



CSIR CDRI

**Spearheading Science & Innovation
for Health & Pharma Sector
with a Human Face**

CSIR-Central Drug Research Institute

Dedicated to the Nation on 17 February 1951

"I think it is quite essential, specially from the national point of view, to promote drug research and the manufacture of important drugs to treat epidemics, to improve the public health. I think that by our research work, we can find out new drugs for curing diseases, not only for ourselves but for the world".

Pt. Jawaharlal Nehru



Pt. Jawaharlal Nehru in Chatrar Manzil premises accompanied by Sir Edward Mellanby, Shri H.P. Mody and Dr. D.L. Shrivastava on the day of Inauguration

CSIR – Central Drug Research Institute, a premier drug research centre was the Seventh in the chain of laboratories set up in India as a vision of the then Prime Minister Pt. Jawaharlal Nehru to transform the nation through science and technology. Housed in the historical monument Chatrar Manzil Palace, built by the Nawabs of Awadh, Institute was formally inaugurated on 17th February 1951 with a vision to strengthen and advance the field of biomedical research in India. Institute has made significant accomplishments in the pursuit of its mission to New Drugs & Technologies for affordable healthcare, generation of knowledge base and nurturing future leaders for Biopharma sector. Today, it has become a unique model for modernized drug research in India – having everything under one roof, from discovery to development.

State of the Art new campus

Spread across ~ 61 acres of land, it houses:

R&D Complex (Biological, Chemical, Pre-clinical Sciences Blocks and Special Equipment Facility)

Support Services (Experimental Animal Facility, IT Data Centre, Knowledge Resource Centre, Dispensary, Administration, Auditorium & Utility buildings)

Since May 2012, Institute is functioning from its new campus



In the Service of Nation

Priority Areas of Research

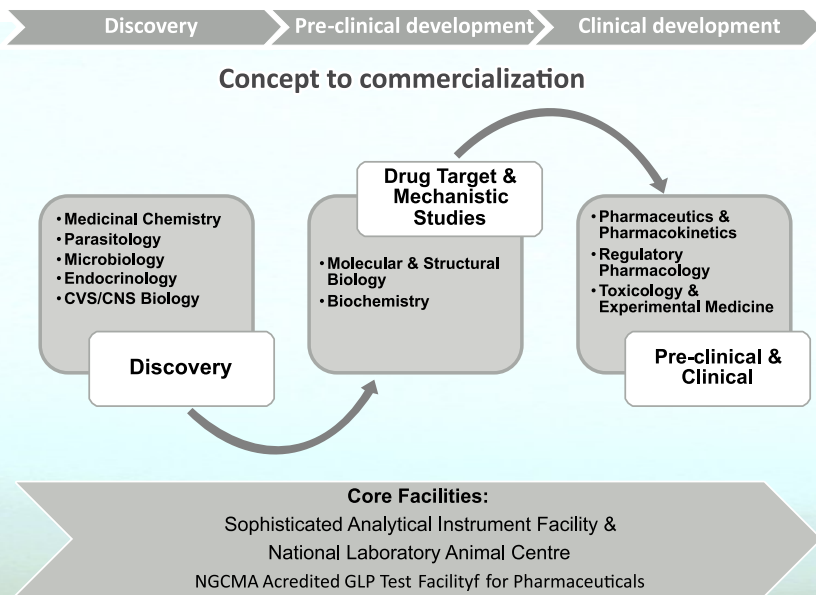
- Malaria
- Leishmaniasis
- AMR
- Bone Health

Highlights of Accomplishments

13 New Drugs, >85 Process Technologies,
211 in force patents across the globe, 135 in force
patents in India, >10,000 Research Publications,
>1500 Ph.D.'s, >2000 Sponsored Trainings
>5000 Post Graduate Trainings, counting is on....

Positioning

With state-of-the-art infrastructure for New Drug Discovery and Development from 'Concept to Commercialisation', Institute is poised to become a global leader through cutting edge science & technology. It is positioned to meet the expectations of unmet medical need as well as expectations of the Industry



Successful Track Record of New Drug Discovery

	Drug/Product	Use	Licensee & year of license
1	$\alpha \beta$ - Arteether	Antimalarial	• Themis Medicare Ltd., Mumbai (1997)
2	Centchroman	Contraceptive & DUB	• HLL Lifecare Ltd., Thiruvananthapuram (1990) • Torrent Pharma. Ltd., Ahmedabad (1991)
3	BESEB	Memory improvement	• Lumen Marketing Co. Chennai (2002)
4	Standardized Extract of <i>Dalbergia sissoo</i>	Rapid fracture healing	• Pharmeda Herbal Pvt Ltd, Gujarat (2015)
5	Centimizone	Anti-thyroid	• Unichem Lab. Ltd., Mumbai (1972)
6	Elubaquin	Anti-relapse anti-malarial	• Nicholas Piramal India Ltd., Mumbai (1999)
7	Centpropazine	Antidepressant	• Merind Ltd., Mumbai (1996)
8	Chandonium Iodide	Neuromuscular blocker	• Ranbaxy Labs Ltd., New Delhi (1987) • Cipla Ltd., Mumbai (1995)
9	Consap	Spermicidal cream	• HLL Lifecare Ltd., Thiruvananthapuram (2004)
10	Centbutindole	Neuroleptic	• Chemosyn Pvt. Ltd., Mumbai (1987) • Merind Ltd., Mumbai (1997)
11	Centbucridine	Local anaesthetic	• Themis Chemical Ltd., Mumbai (1987)
12	Gugulipid	Hypolipidemic	• Cipla Ltd., Mumbai (1987) • Nicholas Piramal India Ltd., Mumbai (2000)
13	Isaptent	Cervical dilation	• Unichem Lab. Ltd., Mumbai (1972)

Important Process Development and Technology Transfer

Generic(s)	Use	Licensee & year of license
Artemether	Antimalarial drug	IPCA Labs, 1995
Acyclovir	Antiviral drug	Ranbaxy, 1996
Sumatriptan succinate	5-HT ₁ agonist	CIPLA, 1993
Primaquine diphosphate	Antimalarial	Nicholas Piramal and IDL, 1994
Mefloquine	Antimalarial	Wockhardt, 1997
Paracetamol	Analgesic	Duphar-Interfran, 1973; & 10 other companies
L-Ephedrine hydrochloride	Anti-nasal congestion	Unichem Laboratories Ltd, 1976; B V M Pharma Ltd, 2013 & 6 Other companies
Indomethacin	Anti-inflammatory	Kembiotic, 1965; IDPL, 1976
Ibuprofen	Anti-inflammatory	Astra IDL Limited, 1984
Clofazimine	Antibacterial	IDL Chemicals LTD, 1979
Sulphamethoxazole	Antibacterial agent	Dolphin Laboratories Pvt Ltd, Kolkata, 1977
Bivalirudin	Thrombin Inhibitor	Biocon Ltd. 2010

So far, CSIR-CDRI has transferred more than 80 Process Technologies to Industries

Drugs Currently in Market

Synthetic Drug

Centchroman (Contraceptive)

Recommended Contraceptive Agent under National Family Planning Program of India



Marketed by HLL Lifecare Ltd., Thiruvananthapuram

Synthetic Drug

$\alpha \beta$ – Arteether (Antimalarial)

Recommended for severe and complicated malaria under National Drug Policy on Malaria, India



Marketed by Themis Medicare Ltd., Mumbai

Herbal Drug

Standardized Extract of *Dalbergia sissoo* for rapid fracture healing and management of post-menopausal osteoporosis



Marketed by Pharmeda Herbal Pvt Ltd, Gujarat

Herbal Drug

Standardized Extract of Bacopa (Memory Enhancer) Keen Mind



Marketed by Lumen Marketing Company, Chennai in India, Malaysia, Australia, & other 6 countries

Nutraceutical Formulation of *Spinacea oleracea* for Osteoarthritis



Marketed by Pharmeda Herbal Pvt Ltd, Gujarat

Technologies Currently in Market

Artemether (Antimalarial)



Marketed by IPCA Labs., Mumbai in India & African countries

I-Ephedrine Hydrochloride (Bronchodilator)



Bulk drug manufactured by Malladi Drugs & Pharmaceuticals Ltd., Chennai

GLP Test Facility for Pharmaceuticals

The following studies are conducted under certificate of GLP compliance for various sponsors to meet the regulatory requirements:

- Acute toxicity study
- Oxygen Saturation study
- Respiratory Safety study
- CNS Safety Pharmacology
- CVS Safety Pharmacology

Types of Chemicals/Materials for Toxicity Studies:

- New chemical entities (NCE)
- Pharmaceuticals (Small molecules, Bio-similars, Bio-therapeutics, Vaccines, etc.)
- Veterinary drugs
- Nutraceuticals
- Phytopharmaceuticals
- Plant extracts in Ayush mode

Test Systems for the Studies:

- Rat (Wistar, SD, CF)
- Mouse (Swiss albino; C57Bl/6; Balb/C)
- Rabbit (New Zealand White, Belgium)

Studies under GLP Compliant Conditions:

- AMES assay
- *In vivo* micronucleus assay
- *In vitro* micronucleus assay
- *In vivo* chromosomal aberration assay
- *In vitro* chromosomal aberration assay
- Repeat dose toxicity studies in rodents (28, 90 and 180 days)
- Repeat dose toxicity study in non-human primates
- Male fertility study
- Female fertility study
- Teratogenicity study
- One generation reproductive toxicity
- Two generation reproductive toxicity

Test Systems for the Studies:

- Rat (Wistar, SD, CF)
- Mouse (Swiss albino; C57Bl/6; Balb/c)
- Rabbit (New Zealand White, Belgium)
- Monkeys (Macacamulata)
- Guinea Pig (Hartley)

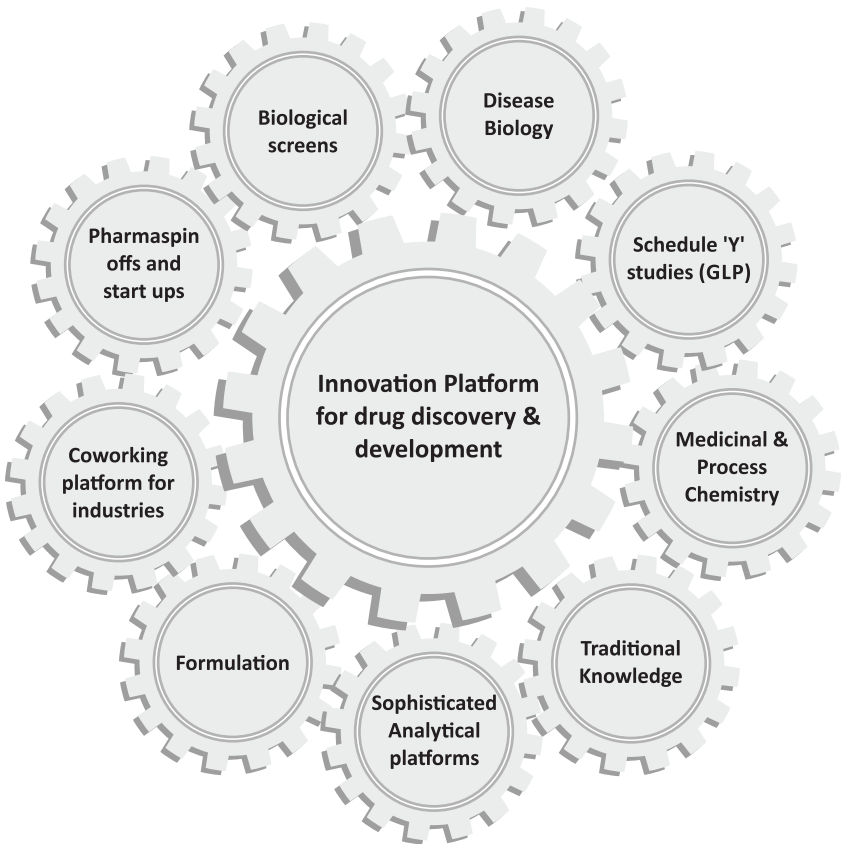


AMRIT

Advanced Platform for Research, Innovation and Translation

The centre is an innovation hub to facilitate entrepreneurial linkages between academia and industry. It is envisioned that this unique co-working model will stimulate the translation of novel ideas in healthcare.

Set up in sprawling area of more than 30,000 sq. feet, AMRIT will provide access to facilities at CSIR-CDRI through this platform. AMRIT will foster translation of ideas using an advanced co-working and development platform in the broad areas of Pharmaceuticals, Bio-pharmaceuticals, Phytopharmaceuticals, AYUSH / Herbal Drugs, Nutraceuticals and allied technological initiatives.



State of the Art Equipments

- Kilo Lab
- Nuclear Magnetic Resonance Spectrometers
- Mass Spectrometers
- X-ray Crystallography
- Flow Cytometers
- Microscopes: Electron, Confocal, Intravital & Atomic Force
- OxyMax Comprehensive Lab Animal Monitoring System (CLAMS)
- Micro-CT & Echo MRI
- *In vivo* Animal Imaging System
- Micro-ultrasound Imaging System
- Seahorse Extracellular Flux Analyzer
- Label Free Interaction Lab (Biacore)
- New Generation DNA Analyzer



State of the Art Facilities

- New Drug Discovery Facilities for
 - Parasitic & Infectious Diseases
 - Life Style Diseases
 - Reproductive Health and Osteoporosis
 - Cancer
- GLP facility for Regulatory Toxicology & Pharmacology
- Pre-Clinical Regulatory Facilities for Drug Development
- National Laboratory Animal Centre
- Bioinformatics and Computational Facility
- Sophisticated Analytical Instrumentation Facility
- National Repository of Organic Compounds
- Knowledge Resource Centre
- Clinical Trial Centers
 - PGIMER, Chandigarh,
 - KGMU, Lucknow,
 - KEM, Mumbai



Human Resource Development

CSIR - Central Drug Research Institute offers a bright and productive career to the students of science interested in pursuing career in the area of Biomedical Research. Under the ambitious Skill Development Mission of Government of India, Institute is committed to train the youth of today to meet the needs of Health & Bio-pharma Sector.

Aim of the program

- To create highest quality personnel with cross disciplinary knowledge, aiming to provide leaders in the field of science and technology.
- Nurture a research-propelled, technology-enabled, Bio-pharma industry-linked, socially conscious higher education platform
- Achieve a seamless integration of intellectual strengths with current market needs with a people centric focus.
- Develop niche capability required to bolster research efforts in futuristic science.
- To create an ecosystem of empowerment through Knowledge base & Skilling with high standards

Distinct Features

- Vibrant academic atmosphere enabling inter-disciplinary and cross-disciplinary areas of research to flourish
- Disseminating advanced knowledge in science & technology
- Research facilities in frontline branches of learning and in emerging areas
- Exposure to the areas and trainings not ordinarily available in regular academic or training centers

Career Opportunities

- Ph.D. & Post-Doctoral Research
- Post Graduate Training
- Project Fellowships
- Sponsored Training for Industry Personnel
- International Training under Bilateral Cooperation
- Skill Development for Bio-Pharma Sector
- Hands on Training Courses in Specialized Techniques

Highlights of Accomplishments

Padma Shri: 4

Shanti Swarup Bhatnagar Prize: 7

CSIR Technology Award for Innovation: 3

JC Bose National Fellowship: 3

Fellow of Indian Academy of Sciences: 10

Fellow of Indian National Academy of Sciences: 23

Fellow of National Academy of Sciences, India: 30

CSIR Young Scientist Awards: 9

INSA Medal for Young Scientists: 11

counting is on.....



Business Opportunities

Over the last six and half decades, CSIR-CDRI has built a unique model for drug research in India – having everything under one roof, from synthesis, screening to development studies. Under a massive modernization program, a new world class drug research laboratory equipped with all the modern facilities and modalities as per the national and international regulatory guidelines has been built. Currently, Institute is functioning from its new campus. Institute collaborates with Pharma industries/academic institutions/funding agencies for development of new drugs, drug targets, new pharmaceutical technologies and new model systems. Some of the opportunities available are as follows:

Opportunities

- Joint R&D with IPR and financial benefit sharing
- Licensing of candidate drugs/lead molecules
- Contract R&D in some specific areas
- Consultancy services
- Licensing of some facilities

Services

- Modern Drug Discovery Services
- Pre-clinical Regulatory Studies
- Sophisticated Analytical Instrumentation Services
- Biological Screening
- Laboratory Animal Facility

Candidate Drugs / Leads open for licensing

Parasitic and Infectious Diseases

- Novel oral combination formularion (SMEDDS) (Antimalarial)
- Lead Compound S011-1793 (Antimalarial)
- Dry powder inhalation of anti-tuberculosis drugs

Life Style Diseases

- S007-867 (Anti-platelet) - Monkey Toxicity Studies
- S002-333 (Anti-platelet)
- 80/574 (Anti-dyslipidemic) - Phase III Clinical Trial
- Standardized fraction of 4655 (Anti-dyslipidemic)

Reproductive Health and Osteoporosis

- 99/373 (Anti-osteoporotic) - Phase I Clinical Trial
- S007-1500 (Oral Rapid Fracture Healing agent) - Toxicity Studies in Rodents
- CDR2492C002 formulation for post-menopausal osteoporosis and associated fractures

For further enquiries, please contact

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