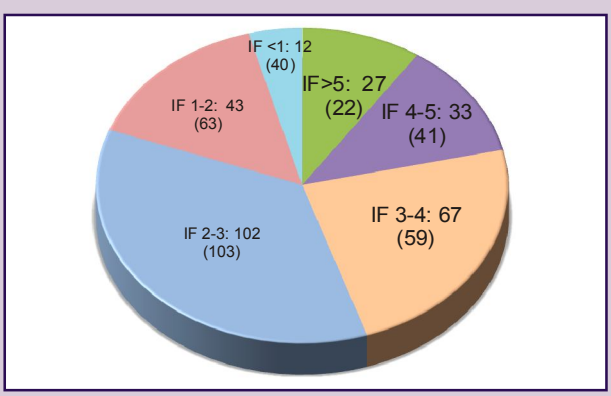
PUBLICATIONS



Average Impact Factor

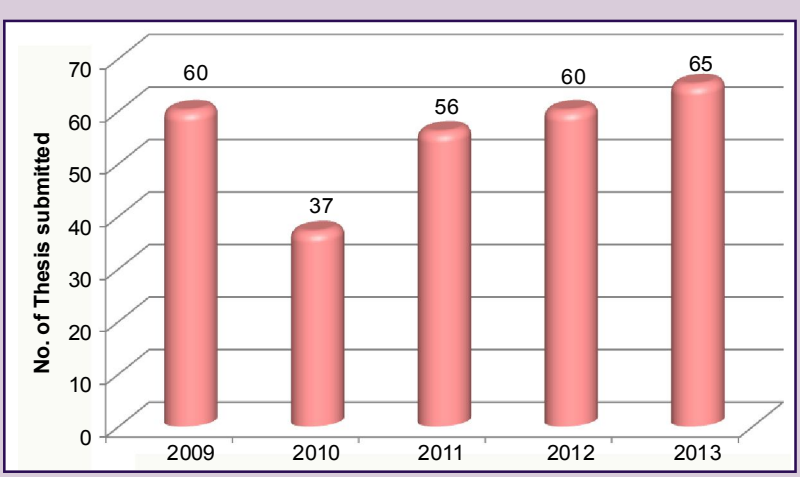


Impact Factor-wise No. of Publications 2013*



*Provisional data as on 31-01-2014

Ph.D. THESIS SUBMITTED



SOME IMPORTANT PUBLICATIONS 2013

Chemical Sciences

Authors	Title	Journal, Vol.(Iss), PP	IF (2012)
Goel A, Kumar A and Raghuvanshi A	Synthesis, stereochemistry, structural classification, and chemical reactivity of natural pterocarpans	**Chemical Reviews** 113(3), 1614-1640	41.298
Reddy LVR, Kumar V, Sagar R and Shaw AK	Glycal-derived delta-Hydroxy alpha,beta-unsaturated aldehydes (Perlin aldehydes): Versatile building blocks in organic synthesis	**Chemical Reviews** 113(5), 3605-3631	41.298
Siriwardena A, Pulukuri KK, Kandiyal PS, … … … … … …Woods RJ, Ampapathi RS and Chakraborty TK	Sugar-modified foldamers as conformationally defined and biologically distinct glycopeptide mimics	**Angewandte Chemie - International Edition** 52(39), 10221-10226	13.734
Kumar A, Saxena D and Gupta MK	Nanoparticle catalyzed reaction (NPCR): ZnO-NP catalyzed Ugi-reaction in aqueous mediumt	**Green Chemistry** 15(10), 2699-2703	6.828
Wahajuddin, Raju KSR and Taneja I	Bioanalysis of antimalarials using liquid chromatography	**Trac-Trends In Analytical Chemistry** 42, 186-204	6.351
Pandey G, Bhowmik S and Batra S	Synthesis of 3H-Pyrazolo[3,4-c]-isoquinolines and Thieno[3,2-c]-isoquinolines via Cascade Imination/ Intramolecular Decarboxylative Coupling	**Organic Letters** 15(19), 5044-5045	6.142
Bhowmik S, Pandey G and Batra S	Substituent-guided switch between C-H activation and decarboxylative cross-coupling during Palladium/ Copper-catalyzed cascade reactions of 2-aminobenzoates with 2-haloarylaldehydes	**Chemistry -A European Journal** 19(32), 10487-91	5.831
Shigemitsu H, Hisaki I, Kometani E, Yasumiya D, Sakamoto Y, Osaka K, Thakur TS, Saeki A, Seki S, Kimura F, Kimura T, Tohnai N and Miyata M	Crystalline supramolecular nanofibers based on dehydrobenzoannulene derivatives	**Chemistry -A European Journal** 19(45), 15366-15377	5.831
Azmi S, Srivastava S, Mishra NN, Tripathi JK, Shukla PK and Ghosh JK	Characterization of antimicrobial, cytotoxic, and antiendotoxin properties of short peptides with different hydrophobic amino acids at "a" and "d" positions of a heptad repeat sequence	**Journal of Medicinal Chemistry** 56(3), 924-939	5.614
Gajula PK, Asthana J, Panda D and Chakraborty TK	A synthetic dolastatin 10 analogue suppresses microtubule dynamics, inhibits cell proliferation, and induces apoptotic cell death	**Journal of Medicinal Chemistry** 56(6), 2235-2245	5.614
Sashidhara KV, Kumar M, Khedgikar V, Kushwaha P, Modukuri RK, Kumar A, Gautam J, Singh D, Sridhar B and Trivedi R	Discovery of coumarin-dihydropyridine hybrids as bone anabolic agents	**Journal of Medicinal Chemistry** 56(1), 109-122	5.614
Sharma M, Chauhan K, Shivahare R, Vishwakarma P, Suthar MK, Sharma A, Gupta S,Saxena JK, Lal J, Chandra P, Kumar B and Chauhan PMS	Discovery of a new class of natural product-inspired quinazolinone hybrid as potent antileishmanial agents	**Journal of Medicinal Chemistry** 56(11), 4374-4392	5.614

*Provisional data as on 31-01-2014

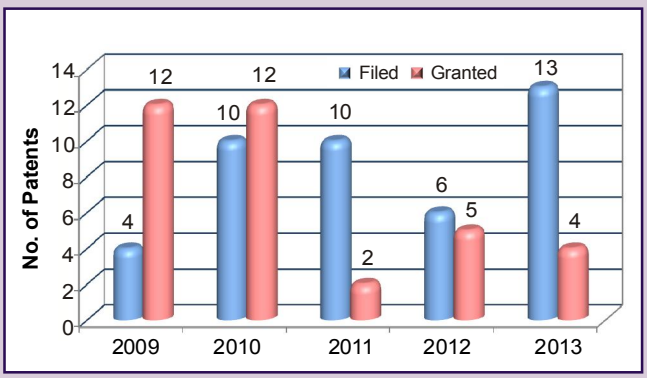
Biological Sciences

Authors	Title	Journal, Vol.(Iss), PP	IF (2012)
Singh DK, Krishna S, Chandra S, Shameem M, Deshmukh AL, Banerjee D.	Human DNA Ligases: A Comprehensive New Look for Cancer Therapy	**Med Res Rev** PMID: 23959747	9.58
Singh AK, Arya RK, Trivedi AK, Sanyal S, Baral R, Dormond O, Briscoe DM and Datta D	Chemokine receptor trio: CXCR3, CXCR4 and CXCR7 crosstalk via CXCL11 and CXCL12	**Cytokine & Growth Factor Reviews** 24(1), 41-9	8.831
Khan S, Shukla S, Sinha S and Meeran SM	Role of adipokines and cytokines in obesity-associated breast cancer: Therapeutic targets.	**Cytokine & Growth Factor Reviews** 24(6), 503-13	8.831
Friese RS, Altshuler AE, Zhang K, ……. … … …, Gayen JR, Mahapatra NR, Biswas N, Cale M, …. … Schmid-Schönbein GW and O'Connor DT	MicroRNA-22 and promoter motif polymorphisms at the Chga locus in genetic hypertension: functional andtherapeutic implications forgeneexpressionand the pathogenesis of hypertension	**Human Molecular Genetics** 22(18), 3624-3640	7.692
Khedgikar V, Kushwaha P, Gautam J, Verma A, Changkija B, Kumar A, Sharma S, Nagar GK, Singh D, Trivedi PK, Sangwan NS, Mishra PR and Trivedi R	Withaferin A: a proteasomal inhibitor promotes healing after injury and exerts anabolic effect on osteoporotic bone	**Cell Death & Disease** 4(8), e778	6.044
Pal P, Lochab S, Kanaujiya JK, Kapoor I, Sanyal S, Behre G and Trivedi AK	E6AP, an E3 ubiquitin ligase negatively regulates granulopoiesis by targeting transcription factor C/EBP alpha for ubiquitin-mediated proteasome degradation	**Cell Death & Disease** 4(4), E590	6.044
Kaur J, Dutta S, Chang KP and Singh N	A member of the Ras oncogene family, RAP1A, mediates antileishmanial activity of monastrol	**Journal of Antimicrobial Chemotherapy** 68(5), 1071-1080	5.338
Kumar K and Chopra S	New drugs for methicillin-resistant Staphylococcus aureus: an update	**Journal of Antimicrobial Chemotherapy** 68(7), 1465-1470	5.338
Gupta GK, Kumar A, Khedgikar V, Kushwaha P, Gautam J, Nagar GK, Gupta V, Verma A, Dwivedi AK, Misra A, Trivedi R and Mishra PR	Osteogenic efficacy enhancement of kaempferol through an engineered layer-by-layer matrix: A study in ovariectomized rats	**Nanomedicine** 8(5), 757-771	5.26
Gupta A, Asthana S, Konwar R and Chourasia MK	An insight into potential of nanoparticles-assisted chemotherapy of cancer using Gemcitabine and Its fatty acid prodrug: A comparative study	**Journal of Biomedical Nanotechnology** 9(5), 915-925	5.256
Sharma M, Malik R, Verma A, Dwivedi P, Banoth GS, Pandey N, Sarkar J, Mishra PR and Dwivedi AK	Folic acid conjugated guar gum nanoparticles for targeting methotrexate to colon cancer	**Journal of Biomedical Nanotechnology** 9(1), 96-106	5.256

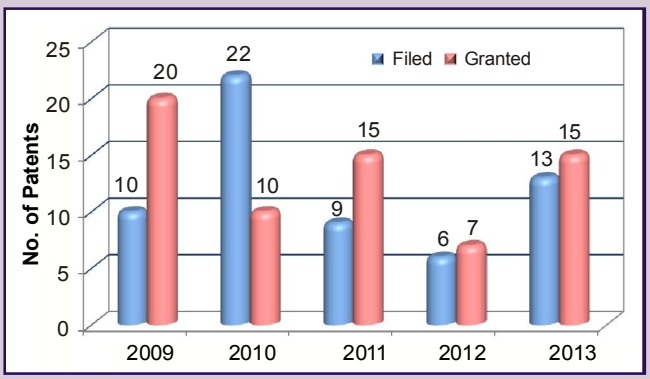
*Provisional data as on 31-01-2014

Intellectual Property

Indian Patents



Foreign Patents



*Provisional data as on 31-01-2014

CSIR-CDRI Patents in-force / Licensed / Commercialized

Indian Patents	
Patents in Force	**48**
Patents Licensed / Commercialized	**13**

Foreign Patents	
Patents in Force	**111**
Patents Licensed / Commercialized	**72**

A total of 27.08% Indian Patents and 64.86 % Foreign Patents in Force are Licensed/Commercialized

New Facilities Created

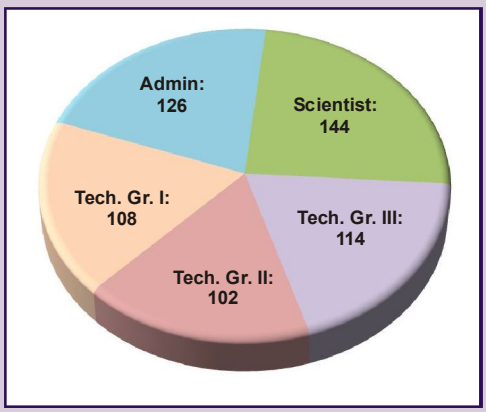

Robotic Compound Library


Confocal Microscope

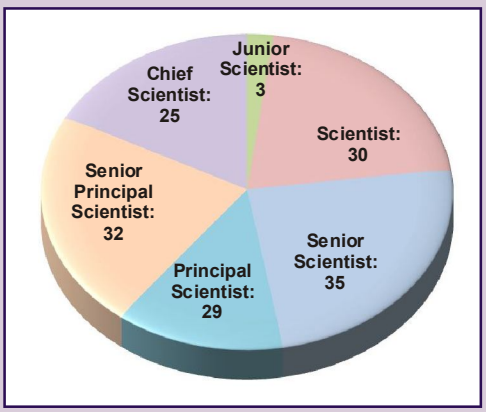

Oxymax CLAMS for Mouse & Rat

MANPOWER

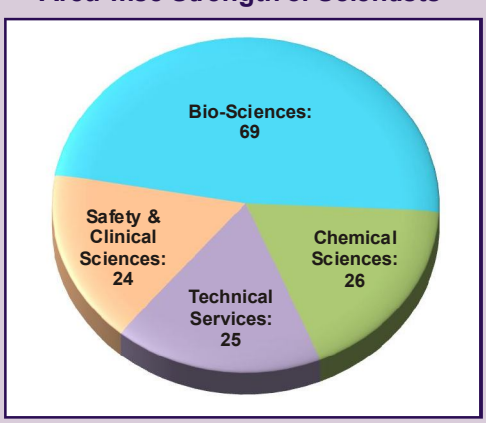
Total Staff (594)



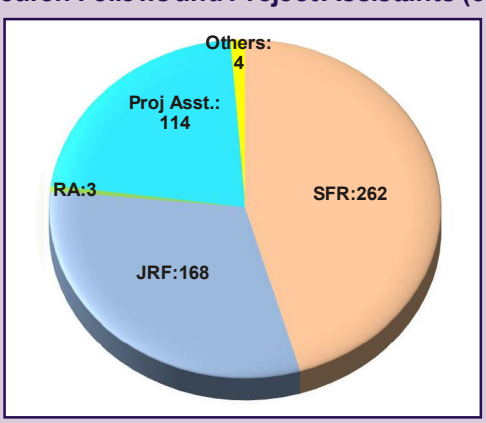
Designation-wise Number of Scientists



Area-wise Strength of Scientists



Research Fellows and Project Assistants (551)



*Data as on 31-01-2013

WE WELCOME NEWLY RECRUITED SCIENTISTS

Dr. Pintu Kumar Mondal
Senior Scientist, Medicinal & Process Chemistry

Dr. Kishor Mohanan
Senior Scientist, Medicinal & Process Chemistry

Dr. Satish Mishra
Senior Scientist, Parasitology

Dr. Mukesh Pasupaleti
Senior Scientist, Microbiology

Dr. Kumarvelu J
Senior Scientist, Pharmacology

Dr. Niti Kumar
Scientist, Molecular & Structural Biology

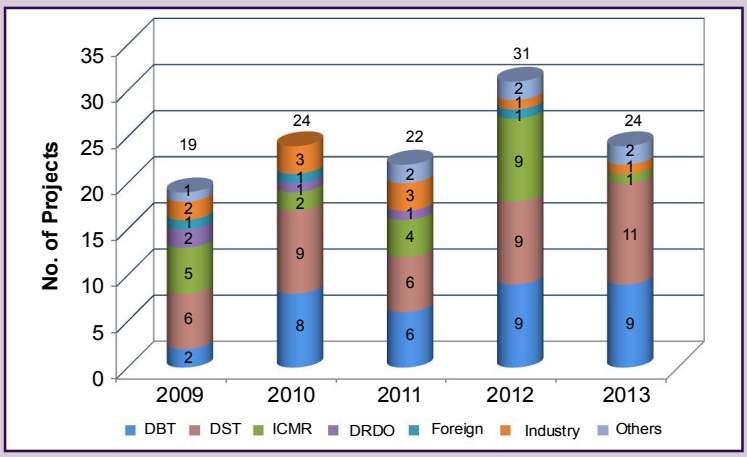
BUDGET

₹ in Lakh

	Heads	2009-10	2010-11	2011-12	2012-13	2013-14 (Anticipated)
(A)	**Recurring**					
	Pay and Allowances	4046.092	3821.022	3926.863	4340.300	4647.629
	Contingencies	256.298	393.437	409.510	797.111	707.285
	HRD	4.000	4.535	4.00	4.000	-
	Maintenance	178.112	248.190	283.125	475.374	336.574
	Chemical and Consumables	411.699	601.112	1041.550	1092.250	155.000
	Sub-Total	**4896.201**	**5068.296**	**5665.048**	**6709.035**	**5846.488**
(B)	**Capital**					
	Works and Services/ Electrical Installation	66.682	109.370	-1682.478	98.522	-
	Apparatus and Equipments/ Computer Equipments	488.779	1550.000	3466.500	820.000	-
	Office Equipments, Furniture and Fittings	4.021	7.031	6.950	7.000	-
	Library Books and Journals	215.000	275.000	240.587	175.000	40.000
	Sub-Total	**774.482**	**1941.401**	**2031.559**	**1100.522**	**40.000**
	Total (A+B)	**5670.683**	**7009.697**	**7696.605**	**7809.557**	**5886.488**
(C)	**Special Projects SIP/NWP/IAP / /HCP/ BSC/CSC**	**452.48**	**1312.323**	**995.599**	**1901.464**	**3546.179**
(D)	**CMM0015 (New CDRI)**	**6669.000**	**9504.300**	**3843.710**	**-**	**-**
	Grant Total (A+B+C+D)	**12792.163**	**17826.32**	**12535.914**	**9711.021**	**9432.667**

*Provisional data as on 31-01-2014 included expenditure against LRF

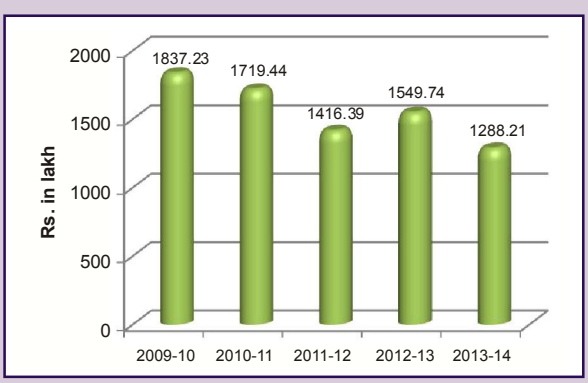
New Inter-Agency Projects Initiated



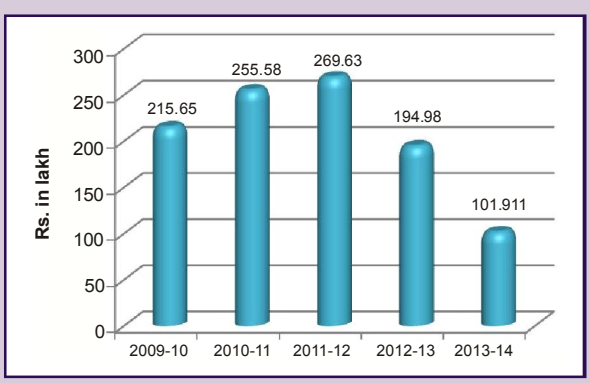
External Budgetary Resources

₹ in Lakh

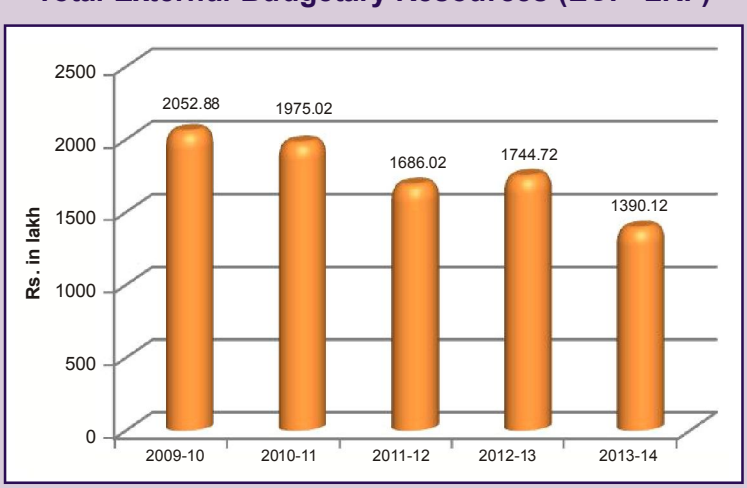
External Cash Flow
(Including Govt Agencies, Foreign Agencies and Industries)



Lab Reserve Fund Generated



Total External Budgetary Resources (ECF+LRF)



Provisional data as on 01-02-2014

Research Council

(August 2013- July 2016)

Chairman

Prof. N.K. Ganguly
Distinguished Biotechnology Professor,
C/o National Institute of Immunology
Aruna Asaf Ali Marg
New Delhi – 110 067

Members

Dr. Shahid Jameel
CEO, The Welcome Trust /
DBT India Alliance,
H.No. 8-2-684/3/K/19,
Ist Floor, Road No. 12,
Banjara Hills, Hyderabad 500 034

Dr. Chandrima Shaha
Director
National Institute of Immunology,
Aruna Asaf Ali Marg,
New Delhi 110 067

Dr. T.S. Balganesh
Distinguished Scientist
CSIR-Centre for Mathematical
Modelling and Computer
Simulation (C-MMACS), NAL Belur Campus
Bangalore – 560037

Prof. A. Surolia
Molecular Biophysics Unit
Indian Institute of Science
Bangalore - 560 012

Dr. K. Nagarajan
Corporate Advisor
Hikal Ltd., R & D Centre
Kalena Agrahara Bannerghatta Road
Bangalore – 560 076

Dr. R. Nagaraj
Chief Scientist
CSIR-Centre for Cellular and Molecular Biology
Hyderabad- 500 007

Dr. Subrata Sinha
Director
National Brain Research Centre
Manesar, Gurgaon Dist.
Haryana-122 051, India

Agency Representative

Dr. Bindu Dey
Adviser
Department of Biotechnology,
Room No.813, 8th Floor, Block 2,
CGO Complex, Lodhi Colony,
New Delhi -110 003

DG Nominee

Dr. Girish Sahni
Director
CSIR-Institute of Microbial Technology
Sector 39-A, Chandigarh - 160036

Sister Laboratory

Dr. K.C. Gupta
Director
CSIR-Indian Institute of Toxicology Research
Post Box No. 80, M.G. Marg
Lucknow – 226001

Cluster Director

Prof. Siddhartha Roy
Director
CSIR-Indian Institute of Chemical Biology
4, Raja SC Mullick Road, Jadavpur
Kolkata- 700 032

Director

Dr. S.K. Puri
Acting Director
CSIR-Central Drug Research Institute
Lucknow – 226 031

Permanent Invitee

Head or his Nominee
Planning & Performance Division
Council of Scientific & Industrial Research Anusandhan
Bhawan, 2, Rafi Marg, New Delhi - 110 001

Secretary

Dr. Saman Habib
Senior Principal Scientist
Molecular & Structural Biology Division
CSIR-Central Drug Research Institute
Lucknow – 226 031

Management Council

(January 2014- December 2015)

Chairman

Dr. S.K. Puri
Acting Director
CSIR-Central Drug Research Institute,
Lucknow – 226 031

Members

Dr. C.S. Nautiyal
Director
CSIR-National botanical Research Institute
Lucknow – 226 001

Dr. W. Haq
Senior Principal Scientist
Medicinal and Process Chemistry Division
CSIR-Central Drug Research Institute
Lucknow - 226 031

Dr. B. N. Singh
Principal Scientist
Microbiology Division
CSIR-Central Drug Research Institute
Lucknow - 226 031

Dr. M. I. Siddiqi
Senior Scientist
Molecular and Structural Biology Division
CSIR-Central Drug Research Institute
Lucknow - 226 031

Dr. Shubha Shukla
Scientist
Pharmacology Division
CSIR-Central Drug Research Institute
Lucknow - 226 031

Mr. Parvez Mahmood
Senior Superintending Engineer
Laboratory Engineering Services
CSIR-Central Drug Research Institute
Lucknow - 226 031

Dr. Rajendra Prasad
Chief Scientist
Business Development Unit
CSIR-Central Drug Research Institute
Lucknow - 226 031

CoFA/FAO
CSIR-Central Drug Research Institute
Lucknow - 226 031

Member Secretary

Controller of Administration
CSIR-Central Drug Research Institute
Lucknow - 226 031

ANNOUNCEMENT

CDRI Awards 2014

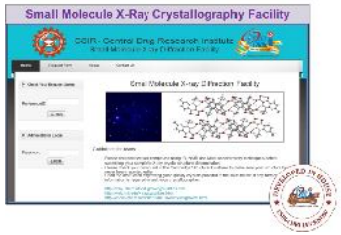
The prestigious CDRI Awards 2014 for Excellence in Drug Research in Life Sciences category has been awarded to Dr. Sathees C. Raghavan, Associate Professor, IISc, Bangalore for his work on "Identification of inhibitor for blocking the Non Homologous DNA End Joining, one of the DNA double strand break repair pathways". In the Chemical Sciences category, the award has gone to Dr. Srinivas Hotha, Associate Professor, IISER, Pune for his contribution on "Methodology of gold –catalysed transglycosidation for glycoconjugates".

Our heartiest congratulations to both the awardees!

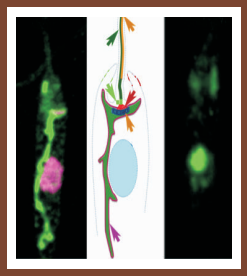
The felicitation ceremony will be held on 26th September 2014

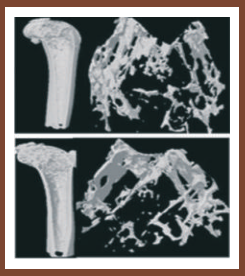
IT Enabled Tools for Faster and Transparent Services at CSIR-CDRI

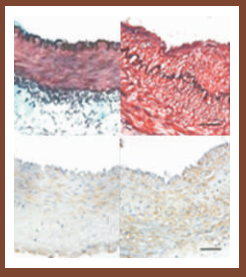
CSIR-Central Drug Research Institute, Lucknow



Progress in Research Projects







CSIR-Central Drug Research Institute, Lucknow

1 Malaria and other Parasitic Diseases

Parasitic infections cause tremendous burden of disease in tropics and subtropics as well as in more temperate climates. Malaria, Leishmaniasis and Filariasis are the three main parasitic disease areas being vigorously pursued at the institute. With prevalence in more than 100 countries and more than 4 billion people worldwide at combined risk, diseases caused by these three parasites represent a major biomedical challenge. Researchers at the institute address issues pertaining to design and development of novel drug molecules as well as optimization and preclinical development of lead molecules and combination therapy regimens, besides investigation of novel drug delivery systems. A significant basic research component of the program focuses on identification and characterization of novel drug targets, understanding mechanisms of drug action and drug resistance, investigation of aspects of parasite biology and host-parasite interaction, immunoprophylaxis and immuno-diagnosis. The contribution of host genetic factors in malaria susceptibility in Indian populations is also under investigation. The structural biology component of the program aids in molecular modeling and X-ray structure determination.

Area Coordinators:

Dr. Saman Habib

Dr. Neena Goyal

Dr. Sanjay Batra

1.1 Malaria

1.1.1 Synthesis and screening for identification of anti-malarial leads

During the reporting period over 600 novel compounds, synthesized at the institute or obtained from various research organizations across the country, were screened against the human malaria parasite, *P. falciparum* (3D7 strain). Over 318 novel chemical moieties representing diverse prototypes including Quinoline-pyrrolidine hybrid, fused isoindole, Sulfonyloxypropionimidamide analogues, Quinolin hybrid with triazole, Pyrido-imidaquinoline hybrid, Indole carboxamide derivatives, Quinoline piprazinyl rhodamine analogues, Quinazoline derivatives, Phenylsulfonyloxy acetimidamide derivative, 2,3-disubstituted 2-phenyl- quinolinones, Benzonaphtharidines, aminoquinoline - amino acid conjugate, aminoquinoline derivatives, Chromeno chalcones, Napthoquinone derivatives, Curcumin derivatives, Triazoquinoline derivatives, Urea derivatives, Sugar triazole, Ascorbic acid +Triazole, Cyclopropyls, Arnabin, Alkannin, Ellagic acid, Ellagic acid derivative, Punicalogin, Triazole derivatives, Quinolin derivatives, 1, 3 quinazoline-4-one, Chalcones, Stilbenoids, Quinoline, Schiff base, Arylidenenitrile, Tetrahydro β-Carboline were evaluated. Prototypes with IC_{50} values below 1000 nM were followed up for evaluation against the chloroquine resistant- K1 strain as well as cytotoxicity profile against the Vero cell line and these included novel aminoquinoline derivatives, Chromeno chalcones, Napthoquinone derivatives, Curcumin derivatives and Triazoquinoline derivatives. A few of the aminoquinoline derivatives showed IC_{50} values lower than 100 nM and these values were considerably lower than corresponding values for chloroquine against chloroquine resistant parasites.

In a follow up studies, compounds S011-1127, S012-0630, S012- 0659, S012- 0928 and S012- 1017 were screened against *P. yoelii* multidrug resistant parasites (*P. yoelii* MDR-Swiss mice model) after oral administration of a dose of 100 mg/kg for four days. However, none of these were curative.

1.1.2 Drug combinations

Mefloquine and Clarithromycin: Investigations revealed that Clarithromycin (CLTR) is a useful antibiotic that can be used as a companion drug with mefloquine (MFQ) in order to overcome mefloquine resistance in plasmodia. CLTR can exert a curative action against MDR/MFQ-resistant *P. yoelii nigeriensis* at 400 mg/kg dose×7days schedule. This parasite is resistant to 128 mg/kg dose of mefloquine x 4 days. When MFQ (32 mg/kg) was combined with CLTR (225 mg/kg), a synergistic anti-malarial effect and complete cure was observed beyond 28 days, indicating synergistic and

curative actions of both these drugs in combination, while drugs alone produced only 0 and 40% cure, respectively during the observation period of 28 days.

Further studies with MFQ 48 mg/kg combined with CLTR 150 mg/kg showed synergistic action as these combinations completely eliminated the *P. yoelii nigeriensis* parasitaemia till 24 days, though trace parasitaemia was observed on day 28. In order to monitor the therapeutic response of the MFQ and CLTR combination, the treatment was started 24 h after infection in mice, and doses of CLTR 300 mg/kg combined with MFQ at 32 and 64 mg/kg×4 days, the parasitaemia was completely suppressed by day 10 post-infection, and this combination completely cured *P. yoelii. nigeriensis* infection in both the groups beyond 28 days. Even the lower doses of CLTR 150 mg/kg with 32 or 64 mg/kg of MFQ resulted in complete suppression of parasitaemia beyond 14 days of observation and cured all the treated mice. This study has established that MFQ and CLTR alone exert only suppressive effects on MFQ-resistant *P. yoelii.nigeriensis*. However, a combination of CLTR 150–300 mg/kg with MFQ 32–64 mg/kg exerts a synergistic effect, resulting in complete cure beyond 10-14 days, and survival of all the treated mice.

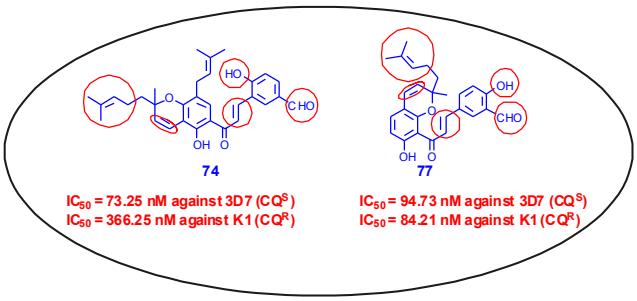
Table: Median (range) sum of FICs for the interaction of mefloquine – clarithromycin against *Plasmodium yoelii nigeriensis* MDR.

Drug combination	Dose	Median (range) Sum of FICs of *P. yoelii nigeriensis* MDR
Mefloquine+ clarithromycin (Prophylactic)	32 mg/kg×4 +225 mg/kg×7	**<0·66**
Mefloquine + clarithromycin (Therapeutic)	32 mg/kg×4 +300 mg/kg×7	**<0·85**

Alone dose i.e. 300 mg/kg×4 days and 400 mg/kg×7days were given for mefloquine and clarithromycin respectively. FICs- Synergy<1; addtivity 1; antagonism>1.

1.1.3 Natural products

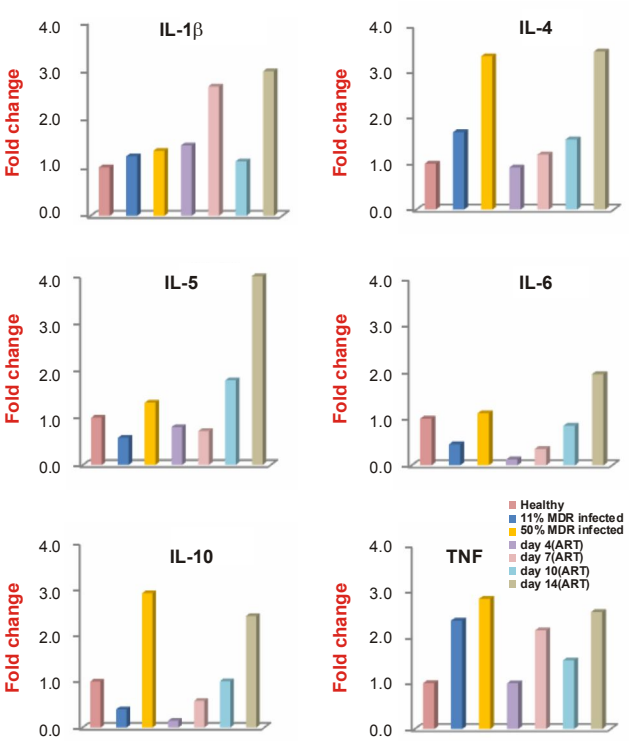
Licochalcone A (I) isolated from the roots of Chinese licorice, is the most promising antimalarial compound reported so far. In continuation of the drug discovery program in this area, two similar chalcones, medicagenin (II) and munchiwarin (III), from *Crotalaria medicagenia*, were isolated, which exhibited antimalarial activity against *P. falciparum*. A library of 88 chalcones were synthesized and evaluated for their *in vitro* antimalarial activity. Among these, 67, 68, 74, 77, and 78 exhibited good *in vitro* antimalarial activity against *P. falciparum* strains, 3D7 and K1 with low cytotoxicity. These chalcones also showed reduction in parasitemia and increased survival of Swiss mice infected



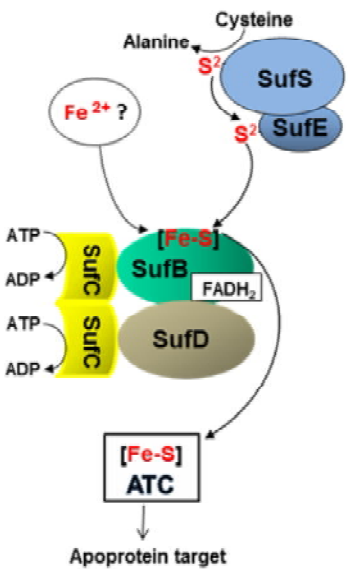
with *P. yoelii* (strain N-67). Pharmacokinetic studies indicated that low oral bioavailability due to poor ADME properties. Molecular docking studies revealed the binding orientation of these inhibitors in active sites of falcipain-2 (FP-2) enzyme. Compounds 67, 68 and 78 showed modest inhibitory activity against the major hemoglobin degrading cysteine protease FP-2 (***J. Med. Chem.*** 2013, 56: 31-45).

1.1.4 Cytokine mRNA expression in spleen of *P. yoelii nigeriensis* MDR infected and arteether-treated Swiss mice

The murine *Plasmodium yoelii nigeriensis* MDR (*Py* MDR) – Swiss mice malaria model was used to investigate the profile of cytokines throughout the entire infection. Investigation revealed that TNF α, IL-4 and IL-10 were significantly elevated during infection in mice spleen while IL-1β, IL-5 and IL-6 were increased to a lesser extent. Treatment with α/β Arteether brought most of these elevated levels to normal on day 10 but a rise was again observed on day 14.



1.1.5 Sulphur mobilization for [Fe-S] assembly in the apicoplast



[Fe-S] clusters assembled on target proteins participate in electron transfer in important enzymatic reactions and are believed to be among the earliest catalysts in nature. Of the three [Fe-S] assembly systems known in bacteria, two-ISC and SUF systems-are partitioned in the malaria parasite mitochondrion and apicoplast, respectively. Early evidence for the existence of the unique SUF pathway in the apicoplast by studying the interaction between scaffold components SufB and SufC has been already provided. Recent investigations on putative sulphur mobilisation factors SufS and SufE show that these proteins are targeted to the apicoplast where PLP cofactor-dependent SufS functions as a cysteine desulphurase whose activity is enhanced by SufE. Conserved cysteine residues on the two interacting proteins participate in the transpersulphuration reaction that begins with the release of S^{2-} from the cysteine substrate. The SUF pathway is essential for maintenance of the apicoplast and consequent survival of the parasite, is absent in humans, and is now being probed for identification of inhibitors that can show anti-malarial effects. [in ***Encyclopedia of Malaria***, 2013, *http://springerreference.com/docs/html/chapterdbid/372348.html)*]

1.1.6 Protein translation in organelles of *Plasmodium falciparum*

Translation involves closely coordinated steps of peptide chain initiation, elongation and termination with the participation of translation factors, amino acylated tRNAs and ribosome components. Recycling of ribosomes after release of a peptide chain is a critical step required for reassembly of a translation-competent 30S initiation complex. The partitioning of two nuclear encoded ribosome recycling factors (RRFs) to the apicoplast and mitochondrion, respectively was established and the ability of the RRFs to split surrogate *E. coli* ribosomes in the presence of their cognate organellar EF-Gs and IF-3 was demonstrated (***Molecular Microbiology***, 2013, 88(5): 891-905). In addition, the action of the steroid antibiotic fusidic acid (FA) was assessed on apicoplast and mitochondrial EF-Gs. The drug

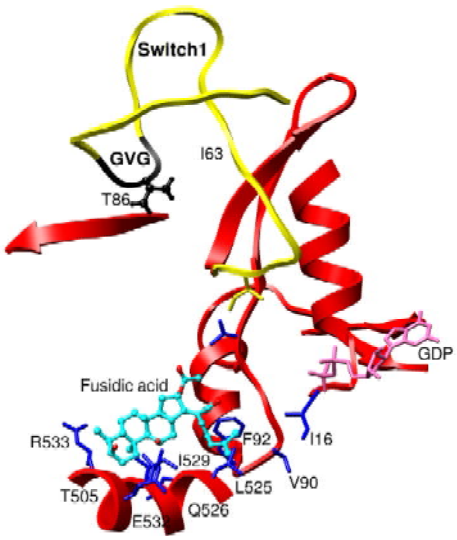


Fig. PfEF-G_{Mit} docked with FA. A portion of the FA-binding pocket, GDP/GTP binding site and switch I loop are shown.

had a more potent effect on EF-G_{Ap} as compared to EF-G_{Mit}; this is attributable to the presence of a GVG insertion in the switch I region of EF-G_{Mit} that stiffens the loop and alters access of FA to the factor (***Molecular & Biochemical Parasitology***, 2013, doi: 10.1016/j.molbiopara.2013.10.003.).

1.1.7 Purine nucleoside phosphoryase

Biochemical and biophysical properties of *P. falciparum* Purine nucleoside phosphorylase (PfPNP) enzymes were studied in dilute buffer system, which are far from the crowded physiological condition of cell. The enzyme kinetics and refolding of (PfPNP) under crowded conditions showed that enzyme catalytic efficiency was inversely affected in the presence of polyethylene glycols and Dextran whereas it was increased in the presence of osmolytes. At low concentrations of PEGs and Dextran, decreased substrate binding whereas higher concentrations of PEGs and Dextran favored substrate binding was observed. The presence of sucrose decreased the Km values. Thermal resistance of

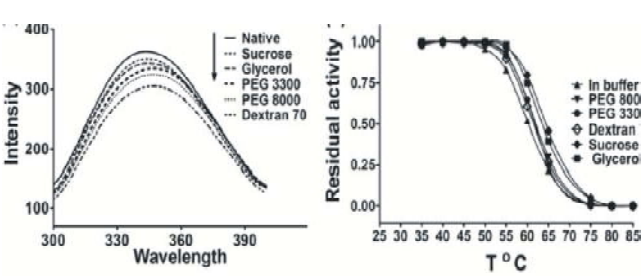


Fig. 2. Effect of different crowding agents on intrinsic fluorescene and thermal stability of PfPNP. (a) Change in intrinsic fluorescence of PfPNP at 15% concentrations of different crowding agents, PfPNP in Tris buffer pH 7.5 was excited at 295 nm. (b) Effect of PEGs, Dextran 70, sucrose and glycerol on thermal stability of PfPNP. Activity was measured in 50 mM sodium phosphate buffer, pH 7.5 Residual activity was calculated with respect to maximum activity achieved in each experiment in the presence or absence of crowding agents or osmolytes.

enzyme was increased in the presence of crowding agents. Intrinsic and extrinsic fluorescence analysis indicated change around active site loop region having single tryptophan residue. (***Int J Biol Macromol*.PMID:24095713**).

1.2 Leishmaniasis

1.2.1 Synthesis and screening

Novel synthetic moieties representing several prototypes viz. 2, 3 di substituted Quinoline-4-ones, Pyrazolodihydropyridines, Chalcones, Stilbenoids, Schiff's base, Arylidenenitrile, Aryl 1, 2, 3, 4 Tetrahyroisoquinolines, Indole-2-carboxamide and Bis-triazine derivatives were synthesized for bioevaluation against experimental models. Ninety eight synthetic compounds were evaluated at 100 µM and 50 µM concentrations respectively against *in vitro* macrophage- amastigote model for lead identification. A total of nine compound showing significant activity (>90% inhibition of parasite multiplication) were re-evaluated for their IC_{50} and CC_{50} determination. Compounds showing IC_{50} <10 µM and SI >5 were selected for *in vivo* evaluation. Fourteen compounds identified from *in vitro* screening were evaluated against *L. donovani* hamster model. Two synthetic compound representing Indole-2-carboxamide and Bis-triazine derivatives showed 70% and 74% inhibition of parasite multiplication respectively.

1.2.2 Drug resistance mechanism

Sodium antimony gluconate (SAG) unresponsiveness of *Leishmania donovani* (Ld) had effectively compromised the chemotherapeutic potential of SAG. 60s ribosomal L23a (60sRL23a), identified as one of the overexpressed proteins in different resistant strains of *L. donovani* indicated its possible involvement in SAG resistance. 60sRL23a was characterized for its probable association with SAG resistance mechanism. Its expression profile was checked in different SAG resistant as well as sensitive strains of *L. donovani* clinical isolates and was found to be up-regulated in resistant strains. Ld60sRL23a was recombinantly expressed and purified for raising antibody and was observed to have cytosolic localization in *L. donovani*. 60sRL23a was further overexpressed in a sensitive strain of *L. donovani* to check its sensitivity profile against SAG (SbV and III) and was found to be altered towards the resistant mode. Growth curve of the transfectants further indicated the proliferative potential of 60sRL23a in assisting parasite survival and reaffirming the extra ribosomal role of 60sRL23a (***PLoS NTD***, in press)

1.2.3 Immunobiology

The role of *Mycobacterium w* (Mw) vaccine as an immunomodulator and immunoprophylactant in the treatment of mycobacterial diseases (leprosy and pulmonary tuberculosis) is well established. The fact that it shares common antigens with leishmanial parasites prompted its assessment as an immunostimulant and as an adjunct to known anti-leishmanials that may help in stimulating the suppressed immune status of *Leishmania donovani*-infected individuals. The efficacy of Mw vaccine was assessed as an immunomodulator, prophylactically either alone or in combination with anti-leishmanial vaccine, as well as therapeutically as an adjunct to anti-leishmanial treatment in *L. donovani*-infected hamsters, representing a chronic human Visceral Leishmaniasis (VL) model. Similarly, its efficacy was also evaluated in *L. donovani*-infected BALB/c mice, representing an acute VL model. Preliminary studies revealed that Mw was ineffective as an immunostimulant and/or immunoprophylactant in hamsters infected with *L. donovani*, as estimated by T-cell immunological responses. However, in the BALB/c mice-VL model it appeared as an effective immunostimulant but a futile prophylactic agent. It is therefore inferred that, contrary to its role in managing tuberculosis and leprosy infections, Mw vaccine has not been successful in controlling VL infection, emphasizing the need to find detailed explanations for the failure of this vaccine against the disease (***Parasitology***, 2013, 140:435-44.)

In visceral leishmaniasis (VL), Th1-type immune response plays an important role which correlates with recovery from and resistance to disease resulting in lifelong immunity. Based on this rationale, soluble leishmanial antigens that elicit cellular responses in PBMCs from cured Leishmania patients were characterized through immunoproteomic approach. This led to the identification of trypanothione reductase (TPR) (a cytosolic enzyme explored as a drug target), as a potent Th1 stimulatory protein. The immunogenicity of recombinant *L. donovani* TPR (rLdTPR) was assessed in PBMCs of cured Leishmania-infected patients/hamsters and further evaluated its prophylactic efficacy against *L. donovani* challenges in hamsters. Substantial proliferative responses to rLdTPR, as compared to soluble *L. donovani* antigen, were observed in *Leishmania*-infected cured patients as well as in hamsters. Moreover, rLdTPR reasonably stimulated PBMCs of cured *Leishmania* patients to produce IFN-, IL-12, and TNF-α but not IL-4 or IL-10. On the other hand, the protein down regulated LPS-induced IL-10 as well as soluble *L. donovani* antigen induced IL-4 production in PBMCs of *Leishmania* patients. In case of cured hamsters, rLdTPR generates mixed Th1& Th2 immune response. Vaccination with rLdTPR alongwith BCG was able to provide considerably good prophylactic efficacy (~60%) against *L. donovani* challenge in hamsters. The efficacy was supported by the increased inducible NO synthase mRNA transcript and Th1-type cytokines IFN-, IL-12, and TNF-α and down-regulation of IL-4, IL-10, and TGF-β (***Parasitology Research***, 2013, DOI: 10.1007/s00436-013-3716-5).

1.2.4 Proteomic analysis of *L. donovani* soluble proteins in Indian clinical isolate

The aim of this study was to identify novel targets in soluble *L. donovani* (SLD) protein. SLD protein was isolated and resolved by two-dimensional gel electrophoresis and analyzed through MALDI-TOF/TOF based mass spectrometry. Proteomic results identified several proteins as drug targets, Th1 stimulatory, novel and hypothetical proteins which could have crucial biological functions in *Leishmania* pathogenesis (***Pathogens and Disease*** 2013, in press).

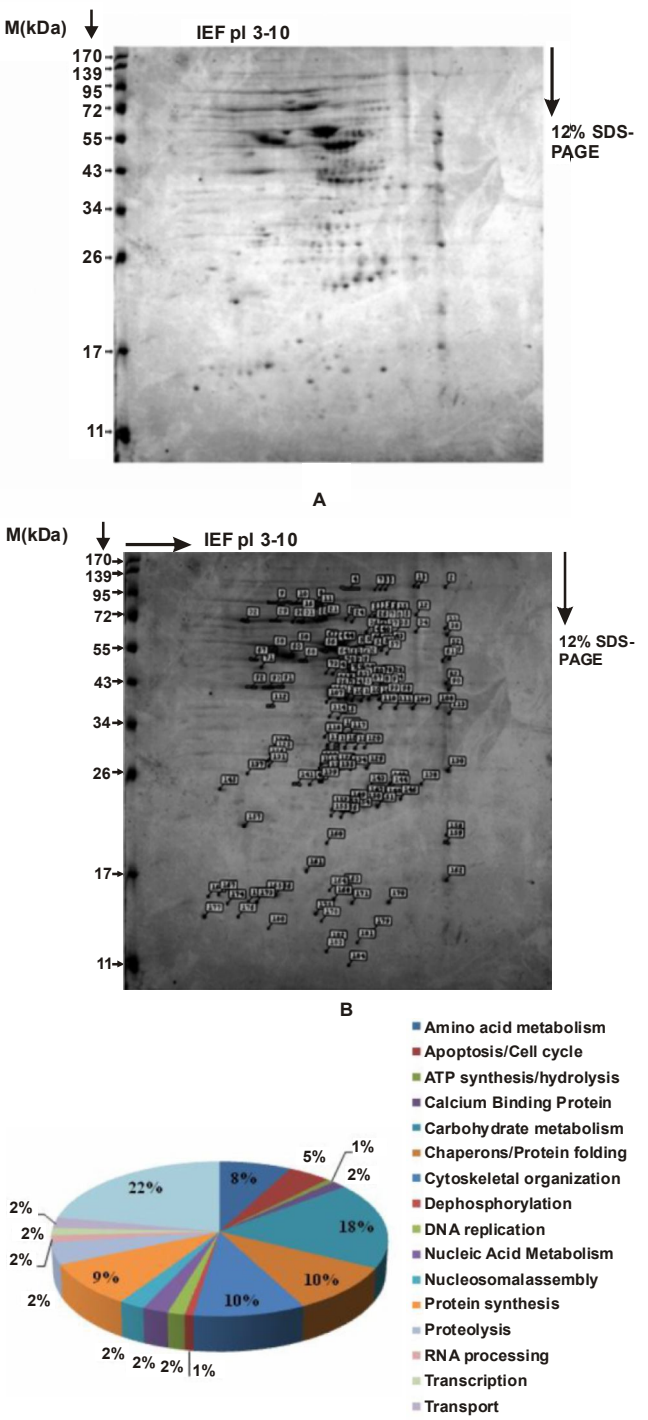


Fig (A) 2-D gel map of soluble proteins of *L. donovani*. SLD proteins were loaded onto IPG strip pI 3–10 followed by SDS-PAGE (12%). (B) The numbered spots indicate the identified/unidentified SLD listed in supplementary table 1. (C) Pie-chart representing the percentage and biological categories of identified SLD proteins based upon their putative functions, assigned using protein function databases.

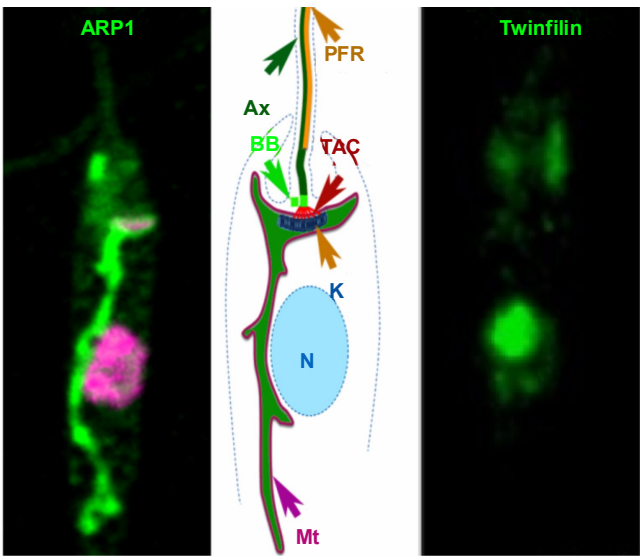
1.2.5 Drug resistance mechanism: Role of efflux pumps and intracellular thiols in natural antimony resistant isolates of *L. donovani*

In view of the recent upsurge in the phenomenon of therapeutic failure, drug resistance in *Leishmania*,developed under natural field conditions, has become a great concern yet little understood. In the present study, mechanism of natural antimony resistance in *L. donovani* field isolates was explored by analyzing the functionality of efflux pump(s) and expression profiles of known genes involved in drug transport and thiol based redox metabolism. Seven clinical isolates (2 sensitive and 5 resistant) were selected in addition to laboratory sensitive reference and SbIII resistant mutant strains. Functional characterization using flow cytometry identified efflux pumps that transported substrates of both P-gp and MRPA and were inhibited by the calmodulin antagonist trifluoperazine. For the first time, verapamil sensitive efflux pumps for rhodamine 123 were observed in *L. donovani* that were differentially active in resistant isolates. RT-PCR confirmed the over expression of MRPA in isolates with high resistance index only. Resistant isolates also exhibited consistent down regulation of AQP1 and elevated intracellular thiol levels which were accompanied with increased expression of ODC and TR genes. Interestingly, γ-GCS is not implicated in clinical resistance in *L. donovani* isolates. Hence, for the first time, the role of P-gp type plasma membrane efflux transporter(s) in antimony resistance in *L. donovani* field isolates. Further, decreased levels of AQP1 and elevated thiols levels have emerged as biomarkers for clinical resistance (***Plos One***, 2013, 8(9): e74862).

1.2.6 Actin-network in *Leishmania* parasites

The role of actin-network proteins in *Leishmania* was investigated with an aim to deduce its physiological importance in parasite survival. The specific research projects included functional characterization of novel actin-related and actin-binding proteins which regulate essential cell biological processes in these parasites. Greater understanding of the functionality of two such proteins has been achieved, 1) actin-related protein-1 (ARP1), and 2) twinfilin.

One of the closest relatives of actin, ARP1, localizes primarily in the mitochondrion and regulates its ability to generate energy. Its role in flagella elongation and production



of organized flagellar beats, which eventually imposed aberrated or ablated cellular motility has been showed earlier. Further, it was demonstrated that these two physiological variables are important for the survival of *Leishmania* parasites within the mammalian macrophages.

Studies on the actin-monomer sequestering protein, twinfilin, showed localization of this protein in the *Leishmania* nucleolus. By knocking out its gene, its function in the progression of 'S' phase of the cell division cycle and stability of the intra-nuclear mitotic spindles was deduced. Failures to isolate null cells and emergence of aneuploid population after replacement of both the genetic alleles indicated essential nature of this protein in *Leishmania*.

1.2.7 Structural and functional studies on proteins from pathogens

Enzymes of the polyamine biosynthesis pathway are essential and are sufficiently distinct from their human homologues, are interesting targets for identification of novel targets against leishmania. Trypanosomatids including leishmania possess an additional copy of S-adenosyl-methionine decarboxylase (adometDC), putatively annotated as adometDC-like protein (ADL). *T. brucei* ADL was shown to be inactive but playing a regulatory role for its adometDC. To better understand the role of this protein, *L. donovani* ADL has been cloned, expressed, purified and functionally characterized and was shown to bind to S-adenosyl methionine and putrescine, substrates of adometDC. AdometDC was also cloned, expressed and purified and preliminary experimental and computational studies indicate that ADL indeed forms a complex with adometDC (Fig.). Functional and structure elucidation studies of this complex are in progress.

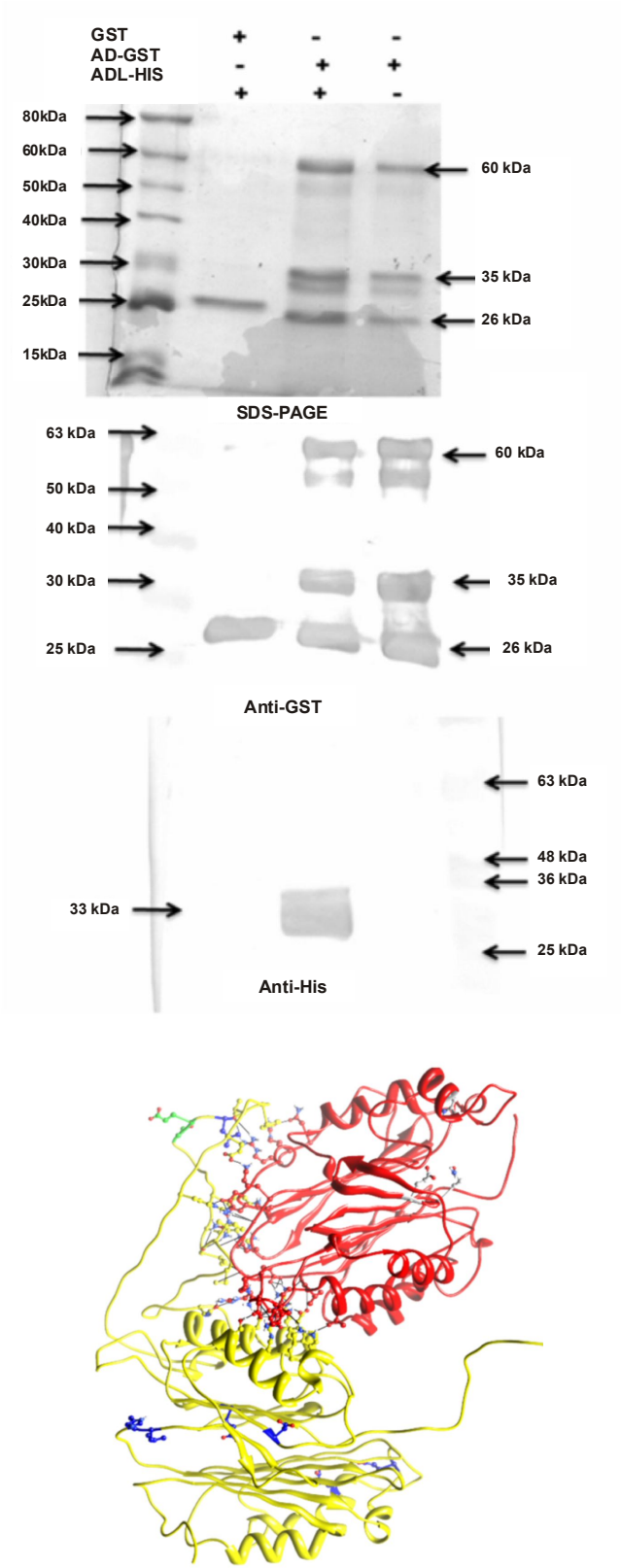


Fig. showing adometDC –ADL interaction: (top panel) eluted sample of GST pull down assay showing presence of both proteins in SDS-PAGE, with the individual components identified by anti-GST and anti-His western blots. A homology model of the proposed adometDC-ADL interaction with residues proposed to be involved in functional and inter-protein interactions coloured differently.

1.2.8 Cytosolic Serine Hydroxylmethyltransferase (cSHMT) of *L. donovani*

Serine hydroxymethyltransferase (SHMT) catalyses the reversible conversion of serine and tetrahydrofolate to glycine and methylene-tetrahydrofolate. The cytosolic form of SHMT from *L. donovani,* the cSHMT gene was cloned, sequenced (Accession no: JN798513) and over expressed in pET-28(a) expression vector. The Recombinant *Ld*cSHMT was purifed by ion exhange chromatography and found to be catalytically active protein with Km and Vmax of 0.83 mM and 1.97 mM/minute respectively. Recombinant enzyme was stable over a pH range of 7.2 to 7.6 with temperature optima of 37°C. Gel filtration chromatography studies suggest that *Ld*cSHMT is a homodimer. *Ld*cSHMT activity is more sensitive towards GdmCl than that of urea; this might be due to the ability of GdmCl to disturb the electrostatic interactions. The energy minimized and refined 3D structure of the *Ld*cSHMT was built by using homology modeling based on the known crystal structure of rabbit cytosolic Serine Hydroxymethyltransferase and TriGlu-5-formyl-tetrahydrofolate (THF) [PDB Identifier-1LS3] as a template. The model of *Ld*cSHMT revealed an active site similar to that of the 1LS3 with conservation of the catalytically important residues.

1.2.9 Arginase (Arg) of *L. donovani*

Polyamines are ubiquitous organic cations found in virtually every eukaryotic cell and play critical roles in key cellular processes such as growth, differentiation and macromolecular biosynthesis. Ornithine, the amino acid from which polyamines are generated, is produced from arginine by Arginase enzyme. Arginase from *L. donovani* has been cloned, sequenced and overexpressed in pET-28(a) expression vector. The recombinant *Ld*Arg was purifed by ion exhange chromatography and found to be catalytically active protein with Km and Vmax of 1.6mM and 2.1 mM/minute respectively. Recombinant enzyme was stable at pH 9 with temperature optima of 37°C. Gel filtration chromatography studies suggest that *Ld*Arg is a hexamer. The refined 3D model of the *Ld*Arg was built by using homology modeling based on the known crystal structure of Arginase from rat liver as a template. Biophysical characterization is under process.

1.3 Filariasis

1.3.1 Synthesis and anti-filarial screening

Out of 12 synthetic compounds (coumarin analogs) received from BHU (under MOU), eight showed activity *in vitro* on adult and microfilariae of *Brugia malayi.* All were safe in cytotoxicity studies carried out on vero cells and were prioritized on the basis of their low IC_{50} values which varied between 0.094 µM and 1.99 µM. The identified compounds were tested in primary jird (*Meriones unguiculatus*) screening model at 100 mg/kg, S.C. x 5 days. Compounds 8 and 9 were found to be most active exhibiting 71-76% adulticidal activity while others had activity lower than this.

1.3.2 Natural products and anti-filarial activity

1.3.2.1 Potent antifilarial activity identified in a calophyllic acid and isocalophllic acid mixture isolated from *Calophyllum inophyllum*

Potent antifilarial activity was identified in a calophyllic acid and isocalophllic acid mixture isolated from the leaves of *Calophyllum inophyllum* 'Indian laurel' or 'Alexandrian laurel'. The mixture inhibited the motility of adult *Brugia malayi* and microfilariae at 15.6 µg/mL conc. and showed IC_{50} of 2.1 and 5.5 µg/mL respectively *in vitro*. The diastereomeric mixture also exhibited moderate *in vivo* antifilarial activity in the jird model. A few derivatives of calophyllic acid and isocalophyllic acid were prepared and one of the amide derivatives turned out to be the most promising compound against the adult (MIC: 3.9 and IC_{50}: 0.32 µg/mL) and microfilariae stage (MIC: 1.9 and IC_{50}: 0.26 µg/mL) parasites with a high selectivity index. The amide derivative has superior activity than the parent natural product, as well as the standard antifilarial drug, ivermectin (***Natural Products Communications***, 2013, 8(6) 803-804).

1.3.2.2 *Immunomodulatory* activity of *Annona squamosa twigs in BALB/c mice.*

The crude ethanolic extract of *Annona squamosa* (AS) and its four fractions, hexane (F1), chloroform (F2), *n*-butanol (F3) and aqueous (F4) prepared from twig were fed orally to BALB/c mice at 3, 10 and 30 mg/kg x14 days. Crude extract and the three fractions (F2, F3, F4) activated APCs, *in vitro* splenic T and B cell proliferation and upregulated CD4+, CD8+ and CD19+ cell population and incited dose dependent Th1 or mixed Th1/Th2 cytokine responses. Further purification and identification of active moiety is being undertaken (***Current Science***, 2013, 10 (9): 12-24).

1.3.2.3 Glycyrrhetinic acid and its analogs: A new class of antifilarial agents.

The roots of *Glycyrrhiza glabra* were chemically investigated, and glycyrrhetinic acid (GA) was found to be effective against *Brugia malayi* mf *in vitro* (LC100: 12.5 mM; IC_{50}: 1.20 mM). Out of six GA analogs, the benzyl amide analog (6a) exerted slow death of mf (LC100: 50 µM; IC_{50}: 2.2µM) and inhibited around 50% MTT reduction potential of the adult parasites. The SI of the compound was >60. Amide analog 6a evaluated *in vivo* using *B. malayi*-jird model, showed promising macrofilaricidal activity at 100mg/kg, s.c. x 5 days with calcified masses of worm fragments in peritoneal cavity of the animals. This is the first ever report on the antifilarial potential of GA analogs (***Biooorganic and Medicinal Chemistry Letters***, 2013, 23, 2566-2570).

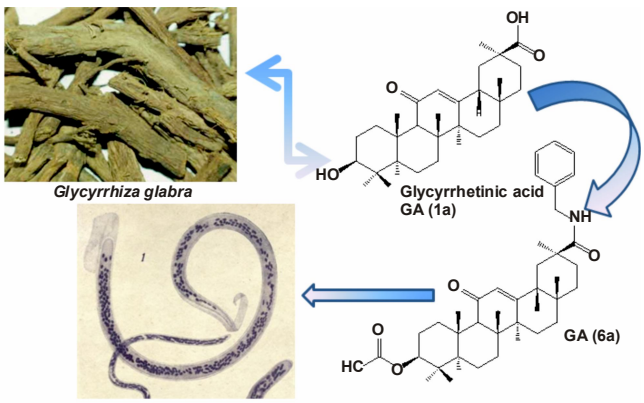


Fig. Glycyrrhetinic acid and its analogs

1.3.2.4 Diarylheptanoid compounds from *Alnus nepalensis* exhibit *in vitro* and *in vivo* antifilarial activity

A crude methanolic extract of leaves of *Alnus nepalensis* (alder tree), chloroform- and *n*-butanol-partitioned fractions from the crude extract and 6 bioactivity-guided isolated compounds including two new diarylheptanoid from the fractions were assayed for microfilaricidal, macrofilaricidal and female worm sterilizing activity using the lymphatic filariid *B. malayi* in *in vitro* and *in vivo* systems. *In vitro*, the crude methanolic extract exerted better microfilaricidal than macrofilaricidal activity whereas chloroform and *n*-butanol fractions were more macrofilaricidal than microfilaricidal. In addition, *n*-butanol fraction also caused 74% inhibition in MTT reduction potential of the adult worms. *In vivo* the chloroform fraction (at 100mg/kg, i.p. x 5 days) exerted >50% macrofilaricidal activity. Two compounds alnus dimer, and (5S)-5-hydroxy-1-(4-hydroxyphenyl)-7-(3, 4-dihydroxyphenyl)-3-heptanone were found to show the most potent with both macrofilaricidal (LC100: 15.63mg/ml, IC_{50}: 6.57-10.31mg/ml) and microfilaricidal (LC100: 31.25-62.5mg/ml, IC_{50}: 11.05-22.10mg/ml) activity *in vitro*. These findings indicate that the active diarylheptanoid compounds may provide valuable lead for design and development of new antifilarial agent(s) (***Acta Tropica***, 2013, 128, 509– 517).

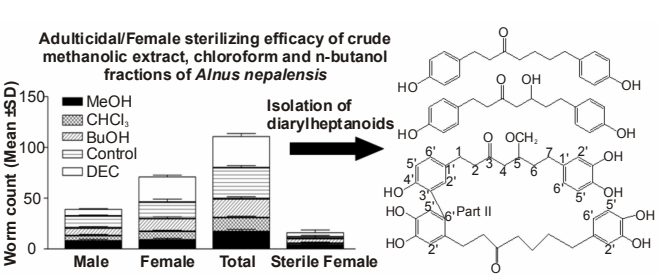


Fig. Antifilarial activity of Diarylheptanoid compounds

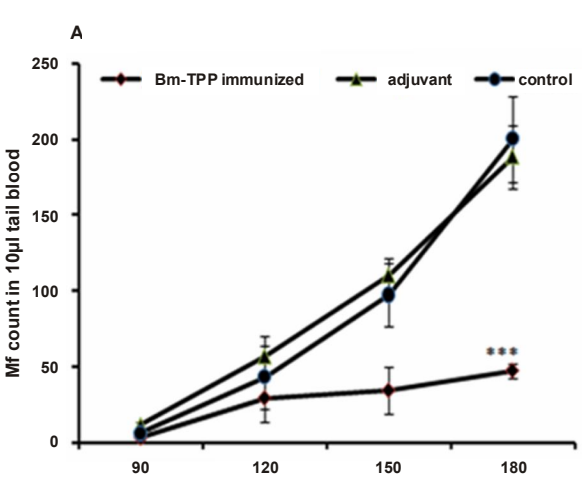
1.3.3 Drug delivery

Attempt was made to improve the antifilarial activity of ivermectin (IVM) using spherical chitosan–alginate nanoparticles of 155 nm size and 4.56 and 75.67% loading and entrapment efficiency, respectively. The delivery system maintained the sustained release and significantly augmented the microfilaricidal (MIF) activity at a single subcutaneous low dose of 200 µg/kg over free drug. Pharmacokinetics study in Wistar rats revealed a greater peak plasma concentration (45.3 ± 1.79 ng/ml), area under the concentration curve (298 ± 38.7 ng d/ml) and extended mean residence time (23.4 ± 8.56 days) of IVM in chitosan–alginate nanoparticles. Treatment with 25 mg/kg of diethylcarbamazine following nanoparticle therapy further improved the micro- and macrofilaricidal action of encapsulated drug (***Expert Opinion on Drug Delivery***, 2013, 10(5): 665-678; Ali *et al*., ***J Drug Target***, 2013; 1-13; ***Parasitology Research*** 2013, 112(8):2933-43).

1.3.4 *Brugia malayi* proteins/enzymes as antifilarial vaccine targets

1.3.4.1 *B. malayi* recombinant Trehalose-6-Phosphate Phosphatase (Bm-TPP)

Trehalose-6-phosphate phosphatase of *Brugia malayi* (Bm-TPP) represents an attractive vaccine target due to its absence in mammals, prevalence in major life stages of *B. malayi* and immune-reactivity with human bancroftian endemic normal sera. Immunoprophylactic study was undertaken in susceptible host, *M. coucha* where Bm-TPP produced 78.4% decrease in microfilaremia and 71.04% reduction in adult worm establishment with 70% females being sterilized. The decreased parasitaemia was accompanied by the mixed Th1/Th2 immune response and enhanced generation of IL-2, IFN-γ, TNF-α, IL-4 cytokines and IgG1, IgG2a, IgG2b and IgA antibodies (***PLoS One***, 2013. 8(8):e72585).



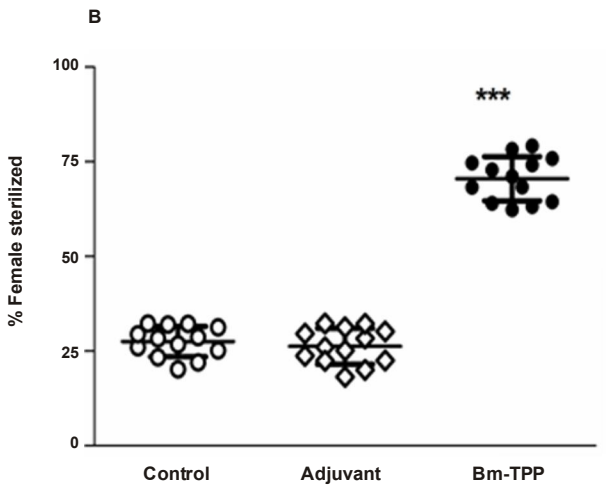


Fig. Effect of Bm-TPP immunization on *B. malayi* burden in Mastomys

1.3.4.2 *B. malayi* DEAD Box RNA helicase

DEAD Box RNA helicases are essential enzymes involved in RNA metabolic processes. The 3D structure of the *B. malayi* helicase was determined and immunoprophylactic efficacy of the recombinant protein was investigated in *Mastomys coucha* after challenging with *B. malayi* infective larvae. Immunization had an adverse outcome on the establishment of challenged larvae resulting in a 67·4% reduction in adult parasite recovery, an 86·7% decrease in the microfilarial density and profound sterility of the recovered female worms. The immune response thus generated was investigated by measuring the levels of specific antibodies including IgG subclasses, reactive oxygen species and cytokines (***Parasitology***, 2013, 140(8): 1016-25).

1.3.4.3 *B. malayi* independent phosphoglycerate mutase (iPGM)

The phosphoglycerate mutase (PGM) enzyme catalyzes the interconversion of 2- and 3-phosphoglycerate in the glycolytic /gluconeogenic pathways. Nematodes have only co-factor independent (iPGM) form but mammals are devoid of this form. Study in *C. elegans* suggests the essentiality of this enzyme. The *in vitro* ipgm gene silencing in *B. malayi* by small size siRNA led to severe phenotypic deformities in the intrauterine developmental stages of female worms with a drastic reduction (~90%) in the motility of adult parasites and profoundly reduced (80%) release of microfilariae (mf) by female worms in culture. Almost half of the *in vitro*-treated infective larvae (L3) displayed sluggish movement. The *in vivo* survival and development of siRNA-treated L3 after introduction in the peritoneal cavity of jird showed ~45% reduced adult worm establishment suggesting essentiality of iPGM for both larval and adult forms of *B. malayi* and its pivotal role in larval development and embryogenesis thus validating it as a putative anti-filarial drug target (***Infectious Diseases of Poverty*** 2013, 2:5).

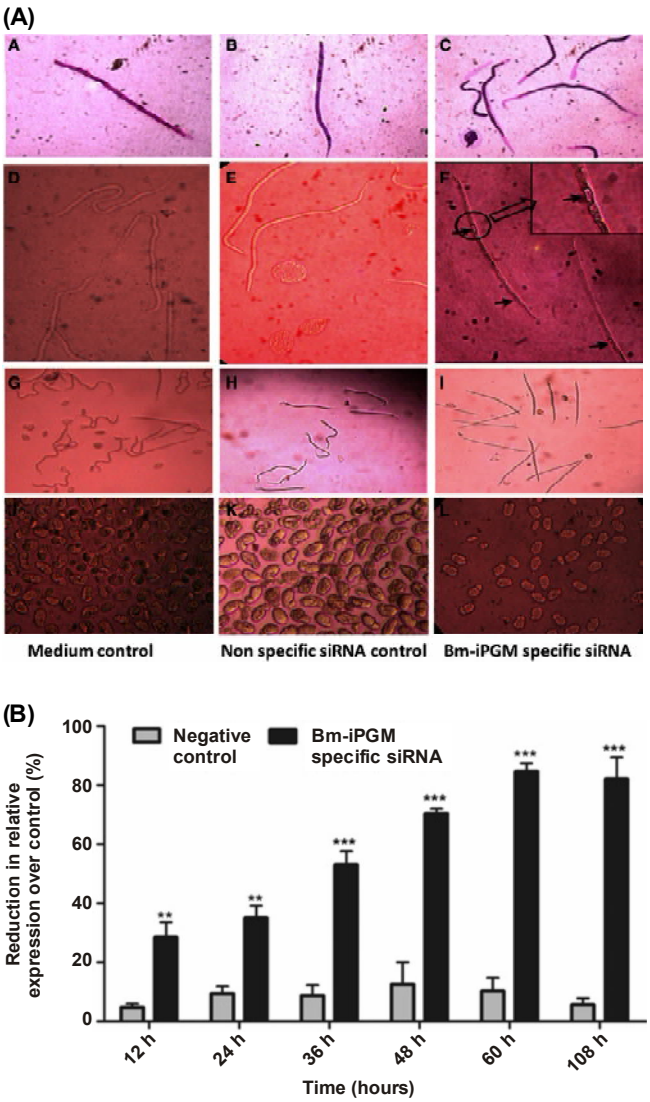


Fig. (A) Effect of Bm-ipgm gene silencing on *B. malayi* phenotypes. (B) Percent reduction in gene transcript level in worms after Bm-ipgm gene silencing

1.3.4.4 Multi-subunit vaccine

Various combinations of three *B. malayi* recombinant proteins BmAF-Myo, Bm-iPGM and Bm-TPP were evaluated for protective efficacy. Myosin + TPP and iPGM + TPP provided the best protection upon *B. malayi* infective larval challenge with ~70% reduction in adult worm establishment over non-vaccinated animals, which was significantly higher than that achieved by any single antigen. Myosin + iPGM, in contrast did not provide any enhance protection over the single recombinant protein vaccines. Specific IgG, IgM level, IgG antibody subclasses levels (IgG1, IgG2a, IgG2b, IgG3), lymhocyte proliferation, reactive oxygen species level and cytokines level were also determined to elucidate the characteristics of the protective immune responses (***Comparative Immunology, Microbiology and Infectious Diseases*** (CIMID), 2013, 36(5):507-19)

1.3.4.5 Anti-inflammatory BmAFI of *Brugia malayi* modulates IgE, histamine and histamine receptor responses in *Mastomys coucha*

The effects of sensitization with BmAFI, an anti-inflammatory fraction of *Brugia malayi* adult worm, were investigated on serum IgE levels, IL-5 release from splenocytes, histamine concentration and mRNA expression of histamine receptor 1 (HR1) and HR2 in lymph node cells in *Mastomys coucha* challenged with *B. malayi* 3rd stage infective larva (L_3) in the peritoneal cavity (p.c.). Sensitization facilitated parasite development and upregulated IgE, IL-5 release, histamine levels, HR2 expression but downregulated HR1 expression. L_3 exposure of sensitized animals caused late increase in IgE and IL-5 release, downregulation in histamine and HR1 expression. The findings of the study further establish that BmAFI downregulates inflammatory/Th1 and modulates Th2 responses to favour survival and development of the parasite even in the hostile p.c. of the host (***Acta Tropica***, 2013, 127, 82-86).

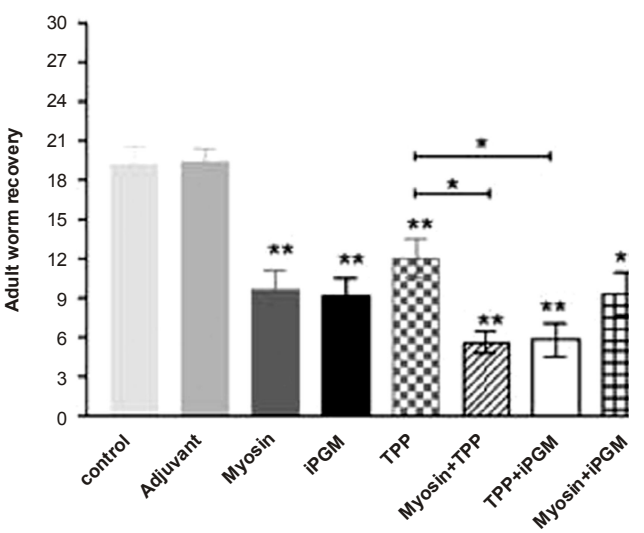


Fig. Effect of immunization with recombinant cocktail proteins on adult *B. malayi* establishment

1.3.4.6 Modulation of host's immune responses and parasite load in *Mastomys coucha* immunized with recombinant mitochondrial HSP60 of human lymphatic filarial parasite *Brugia malayi*

Mitochondrial HSP60 of *Brugia malayi* (mtHSP60bm) shows high degree of identity with *Escherichia coli* GroEL/ES. The immune responses to recombinant mtHSP60bm in *Mastomys coucha* were investigated and the fate of infection in the immunized animals was assessed. The findings show that mtHSP60bm may modulate and balance the host's immune responses to favour parasite survival without inducing any pathology (***Journal of Experimental and Applied Animal Science***, 1, 140-151).

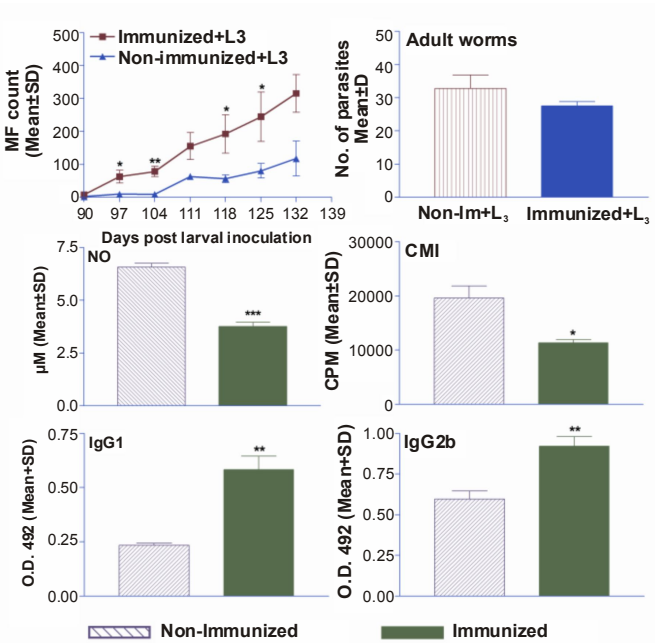


Fig. rHSP60 of *B. malayi* modulates and balances the host's- parasite interaction

1.3.4.7 Poly (d,l)-lactide-co-glycolide (PLGA) poly-lactide microspheres (DL-PLA) microspheres as immunoadjuvants for *Brugia malayi* antigens

A pro-inflammatory fraction F6 (54–68 kDa) of *Brugia malayi* given in three doses protects *Mastomys coucha* from *B. malayi* infection via Th1/Th2 type responses. The suitability of poly (d, l)-lactide-co-glycolide microspheres (PLGA-Ms prepared at lactide:glycolide ratios 50:50 and 75:25) as immunoadjuvant for the antigen administration in a single dose was investigated. Single shot injection of PLGA-Ms 50:50/75:25-BmA/F6 produced superior immune responses than even two injections of plain BmA/F6. Further, PLGA-Ms 50:50-F6 produced stronger immune responses than PLGA-Ms 50:50-BmA. Anti-PLGA-Ms 50:50-F6 antibodies promoted better cell adherence and induced death of L_3 and microfilariae (mf) stages of the parasite than anti-PLGA-Ms 75:25-F6 antibodies. The findings demonstrate that PLGA-Ms 50:50 is an excellent adjuvant for use with F6 in a single administration (***Vaccine***, 2013, 83, 4183-4191). The immunoadjuvant effect of poly-lactide microspheres (DL-PLA-Ms) loaded F6 molecules in *M. coucha* was also investigated. A single dose of DL-PLA-Ms-F6 or two doses of plain F6 induced identical Th1 immune responses (***Drug Delivery***, in press, doi: 10.3109/10717544.2013.848494).

1.3.5 Wolbachia proteins as antifilarial drug target

1.3.5.1 RsmD-like rRNA Methyltransferase of *Wolbachia* of *B. malayi*

RsmD is ribosomal RNA small subunit methyltransferase D; cloning and expression of an *rsmD*-

Table: *In vivo* antifilarial activity of inhibitors in primary and secondary screen

Inhibitor Code	Primary *in vivo* screen (adult worm I.P. implanted jird model)			Secondary *in vivo* screen (S.C. L3 induced *Mastomys coucha* model)		
	Dose (mg/kg) i.p. x7 d	No. of animals taken	%reduction in worm burden	Dose (mg/kg, i.p. x7 d	No. of animals	% reduction in worm recovery
Control (5% DMSO)	0	3	-	0	4	-
NSC 659390	5	3	-83.4**	3	4	-92.0**
NSC 658343	5	3	-70.0**	5	4	-76.9**
NSC 657589	5	3	-80.0**	5	4	-7.69
DEC	50	3	-30.0*	50	4	-53.8*

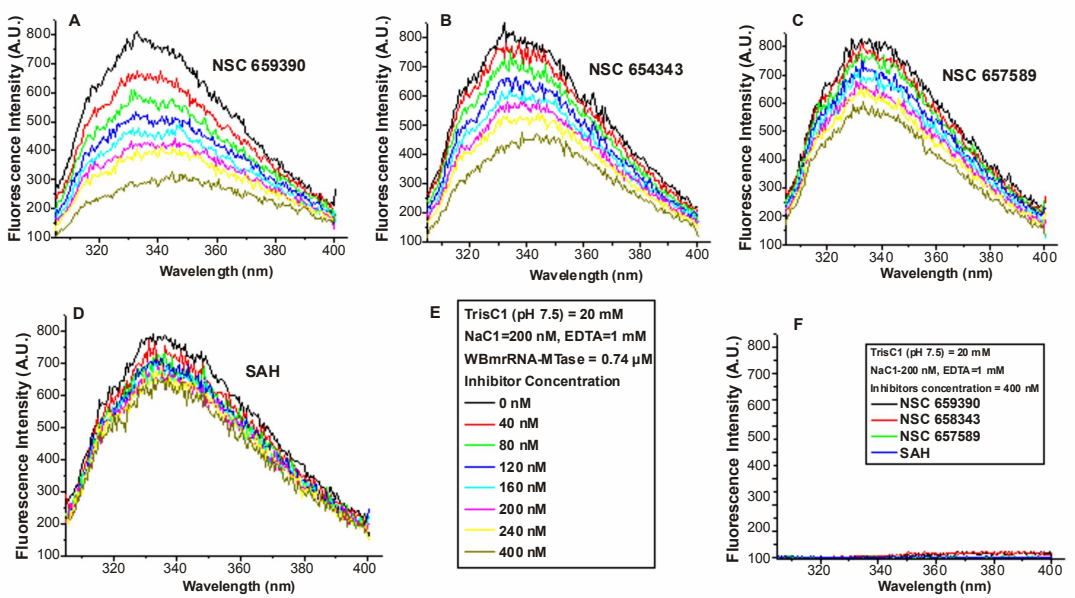


Fig. Interaction of inhibitors against rRNA-MTase by fluorescence spectroscopy

like rRNA methyltransferase of filarial *Wolbachia* endosymbiont was undertaken. The gene was expressed in all the major life stages of filariid and recombinant enzyme was found to be in monomer form in its native state. The specific enzyme inhibitors (heteroaryl compounds) were tested *in vitro* on *B. malayi* adult and microfilariae for 7 days *in vitro* at various concentrations, and NSC-659390 proved to be the most potent compound (IC_{50}, 0.32 µM). Further, *in vivo* testing of all inhibitors at 7x5 mg/kg in jird model revealed mortality of high proportion of the implanted worms with almost similar antifilarial action in secondary screen (mastomys). Docking and *in vitro* tryptophan quenching studies exhibited higher affinity for catalytic site of enzyme as compared to nonspecific inhibitors. Findings suggest testing of these compounds against other pathogens possessing methyltransferase with a DPPY motif and warrant design and synthesis of more such inhibitors (***Antimicrobial Agents and Chemotherapy***, 2013, 57 (8): 3843–3856).

2 Reproductive Health Research, Diabetes & Energy Metabolism

This area is broadly divided into two sections; a) Reproductive health research and b) Diabetes and energy metabolism research. Objectives followed by significant research progress made under these two sections are described subsequently.

a) Reproductive health research: The prime objectives are: I) Drug Design and synthesis of novel molecules and extracts/isolates from natural sources and their bio evaluation for generating new leads and to develop them as potential female or male contraceptives, spermicides with anti-STI properties; II) Development of new bone anabolic and/or anti-catabolic agents for the management of post-menopausal osteoporosis and other related endocrine disorders; III) Undertake basic research to identify mode of action of promising agents and to generate new knowledge in the area of female and male reproductive health.

b) Diabetes and energy metabolism research: I) Discovering of targeted therapeutic leads in type II diabetes mellitus (T2DM) and hyperlipidemic condition for potential preclinical development and II) Understanding pharmacological basis of actions of existing and potential therapeutics in type II diabetes and hyperlipidemic condition.

Area Coordinators:
Dr. Gopal Gupta
Dr. Sabyasachi Sanyal
Dr. Atul Goel

2.1 Reproductive Health Research

2.1.1 Male/Female contraception and infertility

2.1.1.1 Designed synthesis and screening of novel chemical entities as dually active microbicidal spermicides

The hybridization of two active pharmacophores leading to a novel class of molecules with better biological activity profile is a promising approach in drug design endeavors. Dithiocarbamte derivatives have been shown to possess sperm immobilizing and trichomonacidal activities and thiourea scaffolds have reverse transcriptase inhibitor activity. Therefore introducing dithiocarbamate and thiourea moieties in single chemical entity could yield compounds with both spermicidal as well as anti-HIV activity. The synthesized compounds (total 30) exhibited spermicidal activity at 0.025-1% (MEC) against human sperm with two compounds active at 0.025%. 23 of these compounds inhibited the growth of *Trichomonas vaginalis* at 62.5 – 500 µg/ml (MIC). Several compounds showed mild inhibitory activity (20-46%) against reverse transcriptase at 100 µg/ml concentration. A novel chemical class, Alkyl/aryl 4-(substitutedcarbamothioyl) piperazine-1-carbodithioate with dual activity has been invented. Further structure optimization may yield a potent spermicide with anti-STI and anti-HIV activities.

2.1.1.2 Azole-carbodithioate hybrids as vaginal anti-Candida contraceptive agents

Azole and carbodithioate hybrids were synthesized as alkyl 1H-azole-1-carbodithioates and evaluated for spermicidal/microbicidal activities. Seventeen compounds showed spermicidal activity at minimum effective concentration of 1.0% (w/v) and permanently immobilized 100% normal human spermatozoa within ~30 s and fourteen of these exhibited anti-Candida activity (IC_{50} 1.26-47.69 µg/ml). However, all compounds were devoid of bactericidal activity against four bacterial strains and antiprotozoal activity against *Trichomonas vaginalis*. Four promising compounds exhibited better safety profile as compared to Nonoxynol-9 (N-9). Docking study was done to visualize the possible interaction of designed scaffold with prospective receptor (Cyp51) of *Candida albicans* (***Eur J Med Chem*** 70:68-77, 2013).

2.1.1.3 Designed chemical intervention with thiols for prophylactic contraception

Unlike somatic cells, sperm have several-fold more free-thiols that are susceptible to redox-active agents. The present study explains the mechanism behind the instant sperm-immobilizing and trichomonacidal activities of pyrrolidinium pyrrolidine-1-carbodithioate (PPC), a novel thiol agent rationally created for prophylactic contraception by minor chemical modifications of some known thiol drugs. PPC irreversibly immobilized 100% human sperm in ~30 seconds and totally eliminated *Trichomonas vaginalis* more efficiently than nonoxynol-9 and metronidazole. It significantly inhibited ($P<0.001$) thiol-sensitive sperm hexokinase but completely lost all its biological activities once its 'active' thiol group was blocked by alkylation. PPC was subsequently formulated into a quick-dissolving vaginal film using GRaS excipients and evaluated for spermicidal and microbicidal activities (*in vitro*), and contraceptive efficacy in rabbits. PPC remained fully active in mucoadhesive vaginal-film formulation, and significantly reduced pregnancy and fertility rates in rabbits. The films released >90% of PPC in simulated vaginal fluid (pH 4.2) at 37°C in 5 minutes, *in vitro*. PPC presents a proof-of-concept for prophylactic contraception via manipulation of thiols in vagina for selective targeting of sperm and Trichomonas, and qualifies as a promising lead for the development of dually protective vaginal-contraceptive. [***PLoS One*** 8:e67365, 2013].

2.1.1.4 Significant impact of the MTHFR polymorphisms and haplotypes on male infertility risk

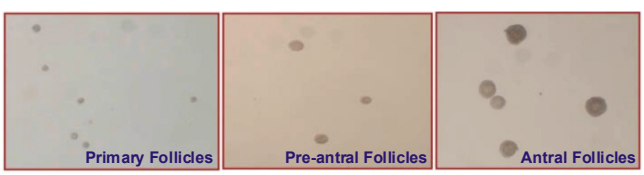
Methylenetetrahydrofolate reductase (MTHFR) converts 5,10-methylene tetrahydrofolate to 5-methyl tetrahydrofolate and affects the activity of cellular cycles participating in nucleotide synthesis, DNA repair, genome stability, maintenance of methyl pool, and gene regulation. Genetically compromised MTHFR activity has been suggested to affect male fertility. The present study was undertaken to find the impact on infertility risk of c.203G>A, c.1298A>C, and c.1793G>A polymorphisms in the MTHFR gene. The target sites were genotyped in 630 infertile and 250 fertile males, followed by statistical analysis using chi-square test. Linkage disequilibrium between the SNPs and the frequency of common haplotypes were assessed using Haploview software. Biochemical levels of total homocysteine (tHcy) and folic acid were measured. Meta-analysis on c.1298A>C polymorphism was performed using data from ten studies, comprising 2734 cases and 2737 controls. c.203G>A and c.1298A>C were found to be unrelated to infertility risk. c.1793G>A was protective against infertility ($P = 0.0008$). c.677C>T and c.1793G>A were in significant LD ($D' = 0.9$). Folic acid and tHcy level did not correlate with male infertility. Pooled estimate on c.1298A>C data from all published studies including our data showed no association of this polymorphism with male infertility (Odds ratio = 1.035, $P = 0.56$), azoospermia (Odds ratio = 0.97, $P = 0.74$), or oligoasthenoteratozoospermia (Odds ratio = 0.92, $p = 0.29$). Eight haplotypes with more than 1% frequency were detected, of which CCGA was protective against infertility ($p = 0.02$), but the significance of the latter was not seen after applying Bonferroni correction. Among MTHFR polymorphisms, c.203G>A and c.1298A>C do not affect infertility risk and c.1793G>A is protective against infertility. Haplotype analysis suggested that risk factors on the MTHFR locus do not extend too long on the DNA string. (***PLoS One*** 2013 8:e69180)

2.1.1.5 L712V mutation in the androgen receptor gene causes complete androgen insensitivity syndrome due to severe loss of androgen function

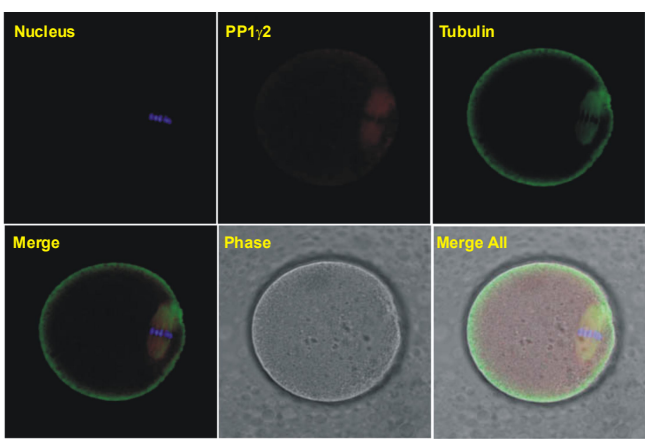
Inability to respond to the circulating androgens is named as androgen insensitivity syndrome (AIS). Mutations in the androgen receptor (AR) gene are the most common cause of AIS. A cause and effect relationship between some of these mutations and the AIS phenotype has been proven by *in vitro* studies. Several other mutations have been identified, but need to be functionally validated for pathogenicity. Screening of the AR mutations upon presumptive diagnosis of AIS is recommended. A case of complete androgen insensitivity syndrome (CAIS) for mutations in the AR gene was analysed. Sequencing of the entire coding region revealed C>G mutation (CTT-GTT) at codon 712 (position according to the NCBI database) in exon 4 of the gene, resulting in replacement of leucine with valine in the ligand-binding domain of the AR protein. No incidence of this mutation was observed in 230 normal male individuals analyzed for comparison. In vitro androgen binding and transactivation assays using mutant clone showed approximately 71% loss of ligand binding and about 76% loss of transactivation function. It is concluded that CAIS in this individual was due to L712V substitution in the androgen receptor protein (***Steroids*** 78:1288-92, 2013).

2.1.1.6 Oogenesis

Studies are in progress to identify and characterize various gametogenesis markers involved in germ cell development. The microscopic setup has been established and ovarian follicle collection (Fig.) as well as *in-vitro* fertilization (IVF) of mouse has been standardized. During oogenesis, Protein Phosphatases gamma 1 (PP1g2) has been demonstrated as a germ cell specific isoform.



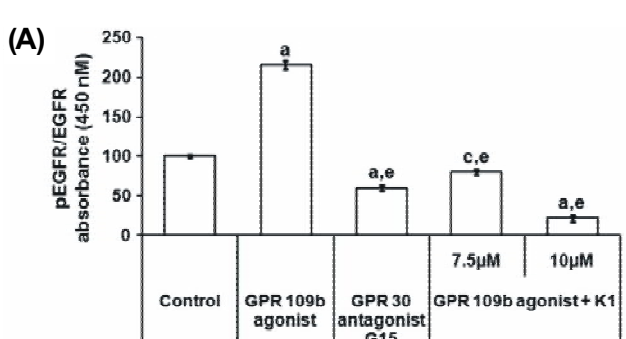
Additionally germ cell specific expression of PP1g2 in MII (Metaphase II) arrested oocytes (Fig.) has been linked to activate GSK3β through dephosphorylation of S9 and trigger the oocyte for MII exit to facilitate fertilization. This sequence of the events also pertains to the control of oocyte maturation that may subsequently influence the developmental competency of resulting embryos. Further studies are in progress to characterize the role of Phosphatases and Kinases during spermatogenesis as well as the factors affecting the sperm motility.



2.1.2 Agents against endocrine cancer

2.1.2.1 Anti-tumorigenic action of 2-[piperidinoethoxy-phenyl]-3-[4-hydroxyphenyl]-2H-benzo[b]pyran (K-1) in endometrial cancer: Evidence for involvement of GPR30/EGFR signalling pathway

Earlier it was showed that the benzopyran derivative (K-1) induces apoptosis via modulation of the 'classical ERE-mediated' and 'non-classical AP-1 mediated' genomic estrogen signaling. The current study was undertaken to demonstrate and explore the anti-tumorigenic action of the identified compound i.e. 2-[piperidinoethoxyphenyl]-3-[4-hydroxyphenyl]- 2H-benzo[b]pyran (K-1) in endometrial cancer cells and in xenograft mouse model. Study demonstrated that the compound interfered with GPR30/EGFR – mediated non-genomic signaling and inhibited endometrial cancer cellular growth *in vitro* and in xenograft



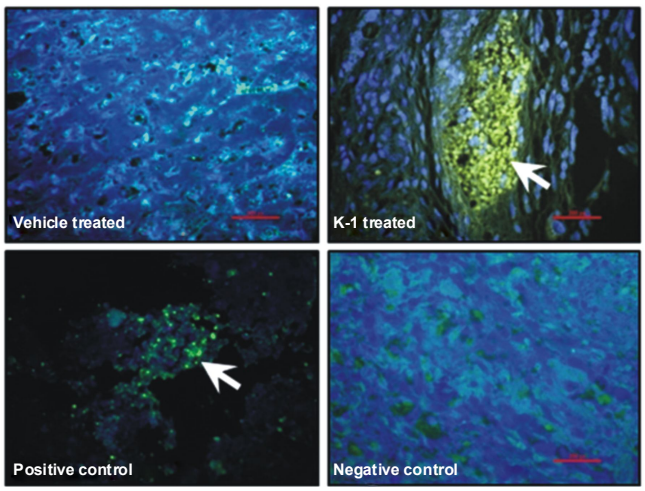


Fig. (A) Effect of compound K-1 on GPR109b agonist induced activation of EGFR. Quantified degree of p-EGFR relative to total EGFR expression as determined by ELISA, in Ishikawa cells. (B) Representative sections from the tumor xenografts dissected out from treated mice stained for TUNEL showing cells with fragmented DNA in treatments with K-1 and vehicle treated control tumor. Note the large number of TUNEL positive cells with greenish yellow deposit in K-1 treated group.

mouse model. Thus, K-1 showed dual targeting i.e. non-genomic GPR30 signaling and genomic ER signaling in endometrial cancer cells to indicate that benzopyran derivative K-1 could be explored further for its chemotherapeutic potential against human endometrial cancer. (***Gynecol Oncol.*** 129:433-42, 2013).

2.1.2.2 Chemopreventive effect of (-)-Epigallocatechin-3-gallate in human endometrial adenocarcinoma cells

(-)-Epigallocatechin-3-gallate (EGCG), the major polyphenol in green tea, has been shown to inhibit carcinogenesis of various tumor types. The aim of this study was to elucidate the antiproliferative potential of EGCG and its mechanism in human endometrial cancer cells (Ishikawa cells) and primary endometrial adenocarcinoma cells. EGCG was found to inhibit proliferation in Ishikawa as well as in primary endometrial adenocarcinoma cells and effectively down-regulated the expression of proliferation markers, i.e., estrogen receptor α, progesterone receptor, proliferating cell nuclear antigen and cyclin D1. EGCG also decreased the activation of ERK and downstream transcription factors fos and jun. EGCG caused apoptotic cell death and significantly induced the ROS generation as well as p38 activation in Ishikawa cells, which appeared to be a critical mediator in EGCG-induced apoptosis. The apoptotic effect of EGCG and the p38 activation were blocked by pretreatment of cells with the ROS scavenger *N*-acetylcysteine. EGCG reduced the glutathione levels, which might be responsible for enhanced ROS generation causing oxidative stress in endometrial cancer cells. Taken together, these results suggest that EGCG inhibits cellular proliferation via inhibiting ERK activation and inducing apoptosis via ROS generation and

p38 activation in endometrial carcinoma cells. The results indicate beneficial chemopreventive effects of EGCG on endometrial adenocarcinoma cells. (**J Nutr Biochem** 2013, 24:940-7)

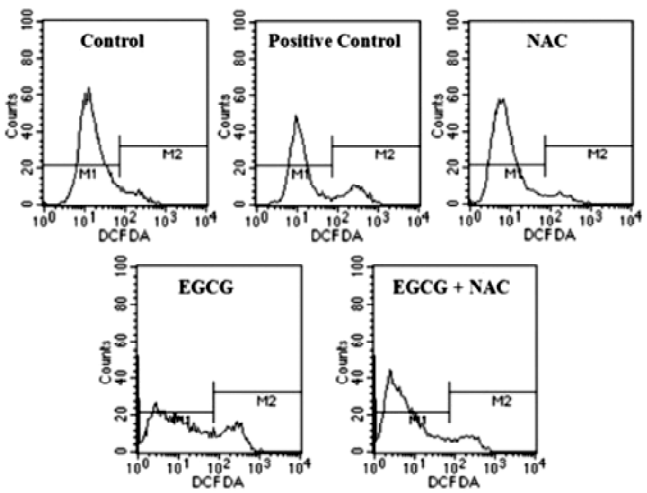


Fig. Effect of EGCG on ROS generation in Ishikawa cells in the presence of ROS inhibitor NAC. Control, positive control (H_2O_2 400 iM), EGCG 125 iM, NAC 10 mM for 2h, EGCG (125 iM)+NAC (10 mM). After 48 h, cells were stained with DCFH-DA dye (1 ìg/il) for 30 min at 37°C in the dark with continuous shaking. The oxidative burst (hydrogen peroxide) was detected using a FACScan flow cytometer, (BD Biosciences,USA) with excitation and emission settings of 488 and 530 nm, respectively.

2.1.3 Osteoporosis and other related endocrine disorders

A total 49 new chemical compounds including plant extracts were screened under the area of osteoporosis and bone biology research. These compounds (synthetic compounds-40; plant derived- 9) were submitted for bone anabolic activity in *in vitro* (osteoblast differentiation, mineralization, proliferation, mechanism studies) models. Among various synthesized compounds, 13 synthetic compounds and 1 natural product showed promising activity in osteoblast ALP and shortlisted for further study.

2.1.3.1 Bone morphogenetic protein (BMP) 2 is the mediator of osteogenic response of estrogen in adult skeleton

Estrogen (E2) exerts osteogenic effect by upregulating BMP2 in osteoblasts and we sought to determine whether BMP2 mediates the effect of E2 in adult skeleton. Tamoxifen inducible *Bmp2* conditional knockout mouse strain was generated by crossing *Bmp2*$^{C/C}$ with R26CreER for two rounds to generate *Bmp2*$^{C/C}$R26creER/R26CreER. This strain behaved as wild type (WT) and could be rendered BMP2 deficient (KO) upon administration of Tamoxifen (2.5 mg/20 g body weight for seven days). The following groups were experimented; (A)WT, (B) KO, (C) WT with Ovx, (D) KO with Ovx, (E) WT with Ovx treated with E2 and (F) KO with Ovx treated with E2. Treatments were continued for 5 wk following which animals were autopsied to harvest bones and bone marrow stromal cells (osteoprogenitor cells) to measure colony forming units-osteoblast (CFU-OB). Key findings were: B had reduced trabecular bones and CFU-OB compared to A. Trabecular bone loss in C was most severe and least CFU-OB compared with A and B groups. D had even greater trabecular loss over C. Trabecular parameters and CFU-OB values between A and E were comparable. Trabecular bone loss was significantly lesser in F compared to B, C and D but higher than A and E. CFU-OB was higher in F compared to B, C and D but lesser than A and E. Conclusion: These data suggest that E2 mediates its skeletal effect in adult mice partially but significantly via BMP2, by promoting osteogenic response.

2.1.3.2 Preclinical studies of fracture healing compound S007-1500 (PCT WO/2010/052734)

A study was carried out to find whether S007-1500 acts similar to that of medicarpin. The effect of ICI 182,780 (ER antagonist) on S007-1500-mediated ALP production was investigated. It was observed that stimulation of ALP production by S007-1500 at 10^{-12}M was significantly inhibited by ER antagonist. S007-1500 also induced BMP2 secretion, which plays a key role in osteoblast differentiation. In order to test if increased BMP2 secretion by S007-1500 is mediated via ER pathway, cells were pre-treated with ER antagonist ICI 182,780 followed by S007-1500 treatment for 48h. It was observed that S007-1500 induced BMP2 secretion was abolished in presence of ICI. These results suggest that S007-1500 promotes osteoblast differentiation via ER/BMP2 pathway.

BMP-2 signaling plays an important role in osteoblast differentiation. Binding of BMP-2 to its receptor leads to Smad 1/5/8 phosphorylation and subsequent activation of osteogenic genes. Thus, effect of S007-1500 on smad phosphorylation showed that S007-1500 stimulated smad phosphorylation at about 1h with peak being observed at around 4h. Next it was determined if smad phosphorylation is a downstream event of ER activation by S007-1500. It was observed that smad phosphorylation induced by S007-1500 was inhibited in presence of ER antagonist ICI-182,780. Thus, these results strongly revealed that S007-1500 acts via ER/BMP-2 signaling pathway.

2.1.3.3 MiR-542-3p suppresses osteoblast cell proliferation and differentiation, targets BMP-7 signaling and inhibits bone formation

MicroRNAs (miRNAs) are short non-coding RNAs that interfere with translation of specific target mRNAs and thereby regulate diverse biological processes. Recent reports have suggested that miRNAs might play a role in osteoblast differentiation and bone formation. In this study,

miR-542-3p, a well characterized tumor suppressor whose down-regulation is tightly associated with tumor progression via C-src related oncogenic pathways was found to inhibit osteoblast proliferation and differentiation. MiRNA array profiling in Medicarpin induced mice calvarial osteoblast cells and further validation by quantitative RT-PCR revealed that miR-542-3p was down-regulated during osteoblast differentiation. Over-expression of miR-542-3p inhibited osteoblast differentiation, whereas inhibition of miR-542-3p function by anti-miR-542-3p promoted expression of osteoblast-specific genes, alkaline phosphatase activity, and matrix mineralization. Target prediction analysis tools and experimental validation by luciferase 3' UTR reporter assay identified BMP-7 as a direct target of miR-542-3p. It was seen that over-expression of miR-542-3p leads to repression of BMP-7 and inhibition of BMP-7/PI3K- survivin signaling. This strongly suggested that miR-542-3p suppresses osteogenic differentiation and promotes osteoblast apoptosis by repressing BMP-7 and its downstream signaling. Furthermore, silencing of miR-542-3p led to increased bone formation, bone strength and improved trabecular micro architecture in sham and ovariectomized (Ovx) mice. Although miR-542-3p is known to be a tumor repressor, a second complementary function of miR-542-3p where it inhibits BMP-7-mediated osteogenesis was identified. These findings suggest that pharmacological inhibition of miR-542-3p by anti-miR-542-3p could represent a therapeutic strategy for enhancing bone formation *in vivo*. (***Cell Death and Disease:*** *2014, In Press*).

2.1.3.4 Withaferin A: a proteasomal inhibitor promotes healing after injury and exerts anabolic effect on osteoporotic bone

Withania somnifera or Ashwagandha is a medicinal herb of Ayurveda with different pharmacological activities. Its effect on bone formation has not been studied. Here, we show the effect of isolated fraction of withania, withaferin A (WFA) induced stimulatory effect on osteoblasts, enhanced mineralization, suppressed RANKL/OPG ratio and promoted osteoblast survival. Furthermore, WFA induced BMP2 expression, averts degradation of Smad which interacts with Smurf2 due to its activity as a proteasomal inhibitor (PI). Smurf2 regulates protein activity of RunX2, preventing its degradation. Treatment to osteopenic ovariectomized mice increased osteoprogenitor cells in the bone marrow, mineral apposition, bone formation rate, longitudinal growth, biomechanical strength and compressive energy as compared with vehicle, bortezomib (known PI), PTH and alendronate (FDA approved drugs). WFA promoted the process of newly generated bone to fill drill holes in the femur of both estrogen sufficient and deficient mice. Together, data suggests that WFA stimulates bone formation by abrogating TNFα induced Smurf2 to increase RunX2 expression and is a naturally occurring PI that provides

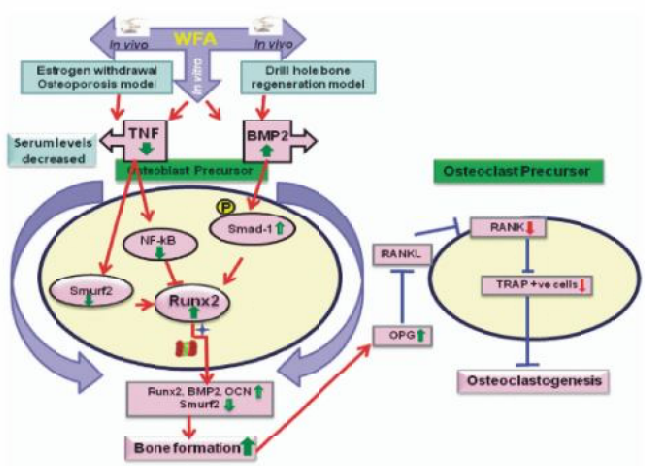
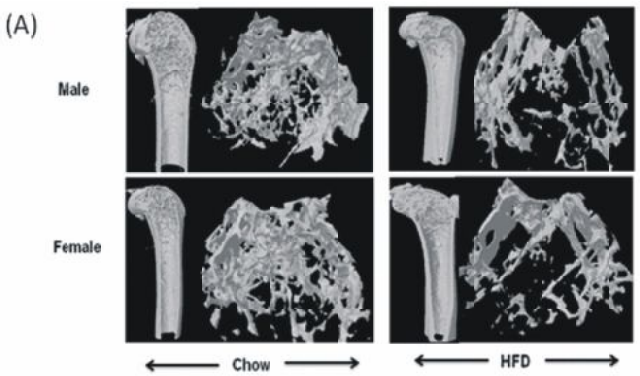


Fig: Schematic diagram outlining the potential molecular targets and *in vivo* effect of WFA leading to bone anabolic effect in osteogenic cells and osteoclast precursors induced by proteasome inhibition. BMP signaling induced by WFA prevents degradation of Smad receptors. The transcription factor Runx2, which is induced by BMP2, is further stabilized by preventing completion of proteasomal degradation by E3 ubiquitin ligase, Smurf2. WFA decreases tumor necrosis factor a (TNFa), induced NF-Kb and Smurf2 expression resulting in increased Smad and Runx2 levels. In vivo proteasome inhibition simultaneously increases osteoblastogenesis by stabilizing RunX2 and reduces osteoclast numbers directly by inhibiting RANKL: OPG ratio. Thus, osteoclast differentiation is suppressed by inability of RANKL to bind with RANK. This results in reduced number of TRAP-positive cells. Simultaneous induction of osteoblastogenesis and suppression of osteoclastogenesis results in increased bone mass. *In vivo* data demonstrate that WFA exerted an osteogenic effect in osteopenic OVx mice and accelerated the bone-healing process after bone marrow injury of long bones.

knowledge base for clinical evaluation as a bone anabolic agent [***Cell Death and Disease****, 4:e778, 2013*]

2.1.3.5 Micro architectural changes in cancellous bone differ in female and male C57BL/6 mice in high fat diet induced osteoporosis model

Relationship between fat and bone mass at distinct trabecular and cortical skeletal compartments in (high fat diet) HFD induced osteoporosis model was studied. Results shows that male mice being fed HFD were heavier and gained more weight versus those on control diet or when compared to the female group on HFD. We observed increased lipid profile in both males and females with significantly higher lipid levels in males. However, assessment of glucose intolerance data shows more pronounced glucose intolerance in females than males on HFD. Micro-architectural assessment of bones shows that compared with female mice on HFD, male mice on HFD showed more deterioration at trabecular region. This was corroborated by the urinary marker confirming greater loss in males. Cortical bone parameters and strength remained unchanged after 10 week HFD treatment to both sexes. Direct effect of HFD on bone at mRNA level in the progenitor cells isolated from the femoral bone marrow shows significantly increased expression of adipogenic marker genes versus the osteogenic genes. Overall, our data indicates that obesity



induced by high fat diet aggravates bone loss in the cancellous bone compartment with a greater loss being in the males, than the females although 10 weeks HFD treatment did not alter cortical bone mass and strength in both males and females. (***British J of Nutrition,*** *2014, In Press*)

2.1.3.6 Evaluation of Alkaline Phosphatase (ALP) activity of enantiomerically pure Pterocarpans: Medicarpin (MED) and Demethoxymedicarpin (DMM)

A convenient synthesis of natural (medicarpin) and synthetic (demethoxymedicarpin) pterocarpans was achieved in three steps and optical resolution of the respective enantiomers was accomplished by analytical and semi-preparative HPLC on a chiral stationary phase (Chem. Rev., 2013, 113, 1614). Approximately 100 mg of each, (6a*S*, 11a*S*)-MED (*ee* > 99.5 %) and (6a*R*,11a*R*)-DMM (*ee* > 99.5 %), were obtained for evaluation of the biological activity. Primary cultures of rat osteoblasts were used for investigating the effect of enantiomerically pure and racemic pterocarpans on osteoblast differentiation. Production of alkaline phosphatase (ALP) served as a differentiation marker of osteoblasts.

The effect of the respective enantiomers on the expression of osteogenic genes (Runx-2 and BMP-2) in calvarial osteoblasts by quantitative real-time PCR (qPCR) was studied. Runx-2, a bone-specific transcription factor, is a key regulator of osteoblastic differentiation. Runx-2 expression is induced by BMP-2 stimulation suggesting that Runx-2 is a downstream transcription factor in BMP-2 signalling. Thus, mRNA levels of Runx-2 and BMP-2 were monitored by qPCR after treatment with the compounds. In the case of the medicarpins (±)-MED, (+)-MED, and (–)-MED, a significant increase in BMP-2 mRNA levels was found for (+)-MED when compared with the control (in the absence of a test substance). A decrease in the BMP-2 transcription levels was observed after treatment with (–)-MED, which reveals the antagonistic effect of the (6a*R*,11a*R*)-enantiomer evidencing the importance of the absolute configuration. In the case of 9-demethoxymedicarpin [(±)-DMM, (+)-DMM, and (–)-DMM)], BMP-2 and Runx-2 mRNA levels were increased for all three test substances. However, the highest increase in BMP-2 transcript level was obtained by treatment with (±)-DMM possibly due to a synergistic effect of the two enantiomers.

2.1.3.7 Isoformononetin reverses bone loss in osteopenic rats and exerts bone anabolic action by preventing osteoblast apoptosis

Daidzein (Daid) has been implicated in bone health for its estrogen-'like' effects but low bioavailability, unfavorable metabolism and uterine estrogenicity impede its clinical potential. This study was aimed at assessing isoformononetin (Isoformo), a naturally occurring methoxydaidzein, for bone anabolic effect by overcoming the pitfalls associated with Daid. In osteopenic rats, Isoformo treatment restored trabecular microarchitecture, increased new bone formation, increased the serum osteogenic marker (PINP), decreased resorptive marker (urinary Ctx) and diminished osteoblast apoptosis in bone. At the most effective osteogenic dose of Isoformo, plasma and bone marrow levels were comprised of ~90% Isoformo and the rest, Daid. Isoformo at the concentration reaching the bone marrow achieved out of its most effective oral dosing induced stromal cell mineralization and osteogenic gene expression in the calvaria of neonatal rats. Isoformo exhibited uterine safety. Thus, our study demonstrates that Isoformo reverses established osteopenia in adult OVx rats likely via its pro-survival effect on osteoblasts. Given its bone anabolic and anti-catabolic effects accompanied with safety at uterine level it may be potential in the management of postmenopausal osteoporosis. [***Phytomedicine*** 2013; 20:470-80]

2.2 Diabetes and Energy Metabolism Research

2.2.1 Evaluation of 914/K058 on metabolic disorders

The previous results demonstrated that K058 acting probably through adiponectin receptors induced glucose uptake and fatty acid oxidation in skeletal muscle. This compound also enhanced glucose clearance and induced browning of white adipose tissue in db/db mice. Further mechanistic experiments revealed that K058 indeed is the first in class orally active small molecule adiponectin mimic. K058 not only stalled the progression of diabetes in 12 week old db/db mice as determined by glycated hemoglobin level, it also protected pancreatic beta cells from diabetes-induced apoptosis. Such protection is also evidenced *in vitro*, indicating that K058 may also be used for pancreatic degeneration in both type 1 and type 2 diabetes. From the cue that K058, initially identified as an osteoanabolic agent also improves metabolic health, investigations into anti-diabetic effect of other osteoanabolics have been started.

2.2.2 Novel 2*H*-benzo[e]indazole-9-carboxylates as anti-hyperglycemic agents (PCT/IN2013/000056 dated Jan 29, 2013)

Protein tyrosine phosphatase-1B (PTP-1B) has emerged as a promising therapeutic target for the treatment of Type 2 diabetes. PTP-1B is a key negative regulator of both insulin and leptin signaling pathways associated with obesity and diabetes by dephosphorylating the insulin receptor (IR), insulin receptor substrates (IRS) and Janus kinase 2 (JAK2). Majority of known inhibitors possess tyrosine mimetic structures functionalized with negatively charged moieties such as phosphonates, malonates, carboxylates, or cinnamates.

Among the 23 screened compounds of the series 2H-benzo[e]indazole-9-carboxylates/carbonitriles, two compounds S009-629 and S009-630 functionalized with methylsulfanyl and carbomethoxy groups exhibited good PTP1B inhibitory activity with IC_{50} of 7 and 8 µM respectively. Molecular docking analysis revealed that these compounds bind in an extended conformation and engage in non-covalent interactions with the main chain nitrogen of Lys-120, van der Waals contact with several aliphatic side chains, and aromatic-aromatic interaction with Tyr-46 and Phe-182. Both the compounds exhibited glucose uptake stimulatory effect in L6 skeletal muscle cells and showed good *in vivo* antihyperglycemic activity in sucrose challenged streptozotocin-induced diabetic rats (STZ-S model) and in C57BL/KsBom-db mouse (db/db mouse). Both the compounds showed significant improvement on oral glucose tolerance i.e. 25.5 and 27.6% improvement on 15th day post-treatment of db/db mice, respectively. These compounds lowered the plasma triglycerides level (TG) by 13.7%, 19.8%, and plasma total cholesterol (T-Chol) level by 41.8%, 38.3%, respectively. Further detailed mechanism studies and PK studies are in progress.

2.2.3 Development of screening model: Chronic insulin mediated insulin resistance in hMSC derived adipocyte as an alternative model system to 3T3-L1 adipocyte

Protocol for differentiation of characterized hMSC in adipocyte has been optimized. Differentiated adipocyte were then exposed to physiologically relevant concentration of insulin for 72 hours and insulin resistance was observed by tritiated -2 deoxy glucose uptake method. Significantly decreased glucose uptake has been observed in chronic insulin exposed adipocyte compared to control adipocytes. No compound or standards screening has been performed yet.

2.2.4 Basic Research

2.2.4.1 Regulation of Pancreastatin (PST): A novel approach to control Diabetes

The rise in blood PST level with age and in diabetes (T2DM) suggests that PST is a negative regulator of insulin sensitivity and glucose homeostasis. Eight PST inhibitory peptides were designed and synthesized. Two peptides significantly increases glucose uptake *in vitro*. Mechanism of action and *in vivo* studies are in progress.

3 Tuberculosis and Microbial Infections

Aims and objectives of the research area Microbial Infections focus on Tuberculosis, Fungal and Viral infections. Using different screening formats *viz. in vitro*, *ex vivo*, *in vivo* and BACTEC, natural products and synthetic compounds screened for antitubercular, antifungal, antibacterial and antiviral activities and work towards the identification and validation of novel drug targets, developing rationale based screen system, resolving the structure of candidate mycobacterial proteins, analysing host-pathogen kinase interaction and sigma factors regulon to understand the molecular mechanisms of mycobacterial pathogenesis.

Area Coordinators:
Dr. K.K. Srivastava
Dr. B.N. Singh
Dr. Gautam Panda

3.1 Drug screening

3.1.1 Antitubercular evaluation of compounds

Several hundred compounds synthesized from in-house and OSDD resources were screened for anti-TB activity using the standard *in vitro, ex vivo* and *in vivo* assays. Nearly hundred compounds were also screened against mycobacterial FAS-II pathway and against *M. tuberculosis* serine threonine protein kinases (STPks) but none were considered active as per our screening parameters. Compounds from earlier series, S010-0912, anATP synthase inhibitor, was dropped as it showed much higher MIC in comparison to TMC207 (approved ATP synthase inhibitor from Janssen).

New series of compounds showing an MIC of = 6.25 µM against *M. tuberculosis* H37Ra are as follows.

Compounds	MIC_{90}	CC_{50} -THP-1	SI index
S012-1167	3.12 µg/ml	60 µg/ml	19.23
S012-0740	3.12 µg/ml	100 µg/ml	32.0
S012-0742	1.56 µg/ml	100 µg/ml	64.10
S012-1047	3.12 µg/ml	100 µg/ml	32.0
S012-1176	6.25 µg/ml	100 µg/ml	16.0
S012-1414	2.3 µg/ml	33 µg/ml	14.34
S012-1417	4.4 µg/ml	57µg/ml	12.95

3.1.2 Antifungal and antibacterial evaluation of compounds

A total of 506 (synthetic 443, marine 42, and plants 21) compounds/extracts were evaluated for *in vitro* antifungal and antibacterial activity by micro-broth dilution method by standard protocol (as per CLSI guide lines) initially against 6 human bacteria viz. *1. E. coli* (ATCC 9637), *2. Pseudomonas aeruginosa* (ATCC BAA-427), 3. *Staphyllococcus aureus* (ATCC 25923), 4. *Klebsiella pneumoniae* (ATCC 27736), 5. *Staphyllococcus aureus* (ATCC 700699 MRSA), *Staphyllococcus aureus* (ATCC 29213), and six human fungi viz. 1. *Candida albicans* 2. *Cryptococcus neoformans* 3. *Sporothrix schenckii, 4. Trichophyton mentagrophytes 5. Aspergillus fumigatus* 6. *Candida parapsilosis* (ATCC-22019). Extract from plant 4237 exhibited appreciable antifungal activity (MIC 15.6-31.2 µg/ml) against different fungi. Synthetic compounds S012-1877-1881, 1884, -1886, -1894, -1897, -1899, and -1902 exhibited activity against *Staphyllococcus aureus* and its methicillin resistant strain (MIC 0.02-3.12 µg/ml) whereas synthetic compounds S013-0260, -0261, 0268 - 0271 exhibited antifungal activity in the range of 1.56-3.12 µg/ml.

Identified novel hits are being developed into drugs targeting highly drug resistant gram-negative pathogens such as *Acinetobacter baumannii*, other members of the ESKAPE family and non tuberculous mycobacteria such as *M. smegmatis*, *M. fortuitum* and *M. abscessus*. All of the above

mentioned bacteria are either highly drug resistant, or among the top nosocomial and /or opportunistic pathogens for which there are very limited chemotherapeutic options available.

Prestwick library of FDA approved drugs against *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* has been screened. Among 1200 drugs been tested, 36 showed activities against *P. aeruginosa* at concentration 25μM and 22 exhibited activities against *K. pneumoniae* at the same concentration and 17 of these drugs are active against both the strains. Interestingly, 6 drugs against *Pseudomonas* and 3 against *Klebsiella* are novel non-antibiotic drugs. Further validations and studies with clinical isolates have been carried out with the leads.

3.1.3 Progress on the TB lead molecule S006-830

CDRI-830 kills *Mtb* in the lungs of infected mice in a manner comparable with ethambutol and pyrazinamide. It is also effective against MDR-*Mtb*. Preliminary PK studies have shown its good bioavailability after oral administration in rats. During this year, studies towards its preclinical development have produced following results: (a) CDRI-830 lacks genotoxicity, as determined by Ames test. (b) It did not show any non-specific microbicidal activity when screened against a panel of bacteria (G+ or G-) and fungi. (c) At a selectivity score of 10, it did not show any hits in binding assays against a panel of 456 human kinases. (d) In CYP450 binding assays, CDRI-830 did not inhibit CYP-1A2, 2C9, 2C19 and A4, though it showed moderate inhibition of CYP2D6 (IC_{50} = 6 μM). (e) In the functional assay using patch clamp technique, CDRI-830 caused mild inhibition of hERG channel (IC_{50}= 19 μM). (f) When screened at a single dose (10 μM) against a panel of 22 selected GPCRs, it showed > 60% inhibition of control specific binding to 4 of the receptors (muscarinic M2, 5HT2B, norepinehrine transporter and dopamine transporter).

CDRI-830 is a racemic mixture of two enantiomers. It has often been observed that the use of pure enantiomers can lead to the selection of a safer as well as more potent species. Therefore, a HPLC based method for separation of the enantiomers was developed and used for their isolation on a preparative scale. The purity of each enantiomer was confirmed by HPLC as > 99%. When used at a concentration of 6 μg/ml, one of the enantiomers showed 96% reduction in intracellular CFU of *Mtb* whereas the other showed only 29% reduction, suggesting a significant difference in their anti-TB activity. The standard drugs rifampicin (at 1 μg/ml) and isoniazid (at 0.5 μg/ml) showed 100% reduction in CFU. Studies aimed at determining whether the mild-to-significant inhibition of CYP2D6, hERG channel and some of the GPCRs can also be attributed to one of the enantiomers are underway. Studies are also underway to determine the synergy of the active enantiomer with first line TB drugs INH and RFM, since any new drug must become a part of the multidrug therapy against TB.

3.1.4 Bactericidal activity of thiophene containing trisubstituted methanes (TRSMs) and their potency against MDR-*M. tuberculosis*

Compound of the series also showed bactericidal activity *in vitro* as well as *ex vivo* (in mouse macrophage model). The lead compound S006-830 produced 100% killing (zero CFU) *in vitro* and 75% killing (1200 CFU) *ex vivo* of the seed culture (inoculum) of *M. tuberculosis* H37Rv. The bactericidal potency was comparable with standard drug rifampicin (RFM). (Fig. 1). Lead compound S006-830 also showed potent bactericidal activity against multi-drug resistant (i.e., resistant to RFM and INH) and single-drug resistant (to RFM) clinical isolates of *M. tuberculosis* (Fig. 2).

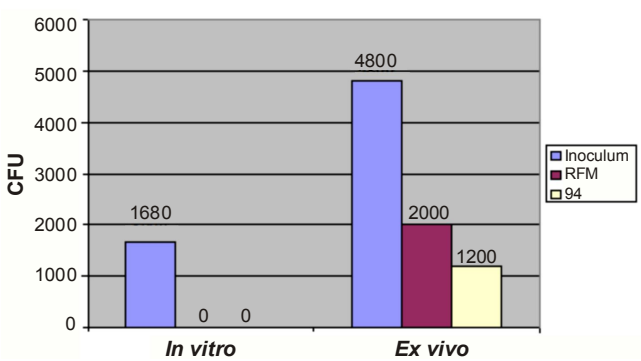


Fig. 1: *In vitro* and *ex vivo* bactericidal property of compound S006-830 in comparison with rifampicin.

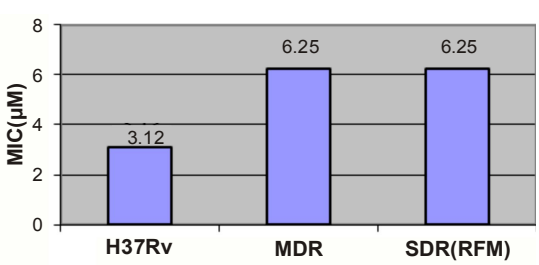


Fig. 2: Activity of lead molecule S006-830 against single- and multi- drug resistant *M. tuberculosis*.

3.1.5 TRAMS act through inhibition of mycobacterial proteins synthesis

Compounds of the series appeared to act, at least partially, through inhibition of mycobacterial protein synthesis. The lead compound S006-830 showed approximately 25% inhibition of ^{3}H Leucine uptake by *M. tuberculosis in vitro*. On the other hand, metabolic uptake of two other precursors- ^{14}C Acetate (fatty acid synthesis) and ^{3}H Uracil (RNA synthesis) was not inhibited by S006-830, suggesting that synthesis of fatty acids or nucleic acids was not affected.

3.2 Pharmacokinetic studies and drug delivery

3.2.1 Oral Bioavailability and Pharmacokinetics (PK) of thiophene containing trisubstituted methane (TRSM) lead compound S-006-830

To estimate the oral bioavailability and PK of compound S-006-830, a sensitive LC-MS/MS method for its quantification was developed and validated in *Sprague-Dawley* (SD) rat plasma. The method was found to be sensitive, selective, accurate and precise over the range 0.78-400 ng/ml. This method was applied for the analysis of PK samples obtained after oral (100 mg/Kg) and intravenous (25 mg/Kg) dose administration of the compound S-006-830 in rats (n=3). Compound S-006-830 exhibited fast intestinal absorption and its elimination half-lives ($T_{1/2}$) were found to be 9.41 ± 1.68 h and 13.53 ± 2.15 h for oral and IV dose administration respectively. The mean residence time (MRT) of 22.51 ± 7.65 h after an intravenous dose and 11.21 ± 1.02 h after oral dose indicated that compound S-006-830 is retained in the biological systems for longer periods of time due to slow elimination from the body. The volume of distribution (V_d) and clearance (CL) were found to be 229.82 ± 52.28 L and 1.87 ± 0.94 L/h/Kg respectively. The oral bioavailability of the compound S-006-830 was found to be 51.35 ± 11.4% after oral administration. Further, this method was applied to determine plasma protein binding of compound S-006-830 in SD rat plasma. Study revealed that plasma protein binding of the compound S-006-830 was ~60%. The plasma protein binding was not too high, which in turn leads to unbound fraction of compound S-006-830 to favor tissue redistribution or clearance from the body.

3.2.2 Novel payloads for inhalable particles against tuberculosis

Rapamycin, an agent used in some types of cancers, kills tuberculosis bacteria if delivered to the cytosol of the infected macrophage by inducing the phenomenon of autophagy. However, the same molecule can show cytotoxicity towards the macrophage. It has been observed that inhalable particles containing this agent kill pathogenic bacteria living inside cultured macrophages more efficiently than a solution of the same drug at identical concentrations, without killing the macrophage.

Further, RNA interference against host molecules implicated in allowing the TB bacterium sanctuary within the alveolar macrophage is also being investigated. Having observed that the Suppressor of Cytokine Signalling (SOCS)-3 is upregulated in macrophages infected with pathogenic bacteria, an siRNA comprising biostable, morpholino-oligonucleotides has been designed. Conjugated to a dendrimer and dry-mixed with lactose, fluorescent-labeled oligos were administered as inhalations to mice. Targeting to lung macrophages was observed.

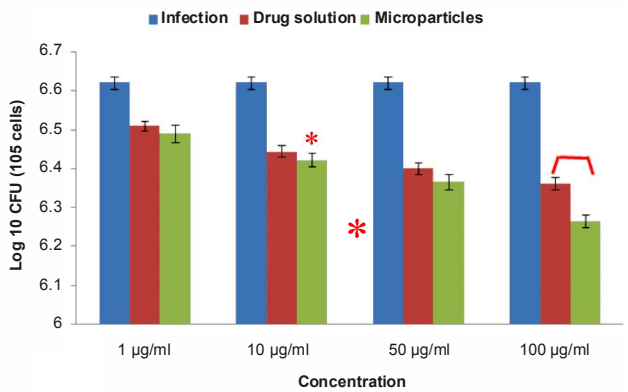


Fig.: Bacteria recovered from cultured macrophages infected *in vitro* with *M. tuberculosis* and treated with rapamycin solution (*red bars*) or particles containing an equivalent amount (*green bars*).

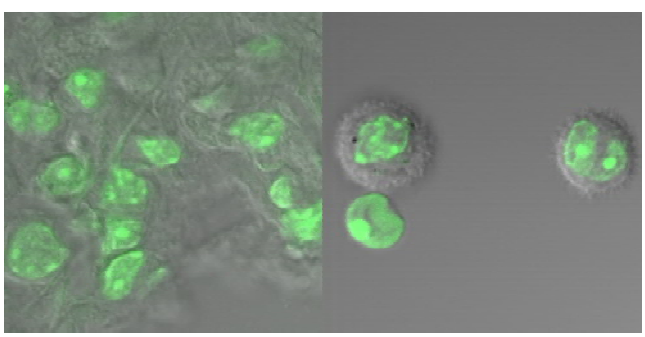


Fig.: Fluorescence micrograph of cells recovered through bronchioalveolar lavage from mice administered fluorescent-tagged morpholino siRNA (*left panel*) and lung section showing uptake of inhaled siRNA by tissue macrophages (*right*).

3.3 New model for anti-mycobacterial screening

A double recombinant *Mycobacterium bovis* BCG strain for screening of primary and rationale-based antimycobacterial compounds has been developed in-house. A double recombinant *Mycobacterium bovis* BCG strain carrying firefly and *Renilla* luciferase genes as two reporters under the control of a constitutive and an inducible mycobacterial promoter has been generated. The presence of dual reporters allows simultaneous expression and analysis of two reporter enzymes within a single system. The expression profile of the firefly luciferase gene, rendered by a constitutive mycobacterial promoter, corroborates with the decline in bacterial growth in response to a wide range of antimycobacterial drugs, while the enhanced expression of *Renilla* luciferase mirrors the selective induction of the reporter gene expression as a result of pathway-specific inhibition. Thus, the double recombinant strain allows the screening of both primary and rationally synthesized

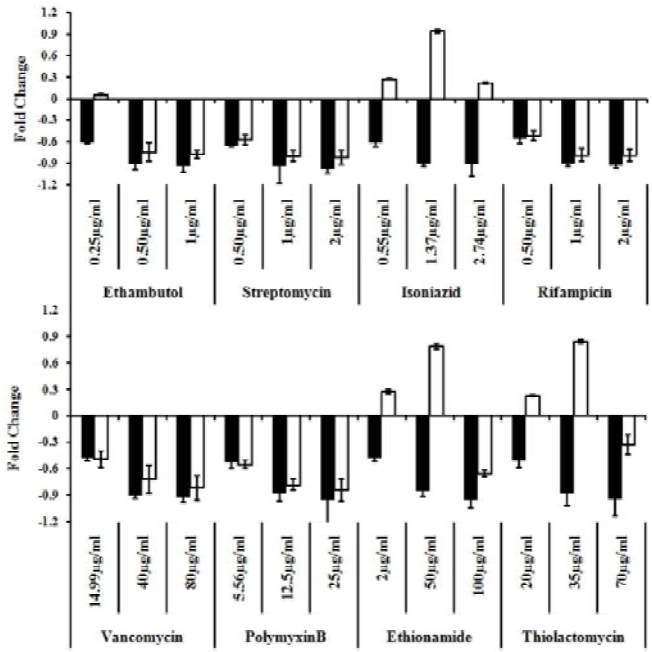


Fig.: Dual luciferase assay was performed using double rBCG strain (*M. bovis* BCG: *hsp60*$_{pr}$-*Fluc*: *43*$_{pr}$-*Rluc*). Firefly and *Renilla* luciferase activities were assayed together in treated samples and fold change in the RLU was determined with respect to basal level expression in untreated control. Note the reduced Fluc level (■) in response to all the treated drugs, while enhanced Rluc level (□) is seen in response to isoniazid, ethionamide and thiolactomycin, known FAS-II pathway inhibitors. In response to other drugs Rluc too showed diminished activity like Fluc.

antimycobacterial compounds in a single assay. The inhibiting response of drugs was monitored by Dual-Luciferase Reporter Assay which can be easily adapted in high-throughput mode. (***Antimicrob. Agents Chemother*** 2013: In Press)

3.4 Transcription regulation in fatty acid synthesis pathway and Enzyme pathways

3.4.1 Development of recombinant mycobacteria and study of growth under nutritional and environmental stress.

D-Amino acid oxidase (DAO) is a hydrogen peroxide-generating enzyme that uses a D-amino acid as a substrate. The D-amino acid oxidase (DAAO, EC 1.4.3.3) is a flavoenzyme which uses FAD as a cofactor. The PCR cloning of putative D-amino acid oxidase of *Mycobacterium tuberculosis* H37Ra was performed in pGEM-T Easy vector (Promega). The clones were confirmed by restriction digestion and sequencing. The inserts were mobilized into pMV361 vector and constructs were electeroporated in *Mycobacterium tuberculosis* H37Ra. The recombinants were selected against kanamycin resistance. The recombinants were confirmed by PCR amplification and digestion of amplicons, followed by sequencing of PCR amplicon. Further studies for evaluation of nutritional and environmental stress on survival fitness of recombinants are under progress. Similarly, recombinant *Mycobacterium tuberculosis* H37Ra strains with gene knockdown of putative threonine dehydratase, malate synthase and phosphoenolpyruvate carboxykinase were developed and are being studied for their survival fitness under nutrient limiting conditions.

3.4.2 Identification and characterization of Rv0494: a fatty acid responsive protein of the GntR/ FadR family from *Mycobacterium tuberculosis*.

Escherichia coli FadR, a member of the GntR family of transcription factors, plays dual roles in fatty acid metabolism. FadR–DNA binding is inhibited by fatty acyl-CoAs, and thus FadR acts as a sensor of the fatty acid level in bacteria. We have identified FadR-binding sites in the upstream regions of genes showing altered expression after the disruption of fatty acid biosynthesis in *Mycobacterium tuberculosis*. A FadR homologue in *M. tuberculosis*, Rv0494, was identified, which binds to its operator in the upstream

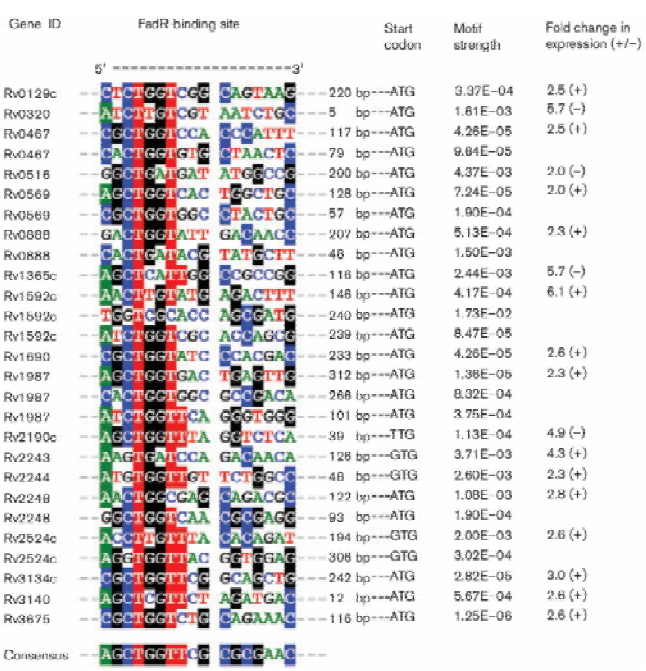


Fig.: FadR binding sites in the upstream regions of *M. tuberculosis* genes. The FadR$_{Mt}$-binding consensus sequence was generated based on the virtual footprints in the upstream regions of selected genes. The binding sites, shown in 5' —3' direction, are present at a given distance from the designated start codon of the gene. Motif strength denotes the binding strength (p-value) of each binding site to the FadR$_{Mt}$ consensus sequence. Fold change in expression refers to the altered gene expression (+, upregulated; –, downregulated) upon INH/ETH treatment, as reported in microarray experiments. It has been shown that FadRMt (Rv0494) directly binds to long-chain fatty acyl-CoA and that binding quenches the intrinsic fluorescence of the purified protein. FadR–DNA binding can be impaired by long-chain fatty acyl-CoA compounds. Overexpression of Rv0494 in *Mycobacterium bovis* BCG reduced the basal level expression of kasoperon genes, thereby suggesting the repressor nature of this protein in fatty acid synthase II regulation. This is the first report of a GntR/FadR family protein acting as a fatty acid-responsive transcriptional regulator in *M. tuberculosis*, suggesting a possible role for this protein in mycolic acid biosynthesis.

region of the *kas* operon. [***Microbiology*** (2013) 159, 913–923].

3.5 Immunoprophylaxis and vaccine

3.5.1 Putative roles of PE3 protein in intracellular survival and as a candidate for subunit vaccine against *Mycobacterium tuberculosis*

This study was undertaken to demonstrate the role of PE3 (Rv0159c) for persistence, host immune response and immunoprophylaxis. The Mtb-specific PE3 gene in *M. smegmatis* (MS) has been expressed and the strain was used to infect J774A.1 macrophage cells and BALB/c mice. It was observed that during the infection, the MS expressing PE3 showed higher bacterial load when compared to infection with wild-type MS. In hypoxic condition, the expression level of PE3 gene was induced in Mtb, which further showed its relevance in the cell survival during hypoxia-induced persistence. The expression level of PE3 in Mtb was markedly induced during chronic stage of murine infection, which reiterated its importance in mycobacterial persistence in the host. The immunization of mice with recombinant PE3 protein stimulated the secre- tion of TNF, IL-6 and IL-2 cytokines and generated strong protective immunity against challenge with live mycobacteria, which was evidenced by decreased viable bacilli in the lungs, histopathological changes and increased survival of PE3 immunized mice. Conclusively, the results indicated that PE3 plays significant roles in mycobacterial persistence during infection, modulate host immune response and hence could be a prospective candidate for the development of subunit vaccine against tuberculosis. (***Medical Microbiology and Immunology*** 2013, 202(5):365-77)

3.5.2 Lip Y as immuno-dominant protein

The role of LipY (encoded by Rv3097c) in the pathogenesis of *M. tuberculosis* has been investigated. Overexpression of LipY in *M. tuberculosis* (H37Rv::LipY) makes the strain "hypervirulent" compared to its vector control (H37Rv::V). Mice infected with recombinant H37Rv::LipY exhibit higher bacterial loads in their lungs, worsening lung histopathology, overt splenomegaly, weight loss and reduced survival when compared to mice infected with H37Rv::V. The hypervirulence was characterized by significantly reduced levels of cytokines TNF-α, IL-6, IFN-γ and IL-17 and elevated levels of IL-10 suggesting attenuation of Th1 and Th-17 response and domination of Th2 response in these animals.

3.6 Role of Protein-Protein interactions in TB and in HIV biology

3.6.1 EccA1 is essential for the secretion of essential virulence factors like ESAT-6/CFP10 etc. The author's group has characterized the protein to understand its molecular properties and has identified that it is a thermostable protein, although *M. tuberculosis* is a mesophile. The implications of this characteristic in new therapeutic discovery are being investigated presently.

3.6.2 Interactions between HIV-1 Nef and ASK1 are important for pathogenesis and viral biology in the human host. Interaction motifs between these proteins were identified computationally. Subsequent experimental results carried out by Dr. Kamal Tripathi's group have validated the computational analyses. These aspects are collaboratively being developed further for investigations leading to new therapeutic agents for HIV-1.

3.7 Structure function analysis

3.7.1 Studies on MTB Molybdenum cofactor

The Molybdenum cofactor (Moco) biosynthesis pathway is conserved in almost all eukaryotes including *M. tuberculosis* comprises of novel reactions carried out by enzymes. The mechanistic details of the primary step in this pathway, catalyzed by MoaA & MoaC, that of obtaining precursorZ from guanosine triphosphate, is still unclear. Crystals of MoaC2, one of the three orthologues of MoaC in *M. tuberculosis*, diffracted to 2.2A at BM14, European

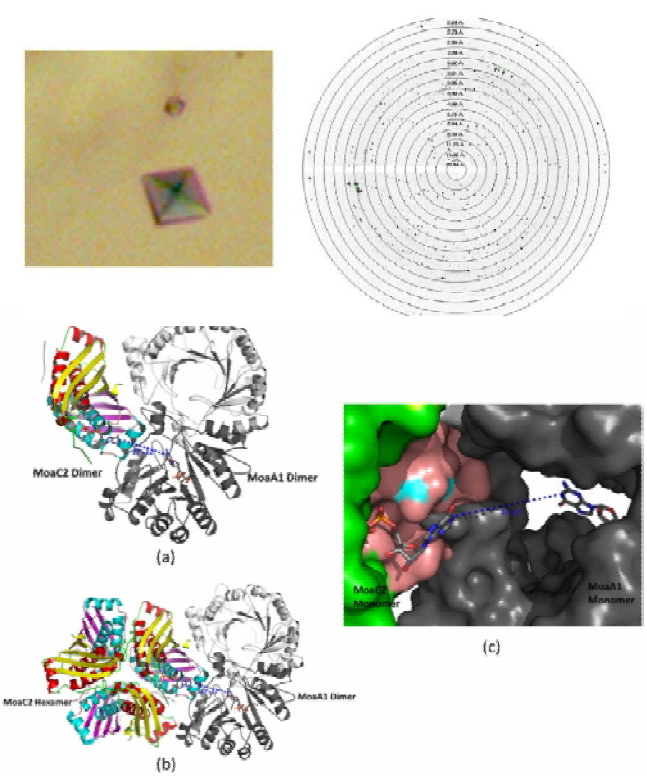


Fig.: showing Good diffraction quality crystal (left) and typical diffraction pattern of the MoaC2 crystal (right)

Synchrotron Radiation Facility (ESRF), Grenoble and the structure solved. Analysis of the structure resulted in identification of invariant residues that have been implicated in structural and functional roles. Computational docking studies have resulted in the proposal of a hypothesis that help us better understand this step in Moco biosynthesis.

3.7.2 Characterization of antimicrobial, cytotoxic and anti-endotoxin properties of short peptides with variation in heptad repeat sequences

To understand the influence of different hydrophobic amino acids at 'a' and 'd' positions of a heptad repeat sequence on antimicrobial, cytotoxic and anti-endotoxin properties, four fifteen-residues peptides with leucine (LRP), phenylalanine (FRP), valine (VRP) and alanine (ARP) residues at these positions were designed, synthesized and characterized. Though valine is similarly hydrophobic to leucine and phenylalanine, VRP showed significantly lesser cytotoxicity than LRP and FRP. Moreover, the replacement of leucine residues with valine residues at 'a' and 'd' positions of the heptad repeat sequence of melittin drastically reduced its cytotoxicity. However, all four peptides exhibited significant antimicrobial activities that correlate well with their interactions with mammalian and bacterial cell membranes and the corresponding mimetic lipid vesicles. LRP most efficiently neutralized the LPS-induced pro-inflammatory mediators like NO, TNF-α, and IL-6 in macrophages followed by FRP and VRP, and ARP. The results could be useful for designing short antimicrobial and anti-endotoxin peptides with understanding the basis of their activity (***J. Med. Chem.*** 2013, 56, 924-939).

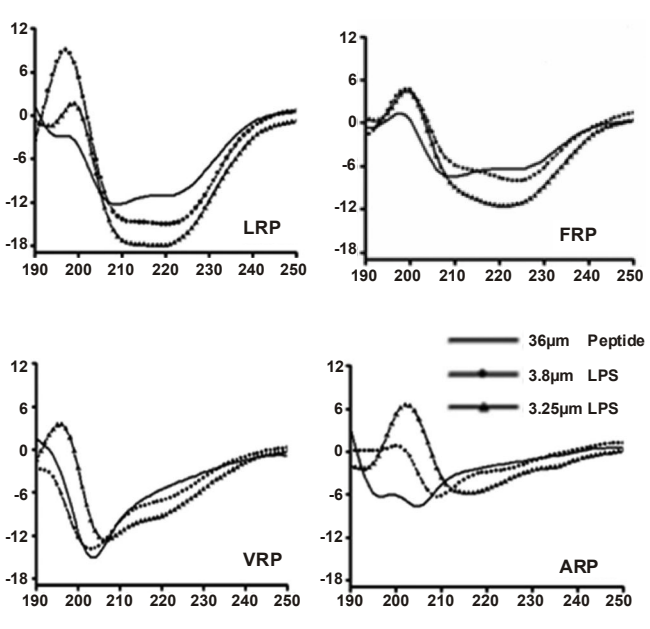


Fig.: Secondary structure of peptides in the presence of LPS.

3.7.3 Introduction of a lysine residue promotes aggregation of Temporin L in lipopoly-saccharides and augments its anti-endotoxin property

Temporin L (TempL) is a 13-residue frog antimicrobial peptide which shows moderate bactericidal activity and anti-endotoxin properties in macrophage cells. It was envisioned that due to very hydrophobic nature, this peptide may fail to show its desired biological properties. It was predicted by employing the available algorithms that the substitution of a glutamine by lysine at position 3 could appreciably reduce its aggregation propensity in aqueous environment. In order to investigate the structural, functional and biological consequences of substitution of the glutamine by a lysine at its third position, TempL and the corresponding analog, Q3K,TempL, was synthesized and characterized. This amino acid substitution significantly enhanced the self-assembly and oligomeric state of TempL in LPS. Q3K, TempL exhibited

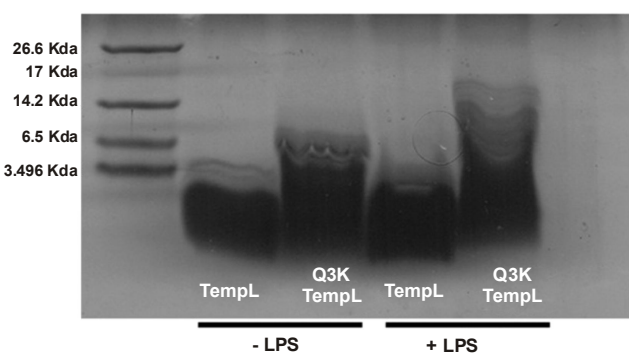
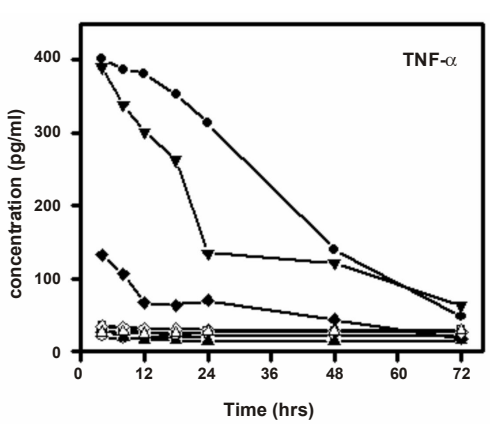


Fig.: Oligomerization/self aggregation of TempL and Q3K, TempL in LPS environment.



Alterations in the level of pro-inflammatory cytokines with time in the serum of LPS-treated (LPS 0111:B4, 10mg/kg) Balb/C mice in the absence and presence of TempL and Q3K,TempL (as described in the Materials and Methods section). Figure shows the TNF α levels in blood serum of LPS and peptide treated mice at different time intervals. *Symbols*; —■—, mice, not-treated with peptide or LPS; —●—, treated with only LPS(10mg/kg); —▲—, TempL (1mg/kg) and LPS; —▼—, Q3K,TempL (0.25mg/kg) and LPS; —◆—, TempL (0.25mg/kg) and LPS; —◀—, Polymixin B (1mg/kg) and LPS; —▶—, TempL (1mg/kg) with no LPS and —⬢—, Q3K,TempL (0.25mg/kg) with no LPS.

augmented binding towards LPS and also dissociated the LPS-aggregates with higher efficacy than TempL. Further, Q3K, TempL inhibited the LPS-induced pro-inflammatory cytokines in rat primary macrophage cells *in vitro* and *in vivo* in Balb/C mice to a higher efficacy than TempL. The results showed a simple amino acid substitution in a short hydrophobic antimicrobial peptide, TempL to enhance its anti-endotoxin properties and illustrate a plausible correlation between its aggregation properties in LPS and LPS-detoxification activity (***Antimicrob Agents Chemother*** 2013 Jun; 57(6):2457-66).

3.8 Fungal Biology

3.8.1 Arachidonic acid affects biofilm formation and PGE2 level in *Candida albicans*

The aim of this study was to evaluate the effect of AA alone or in combination with antifungal agents on biofilm formation and production of prostaglandin (PGE_2) in *C. albicans, C. parapsilosis, C. glabrata, C. tropicalis, and C. albicans* amphotericin B resistant strain (AmBR). Maximum biofilm formation was found to be in case of *C. albicans* compared to *Candida* non-*albicans* strains however, among the non-*albicans* species *C. tropicalis* exhibited highest biofilm formation. Treatment with AA in combination with sub-inhibitory concentrations of fluconazole and terbinafine separately exhibited significant (P<0.05) reduction in biofilm formation against *C. glabrata, C. parapsilosis, C. tropicalis* and AmBR as compared to their individual effect. Further, these two antifungal agents in combination with AA caused an increase in production of prostaglandin from fungal cell itself which was significant (P<0.05) in case of all the strains tested. (***Braz. J Infectious disease*** 2013, In press).

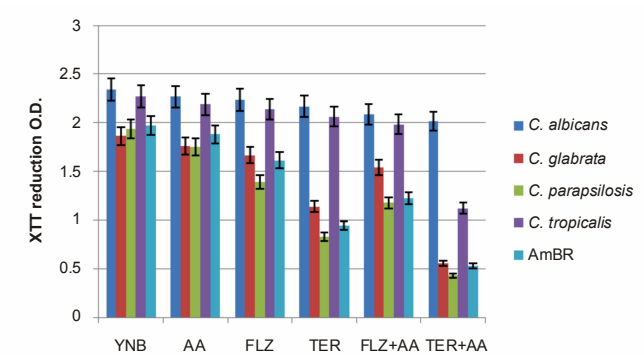


Fig. Biofilm formation by *C. albicans*, non *albicans* and AmBR under the influence of different media treatments

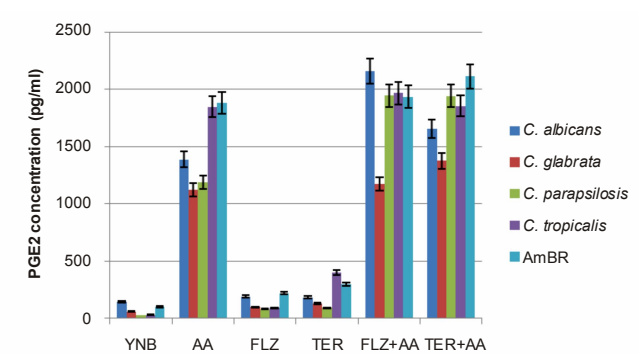


Fig. The level of PGE_2 produced by *Candida albicans* and non albicans biofilm in different media treatments.

3.8.2 *In-silico* characterization of β-(1, 3)-endoglucanase (ENGL1) from *Aspergillus fumigates*

Recent studies have revealed that the β-1,3-endoglucanase (ENGL1) plays an essential role in cell wall remodeling that is absolutely required during growth and morphogenesis of filamentous fungi and thus is a promising target for the development of antifungal agents. Unfortunately no structural information of fungal β- glucanases has yet been available in the Protein Databank (PDB). Therefore in the present study, 3D structure of β-(1,3)-endoglucanase (ENGL1) was modeled by using I-TASSER server and validated with PROCHECK and VERIFY 3D. The best model was selected, energy minimized and used to analyze structure function relationship with substrate β-(1,3)-glucan by C-DOCKER (Accelrys DS 2.0). The results indicated that amino acids (GLU 380, GLN 383, ASP 384, TYR 395, SER 712, and ARG 713) present in β-1,3-endoglucanase receptor are of core importance for binding activities and these residues are having strong hydrogen bond interactions with β-(1,3)-glucan. The predicted model and docking studies permits initial inferences about the unexplored 3D structure of the β-(1,3)-endoglucanase and may be promote in relational designing of molecules for structure-function studies. (***Bioinformation*** 2013 Sep 23; 9(16):802-7)

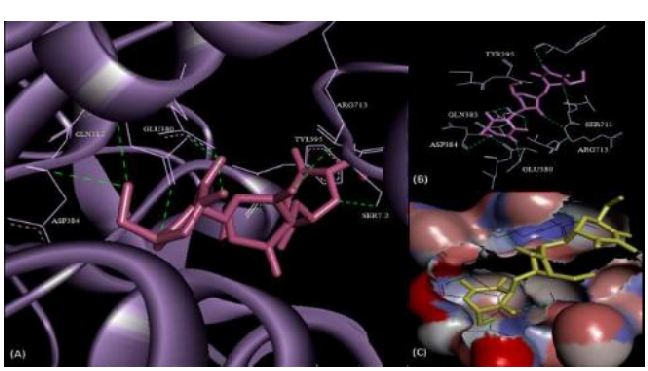


Fig.: Docking of ligand in protein cleft: The ligand (pink) and interacting residues (purple) are shown in stick format and green dotted lines represent H-bond; B) **Active site residues (purple) and their interaction with ligand(pink);** C) **Molecular surfaces: showing channel for substrate binding**

4 CVS, CNS and Related Disorders

The research activities in CVS-CNS and related disorders pertain to the design, synthesis and development of new drugs from synthetic, plant or marine sources to treat pathologies related to:

- **Cardiovascular system** *(Thrombosis, Cardio-Metabolic Disease, Hypertension, Pulmonary hypertension, Dyslipidemia, Atherosclerosis and Myocardial Infarction)*
- **Central nervous system** *(Psychopharmacology, Neurodege-neration, Dementia and Stroke)*
- **Other disorders** *(Stress, Gastric ulcers and Inflammation)*

The various research activities in the area also included research in macrophages, vascular smooth muscle cells, endothelial cells, adipocytes and skeletal muscles for elucidating the role of various cells and their signalling mechanisms in the progression of cardio-metabolic diseases. New studies in various animal models of cardio-metabolic disorders were also initiated.

Area Coordinators:
Dr. Manoj K Barthwal
Dr. Prem N. Yadav
Dr. Maddi Sridhar Reddy

4.1 Drug discovery and animal models

4.1.1 Summary of compound screening and identification of actives

During past one year, total 543 compounds (517-Synthetic and 29-natural) were submitted (Jan-Dec, 2013) for their biological activity evaluation in CVS, CNS and related disorders. These molecules were tested for anti-diabetic (200 molecules), anti-dyslipidemic (96 molecules) and anti-thrombotic (138 molecules) activities. Some interesting hits were seen which require more validation. Moreover, 262 compounds were also submitted for G-Protein Coupled Receptor (GPCR) profiling, which were tested for agonistic and antagonistic activities on 12 GPCRs (Histamine family H1-H4, Dopamine Family D1-D5, OPRK1, 5-HT2c and 5-HT2b). By employing various disease specific *in vitro* assays for primary screening, 7 active compounds have been identified as anti-diabetic, 11 compounds as anti-thromobotic and 15 compounds as anti-hyperlipidemic/anti-adipogenic. Furthermore, 12 new molecules from GPCR screening were identified which were active on various GPCRs (H3 receptor-3, D2 receptor agonist-3, D2 receptor antagonist-3, D5 receptor agonist-1, 5-HT2c receptor agonist-1, KOR antagonist-1). Currently, these active compounds are in lead validation stage and/or *in vivo* efficacy evaluation in pre-clinical models systems.

4.1.2 Diastereomeric mixture of calophyllic acid and isocalophyllic acid stimulates glucose uptake in skeletal muscle cells: Involvement of PI-3-Kinase- and ERK1/2-dependent pathways

The diastereomeric mixture of calophyllic acid and isocalophyllic acid (F015) isolated from the leaves of *Calophyllum inophyllum* was investigated for the metabolic effect on glucose transport in skeletal muscle cells. In L6 myotubes, F015 dose-dependently stimulated glucose uptake by increasing translocation of glucose transporter4 (GLUT4) to plasma membrane without affecting their gene expression. The effects on glucose uptake were additive to insulin. Inhibitors analysis revealed that F015-induced glucose uptake was dependent on the activation of phosphatidylinositol-3-kinase (PI-3-K) and extracellular signal-regulated kinases 1 and 2 (ERK1/2), while independent to the activation of AMP-activated kinase (AMPK). F015 significantly increased the phosphorylation of AKT, AS160 and ERK1/2, account for the augmented glucose transport capacity in L6 myotubes. Furthermore, F015 improved glucose tolerance and enhanced insulin sensitivity in skeletal muscle of dexamethasone-induced insulin resistant mice. The findings demonstrate that F015 activates glucose uptake in skeletal muscle cells through PI-3-K- and EKR1/2-dependent mechanisms and can be a potential lead for the management of diabetes and obesity (Molecular and Cellular Endocrinology 370 (2013) 11–19).

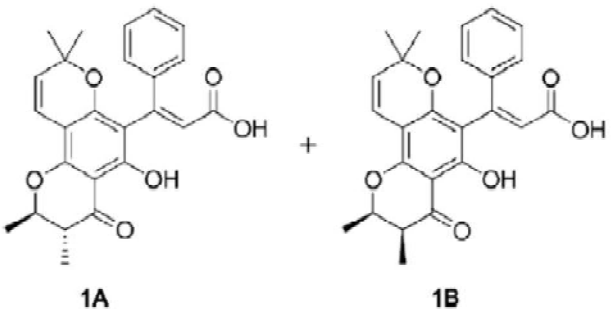


Fig.: Chemical structure of calophyllic acid (1A) and isocalophyllic acid (1B) from *Calophyllum inophyllum*.

4.1.3 Coagulin-L as an anti-adipogenic agent

Coagulanolides, particularly coagulin-L isolated from *W. coagulan* has earlier been reported for anti-hyperglycemic activity. Results showed coagulin-L inhibit lipid droplets formation in 3T3-L1 pre-adipocyte, mouse stromal mesenchymal C3H10T1/2 cells and bone marrow derived human mesenchymal stem cells (hMSCs). Underlying mechanism reveals down-regulation of key adipogenic proteins PPARγ and C/EBPα. Detailed analysis showed early exposure of coagulin-L is sufficient to cause inhibition of adipogenesis. Coagulin-L inhibited mitotic clonal expansion (MCE) through decreased phosophorylation of C/EBPβ, modulation in expression of cell cycle regulatory proteins, and upregulation of Wnt/βcatenin pathway. Taken together all evidences, a known anti-hyperglycemic agent coagulin-L has shown potential to inhibit adipogenesis significantly, which can be therapeutically exploited for treatment of obesity and metabolic syndrome.

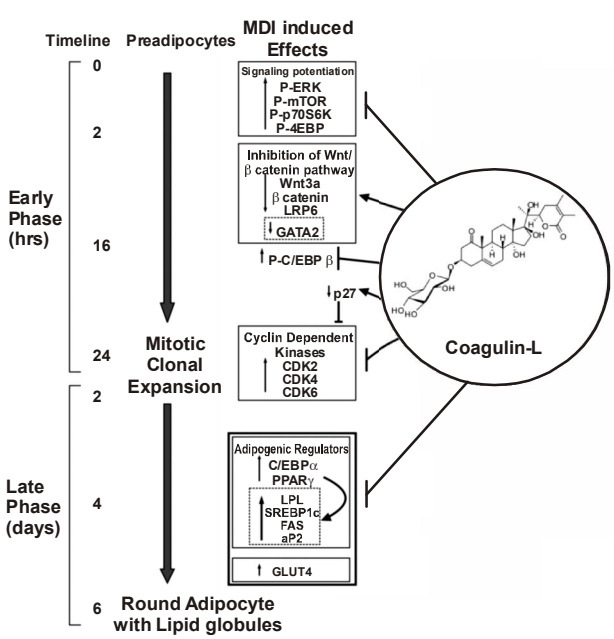


Fig.: Mechanistic overview of Coagulin-L anti-adipogenic action

4.1.4 DPV aspargine and platelets

A study was undertaken to assess the effect of peroxide radicals on platelet functions and underlying signaling mechanisms using asparagines conjugated diperoxovanadate (DPV-Asn). Platelet aggregation induced by DPV-Asn was chiefly regulated by dense granule secretion, thromboxane A2 (TxA2) generation, intra-platelet [Ca2+] influx, GPIIbIIIa activation and sCD40L release, which were significantly reduced in presence of U73122 (PLC inhibitor), aspirin (COX), SB203580 (p38 inhibitor), and PD98059 (ERK inhibitor). This was further corroborated by enhanced tyrosine phosphorylation of numerous platelet proteins including PLC-γ2, which apparently played a central role in transducing peroxide signals to regulate [Ca2+] influx and phosphorylation of p38 and ERK1/2 MAP kinase. Peroxide radicals critically regulate the thrombo-inflammatory functions of platelets via the PLCγ2-p38-ERK1/2-TxA2 pathway (Fig.), which closely resembles the clinical scenario of various pathologies like hyperglycemia and atherosclerosis during which oxidative stress disrupts platelet functions (***Redox Report*** Volume 18:174-85, 2013) .

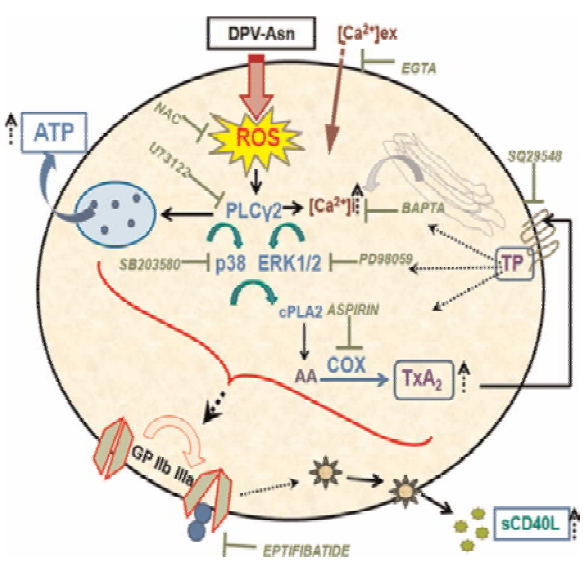


Fig.: Schematic illustration of DPV-Asn-induced oxidative stress in platelets causing aggregation and sCD40L release. The model depicts that catalase-tolerant peroxide DPV-Asn mediated sequential induction of a signaling cascade in platelets, chiefly regulated by PLC-γ2, which apparently played a central role in upregulating dense granule secretion, calcium influx, p38 and ERK1/2 MAP kinase phosphorylation, which subsequently directed COX activation and enhanced TxA2 generation to further amplify platelet aggregation and thrombus formation. DPV-Asn further augmented GPIIbIIIa-dependent release of proinflammatory cytokine sCD40L, thereby exhibiting a thrombo-inflammatory phenotype.

4.1.5 Anti-secretory and cyto-protective effects of peganine hydrochloride isolated from the seeds of Peganum harmala on gastric ulcers

Gastroprotective mechanism of peganine hydrochloride isolated from *Peganum harmala* seeds was investigated. Peganine hydrochloride was evaluated against

cold restraint (CRU), aspirin (AS), alcohol (AL) and pyloric ligation (PL) induced gastric ulcer models in rats. Potential anti-ulcer activity of peganine was observed against CRU (50.0%), AS (58.5%), AL (89.41%) and PL (62.50%) induced ulcer models. The reference drug omeprazole (10mg/kg, p.o.) showed 77.45% protection against CRU, 49.97% against AS and 69.42% against PL model. Sucralfate, another reference drug (500mg/kg, p.o.) showed 62.50% protection in AL induced ulcer model. Peganine significantly reduced free acidity (33.38%), total acidity (38.09%) and upregulated mucin secretion by 67.91%, respectively. Further, peagnine significantly inhibited H(+) K(+)-ATPase activity *in vitro* with IC_{50} of 73.47µg/ml as compared to the IC_{50} value of omeprazole (30.24µg/ml) confirming its anti-secretory activity (***Phytomedicine***. 2013 Oct 15;20(13):1180-5).

4.1.6 Arbortristoside-A and 7-O-trans-cinnamoyl-6β-hydroxyloganin isolated from *Nyctanthes arbortristis* possess anti-ulcerogenic and ulcer-healing properties.

Arbortristoside-A (AT) and 7-O-trans-cinnamoyl-6β-hydroxyloganin (6-HL) were isolated from the seeds *of Nyctanthes arbortristis* Linn (Oleaceae). AT and 6-HL exhibited anti ulcer activity in experimentally induced ulcer models including cold restraint stress (CRU), alcohol (AL), pylorus ligation-induced gastric ulcer (PL) models and they also showed ulcer healing effect in chronic acetic acid-induced ulcer model (AC). (***Phytomedicine***. 2013 Sep 15;20(12):1055-63).

4.1.7 Role and regulation of extracellular signal-regulated kinase during smooth muscle proliferation

Vascular smooth muscle cell (VSMC) proliferation plays an essential role in the development of atherosclerosis and restenosis. Stimulation of primary VSMCs with FBS or platelet-derived growth factor-BB (PDGF-BB) lead to significant increase in VSMC proliferation as determined by MTT and cell cycle progression through G0/G1 to S phase analysis. Also P27 kip 1 expression was decreased and PCNA expression was increased by PDGF or FBS stimulation. Both FBS and PDGF induced extracellular signal-regulated kinase (ERK) activation. *In-vitro* treatment with ERK pathway inhibitor reduced VSMC proliferation, PCNA protein expression and increased p27 Kip 1 protein expression, suggesting role of ERK in VSMC proliferation. Balloon injury of the rat carotid artery lead to increase in PCNA protein expression and a decrease in p27 Kip 1 protein expression. ERK activation was also observed in injured carotid artery. The local application of ERK pathway inhibitor via a thermo-sensitive pluronic F-127 gel attenuated ERK activation. ERK pathway inhibitor also restored PCNA and p27Kip 1 protein

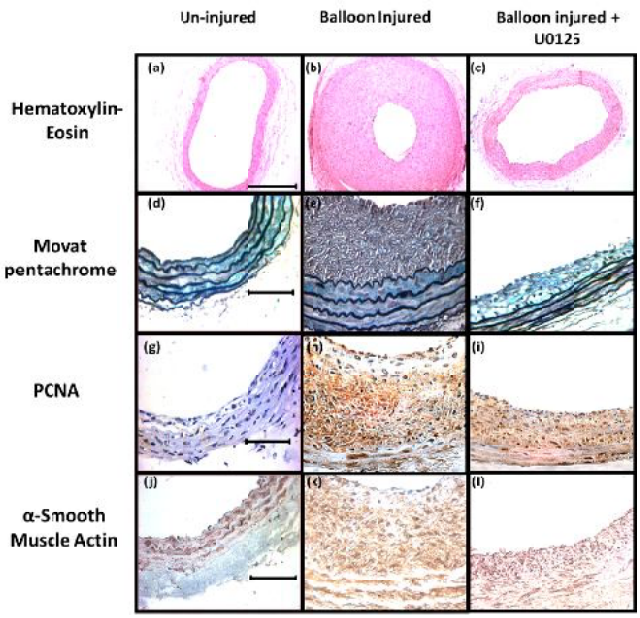


Fig.: ERK mediates balloon injury induced neo-intimal cell proliferation and hyperplasia. Carotid arteries pre-treated with ERK pathway inhibitor (U0126) were analyzed 14 days after Balloon injured. Representative images of (a-c) HE staining, (d-f) Movat pentachrome (j-l) Immuno-histochemical staining showing α smooth muscle actin and (g-i) PCNA. Results are representative arterial sections from at least four animals from each group. Magnification of photos is 100X for HE and 400X for α smooth muscle actin and PCNA staining. Scale bar in (a) =100µm and applies to (b, c,). Scale bar in (d) = 20µm and applies to (e-l).

expression. In addition, ERK pathway inhibitor significantly inhibited proliferation of neointimal VSMCs as determined by hematoxylin-eosin staining as well as immuno-histochemical localization of α SMC actin and PCNA. Altogether ERK pathway inhibition significantly decreased the neointimal lesion size at 14 days of injury when compared to balloon injured control. Present finding identifies ERK as a key regulator of VSMC proliferation and neointima formation and may serve as an important target for the prevention of atherosclerosis.

4.1.8 Atherosclerosis regression following cholesterol diet withdrawal in rabbits

Effect of long term cholesterol diet withdrawal on accelerated atherosclerosis in iliac artery of New Zealand White (NZW) rabbits was explored. Significant elevation in plasma lipids with atherogenic diet (AD) feeding was normalized following 16 weeks of chow diet (CD) feeding. However, baseline comparison showed advanced plaque features even after 8 weeks of CD feeding with significant elevation in intima/media thickness ratio and plaque area later showing reduction at 50 and 64 weeks CD. Lesion lipid accumulation and CD68 positivity was maintained till 16 weeks of CD feeding which significantly reduced from 32 to 64 weeks CD periods. Baseline comparison showed significant increase in ground substance, MMP-9 and

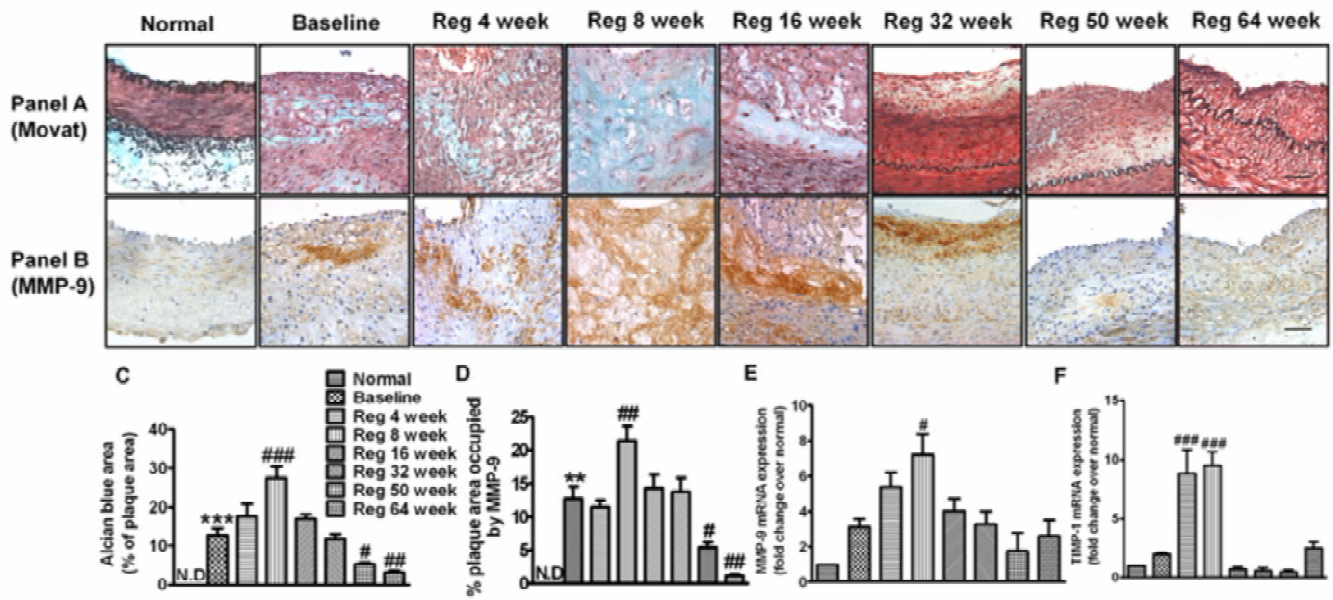


Fig.: Biphasic elevation and subsequent regression of ground substance and matrix metalloproteinase-9. (A) Representative images of movat pentachrome stained sections of all groups (Scale bar = 50µm). Panel (B) Immunohistochemical staining showing MMP-9 positive area of all groups (Scale bar =50µm). (C) Quantitative analysis of alcian blue stained area in respective groups (D) Quantitative analysis of MMP-9 positive areas in respective groups (E) Arterial MMP-9 mRNA expression in all groups as determined by real time PCR (F) Arterial TIMP-1 mRNA expression in all groups as determined by real time PCR. **p<0.01 and ***p<0.001 *vs* normal; #p<0.05, ##p<0.01 and ###p<0.001 *vs* Baseline. (* indicates lumen, arrow heads indicate positive staining).

significant decrease in α-actin and collagen content at 8 weeks CD period indicating features of unstable plaque. These features regressed up to 64 weeks of CD. Partial restoration of functional vasoconstriction and vasorelaxation was seen after 64 weeks of CD feeding. mRNA expression of MCP-1, VCAM-1, collagen type I and III, MMP-9, TIMP-1, IFN-γ, TNF-α, IL-10 and eNOS supported the above findings. The study results indicate that atherosclerotic iliac artery of NZW rabbits presents features of human unstable plaques after a brief phase of AD removal. Also, collective changes in plaque intracellular and extracellular lipid, restoration of endothelium functionality, increase in fibrous component (collagen and SMCs), decreased metalloproteinase and modulation of gene expression orchestrated plaque regression associated with this model. The study thus defines processes involved in stabilizing or destabilizing plaque structures and also provides the window for evaluating new chemical entities on atherosclerosis regression in this model. (***PLOS ONE***, Volume 8, e77037, 2013)

4.1.9 Involvement of PARP-1 in pulmonary hypertension

Pulmonary hypertension (PH) is a disease affecting 100 million people worldwide and is characterized by increased right ventricle pressure (RVP) and hypertrophy(RVH). High morbidity and mortality is associated with PH as there is no concrete cure for it. It has been tried to find new therapeutic targets by dissecting the role of PARP-1 in PH. The involvement of PARP-1 in Monocrotaline induced

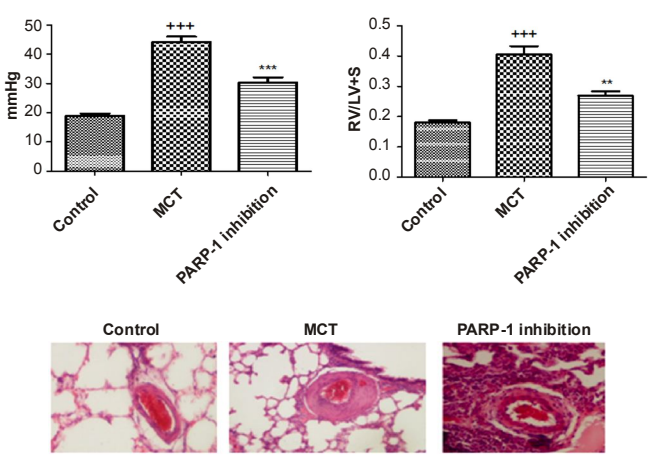


Fig.: Effect of PARP-1 inhibition on right ventricular oxidative stress, endothelial, pressure, hypertrophy and pulmonary vascular remodeling dysfunction and apoptosis resistance in PH.

PH in rats was studied. There is severe oxidative stress in PH which results in the overactivation of PARP-1as seen by increased PARP-1 activity and expression in monocrotaline (MCT) treated rats. PARP-1 inhibition led to significant decrease in the RVP and RVH, pulmonary vascular remodeling, inflammation, oxidative stress, endothelial dysfunction and apoptosis resistance in PH.

4.1.10 Development and standardization of *in vivo* angiogenesis assay for screening novel angiogenic drug candidates

Angiogenesis is a key process mainly involved in the

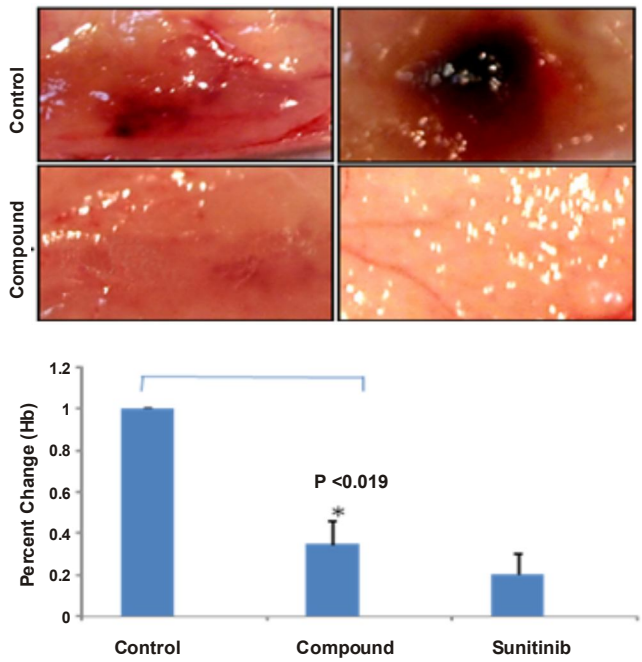


Fig.: Pictograph shows matrigel plug, implanted in the mice for 7 days with or without the test compound. Histogram shows the concentration of Haemoglobin present within the matrigel plug to prove the specificity of the assay.

normal growth, development as well in disease states. An *in vivo* model system was established for screening novel angiogenic and anti-angiogenic drug candidate for the treatment of cardiovascular diseases and tumors respectively. This *in vivo* angiogenic assay is one of the most relevant methods for determining the potency of the drug candidate.

4.2 Basic studies

4.2.1. Inflammatory potential of NETs

Neutrophils expel extracellular traps (NETs) to entrap and exterminate the invaded micro-organisms. Acute/chronic inflammatory disorders are often observed with aberrantly enhanced NETs formation and high nitric oxide (NO) availability. Recent study from this laboratory demonstrated release of NETs from human neutrophils following treatment with SNP or SNAP. This study is an extension of our previous finding to explore the extracellular bacterial killing, source of DNA in the expelled NETs, their ability to induce proinflammatory cytokines release from platelets/THP-1 cells, and assessment of NO-mediated free radical formation by using a consistent NO donor, DETA-NONOate. NO-mediated NETs exhibited extracellular bacterial killing as determined by colony forming units. NO-mediated NETs formation was due to the activation of NADPH oxidase and myeloperoxidase. NO- or PMA-mediated NETs were positive for both nuclear and mitochondrial DNA as well as proteolytic enzymes. Incubation of NETs with human platelets enhanced the release of IL-1b and IL-8, while with THP-1 cells, release of IL-1b, IL-8, and TNFα was observed. This study demonstrates that NO by augmenting enzymatic free radical generation release NETs to promote extracellular bacterial killing. These NETs were made up of mitochondrial and nuclear DNA and potentiated release of proinflammatory cytokines. (***Cytometry Part A***, Volume, 81A: 238-247, 2012).

4.2.2. Protective effect of Melatonin in Streptozotocin induced memory impairment in rats: effect on Nrf2 pathway

Effect of Melatonin on behavior, oxidative stress, neuroinflammation and neuronal apoptosis in Streptozotocin (STZ) induced memory impairment has been evaluated in rats. STZ produced a significant memory deficit, along with reduction in mRNA expression of Nrf2 and its cytoprotective enzymes in both brain regions results in enhanced oxidative-nitrosative stress, neuroinflammation and neuronal apoptosis. Treatment with Melatonin significantly improved memory dysfunction, restored mRNA levels of Nrf2, oxidative stress, neuroinflammation, and apoptotic cell death. Present findings suggest the beneficial effects of Melatonin in STZ induced memory impairment in rats could be related to modulation of Nrf2 pathway [P17: ***Annals of Neuroscience***; Vol 20 suppl Oct 2013].

4.2.3. RAC2 interaction with iNOS

The study explores importance of iNOS and its interaction with Rac2 in ROS/RNS generation, protein-nitration, and in microbial killing by neutrophils. The iNOS transcript and protein were constitutively present in human as well as in mice neutrophils. iNOS protein was found in cytosol, granules containing elastase and gelatinase, and in other subcellular organelles in resting human neutrophils. Following phagocytosis of BSA coated beads, both human and mice neutrophils showed significant elevation in superoxide radicals, NO, ROS/RNS and consequent BSA nitration. These responses were significantly reduced in presence of iNOS, NOX, MPO or Rac inhibitors as well as in iNOS, NOX2 and Rac2 silenced human or $iNOS^{-/-}$ mice neutrophils. The complex formed on interaction of iNOS with Rac2 co-precipitated with anti-Rac2, predominantly in the cytosol in resting human neutrophils, while iNOS-Rac2 complex translocated to the phagosomes following phagocytosis. This was accompanied by generation of superoxide radicals, NO, ROS/RNS and consequent BSA-nitration. Importance of Rac2 in iNOS mediated NO formation and microbial killing was confirmed by pre-treatment of mice with Rac inhibitor, NSC23766 that significantly abrogated NO release and microbial killing *in vivo*. This study highlights previously undefined role of Rac2-iNOS interaction, in the translocation of iNOS to phagosomal compartment, and consequent NO, superoxide radicals, ROS/RNS generation, BSA nitration and microbial killing. Altogether results obtained

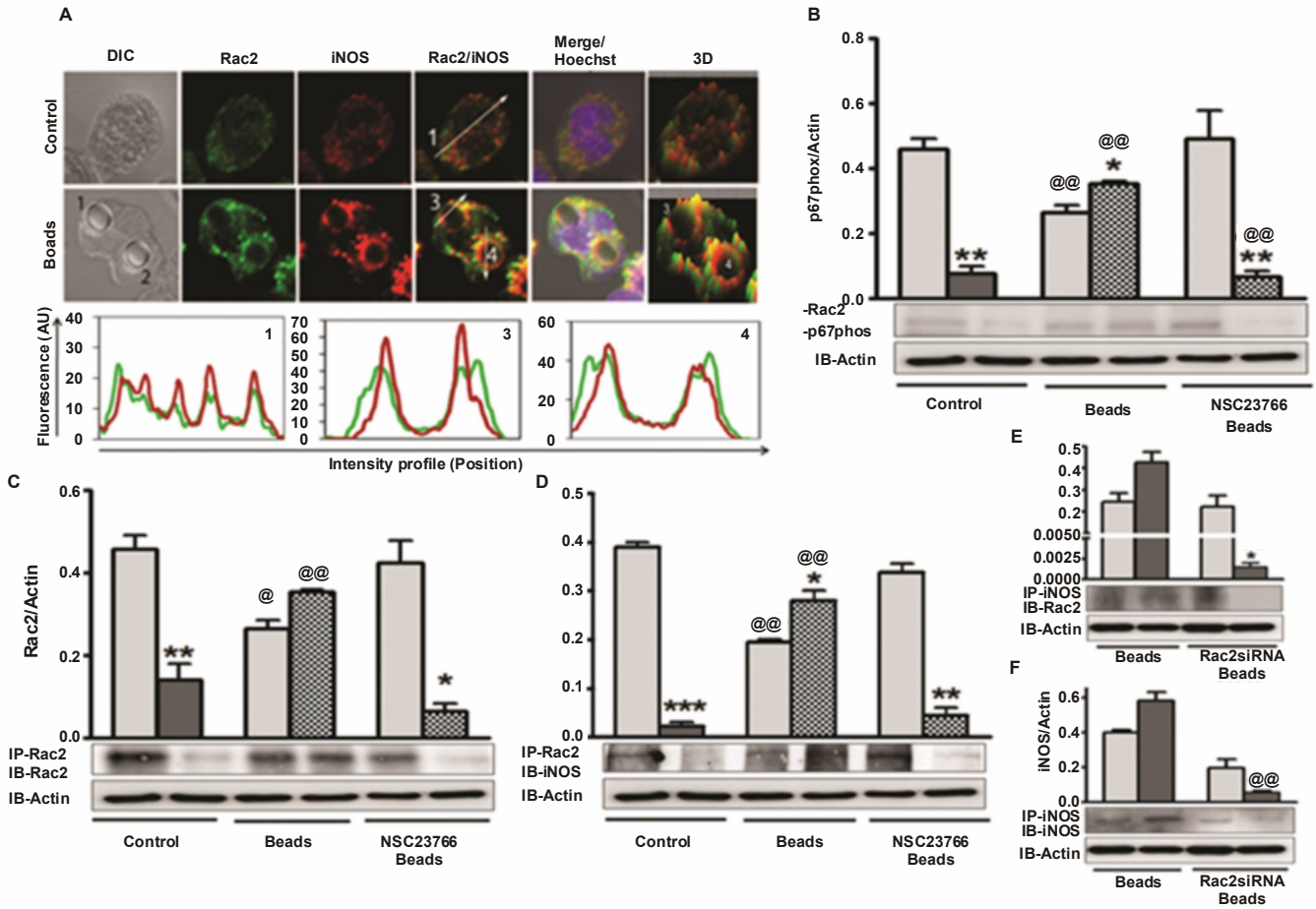


Fig.: Biphasic elevation and subsequent regression of ground substance and matrix metalloproteinase-9. (A) Representative images of movat pentachrome stained sections of all groups (Scale bar = 50µm). Panel (B) Immunohistochemical staining showing MMP-9 positive area of all groups (Scale bar =50µm). (C) Quantitative analysis of alcian blue stained area in respective groups (D) Quantitative analysis of MMP-9 positive areas in respective groups (E) Arterial MMP-9 mRNA expression in all groups as determined by real time PCR (F) Arterial TIMP-1 mRNA expression in all groups as determined by real time PCR. **p<0.01 and ***p<0.001 vs normal; #p<0.05, ##p<0.01 and ###p<0.001 vs Baseline. (* indicates lumen, arrow heads indicate positive sta

demonstrated the role of iNOS in NO and ROS/RNS generation, following phagocytosis of coated latex beads by human PMNs. These studies imply functional importance of iNOS and its interaction with Rac2 in pathogen killing by the neutrophils (***Antioxidant Redox Signalling***, in press, 2013).

4.2.4. Insulin ameliorates insulin resistance and amyloidogenic proteins expression in streptozotocin stimulated astroglial cells

The present study was undertaken to evaluate the neuroprotective effect of insulin on Streptozotocin stimulated astroglial cells. Streptozotocin treatment caused significant decrease in IR mRNA/Protein expression, phosphorylation of IRS-1 and AKT. Further Streptozotocin treatment induced increase in APP, BACE-1 and AB_{1-42} expression. Insulin treatment significantly improved insulin receptor expression along with downstream signaling protein expression. Further it also mitigated amyloidogenic proteins expression in Streptozotocin treated astroglial cells. [P76: ***Annals of Neuroscience***; Vol 20 suppl Oct 2013].

4.2.5. Inhibition of Angiotensin converting enzyme in brain attenuates chronic neuro-inflammation and amyloidogenesis

Angiotensin converting enzyme (ACE), known to regulate blood pressure, is also involved in memory functions but how ACE affects chronic neuroinflammation and amyloidogenesis is not well understood. Therefore, in this study, chronic neuroinflammation was induced by intracerebroventricular (ICV) administration of lipopolysaccharide in Wistar rats, on day 1, 4, 7 and 10. Administration of LPS resulted in robust neuroinflammation and memory impairment. ACE activities, apoptosis, accumulation of Aβ1-42, β-secretase activity were also increased. Pretreatment with the perindopril, an ACE inhibitor (0.1 mg/kg, p.o), attenuates LPS-induced memory deficit including reduction of neuroinflammatory markers and suppression of Aβ1-42 formation. [P12: ***Annals of Neuroscience***; Vol 20 suppl Oct 2013].

4.2.6 PPAR-γ agonist ameliorates streptozotocin induced neuroinflammation and insulin resistance in astroglial cells

The present study aimed to evaluate the protective effect of pioglitazone (PPAR-γ agonist) on streptozotocin (STZ) stimulated astroglial cells. Pioglitazone treatment significantly down regulated STZ induced over expression of GFAP, NF-kB (translocation), p-p38 MAPK, COX-2, iNOS and oxidative/nitrosative stress in astroglial cells. It also significantly mitigated STZ induced insulin resistance as evidenced by increased pIRS-1, pAKT and pGSK-3β in astroglial cells (***Indian J Pharmacol Dec*** (Supp) 2013).

4.2.7 ER stress mediates the rotenone induced neurotoxicity: A study on Neuro 2A cells

The role of endoplasmic reticulum stress was evaluated in rotenone (a widely used pesticide) induced neurotoxicity. Rotenone treatment (0.1μM, 0.5μM and 1μM) to neuro-2A cells caused decreased neuronal viability, increased cytotoxicity, significant ROS generation, increased nitrite levels, decreased mitochondrial membrane potential and DNA damage. Rotenone also induced ER stress as assessed by increased expression of GRP78 and GADD and phosphorylation of eIF2-α. Finally rotenone treatment led to increased expression of caspase-12 which is an ER resident caspase and activation of caspase-3 for apoptotic death of neurons. Salubrinal pretreatment offered significant attenuation against rotenone induced cytotoxicity, ROS generation, DNA damage, ER stress and apoptosis, though no protection was observed against rotenone induced increased nitrite level and decreased mitochondrial membrane potential. Thus it appears that ER stress plays a major role in rotenone induced apoptotic cell death through phosphorylation of eIF-2α transcription factor. (***Annals of Neurosciences*** Volume 20, supplement October 2013, p 36)

4.2.8 Streptozotocin induced neurotoxicity: Involvement of intrinsic apoptotic pathway and DNA damage

Streptozotocin (STZ) administration via intracerebroventricular (I.C.V) route in rodents causes neuronal damage associated with memory impairment. STZ induced cellular and molecular changes in neurons were studied by using neuro2A cells. STZ treatment to neuro2A cells caused considerable morphological alterations, significant increase in cytotoxicity, decreased mitochondrial dehydrogenase activity, mitochondrial membrane potential and cytochrome-c translocation in cytosol. STZ treatment causes decreased glucose uptake in neuronal cells that led to the altered mitochondrial function. Chromatin condensation and DNA damage was increased with increasing concentration of STZ. Significant caspase-3 activation was observed after STZ treatment which was attenuated with caspase inhibitor, z-VAD. Findings suggested that STZ caused significant mitochondria dysfunction and DNA damage in neurons that led to apoptotic death. (***Annals of Neurosciences*** Volume 20, suppl. October 2013 p 39)

4.2.9 Sustained kappa opioid receptor activation causes epigenetic changes in various regions of brain and decreases BDNF level

This study was undertaken to test the hypothesis that sustained activation of dynorphin/KOR system, not transient, leads to epigenetic changes in various brain regions, which in turn modulates GABAergic and Glutamatergic signalling. The results of the experiments showed decreased level of H3K4me3 in hippocampus of U50488 treated mice in comparison to vehicle and swim stressed mice. Moreover, it is also found that both KOR activation and stress stimulated the level of suppressive histone mark H3K9me3 in striatum. Since increased KOR signalling have been shown to be associated with depression like symptoms and decreased BDNF level in hippocampus has also been widely reported in depression, we assessed the effect chronic U50488 on BDNF level in various brain regions. Interestingly, chronic activation of KOR by selective agonist and swim stress significantly decreased the BDNF level in cortex, hippocampus and striatum (***Annals of Neurosciences*** Volume 20, supplement October 2013, p 40).

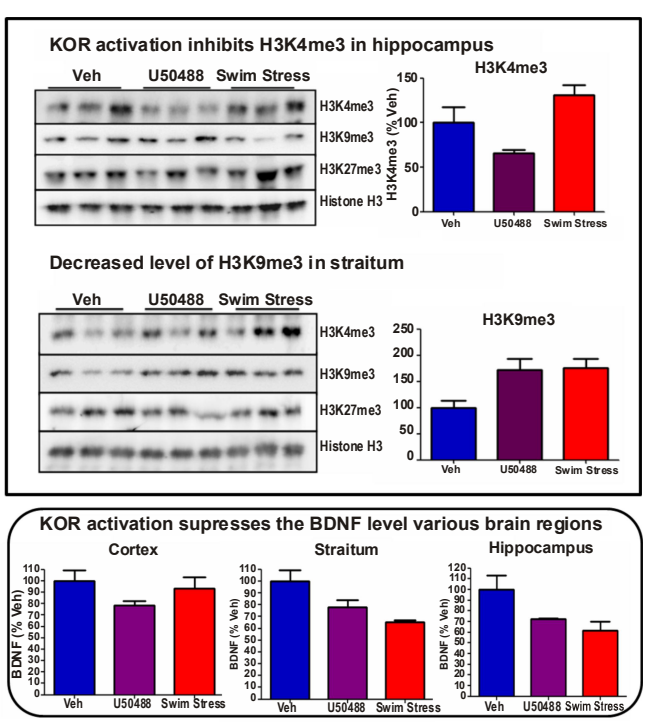


Fig. : Chronic KOR activation and Strees modulates epigenetic modification and BDNF level in mice.

4.2.10 Role of Sirtuin mediated neuroprotection and its association with autophagy and apoptosis studied in *C. elegans* model

The present study endeavoured to understand the

role of nicotinamide adenine dinucleotide activated protein deacetylase Sir2p/Sirt1 in calorie restriction mediated prevention of Parkinsonism employing transgenic *Caenorhabditis elegans* expressing human alpha synuclein. Transgenic *C. elegans* models - NL5901 (P_{unc-54}:: alphasynuclein::YFP+unc-119) expressing 'human' alpha synuclein; BZ555 (P_{dat-1}::GFP) expressing green fluorescence protein (GFP) specifically in eight dopaminergic (DA) neurons and DA2123 expressing LGG-1::GFP, were employed for the studies. Findings provide evidences towards the role of calorie restriction in reducing α-synuclein aggregation, mitochondrial content, lipid content and ROS in human α-synuclein expressing strain of *C. elegans*. RNAi of *sir-2.1* enhanced aggregation of alpha synuclein but *sir-2.1* silenced worms raised on reduced calorie diet didn't show protective effect in reducing protein aggregation which proved that protective effects of calorie restriction were mediated by NAD-dependent histone deacetylase activity of *sir-2.1*. We next focused on the mechanism of the *sir-2.1* mediated neuroprotective effect via autophagy. Assessment of autophagy in *C. elegans* was performed using a transgenic strain DA2123, expressing LGG-1::GFP. Worms with RNAi induced gene silencing of *sir-2.1* showed decreased expression of LGG-1::GFP and decreased mRNA level of different autophagy genes including *bec-1,atg-5,atg-7, lgg-1* and *atg-13* in qPCR studies. In order to further examine the signaling pathways regulating the SIRT1 mediated regulation of autophagic degradation, the expression of different apoptosis genes including *ced-4, cep-1, lin-35, jkk-1* and *jnk-1* were analyzed. In the studies, silencing of *sir-2.1* showed significant up-regulation of *ced-4* (Apaf-1) and *cep-1* (p53 ortholog- DNA damage pathway) apoptosis genes. This study provides evidence for the protective role of *sir-2.1* on autophagosome formation in *C. elegans*, which is associated with the p53 and apaf-1 dependent signaling pathways; the well-known stress resistance mediators. (***Molecular Neurodegeneration*** *2013, 8(Suppl 1):P65*

4.2.11 Activation of glial cells in rat model of chronic hypertension

How hypertension affects glial cells activation and neuroinflammation, inherent aspects of neurodegeneration, is not known. Therefore, a rat model of chronic hypertension was induced by partial occlusion of left renal artery and administration of DOCA salt. After 35 days, there was significant rise in systolic blood pressure (>165 mmHg) in hypertensive rats. This increased blood pressure induced neuroinflammation evident from increased pro-inflammatory cytokine TNF α and decreased IL10 level. Chronic elevation in blood pressure induced Glial cell activation (as evident by increased OX 42 and GFAP immunostaining).

4.2.12 Peripheral and central alterations is animals exposed to stress at different time points

The rat model of stress was established and the role

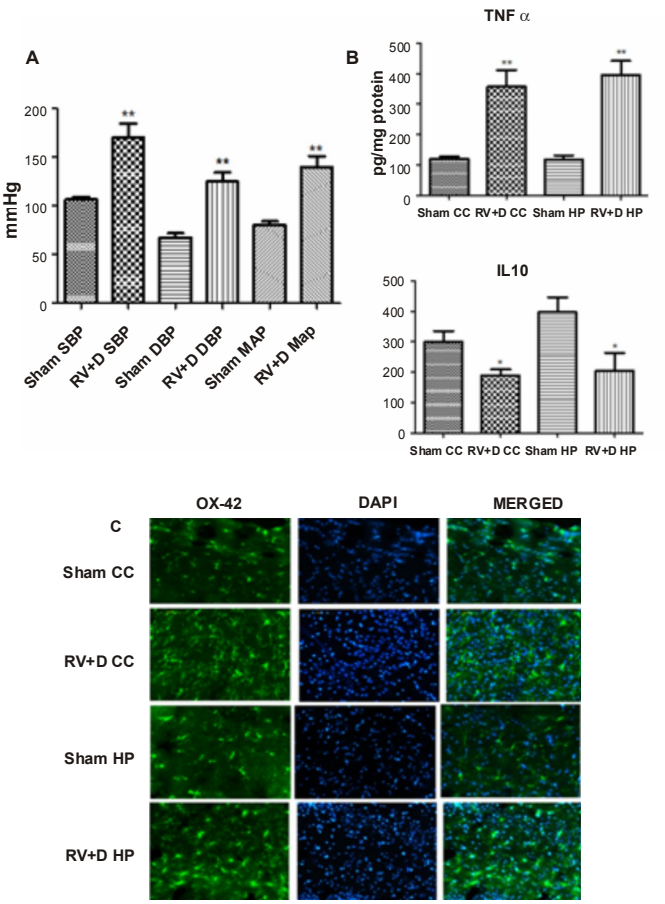


Fig.: (A) Increased hemodynamic parameters (SBP, DBP and MAP) in RV+D group (B) hypertension up-regulates pro-inflammatory TNF α and down regulates anti-inflammatory IL10 (C) hypertension induces microglial cell activation evident by increased OX 42 immunostainning in RV+D group. RV+D, renovascular+ DOCA salt; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean arterial pressure; CC, cortex; HP, hippocampus.

of corticosterone in the regulation of glucose and creatine kinase in plasma and monoamine levels (Noradrenaline, Dopamine and 5-HT) in brain was explored. Significant ulceration and adrenal gland hypertrophy was observed along with body weight loss in rats in stressed groups at all time points. Further, 7 day chronic unpredictable stress (CUS) group showed significant increase in plasma corticosterone and creatine kinase levels whereas plasma glucose level was found to be same as in control group. Thereafter, monoamine levels were also found to be altered in different brain regions in 7 day CUS group. In hypothalamus, NA and 5-HT levels were found to be significantly decreased in CUS. In striatum, there was no significant change in the level of NA, however, the DA level was found to be significantly increased, whereas, 5-HT was significantly decreased in CUS. In frontal cortex and hippocampus NA, DA and 5-HT levels were significantly decreased in CUS group. These results suggest that CUS might lead to anxiety and depression.

5 Cancer and Related Areas

- Creation of appropriate platform for interdisciplinary collaborative research;
- Creation of knowledge base in cancer biology;
- Lead identification/optimization to obtain drug-like molecules.

Area Coordinators:
Dr. Dipak Datta
Dr. Arun K Trivedi
Dr. Atul Kumar

5.1 Updates on existing leads

5.1.1 Evaluation of S007-1235 as an anti-leukemia agent

In the previous study CDRI compound S007-1235 was identified as a promising lead as an anti-leukemia compound. Detailed investigation revealed that this compound induces differentiation in leukemia cell-lines as well as blast cells from chronic myelogenous leukemia (CML) patients in accelerated phase. Further work on patient samples revealed that this compound is particularly effective against cells from imatinib resistant patients harbouring multi-drug resistant T315I point mutation in oncogenic fusion protein BCR-ABL. This compound is also found to be active in different cellular models of acute myelogenous leukemia (AML). The detailed mechanistic study is in progress. Attempts at target identification revealed that this compound acts through pertussis toxin-sensitive GPCRs. Confirmation of the target is in progress.

5.1.2 Screening for new leads

Cell Based Screening: Various cancer type cell based assays are being used to screen in-house as well as commercially available compounds for their anti-cancer potential. These caner types include: Breast, Lung, Colon, Ovary, Cervical, Head and Neck, Pancreas, Prostate, Liver, Brain etc. Data were generated by using NCI recommended SRB assay. Further validation and mechanistic studies are ongoing. During the reporting period, 111 plant extracts and 249 pure compounds were tested in primary screening (SRB Assay) followed by secondary screening. 296 compounds found inactive and results of remaining compounds awaited.

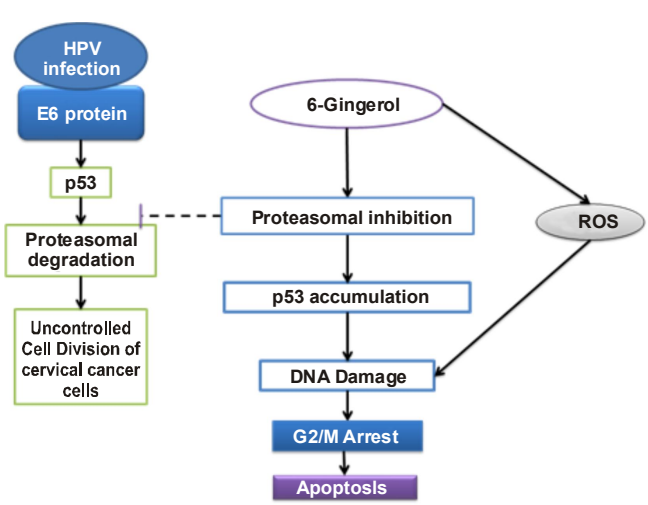
5.1.3 Development of *in-vivo* cancer model

Syngenic *in vivo* screening model for breast cancer has been developed. In addition, *in vivo* model for Lung and Head & Neck cancer are under development.

5.2 Basic research

5.2.1 Identification of (6)-gingerol as a novel proteasomal inhibitor that shows promising anticancer activity

A novel proteasome inhibitory activity of (6)-gingerol was discovered, which leads to restoration of P53 function and is accompanied by p21 up-regulation and G2/M arrest. The effects were also partially associated with ROS generation and DNA damage which leads to p53 nuclear translocation upon activation. (6)-gingerol also showed marked synergism with lower doses of Cisplatin in combination. Insufficient success of Bortezomib against solid cancers and its severe side effects pave way for the discovery of new proteaosme inhibitors with better effectiveness and lower side effects. Inhibition of Proteasome through natural compounds like (6)-gingerol may be considered as effective targeted therapy for cervical cancer by restoring p53 function. It may also help in mitigating toxic effects of standard chemotherapy by reducing their effective concentration when used in combination.



5.2.2 Regulation of E3 Ubiquitin Ligases in pathogenesis of cancer and their potential as therapeutic targets

Major objective of the study was to identify deregulated E3 ubiquitin ligases and their substrates which may have implications in cancer pathogenesis. In line with this, we worked with potential E3 ubiquitin Ligases E6AP and FBW7 and identified their new substrates. It has been recently showed that E6AP targets C/EBPα for ubiquitin mediated proteasome degradation and thereby negatively modulates its functions. Further, in a recent study it has been demonstrated that Fbw7, a component of SCF ubiquitin ligase (SCF^{FBW7}), in cooperation with GSK3β negatively modulates G-CSFR protein steady state levels by promoting its degradation and thus critically regulates G-CSFR signalling. More importantly, the finding that Fbw7 and GSKβ induced degradation G-CSFR is faster than that of G-CSFR-T718 mutant lacking some of consensus CPD motifs may be significant for understanding pathophysiology of SCN/AML patients and developing better therapeutics. Overall, these findings suggest that Fbw7 together with G-SK3β negatively regulates G-CSFR signalling through ubiquitin-proteasome pathway. (***BBA-Mol Cell Res*** *2013*)

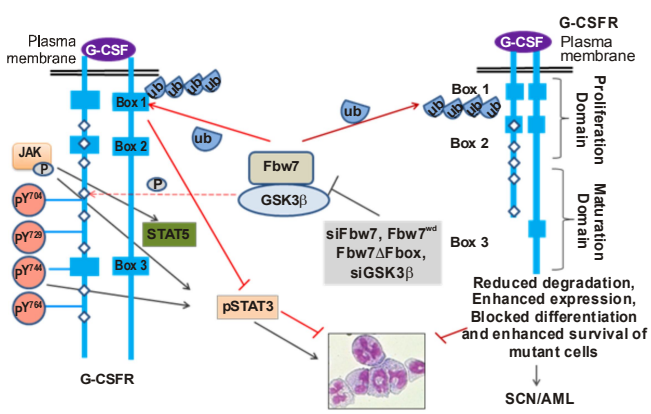


Fig. Concluding hypothetical model that suggests Fbw7 inhibits G-CSFR signaling by targeting G-CSFR for degradation

5.2.3 Cytokine gene polymorphism in breast cancer: Impact of TGF-β1 on breast cancer risk

Cytokines are important regulators of the entire gamut of breast cancer from initiation, invasion and metastasis. There is a possibility that different sets of polymorphic variants of cytokines may influence risk of breast cancer in Indian population. Therefore, possible association of cytokine gene polymorphism with breast cancer risk is being evaluated. In this phase of study, studies on polymorphisms in c.29C>T (Pro10Leu) and c.74G>C (Arg25Pro) polymorphisms in the TGF-β1 gene was conducted. TGF-β1 is a multi-functional cytokine that plays an important role in breast cancer initiation and progression. However, genetic association of TGF-β1 gene polymorphism in Indian breast cancer subject is not clear. It is observed that c.29C>T substitution increased breast cancer risk, irrespective of ethnicity and menopausal status. On the other hand, c.74G>C substitution reduced breast cancer risk significantly in the north Indian group (p=0.0005) and only in the pre-menopausal women. The protective effect of c.74G>C polymorphism may be ethnicity-specific, as no association was seen in south Indian group. The polymorphic status of c.29C>T was comparable among Indo-Europeans, Dravidians, and Tibeto-Burmans. Interestingly, it is found that Tibeto-Burmans lack polymorphism at c.74G>C locus. However, the Brahmins of Nepal (Indo-Europeans) showed polymorphism in 2.08% of alleles. In addition, we also compared peripheral level of TGF-β1 that showed significantly elevated mean TGF-β1 level in the patients in comparison to controls (p<0.001). Therefore c.29C>T polymorphism of TGF-β1 gene has significant association with risk of breast cancer across India while c.74G>C polymorphism show ethnicity-specific association. This study, in addition to identifying genetic risk factors for breast cancer, revealed striking differences in the genetic variations between different ethnic groups in India. (***PLoS One,*** *2013, 8(10):e75979.*)

5.2.4 Novel histone deacetylase inhibitors against human lung cancer *in vitro*

Epigenetic therapies have shown to prove an alternate and most effective therapy for many cancers including lung cancer. In view of this, a search was made for an epigenetic modulatory enzyme, histone deacetylase (HDAC) inhibitors and its mechanistic role against non-small cell lung cancer (NSCLC). A series of 54 compounds were screened for *in vitro* anti-cancer effect in A549 and H1299 human lung cancer cells. Three compounds (4771-K02, 4771-K05 and 4737-K035) were found to be most active in inhibiting HDACs activities in human lung cancer cells at sub-IC_{50} doses. Amongst them, 4771-K02 was found to be more effective than the available HDAC inhibitor, SAHA, tested in NSCLC *in vitro*. K02 was also found to induce key tumor suppressor genes and inhibit tumor promoter gene by modulating DNA methylation and active chromatin modifications. The reactivation of tumor suppressor genes was found to be correlated with the inhibition of histone deacetylase and DNA methyltransferase activities and their expressions. ChIP-analysis showed the enrichment of transcriptional active chromatin markers acetyl-H3 and acetyl H3K9 at $p16^{INK4A}$ and $p21^{CIP1/WAF1}$ promoters in NSCLC, where as chromatin inactive markers such as trimethyl-H3K27 and trimethyl-H3K9 were decreased at these promoters. Further, 4771-K02 treatment significantly disrupted binding of methyl-CpG binding domain (MBD) proteins, MeCP2 and MBD1, to the $p16^{INK4A}$ promoter and increased the binding of MeCP2 at *hTERT* promoters, which might be due to the hypomethylation and hyperacetylation-mediated by K02 in NSCLC. Collectively, findings suggest that 4771-K02, a novel epigenetic modulator, inhibits cellular proliferation and induces cellular apoptosis by altering DNA methylation and chromatin modifications in key tumor suppressor genes as well as tumor promoter gene in NSCLC, which can be further evaluated in pre-clinical models to develop active treatment strategies.

6 Safety and Clinical Development

The Translational Research Team (TRT) was constituted to facilitate the development of CSIR-CDRI drug candidates using in-house infrastructure and expertise, or outsourcing specific activities, and through collaboration with the pharmaceutical industries.

The report includes Pharmaceutical, Pharmacokinetic & Metabolic, Safety Pharmacological, Regulatory Toxicological, and Clinical studies carried out on CDRI molecules:

Translational Research Team

Chairperson:
Dr. Madhu Dikshit

Members:
Dr. Bijoy Kundu
Dr. Ashim Ghatak
Dr. A.K. Dwivedi
Dr. S.K. Singh
Dr. S.K. Sinha
Dr. S.K. Rath
Dr. Amit Misra
Dr. S.R. Kulkarni
Mr. Naseem Ahmed Siddiqui

6.1 Pharmaceutics

6.1.1 Pharmaceutical analysis CDRI lead molecules

Pharmaceutical analysis of 32 different drugs and drug candidates was conducted during the reporting period in respect of purity and stability of synthetic compounds, plant extracts and industrial production batches. The average sample turnover time this year was 11.05 ±1.2 calendar days. Semi-preparative HPLC purification was undertaken for two CSIR-CDRI compounds. New HPLC methods of analysis were developed for S-009-629, S-009-630, S-010-361, S-011-1565, S-011-2101, S-012-550, S-012-551, S-012-552, S-012-1167, and S-012-1399.

6.1.2 Estimation of marker compounds in *C.oil* and its formulation.

A standardized hexane extract of *Curcuma longa* has shown very good anti-stroke activity and is currently under product development at M/s Themis Medicare under the product code 'HM'. A validated HPLC analysis method for estimation of isocurcumenol, ar-turmerone and α,β-turmerone was developed for estimation of these compounds in different batches of HM and capsules containing HM formulation. This newly developed method was capable in separating isocurcumenol from ar-turmerone which used to interfere with the peak of ar-turmerone in earlier reported methods. Forced degradation studies of ar-turmerone in pure form, bulk HM and HM capsule formulation was carried out. The results indicated that the marker compound ar-turmerone was susceptible to oxidative, photolytic and heat conditions.

6.1.3 Engineered nanocarriers for improved delivery of Amphotericin B nanoaggregates

Amphotericin B loaded chitosan grafted copolymer self-assembled nano-aggregates (SAN-AMB) were prepared and examined for uptake by J774 cells and antileishmanial activity. Whereas drug free SAN inhibited parasite growth by only 7.12±4.34%, drug-loaded SAN and Fungizone showed 86.23±3.04%, and 79.62±2.74% inhibition *in vitro*. *In vivo* antileishmanial of SAN was superior (73.2±3.1% parasite inhibition) to the marketed formulation Fungizone (61.3±4.6%) in *Leishmania donovani* infected hamsters. The immunomodulatory potential of these nanoaggregates was evaluated by quantitative mRNA analysis by real-time PCR (RT-PCR) in terms of extra- and intra-cellular leishmanicidal effects with macrophage activation for up regulation of nitric oxide (NO), tumour necrosis factor alpha (TNF-α) and interleukin-12 (IL-12) along with down regulation of transforming growth factor β (TGF-β), IL-10, and IL-4.

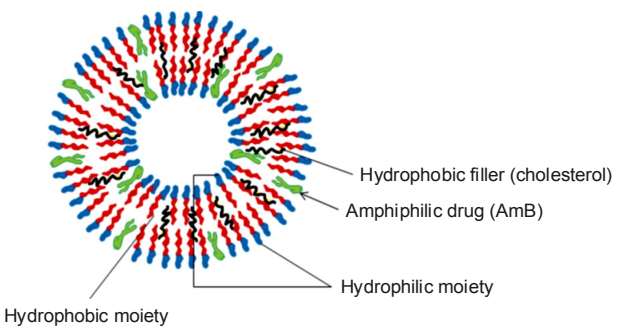
6.1.4 Inhalable particles containing anti-tuberculosis agents

Two pharmaceutical companies from India (M/s. Simpex and M/s. Biopore) and one from Russia (M/s.

Pharmasyntez) are currently evaluating the data on preparation, characterisation, storage stability, preclinical safety and preclinical efficacy of this formulation with a view to commercialise the product.

6.1.5 Amphotericin B delivery system for management of Leishmaniasis

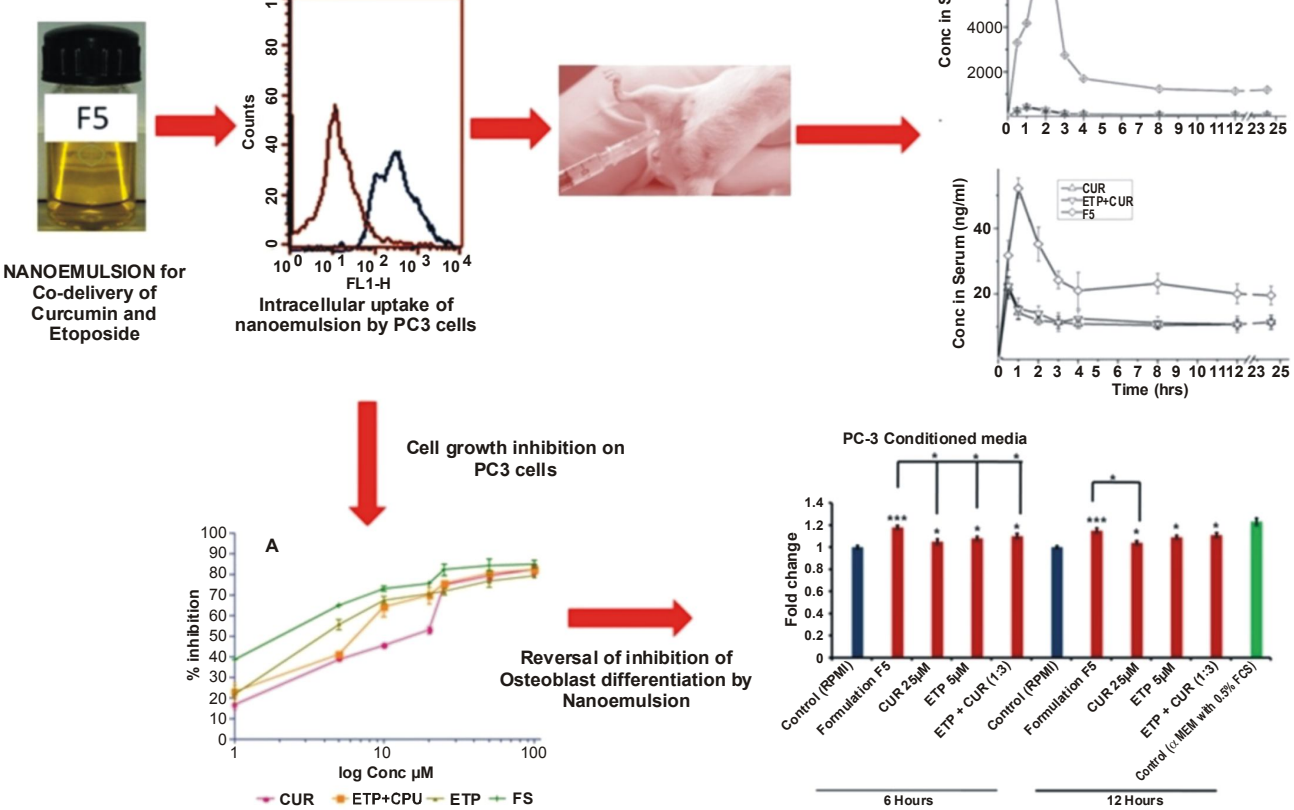
A glycol-chitosan-stearic acid copolymer was synthesised which spontaneously self-assembled into nano-structures and was termed as 'lipo-polymerosomes' (L-Psomes). L-Psomes containing Amphotericin B (AmB) were formulated and showed comparatively sustained AmB compared to Fungizone and AmBisome, likely because of AmB being retained in a monomeric form within L-Psome, as evidenced by UV-visible spectroscopy. Experimental results of *in vitro* (macrophage amastigote system) and *in vivo* (*Leishmania donovani* infected hamsters) studies illustrated the efficacy of AmB-L-Psome to augment effective anti-leishmanial properties supported by up-regulation of Th-1 cytokines (TNF-α, IL-12 and IFN-γ) and inducible nitric oxide synthase, and down-regulation of Th-2 cytokines (TGF-β, IL-10 and IL-4), measured by quantitative mRNA analysis by Real Time PCR (RT-PCR).



Drug encapsulated self assembled vesicle

6.1.6 Nanoemulsion based concomitant delivery of Curcumin and Etoposide: Impact on cross talk between prostate cancer cells and osteoblast during metastasis

An attempt has been made to use curcumin (CUR) in combination with Etoposide (ETP) by encapsulating in nanoemulsion, as two tier approach i.e., to evaluate improvement in efficacy of ETP on prostate cancer cells (PC3 & DU145) and to assess their effect on cross-talk between osteoblast and tumor cells leading to metastatic cascade in bones. The percent inhibition in case of ETP and ETP: CUR



(1:3 w/w) was 55.92±1.2 and 41.13±2.4 % (at 5µM) respectively when tested in PC3 cells. DU-145 seemed to be less responsive in comparison to PC3 cells both in respect of ETP and their mixture (ETP+CUR). Data shows that CUR and ETP after encapsulation in nanoemulsion (F5) were effectively delivered intracellularly in PC3 cells and the cytotoxicity of F5 was enhanced by 1.5 fold as compared to ETP + CUR at 5µM concentration. It has also been observed that mice calvarial osteoblasts cultured and incubated with PC-3 and DU-145 cells conditioned media induces inhibition of osteoblast differentiation event. While this inhibition was significantly reversed by F5 at 5ìM concentration over other treated groups. The pharmacokinetic profile of both ETP and CUR was significantly improved when administered in nanoemulsion.

6.1.7 Improving oral bioavailability and enhancing antimalarial activity of Arteether

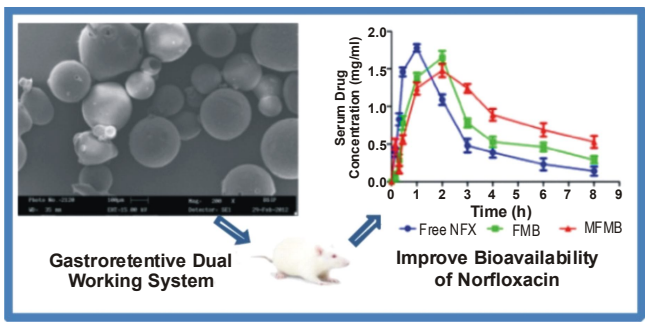
A lipid-based self micro emulsifying drug delivery system (SMEDDS) was developed to improve the bioavailability of the poorly water-soluble drug; arteether (ART) for oral delivery. No toxicity against J774A.1 cells was observed with blank (drug-free) SMEDDS. Repeated dosing with SMEDDS did not induce toxicity in the peripheral organs or in neuronal section of the brain of mice. Pharmacokinetics of ART following administration of SMEDDS to rats at a dose level of 25mg/kg showed that the initial plasma concentrations of ART in SMEDDS were significantly higher than those of ART in GNO solution or ART in aqueous suspension. A daily dose of 25 mg/kg for 5 days in *Plasmodium yoelii nigeriensis* in mice led to complete cure for >28 days in 100% of treated mice, which was significantly higher than that of an oily solution of ART given orally at the same dose.

6.1.8 Development and characterization of stable Paclitaxel Nanocrystals to enhance the oral absorption

Paclitaxel Nanocrystals (NCs) were developed using high-pressure homogenisation. *In-vitro* cytotoxicity and cell cycle arrest studies on MCF7 and MDA-MB cell lines revealed that NCs were more potent and efficacious than plain drug. Pharmacokinetic studies demonstrated that NCs exhibit significant increase in AUC_{0-t}, C_{max}, MRT and decrease in T_{max}, compared to unformulated paclitaxel.

6.1.9 Gastroretentive, dual-function system to improve the bioavailability of norfloxacin

Floating microballoons were prepared by non-aqueous emulsification-solvent evaporation employing hydroxypropyl methylcellulose and ethylcellulose. Microballoons were coated with chitosan by ionotropic gelation to impart mucoadhesive characteristic. Scanning



electron microscopy revealed their spherical shape and smooth, low-porosity surface. The optimized microballoons showed good *in vitro* buoyancy and high drug entrapment efficiency. Microballoons exhibited a zero-order drug release in simulated gastric fluid. Chitosan coating imparted excellent mucoadhesion in rat gut wall and results were also supported by mucin glycoprotein assay. Chitosan-coated microballoons were able to achieve higher mean plasma concentrations of norfloxacin compared to uncoated microballoons and pure drug in rats.

6.1.10 Chitosan-modified polymeric nanocarriers of docetaxel for chemotherapy of breast cancer

Whether coating of docetaxel-loaded particles (<250 nm) with chitosan (CS) affects the anticancer efficacy and uptake by MCF-7 tumor cells was investigated. Negatively charged poly lactic-co-glycolic acid (PLGA) nanoparticles (-18.4 ± 2.57 mV, 162 ± 6.34 nm), poorly endocytosed by the MCF-7 cells, were subjected to surface modification with CS. Significant increase (>5-fold) in intracellular uptake as well as antitumor efficacy of modified nanoparticles suggests the possibility of saccharide marker-mediated tumor targeting along with synergism via proapoptotic effect of CS. Additionally, high positivity of optimized tailored nanocarrier (+23.3 ± 2.02 mV, 242.8 ± 9.42 nm) may have accounted for the increased adsorption-mediated endocytosis, preferably toward tumor cells with negative potential. The particles showed high stability in the presence of human blood which is in compliance with mucoadhesive property of CS. Preliminary *in vivo* safety/toxicity studies indicate that the nanoparticles are safe at the dose level of 20 mg/kg.

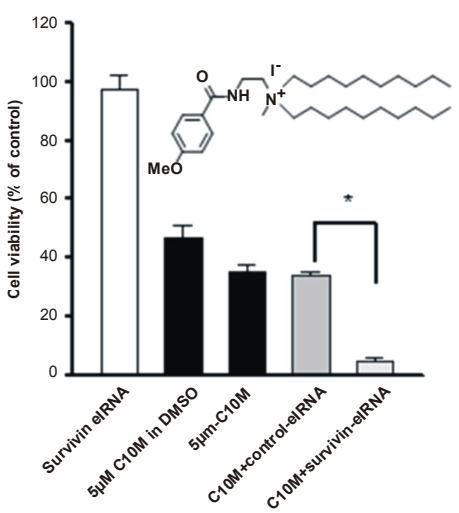
6.1.11 Novel polymeric micelles for chemotherapy of visceral leishmaniasis

Chitosan coated polymeric micelles containing amphotericin B (AmB) were developed for the treatment of visceral leishmaniasis (VL). Spherical shape and surface morphology of micelles were verified through transmission electron microscopy. Coating of chitosan over the micelles was confirmed by increased size after coating in comparison to uncoated micelles and attainment of high zeta potential in positive territory (+ 41.47±4.61 mV) leading to stabilization of the formulation. The optimized formulation showed high

storage stability during a period of 6 months. Hemolysis and cytotoxicity towards J774A.1 cells suggest that the formulation is biocompatible. A comparative study revealed that these micelles exhibited higher efficacy *in vitro* and *in vivo* in comparison to marketed formulations.

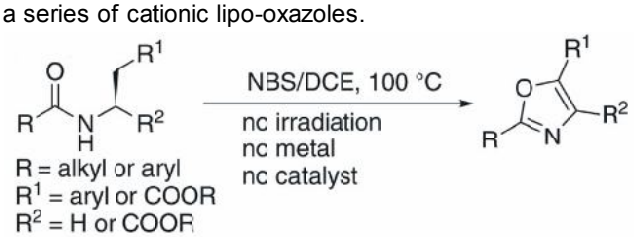
6.1.12 Anticancer siRNA delivery by new anticancer molecules: A novel combination strategy for cancer cell killing

It was hypothesized that chemical conjugation of cationic lipid and anisamide would yield a new sigma receptor trageted anti-cancer molecule with siRNA delivery capability. A series of cationic lipo-benzamides were synthesized and screened for *in vitro* anticancer activities as well as capability to deliver siRNA against survivin. The lipid chain length was observed to be crucial for anti-cancer activity. To our knowledge, this is the first report of a dual-



purpose molecule with intrinsic anticancer activity and suitability for use in siRNA delivery. It is now intended to test such compounds for activity against bacterial infections, breast cancer, and pancreatic cancer, and even diabetes.

A new method for synthesis of di- and tri-substituted oxazoles has been developed by NBS-mediated oxidative cyclisation of *N*-acyl amino acid derivatives and synthesized a series of cationic lipo-oxazoles.



6.1.13 Cationic lipid conjugates of glutamate urea: anticancer activity and siRNA delivery capability

A series of ureido dipeptide compounds were developed by conjugating cationic lipid of medium alkyl chains with glutamate ureas. These compounds target prostate membrane specific antigen (PMSA) and possess siRNA delivery capability. A series of PSMA targeted cationic lipids such as [2-(3-{5-Carboxy-5-(1,3-dicarboxy-propyl)-ureido)-ethyl]-dialkyl-methylammonium chlorides starting from carbon chain length seven to fourteen were synthesized and their anti-proliferative activities were evaluated against LnCap (PSMA +ve) and PC-3 (PSMA –ve) cells. Some of the derivatives showed promising anti-proliferative activity and were also capable of delivering siRNA.

6.2 Pharmacokinetics & Metabolism

6.2.1 Studies on CDRI lead molecules

6.2.1.1 Method development and Validation of CDRI candidate S006-830 (Anti-tubercular agent) and its application to Pharmacokinetic Studies.

A UFLC assay for quantification of S006-830 in SD Rat plasma:

The developed and validated UFLC assay for the quantification of S006-830 in SD rat plasma was sensitive, selective, accurate and precise over the range 15.6-2000 ng/ml. The recovery of S006-830 was found more than 90% at concentrations of 15.6, 500 and 2000 ng/ml. The Compound was found to be stable during Freeze-Thaw cycle, Bench top, Auto sampler stability and Long term conditions. This method was applied for the quantification of S006-830 in biological matrix and plasma protein binding studies.

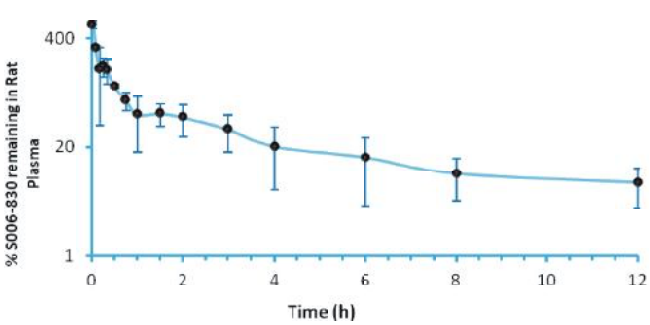


Fig.: Percent decline of S006-830 during charcoal adsorption assay in rat plasma

B *In-vitro* plasma protein binding of S006-830 in SD Rat plasma:

Protein binding study (charcoal adsorption method) samples were analyzed by validated assay for **S006-830** at 1ìg/ml (N=3). The assay is based on charcoal adsorption kinetics and operates under non-equilibrium conditions. The study was performed to evaluate the plasma protein binding for S006-830. Plasma protein binding was found to be 58.63 ± 3.41%. The percent decline of S006-830 during the charcoal adsorption assay is shown in Fig.

C Pharmacokinetics and dose proportionality studies of S006-830

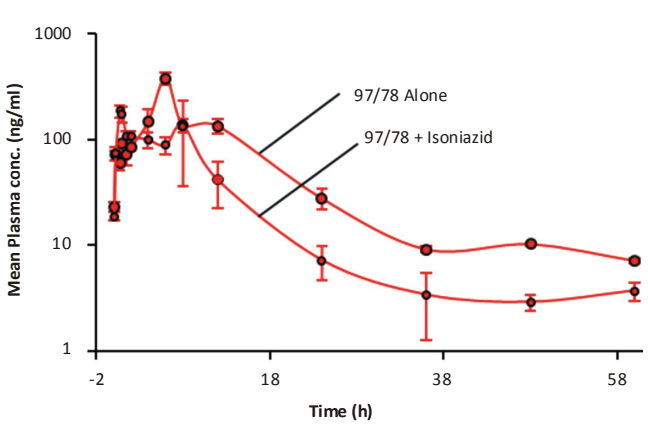
Compound S006-830 was found to exhibit fast absorption and its elimination half-lives at 100, 50 and 25 mg/kg were found to be 9.41 ± 1.68 h, 9.35 ± 2.64 h and 9.90 ± 1.60 h respectively after single oral dose administration. The MRT values were found to be 11.21 ± 1.02 h, 18.92 ± 0.77 h and 15.31± 4.08h at 100, 50 & 25 mg/kg respectively. These MRT values predicted that S006-830 was retained in the system for longer periods, which may be attributed to slow elimination from the body. The volume of distribution and clearance were found to be 229.82 ± 52.28 L and 1.87 ± 0.94 L/h/Kg respectively at 100 mg/kg dose, while at 50 and 25 mg/kg dose, the values for volume of distribution was 116.93 ± 22.03 L and 264.92± 85.06 L respectively and for clearance values were 1.42 ± 0.34 L/h/Kg and 2.04± 0.66L/h/Kg respectively. After oral dosing of S006-830 at 100, 50 and 25 mg/kg, it appeared that the absorption was fast as plasma concentration peaked at < 1 hr post dose. Oral bioavailability at 100, 50 and 25 mg/kg were found to be 51.35±11.4 %, 45.13±9.4 % and 49.18±12.6 % respectively.

Compound S006-830 exhibited fast absorption and its elimination half-life was found to be 13.53 ± 2.15 h after intravenous dose administration. The MRT value was found to be 22.51 ± 7.65 h which indicated that S006-830 is retained in the system for longer periods due to slow elimination from the body. The volume of distribution and clearance was found to be 172.79 ± 53.84 L and 1.57 ± 0.48 L/h/Kg respectively. The initial concentration was found to be 1.4 ± 0.4 µg/ml.

6.2.1.2 Preclinical pharmacokinetic Drug-Drug interaction studies of CDRI 97/78 (Anti-malarial) with anti-tubercular drugs

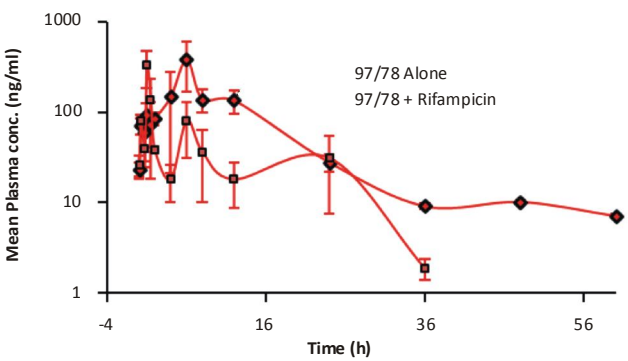
A 97/78 co-administration with Isoniazid

Co-administration of Isoniazid (70mg/kg) altered the pharmacokinetics of 97/78 significantly. A statistically significant difference was found in Tmax value in terms of P= 0.05. A decrease of about 30% was observed in the systemic exposure of 97/78 upon Isoniazid co-administration. Plasma conc. –time profile after Isonoazid co-administration has been shown in fig.



B 97/78 co-administration with Rifampicin

Co-administration of Rifampicin (70mg/kg) profoundly influenced the pharmacokinetics of 97/78. A statistically significant difference was found in Tmax value in terms of P= 0.05. A decrease of about 70% was observed in the Relative bioavailability of 97/78, when co-administered with Rifampicin. This explicitly indicated that systemic exposure of 97/78 was significantly reduced upon concurrent administration of Rifampicin, necessitating the requirement for dose adjustment. Plasma conc. –time profile after Rifampicin co-administration.



6.2.1.3 Tissues uptake study of anti-tuberculosis compounds S009-1588 in rats

The pharmacokinetics and tissues (blood, liver, lung and spleen) uptake of S009-1588 was studied after 10 mg/kg oral dose in male Sprague Dawley rats. The findings indicate that the higher amount of the compound reaches the spleen than in lung and liver. Lowest amount of drug was disposed in liver indicating that the compound was rapidly cleared from the liver. The compound was stable in SGF. Due to appearance of a creamy precipitate, stability in SIF could not be determined.

6.2.1.4 Pharmacokinetics Studies

A Anti-hyperlipidemic compounds S012-1650 and S012-1651 in rats

The oral pharmacokinetic study of S012-1650 and S012-1651 in the male Charles Foster rats revealed that the compounds were quickly absorbed, distributed and slowly eliminated from the serum with an elimination half-life of 16 h. Both compounds exhibited multiple peak phenomenon, high extra vascular distribution and extra hepatic metabolism. Apart from comparable elimination half-life ($t_{½}$), S012-1650 showed better pharmacokinetic profile than S012-1651.

B Anti-hyperlipidemic compound S010-1548 in rats

The pharmacokinetic study of S010-1548 after 20 mg/

kg oral dose in the male Sprague Dawley rats revealed that the compound was quickly absorbed, distributed (volume of distribution, 1.12 L/kg) and eliminated (elimination half-life, 1.61 h). Its low clearance (0.66 L/h/kg) indicates hepatic elimination.

C Preliminary pharmacokinetics of Anti-hyperlipidemic compound S010-1372

In vitro pharmacokinetic study of S010-1372 revealed that it was stable in both simulated gastric fluid (SGF) and simulated intestinal fluid (SIF) whereas, metabolic stability using male Sprague Dawley rat's liver microsomes showed that 64.5% of the compound was metabolized at the end of 1 h.

D Anti-leishmanial compound S012-0135 in rat

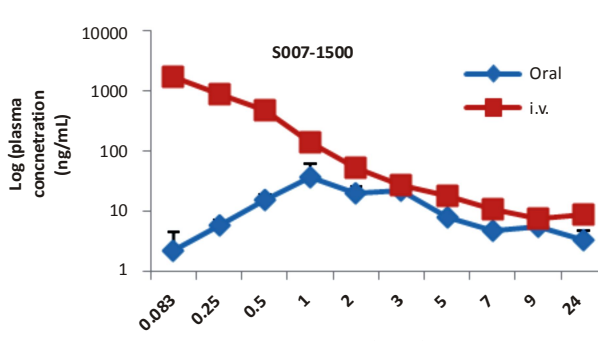
The pharmacokinetic study of S012-0135 after 10 mg/kg oral dose in the male Sprague Dawley rats revealed that the compound was quantified up to 8 h with low systemic levels indicating poor absorption.

E Spermicidal compound S010-1255

An HPLC-UV and LC-MS/MS assay methods for estimation of S010-1255 were developed. The unchanged compound was not monitored/extractable from the serum/plasma or solutions containing proteins. *In vitro* studies revealed that compound was unstable in serum, plasma, BSA and simulated vaginal fluid containing mucin.

F Oral Pharmacokinetic profile of Anti-osteoporosis compound S007-1500 and its enantiomers

Oral formulation for all the three NCEs (S007-1500, S008-1482 and S008-1483) was prepared by suspending in 0.25% sodium CMC and was administered orally at a dose of 20 mg/kg. For intravenous administration, a solution of each NCE was prepared using 20% DMF, 10% ethanol, 30% PEG400 and 40% triple distilled water. Intravenous formulation was administered through tail vein at a dose of 5 mg/kg. The plasma concentration versus time profile of S007-1500, S008-1482 and S008-1483 (Fig.) was subjected to non-compartmental analysis by WinNonLin 5.1. The mean oral bio availabilities of S007-1500, S008-1482 and S008-1483 were found to be 5.13%, 3.10% and 7.23% respectively.



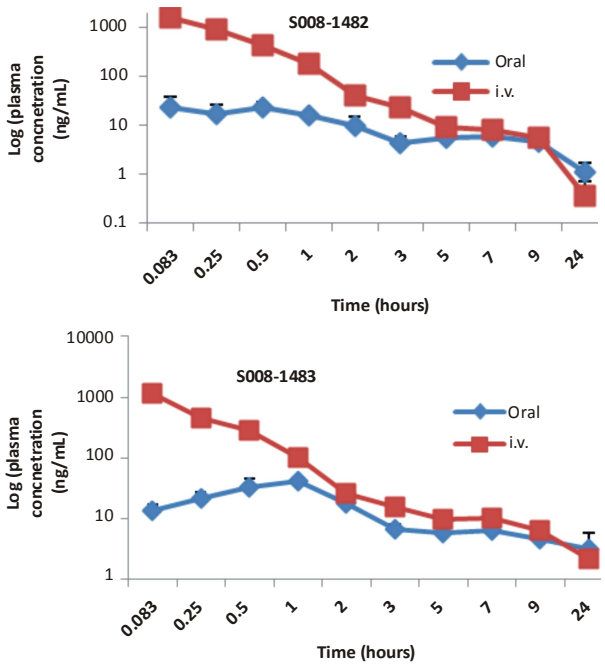


Fig. Plasma concentration-time profile of S007-1500, S008-1482 and S008-1483 upon i.v. and oral administration. Data represented as mean±S.D. (n=3)

1483 was found to be more bioavailable than 1482 and 1500 both. The maximum plasma concentration reached, $C_{max,}$ was similar for all the three NCEs and was reached at 1 hour for 1500 and 1483 and at 0.22 hour for 1482.

G Preliminary *in vivo* pharmacokinetics investigations of S013-1960 (anti-HIV and spermicidal) in New Zealand rabbit

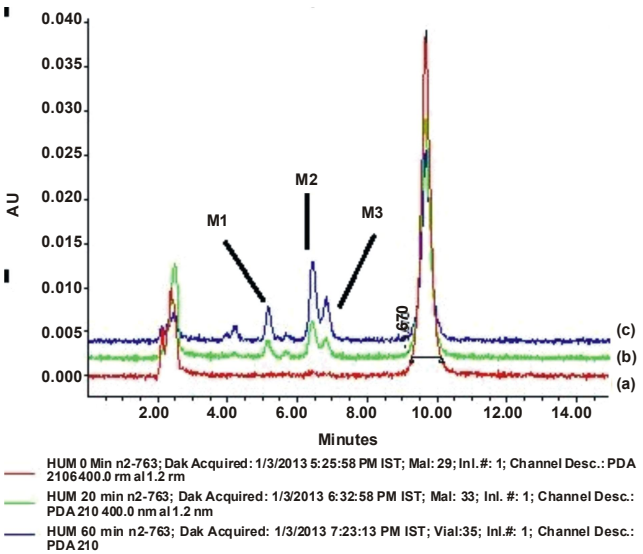
Bioanalytical method for S013-1960 was developed and validated. Accucore C18 (150×4.6 mm, 5 ìm) column was used for separation of S013-1960 and phenacetin (IS). The S013-1960 was stable in simulated vaginal fluid. After vaginal administration S013-1960 was very less in systemic circulation might be suggestive of minimal systemic adverse effects or minimal toxic effect of S013-1960.

H CYP metabolic profiling of 80/574 (Anti-hyperlipidemic agent)

80/574 is a novel FXR antagonist which was in clinical development for the treatment of hyperlipidaemia. CYP reaction phenotyping assay was performed using human recombinant enzymes (Baculosomes) to screen CYP enzymes involved in the metabolism. 80/574 was metabolised in the presence of specific CYP isoforms and the order of metabolism was found to be CYP 2C19 > CYP 3A4 >CYP 2E1 > CYP 1A2> CYP 2D6.

I *In vitro* metabolism studies of S005-0763 (Anti-lesmanial agent) in hamster liver microsomes

In vitro metabolism studies of S005-0763 in hamster



liver microscomes were studied to access *in vitro* hepatic intrinsic clearance. The calculated *in vitro* half-life for compound S005-0763 was 60.5 ± 2.7 min and derived intrinsic clearance (CLi) was 14.3 µL/min*mg of microsomal protein in pooled hamster liver microsomes. The calculated *in vitro* half-life for compound S005-0763 was 60.5 ± 2.7 min and derived intrinsic clearance (CLi) was 14.3 µL/min*mg of microsomal protein in pooled hamster liver microsomes. Three metabolites were also detected. (***Bioorganic & Medicinal Chemistry Letters***, Volume 23, 3979–3982, 2013)

J Pharmacokinetic studies of S011-1870 (Anti-hyperlipidemic agent) and its carboxy acid metabolite

The pharmacokinetic studies with S011-1870 were performed in male Charles Foster rats. S011-1870 at 100 mg/kg oral administration was rapidly and extensively metabolized to a carboxy acid metabolite. The parent drug remains undetectable in plasma but its carboxy acid metabolite is detectable in plasma. Quantification of carboxylic acid metabolite would be an indirect approach for studying the pharmacokinetics of S011-1870. The plasma elimination half-life ($t_{½}$) were found to be 8.87 ± 1.85 hr for carboxy acid metabolite and detected in plasma up to 48 h, indicating its prolonged exposure.

K *In vitro* and *in vivo* Pharmacokinetic of S005-29 (Anti-lesmanial agent) in Hamster

S005-29 was found stable in gastric fluids but it shows 30% degradation in the intestinal fluids in 2 hours. In- vitro half-life of S005-29 in hamster liver microsomes was 37.78 ± 5.38 min. Compound shows rapid oral absorption in hamster. The compound shows high Vd/F indicating peripheral distribution. The parameter Tmax and Cmax at 100 mg/kg oral administration were 0.625 ± 0.0 h and 1.47 ± 0.11 µg/mL. Although absorption was high but low systemic levels was due to high peripheral distribution as indicated by Vd/F data. The longer plasma elimination half-life found 7.40 ± 0.99 h.

L Pharmacokinetic and oral bioavailability studies of S009-2042 (Anti-diabetic) in SD rat

Bioanalytical LC-MS/MS method was developed for S009-2042. The method was accurate and precise in linearity range 1-1000 ng/mL. Oral and intravenous pharmacokinetics in rats was carried out at 3 mg/kg and 30 mg/kg respectively. Oral bioavailability was found to be ~ 10.29% at 30 mg/kg oral dosing. Compound was detected in the plasma up to 24 hr after oral and intravenous dosing.

M Screening of anti-diabetic peptides and their PK studies

Two pancreastatin (PST) variants were showed anti-PST activity and promoting insulin function in HepG2 cells. It was tried first with the PST variants alone and as expected the variants with deleted carboxy terminals had better anti-PST activity. Accordingly the same results came when the PST variants were treated along with insulin and PST. The variants with deleted aa at carboxy ends, mainly PSTV7 and V8 showed anti-PST action. PST V2 of the amino terminal cleaved also showed anti-PST action. Thus variant number 2, 7 & 8 are working better and further *in vivo* works has to be carried out. More experiments in 3T3L1 cells are in plan before starting the *in vivo* treatment.

N PK studies of antithrombotic lead candidate S002-333 and isomers S004-1032 & S007-1558

PAMPA permeability of the test drugs was conducted at two different pH (4.0 and 7.0) to cover the entire pH range of intestine. All the three lead candidates show low permeability characteristic when compared with high and low permeability markers except S005-1558 at pH-4 is showing high permeability, which means it has high gastric permeability and low intestinal permeability. The reason behind a low permeability of test candidates may be high proportion of ionized form of the drug present near iso-electric point. Racemate S002-333 and enantiomers S004-1032 and S007-1558 are sufficiently stable in simulated gastric fluid (SGF) and simulated intestinal fluid (SIF). The values of intrinsic clearance for S002-333 and S004-1032 with cDNA-expressed P450s followed order: 2C19 > 3A4 > 2D6 > 2B6 > 2C9 while S007-1558 followed 2C19 > 3A4 > 2D6 > 2C9 > 2B6 (Table 3). The intrinsic clearance of S002-333, S004-1032 and S007-1558 with pooled HLM were determined as 47.31± 1.19, 50.90 ± 4.56 and 64.46 ± 7.8 µL/mg/min respectively. After normalizing the CLint(P450)/CLint(HLM) ratio with RAF[CL] values, CYP2C19 showed maximum percentage contribution in S002-333 and S007-1558 metabolism while CYP3A4 contributed greater in S004-1032

Table 3. Percentage contribution of cytochrome P450 enzymes in overall human liver microsomal metabolism of S002-333 and enantiomers.

CYP isoform	$RAF_{[CL]}$ pmol/mg	$CL_{int(P450)}$ (µL/min/pmol)[a] S002-333 (Racemate)	S004-1032 (R-enantiomer)	S007-1558 (S-enantiomer)	% Contribution S002-333 (Racemate)	S004-1032 (R-enantiomer)	S007-1558 (S-enantiomer)
CYP2B6	3.45	0.08 ± 0.05 (0.3)[b]	0.09 ± 0.02 (0.3)	0.15 ± 0.12 (0.5)	0.58	0.61	0.80
CYP2C9	36.55	0.03 ± 0.01 (1.1)	0.07 ± 0.04 (2.6)	0.16 ± 0.04 (5.8)	2.32	5.03	9.07
CYP2C19	3.39	4.03 ± 0.08 (13.7)	3.8 ± 0.11 (12.9)	7.90 ± 0.17 (26.8)	28.88	25.31	41.55
CYP2D6	5.05	0.15 ± 0.01 (0.8)	0.12 ± 0.06 (0.6)	0.98 ± 0.23 (4.9)	1.60	1.19	7.68
CYP3A4	8.10	1.49 ± 0.12 (12.1)	1.96 ± 0.10 (15.9)	1.45 ± 0.18 (11.7)	25.51	31.19	18.22
Sum % Contribution					58.89	63.33	77.32

[a]$CL_{int(P450)}$ for test compounds were calculated through substrate depletion approach; *In vitro* intrinsic clearance for S002-333, S004-1032 and S007-1558 in pooled HLM was 47.31 ± 1.19, 50.90 ± 4.56, 64.46 ± 7.8 µL/mg/min.
[b]Values in brackets denote normalized rates ($RAF_{[CL]} \times CL_{int(P450)}$). Values are from experiments, performed in triplicate ($n = 3$).

metabolism, followed by 2C9 > 2D6 > 2B6 for all the three lead candidates. The sum of percent contribution of P450 isoforms is 58.89, 63.33 and 77.32% for S002-333, S004-1032 and S007-1558 respectively as shown in Table 3 (***Xenobiotica***. 2013 Aug 30.).

6.2.2 Studies on Natural Products

6.2.2.1 Protein binding Studies of Isoformononetin

The plasma protein binding of Isoformononetin (IFN) was estimated using the ultra-filtration method. Briefly, freshly collected female rat plasma was spiked with IFN to obtain the plasma concentration of 1000 and 2000 ng/mL. The spiked plasma was allowed to equilibrate for 15 min before the start of the study. Samples in triplicate at each concentration level (1 mL) were placed in centrifree devices and centrifuged at 2000g for 15 min at 370C to collect approximately 200 µL of the original volume of plasma as ultra-filtrate. The concentrations of *in-vitro* plasma samples and their respective ultrafiltrates were analyzed by LC–MS/MS. The plasma protein binding was found to be 91.74±0.14 and 91.2±0.84 at 1000 and 2000 ng/mL, respectively.

6.2.2.2 Determination of CYP inhibitory potential of Biochanin A and Formononetin using human liver microsomes

The inhibitory effects of Biochanin A (BCA) and Formononetin (FMN) on the activities of five different human CYP isoforms were studied with human liver microsomes (HLM). The reactions monitored were CYP1A2-catalyzed phenacetin O-deethylation, CYP2E1-catalyzed chlorzoxazone 6-hydroxylation, CYP2C11-catalyzed diclofenac 4-hydroxylation, CYP3A-catalyzed testosterone 6β-hydroxylation and CYP2D4-catalyzed dextromethorphan O-demethylation. Incubation mixture that consisted of the substrate probe, HLMs, and phosphate reaction buffer (pH 7.4) was prewarmed for 10 min at 37°C without (control) and with multiple concentrations of tested compounds. The compounds were dissolved in acetonitrile and diluted with the same solvent to the required concentrations. The reaction was initiated by addition of an NADPH (1.2mM) (final incubation volume, 500 µl). The incubations were conducted in duplicate. The reaction was allowed to proceed for the time specific for each isoform and was then terminated by placing the tubes on ice and immediately adding the appropriate reagent. The samples were then vortex mixed, and then centrifuged at 4,500 rpm for 10 min. Supernatant (50 µL) was directly injected into an HPLC system for quantification of specific metabolite formed. The concentration range selected for each compound was 0.1-100 µM.

6.2.2.3 Bioanalytical LC-MS/MS assay and bioavailability estimation of rohitukine (Anti-hyperlipidemic agent) in rat

A sensitive, selective and rapid liquid chromatography–tandem mass spectrometry (LC-MS/MS) was developed for the quanti?cation of rohitukine in rat plasma. Sample clean-up involved solid phase extraction of analyte and internal standard (phenacetin) from 100 µl plasma. The parent→product ion transitions (MRM) for analyte and IS were 306.1 →245.1 m/z and 180.1→138.1 m/z respectively. The method was applicable for oral and intravenous pharmacokinetic estimation of rohitukine. The oral bioavailability was ~26 %.

6.2.2.4 Pharmacokinetic studies, tissue distribution and plasma protein binding evaluation of rohitukine in hamster

Rohitukine (RH) is one of the major active components of *Dysoxylum binectariferum*, is a chromone alkaloid, which exhibit various pharmacological activities such as anti-cancer, anti-inflammatory, immune-modulator, anti-leishmanial, anti ulcer and anti-fertility. Oral pharmacokinetic at 50 mg/kg in hamster exhibit rapidly absorption and distribution to various tissues, among which the highest concentration was observed in the liver. The pharmacokinetics parameters estimated for clearance, volume of distribution and elimination half life was 19.75 ± 13.64L/h/kg, 4.85 ± 1.09 L/kg, 2.62 ± 1.34 hr respectively. RH shows moderate protein binding around ~60%.

6.2.2.5 DMPK studies of E-and Z-guggulsterone

A sensitive, selective, and rapid high performance liquid chromatography–tandem mass spectrometry (LC–MS/MS) was developed for the quantication of E-and Z-guggulsterone simultaneously in rat plasma for a concentration range of 0.395 – 200 ng/ml. E- and Z- isomer of GS were highly bound (>95%) in rat, monkey and human plasma and showed that both human serum albumin) (72-78%) and α-1 -acid glycoprotein contribute to this binding. The rank order of the species with regard to the CLint of guggulsterone was rat > monkey > human. Recombinant CYP together with CYP450 selective inhibitors were used to evaluate the relative contribution of different P450s and revealed major involvement of CYP 3A4, CYP2D6, CYP2C19, and CYP2C8.

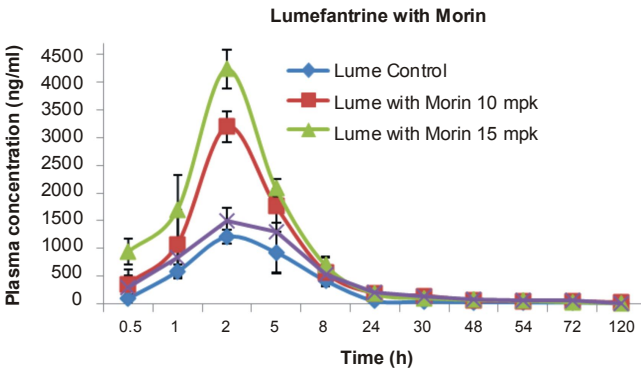
6.2.2.6 PK studies of Ashwagandha (Anti-stroke) [NMITLI-118R(T+)]

Analytical and Bioanalytical method was developed using HPLC and validated as per US-FDA guideline for the marker compound Withanolide-A. No interfering peak was found at the retention time (Rt) of the analyte. The Rt of carbamazepine (IS) and withanolide-A were 4.94 min and 8.48 min respectively. LOD was found to be 0.02 µg/ml and LLOQ was found to be 0.08 µg/ml. Liquid-liquid extraction was followed using tertiary methyl butyl ether (TBME) as extraction solvent. Around 70-80% recovery was obtained at three concentration levels. Analytical and Bioanalytical method development and validation for extract and marker compound using LC-MS/MS have been initiated.

6.2.3 Studies on molecules other than CDRI

6.2.3.1 Investigation of pharmacokinetic interaction of morin on lumefantrine

To investigate the herb-drug interaction between morin and lumefantrine, morin at 3 different doses (5, 10 and 15mg/kg) was administered 15 min prior to administration of lumefantrine (N=4 for each group). Lumefantrine was administered orally at a dose of 10 mg/kg. Lumefantrine was administered intravenously at a dose of 0.5mg/kg with and with-out oral morin at a dose of 15 mg/kg in another two groups. The plasma concentration-Time profile of oral lumefantrine was as shown in figure. The exposure of the oral lumefantrine upon co-administration of morin significantly increased, while its i.v. profile remained unchanged. The C_{max} increased 1.4, 2.6 and 3.4 folds while its AUC_{0-8} increased 1.4, 1.72 and 1.98 folds respectively with co-administration of 5, 10 and 15 mg/kg of morin, respectively. The relative bioavailability increased 1.4, 1.74 and 2.0 folds respectively with 5, 10 and 15 mg/kg morin respectively. This data shows that lumefantrine is more prone to have herb-drug interactions when administered with morin.



6.3 Safety Pharmacology

hERG channel protein binding assay was performed with NMITLI-118R (T+) and CPL-2009-0031. NMITLI-118R (T+) has no hERG liability at the concentration less than 30 µg/ml.

6.4 Regulatory Toxicity

6.4.1 Toxicity studies of candidate drugs

6.4.1.1 Dose Range finding study of Compound S007-867

Ten day dose range finding (DRF) study on S007-867, an ant-thrombotic synthetic molecule was performed in CF rats at three doses (160mg, 320mg, 640mg, po) and the highest dose found to be safe.

6.4.1.2 Genotoxicity Studies S006-830: Salmonella reverse mutation assay (AMES)

Five concentrations of S006-830 base (10µg, 33µg, 100µg, 333µg and 1000µg/plate) were tested using tester strains of Salmonella, TA97a, TA 98, TA 100, TA 102. All the concentrations were found to be safe and non mutagenic

6.4.2 Toxicity of Compound under NMITLI Project

NMITLI-118R(T+)

Single dose toxicity study in Swiss mice by oral route was performed using three doses (500mg,1g and 2 g/kg bw). Animals were observed for 14 days and no toxicity was found in the tested doses.

Genotoxicity Studies of NMITLI-118 R(T+)

AMES Assay: Five concentrations (10µg, 33µg, 100µg, 333µg and 1000µg/plate) were tested in plate incorporation assay using tester strains of Salmonella, TA97a, TA 98, TA 100, TA 102. All the doses were found to be safe and non mutagenic.

***In vivo* Micro nucleus test:** Micro nucleus *in vivo* test was done using Swiss mice at three doses (500, 1000 and 1500mg/kg). The test sample was found to be non-clastogenic /non- genotoxic at all doses.

6.5 Clinical Trial Studies

6.5.1 CDR-134 D123 (Anti-diabetic extract)

The Quality Monograph of the Plant Xylocarpus granatum was prepared as per Ayurvedic Pharmacopia of India specifications including TLC and HPLC Fingerprinting using Phyto-chemical Reference Standards (PRS) and submitted to DGCCRAS. Subsequently as per the DGCCRAS further requirements an Additional Quality Monograph of the plant *Xylocarpus granatum* and detailed Quality Monograph on the Epicarp of the plant *Xylocarpus granatum* were again compiled and submitted incorporating all freshly generated data of Epicarp. The matter is awaiting DGCCRAS New Expert committee reorganization and its clearance for inclusion in the Extra Ayurvedic Pharmacopia. The Clinical trial data of CDR-134 D123 was compiled and submitted to AYUSH and has been referred to Extra Ayurvedic Pharmacopia Committee. The demonstration of methodology to TVC on processing of fresh fruit collections is going on.

6.5.2 CDR-134 F194 (Anti-hyperglycaemic fraction)

The Permission for Phase-I Clinical Trial studies of CDR134 F194 was accorded by Drugs Controller General of India. The efforts are on to get the formulation prepared by the Certified GMP Pharmaceutical Company for Phase-I Single Dose and Multiple Dose Clinical trial. The trials are likely to commence soon.

6.5.3 CDRI compound 97/78 (Anti-malarial agent)

The single dose pharmacokinetic study in healthy volunteers as per revised protocol approved by DCGI was completed at PGIMER, Chandigarh. A total of 16 volunteers completed the trial. The blood samples were analysed in the Pharmacokinetics & Metabolism division and the final report on single dose pharmacokinetic study submitted to IPCA, Mumbai.

6.5.4 CDRI compound 99/411 (Anti-malarial agent)

The preclinical data is under compilation for IND submission in collaboration with IPCA, Mumbai.

6.5.5 Picroliv (Hepatoprotective agent)

Phase III Clinical Trial in patients of Tuberculosis on Multi Drug Therapy (MDT) has been completed at two centers. Clinical Trial Reports of both centers compiled i.e. 260 patients at CSM Medical University, Lucknow and 113 patients at Seth G. S. Medical College and KEM Hospitals, Mumbai.

6.5.6 Clinical Research Studies

6.5.6.1 Effect of sulphadoxin–pyrimethmine coadministration on pharmacokinetics of α, β Arteether

The study has been initiated with recruitment of volunteers completed (19 volunteers recruited in the trial). The Data on clinical parameters has been obtained and prepared and bioanalysis of the samples is in progress.

6.5.6.2 Drug interaction study of Cap Memory Sure with anti-diabetic drugs Metformin and Gliclazide

The clinical study documents such as protocol, case report form, consent form were prepared and got approved from Institutional ethics committee. The investigational drug formulation has been received and the study has been initiated.

Notes

Technical Services & Facilities


स्था.1951
वै.औ.अ.प.- केन्द्रीय औषधि अनुसंधान संस्थान
Estd. 1951
CSIR-Central Drug Research Institute, Lucknow

Technical Services & Facilities

1 Business Development

The institute continued to explore the business development opportunities for new leads by collaborating with industries, academia, government organizations, funding agencies and foreign bodies in order to have more public-private partnerships at an early stage of the development. The major new contract/assignments signed/undertaken by the CSIR-CDRI during reporting period is as follows:

	Title	Industry/Institute	Signing Date
Licensing Agreement			
1.	L-PAC, ephedrine and pseudoephedrine technology	BVM Pharma Ltd., Bulandshahar, UP	11.03.2013
Patent Assignment Agreement			
1.	Compound 80/53	Piramal Enterprises Ltd., Mumbai	23.04.2013
2.	Patent No.1052/MUM/2009	Cadila Pharmaceuticals Ltd., Ahmedabad	23.07.2013
Memorandum of Understanding for joint R&D			
1.	Role of E3 ubiquitin ligases in negative regulation of GCSFr signaling: Implication in myeloid leukemia	Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow	24.01.2013
2.	Development and characterization of novel drug delivery systems for controlled and targeted drug delivery with special reference to leishmaniasis and cancer	Amity Institute of Pharmacy, Lucknow	03.04.2013
3.	Characterization of novel CTA markers	Dr. R. M. L. Institute of Medical Sciences, Lucknow & KGMU, Lucknow	09.04.2013
4.	An open label, single-centre, two period, crossover, drug interaction study to assess the effect of multiple oral administration of cap memory sure (150 mg BD) on the pharmacokinetics, safety and tolerability of antidiabetic drugs Gliclazide 80mg and Metformin 500mg in Indian patients with Type 2 Diabetes.	KGMU, Lucknow	14.06.2013
5.	Discovery and development of novel bone anabolic agents for Accelerated fracture healing	Enem Nostrum Remedies Pvt. Ltd., Mumbai	21.06.2013
6.	Screening of a series of 4-amino quinoline derivatives for identifying more potent and/or functionally altered ligands	Tufts Medical Centre Bostan, MA	28.06.2013
7.	Design, synthesis and development of aromatic, hetero aromatic and glyco-conjugates as anti therapeutic agents and cholinesterase reactivators	Defence R&D Establishment and Pt. Ravishankar Shukla University, Raipur	24.06.2013
8.	Structure-function characterization of ADF/cofilin proteins using NMR spectroscopy	Centre of Bio-Medical Research, Lucknow	03.07.2013
9.	Collaborative Research & Development	Panacea Biotech Ltd., New Delhi	25.07.2013
10.	To impart training as per CPCSEA and other regulatory authorities for laboratory professionals	National Institute of Animal Welfare, Haryana	06.08.2013
11.	Studies to investigate the modulation of inflammatory cytokine(s) mediated effector responses in visceral leishmaniasis	MNNIT, Allahabad	07.08.2013
12.	To carry out the antifilarial evaluation of compounds synthesized	Banaras Hindu University, Varanasi	18.09.2013
13.	Investigation on applications of innate immune system for the development of novel drug molecules for infectious disease	Department of Biotechnology, SRM University, Kattankulathur	23.09.2013
14.	Development of intradermal animal model of visceral leishmaniasis with fluorescent *L.donovani* relevance to vaccine development	MNNIT, Allahabad & AIIMS, New Delhi	30.09.2013
15.	Functional characterization of genes expressed in Plasmodium pre-erythrocytic stages through genetic manipulation and drug targeting approaches	University of Hyderabad, Hyderabad	05.11.2013
16.	To promote institutional linkage between CSIR-CDRI and GIPER	GIPER, Kashipur, Uttarakhand	14.11.2013
Memorandum of Agreement			
1.	Investigation of effect of polysaccharide in modifying leishmanicidal potential of nanoparticulate system bearing chemotherapeutics agent	DBT, New Delhi	17.01.2013

	Title	Industry/Institute	Signing Date
2.	To investigate the ability of the specified CSIR-CDRI compounds to inhibit the interaction of human platelets with the collagen receptor GPVI.	The University of Cambridge of The Old Schools, University of Cambridge	17.04.2013
3.	Centchroman INN: Ormeloxifene for the treatment of breast cancer	HLL Lifecare Limited, Thiruvananthpuram	16.05.2013
4.	Study of brain Insulin/Insulin Receptor in glial cell during neuro inflammation (National Initiative on Glial Cell Research in Health and Disease)	DBT, New Delhi	03.09.2013
Secrecy Agreement			
1.	Evaluation of data on inhalable micro-particles containing Isoniazid and Rifabutin	Simpex Pharma Pvt. Ltd., New Delhi	09.01.2013
2.	Evaluation of Antithrombotic compounds S002-333and S-007-867	NEOMED, Canada	31.07.2013
3.	CSIR-CDRI compound 80/574 (Antidyslipidemic)	Panacea Biotec Ltd., New Delhi	10.10.2013
4.	CSIR-CDRI compound S002-333 & S007-867(Antithrombotic)	Panacea Biotec Ltd., New Delhi	10.10.2013
5.	CSIR-CDRI compound S007-1235 (Antileukemic)	Panacea Biotec Ltd., New Delhi	10.10.2013
6.	PBL 1427 as therapeutic agent for treatment and/ or prophylaxis of diabetes, metabolic syndrome and related diseases	Panacea Biotec Ltd., New Delhi	14.11.2013
7.	PBL 2958 as therapeutic agent for treatment and/ or prophylaxis of diabetes, metabolic syndrome and related diseases.	Panacea Biotec Ltd., New Delhi	14.11.2013
8.	A synthetic compound PBL 1920 as therapeutic agents for the treatment/ prophylaxis of CNS disorders	Panacea Biotec Ltd., New Delhi	14.11.2013
9.	A synthetic compound PBL 2798 as therapeutic agents for the treatment and/ or prophylaxis of CNS disorders	Panacea Biotec Ltd., New Delhi	14.11.2013
10.	New route of synthesis of ormeloxifene	HLL Lifecare Ltd., Thiruvananthapuram	27.11.2013
11.	PBL 2270 as therapeutic agent for treatment and/ or prophylaxis of bacterial infections	Panacea Biotec Ltd., New Delhi	23.12.2013
Material Transfer Agreement			
1.	Soluble antigen of *Leishmania donovani* (SLD)	Rajendra Institute of Technology & Sciences, Haryana	23.01.2013
2.	Highly metastatic mouse mammary breast cancer cells	Sir Peter MacCallum, Department of Onocology, University of Melbourne, Australlia	30.01.2013
3.	Green Fluorescent tagged *Leishmania donovani* promastigotes	University of Hyderabad, Hyderabad	06.02.2013
4.	Green Fluorescent tagged *Leishmania donovani* promastigotes	University of Colombo, Colombo, Sri Lanka	23.03.2013
5.	ID7 cell line	The University of Kansas Medical Center, Kansas, USA	08.08.2013
6.	Material- 8705,8708,8711,35482,12647	Addgene, USA	23.09.2013
7.	KEENMIND containing CDRI 08 (150 mg of Bacopa Extract in the form of capsules)	Lumen Marketing Company, Chennai	25.09.2013

2. S&T Management Activities

The S&T Management Unit is the nucleus of multifarious Management and coordination activities at CSIR-CDRI including Project, IPR, HRD & HRM, Website & Intranet, ISTAG, RTI, Press & Media, Technical Information, Societal activities, Event Organizations, PRO and other miscellaneous activities. List of assignments undertaken during the reporting period are as follows:

PME Activities

- Preparation of Annual Plan 2014-15
- Vetting of project proposals and processing for approval of the competent authorities
- Revised Estimates & Budget Estimates 2013-14 & 2014-15
- Monitoring of expenditure/budget utilization
- Co-ordination with Finance & Accounts and Stores & Purchase
- Coordination with Planning & Performance Division, CSIR
- Monitoring of R&D activities under the leadership of Director
- Centralised record keeping of all kinds of projects
- Vetting of expenditure statements and utilization certificates
- R&D Highlights and Executive Summary for RC meeting
- Security & Sensitivity clearance of the projects involving foreign agencies
- Digitised information management
- Data entry for ERPS
- Designed and developed Real Time Budget Monitoring Tool in collaboration with Computer Centre to help the Project PI's and taskforce members in expenditure management.

IPR Management

Implementation of Intellectual Property Management Policy to

ensure timely completion of procedures for filing and grant of patents for the institute and their maintenance

- Protection of innovations
- Coordination for filing and grant of Indian and foreign applications/patents
- Recommendations for renewal of patents/ commercialization status
- Maintenance of information on IP system/surveillance
- Respond to queries on IP related issues

Dissemination of Technical Information

- Maintaining and updating the CDRI Website and intranet
- Biological screening services for external users
- Respond to queries from various corners (Govt./non-Govt. agencies)
- Replies to Parliament and Audit queries
- Print and Electronic Media management
- Communication within and outside the institute
- Management of database on projects, patents, staff, research fellows, budget, ECF, awards, conferences / symposia / seminar / workshops etc.

Institutional Publications

- CSIR-CDRI Annual Report
- CSIR-CDRI Newsletters (two issues per year)
- CSIR-CDRI Monthly Reports
- CSIR-CDRI Advertisements
- Inputs for CSIR News and CSIR Annual Report

Human Resources Management

A New Human Resources Management Policy has been evolved which made a paradigm changes in human resource planning and its management, optimize the output and meet the current as well as future requirements of the Institute and ultimately enhance the productivity of individual.

- Competency Development Programme organized for Group-II personnel, in association with CSIR-Human Resource Development Centre
- Transfer platform provided for dissatisfied/surplus staff
- Background work for recruitment of Technical & Scientific Staff
- Nominations for training programs
- Processing of staff nominations for honours & awards and fellowships
- Processing of requests of staff and research fellows for participation in various fora (Conference/symposia/seminar/ workshop/training programmes)

HRD Activities

- Advance Training Courses for Postgraduate Students and for the employees of R&D Institutions/ Pharmaceutical Industry/ Government Laboratories etc.
- Trainees from Academia/Organizations
- Trainees from Industries (private & public sector)
- IAS, INSA & NASI Summer Fellows
- Postgraduate Student Trainees
- Research Students training
- Training in Instrumentation (SAIF)
- Training in Laboratory Animal Science for Technical personnel
- Induction and motivation of post graduate students from across the country through arranging interactive lab visit programmes

ISTAG

- Processing of application of the laboratory scientists pertaining to international visits, bilateral exchange programmes, sabbatical leave / study leave for deputations abroad
- Arranging training programmes for international candidates
- Coordination of distinguished foreign visitors/delegation at CSIR-CDRI
- International collaborative projects, Bilateral International cooperation programmes

ERPS

- Acted as Nodal point for implementation of the ERPS in liaison with the CSIR Headquarter
- Co-ordinated and facilitated various groups for integration of the ERPS implementation at CSIR-CDRI
- Co-ordinated the ERPS training program to the staff members

RTI

- Implementation of Right to Information Act-2005 in the institute for Scientific & Technical matters to promote transparency and accountability in the working of every public authority in India

Adopt a Plant Scheme

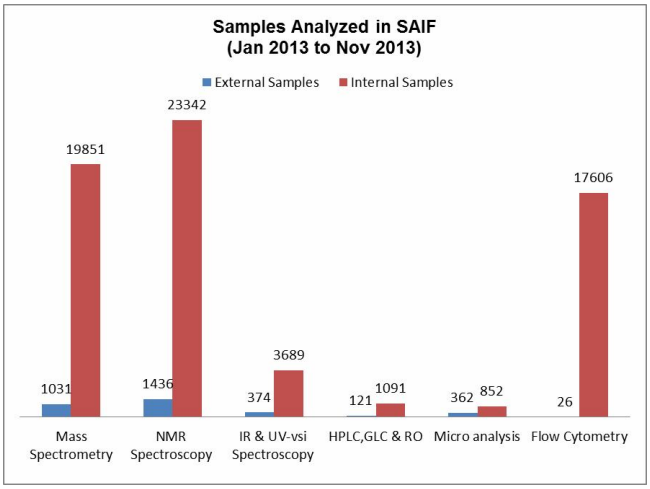
Introduced Green CSIR-CDRI initiative by Plantation in the new premises

3. Sophisticated Analytical Instrument Facility

Objective of the facility

Sophisticated Analytical Instrument facility at CSIR-Central Drug Research Institute, Lucknow is more than 30 years old and is one of the first four such facilities set up by the Department of Science & Technology (DST), Government of India for fulfilling the following objectives:

- Provide facilities of sophisticated analytical instruments to scientists and other users from academic institutes, R&D laboratories and industries to enable them to carry out measurements for R&D work
- Acquire and develop capability for preventive maintenance and repair of sophisticated instruments
- Organize short term courses/workshops on the use and application of various instruments and analytical techniques;
- Train technicians for maintenance and operation of sophisticated instruments
- Development of new measurement/analytical techniques: Apart from providing routine analytical techniques/methods of analysis available on the instruments, efforts are made by the SAIF to develop new techniques/methods of analysis to put the instruments to their full use and offer them to the scientists for exploring new dimensions in research in various areas of science and technology



Name of the facility	External Samples	Internal Samples	Total no of samples analyzed
Mass Spectrometry	1031	19851	20882
NMR Spectroscopy	1436	23342	24778
IR & UV-visible Spectroscopy	374	3689	4063
HPLC,GLC & RO	121	1091	1212
Micro analysis	362	852	1214
Flow Cytometry	26	17606	17632

4 Electron Microscopy

Electron microscopy unit is equipped with scanning and transmission electrom microscopes and confocal microscope. Analytical services provided during the year of report are as follows:

Instrument	Internal Samples	External Samples	Total No.
Electron Microscopy	485	07	492
Confocal Microscopy	1375	0	1375

5 National Laboratory Animal Centre

The National Laboratory Animal Center of the institute breeds and maintains various species of laboratory animals required for use in approved biomedical experimentation and research progremmes. During the reported period, this facility ensured supply of healthy and defined animals for in-house and sponsored research projects, upholding of quarantined tested Rhesus and Langoor monkeys obtained from recognized animal supplier for CPCSEA approved research projects, supply of tissues, organ, blood, sera samples of laboratory animals for research purposes, health monitoring of laboratory animals through microbiological, parasitological (ecto- and endoparasites), pathological and post mortem screening, radiological monitoring of monkeys, analysis of laboratory animal feed, animal feed trial studies, production of special research diet like, high sucrose diet, high fat diet, high cholesterol diet, high fat and high cholesterol diet etc. The facility had also been involved in HRD programme in laboratory animal science through conducting training courses in laboratory animal science including animal care, breeding and management, health monitoring and quality control, nutritional monitoring, and diagnosis and management of laboratory animal diseases.

a) Breeding and maintenance of following laboratory animals (10 species and their >30 strains):

Animal Species	Strains	Genotype	Housing status in breeding facility
Mouse	Swiss	Out-bred	6179
	Park's strain (PS)	-do-	151
	BALB/C	Inbred	4194
	AKR	-do-	284
	NZB	-do-	49
	AJ	-do-	714
	C57BL/6	-do-	839
	NOD	-do-	34
	db/db	-do-	2349
	Apo e	-do-	86
	DBA/1J	-do-	284
	C3H/Hej	-do-	383
	NCF-1	-do-	5
	NOS-1Tg	-do-	15
	APO$^{E'}$	-do-	8
	Lepr<db>\J	-do-	8
	NOS-2	-do-	4
	B2/4	-do-	2
	WT	-do-	7
	WT\Sham	-do-	4
	CD-1	-do-	10
Rat	Sprague Dowley (SD)	Out-bred	3910
	Sprague Dowley (SD-NIN)	-do-	1394
	Druckrey(DR)	-do-	72
	Charles Foster (CF)	-do-	898
	Wistar	Inbred	1272
	SHR	-do-	341
	F344	-do-	38
Hamster	Golden hamster	Out-bred	1680
	-do-	In-bred	420
	White hamster (Mutant of Golden Hamster)	-do-	80
Gerbil	Mongolian strain	Out-bred	470
Mastomys Rat	Coucha strain	-do-	1035
Guinea Pig	English albino	-do-	849
Rabbit	New Zealand White	-do-	395
	Belgian	-do-	195
Sheep	Indian Merino	Farm-bred (random)	2
Monkey	Rhesus	Wild caught	40
	Langoor	Wild caught	11

b) Supply of experimental animals for research purposes:

Total 22,227 animals were supplied for research studies. Out of which 2518 animals costing ₹ 16,91,100/- were supplied to outside institutions including government establishments, pharmaceutical companies and research organizations.

	Services Details	Total Numbers
a)	Supply of research animals to CDRI in-house projects	15742
b)	Supply of animals to Extramural projects in CDRI	3967
c)	Supply of animals to CPCSEA registered institution	
	Government sector	1886
	Private sector	632
	Total	**43780**

c) Other technical services rendered:

- Screening for Animal Endo/ Ecto Parasites : 1210 Nos.
- Pathological Monitoring including gross/post mortem cases : 99 Nos.
- Hematology and biochemistry : 219 Nos
- Nonhuman primates purchased : 14 Nos.
- Nonhuman primate maintained in rehabilitation unit : 16 Nos
- Proximate Analysis of animal feed samples : 24 Nos
- Production of CDRI laboratory animal feed for in-house use in breeding and experimental animals : 730 Qts

6 S&T Knowledge Resource Centre

The S&T Knowledge Resource Centre (KRC) has been established with an objective to provide biomedical information services for the scientists in the era of information boom. The centre also caters to the need of the pharmaceutical industry, entrepenures, and researchers involved in biomedical research. The center is computerized and conforms to the norms of e-governance.

KRC continued to provide information services to its users and a total of 1255 outside users (Students of M. Pharm, Biotechnology, Biomedical Sciences) utilized these services during the year. Its present collection comprises of 22494 books and 73969 bound volumes of journals. Centre also provides access to various e journals, open source resources and bibliographic databases viz- Scifinder, Web of Science, R&D Insight etc. Thecentre also manages, maintains and updates the institute website and institutional repository. The centre published a monthly periodical 'Drugs & Pharmaceuticals Industry Highlights' incorporating periodical 'Drugs & Pharmaceutical R&D Highlights'.

In addition centre provides services to the scientists of institute and other scientific organizations in photography, power point presentations, exhibitions, display panels, posters, designing of covers and layouts for institutional publications.

7 Information Technology Services

Computer Division provided following services during the reporting period:

- Creation of Repository Database for CSIR-CDRI candidate drugs
- MoES database application software was implemented and maintained for online transaction
- Setting up and maintenance of a state-of-art LAN/WAN infrastructure for the New CSIR-CDRI Campus, Sitapur Road, Lucknow
- Projects leveraging NKN (National Knowledge Network) infrastructure and services
- Comprehensive ERP implementation and maintenance
- Designing complete layout on internet cabling system using fiber optic and UTP cables
- Implemented antivirus software and firewall to avoid any virus threat to our Network
- Development of R&D databases and portals
- Implementation and maintenance of GLP Computers
- Complete video-conferencing and audio-visual coverage in different national and international seminars, conferences and workshop
- In-house maintenance of Online Stores & Purchase Software
- Following new software applications developed:
  a. Online Application for Ph.D. registration (For Academic Affairs Unit)
  b. SAIF Web Application (For online management of SAIF division work)
  c. Online Survey application for CSIR-CDRI employees
  d. Online slot reservation application for UID generation (For CSIR-CDRI Staff Club)
  e. Online Student Management System (For Academic Affairs Unit, CSIR-CDRI)
  f. Online Scheduler for CSIR-CDRI RC-Meeting
  g. Online Real Time Budget Monitoring Software
  h. Online Small Molecule X-Ray Crystallography Facility
  i. Laboratory Animal Issue Management Software

8 Other Lab Services

Instrumentation Centre provided efficient and economical repair, maintenance and upkeep of different sophisticated analytical, biomedical, electronics and laboratory equipments in CSIR-CDRI and CDRI-SAIF. Due to non-availability of imported components/spares, equivalent indigenous substitute were used to ensure the smooth functioning of equipments. Tracing of part of circuit were carried out whenever circuit diagram/service manual was not available. Technical specification verification was carried out for the procurement of state of the art new equipments. Division helped the user Scientists to prepare broad based technical specification and to choose right equipment to suit their application. Laboratory equipments of different divisions of institute were calibrated as per GLP guidelines as per user requirement. Division reviewed the SOP (Instrument Maintenance) of different Instruments.

9 Academic Affairs

The unit serves as a centre for the management of research students (PAs/JRFs/SRFs/RAs) working in different departments of the institute. The activities carried out during the period include:

- Completion of pre-Ph.D. course work (Ist and IInd semester) under CSIR-CDRI Ph.D. program for JNU and AcSIR students (total 105) for the session Jan 2013
- Coordinated centralized admission of Junior Research Fellows under JNU for Pre-Ph.D. program through interview for the batch commencing from spring 2014

- Coordinated centralized admissions of GATE-JRFs for the session commencing July 2014
- Coordinated centralized admission of JRFs/SRFs for registration under AcSIR for Pre-PhD program through interview for the batches commencing fall 2013 and spring 2014
- Liaised with Jawaharlal Nehru University, New Delhi for timely registration, synopsis approval, thesis submission, Ph.D. viva at CSIR-CDRI etc.
- Conducted viva voce exams of 25 students registered with JNU New Delhi
- Coordinated with JNU and other universities for submission of sixty four (64) Ph.D. thesis for the award of Ph.D. degree from respective universities
- Liaised with AcSIR-HQ for the registration of students working at CSIR-CDRI
- Comprehensive exams of two batches of year 2012 AcSIR students were held
- Screening and endorsement of post-doctoral application forms being submitted by Ph.D. students from outside CSIR-CDRI to Indian funding agencies
- Two meetings of CSIR-CDRI-JNU academic council were organized at CSIR-CDRI and at JNU, New Delhi
- Upgraded and Implemented new "Human Resource Management System" software dealing with the online registration of research students (JRFs/SRFs/PAs/RAs) with the help of Computer division
- Coordinated with AcSIR for submission of Ph.D. thesis of session 2011 students and successfully conducted viva-voce examination of one student at CSIR-CDRI
- Formation and Implementation of DAC (Doctoral Advisory Committee) for JNU students of five academic years, 2009-2013
- Three meetings of CSIR-CDRI Academic Council were held to prepare guidelines for carrying out academic activities in the institute
- Formation of DAC (Doctoral Advisory Committee) for AcSIR students
- Formation of Comprehensive Examination Committee (CEC) for AcSIR students
- Students were nominated for MM Dhar memorial award, Eli-Lilly best thesis award 2012-2013

10 Laboratory Engineering Services

The Lab Engineering Services division continued to provide Engineering Services to the Institute to maintain the Infrastructure for R&D work. The major works carried out during reporting period are as follows:

- Progress monitoring & co-ordination of the New CSIR-CDRI campus being setup at Sitapur Road, Lucknow.
- Facilitate the shifting process to New CSIR-CDRI campus.
- New facilities of centralised compressed air, Nitrogen, LPG & Vacuum, distilled water supply at the user bench in laboratory has been provided.
- Most sophisticated laboratory set up i.e. reaction hoods, chemical storage cabinet and safety measures.
- Laboratory follows safety provision along with most sophisticated optical fume sensor, fire alarms and computer controlled fire alarm panels.
- CSIR-CDRI is committed to share environmental & social responsibility therefore, facility of Effluent treatment plant for treatment of laboratory waste and sewage treatment plant for treatment of domestic waste water has been created in jankipuram campus.
- The laboratory compliances all the statuary norms from various state and central agencies and committed to follow the guidelines issued by various agencies time to time.
- Laboratory has integrated water lines to reuse of ETP/STP treated water in Garden hydrant line to optimise water consumption.

Research Output

CSIR-Central Drug Research Institute, Lucknow

1 Publications

2012

1. Gangwar S, Baig MS, Shah P, Biswas S, Batra S, Siddiqi MI, Goyal N. Identification of novel inhibitors of dipeptidylcarboxypeptidase of *Leishmania donovani* via ligand-based virtual screening and biological evaluation. **Chem Biol Drug Des 79(2), 149-156**

2. Jaiswal D, Trivedi S, Singh R, Dada R and Singh K. Association of the IL1RN gene VNTR polymorphism with human male infertility. **PLoS One 7(12), e51899**

3. Kumar A, Kumar P, Tripathi VD and Srivastava S. A novel access to indole-3-substituted dihydrocoumarins in artificial sweetener saccharin based functional ionic liquids. **RSC Advances 2(31), 11641-11644**

4. Macwan AS, Kukshal V, Srivastava N, Javed S, Kumar A and Ramachandran R. Crystal structure of the hexachlorocyclohexane dehydrochlorinase (LinA-type2): mutational analysis, thermostability and enantioselectivity. **PLoS One 7(11), e50373**

5. Mishra P, Kumar S, Maurya HK, Gautam SK, Kumar B, Tandon VK and Ram VJ. A diversified approach to the synthesis of highly functionalized novel azines and azoles from 2h-pyran-2-ones. **Heterocycles 86(1), 189-201**

6. Prasad R, Atul, Soni A, Puri SK, Sijwali PS.. Expression, characterization, and cellular localization of knowpains, papain-like cysteine proteases of the *Plasmodium knowlesi* malaria parasite. **PLoS One 7(12), e51619**

7. Singh C, Hassam M, Verma VP, Singh AS, Naikade NK, Puri SK, Maulik PR and Kant R. Bile acid-based 1,2,4-trioxanes: synthesis and antimalarial assessment. **Journal of Medicinal Chemistry 55(23), 10662-10673**

2013

1. Abbas S, Khan K, Khan MP, Nagar GK, Tewari D, Maurya SK, Dubey J, Ansari NG, Bandyopadhyay S and Chattopadhyay N. Developmental exposure to As, Cd, and Pb mixture diminishes skeletal growth and causes osteopenia at maturity via osteoblast and chondrocyte malfunctioning in female rats. **Toxicological sciences 134(1), 207-220**

2. Agarwal P, Srivastava RK, Puri SK and Srivastava K. Management of mycoplasma contamination in *in vitro* culture of *Plasmodium falciparum* without antibiotic treatment - A preliminary report. **Research in Microbiology 164(3), 211-215**

3. Agarwal P, Srivastava R, Srivastava AK, Ali S and Datta M. miR-135a targets IRS2 and regulates insulin signaling and glucose uptake in the diabetic gastrocnemius skeletal muscle. **Biochimica et Biophysica Acta -Molecular Basis of Disease 1832(8), 1294-1303**

4. Ahmad I, Thakur JP, Chanda D, Saikia D, Khan F, Dixit S, Kumar A, Konwar R, Negi AS and Gupta A. Syntheses of lipophilic chalcones and their conformationally restricted analogues as antitubercular agents. **Bioorganic & Medicinal Chemistry Letters 23(5), 1322-1325**

5. Ahmed R, Jain SK and Shukla PK. *In silico* characterization of beta-(1, 3)-endoglucanase (ENGL1) from *Aspergillus fumigatus* by homology modeling and docking studies. **Bioinformation 9(16), 802-7**

6. Ali M, Afzal M, Verma M, Misra-Bhattacharya S, Ahmad FJ and Dinda AK. Improved antifilarial activity of ivermectin in chitosan–alginate nanoparticles against human lymphatic filarial parasite, *Brugia malayi*. **Parasitology Research 112(8), 2933-43**

7. Ali M, Afzal M, Bhattacharya SM, Ahmad FJ and Dinda AK. Nanopharmaceuticals to target antifilarials: A comprehensive review. **Expert Opinion on Drug Delivery 10(5), 665-678**

8. Amirtharaj F, Singh P, Singh R, Periyasamy G, Nageswara Rao T, Daminani S, Digumarthi Raghunatha R, Lakshmi R, Lingadakai R, Satti V, K Ramalingam, Kapaettu S and Kumarasamy T. A mitochondrial DNA variant 10398G > A in breast cancer among South Indians: An original study with meta-analysis. **Mitochondrion 13(6), 559-565**

9. Anand N, Ramakrishna KKG, Gupt MP, Chaturvedi V, Singh S, Srivastava KK, Sharma P, Rai N, Ramachandran R, Dwivedi AK, Gupta V, Kumar B, Pandey S, Shukla PK, Pandey SK, Lal J and Tripathi RP. Identification of 1-[4-Benzyloxyphenyl)-but-3-enyl]-1H-azoles as new class of antitubercular and antimicrobial agents. **ACS Medicinal Chemistry Letters 4(10), 958-963**

10. Anand N, Vpadhyaya K, Ajay A, Mahar R, Shukla SK, Kumar B and Tripathi RP. A strategy for the synthesis of Anthraquinone-based Aryl-C-glycosides. **Journal of Organic Chemistry 78(10), 4685-4696**

11. Arigela RK, Samala S, Mahar R, Shukla SK and Kundu B. Synthesis of triazolo Isoquinolines and Isochromenes from 2-Alkynylbenzaldehyde via Domino reactions under Transition-Metal-Free conditions. **Journal of Organic Chemistry 78(20), 10476-10484**

12. Arigela RK, Sharma SK, Kumar B and Kundu B. Microwave-assisted three-component domino reaction: Synthesis of indolodiazepinotriazoles. **Beilstein Journal of Organic Chemistry 9, 401-405**

13. Arockiaraj J, Gnanam AJ, Kumaresan V, Palanisamy R, Bhatt P, Thirumalai MK, Roy A, Pasupuleti M and Kasi M. An unconventional antimicrobial protein histone from freshwater prawn *Macrobrachium rosenbergii*: Analysis of immune properties. **Fish & Shellfish Immunology 35(5), 1511-1522**

14. Arockiaraj J, Gnanam AJ, Palanisamy R, Kumaresan V, Bhatt P, Thirumalai MK, Roy A, Pasupuleti, M, Kasi M, Sathyamoorthi A and Arasu A. A prawn transglutaminase: Molecular characterization and biochemical properties. **Biochimie 95(12), 2354-2364**

15. Arora A. Solution NMR spectroscopy for the determination of structures of membrane proteins in a lipid environment. **Methods in Molecular Biology 974, 389-413**

16. Arya KR, Khatoon S and Kumar B. Development of quality control markers for *Ulmus wallichiana* Planchon: An Indian

traditional plant for osteogenic activity. **Indian Journal of Traditional Knowledge 12**(**4**), **664-669**

17. Asthana S, Gupta PK, Chaurasia M, Dube A and Chourasia MK. Polymeric colloidal particulate systems: intelligent tools for intracellular targeting of antileishmanial cargos. **Expert Opinion on Drug Delivery 10** (**12**), **1633-1651**

18. Asthana S, Gupta PK, Konwar R and Chourasia MK. Specific internalization and synergistic anticancer effect of docetaxel-encapsulated chitosan-modified polymeric nanocarriers: A novel approach in cancer chemotherapy. **Journal of Nanoparticle Research 15**(**9**), **1864**

19. Asthana S, Jaiswal AK, Gupta PK, Pawar VK, Dube A and Chourasia MK. Immunoadjuvant chemotherapy of visceral leishmaniasis in hamsters using Amphotericin B-encapsulated nanoemulsion template-based chitosan nanocapsules. **Antimicrobial Agents and Chemotherapy 57**(**4**), **1714-1722**

20. Azmi S, Srivastava S, Mishra NN, Tripathi JK, Shukla PK and Ghosh JK. Characterization of antimicrobial, cytotoxic, and antiendotoxin properties of short peptides with different hydrophobic amino acids at “a” and “d” positions of a heptad repeat sequence. **Journal of Medicinal Chemistry 56**(**3**), **924-939**

21. Bajpai V, Pandey R, Negi MPS, Bindu KH, Kumar N and Kumar B. Characteristic differences in metabolite profile in male and female plants of dioecious *Piper betle* L. **Journal of Biosciences 37**(**6**), **1061-1066**

22. Bajpai V, Pandey R, Negi MPS, Kumar N and Kumar B. DART MS based chemical profiling for therapeutic potential of *Piper betle* Landraces. **Natural Product Communications 7**(**12**), **1627-1629**

23. Basu S, Kandiyal PS, Ampapathi RS and Chakraborty TK. Ti(III)-mediated radical cyclization of epoxy-beta-aminoacrylate in the synthesis of the substituted pyrrolidine core of necine bases: Synthesis of 2-epi-rosmarinecine. **RSC Advances 3**(**33**), **13630-13634**

24. Bathula SR, Reddy MP, Viswanadham KKDR, Sathyanarayana P and Reddy MS. Access to Di- and trisubstituted oxazoles by NBS-mediated oxidative cyclisation of N-Acyl amino acid derivatives. **European Journal of Organic Chemistry 2013**(**21**), **4552-4557**

25. Bhosale VV, Tyagi A, Srivastava M and Gaur SPS. Incidence of hepatotoxicity in Indian patients receiving standard multidrug anti-tubercular therapy without risk factors. **Clinical Epidemiology and Global Health 1**(**2**), **58**

26. Bhosale VV, Asthana OP and Gaur SPS. Efficacy and safety of herbal spermicidal contraceptive, Consap. **Current Science 104**(**12**), **1701-1703**

27. Bhowmik S and Batra S. Morita-Baylis-Hillman Approach toward formal total synthesis of Tamiflu and total synthesis of Gabaculine. **European Journal of Organic Chemistry 2013**(**31**), **7145-7151**

28. Bhowmik S, Khanna S, Srivastava K, Hasanain M, Sarkar J, Verma S and Batra S. An efficient combinatorial synthesis of allocolchicine analogues via a triple cascade reaction and their evaluation as inhibitors of insulin aggregation. **Chemmedchem 8**(**11**), **1767-1772**

29. Bhowmik S, Kumar AKS and Batra S. Expeditious synthesis of chiral 1,2,3, 4-tetrahydropyrrolo [1,2-a]pyrazines. **Tetrahedron Letters 54**(**18**), **2251-2254**

30. Bhowmik S, Pandey G and Batra S. Substituent-Guided Switch between C-H activation and decarboxylative Cross-Coupling during Palladium/Copper-catalyzed cascade reactions of 2-Aminobenzoates with 2-Haloarylaldehydes. **Chemistry -A European Journal 19**(**32**), **10487-91**

31. Bishnoi A, Singh S, Tiwari AK, Sethi A and Tripathi CM. Design, synthesis and antimicrobial properties of novel 3,3a,4,5,6,7-Hexahydroindazole and arylthiazolylpyrazoline derivatives. **Medicinal Chemistry 9**(**1**), **45-52**

32. Bishnoi A, Singh S, Tiwari AK, Srivastava K, Raghuvir R and Tripathi CM. Synthesis, characterization and biological activity of new cyclization products of 3-(4-substituted benzylidene)-2H-pyrido[1,2-a]pyrimidine 2,4-(3H)-diones. **Journal of Chemical Sciences 125**(**2**), **305-312**

33. Bishnoi A, Tiwari AK, Singh S, Sethi A, Tripathi CM and Banerjee B. Synthesis, characterization, and biological evaluation of novel thiazole and pyrazole derivatives of quinoline-4-carboxylic acid as potential antimicrobial agents. **Medicinal Chemistry Research 22**(**7**), **3527-3535**

34. Biswas RK, Dutta D, Tripathi A, Feng YJ, Banerjee M and Singh BN. Identification and characterization of Rv0494: a fatty acid-responsive protein of the GntR/FadR family from *Mycobacterium tuberculosis*. **Microbiology-SGM 159**, **913-923**

35. Bodhicharla R, Nagarajan A, Winter J, Adenle A, Nazir A, Brady D, Vere K, Richens J, O’Shea P, Bell DR and De Pomerai D. Effects of alpha-Synuclein overexpression in transgenic *Caenorhabditis elegans* strains. **CNS & Neurological Disorders-Drug Targets 11**(**8**), **965-975**

36. Chandra V, Fatima I, Saxena R, Hussain MK, Hajela K, Sankhwar P, Roy BG, Chandna S and Dwivedi A. Anti-tumorigenic action of 2-[piperidinoethoxyphenyl]-3-[4-hydroxyphenyl]-2H-benzo(b)pyran: Evidence for involvement of GPR30/EGFR signaling pathway. **Gynecologic Oncology 129**(**2**), **433-442**

37. Chatterjee A, Chattopadhyay SK, Tandon S, Kaur R, Gupta AK, Maulik PR and Kant R. Isolation of a unique dipyridodiazepinone metabolite nevirapine during large scale extraction of Cliv-92 from the seeds of *Cleome viscosa*. **Industrial Crops and Products 45**, **395-400**

38. Chatterjee M, Verma R, Lakshmi V, Sengupta S, Verma AK, Mahdi AA and Palit G. Anxiolytic effects of *Plumeria rubra* var. acutifolia (Poiret) L. flower extracts in the elevated plus-maze model of anxiety in mice. **Asian Journal of Psychiatry 6**(**2**), **113-8**

39. Chaturvedi U, Shrivastava A, Bhadauria S, Saxena JK and Bhatia G. A mechanism-based pharmacological evaluation of efficacy of *Trigonella foenum* graecum (fenugreek) seeds in regulation of dyslipidemia and oxidative stress in hyperlipidemic rats. **Journal of Cardiovascular Pharmacology 61**(**6**), **505-12**

40. Chauhan K, Sharma M, Saxena J, Singh SV, Trivedi P, Srivastava K, Puri SK, Saxena JK, Chaturvedi V and Chauhan PMS. Synthesis and biological evaluation of a new class of 4-aminoquinoline-rhodanine hybrid as potent anti-infective agents. **European Journal of Medicinal Chemistry 62**, **693-704**

41. Chauhan K, Sharma M, Shivahare R, Debnath U, Gupta S, Prabhakar YS and Chauhan PMS. Discovery of triazine mimetics as potent antileishmanial agents. **ACS Medicinal Chemistry Letters 4**(**11**), **1108-1113**

42. Chhonker YS, Kumar D, Shrivastava P, Kumar D,Singh R, Chandasana H and Bhatta RS. LC-MS/MS assay for the determination of natamycin in rabbit and human plasma: Application to a pharmacokinetics and protein binding study. **Journal of Pharmaceutical Analysis 3(2), 144-148**

43. Chopra S. Could repurposing existing drugs be an efficient protective method against microbial biologic threats? **Future Microbiology 8(8), 951-952**

44. Choubey VK, Sankhwar SN, Tewari R, Sankhwar P, Singh BP and Rajender S. Null genotypes at the GSTM1 and GSTT1 genes and the risk of benign prostatic hyperplasia: A case-control study and a meta-analysis. **Prostate 73(2), 146-152**

45. Das B, Tandon V, Saxena JK, Joshi S and Singh AR. Purification and characterization of phosphoenolpyruvate carboxykinase from Raillietina echinobothrida, a cestode parasite of the domestic fowl. **Parasitology 140(1), 136-146**

46. Das S, Shah P, Baharia R, Tandon R, Khare P, Sundar S, Sahasrabuddhe A, Siddiqi MI and Dube A. Over-expression of 60s ribosomal L23a is associated with cellular proliferation in SAG resistant clinical isolates of *Leishmania donovani*. **PLOS Neglected Tropical Diseases 7(12), e2527**

47. Das SK and Panda G. Stereoselective approach to aminocyclopentitols from Garner aldehydes. **RSC Advances 3(25), 9916-9923**

48. Debnath U, Katti SB and Prabhakar YS. Graph Theory concepts in the rationales of anti HIV-1 compounds. **Current Computer-Aided Drug Design 9(4), 472-481**

49. Debnath U, Verma S, Jain S, Katti SB and Prabhakar YS. Pyridones as NNRTIs against HIV-1 mutants: 3D-QSAR and protein informatics. **Journal of Computer-Aided Molecular Design 27(7), 637-654**

50. Deora, GS, Karthikeyan C, Moorthy NSHN, Rathore V, Rawat AK, Tamrakar AK, Srivastava AK and Trivedi P. Design, synthesis and biological evaluation of novel arylidine-malononitrile derivatives as non-carboxylic inhibitors of protein tyrosine phosphatase 1B. **Medicinal Chemistry Research 22(11), 5344-5348**

51. Dhankar R, Rahatgaonkar AM, Shukla R, Chorghade M and Tiwari A. Computer simulation of the *in vitro* and *in vivo* anti-inflammatory activities of dihydropyrimidines acid derivatives through the inhibition of cyclooxygenase-2. **Medicinal Chemistry Research 22(5), 2493-2504**

52. Dighe SU and Batra S. Iodine-mediated electrophilic tandem cyclization of 2-alkynylbenzaldehydes with anthranilic acid leading to 1,2-dihydroisoquinoline-fused benzoxazinones. **Tetrahedron 69(46), 9875-9885**

53. Dwivedi A, Pal MK, Tripathi, A K, Yadav N, Mujtaba SF, Pant MC, Singh SK, Mishra DP, Ray RS and Manjunatha Prabhu BH. Role of type-II pathway in apoptotic cell death induction by photosensitized CDRI-97/78 under ambient exposure of UV-B. **Toxicology Letters 222(2), 122-131**

54. Dwivedi S, Nagarajan R, Hanif K, Siddiqui HH, Nath C and Shukla R. Standardized extract of *Bacopa monniera* Attenuates okadaic acid induced memory dysfunction in rats: Effect on Nrf2 pathway. **Evidence-Based Complementary and Alternative Medicine 2013, 294501**

55. Dwivedi SKD, Samanta K, Yadav M, Jana AK, Singh AK, Chakravarti B, Mondal S, Konwar R, Trivedi AK, Chattopadhyay N, Sanyal S and Panda G. Amino acids derived benzoxazepines: Design, synthesis and antitumor activity. **Bioorganic & Medicinal Chemistry Letters 23(24), 6816-6821**

56. Fatima I, Saxena R, Kharkwal G, Hussain MK, Yadav N, Hajela K, Sankhwar PL and Dwivedi A. The anti-proliferative effect of 2-[piperidinoethoxyphenyl]-3-[4-hydroxyphenyl]-2H-benzo(b) pyran is potentiated via induction of estrogen receptor beta and p21 in human endometrial adenocarcinoma cells. **The Journal of Steroid Biochemistry and Molecular Biology 138C, 123-131**

57. Friese RS, Altshuler AE, Zhang K, Miramontes-Gonzalez JP, Hightower CM, Jirout ML, Salem RM, Gayen JR, Mahapatra NR, Biswas N, Cale M, Vaingankar SM, Kim HS, Courel M, Taupenot L, Ziegler MG, Schork NJ, Pravenec M, Mahata SK, Schmid-Schönbein GW and O'Connor DT. MicroRNA-22 and promoter motif polymorphisms at the Chga locus in genetic hypertension: Functional and therapeutic implications for gene expression and the pathogenesis of hypertension. **Human Molecular Genetics 22(18), 3624-3640**

58. Gajula PK, Asthana J, Panda D and Chakraborty TK. A Synthetic Dolastatin 10 Analogue Suppresses Microtubule Dynamics, Inhibits Cell Proliferation, and Induces Apoptotic Cell Death. **Journal of Medicinal Chemistry 56(6), 2235-2245**

59. Gajula PK, Sharma S, Ampapathi RS and Chakraborty TK. Total synthesis of (29S,37S)-isomer of malevamide E, a potent ion-channel inhibitor. **Organic & Biomolecular Chemistry 11(2), 257-260**

60. Garg M, Dalela D, Dalela D, Goel A, Kumar M, Gupta G and Sankhwar SN. Selective estrogen receptor modulators for BPH: New factors on the ground. **Prostate Cancer and Prostatic Diseases 16(3), 226-232**

61. Gauniyal HM, Gupta S, Sharma SK and Bajpai U. Temperature-gradient-directed NMR monitoring of a [3+3]-Cyclocondensation reaction between alkynone and Ethyl 2-Amino-1H-indole-3-carboxylate toward the synthesis of Pyrimido[1,2-a]indole catalyzed by Cs2CO3. **Synthetic Communications 43(15), 2090-2099**

62. Ghosal P, Ajay S, Meena S, Sinha S and Shaw AK. Stereoselective total synthesis of Jaspine B (Pachastrissamine) utilizing iodocyclization and an investigation of its cytotoxic activity. **Tetrahedron-Asymmetry 24(15-16), 903-908**

63. Goel A, Kumar A and Raghuvanshi A. Synthesis, stereochemistry, structural classification, and chemical reactivity of natural pterocarpans. **Chemical Reviews 113(3), 1614-1640**

64. Goel A, Parihar A, Mishra P, Varshney S, Nag P, Beg M, Gaikwad A and Rath SK. Design and synthesis of novel pyranone-based insulin sensitizers exhibiting *In vivo* hepatoprotective activity. **MedChemComm 2013(4), 1532-1536**

65. Goel A, Taneja G, Raghuvanshi A, Kant R and Maulik PR. Diversity-oriented general protocol for the synthesis of privileged oxygen scaffolds: Pyrones, coumarins, benzocoumarins and naphthocoumarins. **Organic & Biomolecular Chemistry 11, 5239-5253**

66. Goyal N. Novel approaches for the identification of inhibitors of leishmanial dipeptidylcarboxypeptidase. **Expert Opinion on Drug Delivery 8(9), 1127-34**

67. Gupta A, Asthana S, Konwar R and Chourasia MK. An insight into potential of nanoparticles-assisted chemotherapy of cancer using gemcitabine and its fatty acid prodrug: A comparative study. **Journal of Biomedical Nanotechnology 9(5), 915-925**

68. Gupta A, Mir SS, Jackson KE, Lim EE, Shah P, Sinha A, Siddiqi MI, Ralph SA and Habib S. Recycling factors for ribosome disassembly in the apicoplast and mitochondrion of *Plasmodium falciparum*. **Molecular Microbiology 88**(**5**), **891-905**

69. Gupta A, Pandya SM, Mohammad I, Agrawal AK, Mohan M and Misra A. Particulate pulmonary delivery systems containing anti-tuberculosis agents. **Critical Reviews in Therapeutic Drug Carrier Systems 30**(**4**), **277-291**

70. Gupta AK and Saxena AK. Triple-layered QSAR studies on substituted 1,2,4-trioxanes as potential antimalarial agents: superiority of the quantitative pharmacophore-based alignment over common substructure-based alignment. **SAR and QSAR in Environmental Research 24**(**2**), **119-134**

71. Gupta AK, Varshney K, Singh N, Mishra V, Saxena M, Palit G and Saxena AK. Identification of novel amino acid derived CCK-2R antagonists as potential antiulcer agent: Homology modeling, design, synthesis, and pharmacology. **Journal of Chemical Information and Modeling 53**(**1**), **176-187**

72. Gupta GK, Kumar A, Khedgikar V, Kushwaha P, Gautam J, Nagar GK, Gupta V, Verma A, Dwivedi AK, Misra A, Trivedi R and Mishra PR. Osteogenic efficacy enhancement of kaempferol through an engineered layer-by-layer matrix: A study in ovariectomized rats. **Nanomedicine 8**(**5**), **757-771**

73. Gupta N, Sarkar S, David A, Gangwar PK, Gupta R, Khanna G, Sankhwar SN, Khanna A and Rajender S. Significant Impact of the MTHFR polymorphisms and haplotypes on male infertility risk. **PLoS One 8**(**7**), **e69180**

74. Gupta P, Sharma U, Gupta P, Siripurapu KB and Maurya R. Evolvosides C-E, flavonol-4-O-triglycosides from *Evolvulus alsinoides* and their anti-stress activity. **Bioorganic & Medicinal Chemistry 21**(**5**), **1116-1122**

75. Gupta S, Koley D, Ravikumar K and Kundu B. Counter ion effect in Au/Ag-catalyzed chemoselective 6-endo-dig N- and O-cyclizations of enyne-urea system: Diversity-oriented synthesis of annulated indoles. **Journal of Organic Chemistry 78**(**17**), **8624-33**

76. Gupta S, Varshney K, Srivastava R, Rahuja N, Rawat AK, Srivastava AK and Saxena AK. Identification of novel urea derivatives as PTP1B inhibitors: Synthesis, biological evaluation and structure-activity relationships. **MedChemComm 4**(**10**), **1382-1387**

77. Hickey AJ, Misra A and Fourie PB. Dry powder antibiotic aerosol product development: Inhaled therapy for tuberculosis. **Journal of Pharmaceutical Sciences 102**(**11**), **3900-3907**

78. Husain I, Saquib M and Shaw AK. Conjugation-driven cascade approach to enantiopure Pyrano-fused 1,5-Benzodiazepines by tandem condensation/[3,3]-Sigmatropic rearrangement/ Aza-Michael addition-elimination. **European Journal of Organic Chemistry 2013**(**11**), **2194-2200**

79. Ishola IO, Tota S, Adeyemi OO, Agbaje EO, Narender T and Shukla R. Protective effect of *Cnestis ferruginea* and its active constituent on scopolamine-induced memory impairment in mice: A behavioral and biochemical study. **Pharmaceutical Biology 51**(**7**), **825-835**

80. Ishola IO, Adeyemi OO, Agbaje EO, Tota S and Shukla R. *Combretum mucronatum* and *Capparis thonningii* prevent scopolamine-induced memory deficit in mice. **Pharmaceutical Biology 51**(**1**), **49-57**

81. Ishola IO, Chaturvedi JP, Rai S, Rajasekar N, Adeyemi OO, Shukla R and Narender T. Evaluation of amentoflavone isolated from *Cnestis ferruginea* Vahl ex DC (Connaraceae) on production of inflammatory mediators in LPS stimulated rat astrocytoma cell line (C6) and THP-1 cells. **Journal of Ethnopharmacology 146**(**2**), **440-448**

82. Jadiya P and Nazir A. Environmental Toxicants as extrinsic epigenetic factors for parkinsonism: Studies employing transgenic *C. elegans* model. **CNS & Neurological Disorders-Drug Targets 11**(**8**), **976-983**

83. Jadiya P, Mir SS and Nazir A. Effect of various classes of pesticides on expression of stress genes in transgenic *C. elegans* model of Parkinson's disease. **CNS & Neurological Disorders-Drug Targets 11**(**8**), **1001-1005**

84. Jain M, Surin WR, Misra A, Prakash P, Singh V, Khanna V, Kumar S, Siddiqui HH, Raj K, Barthwal MK and Dikshit M. Antithrombotic activity of a newly synthesized coumarin derivative 3-(5-Hydroxy-2,2-dimethyl-chroman-6-yl)-N-{2-[3-(5-hydroxy-2,2-dimethyl-chroman-6-yl)-propionylamino]-ethyl}-propionamide. **Chemical Biology & Drug Design 81**(**4**), **499-508**

85. Jaiswal D, Trivedi S, Agrawal NK, Singh R and Singh K. Association of interleukin-1beta C+3953T gene polymorphism with human male infertility. **Systems Biology in Reproductive Medicine 59**(**6**), **347-351**

86. Jana AK and Panda G. Stereoselective synthesis of Jaspine B and its C2 epimer from Garner aldehyde. **RSC Advances 3**(**37**), **16795-16801**

87. Jankiprasad, Naresh G, Gupta J, Bhattacharya SM, Rajendran SM, Awasthi SK and Narender T. Antifilarial activity of constituents of *Calophyllum inophyllum* and their derivatives. **Natural Product Communications 8**(**6**), **803-804**

88. Jha AN, Singh VK, Singh R, Pati SS, Patra PK, Singh L and Thangaraj K. A rare non-synonymous c.102C > G SNP in the IFNB1 gene might be a risk factor for cerebral malaria in Indian populations. **Infection Genetics and Evolution 14**, **369-374**

89. Joseph SK, Verma SK, Verma R, Saxena JK, Srivastava M and Murthy PK. Anti-inflammatory BmAFI of *Brugia malayi* modulates IgE, histamine and histamine receptor responses in *Mastomys coucha*. **Acta Tropica 127**(**2**), **82-86**

90. Joshi P, Deora GS, Rathore V, Rawat AK , Srivastava AK and Jain D. Molecular modeling and synthesis of ZINC02765569 derivatives as protein tyrosine phosphatase 1B inhibitors: lead optimization study. **Medicinal Chemistry Research 22**(**4**), **1618-1623**

91. Joshi P, Deora GS, Rathore V, Tanwar O, Rawat AK, Srivastava AK and Jain D. Identification of ZINC02765569: a potent inhibitor of PTP1B by vHTS. **Medicinal Chemistry Research 22**(**1**), **28-34**

92. Kalani K, Kushwaha V, Verma R, Murthy PK and Srivastava SK. Glycyrrhetinic acid and its analogs: A new class of antifilarial agents. **Bioorganic & Medicinal Chemistry Letters 23**(**9**), **2566-2570**

93. Kamat PK, Rai S and Nath C. Okadaic acid induced neurotoxicity: An emerging tool to study Alzheimer's disease pathology. **Neurotoxicology 37**, **163-172**

94. Kanaujiya JK, Lochab S, Kapoor I, Pal P, Datta D, Bhatt ML, Sanyal S, Behre G and Trivedi AK. Proteomic identification of Profilin1 as a co-repressor of Estrogen receptor alpha in MCF7 breast cancer cells. **Proteomics 13**(**14**), **2100-2112**

95. Kansal S, Tandon R, Verma PRP, Dube A and Mishra PR. Development of doxorubicin loaded novel core shell structured nanocapsules for the intervention of visceral leishmaniasis. **Journal of Microencapsulation 30(5), 441-450**

96. Katiyar S, Patidar D, Gupta S, Singh RK and Singh P. Some Indian traditional medicinal plants with antioxidant activity: A Review. **International Journal of Innovative Research in Science, Engineering and Technology 2(12)**

97. Kaur J, Dutta S, Chang KP and Singh N. A member of the Ras oncogene family, RAP1A, mediates antileishmanial activity of monastrol. **Journal of Antimicrobial Chemotherapy 68(5), 1071-1080**

98. Kaushik S, Singh N, Yamini S, Singh A, Sinha M, Arora A, Kaur P, Sharma S and Singh TP. The mode of inhibitor binding to Peptidyl-tRNA hydrolase: binding studies and structure determination of unbound and bound Peptidyl- tRNA hydrolase from *Acinetobacter baumannii*. **PLoS One 8(7), e67547**

99. Keshari RS, Verma A, Barthwal MK and Dikshit M. Reactive oxygen species-induced activation of ERK and p38 MAPK mediates PMA-induced NETs release from human neutrophils. **Journal of Cellular Biochemistry 114(3), 532-540**

100. Khan IA and Saxena AK. (R/S)-BINOL-á-Phosphoryloxy enecarbamate-mediated and (R/S)-Titanium(IV) BINOLates-catalyzed enantioselective Intramolecular Heck/Aza-Diels–Alder Cycloaddition (IHADA): An expedient methodology. **Advanced Synthesis & Catalysis 355(13), 2617-2626**

101. Khan IA and Saxena AK. Metal-Free, Mild, Nonepimerizing, Chemo- and Enantio- or Diastereoselective N-alkylation of amines by alcohols via oxidation/Imine-Iminium formation/ reductive amination: A pragmatic synthesis of Octahydropyrazinopyridoindoles and higher ring analogues. **Journal of Organic Chemistry 78(23), 11656-11669**

102. Khan K, Sharan K, Swarnkar G, Chakravarti B, Mittal M, Barbhuyan TK, China SP, Khan MP, Nagar GK, Yadav D, Dixit P, Maurya R and Chattopadhyay N. Positive skeletal effects of cladrin, a naturally occurring dimethoxydaidzein, in osteopenic rats that were maintained after treatment discontinuation. **Osteoporosis International 24(4), 1455-1470**

103. Khan MP, Mishra JS, Sharan K, Yadav M, Singh AK, Srivastava A, Kumar S, Bhaduaria S, Maurya R, Sanyal S and Chattopadhyay N. A novel flavonoid C-glucoside from *Ulmus wallichiana* preserves bone mineral density, microarchitecture and biomechanical properties in the presence of glucocorticoid by promoting osteoblast survival: A comparative study with human parathyroid hormone. **Phytomedicine 20(14), 1256-1266**

104. Khan S, Shukla S, Sinha S and Meeran SM. Role of adipokines and cytokines in obesity-associated breast cancer: Therapeutic targets. **Cytokine & Growth Factor Reviews 24(6), 503-13**

105. Khan SR, Singh S, Roy KK, Akhtar MS, Saxena AK and Krishnan MY. Biological evaluation of novel substituted chloroquinolines targeting mycobacterial ATP synthase. **International Journal of Antimicrobial Agents 41(1), 41-46**

106. Khanna V, Jain M, Singh V, Kanshana JS, Prakash P, Barthwal MK, Murthy PSR and Dikshit M. Cholesterol diet withdrawal leads to an initial plaque instability and subsequent regression of accelerated iliac artery atherosclerosis in rabbits. **PLoS One 8(10), e77037**

107. Khatik R, Mishra R, Verma A, Dwivedi P, Kumar V, GuptaV, Paliwal SK, Mishra PR and Dwivedi AK. Colon-specific delivery of curcumin by exploiting Eudragit-decorated chitosan nanoparticles *in vitro* and *in vivo*. **Journal of Nanoparticle Research 15(9), 1893**

108. Khedgikar V, Kushwaha P, Gautam J, Verma A, Changkija B, Kumar A, Sharma S, Nagar GK, Singh D, Trivedi PK, Sangwan NS, Mishra PR and Trivedi R. Withaferin A: a proteasomal inhibitor promotes healing after injury and exerts anabolic effect on osteoporotic bone. **Cell Death & Disease 4(8), e778**

109. Kumar NVS, Singh H, Pulukuri KK and Chakraborty TK. Preferential heterochiral cyclic trimerization of 5-(aminoethyl)-2-furancarboxylic acid (AEFC) driven by non-covalent interactions. **Journal of Molecular Graphics & Modelling 38, 13-25**

110. Kumar A, Gupta GK, Khedgikar V, Gautam J, Kushwaha P, Changkija B, Nagar GK, Gupta V, Verma A, Dwivedi AK, Chattopadhyay N, Mishra PR and Trivedi R. *In vivo* efficacy studies of layer-by-layer nano-matrix bearing kaempferol for the conditions of osteoporosis: A study in ovariectomized rat model. **European Journal of Pharmaceutics and Biopharmaceutics 82(3), 508-517**

111. Kumar A, Gupta LP and Kumar M. Metal-free C(sp(3))-H bond activation: First synthesis of diaryl-pyridinium-azaarene-butenolate zwitterionic salts on chalcones. **RSC Advances 3(41), 18771-18774**

112. Kumar A, Gupta MK, Kumar M and Saxena D. Micelle promoted multicomponent synthesis of 3-amino alkylated indoles via a mannich-type reaction in water. **RSC Advances 3(6), 1673-1678**

113. Kumar A, Misra P and Dube A. Amplified fragment length polymorphism: An adept technique for genome mapping, genetic differentiation, and intraspecific variation in protozoan parasites. **Parasitology Research 112(2), 457-466**

114. Kumar A, Saxena D and Gupta MK. Nanoparticle catalyzed reaction (NPCR): ZnO-NP catalyzed Ugi-reaction in aqueous mediumt. **Green Chemistry 15(10), 2699-2703**

115. Kumar A, Saxena D and Gupta MK. Boric acid catalyzed Ugi three-component reaction in aqueous media. **RSC Advances 3(14), 4610-4612**

116. Kumar A, Srivastava S, Gupta G, Kumar P and Sarkar J. Functional ionic liquid [bmim][Sac] mediated synthesis of ferrocenyl thiopropanones via the “dual activation of the substrate by the ionic liquid”. **RSC Advances 3(11), 3548-3552**

117. Kumar A,Gupta G, Srivastava S, Bishnoi AK, Saxena R, Kant R, Khanna RS, Maulik PR and Dwivedi A. Novel diastereoselective synthesis of spiropyrrolidine-oxindole derivatives as anti-breast cancer agents. **RSC Advances 3(14), 4731-4735**

118. Kumar B, Tripathi C, Kanchan RK, Tripathi JK, Ghosh JK, Ramachandran R, Bhadauria S and Tripathi RK. Dynamics of physical interaction between HIV-1 Nef and ASK1: Identifying the interacting Motif(S). **PLoS One 8(6), e67586**

119. Kumar D, Tiwary P, Dube A, Chakravarty J, Rai M and Sundar S. Cloning, expression and purification of *L. donovani* specific antigen for serodiagnosis of *Visceral Leishmaniasis*. **Journal of Molecular Biomarkers & Diagnosis 4, 141**

120. Kumar K and Chopra S. New drugs for methicillin-resistant *Staphylococcus aureus*: An update. **Journal of Antimicrobial Chemotherapy 68**(**7**), **1465-1470**

121. Kumar L, Lal N, Kumar V, Sarswat A, Jangir S, BalaV, Kumar L, Kushwaha B, Pandey AK, Siddiqi MI, Shukla PK, Maikhuri JP, Gupta G and Sharma VL. Azole-carbodithioate hybrids as vaginal anti-Candida contraceptive agents: Design, synthesis and docking studies. **European Journal of Medicinal Chemistry 70**, **68-77**

122. Kumar S, Dwivedi AP, Kashyap VK, Saxena AK, Dwivedi AK, Srivastava R and Sahu DP. Synthesis and biological evaluation of trans 6-methoxy-1,1-dimethyl-2-phenyl-3-aryl-2,3-dihydro-1H-inden-4-yloxyalkylamine derivatives against drug susceptible, non-replicating *M. tuberculosis* H37Rv and clinical multidrug resistant strains. **Bioorganic & Medicinal Chemistry Letters 23**(**8**), **2404-2407**

123. Kumar S, Pratap R, Kumar A, Kumar B, Tandon VK and Ram VJ. Direct alkenylation of indolin-2-ones by 6-aryl-4-methylthio-2H-pyran-2-one-3-carbonitriles: A novel approach. **Beilstein Journal of Organic Chemistry 9**, **809-817**

124. Kumar S, Pratap R, Kumar A, Kumar B, Tandon VK and Ram VJ. Synthesis of dibenzo[d,f]diazepinones and alkenylindolinones through ring transformation of 2H-pyran-2-one-3-carbonitriles by indolin-2-ones. **Tetrahedron 69**(**24**), **4857-4865**

125. Kumar V, Gupta MK, Singh G and Prabhakar, YS. CP-MLR/PLS directed QSAR study on the glutaminyl cyclase inhibitory activity of imidazoles: rationales to advance the understanding of activity profile. **Journal of Enzyme Inhibition and Medicinal Chemistry 28**(**3**), **515-522**

126. Kumari BN and Goyal N. Cloning, characterization and sub-cellular localization of gamma subunit of T-complex protein-1 (chaperonin) from *Leishmania donovani*. **Biochemical and Biophysical Research Communications 429**(**41306**), **70-74**

127. Kumari R, Saxena R, Tiwari S, Tripathi DK and Srivastava KK. Rv3080c regulates the rate of inhibition of mycobacteria by isoniazid through FabD. **Molecular and Cellular Biochemistry 374**(**41306**), **149-155**

128. Kushwaha HN, Misra A, Gautam N, Singh Y, Kumar H, Siddiqui HH, Singh SK. Effect of Carbamazepine on the pharmacokinetic parameters of CDRI-97/78 following coadministration to rats. **Drug Research (Stuttg). (Arzneimittel Forschung) 63**(**6**), **282-288**

129. Kushwaha S, Singh PK, Rana AK and Misra-Bhattacharya S. Immunization of *Mastomys coucha* with *Brugia malayi* recombinant trehalose-6-phosphate phosphatase results in significant protection against homologous challenge infection. **PLoS One 8**(**8**), **e72585**

130. Li YY, Meeran SM, Patel SN, Chen HP, Hardy TM and Tollefsbol TO. Epigenetic reactivation of estrogen receptor-alpha (ER alpha) by genistein enhances hormonal therapy sensitivity in ER alpha-negative breast cancer. **Molecular Cancer 12**(**9**), **doi: 10.1186/1476-4598-12-9**

131. Lochab S, Pal P, Kapoor I, Kanaujiya JK, Sanyal S, Behre G and Trivedi AK. E3 ubiquitin ligase Fbw7 negatively regulates granulocytic differentiation by targeting G-CSFR for degradation. **Biochimica et Biophysica Acta (BBA) - Molecular Cell Research 1833**(**12**), **2639-2652**

132. Luthra A, Gaur A and Ramachandran R. Rv3868 (EccA1), an essential component of the *Mycobacterium tuberculosis* ESX-1 secretion system, is thermostable. **Biochimica Et Biophysica Acta-Proteins and Proteomics 1834**(**6**), **1181-1186**

133. Malasoni R, Srivastava A, Pandey RR, Srivastava PK and Dwivedi AK. Development and validation of improved HPLC method for the Quantitative determination of Curcuminoids in Herbal Medicament. **Journal of Scientific & Industrial Research 72**(**2**), **88-91**

134. Manna SK and Panda G. An efficient synthetic approach for N-C bond formation from (S)-amino acids: an easy access to cis-2,5disubstituted chiral piperazines. **RSC Advances 3**(**40**), **18332-18338**

135. Manohar M, Fatima I, Saxena R, Chandra V, Sankhwar PL and Dwivedi A. (-)-Epigallocatechin-3-gallate induces apoptosis in human endometrial adenocarcinoma cells via ROS generation and p38 MAP kinase activation. **Journal of Nutritional Biochemistry 24**(**6**), **940-947**

136. Maurya HK, Verma R, Alam S, Pandey S, Pathak V, Sharma S, Srivastava KK, Negi AS and Gupta Atul. Studies on substituted benzo[h]quinazolines, benzo[g]indazoles, pyrazoles, 2,6-diarylpyridines as anti-tubercular agents. **Bioorganic & Medicinal Chemistry Letters 23**(**21**), **5844-5849**

137. Maurya VK, Jha RK, Kumar V, Joshi A, Chadchan S, Mohan JJ and Laloraya M. Transforming Growth Factor-Beta 1 (TGF-B) liberation from its latent complex during embryo implantation and its regulation by estradiol in mouse. **Biology of Reproduction 89**(**4**), **84-1-17**

138. Maurya R, Soni A, Anand D, Ravi M, Raju KSR, Taneja I, Naikade NK, Puri SK, Wahajuddin, Kanojiya S and Yadav PP. Synthesis and Antimalarial Activity of 3,3-Spiroanellated 5,6-Disubstituted 1,2,4-Trioxanes. **ACS Medicinal Chemistry Letters 4**(**2**), **165-169**

139. Mishra A, Srivastava R, Srivastava SP, Gautam S, Tamrakar AK, Maurya R and Srivastava AK. Antidiabetic activity of heart wood of *Pterocarpus marsupium* Roxb. and analysis of phytoconstituents. **Indian Journal of Experimental Biology 51**(**5**), **363-374**

140. Mishra S, Triptahi V, Singh S, Phukan UJ, Gupta MM, Shanker K and Shukla RK. Wound induced tanscriptional regulation of benzylisoquinoline pathway and characterization of wound inducible pswrky transcription factor from *Papaver somniferum*. **PLoS One 8**(**1**), **e52784**

141. Mishra SK, Singh P and Rath SK. Protective effect of quercetin on chloroquine-induced oxidative stress and hepatotoxicity in mice. **Malaria Research and Treatment 2013, Article no. 141734, 1-10**

142. Mishra V, Agrawal M, Onasanwo SA, Madhur G, Rastogi P, Pandey HP, Palit G and Narender T. Anti-secretory and cyto-protective effects of chebulinic acid isolated from the fruits of *Terminalia chebula* on gastric ulcers. **Phytomedicine 20**(**6**), **506-511**

143. Mishra V, Shukla A, Pandeti S, Barthwal MK, Pandey HP, Palit G and Narender T. Arbortristoside-A and 7-O-trans-cinnamoyl-6â-hydroxyloganin isolated from *Nyctanthes arbortristis* possess anti-ulcerogenic and ulcer-healing properties. **Phytomedicine 20**(**12**), **1055-1063**

144. Misra A, Srivastava S, Ankireddy SR, Islam NS, Chandra T, Kumar A, Barthwal MK and Dikshit M. Phospholipase C-gamma 2 via p38 and ERK1/2 MAP kinase mediates diperoxovanadate-asparagine induced human platelet aggregation and sCD40L release. **Redox Report 18**(**5**), **174-185**

145. Nag JK, Shrivastava N, Gupta J and Misra-Bhattacharya S. Recombinant translation initiation factor-1 of Wolbachia is an immunogenic excretory secretory protein that elicits Th2 mediated immune protection against *Brugia malayi*. **Comparative Immunology Microbiology and Infectious Diseases 36**(**1**), **25-38**

146. Nair RR, Khanna A, Singh R and Singh K. Association of maternal and fetal MTHFR A1298C polymorphism with the risk of pregnancy loss: a study of an Indian population and a meta-analysis. **Fertility and Sterility 99**(**5**), **1311-0**

147. Narender T, Madhur G, Jaiswal N, Agrawal M, Maurya CK, Rahuja N, Srivastava AK and Tamrakar AK. Synthesis of novel triterpene and N-allylated/N-alkylated niacin hybrids as á-glucosidase inhibitors. **European Journal of Medicinal Chemistry 63**, **162-169**

148. Narender T, Sukanya P, Sharma K and Bathula SR. Preparation of novel antiproliferative emodin derivatives and studies on their cell cycle arrest, caspase dependent apoptosis and DNA binding interaction. **Phytomedicine 20**(**10**), **890-896**

149. Narender T, Sukanya P, Sharma K and Bathula SR. Apoptosis and DNA intercalating activities of novel emodin derivatives. **RSC Advances 3**(**17**), **6123-6131**

150. Narender T, Venkateswarlu K, Madhur G and Reddy KP. Highly efficient and selective deprotection method for prenyl, geranyl, and phytyl ethers and esters using borontrifluoride-etherate. **Synthetic Communications 43**(**1**), **26-33**

151. Natarajan, R; Bhattacharjee, AK; Prabhakar, YS. Chemo- and bioinformatics in the discovery of antimalarial drugs and arthropod repellents to counter vector borne diseases (VBDs). **Current Computer-Aided Drug Design 9**(**3**), **299-299**

152. Nayak M, Rastogi N and Batra S. Synthesis of pyrazole-fused polycyclic systems via intramolecular 1,3-dipolar cycloaddition reactions. **Tetrahedron 69**(**24**), **5029-5043**

153. Nayak S, Goel MM, Bhatia V, Chandra S, Makker A, Kumar S, Agrawal SP, Mehrotra D and Rath SK. Molecular and phenotypic expression of decorin as modulator of angiogenesis in human potentially malignant oral lesions and oral squamous cell carcinomas. **Indian Journal of Pathology and Microbiology 56**(**3**), **204-210**

154. Nazir A. Model System *Caenorhabditis elegans* and neurodegenerative disease research. **CNS & Neurological Disorders-Drug Targets 11**(**8**), **955-956**

155. Ngueguim FT, Khan MP, Donfack JH, Tewari D, Dimo T, Kamtchouing P, Maurya R and Chattopadhyay N. Ethanol extract of *Peperomia pellucida* (Piperaceae) promotes fracture healing by an anabolic effect on osteoblasts. **Journal of Ethnopharmacology 148**(**1**), **62-68**

156. Niranjan R, Rajasekar N, Nath C and Shukla R. The effect of guggulipid and nimesulide on MPTP-induced mediators of neuroinflammation in rat astrocytoma cells, C6. **Chemico-Biological Interactions 200**(**41335**), **73-83**

157. Niwas R, Singh V, Singh R, Tripathi D and Tripathi CK. Production, purification and characterization of cholesterol oxidase from a newly isolated Streptomyces sp. **World Journal of Microbiology and Biotechnology 29**(**11**), **2077-2085**

158. Ojo OO, Bhadauria S and Rath SK. Dose-dependent adverse effects of salinomycin on male reproductive organs and fertility in mice. **PLoS One 8**(**7**), **e69086**

159. Omer A, Yadav NK, Singh P and Singh RK. Hematological malignancies: Role of miRNAs and their *in silico* aspects. **Expert Review of Anticancer Therapy 13**(**9**), **1121-33**

160. Pachauri SD, Khandelwal K, Singh SP, Sashidhara KV and Dwivedi AK. HPLC method for identification and quantification of two potential anti-inflammatory and analgesic agents-1, 3-dibenzyl urea and aurantiamide acetate in the roots of *Moringa oleifera*. **Medicinal Chemistry Research 22**, **5284-5289**

161. Pachauri SD, Verma PR, Dwivedi AK, Tota S, Khandelwal K, Saxena JK and Nath C. Ameliorative effect of Noni fruit extract on streptozotocin-induced memory impairment in mice. **Behavioural Pharmacology 24**(**4**), **307-319**

162. Pal P, Kanaujiya JK, Lochab S, Tripathi SB, Sanyal S, Behre G and Trivedi AK. Proteomic analysis of rosiglitazone and guggulsterone treated 3T3-L1 preadipocytes. **Molecular and Cellular Biochemistry 376**(**41306**), **81-93**

163. Pal P, Lochab S, Kanaujiya JK, Kapoor I, Sanyal S, Behre G and Trivedi AK. E6AP, an E3 ubiquitin ligase negatively regulates granulopoiesis by targeting transcription factor C/EBP alpha for ubiquitin-mediated proteasome degradation. **Cell Death & Disease 4**(**4**), **E590**

164. Pal P, Lochab S, Kanaujiya JK, Kapoor I, Sanyal S, Behre G and Trivedi AK. E3 Ubiquitin ligase E6AP negatively regulates adipogenesis by downregulating proadipogenic factor C/EBPalpha. **PLoS One 8**(**6**), **e65330**

165. Pandeti S, Sonkar R, Shukla A, Bhatia G and Tadigoppula N. Synthesis of new andrographolide derivatives and evaluation of their antidyslipidemic,LDL-oxidation and antioxidant Activity. **European Journal of Medicinal Chemistry 69**, **439-448**

166. Pandey AK, Sharma R, Shivahare R, Arora A, Rastogi N, Gupta S and Chauhan PMS. Synthesis of Perspicamide A and related diverse analogues: Their bioevaluation as potent antileishmanial agents. **Journal of Organic Chemistry 78**(**4**), **1534-1546**

167. Pandey G, Bhowmik S and Batra S. Synthesis of 3H-Pyrazolo[3,4-c]-isoquinolines and Thieno[3,2-c]-isoquinolines via cascade imination/ intramolecular decarboxylative coupling. **Organic Letters 15**(**19**), **5044-5045**

168. Pandey S, Agarwal P, Srivastava K, Rajakumar S, Puri SK, Verma P, Saxena JK, Sharma A, Lal J and Chauhan PM. Synthesis and bioevaluation of novel 4-aminoquinoline-tetrazole derivatives as potent antimalarial agents. **European Journal of Medicinal Chemistry 66**, **69-81**

169. Pandey SK, Dwivedi H, Singh S, Siddiqui WA and Tripathi R. Antimalarial interaction of quinine and quinidine with clarithromycin. **Parasitology 140**(**3**), **406-413**

170. Pawar VK, Asthana S, Mishra N, Chaurasia M and Chourasia MK. Chitosan coated hydroxypropyl methylcellulose-ethylcellulose shell based gastroretentive dual working system to improve the bioavailability of norfloxacin. **RSC Advances 3**(**41**), **19144-19153**

171. Pooja S, Francis A, Rajender S, Tamang R, Rajkumar R, Saini KS, Megu K, Goel MM, Surekha D, Rao DR, Rao L, Ramachandra L, Kumar S, Kumar S, Vishnupriya S, Satyamoorthy K, Negi MPS, Thangaraj K and Konwar R. Strong impact of TGF-beta 1 gene polymorphisms on breast cancer risk in Indian women: A case-control and population-based study. **PLoS One 8**(**10**), **e75979**

172. Prasad J, Singh VK, Shrivastava A, Chaturvedi U, Bhatia G, Arya KR, Awasthi SK and Narender T. Antidyslipidemic and

antioxidant activity of an unusual amino acid (2-amino-5-hydroxyhexanoic acid) isolated from the seeds of *Crotalaria juncea*. **Phytomedicine 21**(**1**), **15-9**

173. Prasad J, Maurya CK, PandeyJ, Jaiswal N, Madhur G, Srivastava AK, Narender T and Tamrakar AK. Diastereomeric mixture of calophyllic acid and isocalophyllic acid stimulates glucose uptake in skeletal muscle cells: Involvement of PI-3-Kinase- and ERK1/2-dependent pathways. **Molecular and Cellular Endocrinology 370**(**41306**), **11-19**

174. Pratap JV, Luisi BF and Calladine CR. Geometric principles in the assembly of alpha-helical bundles. **Philosophical Transactions of the Royal Society A-Mathematical Physical and Engineering Sciences 371**, **1993**

175. Puri A, Srivastava A, Bhardwaj A, Tandon JS and Saxena KC. Immunostimulant activity of certain plants used in Indian traditional medicine. **Journal of Medicinal Plants Research 70**(**44**), **3242-3246**

176. Rai NK, Ashok A, Rai A, Tripathi S, Nagar GK, Mitra K and Bandyopadhyay S. Exposure to as, cd and pb-mixture impairs myelin and axon development in rat brain, optic nerve and retina. **Toxicol Appl Pharmacol. 273**(**2**), **242-58**

177. Rai S, Bhaskar, Goel SK, Dwivedi, UN, Sundar S and Goyal N. Role of Efflux pumps and intracellular thiols in natural antimony resistant isolates of *Leishmania donovani*. **PLoS One 8**(**9**), **e74862**

178. Rai S, Kamat PK, Nath C and Shukla R. A study on neuroinflammation and NMDA receptor function in STZ (ICV) induced memory impaired rats. **Journal of Neuroimmunology 254**(**1-2**), **1-9**

179. Raj A, Kumar S, Singh SK and Kumar M. Characterization of a new providencia sp strain X1 producing multiple Xylanases on wheat bran. **Scientific World Journal ID-386769**, **1-10**

180. Rajasekar N, Dwivedi S, Tota SK, Kamat PK, Hanif K, Nath C and Shukla R. Neuroprotective effect of curcumin on okadaic acid induced memory impairment in mice. **European Journal of Pharmacology 715**(**1-3**), **381-394**

181. Rajendar K, Kant Ruchir and Narender T. Molecular Iodine-mediated domino reaction for the synthesis of benzamides, 2,2-Diazidobenzofuran-3(2H)-ones and benzoxazolones. **Advanced Synthesis & Catalysis 2013**(**355**), **3591-3596**

182. Rajender S, Carlus SJ, Bansal SK, Negi MPS, Sadasivam N, Sadasivam MN and Thangaraj K. Androgen receptor CAG repeats length polymorphism and the risk of polycystic ovarian syndrome (PCOS). **PLoS One 8**(**10**), **e75709**

183. Rajender S, Gupta NJ, Chakrabarty B, Singh L and Thangaraj K. L712V mutation in the androgen receptor gene causes complete androgen insensitivity syndrome due to severe loss of androgen function. **Steroids 78** (**12-13**), **1288-1292**

184. Raju KS, Taneja I, Singh SP and Wahajuddin. Utility of noninvasive biomatrices in pharmacokinetic studies. **Biomedical Chromatography 27** (**10**), **1354-1366**

185. Ramakrishna KKG, Ajay A, Sharma A and Tripathi RP. Chemoselective synthesis of polyfunctional aminophenylm 2-oxobut-3-enyl - and quinolinylmethyl- C-glycopyranosides from nitrophenyl 2-oxobut-3-enyl C-glycopyranosides under ultrasonic vibration. **Arkivoc 2013**(**ii**), **146-165**

186. Rana AK and Misra-Bhattacharya S. Current drug targets for helminthic diseases. **Parasitology Research 112**(**5**), **1819-1831**

187. Rana AK, Chandra S, Siddiqi MI and Misra-Bhattacharya S. Molecular characterization of an rsmD-Like rRNA methyltransferase from the wolbachia endosymbiont of *Brugia malayi* and antifilarial activity of specific inhibitors of the enzyme. **Antimicrobial Agents and Chemotherapy 57**(**8**), **3843-3856**

188. Rastogi N and Mishra DP. Therapeutic targeting of cancer cell cycle using proteasome inhibitors. **Cell Division 7**, **26**

189. Ravi M, Anand D, Maurya R, Chauhan P, Naikade NK, Shukla SK and Yadav PP. Synthesis of 1,2,4-Trioxepanes and 1,2,4-Trioxanes via H2O2-Mediated Reaction of Tertiary Carbinols. **Synlett 2013**(**2**), **173-176**

190. Rawat SK, Singh RK, Bansode FW, Singh P and Singh RP. Nitrate induced toxicity on some haematological parameters of charles foster rats. **Journal of Recent Advances in Applied Sciences 2013**(**28:**), **35-38**

191. Raza S, Srivastava SP, Srivastava DS, Srivastava AK, Haq W and Katti SB. Thiazolidin-4-one and thiazinan-4-one derivatives analogous to rosiglitazone as potential antihyperglycemic and antidyslipidemic agents. **European Journal of Medicinal Chemistry 63**, **611-620**

192. Reddy LVR, Kumar V, Sagar R and Shaw AK. Glycal-Derived delta-Hydroxy alpha,beta-Unsaturated Aldehydes (Perlin Aldehydes): Versatile Building Blocks in Organic Synthesis. **Chemical Reviews 113**(**5**), **3605-3631**

193. Reddy MS, Thirupathi N and Haribabu M. Tandem aldehyde-alkyne-amine coupling/cycloisomerization: A new synthesis of coumarins. **Beilstein Journal of Organic Chemistry 9**, **180-184**

194. Reddy MS, Thirupathi N, Hari Babu M and Puri S. Synthesis of substituted 3-iodocoumarins and 3-Iodobutenolides via electrophilic iodocyclization of ehoxyalkyne diols. **Journal of Organic Chemistry 78**(**12**), **5878-88**

195. Romero JR, Youte R, Brown EM, Pollak MR, Goltzman D, Karaplis A, Pong LC, Chien L, Chattopadhyay N and Rivera A. Parathyroid hormone ablation alters erythrocyte parameters that are rescued by calcium-sensing receptor gene deletion. **European Journal of Haematology 91**(**1**), **37-45**

196. Sagar N, Pandey AK, Gurbani D, Khan K, Singh D, Chaudhari BP, Soni VP, Chattopadhyay N, Dhawan A and Bellare JR. *In-Vivo* efficacy of compliant 3D nano-composite in critical-size bone defect repair: A six month preclinical study in rabbit. **PLoS One 8**(**10**), **e77578**

197. Saifuddin M, Samala S, Krishna DGV and Kundu B. A sequential One-Pot protocol for the synthesis of Dihydrobenzo [6,7]indolo[3',4':3,4,5]azepino[2,1-a]isoquinolines using a Gold-Silver combined catalyst. **Synthesis-Stuttgart 45**(**11**), **1553-1563**

198. Saini V, Verma SK, Murthy PK and Kohli D. Poly(D,L)-lactide-co-glycolide (PLGA) microspheres as immunoadjuvant for *Brugia malayi* antigens. **Vaccine 31** (**38**), **4183-4191**

199. Samala S, Mandadapu AK, Saifuddin M and Kundu B. Gold-catalyzed sequential alkyne activation: One-Pot synthesis of NH-Carbazoles via cascade hydroarylation of Alkyne/6-Endo-Dig carbocyclization reactions. **Journal of Organic Chemistry 78**(**13**), **6769-6774**

200. Samala S, Saifuddin M, Mandadapu AK and Kundu B. Three-component tandem-intramolecular hydroamination reactions in One Pot involving Indoles, 2-Aminobenzyl Alcohols, and 2-Alkynylbenzaldehydes: Consecutive 7-endo-trig and

electrophilic 6-endo-dig Cyclizations. **European Journal of Organic Chemistry 2013**(**18**), **3797-3806**

201. Sanchez-Gomez FJ, Espinosa-Diez C, Dubey M, Dikshit M and Lamas S. S-glutathionylation: Relevance in diabetes and potential role as a biomarker. **Biological Chemistry 394**, **1263-1280**

202. Saquib M, Husain I, Kant R, Meena S, Gauniyal HM, Sinha S, Maulik PR and Shaw AK. Regioselective synthesis of densely functionalized, enantiopure, sugar-pyrazole hybrids as potential scaffolds for drug discovery. **RSC Advances 3**(**14**), **4526-4530**

203. Sarkar S, Jana M and Tadigoppula N. Transition metal-free domino sequential synthesis of (E)-stilbenes, biaryl methanes and biaryl ethers using Et2AlCl as a Lewis acid. **RSC Advances 3**, **18755-18758**

204. Sarkar S, Jana M and Narender T. Metal-Free directed ortho C-H iodination: Synthesis of 2 '-Iodobiaryl-2-carbonitriles. **European Journal of Organic Chemistry 2013**(**29**), **6491-6495**

205. Sashidhara KV, Modukuri RK, Sonkar R, Rao KB and Bhatia G. Hybrid benzofuran–bisindole derivatives: New prototypes with promising anti-hyperlipidemic activities. **European Journal of Medicinal Chemistry 68**, **38-46**

206. Sashidhara KV, Modukuri RK, Choudhary D, Rao KB, Kumar M, Khedgikar V and Trivedi R. Synthesis and evaluation of new coumarin-pyridine hybrids with promising anti-osteoporotic activities. **European Journal of Medicinal Chemistry 70**, **802-810**

207. Sashidhara KV, Avula SR, Sharma K, Palnati GR and Bathula SR. Discovery of coumarin-monastrol hybrid as potential antibreast tumor-specific agent. **European Journal of Medicinal Chemistry 60**, **120-127**

208. Sashidhara KV, Kumar M, Khedgikar V, Kushwaha P, Modukuri RK, Kumar A, Gautam J, Singh D, Sridhar B and Trivedi R. Discovery of Coumarin-dihydropyridine hybrids as bone anabolic agents. **Journal of Medicinal Chemistry 56**(**1**), **109-122**

209. Sashidhara KV, Palnati GR, Dodda RP, Avula SR and Swami P. Studies on novel synthetic methodologies, Part XII: An efficient One-Pot access to 6,6a-Dihydroisoindolo[2,1-a]quinazoline-5,11-diones and 5-Phenylisoindolo[2,1-a]quinazolin-11(6aH)-ones. **Synlett 2013**(**1**), **105-113**

210. Sashidhara KV, Palnati GR, Dodda RP, Avula SR and Swami P. One Pot regioselective synthesis of Imidazole and 2,3-Dihydroquinazolinone derivatives- An easy access to "Nature Like Molecules". **Synlett 2013**(**24**), **1795-1800**

211. Sashidhara KV, Palnati GR, Sonkar R, Avula SR, Awasthi C and Bhatia G. Coumarin chalcone fibrates: A new structural class of lipid lowering agents. **European Journal of Medicinal Chemistry 64**, **422-431**

212. Sashidhara KV, Singh SP, Singh SV, Srivastava RK, Srivastava K, Saxena JK and Puri SK. Isolation and identification of beta-hematin inhibitors from *Flacourtia indica* as promising antiplasmodial agents. **European Journal of Medicinal Chemistry 60**, **497-502**

213. Sashidhara KV, Singh SP, Srivastava A, Puri A. Main extracts and hypolipidemic effects of the *Bauhinia racemosa* Lam. leaf extract in HFD-fed hamsters. **Natural Product Research 27**(**12**), **1127-1131**

214. Saxena A, Balaramnavar VM, Hohlfeld T and Saxena AK. Drug/drug interaction of common NSAIDs with antiplatelet effect of aspirin in human platelets. **European Journal of Pharmacology 721**(**1-3**), **215-224**

215. Saxena A, Gupta R, Dubey CK., Singh P, Bansode FW and Singh RK. Toxic assessment of potassium nitrate by using Cfu-Gm Assay. **Journal of Recent Advances in Applied Sciences 2013** (**28**), **96-99**

216. Saxena AK, Roy KK, Singh S, Vishnoi SP, Kumar A, Kashyap VK, Kremer L, Srivastava R and Srivastava BS. Identification and characterisation of small-molecule inhibitors of Rv3097c-encoded lipase (LipY) of *Mycobacterium tuberculosis* that selectively inhibit growth of bacilli in hypoxia. **International Journal of Antimicrobial Agents 42**(**1**), **27-35**

217. Saxena R, Chandra V, Manohar M, Hajela K, Debnath U, Prabhakar YS, Saini KS, Konwar R, Kumar S, Megu K, Roy BG and Dwivedi A. Chemotherapeutic potential of 2-[Piperidinoethoxyphenyl]-3-Phenyl-2H-Benzo(b)pyran in estrogen receptor- negative breast cancer cells: Action via prevention of EGFR activation and combined inhibition of PI-3-K/Akt/FOXO and MEK/Erk/AP-1 pathways. **PLoS One 8**(**6**), **e66246**

218. Saxena R, Fatima I, Chandra V, Blesson CS, Kharkwal G, Hussain MK, Hajela K, Roy BG and Dwivedi A. Benzopyran derivative CDRI-85/287 induces G2-M arrest in estrogen receptor-positive breast cancer cells via modulation of estrogen receptors alpha- and beta-mediated signaling, in parallel to EGFR signaling and suppresses the growth of tumor xenograft. **Steroids 78**(**11**), **1071-1086**

219. Sethi A, Bhatia A, Maurya A, Panday A, Bhatia G, Shrivastava A, Singh RP and Prakash R. Proficient synthesis of biologically active pregnane derivatives and its glycoside - Experimental and theoretical approach. **Journal of Molecular Structure 1052**, **112-124**

220. Sharma BK, Verma S and Prabhakar YS. Topological and physicochemical characteristics of 1,2,3,4-Tetrahydro-acridin-9(10H)-Ones and their antimalarial profiles: A composite insight to the structure-activity relation. **Current Computer-Aided Drug Design 9**(**3**), **317-335**

221. Sharma M, Mahar R, Shukla SK, Kant R and Chauhan PMS. Potassium carbonate mediated unusual transformation of 2,3-dihydroquinazolinone via cascade reaction. **Tetrahedron Letters 54**(**46**), **6171-6177**

222. Sharma M, Chauhan K, Shivahare R, Vishwakarma P, Suthar MK, Sharma A, Gupta S,Saxena JK, Lal J, Chandra P, Kumar B and Chauhan PMS. Discovery of a new class of natural product-inspired quinazolinone hybrid as potent antileishmanial agents. **Journal of Medicinal Chemistry 56**(**11**), **4374-4392**

223. Sharma M, Kumar L, Jain A, Verma V, Sharma V, Kushwaha B, Lal N, Kumar L, Rawat T, Dwivedi AK, Maikhuri JP, Sharma VL and Gupta G. Designed chemical intervention with thiols for prophylactic contraception. **PLoS One 8**(**6**), **e67365**

224. Sharma M, Malik R, Verma A, Dwivedi P, Banoth GS, Pandey N, Sarkar J, Mishra PR and Dwivedi AK. folic acid conjugated guar gum nanoparticles for targeting methotrexate to colon cancer. **Journal of Biomedical Nanotechnology 9**(**1**), **96-106**

225. Sharma S, Khan IA and Saxena AK. Room temperature Palladium-catalyzed decarboxylative Acyl/Aroylation using [Fe(III)(EDTA)(2-O2)]3 as oxidant at biological pH. **Advanced Synthesis & Catalysis 355**(**4**), **673-678**

226. Shigemitsu H, Hisaki I, Kometani E, Yasumiya D, Sakamoto Y, Osaka K, Thakur TS, Saeki A, Seki S, Kimura F, Kimura T, Tohnai N and Miyata M. Crystalline supramolecular nanofibers based on dehydrobenzoannulene derivatives. **Chemistry - A European Journal 19**(**45**), **15366-15377**

227. Shigemitsu H, Hisaki I, Senga H, Yasumiya D, Thakur TS, Saeki A, Seki S, Tohnai N and Miyata M. Structural transformation between supramolecular nanofibers with drastic change of conductivity by heat and ultrasound. **Chemistry-An Asian Journal 8**(**7**), **1372-1376**

228. Shingade SG, Bari SKB, Agarwal Pooja and Srivastava K. Novel 5-chloroindoline-2, 3-dione derivatives: Synthesis, characterization and preliminary evaluation for antimalarial activity. **Indian Journal of Chemistry Section B-Organic Chemistry Including Medicinal Chemistry 52**(**9**), **1236-1240**

229. Shrestha BB, Karanjit S and Panda G. Shuhei Higashibayashi and Hidehiro Sakurai; Synthesis of substituted sumanenes by aromatic electrophilic substitution reactions. **Chemistry Letters 42**, **386-388**

230. Shrivastava A, Chaturvedi U, Singh SV, Saxena JK and Bhatia G. Lipid lowering and antioxidant effect of miglitol in triton treated hyperlipidemic and high fat diet induced obese rats. **Lipids 48**(**6**), **597-607**

231. Shrivastava N, Singh PK, Nag JK, Kushwaha S and Misra-Bhattacharya S. Immunization with a multisubunit vaccine considerably reduces establishment of infective larvae in a rodent model of *Brugia malayi*. **Comparative Immunology Microbiology and Infectious Diseases 36**(**5**), **507-19**

232. Shukla R, Kumar J, Dwivedi P, Gatla P and Mishra PR. Microparticles of diethylcarbamazine citrate for the treatment of lymphatic filariasis. **Asian Journal of Chemistry 25**, **S302-S304**

233. Shukla S, Khan S, Tollefsbol TO Meeran SM. Genetics and epigenetics of lung cancer: mechanisms and future perspectives. **Current Cancer Therapy Reviews 9**, **97-110**

234. Shukla V, Phulara SC, Yadav D, Tiwari S, Kaur S, Gupta MM, Nazir A and Pandey R. Iridoid Compound 10-O-trans-p-Coumaroylcatalpol extends longevity and reduces alpha synuclein aggregation in *Caenorhabditis elegans*. **CNS & Neurological Disorders-Drug Targets 11**(**8**), **984-992**

235. Siddiqui TI, Kumar KSA and Dikshit DK. Platelets and atherothrombosis: causes, targets and treatments for thrombosis. **Current Medicinal Chemistry 20**(**22**), **2779-2797**

236. Singh AK, Abhimanyu, Yadav AB, Sharma S, Garg R, Bose M and Misra A. HLA-DRB1*1501 and VDR polymorphisms and survival of *Mycobacterium tuberculosis* in human macrophages exposed to inhalable microparticles. **Pharmacogenomics 14**(**5**), **531-540**

237. Singh AK, Arya RK, Trivedi AK, Sanyal S, Baral R, Dormond O, Briscoe DM and Datta D. Chemokine receptor trio: CXCR3, CXCR4 and CXCR7 crosstalk via CXCL11 and CXCL12. **Cytokine & Growth Factor Reviews 24**(**1**), **41-9**

238. Singh AP, Sarkar S, Tripathi M and Rajender S. *Mucuna pruriens* and its major constituent L-DOPA recover spermatogenic loss by combating ROS, loss of mitochondrial membrane potential and apoptosis. **PLoS One 8**(**1**), **e54655-**

239. Singh G, Gupta MK, Kumar V and Prabhakar YS. Modeling of LIM-Kinase 2 inhibitory activity of pyrrolopyrimidine analogues: Useful in treatment of ocular hypertension and glaucoma. **Medicinal Chemistry 9**(**3**), **402-409**

240. Singh M, Shrivastava N, Saqib U, Siddiqi MI and Misra-Bhattacharya S. Structural modelling studies and immunoprophylactic potential of *Brugia malayi* DEAD Box RNA helicase. **Parasitology 140**(**8**), **1016-1025**

241. Singh N, Chikara S and Sundar S. SOLiD (TM) sequencing of genomes of clinical isolates of *Leishmania donovani* from India confirm leptomonas Co-infection and raise some key questions. **PLoS One 8**(**2**), **e55738**

242. Singh N, Rai V and Tripathi CKM. Purification and chemical characterization of antimicrobial compounds from a new soil isolate *Streptomyces rimosus* MTCC 10792. **Applied Biochemistry and Microbiology 49**(**5**), **473-480**

243. Singh P, Dinda SK, Shagufta and Panda G. Synthetic approach towards trisubstituted methanes and a chiral tertiary alpha-hydroxyaldehyde, a possible intermediate for tetrasubstituted methanes. **RSC Advances 3**(**30**), **12100-12103**

244. Singh P, Singh SK, Selvaraj C and Singh RK. *In silico* study on HIV-PRIs substructures to terminate proteolytic activity in HTLV. **Journal of Biomolecular Structure & Dynamics 31**, **127-127**

245. Singh PK, Kushwaha S, Mohd S, Pathak M and Misra-Bhattacharya S. *In vitro* gene silencing of independent phosphoglycerate mutase (iPGM) in the filarial parasite *Brugia malayi*. **Infectious Diseases of Poverty 2**(**1**), **1-12**

246. Singh R and Panda G. L-Proline derived nitrogenous steroidal systems: An asymmetric approach to 14-azasteroids. **RSC Advances 3**(**42**), **19533-19544**

247. Singh R, Parai MK, Mondal S and Panda G. Contiguous generation of quaternary and tertiary stereocenters: One pot synthesis of chroman and thiochroman fused S-proline derived chiral oxazepinones. **Synthetic Communications 43**(**2**), **253-259**

248. Singh R, Panduri J, Kumar D, Kumar D, Chandsana H, Ramakrishna R and Bhatta RS. Evaluation of memory enhancing clinically available standardized extract of *Bacopa monniera* on P-Glycoprotein and Cytochrome P450 3A in Sprague-Dawley Rats. **PLoS One 8**(**8**), **e72517**

249. Singh R, Singh SV and Arora V. Platform switching: A narrative review. **Implant Dentistry 22**(**5**), **453-459**

250. Singh SK and Pandey A. Emerging approaches in fermentative production of statins. **Applied Biochemistry and Biotechnology 171**(**4**), **927-938**

251. Singh SK, Kumari R, Singh DK, Tiwari S, Singh PK, Sharma S and Srivastava KK. Putative roles of a proline–glutamic acid-rich protein (PE3) in intracellular survival and as a candidate for subunit vaccine against *Mycobacterium tuberculosis*. **Medical Microbiology and Immunology 202**(**5**), **365-377**

252. Singh SK, Tripathi DK, Singh PK, Sharma S and Srivastava KK. Protective and survival efficacies of Rv0160c protein in murine model of *Mycobacterium tuberculosis*. **Applied Microbiology and Biotechnology 97**(**13**), **5825-5837**

253. Singh SP, Agnihotri P and Pratap JV. Characterization of a novel putative S-adenosylmethionine Decarboxylase-Like protein from *Leishmania donovani*. **PLoS One 8**(**6**), **e65912**

254. Singh V, Jain M, Misra A, Khanna V, Rana M, Prakash P, Malasoni R, Dwivedi AK, Dikshit M and Barthwal MK. Curcuma oil ameliorates hyperlipidaemia and associated deleterious

effects in golden Syrian hamsters. **British Journal of Nutrition 110**(**3**), **437-46**

255. Singh VK, Mishra V, Tiwari S, Khaliq T, Barthwal MK, Pandey HP, Palit G and Narender T. Anti-secretory and cyto-protective effects of peganine hydrochloride isolated from the seeds of Peganum harmala on gastric ulcers. **Phytomedicine 20**(**13**), **1180-1185**

256. Singh, R; Panda, G. An overview of synthetic approaches for heterocyclic steroids. **Tetrahedron 69**(**14**), **2853-2884**

257. Siriwardena A, Pulukuri KK, Kandiyal PS, Roy S, Bande O, Ghosh S, Garcia?Fernández JM, Martin FA, Ghigo JM, Beloin C, Ito K, Woods RJ, Ampapathi RS and Chakraborty TK. Sugar-Modified Foldamers as conformationally defined and biologically distinct glycopeptide mimics. **Angewandte Chemie -International Edition 52**(**39**), **10221-10226**

258. Solomon VR, Haq W, Srivastava K, Puri SK and Katti SB. Design, synthesis of 4-aminoquinoline-derived thiazolidines and their antimalarial activity and heme polymerization inhibition studies. **Journal of Enzyme Inhibition and Medicinal Chemistry 28**(**3**), **619-626**

259. Solomon VR, Haq W, Srivastava K, Puri SK and Katti SB. Design and synthesis of 3-[(7-chloro-1-oxidoquinolin-4-ylamino)alkyl]-1,3-thiazolidin-4-ones as antimalarial agents. **Journal of Enzyme Inhibition and Medicinal Chemistry 28**(**5**), **1048-1053**

260. Soni VK, Pathak M, Yadav DK, Maurya R, Sahai M, Jain SK and Misra-Bhattacharya S. Immunomodulatory constituents from Annona squamosa twigs provoke differential immune response in BALB/c mice. **Current Science 104**(**9**), **1224-1230**

261. Srivastava AK, Singh PK, Srivastava K, Singh D, Dalela D, Rath SK, Goel MM and Bhatt MLB. Diagnostic role of survivin in urinary bladder cancer. **Asian Pacific Journal of Cancer Prevention 14**(**1**), **81-85**

262. Srivastava K, Khan K, Tyagi AM, Khan MP, Yadav DK, Trivedi R, Maurya R, Singh D and Chattopadhyay N. Greater skeletal gains in ovary intact rats at maturity are achieved by supplementing a standardized extract of *Butea monosperma* stem bark that confers better bone conserving effect following ovariectomy and concurrent treatment withdrawal. **Evidence-Based Complementary and Alternative Medicine 2013**, **519387**

263. Srivastava K, Tyagi AM, Khan K, Dixit M, Lahiri S, Kumar A, Changkija B, Khan MP, Nagar GK, Yadav DK, Maurya R, Singh SP, Jain GK, Wahajuddin, Trivedi R, Chattopadhyay N and Singh D. Isoformononetin, a methoxydaidzein present in medicinal plants, reverses bone loss in osteopenic rats and exerts bone anabolic action by preventing osteoblast apoptosis. **Phytomedicine 20**(**6**), **470-480**

264. Srivastava S and Ghosh JK. Introduction of a lysine residue promotes aggregation of Temporin L in lipopolysaccharides and augmentation of its antiendotoxin property. **Antimicrobial Agents and Chemotherapy 57**(**6**), **2457-2466**

265. Srivastava S, Sonkar R, Mishra SK, Tiwari A, Balramnavar V, Mir S, Bhatia G, Saxena AK and Lakshmi V. Antidyslipidemic and antioxidant effects of novel Lupeol-derived chalcones. **Lipids 48**(**10**), **1017-1027**

266. Srivastava VK, Srivastava S, Arora A and Pratap JV. Structural insights into putative Molybdenum Cofactor Biosynthesis Protein C (MoaC2) from *Mycobacterium tuberculosis* H37Rv. **PLoS One 8**(**3**), **e58333**

267. SrivastavaVK, Rana AK, Sahasrabuddhe AA, Gupta CM and Pratap JV. Cloning, overexpression, purification and crystallization of the CRN12 coiled-coil domain from *Leishmania donovani*. **Acta Crystallographica Section F-Structural Biology and Crystallization Communications 69**, **535-539**

268. Subramaniam A, Singh R, Tilak P, Devi R, Kulandaivelu M and Kumarasamy T. Androgen insensitivity syndrome: Ten years of our experience. **Frontiers in Bioscience (Elite Ed) 5**, **779-84**

269. Suryawanshi SN, Kumar S, Shivahare R, Pandey S, Tiwari A and Gupta S. Design, synthesis and biological evaluation of aryl pyrimidine derivatives as potential leishmanicidal agents. **Bioorganic & Medicinal Chemistry Letters 23**(**18**), **5235-8**

270. Suryawanshi SN, Kumar S, Tiwari A, Shivahare R, Chhonker YS, Pandey S, Shakya N, Bhatta RS and Gupta S. Synthesis and biological evaluation of a novel series of aryl S,N-ketene acetals as antileishmanial agents. **Bioorganic & Medicinal Chemistry Letters 23**(**13**), **3979-3982**

271. Suryawanshi SN, Tiwari A, Kumar S, Shivahare R, Mittal M, Kant P and Gupta S. Chemotherapy of leishmaniasis. Part XII: Design, synthesis and bioevaluation of novel triazole integrated phenyl heteroterpenoids as antileishmanial agents. **Bioorganic & Medicinal Chemistry Letters 23**(**10**), **2925-2928**

272. Suthar MK, Doharey PK, Verma A and Saxena JK. Behavior of *Plasmodium falciparum* purine nucleoside phosphorylase in macromolecular crowded environment. **International Journal of Biological Macromolecules 62**, **657-662**

273. Suthar MK, Verma A, Doharey PK, Singh SV and Saxena JK. Single Tryptophan of disordered loop from *Plasmodium falciparum* purine nucleoside phosphorylase: Involvement in catalysis and microenvironment. **Applied Biochemistry and Biotechnology 170**(**4**), **868-879**

274. Swarnkar S, Goswami P, Kamat PK, Patro IK, Singh S and Nath C. Rotenone-induced neurotoxicity in rat brain areas: A study on neuronal and neuronal supportive cells. **Neuroscience 230**, **172-183**

275. Tadigoppula N, Korthikunta V, Gupta S, Kancharla P, Khaliq T, Soni A, Srivastava RK, Srivastava K, Puri SK, Raju KSR, Wahajuddin, Sijwali PS, Kumar V and Mohammad IS. Synthesis and insight into the Structure-Activity Relationships of Chalcones as Antimalarial Agents. **Journal of Medicinal Chemistry 56**(**1**), **31-45**

276. Tamaru T, Hattori M, Ninomiya Y, Kawamura G, Vares G, Honda K, Mishra DP, Wang B, Benjamin I, Sassone-Corsi P, Ozawa T and Takamatsu K. ROS stress resets circadian clocks to coordinate pro-survival signals. **PLoS One 8**(**12**), **e82006**

277. Tandon R, Misra P, Soni VK, Bano N, Misra-Bhattacharya S and Dube A. Unresponsiveness of Mycobacterium w vaccine in managing acute and chronic *Leishmania donovani* infections in mouse and hamster. **Parasitology 140**(**4**), **435-444**

278. Tanveer A, Allen SM, Jackson KE, Charan M, Ralph SA and Habib S. An FtsH protease is recruited to the mitochondrion of *Plasmodium falciparum*. **PLoS One 8**(**9**), **e74408**

279. Tewari R, Rajender S, Natu SM, Goel A, Dalela D, Goel MM and Tondon P . Significance of obesity markers and adipocytokines in high grade and high stage prostate cancer in North Indian men - A cross-sectional study. **Cytokine 63**(**2**), **130-134**

280. Thakur R and Mishra DP. Pharmacological modulation of beta-catenin and its applications in cancer therapy. **Journal of Cellular and Molecular Medicine 17(4), 449-456**

281. Tiwari A, Kumar S, Suryawanshi SN, Mittal M, Vishwakarma P and Gupta S. Chemotherapy of leishmaniasis part X: Synthesis and bioevaluation of novel terpenyl heterocycles. **Bioorganic & Medicinal Chemistry Letters 23(1), 248-251**

282. Tota S, Goel R, Pachauri SD, Rajasekar N, Najmi AK, Hanif K and Nath C. Effect of angiotensin II on spatial memory, cerebral blood flow, cholinergic neurotransmission, and brain derived neurotrophic factor in rats. **Psychopharmacology 226(2), 357-369**

283. Tripathi PK, Awasthi S, Kanojiya S, Tripathi V and Mishra DK. Callus culture and in vitro biosynthesis of cardiac glycosides from *Calotropis gigantea* (L.) Ait. ***In Vitro* Cellular & Developmental Biology - Plant 49, 455-460**

284. Tripathi R, Rizvi A, Pandey SK, Dwivedi H and Saxena JK. Ketoconazole, a cytochrome P-450 inhibitor can potentiate the antimalarial action of alpha/beta arteether against MDR *Plasmodium yoelii* nigeriensis. **Acta Tropica 126(2), 150-155**

285. Tyagi V, Khan S and Chauhan PMS. A simple and efficient microwave-assisted synthesis of substituted isoindolinone derivatives via Ligand-free Pd-catalyzed Domino C-C/C-N coupling reaction. **Synlett 2013(5), 645-651**

286. Tyagi V, Khan S and Chauhan PMS. Ugi Four-Component reaction with tandem deprotection, cyclization and Pictet-Spengler reaction: A concise route to N-Fused polycyclic Indolediketopiperazine alkaloid analogues. **Synlett 2013(10), 1291-1297**

287. Tyagi V, Khan S and Chauhan PMS. Facile synthesis of diverse isoindolinone derivatives via Ugi-4CR followed by Cu-catalyzed deamidative C(sp(2))-C(sp(3)) coupling. **Tetrahedron Letters 54(10), 1279-1284**

288. Tyagi V, Khan S, Shivahare R, Srivastava K, Gupta S, Kidwai S, Srivastava K, Puri SK and Chauhan PMS. A natural product inspired hybrid approach towards the synthesis of novel pentamidine based scaffolds as potential anti-parasitic agents. **Bioorganic & Medicinal Chemistry Letters 23(1), 291-296**

289. Upadhyaya K , Ajay A, Mahar R, Pandey R, Kumar B, Shukla SK and Tripathi RP. A strategy to access fused triazoloquinoline and related nucleoside analogues. **Tetrahedron 69(40), 8547-8558**

290. Valicherla GR, Hossain Z, Mahata SK and Gayen JR. Pancreastatin is an endogenous peptide that regulates glucose homeostasis. **Physiological Genomics 45(22), 1060-1071**

291. Venkatesham A, Rao JV, Kumar KV, Sarangapani M and Devarakonda K. Effect of dialkyl- [2-(1-oxa-3,4,9-triaza-fluoren-2-yl-methoxy)ethyl] amines on biogenic amines: new potential antidepressants. **Canadian Journal of Physiology and Pharmacology 90(12), 1585-1590**

292. Verma A, Suthar MK, Doharey PK, Gupta S, Yadav S, Chauhan PMS and Saxena JK. Molecular cloning and characterization of glucose-6-phosphate dehydrogenase from *Brugia malayi*. **Parasitology 140(7), 897-906**

293. Verma RK, Agrawal AK, Singh AK, Mohan M, Gupta A, Gupta P, Gupta UD and Misra A. Inhalable microparticles of nitric oxide donors induce phagosome maturation and kill *Mycobacterium tuberculosis*. **Tuberculosis 93(4), 412-417**

294. Verma RK, Germishuizen WA, Motheo MP, Agrawal AK, Singh AK, Mohan M, Gupta P, Gupta UD, Cholo M, Anderson R, Fourie PB and Misra A. Inhaled microparticles containing Clofazimine are efficacious in treatment of experimental tuberculosis in mice. **Antimicrobial Agents and Chemotherapy 57(2), 1050-1052**

295. Wahajuddin, Raju KSR and Taneja I. Bioanalysis of antimalarials using liquid chromatography. **Trac-Trends In Analytical Chemistry 42, 186-204**

296. Wahajuddin, Taneja I, Arora S, Raju KSR and Siddiqui N. Disposition of pharmacologically active dietary isoflavones in biological systems. **Current Drug Metabolism 14(4), 369-380**

297. Yadav D, Kushwaha V, Saxena K, Verma R, Murthy PK and Gupta MM. Diarylheptanoid compounds from *Alnus nepalensis* express *in vitro* and *in vivo* antifilarial activity. **Acta Tropica 128(3), 509-517**

298. Yadav D, Singh SC, Verma RK, Saxena K, Verma R, Murthy PK and Gupta MM. Antifilarial diarylheptanoids from *Alnus nepalensis* leaves growing in high altitude areas of Uttarakhand, India. **Phytomedicine 20(2), 124-132**

299. Yadav N, Dwivedi A, Mujtaba SF, Kushwaha HN, Singh SK and Ray RS. Ambient UVA-induced expression of p53 and apoptosis in human skin melanoma A375 cell line by quinine. **Photochemistry and Photobiology 89(3), 655-664**

300. Yadav N, Hussain MK, Ansari MI, Gupta PK and Hajela K. A highly efficient ultrasound-promoted synthesis of 2,3-disubstituted benzo[b]furans via intramolecular C-C bond formation in ionic liquid[bmim]BF4 at room temperature. **RSC Advances 3(2), 540-544**

Book /Book Chapters

1. Charan M and Habib S. Biosynthesis of Fe-S proteins and their roles. . **Encyclopedia of Malaria (2013), Eds., Marcel Hommel and Peter G. Kremsner). Springer.**

2. Gupta A, Haider A, Vaishya S and Habib S. Translation in Mitochondria and Apicoplasts of Apicomplexan Parasites. **In "Translation In Mitochondria and Other Organelles 2013, ", Ed. Anne-Marie Duchene, Springer: pp 159-179**

3. Omer Ankur, Singh RK, Selvaraj C, Singh Sanjeev Kumar and Singh Poonam. Predictive Toxicology – A Machine Learning Approach in Advances In Applied Information and Knowledge management Practices. **Editor: Ajit Kumar Roy 2013 pp 169-177 ISBN: 9789381450628**

4. Shukla SM and Meeran SM. Epigenetic Factors in Breast Cancer Progression. **Breast Cancer Metastasis and Drug Resistance Springer Science, New York 2013, A. Ahmad (ed.) DOI: 10.1007/978-1-4614-5647-6_19**

5. Singh RK, Singh P, Bansode FW and Yadav NK. Molecular Haematotoxicity of Drugs and Vaccines. **In Recent Advances in Biotechnology ISBN – 978-81-928063-1-0(2013), Eds. Prof. S. K. Mishra, Dept of Botany and Biotechnology, Govt. Science College, Rewa (MP) India- 486001. Vol.2, pp. 12-16, 2013**

6. Sukla P, Bansode FW, Singh P and Singh RK. Phenylhydrazine Induced Haematotoxicity in Charles Foster Rats. **In Recent Advances in Biotechnology, ISBN –978-81-928063-1-0,(2013,), Eds. Prof. S. K. Mishra, Dept of Botany and Biotechnology, Govt. Science College, Rewa (MP) India-486001. Vol.2, pp. 128-133, 2013**

2 Patents

Patents Granted Abroad

2013

1. **Title**: Novel hydroxy functionalized 1,2,4-trioxanes and their derivatives useful as antimalarial agents and a process for the preparation thereof
African Patent No. AP2633 **Date of Grant**: 03.04.2013
Inventors: Chandan Singh, Ved Prakash Verma & Sunil Kumar Puri

2. **Title**: Herbal extracts of *Salicornia species*, process of preparation thereof, use thereof against tuberculosis
Canadian Patent No. 2541971 **Date of Grant**: 23.04.2013
Inventors: Meena Rajnikanth Rathod, Bhupendra Dhanvantrai Shethia, Jayant Batukrai Pandya, Pushpito Kumar Ghosh, Prakash Jagjivanbhai Dodia, Brahm Shanker Srivastava, Ranjana Srivastava, Anil Srivastava, Chittar Mal Gupta & Vinita Chaturvedi

3. **Title**: Naturally occurring coumarins and their precursors as acetylcholinesterase inhibitors
German Patent No. 2001463 **Date of Grant**: 03.07.2013
Inventors: Janaswamy Madhusudhana Rao, B. Chinaraju, P.V. Srinivas, K.S. Babu, Jhillu Singh Yadav, K. V. Raghavan, H. K. Singh & Chandishwar Nath

4. **Title**: Naturally occurring coumarins and their precursors as acetylcholinesterase inhibitors
European Patent No. 2001463 **Date of Grant**: 03.07.2013
Inventors: Janaswamy Madhusudhana Rao, B. Chinaraju, P.V. Srinivas, K.S. Babu, Jhillu Singh Yadav, K. V. Raghavan, H. K. Singh & Chandishwar Nath

5. **Title**: Naturally occurring coumarins and their precursors as acetylcholinesterase inhibitors
French Patent No. 2001463 **Date of Grant**: 03.07.2013
Inventors: Janaswamy Madhusudhana Rao, B. Chinaraju, P.V. Srinivas, K.S. Babu, Jhillu Singh Yadav, K. V. Raghavan, H. K. Singh & Chandishwar Nath

6. **Title**: Naturally occurring coumarins and their precursors as acetylcholinesterase inhibitor
British Patent No. 2001463 **Date of Grant**: 03.07.2013
Inventors: Janaswamy Madhusudhana Rao, B. Chinaraju, P.V. Srinivas, K.S. Babu, Jhillu Singh Yadav, K. V. Raghavan, H. K. Singh & Chandishwar Nath

7. **Title**: Controlled release micro-capsule for osteogenic action
US Patent No. 8496964 **Date of Grant**: 30.07.2013
Inventors: Prabhat Ranjan Mishra, Ritu Trivedi, Girish Kumar Gupta, Avinash Kumar, Varsha Gupta, Srikanta Kumar Rath, Kamini Srivastava, Naibedya Chattopadhyay & Anil Kumar Dwivedi

8. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
French Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

9. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
German Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

10. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
British Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

11. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
Swiss Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

12. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
Spanish Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

13. **Title**: Antidiabetic and antidyslipidemic activities of S-(+)-7-[3 N- substituted amino-2-hydroxypropoxy] flavones
European Patent No. 2057137 **Date of Grant**: 23.10.2013
Inventors: Ram Pratap, Himanshu Singh, Alok Kumar Verma, Amar Bahadur Singh, Preeti Tiwari, Mukesh Srivastava, Arvind Kumar Srivastava, Anil Kumar Dwivedi, Satyawan Singh, Pratima Srivastava, Shio Kumar Singh, Chandishwar Nath & Ram Raghubir
Supporting Staff: Krishna Kumar Chaudhari & Suresh Yadav

14. **Title**: Polymeric nanomatrix associated delivery of Kaempferol in rats to improve its osteogenic action
European Patent No. 8188143 **Date of Grant:** 30.10.2013
Inventors: Prabhat Ranjan Mishra, Ritu Trivedi, Girish Kumar Gupta, Avinash Kumar, Varsha Gupta, Srikanta Kumar Rath, Kamini Srivastava, Naibedya Chattopadhyay & Anil Kumar Dwivedi

15. **Title**: Oxy substituted flavones as antihyperglycemic and antidyslipidemic agents
Canadian Patent No. 2584709 **Date of Grant**: 12.11.2013
Inventors: Ram Pratap, Mavurapu Satyanarayana, Chandeshwar Nath, Ram Raghubir, Anju Puri, Ramesh Chander, Preeti Tiwari & Brajendra K

2012 (Not included in previous Annual Report)

1. **Title**: Substituted 1,2,4-trioxanes useful as antimalarial agents and a process for the preparation thereof
Indonesian Patent No. W00200300640 **Date of Grant**: 17.02.2012
Inventors: Chandan Singh, Pallvi Tiwari & Sunil Kumar Puri
Supporting Staff: Shashi Rastogi & Akhilesh Kumar Srivastava

2. **Title:** Substituted mercapto phenyl naphthyl methane derivatives as serm for the prevention and treatment of osteoporosis and other estrogen dependent disorders and as contraceptives
Patent No: 2524568 **Date of Grant:** 17.07.2012
Inventors: Sangita, Atul Kumar, Man Mohan Singh, Girish Kumar Jain, Puvvada Sri Ramanchandra Murthy & Suprabhat Ray
Support staff: Vasi Ahmad, A.H. Ansari, Mohini Chhabra & Govind Keshri

3. **Title:** Naturally occurring coumarins and their precursors as acetylcholinesterase inhibitors
Patent No: ZL200780016176.0 **Date of Grant:** 05.12.2012
Inventors : Jana Swamy Madhu Sudanarao, B Chinaraju, P V Srinivas, K S Babu, J S Yadav, K V Raghavan, H K Singh & Chandiswar Nath

Patents Granted in India

2013

1. **Title**: Novel hydroxy functionalized adamantyl substituted 6-arylvinyl-1,2,4-trioxanes, their derivatives and salts thereof
Patent No. 255359 **Date of Grant:** 14.02.2013
Inventors: Chandan Singh, Sunil Kumar Puri & Upasana Sharma

2. **Title**: A one pot process for the preparation of 11,12-dehydro deoxy artemisinin
Patent No. 256382 **Date of Grant:** 08.06.2013
Inventors: Chandan Singh & Pallvi Tiwari

3. **Title**: Novel spiro 1,2,4-trioxanes as antimalarial agents and a process for the preparation thereof
Patent No. 256987 **Date of Grant:** 22.08.2013
Inventors: Chandan Singh, Heetika Malik & Sunil Kumar Puri

4. **Title**: C-3 alkyl or arylalkyl substituted 2,3- dideoxy glucopyranosides and a process for preparation thereof
Patent No. 257469 **Date of Grant:** 05.10.2013
Inventors: Ram Sagar, Mohd. Saquib, Arun Kumar Shaw, Anil Nilkanth Gaikwad, Sudhir Kumar Sinha, Anil Srivastava, Vinita Chaturvedi, Manju Yashoda Krishnan, Ranjana Srivastava & Brahm Shanker Srivastava

Patents Filed Abroad:

2013

1 **Title**: N-(3-((diethylamino)methyl)-4-hydroxyphenyl)-n-(quinolin-4-yl)sulfonamide derivatives for the treatment of tuberculosis
PCT Application No. PCT/IN2013/000006 **Date of Filing**: 03.01.2013
Inventors: Supriya Singh, Kuldeep Kumar Roy, Shaheb Raj Khan, Vivek Kumar Kashyap, Sandeep Kumar Sharma, Manju Yasoda Krishnan, Vinita Chaturvedi, Sudhir Sinha, Ranjana Srivastava & Anil Kumar Saxena

2 **Title**: Novel Substituted 2H-Benzo[e]indazole-9-carboxylates for the treatment of diabetes and related metabolic disorders
PCT Application No. PCT/IN2013/000056 **Date of Filing**: 29.01.2013
Inventors: Atul Goel, Gaurav Taneja, Neha Rahuja, Arun Kumar Rawat, Natasha Jaiswal, Akhilesh Kumar Tamrakar & Arvind Kumar Srivastava

3 **Title**: Novel coumarin-chalcone hybrids as anticancer agents
European Application No. 11770879.2 **Date of Filing**: 05.02.2013
Inventors: Koneni Venkata Sashidhara, Abdhesh Kumar, Manoj Kumar, Jayanta Sarkar & Sudhir Kumar Sinha
Supporting Staff: Sanjeev Meena

4 **Title**: Novel coumarin-chalcone hybrids as anticancer agents
US Application No. 13/814401 **Date of Filing**: 05.02.2013
Inventors: Koneni Venkata Sashidhara, Abdhesh Kumar, Manoj Kumar, Jayanta Sarkar & Sudhir Kumar Sinha
Supporting Staff: Sanjeev Meena

5 **Title**: Peptide inhibitors as novel anti-HIV therapeutics
PCT Application No. PCT/IB2013/051641 **Date of Filing**: 01.03.2013
Inventors: Raj Kamal Tripathi, Balwant Kumar, Ravishankar Ramachandran, Jitendra Kumar Tripathi, Smrati Bhadauria & Jimut Kanti Ghosh

6 **Title**: Chiral 3-aminomethylpiperidine derivative as inhibitors of collagen induced platelet activation and adhesion
US Application No. 13/995336 **Date of Filing**: 18.06.2013
Inventors: Dinesh Kumar Dikshit, Madhu Dikshit, Tanveer Irshad Siddiqui, Anil Kumar, Rabi Sankar Bhatta, Girish Kumar Jain, Manoj Kumar Barthwal, Ankita Misra, Vivek Khanna, Prem Prakash, Manish Jain, Vishal Singh, Varsha Gupta & Anil Kumar Dwivedy
Supporting Staff: Surendra Singh, CP Pande, Kanta Bhutani, M S Ansari & Devendra Singh

7 **Title**: Chiral 3-aminomethylpiperidine derivative as inhibitors of collagen induced platelet activation and adhesion
European Application No. 12705463.3 **Date of Filing**: 23.07.2013
Inventors: Dinesh Kumar Dikshit, Madhu Dikshit, Tanveer Irshad Siddiqui, Anil Kumar, Rabi Sankar Bhatta, Girish Kumar Jain, Manoj Kumar Barthwal, Ankita Misra, Vivek Khanna, Prem Prakash, Manish Jain, Vishal Singh, Varsha Gupta & Anil Kumar Dwivedy
Supporting Staff: Surendra Singh, CP Pande, Kanta Bhutani, M S Ansari & Devendra Singh

8 **Title**: Substituted 1, 2, 3, 4-tetrahydroquinolin-7-yl carbamates, their preparation, and use thereof as acetylcholinesterase (AChE) inhibitors for the treatment of alzheimer's and other neurodegenerative diseases
US Application No. 13/984998 **Date of Filing**: 12.08.2013
Inventors: Kuldeep Kumar Roy, Santosh kumar Tota, Chandishwar Nath, Rakesh Shukla & Anil Kumar Saxena
Supporting Staff: Zahid Ali, Arimardan Singh Kushwaha

9 **Title**: Substituted 1, 2, 3, 4-tetrahydroquinolin-7-yl carbamates, their preparation, and use thereof as acetylcholinesterase (AChE) inhibitors for the treatment of alzheimer's and other neurodegenerative diseases
European Application No. 13/984998 **Date of Filing**: 12.08.2013
Inventors: Kuldeep Kumar Roy, Santosh kumar Tota, Chandishwar Nath, Rakesh Shukla & Anil Kumar Saxena
Supporting Staff: Zahid Ali & Arimardan Singh Kushwaha

10 **Title**: Novel dolastatin mimics as anticancer agents
US Application No. 14/005202 **Date of Filing**: 13.09.2013
Inventors: Tushar Kanti Chakraborty, Gajula Praveen Kumar, Dulal Panda & Jayant Asthana

11 **Title**: Novel dolastatin mimics as anticancer agents
European Application No. 12707389.8 **Date of Filing**: 11.10.2013
Inventors: Tushar Kanti Chakraborty, Gajula Praveen Kumar, Dulal Panda & Jayant Asthana

12 **Title**: *Dalbergia sisso* derived extract and compounds employed in prevention or treatment of osteo-health related disorders designated as osteo natural care
European Application No. 12729239. **Date of Filing**: 22.10.2013
Inventors: Rakesh Maurya, Preety Dixit, Ritu Trivedi, Vikram Khedgikar, Jyoti Gautam, Avinash Kumar, Divya Singh, Shelendra Pratap Singh, Wahajuddin, Girish Kumar Jain & Naibedya Chattopadhyay
Supporting Staff: Satish Chandra Tiwari, Bendangla Chagkija & Priyanka Kushwaha

13 **Title**: *Dalbergia sisso* derived extract and compounds employed in prevention or treatment of osteo-health related disorders designated as osteo natural care
US Application No. 14/113561 **Date of Filing**: 23.10.2013
Inventors: Rakesh Maurya, Preety Dixit, Ritu Trivedi, Vikram Khedgikar, Jyoti Gautam, Avinash Kumar, Divya Singh, Shelendra Pratap Singh, Wahajuddin, Girish Kumar Jain & Naibedya Chattopadhyay
Supporting Staff: Satish Chandra Tiwari, Bendangla Chagkija & Priyanka Kushwaha

Patents Filed in India:

2013

1. **Title**: Improved process for preparation of cyclic peptides
Patent App. No. 0020DEL2013 **Date of Filing**: 03.01.2013
Inventors: Wahajul Haq, Shyam Raj Yadav, Raghavendra Murugula, Madhu Dikshit & Smriti

2. **Title**: Antidiabetic and antidyslipidemic activities of pregnane-oximino-aminoalkylethers
Patent Application No. 0193DEL2013 **Date of Filing (Prov.):** 24.01.2013
Inventors: Prem Chandra Verma, Jyoti Gupta, Dharmendra Pratap Singh, Varsha Gupta, Hari Narayan Kushwaha, Anamika Misra, Neha Rahuja, Rohit Srivastava, Natasha Jaiswal, Ashok Kumar Khanna, Akhilesh Kumar Tamrakar, Shio Kumar Singh, Anil Kumar Dwivedi, Arvind Kumar Srivastava & Ram Pratap

3. **Title**: Substituted fluoranthene-7-carbonitriles/esters as fluorescent dyes for cell imaging applications
Patent Application No. 0807DEL2013 **Date of Filing (Prov.):** 19.03.2013
Inventors: Goel Atul, Ashutosh Sharma, Kalyan Mitra, Arindam Bhattacharjee & Manoj Kathuria

4. **Title**: Proteasomal inhibitors useful for osteogenic activity and pharmaceutical composition thereof [osteoheal]
Patent Application No. 2145DEL2013 **Date of Filing (Prov.):** 17.07.2013
Inventors: Ritu Trivedi, Prabhat Ranjan Mishra, Neelam S Sangwan, Prabodh Trivedi, Divya Singh, Rajendra S Sangwan, Priyanka Kushwaha, Vikram Khedgikar, Sulekha Adhikari, Dharmendra Choudhary, Jyoti Swarup, Avinash Kumar, Anirudha Karvande, Ashwni Verma & Shweta Sharma

5. **Title**: Ulmoside-A-derived compound from *Ulmus Wallichiana* Planchon useful for prevention or cure of metabolic diseases
Patent Application No. 2326DEL2013 **Date of Filing (Prov.): 02.08.2013**
Inventors: Sanyal Sabyasachi, Naibedya Chattopadhyay, Rakesh Maurya, Jiaur Rahman Gayen, Smrati Bhadauria, Arun Kumar Trivedi, Abhishek Kumar Singh, Jay Sharan Mishra,Rashmi Kumari, Kunal Sharan, Mohd. Parvez Khan, Kainat Khan, Nidhi singh, Shailendra Kumar Dhar Dwivedi, Manisha Yadav, Priti Dixit, Devendra Pratap Mishra, Sharad Sharma & Kamal Ram Arya

6. **Title**: Novel aryl naphthyl methanone oxime derivatives for the treatment of hematological malignancies and solid tumors
Patent Application No. 2567DEL2013 **Date of Filing (Prov.):** 30.08.2013
Inventors: Sabyasachi Sanyal, Atul Kumar, Naibedya Chattopadhyay, Jawahar Lal, Arun Kumar Trivedi, Dipak Datta, Srikanta Kumar Rath, Tahseen Akhtar, Shailendra Kumar Dhar Dwivedi, Manisha Yadav, Bandana Chakravarti, Abhishek Kumar Singh, Jay Sharan Mishra, Nidhi Singh & Anil Kumar Tripathi

7. **Title**: Carbodithioates and process for preparation thereof
Patent Application No. 0373DEL2013 **Date of Filing:** 08.02.2013
Inventors: Vishanu Lal Sharma, Nand Lal, Amit Sarswat, Santosh Jangir, Veenu Bala, Lalit Kumar, Tara Rawat, Ashish Jain, Lokesh Kumar, Jagdamba Prasad Maikhuri & Gopal Gupta

8. **Title**: Phenyl pyrazole containing heteroretonoid schiff bases and process for preparation thereof
Patent Application No. 2244DEL2013 **Date of Filing:** 29.07.2013
Inventors: Shivaji Narayan Rao Suryawanshi, Suman Gupta, Santosh Kumar, Rahul Shivhare & Preeti Vishwakarma

9. **Title**: 4-Amino quinolines and process of preparation thereof
Patent Application No. 2291DEL2013 **Date of Filing:** 31.07.2013
Inventors: Seturam Bandhacharya Katti, Wahajul Haq, Kumkum Srivastava, Sunil Kumar Puri, Vasantha Rao Dola, Awakash Soni & Rajeev Kumar Srivastava

10. **Title**: An antileukemic agent useful for inducing differentiation in myeloid leukemia cells
Patent Application No. 2807DEL2013 **Date of Filing:** 24.09.2013
Inventors: Pooja Pal, Savita Lochab, Jitendra Kumar Kanaujia, Sabyasachi Sanyal & Arun Kumar Trivedi

11. **Title**: 3,7 Diazabicyclo[3.3.1]nonane carboxamides and process of preparation thereof
Patent Application No. 2892DEL2013 **Date of Filing:** 30.09.2013
Inventors: Dinesh Kumar Dikshit, Anil Kumar Karunakaran Sasikala, Manoj Barthwal, Ankita Mishra & Manish Jain

12. **Title**: Substituted bis quinolin compounds and process for preparation thereof
Patent Application No. 2953DEL2013 **Date of Filing:** 04.10.2013
Inventors: Dinesh Kumar Dikshit, Vinita Chaturvedi, Manju Yasodha Krishnan, Shaheb Raj Khan, Sudhir Sinha & Bhupendra Narain Singh

13. **Title**: Terpenylphenolic derivatives and Process for preparation thereof
Patent Application No. 3806DEL2013 **Date of Filing**: 30.12.13
Inventors: Shivaji Narayan Suryawanshi, Suman Gupta, Santosh Kumar, Rahul Shivhare & Khushboo Srivastava

3 Papers Presented in Scientific Conventions

2012

4th NIPER (RBL)-CDRI Symposium on "Medicinal Chemistry and Pharmaceutical Sciences, Lucknow (23-25 February)

1. In-House Determination of Kinetic Parameters for Cytochrome P450 Probe Substrates Using Rat Liver Microsomes, Sumit Arora, Isha Taneja, KSR Raju, SP Singh, Wahajuddin and GK Jain

8th Annual Meeting of Indian Society for Bone and Mineral Research, Lucknow (29-30 September)

2. CAFG a novel orally active molecule from natural source is potent than genistein in promoting bone formation (Oral Presentation) Priyanka Kushwaha, Vikram Khedgikar, Jyoti Gautam, Dharmendra Choudhary, Preeti Dixit, Rakesh Maurya and Ritu Trivedi

81st Annual Meeting of SBC, Kolkata (8-11 November)

3. Identification of novel endometrial proteins associated with unexplained infertility by using two dimensional gel electrophoresis and LC-MS analysis, M Manohar, S Agarwal, H Khan, V Das, A Agarwal, A Pandey, MP Singh, W A Siddiqui and A Dwivedi

Carcinogenesis 2012- International Conference, New Dehi, (19-21 November)

4. 2-[piperidinoethoxyphenyl]-3-[4-hydroxyphenyl]-2H-benzo (b) pyran triggers anti-tumorigenic action in endometrial carcinoma via GPR30/ EGFR signaling pathway, V Chandra, I Fatima, MK Hussain, K Hajela, PL Sankhwar, BG Roy, S Chandna and A Dwivedi

5. 2-[piperidinoethoxyphenyl]-3-[4-hydroxyphenyl]- 2H-benzo (b) pyran interferes with IGF-1R/PI3-K/Akt/mTOR pathway, causes G1 phase arrest and induces apoptosis in endometrial cancer cells, I Fatima, V Chandra, R Saxena, K Hajela, P Sankhwar, SK Jain and A Dwivedi

International Conference on Chemistry and Materials: Prospects & Perspectives, Lucknow (14-16 December)

6. ICT based fluorescent partially reduced naphthonaph-thyridines as tunable and Zn2+ selective ON-OFF Chemosensors, Shahida Umar, Pankaj Nag and Atul Goel

18th Congress of Society of Andrology, Lucknow (22-24 December)

7. Sperm ligand SLLP1 interaction with Oolemmal receptor SAS1B vital for fertilization, Monika Sachdev

2013

100th Indian Science Congress, Kolkata (3-7 January)

8. Apoptosis: an approach to curb malaria, S Gunjan, BS Chauhan and R Tripathi

9. Establishment of a new in vitro model for cerebral malaria, H Dwivedi and R Tripathi

10. Quinoline/Quinazoline: A class of potent trypanocidal agents, SK Singh, H Dwivedi, SK Pandey and R Tripathi

International conference on Advances in Free Radicals, Redox Signaling and Translational Antioxidant Research (SFRR-STAR 2013), Lucknow (30 Junary- 1 February)

11. Centchroman Inhibits Epithelial-to-Mesenchymal Transition and Reactivates Tumor Suppressor Genes in Human Breast Cancer Cells through Epigenetic Modulation, Khan S, Soni I, Shukla S and Meeran SM

12. Epigenetic reprogramming by bioactive dietary supplements: A novel therapy for hormonal refractory breast cancer, Shukla S, Soni I, Khan S and Meeran SM

13. Nitric oxide induced glutathionylation of neutrophil proteins: regulation of actin dynamics, M Dubey, MK Barthwal and M Dikshit

NMRS-2013, Mumbai (3-6 February)

14. Comparative studies of backbone dynamics of ADF/Cofilin proteins on NMR timescale, Anupam Jain, Vaibhav K. Shukla, Sarita Tripathi, Ashish Kabra, Himanshu Pandey and Ashish Arora

15. Solution structure and dynamics of ADF-like UNC-60A and Cofilin-like UNC-60B: Effect of dynamic property of F-loop on its activity, Vaibhav Kumar Shukla, Ashish Kabra, Himanshu Pandey, Anupam Jain, Dinesh Kumar, Shoichiro Ono and Ashish Arora

16. Solution structure of hypothetical protein Rv0603 from *Mycobacterium tuberculosis* H37Rv reveals a novel α, β fold and its immunological characterization, Sarita Tripathi, SVSR Krishna Pulavarti, Rahul Yadav, Anupam Jain and Ashish Arora

17. Pyran based macrocyles and its conformational studies, S Sharma, A Ajay, RP Tripathi and RS Ampapathi

Ramanbhai foundation international symposium on Advances in New Drug Discovery Technologies & Translational Research, Ahmadabad (4-6 February)

18. Plaque characterization in the accelerated model of iliac artery atherosclerosis in New Zealand White rabbits following cholesterol diet withdrawal, V Khanna, M Jain, V Singh, J Kanshana, P Prakash, MK Barthwal, PS Murthy and M Dikshit

19. Free radicals mediate secretory, IL-1β production, transcription and processing in monocytes, Singh A, Singh V, Tiwari RL and Barthwal MK

20. Curcuma oil Mitigates LPS induced TNF Production, M Rana, V Singh, S Chaturvedi, R Malasoni, AK Dwivedi and MK Barthwal

REPROMICS - OMICS In reproduction and development, Trivendram (7-9 February)

21. Determination of uterine Poly(ADP-ribose) polymerase

association with embryo implantation, Anubha Joshi, Vijay Kumar, Vineet Kumar Maurya and Rajesh Kumar Jha

22. Development of a Nanotechnology Based Biomedicine RISUG-M as a Male Contraceptive in India, R K Singh, Poonam Singh and F W Bansode

Miami Winter Symposium; The Molecular Basis of Metabolism And Nutrition, Miami, USA (10-13 February)

23. Effect of biochanin A and formononetin, the principal components of red clover (*Trigolium pratense*) on Xenobiotic Metabolizing Cytochrome P450 major isozymes, Wahajuddin, S Arora, I Taneja, KSR Raju and SK Singh

32nd Annual Convention of Indian Association for Cancer Research and International Symposium on: Infection & Cancer, New Delhi (13-16 February)

24. 2-(piperidinoethoxyphenyl)-3-(4-hydroxyphenyl)-2H-benzo(b)pyran induces apoptosis via intrinsic pathway and interfere with PI3K/Akt cell survival pathway in human primary endometrial hyperplasial cells, V Chandra, I Fatima, R Saxena, K Hajela, P Sankhwar and A Dwivedi

25. Benzopyran derivative CDRI-85/287 induces G2-M arrest in estrogen receptor-positive breast cancer cells via modulation of ERα and ERβ signaling and suppresses the growth of tumor xenograft, R Saxena, I Fatima, V Chandra, K Hajela, B G Roy and A Dwivedi

26. Association of cytokine levels with prognostic markers of breast cancer, Karan Singh Saini, Hamidullah, Mayank Jadon, Sandeep Kumar and Rituraj Konwar

27. Quercetin-6-C-A-D-glucopyranoside, a natural analogue of quercetin exhibits potent activity against prostate cancer, Hamidullah, Karan Singh Saini and Rituraj Konwar

National Conference on Use of Animals and Alternatives in Biomedical Research with special Reference to Drug Discovery and Drug Development, Noida (14 -15 February)

28. Molecular Haematopoietic Assays as substitute of In-vivo Regulatory Toxicity Studies in Experimental Animals, RK Singh, FW Bansode, Poonam Singh and Pooja Shukla

International symposium on molecular signaling, Kolkata (18-20 February)

29. Osteogenic effect of CDR-S008-399 in adult osteopenic rats, Jyoti, Abdul Malik Tyagi, Abnish K Gautam, Kamini Srivastava, Amit Kumar, Atul Goel, Naibedya Chattopadhyay and Divya Singh

CTDDR-2013, Lucknow (26-28 February)

30. Synthesis and anti-breast cancer activity of biphenyl based chalcones, Anindra Sharma, Bandana Chakravarti, Munna Prasad Gupta, Jawed A Siddiqui, Rituraj Konwar and Rama P Tripathi

31. Impairment of flagellar assembly by overexpression of S4D mutant of ADF/cofilin in Leishmania, G Kumar, R Srivastava, K Mitra, AA Sahasrabudhe and CM Gupta

32. Induction of autophagy as treatment strategy for tuberculosis using inhalable microparticles, Anuradha Gupta and Amit Misra

33. Solution structure and dynamics of ADF/Cofilins: Effect of dynamic property of F-loop on severing activity, Vaibhav Kumar Shukla, Ashish Kabra, Himanshu Pandey, Anupam Jain, Dinesh Kumar, Shoichiro Ono, and Ashish Arora

34. Structural insights into putative molybdenum cofactor biosynthesis protein C (MoaC2) from *Mycobacterium tuberculosis* H37Rv, Shubhra Srivastava, Vijay Kumar Srivastava, JV Pratap and Ashish Arora

35. Implication of the leucine zipper sequences in cytotoxic and anti-endotoxin properties of bee venom antimicrobial peptide, melittin, N Asthana, S P Yadav, A Ahmad, B K Pandey, R M Srivastava, S Srivastava, S Azmi, A Kumar, A Tandon, A K Tripathi and J K Ghosh

36. RNA Interference validates *Brugia malayi* independent phosphoglycerate mutase as vital antifilarial drug target, Prashant Kumar Singh, Susheela Kushwaha, Mohd. Shahab and Shailja Misra Bhattacharya

37. *In vitro* antifilarial activity of Moxidectin alone and in combination with antifilarial drugs or antiwolbachial antibiotic, doxycyclin led to the death of adult *Brugia malayi* female worm, Meenakshi Verma, Manisha Pathak and Shailja Misra Bhattacharya

38. Characterization of Translation Initiation Factor-1 and Its Mutant R45D, a Member of OB Family Protein Responsible for Viability of *Wolbachia* an Endosymbiont of *B. malayi,* Jeetendra Kumar Nag, Nidhi Shrivastava and Shailja Misra Bhattacharya

39. Molecular characterization of NAD^+- dependent DNA ligase from *Wolbachia* endosymbiont of lymphatic filarial parasite *Brugia malayi,* Nidhi Shrivastava, Jeetendra Kumar Nag and Shailja Misra Bhattacharya

40. Immunogenicity of the recombinant trehalose-6-phosphate phosphatase of *Brugia malayi,* Jyoti Gupta, Susheela Kushwaha, Prashant Kumar Singh, Vishal Kumar Soni and Shailja Misra Bhattacharya

41. Immunoprophylactic efficacy of *Withania somnifera* chemotype 101R against *Leishmania donovani* infection in golden hamster, Shailja Misra Bhattacharya and Anuradha Dube

42. Chemotherapeutic potential of pure compounds isolated from *Annona squamosa* and *Withania somnifera* against filarial parasite *Brugia malayi*, Vishal Kumar Soni, Prashant Kumar Singh, Susheela Kushwaha and Shailja Bhattacharya

43. Immune Characterization of UDP-N-acetylglucosamine Enolpyruvyl transferase of Bacterial Endosymbiont *Wolbachia* of Human Lymphatic Filarial Parasite *Brugia malayi*, Mohd Shahab, Prashant K Singh, Susheela Kushwaha and Shailja Misra Bhattacharya

44. *Wolbachia* surface protein (WSP) of *Brugia malayi* endosymbiont activates the host innate immune response via Nod 1 and Nod 2, Manisha Pathak, Meenakshi Verma, Mrigank Srivastava and Shailja Misra Bhattacharya

45. Studies on immune response elicited after inoculation of *P. yoelii* sporozoite via intra-venous or subcutaneous route, Arif J Siddiqui, Jyoti Bhardwaj, Mrigank Srivastava and S K Puri

46. Multiple inoculations with live *P. Yoelii* sporozoites under arteether treatment protects against the infective challenge Jyoti Bhardwaj, Arif J Siddiqui, Mrigank Srivastava and S K Puri

47. Studies on involvement of redox system in resistance to Arteether, Kirtika Prakash, Awakash Soni, Santosh kumar and S K Puri

48. Studies of heme Detoxification Protein (HDP) from rodent malaria parasite *P.vinckei*, Awakash Soni, Santosh Kumar, Kirtika Prakash and S K Puri

49. Antimalarial profile of chloroquine – febrifugine hybrids, S Gunjan, S Sharma, SK Pandey, A Kumar and R Tripathi

50. Synthesis of novel emodin derivatives and their antimalarial activity, S Pandeti, S Gunjan, R Tripathi and T Narender

51. Immunoprophylactic efficacy of *Withania somnifera* chemotype 101R –against *Leishmania donovani* infection in golden hamster, Chandra Dev Pati Tripathi, Prashant Khare, Pramod K Kushawaha, Reema Gupta, Shailja Misra Bhattacharya and Anuradha Dube

52. Glycyrrhetinic acid and its analogs: a new class of antifilarial agents, Richa Verma, Komal Kalani, Vikas Kushwaha, P K Murthy and S K Srivastav

53. Antifilarial activity of extracts and Diarylheptanoids from *Alnus nepalensis*, Deepti Yadav, Vikas Kushwaha, Kirti Saxena, Richa Verma, P Kalpana Murthy and Madan M Gupta

54. Alternative to laboratory animals in toxicity study, Poonam Singh and RK Singh

55. *In silico* toxicity prediction of antiviral drugs, Ankur Omer, Navneet Kumar Yadav, Poonam Singh, FW Bansode and RK Singh

56. Donor-Acceptor p-conjugated aromatic fluorescent dyes and their applications, Ashutosh Sharma, Vijay Kumar and Atul Goel

57. Design and Synthesis of Novel Dithiocarbamate derivatives of Piperazine as Potent Spermicidal agents, Santosh Jangir, Veenu Bala, Nandlal, Gopal Gupta and Vishnu Lal Sharma

58. Newer Dithiocarbamate derivatives as possible dual-action spermicides, Veenu Bala, Santosh Jangir, Nandlal, Gopal Gupta and Vishnu Lal Sharma

59. Design, Synthesis and Biological evaluation of 2, 21-Disulfanediylbis (3(Alkylamino) propane-2,1-Diyl) Bis (Dimethylcarbamodithioate) for prophylactic vaginal contraception, Dhanraju Mandalapu, Nand Lal, Lokesh Kumar, JP Maikhuri, Gopal Gupta and Vishnu Lal Sharma

60. Chemical Entities Predisposed with Spermicidal Action, Neetika, Santosh Jangir, Veenu Bala and Vishnu Lal Sharma

International Conference on Cardiomyopathy Research, Chandigarh (1-2 March)

61. Curcumin oil and its fraction protect endothelial cell induced inflammatory processes in post myocardial ischemia/ reperfusion injury, Kumar Jagavelu, Amit Manhas, V Khanna, P Prakash, Richa Malasoni, Arshi Naqvi, Anil Kumar Dwivedi and Madhu Dikshit

Annual India CLEN Conference-2013 of Society of Indian Clinical Epidemiology Network, Lucknow (2-3 March)

62. Incidence of hepatotoxicity in Indian patients receiving standard multidrug anti-tubercular therapy without risk factors, Vivek V Bhosale, A Tyagi, M Shrivastava and SPS Gaur

19th International Conference on Recent Advances and Current Trends in Chemical and Biological Sciences (ISCBC-2013), Udaipur (02-05 March)

63. Targeting the dormant 'Hypnozoites' for malaria elimination, S K Puri

64. Isolation and identification of β-hematin inhibitors from *Flacourtia indica* as promising antiplasmodial agents, SP Singh, SV Singh, RK Srivastava, K Srivastava, JK Saxena, SK Puri and KV Sashidhara

65. Insight into the role of *Mycobacterium tuberculosis* H37Rv MoaC in molybdenum cofactor biosynthesis based on the structural characterization, Shubhra Srivastava, Vijay Kumar Srivastava, JV Pratap and Ashish Arora

66. Cloning and sequence analysis of Lactate dehydrogenase from different strains of *Plasmodium knowlesi*, Vandana Singh, Inayat Hussain Sheikh, Deep C Kaushal and Nuzhat A Kaushal

67. Immunoscreening of *Brugia malayi* cDNA expression library for identification of diagnostic filarial antigen(s), Priyanka Priyadarshi, Deep C Kaushal and Nuzhat A Kaushal

68. Antigenic analysis of embryo stage of *Setaria cervi*, the bovine filarial parasite, Sunita Saxena, Deep C Kaushal and Nuzhat A Kaushal

69. The root extract from 101R chemotype of *Withania somnifera* and the pure molecule, Withaferin A protects the host against *Brugia malayi* by immunostimulation, Jyoti Gupta, Susheela Kushwaha, Vishal Kumar Soni, Prashant Kumar Singh, Nasreen Bano and Shailja Misra Bhattacharya

70. Chiral separation of centchroman, a non-steroidal contraceptive agent, V Gupta, H Ahmed, AP Dwivedi and A K Dwivedi

71. Synthesis of γ–Butyrolactone Derivatives as Possible Spermicide, Rishi Ranjan Pandey, Akansha Srivastava, Jagdamba Prasad Maikhuri, Sarvesh Paliwal, Gopal Gupta and Anil Kumar Dwivedi

72. Synthesis and biological evaluations of curcumin derivatives as possible microbicidal spermicides, Akansha Srivastava, Rishi Ranjan Pandey, Jagdamba Prasad Maikhuri, Gopal Gupta and Anil Kumar Dwivedi

73. Rational Based design and synthesis of novel functionalizd biphenyls as potent antihyperglycemic agents, Pankaj Nag, Sumit Chaurasia, A K Srivastava, M I Siddiqi and Atul Goel

74. cis-Pterocarpans and their osteogenic activity, Ashutosh Raghuvanshi, Divya Singh and Atul Goel

75. Isolation and identification of β-hematin inhibitors from *Flacourtia indica* as promising antiplasmodial agents, SP Singh, SV Singh, RK Srivastava, K Srivastava, JK Saxena, SK Puri and KV Sashidhara

76. Novel Dithiocarbamate AnalogsOf Phosphocholine: As Spermicidal Agents, Santosh Jangir, Veenu Bala, Nandlal, Lokesh Kumar, Gopal Gupta and Vishnu Lal Sharma

77. A Comparative spermicidal activity study of different salts of disulfide ester derivative (DSE-37), Veenu Bala, Santosh Jangir, Lalit Kumar, Gopal Gupta and Vishnu Lal Sharma

78. Characterization of *Brugia malayi* Guanylate kinase: a putative drug target, Smita Gupta, Sunita Yadav, Anita, Manish K.Suthar, Pawan K Doharey, Pravesh Verma and Jitendra K Saxena

79. Complex formation of *Brugia malayi* Calreticulin with Human C1q (BmCRT-HuC1q) blocks activation of Human complement system, Sunita Yadav, Smita Gupta, Anita, Manish K Suthar, Pawan K Doharey,Pravesh verma and Jitendra K Saxena

80. Pharmacological profile of noval protein tyrosin phosphatise 1b inhibitor, Rohit Srivastava, Vishal M, M Balramvir, Sudeep Gautam, Arun K Rawat, AK Saxena and AK Srivastava

International Conference on Nanoscience and Nanotechnology-2013, Chennai (3-5 March)

81. Microparticles of Diethylcarbamazine Citrate for the Treatment of Lymphatic Filariasis, Rahul Shukla and PR Mishra

5th International Symposium on Drug Metabolism and Pharmacokinetics, Mohali (7-10 March)

82. Determination of interspecies metabolic stability of antiplatelet agent S007-867 and prediction of *in-vivo* hepatic clearance by IVIVE, TK Chaitanya, H Chandasana, YS Chhonker, D Kumar, DK Diskshit and RS Bhatta

83. Development and validation of an HPLC-UV method to quantify Rohitukine in hamster plasma: Application to pharmacokinetic study, Ashok Kumar, H Chandasana, YS Chhonker, D Kumar and RS Bhatta

84. Pharmacokinetics, *In-vitro* metabolic characterization of E & Z –guggulsterone using HPLC-PDA and LC-MS/MS, YS Chhonker, H Chandasana, Deepak Kumar, D Kumar and RS Bhatta

85. Cytochrome P450 reaction phenotyping and metabolic profiling of novel antithrombotic lead candidate CDRI-S002-333, Amrita Saxena, Jiaur R Gayen and Girish K Jain

RETICS-2013, Sambalpur (16-17 March)

86. Protein structure determination by NMR spectroscopy, Sarita Tripathi and Ashish Arora

Recent Advances in Biodiversity Conservation, Biotechnology and Environmental Management Research, Rewa (16-17 March)

87. Molecular Hematotoxicity of Drugs, RK Singh, FW Bansode and Poonam Singh

88. Phenylhydrazine Induced Haematotoxicity in Charles Foster Rats, Ruby Singh, Pooja Shukla, FW Bansode, Poonam Singh and RK Singh

Ist Lucknow Science Congress, Lucknow (20-21 March)

89. Application of stem cells in screening & development of drugs, GauravYadav, SatyendraVishwakarma, RK Singh, FW Bansode and Poonam Singh

90. Invention of a New Drug for population control in India, R.K. Singh

5th NIPER (RBL)-symposium on Chemical and Biological Approaches in Drug Development and Delivery Strategies, Lucknow (21-23 March)

91. PK Drug Interaction between 97/78 with Rifabutin, Babrisethi Sirisha, Yeshwant Singh, Mahendra Kumar Hidau, Anamika Misra and SK Singh

92. Biotransformation of xenobiotics and human esterases, K Ravindrachary, A Sharma, S Jaiswal and J Lal

93. Pulmonary drug disposition kinetics, S Jaiswal, A Sharma, K Ravindrachary, J Lal and RS Bhatta

94. Formulation and characterization of Natamycin loaded nanocarriers for ophthalmic delivery, Durga prasad, H Chandasana, YS Chhonker, Deepak Kumar, Pankaj Shrivastava and RS Bhatta

95. Nano-formulated Amphotericin-B by using Mucoadhesive polymer with different stabilizing agents for ocular drug delivery system, YS Chhonker, Ashok Kumar, H Chandasana, Vishvakarma, Vijay Kumar and RS Bhatta

96. Determination of interspecies metabolic stability of antiplatelet agent S007-867 and prediction of *in-vivo* hepatic clearance by IVIVE, T K Chaitanya, H Chandasana, YS Chhonker, D Kumar, DK Diskshit and RS Bhatta

97. Role of Toxicology studies in the Drug Development, Harbeer Kaur, Gulam Mohammad Hussain and Neeraj Sinha

98. Gene Therapy: A Golden future of therapeutics, Jitendra Kumar and Neeraj Sinha

99. Emerging approaches for regulation of obesity, Poorella Lingshwar, Gulam Mohammad Hussain and Neeraj Sinha

100. Curcumin mimics as dual action Spermicides: Design, Synthesis and Biological Evaluation, Vikas kumar, Gopal Gupta and Vishnu Lal Sharma

Highlights of American Society of Hematology in Asia, Shanghai, Chaina (23-24 March)

101. Nitric Oxide Synthase - Nitric Oxide Involvement in the Human Neutrophil Free Radical Generation: Role of iNOS and Rac2 Interaction, A Jyoti, AK Singh, R Keshari, S Kumar, R Saluja, M Dubey, A Verma, VK Bajpai, M K Barthwal, AK Tripathi and M Dikshit

245th American Chemical Society National Meeting, New Orleans, USA (7-11 April)

102. Molecular docking and biological activity screenings of newly synthesized pyrazolones, Arshi Naqvi, Richa Malasoni, Akansha Srivastava, Rishi Ranjan Pandey and Anil Kumar Dwivedi

103. High-performance liquid chromatographic method for estimation of marker compounds in HM-oil and its formulation, Richa Malasoni, Arshi Naqvi, Akansha Srivastava, Rishi Ranjan Pandey and Anil Kumar Dwivedi

24th National Congress of Parasitology (ISP), Jabalpur (27-29 April)

104. *Leishmania donovani* exploits host deubiquitinating enzyme A20, a negative regulator of TLR signaling, to subvert host immune response, S Kar, S Srivastav, and PK Das

105. Evaluation of protective efficacy of recombinant independent phosphoglycerate mutase protein of human lymphatic filariid *Brugia malayi* using different adjuvants, Prashant Kumar Singh, Susheela kuswaha, Mohd. Shahab and Shailja Misra Bhattacharya

106. Immune Characterization of UDP-N-acetylglucosamine Enolpyruvyl transferase of Bacterial Endosymbiont *Wolbachia* of Human Lymphatic Filarial Parasite *Brugia malayi*, Mohd Shahab, Prashant K. Singh, Susheela Kushwaha, Manisha Pathak and Shailja Misra Bhattacharya

107. Antitrypanosomal potential and safety of extract from *Oceanapia sp.*, H Dwivedi, SK Singh and R Tripathi

108. Antimalarial activity of traditional plant against chloroquine sensitive and resistant strain of *Plasmodium falciparum*, S Dhawan, S Gunjan, A Pal and R Tripathi

109. Tryptanthrin analogues as potential antimalarial agent, S Gunjan, SK Pandey, VD Tripathi, A Kumar and R Tripathi

110. Enhanced antimalarial activity of Lumefantrine nano powder prepared by wet milling DYNOMILL technique, R Tripathi, S Gahoi, GK Jain, SK Pandey, M Anwar, MH Warsi, M Sinhal, RK Khar and FJ Ahmad

WorldLeish5, Pernambuco, Brazil (13-17 May)

111. An approach towards identification and synthesis of antigenic epitopes of potential *L. donovani* Th1 stimulatory proteins for the development of synthetic vaccine against Visceral

Leishmaniasis, Anuradha Dube, Chandradev Pati Tripathi, Sumit Joshi, Reema Gupta, Prashant Khare and Anil Jaiswal

First International and Third National Conference on Biotechnology, Bioinformatics and Bioengineering, Tirupati (28 June)

112. Troponin I of lymphatic filarial parasite Brugia malayi: cDNA cloning, expression, purification, sequence analysis and immune characterization, Vikas Kushwaha, Richa Verma and P Kalpana Murthy

24th International symposium on Pharmaceutical and BioMedical analysis (PBA2013) and Recent Developments in Pharmaceutical Analysis (RDPA 2013), Bologna, Italy (30 June – 3 July)

113. Preparation, optimization and its evaluation by HPLC, of oil in water nanoemulsion by low energy method for antimalarial drug: Arteether, Pankaj Dwivedi and PR Mishra

114. Exploring the effect of curcumin-phospholipids complex-a rapid and simple HPLC method for the determination of the *in vitro* release and toxicological evaluation, R Khatik, A Shukla, P Dwivedi, SK Paliwal, PR Mishra and AK Dwivedi

International Conference on Electron Microscopy and XXXIV Annual Meeting of the Electron Microscope Society of India, Kolkata (3-5 July)

115. Ultra-Structural and Physiological studies on clerodane diterpene induced cell death in *Leishmania donovani* promastigotes, M Kathuria, A Bhattacharjee, SP Singh, KV Sashidhara and K Mitra

Alzheimer's Association International Conference, Boston, USA (13-18 July)

116. Activation of Nrf2-antioxidants signaling protects memory impairment in rats, S Dwivedi, Rajasekar N, HH Siddiqui, C Nath, K Hanif and R Shukla

Colloids and Nanomedicine, Amsterdam, Netherlands (15-17 July)

117. A Lymphotropic Delivery System for Antifilarial Drug, Rahul Shukla and PR Mishra

Third Euro-India International Conference on Nanomedicine and Tissue Engineering (ICNT 2013), Kottayam (9-11 August)

118. Toxicological evaluation and targeting tumour cells through folic acid modified guar gum nanoparticles of curcumin, Renuka Khatik, Pankaj Dwivedi, Mansi Upadhyay, Vivek Kumar Patel, Sarvesh Kumar Paliwal and Anil Kumar Dwivedi

119. Exploring the effect of curcumin–phospholipids complex-a novel drug delivery system on the in vitro release and toxicological evaluation, Renuka Khatik, Pankaj Dwivedi, Mansi Upadhyay, Vivek Kumar Patel, Sarvesh Kumar Paliwal and Anil Kumar Dwivedi

120. *In-vitro* and *in-vivo* Studies on Novel Chitosan-g-Pluronic Copolymer Based Nanocarrier of Amphotericin B for Improved Antifungal Activity, Vivek Kumar, Pramod K. Gupta, Vivek K. Pawar, Ashwni Verma, Renuka Khatik, Priyanka Tripathi, Prasant Shukla, Bholenath Yadav, Jeetesh Parmar, Rohit Dixit, P R Mishra and Anil Kumar Dwivedi

121. Formulation and characterization of Amphotericin B loaded nanostructured lipid carriers using microfluidizer, Priyanka Tripathi and PR Mishra

122. Preparation and characterization of solid lipid nanoparticles of antimalarial drug: Arteether for oral administration, Pankaj Dwivedi and PR Mishra

VIIth National Conference of the Indian Academy of Tropical Parasitology (IATP) 'Tropacon', Lucknow (6-8 September)

123. Filariasis: steps towards eradication, Shailja Misra Bhattacharya

9th Annual meeting of Indian Society for Bone and Mineral Research, Srinagar, Kashmir (7-8 September)

124. Micro architectural changes in cancellous bone differ in female and male C57BL/6 mice in high fat diet induced osteoporosis model, Dharmendra Choudhary, Jyoti Gautam, Priyanka Kushwaha, Vikram Khedgikar and Ritu Trivedi

246th American Chemical Society National Meeting, Indianapolis, USA (8-12 September)

125. Molecular docking studies of newly synthesized pyrazolones, Arshi Naqvi, Richa Malasoni, Akansha Srivastava, Rishi Ranjan Pandey and Anil Kumar Dwivedi

12th International Conference on Vector and Vector Borne Diseases, Udaipur (16-18 September)

126. Filarial manifestation of Tropical Pulmonary Eosinophilia caused by *Brugia malayi* presents a differential gene expression profile when compared to different life stages of the filarial nematode, Sharma P, Sharma A and Srivastava M

127. Recombinant UDP-N-acetylglucosamine enolpyruvyl transferase of endosymbiont, *Wolbachia* of filarial parasite *Brugia malay*i elicited protective immune response in the rodent host model *Mastomys coucha,* Shahab M, Pathak M, Verma M, Gupta J and Bhattacharya SM

128. Heme Detoxification Protein (HDP) and its possible role in resistance to antimalarial drug Arteether, Awakash Soni , Santosh Kumar, Kirtika Prakash and S K Puri

129. Immune Responses in spleen and liver during pre-erythrocytic stage after infection with live *P. yoelii* sporozoites, Arif J Siddiqui, Jyoti Bhardwaj, Mrigank Srivastata and S K Puri

130. Redox system involvement in resistance to antimalarial drug Arteether, Kirtika Prakash, Awakash Soni and S K Puri

131. Repetitive inoculation with live sporozoites under Piperaquine treatment protects Swiss mice against the infective challenge, Jyoti Bhardwaj, Arif J Siddiqui, Mrigank Srivastava and S K Puri

132. Filarial manifestation of Tropical Pulmonary Eosinophilia caused by *Brugia malayi* presents a differential gene expression profile when compared to different life stages of the filarial nematode, Sharma P, Sharma A and Srivastava M

16th Anual Land O' Lakes conference on Drug Metabolism and applied Pharmacokinetics, Wisconsin-Madison, USA (23-26 September)

133. *In vitro* Metabolism characterization, enzyme kinetic, CYP phenotyping, permeability studies of E and Z guggulsterone, YS Chhonker, H Chandasana, R Singh, D Kumar and RS Bhatta

Inhaled Therapies for Tuberculosis-Tokyo Meeting, Tokyo, Japan (1-3 October)

134. Targeted drug delivery of Rapamycin-PLGA microparticles to THP-1 derived macrophages infected with *Mycobacterium tuberculosis*, Anuradha Gupta and Amit Misra

135. Dry powder inhalations of dendrimer-conjugated morpholino siRNA, Mradul Mohan and Amit Misra

XXXIII Annual Conference of Society of Toxicology, Mathura, (23-25 October)

136. Protective role of Curcumin against teratogenic effect of Cyclophosphamide in rat, Akhilesh Kumar and Neeraj Sinha

137. Cyclophosphamid Testing teratogenicity of Cyclophosphamide: A metabolic approach, Nikunj Shethi, SK Shukla and Neeraj Sinha

XXXI Annual Conference of Indian academy of Neuroscience, Allahabad (25-27 October)

138. Protective effect of Melatonin in Streptozotocin induced memory impairment in Rats: effect on Nrf2 pathway, S Dwivedi, SK Mishra, Rajasekar N, K Hanif, C Nath and R Shukla

139. Insulin ameliorates insulin resistance and amyloidogenic proteins expression in streptozotocin stimulated astroglial cells, Rajasekar N, S Dwivedi, K Hanif, C Nath and R Shukla

140. Inhibition of Angiotensin converting enzyme in brain attenuates chronic neuroinflammation and amyloidogenesis, R Goel, K Hanif and R Shukla

Recent Advances in Biochemistry and Biotechnology: Applications in Health, Environment & Agriculture, Lucknow (29-31 October)

141. Temporal and spatial changes induced by Caviunin7-O-[β-D-apiofuranosyl-(1,6)-β-D-glucopyranoside (CAFG) in drill-hole defect model for bone healing, Priyanka Kushwaha, Vikram Khedgikar, Jyoti Gautam, Dharmendra Choudhary, Preeti Dixit, Rakesh Maurya and Ritu Trivedi

142. 4-hydroxyisoleucine improves the glucose intolerance in high fructose diet fed STZ treated rats through AMPK dependent pathway, Arun K Rawat , Savita Pal, Sudeep Gautam, T Narender and Arvind K Srivastava

143. Antidiabetic effect of *Potentilla fulgens* root in validated animal models of type2 Diabetes mellitus, Savita Pal, Arvind Mishra , Rakesh Maurya and Arvind K Srivastava

144. Antidiabetic and Antidyslipidemic activity of *Terminalia belerica* fruits, Arvind Mishra , Akansha Mishra , Savita Pal, Rakesh Maurya and Arvind K Srivastava

145. Structural and functional study of guanylate kinase, a nucleoside monophosphate kinase of human filarial parasite *Brugia malayi,* Smita Gupta, Sunita Yadav, Pravesh Verma and Jitendra K Saxena

146. Molecular cloning of *Brugia malayi* Protein disulphide Isomerase, Pravesh Verma, Sunita Yadav, Smita Gupta and Jitendra K Saxena

9th NCRI Cancer Conference, Liverpool, UK (3-6 November)

147. DIMA, a designed SERM, suppresses telomerase activity by selectively modulating estrogen receptors in human prostate cancer cells, Vikas Verma, Vikas Sharma, Vishal Singh, Siddhartha Sharma, AK Bishnoi, Atul Kumar, Anila Dwivedi and Gopal Gupta

11th Annual world congress on Insulin resistance, Diabetes and Cardiovascular disease, Los Angels, USA (7-9 November)

148. Physiologically relevant in vitro model of chronic insulin resistance, Muheeb Beg, Sujith Rajan, Abhishek Gupta, Salil Varshney, Ankita Srivastava, Kripa Shankar and Anil Gaikwad

81st Annual Meeting of Society of Biological Chemists, Kolkata, (8-11 November)

149. Detection and Characterization of chitinase in *Setaria cervi*, a bovine filarial parasite, P Dravid, DC Kaushal and NA Kaushal

AAPS-2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition-2013, San Antiano, USA (10-14 November)

150. Drug-Drug Interaction Potential Assessment of Tamoxifen and Centchroman, Wahajuddin, KSR Raju, I Taneja, A Tripathi and DP Mishra

IMMUNOCN-2013 (40th Annual Conference of Indian Immunology Society), New Delhi (15-17 November)

151. Isolation of *Setaria cervi* antigens having diagnostic potential for human filariasis, Priyanka Priyadarshi, Ashish Tandon, Deep C. Kaushal and Nuzhat A Kaushal

152. Identification of Setaria cervi antigens, recognized by antibodies against intact microfilariae Sunita Saxena, Piyush Dravid, Neeloo Singh, Deep C Kaushal and Nuzhat A. Kaushal

International Conference on Environment, health and Industrial biotechnology: Biosangam 2013, Allahabad (21-23 November)

153. mRNA expression of cytokines in malaria infected host spleen and their response to antimalarial, SK Singh, S Saini and R Tripathi

1st Indian Cancer Congress (ICC-2013), New Delhi (21-24 November)

154. Epigenetic reprogramming by a novel bioactive supplement in non-small cell lung cancer therapy, Shukla S, Khan S and Meeran SM

National Symposium on Recent Advances in Reproductive Health, Varanasi (28-30 November)

155. Pre-patterning in Mammalian Oocytes, Monika Sachdev

156. Characterization of a Novel Germ Cell Marker PP1ã2 in Cancer and Adult Stem Cells, Parmita Kar, Saurabh Agnihotri, Archana Sharma, MLB Bhatt, Rekha Sachan, Deepshikha Tewari and Monika Sachdev

157. Reproductive toxicity of Salinomycin. National symposium on reproductive health, Ojo Olajumake and SK Rath

32nd Annual Conference of Indian Council of Chemists (ICC), Dharwad (28-30 November)

158. Synthesis, characterization, *in silico* and ADMET studies of some new hydrazides and hydrazones as anti-tubercular agents, Arshi Naqvi, Richa Malasoni, Akansha Srivastava, Rishi Ranjan Pandey and Anil Kumar Dwivedi

159. Stability indicating studies on NMITLI 118R, a Standardized Extract of *Withania somnifera* Dunal, Hafsa Ahmad, Kiran Khandelwal, Shakti Deep Pachauri, Rajender Singh Sanghwan and Anil Kumar Dwivedi

82nd Annual Meeting of Society of Biological Chemists, India, Hyderabad (2 - 5 December)

160. Infection and immunomodulation of primary murine adipocytes by *Mycobacterium tuberculosis*, Pooja Agarwal, Shaheb R Khan, Subash C Verma and Manju Y Krishnan

European Union-Marie Curie FP1-people 2011-IRSES-International workshop on wound healing and angiogenesis, Chennai (14-15 December)

161. Endothelial regulation of fibrosis associated angiogenesis in liver, Kumaravelu Jagavelu

XXXVII All India Cell Biology Conference on Cell Dynamics and Cell Fate, Bangaluru, (22-24 December)

162. Hetero-complemented *Mycobacterium* bovis sigF mutant endures mycobacterial pathogenesis, Debashis Dutta, Ashutosh Tripathi and Bhupendra N Singh

163. Cross talk among mycobacterial sigma factors, Vishal Srivastava, Debashis Dutta and Bhupendra N Singh

164. Protein Kinase J regulates two key enzymes for the growth and intracellular survival of mycobacteria, Sameer Tiwari, Diwakar K Singh, Richa Saxena, Pramod K Singh and Kishore K Srivastava

165. Bi-functional role of PE proteins in mycobacterial persistence and in immuno-prophylaxis, Pramod K Singh, Susmita K Singh, Diwakar K Singh, Sameer Tiwari and Kishore K Srivastava

166. Fructose Exposure induces mitochondrial dysfunction and apoptosis in skeletal muscle cells, Jaiswal N and Tamrakar AK

4 Inter-Agency Linkages

Title of the Project	Principal Investigator
Department of Health Research, Government of India	
Center for Drug Discovery and Development in Reproductive Health at CSIR-CDRI, Lucknow	Director
Ministry of Earth Sciences, Government of India	
Biological evaluations, discovery of novel bioactive compounds of the MoES Project "Drugs From sea"	Dr. Madhu Dikshit
Design and synthesis of noval dolastatins, azumamides and microsporin A analogs: A quest for anti cancer drugs	Dr. Dipankar Koley
Development of antimicrobial, anti-inflammatory and anticancer agents from the marine-organisms and micro-organisms	Dr. T. Narender
Search for novel antimicrobial and anticancer metabolites from marine bacteria	Dr. Prem Prakash Yadav
Department of Science & Technology, Government of India	
Sophisticated Analytical Instrument Facility	Director
JC Bose Fellowship	Dr. TK Chakraborty
Electronic structure theory based investigation of conformational behaviour and secondary structures of substituted β-proline based peptides" conformational studies and biological evaluation.	Dr. T.K. Chakraborty Dr. R.S. Ampapathi
Identification and characterization of protein(s) from arteether sensitive and arteether resistant rodent malaria parasites for elucidation of mechanism of resistance	Dr. S.K. Puri
Design, synthesis and biological evaluation of SIRT-1 activators for the treatment of type-II diabetes	Dr. Bijoy Kundu
Design and synthesis of flexible model based on Pyrazolo[3,4-d] pyrimidine for better understanding of arene interactions at molecular & supramolecular level	Dr. Kamlakar Awasthi Dr. A.K. Shaw
Chiron approach synthesis of natural products and natural product like molecules from carbohydrate based building blocks	Dr. A.K. Shaw
Characterization of natural antimony resistance related gene(s) of *Leishmania donovani*	Dr. Neena Goyal
Proteomic analysis of drug resistance in *Leishmania donovani* clinical isolates.	Dr. Neeloo Singh
Antimalarial principles from plants belonging to the genus veronia endemic to the western ghats	Dr. Kumkum Srivastava
Application of Baylis-Hillman chemistry for the synthesis of natural products and their mimics	Dr. Sanjay Batra
Amino acids as chiral synthons: Development of new synthetic protocols for creating natural products and related diversity in quest for anticancer agent	Dr. Gautam Panda
Design, synthesis and development of novel antileishmanial agents	Dr. T. Narender
Structural characterization of gama-glutamylcysteine synthetase and glutathione synthetase from *Leishmania spp*.	Dr. J.V. Pratap
Effect of cancer chemotherapeutic drugs on spermatogonial stem cell niche, chromatin remodeling and epigenetic programming in male germ cells	Dr. D.P. Mishra
Investigation on immunomodulation mediated by *Mycobacterium tuberculosis* during persistent infection	Dr. Y.K. Manju
Expression, intracellular localization and functional characterization of actin related proteins of leishmania	Dr. A.A. Sahasrabuddhe
Osteogenic actions of a naturally derived NP-1 pure compound on bone	Dr. Divya Singh
To study immunoprotective roles of methoxyisoflavones in estrogen-deficiency induced bone loss	Dr. Divya Singh

Title of the Project	Principal Investigator
Polymeric nano-matrix -associated *in vivo* delivery of Kaempferol in rats for bone anabolic action	Dr. Ritu Trivedi
A systematic RNAi screen for identification of genetic modulators of HIV-NEF induced pathogenesis in a novel *Caenorhabditis elegans* model	Dr. Aamir Nazir
Evaluation of TGF-Beta activation mechanism and signaling during uterine tissue remodeling	Dr. R.K. Jha
Role of estrogen(s) induced redox alterations in breast carcinogenesis	Dr. Smrati Bhadauria
Role of integrin 8-Fas and FAK signaling in the endometrial epithelial cell physiology during uterine tissue remodeling process	Dr. Rajesh Kumar Jha
Functional Characterization of fission yeast cleavage and polyadenylation factor subunit RNA 14 and its implication on cell cycle checkpoint pathway	Dr. Shakil Ahmed
Biotechnological Intervention for Pharmaceutically Valuable Componds from forest resins	Dr. Rakesh Shukla
Molecular dissection of signal transduction events involved in host defence against experimental visceral leishmaniasis	Dr. Susanta Kar
Deconstructing Corticostriatal Circuit : Implication in executive function	Dr. Prem N. Yadav
Tyrosine hydroylase as potential drug target in Parkinson's disease: Studies with genetic knockdown model of *Caenorhabditis elegans*.	Dr. Aamir Nazir
Clonal multiplication of Indian traditional plant *Ulmus wallichiana* Planchon : An endangered tree for healing fracture	Dr. K.R. Arya
Qualitative and Quantitative analysis of bioactive alkaloids in *Berberis* and *Mahonia* species and use of PCA for marker identification	Dr. Brijesh Kumar
Probing electrophilic cyclization of alkynols and alkylamines for the synthesis of various heterocyclic compounds	Dr. Maddi Sridhar Reddy
Evaluation of weak dipole-dipole interactions in molecular solids by means of experimental charge density studies and computational methods.	Dr. T.S. Thakur
Exploration of potency, efficacy and mode of action of *Ulmus wallichiana* against hypertension	Dr. J.R. Gayen
Understanding the mechanism of anticarcinogenic effect of Alfa-solanine	Dr. Jayanta Sarkar
Novel genetic and epigenetic targets for breast cancer prevention and therapy: A mechanistic approach with bioactive dietary supplements	Dr. S. Musthapa
Pharmacokinetics, metabolic and biopharmaceutics assessment of antimalaarial lumefantrine and it's active and more potent metabolite	Dr. Wahajuddin
Isolation and characterization of antifungal peptides from natural sources	Dr. Vineeta singh
Therapeutic evaluation of fetal osteo-progenitor stem cell in rat model of osteoporosis	Dr. Deepshika Tewari - RA
Role of innate immune components in inflammation induced insulin resistance	Dr. A. Tamrakar
Identification and characterization of small molecule inhibitors of human DNA ligases as potential anti-cancer agents	Dr. Dibyendu Banerjee
Department of Biotechnology, Government of India	
Structural analysis of bacterial peptidyl-t RNA hydrolase enzymes and design of high affinity binders	Dr. Ashish Arora
Generation and characterization of *Mycobacterium smegmatis* sigF mutant and studies on the sigF-mediated gene expression by microarray analysis	Dr. B.N. Singh
Understanding mechanism of action of the anti-osteoporotic activity of CDRI's compounds K095 1709	Dr. S. Sanyal
Investigation on involvement of adipose tissue in persistence of pathogenic mycobacteria	Dr. Y.K. Manju
Isolation, identification, characterization and bioactivity assay of antidiabetic drug leads from few selected medicinal plants of north east India: Voyage for cure of diabetes	Dr. A.N. Gaikwad
Functional characterization of CRN 12 In leishmania parasites	Dr. A.A. Sahasrabuddhe

Title of the Project	Principal Investigator
Investigation of effect of polysaccharide in modifying leishmanicidal potential of nanoparticulate system bearing chemotherapeutics agent	Dr. M.K. Chourasia
Identification of ER alpha interacting proteins from tamoxifen induced and uninduced MCF7 cells: A mass spectrometry based proteomics approach	Dr. A.K. Trivedi
Structural analysis of bacterial peptidyl-t RNA hydrolase enzymes and design of high affinity binders.	Dr. Ashish Arora
Generation and characterization of *Mycobacterium smegmatis* sigF mutant and studies on the sigF-mediated gene expression by microarray analysis	Dr. B.N. Singh
Understanding mechanism of action of the anti-osteoporotic activity of CDRI's compounds K095 1709	Dr. S. Sanyal
Investigation on involvement of adipose tissue in persistence of pathogenic mycobacteria	Dr. Y.K. Manju
Isolation, identification, characterization and bioactivity assay of antidiabetic drug leads from few selected medicinal plants of north east India: Voyage for cure of diabetes	Dr. A.N. Gaikwad
Functional characterization of CRN 12 In leishmania parasites	Dr. A.A. Sahasrabuddhe
Investigation of effect of polysaccharide in modifying leishmanicidal potential of nanoparticulate system bearing chemotherapeutics agent	Dr. M.K. Chourasia
Identification of ER alpha interacting proteins from tamoxifen induced and uninduced MCF7 cells: A mass spectrometry based proteomics approach	Dr. A.K. Trivedi
Expression profiling of major testis specific genes in human semen/spermatozoa for identification of the biological role of these genes, their diagnostic utility and identification of novel targets for infertility treatment/male contraception	Dr. Rajender Singh
Regulation of Pancreastatin : A noval approach to control diabetes	Dr. J.R. Gayen
Solution structure and dynamics of Unc-60 ADF/Cofilin protiens of *Caenorhabditis elegans*	Dr. Ashish Arora
Drugs against central body fatness and insulin resistance (High pre/post-menopausal prevalence)-RGYI Scheme	Dr. J.R. Gayen
Validation of the cancer testis biomarker CABYR in cervical squamous cell carcinomas	Dr. Monika Sachdev
Antioxidant capacity of astrocytes and neurotrophic factors in aging: Age and gender based analysis(National initiative on Glial cell research in health and disease)	Dr. Sarika Singh
Molecular Characterization and Epidemiological Modeling of Antimicrobial resistance at the interface of animal-Human-Plant pathogen Continuum	Dr. Rabi Shankar Bhatta
Studies on effect of different herbal preparation on wound healing and angiogenesis	Dr. Syed Musthapa M
Role of miRNAs responsible for bone mass reversal at the time of weaning	Dr. Ritu Trivedi
Characterization of the role of Human DNA ligase I in Lagging strand DNA synthesis and DNA Replication (RGYI)	Dr. Dibyendu Banerjee
An Approaches towards identification and synthesis of antigenic epitopes of potential L. donavani Th1 stimulatory proteins for the development of synthetic vaccine against Visceral Leishmanisis	Dr. Anuradha Dube
Elucidating the role of P53 and DNA damage response pathway in anti-cancer activity of a novel coumarinchalcone hybrid	Dr. Jayanta Sarkar
Genetic manipulation and drug targeting approaches against *Plasmodium berghei* sporozoite proteins S14, Serine threonine protein Kinase -9 and Liver stage specific Acyl - CoA Synthase	Dr. Satish Mishra
Investigating the extra-ribosomal functions of ribosomal proteins during stress and infection	Dr. Niti Kumar
Assembly of Iron-Sulphur [Fe-S] Cluster on critical proteins of the plasmodium apicoplast	Dr. Saman Habib
Indian Council of Medical Research, Government of India	
Design, synthesis and biological evaluation of HIV-1 RT inhibitors-4- thiazolidinone compounds	Dr. S.B. Katti
Impact of adipokine and chemokine gene polymorphism and its protein expression in metabolic syndrome	Dr. Ashim Ghatak Dr. Rituraj Konwar

Title of the Project	Principal Investigator
Nucleosomal histone proteins of *Leishmania donovani*: Molecular & Immunobiochemical characterization for its potential as vacceine target against visceral Leishmaniasis	Dr. Anuradha Dube
Development of bone anabolic agents from an Indian medicinal plant	Dr. N. Chattopadhyay
Effect of 2,3-diaryl-2H-1-benzopyran derivative on estrogen induced endometrical cell proliferations and uterine hyperplasis formation	Dr. Anila Dwivedi
Preclinical development of DSE-37[S,S"-{Disulfanediylbi (pyrrolidino-propane-2,1-diyl)} bis(piperidinothiocarbamate) as a vaginal contraceptive	Dr. Gopal Gupta
Design, synthesis and bioequivalence of new analogues of fluconazole for antifungal activity	Dr. P.K. Shukla
Design, synthesis and bioevaluation of novel hybrid compounds for antimalarial activity	Dr. Sanjay Batra
Delivery system for the management of septic shock; Rational approach towards lipopolysaccharide (LPS), neutralization and detoxification	Dr. P.R. Mishra
Design, synthesis and evaluation of new chemical entities against a typical *Mycobacterium-2-fortuitum*	Dr. Gautam Panda
Evaluation of Ply-ADP-Ribose Polymerase-2 (PARP-2) and caspace-8 signaling mechanism role during uterine tissue remodelling	Dr. Rajesh Kumar Jha
Designed synthesis and biological evaluation of novel agents for managements design prostatic hyperplasia	Dr. V.L. Sharma
Development of antidyslipidemic agents from *Aegle marmelos* (BAEL) and *Trigonella feonum graeucum* (METHI)	Dr. T. Narender
Natural modulators of GLUT-4 translocation for the treatment of insulin resistance	Dr. A.K. Tamarkar
Elucidation of inflammatory pathways involved in septic shock	Dr. M. Dikshit
Identification and characterization of cross-reactive molecules of filarial and leishmanial parasites and their possible prophylactic potential against either infection	Dr. P.K. Murthy
Nanoreservoirs carrying *Brugia malayi* recombinant proteins as potential vaccine against experimental lymphatic filariasis	Dr. S. Bhattacharya
Neuroinflammation and memory impairment in hypertension: Role of the central rennin angiotensin system	Dr. Rakesh Shukla
Evaluation of rescue treatment for cerebral malaria *in vitro / in vivo* model	Dr. Renu Tripathi
NMITLI(CSIR)	
Lead based drug development and genetic improvement of Ashwagandha *Withania somnifera*	Dr. S. Bhattacharya
Novel DPP IV Inhibitor for the Treatment of Diabetes	Dr. SK Rath/Dr. S Sanyal
UPCST	
Production of microbial heparinases to produce low molecular weight heparins used as antithrombotic agents	Dr. C.K.M. Tripathi/Dr. PK Shukla

5 Human Resource Development

1 Ph.D. Theses submitted

S. No.	Student	Thesis Title	Supervisor
Jawaharlal Nehru university, New Delhi			
01	Mandadapu Anil Kumar	Synthesis of nitrogen containing polyheterocyclic compounds of biological interest	Dr. Bijoy Kundu
02	Anita	Molecular & biochemical characterization of a putative chemotherapeutic target of filarial parasite	Dr. J K Saxena
03	Aiman Tanveer	Analysis of proteins putatively involved in *Plasmodium falciparum* apicoplast replication and segregation	Dr. Saman Habib
04	Savita Lochab	Global protein expression changes in breast cancer upon anti-cancer drug treatment: A mass spectrometry based proteomics approach	Dr. Arun K. Trivedi
05	Vishal Singh	A study on macrophage from cell formation and atherosclerosis progression: Role of Hyperlipidaemia and Inflammation	Dr. Manoj K Bharthwal
06	Kiran Kumar Pulukuri	Design, synthesis and conformational analysis of glycopeptides containing sugar amino acids and studies directed towards the total synthesis of Rhizopodin	Dr. T K Chakraborty
07	Venkateswarlu K	Synthesis of bioactive natural products analogues and development of novel synthetic methodologies	Dr. T Narender
08	Vikas Tyagi	Diversity oriented synthesis of novel heterocycles as anti-infective agents	Dr. PMS Chauhan
09	Vivek Khanna	Vascular injury induced atherosclerotic lesions: Inflammatory status and scope of anti-platelet drugs	Dr. Madhu Dikshit
10	Jeetendra Kumar Nag	Characterization of human lymphatic filariid protein(s) involved in transcription /translation mechanism	Dr. Shailja Bhattacharya
11	Nidhi Shrivastava	Molecular cloning and characterization of NDA+ - dependent DNA ligase of of filarial endosymbiont wolbachia and immunoprophlatic efficacy of recombinant *Brugia malayi* proteins	Dr. Shailja Bhattacharya
12	Mukesh Kumar	Design and synthesis of novel bioactive heterocycles as potential therapeutic agents	Dr. Atul Kumar
13	Sanchita Das	Studies on expression and characterization of SAG resistant gene(s) of *Leishmania Donovani* identified through differential protiomics	Dr. Anuradha Dube
14	Diwakar Kumar Singh	Studies on the role of post translational modifications by serine/threonine protein kinase in survival of mycobacteria in the host and its effect on the virulence: Role of protein kinase J	Dr. Kishore K Srivastava
15	Jay Sharan Mishra	Identification and evaluation of novel osteogenic and anti-resorptive agents	Dr. Sabyasachi Sanyal
16	Jitendra Kumar Kanaujiya	Global protein expression changes in myeloid leukemia cells upon anticancer drug treatment: A mass spectrometry based proteomics approach	Dr. Arun K Trivedi
17	Olajupmoke Omolara Ojo	Studies on toxicity of Salinomycin	Dr. S K Rath
18	Shyam Raj Yadav	Design and synthesis of novel peptidomimetics of biological interest	Dr. W Haq
19	Ankit Gupta	Investigation of translation factors involved in *Plasmodium Falciparam* apicoplast and mitochondrial translation	Dr. Saman Habib
20	Rajendra Kumar Baharia	Characterization of nucleosomal histone protein(s) of *L. donovani* for its potential as a vaccine target against visceral Leishmaniasis	Dr. Anuradha Dube
21	Rati Tandon	Studies on Characterization of protein(s) identified through proteomics for their potential as vaccine/drug targets against experimental visceral Leishmaniasis	Dr. Anuradha Dube

S. No.	Student	Thesis Title	Supervisor
22	Promod Kumar	Design and synthesis of privileged structure based bioactive molecules	Dr. Atul Kumar
23	Namrata Anand	Synthesis of bio-evaluation of hybrid molecules based on aromatics, heterocyles & sugar	Dr. R P Tripathi
24	Nidhi Singh	Dissecting the role of GPS2 interacting protein FXR and its "Specific Ligand" GW4064 in different physiological and pathophysilogical conditions	Dr. Sabyasachi Sanyal
25	Seerat Fatima	Synthesis of novel chemotherapeutic agents based on carbohydrates, aromatics and heterocycles	Dr. Sabyasachi Sanyal
26	Mohammad Imran Ansari	Synthetic studies on ER active ligands as potential estrogen agonist/antagonists	Dr. Kanchan Hajela
27	Mohammad Saifuddin	Design, synthesis and antimalarial activity of natural product inspired polycyclic compounds	Dr. Bijoy Kundu
28	Imran Ahmad Khan	Design, synthesis and exploration of biologically active molecules	Dr. A K Saxena
29	Sarvendra Vikram Singh	Single nucleotides polymorphism analysis in P53 pathway and target genes in carcinoma of upper areo digestive tract (UADT) in selected Indian sub-population	Dr. S K Rath
30	Rajeev Ranjan	Functional and characterization of Rint1(Rad 50 interacting protein) during the cell cycle of *Schizosacharomyces pombe*	Dr. Shakil Ahmed
31	Rajbir Singh	Evaluation of standardized extract of *bacopa monniera* on metabolic enzymes and membrane transporters: assessment of potential herb-drug interactions	Dr. Rabi Sankar Bhatta
32	Sudip Pal	Design, synthesis and biological study of cationic antimicrobial peptides and synthetic studies toward *Lagunamide B*	Dr. T K Chakraborty
33	Kuldeep Chauhan	Design and synthesis of novel nitrogen heterocylic prototypes and their antiparasitc and antimicrobial activity	Dr. PMS Chauhan
34	Sandip Basu	Design, synthesis and conformational studies of peptidomimetics containing β-prolines and application of titanium (III) induced radical cyclization of epoxyolefins in natural product synthesis	Dr. T K Chakraborty
35	Priyanka Singh	Carbohydrate and amino acid as chiral synthons: Approach towards natural product and natural product like designer synthetic molecules	Dr. Gautam Panda
36	Gaurav Kumar	Functional studies of G-Actin binding proteins, ADF/cofilin and Twinfilin, in Leshmania parasites	Dr. Amogh A Sahasrabuddhe
37	Vivek Kumar Kashyap	Evaluation of murine infection model of *Mycobacterium fortuitum* for drug screening and heterologous gene expression	Dr. Arunava Das Gupta
38	Upma Chaturvedi	A Pharmacological evaluation of antihyperlipidemic and antioxidant activities of some selected medicinal plants and/or synthetic compounds	Dr. Gitika Bhatia
39	Gopal Reddy Palnati	Design and synthesis of novel coumarin analogs as versatile biodynamic agents	Dr. K V Sashidhara
40	Kandhikonda Rajendar	Synthesis and chemical transformations of biologically active natural products	Dr. T Narender
41	Manish Kumar Suthar	Characterization of a putative Chemotherapeutic target from malaria parasite	Dr. J K Saxena
42	Atul Srivastava	Identification, systematic evaluation and mechanistic studies of antihyperlipidemic and antioxidant activities of some selected medicinal plants, microorganism and synthetic compounds	Dr. Gitika Bhatia
43	Jitendra Kumar Tripathi	Understanding the structure-function relationship in naturally occurring antimicrobial peptides and design of their novel analogs	Dr. Jimut Kanti Ghosh
44	Ravi Sonkar	Identification and characterization of synthetic/natural compounds on obesity induced metabolic disorders	Dr. Gitika Bhatia
AcSIR-CSIR-CDRI, Lucknow			
45	Abdul Malik	To study the immuno protective role of Estrogen and isoflavonoids *in vitro* and in Estrogen deficient mouse model of osteoporosis	Dr. Divya Singh
46	Amit Kumar Gupta	Molecular modulating based design, synthesis and biological studies of novel anti malarial anti ulcer agents	Dr. A K Saxena

S. No.	Student	Thesis Title	Supervisor
47	Shalini Asthana	Development of nanoreservoir system for effective delivery of chemotherapeutic agent against experimental visceral leshmaniasis	Dr. Manish Chourasia
Lucknow University, Lucknow			
48	Amita Parihar	Synthesis and Biological properties of lactones and their ring transformed products	Dr. Atul Goel
49	Maloy Nayak	Design and synthesis of novel compounds using multi component reactions	Dr. Sanjay Batra
50	Gaurav Taneja	Lactone-derived agents and heteroarenes of therapeutic importance	Dr. Atul Goel
Dr. B R Ambedkar University, Agra			
51	Shanawaz Khan	Design and synthesis of heterocycle as anti-infective agents	Dr. PMS Chauhan
University of Kalyani Das, Kolkata			
52	Sati Nath Sarkar	Synthesis of natural products analogues of biological importance and development of new synthetic methodology	Dr. T Narender
Bhagwant University Ajmer, Rajasthan			
53	Moni Sharma	Synthesis of novel heterocyclic hybrid prototype as possible anti-infective agents	Dr. PMS Chauhan
Jamia Hamdard University, New Delhi			
54	Swaroop Kumar Pandey	Development of artimisinin based combination therapy for malaria: therapeutic and biomedical approach	Dr. Renu Tripathi
55	Shravan K. Singh	Molecular characterization of acetylcholinesterase enzyme from filarial parasites	Dr (Mrs) Nuzhat A. Kaushal
56	Ashish Jain	Novel microbicidal contraceptives for dual protection and their molecular mechanism of action	Dr Gopal Gupta
Dr. Ram Manohar Lohia Avadh University, Faizabad			
57	Devendra Pratap Mishra	Isolation and characterization of bioactive natural products from Indian Medicinal Plants	Dr. Rakesh Maurya
Gautam Bhuddha Technical University, Lucknow			
58	Smriti Sharma	Design and synthesis of carbohydrate derivative molecules as antitubercular agents	Dr. Arun K Shaw
59	J.P. Chaturvedi	Phytochemical investigation of Indian medicinal plants	Dr. T. Narender
Integral University, Lucknow			
60	Prashant Khare	Cloning, overexpression and purificationof TH1stumulatory poly proteins identified through proteomics for their prophylactic potential against experimental visceral Leishmaniasis	Dr. Anuradha Dube
61	Balaramnaver Vishal sinh Mohan Sinh	Design and synthesis of BMP-receptor against as anti-osteoporotic and anti-cancer agents and synthesis bioactive molecules	Dr. A K Saxena
62	Amrita Saxena	Drug metabolism and pharmacokinetics of novel antithrombotic	Dr. J R Gayen
Birla Institute of Technology, Ranchi			
63	Shakti Deep Pachauri	Phytopharmaceutical evaluation of *Morinda citrifolia* L. (Noni) and development of herbal formulation	Dr. A K Dwivedi
64	Shaswat Kansal	Surface modified polyelectrolyte reservoir bearing chemotherapeutic agent for effective management of visceral leishmaniasis	Dr. P.R. Mishra and Dr. PRP Verma
Banasthali University, Rajasthan, India			
65	Rish Ranjan Pandey	Design, synthesis, charactersation and evaluation of some novel compounds for local contraceptive and anticancer activity	Dr. A K Dwivedi

2. Sponsored training provided to external aspirants

Under the above program, the institute imparted training to the post-graduate students, fellows from foreign countries and aspirants from academia and industries across the India in the area of drug & pharmaceutical research, techniques in laboratory animals, tissue & cell culture, instrumentation, sophisticated analytical instruments and other laboratory techniques as given below:

2.1 Training to Post Graduate Students

During the calendar year, a total of 140 Post-graduate students from 51 Colleges/Universities and their affiliated colleges from all over the country were selected on merit basis and were imparted training in various disciplines of drugs and pharmaceutical research for 4-10 months duration.

2.2 Training to Post Graduate Students

CSIR-CDRI being a mentor institute for the NIPER Raebareli, imparted one year project training in biomedical research to 30 M.S. (Pharm) Pharmaceutics & Medicinal Chemistry specialization students.

2.3 Training under cooperation with INSA & NASI

Under the programme, 07 INSA & NASI fellows from different institutes were provided training in different aspects of biomedical research.

2.4 International training under bilateral cooperation

Long-term/short term training was provided to the following trainees from abroad:

Name and Address of Trainee	Fellowship/ Programme	Supervisor	Duration
Ms. Olajumoke Omolara Ojo, Assistant Lecturer, Biochemistry Department, Faculty of Science, University of Ado Ekiti, Ekiti State, Nigeria	For Postgraduate studies under CSIR-TWAS Fellowship leading to a Ph.D. on 'Studies on Toxicity of Salinomycin'	Dr. S.K. Rath, Principal Scientist, Toxicology Division	20.07.2009 to 05.07.2013
Dr. Nene Bi Semi Anthelme, Laboratoire de Physiologie Animale, UFT Biosciences, University de Cocody, Abidjan, Ivory Coast	Under C.V. Raman International Fellowshhip for African Researchers for Post Doctoral Studies sponsored by FICCI, New Delhi	Dr. Madhu Dikshit, Chief Scientist, Pharmacology Division	11.07.2013 to 10.01.2014

3. Training program attended by CSIR-CDRI staff

In the reporting year following Scientist/Technical staff from CSIR-CDRI attended various training programs and workshops for updating their knowledge and expertise in different disciplines.

Name of the Staff	Title of the Programme	Place	Date
Dr. Vivek V. Bhosale Scientist, Clinical & Experimental Medicine	Workshop on molecular biotechnology and bioinformatics	International Centre for Stem Cells, Cancer and Biotechnology, Pune, India	15-19 July, 2013
Dr. Monika Sachdev Sr. Scientist, Endocrinology Division	ICMR workshop on Pluripotent Stem Cells in Adult Mammalian Gonads	National Institute of Research in Reproductive Health, Mumbai	6-9 September, 2013
Dr. Satish Mishra Scientist, Parasitology Division	Beckman Coulter flow cytometry workshop	CSIR-CDRI, Lucknow	23-27 September, 2013
Dr. Rabi S. Bhatta Scientist, Pharmacokinetics and Metabolism Division	Workshop on Pharmacokinetic Modelling	CSIR-CDRI, Lucknow	4-6 September, 2013
Dr. HK Bora Jr. Scientist, Division of Laboratory Animal	ICLAS International workshop on Laboratory Animal Science	CSIR-IGIB, New Delhi	18-29 November, 2013
Mr. Karunesh Rai Sr. Technical Officer (2), Division of Laboratory Animal	ICLAS International workshop on Laboratory Animal Science	CSIR-IGIB, New Delhi	18-29 November, 2013

6 Honours and Awards

Dr. Anuradha Dube

- Elected Fellow of Indian National Science Academy-2014, (INSA), New Delhi

Dr. Renu Tripathi

- Platinum Jubilee Lecture Award-2013 of the 100th Indian Science Congress, Kolkata

Dr. PK Murthy

- Elected Fellow of National Academy of Science India- 2014
- Dr. B.N. Singh Memorial Oration Award - 2011 of the Indian Society for Parasitology

Dr. Anil Balapure

- Elected Vice-President of The Indian Pharmacological Society

Dr. Saman Habib

- National Young Woman Bioscientists Award-2012 (young Category), DBT, India

Dr. Jiaur R Gayen

- Fellow of Society of Applied Biotechnology (FSAB)

Dr. Arun K Trivedi

- CSIR Young Scientist Award-2013
- INSA Medal for Young Scientists- 2013

Dr. Ashish Arora

- Nominated as Member Executive Council of Indian Biophysical Society, India for 2013-2015

Dr. Susanta Kar

- INSA Medal for Young Scientists- 2013
- Young Scientist Award from the Indian Society for Parasitology (ISP-2012), India

Dr. Sripathi R. Kulkarni

- DBT-CREST Fellowship, 2013-2014

Dr. Madhu Dikshit

- Darshan Ranganathan Memorial Lecture Award (2013) of the Indian National Science Academy, New Delhi

Dr. Wahajuddin

- Dr. P.D. Sethi Annual Award – 2012 for the best research Paper in Pharmaceutical Analysis sponsored by The Pharma Review
- Young Mass Spectroscopist Award- 2013

Dr. Aamir Nazir

- Elected Fellow of Society for Applied Biotechnology, FSAB - 2012

Mr. Kiran K Pulukuri (Student of Dr. TK Chakraborty)

- Eli-Lilly best thesis award-2013

Dr. Atul Kumar

- Global Advisory Council Member of SciFinder, Chemical Abstracts Services (CAS), Divison of American Chemical Society (ACS) Columbus, OH, USA

Ms. Rachana Trivedi (Student of Dr. D P Mishra)

- DAAD Fellowship

Dr. Sarika

- Raman Research Fellowship Award-2013
- Indo-US Fellowship Award - 2013

Ms. Savita Lochab (Student of Dr. Arun K Trivedi)

- Dr. Swarna Nityanand Award for the best women research scholar-2013
- Best Poster Presentation Award at "International Conference on Stem Cells and Cancer ICSCC-2012", New Delhi

Dr. R. Ravishankar

- V Life Best Publication Award, 1st June'13, In recognition of outstanding publication in the field of Computer Aided and Molecular Design by M/s V Life Sciences Technologies Pvt. Ltd.
- Elected as the 'Joint Secretary' and Executive committee member, *Indian Crystallographic Association*' from 21st Nov'13 onwards

Mr. Nand Lal (Student of Dr. VL Sharma)

- MM Dhar Memorial Award, 2013 – Chemical Sciences

Dr. Monika Sachdev

- Prof. Vishwnath Memorial Oration Award for the oral presentation at 18th Congress of Society of Andrology, Lucknow,

Mr. Saurabh Srivastava (Student of Dr. JK Ghosh)

- MM Dhar Memorial Award, 2013 – Biological Sciences

Dr. Satish Mishra

- Ramalingaswami Re-Entry Fellowship 2012-13
  Department of Biotechnology

Ms. Pooja Jadiya (Student of Dr. Aamir Nazir)

- First Prize in Poster Presentation at Lucknow Science Congress - 2013

Ms. Ankita Mishra (Student of Dr. Madhu Dikshit)

- Director's Appreciation Award for Best Thesis

Mr. Pankaj Sharma (Student of Dr. Mrigank Srivastava)

- "Prof. Awtar Krishan Prize" for getting first position in Flow Cytometry Quiz, Bangalore (5-8 November 2013)
- First prize in Flow Cytometry Workshop Beckman Coulter, (23-27 September 2013)

Ms. Aiman Tanveer (Student of Dr. Saman Habib)

- Best Poster Award at CTDDR 2013

Ms. Kirtika Prakash (Student of Dr. S.K. Puri)

- Best Poster Award in 12th International Conference on Vector and Vector Borne Diseases, Udaipur

Ms. Parmita Kar (Student of Dr. M. Sachdev)

- Best Poster Award in the National Symposium on Recent Advances in Reproductive Health, Varanasi

Ms. Hafsa Ahmad (Student of Dr. A.K. Dwivedi)

- Dr. V. K. Sharma Award for best oral presentation (Pharmaceutical and Bio-chemistry section) in 32nd Annual Conference of the Indian Council of Chemists, Dharwad

Ms. Priyanka Kushwaha (Student of Dr. Ritu Trivedi)

- Best Oral Presentation Award from Indian Society for Bone and Mineral Research (ISBMR)

Ms. Minakshi Rana (Student of Dr. Manoj K. Barthwal)

- Best Poster Award, SFRR India-14 Conference on recent Trends in Free Radical abd Antioxidant Research, Lonavala

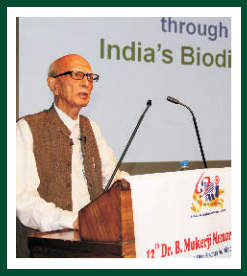
Mr. Dharmendra Choudhary (Student of Dr. Ritu Trivedi)

- Best Oral Presentation Award from Indian Society for Bone and Mineral Research (ISBMR)

Ms. Megha Dubey (Student of Dr. Madhu Dikshit)

- Best Poster Award, SFRR India-14 Conference on recent Trends in Free Radical abd Antioxidant Research, Lonavala

Other Activities



CSIR-Central Drug Research Institute, Lucknow

1 Major Events Organized

CSIR-CDRI Annual Day Celebrations 2013

CSIR-CDRI celebrated its 62nd Annual Day on 17th February, 2013 at its new premises. Dr. R.A. Mashelkar, former Director-General, CSIR, National Research Professor, Chancellor-AcSIR and President - Global Research Alliance was the Chief Guest and Dr. Nirmal Kumar Ganguly, former Director- General, ICMR and Distinguished Biotechnology Fellow presided over the function. Dr. Tushar Kanti Chakraborty, Director CSIR-CDRI formally welcomed the Chief Guest, other dignitaries and presented a detailed account of the achievements made by CSIR-CDRI during the reporting period. He declared the winners of the prestigious CSIR-CDRI awards - 2013. Dr. Balasubramanian Gopal from IISc, Bangalore under Life Sciences stream and Dr. D. Srinivas Reddy from CSIR-NCL under Chemistry streams were selected for the award.

In his address, Dr. Mashelkar expressed his happiness over looking at the beautiful and sprawling new campus that has been visualized during the nineties. He stressed on monetization of R&D activities rewarding the endeavors of scientists and the importance of 'affordable accessibility' that requires innovation model that could be system derived or work-flow based or a technology-flow based innovation. He ended his speech to a standing ovation from the audience, with a congratulatory remark to the achievements made by CSIR-CDRI and expectation to do more in its endeavors. Later, the Annual Report-2012-13 was released by the distinguished guests on the dais, along with the distribution of Annual Awards for the best performing employees and students. Dr. M.M. Dhar Best Ph.D. Theses were awarded to Mr. Nand Lal for Chemical Sciences and Mr. Sourabh Shrivastava for Biological Sciences along with Director's appreciation award to Ms Ankita Mishra. This year CSIR-CDRI instituted another award in the fond memory of Dr. Swarn Nityanand sponsored by the family of Dr. Nityanand. Further, publications with impact factor greater than 5 were given away with awards along with the patents that were granted abroad and also best technology award was awarded. Further more, the institute felicitated its employees completing 25 years of service. Dr. N.K. Ganguly, in his presidential remarks, praised the efforts made by the institute. He was delighted to visit this new campus and vested expectations on the shoulders of the younger scientists to carry on tone and tempo of the able leadership from its former directors and stalwarts, as this institute is modernized beyond imaginations and everyone has greater expectations from the coming research teams. Dr. S.K. Rath proposed vote of thanks and concluded the programme.

Current Trends in Drug Discovery and Research (CTDDR-2013)

A three days symposium on Current Trends in Drug Discovery and Research (CTDDR-2013) focusing on orphan and neglected diseases like malaria and tuberculosis was organized from 25th to 28th Feb 2013 at CSIR-Central Drug Research Institute.

On the first day of symposium, Dr. R.M. Muthyala of University of Minnesota talked about the rare/orphan as well as neglected tropical diseases like TB and Malaria. Prof. Samir K Brahmachari, Secretary, DSIR and Director General, CSIR, discussed the important role played by CSIR and Open Source Drug Discovery (OSDD) in discovery of affordable and accessible healthcare to common man. Dr. T.S. Balganesh, Scientist at CSIR-CMMACS, discussed the challenges of drug discovery in tuberculosis, highlighting the role of new OSDD programme which can circumvent problems by open innovation model of data sharing and supports projects through a series of facilities towards progressing compounds with anti-TB activity On the second day of the session of CTDDR-2013, Prof. S.E. Hasnain from IIT Delhi, talked about the molecular infection biology of *Mycobacterium tuberculosis*, a causative agent of TB. Other renowned speakers of the second day were, Dr. Anil Koul from Belgium, Prof. J. Basu from Bose Institute, Kolkata, Riccardo Manganelli from University of Padova Via Gabelli, Italy, Dr. Timothy Wells, Chief Scientific Officer of Medicine for Malaria Venture (MMV) programme and Alexander G. Maier from Australian National University. Many Scientists and research scholars attended this three day symposium. More than 200 posters were presented during the event. The symposium was concluded with the vote of thanks by Dr. Bijoy Kundu, Organizing Secretary, CTDDR-2013.

Hussain Zaheer Memorial Bridge Tournament

In the memory of former Director General of CSIR, Dr Hussain Zaheer, Staff club of CSIR-Central Drug Research Institute organized Hussain Zaheer Memorial Bridge tournament from 19th to 21st February 2013. Dr. (Mrs) Susmita Chakraborty was the chief guest on the inaugural function. A souvenir about Hussain Zaheer Bridge Tournament was released on this occasion. A total of eight teams participated out of which four teams were from various CSIR laboratories and three from Lucknow Bridge Association. A team from CSIR-CDRI Pensioner's association also participated in this tournament and showed their sporting spirit.

Workshop on the Applications of Mass and NMR techniques

SAIF, CSIR-CDRI has organized a Workshop on the applications of Mass and NMR techniques from 28-29 February, 2013. 104 participants from different parts of India came to attend the workshop. The speakers and application people were all experts and had delivered the current state of art in mass spectrometry techniques with the highlights of hot topics and potential future course of advances in mass spectrometry. The workshop provided a golden opportunity to experience the state of the art in mass and NMR techniques.

National Safety Day Celebration

CSIR-CDRI celebrated the National Safety Day on 4th March, 2013 in its new premises. On this occasion, Mr R.S. Deswal, Senior Security Officer, CSIR-CDRI, delivered a lecture on "Fire Safety" followed by safety pledge and a live demonstration of Fire Fighting. Many Scientists, Technical staff and Research Scholars participated in live demonstration of fire fighting and learned the safety measures in working environment. The theme of the programme was working together to ensure safety and health at work place.

Competency Development Programme for Group II Personnel

CSIR-Central Drug Research Institute, Lucknow, in collaboration with CSIR-Human Resource Development Centre Ghaziabad has organized a Competency Development Programme for Group II Personnel for Lucknow based CSIR research laboratories viz CSIR-CDRI, CSIR- CIMAP, CSIR-IITR and CSIR-NBRI from March 11-14, 2013. This four days training programme was organized with

the aim to enhance the competency of the technical personnel. During this programme, Dr. Laxman Prasad, Former Adviser, DST discussed about Indian S&T Organizations and Role of Technical Support in R&D organizations. Sh. Vinay Kumar, Scientist, CSIR-HRDC Ghaziabad discussed how Self-Awareness & Interpersonal skills help to improve the competency of personnel. Mr. Abhisek Kumar, Scientist, CSIR-CDRI explained how Information Technology tools increase the office productivity. Mr. Biranchi Sarang, Section Officer, CSIR-CDRI explained the overview of ERP, Dr. Aamir Nazir, Senior Scientist discussed about the conditioning of mind to enhance the productivity at workplace, Dr. R. Chimote, Senior Principal Scientist CSIR-CBRI, Roorkee discussed the Safety in Laboratory Environment and Good Laboratory Practices, Dr. Manu Saxena, Senior Principal Scientist, CSIR-HRDC discussed about the Self-Effectiveness at workplace and team building. The programme was concluded with feedback remarks by Dr. Manu Saxena, valedictory address by Dr. T.K. Chakraborty, Director, CSIR-CDRI and vote of thanks by Mr. Vinay Tripathi, Senior Principal Scientist, CSIR-CDRI.

Training Programme on Enterprise Resource Planning (ERP) Systems

Enterprise resource planning (ERP) systems integrate internal and external management of information across an entire organization. In order to bring awareness among staff members and to train the implementing officials, CSIR deputed Mr. TAB Mulla of CSIR-NCL, Pune and during his visit general awareness and training programs were organized at CSIR-CDRI from 12-13 March, 2013. All HODs, Section Officers and other staff members of CSIR-CDRI participated in this training program. Besides this few scientists and

section officers from Finance and Accounts sections of CSIR-IITR also participated in this two days training programme.

5th NIPER (RBL)-CSIR-CDRI Symposium on "Chemical and Biological Approaches in Drug Development & Delivery Strategies (CBADDDS-2013)

The 5th NIPER (RBL)-CDRI Symposium on "Chemical and Biological Approaches in Drug Development & Delivery Strategies (CBADDDS-2013)" was organized in collaboration with NASI, Allahabad during March 21-23, 2013 at the new campus of CSIR-CDRI, Sitapur Road, Lucknow. The Symposium 'CBADDDS-2013' comprised 20 invited lectures by eminent scientists and clinicians, and approximately 100 posters by young students, which provided a common platform to discuss some of their most innovative research work in the field of drug discovery and development.

SciFinder Training Programme

CSIR-CDRI have subscribed to the unlimited simultaneous user access to the SciFinder. Thus, the users can now have access to SciFinder from any system attached to its campus IPs. SciFinder has also added few new features for easy and comprehensive search. So as to make maximum use of this costly resource, a training session was organized on 15th April, 2013 in both campus (Old & New) to provide a glimpse of the new applications and search facilities.

World Laboratory Animal Day Celebration

The National Laboratory Animal Centre of CSIR-Central Drug Research Institute, Lucknow in collaboration with Laboratory Animal Science Association of India (LASAI) celebrated the World Laboratory Animal Day on 24th April, 2013 to commemorate the great sacrifices of the laboratory animal lives for the cause of mankind. The various lectures were delivered on Ethics, Welfare, Care & Use of laboratory animals for the education and Research, Science & Technology for human as well as animal welfare.

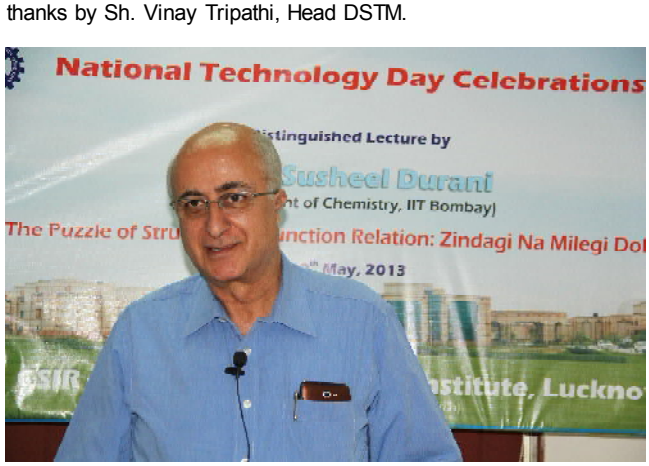
CSIR-CDRI-BD Centre of Excellence Flow Cytometry Workshop on Multicolour Immunophenotyping

A hands-on workshop was organized by CSIR-Central Drug Research Institute-BD Centre of Excellence in Flow Cytometry on 29th April, 2013 to 1st May, 2013. This workshop was organized with special emphasis on Multicolour Immunophenotyping. Six selected participants from various institutes of India attended this advance training. The workshop modules were divided into lecture and hands on practical sessions over a three day period. The lecture session covered all aspects of basic flow cytometry as well as advanced concepts in this field. All applicants performed hands on training and learnt the basics of multicolour Immunophenotyping like sample

preparation, experimental execution, data analysis etc. The workshop was conducted by Dr. Amitava Mohanty (BD India Pvt. Ltd), Dr. Mrigank Srivastava (Parasitology Div., CSIR-CDRI), Dr. Anil Gaikwad and Dr. Madhu Dikshit (Pharmacology Div., CSIR-CDRI). The practical sessions in the workshop were conducted by Mr. A.L. Vishwakarma and Mrs. Madhu Chaturvedi (SAIF-CSIR-CDRI). On the third day of workshop, certificates for successful completion of the training were distributed by Dr. Bijoy Kundu (SAIF-CSIR-CDRI) alongwith protocol manual to all participants.

National Technology Day Celebration

CSIR-CDRI celebrated National Technology Day on 10th May, 2013. On this occasion Prof Susheel Durani from IIT-Bombay delivered a motivational talk on "The puzzle of Structure-to-function Relation: Zindagi Na Milegi Dobara". In his presidential address Dr. TK Chakraborty, Director, CSIR-CDRI, motivated the young research scholars to work hard for development of new technologies in the field of drug research. Programme was concluded with the vote of thanks by Sh. Vinay Tripathi, Head DSTM.



12th Dr. B. Mukerji Memorial Lecture

Dr. B Mukerji Memorial Lecture, in the series, is sponsored by Sachin and Sikta Pradhan Foundation, Bethesda, USA. It is held in the memory of Late Dr. Bishnupada Mukerji, the second Director of CSIR-CDRI. CSIR-CDRI organized 12th B. Mukerji Lecture on May 22nd, 2013. Dr. T.K. Chakraborty welcomed the guest and Padma Shree Dr. Nitya Anand discussed the fond memories of Dr. B. Mukerji. On this occasion Padma Bhushan Prof. Sukh Dev was the chief guest and delivered the lecture on "A chemists Journey in India's Biodiversity". He said science has improved the human life along with financial impact. Chemistry has played a vital role in solving the problems associated with agriculture, health and other areas. After lecture, the CSIR-CDRI Newsletter was released. Dr. Chakraborty honored the guests by presenting the mementos. Programme was concluded with the vote of thanks by Sh. Vinay Tripathi, Head DSTM.

Initiation of Tree- Adoption Movement in CSIR-CDRI

On the occasion of World Environment Day, the scientists and staff members of CSIR-CDRI initiated a Tree-Adoption movement in their new premises showing their spirit and concern to the environment. In the first phase of movement about 120 scientists and staff members adopted the trees in the memory of their beloved ones by contributing Rs.750/- for a tree for its annual maintenance and showed that they are not only involved in R&D activities of institute but they are aware of their social and environmental duties and dedicated to fulfill them. On 5th July, 2013, Director, CSIR-CDRI, planted a tree and initiated the movement. On the occasion, he said that the success of every work depends on the proper guidance and spirit of coordination. He appreciated the efforts made by Mr. Vinay Tripathi, coordinator, Tree-Adoption movement and Dr. M.N. Srivastav, Chief Executive Officer, Tree-Adoption movement.

Flow Cytometry Workshop for internal Ph.D. Students

Under CSIR-CDRI-Becton Dickinson "Centre of Excellence in Flow cytometry" program, a hand on workshop was organized from July 15-17th, 2013. In this workshop, training was provided for 10 Research Fellows (who are in first 2 years of their Ph.D./CDRI). The selection of candidate was performed based on need of Flow Cytometry in their research problem statement.

Workshop on "Protein Identification by Mass Spectrometry"

A workshop was conducted on "Protein Identification by Mass Spectrometry" from 24-26 July, 2013 at Sophisticated Analytical Instrument Facility (SAIF) of CSIR-CDRI, Lucknow. The objective of the workshop was to provide hands on experience in sample preparation for MS analysis and data processing. This specialized training was provided to newly joined research scholars depending on their requirement of MS analysis for their research.

Brain Awareness Day Celebration

The Brain Awareness Campaign is a countrywide celebration for recognizing impact of neuroscience research and its dissemination across the community that brings together scientists, teachers and students. It also aims to increase community awareness on the potential for improving the long-term health of the brain through lifestyle changes and risk-reduction strategies. In this context, to educate and excite pupils about the progress and benefits of brain research, CSIR-Central Drug Research Institute, Lucknow organized a "Brain Awareness Day" on 14th August, 2013 from 9.00 AM to 5.00 PM at CSIR-CDRI Campus at Jankipuram Extension, Sitapur Road in collaboration with National Brain Research Centre, Manesar. As part of above, a one day interactive Seminar on "Recent Advances in CNS Disorders Research" and a Quiz competition on "Brain functions and its Diseases" were organized. About 100 Intermediate students of science stream from 09 Lucknow based schools/ colleges participated in this programme and interacted with leading Neuroscience researchers/scientists. The seminar was started with the welcome address by Dr. T.K. Chakraborty, Director, CSIR-CDRI. During the seminar, Dr Rakesh Shukla from KGMU, Lucknow, Dr.

U.K. Mishra from SGPGIMS, Lucknow and Dr. Pankaj Seth from National Brain Research Centre, Manesar, discussed about the Recent Advances in CNS Disorders Research. The seminar was chaired by Dr. P.K. Seth, Dr Ram Raghubir and Dr. Gautam Palit and was concluded with the concluding remark by Dr. B.N. Dhawan, Ex-Director, CSIR-CDRI. Team of City Montessori School, Aliganj was the winner of Quiz competition. Team of La Martiniere Girls' College, Lucknow got second price and team of Kendriya Vidyalaya, Aliganj got the third price. DPS Jankipuram Vistar got the fourth consolation prize. All participants were given a certificate of participation for this Brain awareness programme. Programme was concluded with the vote of thanks by Dr. P.N. Yadav, Senior Scientist and Organizing Secretary, Brain Awareness Day celebration.

Communal Harmony Day (Sadbhawana Diwas) Celebration

"Sadbhawana Diwas" was celebrated in the institute on August 20, 2013 with a theme to promote national integration and communal harmony among people of all religions, languages and regions. The idea behind CSIR-Central Drug Research Institute, Lucknow observance of Sadbhawna Diwas is to avoid violence and to promote goodwill among the people. All the employees of CSIR-CDRI participated in this occasion and took the "Pledge of Sadbhawana" that they will work for the emotional oneness and harmony of all the people of India regardless of caste, region, religion or language.

Workshop on Applications of Direct Analysis in real time Mass Spectrometry Techniques

Mass spectrometry (MS) is amongst the most important analytical tools as well as a fast developing research area in chemical and biological sciences. The versatility of this technique in addressing

divergent issues has attracted the researcher's attention in the recent past. There is a need to increase awareness among the prospective users of this technique. SAIF, CSIR-CDRI has organized a Workshop on the applications of Direct Analysis in real time Mass Spectrometry techniques from 24th-25th September 2013. Eighteen (18) participants from different parts of India came to attend the workshop. The speakers and application people were all experts and had delivered the current state of art mass spectrometry techniques with the highlights of hot topics and potential future course of advances in mass spectrometry.

Hindi Saptah

CSIR-CDRI organized "Hindi Saptah" to promote the working in Hindi in the institute from 16-23 September 2013. The celebration was inaugurated by chief guest Dr. Shambhu Nath, Ex-Chief Secretary, Govt. of UP. Various events such as Hindi Essay writing, Hindi translation, Hindi writing, Hindi stenography, Hindi Debate, Rajbhasha Quiz and Hindi Kavya Paath were organized during a weeklong celebration. Celebration was concluded with prize distribution and 'Kavi Sammelan'.

71st CSIR Foundation Day Celebrations and Award Ceremony of CSIR-CDRI Award-2013 for Excellence in Drug Research

CSIR-CDRI Celebrated the 71st CSIR Foundation Day on September 26, 2013. Prof. Y.K. Gupta, All India Institute of Medical Sciences, New Delhi was the chief guest of the function. He addressed the audience and appreciated the scientific contributions made by CSIR-CDRI. In his presidential address he discussed about the obstacles and their solutions in clinical trials.

On this occasion, felicitation with CSIR-CDRI Award-2013 for Excellence in Drug Research was the main event. CSIR-CDRI Awards for Excellence in Drug Research has been instituted in the year 2004 to honour the Indian researchers below 45 years of age who have contributed significantly to the broad areas of drug research. The Award is being given in two categories viz. Biological Sciences and Chemical Sciences. Each award carries a cash prize of Rs. 20,000 and a citation. The prestigious CSIR-CDRI Award for Excellence in Drug Research for the year 2013 in Biological Sciences has been awarded to Dr. B Gopal, IISc, Bengaluru for his work on "Studies on sigma factor/anti-sigma complexes reveal a molecular rationale for *M. tuberculosis* persistence" whereas in Chemical Sciences the award was conferred on Dr. Srinivasa Reddy, CSIR-NCL, Pune for his work on "Efforts to identify new chemical entities (NCEs) for treating Metabolic disorders and infections". Both the awardees presented their research achievements.

The chief guest Prof. Y.K Gupta released CSIR-CDRI Newsletter (Vol. 5 No.1 April to September, 2013) and felicitated employees of CSIR-CDRI who retired during September 2012 – August 2013, followed with the felicitation of employees who have completed 25 years of their services at CSIR-CDRI. Cash prizes were also awarded to the children of CSIR-CDRI employees who secured more than 90% marks in Science subjects in intermediate board exams. About 200 Postgraduate and Graduate students form Lucknow and Allahabad Universities visited the Institute and interacted with the scientists.

Satarkata Jagrukta Saptah (Vigilance Awareness Week)

Satarkata Jagrukta Saptah (Vigilance Awareness Week) was celebrated from 28th October to 2nd November 2013. Program was initiated by the Oath ceremony by Director CSIR-CDRI. Debate and assay competition were also organized during the weeklong celebration. Program was concluded with lecture on vigilance.

Training Session on Web of Science & Citation Analysis

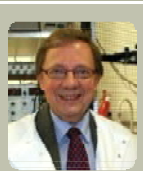
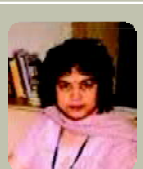
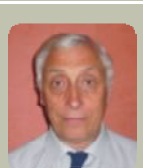
Knowledge Resource Centre of CSIR-CDRI in collaboration of Thomson Reuters organized a training session on Web of Science & Citation Analysis on 25th November, 2013. The Session is to show how "Web of Science" may assist all Scientists and Research Scholars in finding required and related literature for the research, finding citation details for the research work, getting more visibility to the research work, access to related records and additional information on potential collaborators, funding agencies and many more. The training on EndNote Web (Bibliography management tool) and Researcher ID (Unique place to capture researcher's profile) was also provided.

Seminar on Optimization Techniques for Western Blot and Immunohistochemistry

A one day seminar was organized in CSIR-CDRI on Optimization Techniques for Western Blot and Immunohistochemistry on December 2, 2013. Dr. Anja Hoffmann, Senior Scientific Support Specialist at AbCam, delivered talks on Optimization techniques for western blot and Optimization techniques for IHC. Dr. Hoffmann has worked for seven years in the research field of Immunology, especially B- and T cell Immunology.

2 Distinguished Visitors

Distinguished Visitors

	Name and Address	Topic	Date
	**Prof. Richard D Vaughan-Jones** Burdon Sanderson Cardiac Science Centre, University of Oxford, UK	Spatial $Ca2^{+}/H^{+}$ ion coupling in the heart: A key substrate for arrhythmia?	08.03.2013
	**Dr. Sharmila Mande,** Bio Sciences R&D, TCS' Innovation Labs Tata Consultancy Service Ltd., Pune	Microbiome and human health : Insights from metagenomics studies	17.06.2013
	**Prof. Dipankar Chatterji,** Molecular Biology Unit, Indian Institute of Science, Bangalore	Structural basis for nucleic acid-protein recognition	06.08.2013
	**Prof. Serge Mignani**, Vice President, French-Japanese Society for Fine and Medicinal Chemistry	From small-molecules to bioconjugates via dendrimeric nanoparticles as new anti-cancer agents: feasibility, challenges and opportunities Fox against Mammoths!	20.11.2013

Other Special Visitors

	Name and Address	Topic	Date
1	**Dr. Vikas Kumar** Vascular Biology Section/ Cardiovascular Proteomics Center Boston University School of Medicine, Boston	Deciphering Cardiac Redoxome using Mass Spectrometry based Proteomics	16.01.2013
2	**Dr. Rajarshi Samanta** Max-Planck Institute of Molecular Physiology Dortmund, Germany	C-H Functionalization: A Shortcurt Towards Important Scaffolds	16.01.2013
3	**Dr. Pooja Narang** Qiagen india limited	PCR Arrays: The Real Pioneer in Real-Time PCR Analysis of Biological Pathways	31.01.2013
4	**Dr. Madhumouli Chatterjee** Division of Rheumatology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston	Involvement of T cell activation in the pathogenesis of the autoimmune disorder lupus	04.02.2013
5	**Dr. Anjan Guhathakurta** Director, Translational Development Integration Celgene Corporation, New Jersey, USA	Disease, Process and Partners: Challenges of Biomarker and Diagnostic Development in Oncology	08.02.2013
6	**Dr. Ishani Deb** Department of Neurology, University of New Mexico, USA	Tyrosine Phosphatase STEP: a Potential Target for Protection Against Ischemic Brain Damage	12.03.2013
7	**Dr. Shahid Jameel** Chief Executive Officer, Wellcome Trust/DBT India Alliance	Fellowship for Biomedical Research in India	07.06.2013
8	**Dr. Jayant Karajgi** President, R & D, Aurobindo Pharma,	Generic Drug Development – An Industry-walla speaks to Academicians!	18.06.2013

	Name and Address	Topic	Date
9	**Dr. S. Pramanick** Director, R&D (Formulation), Emcure Pharmaceuticals Limited	QbD with special focus on lyophilization	28.06.2013
10	**Dr. Peter Kuckenberg** Product Specialist Macherey Nagel, Germany	Endotoxins and Transfection - How Different Plasmid Prep Technologies can affect Transfection Efficiencies.The world of RNA - new ways to get your RNA for drug discovery / screening	04.07.2013
11	**Dr. Prosenjit Mondal** Johns Hopkins University, Baltimore, USA	The molecular switch for the secretion of Insulin	10.07.2013
12	**Dr. Arun K Shukla** Duke University Medical Center, Durham	Structural basis of p-arrestin dependent regulation and signaling of G Protein Coupled Receptors	22.07.2013
13	**Dr. Ashutosh Srivastava** Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA	Inhibition of HIV-1 via modulation of novel cytoskeletal elements	19.08.2013
14	**Dr. Radha K Shandil** Dept. of Drug Metabolism, Pharmacokinetics & Animal Sciences; AstraZeneca India	Challenges in discovery of new anti TB agents	20.08.2013
15.	**Dr. Seema Dangwal** Hannover Medical School, Hannover, Germany	miRNAs: Novel Regulator of Cardiovascular and metabolic diseases	06.09.2013
16.	**Dr. Ramishetti Srinivas** Eshelman School of Pharmacy, University of North Carolina, USA	Lipid based nanoparticles for drug/vaccine delivery: Application in cancer therapy	09.09.2013
17.	**Mr. Vikash Vora** Waters India (P) Ltd	Effective liquid chromatography method developmental tools	17.09.2013
18.	**Dr. Nischal Sharma** Waters India (P) Ltd	Waters latest Chromatography technology, Ultra Performance Convergence Chromatography (UPC2) system	17.09.2013
19.	**Dr. Mitali Mukerji** CSIR-IGIB, New Delhi	Ayurgenomics: a novel integrative approach for identification of axes of human variation	18.10.2013
20.	**Prof. Subhash C. Pandey** Neuroscience Alcoholism Research University of Illinois, USA	Targeting the Epigenomic to Develop Novel Drugs for Alcoholism treatment	06.11.2013
21.	**Dr. Dharmendra Kumar Singh** Department of Biological Chemistry, David Geffen School of Medicine, University of California, LA, USA	RECQL4: A member of RecQ helicases in DNA repair and genome stability	25.11.2013
22.	**Dr. Jeyakumar Kandasamy** Max Planck Institute of Colloids and Interface, Free University Berlin, Germany	To fix nature's mistakes: Repairing Human Faulty Genes by sugars-based small molecules	03.12.2013
23.	**Dr. E. Elamparuthi** Ludwig-Maximilians-Universität LMU, Munchen, Germany	Total synthesis and Chemical Editing of Neuritogenic Natural Products for Biological Profiling	20.12.2013

Visit of Student Delegations

Sl. No.	Student Delegation	No of Members	Date
1.	Motilal Nehru National Institute of Technology, Allahabad	42	20.03.2013
2.	Jamia Hamdard University, New Delhi	28	21.03.2013
3.	Indira Gandhi National Tribal University, Amarkantak, (MP)	39	03.04.2013
4.	Allhabad University, Allahabad	25	26.09.2013
5.	S.R.G.I., Lucknow	175	26.09.2013
6.	Golbal Institute of Pharmaceutical Education and Research, Kashipur, (Uttarakhand)	23	01.10.2013
7.	D.M. College of Science, Imphal, Manipur	33	17.10.2013
8.	Pranveer Singh Institute of Technology, Kanpur	52	08.11.2013
9.	Army Public School, Faizabad	46	20.11.2013
10	Biotechnology Finishing School, Biotech Park, Lucknow	10	27.11.2013

3 Invited Lectures Delivered by Institute Scientists

Dr. S.K. Puri

- Targeting the dormant Hypnozoites for malaria elimination, MS University, Udaipur, 04 March, 2013

Dr. A.K. Saxena

- Integrated Sub-Structural and Computational Approaches in Drug Discovery Research, Institute of Pharmacy, Nirma University, Ahmedabad, 19 January, 2013
- CADD in Drug Discovery Research: Search of Antithrombotic Agents, National Workshop cum Training Program on Drug Design and Discovery, Institute of Life Sciences, Bhubaneswar, 20 February, 2013
- Drug Design, Discovery and Development: An Overview, Drug Design, Discovery and Development, Global Institute of Pharmaceutical Education and Research, Kashipur, 02 May, 2013
- Chemistry in Healthcare, Inspire Internship Science Camp, Sitapur, 23 May, 2013
- Chemistry in health: An overview, Inspire Internship Science Camp, Hardoi, 11 June, 2013
- Search of small molecule(s) as anti-tubercular agents: CADD and Rational Approaches, Astra Zeneca, Bangalore, 17 September, 2013
- Modeling Binding Affinity of Steroids to Zebrafish Sex Hormone binding Globulin, 7th International Symposium on Computational Methods in Toxicology and Pharmacology Integrating Internet Resources, Asian Hub for e-Drug Discovery, Seoul, South Korea, 12 October, 2013
- Structure and Ligend based models in Drug Design, Workshop on Recent Trends in Structural Biology & Drug Designing, Biotech Park, Lucknow, 25 October, 2013
- *In Silico* Drug Design: An overview, a workshop on Modeling and Drug Designing, University of Kalyani, Kalyani, 18 November, 2013

Dr. C. Nath

- Therapeutic Targets for Alzheimer's Disease: Current Status & Future, International Conference on Navigating Pharmacology towards Safe and Effective Therapy, Indian Pharmacological Society, Nagpur, 06 January, 2013

Dr. Madhu Dikshit

- Thrombosis an overview, DST Inspire Internship Programme, Amity University, Lucknow, 24 January, 2013
- Role of calcium independent nitric oxide synthase in neutrophil derived synthesis of reactive oxygen and nitrogen species, Annual meeting of Society of Free Radical Research, IITR, Lucknow, 30 January, 2013
- Reduction in Hepatic Lipogenesis by Silymarin ameliorated Fructose induced Insulin Resistance Syndrome and Myocardial Ischemic Reperfusion injury in Rats, International Conference of Cardiomyopathy Research, PGIMER, Chandigarh, 01 March, 2013
- Nitric oxide level, iNOS expression and its regulation in chronic myeloid leukemia patients, Villejuif, France, 12 October, 2013
- Molecular mechanisms involved in Collagen mediated Platelet Activation and their Modulation by Anti-platelet Compounds, Paris, France, 14 October, 2013
- Evidences for nitric oxide mediated microbial killing by human neutrophils, Nancy, France, 16 October, 2013

Dr. Anil Kumar Dwivedi

- Spermicides: Local contraceptive agents, 19th ISCB, MS University, Udaipur, 02 March, 2013

Dr. Shailja Bhattacharya

- Filariasis: Steps towards eradication, SGPGI, Lucknow, 07 September, 2013

Dr. Anuradha Dube

- Experimental models for Leishmania research, Update on Clinical, Diagnostic, Chemothera-peutic and Entomological Aspects of Leishmaniasis, Sri Lanka Institute of Development Admin-istration (SLIDA), Colombo, Sri Lanka, 26 March, 2013
- Strategies for developing safe and effective vaccines against Visceral Leishmaniasis, University of Sri Lanka, Colombo, Sri Lanka, 04 April, 2013
- Search for safe and effective vaccines against Visceral Leishmaniasis- a disease of poverty, Lucknow University, Lucknow, 30 October, 2013

Dr. R. Shukla

- Involvement of Nrf2 and NF-κB pathways in the neuroprotection by *Bacopa monniera* and Melatonin in Okadaic acid induced memory impairment model, Advances in Free Radicals, Redox Signaling and translational Antioxidant Research, Lucknow, 01 February, 2013
- Insulin: An emerging treatment for Alzheimer's Disease, Symposia, Glial neurobiology, 31st Annual Conference of Indian academy of Neuroscience, Allahabad University, Allahabad, 27 October, 2013

Dr. J. K. Saxena

- *Plasmodium falciparum* transketolase and purine nucleoside phosphorylase: potential Drug targets in 19th ISCB International Conference, Udaipur, 05 March, 2013

Dr. Rakesh Maurya

- Recent advances in the area of antidiabetics from medicinal plants, National Conference on Drug Discovery from Natural Products, Anand, Gujarat, 09 January, 2013
- Application of natural resources and traditional knowledge in search of potential leads for the development of herbal medicine for the treatment of stress, diabetes and osteoporosis, International workshop on green initiatives in energy, environment and health, Gautam Budha University, Greater Noida, 02 December, 2013

Dr. Neeraj Sinha

- Metabonomics: A platform for testing Toxicity, 19th Indian Society of Chemist and Biologist International Conference , Udaipur, 04 March, 2013

Dr. R.K. Singh

- Invention of A New Drug for Population control in India, Lucknow Science Congress, Babasaheb Bhimrao Ambedkar University, Lucknow, 20 March, 2013
- Drug Induced Haematotoxicity and It's Prevention by Plant Products, National Conference on Application of Natural Products for Human Health & Bioremediation of Pollutants, Centre for Advanced Studies, University of Rajasthan, Jaipur, 22 March, 2013
- CSIR–CDRI as Pioneer Institute in the Development of Drugs Against Tuberculosis, Seminar on Clinical Research, Balrampur Hospital, Lucknow, 23 March, 2013
- Regulatory Aspects of Toxicity Studies for new Drug Development in India, Ethics On Medical Research, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, 27 July, 2013
- Importance of Drugs for the cure of life threatening diseases in India, A Life changing Seminar Success Mantra for Health, Wealth & Happiness, RITM, Lucknow, 04 October, 2013

Dr. Brijesh Kumar

- Tools and Techniques in Mass spectrometry, Workshop on Mass and NMR Techniques, at CSIR-CDRI, Lucknow, 28January, 2013
- Mass spectrometry facility in SAIF- CDRI and their application, Application of DARTMS Technique, at CSIR-CDRI, Lucknow 24 September, 2013

Dr. R. Ravishankar

- Structural Biology and its applications to Drug design, Molecular dynamics simulations and Drug design, Biotech Park, Lucknow, 21 March, 2013
- Towards discovery of anti-TB inhibitors that disrupt activities of the essential *M. tuberculosis* NAD+-dependent DNA ligase and its interacting partners, Emerging themes in tuberculosis research, IISc, Bangaluru, 20 July, 2013
- Towards discovery of anti-TB inhibitors, Annual meeting of the CSIR-OSDD, New Delhi, 12 September, 2013
- Structural biology and its applications to Drug Design, 1st National Workshop on Computer Aided Drug Designing, Integral University, Lucknow,10 November, 2013
- Target components of the BER pathway and those responsible for adaptation/maintenance of TB persistence, International workshop on application of X-ray diffraction for drug discovery & 42nd National Seminar on crystallography, JNU, New Delhi, 23 November, 2013

Dr. Jawahar Lal

- Preclinical pharmacokinetics and tissue distribution study of anti-tubercular azolyl phenyl cyclopropyl methane, S010-399, in rats, 19th ISCB International Conference, MS University, Udaipur, 05 March, 2013
- Pharmacokinetics: Concepts and Applications, Seminar cum Workshop on Concepts and Applications of PK & PD Modeling, BHU, Varanasi, 28 September, 2013

Dr. S.K. Rath

- Reproductive toxicity of Salinomycin, National symposium on reproductive health, BHU, Varanasi, 29 November, 2013

Dr. J. Venkatesh Pratap

- X-ray Crystallography: An introduction, MMV, BHU, Varanasi, March 2012

Dr. Anila Dwivedi

- Search for differentially expressed endometrial proteins associated with unexplained infertility, International Conference on REPROMICS – Omics in reproduction and development, ISSRF, Rajiv Gandhi Center for Biotechnology, Trivandrum, Kerala, 6 February, 2013

Dr. D.S. Upadhyay

- Non-Human Primates in Biomedical Research, ICLAS International Workshop on Lab Animal Science, CSIR-IGIB, New Delhi, 28 November, 2013

Dr. Nuzhat A. Kaushal

- Plasmodium vivax: Current scenario of vaccines and diagnostics, Lucknow University, Lucknow, 30 October, 2013

Dr. Renu Tripathi

- Malaria chemotherapy: Present scenario and future perspectives, Kolkata University, 100th Indian Science Congress, 04 January, 2013

Dr. Amit Misra

- Translational research on inhalable microparticles containing anti-tuberculosis drugs, Translational Health Sciences and Technology Institute, Gurgaon, 10 January, 2013
- *Dava ki gunvatta ke yatharthavadi manak*, All India People's Science Congress, Lucknow, 26 February, 2013
- Clincal trial design for inhaled therapy of tuberculosis in India, Inhalation Asia 2013, Hong Kong, 27 June, 2013
- Augmenting the macrophage nitric oxide response to intracellular *Mycobacterium tuberculosis*, Inhaled Therapies for Tuberculosis: Tokyo Meeting, Tokyo , 01 October, 2013

- Inhaled Therapies for Tuberculosis in The Russian Regulatory Landscape, Indian Pharmaceutical Association Seminar on Nasal and Pulmonary Drug Delivery; Mumbai, 24 October, 2013
- Inhalable Particles Targeting Drugs Affecting Host Responses to Tuberculosis, Prof. (Mrs.) M.R. Baichwal Visiting Fellowship Lecture, Mumbai, 25 October, 2013

Dr. Sanjay Batra

- Transitional-metal catalyzed synthesis of heterocycles, Recent Advances in Chemical Synthesis, North Maharashtra University, Jalgaon, 23 August, 2013
- Transitional-metal catalyzed synthesis of heterocycles of biological interest, Department of Chemistry, IIT Bombay, Mumbai, 29 August, 2013
- Transitional-metal catalyzed synthesis of heterocycles of biological interest, INDIGO Conference, Regensburg University, Regensburg, Germany, 09 October, 2013
- Transitional-metal catalyzed synthesis of heterocycles of biological interest, Department of Chemistry, IIT Guwahati, Guwahati, 25 October, 2013

Dr. Atul Goel

- Pyranone derived fluorescent molecules for drug development and organic light emitting diodes, Conference on Emerging Trends in Development of Drugs and Devices, University of Delhi, Delhi, 22 January, 2013

Dr. T. Narender

- Anticancer agents from the Indian medicinal plants, MEDCHEM-2013 (Advances in Anticancer Drug Discovery and Development), IIT, Madras, 26 October, 2013

Dr. Jimut Kanti Ghosh

- Understanding the amino acid sequence requirement for the anti-endotoxin properties of antimicrobial peptides, Symposium on Biomolecular Recognition and Chemical Biology, SINP, Kolkata, 27 May, 2013

Dr. Manish K. Chourasia

- Role of microparticles in drug delivery, Recent Advances in Drug Delivery, Changa, Gujrat, 21 February, 2013
- Design of nanomedicines for target specific delivery, Nanobiotechnology: An emerging future Technology for Nanomedicine, Guru Ramdas Khalsa Institute of Science and Technology, Pharmacy Jabalpur, 13 April, 2013
- Nanoparticulate systems for controlled and targeted drug delivery, ADINA Institute of Pharmaceutical Sciences, Sagar, 18 June, 2013
- Perspectives of drug delivery through nano-carriers in enhancing target selectivity, RKDF University, Bhopal, 14 November, 2013

Dr. Ashish Arora

- NMR solution structures of eukaryotic ADF/Cofillins, University of Mumbai, 14 January, 2013
- Comparison of solution structures and dynamics of four eukaryotic ADF/Cofilins, IIT Bombay, 04 February, 2013
- 1D, 2D and 3D NMR spectroscopy for research methodology in chemistry course, Academic staff college, School of Chemistry, Sambalpur University, Odisha, 28 May, 2013
- Emerging themes in TB research, IISc., Bangaluru, 19 July, 2013
- Recent trends in structural biology and drug design, Biotech Park, Lucknow, 25 October, 2013

Dr. K.V. Sashidhara

- Discovery of Natural and Nature like molecules as potential leads, Natural Products Affinity Group, Scripps Institution of Oceanography, University of California, San Diego, USA,12 April, 2013

Dr. Ritu Trivedi

- Bridiging the gap between traditional and modern medicine in the fight against osteoporosis, Recent Advances in Biochemistry and Biotechnology: Applications in Health, Environment & Agriculture, 29 October, 2013

Dr. Divya Singh

- Immune responses and bone loss: The Estrogen link, 5th NIPER (RBL)-CDRI symposium, Lucknow, 21 March, 2013

Dr. Arun Kumar Trivedi

- E3 ubiquitin ligase fbw 7 attenuates GCSFR signaling by targeting GCSFR for degradation in 4th International Conference on Stem cells and cancer, Hafftein Institute, Parel Mumbai, 22 October, 2013
- C/EBPá protein regulation by ubiquitination, Convocation Week of CSJMU, Kanpur, 23 December, 2013

Dr. Manoj Kumar Barthwal

- Role and regulation of extracellular Signal-Regulated Kinase during smooth muscle proliferation and Atherosclerosis, International Conference on Cardiomyopathy Research, Chandigarh, 02 March, 2013

Dr. Kumaravelu Jagavelu

- Endothelial regulation of fibrosis associated angiogenesis in liver, AU-KBC, Chennai, 14 December, 2013

Dr. Monika Sachdev

- Pre-patterning in Mammalian Oocytes, National Symposium on Recent Advances in Reproductive Health, BHU, Varanasi, 30 November, 2013

Dr. Aamir Nazir

- Dietary interventions as extrinsic epigenetic factors for Neurodegenerative diseases: Studies employing transgenic *C. elegans* models, National Institute of Food Technology Entrepreneurship and Management, (NIFTEM), Ministry of Food Processing Industries, Govt. of India, Sonepat, Haryana, 16 November, 2013

Dr. Sanjeev Kanojiya

- Liquid Chromatography-Mass Spectrometry (LC-MS) and its Applications, Workshop on Mass and NMR Techniques, at CSIR-CDRI, Lucknow, 28 January 2013

Dr. Sanjeev K. Shukla

- NMR Spectroscopy: An Introduction and Applications, Workshop on Mass and NMR Techniques, at CSIR-CDRI, Lucknow, 28 January 2013
- NMR Spectroscopy and It's Applications, B.B.D.U. Scholars Conclave 2013, Babu Banarasi Das University, Lucknow, 12 July, 2013

Dr. Kalyan Mitra

- Preparation and Imaging of Biological Specimens in Scanning Electron Microscopy, Workshop on Scanning Electron Microscopy in Life Sciences, National Institute of Cholera and Enteric Diseases (ICMR) Kolkata, 07 February, 2013
- Cryo-EM of macro-molecular assemblies and 3D image reconstruction, Workshop on Cryo-electron Microscopy in Life Sciences at National Institute of Cholera and Enteric Diseases (ICMR) Kolkata, 01 July, 2013
- Cryo-electron microscopy of enveloped viruses, International Conference on Electron Microscopy and XXXIV Annual Meeting of the Electron Microscope Society of India (EMSI), Saha Institute of Nuclear Physics, Kolkata, 04 July, 2013

Dr. Prem Prakash Yadav

- Spiroannelated 1,2,4-trioxanes as antimalarials, 19th ISCBC on Recent Advances and Current Trends in Chemical and Biological Science, Udaipur, 5 March, 2013

Dr. Bathula Surendar Reddy

- Targeted cancer therapies: a chemical pharmaceutics approach, Nanobiotechnology: An Emerging Future Technology for Nanomedicine, Guru Ramdas Khalsa Institute of Science and Technology, Pharmacy, Jabalpur, 13 April, 2013

Dr. Rabi Sankar Bhatta

- LC-MS/MS based dereplication tool in identification of plant secondary metabolite, 148th (OMICS Group Conference) International Conference and Exhibition on Pharmacognosy, Phytochemistry & Natural Products, Hyderabad, 22 October, 2013

Dr. Sripathi Rao Kulkarni

- Collaborative R&D & IP Issues in Technology Transfer, Workshop on Intellectual Property and Innovation Management in Knowledge Era, SHIATS, Allahabad, 07 November, 2013
- Patent search tools and drafting of patents, Seminar on Intellectual Property Rights: Importance & Protection Process, Dr. Ram Manohar Lohia Avadh University, Faizabad, 13 December, 2013
- Patent Protection System in India and Abroad, Refresher Course on Updates of Intellectual Property Rights, CST-UP, Lucknow, 17 December, 2013

Dr. Rajesh Kumar Jha

- TGF-β and integrin β affairs during embryo implantation International Conference on REPROMICS – Omics in reproduction and development, ISSRF, Rajiv Gandhi Center for Biotechnology, Trivandrum, Kerala, 08 February, 2013
- Intimacy of integrin β8 with embryo implantation, International Conference on Proteomics & Bioinformatics, Philadelphia, USA, 16 July, 2013

Dr. Vivek V. Bhosale

- Clinical phase of Drug development: Recent changes in regulations, NIPER (RBL)-CDRI Symposium on Chemical and Biological Approaches in Drug Development & Delivery Strategies, 23 March, 2013

Dr. H.K. Bora

- Laboratory Animal Experimentation techniques, RRIUM, University of Kashmir, Srinagar, 09 November, 2013

4 Visits & Deputations Abroad

Name of Scientist/ Technical Officer	Country of Visit	Purpose of Visit (Period of Deputation)
Dr. A.K Saxena	South Korea	To deliver a lecture in International Symposium (CMTPI-2013) (8-12 October 2013)
Dr. Madhu Dikshit	France	To deliver the lecture in the EU-India Science, Technology and Innovation Days 2013 (10-18 October 2013)
Dr. J S Srivastava	USA	To attend Annual Meeting as a part of the Society for Clinical Trials (19 – 22 May 2013)
Dr. Anuradha Dubey	Sri Lanka	To attend the meeting at University of Colombo (24 March to 06 April 2013)
Dr. Naibedya Chattopadhyay	Korea	To deliver the lecture in Inter national Congress-ICTAM-2013 (09-13th September 2013)
Dr. Neeloo Singh	Sri Lanka	To attend a Workshop (25- 28 March 2013)
	Brazil	To attend the World Congress on Leishmaniasis-WORLDLEISH 5 (13 - 17 May 2013)
Dr. Atul Kumar	USA	Invited by Chemical Abstracts Services (CAS) for Advisory Council meeting (22 April 2013)
	USA	Invited by Chemical Abstracts Services(CAS) for Advisory Council meeting (4-5 November 2013)
Dr. Amit Misra	Hong Kong	To attend Inhalation Asia 2013 (26- 28 June 2013)
	Japan	To deliver a lecture on “Inhaled Therapies for TB” (1- 3 October 2013)
Mr. Pradeep Kumar	Portugal	To attend International Conference (22 – 26 July 2013)
	Germany	To deliver an invited lecture (26 – 31 July 2013)
	Sweden	To deliver an invited lecture (31July - 4 August 2013)
Dr. Jawahar Lal	Germany	To attend practical training on PK/PD modeling using NONMEM (26 August-20 September 2013)
Dr. Sanjay Batra	Germany	To deliver the lecture in Research Conference of the Indian-German Graduate School of Advanced Organic Synthesis for Sustainable future (INDIGO) (6-10 October 2013)
Dr. Ravishankar Ampapati	Switzerland	To attend advance application training on NMR Spectrometer (18-22 March 2013)
Dr. Prem Narayan Yadav	France	To attend EU-India Science ,Technology and Innovation Days 2013 (10-14 October 2013)
Dr. Rajender Singh	USA	To attend Annual Meeting of American Society of Human Genetics (22- 26 October 2013)
Dr. Sarika	USA	To undertake research at South-western Medical Center, University of Texas (30 October 2013 to 29 October 2014)
Dr. Aamir Nazir	France	To present a paper in the Conference (10-12 September 2013)
Dr. Wahajuddin	USA	To attend advance training at Eshelman School of Pharmacy (13 January 2013 to 12 January 2014)
Dr. Rajesh Kumar Jha	USA	To attend International Conference on Proteomics-2013 (15- 17 July, 2013)
Mr. Harsh Mohan Gauniyal	Switzerland	To attend advance application training on NMR Spectrometer (18-22 March 2013)

5 Membership of Distinguished Committees / Boards

Dr. S.K. Puri

Member Scientific Advisory Committee (1) Vector Control Research Centre, Puducherry (2) Institutional Animal Ethics Committee, Indian Animal Supplier, Lucknow

Vice President, Indian Society for Parasitology

Dr. Tushar K. Chakraborty

Member, (1) American Chemical Society, USA (2) Senior Science Committee, OSDD; (3) Chemical Sciences Sectional Committee, Indian Academy of Sciences; (4) Sectional Committee III in Chemical Sciences, The Indian National Science Academy (5) Program Advisory Committee (Organic Chemistry), DST; (6) Steering Committee, National Bio-resource Development Board, DBT; (7) Sub-committee of Sponsored Schemes Research Committee, CSIR; (8) Expert Committee, Drugs and Pharmaceuticals Research Programme, DST; (9) Drugs Technical Advisory Board, Ministry of Health & Family Welfare (10) Technical Advisory Committee, Technology Development and Utilization Programme for Women, DSIR; (11) High Powered Committee, NMITLI Projects, CSIR

Member Editorial Board, (1) Indian Journal of Chemistry, B; (2) Indian Journal of Biochemistry & Biophysics; (3) The Natural Products Journal

Dr. A.K. Saxena

Member, (1) American Chemical Society, USA (2) Expert Committee, Ministry of Chemicals & Fertilizers, Department of Pharmaceuticals (India) (3) IND Committee, Directorate General of Health Services, Office of Drugs Controller General (India), (4) REACH INDIA TASK FORCE, Department of Chemical and Petrochemicals, Govt. of India (5) Board of International Charitable Foundations' (Scientific Partnership) Coordinating Board, Russia, (6) Board of Directors, American Bibliography Inc. USA; (7) Screening-cum-Technical Evaluation Committee for National Awards for R&D efforts in Industry; (8) Management Committee of M.M.S. Birla Hostel operated by Motilal Memorial Society;

UGC Nominee, Advisory Committee, Special Assistance Programme, (1) Department of Chemistry, Saurashtra University, Rajkot, (2) Department of Chemistry, A. P. S University, Rewa

Secretary, QSAR Society of India

Patent Evaluator, For Current Drugs Ltd., U.K.

Dr. C. Nath

Member, (1) Research Council (DG nominee), CSIR-Indian Institute of Toxicological Research (IITR), (2) Expert Committee for Biotherapeutic Products, Drug Controller General of India, Ministry of Health, Government of India (3) Academic Council JNU, New Delhi, (4) Advisory Committee for IND permission, Drug Controller General of India,(5) Institutional Ethics Committee, SG Post Graduate Institue of Medical Sciences, Lucknow, (6) Institutional Animal Ethics Committee, K G Medical University, Lucknow

Chairperson: Departmental Academic Advisory Committee [MS (Pharm.) Pharmaceutics], NIPER, Rae Bareli

Dr. Madhu Dikshit

President, Cytometry Society of India

Member, (1) DBT (RCGM) Committee, (2) Fellow Selection Committee National Academy of Sciences. (3) Member - CSIR (Organic & Med Chemistry and Chemical Tech, RC) Committee, (4) ICMR-PRC Committee, (5) Fellow Selection Committee Indian Academy of Sciences, (6) Ethics Committee KGMC, Lucknow (7) Animal Ethics Committee Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow , (8) Ethics Committee, Center of Biomedical Magnetic Resonance, Lucknow

Member, Editorial Board, (1) Indian J. Pharmacology, (2) Proceedings of the National Academy Sciences India (Sec B)

Assessor, National Assessment & Accreditation Council

Dr. A.K. Dwivedi

Member, (1) Drugs Panel for New Drugs Manufacturing Licenses, Directorate of Medical & Health Services, Uttar Pradesh (2) Expert Sub-Committee for product development of drug from Natural Sources, Indian Council of Medical Research

Joint Secretary, Indian Society of Chemists and Biologists, Lucknow

Dr. Ashim Ghatak

Fellow, Indian College of Physicians

Elected Councillor, Executive Committee of South Asian Chapter of American College of Clinical Pharmacology, Mumbai, India

Dr. P.M.S. Chauhan

Secretary, Indian Society of Biologists and Chemists

Dr. Anuradha Dube

Member, **Editorial Board**, (1) Journal of Biomedical Research; (2) BioMed Central, Infectious Diseases (Open Access)

Dr. J.K. Saxena

Secretary, Indian Society for Parasitology

Vice President, Indian Society of Biologists and Chemists

Member Editorial Board, Asian Pacific Journal of Tropical Medicine

Associare Editor, J. Applied Bioscience

Member, Expert committee for Chemical and Pharmaceutical Sciences, UPCST, Lucknow

Dr. R.P. Tripathi

Editorial Board Member, (1) ARKIVOC (2) Journal of Organic Biological Chemistry

Mr. Vinay Tripathi

Member, IPR Committee, Department of Health Research, Indian Council of Medical Research

Dr. D.S. Upadhyay

Member, (1) CPCSEA sub-committee for rehabilitation of laboratory animals, (2) Live Stock Feed, Equipments and System, Sectional Committee, FAD, Bureau of Indian Standards, New Delhi, (3) Veterinary Council of India; (4) U.P Veterinary Council, Lucknow (5) Institutional Animal Ethics Committee, IVRI, CIMAP, IITR, Integral University, AH Dept. Lucknow

CSIR Nominee, National Institute of Animal Welfare, MoEF, Govt. of India

Dr. M.N. Srivastava

Member, Board of panel for PSC on R&D of Central Sector Scheme for Conservation Development and Sustainable Management of Medicinal plants, National Medicinal Plants Board, (AYUSH), Ministry of Health & Family Welfare, Government of India

Dr. Saman Habib

Member, (1) Animal Sciences Review Committee, CSIR, New Delhi (2) Selection Committee for CSIR Nehru Post-doctoral Fellows (Life Sciences)

Dr. Jawahar Lal

Editorial Board Member, American Journal of Modern Chromatography, USA

Executive Member, Indian Society of Chemists and Biologists, Lucknow, India

Dr. R. Ravishankar

Member, Working group on new TB drugs (WGND),

Dr. Y.S. Prabhakar

Editor, Journal of Chemistry, Hindawi Publishers

Joint Secretary and Executive committee member, Indian Crystallographic Association

Dr. Srikanta Kumar Rath

Joint Secretary-Elected, Indian Society for Cell Biology (2011-13)

Member, **Editorial Board**, Toxicology International

Dr. Amit Misra

Member, Expert Committee on Tuberculosis, Department of Biotechnology

Vice-President, Asian Federation for Pharmaceutical Sciences

Dr. Sanjay Batra

Member, (1) Council of NOST, India (2011-2014); (2) Governing Council, Chemical Research Society of India, Bangalore (3) Project Advisory Committee for Chemical Sciences committee Fast Track, DST SERB

Dr. Atul Kumar

Member, Global Advisory Board member of SciFinder, Chemical Abstracts Service (CAS), American Chemical Society (ACS), Columbus , USA

Dr. Ashish Arora

Executive Committee Member, Indian Biophysical Society

Dr. Kumkum Srivastava

Member Executive Committee, Indian Society for Parasitology

Dr. M. Imran Siddiqi

Member, Advisory Committee for Biotechnology, (2012-2015) Council of Science and Technology, (CST) UP

Dr. P.R. Mishra

Member Editorial Board, (1) Recent Patents in Drug Delivery and Formulations, (2) Journal of Pharmaceutical and Biomedical Sciences; (2) Journal of Pharmaceutical and Biomedical Sciences

Dr. D. Hansda

Member, (1) West Bengal Veterinary Council, Constitute under Veterinary Council India, (2) Live stock feed, equipments and system, sectional committee, FAD, BIS, New Delhi

Dr. Wahajuddin

Member, **Editorial Board**, (1) Journal of Bioequivalence & Bioavailability; (2) Analytica Pharmaceutica Acta; (3) Pharmaceutical Regulatory Affairs

Dr. J.R. Gayen

Fellow of Association of Biotechnology and Pharmacy, Guntur

Dr. H.K. Bora

Member, Assam Veterinary Council, Constitute under Veterinary Council India

Notes

अनुसंधान उपलब्धियाँ

1 पेटेण्ट्स

विदेशों मे स्वीकृत पेटेण्ट्स

2013

1. **शीर्षक:** नॉवेल हाइड्रॉक्सी फ़ंक्शनलाइज़्ड 1,2,4–ट्राइऑक्ज़ेन्स एण्ड देयर डेरीवेटिव्स यूज़फुल एज़ एण्टीमलेरियल एजेण्ट्स एण्ड ए प्रॉसेस फॉर द प्रेपरेशन देयरऑफ़
अफ्रीकन पेटेण्ट नं.: एपी2633 **आबंटन की तिथि:** 03.04.2013
अन्वेषक: चन्दन सिंह, वेद प्रकाश वर्मा और सुनील कुमार पुरी

2. **शीर्षक:** हर्बल एक्सट्रेक्ट्स ऑफ सैलिकोर्निया स्पिसीज, प्रॉसेस ऑफ प्रिपेरेशन दियर ऑफ, यूज दियर ऑफ अगेन्स्ट ट्यूबरक्युलोसिस
केनेडियन पेटेण्ट नं.: 2541971 **आबंटन की तिथि:** 23.04.2013
अन्वेषक: मीना रजनीकान्त राठौड़, भूपेन्द्र धन्वन्तरि सेठिया, जयंत बटुक राय पाण्ड्या, पुष्पितो कुमार घोष, प्रकाश जे डोडिया, ब्रह्म शंकर श्रीवास्तव, रंजना श्रीवास्तव, अनिल श्रीवास्तव, छित्तर मल गुप्ता और विनीता चतुर्वेदी

3. **शीर्षक:** नैचुरली ऑकरिंग क्यूमैरिन्स एण्ड देअर प्रिकर्सर्स एज़ एसिटाइलकोलिन एस्टरेज़ इनहिबिटर्स
जर्मन पेटेण्ट नं.: 2001463 **आबंटन की तिथि:** 03.07.2013
अन्वेषक: जनास्वामी मधुसूदन राव, बी चिन्नाराजू, पी वी श्री निवास, के एस बाबू, झिल्लू सिंह यादव, के वी राघवन, एच के सिंह और चण्डीश्वर नाथ

4. **शीर्षक:** नैचुरली ऑकरिंग क्यूमैरिन्स एण्ड देअर प्रिकर्सर्स एज़ एसिटाइलकोलिन एस्टरेज़ इनहिबिटर्स
यूरोपियन पेटेण्ट नं. 2001463 **आबंटन की तिथि:** 03.07.2013
अन्वेषक: जनास्वामी मधुसूदन राव, बी चिन्नाराजू, पी वी श्री निवास, के एस बाबू, झिल्लू सिंह यादव, के वी राघवन, एच के सिंह और चण्डीश्वर नाथ

5. **शीर्षक:** नैचुरली ऑकरिंग क्यूमैरिन्स एण्ड देअर प्रिकर्सर्स एज़ एसिटाइलकोलिन एस्टरेज़ इनहिबिटर्स
ब्रिटिश पेटेण्ट नं. 2001463 **आबंटन की तिथि:** 03.07.2013
अन्वेषक: जनास्वामी मधुसूदन राव, बी चिन्नाराजू, पी वी श्री निवास, के एस बाबू, झिल्लू सिंह यादव, के वी राघवन, एच के सिंह और चण्डीश्वर नाथ

6. **शीर्षक:** नैचुरली ऑकरिंग क्यूमैरिन्स एण्ड देअर प्रिकर्सर्स एज़ एसिटाइलकोलिन एस्टरेज़ इनहिबिटर्स
फ्रेन्च पेटेण्ट नं. 2001463 **आबंटन की तिथि:** 03.07.2013
अन्वेषक: जनास्वामी मधुसूदन राव, बी चिन्नाराजू, पी वी श्री निवास, के एस बाबू, झिल्लू सिंह यादव, के वी राघवन, एच के सिंह और चण्डीश्वर नाथ

7. **शीर्षक:** कट्रोल्ड रिलीज माइक्रो–कैप्सूल फॉर ओस्टियोजेनिक एक्शन
यूएस पेटेण्ट नं. 8496964 **आबंटन की तिथि:** 30.07.2013
अन्वेषक: प्रभात रंजन मिश्रा, रितु त्रिवेदी, गिरीश कुमार गुप्ता, अविनाश कुमार, वर्षा गुप्ता, श्रीकांत कुमार रथ, कामिनी श्रीवास्तव, नैबेद्य चट्टोपध्याय एवं अनिल कुमार द्विवेदी

8. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
फ्रेन्च पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव

9. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
जर्मन पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव

10. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़+ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
ब्रिटिश पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव।

11. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
स्विस पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव

12. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
स्पेनिश पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव

13. **शीर्षक:** एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटीज़ ऑफ़+ S-(+)-7-[3 N-सब्स्टीट्यूटेड एमिनो–2–हाइड्रोक्ज़ाइप्रोपोक्ज़ाइ, फ्लेवॉन्स
यूरोपियन पेटेण्ट नं.: 2057137 **आबंटन की तिथि:** 23.10.2013
अन्वेषक: राम प्रताप, हिमांशु सिंह, आलोक कुमार वर्मा, अमर बहादुर सिंह, प्रीति तिवारी, मुकेश श्रीवास्तव, अरविन्द कुमार श्रीवास्तव, अनिल कुमार द्विवेदी, सत्यवान सिंह, प्रतिमा श्रीवास्तव, शियो कुमार सिंह, चण्डीश्वर नाथ और राम रघुबीर
सहायक सदस्य: कृष्ण कुमार चौधरी और सुरेश यादव

14. **शीर्षक:** पॉलीमेरिक नैनोमैट्रिक्स एसोशिएटेड डिलीवरी ऑफ़ कैम्पफ्रॉल इन रैटस टु इम्प्रूव इट्स ओस्टियोजेनिक एक्शन
यूरोपियन पेटेण्ट्स नं.: 8188143 **आबंटन की तिथि:** 30.10.2013
अन्वेषक: प्रभात रंजन मिश्रा, रितु त्रिवेदी, गिरीश कुमार गुप्ता, अविनाश कुमार, वर्षा गुप्ता, श्रीकान्त कुमार रथ, कामिनी श्रीवास्तव, नैवेद्य चट्टोपाध्याय और अनिल कुमार द्विवेदी

15. **शीर्षक:** ऑक्ज़ी सब्स्टीट्यूटेड फ्लेवॉन्स एण्टी हाइपर ग्लाइसेमिक एण्ड एण्टी डिस्लिपिडेमिक एजेन्ट्स
कनेडियन पेटेण्ट्स नं.: 2584709 **आबंटन की तिथि:** 12.11.2013
अन्वेषक: राम प्रताप, मावुरपु सत्यनारायण, चण्डीश्वर नाथ, राम रघुबीर, अंजु पुरी, रमेश चन्द्र, प्रीति तिवारी और के. बृजेन्द्र

2012 (पिछली वार्षिक रिपोर्ट में सम्मिलित नहीं)

1. **शीर्षक:** सब्सीट्यूटेड 1,2,4–ट्राइऑक्ज़ेन्स यूज़फुल एज़ एण्टीमलेरियल एजेण्ट्स एण्ड ए प्रॉसेस फ़ॉर द प्रेपरेशन देयरऑफ
इण्डोनेशियन पेटेण्ट नं.: 8188143 **आबंटन की तिथि:** 17.02.2012
अन्वेषक: चन्दन सिंह, पल्लवी तिवारी और सुनील कुमार पुरी
सहायक सदस्य: शशि रस्तोगी और अखिलेश कुमार श्रीवास्तव

2. **शीर्षक:** सब्सिट्यूटेड मरकेप्टो फिनाइल नेफ्थाइल मीथेन डेरिवेटिव्स एज + SERM फार दि प्रिवेन्शन एण्ड ट्रीटमेण्ट ऑफ ओस्टियोपोरोसिस एण्ड अदर एस्ट्रोजन डिपेन्डेन्ट डिस्ओर्डर्स एण्ड एज़ कॉन्ट्रासेप्टिव्स
पेटेण्ट नं.: 2524568 **आबंटन की तिथि:** 17.07.2012
अन्वेषक: संगीता, अतुल कुमार, मनमोहन सिंह, गिरीश कुमार जैन, पुव्वाड़ा श्री रामचन्द्रा मूर्थि और सुप्रभात रे
सहायक सदस्य: वासी अहमद, ए एच अंसारी, मोहनी छाबड़ा और गोविन्द केशरी

3. **शीर्षक:** नैचरली अकरिंग कौमारिन्स एण्ड दिअर प्रिकर्सर्स एज़ एसिटाइलकोलिनएस्टरेज़ इन्हिबिटर्स
पेटेण्ट नं.: ज़ेड एल 200780016176.0 **आबंटन की तिथि:** 05.12.2012
अन्वेषक: जनास्वामी मधुसूदनाराव, बी चीनाराजु, पी वी श्रीनिवास, के एस बाबु, जे एस यादव, के वी राघवन, एच के सिंह और चण्डीश्वर नाथ

भारत मे स्वीकृत पेटेण्ट

2013

1. **शीर्षक :** नॉवेल हाइड्रॉक्सी फ़ंक्शनलाइज़्ड एडमैनटिल सब्स्टीट्यूटेड 6–एरिलविनिल–1,2,4–ट्राइऑक्ज़ेन्स, देयर डेरीवटिव्स एण्ड साल्ट्स देयर ऑफ़
पेटेण्ट नं. : 255359 **आबंटन की तिथि:** 14.02.2013
अन्वेषक: चन्दन सिंह, सुनील कुमार पुरी और उपासना शर्मा

2. **शीर्षक:** ए प्रॉसेस फॉर द प्रिपरेशन ऑफ 11, 12–डिहाइड्रो डिऑक्सी आर्टीमिज़िनिन
पेटेण्ट नं. 256382 **आबंटन की तिथि:** 08.06.2013
अन्वेषक: चन्दन सिंह एवं पल्लवी तिवारी

3. **शीर्षक :** नॉवेल स्पाइरो 1,2,4–ट्राइऑक्जेन्स एज़ एण्टीमलेरियल एजेण्ट्स एण्ड ए प्रॉसेस फ़ोर्थ प्रिपरेशन देयर ऑफ़
पेटेण्ट नं. : 256987 **आबंटन की तिथि:** 22.08.2013
अन्वेषक: चन्दन सिंह, हीतिका मलिक और सुनील कुमार पुरी

4. **शीर्षक :** सी–3 अल्काइल ऑर एरिलएल्काइल सब्सटीट्यूटेड 2,3–डाइडिऑक्ज़ी ग्लूकोपाइरैनोसाइड्स एण्ड ए प्रॉसेस फ़ॉर प्रिपरेशन देयर ऑफ़
पेटेण्ट नं. : 257469 **आबंटन की तिथि:** 05.10.2013
अन्वेषक: राम सागर, मोहम्मद साकिब, अरूण कुमार शॉ, अनिल नीलकण्ठ गायकवाड़, सुधीर कुमार सिन्हा, अनिल श्रीवास्तव, विनीता चतुर्वेदी, मंजू यशोदा कृष्णन्, रंजना श्रीवास्तव और ब्रह्म शंकर श्रीवास्तव

विदेश में आवेदित पेटेण्ट

2013

1. **शीर्षक:** एन–(3–((डाइथाइलएमिनो) मिथायल)–4–हाईड्रोक्सीफिनायल)–एन–(क्युनोलिन–4–यल) सल्फोनामाइड डेरीवेटिव्स फॉर द ट्रीटमेन्ट ऑफ ट्यूबरकुलोसिस
पीसीटी पेटेण्ट एप्लीकेशन नं.: पीसीटी/आईएन2013/000006 **आवेदन की तिथि:** 03.01.2013
अन्वेषक: सुप्रिया सिंह, कुलदीप कुमार राय, साहेब राज खान, विवेक कुमार कश्यप, संदीप कुमार शर्मा, मंजू यशोदा कृष्णन्, विनीता चतुर्वेदी, सुधीर सिन्हा, रंजना श्रीवास्तव और अनिल कुमार सक्सेना

2. **शीर्षक:** नॉवेल सब्सटिट्यूटेड 2एच–बेन्जो(इ)इन्डाजोल–9–कार्बोक्सिलेट्स फार दि ट्रीटमेन्ट ऑफ डाइबिटीज़ एण्ड रिलेटेड डिस्आर्डर्स
पीसीटी पेटेण्ट एप्लीकेशन नं.: पीसीटी/आईएन2013/000056 **आवेदन की तिथि:** 29.01.2013
अन्वेषक: अतुल गोयल, गौरव तनेजा, नेहा राहुजा, अरूण कुमार रावत, नताशा जायसवाल, अखिलेश कुमार ताम्रकार, अरविन्द कुमार श्रीवास्तव

3 **शीर्षक:** नॉवेल कूमरिन चैलकोन हाइब्रिड्स एज़ एण्टीकैंसर एजेण्ट्स
यूरोपियन पेटेण्ट एप्लीकेशन नं. 11770879.2 **आवेदन की तिथि:** 05.02.2013
अन्वेषक: कोनेनी वेंकट श्रीधरा, अवधेश कुमार, मनोज कुमार, जयन्त सरकार तथा सुधीर कुमार सिन्हा

4 **शीर्षक:** नॉवेल कूमरिन चैलकोन हाइब्रिड्स एज़ एण्टीकैंसर एजेण्ट्स
यूएस पेटेण्ट **एप्लीकेशन** नं. यूएस 13/814401 **आवेदन की तिथि:** 05.02.2013
अन्वेषक: कोनेनी वेंकट श्रीधरा, अवधेश कुमार, मनोज कुमार, जयन्त सरकार तथा सुधीर कुमार सिन्हा
सहायक सदस्य : संजीव मीना

5 **शीर्षक:** नेफ–अस्क1 इन्ट्रैक्शन इनहिबीटर एज़ नॉवेल एण्टी–एचआईवी थेरापियूटिक्स
पीसीटी पेटेण्ट एप्लीकेशन नं.: पीसीटी/आईबी2013/051641 **आवेदन की तिथि:** 01 मार्च, 2013
अन्वेषक: त्रिपाठी राज कमल, बलवन्त कुमार, रामचन्द्रन रविशंकर, जितेन्द्र कुमार त्रिपाठी, स्मृति भदौरिया और जीमुत कान्ति घोष

6 **शीर्षक:** काइरल 3–एमीनोमिथाइल पिपरीडीन डेरीवेटिव एज़ इनहिबिर्टस ऑफ़ कोलेजेन इन्ड्यूज्ड प्लेटलेट एक्टिवेशन एण्ड एडेशन
पेटेण्ट एप्लीकेशन नं. यूएस 13/995336 **आवेदन की तिथि:** 18.06.2013
अन्वेषक: दिनेश कुमार दीक्षित, मधु दीक्षित, तनवीर इरशाद सिद्दीकी, अनिल कुमार, रवि शंकर भट्टा, गिरीश कुमार जैन, मनोज कुमार बर्थवाल, अंकिता मिश्रा, विवेक खन्ना, प्रेम प्रकाश, मनीष जैन, विशाल सिंह, वर्षा गुप्ता एवं अनिल कुमार द्विवेदी
सहायक सदस्य : सुरेन्द्र सिंह, सीपी पाण्डे, कांता भुटानी, एमएस अंसारी और देवेन्द्र सिंह

7 **शीर्षक:** काइरल 3–एमीनोमिथाइल पिपरीडीन डेरीवेटिव एज़ इनहिबिर्टस ऑफ़ कोलेजेन इन्ड्यूज्ड प्लेटलेट एक्टिवेशन एण्ड एडेशन
पेटेण्ट एप्लीकेशन नं. यूरोप 12705463.3 **आवेदन की तिथि:** 23.07.2013
अन्वेषक: दिनेश कुमार दीक्षित, मधु दीक्षित, तनवीर इरशाद सिद्दीकी, अनिल कुमार, रवि शंकर भट्टा, गिरीश कुमार जैन, मनोज कुमार बर्थवाल, अंकिता मिश्रा, विवेक खन्ना, प्रेम प्रकाश, मनीष जैन, विशाल सिंह, वर्षा गुप्ता एवं अनिल कुमार द्विवेदी
सहायक सदस्य : सुरेन्द्र सिंह, सी पी पाण्डे, कांता भुटानी, एमएस अंसारी और देवेन्द्र सिंह

8 **शीर्षक:** सब्सटीट्यूटेड 1,2,3,4–टेट्राहाइड्रोक्विनोलिन–7–ईल कार्बामेट्स, देयर प्रिपरेशन एण्ड यूज़ देयरऑफ़ एज़ एसिटाइलकोलिनस्ट्रेज़ (AChE) इनहिबिटर्स फ़ॉर द ट्रीटमेन्ट ऑफ़ अल्ज़ाइमर्स एण्ड अदर न्यूरोडिजेनरेटिव डिज़ीजेज़
यूएस एप्लीकेशन नं.: 13/984998 **आवेदन की तिथि:** 12.08.2013
अन्वेशक : कुलदीप कुमार राय, संतोष कुमार टोटा, चण्डीश्वर नाथ, राकेश शुक्ला, और अनिल कुमार सक्सेना
सहायक सदस्य: ज़ाहिद अली, अरिमर्दन सिंह कुशवाहा

9 **शीर्षक:** सब्सटीट्यूटेड 1,2,3,4–टेट्राहाइड्रोक्विनोलिन–7–ईल कार्बामेट्स देयर प्रेपरेशन एण्ड यूज़ देयरऑफ़ एज़ एसिटाइलकोलिनस्ट्रेज़ (AChE) इनहिबिटर्स फ़ॉर द ट्रीटमेन्ट ऑफ़ अल्ज़ाइमर्स एण्ड अदर न्यूरोडिजेनरेटिव डिज़ीजेज़
यूरोपीयन एप्लीकेशन नं.: 13/984998 **आवेदन की तिथि:** 12.08.2013
अन्वेषक: कुलदीप कुमार राय, संतोष कुमार टोटा, चण्डीश्वर नाथ, राकेश शुक्ला और अनिल कुमार सक्सेना
सहायक सदस्य: जाहिद अली और अरिमर्दन सिंह कुशवाहा

10 **शीर्षक:** नॉवेल डोलैस्टैटिन मिमिक्स एज़ एण्टीकैन्सर एजेण्ट्स
यूएस एप्लीकेशन नं.: 13/984998 **आवेदन की तिथि:** 13.09.2013
अन्वेषक: तुषार कान्ति चक्रबर्ती, गजुला प्रवीन कुमार, दुलाल पाण्डा और जयन्त अस्थाना

11 **शीर्षक:** नॉवेल डोलैस्टैटिन मिमिक्स एज़ एण्टीकैन्सर एजेण्ट्स
यूरोपियन एप्लीकेशन नं.: 14/005202 **आवेदन की तिथि:** 11.10.2013
अन्वेषक: तुषार कान्ति चक्रवर्ती, गजुला प्रवीन कुमार, दुलाल पाण्डा और जयन्त अस्थाना

12 **शीर्षक:** *डैलबर्ज़िया सिसो* डिराइव्ड एक्सट्रैक्ट एण्ड कम्पाउण्ड्स एम्प्लायड इन प्रिवेन्शन ऑर ट्रीटमेन्ट ऑफ़ ओस्टियो हेल्थ रिलेटेड डिस्आर्डर्स डेज़िगेनेटेड एज़ ओस्टियो नैचुरल केयर
यूरोपियन एप्लीकेशन नं.: 12729239 **आवेदन की तिथि:** 22.10.2013
अन्वेषक: राकेश मौर्या, प्रीति दीक्षित, रितु त्रिवेदी, विक्रम खेडगिकर, ज्योति गौतम, अविनाश कुमार, दिव्या सिंह, शैलेन्द्र प्रताप सिंह, वहाजुद्दीन, गिरीश कुमार जैन और नैबेद्य चट्टोपाध्याय
सहायक सदस्य: सतीश चन्द्र तिवारी, बेन्डांगला चकीजा और प्रियंका कुशवाहा

13 **शीर्षक:** *डैलबर्ज़िया सिसो* डिराइव्ड एक्सट्रैक्ट एण्ड कम्पाउण्ड्स एम्प्लायड इन प्रिवेन्शन ऑर ट्रीटमेन्ट ऑफ़ ओस्टियो हेल्थ रिलेटेड डिस्आर्डर्स डेज़िगेनेटेड एज़ ओस्टियो नैचरल केयर
यूएस एप्लीकेशन नं.: 14/113561 **आवेदन की तिथि:** 23.10.2013
अन्वेषक: राकेश मौर्या, प्रीति दीक्षित, रितु त्रिवेदी, विक्रम खेडगिकर, ज्योति गौतम, अविनाश कुमार, दिव्या सिंह, शैलेन्द्र प्रताप सिंह, वहाजुद्दीन, गिरीश कुमार जैन,और नैबेद्य चट्टोपाध्याय
सहायक सदस्य: सतीश चन्द्र तिवारी, बेन्डांगला चकीजा और प्रियंका कुशवाहा

भारत में आवेदित पेटेण्ट

2013

1 **शीर्षक:** इम्प्रूव्ड प्रॉसेस फॉर प्रिपरेशन ऑफ साइक्लिक पेप्टाइड्स
पेटेण्ट एप्लीकेशन नं.: 0020डीईएल2013 **आवेदन की तिथि:** 03.01.2013
अन्वेषक: वहाजुल हक़, श्याम राज यादव, राघवेन्द्र मुरूगला, मधु दीक्षित और स्मृति

2 **शीर्षक:** एण्टीडायबेटिक एण्ड एण्टीडिस्लिपिडिमिक एक्टिविटीज़ ऑफ प्रेग्नेन–आक्सीमीनो–अमीनोअल्काइलीथर्स
पेटेण्ट एप्लीकेशन नं.: 0193डीईएल2013 **आवेदन की तिथि:** 24.01.2013 (अनंतिम)
अन्वेषक: प्रेम चन्द्र वर्मा, ज्योति गुप्ता, धर्मेन्द्र प्रताप सिंह, वर्षा गुप्ता, हरि नारायण कुशवाहा, अनामिका मिश्रा, नेहा राहुजा, रोहित श्रीवास्तव, नताशा जायसवाल, अशोक कुमार खन्ना, अखिलेश कुमार ताम्रकार, शियो कुमार सिंह, अनिल कुमार द्विवेदी, अरविन्द कुमार श्रीवास्तव, राम प्रताप

3 **शीर्षक:** सब्सटिट्यूटेड लुओरान्थीन–7–कार्बोनाईट्राइल्स/ईस्टर्स एज़ लोरेसेन्ट डाइस फॉर सेल इमेजिंग एप्लीकेशन्स
पेटेण्ट एप्लीकेशन नं.: 0807डीईएल2013 **आवेदन की तिथि:** 19 मार्च, 2013 (अनंतिम)
अन्वेषक: अतुल गोयल, आशुतोष शर्मा, कल्याण मित्रा, अरिन्दम भट्टाचारजी और मनोज कठूरिया

4 **शीर्षक:** प्रोटियाज़ोमल इनहिबिटर्स यूज़फुल फॉर ओस्टियोजेनिक एक्टिविटी एण्ड फार्मास्यूटिकल कॉम्पोज़ीशन देयर ऑफ़ (ओस्टियोहील)
पेटेण्ट एप्लीकेशन नं. 2145डीईएल2013 **आवेदन की तिथि:** 17.07.2013 (अनंतिम)
अन्वेषक: रितु त्रिवेदी, पी आर मिश्रा, एन एस सांगवान, पी त्रिवेदी, दिव्या सिंह, आर एस सांगवान, प्रियंका कुशवाहा, वी खेडगिकर, सुलेखा अधिकारी, धर्मेन्द्र चौधरी, ज्योति स्वरूप, अविनाश कुमार अनिरूद्ध करवान्डे, अश्विनी वर्मा और श्वेता शर्मा

5 **शीर्षक:** अलमोसाइड–ए–डिराइव्ड कम्पाउण्ड फ्रॉम *अल्मस वालिचियाना* प्लैनकॉन यूज़फुल फ़ॉर प्रिवेन्शन ऑफ क्योर ऑफ़ मेटाबोलिक डिज़ीज़ेज
पेटेण्ट एप्लीकेशन नं. 2326डीईएल2013 **आवेदन की तिथि:** 02.08.2013 (अनंतिम)
अन्वेषक: सब्यसाची सान्याल, एन चटोपाध्याय, राकेश मौर्या, जियाउर रहमान गाइन, स्मृति भदौरिया, ए के त्रिवेदी, अभिषेक कुमार सिंह, जयशरन मिश्रा, रश्मि कुमारी, कुनाल शरन, परवेज मोहम्मद खान, कायनात खान, निधि सिंह, शैलेन्द्र कुमार द्विवेदी, मनीषा यादव, प्रीति दीक्षित, देवेन्द्र प्रताप मिश्रा, शरद शर्मा एवं के आर आर्या

6 **शीर्षक:** नोवेल एरिल नेथिल मेथेनोन ओक्सिम डेरेवेटिव्स फॉर द ट्रीटमेण्ट ऑफ हीमेटोलोजिकल मेलिग्नेंसी एक सॉलिड ट्यूमर्स
पेटेण्ट एप्लीकेशन नं. 2567डीईएल2013 **आवेदन की तिथि:** 30.08.2013 (अनंतिम)
अन्वेषक: सब्यसाची सान्याल, अतुल कुमार, नैबेद्य चट्टोपाध्याय, जवाहर लाल, अरूण कुमार त्रिवेदी, दीपक दत्ता, श्रीकांत कुमार रथ, तहसीन अख्तर, शैलेन्द्र कुमार धर द्विवेदी, मनीषा यादव, वंदना चक्रवर्ती, अभिषेक कुमार सिंह, जय शरण मिश्रा, निधि सिंह तथा अनिल कुमार त्रिपाठी

7 **शीर्षक:** कार्बोडाइथायोएट्स एण्ड प्रॉसेस फॉर प्रिपेरेशन दिअरऑफ
पेटेण्ट एप्लीकेशन नं.: 0373डीईएल2013 **आवेदन की तिथि:** 08.02.2013
अन्वेषक: शर्मा विष्णु लाल, लाल नन्द, सारस्वत अमित, जांगिड़ संतोष, बाला वीनू, कुमार ललित, रावत तारा, जैन आशीष, कुमार लोकेश, मैखुरी जगदम्बा प्रसाद तथा गुप्ता गोपाल
सहायक सदस्य: रामजीत तथा छत्तरपाल

8 **शीर्षक:** फ़ेनाइल पैराज़ोल कन्टेनिंग हेट्रोरेटॉनॉइड शिफ़ बेसेज़ एण्ड प्रॉसेज़ फॉर प्रेपरेशन देयर ऑफ
पेटेण्ट एप्लीकेशन नं. 2244डीईएल2013 **आवेदन की तिथि:** 29.07.2013
अन्वेशक: शिवाजी नारायण सूर्यवंशी, सुमन गुप्ता, संतोष कुमार, राहुल शिवहरे तथा प्रीति विश्वकर्मा

9 **शीर्षक:** काइरल–4 एमिनो–क्विनोलिन्स एज़ ओरली एक्टिव एण्टीमलेरियल एजेन्ट्स
पेटेण्ट एप्लीकेशन नं. 2291डीईएल2013 **आवेदन की तिथि:** 31.07.2013
अन्वेषक: सेतुराम बन्धाचार्या कट्टी, वहाजुल हक, कुमकुम श्रीवास्तव, सुनील कुमार पुरी, बसन्त राव डोला, अवकाश सोनी तथा राजीव कुमार श्रीवास्तव

10 **शीर्षक:** एन एण्टील्यूकीमिक एजेण्ट यूज़फुल फ़ॉर इन्ड्यूसिंग डिफ़रेन्सिएशन इन मायलॉइड ल्यूकीमिया सेल्स
पेटेण्ट एप्लीकेशन नं. 2807डीईएल2013 **आवेदन की तिथि:** 31.09.2013
अन्वेषक: पूजा पाल, सविता लोचब, जितेन्द्र कनौजिया, सब्यसाची सन्याल और अरूण कुमार त्रिवेदी

11 **शीर्षक:** 3,7 डाइएज़एबाइसाइक्लो [3.3.1] नॉनेन कार्बोक्ज़ैमाइड्स एण्ड प्रॉसेस ऑफ़ प्रेपरेशन देयर ऑफ़
पेटेण्ट एप्लीकेशन नं. 2892डीईएल2013 **आवेदन की तिथि:** 30.09.2013
अन्वेषक: दिनेश कुमार दीक्षित, अनिल कुमार करूणाकरण, शशिकला, मनोज बर्थवाल, अंकिता मिश्रा और मनीष जैन

12 **शीर्षक:** सब्स्टीट्यूटेड बिस क्विनोलिन कम्पाउण्ड्स एण्ड प्रॉसेस फॉर प्रेपरेशन देयर ऑफ
पेटेण्ट एप्लीकेशन नं. 2953डीईएल2013 **आवेदन की तिथि:** 04.10..2013
अन्वेषक: दिनेश कुमार दीक्षित, विनीता चतुर्वेदी, मंजू यशोधा कृष्णन, शाहेब राज खान, सुधीर सिन्हा और भूपेन्द्र नारायण सिंह

13 **शीर्षक:** टर्पेनिलफ़ेनोलिक डेरीवटिव्स एण्ड प्रॉसेस फॉर प्रेपरेशन देयर ऑफ़
पेटेण्ट एप्लीकेशन नं. 3806डीईएल2013 **आवेदन की तिथि:** 30.12.2013
अन्वेषक: शिवाजी नारायण सूर्यवंशी, सुमन गुप्ता, संतोष कुमार, राहुल शिवहरे और खुशबू श्रीवास्तव

2 वैज्ञानिक सम्मेलनों में प्रस्तुत शोध पत्र

2012

मेडिसिनल केमिस्ट्री एण्ड फार्मास्यूटिक्ल साइंसेज पर लखनऊ में चतुर्थ नाइपर (रायबरेली)–सीडीआरआई संगोष्ठी (23–25 फरवरी)

1. इन हाउस डिटर्मिनेशन ऑफ़ कायनेटिक पैरामीटर्स फॉर साइटोक्रोम पी450 प्रोब सब्सट्रेट्स यूजिंग रैट लिवर माइक्रोज़ोम्स, सुमित अरोड़ा, ईशा तनेजा, केएसआर राजू, एस पी सिंह, वहाजुद्दीन और जी के जैन

इण्डियन सोसाइटी फ़ॉर बोन एण्ड मिनरल रिसर्च, लखनऊ की आठवीं वार्षिक बैठक (29–30 सितम्बर)

2. सीएएफ़जी ए नॉवेल ओरली एक्टिव मॉलीक्यूल फ्रॉम नैचरल सोर्स इज़ पोटेण्ट दैन जेनिस्टीन इन प्रमोटिंग बोनफ़ॉर्मेशन, प्रियंका कुशवाहा, विक्रम खेडगिकर, ज्योति गौतम, धर्मेन्द्र चौधरी, प्रीति दीक्षित, राकेश मौर्या और रितु त्रिवेदी

एसबीसी की 81वीं वार्षिक बैठक, कोलकता (8–11 नवम्बर)

3. आइडेन्टीफ़िकेशन ऑफ़ नॉवेल एन्डोमीट्रियल प्रोटीन्स एसोशिएटेड विद अनएक्सप्लेन्ड इनफ़र्टिलिटी बाइ यूजिंग टू डाइमेन्शल जेल इलेक्ट्रोफ़ोरेसिस एण्ड एलसी–एमएस एनालिसिस, एम मनोहर, एस अग्रवाल, एच खान, वी दास, ए अग्रवाल, ए पाण्डे, एमपी सिंह, डब्ल्यू ए सिद्दीकी और ए द्विवेदी

कार्सिनोजेनेसिस 2012–इण्टरनैशनल कॉन्फ्रेन्स, नई दिल्ली (19–21 नवम्बर)

4. 2–(पिपरीडाइनोइथोज़ाइफ़ेनिल)–3–(4– हाइड्रोक्सिफिनाइल)–2एच–बेन्जो (बी) पाइरन ट्रिगर्स एण्टी ट्युमॉरिजेनिक एक्शन इन एन्डोमीट्रियल कार्सिनोमा वाया जीपीआर30 / ईजीएफआर सिग्नलिंग पाथवे, वी. चन्द्रा, आई फ़ातिमा, एम के हुसैन, के हजैला, पीएल शंखवार, बीजी रॉय, एस चन्दना और ए द्विवेदी

5. 2–(पिपरीडाइनोइथोज़ाइफ़ेनिल)–3–(4– हाइड्रोक्सिफिनाइल) –2एच–बेन्जो (बी) पाइरन इन्टरफ़ियर्स विद 1GF-1R/P13-K/Akt/mTOR, पाथवे, कॉजेज G1 फेज़ अरेस्ट एण्ड इन्ड्यूसेज एपॉप्टॉसिस इन एण्डोमीट्रियल कैन्सर सेल्स, आई फ़ातिमा, वी चन्द्रा, आर सक्सेना, के हजैला, पी शंखवार, एसके जैन और ए द्विवेदी

इण्टरनैशनल कांफ्रेस ऑन केमिस्ट्री एण्ड मैटीरियल्स : प्रॉसपेक्ट्स एण्ड पर्सपेक्टिव, लखनऊ, (14–16 दिसम्बर)

6. आईसीटी बेस्ड फ्लोरेसेन्ट, पार्शियली रिड्यूज़्ड नैफ़थॉनैफ़थाइरिडीन्स एज़ ट्यूनेबल एण्ड Zn2+ सेलेक्टिव ऑन–ऑफ़ ON-OFF केमोसेन्सर्स, शाहिदा उमर, पंकज नाग और अतुल गोयल

18वीं कांग्रेस ऑफ सोसाइटी ऑफ एन्ड्रोलॉजी, लखनऊ (22–24 दिसम्बर)

7. स्पर्म लिगैन्ड SLLP1 इन्टरैक्शन विद ऊलेमल रिसेप्टर SAS1B वाइटल फ़ॉर फ़र्टिलाइज़ेशन, मोनिका सचदेव

2013

100वीं इण्डियन साइंस कांग्रेस, कोलकता (3–7 जनवरी)

8. एपॉप्टॉसिसः एन एप्रोच टु कर्ब मलेरिया, एस गुंजन, बीएस चौहान और आर त्रिपाठी

9. इस्टैब्लिशमेन्ट ऑफ ए न्यू *इन विट्रो* मॉडल फ़ॉर सेरेब्रल मलेरिया, एच द्विवेदी और आर त्रिपाठी

10. क्विनोलिन / क्विनाज़ोलिनः ए क्लास ऑफ पोटेण्ट ट्राइपैनोसाइडल एजेण्ट्स, एसके सिंह, एच द्विवेदी, एसके पाण्डे और आर त्रिपाठी

इण्टरनैशनल कांफ्रेन्सेज़ ऑन एडवांसेज़ इन फ्री रैडिकल्स, रिडॉक्स सिग्नलिंग एण्ड ट्रांसलेशनल एण्टी ऑक्सीडेन्ट रिसर्च, लखनऊ (30 जनवरी – 1 फरवरी)

11. सेन्टक्रोमान इनहिबिट्स एपिथेलियल–टु–मीजेनकाइमल ट्रांज़िशन एण्ड रिएक्टिवेट्स ट्यूमर सप्रेसर जीन्स इन ह्यूमन ब्रेस्ट कैन्सर सेल्स थ्रू एपिजेनेटिक मॉड्यूलेशन, खान एस, सोनी आई, शुक्ला एस और मीरन एसएम

12. एपिजेनेटिक रिप्रोग्रामिंग बाइ बायोएक्टिव डायटरी सप्लीमेन्ट्सः ए नॉवेल थेरेपी फॉर हॉर्मोनल रिफ्रैक्टरी ब्रेस्ट कैन्सर, शुक्ला एस, सोनी आई, खान एस और मीरन एसएम

13. नाइट्रिक आक्साइड इनड्यूज्ड ग्लूटाथिऑनिलाइशैन ऑफ न्यूट्रोफ़िल प्रोटिन्सः रेगुलेशन ऑफ़ एक्टिन डायनेमिक्स, एम दुबे, एमके बर्थवाल और एम दीक्षित

एनएमआरएस–2013, मुंबई (3–6 फरवरी)

14. कॉम्पैरेटिव स्ट्डीज ऑफ बैकबोन डायनैमिक्स ऑफ एडीएफ/कॉफ़िलिन प्रोटीन्स ऑन एनएमआर टाइम स्केल, अनुपम जैन, वैभव के शुक्ला, सरिता त्रिपाठी, आशीष काबरा, हिमांशु पाण्डे और आशीष अरोड़ा

15. सॉल्यूशन स्ट्रक्चर एण्ड डायनैमिक्स ऑफ ADF-लाइक UNC-60A एण्ड कॉफ़िलिन–लाइक UNC-60A इफ़ेक्ट ऑफ डायनैमिक प्रॉपर्टी आफ़ F–लूप ऑन इट्स एक्टिविटी, वैभव कुमार शुक्ला, आशीष काबरा, हिमांशु पाण्डे, अनुपम जैन, दिनेश कुमार, शोइचिरो ओनो, आशीष अरोड़ा

16. सोल्यूशन स्ट्रक्चर ऑफ़ हाइपॉथिटिकल प्रोटीन Rv0603 फ्रॉम *माइकोबैक्टीरियम ट्युबरकुलोसिस* H37Rv रिवील्स ए नॉवेल α, β फोल्ड एण्ड इट्स इम्यनोलॉजिकल कैरेक्टराइजेशन, सरिता त्रिपाठी, एसवीएसआर कृष्णा पुलावर्ती, राहुल यादव, अनुपम जैन और आशीष अरोड़ा

17. पाइरन बेस्ड मैक्रोसाइकल्स एण्ड इट्स कन्फर्मेशनल स्ट्डीज, एस शर्मा, ए अजय, आर पी त्रिपाठी और आर एस अम्पापति

रमनभाई फाउण्डेशन इण्टरनैशनल सिम्पोज़ियम ऑन एडवांसेज़ इन न्यू ड्रग टेक्नोलॉजिस एण्ड ट्रांसलेशनल रिसर्च, अहमदाबाद (4–6 फरवरी)

18. प्लैक कैरेक्टराइज़ेशन इन द एक्सलेरेटेड मॉडल ऑफ इलिअक आर्टरी एथरोस्क्लेरोसिस इन न्यूजीलेण्ड व्हाईट रैबिट्स फॉलोइंग कोलेस्ट्रॉल डाइट विथ्ड्रॉल, वी खन्ना, एम जैन, वी सिंह, जे काशना, पी प्रकाश, एम के बर्थवाल, पी एस मूर्ति और एम दीक्षित

19. फ्री रैडिकल्स मीडिएट सेक्रेटरी, IL-1β प्रोडक्शन, ट्रांसक्रिप्शन एण्ड प्रोसेसिंग इन मोनोसाइट्स, ए सिंह, वी सिंह, आर एल तिवारी और एम के बर्थवाल

20. करक्यूमा ऑयल मिटिगेट्स LPS इन्ड्यूज्ड TNF प्रोडक्शन, एम राणा, वी सिंह, एस चतुर्वेदी, आर मालासोनी, ए के द्विवेदी और एम के बर्थवाल

रिप्रोमिक्स–ओमिक्स इन रिप्रोडक्शन एण्ड डेवलपमेन्ट, त्रिवेन्द्रम (7–9 फरवरी)

21. डिटर्मिनेशन ऑफ़ यूटरिन पॉली(एडीपी–राइबोज़) पॉलीमरेज़ एसोसिएशन विद एम्ब्रयो इम्प्लान्टेशन, अनुभा जोशी, विजय कुमार, विनीत कुमार मौर्या और राजेश कुमार झा

22. डेवलपमेन्ट ऑफ ए नैनोटेक्नोलॉजी बेस्ड बायोमेडिसिन RISUG-M एज़ ए मेल कॉन्ट्रासेप्टिव इन इण्डिया, आर के सिंह, पूनम सिंह और एफ डब्ल्यू बानसोडे

मियामी–2013 विन्टर सिम्पोज़ियमः द मॉलिक्युलर बेसिस ऑफ मेटाबोलिज़्म एण्ड न्यूट्रीशन, मियामी, यूएसए (10–13 फरवरी)

23. इफ़ेक्ट ऑफ़ बायोचेन ए एण्ड फॉर्मोनोनेटिन, द प्रिंसिपल कॉम्पोनेन्ट्स ऑफ रेड क्लोवर (*ट्राइगोनेला रैन्टेन्स*) ऑन ज़ेनोबायोटिक मेटाबोलाइज़िंग साइटोक्रोम P450 मेजर आइज़ोज़ाइम्स, वहाजुद्दीन, एस अरोड़ा, आई तनेजा, के एस आर राजू और एस के सिंह

32वीं वार्षिक कन्वेंशन ऑफ़ इण्डियन एसोसिएशन फॉर कैन्सर रिसर्च एण्ड इण्टरनैशनल सिम्पोज़ियम ऑनः इन्फेक्शन एण्ड कैंसर, नई दिल्ली, (13–16 फरवरी)

24. 2–(पिपरीडाइनोइथोज़ाइफ़ेनिल)–3–(4–हाइड्रोक्सिफिनाइल) –2एच–बेन्जो(इ) पाइरन इन्ड्यूसेज एपॉप्टोसिस वाया इनट्रिन्सिक पाथवे एण्ड इण्टरफ़ियर विद P13K/AkT सेल सर्वाइवल पाथवे इन ह्यूमन प्राइमरी इन्डोमीट्रियल हाइपरप्लेज़ियल सेल्स, वी चन्द्रा, आई फ़ातिमा, आर सक्सेना, के हजैला, पी शंखवार और ए द्विवेदी

25. बेन्ज़ोपाइरन डेरिवेटिव सीडीआरआई–85/287 इन्ड्यूसेज G2-M अरेस्ट इन एस्ट्रोजन रिसेप्टर–पॉजिटिव ब्रेस्ट कैंसर सेल्स वाया मॉडुलेशन ऑफ ERα एण्ड ERβ सिग्नलिंग एण्ड सप्रेसेज द ग्रोथ ऑफ़ ट्यूमर ज़ेनोग्राफ्ट, आर सक्सेना, आई फ़ातिमा, वी चन्द्रा, के हजैला, बी जी राय और एके द्विवेदी

26. एसोसिएशन ऑफ़ साइटोकाइन लेविल्स विद प्रॉग्नॉस्टिक मार्कर्स ऑफ़ ब्रेस्ट कैन्सर, करन सिंह सैनी, हमीदुल्ला, मंयक जादौन, संदीप कुमार और रितुराज कोनवर

27. क्वेर्सटिन–6-C-A-D-ग्लूकोपाइरैनोसाइड, ए नैचरल एनालॉग ऑफ़ क्वेर्सटिन एक्ज़िबिट्स पोटेन्ट एक्टिविटी अगेन्स्ट प्रॉस्टेट कैन्सर, हमीदुल्ला, करन सिंह सैनी और रितुराज कोनवर

नैशनल कॉन्फ्रेंस ऑफ यूज़ ऑफ़ एनीमल्स एण्ड आल्टरनेटिव्स इन बायोमेडिकल्स रिसर्च विद स्पेशल रिफ़रेन्स टु ड्रग डिस्कवरी एण्ड ड्रग डेवलपमेन्ट, नोएडा, (14–15 फरवरी)

28. मॉलीक्युलर हेमाटोपॉयटिक एसेज एज़ सब्स्टीट्यूट ऑफ़ *इन वीवो* रेगुलेटरी टॉक्सिसिटी स्ट्डीज़ इन एक्सपेरीमेन्टल एनीमल्स, आरके सिंह, एफडब्ल्यू बनसोडे, पूनम सिंह और पूजा शुक्ला

इण्टरनैशनल सिम्पोज़ियम ऑन मॉलीक्युलर सिग्नलिंग, कोलकता (18–20 फरवरी)

29. ओस्टियोजेनिक इफ़ेक्ट ऑफ सीडीआर–एस008–399 इन एडल्ट ओस्टियोपीनिक रेटस, ज्योति, अब्दुल मलिक त्यागी, अबनीश के गौतम, कामिनी श्रीवास्तव, अमित कुमार, अतुल गोयल, नैवेद्य चट्टोपाध्याय और दिव्या सिंह

सीटीडीडीआर–2013, लखनऊ (26–28 फरवरी)

30. सिन्थेसिस् एण्ड एण्टी ब्रेस्ट कैन्सर एक्टिविटी ऑफ़ बाइफ़ेनिल बेस्ड चाल्कोन्स, अनिन्द्र शर्मा, बन्दना चक्रवर्ती, मुन्ना प्रसाद गुप्ता, जावेद ए सिद्दीकी, रितुराज कोनवर और रमापति त्रिपाठी

31. इम्पेयरमेन्ट ऑफ फ्लैजलर एसेम्बली बाइ ओवर एक्सप्रेशन ऑफ+ S4D म्यूटेन्ट ऑफ़ ADF / कॉफ़िलिन इन लीशमैनिया, जी कुमार, आर श्रीवास्तव, के मित्रा, ए ए सहस्रबुद्धे और सी एम गुप्ता

32. इन्डक्शन ऑफ़ ऑटोफैगी एज़ ट्रीटमेन्ट स्ट्रैट्जी फ़ॉर ट्युबरकुलोसिस यूजिंग इन्हेलेबल माइक्रोपार्टिकल्स, अनुराधा गुप्ता और अमित मिश्रा

33. सोल्यूशन स्ट्रक्चर एण्ड डायनमिक्स ऑफ ADF / कॉफ़िलिन्सः इफेक्ट ऑफ डायनमिक प्रापर्टी F-loop ऑन सिविरिंग एक्टिविटी, वैभव कुमार शुक्ला, आशीष काबरा, हिमांशु पांडे, अनुपम जैन, दिनेश कुमार, शॉइचिरो ओनो और आशीष अरोड़ा

34. स्ट्रक्चरल इन्साइट्स इनटू प्यूटेटिव मोलिब्डेनम कोफ़ैक्टर बायोसिन्थिसिज़ प्रोटीन C($MoaC_2$) फ्रॉम *माइकोबैक्टीरियम ट्युबरकुलोसिस* H37Rv, शुभ्रा श्रीवास्तव, विजय कुमार श्रीवास्तव, जेवी प्रताप और आशीष अरोड़ा

35. इम्प्लिकेशन ऑफ़ द ल्यूसिन ज़िपर सीक्वेन्सेज़ इन साइटोटॉक्सिक एण्ड एण्टी एन्डोटॉक्सिन प्रापर्टीज़ ऑफ़ बी वेनॉम एण्टी माइक्रोबियल पेप्टाइड मेलिटिन, एन अस्थाना, एस पी यादव, ए अहमद, बी के पाण्डे, आर एम श्रीवास्तव, एस श्रीवास्तव, एस आज़मी, ए कुमार, ए टण्डन, ए के त्रिपाठी और जे के घोष

36. RNA इन्टरफ़ियरेन्स वैलिडैट्स *ब्रूज़िया मलाई* इन्डिपेन्डेन्ट फ़ास्फ़ोग्लाइसरेट म्यूटेज़ एज़ वाइटल एण्टी फ़ाइलेरियल ड्रग टार्गेट, प्रशांत कुमार सिंह, सुशील कुशवाहा, मो. शहाब और शैलजा मिश्रा भट्टाचार्या

37. *इन विट्रो* एण्टी फ़ाइलेरियल एक्टिविटी ऑफ़ मोक्ज़ीडेक्टिन एलोन एण्ड इन कॉम्बीनेशन विद् एण्टी फाइलेरियल ड्रग्स और एण्टीवॉलबैचियल एण्टी बायोटिक, डॉक्ज़ीसाइक्लिन लेड टु द डेथ ऑफ़ एडल्ट *ब्रूज़िया मलाई* फ़ीमेल वर्म, मीनाक्षी वर्मा, मनीषा पाठक और शैलजा मिश्रा भट्टाचार्या

38. कैरेक्टराइज़ेशन ऑफ ट्रांसलेशन इनीशिएशन फैक्टर–1 एण्ड इट्स म्यूटेन्ट R45D, ए मेम्बर ऑफ़ OB फैमिली प्रोटीन रिस्पॉन्सिबल फॉर वायबिलिटी ऑफ *वॉल्बैशिया* एन एनडोसिम्बायोन्ट ऑफ़ *बी. मलाई*, जितेन्द्र कुमार नाग, निधि श्रीवास्तव और शैलजा मिश्रा भट्टाचार्या

39. मॉलीक्युलर कैरेक्टराइज़ेशन ऑफ NAD$^+$–डिपेन्डेन्ट DNA लाइगेज फ्रॉम वॉलबैचिया एन्डॉसिम्बायोन्ट ऑफ़ लिम्फ़ैटिक फ़ाइलेरियल पैरासाइट *ब्रूज़िया मलाई*, निधि श्रीवास्तव, जितेन्द्र कुमार नाग और शैलजा भट्टाचार्या

40. इम्यूनोजेनिसिटी ऑफ द रिकॉम्बीनेन्ट ट्रिहेलोज़–6–फॉस्फ़ेट फॉस्फ़ेटेज़ ऑफ़ *ब्रूज़िया मलाई*, ज्योति गुप्ता, सुशीला कुशवाहा, प्रशान्त कुमार सिंह, विशाल कुमार सोनी और शैलजा मिश्रा भट्टाचार्या

41. इम्यूनोप्रोफ़ाइलैक्टिक एफिकेसी ऑफ *विधानिया सोमनीफ़ेरा* केमोटाइप 101R अगेन्स्ट *लीशमैनिया डोनोवनी* इनफेक्शन इन गोल्डेन हैमस्टर, शैलजा मिश्रा भट्टाचार्या तथा अनुराधा दुबे

42[ए] केमोथेराप्यूटिक पोटेन्शियल ऑफ प्योर कम्पाउण्ड्स आइसोलेटेड फ्रॉम *एनोना स्क्वामोज़ा* एण्ड *विधानिया सोमनीफ़ेरा* अगेन्स्ट फ़ाइलेरियल पैरासाइट *ब्रूज़िया मलाई*, विशाल कुमार सोनी, प्रशांत कुमार सिंह, सुशीला कुशवाहा और शैलजा भट्टाचार्या

43. इम्यून कैरेक्टराइज़ेशन ऑफ UDP-N एसिटाइलग्लूकोजामाइन एनोलपायरुविल ट्रांसफ़रेज़ ऑफ बैक्टीरियल एन्डोसिम्बायोन्ट *वॉलबैशिया* ऑफ़ ह्यूमन लिम्फैटिक फ़ाइलेरियल पैरासाइट *ब्रूज़िया मलाई*, मो शहाब, प्रशांत के सिंह, सुशीला कुशवाहा और शैलजा मिश्रा भट्टाचार्या

44. *वालबैशिया* सर्फेस प्रोटीन (WSP) ऑफ़ *ब्रूज़िया मलाई* एन्डोसिम्बायोन्ट एक्टिवेट्स द होस्ट इन्नेट इम्यून रिस्पांस वाया नॉड1 एण्ड नॉड2, मनीषा पाठक, मीनाक्षी वर्मा, मृगांक श्रीवास्तव और शैलजा मिश्रा भट्टाचार्या

45. स्ट्डीज ऑन इम्यून रिस्पॉन्स एलिसिटेड ऑफ्टर इनोक्यूलेशन ऑफ *पी. योएली* स्पॉरोज़ॉइट वाया इन्ट्रावेनस और सबक्यूटेनियस रूट, आरिफ़ जे सिद्दीकी, ज्योति भारद्वाज, मृगांक श्रीवास्तव और एस के पुरी

46. मल्टीपल इनोक्यूलेशन्स विद लाइव *पी. योएली* स्पॉरोज़ॉइट्स अन्डर आर्टीथर ट्रीटमेन्ट प्रोटेक्ट्स अगेन्स्ट द इन्फेक्टिव चैलेन्ज, ज्योति भारद्वाज, आरिफ़ जे सिद्दीकी, मृगांक श्रीवास्तव और एस के पुरी

47. स्ट्डीज ऑन इनवॉल्वमेन्ट ऑफ़ रेडॉक्स सिस्टम इन रेज़िस्टेन्स टु आर्टीथर, कीर्तिका प्रकाश, अवकाश सोनी, संतोष कुमार और एस के पुरी

48. स्ट्डीज ऑन हीम डिटॉक्सीफ़िकेशन प्रोटीन (HDP) फ्रॉम रोडेन्ट मलेरिया पैरासाइट *पी. विन्केई*, अवकाश सोनी, संतोष कुमार, कीर्तिका प्रकाश और एस के पुरी

49. एण्टीमलेरियल प्रोफ़ाइल ऑफ़ क्लोरोक्विन–फ़ेबरीफ्यूज़िन हाइब्रिड्स, एस गुंजन, एस शर्मा, एस के पाण्डे, ए कुमार और आर त्रिपाठी

50. सिन्थेसिस ऑफ़ नॉवेल एमोडिन डेरीवेटिव्स एण्ड देयर एण्टीमलेरियल एक्टिविटी, एस पन्डेटी, एस गुंजन, आर त्रिपाठी और टी नरेन्दर

51. इम्यूनोप्राफ़ाइलैक्टिक एफिकेसी ऑफ़ *विथैनिया सोमनीफ़ेरा* केमोटाइप 101R- अगेन्स्ट *लीशमैनिया डोनोवनी* इन्फ़ेक्शन इन गोल्डेन हैम्स्टर, चन्द्रदेव पति त्रिपाठी, प्रशांत खरे, प्रमोद के कुशवाहा, रीमा गुप्ता, शैलजा मिश्रा भट्टाचार्या और अनुराधा दुबे

52. ग्लाइसिरेटिनिक एसिड एण्ड इट्स एनालॉग्सः ए न्यू क्लास ऑफ़ एण्टी फाइलेरियरल एजेण्ट्स, रिचा वर्मा, कोमल कलानी, विकास कुशवाहा, पी के मूर्ति और एस के श्रीवास्तव

53. एण्टीफ़ाइलेरियल एक्टिविटी ऑफ एक्सट्रैक्ट्स एण्ड डायरिलहेप्टानॉएड्स फ्रॉम *एलनस नेपालेन्सिस*, दीप्ति यादव, विकास कुशवाहा, कीर्ति सक्सेना, रिचा वर्मा, पी कल्पना मूर्ति और मदन एम गुप्ता

54. आल्टरनेटिव टु लेबोरेट्री एनिमल्स इन टॉक्सिसिटी स्टडी, पूनम सिंह और आर के सिंह

55. *इन सिलिको* टॉक्सिसिटी प्रेडिक्शन ऑफ़ एण्टीवायरल ड्रग्स, अंकुर ओमेर, नवनीत कुमार यादव, पूनम सिंह, एफ डब्ल्यू बनसोडे और आर के सिंह

56. डोनर–एक्सेप्टर च.कन्ज्युगेटेड एरोमेटिक फ्लोरिसेण्ट डाइज़ एण्ड देयर एप्लिकेशन्स, आशुतोष शर्मा, विजय कुमार और अतुल गोयल

57. डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ नॉवेल डाईथायोकार्बामेट डेरीवेटिव्स ऑफ़ पाइपेराज़ीन एज़ पोटेण्ट स्पर्मिसाइडल एजेण्ट्स, संतोष जांगिड़, वीनू बाला, नन्दलाल, गोपाल गुप्ता और विष्णु लाल शर्मा,

58. न्यूअर डाइथायोकार्बामेट डेरीवेटिव्स एज़ पॉसिबल डुएल–एक्शन स्पर्मिसाइड्स, वीनू बाला, संतोष जांगिड़, नन्दलाल, गोपाल गुप्ता और विष्णु लाल शर्मा,

59. डिज़ाइन, सिन्थिसिज़ एण्ड बायोलॉज़िकल इवैल्युएशन ऑफ़ 2, 21–डाइसल्फेनडाइलबिस (3(अल्काइलैमिनो) प्रॉपेन–2,1–डाइल) बिस (डाइमिथाइलकार्बोमोडाइथायोएट) फॉर प्रोफ़ाइलैक्टिक वैजाइनल कॉन्ट्रासेप्शन, धनराजु मंडाडपु, नन्द लाल, लोकेश कुमार, जे पी मैखुरी, गोपाल गुप्ता और विष्णु लाल शर्मा

60. केमिकल एन्टिटीज़ प्रीडिस्पोज़्ड विद स्पर्मिसइडल एक्शन, नीतिका, संतोष जांगिड़, बीनू बाला और विष्णु लाल शर्मा

इण्टरनैशनल कांफ्रेंस ऑन कार्डियोमायोपैथी रिसर्च, पीजीआईएमईआर, चण्डीगढ़ (1–2 मार्च)

61. करक्यूमिन ऑयल एण्ड इट्स फ्रैक्शन प्रोटेक्ट एण्डोथीलियल सेल इन्ड्यूज्ड इन्फ्लमेटरी प्रॉसेसेज़ इन पोस्ट मायोकार्डियल इश्चिमिया / रिपर्फ्यूज़न इंज्युरी, कुमार जगावेलू, अमित मन्हास, वी खन्ना, पी प्रकाश, रिचा मालासोनी आर्शी नकवी, अनिल कुमार द्विवेदी और मधु दीक्षित

एन्युअल इण्डिया CLEN कांफ्रेन्स–2013 ऑफ सोसाइटी ऑफ इण्डियन क्लिनिकल एपिडेमिऑलोजी नेटवर्क, लखनऊ (2–3 मार्च)

62. इन्सिडेन्स ऑफ हिपेटोटॉक्सिसिटी इन इण्डियन पेशेन्ट्स रिसीविंग स्टैन्डर्ड मल्टीड्रग एण्टी–ट्यूबरकुलर थेरेपी विदआउट रिस्क फ़ैक्टर्स, विवेक वी भोंसले, ए त्यागी, एम श्रीवास्तव और एस पी एस गौड़

19वीं आईएससीबी इण्टरनैशनल कांफ्रेंस ऑन रीसेन्ट एडवांसेज एण्ड करेन्ट ट्रेन्ड्स इन केमिकल एण्ड बायोलॉजिकल साइंसेज़ (आईएससीवीसी–2013), उदयपुर (2–5 मार्च)

63. टार्गेटिंग द डॉर्मेन्ट 'हिप्नॉजॉइट्स' फॉर मलेरिया एलिमिनेशन, एस.के. पुरी

64. आइसोलेशन एण्ड आइडेण्टीफ़िकेशन ऑफ β–हेमेटिन इन्हिबिटर्स फ्रॉम *फ़्लैकोर्शिया इण्डिका* एज़ प्रामिजिंग एण्टीप्लाज्मोडियल एजेन्ट्स, एस पी सिंह, एस वी सिंह, आर के श्रीवास्तव, के श्रीवास्तव, जे के सक्सेना, एस के पुरी और के वी शशिधरा

65. इनसाइट इनटू द रोल ऑफ़ *मायकोबैक्टीरियम ट्युबरकुलोसिस* H37Rv MoaC इन मॉलीब्डेनम कोफ़ैक्टर बायोसिन्थिसिस बेस्ड ऑन द स्ट्रक्चरल कैरेक्टराइज़ेशन, शुभ्रा श्रीवास्तव, विजय कुमार श्रीवास्तव, जे वी प्रताप एवं आशीष अरोड़ा

66. क्लोनिंग एण्ड सीक्वेन्स एनालिसिस ऑफ़ लैक्टेट डिहाइड्रोजिनेस फ्रॉम डिफ़रेन्ट स्ट्रेन्स ऑफ़ *प्लाज़्मोडियम नॉलेसी*, वन्दना सिंह, इनायत हुसैन शेख, दीप सी कौशल तथा नुज़हत ए कौशल

67. इम्यूनोस्क्रीनिंग ऑफ़ *ब्रूज़िया मलाई* सीडीएनए एक्सप्रेशन लाइब्रेरी फ़ार आइडेन्टीफ़िकेशन ऑफ डॉयग्नॉस्टिक फ़ाइलेरियल एण्टीजन, प्रियंका प्रियदर्शी, दीप सी कौशल और नुज़हत ए कौशल

68. एण्टीजेनिक एनालिसिस ऑफ एम्ब्रयो स्टेज ऑफ़ *सेटेरिया सर्वी*, द बोवाइन फ़ाइलेरियल पैरासाइट, सुनीता सक्सेना, दीप सी कौशल और नुज़हत ए कौशल

69. द रूट एक्सट्रैक्ट फ्रॉम 101R केमोटाइप ऑफ़ *विथैनिया सोमनीफ़ेरा* एण्ड द प्योर मॉलीक्यूल विथैरिन–ए प्रोटेक्ट्स द होस्ट अगेन्स्ट *ब्रूज़िया मलाई* बाइ इम्यूनोस्टिमुलेशन, ज्योति गुप्ता, सुशीला कुशवाहा, विशाल कुमार सोनी, प्रशांत कुमार सिंह, नसरीन बानो और शैलजा मिश्रा भट्टाचार्या

70. काइरल सेपरेशन ऑफ सेन्टक्रोमान, ए नॉन–स्टेरॉइडल कॉन्ट्रासेप्टिव एजेण्ट, वी गुप्ता, एच अहमद, ए पी द्विवेदी और ए के द्विवेदी

71. सिन्थिसिस ऑफ़ γ–ब्यूटिरोलैक्टोन डेरीवटिव्स एज़ पॉसिबल स्पर्मिसाइड, ऋषि रंजन पाण्डे, आकांक्षा श्रीवास्तव, जगदम्बा प्रसाद मैखुरी, सर्वेश पॉलीवाल, गोपाल गुप्ता और अनिल कुमार द्विवेदी

72. सिंथिसिस एण्ड बायोलॉजिकल इवैल्युएशंस ऑफ करक्युमिन डेरीवटिव्स एज़ पॉसिबल माइक्रोबिसाइल स्पर्मिसाइड्स, आकांक्षा श्रीवास्तव, ऋषि रंजन पाण्डे, जगदम्बा प्रसाद मैखुरी, गोपाल गुप्ता और अनिल कुमार द्विवेदी

73. रैशनल बेस्ड डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ नॉवेल फंक्शनलाइज़्ड बाइफ़ेनिल्स एज़ पोटेण्ट एण्टीहाइपरग्लाइसेमिक एजेण्ट्स, पंकज नाग, सुमित चौरसिया, ए के श्रीवास्तव, एम आई सिद्दिकी और अतुल गोयल

74. सिस–टेरोकार्पन्स एण्ड देयर ओस्टियोजेनिक एक्टिविटी, आशुतोष रघुवंशी, दिव्या सिंह और अतुल गोयल

75. आइसोलेशन एण्ड आइडेण्टीफ़िकेशन ऑफ β–हेमैटिन इनहिबिटर्स फ्रॉम *फलॉकोर्शिया इण्डिका* एज़ प्रॉसिसिंग एण्टी प्लाज़मोडियल एजेण्ट्स, एस पी सिंह, एस वी सिंह, आर के श्रीवास्तव, के श्रीवास्तव, जे के सक्सेना, एस के पुरी और के वी शशिधरा

76. नॉवेल डाइथियोकार्बामेट एनालॉग्स ऑफ़ फ़ॉस्फोकोलीनः एज़ स्पर्मिसाइडल एजेण्ट्स, संतोष जांगिड़, वीनूबाला, नन्दलाल, लोकेश कुमार, गोपाल गुप्त और विष्णु लाल शर्मा

77. ए कम्पैरेटिव स्पर्मिसाइडल एक्टिविटी स्टडी ऑफ़ डिफ़रेन्ट सॉल्ट्स ऑफ़ डाइसल्फ़ाइड ईस्टर डेरीवेटिव (DSE-37) वीनू बाला, संतोष जांगिड़, ललित कुमार, गोपाल गुप्ता और विष्णु लाल शर्मा

78. कैरेक्टराइज़ेशन ऑफ़ *ब्रूज़िया मलाई* ग्वानिलेट काइनेज़ः ए प्युटेटिव ड्रग टार्गेट, स्मिता गुप्ता, सुनीता यादव, अनिता, मनीष के सुथार, पवन के दोहरे, प्रवेश वर्मा और जितेन्द्र के सक्सेना

79. कॉम्प्लेक्स फार्मेशन ऑफ़ *ब्रूजिया मलाई* कैलरेटिक्युलिन विथ ह्यूमन C1q (BmCRT-HuC1q) ब्लॉक्स एक्टिवेशन ऑफ़ ह्यूमन कॉम्प्लीमेन्ट सिस्टम, सुनीता यादव, स्मिता गुप्ता, अनिता, मनीष के सुथार, पवन के दोहरे, प्रवेश वर्मा और जितेन्द्र के सक्सेना

80. फ़ार्माकोलोजिकल प्रोफ़ाइल ऑफ नॉवेल प्रोटीन ट्रोज़िन फॉस्फैटाइज 1b इनहिबिटर, रोहित श्रीवास्तव, विशाल एम, एम बलरामवीर, सुदीप गौतम, अरूण के रावत, ए के सक्सेना और ए के श्रीवास्तव

इण्टरनैशनल कांफ्रेंस ऑन नैनोसाइंस एण्ड नैनोटेक्नोलॉजी ICONN-2013, चेन्नई (3–5 मार्च)

81. माइक्रोपार्टिकल्स ऑफ डाइएथिलकार्बामैजाइन साइट्रेट फ़ॉर द ट्रीटमेन्ट ऑफ लिम्फ़ैटिक फ़ाइलेरियासिस, राहुल शुक्ला और पी आर मिश्रा

5वाँ इण्टरनैशनल सिम्पोज़ियम ऑन ड्रग मेटाबोलिज़्म एण्ड फ़ार्माकोकाइनेटिक्स, मोहाली (7–10 मार्च)

82. डिटर्मिनेशन ऑफ़ इण्टरस्पीशीज़ मेटाबोलिक स्टैबिली ऑफ़ एण्टी प्लेटलेट एजेण्ट S007-867 एण्ड प्रेडिक्शन ऑफ़ *इन–वीवो* हेपाटिक क्लीयरेन्स बाई IVIVE, टी के चैतन्य, एच चन्दासना, वाई एस छोंकर, डी कुमार, डी के दीक्षित और आर एस भट्टा

83. डेवलपमेन्ट एण्ड वैलिडेशन ऑफ़ एन HPLC-UV मेथड टु क्वान्टिफ़ाइ रोहिट्युकिन इन हैम्स्टर प्लाज़्माः एप्लिकेशन टु फ़ार्माकोकाइनेटिक स्ट्डी, अशोक कुमार, एच चन्दासना, वाई एस छोंकर, डी कुमार और आरएस भट्टा

84. फ़ार्मेकोकाइनेटिक्स *इन विट्रो* मेटाबोलिक कैरेक्टराइज़ेशन ऑफ़ E एण्ड Z-गुगुलस्टेरोन HPLC-PDA और LC-MS/MS, वाई एस छोंकर, एच चन्दासना, दीपक कुमार और आर एस भट्टा

85. साइटोक्रोम P450 रिएक्शन फीनोटाइपिंग एण्ड मेटाबोलिक प्रोफ़ाइलिंग ऑफ नॉवेल एण्टीथ्रॉम्बोटिक लीड कैन्डीडेट CDRI-S002-333, अमृता सक्सेना, जियाउर आर गाइन, गिरीश के जैन

रेटिक्स–2013, सम्बलपुर (16–17 मार्च)

86. प्रोटीन स्ट्रक्चर डिटर्मिनेशन बाइ एनएमआर स्पेक्ट्रोस्कोपी, सरिता त्रिपाठी और आशीष अरोड़ा

रीसेन्ट एडवान्सेज़ इन बायोडाइवर्सिटी कन्ज़र्वेशन, बायोटेक्नोलॉजी एण्ड एनवायरमेन्ट मैनेजमेन्ट रिसर्च, रीवा (16–17 मार्च)

87. मॉलीक्युलर हिमेटोटॉक्सिसिटी ऑफ ड्रग्स, आर के सिंह, एफ़ डब्ल्यू बन्सोडे और पूनम सिंह

88. फ़ेनिलहाइड्रेज़िन इन्ड्यूज़्ड हिमेटोटॉक्सिसिटी इन चार्ल्स फॉस्टर रैट्स, रूबी सिंह, पूजा शुक्ला, एफ़ डब्ल्यू बन्सोडे, पूनम सिंह और आर के सिंह

प्रथम लखनऊ साइंस कांग्रेस (20–21 मार्च)

89. एप्लिकेशन ऑफ स्टेम सेल्स इन स्क्रीनिंग एण्ड डेवलपमेन्ट ऑफ ड्रग्स, गौरव यादव, सत्येन्द्र विश्वकर्मा, आर के सिंह, एफ़ डब्ल्यू बन्सोडे और पूनम सिंह

90. इन्वेंशन ऑफ ए न्यू ड्रग फॉर पॉपुलेशन कन्ट्रोल इन इण्डिया, आर के सिंह

केमिकल एण्ड बायोलॉजिकल एप्रोचेज़ इन ड्रग डेवलपमेन्ट एण्ड डिलीवरी स्ट्रेटजीज़ पर पांचवीं नाइपर रायबरेली संगोष्ठी, (लखनऊ 21–23 मार्च)

91. पीके ड्रग इन्टरैक्शन बिटवीन 97/78 विद रिफ़ाब्यूटिन, बाबरीसेठी सिरिशा, यशवन्त सिंह, महेन्द्र कुमार हिडाऊ, अनामिका मिश्रा और एस के सिंह

92. बायोट्रांसफ़ार्मेशन ऑफ ज़ेनोबायोटिक्स एण्ड ह्यूमन एस्ट्रेजेज़, के रवीन्द्रचारी, ए शर्मा, एस जायसवाल और जे लाल

93. पल्मोनरी ड्रग डिस्पोज़ीशन कायनेटिक्स, एस जायसवाल, ए शर्मा, के रवीन्द्रचारी और जे लाल कुमार और आर एस भट्टा

94. फॉर्मुलेशन एण्ड कैरेक्टराइज़ेशन ऑफ नाटामाइसिन लोडेड नैनोकैरियर्स फ़ॉर ऑथ्थैलमिक डिलीवरी, दुर्गा प्रसाद, एच चन्दासना, वाई एस छोंकर, दीपक कुमार, पंकज श्रीवास्तव और आर एस भट्टा

95. नैनो फ़ार्मुलेटेड एम्फोटेरिसिन–बी बाइ यूजिंग म्यूकोएडेसिव पॉलीमर विद डिफ़रेन्ट स्टैबिलाइजिंग एजेण्ट्स फ़ॉर ऑकुलर ड्रग डिलीवरी सिस्टम, वाई एस छोंकर, अशोक कुमार, एच चन्दासना, विश्वकर्मा, विजय कुमार और आर एस भट्टा

96. डिटर्मिनेशन ऑफ़ इण्टरस्पीशीज़ मेटाबोलिक स्टैबिलिटी ऑफ एण्टीप्लेटलेट एजेण्ट S007-867 एण्ड प्रेडिक्शन ऑफ़ *इन वीवो* हेपाटिक क्लीयरेन्स बाइ IVIVE, टी के चैतन्य, एच चन्दासना, वाई एस छोंकर, डी कुमार, डी के दीक्षित और आर एस भट्टा

97. रोल ऑफ़ टॉक्सिकोलॉजी स्ट्डीज इन द ड्रग डेवलपमेन्ट, हरबीर कौर, गुलाम मोहम्मद हुसैन और नीरज सिन्हा

98. जीन थेरेपीः ए गोल्डेन फ्यूचर ऑफ़ थेराप्यूटिक्स, जितेन्द्र कुमार और नीरज़ सिन्हा

99. एमर्जिंग एप्रोचेज़ फ़ॉर रेगुलेशन ऑफ़ ओबेसिटी, पूरेला लिंगेश्वर, गुलाम मोहम्मद हुसैन और नीरज सिन्हा

100. करक्युमिन मिमिक्स एज़ डुएल एक्शन स्पर्मिसाइड्सः डिज़ाइन, सिन्थिसिज़ एण्ड बायोलॉज़िकल इवैल्युएशन, विकास कुमार, गोपाल गुप्ता और विष्णु लाल शर्मा

हाईलाइट्स ऑफ़ अमेरिकन सोसाइटी ऑफ हिमेटोलॉजी इन एशिया, शंघाई, चायना (23–24 मार्च)

101. नाइट्रिक आक्साइड सिन्थेज़–नाइट्रिक आक्साइड इन्वॉल्वमेन्ट इन द ह्यूमन न्यूट्रोफ़िल फ्री रैडिकल जनरेशनः रोल ऑफ iNOS एण्ड Rac2 इन्टरैक्शन, ए ज्योति, ए के सिंह, आर केसरी, एस कुमार, आर सलुजा, एम दुबे, ए वर्मा, वी के बाजपेयी, एम के बर्थवाल, ए के त्रिपाठी और एम दीक्षित

अमेरिकन केमिकल सोसाइटी की 245वीं नैशनल मीटिंग, न्यू ओरलियन्स, यूएसए (7–11 अप्रैल)

102. मॉलीक्युलर डॉकिग एण्ड बायोलॉज़िकल एक्टिविटी स्क्रीनिंग ऑफ़ न्यूली सिंथेसाइज़्ड पाइराज़ोलोन्स, आर्शी नकवी, रिचा मालासोनी, आकांक्षा श्रीवास्तव, ऋषि रंजन पाण्डे और अनिल कुमार द्विवेदी

103. हाई–परफॉर्मेन्स लिक्विड क्रोमैटोग्राफ़िक मेथड फ़ार एस्टीमेशन ऑफ़ मार्कर कम्पाउण्ड्स इन HM-Oil एण्ड इट्स फ़ॉर्मुलेशन, रिचा मालासोनी, आर्शी नकवी, आकांक्षा श्रीवास्तव, ऋषि रंजन पाण्डे और अनिल कुमार द्विवेदी

पैरासिटोलॉजी की 24वीं राष्ट्रीय कांग्रेस (आईएसपी), जबलपुर (27–29 अप्रैल)

104. *लीशमैनिया डोनोवनी* एक्सप्लॉइट्स होस्ट डियुबिक्विटिनेटिंग एन्ज़ाइम A20, ए निगेटिव रेगुलेटर ऑफ़ रेगुलेटर ऑफ़ TLR सिग्नलिंग टु सबवर्ट होस्ट इम्यून रिस्पांस, एस कार, एस श्रीवास्तव और पी के दास

105. इवैल्युएशन ऑफ़ प्रोटेक्टिव एफ़ीकेसी ऑफ़ रीकॉम्बीनेन्ट इन्डिपेन्डेन्ट फ़ॉस्फोग्लिसरेट म्युटेज़ प्रोटीन ऑफ़ ह्यूमन लिम्फ़ैटिक फ़ाइलेरिइड *ब्रूज़िया मलाई* यूजिंग डिफ़रेन्ट एडजुएन्ट्स, प्रशांत कुमार सिंह, सुशील कुशवाहा, मो. शहाब और शैलजा मिश्रा भट्टाचार्या

106. इम्यून कैरेक्टराइजेशन ऑफ UDP-N-एसिटिलग्लूकोजामाइन इनॉलपायरूविल ट्रांसफ़रेज़ ऑफ बैक्टीरियल एन्डोसिमबॉएन्ट *वॉलबैशिया* ऑफ़ ह्यूमन लिम्फ़ैटिक फ़ाइलेरियल पैरासाइट *ब्रूज़िया मलाई*, मो. शहाब, प्रशांत के सिंह, सुशीला कुशवाहा, मनीष पाठक और शैलजा मिश्रा भट्टाचार्या

107. एण्टीट्रिपैनोज़ोमल पोटेन्शियल एण्ट सेफ्टी ऑफ़ एक्सट्रैक्ट फ्रॉम *ओशियानेपिया* स्पसीज, एच द्विवेदी, एस के सिंह और आर त्रिपाठी

108. एण्टीमलेरियल एक्टिविटी ऑफ़ ट्रेडीशनल प्लांट अगेन्स्ट क्लोरोक्विन सेन्सिटिव एण्ड रेज़िस्टेन्ट स्ट्रेन ऑफ *प्लाज़मोडियम फैल्सीपेरम*, एस धवन, एस गुंजन, ए पाल और आर त्रिपाठी

109. ट्रिपटैन्थ्रिन एनालॉग्स एज़ पोटेन्शियल एण्टीमलेरियल एजेण्ट, एस गुंजन, एस के पाण्डे, वी डी त्रिपाठी, ए कुमार और आर त्रिपाठी

110. एनहैन्स्ड एण्टीमलेरियल एक्टिविटी ऑफ़ ल्यूमिफ़ैन्ट्रिन नैनो पाउडर प्रिपेयर्ड बाइ वेट मिलिंग DYNOMILL टेक्नीक, आर त्रिपाठी, एस गहोइ, जी के जैन, एस के पाण्डे, एम अनवर, एम एच वारसी, एम सिंहल, आर के खरे और एफ जे अहमद

वर्ल्डलीश 5, पर्नेम्ब्युको, ब्राजील (13–17 मई)

111. एन एप्रोच टुवर्ड्स आइडेन्टीफ़िकेशन एण्ड सिन्थिसिज़ ऑफ़ एण्टीजेनिक एपिटोप्स ऑफ़ पोटेन्शियल *एल. डोनोवनी* जी1 स्टिम्युलेटरी प्रोटीन्स फॉर द डेवलपमेन्ट ऑफ़ सिंथेटिक वैक्सीन अगेन्स्ट विसरल लीशमैनियासिस, अनुराधा दुबे, चन्द्रदेव पति त्रिपाठी, सुमित जोशी, रीमा गुप्ता खरे और अनिल जायसवाल

बायोटेक्नोलॉजी, बायोइन्फ़ॉर्मेटिक्स और बायोइन्जिनियरिंग पर प्रथम अन्तर्राष्ट्रीय और तीसरा राष्ट्रीय सम्मेलन (28 जून)

112. ट्रोपोनिन 1 ऑफ़ लिम्फ़ैटिक फ़ाइलेरियल पैरासाइट *ब्रूज़िया मलाई* : cDNA क्लोनिंग, एक्सप्रेशन, प्योरिफ़िकेशन, सीक्वेन्स एनालिसिस एण्ड इम्यून कैरेक्टराइज़ेशन, विकास कुशवाहा, रिचा वर्मा और पी कल्पना मूर्ति

फ़ार्मास्युटिकल और बायोमेडिकल एनालिसिस (पीबीए 2013) और फार्मास्यूटिकल एनालिसिस (आरडीपीए 2013) पर 24वीं अन्तर्राष्ट्रीय संगोष्ठी, बोलोग्ना, इटली (30 जून–3 जुलाई)

113. प्रिपरेशन, ऑप्टिमाइज़ेशन एण्ड इट्स इवैल्युएशन बाइ HPLC ऑफ़ ऑयल इन वॉटर नैनोइमल्शन बाइ लो एनर्जी मेथड फॉर एण्टी मलेरियल ड्रग आर्टीथर, पंकज द्विवेदी और पी आर मिश्रा

114. एक्सप्लोरिंग द इफ़ेक्ट ऑफ़ करक्यूमिन–फॉस्फोलिपिड्स कॉम्प्लेक्स–ए रैपिड एण्ड सिम्पल HPLC मेथड फॉर द डिटर्मिनेशन ऑफ़ द *इन विट्रो* रिलीज़ एण्ड टॉक्सीकोलॉजिकल इवैल्युएशन, आर खटिक, ए शुक्ला, पी द्विवेदी, एस के पालीवाल, पी आर मिश्रा और ए के द्विवेदी

इलेक्ट्रॉन माइक्रोस्कोपी पर अन्तर्राष्ट्रीय सम्मेलन और इलेक्ट्रॉन माइक्रोस्कोप सोसाइटी ऑफ़ इण्डिया, कोलकता की 34वीं वार्षिक बैठक (3–5 जुलाई)

115. अल्ट्रा–स्ट्रक्चरल एण्ड फ़िजियोलॉजिकल स्ट्डीज़ ऑन क्लेरोडेन डाइटरपीन इन्ड्यूज्ड सेल डेथ इन *लीशमैनिया डोनोवनी* प्रोमैस्टीगोट्स, एम कथूरिया, ए.भट्टाचार्जी, एस पी सिंह, के वी शशिधरा और के मिश्रा

आल्ज़ाइमर्स एसोसिएशन इण्टरनेशन कांफ्रेंस, बोस्टन, यूएसए (13–18 जुलाई)

116. एक्टिवेशन ऑफ़ Nrf2-एण्टीऑक्सीडेन्ट्स सिंगनलिंग प्रोटेक्ट्स मेमोरी इम्पेयरमेन्ट इन रैट्स, एस द्विवेदी, राजशेखर एन, एन एच सिद्दीकी, सी नाथ, के हनीफ़ और आर शुक्ला

कॉलोइड्स एण्ड नैनोमेडीसिन्स, एम्सटर्डम, नीदरलैण्ड्स (15–17 जुलाई)

117. ए लिम्फोट्रोपिक डिलीवरी सिस्टम फॉर एण्टीफाइलेरियल ड्रग, राहुल शुक्ला और पी आर मिश्रा

तृतीय यूरो–इण्डिया इण्टरनैशनल कांफ्रेंस ऑन नैनोमेडिसिन एण्ड टिश्यू इंजीनियरिंग (आईसीएन 2013), कोट्टायम (9–11 अगस्त)

118. टॉक्सिकॉलोज़िकल इवैल्युएशन एण्ड टार्गेटिंग ट्यूमर सेल्स थ्रू फोलिक एसिड मॉडीफाइड ग्वार गम नैनोपार्टिकल्स ऑफ़ करक्यूमिन, रेनुका खटिक, पंकज द्विवेदी, मानसी उपाध्याय, विवेक कुमार पटेल, सर्वेश कुमार पालीवाल और अनिल कुमार द्विवेदी

119. एक्सप्लोरिंग द इफ़ेक्ट ऑफ करक्यूमिन–फॉस्फोलिपिड्स कॉम्प्लेक्स ए नॉवेल ड्रग डिलीवरी सिस्टम ऑन द *इन विट्रो* रिलीज़ एण्ड टॉक्सिकोलॉज़िकल इवैल्युएशन, रेनुका खटिक, पंकज द्विवेदी, मानसी उपाध्याय, विवेक कुमार पटेल, सर्वेश कुमार पॉलीवाल और अनिल कुमार द्विवेदी;

120. *इन विट्रो* और *इन वीवो* स्ट्डीज ऑन नॉवेल चिटोसन–g-प्लूरॉनिक कोपोलिमर बेस्ड नैनोकैरियर ऑफ़ एम्फ़ोटेरिसिन B फॉर इम्प्रूव्ड एण्टीफंगल एक्टिविटी, विवेक कुमार, प्रमोद के गुप्ता, विवेक के पवार, अश्वनी वर्मा, रेनुका खटिक, प्रियंका त्रिपाठी, प्रशांत शुक्ला, भोलेनाथ यादव, जीतेश परमार, रोहित दीक्षित, पी आर मिश्रा और अनिल कुमार द्विवेदी

121. फ़ार्मुलेशन एण्ड कैरेक्टराइज़ेशन ऑफ़ एम्फोटेरिसिन B लोडेड नैनोस्ट्रक्चर्ड लिपिड कैरियर्स यूजिंग माइक्रोफ्लूडाइज़र, प्रियंका त्रिपाठी और पी आर मिश्रा

122. प्रिपरेशन एण्ड कैरेक्टराइज़ेशन ऑफ़ सॉलिड लिपिड नैनोपार्टिकल्स और एण्टीमलेरियल ड्रगः आर्टीथर फॉर ओरल एडमिनिस्ट्रिशन, पंकज द्विवेदी और पी आर मिश्रा

इण्डियन एकेडमी ऑफ़ ट्रॉपिकल पैरासिटालॉजी (आईएटीपी) 'ट्रोपाकॉन', लखनऊ का सातवां राष्ट्रीय सम्मेलन (6–8 सितम्बर)

123. फ़ाइलेरियासिसः स्टेप्स टुवर्ड्स इरेडिकेशन, शैलजा मिश्रा भट्टाचार्य

इण्डियन सोसाइटी फ़ार बोन एण्ड मिनरल रिसर्च (आईएसबीएमआर) श्रीनगर, कश्मीर, की नौवीं राष्ट्रीय बैठक (7–8 सितम्बर)

124. माइक्रो आर्किटेक्चलर चेन्जेज़ इन कैन्सिलस बोन डिफ़र इन फीमेल एण्ड मेल C57BL/6 मॉइस इन हाई फ़ैट डाइट इन्ड्यूज्ड ओस्टियोपोरोसिस मॉडल, धर्मेन्द्र चौधरी, ज्योति गौतम, प्रियंका कुशवाहा, विक्रम खेडगिकर और रितु त्रिवेदी

अमेरिकन केमिकल सोसाइटी की 246वीं राष्ट्रीय बैठक, इण्डियानापोलीस, यूएसए (8–12 सितम्बर)

125. मॉलीक्यूलर डॉकिंग स्ट्डीज ऑफ न्यूली सिन्थेसाइज़्ड पाइराज़ोलोन्स, आर्शी नकवी, ऋचा मालासोनी, आकांक्षा श्रीवास्तव, ऋषि रंजन पाण्डे और अनिल कुमार द्विवेदी

वेक्टर और वेक्टर बोर्न डिज़ीज़ेज पर 12 वाँ अन्तर्राष्ट्रीय सम्मेलन, उदयपुर (16–18 सितम्बर)

126. फ़ाइलेरियल मैनीफ़ेस्टेशन ऑफ़ ट्रॉपिकल पल्मोनरी इओसिनोफीलिया कॉज़्ड बाई *ब्रूज़िया मलाई* प्रेजेन्ट्स ए डिफ़रेन्शियल जीन एक्सप्रेशन प्रोफाइल वेन कम्पेयर्ड टु डिफ़रेन्ट लाइफ़ स्टेजेस ऑफ़ द फ़ाइलेरियल निमेटोड, शर्मा पी, शर्मा ए और श्रीवास्तव एम

127. रिकॉम्बीनेन्ट UDP-N-एसिटाइलग्लूकोजामाइन इनॉलपायरूविल ट्रांसफ़रेज़ ऑफ एन्डॉसिम्बायोन्ट, *वॉलबैशिया* ऑफ़ फ़ाइलेरियल पैरासाअट *ब्रूज़िया मलाई* एलिसिटेड प्रोटेक्टिव इम्यून रिस्पॉन्स इन द रोडेन्ट होस्ट मॉडल *मैस्टोमिस़ काउचा*, शहाब एम, पाठक एम, वर्मा एम, गुप्ता जे और भट्टाचार्या एस एम

128. हीम डिटॉक्सीफ़िकेशन प्रोटीन (HDP) एण्ड इट्स पॉसिबल रोल इन रेज़िस्टेन्स टु एण्टीमलेरियल ड्रग आर्टीथर, अवकाश सोनी, संतोष कुमार, कीर्तिका प्रकाश और एस के पुरी

129. इम्यून रिस्पॉन्सेज़ इन स्प्लीन एण्ड लिवर ड्यूरिंग प्री–एराइथ्रोसाइटिक स्टेज ऑफ्टर इन्फेक्शन विद लाइव *पी. योएली* स्पॉरोज़ॉइट्स, आरिफ़ जे सिद्दीकी, ज्योति भारद्वाज, मृगांक श्रीवास्तव और एस के पुरी

130. रेडॉक्स सिस्टम इनवॉल्वमेन्ट इन रेज़िस्टेन्स टु एण्टी मलेरियल ड्रग आर्टीथर, कीर्तिका प्रकाश, अवकाश सोनी और एस के पुरी

131. रिपिटेटिव इनोक्यूलेशन विद लाइव स्पॉरोज़ाइस अण्डर पाइपेराक्वीन ट्रीटमेन्ट प्रोटेक्ट्स स्विस मॉइस अगेन्स्ट द इनफ़ेक्टिव चैलेन्ज़ेज, ज्योति भारद्वाज, आरिफ़ जे सिद्दीकी, मृगांक श्रीवास्तव और एस के पुरी

132. फाइलेरियल मैनिफ़ेस्टेशन ऑफ़ ट्रॉपिकल पल्मोनरी इओसिनोफ़ीलिया कॉज़्ड बाइ *ब्रूज़िया मलाई* प्रेजेन्ट्स ए डिफ़रेन्शियल ज़ीन एक्सप्रेशन प्रोफ़ाइल वेन कम्पेयर्ड टु डिफरेन्ट लाइफ़ स्टेज़ेज ऑफ़ द फ़ाइलेरिया निमेटोड, शर्मा पी, शर्मा ए और श्रीवास्तव एम

ड्रग मेटाबोलिज़्म और अप्लाइड फ़ार्माकोकाइनेटिक्स पर 16वीं वार्षिक लैण्ड ओ लेक्स कांफ्रेंस, विस्कॉन्सिन–मैडिसन, यूएसए (23–26 सितम्बर)

133. *इन विट्रो* मेटाबोलिज़्म कैरेक्टराइज़ेशन, एन्ज़ाइम काइनेटिक, CYP फीनोटाइपिंग पर्मिएबिलिटी स्ट्डीज ऑफ़ E और Z गुगुलस्टेरोन, वाई एस छोंकर, एच चंदासना, आर सिंह, डी कुमार और आर एस भट्टा

ट्युबरकुलोसिस हेतु इन्हेल्ड थेरेपीज़, टोकियो सम्मेलन, टोकियो, जापान (1–3 अक्टूबर)

134. टार्गेटेड ड्रग डिलीवरी ऑफ रेपामाइसिन–PLGA माइक्रोपार्टिल्स टु THP-1 डिराइब्ड मैक्रोफ़ेजेज़ इनफ़ेक्टेड विद *माइकोबैक्टीरियम ट्युबरकुलोसिस*, अनुराधा गुप्ता और अमित मिश्रा

135. ड्राइ पाउडर इन्हेलेशन्स ऑफ़ डेनड्रीमर कॉन्जुगेटेड मॉरफ़ोलिनो siRNA, मृदुल मोहन और अमित मिश्रा

सोसाइटी ऑफ़ टॉक्सीकोलॉजी का 33वॉ वार्षिक सम्मेलन, मथुरा

136. प्रोटेक्टिव रोल ऑफ़ करक्यूमिन अगेन्स्ट टेराटोजेनिक इफ़ेक्ट ऑफ़ साइक्लोफ़ॉस्फ़ैमाइड इन रैट, अखिलेश कुमार और नीरज सिन्हा

137. साइक्लोफ़ॉस्फ़ैमिड टेस्टिंग टेराटोजेनिसिटी ऑफ़ साइक्लोफ़ॉस्फ़ेमाइडः ए मेटाबोलिक एप्रोच, निकुंज सेठी, एस के शुक्ला और नीरज सिन्हा

इण्डियन एकेडमी ऑफ़ न्यूरोसाइंस का 31वाँ वार्षिक सम्मेलन, इलाहाबाद

138. प्रोटेक्टिव इफ़ेक्ट ऑफ़ मेलाटोनिन इन स्ट्रेप्टोलॉटोसिन इन्ड्यूज्ड मेमोरी इम्पेयरमेन्ट इन रैटसः इफेक्ट ऑन Nrf2 पाथवे, एस द्विवेदी, एस के मिश्रा, राजशेखर एन, के हनीफ़, सी नाथ और आर शुक्ला

139. इन्स्युलिन एमेलियोरेट्स इन्स्युलिन रेज़िस्टेन्स एण्ड एमिलॉइडोजेनिक प्रोटीन्स एक्सप्रेशन इन स्ट्रेप्टोजॉटोसिन स्टिम्युलेटेड एस्ट्रोग्लायल सेल्स, राजशेखर एन, एस द्विवेदी, के हनीफ़, सी नाथ और आर शुक्ला

140. इन्हिबिशन ऑफ़ एन्जियोटेन्ज़िन कनवर्टिंग एन्ज़ाइम इन ब्रेन एटीन्युएट्स क्रोनिक न्यूरोइफ्लमेशन एण्ड एमिलॉइजेजेनोसिस, आर गोयल, के हनीफ़ और आर शुक्ला

रीसेन्ट एडवांसेज़ इन बायोकेमिस्ट्री एण्ड बायोटेक्नोलॉजीः एप्लिकेशंस इन हेल्थ एनवॉयरनमेन्ट एण्ड एग्रीकल्चर, लखनऊ (29–31 अक्टूबर)

141. टेम्पोरल एण्ड स्पैशियल चेन्जेज़ इन्ड्यूज्ड बाइ कैवियुनिन 7-O-[B-D-एपियोफ्यूरेनॉसिल–(1,6)-β-ग्लूकोपाइरैनोसाइड (CAFG) इन ड्रिल–होल डिफ़ेक्ट मॉडल फॉर बोन हीलिंग, प्रियंका कुशवाहा, विक्रम खेडगिकर, ज्योति गौतम, धर्मेन्द्र चौधरी, प्रीति दीक्षित, राकेश मौर्या और रितु त्रिवेदी

142. 4–हाइड्रोक्ज़ीआइसोल्यूसिन इम्प्रूव्स द ग्लूकोज़ इन्टॉलरेन्स इन हाई फ्रक्टोज़ डाइट फेड STZ ट्रीटेड रैट्स थ्रू AMPK डिपेन्डेन्ट पॉथवे, अरूण के रावत, सविता पाल, सुदीप गौतम, टी नरेन्दर और अरविन्द के श्रीवास्तव

143. एण्टीडायबिटिक इफ़ेक्ट ऑफ *पोटेन्टिला फयूल्जेन्स* इन वैलिडेटेड एनिमल मॉडल्स ऑफ़ टाइप 2 डायविटीज़ मेलिटस, सविता पाल, अरविन्द मिश्रा, राकेश मौर्या और अरविन्द श्रीवास्तव

144. एण्टीडायबिटिक एण्ड एण्टीडिस्लिपिडेमिक एक्टिविटी ऑफ *टर्मिनेलिया बेलेरिका* फ्रूट्स, अरविन्द मिश्रा, अकांक्षा मिश्रा, सविता पाल, राकेश मौर्या और अरविन्द के श्रीवास्तव

145. स्ट्रक्चरल एण्ट फ़ंक्शनल स्टडी ऑफ़ ग्वानिलेट काइनेज़, ए न्यूक्लिओसाइड मोनोफ़ॉस्फेट काइनेज़ ऑफ़ ह्यूमन फ़ाइलेरियल पैरासाइट *ब्रूगिया मलाई*, स्मिता गुप्ता, सुनीता यादव, प्रवेश वर्मा और जितेन्द्र के सक्सेना

146. मॉलीक्यूलर क्लोनिंग ऑफ़ *ब्रूजिया मलाई* प्रोटीन डाइसल्फ़ाइड आइसोमरेज़, प्रवेश वर्मा, सुनीता यादव, स्मिता गुप्ता और जितेन्द्र के सक्सेना

9वीं एनसीआरआई कैन्सर कांफ्रेंस, लिवरपूल, यू.के. (3–6 नवम्बर)

147. क्ड।ए ए डिज़ाइन्ड SERM, सप्रेसेज़ टीलोमरेज़ एक्टिविटी बाइ सेलेक्टिवली मॉडुलेटिंग एस्ट्रोजन रिसेप्टर्स इन ह्यूमन प्रॉस्टेट कैन्सर सेल्स, विकास वर्मा, विकास शर्मा, विशाल सिंह, सिद्धार्थ शर्मा, ए के विश्नोई, अतुल कुमार, अनिल द्विवेदी और गोपाल गुप्ता

इन्स्युलिन रेज़िस्टैन्स डायबिटीज़ और कार्डियोवैस्कुर डिज़ीज पर 11वीं वार्षिक विश्व कांग्रेस, लॉस एन्जेल्स, यूएसए (7–9 नवम्बर)

148. फ़िज़ियॉलोजिकली रिलेवैन्ट *इन विट्रो* मॉडल ऑफ़ क्रोनिक इन्स्युलिन रेज़िस्टेन्स, मुहीब बेग, सुजीत राजन, अभिषेक गुप्ता, सलिल वार्ष्णेय, अंकिता श्रीवास्तव, कृपा शंकर और अनिल गायकवाड़

सोसाइटी ऑफ बायोलॉजिकल केमिस्ट की 81वीं वार्षिक बैठक (8–11 नवम्बर)

149. डिटेक्शन एण्ड कैरेक्टराइज़ेशन ऑफ़ काइटिनेज़ इन *सेटैरिया सर्वी*, ए बोवाइन फ़ाइलेरियल पैरासाइट, पी द्रविड, डी सी कौशल और एन ए कौशल

अमेरिकन एसोसिएशन ऑफ़ फ़ार्मास्युटिकल साइन्टिस्ट्स (AAPS) एनुअल मीटिंग एण्ड एक्सपोज़ीशन–2013 सैनएन्टिएनो, यूएसए (10–14 नवम्बर)

150. ड्रग–ड्रग इन्टरैक्शन पोटेन्शियल असेसमेन्ट ऑफ़ टैमॉक्ज़ीफ़ेन एण्ड सेन्टक्रोमान, वहाजुद्दीन, के एस आर राजू, आई तनेजा, ए त्रिपाठी और डी पी मिश्रा

इम्यूनोकॉन–2013 (इण्डियन इम्यूनोलॉजी सोसाइटी) की 40वीं वार्षिक बैठक, नई दिल्ली (15–17 नवम्बर)

151. आइसोलेशन ऑफ *सेटेरिया सर्वी* एण्टीजन्स हैविंग डायग्नॉस्टिक पोटेन्शियल फॉर ह्यूमन फ़ाइलेरियासिस, प्रियंका प्रियदर्शी, आशीष टण्डन, दीप सी कौशल और नुज़हत ए कौशल

152. आइडेन्टीफ़िकेशन ऑफ सेटेरिया सर्वी एण्टीजन्स रिकग्नाइज़्ड बाइ एण्टीबॉडीज अगेन्स्ट इनटैक्ट माइक्रोफ़ेलेरिया, सुनीता सक्सेना, पीयूष द्रविड़, नीलू सिंह, दीप सी कौशल और नुज़हत ए कौशल

पर्यावरण, स्वास्थ्य और औद्योगिक जैव प्रौद्योगिकी पर अन्तर्राष्ट्रीय सम्मेलनः बायोसंगम–2013, इलाहाबाद (21–23 नवम्बर)

153. mRNA ऑफ़ साइटोकाइन्स इन मलेरिया इन्फ़ेक्टेड होस्ट स्प्लीन एण्ड देयर रिस्पॉन्स टु एण्टीमलेरियल, एस के सिंह, एस सैनी और आर त्रिपाठी

प्रथम इण्डियन कैन्सर कांग्रेस (आईसीसी–2013), नई दिल्ली (21–24 नवम्बर)

154. एपिजेनेटिक रिप्रोग्रामिंग बाइ ए नॉवेल बायोएक्टिव सप्लीमेन्ट इन नॉन–स्मॉल सेल लंग कैन्सर थेरेपी, एस शुक्ला, एस खान और एस एम मीरन

रीसेन्ट एडवांसेज़ इन रिप्रोडक्टिव हेल्थ पर राष्ट्रीय संगोष्ठी, वाराणसी (28–30 नवम्बर)

155. प्री–पैटर्निंग मैमेलियन ऊसाइट्स, मोनिका सचदेव

156. कैरेक्टराइज़ेशन ऑफ़ ए नॉवेल जर्म सेल मार्कर PP1γ2 इन कैंसर एण्ड एडल्ट स्टेम सेल्स, परमिता कार, सौरभ अग्निहोत्री, अर्चना शर्मा, एमएलबी भट्ट, रेखा सचान, दीपशिखा तिवारी और मोनिका सचदेवा

157. रिप्रोडक्टिव टॉक्सिसिटी ऑफ़ सैलिनोमाइसिन, ओजो ओलाजुमाके और एस के रथ

इण्डियन काउन्सल ऑफ़ केमिस्ट्स (आईसीसी) का 32वां राष्ट्रीय सम्मेलन, धारवाड़ (28–30 नवम्बर)

158. सिन्थिसिज़ कैरेकटराइज़ेशन, *इन सिलिको* एण्ड ADMET स्ट्डीज़ ऑफ़ सम न्यू हाइड्रेज़ाइडस एण्ड हाइड्राजोन्स एज़ एण्टी ट्युबरकुलर एजेण्ट्स, आर्शी नकवी, ऋचा मालासेनी, आकांक्षा श्रीवास्तव, ऋषि रंजन पाण्डे और अनिल कुमार द्विवेदी

159. स्टैबिलिटी इन्डिकेटिंग स्ट्डीज़ NMITL 118R, ए स्टैण्डर्डाइज़्ड एक्सट्रैक्ट ऑफ़ *विथैनिया सोमनीफ़ेरा* दुनाल, हफ़सा अहमद, किरन खंडेलवाल, शक्तिदीप पचौरी, राजेन्दर सिंह संघवान और अनिल कुमार द्विवेदी

82वी वार्षिक बैठक सोसाइटी ऑफ बायोलॉजिकल केमिस्ट्स इण्डिया, हैदराबाद (2–5 दिसम्बर)

160. इनफ़ेक्शन एण्ड इम्यूनोमॉड्युलेशन ऑफ़ प्राइमरी म्यूरिन एडिपोसाइट्स बाइ *माइकोबैक्टीरियम ट्युबरकुलोसिस*, पूजा अग्रवाल, शाहेब आर खान, सुभाष सी वर्मा और मन्जू वाई कृष्णन

यूरोपियन यूनियन–मैरी क्यूरी पीपुल 2011–IRSES–अन्तर्राष्ट्रीय वर्कशॉप ऑन वून्ड हीलिंग एण्ड एन्जियो–जेनेसिस, चेन्नई (14–15 दिसम्बर)

161. एण्डोथिलियल रेगुलेशन ऑफ फ़ाइब्रोसिस एसोशिएटेड एन्जियोनेनेसिस इन लीवर, कुमारवेलु जगवेलु

सेल डायनमिक्स और सेल फ़ेट पर 37वीं ऑल इण्डिया सेल बायोलॉजी कांफ्रेंस, बंगालुरू (22–24 दिसम्बर)

162. हेट्रो–कॉम्प्लीमेन्टेड *माइकोबैक्टीरियम बोविस* sigF म्यूटेन्ट एन्ड्योर्स माइकोबैक्टीरियल पैथॉजेनेसिस, देबाशीष दत्ता, आशुतोष त्रिपाठी और भूपेन्द्र एन सिंह

163. क्रॉस टॉक एमंग माइकोबैक्टीरियल सिग्मा फ़ैक्टर्स, विशाल श्रीवास्तव, देबाशीष दत्ता और भूपेन्द्र एन सिंह

164. प्रोटीन काइनेज़ जे रेगुलेट्स टू की एन्ज़ाइम फॉर द ग्रोथ एण्ड इन्ट्रासेल्युलर सर्वाइवल ऑफ़ माइकोबैक्टीरिया, समीर तिवारी, दिवाकर के सिंह, रिचा सक्सेना, प्रमोद के सिंह और किशोर के श्रीवास्तव

165. बाइ–फंक्शनल रोल ऑफ़ PE प्रोटीन्स इन माइकोबैक्टीरियल पर्सिस्टेन्स एण्ड इन इम्यूनो–प्रोफ़ाइलैक्सिस, प्रमोद के सिंह, सुष्मिता के सिंह, दिवाकर के सिंह, समीर तिवारी और किशोर के श्रीवास्तव

166. फ़क्टोज़ एक्सपोजर इन्डयूसेज़ माइटोकॉन्ड्रियल डिस्फ़ंक्शन एण्ड एपॉप्टॉसिस इन स्केलेटल मसल सेल्स, एन जायसवाल और ए के ताम्रकार

3 अन्तःअभिकरण संबद्धता

परियोजना का शीर्षक	प्रधान अन्वेषक
स्वास्थ्य अनुसंधान विभाग, भारत सरकार	
प्रजनन स्वास्थ्य में औषधि अनुसंधान एवं विकास हेतु केंद्र	निदेशक
पृथ्वी विज्ञान मंत्रालय, भारत सरकार	
एमओईएस परियोजना "ड्रग्स फ्रॉम सी" के नवीन जैव सक्रिय यौगिकों का अन्वेषण एवं जैविक मूल्यांकन	डॉ. मधु दीक्षित
नवीन डोलैस्टैटिन, एज़्यूमैमाइड्स और माइक्रोस्पोरिन ए एनालॉग्स की अभिकल्पना और संश्लेषणः कैंसररोधी औषधि हेतु एक खोज	डॉ. दीपांकर कोले
समुद्री जीवों एवं सूक्ष्मजीवों द्वारा एण्टीमाइक्रोबियल, एण्टीइन्फलेमेटरी एवं एण्टिकैंसर एजेन्ट्स का विकास	डॉ. टी. नरेन्दर
समुद्री बेक्टीरिया द्वारा नवीन एण्टीमाइक्रोबियल एवं एण्टीकैंसर मेटाबोलाइट्स हेतु अन्वेषण	डॉ. प्रेम प्रकाश यादव
विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार	
परिष्कृत विश्लेषणात्मक उपकरण सुविधा (सैफ़)	निदेशक
जे.सी. बोस फेलोशिप	डॉ. टी.के. चक्रवर्ती
इलेक्ट्रानिक स्ट्रक्चर थ्योरी बेस्ड इन्वेस्टीगेशन ऑफ कन्फर्मेशनल बिहेवियर एण्ड सेकेण्डरी स्ट्रक्चर्स ऑफ सब्स्टीट्यूटेड बीटा–प्रोलीन बेस्ड पेप्टाइड्स कनफर्मेशनल स्ट्डीज़ एण्ड बायोलॉजिकल इवैल्युएशन	डॉ. टी.के. चक्रवर्ती डॉ. आर.एस. अम्पापति
आइडेण्टीफिकेशन एण्ड कैरेक्टराइज़ेशन ऑफ प्रोटीन्स फ्रॉम आर्टीथर सेन्सिटिव एण्ड आर्टीथर रेजिस्टेन्ट रोडेन्ट मलेरिया पैरासाइट्स फॉर इल्युसिडेशन ऑफ मेकैनिज़्म ऑफ रेज़िस्टेन्स	डॉ. एस.के. पुरी
डिज़ाइन, सिन्थेसिस् एण्ड बायोलॉजिकल इवैल्युएशन ऑफ SIRT-1 एक्टिवेटर्स फॉर द ट्रीटमेन्ट ऑफ टाइप–।। डायबिटीज़	डॉ. बिजोय कुण्डू
डिज़ाइन एण्ड सिन्थेसिस् ऑफ फ्लेक्सिबल मॉडल बेस्ड ऑन पाइराजोलो [3,4–डी] पिरीमिडीन फॉर बेटर अंडरस्टैडिंग ऑफ एरीन इन्टरैक्शन्स एट मॉलीक्युलर एण्ड सुप्रामॉलीक्युलर लेवल	डॉ. कमलाकर अवस्थी/ डॉ. ए.के. शॉ
काइरॉन एप्रोच सिन्थेसिस् ऑफ नैचुरल प्रॉडक्ट्स एण्ड नैचुरल प्रॉडक्ट लाइक मॉलीक्युल्स फ्रॉम कार्बोहाइड्रेट बेस्ड बिल्डिंग ब्लॉक्स	डॉ. ए.के. शॉ
कैरेक्टराइजेशन ऑफ नैचुरल एण्टीमनी रेज़िस्टेन्स रिलेटेड जीन्स ऑफ *लीशमैनिया डोनोवनी*	डॉ. नीना गोयल
प्रोटियोमिक एनालिसिस ऑफ ड्रग रेज़िस्टेन्स इन *लीशमैनिया डोनोवनी* क्लीनिकल आइसोलेट्स	डॉ. नीलू सिंह
एण्टीमलेरियल प्रिंसिपल फ्रॉम प्लान्ट्स बिलांगिंग टु द जीनस *बेरोनिया* एनडेमिक टु द वेस्टर्न घाट्स	डॉ. कुमकुम श्रीवास्तव
एप्लीकेशन ऑफ बेलिस–हिलमेन कैमिस्ट्री फॉर द सिन्थेसिस् ऑफ नैचुरल प्रॉडक्ट्स एण्ड देयर मिमिक्स	डॉ. संजय बत्रा
अमीनो एसिड्स एज़ काइरल सिन्थॉन्सः डेवलपमेन्ट ऑफ न्यू सिन्थेटिक प्रोटोकॉल्स फॉर क्रिएटिंग नैचुरल प्रॉडक्ट्स एण्ड रिलेटेड डायवर्सिटी इन क्वेस्ट फॉर एण्टीकैंसर एजेण्ट	डॉ. गौतम पाण्डा
डिज़ाइन, सिन्थेसिस् एण्ड डेवलपमेण्ट ऑफ नॉवेल एण्टीलीशमैनियल एजेण्ट्स	डॉ. टी. नरेन्दर
स्ट्रक्चरल कैरेक्टराइज़ेशन ऑफ गामा–ग्लूटामाइलसिस्टीन सिन्थटेज़ एण्ड ग्लूटाथिऑन सिन्थटेज़ फ्रॉम *लीशमैनिया स्पिशीज*	डॉ. जे.वी. प्रताप

परियोजना का शीर्षक	प्रधान अन्वेषक
इफेक्ट ऑफ कैंसर कीमोथेरेप्यूटिक ड्रग्स ऑन स्पर्मेटागोनियल स्टेम सेल निशे, क्रोमैटिन रिमॉडलिंग एण्ड इपीजेनेटिक प्रोग्रामिंग इन मेल जर्म सेल्स	डॉ. डी.पी. मिश्रा
इन्वेस्टीगेशन ऑन इम्यूनोमॉडुलेशन मीडिएटेड बाइ *माइकोबैक्टीरियम ट्यूबरकुलोसिस* ड्युरिंग परसिस्टेन्ट इन्फेक्शन	डॉ. वाई.के. मंजू
एक्सप्रेशन, इन्ट्रासेल्युलर लोकलाइज़ेशन एण्ड फंक्शनल कैरेक्टराइज़ेशन ऑफ एक्टिन रिलेटेड प्रोटीन्स ऑफ *लीशमैनिया*	डॉ. ए.ए. सहस्त्रबुद्धे
ओस्टियोजेनिक एक्शन्स ऑफ ए नैचुरली डिराइव्ड एनपी–1 प्योर कम्पाउण्ड ऑन बोन	डॉ. दिव्या सिंह
टू स्टडी इम्यूनोप्रोटेक्टिव रोल्स ऑफ मिथॉक्सीआइसोफ्लेवॉन्स इन एस्ट्रोजेन–डिफीशिएन्सी इन्ड्यूज्ड बोन लॉस	डॉ. दिव्या सिंह
पॉलीमेरिक नैनो–मैट्रिक्स–एसोशिएटेड *इन वीवो* डिलीवरी ऑफ कैम्पफेरॉल इन रैट्स फॉर बोन एनाबोलिक एक्शन	डॉ. रितु त्रिवेदी
ए सिस्टमैटिक आरएनएआई (RNAi) स्क्रीन फॉर आइडेण्टीफिकेशन ऑफ जेनेटिक माड्युलेट्र्स ऑफ एचआईवी–एनईएफ इन्ड्यूज्ड पैथोजेनेसिस इन ए नॉवेल *सीनॉरैब्डाइटिस एलिगैन्स* मॉडल	डॉ. आमिर नाज़िर
इवैल्युएशन ऑफ टीजीएफ–बीटा एक्टिवेशन मेकैनिज्म एण्ड सिग्नलिंग ड्यूरिंग यूटीराइन टिश्यू रिमॉडलिंग	डॉ. राजेश कुमार झा
रोल ऑफ एस्ट्रोजन्स इन्ड्यूज्ड रिडॉक्स आल्टरेशन्स इन ब्रेस्ट कार्सिनोजेनेसिस	डॉ. स्मृति भदौरिया
रोल ऑफ इन्टिग्रिन 8-Fas एण्ड FAK सिग्नलिंग इन एण्डोमीट्रियल एपिथिलियल सेल फिजियोलॉजी ड्यूरिंग यूटराइन टिश्यू रिमोडलिंग प्रोसेस	डॉ. राजेश कुमार झा
फंक्शनल केरेक्टराइजेशन ऑफ फिशन यीस्ट क्लीवेज एण्ड पॉलिएडिनाइलेशन फेक्टर सबयुनिट RNA 14 एण्ड इट्स इम्पलीकेशन ऑन सेल सायकल चेकपॉइन्ट पाथवे	डॉ. शकील अहमद
बायोटेक्नोलॉजिकल इन्टरवेन्शन फॉर फार्मास्युटिकली वेल्यूबल कंपाउण्ड्स फ्रॉम फोरेस्ट रेजिन्स	डॉ. राकेश शुक्ला
मोलिक्युलर डिसेक्शन ऑफ सिग्नल ट्रान्सडक्शन इवेन्ट्स इन्वोल्वड इन होस्ट डिफेन्स अगेन्स्ट एक्सपेरिमेन्टल विसरल लिश्मेनिएसिस	डॉ. सुसान्त कार
डिकन्सट्रक्टिन्ग कॉर्टिकोस्ट्राइटल सर्किटः इम्पलिकेशन इन एक्सिक्युटिव फंक्शन	डॉ. प्रेम एन यादव
टायरोसीन हायड्रोलेज एज पोटेन्शियल ड्रग टारगेट इन पर्किन्शन्स डिसीज़ः स्टडीज विथ जेनेटिक नोकडाउन मोडल ऑफ *सीनोरैब्डिटिस एलिगेन्स*	डॉ. आमिर नाजिर
क्लोनल मल्टिप्लाइकेशन ऑफ इण्डियन ट्रेडिश्नल प्लान्ट *अल्मस वालिशियाना* प्लैन्कोनः एन एण्डेन्जर्ड ट्री फॉर हीलिन्ग फ्रेक्चर	डॉ. के. आर. आर्या
क्वालिटेटिव एण्ड क्वान्टिटेटिव एनालिसिस ऑफ बायोएक्टिव एल्केलोएड्स इन *बर्बेरिस* एण्ड *महोनिया* स्पिसीज एण्ड यूज ऑफ पीसीए मार्कर आइडेन्टिफिकेशन	डॉ. बृजेश कुमार
प्रोबिन्ग इलेक्ट्रोफिलिक साइक्लाइजेशन ऑफ एल्कायनोल्स एण्ड एल्कायलएमीन फॉर द सिन्थेसिस ऑफ वेरियस हेट्रोसायक्लिक कंपाउण्ड्स	डॉ. मद्दि श्रीधर रेड्डी
एक्सपेरीमेन्टल चार्ज डेन्सिटी अध्ययन और कम्प्यूटेशनल विधियों द्वारा मॉलीक्युलर सॉलिड में कमज़ोर डायपोल–डायपोल पारस्परिक क्रिया का मूल्यांकन	डॉ. टी.एस. ठाकुर
हाइपरटेंशन के विरूद्ध *अल्मस वॉलिचियाना* की क्षमता, प्रभावोत्पादकता और क्रियाविधि	डॉ. जे.आर. गाइन
अल्फा–सोलानिन के कार्सिनोजेनिक प्रभाव की क्रियाविधि को समझना	डॉ. जयन्त सरकार
ब्रेस्ट कैंसर के बचाव तथा उपचार के नवीन जेनेटिक और इपीजेनेटिक लक्ष्यः जैव सक्रिय आहार अनुपूरकों सहित एक यांत्रिक दृष्टिकोण	डॉ. एस. मुस्तफा
मलेरियारोधी ल्यूमिफ्रैन्ट्राइन और उसके सक्रिय और अधिक शक्तिशाली चयापचयक (मेटाबोलाइट) का औषधि गतिक, उपापचयी एवं जैव औषधीय मूल्याकंन	डॉ. वहाजुद्दीन

परियोजना का शीर्षक	प्रधान अन्वेषक
प्राकृतिक स्रोतों के फफूँदरोधी पेप्टाइड का पृथक्करण और लक्षणांकन	डॉ. विनीता सिंह
ओस्टियोपोरोसिस के रैट मॉडल में फेटल ओस्टियोप्रोजेनिटर स्टेम सेल्स का थेराप्युटिक इवैन्यूशन	डॉ. दीपशिखा तिवारी
इन्फ्लेमेशन उत्प्रेरित इन्स्युलिन प्रतिरोध में प्रतिरक्षा घटकों की भूमिका	डॉ. ए. ताम्रकार
ह्युमन डीएनए लाइगेजेज़ के स्माल मोलिक्यूल इन्हिबिटर्स का पोटेन्शियल एण्टी कैन्सर एजेन्ट्स के रूप में पहचान एवं लक्षणांकन	डॉ. दिब्येन्दु बनर्जी
जैव प्रौद्योगिकी विभाग, भारत सरकार	
स्ट्रक्चरल एनालिसिस ऑफ बैक्टीरियल पेप्टाइडिल–टी आरएनए हाइड्रोलेज़ एन्जाइम्स एण्ड डिज़ाइन ऑफ हाई एफिनिटी बाइन्डर्स	डॉ. आशीष अरोड़ा
जेनरेशन एण्ड कैरेक्टराइजेशन ऑफ *मायकोबैक्टीरिया स्मेगमैटिस* सिगएफ (sigF) म्यूटेन्ट एण्ड स्ट्डीज़ ऑफ द सिगएफ–मीडिएटेड ज़ीन एक्सप्रेशन बाई माइक्रोएरे एनालिसिस	डॉ. बी.एन. सिंह
अन्डरस्टैडिंग मेकैनिज़्म ऑफ एक्शन ऑफ द एण्टी–ओस्टियोपोरोटिक एक्टिविटी ऑफ सीडीआरआई कम्पाउण्ड्स के095 1709	डॉ. एस. सान्याल
इन्वेस्टीगेशन ऑन इन्वॉल्वमेन्ट ऑफ एडिपोज टिश्यू इन परसिस्टेन्स ऑफ पैथोजेनिक माइकोबैक्टीरिया	डॉ. वाई.के. मंजू
आइसोलेशन, आइडेन्टीफिकेशन, करैक्टराइज़ेशन एण्ड बायोएक्टिविटी एस्से ऑफ एण्टीडायबिटिक ड्रग लीड्स फ्रॉम फ्यू सिलेक्टेड मेडिसिनल प्लान्ट्स ऑफ नॉर्थ ईस्ट इण्डियाः वॉएज फॉर क्योर ऑफ डायबिटीज़	डॉ. ए.एन. गायकवाड़
फंक्शनल कैरेक्टराइजेशन ऑफ सीआरएन 12 इन *लीशमैनिया* पैरासाइट	डॉ. ए.ए. सहस्रबुद्धे
इन्वेस्टीगेशन ऑफ इफेक्ट ऑफ पॉलीसैक्राइड इन मॉडीफाइंग लीशमैनिसाइडल पोटेन्शियल ऑफ नैनोपार्टिकुलेट सिस्टम बियरिंग कीमोथेराप्यूटिक्स एजेण्ट	डॉ. एम.के. चौरसिया
आईडेण्टीफिकेशन ऑफ इआर अल्फा इन्टरैक्टिंग प्रोटीन्स फ्रॉम टैमोक्सीफेन इन्डयूज्ड एण्ड अनइन्ड्यूज्ड एमसीएफ7 सेल्सः ए मास स्पेक्ट्रोमीट्री बेस्ड प्रोटियॉमिक्स एप्रोच	डॉ. ए.के. त्रिवेदी
एक्सप्रेशन प्रोफ़ाइलिंग ऑफ मेजर टेस्टिस स्पेसिफिक जीन्स इन ह्यूमन सीमेन/स्पर्मेटोजोआ फॉर आइडेण्टीफिकेशन ऑफ द बायोलॉजिक रोल ऑफ दीज़ जीन्स, देयर डायग्नोस्टिक यूटिलिटी एण्ड आइडेण्टीफिकेशन ऑफ नॉवेल टारगेटस फॉर इन्फर्टिलिटी ट्रीटमेन्ट/मेल कॉन्ट्रासेप्शन	डॉ. राजेन्द्र सिंह
पैंक्रियास्टैटिन का नियंत्रणः मधुमेह को नियंत्रित करने का नवीन दृष्टिकोण	डॉ. जे.आर. गाइन
सीनॉरैब्डाइटिस एलिगैन्स केयूएनसी–60 एडीएफ/कॉफिलिन प्रोटीन का सोल्यूशन स्ट्रक्चर और डायनामिक्स	डॉ. आशीष अरोड़ा
सेन्ट्रल बॉडी फ़ैटनेस और इन्स्युलिन रेज़िस्टेन्स के उपचार हेतु औषधियाँ (हाई पेरी/पोस्ट–मेनोपॉजल प्रिवैलेन्स)–आरजीवाईआई स्कीम	डॉ. जे.आर. गाइन
सर्विकल स्क्वामोज सेल कार्सिनोमा में कैंसर स्टेसिस बायोमार्कर सीएबीवाईआर का वैधीकरण	डॉ. मोनिका सचदेवा
बढ़ती आयु में एस्ट्रोसाइट्स और न्यूरोट्रॉफिक फैक्टर्स की एन्टीऑक्सीडेन्ट क्षमताः आयु और लिंग आधारित विश्लेषण (स्वास्थ्य एवं बीमारियों में ग्लियल सेल रिसर्च पर राष्ट्रीय पहल)	डॉ. सारिका सिंह
एनिमल–ह्यूमन–प्लान्ट पेथोजन कन्टिन्युअम के इन्टरफेस पर एण्टीमाइक्रोबियल रेजिस्टेन्स का मोलिक्यूलर केरैक्टराइजेशन एवं एपिडेमियोलॉजिकल मॉडलिंग	डॉ. रबि शंकर भट्टा
वून्ड हीलिंग एवं एन्जियोजेनेसिस पर डिफरेन्ट हर्बल प्रिपरेशन के इफेक्ट्स का अध्ययन	डॉ. सईद मुस्तफा एम.
वीनिंग के समय बोन मास रिवर्सल के लिए रिस्पांसिबल miRNAs की भूमिका	डॉ. रितु त्रिवेदी
लेगिंग स्ट्रेन्ड डीएनए सिंथेसिस एवं डीएनए रिप्लिकेशन में डीएनए लाइगेज़ 1 की भूमिका का लक्षणांकन	डॉ. दिब्येन्दु बनर्जी

परियोजना का शीर्षक	प्रधान अन्वेषक
विसरल लिश्मानिऐसिस के विरूद्ध सिंथेटिक वेक्सीन के विकास के लिए पोटेन्शियल *एल. डोनोवनी* Th1 स्टीमुलेटरी प्रोटीन के एण्टीजेनिक एपिटोप के आइडेन्टिफिकेशन एवं सिंथेसिस हेतु एक एप्रोच	डॉ. अनुराधा दुबे
नवीन कौमारिनचाल्कोन हायब्रिड की एण्टीकैन्सर एक्टिविटी में P53 एवं डीएनए डेमेज रिस्पांस पाथवे की भूमिका का विश्लेषण	डॉ. जयंत सरकार
प्लाज्मोडियम बर्घेई स्पोरोजॉइट एस14, सीरीन थ्रियोनिन प्रोटीन काइनेज–9 एवं लीवर स्टेज स्पेसिफिक Acyl - CoA सिन्थेज के विरूद्ध जेनेटिक मेनिपुलेशन एवं ड्रग टारगेटिंग	डॉ. सतीश मिश्रा
स्ट्रेस एवं इन्फेक्शन के दौरान राइबोसोमल प्रोटीन्स के एक्सट्रा–राइबोसोमल फंक्शन्स के अन्वेषण	डॉ. नीति कुमार
प्लाज्मोडियम एपिकोप्लास्ट के क्रिटिकल प्रोटीन्स पर आयरन–सल्फर [Fe-S] क्लस्टर की असेम्बली	डॉ. समन हबीब
भारतीय चिकित्सा अनुसंधान परिषद, भारत सरकार	
डिज़ाइन, सिन्थेसिस एण्ड बायोलॉजिकल इवैल्युएशन ऑफ एचआईवी–1 आरटी इनहिबिटर्स–4 थायजोलिडिनॉन कम्पाउण्ड्स	डॉ. एस.बी. कट्टी
इम्पैक्ट ऑफ एडिपोकाइन एण्ड केमोकाइन जीन पॉलीमॉरफिज़्म एण्ड इट्स प्रोटीन एक्सप्रेशन इन मेटाबोलिक सिन्ड्रोम	डॉ. असीम घटक डॉ. रितुराज कोनवर
न्यूक्लिओज़ोमल हिस्टोन प्रोटीन्स ऑफ *लीशमैनिया डोनोवनी* : मॉलीक्युलर एण्ड इम्यूनोबायोकैमिकल कैरेक्टराइजेशन फॉर इट्स पोटेन्शियल एज़ वैक्सीन टारगेट अगेन्स्ट विसरल लीशमेनिआसिस	डॉ. अनुराधा दुबे
डेवलपमेन्ट ऑफ बोन एनाबोलिक एजेण्ट्स फ्रॉम एन इण्डियन मेडिसनल प्लांट	डॉ. एन. चट्टोपाध्याय
इफेक्ट ऑफ 2,3–डायएरिल–2एच–1–बेनजोपाइरन डेरिवेटिव ऑन एस्ट्रोजेन इन्ड्यूस्ड एन्डोमीट्रिकल सेल प्रॉलीफ़रेशन्स एण्ड यूटराइन हाइपरप्लासिस फॉरमेशन	डॉ. अनिला द्विवेदी
वेज़ाइनल कान्ट्रासेप्टिव के रूप में डीएसई–37[एस,एस"-{डाइसल्फ़ेनडायल्बी (पाइरोलिडिनो–प्रोपेन–2,1–डाइल)] बिस(पिपरीडिनोथियोकार्बामेट) का प्रीक्लिनिकल डेवलपमेन्ट	डॉ. गोपाल गुप्ता
फ्लूकोनाजोल के नए एनालॉग्स का एण्टीफंगल एक्टिविटी के लिए डिज़ाइन, सिन्थिसिस एवं बायोइक्विवैलेन्स	डॉ. पी.के. शुक्ला
एण्टीमलेरियल एक्टिविटी के लिए नॉवेल हाइब्रिड कम्पाउण्ड्स का डिज़ाइन, सिन्थिसिस एण्ड बायोइवैल्युएशन	डॉ. संजय बत्रा
सेप्टिक शॉक के मैनेजमेण्ट के लिए डिलीवरी सिस्टम : लाइपोपॉलीसैक्राइड (एलपीएस), न्यूट्रिलाइज़ेशन एवं डिटॉक्सीफिकेशन की ओर एक रैशनल एप्रोच	डॉ. पी.आर. मिश्रा
टिपिकल *माइक्रोबैक्टीरियम–2–फॉरच्युटम* के अगेन्स्ट न्यू कैमिकल एन्टिटीज का डिज़ाइन, सिन्थिसिस एवं इवैल्युएशन	डॉ. गौतम पाण्डा
पीएलई–एडीपी–रिबोज़ पॉलीमरेज़–2 (पीएआरपी–2) का मूल्यांकन और यूटीराइन टिश्यू रीमॉडलिंग के दौरान कैसपेस–8 सिग्नलिंग मेकैनिज़्म	डॉ. राजेश कुमार झा
अभिकल्पित संश्लेषण और मैनेजमेन्ट डिज़ाइन प्रॉस्टैटिक हाइपरप्लेज़िया हेतु नवीन अभिकर्मकों के जैविक मूल्यांकन	डॉ. वी.एल. शर्मा
एज़ल मार्मेलॉस (बेल) एवं *ट्राइगोनेला फिओनम ग्रेइकम* (मेथी) से एन्टीडिसलिपिडेमिक एजेण्ट्स का डेवलपमेंट	डॉ. टी. नरेन्द्र
इन्स्युलिन प्रतिरोधकता के उपचार हेतु जीएलयूटी–4 ट्रांसलोकशेन के नैचुरल मॉड्युलेटर्स	डॉ. एम.के. ताम्रकार
सेप्टिक शॉक में सम्मिलित इनफ्लेमेटरी मार्ग की व्याख्या	डॉ. एम. दीक्षित
फाइलेरिया और लीशमैनिया परजीवियों के क्रास रिएक्टिव अणुओं को चिह्नित करना और उनका लक्षणांकन और किसी भी संक्रमण के विरूद्ध उनकी संभावित रोग निरोधक क्षमता	डॉ. पी. कल्पना मूर्ति

परियोजना का शीर्षक	प्रधान अन्वेषक
एक्सपेरीमेन्टल लिम्फैटिक फाइलेरिया के विरूद्ध *ब्रूज़िया मैलाई* रीकॉम्बीनेन्ट प्रोटीन युक्त नैनोरिज़वॉयर शक्तिशाली वैक्सीन के रूप में	डॉ. शैलजा भट्टाचार्य
हाइपरटेंशन में न्यूरोइनफ्लेमेशन और मेमोरी इम्पेयरमेन्टः सेन्ट्रल रेनिन एन्जियोटेन्सिन सिस्टम की भूमिका	डॉ. राकेश शुक्ला
सेरेब्रल मलेरिया के *इन विट्रो/ इन विवो* मॉडल के लिए रेस्क्यू ट्रीटमेण्ट का मूल्यांकन	डॉ. रेणु त्रिपाठी
एनएमआईटीएलआई (सीएसआईआर)	
अश्वगंधा *विथानिया सोमनीफेरा* का लीड बेस्ड ड्रग डेवलपमेन्ट एवं जेनेटिक इम्प्रूवमेन्ट	डॉ. एस. भट्टाचार्या
डायबिटीज के उपचार हेतु नवीन DPP IV इन्हिबिटर	डॉ. एस. के. रथ/ डॉ. एस. सान्याल
यूपीसीएसटी	
लो मॉलीक्युलर वेट हिपेरिन्स का एण्टीथ्रॉम्बोटिक एजण्ट्स के रूप में प्रयोग हेतु माइक्रोबियल हेपारीनेजेज का उत्पादन	डॉ. सी.के.एम. त्रिपाठी डॉ. पी.के. शुक्ला

4 मानव संसाधन विकास

1 प्रस्तुत शोध प्रबन्ध (पीएचडी) (2013)

	शोधकर्ता का नाम	शोध प्रबन्ध (थीसिस) का शीर्षक	सुपरवाईजर
जवाहरलाल नेहरू यूनिवर्सिटी, नई दिल्ली			
1	मन्डाडपु अनिल कुमार	सिन्थिसिज़ ऑफ़ नाइट्रोज़न कन्टेनिंग पॉलीहेट्रोसाइक्लिक कम्पाउण्ड्स ऑफ बायोलॉजिकल इन्ट्रेस्ट	डॉ. बिजोय कुण्डू
2	अनीता	मॉलीक्युलर एण्ड बायोकेमिकल कैरेक्टराइज़ेशन ऑफ ए प्यूटेटिव केमोथेराप्यूटिक टार्गेट ऑफ़ फ़ाइलेरियल पैरासाइट	डॉ. जे.के. सक्सेना
3	अयमन तनवीर	एनालिसिस ऑफ़ प्रोटीन्स प्यूटेटिवली इनवॉल्व्ड इन प्लाज़मोडियम फैल्सीपैरम एपिकोप्लास्ट रेप्लिकेशन एण्ड सेग्रीगेशन	डॉ. समन हबीब
4	सविता लोचब	ग्लोबल प्रोटीन एक्सप्रेशन चेन्जेज़ इन ब्रेस्ट कैन्सर अपॉन एण्टी कैन्सर ड्रग ट्रीटमेन्टः ए मॉस स्पेक्ट्रोमीट्री बेस्ड प्रोटियॉमिक्स एप्रोच	डॉ. अरूण के. त्रिवेदी
5	विशाल सिंह	ए स्टडी ऑन मैक्रोफेज़ फ्रॉम सेल इन्फ़ार्मेशन एथेरोस्क्लेरॉसिस प्रोग्रेशनः रोल ऑफ हाइपरलिपिडीमिया एण्ड इन्फ़्लमेशन	डॉ. मनोज के. बर्थवाल
6	किरन कुमार पुलुकुरी	डिज़ाइन, सिन्थिसिज़ एण्ड कन्फ़र्मेशनल एनालिसिस ऑफ़ ग्लाइकोपेप्टाइड्स कन्टेनिंग शुगर एमिनो एसिड्स एण्ड स्ट्डीज डायरेक्टेड टुवर्डस द टोटल सिन्थिसिज़ ऑफ़ राइज़ोपोडिन	डॉ. टी.के. चक्रवर्ती
7	वेंकटेश्वरलु के.	सिन्थिसिज़ ऑफ़ बायोएक्टिव नैचुरल प्रॉडक्ट्स एनालॉग्स एण्ड डेवलपमेन्ट ऑफ़ नॉवेल सिन्थेटिक मेथडोलॉजीज़	डॉ. टी. नरेन्दर
8	विकास त्यागी	डाइवर्सिटी ओरिएन्टेड सिन्थेसिस ऑफ़ नॉवेल हेट्रोसाइकल्स एज़ एण्टी इन्फेक्टिव एजेन्ट्स	डॉ. पी.एम.एस. चौहान
9	विवेक खन्ना	वैस्कुलर इन्ज्युरी इन्ड्यूज़्ड एथेरोस्क्लेरॉटिक लेशन्सः इन्फ़्लेमेटरी स्टेट्स एण्ड स्कोप ऑफ़ एण्टी प्लेटलेट ड्रग्स	डॉ. मधु दीक्षित
10	जीतेन्द्र कुमार नाग	कैरेक्टराइज़ेशन ऑफ ह्यूमन लिम्फ़ैटिक फ़ाइलेरिइड प्रोटीन्स इन्वालव्ड इन ट्रासक्रिप्शन/ट्रांसलेशन	डॉ. शैलजा भट्टाचार्या
11	निधि श्रीवास्तव	मॉलीक्युलर क्लोनिंग एण्ड कैरेक्टराइज़ेशन ऑफ एन.ए.डी.$^+$ डिपेन्डेन्ट डीएनए लाइगेस ऑफ़ फ़ाइलेरियल एन्डोसिमबॉएन्ट *वॉलवैशिया* एण्ड इम्यून प्राफ़ाइलैक्टिक एफीकेसी ऑफ़ रिकॉम्बीनेन्ट *ब्रूज़िया मलाई* प्रोटीन्स	डॉ. शैलजा भट्टाचार्या
12	मुकेश कुमार	डिज़ाइन सिन्थिसिस ऑफ़ नॉवेल बायोएक्टिव हेट्रोसाइकिल्स एज़ पोटेन्शियल थेराप्यूटिक एजेण्ट्स	डॉ. अतुल कुमार
13	संचिता दास	स्ट्डीज़ ऑन एक्सप्रेशन एण्ड कैरेक्टराइज़ेशन ऑफ रेज़िस्टेन्ट ज़ीन्स ऑफ़ *लीशमैनिया डोनोवनी* आइडेण्टीफ़ाइड थ्रू डिफ़ेरेन्शियल प्रोटियॉमिक्स	डॉ. अनुराधा दुबे
14	दिवाकर कुमार सिंह	स्ट्डीज़ ऑन द रोल ऑफ़ पोस्ट ट्रांसलेशनल मॉडीफ़िकेशन्स बाइ सिरीन/थ्रियोनिन प्राटीन काइनेज़ इन सर्वाइवल ऑफ़ माइकोबैक्टीरिया इन द होस्ट एण्ड इट्स इफ़ेक्ट ऑन द वायरुलेन्सः रोल ऑफ़ प्रोटीन काइनेज़ जे	डॉ. किशोर के. श्रीवास्तव
15	जय शरण मिश्रा	आइडेन्टीफ़िकेशन एण्ड इवैल्युएशन ऑफ़ नॉवेल ओस्टियोजेनिक एण्ड एण्टी–रिज़ॉर्प्टिव एजेण्ट्स	डॉ. साब्यसाची सान्याल
16	जीतेन्द्र कुमार कनौज़िया	ग्लोबल प्रोटीन एक्सप्रेशन चेन्जेज़ इन मायलॉइड ल्यूकीमिया सेल्स अपॉन एण्टीकैन्सर ड्रग ट्रीटमेन्टः ए मास स्पेक्ट्रोमीट्री बेस्ड प्रॉटियॉमिक्स एप्रोच	डॉ. अरुण कुमार त्रिवेदी

	शोधकर्ता का नाम	शोध प्रबन्ध (थीसिस) का शीर्षक	सुपरवाईजर
17	ओलाजुमोके ओमोलारा ओजो	स्ट्डीज़ ऑन टॉक्सिसिटी ऑफ़ सैलिनोमाइसिन	डॉ. एस.के. रथ
18	श्याम राज यादव	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ नॉवेल पेप्टिडोमिमेटिक्स ऑफ़ बायोलॉज़िकल इन्ट्रेस्ट	डॉ. डब्ल्यू. हक
19	अंकित गुप्ता	इन्वेस्टीगेशन ऑफ़ ट्रांसलेशन फैक्टर्स इनवॉल्व्ड इन *प्लाज़मोडियम फ़ैल्सीपैरम* एपिकोप्लास्ट एण्ड माइटोकॉन्ड्रियल ट्रांसलेशन	डॉ. समन हबीब
20	राजेन्द्र कुमार बहेरिया	कैरेक्टराइज़ेशन ऑफ़ न्यूक्लियोज़ोमल हिस्टोन प्रोटीन्स ऑफ़ *एल. डोनोवनी* फ़ॉर इट्स पोटेन्शियल एज़ ए वैक्सीन टार्गेट अगेन्स्ट विसरल लीशमैनियासिस	डॉ. अनुराधा दुबे
21	रति टण्डन	स्ट्डीज़ ऑन कैरेक्टराइज़ेशन ऑफ़ प्रोटीन्स आइडेन्टीफ़ाइड थ्रू प्रोटियॉमिक्स फ़ॉर देयर पोटेन्शियल एज़ वैक्सीन/ड्रग टार्गेस्ट्स अगेन्स्ट एक्सपेरीमेन्टल विसरल लीशमैनियासिस	डॉ. अनुराधा दुबे
22	प्रमोद कुमार	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ प्रिविलेज्ड स्ट्रक्चर बेस्ड बायोएक्टिव मॉलीक्यूल्स	डॉ. अतुल कुमार
23	नम्रता आनन्द	सिन्थिसिज़ ऑफ़ बायो–इवैल्युएशन ऑफ़ हाइब्रिड मॉलीक्युल्स बेस्ड ऑन एरोमैटिक्स, हेट्रोसाइकल्स एण्ड शुगर	डॉ. आर.पी. त्रिपाठी
24	निधि सिंह	डिसेक्टिंग द रोल ऑफ़ GPS2 इन्टरैक्टिंग प्रोटीन FXR एण्ड इट्स ''स्पेसिफ़िक लिगेन्ड'' GW4064 इन डिफ़रेन्ट फ़िज़ियोलॉज़िकल एण्ड पैथाफ़िज़ियोलॉजिकल कन्डीशंस	डॉ. सब्यसाची सान्याल
25	सीरत फ़ातिमा	सिन्थिसिज़ ऑफ़ नॉवेल केमोथेराप्यूटिक एजेन्ट्स बेस्ड ऑन कार्बोहाइड्रेट्स, एरोमैटिक्स एण्ड हेट्रोसाइकल्स	डॉ. सब्यसाची सान्याल
26	मो. इमरान अंसारी	सिन्थेटिक स्ट्डीज ऑन ER एक्टिव लिगैन्ड्स एज़ पोटेन्शियल एस्ट्रोज़न एगोनिस्ट/एण्टागोनिस्ट्स	डॉ. कंचन हजैला
27	मो. सैफ़ुद्दीन	डिज़ाइन सिन्थेसिस एण्ड एण्टीमलेरियल एक्टिविटी ऑफ़ नैचुरल प्रॉडक्ट इन्स्पायर्ड पॉलीसाइक्लिक कम्पाउण्ड्स	डॉ. बिजोय कुण्डू
28	इमरान अहमद खान	डिज़ाइन, सिंन्थिसिज़ एण्ड एक्सप्लोरेशन ऑफ़ बायोलॉजिकली एक्टिव मॉलीक्यूल्स	डॉ. ए.के. सक्सेना
29	सर्वेन्द्र विक्रम सिंह	सिंगल न्यूक्लिओटाइड्स पॉलीमॉर्फ़िज्म एनालिसिस इन P53 पॉथवे एण्ड टार्गेट जीन्स इन कार्सिनोमा ऑफ़ अपर एरियो डाइजेस्टिल ट्रैक (यूएडीटी) इन सिलेक्टेड इण्यिन सब–पॉपुलेशन	डॉ. एस.के. रथ
30	राजीव रंजन	फ़ंक्शनल एण्ड कैरेक्टराइज़ेशन ऑफ़ रिन्ट 1 (रैड 50 इन्टरैक्टिंग प्रोटीन) ड्यूरिंग द सेल साइकल ऑफ़ *शीज़ोसैक्रोमायसिस पोम्बे*	डॉ. शकील अहमद
31	राजवीर सिंह	इवैल्युएशन ऑफ़ स्टैण्डर्डाइज़्ड एक्सट्रैक्ट ऑफ़ *बैकोपा मोनिएरा* ऑन मेटाबोलिक एन्ज़ाइम्स एण्ड मेम्ब्रेन ट्रांसपोर्टर्सः असेसमेन्ट ऑफ़ पोटेन्शियल हर्ब–ड्रग इन्टरैक्शन्स	डॉ. रबी शंकर भट्टा
32	सुदीप पॉल	डिज़ाइन, सिंथिसिज एण्ड बायोलॉजिकल स्टडी ऑफ़ कैटायनिक एण्टी माइक्रोबियल पेप्टाइड्स एण्ड सिन्थेटिक स्ट्डीज़ टुवर्ड लैगुनामाइड बी	डॉ. टी.के. चक्रवती
33	कुलदीप चौहान	डिज़ाइन, सिंन्थिसिज ऑफ़ नॉवेल नाइट्रोजन हेट्रोसाइक्लिक प्रोटोटाइप्स एण्ड देयर एण्टी पैरासिटिक एण्ड एण्टीमाइक्रोबियल एक्टिविटी	डॉ. पी.एम.एस. चौहान
34	सन्दीप बासु	डिज़ाइन, सिंथिसिज़ एण्ड कनफर्मेशनल स्ट्डीज़ ऑफ़ पेप्टिडोमिमेटिक्स कन्टेनिंग β–प्रोलीन्स एण्ड एप्लिकेशन ऑफ़ टाइटेनियम इनड्यूज़्ड रेडिकल साइक्लाइज़ेशन ऑफ़ एपॉक्ज़ीओलेफ़िन्स इन नैचुरल प्रॉडक्ट सिन्थेसिस	डॉ. टी.के. चक्रवर्ती

	शोधकर्ता का नाम	शोध प्रबन्ध (थीसिस) का शीर्षक	सुपरवाईजर
35	प्रियंका सिंह	कार्बोहाइड्रेट एण्ड एमिनो एसिड एज़ काइरल सिन्थॉन्सः एप्रोच टुवर्डस नैचुरल प्रॉडक्ट एण्ड नैचुरल प्रॉडक्ट लाइक डिज़ाइनर सिंथेटिक मॉलिक्यूल्स	डॉ. गौतम पाण्डा
36	गौरव कुमार कश्यप	फंक्शनल स्टडीज़ ऑफ़ G-एक्टिन बाइन्डिंग प्रोटीन्स, ADF/कॉफ़िलिन एण्ड ट्विनफिलिन इन लीशमैनिया पैरासाइट्स	डॉ. अमोघ ए. सहस्रबुद्धे
37	विवेक कुमार कश्यप	इवैल्युएशन ऑफ़ म्युरिन इनफ़ेक्शन मॉडल ऑफ़ *माइकोबैक्टीरियम फ़ॉरट्यूटम* फ़ॉर ड्रग स्क्रीनिंग एण्ड हेट्रोलोगस ज़ीन एक्सप्रेशन	डॉ. अरूणव दास गुप्ता
38	उपमा चतुर्वेदी	ए फ़ार्माकॉलोज़िकल इवैल्युएशन ऑफ़ एण्टीहाइपर– लिपिडेमिक एण्ड एण्टीऑक्सीडेण्ट एक्टिविटीज़ ऑफ़ सम सिलेक्टेड मेडिसिनल प्लान्ट्स एण्ड/ऑर सिन्थेटिक कम्पाण्ड्स	डॉ. गीतिका भाटिया
39	गोपाल रेड्डी पाल्नती	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ नॉवेल कौमैरिन एनालॉग्स एज़ वर्सटाइल बायोडायनमिक एजेण्ट्स	डॉ. के.वी. शशिधरा
40	कान्धिकोन्डा राजेन्दर	सिंन्थिसिस एण्ड केमिकल ट्रांसफ़ॉर्मेशन्स ऑफ़ बायोलॉजिकली एक्टिव नैचुरल प्रॉडक्ट्स	डॉ. टी. नरेन्दर
41	मनीष कुमार सुथार	कैरेक्टराइज़ेशन ऑफ़ ए प्यूटेटिव केमोथेराप्यूटिक टार्गेट फ्रॉम मलेरिया पैरासाइट।	डॉ. जे.के. सक्सेना
42	अतुल श्रीवास्तव	आइडेण्टीफ़िकेशन, सिस्टमैटिक इवैल्युएशन एण्ड मेकैनिस्टिक स्टडीज़ ऑफ़ एण्टी हाइपरलिपिडेमिक एण्ड एण्टीऑक्सीडेन्ट एक्टिविटीज़ ऑफ़ सम सेलेक्टेड मेडिसिनल प्लाण्ट्स, माइक्रोऑर्गेनिज्म एण्ड सिंथेटिक कम्पाउण्ड्स	डॉ. गीतिका भाटिया
43	जितेन्द्र कुमार त्रिपाठी	अण्डरस्टैन्डिंग द स्ट्रक्चर–फंक्शन रिलेशनशिप इन नैचुरली ऑकरिंग एण्टीमाइक्रोबियल पेप्टाइड्स एण्ड डिज़ाइन ऑफ़ देयर नॉवेल एनालॉग्स	डॉ. जिमुत कान्ति घोष
44	रवि सोनकर	आइडेण्टीफ़िकेशन एण्ड कैरेक्टराइज़ेशन ऑफ़ सिन्थेटिक/नैचुरल कम्पाउण्ड्स ऑन ओबेसिटी इन्ड्यूज्ड मेटाबोलिक डिस्ऑर्डर्स	डॉ. गीतिका भाटिया
एसीएसआईआर–सीएसआईआर–सीडीआरआई, लखनऊ			
45	अब्दुल मलिक	टु स्टडी द एमिनो प्रोटेक्टिव रोल ऑफ़ एस्ट्रोज़न एण्ड आइसोफ्लोवेनॉइड्स *इन विट्रो* एण्ड इन एस्ट्रोजन डिफीशिएन्ट माउस मॉडल ऑफ़ ओस्टियोपोरोसिस	डॉ. दिव्या सिंह
46	अमित कुमार गुप्ता	मॉलीक्युलर मॉड्युलेटिंग बेस्ड डिज़ाइन, सिंथिसिज़ एण्ड बायोलॉजिकल स्टडीज़ ऑफ़ नॉवेल एण्टी मलेरियल एण्टी अल्सर एजेण्ट्स	डॉ. ए.के. सक्सेना
47	शालिनी अस्थाना	डेवलपमेन्ट ऑफ़ नैनोरिज़रवॉएर सिस्टम फॉर इफेक्टिव डिलीवरी ऑफ़ केमोथेराप्यूटिक एजेण्ट अगेन्स्ट एक्सपेरीमेन्टल विसरल लीशमैनियासिस	डॉ. मनीष चौरसिया
लखनऊ विश्वविद्यालय, लखनऊ			
48	अमिता परिहार	सिन्थिसिस एण्ड बायोलॉजिकल प्रापर्टीज़ ऑफ़ लैक्टोन्स एण्ड देयर रिंग ट्रांसफ़ॉर्म्ड प्रॉडक्ट्स	डॉ. अतुल गोयल
49	मलॉय नायक	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ नॉवेल कम्पाउण्ड्स यूज़िंग मल्टी कम्पोनेन्ट रिएक्शन्स	डॉ. संजय बत्रा
50	गौरव तनेजा	लैक्टोन डिराइण्ड एजेण्ट्स एण्ड हेट्रोएरीन्स ऑफ़ थेराप्यूटिक इम्पॉर्टेन्स	डॉ. अतुल गोयल
डॉ. बी.आर. अम्बेडकर विश्वविद्यालय, आगरा			
51	शानवाज़ खान	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ हेट्रोसाइकल एज़ एण्टी –इनफ़ेक्टिव एजेण्ट्स	डॉ. पी.एम.एस. चौहान

	शोधकर्ता का नाम	शोध प्रबन्ध (थीसिस) का शीर्षक	सुपरवाईजर
कल्याणी दास विश्वविद्यालय, कोलकता			
52	सती नाथ सरकार	सिन्थेसिस ऑफ़ नैचुरल प्रॉडक्ट्स एनालॉग्स ऑफ़ बायोलॉजिकल इम्पॉर्टेन्स एण्ड डेवलपमन्ट ऑफ़ न्यू सिन्थेटिक मेथडोलॉजी	डॉ. टी. नरेन्दर
भगवन्त विश्वविद्यालय, अजमेर, राजस्थान			
53	मोनी शर्मा	सिन्थिसिज़ ऑफ़ नॉवेल हेट्रोसाइक्लिक हाइब्रिड प्रोटोटाइप एज़ पॉसिबल एण्टी–इन्फेक्टिव एजेण्ट्स	डॉ. पी.एम.एस. चौहान
जामिया हमदर्द विश्वविद्यालय, नई दिल्ली			
54	स्वरूप कुमार पाण्डे	डेवलपमेन्ट ऑफ़ आर्टीमिसिनिन बेस्ड कॉम्बिनेशन थेरेपी फ़ॉर मलेरिया: थेराप्यूटिक एण्ड बायोमेडिकल एप्रोच	डॉ. रेणु त्रिपाठी
55	श्रवण के. सिंह	मॉलीक्युलर कैरेक्टराइज़ेशन ऑफ़ एसिटाइलकोलीनएस्ट्रेज़ एन्ज़ाइम फ्रॉम फ़ाइलेरियल पैरासाइट्स	डॉ. नुज़हत ए. कौशल
56	आशीष जैन	नोवेल माइक्रोबिसाइडल कांट्रासेप्टिव फॉर डुअल प्रोटेक्शन एण्ड देअर मोलिक्युलर मेकेनिज्म ऑफ एक्शन	डॉ. गोपाल गुप्ता
डॉ. राम मनोहर लोहिया विश्वविद्यालय, फैज़ाबाद			
57	देवेन्द्र प्रताप मिश्रा	आइसोलेशन एण्ड कैरेक्टराइज़ेशन ऑफ़ बायोएक्टिव नैचुरल प्रॉडक्ट्स फ्रॉम इण्डियन मेडिसिनल प्लाण्ट्स	डॉ. राकेश मौर्या
गौतम बुद्ध टेक्निकल यूनिवर्सिटी, लखनऊ			
58	स्मृति शर्मा	डिज़ाइन एण्ड सिन्थिसिज़ ऑफ़ कार्बोहाइड्रेट डेरीवटिव मॉलीक्यूल्स एज़ एण्टीट्युबरक्युलर एजेण्ट्स	डॉ. अरूण के. शॉ
59	जे.पी. चतुर्वेदी	फ़ाइटोकेमिकल इन्वेस्टीगेशन ऑफ़ इण्डियन मेडिसिनल प्लाण्ट्स	डॉ. टी. नरेन्दर
इन्टिग्रल यूनीवर्सिटी, लखनऊ			
60	प्रशांत खरे	क्लोनिंग, ओवरएक्सप्रेशन एण्ड प्योरिफ़िकेशन ऑफ़ TH1 स्टिमुलेटरी पॉली प्रोटीन्स आइडेण्टीफाइड थ्रू प्रोटियॉमिक्स फ़ॉर देयर प्रोफाइलैक्टिक पोटेन्शियल अगेन्स्ट एक्सपेरीमेन्टल विसरल लीशमैनियासिस	डॉ. अनुराधा दुबे
61	बलरामनवेर विशाल सिंह मोहन सिंह	डिज़ाइन एण्ड सिंन्थिसिज़ ऑफ़ बीएमपी–रिसेप्टर अगेन्स्ट एज़ एण्टी–ओस्टियोपोरोटिक एण्ड एण्टी कैन्सर एजेन्ट्स एण्ड सिन्थिसिज़ बायोएक्टिव मॉलीक्यूल्स	डॉ. ए.के. सक्सेना
62	अमृता सक्सेना	ड्रग मेटाबोलिज़्म एण्ड फ़ार्माकोकाइनेटिक्स ऑफ़ नॉवेल एण्टीथ्रॉम्बोटिक	डॉ. जे.आर. गाइन
बिरला इंस्टीट्यूट ऑफ़ टेक्नोलॉजी, रांची			
63	शक्ति दीप पचौरी	फ़ाइटोफ़ार्मास्युटिकल इवैल्युएशन ऑफ़ *मॉरिन्डा सिट्रीफ़ोलिया* (noni) एण्ड डिवेलपमेन्ट ऑफ़ हर्बल फ़ार्मुलेशन	डॉ. ए.के. द्विवेदी
64	शाश्वत कंसल	सर्फ़ेस मॉडीफाइड पॉलीइलेक्ट्रोलाइट रेज़रवॉयर बेयरिंग केमोथेराप्यूटिक एजेण्ट फ़ॉर इफ़ेक्टिव मैनेजमेन्ट ऑफ़ विसरल लीशमैनियासिस	डॉ. पी.आर. मिश्रा और डॉ. पी.आर.पी. वर्मा
बनस्थली विश्वविद्यालय, राजस्थान, भारत			
65	ऋषि रंजन पाण्डे	डिज़ाइन, सिन्थेसिस कैरेक्टराइज़ेशन एण्ड इवैल्युएशन ऑफ़ सम नॉबेल कम्पाउण्ड्स फॉर लोकल कांट्रासेप्टिव एण्ड एण्टीकैंसर एक्टिविटी	डॉ. ए.के. द्विवेदी

2 वाह्य अभ्यर्थियों को प्रदान किया गया प्रायोजित प्रशिक्षण

उपर्युक्त कार्यक्रम के अन्तर्गत औषधि एवं औषधि निर्माण अनुसंधान, प्रयोगशाला जन्तु तकनीक, टिश्यू एवं सेल कल्चर, इन्स्ट्रूमेन्टेशन, परिष्कृत विश्लेषणात्मक उपकरणों एवं अन्य प्रयोगशाला, तकनीकी के क्षेत्र में संस्थान द्वारा स्नातकोत्तर छात्रों, विदेश के शोध छात्रों तथा सम्पूर्ण देश के शैक्षिक तथा उद्योग जगत के प्रतिभागियों को प्रशिक्षण प्रदान किया गया।

2.1 स्नातकोत्तर छात्रों को प्रशिक्षण

कैलेण्डर वर्ष के दौरान देश भर से 38 कॉलेजो/विश्वविद्यालयों और संबद्ध कॉलेजों से कुल 141 स्नातकोत्तर छात्रों का योग्यता के आधार पर चयन किया गया और औषधि तथा औषधि निर्माण अनुसंधान के विभिन्न विषयों में 4–10 महीनों का प्रशिक्षण दिया गया।

2.2 नाइपर रायबरेली के स्नातकोत्तर छात्रों को प्रशिक्षण

सीएसआईआर–सीडीआरआई में, नाईपर, रायबरेली के लिए एक संरक्षक संस्थान के रूप में 30 एम.फार्मा छात्रों को जैव चिकित्सा अनुसंधान में एक वर्ष का परियोजना प्रशिक्षण प्रदान किया गया।

2.3 आईएएस (IAS) इन्सा (INSA), और नासी (NASI) के साथ सहयोग के अन्तर्गत प्रशिक्षण

इस कार्यक्रम के अर्न्तगत विभिन्न संस्थानों के 07 IAS फेलोज़ को बायोमेडिकल रिसर्च के विभिन्न पहलुओं पर प्रशिक्षण दिया गया।

2.4 द्विपक्षीय सहयोग के अन्तर्गत अन्तर्राष्ट्रीय प्रशिक्षण

निम्नलिखित विदेशी प्रशिक्षुओं को संस्थान में दीर्घ अवधि/लघु अवधि का प्रशिक्षण प्रदान किया गया

प्रशिक्षु का नाम एवं पता	फेलोशिप/कार्यक्रम	सुपरवाइज़र	अवधि
सुश्री ओलाजुमोके ओ. ओजो, असि. लेक्चरर, बायोकेमिस्ट्री डिपार्टमेंट, यूनिवर्सिटी ऑफ एडो एकिति, नाइजीरिया	पोस्टग्रेजुएट स्टडीज अन्डर सीएसआईआर–टीडब्लूएएस फेलोशिप लीडिंग टू पीएचडी	**डॉ. एस के रथ** प्रधान वैज्ञानिक टॉक्सिकोलॉजी प्रभाग	20.07.2009 से 05.07.2013
डॉ. नेने बी सेमी एन्थेल्मी लेबोरेट्री डि फिजियोलॉजी एनिमेल, यूनिवर्सिटी डि कोकोडि, अबिद्जान, आइवरी कोस्ट	सी.वी. रमन इण्टरनेशनल फेलोशिप फॉर अफ्रीकन रिसर्चर फॉर पोस्ट डॉक्ट्रल फेलोशिप स्पॉन्सर्ड बाय फिक्की, नई दिल्ली	**डॉ. मधु दीक्षित** मुख्य वैज्ञानिक, औषधि प्रभाव विज्ञान प्रभाग	11.07.2013 से 10.01.2014

3. सीएसआईआर–सीडीआरआई स्टाफ द्वारा प्रशिक्षण कार्यक्रमों में प्रतिभागिता

प्रतिवेदन के वर्ष में सीएसआईआर–सीडीआरआई स्टाफ ने विभिन्न क्षेत्रों में अपने ज्ञान एवं अनुभव को उन्नत करने के लिए अनेक प्रशिक्षण कार्यक्रमों एवं कार्यशालाओं में हिस्सा लिया।

नाम	कार्यक्रम	स्थान	अवधि
डॉ. विवेक वी. भोसले वैज्ञानिक, क्लिनिकल एण्ड एक्सपेरिमेंटल मेडिसिन प्रभाग	वर्कशॉप ऑन मोलिक्युलर बायोटेक्नोलॉजी एण्ड बायोइन्फॉर्मेटिक्स	इन्टरनेशनल सेन्टर फॉर स्टेम सेल्स, कैन्सर एण्ड बायोटेक्नोलॉजी, पुणे	15–19 जुलाई, 2013
डॉ. रबी शंकर भटटा वैज्ञानिक, फार्मेकोकाइनेटिक्स एण्ड मेटाबोलिज्म प्रभाग	वर्कशॉप ऑन फार्माकोकाइनेटिक्क मॉडलिंग	सीएसआईआर–सीडीआरआई, लखनऊ	4–6 सितम्बर, 2013
डॉ. मोनिका सचदेव वरिष्ठ वैज्ञानिक, एण्डोक्राइनोलॉजी प्रभाग	आईसीएमआर वर्कशॉप ऑन प्लूरिपोटेण्ट स्टेम सेल्स इन एडल्ट मेमेलियन गोनेड्स	नेशनल इन्स्टीट्यूट ऑफ रिसर्च इन रिप्रोडक्टिव हेल्थ, मुम्बई	6–9 सितम्बर, 2013
डॉ. सतीश मिश्रा वैज्ञानिक, पेरासिटोलॉजी प्रभाग	बेकमेन कॉल्टर फ्लो साइटोमीट्री वर्कशॉप	सीएसआईआर–सीडीआरआई, लखनऊ	23–27 सितम्बर, 2013
डॉ. एच. के. बोरा वैज्ञानिक, लेबोरेट्री एनिमल फैसिलिटी	आईसीएलएएस इन्टरनेशनल वर्कशॉप ऑन लेबोरेट्री एनिमल साइंस	सीएसआईआर–आईजीआईबी, नई दिल्ली	18–29 नवम्बर, 2013
श्री करूणेश राय वरि. तकनीकि अधिकारी (2) लेबोरेट्री एनिमल फैसिलिटी	आईसीएलएएस इन्टरनेशनल वर्कशॉप ऑन लेबोरेट्री एनिमल साइंस	सीएसआईआर–आईजीआईबी, नई दिल्ली	18–29 नवम्बर, 2013

5 पुरस्कार एवं सम्मान

डॉ. अनुराधा दुबे

- फेलो ऑफ इण्डियन नैशनल साइंस एकैडमिक, (इन्सा), नई दिल्ली

डॉ. रेनु त्रिपाठी

- प्लेटिनम जुबली लेक्चर अवार्ड–2013 ऑफ द 100वीं इण्डियन साइंस कांग्रेस, कोलकता

डॉ. पी.के. मूर्ति

- फेलो ऑफ नैशनल एकैडमी ऑफ़ साइंस इण्डिया–2014
- डॉ. बी.एन. सिंह मेमोरियल ओरेशन अवार्ड–2011 ऑफ़ द इण्डियन सोसायटी ऑफ़ पैरासिटालॉजी

डॉ. अनिल बालापुरे

- इलेक्टेड वाइस–प्रेसीडेण्ट ऑफ द इण्डियन फार्माकोलॉजिकल सोसायटी

डॉ. समन हबीब

- डीबीटी, नेशनल यंग वूमैन बायो–साइंटिस्ट अवार्ड–2012 (यंग केटेगरी)

डॉ. जियाउर आर गाईन

- फेलो ऑफ सोसायटी ऑफ़ एप्लाईड बायोटेक्नोलॉजी (एफएसएबी)

डॉ. अरूण त्रिवेदी

- सीएसआईआर यंग साइंटिस्ट अवार्ड–2013
- इन्सा मेडल फॉर यंग साइंटिस्ट–2013

डॉ. आशीष अरोड़ा

- एक्ज़ीयूटिव कांउसिल ऑफ इण्डियन बायोफिज़िकल सोसायटी, इण्डिया हेतु वर्ष 2012–2015 के लिए मेम्बर नामांकित

डॉ. सुशांत कार

- इन्सा मेडल फॉर यंग साइंटिस्ट–2013
- यंग साइंटिस्ट अवार्ड फ्रॉम द इण्डियन सोसायटी फॉर पैरासीटालॉजी (आईएसपी–2012) इण्डिया

डॉ. श्रीपति आर. कुलकर्णी

- डीबीटी–क्रेस्ट फेलोशिप, 2013–2014

डॉ. मधु दीक्षित

- दर्शन रंगानाथन मेमोरियल लेक्चर अवार्ड (2013) ऑफ द इण्डियन नैशनल साइंस एकैडमी, नई दिल्ली

डॉ. वहाजुद्दीन

- डॉ. पी.डी. सेठी ऐनुअल अवार्ड – 2012 फॉर द बेस्ट रिसर्च पेपर इन फ़ार्मास्युटिकल एनालिसिस स्पान्सर्ड बाय द फ़ार्मा रिव्यू
- यंग मॉस स्पेक्ट्रोस्कोपिस्ट अवार्ड–2013

डॉ. आमिर नाज़िर

- इलेक्टेड फेलो ऑफ सोसायटी फॉर अप्लाईड बायोटेक्नोलॉजी, एफएसएबी–2012

डॉ. अतुल कुमार

- ग्लोबल एड्वाइज़री काउंसिल मेम्बर ऑफ साइफ़ाइण्डर, केमिकल अब्स्ट्रेक्ट्स सर्विसेज (सीएएस), डिवीज़न ऑफ अमेरिकन केमिकल सोसायटी (एसीएस) कोलम्बस, यूएसए

डॉ. सारिका

- रमन रिसर्च फेलोशिप अवार्ड–2013
- इण्डो–यूएस फेलोशिप अवार्ड–2013

डॉ. आर. रविशंकर

- वी लाइफ़ बेस्ट पब्लिकेशन अवार्ड, इन द फ़ील्ड ऑफ कम्प्यूटर ऐडेड ड्रग एण्ड मॉलीक्युलर डिज़ाइन बाइ मे. वी लाईफ साइंसेज़ टेक्नोलॉजिस्ट प्राई. लि.
- इलेक्टेड ज्वाइंट सेक्रेटरी एण्ड एक्ज़ीक्यूटिव कमेटी मेम्बर, इण्डियन क्रिस्टलोग्रॉफिक ऐसोसिऐशन

डॉ. मोनिका सचदेव

- 18वीं कांग्रेस ऑफ सोसायटी ऑफ ऐण्ड्रोलॉजी, लखनऊ में प्रोफे. विश्वनाथ मेमोरियल ओरेशन अवार्डस

डॉ. सतीश मिश्रा

- रामालिंगास्वामी रि–एण्ट्री फेलोशिप, डिपॉर्टमेन्ट ऑफ बायोटेक्नोलॉजी

श्री किरण कु. पुलुकरी (डॉ. टी. के. चक्रवर्ती के छात्र)

- एलि लिली बेस्ट थीसिस अवार्ड–2013

कु. रचना त्रिवेदी (डॉ. डी.पी. मिश्रा की छात्रा)

- डीएएडी फेलोशिप

कु. सविता लोचब (डॉ. अरूण के. त्रिवेदी की छात्रा)

- डॉ. स्वर्णा नित्यानन्द अवार्ड फॉर द बेस्ट वूमेन रिसर्च स्कॉलर–2013
- बेस्ट पोस्टर प्रजेण्टेशन अवार्ड, इण्टरनैशनल कांफ्रेंस ऑन स्टेम सेल्स एण्ड कैंसर', नई दिल्ली

श्री नन्द लाल (डॉ. वी.एल. शर्मा के छात्र)

- एमएम धर मेमोरियल अवार्ड 2013 – केमिकल साइंसेज़

श्री सौरभ श्रीवास्तव (डॉ. जे.के. घोष के छात्र)

- एमएम धर मेमोरियल अवार्ड 2013 – बायोलॉज़िकल साइंसेज़

कु. अंकिता मिश्रा (डॉ. मधु दीक्षित की छात्रा)

- डायरेक्टर्स एप्रेसिएशन अवार्ड फॉर बेस्ट थीसिस

कु. पूजा जडिया (डॉ. आमिर नाज़िर की छात्रा)

- बेस्ट पोस्टर अवार्ड, लखनऊ साइन्स कांग्रेस – 2013

श्री पंकज शर्मा (डॉ. मृगांक श्रीवास्तव के छात्र)

- फ्लो साइटोमीट्री वर्कशॉप बैकमैन काउल्टर में प्रथम पुरस्कार
- फ्लो साइटोमीट्री क्विज़, बंगलौर में प्रथम स्थान प्राप्त करने पर प्रोफे. अवतार कृष्ण प्राइज

कु. अइमन तनवीर (डॉ. समन हबीब की छात्रा)

- बेस्ट पोस्टर अवार्ड सीटीडीडीआर – 2013

कु. कृतिका प्रकाश (डॉ. एस.के. पुरी की छात्रा)

- बेस्ट पोस्टर अवार्ड, 12वी अन्तर्राष्ट्रीय कांफ्रेंस ऑन वेक्टर एण्ड वेक्टर बोर्न डिज़ीजेज़, उदयपुर

कु. परमिता कार (डॉ. मोनिका सचदेव की छात्रा)

- बेस्ट पोस्टर अवार्ड, नैशनल सिम्पोज़ियम ऑन रीसेन्ट एड्वांसेज इन रिप्रोडक्टिव हेल्थ, वाराणसी

कु. हफ़सा अहमद (डॉ. ए.के. द्विवेदी की छात्रा)

- डॉ. वी.के. शर्मा अवार्ड फॉर बेस्ट ओरल प्रेजेन्टेशन, 32वीं एनुअल कांफ्रेस ऑफ इण्डियन काउंसिल ऑफ कैमिस्ट, धारवाड

कु. प्रियंका कुशवाहा (डॉ. रितु त्रिवेदी की छात्रा)

- बेस्ट ओरल प्रेज़ेन्टेशन अवार्ड फ्रॉम इण्डियन सोसायटी फॉर बोन एण्ड मिनरल रिसर्च

कु. मीनाक्षी राणा (डॉ. मनोज के. बर्थवाल की छात्रा)

- बेस्ट पोस्टर अवार्ड, एसएफएफआर इंडिया – 14 कांफ्रेंस ऑन रिसेंट ट्रेन्ड्स इन फ्री रेडिकल एण्ड एण्टिऑक्सिडेण्ट रिसर्च, लोनावाला

श्री धर्मेन्द्र चौधरी (डॉ. रितु त्रिवेदी के छात्र)

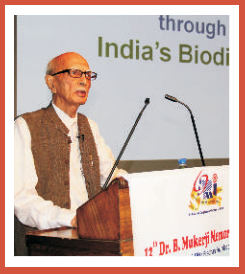
- बेस्ट ओरल प्रेज़ेन्टेशन अवार्ड फ्रॉम इण्डियन सोसायटी फॉर बोन एण्ड मिनरल रिसर्च

कु. मेधा दुबे (डॉ. मधु दीक्षित की छात्रा)

- बेस्ट पोस्टर अवार्ड, एसएफएफआर इंडिया–14 कांफ्रेंस ऑन रिसेंट ट्रेन्ड्स इन फ्री रेडिकल एण्ड एण्टिऑक्सिडेण्ट रिसर्च, लोनावाला

Notes

अन्य गतिविधियाँ



1 आयोजित प्रमुख कार्यक्रम

सीएसआईआर–सीडीआरआई का वार्षिक दिवस

सीएसआईआर–सीडीआरआई ने 17 फरवरी, 2013 को अपना 62वां वार्षिक दिवस समारोह अपने नये परिसर में मनाया। जिसमें सीएसआईआर के भूतपूर्व महानिदेशक, नैशनल रिसर्च प्रोफेसर, एसीएसआईआर के कुलाधिपति और ग्लोबल रिसर्च एलायंस के अध्यक्ष डॉ. आर.ए. मशेलकर मुख्य अतिथि थे और आईसीएमआर के भूतपूर्व महानिदेशक और विशिष्ट बायोटेक्नोलॉजी फेलो डॉ. निर्मल

कुमार गांगुली ने कार्यक्रम की अध्यक्षता की। सीएसआईआर–सीडीआरआई के निदेशक डॉ. तुषार कान्ति चक्रवर्ती ने मुख्य अतिथि तथा अन्य गणमान्य व्यक्तियों का स्वागत किया और प्रतिवेदित अवधि के दौरान सीडीआरआई की उपलब्धियों का विस्तृत ब्यौरा प्रस्तुत किया। उन्होनें प्रतिष्ठित सीडीआरआई पुरस्कार के विजेताओं की घोषणा की तथा लाइफ साइंसेज के लिए आईआईएससी, बंगलुरू के डॉ. बाल सुब्रमण्यम गोपाल और रसायन विज्ञान के लिए सीएसआईआर–एनसीएल के डॉ. डी. श्रीनिवास रेडड्री को विजेता घोषित किया और विजेताओं को बधाई दी।

अपने संबोधन में डॉ. आर.ए. मशेलकर ने खूबसूरत और विस्तृत नये परिसर के प्रति अपनी प्रसन्नता व्यक्त की जिसका स्वप्न नब्बे के दशक से देखा जा रहा था। उन्होंने अनुसंधान एवं विकास क्रिया–कलापों को वहन करने योग्य और पहुँच के अन्दर बनाने के लिये नवीन मॉडल की आवश्यकता पर जोर दिया जो सिस्टम के अन्दर से लिया जा सके तथा जो कार्य प्रवाह आधारित अथवा प्रौद्योगिकी प्रवाह आधारित नवीन कार्य हो। उन्होंने अपना व्याख्यान सीएसआईआर–सीडीआरआई की उपलब्धियों पर बधाई देते हुए तथा और अधिक प्रयासरत रहने की आशा करते हुए समाप्त किया। श्रोताओं ने खड़े होकर करतल ध्वनि के साथ उनके विचारों के प्रति आभार व्यक्त किया। तत्पश्चात् मंच पर अतिविशिष्ट अतिथियों द्वारा वार्षिक रिपोर्ट 2012–13 का विमोचन किया गया। साथ ही सर्वोत्तम कार्य निष्पादन करने वाले कर्मचारियों और छात्रों को वार्षिक पुरस्कार वितरित किये गये। केमिकल साइंसेज मे डॉ. एम.एम. धर सर्वोत्तम पीएच.डी. थीसिस पुरस्कार श्री नन्द लाल को और बायोलॉजिकल साइंसेज में श्री सौरभ श्रीवास्तव तथा सुश्री अंकिता मिश्रा को निदेशक का सराहना पुरस्कार प्रदान किया गया। इस वर्ष सीएसआईआर– सीडीआरआई ने डॉ. नित्यानन्द के परिवार द्वारा प्रायोजित 'सर्वश्रेष्ठ महिला शोधार्थी हेतु डॉ. स्वर्ण नित्यानन्द' पुरस्कार को प्रतिस्थापित किया तथा वर्ष–2013 का पुरस्कार सुश्री सविता लोचब को प्रदान किया। इसके पश्चात् इम्पैक्ट फैक्टर 5 से अधिक के प्रकाशनों को पुरस्कृत करने के साथ विदेशों में स्वीकृत पेटेण्ट को पुरस्कार के साथ सर्वोत्तम प्रौद्योगिकी पुरस्कार भी प्रदान किया गया। इसके बाद संस्थान सेवा के 25 वर्ष पूरे करने वाले कर्मचारियों को सम्मानित किया गया। डॉ. एन. के. गांगुली ने अपने अध्यक्षीय भाषण में संस्थान द्वारा किये गये कार्यों की सराहना की। नवीन परिसर को देखकर वह भी हर्षित हुए। उन्होंने कहा कि युवा वैज्ञानिकों के कंधों पर अपने पूर्व निदेशकों और नेतृत्वकर्ताओं के सुसंगत कार्यकर्मों को आगे ले जाने का दायित्व है क्योंकि यह संस्थान कल्पना से भी अधिक आधुनिक है और सब को भावी अनुसंधान टीम से अत्यधिक आशाएं हैं। डॉ. एस.के. रथ ने धन्यवाद प्रस्ताव के साथ कार्यक्रम का समापन किया।

करेन्ट ट्रेण्ड्स इन ड्रग डिस्कवरी एण्ड रिसर्च (सीटीडीडीआर–2013)

सीएसआईआर–सीडीआरआई में 25 से 28 फरवरी 2013 को मलेरिया और टी.बी. जैसी उपेक्षित बीमारियों की ओर ध्यान आकर्षित करते हुए 'करेन्ट ट्रेण्ड्स इन ड्रग डिस्कवरी एण्ड रिसर्च' (सीटीडीडीआर–2013) पर एक तीन दिवसीय संगोष्ठी का आयोजन किया गया। संगोष्ठी के पहले दिन मिनेसोटा विश्वविद्यालय के डॉ. आर.एम. मुथ्याला ने उपेक्षित उष्ण कटिबंधीय बीमारियों पर चर्चा की। डीएसआईआर के सचिव और सीएसआईआर के महानिदेशक प्रो. समीर के. ब्रह्मचारी ने सीएसआईआर की जनसाधारण के लिये सुलभ

स्वास्थ्य सेवाओं की खोज में तथा उसकी देखरेख के इस उद्देश्य हेतु ओपन सोर्स ड्रग डिस्कवरी (ओएसडीडी) की भूमिका पर चर्चा की। सीएसआईआर–सीएमएमएसीएस के वैज्ञानिक डॉ. टी.एस. बाल गणेश ने क्षयरोग में औषधि खोज की चुनौतियों की चर्चा की और यह बताया कि नवीन ओएसडीडी कार्यक्रम में क्षयरोग रोधी कम्पाउण्ड्स को विकसित करने के लिये सुविधाओ की एक श्रृंखला के माध्यम से डेटा शेयरिंग और सहायक परियोजनाओं के ओपन इनोवेशन मॉडल द्वारा समस्याओं को दूर किया जा सकता है।

सीटीडीडीआर–2013 सत्र के दूसरे दिन आईआईटी, दिल्ली के प्रो. हसनैन ने एक टी.बी. अभिकर्मक माइकोबैक्टीरियम ट्युबरकुलोसस के मॉलीक्युलर इन्फेक्शन बायोलॉजी के विषय में बताया। द्वितीय दिवस के अन्य विख्यात वक्ताओं में बेल्ज़ियम के डॉ. अनिल कौल, बोस इन्स्टीट्यूट, कोलकाता के प्रो. जे. बासु, पैडोवा विया गेबेली

यूनिवर्सिटी, इटली के डॉ. टिमोदी वेल्स, मेडिसिन फॉर मलेरिया वेन्चर (एमएमवी) प्रोग्राम के चीफ साइन्टिफिक ऑफिसर और आस्ट्रेलियन नैशनल यूनिवर्सिटी के अलेक्ज़ैन्डर जी मायर सम्मिलित थे। अनेक वैज्ञानिकों और शोध छात्रों ने तीन दिवसीय संगोष्ठी में भाग लिया। कार्यक्रम के दौरान 200 से अधिक पोस्टर्स प्रदर्शित किये गये। सीटीडीडीआर–13 के आयोजन सचिव डॉ. बिजोय कुण्डू के धन्यवाद प्रस्ताव के साथ कार्यक्रम का समापन हुआ।

डॉ हुसैन ज़हीर स्मृति ब्रिज टूर्नामेण्ट

सीएसआईआर के भूतपूर्व महानिदेशक डॉ. हुसैन ज़हीर की स्मृति में सीएसआईआर– सीडीआरआई के स्टाफ़ क्लब ने 19 से 21 फरवरी, 2013 को डॉ हुसैन ज़हीर स्मृति ब्रिज टुर्नामेन्ट का आयोजन किया। उद्घाटन समारोह में डॉ. सुष्मिता चक्रवर्ती मुख्य अतिथि थीं। इस अवसर पर हुसैन ज़हीर ब्रिज टूर्नामेन्ट के विषय में एक स्मारिका का विमोचन किया गया। टूर्नामेन्ट में कुल आठ टीमों ने भाग लिया जिनमें चार टीमें विभिन्न सीएसआईआर प्रयोगशालाओं की थीं और तीन टीमें लखनऊ ब्रिज एसोसिएशन की थीं। सीडीआरआई पेंशनर एसोसिएशन की एक टीम ने भी टूर्नामेन्ट में भाग लिया और खेल भावना का परिचय दिया।

एप्लिकेशन ऑफ मास एण्ड एनएमआर टेक्नीक्स पर कार्यशाला

सीएसआईआर–सीडीआरआई लखनऊ के ''परिष्कृत विश्लेषणात्मक उपकरण सुविधा'' (सैफ़) में दिनाँक 28–29 फरबरी, 2013 को ''एप्लिकेशन ऑफ मास एण्ड एनएमआर टेक्नीक'' पर एक कार्यशाला का आयोजन किया गया। भारत के विभिन्न भागों से 104 भागीदार इस कार्यशाला में सम्मिलित हुए। विषय विशेषज्ञों ने अत्याधुनिक मास एवं एनएमआर टेक्नीक पर व्याख्यान प्रस्तुत किये जिसमें वर्तमान स्टेट ऑफ आर्ट मास स्पेक्ट्रोमीट्री तकनीक के साथ–साथ मास स्पेक्ट्रोमीट्री के सशक्त भविष्य के उन्नत पाठ्यक्रमों के बारे भी बताया। कार्यशाला में स्टेट ऑफ आर्ट मास एवं एनएमआर तकनीक के बारे में नजदीक से जानने का सुनहरा अवसर प्रदान किया गया।

राष्ट्रीय सुरक्षा दिवस समारोह

सीएसआईआर–सीडीआरआई ने 4 मार्च 2013 को अपने नये परिसर में राष्ट्रीय सुरक्षा दिवस मनाया। इस अवसर पर सीएसआईआर–सीडीआरआई के वरिष्ठ सुरक्षा अधिकारी श्री आर.एस. देशवाल ने 'अग्नि सुरक्षा' पर एक व्याख्यान दिया। उसके पश्चात् एक सुरक्षा प्रतिज्ञा और अग्नि से बचाव पर लाइव डिमान्स्ट्रेशन प्रस्तुत किया गया। लाइव डिमॉन्स्ट्रेशन में बहुत से वैज्ञानिकों, तकनीकी कर्मचारियों और शोध छात्रों ने भाग लिया तथा कार्यस्थल में विभिन्न परिस्थितियों में सुरक्षा उपायों के विषय में जानकारी प्राप्त की।

तकनीकी कर्मचारी वर्ग II के लिए सक्षमता विकास कार्यक्रम

सीएसआईआर–सीडीआरआई, लखनऊ में सीएसआईआर–मानव संसाधन विकास केन्द्र, गाज़ियाबाद के सहयोग से लखनऊ स्थित सीएसआईआर अनुसंधान प्रयोगशालाओं जैसे– सीएसआईआर–सीडीआरआई, सीएसआईआर–सीमैप, सीएसआईआर–आईआईटीआर

और सीएसआईआर–एनबीआरआई के लिये 11 से 14 मार्च, 2013 को सक्षमता विकास कार्यक्रम का आयोजन किया गया। इस चार दिवसीय प्रशिक्षण कार्यक्रम का आयोजन तकनीकी कर्मचारियों की सक्षमता में वृद्धि करने के उद्देश्य से किया गया था। कार्यक्रम के दौरान विज्ञान एवं प्रौद्योगिकी विभाग के भूतपूर्व सलाहकार डॉ. लक्ष्मण प्रसाद ने भारतीय विज्ञान एवं प्रौद्योगिकी संगठनों और अनुसंधान एवं विकास संगठनों में तकनीकी सहयोग की भूमिका पर चर्चा की। सीएसआईआर–एचआरडीसी, गाज़ियाबाद के वैज्ञानिक श्री विनय कुमार ने बताया कि स्व–जागरूकता और व्यक्तिगत कुशलता कर्मचारियों की सक्षमता को सुधारने में मदद करती है। सीएसआईआर–सीडीआरआई के वैज्ञानिक श्री अभिषेक कुमार ने बताया कि किस प्रकार सूचना प्रौद्योगिकी उपकरण कार्यालय उत्पादकता में वृद्धि करते हैं। श्री बिरंची सारंग ने ईआरपी के विषय में सामान्य जानकारी दी। वरिष्ठ वैज्ञानिक डॉ. आमिर नाज़िर ने कार्यस्थल पर उत्पादकता में वृद्धि के लिए मस्तिष्क के अनुकूलन पर चर्चा की। सीएसआईआर–सीबीआरआई, रूड़की के वरिष्ठ प्रधान वैज्ञानिक डॉ. आर. चिमोटे ने प्रयोगशाला पर्यावरण में सुरक्षा और गुड लेबोरेटरी प्रैक्टिस के विषय पर व्याख्यान दिया। सीएसआईआर–एचआरडीसी के वरिष्ठ प्रधान वैज्ञानिक डॉ. मनु सक्सेना ने कार्यस्थल पर स्व–प्रभाव और टीम बिल्डिंग पर विचार व्यक्त किये। कार्यक्रम का समापन डॉ. मनु सक्सेना द्वारा संक्षिप्त विवरण,

सीएसआईआर– सीडीआरआई के निदेशक डॉ. टी.के. चक्रवर्ती के समापन भाषण और सीएसआईआर– सीडीआरआई के वरिष्ठ प्रधान वैज्ञानिक श्री विनय त्रिपाठी के धन्यवाद प्रस्ताव के साथ हुआ।

एंटरप्राइज संसाधन योजना (ईआरपी) प्रणाली पर प्रशिक्षण कार्यकम

एंटरप्राइज संसाधन योजना (ईआरपी) सिस्टम सूचना के आंतरिक और बाह्य प्रबन्धन को संपूर्ण संगठन में एकीकृत करते हैं। स्टाफ सदस्यों में जागरूकता लाने और कार्यान्वयन करने वाले अधिकारियों को प्रशिक्षित करने के लिये सीएसआईआर ने एनसीएल, पुणे के श्री टी.ए.बी. मुल्ला को प्रतिनियुक्त किया और उनके आगमन के दौरान सीएसआईआर– सीडीआरआई में 12–13 मार्च, 2013 को सामान्य जागरूकता और प्रशिक्षण कार्यक्रमों का आयोजन किया गया। सभी विभागाधयक्षों, अनुभाग अधिकारियों और सीएसआईआर– सीडीआरआई के अन्य कर्मचारियों ने इस प्रशिक्षण कार्यक्रम में भाग लिया। इसके अतिरिक्त सीएसआईआर–आईआईटीआर के वित्त एवं लेखा अनुभाग के अधिकारियों और कुछ वैज्ञानिकों ने भी इस दो दिवसीय प्रशिक्षणकार्यक्रम में भाग लिया।

केमिकल एण्ड बायोलॉजिकल एप्रोचेज़ इन ड्रग डेवलपमेन्ट एण्ड डिलीवरी स्ट्रैटजीज़ (सीबीएडी डीडीएस–2013) पर पांचवीं नाइपर (रायबरेली) सीएसआईआर–सीडीआरआई संगोष्ठी

केमिकल एण्ड बायोलॉजिकल ऐप्रोचेज़ इन ड्रग डेवलपमेन्ट एण्ड डिलीवरी स्ट्रैटजीज़ पर पांचवीं नाइपर (रायबरेली)–सीडीआरआई संगोष्ठी का आयोजन 21–23 मार्च, 2013 को सीएसआईआर–सीडीआरआई, सीतापुर रोड, लखनऊ के नये परिसर में एनएएसआई,

इलाहाबाद के सहयोग से किया गया। संगोष्ठी में प्रमुख वैज्ञानिकों और क्लीनीशियन्स के 20 आमंत्रित व्याख्यान और युवा छात्रों के लगभग 100 पोस्टर्स को सम्मिलित किया गया जिससे औषधि अनुसंधान एवं विकास के क्षेत्र में उनको अपने नवीन शोध कार्यो पर चर्चा करने के लिये एक मंच प्राप्त हुआ।

साइफ़ाइन्डर प्रशिक्षण कार्यक्रम

सीएसआईआर–सीडीआरआई ने साइफ़ाइन्डर के अनलिमिटेड साइमल्टेनियस यूज़र ऐक्सेस के लिये अंशदान किया है। अब अपने परिसर में लगे हुए किसी भी सिस्टम से प्रयोगकर्ता साइफ़ाइन्डर तक पहुँच सकता है। साइफ़ाइन्डर ने आसान और विस्तृत खोज के लिये कुछ नये फीचर्स भी सम्मिलित किये हैं। अतः इस मँहगे स्रोत के अधिकतम प्रयोग के लिये इसके नये एप्लिकेशन्स और सर्च सुविधाओं की एक झलक प्रदान करने के लिये 15 अप्रैल 2013 को दोनों परिसरों (पुराने एवं नये) में एक प्रशिक्षण सत्र का आयोजन किया गया।

विश्व जन्तु प्रयोगशाला दिवस समारोह

सीएसआईआर–सीडीआरआई, लखनऊ के राष्ट्रीय जन्तु प्रयोगशाला केन्द्र ने लेबोरेट्री एनिमल साइंस एसोसिएशन ऑफ इण्डिया (एसएएसएआई) के सहयोग से मानवता की सेवा के लिये प्रयोगशाला जन्तुओं के बलिदान की स्मृति में 24 अप्रैल, 2013 को विश्व प्रयोगशाला जन्तु दिवस मनाया। मानवता के साथ–साथ जन्तु कल्याण के लिये शिक्षा और अनुसंधान विज्ञान एवं प्रौद्योगिकी के लिये प्रयोगशाला जन्तुओं के कल्याण के लिये, देखरेख, नीतिशास्त्र एवं प्रयोग पर विभिन्न व्याख्यान प्रस्तुत किये गये।

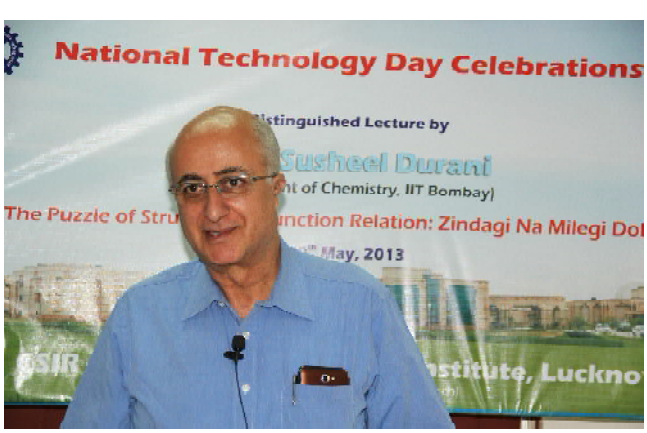
सीएसआईआर–सीडीआरआई–बीडी उत्कृष्टता केन्द्र द्वारा मल्टीकलर इम्यूनोफ़ीनोटाइपिंग पर फ्लो साइटोमीट्री कार्यशाला

मल्टीकलर इम्यूनोफ़ीनोटाइपिगं पर फ्लो साइटोमीट्री में सीएसआईआर–सीडीआरआई– बीडी उत्कृष्टता केन्द्र में 29 अप्रैल 2013 से 1 मई, 2013 तक एक कार्यशाला का आयोजन किया गया। इस कार्यशाला को मल्टीपल इम्यूनोफ़ीनोटाइपिंग पर विशेष महत्व देने के साथ आयोजित किया गया। भारत के विभिन्न संस्थानों से छः चुने हुए भागीदारों ने इस उन्नत प्रशिक्षण में भाग लिया। कार्यशाला मॉड्यूल के तीन दिनों के समय को व्याख्यान और प्रयोगात्मक सत्र में विभाजित किया गया था। व्याख्यान सत्र में बेसिक फ्लोसाइटोमीट्री के सभी पहलुओं के साथ–साथ इस क्षेत्र की उन्नत परिकल्पनाओं को भी सम्मिलित किया गया। सभी आवेदकों ने प्रशिक्षण में भाग लिया और मल्टीकलर इम्यूनोफ़ीनोटाइपिंग के आधार जैसे नमूने तैयार करना, प्रयोगात्मक कार्यान्वयन, डेटा विश्लेषण इत्यादि को सीखा। कार्यशाला का आयोजन डॉ. अमिताव मोहन्ती (बीडी इण्डिया प्रा. लि.) डॉ. मृगांक श्रीवास्तव (परजीवी विज्ञान प्रभाग, सीएसआईआर–सीडीआरआई) डॉ. अनिल गायकवाड़ और डॉ. मधु दीक्षित (औषधि प्रभाव विज्ञान

प्रभाग, सीएसआईआर–सीडीआरआई) द्वारा किया गया। कार्यशाला के प्रयोगात्मक सत्रा का आयोजन श्री ए.एल. विश्वकर्मा और श्रीमती मधु चतुर्वेदी (सैफ–सीएसआईआर– सीडीआरआई) ने किया। कार्यशाला के तीसरे दिन सभी सहभागियों को डॉ. बिजोय कुण्डू (सैफ–सीएसआईआर–सीडीआरआई) द्वारा प्रोटोकाल मैनुअल के साथ प्रशिक्षण के सफलतापूर्वक समापन का प्रमाणपत्र वितरित किया गया।

राष्ट्रीय प्रौद्योगिकी दिवस समारोह

सीएसआईआर–सीडीआरआई ने 10 मई, 2013 को राष्ट्रीय प्रौद्योगिकी दिवस मनाया। इस अवसर पर आईआईटी, मुंबई के प्रो. सुशील दुर्रानी ने ''द पज़ल ऑफ स्ट्रक्चर टु फंक्शन रिलेशनः जिंदगी न मिलेगी दोबारा'' पर एक प्रेरणायुक्त व्याख्यान प्रस्तुत किया। अपने अध्यक्षीय सम्बोधन में सीएसआईआर–सीडीआरआई के निदेशक डॉ. टी.के. चक्रवर्ती ने युवा शोधकर्ताओं को औषधि अनुसंधान के क्षेत्र में नई प्रौद्योगिकियों के विकास हेतु कठिन परिश्रम करने के लिये प्रेरित किया। कार्यक्रम का समापन विज्ञान एवं प्रौद्योगिकी प्रबंधन प्रभाग के प्रभागाध्यक्ष श्री विनय त्रिपाठी के धन्यवाद प्रस्ताव के साथ हुआ।



12वीं डॉ. बी. मुकर्जी स्मृति व्याख्यान

डॉ. बी. मुकर्जी स्मृति व्याख्यान श्रृंखला, सचिन एवं सिक्ता प्रधान फाउण्डेशन, यू.एस.ए. द्वारा प्रायोजित है। इनका आयोजन सीएसआईआर–सीडीआरआई के द्वितीय निदेशक स्व. डॉ. बिष्णुपद मुकर्जी की स्मृति में किया जाता है। सीएसआईआर–सीडीआरआई ने 22 मई, 2013 को 12वें बी. मुकर्जी व्याख्यान का आयोजन किया। डॉ.

टी.के चक्रवर्ती ने अतिथियों का स्वागत किया और पद्मश्री डॉ. नित्यानन्द ने डॉ. बी. मुकर्जी की मधुर स्मृतियों की चर्चा की। इस अवसर पर पद्म भूषण प्रो. सुखदेव मुख्य अतिथि थे और उन्होंने ''ए केमिस्ट्स जर्नी इन इण्डियाज़ बायोडाइवर्सिटी'' विषय पर एक व्याख्यान दिया। उन्होंने कहा कि विज्ञान ने वित्तीय प्रभाव के साथ मानव जीवन में बहुत सुधार किया है। रसायन विज्ञान ने कृषि, स्वास्थ्य और अन्य क्षेत्रों से जुड़ी हुई समस्याओं को सुलझाया है। व्याख्यान के पश्चात् सीएसआईआर–सीडीआरआई समाचार पत्र का विमोचन किया गया। डॉ. चक्रवर्ती ने स्मृति चिह्न भेंट करके अतिथियों को सम्मानित किया। कार्यक्रम का समापन विज्ञान एवं प्रौद्योगिकी प्रभाग के प्रभागाध्यक्ष श्री विनय त्रिपाठी के धन्यवाद प्रस्ताव के साथ हुआ।

संस्थान के शोध छात्रों के लिये फ्लोसाइटोमीट्री कार्यशाला

सीएसआईआर–सीडीआरआई बेकटन डिकिन्सन के अन्तर्गत ''सेन्टर ऑफ एक्सेलेंस इन फ्लोसाइटोमीट्री'' कार्यक्रम में 15–17 जुलाई, 2013 को एक कार्यशाला का आयोजन किया गया। इस कार्यशाला में 10 शोध छात्रों को प्रशिक्षण प्रदान किया गया (जो सीडीआरआई में पी.एच.डी. के प्रथम दो वर्षों में हैं)। अभ्यर्थियों का चयन उनके शोध समस्याओं में फ्लोसाइटोमीट्री की आवश्यकता पर आधारित था।

''प्रोटीन आइडेन्टीफ़िकेशन बाइ मास स्पेक्ट्रोमीट्री'' पर कार्यशाला

सीएसआईआर–सीडीआरआई लखनऊ के ''परिष्कृत विश्लेषणात्मक उपकरण सुविधा'' (सैफ़) में दिनाँक 24–26 जुलाई, 2013 को ''प्रोटीन आइडेन्टीफ़िकेशन बाइ मास स्पेक्ट्रोमीट्री'' पर एक कार्यशाला का आयोजन किया गया। इस कार्यशाला का उद्देश्य एमएस एनालिसिस और डेटा प्रोसेसिंग हेतु सैम्पल तैयार करना था। यह विशेष प्रकार का प्रशिक्षण नये शोधकर्ताओं को उनके अनुसंधान में एमएस एनालिसिस की आवश्यकता के अनुसार प्रदान किया गया था।

सीएसआईआर–सीडीआरआई में वृक्ष अंगीकरण अभियान का शुभारम्भ

वन महोत्सव के अवसर पर मर्मस्पर्शी क्षणों के मध्य केन्द्रीय औषधि अनुसंधान में एक नूतन अध्याय का आरंभ हुआ। संस्थान के वैज्ञानिकों एवं कर्मचारियों ने परस्पर सहयोग की भावना के उच्च मापदण्ड स्थापित करते हुए पर्यावरण संरक्षण के प्रति अपनी जागरूकता और समर्पण का परिचय दिया तथा संस्थान परिसर में स्वतः अंशदान से अपने प्रियजनों की स्मृति में वृक्षारोपण का आरंभ किया। वृक्ष अंगीकरण अभियान के अन्तर्गत संस्थान के सदस्यों से वृक्ष गोद लेने

की अपेक्षा की गयी थी जिसमें उत्साहपूर्वक भाग लेते हुए प्रथम चरण में लगभग 120 सदस्यों ने रुपये 750/– प्रतिवृक्ष का योगदान दिया और समाज को यह संदेश भी ज्ञापित किया कि सीएसआईआर–सीडीआरआई मात्रा औषधि अनुसंधान के क्षेत्र में ही अग्रणी नहीं, अपितु सामाजिक सरोकारों के प्रति भी जागरूक है। दिनांक 5 जुलाई, 2013, को संस्थान के निदेशक ने वृक्ष रोपित कर वृक्ष अंगीकरण अभियान का शुभारम्भ किया इस अवसर पर उन्होंने कहा कि प्रत्येक कार्य की सफलता सामूहिक समन्वय की भावना व उचित मार्गदर्शन पर निर्भर करती है। वृक्षारोपण अभियान के संयोजक श्री विनय त्रिपाठी व वरिष्ठ कार्यपालक अधिकारी डॉ एम.एन. श्रीवास्तव के सतत् प्रयास इस सफल अभियान हेतु बधाई के पात्र हैं।

सीएसआईआर–सीडीआरआई, लखनऊ में मस्तिष्क जागरूकता दिवस का आयोजन

मस्तिष्क जागरूकता अभियान एक राष्ट्रीय स्तर का आयोजन

है जो न्यूरो साइंस में हो रहे नये अनुसंधानों के प्रभावों को सामान्य जन तक पहुँचाने तथा वैज्ञानिकों, अध्यापकों एवं छात्रों को साथ लाने का प्रयास करता है। साथ ही यह मस्तिष्क स्वास्थ्य के सम्बन्ध में सामाजिक जागरूकता लाने का भी प्रयास करता है। इस संदर्भ में केन्द्रीय औषधि अनुसंधान संस्थान, लखनऊ ने छात्रों को शिक्षित एवं प्रेरित करने के लिए 14 अगस्त, 2013 को अपने नवीन परिसर में ''ब्रेन अवेयरनेस डे'' का आयोजन राष्ट्रीय मस्तिष्क अनुसंधान केन्द्र, मनेसर के सहयोग से किया गया। इस दौरान ''रिसेन्ट एडवांसेज़ इन सीएनएस डिस्आर्डर्स रिसर्च'' पर एक सेमिनार तथा 'ब्रेन फंक्शन एण्ड इट्स डिज़िजेस' पर एक प्रश्नोत्तरी प्रतियोगिता का आयोजन किया। इस कार्यक्रम में लखनऊ के 9 स्कूलों के लगभग 100 से अधिक छात्रा–छात्राओं ने भाग लिया एवं न्यूरोसाइंस के विशेषज्ञों से विचार–विमर्श किया। सेमिनार का शुभारंभ सीएसआईआर–सीडीआरआई, लखनऊ के निदेशक डॉ टी.के. चक्रवर्ती के स्वागतीय भाषण से हुआ। सेमिनार के प्रमुख वक्ता केजीएमयू, लखनऊ के डॉ राकेश मिश्रा, एसजीपीजीआई, लखनऊ के डॉ य.के. मिश्रा, एवं एनबीआरसी, मनेसर से आये डॉ पंकज सेठ ने रिसेन्ट एडवांसेज़ इन सीएनएस डिस्आर्डर्स रिसर्च के बारे में जानकारी दी। कार्यक्रम के विभिन्न सत्रों की अध्यक्षता डॉ. पी. के. सेठ, डॉ. राम रघुबीर एवं डॉ. गौतम पालित ने की तथा सेमिनार का समापन सीडीआरआई के पूर्व निदेशक डॉ बी.एन. धवन के समापन संबोधन से हुआ। सेमिनार के पश्चात् स्कूली बच्चों के लिये आयोजित क्विज़ कम्पटीशन में सीएमएस, अलीगंज, लखनऊ की टीम विजेता रही और लॉमर्टिनियर गर्ल्स कॉलेज, लखनऊ की टीम द्वितीय एवं केन्द्रीय विद्यालय, अलीगंज, लखनऊ की टीम तृतीय स्थान पर रही। भाग लेने वाले सभी प्रतियोगियों को प्रतिभागिता प्रमाण–पत्र प्रदान किया गया। कार्यक्रम का समापन वरिष्ठ वैज्ञानिक और कार्यक्रम के संयोजक डॉ पी.एन. यादव के धन्यवाद प्रस्ताव से हुआ।

सद्भावना दिवस समारोह

पूर्व प्रधानमंत्री स्वर्गीय राजीव गाँधी की स्मृति में संस्थान में 20 अगस्त, 2013 को ''सदभावना दिवस'' मनाया गया। सद्भावना की मूल विषयवस्तु सभी धर्मों, भाषाओं और क्षेत्रों के लोगों में राष्ट्रीय एकता और साम्प्रदायिक सामंजस्य को बढ़ाना है। सद्भावना दिवस को मनाने का कारण हिंसा से दूर रहना और लोगों में सद्भावना को प्रोत्साहन देना है। इस अवसर पर सीएसआईआर–सीडीआरआई में उपस्थित होकर सभी नें सद्भावना की शपथ ली कि वे बगैर किसी जाति, क्षेत्र, धर्म व भाषा के भेदभाव के भारत के सभी लोगों की भावनात्मक एकता और मेल–जोल के लिये काम करेंगे।

रियल टाइम मॉस स्पेक्ट्रोमीट्री टेक्नीक्स में ऐप्लिकेशन ऑफ़ डायरेक्ट एनालिसिस पर कार्यशाला

केमिकल और बायोलॉजिकल साइंसेज़ में मॉस स्पेक्ट्रोमीट्री सर्वाधिक महत्वपूर्ण विश्लेषणात्मक उपकरणों के साथ एक तेजी से विकसित होता हुआ अनुसंधान क्षेत्र भी है। इस तकनीक की विविधता ने हाल के वर्षों में अनुसंधानकर्ताओं का ध्यान आकर्षित किया है। इस तकनीक की प्रत्याशित प्रयोगकर्ताओं के मध्य जागरूकता बढ़ाने की आवश्यकता है। सैफ़, सीएसआईआर–सीडीआरआई ने ऐप्लिकेशन्स ऑफ़ डायरेक्ट एनालिसिज़ इन रियल टाइम मॉस स्पेट्रोमीट्री टेक्नीक्स

पर 24–25 सितम्बर, 2013 को एक कार्यशाला का आयोजन किया। भारत के विभिन्न भागों से 18 भागीदार इस कार्यशाला में सम्मिलित हुए। विषय विशेषज्ञों ने अत्याधुनिक मॉस स्पेक्ट्रोमीट्री टेक्नीक पर व्याख्यान प्रस्तुत किये जिसमें तकनीकी बारीकियों के महत्वपूर्ण विषय के साथ–साथ मॉस स्पेक्ट्रोमीट्री के सशक्त भविष्य की झलकियां भी प्रस्तुत की गयी।

हिन्दी सप्ताह

सीएसआईआर–सीडीआरआई ने संस्थान में हिन्दी में कार्य करने को प्रोत्साहन देने के लिये 16–23 सितम्बर, 2013 को 'हिन्दी सप्ताह' का आयोजन किया। समारोह का उद्घाटन मुख्य अतिथि,

उत्तर प्रदेश सरकार के पूर्व मुख्य सचिव डॉ. शम्भू नाथ ने किया। सप्ताह भर चलने वाले इस आयोजन के दौरान हिन्दी निबंध लेखन, हिन्दी अनुवाद, हिन्दी लेखन, हिन्दी आशुलिपि, हिन्दी वाद–विवाद प्रतियोगिता, राजभाषा प्रश्नोत्तरी और हिन्दी काव्य पाठ का आयोजन किया गया। समारोह का समापन पुरस्कार वितरण तथा ''कवि सम्मेलन'' के साथ किया गया।

71वां सीएसआईआर स्थापना दिवस समारोह और औषधि अनुसंधान में उत्कृष्टता हेतु सीएसआईआर–सीडीआरआई पुरस्कार–2013 का पुरस्कार समारोह

26 सितम्बर, 2013 को सीएसआईआर–सीडीआरआई का 71वां स्थापना दिवस मनाया गया। अखिल भारतीय आयुर्विज्ञान संस्थान, नई दिल्ली के प्रो. वाई.के. गुप्ता कार्यक्रम के मुख्य अतिथि थे। उन्होंने श्रोताओं को संबोधित किया और सीएसआईआर–सीडीआरआई द्वारा किये गये वैज्ञानिक योगदान की सराहना की। अपने अध्यक्षीय भाषण में उन्होंने क्लीनिकल परीक्षणों में आने वाली बाधाएं और उनके निवारण पर चर्चा की।

इस अवसर का मुख्य कार्यक्रम औषधि अनुसंधान में उत्कृष्टता हेतु 'सीएसआईआर–सीडीआरआई पुरस्कार–2013' से पुरस्कार प्राप्तकर्ताओं को सम्मानित किया जाना था। सीएसआईआर–सीडीआरआई पुरस्कार वर्ष 2004 से पुरस्कार दो श्रेणियों में दिया जाता है – बायोलॉज़िकल साइंसेज़ और केमिकल साइंसेज़ प्रत्येक पुरस्कार में रु0 20000/– का नकद पुरस्कार और एक प्रशस्ति पत्र दिया जाता है। बायोलॉजिकल साइंसेज में औषधि अनुसंधान में उत्कृष्टता हेतु वर्ष 2013 का प्रतिष्ठित सीएसआईआर–सीडीआरआई पुरस्कार आईआईएससी, बंगलौर के डॉ. बी. गोपाल को उनके कार्य ''स्ट्डीज़ ऑन सिग्मा फैक्टर/एण्टी सिग्मा कॉम्प्लेक्सेज़ रिवील ए मॉलीक्युलर रैशनेल फ़ॉर एम. ट्युबरकुलोसिस पर्सिस्टेन्स'' के लिये दिया गया जबकि केमिकल साइंसेज़ में यह पुरस्कार सीएसआईआर–एनसीएल, पुणे के डॉ. श्री निवास रेड्डी को उनके कार्य ''एफ़र्ट्स टु आइडेण्टीफ़ाई न्यू केमिकल एन्टिटीज़ फ़ॉर ट्रीटिंग मेटाबोलिक डिस्आर्ड्र्स एण्ड इन्फेक्शन्स'' पर दिया गया। दोनों पुरस्कार प्राप्तकर्ताओं ने अपनी अनुसंधान उपलब्धियों का प्रस्तुतिकरण किया।

मुख्य अतिथि प्रो. वाई.के. गुप्ता ने सीएसआईआर–सीडीआरआई न्यूज़लेटर (खण्ड 5 अंक 1, अप्रैल–सितम्बर, 2013) जारी किया और सीएसआईआर–सीडीआरआई के उन कर्मचारियों को सम्मानित किया जो सितम्बर 2012–अगस्त 2013 के मध्य सेवानिवृत्त हुए थे। इसके पश्चात् कर्मचारियों को भी सम्मानित किया गया जिन्होंने सीएसआईआर–सीडीआरआई की सेवा में 25 वर्ष पूर्ण कर लिये थे। सीएसआईआर–सीडीआरआई कर्मचारियों के उन बच्चों को सम्मानित किया गया जिन्होंने इण्टरमीडिएट बोर्ड परीक्षा में विज्ञान विषय में 90 प्रतिशत अंक प्राप्त किये। लखनऊ और इलाहाबाद विश्वविद्यालयों के लगभग 200 पोस्ट ग्रैजुएट और ग्रैजुएट छात्रों ने संस्थान का भ्रमण किया और वैज्ञानिकों से बातचीत की।

वेब ऑफ साइंस एवं साइटेशन विश्लेषण पर प्रशिक्षण सत्र

25 नवम्बर, 2013 को सीएसआईआर–सीडीआरआई के ज्ञान संसाधन केन्द्र ने थॉमसन रायटर के सहयोग से वेब ऑफ साइंस एण्ड साइटेशन एनालिसिज़ के सहयोग से एक प्रशिक्षण सत्र का आयोजन किया गया। प्रशिक्षण सत्र में बताया गया कि किस प्रकार 'वेब ऑफ साइंस' सभी वैज्ञानिकों और शोध छात्रों को अनुसंधान सामग्री अनुसंधान कार्य हेतु विस्तृत विवरण प्राप्त करने, अनुसंधान कार्य हेतु और अधिक दृष्यता प्राप्त करने, संबंधित रिकार्ड्स तक पहुँचनें और सक्षम सहयोगकर्ताओं और निधि प्रदाता एजेंसियों की अतिरिक्त सूचना और अन्य बहुत सी चीजों की अपेक्षित और संबंधित जानकारी देने में सहायक है। एण्डनोट वेब (बिबलियोग्राफी मैनेजमेन्ट टूल) और रिसर्चर आईडी पर भी प्रशिक्षण प्रदान किया गया।

सतर्कता जागरूकता सप्ताह

28 अक्टूबर से 2 नवम्बर, 2013 तक 'सतर्कता जागरूकता सप्ताह' मनाया गया। सीएसआईआर–सीडीआरआई के निदेशक द्वारा शपथ ग्रहण करवाने के साथ कार्यक्रम का शुभारंभ हुआ। सप्ताह भर चलने वाले समारोह में वाद–विवाद तथा निबन्ध प्रतियोगिता का भी आयोजन किया गया। कार्यक्रम का समापन सर्तकता पर व्याख्यान से हुआ।

वेस्टर्न ब्लॉट एण्ड इम्यूनोहिस्टोकेमिस्ट्री हेतु ऑप्टिमाइज़ेशन टेक्नीक्स पर सेमिनार

2 दिसम्बर, 2013 को वेस्टर्न ब्लॉट और इम्यूनोहिस्टोकेमिस्ट्री हेतु ऑप्टिमाइज़ेशन टेक्नीक पर एक दिवसीय सेमिनार का आयोजन किया गया। ऐबकैम की सीनियर साइंटिफिक सपोर्ट स्पेशलिस्ट डॉ. ऐन्जा हॉफ़मैन ने ऑप्टिमाइज़ेशन टेक्नीक्स फ़ॉर वेस्टर्न ब्लॉट और ऑप्टिमाइज़ेशन टेक्नीक्स फॉर आईएचसी पर व्याख्यान प्रस्तुत किये। डॉ. हॉफ़मैन ने इम्यूनोलॉजी के अनुसंधान क्षेत्र विशेष रूप से B और T सेल इम्यूनोलॉजी के क्षेत्र में सात वर्ष तक कार्य किया है।

2 विशिष्ट अतिथि

प्रतिष्ठित अतिथि

	गणमान्य अतिथि	व्याख्यान का शीर्षक	दिनांक
	**प्रो. रिचर्ड डि वॉगन–जोन्स** बर्डन सैन्डरसन कार्डियक साइंस सेन्टर, युनिवर्सिटी ऑफ ऑक्सफोर्ड, यूके	स्पेशियल आयन कपलिंग इन द हार्टः द की सब्सट्रेट फॉर एरिथमिया	08.02.2013
	**डॉ. शर्मिला माण्डे** जैव विज्ञान अनुसंधान एवं विकास, टीसीएस इनोवेशन लैब टाटा कंसल्टेन्सी सर्विस लिमिटेड, पुणे	माइक्रोबायोम एण्ड ह्यूमन हेल्थ : इनसाइट्स फ्रॉम मेटाजिनोमिक्स स्ट्डीज़	17.06.2013
	**प्रोफे. दीपांकर चटर्जी** मोलिक्यूलर बायोलॉजी यूनिट, इंडियन इंस्टिट्यूट ऑफ साइंस, बंगलुरू	स्ट्रक्चरल बेसिस फॉर न्यूक्लिक ऐसिड प्रोटीन रिकॉग्निशन	06.08.2013
	**प्रोफे. सर्जे मिग्नानी** वाइस प्रेसिडेंट, फ्रेन्च–जापानीज सोसाइटी फॉर फाइन एण्ड मेडिसिनल केमिस्ट्री	फ्रॉम स्माल–मोलिक्यॅल टू बायोकान्जुगेट्स वाया डेन्ड्रिमेरिक नेनोपार्टिकल्स एज़ न्यू एण्टि–कैंसर एजेण्ट्सः फीजिबिलिटी, चैलेन्जेज़ एण्ड अपॉर्च्युनिटीज़ फॉक्स अगेन्स्ट मैमथ!	20.11.2013

अन्य विशिष्ट अतिथि

	अतिथि	व्याख्यान का शीर्षक	दिनांक
1	**डॉ विकास कुमार** वास्कुलर बायोलॉजी सेक्शन/कार्डियोवास्कुलर प्रोटियोमिक्स सेन्टर, बोस्टन युनिवर्सिटी स्कूल ऑफ मेडिसिन, बोस्टन	डेसिफरिंग कार्डियक रिडोक्सोम यूसिंग मास स्पेक्ट्रोमीटरी बेस्ड प्रोटियोमिक्स	16.01.2013
2	**डॉ राजर्षि सामन्ता** मेक्स–प्लैन्क इंस्टीट्यूट ऑफ मोलिक्युलर फिजियोलॉजी, डॉर्टमण्ड, जर्मनी	C-H फन्क्शनलाइजेशनः ए शॉर्टकट टुवार्ड्स इम्पोर्टेन्ट स्केफोल्ड्स	16.01.2013
3	**डॉ पूजा नारंग** कियाजन इंडिया लिमिटेड	पीसीआर एर्रेः द रियल पायोनियर इन रियल–टाइम पीसीआर एनालिसिस ऑफ बायोलॉजिकल पाथवेज	31.01.2013
4	**डॉ मधुमौलि चटर्जी** डिविजन ऑफ ऱ्यूमेटॉलॉजी, बैथ इज़राइल डीकोनेस मेडिकल सेन्टर, हार्वर्ड मेडिकल स्कूल, बोस्टन	इल्वॉल्वमेन्ट ऑफ सेल एक्टिवेशन इन द पेथोजेनेसिस ऑफ द ऑटोइम्यून डिस्आर्डर ल्युपस	04.02.2013

	अतिथि	व्याख्यान का शीर्षक	दिनांक
5	**डॉ अंजन गुहाठाकुरता** डायरेक्टर, ट्रान्सलेशनल डेवलपमेन्ट इन्टिग्रेशन सेलजीन कार्पोरेशन, न्यू जर्सी, यूएसए	डिजीज़, प्रोसेस एण्ड पार्टनर्सः चेलेन्जेज़ ऑफ बायोमार्कर एण्ड डायग्नोस्टिक डेवेलपमेण्ट इन ऑन्कोलॉजी	08.02.2013
6	**डॉ ईशानी देब** डिपार्टमेंट ऑफ न्यूरोलॉजी, युनिवर्सिटी ऑफ न्यू मेक्सिको, यूएसए	टायरोसिन फोस्फेटेज STEP: ए पोटेंश्यिल टार्गेट फॉर प्रोटेक्शन अगेन्स्ट इश्चिमिक ब्रेन डेमेज	12.03.2013
7	**डॉ. शाहिद ज़मील** मुख्य कार्यकारी अधिकारी, वेलकम ट्रस्ट/डीबीटी इंडिया एलायंस	फेलोशिप फॉर बायोमेडिकल रिसर्च इन इण्डिया	07.06.2013
8	**डॉ. जयंत काराजगी** अध्यक्ष, आर एण्ड डी, अरबिंदो फार्मा	जेनेरिक ड्रग डिवलेपमेन्ट –एन इण्डस्ट्री वाला स्पीक टू अकादिमिसियन्स!	18.06.2013
9	**डॉ. एस प्रमानिक** निदेशक, आर एण्ड डी (फार्म्यूलेशन), एमक्योर फार्मास्यूटिकल्स लिमिटेड	QbD विथ स्पेशल फोकस ऑन लायोफिलाइजेशन	28.06.2013
10	**डॉ. पीटर कुकेनबर्ग** प्रोडक्ट स्पेशलिस्ट मेक्चेरी नागल, जर्मनी	इण्डोटॉक्सिन्स एण्ड ट्रांसफेक्शन – हाउ डिफ्फरेन्ट प्लाज्मिड प्रेप टेक्नोलॉजिस केन अफेक्ट ट्रांसफ्रेक्शन एफिसिएन्सिज़. द वर्ल्ड ऑफ आरएनए – न्यू वेज़ टु गेट योर आरएनए फॉर ड्रग डिस्कवरी/स्क्रीनिंग	04.07.2013
11	**डॉ. प्रोसेनजीत मण्डल** जोन्स हॉप्किन्स यूनिविर्सिटी, बाल्टिमोर, यू एस ए	गेट द मोलिक्युलर स्विच फॉर द सीक्रेशन ऑफ इन्सुलिन	10.07.2013
12	**डॉ. अरूण के शुक्ला** ड्यूक यूनिविर्सिटी मेडिकल सेन्टर, डरहम	स्ट्रक्चलर बेसिस ऑफ पी–अर्रेस्टीन डिपेन्डेन्ट रेग्युलेशन एण्ड सिग्नलिंग ऑफ जी प्रोटीन कपल्ड रिस्पेटर्स	22.07.2013
13	**डॉ. आशुतोष श्रीवास्तव** बेथ इज़रायल डेकोनेस्स मेडिकल सेंटर, हार्वर्ड मेडिकल स्कूल, बोस्टन, एमए	इन्हिबिशन ऑफ एचआईवी–1 वाया माड्यूलेशन ऑफ नॉवेल सायटोस्केलेटल एलिमेन्टस	19.08.2013
14	**डॉ. राधा के शांडिल्य** डिपार्टमेंट ऑफ ड्रग मेटाबॉलिज़्म, फार्माकोकाइनेटिक्स और पशु विज्ञान विभाग, एस्ट्रा ज़ेनेका भारत	चैलेन्ज़स इन डिस्कवरी ऑफ न्यू एण्टी टीबी एजेण्ट्स	20.08.2013
15	**डॉ. सीमा डांगवाल** हेन्नोवर मेडिकल स्कूल, हेन्नोवर, जर्मनी	miRNAs: नोवेल रेग्युलेटर ऑफ कार्डियोवास्कुलर एण्ड मेटाबोलिक डिसिजेज़	06.09.2013
16	**डॉ. रामिशेट्टी श्रीनिवास** एशेलमान स्कूल ऑफ फार्मेसी, यूनिविर्सिटी ऑफ नोर्थ कैरोलिना, यूएसए	लिपिड बेस्ड नैनोपार्टिकल्स फॉर ड्रग/वेक्सीन डिलेवरीः एप्लिकेशन इन कैंसर थेरेपी	09.09.2013
17	**श्री विकाश वोरा** वाटर्स इण्डिया (प्रा.) लिमिटेड	वाटर्स इफेक्टिव लिक्विड क्रोमेटोग्राफी मेथड डेवलपमेण्टल टूल्स	17.09.2013
18	**डॉ. निश्चल शर्मा** वाटर्स इण्डिया (प्रा.) लिमिटेड	वाटर्स लेटेस्ट क्रोमेटोग्राफी टेक्नोलोजी, अल्ट्रा परफार्मेन्स कन्वर्जेन्स क्रोमेटोग्राफी (UPC2) सिस्टम	17.09.2013

	अतिथि	व्याख्यान का शीर्षक	दिनांक
19	**डॉ. मिताली मुकर्जी** सीएसआईआर–आईजीआईबी, नई दिल्ली	आयुर्जीनोमिक्सः ए नोवेल इन्टिग्रेटिव एप्रोच फॉर आइडेण्टिफिकेशन ऑफ एक्सेस ऑफ ह्युमन वैरिएशन	18.10.2013
20	**प्रोफे. सुभाष सी. पाण्डे** न्यूरोसाइन्स एल्कोहालिज्म रिसर्च, यूनिविर्सिटी ऑफ इलिनॉइस, यूएसए	ऑफ टार्गेटिंग्स द एपिजीनोमिक टू डेवलप नोवेल ड्रग फॉर एल्कोहालिज्म ट्रीटमेंण्ट	06.11.2013
21	**डॉ. धर्मेंद्र कुमार सिंह** डिपार्टमेंन्ट ऑफ बायोलॉजिकल केमिस्ट्री,डेविड गेफेन स्कॅल ऑफ मेडिसिन, यूनिविर्सिटी ऑफ केलिफोर्निया, यूएसए	RECQL4: ए मेम्बर ऑफ RecQ हेलिकेजेज़ इन डीएनए रिपेयर एण्ड जीनोम स्टेबिलिटी	25.11.2013

छात्र प्रतिनिधि मण्डल

क्रम सं.	छात्र प्रतिनिधि मण्डल	सदस्य संख्या	दिनांक
1.	मोतीलाल नेहरू नैशनल इन्स्टीट्यूट ऑफ टेक्नोलॉजी, इलाहाबाद	42	20.03.2013
2.	जामिया हमदर्द यूनिविर्सिटी, नई दिल्ली	28	21.03.2013
3.	इन्दिरा गांधी नैशनल ट्राइबल यूनिविर्सिटी, अमरकंटक	39	03.04.2013
4.	इलाहाबाद यूनिविर्सिटी, इलाहाबाद	25	26.09.2013
5.	श्री रामेश्वर ग्रुप ऑफ इंस्टिट्यूशन्स, लखनऊ	175	26.09.2013
6.	ग्लोबल इन्स्टीट्यूट ऑफ फार्मास्यूटिकल एज्युकेशन एण्ड रिसर्च, काशीपुर, उत्तराखण्ड	23	01.10.2013
7.	डी. एम. कॉलेज ऑफ साइन्स, इम्फाल, मणिपुर	33	17.10.2013
8.	प्राणवीर सिंह इन्स्टीट्यूट ऑफ टेक्नोलॉजी, कानपुर	52	08.11.2013
9.	आर्मी पब्लिक स्कूल, फैजाबाद	46	20.11.2013
10	बायोटेक्नोलॉजी फिनिशिंग स्कूल, बायोटेक पार्क, लखनऊ	10	27.11.2013

3 संस्थान के वैज्ञानिकों द्वारा दिये गये व्याख्यान

डॉ. एस.के. पुरी

- टार्गेटिंग द डॉरमैन्ट 'हिप्नोज़ॉइट्स फॉर मलेरिया एलिमिनेशन', 19वीं आई.एस.सी.बी. इण्टरनैशनल कांफ्रेंस, मोहनलाल सुखाड़िया विश्वविद्यालय, उदयपुर, 04 मार्च, 2013

डॉ. ए.के. सक्सेना

- इन्टीग्रेटेड सब–स्ट्रक्चरल एण्ड कम्प्यूटेशनल एप्रोचेज़ इन ड्रग डिस्कवरी रिसर्च, इन्स्टीट्यूट ऑफ फ़ार्मेसी निरमा विश्वविद्यालय, अहमदाबाद, 19 जनवरी, 2013
- CADD इन ड्रग डिस्कवरी रिसर्च : सर्च ऑफ एण्टीथ्रॉम्बोटिक एजेण्ट्स, नेशनल वर्कशॉप कम ट्रेनिंग प्रोग्राम ऑन ''ड्रग डिज़ाइन एण्ड डिस्कवरी'', इन्स्टीट्यूट ऑफ लाइफ़ साइंसेज़, भुवनेश्वर, 20 फरवरी, 2013
- ड्रग डिज़ाइन, डिस्कवरी एण्ड डेवलपमेंटः एन ओवरव्यू ड्रग डिज़ाइन, डिस्कवरी एण्ड डेवलपमेंट, ग्लोबल इन्स्टीट्यूट ऑफ फ़ार्मास्युटिकल एजूकेशन एण्ड रिसर्च, काशीपुर, 2 मई 2013
- केमिस्ट्री इन हेल्थकेयर, इन्सपायर इंटर्नशिप साइंस कैम्प, सीतापुर, 23 मई, 2013
- केमिस्ट्री इन हेल्थ : एन ओवर व्यू, इन्सपायर इंटर्नशिप साइंस कैम्प, हरदोई, 11 जून, 2013
- सर्च ऑफ़ स्मॉल मॉलीक्यूल्स एज़ एण्टीट्यूबरकुलर एजेण्ट्सः CADD एण्ड रैशनल एप्रोचेज़, एस्ट्रा ज़ेनेका, बंगलुरू, 17 सितम्बर, 2013
- मॉडलिंग बाइन्डिंग एफ़िनिटी ऑफ़ स्टेरॉयड्स टु ज़ेब्राफ़िश सेक्स हॉर्मोन बाइन्डिंग ग्लोबलिन, कम्प्यूटेशनल मेथड्स इन टॉक्सीकॉलोजी एण्ड फ़ार्माकोलॉजी इन्टीग्रेटिंग इण्टरनेट रिसोर्सेज (CMTPI-2013) पर 7वीं अन्तर्राष्ट्रीय संगोष्ठी, एशियन हब फ़ॉर ई–ड्रग डिस्कवरी (AheDD), सियोल, साउथ कोरिया, 12 अक्टूबर, 2013
- स्ट्रक्चर एण्ड लिज़ेण्ड बेस्ड मॉडल्स इन ड्रग डिज़ाइन, वर्कशॉप ऑन रीसेन्ट ट्रेन्ड्स इन स्ट्रक्चरल बायोलॉजी एण्ड ड्रग डिज़ाइनिंग, बायोटेक पार्क, लखनऊ, 25 अक्टूबर, 2013
- *इन सिलिको* ड्रग डिज़ाइनः एन ओवर व्यू, ए वर्कशॉप ऑन मॉडलिंग एण्ड ड्रग डिज़ाइनिंग, कल्याणी विश्वविद्यालय, कल्याणी, 18 नवम्बर, 2013

डॉ. सी. नाथ

- थेराप्यूटिक टार्गेट्स फ़ॉर अल्ज़ाइमर्स डिजीज़ः करेण्ट स्टेटस एण्ड फ्यूचर, इन्टरनैशनल कांफ्रेंस ऑन 'नेवीगेटिंग फ़ार्माकोलॉजी टुवर्डस सेफ़ एण्ड इफ़ेक्टिव थेरेपी', इण्डियन फार्माकोलॉज़िकल सोसाइटी, नागपुर, 06 जनवरी, 2013

डॉ. मधु दीक्षित

- थ्रॉम्बोसिस एन ओवरव्यू, डीएसटी इन्स्पायर इण्टर्नशिप प्रोग्राम, एमिटी विश्वविद्यालय, लखनऊ, 24 जनवरी 2013
- 'रोल ऑफ़ कैलशियम इण्डिपैन्डेन्ट नाइट्रिक ऑक्साइड सिन्थेज़ इन न्यूट्रोफ़िल डिराइव्ड सिन्थिसिज़ ऑफ़ रिएक्टिव ऑक्सीज़न एण्ड नाइट्रोजन स्पिशीज़' पर फ्री रैडिकल रिसर्च सोसाइटी की वार्षिक बैठक, आईआईटीआर, लखनऊ, 30 जनवरी, 2013
- रिडक्शन इन हिपेटिक लाइपोजेनेसिस बाई सिलीमैरिन एमेलियोरेटेड फ़्रक्टोज़ इन्ड्यूज्ड इन्स्युलिन रेज़िस्टेन्स सिन्ड्रोम एण्ड मायोकार्डियल ईश्मिक रिपर्फ्यूज़न इंजरी इन रैट्स, इण्टरनेशनल कांफ्रेंस ऑफ़ कार्डियोमायोपैथी रिसर्च, पीजीआईएमईआर, चण्डीगढ़, 01 मार्च, 2013
- नाइट्रिक ऑक्साइड लेवल iNOS एक्सप्रेशन एण्ड इट्स रेगुलेशन इन क्रोनिक मायलायड ल्यूकीमिया पेशेण्ट्स, विलिज्यूफ, फ्रांस, 12 अक्टूबर, 2013
- मॉलीक्युलर मेकैनिज़्म्स इनवॉल्व्ड इन कोलैजन मीडिएटड प्लेटलेट एक्टिवेशन एण्ड देयर मॉड्युलेशन बाई एण्टीप्लेटलेट कम्पाउण्ड्स, पेरिस, फ्रांस, 14 अक्टूबर, 2013
- एविडेन्सेज़ फ़ॉर नाइट्रिक ऑक्साइड मीडिएटेड माइक्रोबियल किलिंग बाइ ह्यूमन न्यूट्रोफ़िल्स, नैन्सी, फ्रांस, (16 अक्टूबर, 2013)

डॉ. अनिल कुमार त्रिवेदी

- स्पर्मिसाइड्सः लोकल कॉन्ट्रासेप्टिव एजेण्ट्स,19वीं आईएससीबी, मोहन लाल सुखाड़िया विश्वविद्यालय, उदयपुर, 02 मार्च, 2013

डॉ. शैलजा भट्टाचार्य

- फ़ाइलेरियासिसः स्टेट्स टुवर्ड्स इरेडिकेशन, संजय गांधी पोस्ट ग्रैजुएट इन्स्टीट्यूट, लखनऊ, भारत, 07 सितम्बर, 2013

डॉ. अनुराधा दुबे

- एक्सपेरीमेन्टल मॉडल्स फ़ॉर लीशमैनिया रिसर्च, अपडेट ऑन क्लीनिकल, डायग्नॉस्टिक, केमोथेराप्यूटिक एन्टोमॉलोजिकल आस्पेक्ट्स ऑफ़ लीशमैनियासिस, श्रीलंका इन्स्टीट्यूट ऑफ डेवलपमेंट एडमिनिस्ट्रेशन (SLIDA) कोलम्बो, श्रीलंका, 26 मार्च, 2013
- स्ट्रैटजीज़ फ़ॉर डिवेलपिंग सेफ़ एण्ड इफ़ेक्टिव वैक्सीन्स अगेन्स्ट विसरल लीशमैनियासिस, कोलम्बो विश्वविद्यालय, श्रीलंका, 04 अप्रैल, 2013
- सर्च फ़ॉर सेफ़ एण्ड इफ़ेक्टिव वैक्सीन्स अगेन्स्ट विसरल लीशमैनियासिस–ए डिज़ीज़ ऑफ पॉवर्टी, लखनऊ विश्वविद्यालय, लखनऊ, 30 अक्टूबर, 2013

डॉ. आर. शुक्ला

- इन्वॉल्वमेन्ट ऑफ़ Nrf2 एण्ड NF-kB पॉथवेज़ इन द न्यूरोप्रोटेक्शन बाइ *बैकोपा मॉनिएरा* एण्ड मेलाटोनिन इन ओकेडेइक एसिड इन्ड्यूज्ड मेमोरी इम्पेयरमेन्ट मॉडल, एडवांसेज़ इन फ्री रैडिकल्स, रेडॉक्स सिग्नलिंग एण्ड ट्रांसलेशनल एण्टी ऑक्सीडेन्ट रिसर्च, लखनऊ, 01 फरवरी, 2013
- 'इन्स्युलिनः एन एमर्जिंग ट्रीटमेन्ट फॉर अल्ज़ाइमर्स डिज़ीज़ स्म्पिोज़िया, ग्लियल न्यूरोबायोलॉजी, इण्डियन एकेडमी ऑफ़ न्यूरोसाइंस' का 31वां सम्मेलन, इलाहाबाद विश्वविद्यालय, 27 अक्टूबर, 2013

डॉ. जे.के. सक्सेना

- प्लाज्मोडियम फेल्सिपेरम ट्रोसकीटोलेज एण्ड प्युरीन न्युक्लियोसाइड फास्फोराइलेज़: पोटेन्शियल ड्रग टार्गेट्स, 19वीं आईएससीबी इन्टरनैशनल कांफ्रेंस, उदयपुर, 05 मार्च 2013

डॉ. राकेश मौर्या

- रीसेन्ट एडवांसेज़ इन द एरिया ऑफ़ एण्टीडायबिटिक्स फ्रॉम मेडिसिनल प्लाण्ट्स इन नेशनल कांफ्रेंस ऑन ड्रग डिस्कवरी फ्रॉम नैचुरल प्रॉडक्ट्स, आणन्द, गुजरात, 9 जनवरी, 2013
- एप्लिकेशन ऑफ़ नैचुरल रिसोर्सेज़ एण्ड ट्रेडीशनल नॉलेज़ इन सर्च ऑफ़ पोटेन्शियल लीड्स फॉर द डेवलपमेंट ऑफ़ हर्बल मेडिसिन फ़ॉर द ट्रीटमेन्ट ऑफ़ स्ट्रेस, डायबिटीज़ एण्ड ओस्टियोपोरोसिस, इण्टरनेशनल वर्कशॉप ऑन ग्रीन इनीशिएटिव इन एनर्जी एनवायरनमेन्ट एण्ड हेल्थ, गौतम बुद्ध यूनिवर्सिटी, ग्रेटर नोएडा, 2 दिसम्बर, 2013

डॉ. नीरज सिन्हा

- मेटाबोनॉमिक्सः ए प्लेटफॉर्म फ़ॉर टेस्टिंग टॉक्सिसिटी, 19 इण्डियन सोसाइटी ऑफ़ केमिस्ट एण्ड बायोलॉजिस्ट इण्टरनैशनल कांफ्रेंस, उदयपुर, 4 मार्च, 2013

डॉ. आर.के. सिंह

- इन्वेंशन ऑफ़ ए न्यू ड्रग फ़ॉर पॉपुलेशन कन्ट्रोल इन इण्डिया लखनऊ, साइंस कांग्रेस (LUSCON-2013), बाबा साहब भीमराव अम्बेडकर यूनिवर्सिटी, लखनऊ, 20 मार्च, 2013
- ड्रग इन्ड्यूज्ड हेमाटोटॉक्सिसिटी एण्ड इट्स प्रिवेन्शन बाइ प्लाण्ट प्रॉडक्ट्स नैशनल कांफ्रेस ऑन एप्लिकेशन ऑफ़ नैचरल प्रॉडक्ट्स फॉर ह्यूमन हेल्थ एण्ड बायोरिमीडिएशन ऑफ़ पोल्यूटेन्ट्स, सेन्टर फ़ॉर एडवांस्ड स्ट्डीज़ (CAS), यूनिवर्सिटी ऑफ़ राजस्थान, जयपुर, 22 मार्च, 2013
- सीएसआईआर–सीडीआरआई एज़ पायनियर इंस्टीट्यूट इन द डेवलपमेंट ऑफ़ ड्रग्स अगेन्स्ट ट्युबरकुलोसिस, सेमिनार ऑन क्लीनिकल रिसर्च, बलरामपुर हॉस्पिटल, लखनऊ, 23 मार्च, 2013
- रेगुलेटरी एसपेक्टस ऑफ़ टॉक्सिसिटी स्ट्डीज़ फॉर न्यू ड्रग डेवलपमेंट इन इण्डिया, एथिक्स ऑन मेडिकल रिसर्च, डॉ. राम मनोहर लोहिया इंस्टीट्यूट ऑफ़ मेडिकल साइंसेज़, लखनऊ, 27 जुलाई, 2013
- इम्पॉर्टेन्स ऑफ़ ड्रग्स फ़ॉर द क्योर ऑफ़ लाइफ़ थ्रेटेनिंग डिजीज़ेज इन इण्डिया, ए लाइफ़ चेन्जिंग सेमिनार ''सक्सेस मन्त्रा'' फ़ॉर हेल्थ, वेल्थ एण्ड हैपीनेस, रामेश्वरम् इंस्टीट्यूट ऑफ़ टेक्नोलॉजी एण्ड मैनेजमेन्ट, लखनऊ, 4 अक्टूबर, 2013;

डॉ. बृजेश कुमार

- टूल्स एण्ड टेक्नीक्स इन मॉस स्पेक्ट्रोमीट्री, मॉस एण्ड एनएमआर टेक्नीक्स, पर कार्यशाला, सीएसआईआर–सीडीआरआई, लखनऊ, 28 जनवरी, 2013
- मॉस स्पेक्ट्रोमीट्री फ़ैसिलिटी इन सैफ़–सीडीआरआई एण्ड देयर एप्लिकेशन, एप्लिकेशन ऑफ़ DART MS टेक्नीक, 24 सितम्बर, 2013

डॉ. आर. रविशंकर

- स्ट्रक्चरल बायोलॉजी एण्ट इट्स एप्लिकेशन्स टु ड्रग डिज़ाइन, मॉलीक्युलर डायनमिक्स सिम्युलेशन्स एण्ड ड्रग डिज़ाइन, बायोटेक पार्क, लखनऊ, 2 मार्च, 2013;
- टुवर्ड्स डिस्कवरी ऑफ़ एण्टी टी.बी. इनहिबिटर्स दैटः डिसरप्ट एक्टिविटीज़ ऑफ़ द एसेन्शियल एम. ट्युबरकुलोसिस NAD डिपेन्डेन्ट डीएनए लिंगेस एण्ड इट्स इन्टरैक्टिंग पार्टनर्स, एमर्जिंग थीम्स इन ट्युबरकुलोसिस रिसर्च 18–20 जुलाई, आईआईएससी, बंगलौर, 20 जुलाई, 2013;
- टुवर्डस डिस्कवरी ऑफ़ एण्टी–टी.बी. इनहिबिटर्स, सीएसआईआर–ओएसडीडी, नई दिल्ली, 12 सितम्बर, 2013

- स्ट्रक्चरल बायोलॉजी एण्ड इट्स एप्लिकेशन्स टु ड्रग डिज़ाइन, कम्प्यूटर एडेड ड्रग डिज़ाइनिंग पर प्रथम राष्ट्रीय कार्यशाला, इन्टेग्रल विश्वविद्यालय, लखनऊ, 10 नवम्बर, 2013
- टार्गेट कम्पोनेन्ट्स ऑफ़ द BER पॉथवे एण्ड दोज़ रिस्पॉन्सिबल फ़ॉर एडैप्टेशन/मेन्टीनेन्स ऑफ़ TB पर्सिस्टेन्स एप्लिकेशन ऑफ़ एक्स–रे डिफ्रैक्शन फॉर ड्रग डिस्कवरी, पर 42वीं राष्ट्रीय सेमिनार, जे.एन.यू., नई दिल्ली, 23 नवम्बर, 2013

डॉ. जवाहर लाल

- प्री–क्लीनिकल फ़ार्माकोकाइनेटिक्स एण्ड टिश्यू डिस्ट्रीब्यूशन स्ट्डी ऑफ़ एण्टी–ट्युबरकुलर एज़ोलिल फ़ेनिल साइक्लोप्रॉपिल मिथेन, S010-399, इन रैट्स, 19वीं आई.एस.सी.बी. इण्टरनैशनल कांफ्रेंस, मोहनलाल सुखाड़िया विश्वविद्यालय, उदयपुर, राजस्थान, 05 मार्च, 2013
- फ़ार्माकोकाइनेटिक्सः कॉनसेप्ट्स एण्ड एप्लिकेशंस, सेमिनार कम वर्कशॉप ऑन कॉन्सेप्ट्स एण्ड एप्लिकेशंस ऑफ़ पी.के. एण्ड पी.डी. मॉडलिंग, बनारस हिन्दू विश्वविद्यालय, वाराणसी, 28 सितम्बर, 2013

डॉ. एस.के. रथ

- रिप्रोडक्टिव टॉक्सिसिटी ऑफ़ सैलिनोमाइसिन नैशनल सिम्पोज़ियम ऑन रिप्रोडक्टिव हेल्थ, बनारस हिन्दू विश्वविद्यालय, वाराणसी, 29 नवम्बर, 2014

डॉ. जे. वेंक्टेश प्रताप

- एक्स–रे क्रिस्टलोग्राफीः एन इन्ट्रोडक्शन, एमएमबी, बनारस हिन्दू विश्वविद्यालय, वाराणसी, मार्च, 2012

डॉ. अनिला द्विवेदी

- सर्च फ़ॉर डिफ़रेन्शियली एक्सप्रेस्ड एन्डोमीट्रियल प्रोटीन्स एसोसिएटेड विद अनएक्सप्लेन्ड इन फ़र्टिलिटी इण्टरनैशनल कांफ्रेंस ऑन रिप्रोमिक्स–ओमिक्स इन रिप्रोडक्शन एण्ड डेवलपमेंट, राजीव गांधी सेण्टर फॉर बायोटेक्नोलॉजी, त्रिवेन्द्रम, केरल, 6 फरवरी, 2013

डॉ. डी.एस. उपाध्याय

- नॉन ह्यूमन प्राइमेट्स इन बायोमेडिकल रिसर्च, ICLSA इण्टरनैशनल वर्कशॉप ऑन लैब एनीमल साइंस, सीएसआईआर–आईजीआईबी, नई दिल्ली, (28 नवम्बर, 2013)

डॉ. नुज़हत ए. कौशल

- प्लाज़मोडियम वाइवैक्सः करेण्ट सिनैरियो ऑफ़ वैक्सीन एण्ड डायग्नॉस्टिक, लखनऊ विश्वविद्यालय, लखनऊ, 30 अक्टूबर, 2013

डॉ. रेणु त्रिपाठी

- मलेरिया केमोथेरेपी : प्रेजेण्ट सिनेरियो एण्ड फ़्यूचर पर्सपेक्टिव्स, कोलकाता विश्वविद्यालय, 100वीं इण्डियन साइंस कांग्रेस, 04 जनवरी, 2013

डॉ. अमित मिश्रा

- ट्रांसलेशनल रिसर्च ऑन इनहेलेबल माइक्रोपार्टिकल्स कन्टेनिंग एण्टी ट्युबरकुलोसिस ड्रग्स, ट्रान्सलेशनल हेल्थ साइंसेज़ एण्ड टेक्नोलॉजी इंस्टीट्यूट, गुड़गांव, 10 जनवरी, 2013
- दवा की गुणवत्ता के यर्थाथवादी मानक, ऑल इण्डिया पीपुल्स साइंस कांग्रेस, लखनऊ, 26 फरवरी, 2013
- क्लीनिकल ट्रायल डिज़ाइन फॉर इन्हेल्ड थेरेपी ऑफ़ ट्युबरकुलोसिस इन इण्डिया, इन्हेलेशन एशिया 2013, हांगकांग, 27 जून, 2013
- ऑग्मेन्टिंग द मैक्रोफेज़ नाइट्रिक आक्साइड रिस्पॉन्स हु इन्ट्रासेल्युर *माइकोबैक्टीरियम ट्युबरकुलोसिस* इन्हेल्ड थेरेपीज़ फ़ॉर ट्युबरकुलोसिस, टोक्यो मीटिंग, टोक्यो, 01 अक्टूबर, 2013
- इनहेल्ड थेरेपीज़ फॉर ट्युबरकुलोसिस इन द रशियन रेगुलेटरी लैंडस्केप, इण्डियन फ़ार्मास्युटिकल एसोसिएशन सेमिनार ऑन नेज़ल एण्ड पल्मोनरी ड्रग डिलीवरी, मुंबई, 24 अक्टूबर, 2013
- इन्हेलेवल पार्टिकल्स टार्गेटिंग ड्रग्स अफ़ेक्टिंग होस्ट रिस्पॉन्सेज़ टु ट्युबरकुलोसिस, प्रो. (श्रीमती) एम.आर. बैचवाल विजिटिंग फ़ेलोशिप लेक्चर मुंबई, 25 अक्टूबर, 2013

डॉ. संजय बत्रा

- ट्रांज़िशनल मेटल कैटेलाइज़्ड सिंथिसिज़ ऑफ़ हेट्रोसाइकल्स, रीसेन्ट एडवान्सेज़ इन केमिकल सिंथिसिज़, इन्स्टीट्यूट ऑफ़ केमिकल टेक्नोलॉजी, उत्तर महाराष्ट्र विश्वविद्यालय, जलगांव, 23 अगस्त, 2013
- ट्रांजीशनल मेटल कैटेलाइज़्ड सिंथिसिज़ ऑफ़ हेट्रोसाइकल्स ऑफ़ बायोलॉजिकल इन्ट्रेस्ट, डिपार्टमेन्ट ऑफ़ केमिस्ट्री, आईआईटी मुंबई, मुंबई, 29 अगस्त, 2013
- ट्रांजीशनल मेटल केटलाइज़्ड सिंथिसिज़ ऑफ़ हेट्रोसाइकल्स ऑफ़ बायोलॉजिकल इन्ट्रेस्ट INDIGO कांफ्रेंस, रीजेन्सबर्ग यूनिवर्सिटी, रीजेन्सबर्ग, जर्मनी, 9 अक्टूबर, 2013
- ट्रांज़ीशनल मेटल कैटलाइज़्ड सिंथिसिज़ ऑफ हेट्रोसाइकल्स ऑफ़ बायोलॉजिकल इन्ट्रेस्ट, डिपार्टमेन्ट ऑफ केमिस्ट्री, आईआईटी गुवाहाटी, गुवाहाटी, 25 अक्टूबर, 2013

डॉ. अतुल गोयल

- पायरानोन डिराइव्ड फ्लूरोसेन्ट मोलिक्यूल फॉर ड्रग डेवलपमेंट एण्ड ऑर्गेनिक लाइट एमिटिंग डायोड्स, कॉन्फ्रेंस ऑन इमर्जिंग ट्रेन्ड्स इन डेवलपमेंट ऑफ ड्रग्स एण्ड डिवाइसेस, दिल्ली यूनिवर्सिटी, दिल्ली, 22 जनवरी, 2013

डॉ. टी. नरेन्दर

- एण्टी कैन्सर एजेण्ट्स फ्रॉम द इण्डियन मेडिसिनल प्लाण्ट्स, MEDCHEM-2013 (एडवांसेज इन एण्टीकैंसर ड्रग डिस्कवरी एण्ड डेवलपमेंट) डिपार्टमेन्ट ऑफ़ केमिस्ट्री, आईआईटी मद्रास, चेन्नई, 26 अक्टूबर, 2013

डॉ. जिमुत कान्ति घोष

- अण्डरस्टैण्डिंग द एमिनो एसिड सीक्वेन्स रिक्वाएरमेन्ट फॉर द एण्टी एण्डोटॉक्सिन प्रॉपर्टीज़ ऑफ एण्टी माइक्रोबियल पेप्टाइड्स, सिम्पोज़ियम ऑन बायोमॉलीक्युलर रिकगनिशन एण्ड केमिकल बायोलॉजी, SINP कोलकाता, 27 मई, 2013

डॉ. मनीष के. चौरसिया

- रोल ऑफ़ माइक्रोपार्टिकल्स इन ड्रग डिलीवरी, रीसेन्ट एडवांसेज़ इन ड्रग डिलीवरी, चंगा, गुजरात, 21 फरवरी, 2013
- डिज़ाइन ऑफ़ नैनोमेडिसिन्स फ़ॉर स्पेसिफ़िक डिलीवरी, नैनोबायोटेक्नोलॉजीः एन इमर्जिंग फ्यूचर टेक्नोलॉजी फ़ॉर नैनोमेडिसिन्स, गुरू रामदास खालसा इंस्टीट्यूट ऑफ़ साइंस एण्ड टेक्नोलॉजी एण्ड फॉर्मेसी, जबलपुर, 13 अप्रैल, 2013
- नैनोपार्टिकुलेट सिस्टम्स फ़ॉर कन्ट्रोल्ड एण्ड टार्गेटेड ड्रग डिलीवरी, ADINA इंस्टीट्यूट ऑफ़ फ़ार्मास्युटिकल साइंसेज़, सागर, 18 जून, 2013
- पर्सपेक्टिव्स ऑफ ड्रग डिलीवरी थ्रू नैनोकैरियर्स इन एन्हांसिंग टार्गेट सेलेक्टिविटी, आर.के.डी.एफ., यूनिवर्सिटी, भोपाल, 14 नवम्बर, 2013

डॉ. आशीष अरोड़ा

- एनएमआर सोल्यूशन स्ट्रक्चर्स ऑफ यूकैरयॉटिक ADF/कॉफिलिन्स, यूनिवर्सिटी ऑफ़ मुम्बई, 14 जनवरी, 2013
- कम्पैरिज़न ऑफ़ सोल्यूशन स्ट्रक्चर्स एण्ड डायनामिक्स ऑफ़ फ़ोर यूकैरयॉटिक ADF/कॉफ़िलिन्स, आईआईटी बॉम्बे, मुम्बई, 04 फरवरी, 2013
- 1D,2D एण्ड 3D NMR स्पेक्ट्रोस्कोपी फ़ॉर रिसर्च मेथडॉलॉज़ी इन केमिस्ट्री कोर्स, एकैडमिक स्टाफ़ कॉलेज, स्कूल ऑफ केमिस्ट्री, सम्बलपुर विश्वविद्यालय, ओडिशा, 28 मई, 2013
- इमर्जिंग थीम्स इन टीबी रिसर्च, आई.आई.एस.सी., बंगलुरू, 19 जुलाई, 2013
- रीसेन्ट ट्रेण्ड्स इन स्ट्रक्चरल बायोलॉजी एण्ड ड्रग डिज़ाइन, बायोटेक पार्क, लखनऊ, 25 अक्टूबर, 2013

डॉ. के.वी. शशिधरा

- डिस्कवरी ऑफ़ नैचुरल एण्ड नेचर लाइक मॉलीक्यूल्स एज़ पोटेन्शियल लीड्स, नैचुरल प्रॉडक्ट्स एफ़िनिटी ग्रुप, स्क्रिप्स इन्स्टीट्यूशन ऑफ़ ओशिनोग्राफ़ी, यूनिवर्सिटी ऑफ़ कैलिफ़ोर्निया, सैन डिएगो, यूएसए, 12 अप्रैल, 2013

डॉ. रितु त्रिवेदी

- ब्रिजिंग द गैप बिटवीन, ट्रेडीशनल एण्ड मॉडर्न मेडिसिन इन द फ़ाइट अगेन्स्ट ओस्टियोपोरोसिस, रीसेन्ट एडवांसेज़ इन बायोकेमिस्ट्री एण्ड बायोटेक्नोलॉजीः एप्लिकेशंस इन हेल्थ, एनवायसमेन्ट एण्ड एग्रीकल्चर, लखनऊ 29 अक्टूबर, 2013

डॉ. दिव्या सिंह

- इम्यून रिस्पॉन्सेज़ एण्ड बोन लॉसः द एस्ट्रोजन लिंक, 5वीं नाइपर (रायबरेली)–सीडीआरआई संगोष्ठी, लखनऊ, 21 मार्च, 2013

डॉ. अरूण कुमार त्रिवेदी

- E3 युबिक्विटिन लाइगेज Fbw7 अटेन्यूएट्स GCSFR सिग्नलिंग बाय टारगेटिंग GCSFR फॉर डिग्रेडेशन, चतुर्थ इन्टरनैशनल कांफ्रेन्स ऑन स्टेम सेल्स एण्ड कैंसर, हाफ्टीन इन्स्टीट्यूट, मुम्बई, 22 अक्टूबर 2013
- C/EBPα प्रोटीन रेग्युलेशन बाय यूबिक्विटिनेशन, कन्वोकेशन वीक सीएसजेएमयू, कानपुर, 23 सितम्बर 2013

डॉ. मनोज कुमार बर्थवाल

- 'रोल एण्ड रेगुलेशन ऑफ़ एक्स्ट्रासेल्युलर सिग्नल–रेगुलेटेड काइनेज़ ड्यूरिंग स्मूद मसल प्रॉलिफ़रेशन एण्ड एथरोस्क्लेरोसिस' कार्डियोमायोपैथी रिसर्च पर अन्तर्राष्ट्रीय सम्मेलन, चण्डीगढ, 2 मार्च, 2013

डॉ. कुमारवेल जगवेलु

- इण्डोथिलियल रेगुलेशन ऑफ़ फ़ाइब्रोसिस एसोसिएटेड एन्जियोजेनेसिस इन लिवर, AU-KBC, चेन्नई, 14 दिसम्बर, 2013

मेनिका सचदेव

- प्री–पैटर्निंग इन मैमेलियन ऊसाइट्स, नेशनल सिम्पोज़ियम ऑन रीसेन्ट एडवांसेज़ इन रिप्रोडक्टिव हेल्थ ऑर्गनाइज़्ड वाई डिपार्टमेन्ट ऑफ़ जूआलॉज़ी, बनारस हिन्दू विश्वविद्यालय, वाराणसी, 30 नवम्बर, 2013

डॉ आमिर नाज़िर

- डायटरी इण्टरवेन्शन्स एज़ इन्ट्रिन्ज़िक एपिजेनेटिक फ़ैक्टर्स फ़ॉर न्यूरोडिजेनरेटिव डिज़ीज़ेज़: स्ट्डीज़ एम्पलॉइंग ट्रांसजेनिक *सी.एलेगैन्स* मॉडल, नेशनल इन्स्टीट्यूट ऑफ़ फूड टेक्नोलॉजी, एंटरप्रिन्योरशिप एण्ड मैनेजमेण्ट, मिनिस्ट्री ऑफ़ फूड प्रॉसेसिंग इण्डस्ट्रीज़, भारत सरकार, सोनीपत, हरियाणा 16 नवम्बर, 2013

डॉ. संजीव कनौजिया

- लिक्विड क्रोमैटोग्राफ़ी–मॉस स्पेक्ट्रोमीट्री एण्ड इट्स एप्लिकेशंस, वर्कशॉप ऑन मॉस एण्ड एनएमआर टेक्नीक्स, सीएसआईआर–सीडीआरआई, लखनऊ, 28 जनवरी, 2013

डॉ. संजीव के. शुक्ला

- एनएमआर स्पेक्ट्रोस्कोपी: एन इन्ट्रोडक्शन एण्ड एप्लिकेशन्स, वर्कशॉप ऑन मॉस एण्ड एनएमआर टेक्नीक्स, सीएसआईआर–सीडीआरआई, लखनऊ, 28 जनवरी, 2013
- एनएमआर स्पेक्ट्रोस्कोपी एण्ड इट्स एप्लिकेशंस, बी.बी.डी.यू. स्कॉलर्स कॉनक्लेव–2013, बाबू बनारसी दास विश्वविद्यालय, लखनऊ, 12 जुलाई, 2013

डॉ. कल्याण मित्रा

- प्रिपरेशन एण्ड इमेजिंग ऑफ़ बायोलॉज़िकल स्पेसीमेन्स इन स्कैनिंग इलेक्ट्रॉन माइक्रोस्कोपी वर्कशॉप ऑन स्कैनिंग इलेक्ट्रॉन माइक्रोस्कोपी इन लाइफ़ साइंसेज़ एट नैशनल इन्स्टीट्यूट ऑफ़ कॉलरा एण्ड एन्ट्रिक डिज़ीज़ेज़, आईसीएमआर, कोलकाता, 7 फरवरी, 2013
- क्रायो–इएम ऑफ़ मैको मॉजीक्युलर एसेम्बलीज़ एण्ड 3D इमेज़ रिकॉन्सट्रक्शन, वर्कशॉप ऑन क्रायो–इलेक्ट्रॉन माइक्रोस्कोपी इन लाइफ़ साइंसेज़ एट नैशनल इन्स्टीट्यूट ऑफ़ कॉलरा एण्ड एन्ट्रिक डिज़ीज़ेज़, आईसीएमआर, कोलकाता, 01 जुलाई, 2013
- क्रायो–इलेक्ट्रॉन माइक्रोस्कोपी ऑफ़ एनवेलप्ड वायरसेज़, इण्टरनैशनल कॉनफ्रेन्सेज़ ऑन इलेक्ट्रॉन माइक्रोस्कोपी एण्ड 34वीं एनुअल मीटिंग ऑफ इण्डिया, साहा इंस्टीट्यूट ऑफ न्यूक्लियर फ़िज़िक्स–2013, कोलकाता, 04 जुलाई, 2013

डॉ. प्रेम प्रकाश यादव

- स्पाइरोएनेलेटेड, 1,2,4–टरइऑक्ज़ेन्स एज़ एण्टीमलेरियल्स, 19वीं आईएससीबीसी ऑन रीसेन्ट एडवांसेज़ एण्ड करेण्ट ट्रेण्ड्स इन केमिकल एण्ड बायोलॉजिकल साइंस, उदयपुर, 5मार्च, 2013

बैथुला सुरेन्दर रेड्डी

- टार्गेटेड कैन्सर थेरेपीज: ए केमिकल फ़ार्मास्युटिक्स एप्रोच, नैनोबायोटेक्नोलॉजी: एन एमर्ज़िंग फ्यूचर टेक्नोलॉजी फ़ॉर नैनो मेडिसिन, गुरू रामदास खालसा इंस्टीट्यूट ऑफ़ साइंस एण्ड टेक्नोलॉजी, फ़ार्मेसी, जबलपुर, 13 अप्रैल, 2013

डॉ. रबी शंकर भट्टा

- एलसी–एमएस/एमएस बेस्ड डिरिप्लीकेशन टूल इन आइडेन्टीफ़िकेशन ऑफ़ प्लाण्ट सेकेण्डरी मेटाबोलाइट, 148वीं ओमिक्स ग्रुप इण्टरनैशनल कांफ्रेंस एण्ड एक्ज़ीबिशन ऑन फ़ार्माकॉग्नोसी, फ़ाइटोकेमिस्ट्री एण्ड नैचुरल प्रॉडक्ट्स, हैदराबाद, 22 अक्टूबर, 2013

डॉ. श्रीपति राव कुलकर्णी

- कोलैबोरेटिव आर एण्ड डी एण्ड आईपी इश्यूज़ इन टेक्नोलॉजी ट्रांसफ़र, वर्कशॉप ऑन इन्टेलेक्चुअल प्रॉपर्टी एण्ड इनोबेशन मैनेजमेन्ट इन नॉलेज एरा, SHIATS, इलाहाबाद, 7 नवम्बर, 2013
- पेटेण्ट सर्च टूल्स एण्ड ड्राफ्टिंग ऑफ़ पेटेण्ट्स, सेमिनार ऑन इन्टेलेक्चुअल प्रापर्टी राइटस: इम्पॉर्टेन्स एण्ड प्रोटेक्शन प्रॉसेस, डॉ. राम मनोहर लोहिया अवध यूनिवर्सिटी, फैज़ाबाद, 13 दिसम्बर, 2013
- पेटेण्ट प्रोटेक्शन सिस्टम इन इण्डिया एण्ड एब्रॉड, रिफ्रेशर कोर्स ऑन अपडेट्स ऑफ़ इन्टेलेक्चुअल प्रॉपर्टी राइट्स सीएसटी–यू.पी., लखनऊ, 17 दिसम्बर, 2013

डॉ. राजेश कुमार झा

- TGF-β एण्ड इन्टेग्रिन ह्ह अफ़ेयर्स ड्यूरिंग एम्ब्रयो इम्प्लानटेशन इण्टरनैशनल कांफ्रेंस ऑन रिप्रोमिक्स–ओमिक्स इन रिप्रोडक्शन एण्ड डेवलपमेंट, राजीव गांधी सेन्टर फ़ॉर बायोटेक्नोलॉजी, त्रिवेन्द्रम, केरल, 08 फरवरी, 2013
- इन्टीमेसी ऑफ़ इन्टेग्रिन 8 विद एम्ब्रयो इम्प्लांटेशन इण्टरनैशनल कांफ्रेंस ऑन प्राटियामिक्स एण्ड बायोइन्फ़ॉर्मेटिक्स, (प्रोटियॉमिक्स –2013) फ़िलाडेल्फ़िया पीए, यूएसए, 16 जुलाई, 2013;

डॉ. विवेक वी. भोंसले

- क्लीनिकल फेज़ ऑफ़ ड्रग डेवलपमेंट: रीसेन्ट चेंजेज़ इन रेग्युलेशन्स, नाइपर (रायबरेली)–सीडीआरआई सिम्पोज़ियम ऑन केमिकल एण्ड बायोलॉजिकल एप्रोचेज़ इन ड्रग डेवलपमेंट एण्ड डिलीवरी स्ट्रैटजीज़, लखनऊ 23 मार्च, 2013

डॉ. एच.के. बोरा

- लेबोरेट्री एनिमल एक्सपेरीमेन्टेशन टेक्नीक्स, आरआरआईयूएम यूनिवर्सिटी ऑफ़ कश्मीर, श्रीनगर, 9 नवम्बर, 2013

4 विदेश यात्रा एवं प्रतिनियुक्तियां

वैज्ञानिक का नाम	देश	यात्रा का उद्देश्य (प्रतिनियुक्ति की अवधि)
डॉ. ए.के. सक्सेना	दक्षिण कोरिया	अन्तर्राष्ट्रीय विचार गोष्ठी (सीएमटीपीआई–2013) में व्याख्यान देने के लिए (8–12 अक्टूबर, 2013)
डॉ. मधु दीक्षित	फ्रांस	यूरोपीय संघ–भारत विज्ञान, टेक्नोलॉजी और नवाचार दिवस–2013 में व्याख्यान देने के लिए (8–12 अक्टूबर, 2013)
डॉ जे. एस. श्रीवास्तव	यूएसए	बैठक में भाग लेने के लिए (19 से 22 मई, 2013)
डॉ. अनुराधा दुबे	श्री लंका	कोलम्बो विश्वविद्यालय में बैठक में भाग लेने के लिए (24 मार्च से 6 अप्रैल, 2013)
डॉ. नेबैद्य चट्टोपध्याय	कोरिया	आमंत्रित व्याख्यान देने के लिए (9–13 सितम्बर, 2013)
डॉ. नीलू सिंह	श्रीलंका	कार्यशाला में भाग लेने के लिए (25 से 28 मार्च, 2013)
	ब्राजील	अन्तर्राष्ट्रीय लीशमेनियासिस कांग्रेस *वर्ल्डलीश 5* में भाग लेने के लिए (13 से 17 मई, 2013)
डॉ. अतुल कुमार	यूएसए	रासायनिक एब्सट्रेक्ट सेवा (सीएएस) द्वारा आमंत्रित सलाहकार परिषद की बैठक में भाग लेने के लिये (22 अप्रैल, 2013)
	यूएसए	रासायनिक एब्सट्रेक्ट सेवा (सीएएस) द्वारा आमंत्रित सलाहकार परिषद की बैठक में भाग लेने के लिये (4–5 नवम्बर, 2013)
डॉ. अमित मिश्रा	हांगकांग	इन्हेलेशन एशिया 2013 में भाग लेने के लिए (26 से 28 जून, 2013)
	जापान	टीबी के लिए इन्हेल्ड (साँस) चिकित्सा पर व्याख्यान देने के लिए (1 से 3 अक्टूबर, 2013)
श्री प्रदीप कुमार	पुर्तगाल	अन्तर्राष्ट्रीय सम्मेलन में भाग लेने के लिए (22 से 26 जुलाई, 2013)
	जर्मनी	आमंत्रित व्याख्यान देने के लिए (26 से 31 जुलाई, 2013)
	स्वीडन	आमंत्रित व्याख्यान देने के लिए (31 जुलाई से 4 अगस्त, 2013)
डॉ. जवाहर लाल	जर्मनी	पीके/पीडी मॉडलिंग में NONMEM के प्रयोग पर प्रशिक्षण के लिए (26 अगस्त से 20 सितम्बर, 2013)
डॉ. संजय बत्रा	जर्मनी	सतत् भविष्य के लिए उन्नत जैव संश्लेषण पर भारत–जर्मन ग्रेजुएट स्कूल (इंडिगो) के अनुसंधान सम्मेलन में व्याख्यान देने के लिए (6 से 10 अक्टूबर, 2013)
डॉ. रवि शंकर अम्पापति	स्विट्जरलैण्ड	एनएमआर पर ट्रेनिंग कोर्स हेतु (18–22 मार्च, 2013)
डॉ. प्रेम नारायण यादव	फ्रांस	यूरोपीय संघ–भारत विज्ञान, टेक्नोलॉजी और नवाचार दिवस–2013 में व्याख्यान देने के लिए (10–14 अक्टूबर, 2013)
डॉ. राजेन्द्र सिंह	यूएसए	अमेरिकी ह्यूमन जेनेटिक्स सोसायटी की वार्षिक बैठक में भाग लेने के लिए (22–26 अक्टूबर, 2013)
डॉ. सारिका	यूएसए	दक्षिण–पश्चिमी मेडिकल सेन्टर, टेक्सास विश्वविद्यालय, में शोध करने के लिए (30 अक्टूबर, 2013 से 29 अक्टूबर, 2014)
डॉ. आमिर नाज़िर	फ्रांस	अन्तर्राष्ट्रीय सम्मेलन में शोधपत्र प्रस्तुत करने के लिए (10 से 12 सितम्बर 2013)
डॉ. वहाजुद्दीन	यूएसए	ऐसलमैन स्कूल ऑफ फार्मेसी में ट्रेनिंग के लिए (13 जनवरी 2013 से 12 जनवरी 2014)
डॉ. राजेश कुमार झा	यूएसए	अन्तर्राष्ट्रीय सम्मेलन (प्रोटिओमिक्स– 2013) में भाग लेने के लिए (15 से 17 जुलाई)
श्री हर्ष मोहन गौनियाल	स्विट्जरलैण्ड	एनएमआर पर ट्रेनिंग कोर्स हेतु (18–22 मार्च, 2013)

5 विशिष्ट वैज्ञानिक समितियों की सदस्यता

डॉ. एस. के. पुरी

- **सदस्य साइंटिफिक एडवाइज़री कमेटी:** (1) वेक्टर कंट्रोल रिसर्च सेंटर, पुदुच्चेरी (2) इंस्टीट्यूशनल एनिमल एथिक्स कमेटी, एनिमल सप्लायर, लखनऊ
- **उपाध्यक्ष:** इण्डियन सोसाइटी फॉर पेरासिटोलॉजी

डॉ. तुषार कान्ति चक्रवर्ती

- **सदस्य:** (1) अमेरिकन केमिकल सोसाइटी, यू.एस.ए. (2) सीनियर साइंस कमेटी, ओएसडीडी; (3) केमिकल साइसेंज सेक्शनल कमेटी, इण्डियन अकादमी ऑफ साइंसेज; (4) सेक्शनल कमेटी III इन केमिकल साइंसेज, द इण्डियन नेशनल साइंस अकादमी (5) प्रोग्राम एडवाइज़री कमेटी (आर्गेनिक केमेस्ट्री) डीएसटी; (6) स्टियरिगं कमेटी, नेशनल बायो–रिसोर्सेज डेवलपमेंट बोर्ड डीबीटी; (7) सब–कमेटी आफॅ स्पॉन्सर्ड स्कीम्स रिसर्च कमेटी, सीएसआईआर; (8) एक्सपर्ट कमेटी, ड्रग्स एण्ड फार्मास्यूटिकल्स रिसर्च प्रोग्राम, डीएसटी; (9) ड्रग्स टेक्निकल एडवाइज़री बोर्ड, मिनिस्ट्री ऑफ हेल्थ एंड फैमिली वेलफेयर; (10) टेक्निकल एडवाइज़री कमेटी, टेक्नोलॉजी डेवलपमेण्ट एण्ड यूटीलाईजेशन प्रोग्राम फॉर वूमेन, डीएसआईआर; (11) हाई पॉवर्ड कमेटी, एनएमआईटीएलआई प्रोजेक्ट्स, सीएसआईआर;
- **सदस्य संपादक मंडल:** (1) इण्डियन जर्नल ऑफ केमेस्ट्री, बी; (2) इण्डियन जर्नल ऑफ बायाकेमेस्ट्री एण्ड बायोफिजिक्स; (3) दि नेचुरल प्रोडक्ट्स जर्नल

डॉ ए.के. सक्सेना

- **सदस्य:** (1) अमेरिकन केमिकल सोसाइटी, यू.एस.ए. (2) एक्सपर्ट कमेटी, मिनिस्टरी ऑफ केमिकल एंड फर्टीलाइजर, डिपार्टमेन्ट ऑफ फार्मस्यूटिकल्स इंडिया); (3) आइएनडी, डायरेक्टरेट जनरल ऑफ हेल्थ सर्विसेज, ऑफिस ऑफ ड्रग्स कन्ट्रोलर जनरल (इंडिया); (4) रीच इंडिया टास्क फोर्स, डिपार्टमेन्ट ऑफ केमिकल एडं पैट्रोकेमिकल्स, गवर्नमेन्ट ऑफ इंडिया; (5) बोर्ड ऑफ इन्टरनैशनल चैटरिटेबल फाउन्डशेन्स (साइन्टिफिक पार्टनरशिप) कोऑर्डिनेटिंग बोर्ड रशिया; (6) बोर्ड ऑफ डायरेक्टर्स, अमेरिकन बिब्लियोग्राफी इंक. यूएसए (7) स्क्रीनिंग–कम–टेक्निकल इवेल्यूशन कमेटी फॉर नेशनल अवार्ड्स फॉर आर एण्ड डी एफर्ट्स इन इन्डस्ट्री; (8) मेनेजमेण्ट कमेटी ऑफ एम. एम. एस. बिरला हॉस्टल ऑपरेटेड बाइ मोतीलाल मेमोरियल सोसाइटी
- **यूजीसी नॉमिनी:** एडवाइजरी कमेटी, स्पेशल असिस्टेन्स प्रोग्राम; (1) डिपार्टमेन्ट ऑफ केमिस्ट्री, सौराष्ट्र युनिवर्सिटी, राजकोट; (2) डिपार्टमेन्ट ऑफ केमिस्ट्री, एपीएस युनिवर्सिटी, रीवा
- **सचिव:** क्यूएसएआर सोसाइटी ऑफ इंडिया
- **पेटेंट इवेल्यूटर:** करंट ड्रग्स लिमिटेड, यूके

डॉ. सी. नाथ

- **सदस्य:** (1) रिसर्च काउंसिल (डीजी द्वारा नामित), सीएसआईआर – इण्डियन इंस्टीटयूट ऑफ टाक्सीलॉजिकल रिसर्च (आईआईटीआर), (2) एक्सपर्ट कमेटी फॉर बायोथेरेप्यूटिक प्रोडक्ट्स, ड्रग्स कन्ट्रोलर जनरल (इंडिया) मिनिस्ट्री ऑफ हेल्थ, भारत सरकार (3) अकादमिक काउंसिल जे. एन.यू , नई दिल्ली, (4) एडवाइज़री कमेटी फॉर आईएनडी प्रमिशन, ड्रग कंट्रोलर जनरल ऑफ इण्डिया (5) इंस्टीट्यूशनल एथिक्स कमेटी,एसजीपीजीआई एमएस, लखनऊ (6) इंस्टीट्यूशनल एनिमल एथिक्स कमेटी, केजीएमयू, लखनऊ
- **अध्यक्ष:** डिपार्टमेन्टल अकादमिक एडवाइज़री कमेटी एमएस(फार्मा) फार्मास्यूटिक्स, नाईपर, रायबरेली

डॉ. मधु दीक्षित

- **अध्यक्ष:** द साइटोमीट्री सोसायटी, इण्डिया
- **सदस्य:** (1) डीबीटी (आरसीजीएम) कमेटी, (2) फेलो सिलेक्शन कमेटी, नेशनल अकादमी ऑफ साइंसेज (3) सीएसआईआर (ऑर्गेनिक एण्ड मेडि. केमिस्ट एण्ड केमिकल टेक्नो. आरसी) कमेटी, (4) आईसीएमआर–पीआरसी कमेटी, (5) एथिक्स कमेटी, केजीएमयू, लखनऊ (6) एनिमल एथिक्स कमेटी,एसजीपीजीआई एमएस, लखनऊ, (7) एथिक्स कमेटी, सेन्टर ऑफ बायोमेडिकल मेग्नेटिक रेजोनेन्स, लखनऊ
- **सदस्य संपादक मंडल:** (1) इण्डियन जर्नल फार्माकोलॉजी (2) प्रोसिडिंग्स ऑफ द नैशनल एकेडेमी साइन्सेस इंडिया (सेक्शन बी)
- **असेसर:** (1) नेशनल असेसमेन्ट एण्ड एक्रिडेशन काउन्सिल

डॉ. ए.के. द्विवेदी

- **सदस्य:** (1) ड्रग्स पैनल न्यू ड्रग्स मैन्युफैक्चरिंग लाइसेंसीज़, डाइरेक्ट्रेट ऑफ मेडिकल एण्ड हेल्थ सर्विसेज़, यू.पी. (2) एक्सपर्ट सब–कमेटी फॉर प्रोडक्ट डेवलपमेंट ऑफ ड्रग

फ्रॉम नेचुरल सोर्सेस, इण्डियन काउन्सिल ऑफ मेडिकल रिसर्च

- **संयुक्त सचिवः** इण्डियन सासोइटी ऑफ बायोलॉजिस्ट् एण्ड केमिस्ट्स, लखनऊ

डॉ. असीम धटक

- **फेलोः** इण्डियन कॉलेज ऑफ फिजिशियन्स
- **इलेक्टेड काउन्सलरः** एक्सिक्युटिव कमेटी ऑफ साउथ एशियन चैप्टर ऑफ अमेरिकन कॉलेज ऑफ क्लिनिकल फार्माकोलॉजी, मुम्बई

डॉ. पी एम एस चौहान

- **सचिवः** इण्डियन सासोइटी ऑफ बायोलॉजिस्ट एण्ड केमिस्ट्स्, लखनऊ

डॉ. अनुराधा दुबे

- **सदस्य संपादक मंडलः**(1) जर्नल ऑफ बायोमेडिकल रिसर्च; (2) बायोमेड सेन्ट्रल, इन्फेक्शस डिजीज़ज (ओपन एक्सेज़)

डॉ. जे.के. सक्सेना

- **सचिवः** द इण्डियन सोसायटी ऑफ पैरासिटालॉजी
- **उपाध्यक्षः** इण्डियन सोसायटी ऑफ बायोलॉजिस्ट एण्ड केमिस्ट्स
- **सदस्य संपादक मंडलः** एशियन पैसिफिक जर्नल ऑफ ट्रॉपीकल मेडिसिन
- **सह संपादक :** जर्नल एप्लाइड बायोसाइन्स
- **सदस्यः** एक्सपर्ट कमेटी फॉर केमिकल एण्ड फार्मास्यूटिकल साइंसेज़, यूपीसीएसटी, लखनऊ

डॉ. आर.पी. त्रिपाठी

- **सदस्य संपादक मंडलः**(1) एआरकेआईवीओसी, (2) जर्नल ऑफ ऑर्गेनिक बाइलॉजिकल केमिस्ट्री

श्री विनय त्रिपाठी

- **सदस्यः** डिपार्टमेन्ट ऑफ हेल्थ रिसर्च, इण्डियन काउन्सिल ऑफ मेडिकल रिसर्च

डॉ. डी.एस. उपाध्याय

- **सदस्यः** (1) सीपीसीएसईए सब–कमेटी फॉर रिहैबिलिटेशन आफॅ लेबोरेटरी एनीमल्स; (2) लाइव स्टॉक फीड, इक्विपमन्ट्स एण्ड सिस्टम, सेक्शनल कमेटी, एफएडी, ब्यूरो ऑफ इण्डियन स्टैन्डर्ड, नई दिल्ली; (3) वेटेनरी काउंसिल ऑफ इण्डिया; (4) यूपी वेटेनरी कॉन्सिल, लखनऊ (5) इंस्टीट्यूशनल एनिमल एथिक्स कमेटी, आईवीआरआई, सीएसआईआर–सीमैप, सीएसआईआर–आईआईटीआर, इन्टिग्रल यूनिवर्सिटी, एनिमल हसबेंडरी डिपार्टमेंट, लखनऊ
- **सीएसआईआर नामिनीः** नेशनल इंस्टीट्यूट ऑफ एनीमल वेलफेयर एमओइएफ, गवर्नमेन्ट ऑफ इंडिया

डॉ. एम. एन. श्रीवास्तव

- **सदस्यः** बोर्ड ऑफ पैनल फॉर पीएससी ऑन आर एण्ड डी ऑफ सेन्ट्रल सेक्टर स्कीम फॉर कन्सर्वेशन डेवलपमेन्ट एण्ड सस्टेनेबल मैनेजमेन्ट ऑफ मेडिसिनल प्लांट्स, नेशनल मेडिसिनल प्लांट्स बोर्ड, (आयुष), मिनिस्ट्री ऑफ हेल्थ एंड फैमिली वेलफेयर, गवर्नमेन्ट ऑफ इंडिया

डॉ. समन हबीब

- **सदस्यः** (1) एनीमल साइंसेज़ रिव्यू कमेटी, सीएसआईआर, नई दिल्ली, (2) सिलेक्शन कमेटी फॉर सीएसआईआर नेहरू पोस्ट डॉक्टरल फेलोज़ (लाईफ साइंसेज़)

डॉ. जवाहर लाल

- **सदस्य संपादक मंडलः** अमेरिकन जर्नल ऑफ मॉडर्न क्रोमेटोग्राफी, यूएसए
- **कार्यकारी सदस्यः** इण्डियन सोसायटी ऑफ बायोलॉजिस्ट एण्ड केमिस्ट्स, लखनऊ

डॉ. आर. रविशंकर

- **सदस्यः** वर्किंग ग्रुप ऑन न्यू टीबी ड्रग्स (डब्ल्यूजीएनडी)

डॉ. वाई.एस. प्रभाकर

- **संपादक :** जर्नल ऑफ केमिस्ट्री, हिन्दावी पब्लिशर्स
- **संयुक्त सचिव एवं सदस्य कार्यकारी समितिः** इण्डियन क्रिस्टलोग्राफिक एसोसिएशन

डॉ. श्रीकांत कुमार रथ

- **चयनित संयुक्त सचिवः** इण्डियन सोसाइटी फॉर सेल बायोलॉजी (2011–13)
- **सदस्य संपादक मंडलः** टॉक्सीकोलोजी इन्टरनैशनल

डॉ. अमित मिश्रा

- **सदस्यः** एक्सपर्ट कमेटी ऑन ट्यूबरक्युलोसिस, डिपार्टमेंट ऑफ बायोटेक्नोलॉजी
- **उपाध्यक्षः** एशियन फेडरेशन ऑफ फार्मास्यूटिकल साईन्सेज

डॉ. संजय बत्रा

- **सदस्यः** (1) काउन्सिल ऑफ एनओएसटी, इन्डिया (2011–2014) (2) गवर्निंग काउंन्सिल, केमिकल रिसर्च सोसाइटी ऑफ इंडिया, बैंगलुरू (3) प्रोजेक्ट एडवाइज़री कमेटी फॉर केमिकल साइंसेज़ कमेटी फास्ट ट्रैक, डीएसटी एसईआरबी

डॉ. अतुल कुमार

- **सदस्यः** ग्लोबल एडवाइजरी बोर्ड मेम्बर ऑफ साइफाइन्डर, केमिकल एब्स्ट्रेक्ट्स सर्विस, अमेरिकन केमिकल सोसाइटी, यूएसए

डॉ. अतुल कुमार

- **सदस्य कार्यकारी समितिः** इण्डियन बायोफिजिकल सोसाइटी

डॉ. कुमकुम श्रीवास्तव

- **सदस्य कार्यकारी समितिः** इण्डियन सोसाइटी फॉर पेरासिटोलॉजी

डॉ. मो. इमरान सिद्दीकी

- **सदस्यः** (1) एडवाइज़री कमेटी फॉर बायोटेक्नोलॉजी, (2012–2015) काउंसिल ऑफ साइंस एण्ड टेक्नोलॉजी, सीएसटी यूपी

डॉ. पी.आर. मिश्रा

- **सदस्य संपादक मंडलः** (1) रिसेन्ट पेटेण्ट्स इन ड्रग डिलीवरी एण्ड फाम्युलेशन (बेन्थम साइंसेज) (2) जर्नल ऑफ फार्मास्यूटिकल एण्ड बायोमेडिकल साइंसेज़

डॉ. डी. हंसदा

- **सदस्यः** (1) वेस्ट बंगाल वेटरनरी काउन्सिल, कॉस्टिट्यूट अन्डर वेटरनरी काउन्सिल ऑफ इण्डिया (2) लाइव स्टॉक फीड, एक्विप्मेंट्स एण्ड सिस्टम, सेक्शनल कमिटी, एफएडी, बीआईएस, नई दिल्ली

डॉ. वहाजुद्दीन

- **सदस्य संपादक मंडलः** (1) जर्नल ऑफ बायोइक्विवैलेन्स एण्ड बायोअवैलेबिलिटी; (2) एनालिटिकल फार्मास्यूटिक एक्टा; (3) फार्मास्यूटिकल रेगुलेटरी अफेयर्स

डॉ. जे. आर. गाईन

- **फेलोः** एसोसिएशन ऑफ बायोटेक्नोलॉजी एंड फार्मेसी, गुन्टूर

डॉ. एच.के. बोरा

- **सदस्यः** असम वेटरनरी काउन्सिल, कॉस्टिट्यूट अन्डर वेटरनरी काउन्सिल ऑफ इण्डिया

Notes

THE STAFF

ACTING DIRECTOR
Sunil Kumar Puri, M.Sc., Ph.D., FNASc,

DIRECTOR
Tushar Kanti Chakraborty, MSc, Ph.D., FNA, FASc, FNASc (Voluntary retirement on 31/12/2013)

R & D DIVISIONS/UNITS

BIOCHEMISTRY

Chief Scientist
Sudhir K. Sinha, M.Sc., Ph.D.
J K Saxena, M.Sc., Ph.D
A.K. Balapure, M.Sc., Ph.D.
Gitika Bhatia, M.Sc., Ph.D.

Senior Principal Scientist
A.K. Srivastava, M.Sc., Ph.D., *In-Charge*
Neena Goyal, M.Sc., Ph.D.
Neeloo Singh, M.Sc., Ph.D.
Vinita Chaturvedi, M.Sc., Ph.D.

Principal Scientist
Sabyasachi Sanyal, M.Sc., Ph.D.

Senior Scientist
A.K. Tamrakar, M.Sc., Ph.D.
Arun Kumar Trivedi, M.Sc., Ph.D.
Dipak Datta, M.Sc., Ph.D.

Scientist
Jayant Sarkar, M.V.Sc., Ph.D.

Sr. Technical Officer (3)
Ramesh Sharma, M.Sc., Ph.D.
B. Maity, M.Sc., Ph.D.

Technical Officer
Ajay Singh Verma, M.Sc.

Technical Assistant
Shyam Singh, M.Sc.
Ishbal Ahmad, M.Sc.
Sanjeev Meena, M.Sc.
Priyanka Trivedi, M.Sc.
Karthik R. M.Sc.

Sr. Technician (2)
Suresh Yadav
Hori Lal
Chandramool

Sr. Technician (2)
Ram Pal Rawat

Lab. Assistant
Ramesh Chandra
Noor Jehan

BOTANY

Sr. Principal Scientist
M.N. Srivastava, M.Sc., Ph.D.

Principal Scientist
K.R. Arya, M.Sc., Ph.D. *In-Charge*

Senior Scientist
D.K. Mishra, M.Sc., Ph.D.

Scientist
Vineeta Tripathi, M.Sc., Ph.D.

Technical Officer
Savita Tripathi, M.Sc.

Sr. Technician (2)
J.K. Joshi, M.Sc.

Lab. Assistant
Devi Dutt
Makhan Lal
Gopi
Satya Narain

Lab Attendant (1)
R.C. Maurya
Lakhana Devi
N.K. Khanduri
Ashok Kumar

CLINICAL & EXPERIMENTAL MEDICINE

Chief Scientist
S.P.S. Gaur, M.B.B.S., M.D.,
A. Ghatak, M.B.B.S., M.D., MNAMS, FICP, MACCP, *In-Charge*
J.S. Srivastava, M.B.B.S., M.D., D.M., M.H.Sc.
M. Abbas, M.Sc., Ph.D. (Biometry & Statistics)

Scientist
Vivek Vidyadhar Bhosale, M.B.B.S., M.D.

Principal Technical Officer
Mukesh Srivastava, M.Sc., Ph.D. (Biometry & Statistics)

Technical Assistant
Shail Singh, M.Sc., Ph.D.

Sr. Technician (2)
M.P.S. Negi (Biometry & Statistics)

Sr. Steno
Mohd. Sufiyan

Lab. Attendant (1)
Savitri Devi

Lab. Assistant
K.K. Yadav (Retired on 31/07/2013)
Umesh Kumar

ENDOCRINOLOGY

Chief Scientist
Naibedya Chattopadhyay, M.Sc., Ph.D.

Senior Principal Scientist
Anila Dwivedi, M.Sc., Ph.D., *In-Charge*
Gopal Gupta, M.Sc., Ph.D.

Principal Scientist
F.W. Bansode, M.Sc., Ph.D.
Durga Prasad Mishra, M.Sc., Ph.D.

Senior Scientist
Divya Singh, M.Sc., Ph.D.
Syed Musthapa, M.Sc., Ph.D.
Ritu Trivedi, M.Sc., Ph.D.
Rajender Singh, M.Sc., Ph.D.
Monika Sachdev, M.Sc., Ph.D.

Scientist
Rituraj Konwar, M.V.Sc., Ph.D.
Rajesh Kumar Jha, M.Sc., Ph.D.

Sr. Technical Officer (3)
J.P. Maikhuri, M.Sc., Ph.D.

Sr. Technical Officer (2)
Shakti Kitchlu (Retired on 28/02/2013)
Mohini Chhabra, B.Sc., CLSc.
Balvir Singh, M.Sc.

Technical Assistant
Konika Gupta, M.Sc.
Jaspreet Kaur, M.Sc.
Amar Deep Lakra

Sr. Technician (2)
P.K. Bhattacharya
Chattar Pal

Sr. Technician (1)
Geet Kumar Nagar

Lab. Assistant
N.P. Misra
B.P. Mirsa
R.G. Pandey

Lab Attendant (2)
Mahesh Chandra Tewari

Lab. Attendant (1)
Nabbulal
Ram Karan
Pradeep Singh

MEDICINAL AND PROCESS CHEMISTRY DIVISION

Chief Scientist
S.B. Katti, M.Pharm., Ph.D.
A.K. Saxena, Ph.D., (Retired on 31/12/2013)
Bijoy Kundu, M.Sc., Ph.D., *In-Charge,*
Ram Pratap, M.Sc., Ph.D. Supervising Scientist *In-Charge*, SAIF
Rakesh Maurya, M.Sc., Ph.D.
Arun K Sinha, M.Sc., Ph.D.
R.P. Tripathi, M.Sc., M.Phil, Ph.D.

Senior Principal Scientist
Kanchan Hajela, M.Sc., Ph.D.
W. Haq, M.Sc., Ph.D., *In-Charge, Other Lab Services & Supervising Scientist In-Charge, LES*

Y.S. Prabhakar, M.Sc., Ph.D.
Arun K. Shaw, M.Sc., Ph.D.
P.M.S. Chauhan, M.Sc., Ph.D.
V.L. Sharma, M.Sc., Ph.D.
Atul Kumar, M.Sc., Ph.D.
Pradeep Kumar Srivastava, M.Sc.

Principal Scientist
Sanjay Batra, M.Sc., Ph.D.
Atul Goel, M.Sc., Ph.D.
Gautam Panda, M.Sc., Ph.D.
T. Narender, M.Sc., Ph.D.

Senior Scientist
K.V. Sashidhara, M.Sc., Ph.D.
Maddi Shridhar Reddy, M.Sc., Ph.D.
Kishor Mohanan , M.Sc.,Ph.D.
Pintu Kumar Mandal, M.Sc., Ph.D.

Scientist
Prem Prakash Yadav, M.Sc., Ph.D.
Ranveer Singh, M.Tech.
Dipankar Koley, M.Sc., Ph.D.
Namrata Rastogi, M.Sc. Ph.D.

Principal Technical Officer
R.K. Asthana, M.Sc., Ph.D.

Sr. Technical Officer (3)
P.N. Rai (Retired on 31/07/2013)
Vasi Ahmad (Retired on 30/09/2013)
Janki Prasad (Retired on 30/11/2013)
A.K. Mandwal, M.Sc., Ph.D.
S.C. Tripathi, B.Sc.
Keshav Prasad, AMIE, M.Tech.
Suresh Chandra, B.Sc., L.L.B.
S.P.S. Bhandari, M.Sc. Ph.D.
Zahid Ali, B.Sc.
Tara Rawat, B.Sc.

Sr. Technical Officer (2)
Deepali Pandey, B.Sc.
A.S. Kushwaha, B.Sc.

Technical Officer
Ashok Kumar Sharma, B.Sc., D.Ch.E., A.M.I.E.
Atma Prakash Dwivedi, M.Sc.
K.S. Anil Kumar, M.Sc., P.G.D.C.A.

Technical Assistant
Vidisha Sharma
Tahseen Akhtar, M.Sc.
Surya Pratap Singh, M.Sc.

Sr. Technician (2)
Preeti Rastogi, M.Sc.
Ramjeet, B.Sc., PGDC
Zaheer Ahmad (Glass Blowing)
Radha Rani Gupta, B.Sc.
Anoop Kumar Srivastava, M.Sc.
Raju Arora, B.Sc.
Shashi Rastogi, M.Sc.
Mithilesh Sharma, M.Sc.
Veena Mehrotra, M.Sc.

Sr. Technician (1)
Rajesh Kumar
Akhilesh Kumar Srivastava, B.Sc.
D.N. Vishwakarma
Manju, B.Sc.
Ram Lakhan

Technician (1)
H.R. Misra, M.Sc.
N.P. Misra, M.Sc.
Krishna Kumar, B.Sc.
S.C. Tiwari,
A.K. Pandey

Private Secretary
Avadhesh Kumar, B.A.

Jr. Steno
Surendra Kumar

Lab. Assistant
Ram Sanehi (Retired on 31/08/2013)
M.S. Bhol
J.C. Rajan

Lab Attendant (2)
Satish Chandra Yadav, B.Sc.

MICROBIOLOGY

Sr. Principal Scientist
P.K. Shukla, M.Sc., Ph.D.
K.K. Srivastava, M.Sc., Ph.D. *In-Charge*
C.K.M.Tripthi (Retired on 30/06/2013)

Principal Scientist
B.N. Singh, M.Sc., Ph.D.

Senior Scientist
Arunava Dasgupta, M.Sc., Ph.D.
Sudhir Kumar Singh, M.Sc., M.Tech., Ph.D.
Y. K. Manju, M.Sc.,Ph.D
Sidharth Chopra, M.Sc., Ph.D.
Mukesh Pasupuleti, M.Sc, Ph.D

Trainee Scientist
Neha Topno, M.Sc.

Principal Technical Officer
A.K. Joshi, M.Sc.

Sr. Technical Officer (3)
Shyamendra Mehrotra, B.Sc.
Bikram Banerjee, B.Sc.

Sr. Technical Officer (2)
Agney Lal, B.Sc.

Technical Officer
Sandeep Kumar Sharma, M.Sc. Ph.D

Technical Assistant
Atul Krishna, B.Sc., DMLT
Umamageswaran V., M.Sc.

Sr. Technician (2)
P.D. Mishra (Retired on 31/01/2013)
Nuzhat Kamal, B.Sc.
Kishan Singh

Sr. Technician (1)
D.K. Tripathi, M.Sc.

Lab. Assistant
A.N. Dixit
Lakshmi Prasad

Lab. Attendant (1)
Ravi Shankar Misra
Ram Prakash
Shyam Sunder Yadav

MOLECULAR & STRUCTURAL BIOLOGY

Senior Principal Scientist
Saman Habib, M.Sc., Ph.D., *In-Charge*
Ravishankar, R., M.Sc., Ph.D.

Principal Scientist
Jimut Kanti Ghosh, M.Sc., Ph.D., FNASc
J. Venkatesh Pratap, M.Sc., Ph.D.

Senior Scientist
Ashish Arora, M.Sc., Ph.D.
Mohammad Imran Siddiqi, M.Sc., Ph.D.
Mohammad Sohail Akhtar, M.Sc., Ph.D.
Amogh A. Sahasrabuddhe, M.Sc., Ph.D.
Shakil Ahmed, M.Sc., Ph.D.

Scientist
Dibyendu Banerjee, M.Sc., Ph.D.
Tejender Thakur, M.Sc., Ph.D.
Niti Kumar, M.Sc., Ph.D.

Sr. Technical Officer (2)
R.K. Srivastava, B.Sc.
J.P. Srivastava, B.Sc., L.L.B.

Technical Officer
Ruchir Kant, M.Sc. Ph. D
Anupam Jain, M.Sc.
Rima Ray Sarkar, M.Sc

Technical Assistant
Sarita Tripathi, M.Sc.

Sr. Technician (2)
Ram Radhey Shyam
Kishan Singh

PARASITOLOGY

Chief Scientist
Shailja Bhattacharya, M.Sc., Ph.D., FNASc, *In-Charge & Supervising Scientist In-Charge, KRC*
P.K. Murthy, M.Sc., Ph.D., FNASc (Retired on 31/12/2013)
Anuradha Dube, FNA, M.Sc., Ph.D.
Suman Gupta, M.Sc., Ph.D., (Retired on 30/06/2013)

Senior Principal Scientist
N.A. Kaushal, Ph.D., (Retired on 31/12/2013)
Renu Tripathi, M.Sc., Ph.D.

Principal Scientist
Kumkum Srivastava, M.Sc., Ph.D.

Senior Scientist
Satish Mishra, M.Sc, Ph.D

Scientist
Mrigank Srivastava, M.Sc., Ph.D.
Sushant Kar, M.Sc., Ph.D.

Sr. Technical Officer (3)
A.K. Roy (Retired on 31/10/2013)

Private Secretary
H.K. Khulve

Technical Assistant
Shikha Mishra, M.Sc.
Ashan Manhas

Sr. Technician (2)
Ravi Kumar Mehra
K.K. Singh, M.Sc.

Lab. Attendant (1)
Prem Babu
Ram Das
Om Prakash

PHARMACEUTICS

Chief Scientist
A.K. Dwivedi, M.Sc., Ph.D.

Principal Scientist
Amit Misra, M.Pharm., Ph.D., *In-Charge*
Prabhat Ranjan Mishra, M.Pharm., Ph.D.

Senior Scientist
Manish Kumar Chourasia, M.Pharm., Ph.D.

Scientist
Bathula Surender Reddy, M.Sc., Ph.D.

Sr. Technical Officer (3)
Madhuri Chaudhary (Retired on 31/05/2013)

Technical Assistant
V. Saravana Kumar, M.Sc., MPhil
Deepak, M.Sc., M. Tech.

Sr. Technician (2)
S.K. Bhatnagar, B.Sc.

Jr. Steno
Pooja Taneja

Lab. Attendant (1)
Ram Kumar

PHARMACOKINETICS AND METABOLISM

Sr. Principal Scientist
S.K. Singh, M.Sc., Ph.D., *In-Charge*
Jawahar Lal, M.Pharm., Ph.D.

Scientist
R.S. Bhatta, M.Pharm., Ph.D.
Wahajuddin, M.S. Pharm., Ph.D.
Jiaur Rahaman Gayen, M.Pharm., Ph.D.

Sr. Technical Officer (3)
S.K. Pandey, M.Sc.

Sr. Technician (1)
Narendra Kumar

Sr. Steno
Nandita Pandey

Technician (1)
Akhilesh Kumar

Lab. Assistant
Shiv Lal

Lab. Attendants (1)
Ram Bhajan Shukla
Ram Sunder Lal
Chandramani

PHARMACOLOGY

Chief Scientist
Madhu Dikshit, M.Sc., Ph.D., FNASc., FASc., FNA.
Rakesh Shukla, M.Sc., Ph.D., *In-Charge*

Senior Scientist
Manoj K. Barthwal, M.Sc., Ph.D.
Anil Gaikwad, M.Sc., Pharma, Ph.D.
Prem N Yadav, M.Sc., Ph.D.
Kumaravelu Jagavelu, M.Sc., Ph.D.

Scientist
Kashif Hanif, M.Sc., Ph.D.
Shubha Shukla, M.Sc., Ph.D.

Sr. Technical Officer (3)
S. Sengupta, B.Sc.
T.L. Seth, B.Sc.
Jharna Arun, B.Sc.
V.S. Nigam, B.Sc.

Sr. Technical Officer (2)
C.P. Pandey, M.Sc.

Technical Assistant
Sheeba Saji Samuel, M.Sc.
Sachi Bharti, M.Sc.
Smriti, M.Sc.
Pankaj Kumar Shukla, B.Sc., P.G.D.B.T.
Divya Mohan, M.Sc.
Deep Mala, M.Sc.

Sr. Technician (2)
H.C. Verma, B.A.
Bharti Bhushan, B.Sc.

Sr. Technician (1)
Ramesh Chandra, M.Sc.
Anil Kumar Verma, B.Sc.

Sr. Stenographer
Varun Kumar Pathak

Technician (1)
Surendra Singh, M.Sc., Ph.D.

Lab. Attendant (1)
Pankaj Sengupta
Hari Joshi
K.P. Mishra

TOXICOLOGY

Chief Scientist
C. Nath, M.B.B.S., M.D.,

Senior Principal Scientist
Neeraj Sinha, M.Sc., Ph.D., D.Sc., *In-Charge*
R.K. Singh, M.Sc., Ph.D., D.Sc.,
Sharad Sharma, M.B.B.S., M.D.

Principal Scientist
S.K. Rath, M.Sc., Ph.D. *In-Charge (Academic Affairs Unit)*
R.K. Tripathi, M.Sc., Ph.D.

Scientist
Aamir Nazir, M.Sc., Ph.D.
Smrati Bhadauria, M.Sc., Ph.D.
Sarika Singh, M.Sc., Ph.D.
Poonam Singh, M.Sc., Ph.D.

Sr. Technical Officer (3)
S.M. Verma, (Expired on 30/08/2013)
P.K. Agnihotri, M.Sc., Ph.D.
Sadan Kumar, M.Sc

Technical Assistant
Anurag Kumar Srivastava, B.Sc.
Anil Kumar Meena, M.Sc.
Navodayam Kalleti, M.Sc.
Sudhakar Yadav, M.Sc.

Sr. Technician (1)
Anupma, B.Sc.

Lab. Assistant
VK Samant (Expired on 30/12/2013)
Mahabir
Shree Krishan

Lab. Attendant (1)
Ram Kumar
Nand Pal Yadav
Ganesh Prasad

CLINICAL PHARMACOLOGY UNIT (CDRI), SETH G.S. MEDICAL COLLEGE, MUMBAI

Sr. Technician (2)
P.S. Acharya
Vijal J. Ashar, M.Sc.

Lab. Assistant
R.B. Pawar

TECHNICAL INFRASTRUCTURE DIVISIONS / UNITS

ACADEMIC AFFAIRS UNIT

Principal Scientist
Anju Puri, M.Sc., Ph.D.

Sr. Steno (ACP)
Renuka Musraan

Sr. Technician (2)
A.K. Pandey

BUSINESS DEVELOPMENT UNIT

Chief Scientist
Rajendra Prasad, M.Sc., Ph.D., *Unit In-Charge*

Scientist
Naseem Ahmed Siddiqui., M.B.A.

Technical Assistant
Neelima Srivastava, M.C.A

COMPUTER CENTRE

Chief Scientist
A.K. Srivastava, B.E., *Centre In-Charge*

Sr. Principal Scientist
Kural, B.E.

Sr. Technical Officer (3)
J.A. Zaidi, M.Sc., M.L.I.Sc.

Technical Assistant
Ajay Kumar Maurya, M.C.A.
Arbind Kumar, B.C.A, PGDCA
Farah Khan, B.C.A *(Director's Secretariat)*

Sr. Technician (1)
S.S. Bhakuni

Technician (1)
R.A. Prajapati
Sumit Khichi

Lab. Assistants
S.K. Bhattacharya

LABORATORY ANIMALS FACILITY

Senior Principal Scientist
D.S. Upadhyay, M.V.Sc., Ph.D., *Experimental Animal Facility In-Charge and overall Facility In-Charge*
A.K. Srivastava, M.Sc., Ph.D *Animal Breeding Facility & Health Profiling Unit In-Charge*

Senior Scientist
S. Raja Kumar, M.Sc
Dhananjoy Hansda, M.V.Sc.

Trainee Scientist
H.K. Bora, M.V.Sc

Sr. Technical Officer (3)
S.N.A. Rizvi, M.Sc.
A.K. Bhargava, B.Sc.
Karunesh Rai, M.Sc.

Technical Assistant
Chandra Shekhar Yadav, M.Sc.

Sr. Technician (2)
A.K. Dubey, B.A.
Ravinder Singh, M.Sc.
S.R. Yadav, B.A.

Sr. Technician (1)
Ravi Kumar Shukla
Sanjeev Kumar Saxena, B.Sc.
Narendra Kumar, B.A.
Dinesh Kumar, B.A.
Pradeep Tirkey

Technician (1)
Arun Sharma, B.Sc.

Sr. Steno (H)
Raj Kumar, B.A.

Lab. Assistant
Vikram Singh (Retired on 31/07/2013)
M.D. Kushwaha (Retired on 31/07/2013)
Wazahat Ulla (Retired on 31/12/2013)
Gaffar Ali
V.B.L. Srivastava
T.B. Thapa (Expired on 27/12/2013)
S.K. Verma
Shiv Pal Singh
P.B. Thapa
O.P. Verma, B.A.
Mohd. Saleem
R.P. Maurya
G.K. Sharma
Dilip Kumar

Lab. Attendants (1)
Changa Lal
Jameel Beg
Najbullah
Ram Avatar

KNOWLEDGE RESOURCE CENTRE

Chief Scientist
S.K. Mallik, M.A., M.L.I.Sc., *Centre In-Charge*

Principal Technical Officer
Ali Kausar (Retired on 30/11/2013)
Seema Mehrotra, M.Sc.

Sr. Technical Officer (3)
W.F. Rahman (Retired on 31/07/2013)
Sanjay Kumar, M.L.I.Sc
G.C. Gupta, B.Sc.
A.K. Verma, M.A., M.L.I.Sc.
R.M. Pathak, B.F.A.

Technical Officer
Ramesh Chandra Gupta, M.L.I.Sc.

Jr. Steno
Himanshu Upadhyay

Sr. Technician (2)
Nazir Akbar (Retired on 31/03/2013)
Y.C. Pandey (Retired on 31/07/2013)
B.K. Sethi (Retired on 31/07/2013)

Security Guard Group D
Chakrasen Singh

OTHER LAB SERVICES

Senior Principal Scientist
N.K. Agarwal, M.Sc.,

Scientist
Manoj Kumar Rawat, M. Tech.

Sr. Technical Officer (2)
R.N. Lal, M.Sc.

Sr. Technical Officer (1)
Anil Dayal, Diploma
Ram Karan Harijan, AMIE

Technical Officer
Sanjay Kumar, Diploma

Sr. Technician (2)
S.K. Biswas (Retired on 31/07/2013)
V.K. Mishra
Kamal Singh
Laxmi Narain

Sr. Technician (1)
K.M. Shukla, B.Sc.
Shailendra Mohan, M.Sc., PGDCA

Technician (1)
Kul Bahadur Thapa, ITI (Electronics)

Lab. Assistants
Mohd. Islam
Raju

S & T MANAGEMENT UNIT

Sr. Principal Scientist
Vinay Tripathi, M.Sc., M.B.A., P.G. Dip., *Unit In-Charge*
D.N. Upadhyay, M.Sc., Ph.D.
N.S. Rana (Expired on 20/02/2013)

Principal Scientist
Prem Prakash, M.Pharm.

Scientists
Anand P. Kulkarni, M.Sc., Ph.D. (*Director Secretariat)*
Sripathi Rao Kulkarni, M.Sc., Ph.D., P.G. Dip.

Junior Scientist
Sanjeev Yadav, M.Sc., Ph.D.

Sr. Technical Officer (2)
Ravindranath S. Londhe, GD Art (Comm.), Art Teachers Dip.

Technical Assistant
Manish Singh, M.Sc. Ph.D
M. Muruganantham, B.Sc., M.B.A

Hindi Officer
Neelam Srivastava, M.A., B.Ed., L.L.B.

Sr. Steno (ACP)
Manoshi Chatterjee, B.A., B.L.I.Sc.

Sr. Steno (H)
Jitendra Patel, M.A.

Sr. Technician (2)
Krishna Prasad, B.Sc.
Chandrika Singh, B.Sc., L.L.B.

Technician (1)
Susheel Lohani, B.Sc
Preeti Agarwal, M.C.A.

Lab. Assistant
Kishori Kumari

Lab. Attendant (1)
Pradeep Kumar Srivastava

SOPHISTICATED ANALYTICAL INSTRUMENT FACILITY

Sr. Principal Scientist
Brijesh Kumar, M.Sc., Ph.D. *Mass Unit In-Charge, and Overall Facility In-Charge*

Senior Scientist
Ravi Sankar Ampapathi, M.Sc., Ph.D. *NMR Unit In-Charge*
Jagadeshwar Reddy Thota, M.Sc., Ph.D
Sanjeev Kumar Shukla, M.Sc., Ph.D.
Sanjeev Kanojiya, M.Sc., Ph.D.

Scientist
Kalyan Mitra, M.Sc., Ph.D. *Electron Microscopy Unit In-Charge,*

Principal Technical Officer
Abha Arya (Retired on 31/01/2013)
H.M. Gauniyal, M.Sc. Ph.D
A.L. Vishwakarma, M.Sc.
Rakesh Khanna, B.Sc., A.I.C.

Sr. Technical Officer (3)
A.K. Sinha, M.Sc.
Sunil Kumar, B.Sc.

Sr. Technical Officer (2)
Pramod Kumar, M.Sc.
R.K. Purshottam, B.Sc.

Technical Officer
Kavita Singh, M.Sc. Ph.D.

Technical Assistant
Binod Kumar Saw, M.Sc.
Garima Pant
Pooja Soni, Diploma
Toofan K. Rout, M.Sc.
S. Mehzabeem, M.Sc.
Talathoti Sandeep Kumar, M.Sc., PGDCAQM

Sr. Technician (2)
V. Madhwar (Retired on 31/03/2013)
Ashok Pandey, B.Sc.
Sandeep Sengupta, B.Sc.
Radhey Krishna, B.Sc., L.T., C.Lib.Sc.
V.K. Maurya
A.K. Srivastava, M.Sc.
Madhuli Srivastava

Sr. Technician (1)
Madhu Chaturvedi
S.A. Singh, B.Sc., PGDCA
O.P. Gupta

Asst. (G) Grade I
V.K. Kanal

Lab. Attendants (1)
Mansoor Ali (Expired on 16-08-2013)
J.S. Singh

LABORATORY ENGINEERING SERVICES

Senior Superintending Engineer Group III (7)
Parvez Mahmood, B.Sc., *In-Charge*
Kamal Jain, B.E., M.B.A.

Technical Officer
Mohit Kumar Shukla
Jai Prakash
Sidho Hembrom
D.K. Vishwakarma

Technical Assistant
Madhukar Saroj
Ajay Kumar

Sr. Technician (2)
A.J. Khan (Retired on 31/10/2013)
B.P. Sunwar
Radhey Lal
Radhey Shyam
A.K. Sonkar
K.K. Kaul
Mahindra Singh
S.K. Kar
Pradhan Basudev
M.S. Verma
Naseem Mohammad
Harish Kumar
Vijay Kumar

Sr. Technician (1)
Ram Karan Ram (Retired on 31/07/2013)
Arun Kumar Srivastava
Verma Kamal Kishore
Ramesh Kunwar
G.C. Roy
Swapan Karmi
Rajesh Chand Dwivedi

Asstt. (G) Grade I
B.K. Shukla

Technician (1)
Bhagwan Singh Pokhariya

Lab. Assistant
Ram Anjore (Retired on 30/04/2013)
N.K. Mudgal (Retired on 31/07/2013)
Taqi Hussain (Retired on 31/10/2013)
R.K. Yadav
Hussain Taqui
Kandhai Lal
Ramanuj
Rama
Phool Chand
Popinder Singh
T.P. Pathak
S.K. Yadav
Bishan Singh
A.K. Misra
Om Prakash
Iftikhar Ahmad
Shankar Roy
Z.U. Beg

Lab Attendant (2)
Ramesh Chandra

Lab. Attendant (1)
Mohd. Irfan
Dhirendra Misra
Raju Vishwakarma
Ram Autar
Sandeep Roy
Hari Om Garg
Darshan Lal
Vishwanath Nigam
Satyajeet Roy
Ram Samujh
Bindeswari Prasad
Suresh Kumar
Ram Bilas
Gaya Prasad
Ram Asre

GENERAL ADMINISTRATION AND FACILITIES

ADMINISTRATION

Controller of Administration
L.R. Arya, B.A

Administrative Officer
K.P. Sharma, B.A, LLB

Private Secretary
G.M. Dayal, B.Sc, DPA

Asstt. (G) Grade I
Kamla Kandpal, M.A

Lab. Assistants
Maiku Lal (Retired on 31/12/2013)
Sohan Lal
Rajesh

DIRECTOR'S OFFICE

Private Secretary
Sumit Srivastava, B.Com.
Sunita Chopra, B.A.

Lab. Attendant (1)
Nand Kishore

Helper Group D
Ramswarth Prasad Rai

ESTABLISHMENT I

Section Officer (G)
Sunil Kumar, B.A

Asstt. (G) Grade I
Vibhash Kumar, B.A (Hons), CIC
Jagdish Prasad, B.Sc
Smriti Srivastava, M.A, B.Ed
Saju P. Nair

Asstt. (G) Grade II
Reena Bisaria, B.A

Jr. Steno
Deepak Dhawan

Lab. Assistant
Vinod Kumar

Group-C
Manju Yadav

ESTABLISHMENT II

Section Officer (G)
Biranchi Sarang, B.Sc
Nitu Kumari, M.A

Asstt. (G) Grade I
Rashmi Srivastava, B.A, B.Ed
Dilip Kumar Sen, B.Com
Tej Singh, B.Sc
Gangadin Yadav, B.A
Javed Sayed Khan
Riti Chaudhari, B.A
Neena Raizada, B.A
Aparna Bajpai, B.A

Sr. Steno
Vinod Kumar Yadav, B.A

Lab. Assistant
Bhagwanti Devi

Group D
Ram Kumar, B.Com

GENERAL SECTION

Section Officer (G)
C.S. Rao, B.Com

Asstt. (G) Grade I
Kailash Chandra

Sr. Steno
Seema Rani Srivastava, M.A

Asstt. (G) Grade II
Rajendra Prasad, B.A
Ajay Shukla, M.Com
Rani
Mohd. Irfan

Technician (II) (Driver)
K.K. Kashyap
Shakeel Ahmad Khan

Drivers
Prem Chand
Daya Shankar Singh

Helpers Group D
Kalpanath Sharma
Mohd. Saleem

BILL SECTION

Section Officer (G)
Madhuranjan Pandey, B.A

Asstt. (G) Grade I
H.K. Jauhar, B.A
Valsala G. Nair
Vivek Bajpai, M.A
Dilip Kumar (Cash), B.A
Md. Rijwan, B.Tech
Hemchandra (Expired on 16-09-2013)

Asstt. (G) Grade II
N Emam (Retired on 31/12/2013)

Lab. Attendant (1)
Vinod Kumar Sharma
Lalji Prasad

Group 'D'
Sachin

VIGILANCE

Section Officer
Krishna Raj Singh, B.Sc, MSW

Asstt. (G) Grade I
C.P. Nawani, B.A

Jr. Steno
Vineet Pandey

Lab. Assistant
Shanti Devi

RECORDS

Asstt. (G) Grade I
Birendra Singh, B.A

Lab. Assistant
Ved Prakash Misra

HINDI SECTION

Senior Hindi Officer
V.N. Tiwari, M.A., Ph.D.

Sr. Steno (Hindi)
Anil Kumar, B.Com

Lab. Assistant
Ghanshyam

FINANCE & ACCOUNTS

Controller of Finance & Accounts
A.K. Dwivedi, B.Sc, M.A

Finance & Accounts Officer
Mr. IB Dixit, M.Sc

Section Officer (F&A)
Kanak Lata Mishra
Kailash Singh
Ram Rishi Raman, M.A
R.P. Tripathi, M.Com, LLB

Private Secretary
V.P. Singh, B.A

Asstt. (F&A) Grade I
S.L. Gupta, B.A
Mahesh Babu, B.A
R.C. Bisht, B.A
Rekha Tripathi
Ajay Kumar
Sashidharan Radha
U.K. Tewari, B.Sc

Asstt. (F&A) Grade II
D.K. Khare, M.Com
Mahendra Kumar, B.Com
Sanjay Kumar, B.A
Tahseen Talat, B.A
Chandrashekhar
S.A. Siddiqui, B.A

Lab. Attendants (1)
Vikramaditya
Angad Prasad

Helper Group D
Mohd. Firoz

STORES & PURCHASE

Stores & Purchase Officer
S.K. Singh, M.A
Shekhar Sarcar, B.A

Section Officer (Stores & Purchase)
Praphul Kumar
Prasenjeet Mitra, B.Sc

Asstt. (S&P) Grade I
P.S. Chauhan, B.Sc
Arun Wadhera
A.K. Misra, B.A
A.K. Govil, B.A
H.B. Neolia, M.A

Asstt. (S&P) Grade II (ACP)
K.K. Mishra, B.A

Asstt. (S&P) Grade II
R.C. Dwivedi, B.Com
M.C. Verma, B.Com
Srikant Mishra, B.A

Asstt. (S&P) Grade III
Kanchan Bala, B.A
Vandana Parwani, B.A
G.P. Tripathi

Private Secretary
K.P. Ballaney, B.A

Lab. Assistant
Kishan Kumar
Rama Shukla
Kamlesh

Attendant
Hardwari

CSIR DISPENSARY

Medical Officer Group III (7)
Asha Negi, M.B.B.S., M.D. *In-Charge*
D.K. Bhateja, M.B.B.S., M.D. (Retired on 31/12/2013)

Medical Officer Group III (3)
N.K. Srivastava, M.B.B.S., M.D.

Sr. Technician (2)
Nandita Dhar
H.U. Khan

Technician (1)
Shraddha
Shabana

Lab. Assistant
S.K. Paswan

Lab Attendant
Shubendra Kumar

Sr. Safaikarmi
Sunadari (Retired on 31/01/2013)

CANTEEN

Manager Gr. II (ACP)
J.P. Satti, B.A

Asstt. Manager & Store Keeper (ACP)
R.S. Tewari

Count Clerk (ACP)
Ram Jiyawan Tewari
Y.K. Singh, B.A

Cook (ACP)
Man Bahadur

Asstt. Halwai
Uma Shanker Tewari

Bearer
Ganga Ram
Rajender
Kripa Shanker
Sukhdev Prasad

S/Man
Raj Kumar

Wash Boys
Ram Murat
Dinesh Pal Singh

WAY TO CSIR-CDRI