

Director's Message

It is my pleasure to present the Annual Report of our Institute for 2019-20. The last year has been remarkable in several ways both in terms of challenges and achievements. After temporarily moving our old transit campuses from ITI Raebareli and CSIR-CDRI Lucknow to the new single transit campus at the outskirts of Lucknow in June 2018, we had initiated a number of efforts to bring excellence in academic and research fronts, development of infrastructure across different departments, increasing scientific output like research papers, patents, enhancement of employment opportunities for our graduating students and in creating a sustainable roadmap for unabated and holistic growth of the Institute. It is indeed pleasing to share all these significant progress on these fronts.



We began with the start of classes for the academic year 2019-21 in July 2019 after a one day orientation program. The enrollment of students in the M.S. (Pharm) were done in all four departments (Medicinal Chemistry, Pharmaceutics, Pharmacology and Toxicology, Regulatory Toxicology) with a total intake of 66 students. For doctoral studies 6 students enrolled themselves in the Departments of Medicinal Chemistry, Pharmaceutics, Pharmacology and Toxicology. The M.S. (Pharm) students of 2018-20 batch also completed their research projects in a timely manner despite the sudden exigencies caused by the COVID-19 pandemic. In spite of difficult circumstances such as travel restrictions, economic turbulence due to COVID-19, more than 85 percent of our recent graduates were placed in reputed Pharmaceutical industries and higher educational institutes of repute.

Access to advanced scientific instruments is primarily instrumental in performing research of the global standard. As soon as we moved to the new transit campus, we had envisioned setting up an advanced instrumentation center (named Central Instrumentation Facility: CIF). In the first phase, we were able to install many high-value, highly sophisticated instruments such as Nuclear Magnetic Resonance Spectrometer (NMR), High Resolution Mass Spectrometer (LCMS-QTOF), High Performance Liquid Chromatography (HPLC) and Fluorescence Microscope, UV-Vis spectrometer and Fluorescence spectrometer to name a few. This year we again expanded the center by adding many other advanced instruments like Flow Cytometer, Ultracentrifuge, GelDoc, Small Animal Imaging system, Polarimeter, Circular Dichroism spectrometer, Isothermal Calorimeter (ITC), Spray dryer, Tablet Dissolution Apparatus and Hot Stage Microscope, to name just the few. The phase III of CIF expansion has also begun and by the end of the next year, we plan to have a state-of-the-art instrument center to cater to nearly all the scientific needs of the faculty and students.

To strengthen the research activities and placement of the students, we signed MoUs with the leading institutions in the proximity such as Babasaheb Bhimrao Ambedkar University (BBAU) and Lucknow University. We also signed an MoU with Springer Nature India Pvt. Ltd. Pune keeping in view the increasing interest of graduating students in Medical Writing. We also had an industrial training program with Almelo India Pvt. Ltd. Hyderabad to tone the skills of the Master's students as per the requirements of the industry.

For the first time since the beginning in 2008, we organized the convocation of our students on campus in November 2019. The degrees were awarded to 71 Master's students of 2016-18 and 2017-19 batches. We have decided that the convocation will be held annually now. The research output also saw significant enhancement in terms of research publications and patent filings with over 50 publications in highly rated scientific journals and filing of 7 patents in the past academic year. It came as the most pleasant surprise to all of us to see our Institution at the 18th Rank in the National Institutional Ranking Framework (NIRF) in 2020 in the Pharmacy category. From nowhere to be among the top 20 Institutions in India is indeed an honor for all of us. The onus is now on to perform still better to go up in the ladder of NIRF rankings in the coming years.

In the midst of all this, the sudden upsurge of COVID-19 and lockdown mandated several changes in our curriculum. Swiftly adapting to the changes in the corona times, we ensured timely completion of the curriculum of the 2018-20 batch of our students. For the same reason, the entry of new students (2020-22) has been delayed however; we are planning to start online classes from November 09, 2020. The process of bringing back students of 3rd semester have already started and most of the students have already joined for the completion of their project work. Even though lockdown had put several restrictions on our movements, we responded to the country's need at this hour and prepared hand sanitizers on mass scale for quick disbursement to healthcare workers, police personnel and the public in general.

Since the beginning, our Institute had been working with contractual staff at all levels both in teaching and non-teaching divisions. Fortunately in March 2019, regular posts were sanctioned and first phase of recruitment of both teaching and non-teaching staff was completed in February 2020. The second round of recruitment for both teaching and non-teaching staff is currently in progress. The recruitment of regular staff will certainly help in the speedy progress of the Institute. We have also made steady progress towards having our campus and for this a discussion was held between District Magistrate Raebareli and Director NIPER for the suitable land. DM Raebareli agreed to get additional land for the campus at the same site where 50 acres of land is already available near Bachhrawan in the Raebareli district.

I also take this opportunity to thank Chairman Prof Rakesh Kapoor and all members of the Board of Governors of our Institute for their valuable inputs from time to time during the past year. We are also grateful to the Shri D. V. Sadananda Gowda Ji, Hon'ble Minister (Chemicals & Fertilizers), Shri Mansukh Mandaviya Ji, Hon'ble Minister of State (Independent Charge) of the Ministry of Shipping and Minister of State in the Ministry of Chemicals & Fertilizers, Secretary, Joint Secretary and other staff at the Department of Pharmaceuticals (DoP), Ministry of Chemicals and Fertilizers, Government of India for their constant support. The timely inputs of the have been very helpful at every juncture of our journey. Last but not the least; I thank all the faculty and staff for their hard-work. I am sure we will achieve better results in the following years

Dr. S.J.S Flora
Director

Board of Governors

	Name	Affiliation	Designation
1.	Prof. Rakesh Kapoor	Ex-Director, SGPGIMS, Lucknow.	Chairman
2.	Dr. S.J.S. Flora	Director, NIPER-Raebareli	Member (Ex-officio)
3.	Shri Rajneesh Tingal	Joint Secretary (NIPER), DoP, Ministry of Chemical & Fertilizers	Member (Ex-officio)
4.	Smt. Alka Tiwari	Financial Advisor, DoP, Ministry of Chemicals and Fertilizers	Member (Ex-officio)
5.	V.G Somani	Drug Controller General of India Central Drug Standard Control Organization, Ministry of Health & Family Welfare	Member (Ex-officio)
6.	Prof. Alok P. Mittal	Member Secretary, All Indian Council for Technical Education (AICTE)	Member (Ex-officio)
7.	Dr. Sanjay Kumar	Director, CSIR-IHBT, Palampur	Member (ex – officio) Nominated by DG, CSIR on request made by the Department
8.	President	Indian Drug Manufacturer Association	Member (Ex-officio)
9.	President	Organization of Pharmaceuticals Producer of India (OPPI)	Member (Ex-officio)
10	Prof. Abbas A. Mahdi	Vice Chancellor, ERA Medical University, Lucknow.	Member (Ex-officio)

Board of Governors

	Name	Affiliation	Designation
11.	Prof. A.K. Tripathi	Director, Institute of Science Banaras Hindu University, (BHU)	Member Academician (Eminent Pharmaceutical Expert)
12.	Prof. Ganesh Pandey	Distinguished Professor, Institute of Sciences, Banaras Hindu University,	Member (Eminent Pharmaceutical Expert)
13.	Dr. Sanjay Singh	Narayan IIT Academy, Ghaziabad	Member (Eminent Public Person/Social Worker)
14.	Dr. Raghavendra Sharma	Shri Ram Ganga Hospital, Badayu Road, Bareilly	Member (Eminent Public Person/Social Worker)
15.	Dr. Satya Narayan Sankhwar	Prof. KGMU, Lucknow	Member (Eminent Public Person/Social Worker)
16.	Dr. Purav Thakkar	General Manager , APCER APCER LIFE SCIENCES Ahmedabad	Member Industrialist
17.	Secretary	Board of Technical Education, Government of Uttar Pradesh	Member (Ex-officio)
18.	Dr. Rajesh Jain	Managing Director Panacea Biotec Ltd.	Member (Ex-officio)
19.	Sh. Jai Narain	Registrar	Secretary to the Board

ABOUT NIPER RAEBARELI

Overview

The National Institute of Pharmaceutical Education and Research (NIPER), Raebareli is one of the premier institutions of pharmacy education and research in the country. It came into existence in 2008 in the city of Raebareli after the amendment of 1998 NIPER Act by the parliament. Currently, there are seven NIPERs throughout the country with each of them being autonomous having their own Board of Governors. All of these NIPERs function within the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers (MoCF), Government of India. The NIPERs were created with an aim to meet the growing demands of professionals in the field of pharmacy, and to conduct world-class fundamental & applied research in the area of new drug discovery, diagnostics and delivery systems among a number of other related objectives. NIPER Raebareli offers doctoral and masters programs in Medicinal Chemistry, Pharmaceutics, Pharmacology & Toxicology, Regulatory Toxicology and Biotechnology with over 150 enrolled students. It is currently running from its transit campus in Lucknow with a world class central Instrumentation facility within its premises and an animal house to perform pre-clinical studies.



Overview

To be a globally recognized premier educational and research centre with world class facilities, adopting International best practices, focused on the integration of science and technology in the areas of Drug Discovery, Drug Delivery, Medicinal Process Research and Nanoformulations.

Mission

- To serve as a center of excellence in pharmaceutical education with an emphasis on diseases that are India-centric and globally paid less attention to.
- To serve as an advanced centre of drug-testing to help the Government in giving to unadulterated medication to people of our country.
- To engage in entrepreneurship driven research programmes to create new innovators in the pharmaceutical sector.
- To come out with at least 1 or 2 candidate INDs (Investigation New Drug) molecules for tuberculosis, Wilson's diseases/Alzheimer's including nanoformulations for the existing drugs in the next five years.

Objectives

- To work in research areas giving impetus to the study of sociological aspects of drug use and rural pharmacy.
- To achieve global standards for teaching and research in the field of pharmaceutical sciences and to provide best trained professionals in the field of pharmaceutical sciences.
- To serve as a single unit for drug discovery combining the aspects of drug design, target validation, pre-clinical studies and its regulatory aspects.
- To develop teamwork, forge multi-disciplinary research collaborations with research Institutions of mutual and complementary interests to develop therapies for diseases with limited/no medication.

Research Mandate

- Neurodegenerative Diseases
 - Alzheimer's disease
 - Parkinson's Disease
 - Japanese encephalitis
- Toxicity of Environmental Pollutants including prevention and therapy
 - Arsenic, Copper, Flouride
 - Organophosphorus/ Pesticide Poisoning including development of antidotes
- New Targets and Drug Leads in Tuberculosis.
- Drug Delivery System including development of Nano-drug Formulations.

Current Academic Activities

NIPER Raebareli started with two departments in 2008 and now the number of departments has increased to five with the latest inclusion being the Department of Biotechnology. The current number of total enrollments in all programs of the Institute exceeds 150. Out of the five departments, three departments offer Ph.D programs. The research activities are centered on synthesis of new chemical agents and development of new delivery systems for better delivery of different drugs at the specified targets. One of the major focuses of the Institute is work on locally prevalent diseases such as Japanese Encephalitis to help in its diagnosis and cure. Similarly, the metal toxicity detection and treatment is another research interest of the institute to help the local population around the banks of Ganges.

The research activities include synthesis of small molecules both for diagnostic and therapeutic purposes, development of fluorescence based high-throughput assays for lead compound identification and enhancing the bioavailability of known drugs through new drug delivery systems.

Discipline	Opening Year	Sanctioned Seats
M.Pharm		
Medicinal Chemistry	2008	22
Pharmaceutics		20
Pharmacology and Toxicology	2012	15
Regulatory Toxicology	2018	10
Biotechnology	2020	10
PhD		
Medicinal Chemistry	2017	02
Pharmaceutics		02
Pharmacology and Toxicology		02
PhD		
Medicinal Chemistry	2020	04
Pharmaceutics		04
Pharmacology and Toxicology		04

Completion rates: Students pass out year wise against capacity and admission since the beginning:

Year	M. S. (Pharm)		PhD	
	Admission	Completion	Admission	Completion
2008-10	20	20	-	-
2009-11	28	28	-	-
2010-12	30	30	-	-
2011-13	31	31	-	-
2012-14	37	37	--	-
2013-15	38	38	-	-
2014-16	38	38	-	-
2015-17	36	36	-	-
2016-18	35	35	-	-
2017-19	36	36	5	Pursuing 4 th year
2018-20	56	56	6	Pursuing 3 rd year
2019-21	62	Pursuing	6	Pursuing 2 nd year

CAMPUS PLACEMENT

NIPER-Raebareli has a well-established placement cell to provide support to the outgoing batch of students. The placement cell is in continuous touch with the reputed major drug discovery and Pharmaceutical industries to assist in placement of students and to build industry-academia collaborations. The major recruiters in recent years are Novartis, Sun Pharma, Jubilant biosys, Jubilant Chemsys, Patanjali Research Institute, Dabur Research Foundation, Dr Reddy's Research Laboratories, Syngene, Biocon BMS Research Centre, Curadev Pharma Pvt. Ltd, WNS, APCER Life Sciences, Almelo. Our students are prepared in an industry-oriented manner with a major emphasis on personality development along with scientific development. A common placement brochure for all branches was published, highlighting core competencies and achievements of students to facilitate placement. Thus, our students are well-placed in the major Pharmaceutical companies across the country. In addition, a significant number of our students also opt to pursue doctoral programs in foreign universities and institutes.

Year	M.S. (Pharm.)	
	No. of students	Placement (in %)
2008-10	20	20
2009-11	28	50
2010-12	30	25
2011-13	31	50
2012-14	37	45
2013-15	38	30

Year	M.S. (Pharm.)	
	No. of students	Placement (in %)
2014-16	38	40
2015-17	36	25
2016-18	35	100
2017-19	36	100
2018-20	55	88

CAMPUS PLACEMENT

National Institute of Pharmaceutical Education and Research (NIPER)- Raebareli

Congratulations



Mr. Vipin Bhati, Student of M.S. (Pharm), Department of Regulatory Toxicology, selected in the campus placement in Patanjali Research Foundation (Haridwar)

Mr. Vipin Bhati



National Institute of Pharmaceutical Education and Research, Raebareli



Piramal
Pharma Solutions

Congratulations!!

Mr. Vivek Vishwakarma, student of M.S. (Pharm.) selected in the campus placement in Piramal Pharma Solutions.

National Institute of Pharmaceutical Education and Research (NIPER)- Raebareli

Congratulations

Ms. Keerthana S Student of M.S. (Pharm.), Department of Pharmacology & Toxicology selected in the Campus Placement in Syngene International Limited (Banglore)




Syngene
Putting Science to Work

National Institute of Pharmaceutical Education and Research Raebareli


Congratulations!

For getting placement in WNS Global Services Pvt. Ltd.



Mr. Gulam Navi Azad
M.S. (Pharm.)
Department of Pharmacol & Toxicol

You did it!



Oh ventures

Congratulations!



Ms. Aswani Vasant Pise

M.S. (Pharm) Student of NIPER Raebareli selected for campus placement in Oxygen Healthcare Pvt. Ltd. Ahmedabad



National Institute of Pharmaceutical Education and Research Raebareli

Congratulations!

Mr. Pandey Dheeraj Gauri Shanker & Ms. Shaik Ayesha Fathima students of M.S. (Pharm.) selected in the campus placement in Springer Nature Technology and Publishing Solutions.



Mr. Pandey Dheeraj Gauri Shanker




Ms. Shaik Ayesha Fathima

CAMPUS PLACEMENT

Major Recruiters

Syngene
A Biocon company

NOVARTIS



APCER
LIFE SCIENCES

**SPRINGER
NATURE**

PAREXEL

WNS
Extending Your Enterprise

Zydus
dedicated to *life*

O²
OXYGEN_**O²**

INTAS
Biopharmaceuticals

**JUBILANT
LIFESCIENCES**

SANOFI

HETERO

MEDIVISUAL
HEALTHWORLD

HERON
THERAPEUTICS

Academic and Scientific Events

The 5th annual convocation of NIPER Raebareli was held on November 23rd 2019 which saw 71 students being awarded their M.S.(Pharm.) degrees. Dr. P. D Vaghela, Secretary, Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Govt. of India was the chief guest and gave the convocation address. Dr.S.J.S Flora Director NIPER Raebareli addressed the students on this occasion. The Guest of Honor for this occasion was Dr. Sanjeev Misra who is currently the Director of AIIMS, Jodhpur. Speaking to the students on this occasion, Dr. Flora presented a brief account of the progresses made by the Institute in the past year and encouraged students to take active part in the scientific innovations. He encouraged the students to utilize the newly created Central Instrumentation Facility to the best they can. Dr. P.D Vaghela emphasized that the research output in the country should be in sync with the industry needs so that new employments could be generated and the commercial aspects of the innovation are also taken care of.



Workshop on "Scientific Writing and Research Ethics":

NIPER-Raebareli conducted one day workshop on "Scientific Writing and Research Ethics" on October 31, 2019. which focused on creativity in Scientific Research Writing in all its conceptual, methodological, disciplinary and professional aspects. The invited speaker Prof. Bikash Medhi, Professor, Department of Pharmacology, PGIMER, Chandigarh and also the Chief Editor of Indian Journal of Pharmacology delivered a talk covering the topics- "How to Publish Scientific Papers", "Publication Ethics"& "Critical Appraisal of Scientific Paper". The other speaker of the event was Dr. A. B. Pant, Principal Scientist, CSIR-IITR who delivered talk on "Principles of Scientific Communication". The workshop was attended by a large number of students and publishers.. These attendees included Dr. Khushbu Kushwaha, Editor for Wiley VCH journals", Renu Upadhyay Commissioning Editor (CRC Press) Kunj Verma Licensing Manager, Bhuvnesh Sharma Account Manager (ACS Representative)



**Dr Anu Puri, Staff Scientist
Center for Cancer Research, NIH Bethesda, USA
"RNA-based Nanotherapeutics: Current Updates and
Future Directions"**

Dr. Anu Puri presented a webinar on "RNA-based Nanotherapeutics: Current Updates and Future Directions" on July 6, 2020. The webinar was attended by a large number of students from NIPER Raebareli and students of other Institutes of the country through a live web-link. Dr. Anu Puri is currently associated with the Center forPuri is currently associated with the Center for Cancer Research National Cancer Institute (USA) as a Scientist. Dr. Puri shared her research work on RNAi therapeutics and their role in drug delivery when activated by exposure of light so that an appropriate level of the drug can be released. Such drug delivery has the potential to improve cancer treatment of patients. She also highlighted the importance of nanobiosensors for raid detection of cancer.



Dr Suneet Shukla, Senior Pharmacologist
Food and Drug Administration, USA
" Fundamentals of Drug Development"

Dr Suneet Shukla, Senior Pharmacologist, Food and Drug Administration, USA delivered a webinar on " Fundamentals of Drug Development" Dr Suneet Shukla is currently exploring drug transporters for their roles in altering the PK-toxicity of drugs and drug resistance in cancer, developing in vitro cell-based assays and drug-receptor binding assays, studying role of drug transporters in PK/toxicity using PBPK modeling analysis and identifying biomarkers for cells and tissue based therapy.



Dr. Ashish Mehta
Head of iPSC and Phenotyping Research Laboratory
Victor Chang Cardiac Research Institute
Australia

Dr. Ashish Mehta, Head of iPSC and Phenotyping Research Laboratory, Victor Chang, Cardiac Research Institute, Australia presented a webinar on "Induced Pluripotent Stem Cells: A Tool for Disease Modeling and Drug Discovery" on July 6th 2020. He did his PhD in Biochemistry from

Defence Research Laboratory in the area of biochemical toxicology. After a brief post-doctoral stint, he joined a private company and worked on derivation of human embryonic stem cells and their differentiation into cardiac and pancreatic lineages. In 2010, He joined the National Heart Centre Singapore as a Senior Research Scientist with work focused on cardiovascular research using patient derived induced pluripotent stem cells. His main work focus was on disease modeling and understanding cardiac development in iPSC. He has published more than 50 peer reviewed research papers and 4 patents to his credit.

NIPER Raebareli organized a Webinar on Basics of Scanning Electron Microscopes & Transmission Electron Microscopes on June 18, 2020 (Thursday) which was presented by a team of scientists of JEOL India Pvt. Ltd.

JEOL webinar
on
Basics of Scanning Electron Microscopes & Transmission Electron Microscopes

Organized by: National Institute of Pharmaceutical and Education Research, Raebareli



Webinar 1 Title – Basics of Scanning Electron Microscopes
Timings: 11.00 a.m. to 12.00 p.m.
Speaker name – **Mr. Sameer Pai**, DGM- customer support
JEOL India Pvt. Ltd, Mumbai



Webinar 2 Title – Basics of Transmission Electron Microscopes
Timings: 12.00 p.m. to 01.00 p.m.
Speaker name - **Dr. Tetsuo Oikawa**, TEM Application Specialist
JEOL ASIA PTE. LTD, Singapore



Click on this Zoom web-link to join webinar
<https://us02web.zoom.us/j/86494647435?pwd=ZjdjOVNHU3RpNUhVZWVNaYm1pR05GQT09>

Meeting ID: 864 9464 7435
For password, please contact Dr. Rahul Shukla, NIPER Raebareli
Date: 18th June, 2020 Thursday
at 11.00 a.m. to 01.00 p.m. (IST)

Dr. Anurag Varshney, Vice President and Head - Drug Discovery and Development, Patanjali Research Institute – Haridwar presented a webinar on June 26th, 2020 on the topic “Major Challenges in Translational Herbal Drug Discovery”. Dr Varshney has extensive industrial research experience in multinational drug discovery companies. His specialties include translational research on small molecule drug discovery, herbal and natural products discovery and development in diverse disease areas. He is well-known in the field of applications of electrophysiology in preclinical Pharmacology & Toxicology.



A Webinar Session on
MAJOR CHALLENGES IN TRANSLATIONAL HERBAL
DRUG DISCOVERY
Friday, 26th June, 2020, 11.00 am – 12.30 pm (IST)

NIPER-Raebareli **Patanjali Research Institute**



Guest Speaker: Dr. Anurag Varshney
Vice President & Head - Drug Discovery and Development
Patanjali Research Institute, Haridwar, Uttarakhand

https://teams.microsoft.com/j/meetup-join/19%3ameeting_NDVkZmNkNmtYmZmZC00N2M2LTikNWitYTAzNzc0MjBhM2E3%40thread.v2/0?context=%7b%22Tid%22%3a%22abf7e55e-0e6e-4317-9969-355c4fafcf86%22%2c%22Oid%22%3a%22188a68bc-8ff8-44d5-86e0-4c8b9463f1c7%22%7d
Tap on the link or paste it in a browser to join.

Organized By: National Institute of Pharmaceutical and Education Research – Raebareli.
Coordinator: Dr. Rakesh Kumar Singh, +91-9810928555, E-mail: rakesh.singh@niperraebareli.edu.in

A webinar session was organized by NIPER Raebareli which was presented by Dr. Sachin Dubey on July 24th, 2020). The topic of the webinar was “Opportunities and Roadblocks in Advance Therapeutics Development”. Currently Dr Sachin Dubey is working as Deputy Director and Head with Ichnos Sciences, Switzerland (A part of Glenmark Pharmaceuticals SA, Switzerland) and heading three major functions for the company – formulation, analytical, and drug product development groups. He has over 15 years of industrial experience in global multinational companies like Novozymes, Denmark. Twelve products developed by him and his team are currently in clinical trials including many of the products evaluated and developed together with Nova Laboratories, UK. Dr. Sachin also has an excellent academic career and has done his PhD from the School of Pharmaceutical Sciences, University of Geneva, Switzerland. He has 12 patents and 22 publications in high impact journals. The industry and academia have equally recognized his contribution with 20 research awards including prestigious industry awards from Glenmark (Best innovation team – won twice), Merck (Innovation cup), Novartis (International bio camp) and the Swiss Society of Pharmaceutical Sciences (Best publication).



The graphic is a rectangular announcement for a webinar. It features the NIPER Raebareli logo on the left and the Glenmark logo on the right. The central text provides the webinar title, date, and time. Below this, a yellow box highlights the guest speaker's name and title. A small portrait of Dr. Sachin Dubey is shown to the left of this box. At the bottom, there is a blue box with a Teams meeting link and an orange box with organizational details.

A Webinar Session on
Opportunities and Roadblocks in Advance Therapeutics Development – Industry perspective
Friday, 24th July 2020, 4.00 pm – 5.00 pm (IST)

NIPER-Raebareli

glenmark
A new way for a new world

Guest Speaker: Dr. Sachin Dubey
Deputy Director and Head
Early and Late stage Drug Development
Ichnos Sciences (A part of Glenmark Pharmaceuticals), Switzerland

https://teams.microsoft.com/join/19%3ameeting_ZjNjMmUjZmQzZjI4Yi00YTllWlZyYTYtMTY4ZDQ4YzQ1Nzlw%40thread.v2/0?context=%7b%22Tid%22%3a%22abf7e55e-0e6e-4317-9969-355c4fafcf86%22%2c%22Oid%22%3a%22188a68bc-8ffb-44d5-86e0-4c8b9463f1c7%22%7d
Tap on the link or paste it in a browser to join.

Organized By: National Institute of Pharmaceutical and Education Research – Raebareli.
Coordinator: Dr. Rakesh Kumar Singh, +91-9810928555, E-mail: rakesh.singh@niperraebareli.edu.in

A webinar session entitled as “Vocal for Local to boost innovative ideas to small scale entrepreneurship” was organized on Wednesday, 23 Sept 2020, 03-04 pm (IST). Students from NIPER-R and other institutions joined online. The speaker of this event was Dr. Rahul Taneja who is an IPR Scientist at the Patent Information Centre, Department of Science & Technology, Govt. of Haryana. Dr. Taneja explained the current scenario on IPR and how students or scientists can excel as well as begin with small-scale entrepreneurship having an innovative idea.



A Webinar Session on
“Vocal for Local to boost innovative ideas to small scale entrepreneurship”
Wednesday, 23 Sept 2020, 03-04 pm (IST)



Dr. Rahul Taneja
IPR Scientist
Patent Information Centre, Department of
Science & Technology, Govt. of Haryana

Registration for webinar is free
[Register for Webinar here](#)

<https://docs.google.com/forms/d/e/1FAIpQLSchuKekjbgHj-xWie1Jivu5BWljhZiXw9Nt6Cxvw5P9CS4FFA/viewform>

Organised by: National Institute of Pharmaceutical Education and Research, Raebareli
Coordinator: [Dr. Gopal Lal Khatik, Assist. Professor, E-mail:gopal.khatik@niperrabereli.edu.in](mailto:gopal.khatik@niperrabereli.edu.in)

Research Collaborations and MoUs

In order to expand our research domain and have mutually benefitting academic programs , few more MoUs were signed in the past year. Babashaeb Bhimrao Ambedkar University (BBAU), Lucknow is a multifaceted University offering educational programs in various streams including Pharmaceutical Sciences. An MoU was signed earlier this year with BBAU, Lucknow for sharing of faculty and research facilities. The university being in close proximity to our Institution is likely to benefit our students in complimentary areas of research. Another MoU. These MoUs are in addition to our prior collaborations with as Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGI) - Lucknow, Indian Institute of Technology (IIT) - Roorkee, Era University, Indian Institute of Technology (IIT)-Kanpur, Delhi Institute of Pharmaceutical Sciences and Research (DPSRU)- Delhi, King George's Medical University (KGMU)- Lucknow and CSIR- Indian Institute of Toxicology Research (IITR), Lucknow. MoUs signed with these institutes will enable us to expand our research activities and will also help us to overcome any of our current limitations with regard to equipment or infrastructure. The complete list of Institutions that we have MoUs with, is given below-



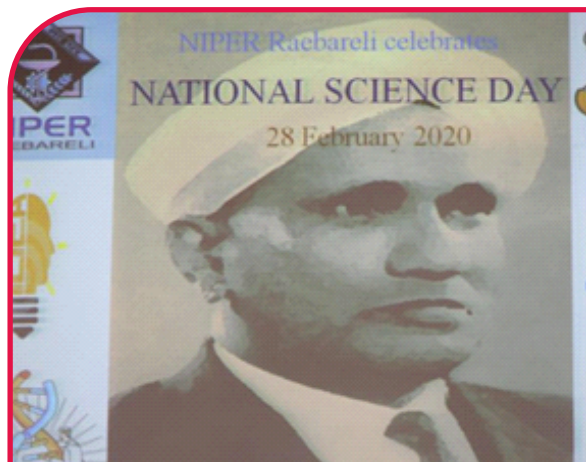
	MoU Signed with Organization	Collaboration
1.	Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow	To work in the area of locally prevalent diseases like <i>Japanese encephalitis</i> , collaborative projects, share faculty and training of students
2.	ERA University, Lucknow	To work on the clinical samples, metal toxicology, and to share faculty
3.	Fragrance & Flavour Development Center (FFDC), Kannauj (U.P .)	Pharmaceutical and pharmacological aspects of natural fragrant raw materials, fragrance & flavour for industry & education
4.	Indian Institute of Technology, Kanpur (IITK)	Collaborative research related to Medicinal Chemistry, Drug Design, to train NIPER students and faculty support
5.	Delhi Pharmaceutical Sciences & Research University (DPSRU), New Delhi	To share facilities, faculty support and jointly work in the research area of mutual interest like Pharmaceuticals, and Nanotechnology
6.	Indian Institute of Technology, Roorkee (IITR)	Nanoencapsulation of drugs, drug designing etc

	MoU Signed with Organization	Collaboration
7.	CSIR-Indian Institute of Toxicology Research (IITR), Lucknow	Environmental Toxicology, Nanomaterial Toxicology, In vivo and in vitro studies, Food, Drugs and Chemical Toxicology
8.	King George's Medical University (KGMU), Lucknow	Jointly work in the area field of Medical and Allied Sciences as well as Medicinal Chemistry, Drug Design, Pharmaceutical, Nanotechnology.
9.	IIS University, Jaipur	To jointly work in the areas of nanotechnology based drug design and development.
10.	Almelo Chemicals Pvt. Ltd.	To build Academia - Industry partnership and develop new chemical entities.
11.	Babasaheb Bhimrao Ambedkar University, Lucknow	For sharing of faculty and research facilities.
12.	Springer Nature	For recruitment of students in Medical Writing.

Contribution to Societal Activities

National Science Day

The National Science Day was celebrated on 28th February to widely spread the message about the significance of scientific applications in the daily life of the people. Director NIPER-R, Dr. Flora discussed the activities, efforts and achievements in the field of science for human welfare. Dr. Abha Sharma, Associate Professor, NIPER Raebareli delivered Science Day Lecture on Women in Science. Students also actively participated on the occasion of Science Day



Covid-19 Pandemic awareness Drive

The Institute strictly adhered to the guidelines issued by Government of India and regularly sanitized the Campus and nearby areas in wake of current Covid-19 pandemic. Regular cleanliness and awareness drives were organized by faculty, staff and students in institutional locality and on campus. Faculty, staff and students distributed face masks and hand sanitizers in the nearby resident localities and made residents aware to use these in combating the Covid-19 spread. The Faculty and students prepared and distributed sanitizers in its adopted village of Mati. NIPER-R honored the Corona warriors (policemen) with sweets regularly for their contribution in fighting against Covid-19 spread and distributed the hand sanitizers at various police stations.



World Environment Day (5th June 2020)

On 5th June, 2020, the World Environment Day was celebrated by planting trees in NIPER-R campus. We campaign for raising awareness on emerging environmental issues from marine pollution, human overpopulation, and global warming, to sustainable consumption and wildlife crime among students. During this occasion, whole NIPER-R family actively involved themselves in plantation to make our environment more safe and healthy.



Swachhta Pakhwada (1-15 September 2020)

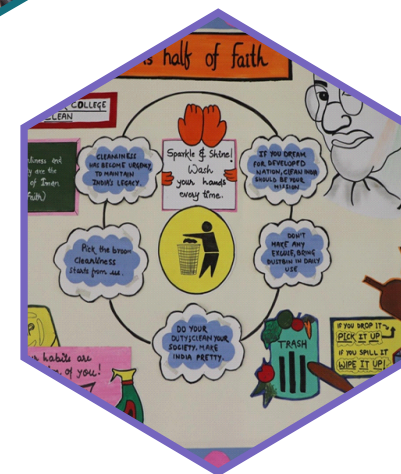
Faculty, staff, students and members of NIPER-R in the leadership of Dr. S.J.S Flora joined hands to participate and contribute in accomplishment of the dream of our Father of the Nation Mahatma Gandhi and the mass movement initiated by our honorable Prime Minister Shri Narendra Modi Ji. In line of the Government of India, NIPER-R focused on the theme “El Kadam Swachhta Ki Oar” and communicated the message of Swachhta to make a transformation in the society. As per the guidance of Ministry of Chemicals and Fertilizers, Government of India in amalgamation of our in-house program, NIPER-R observed “Swachhta Pakhwada” from 1-15th Sep, 2020 in which a number of activities has been performed

As a part of Swachhta Pakhwada activity at the institute, all the officers, staff and student of NIPER-R gathered and showed the banners & posters. The theme of the event was environmental pollution due to single use plastic. The director informed the Institute members for adoption of minimum/no use of single-use plastic policy by NIPER-Raebareli and emphasized to inculcate these good practices not only in the institute but at home also. The staff, officers, and students also conducted a drive to collect and dispose the single use plastic scattered in the campus. All members of the NIPER-R family took oath not to use single-use plastic in campus and to make honest efforts to minimize the pollution due to single use of plastic.



Hindi Pakhwada (14-28 September 2020)

NIPER Raebareli Rajbhasha committee organized the Rajbhasha Hindi Pakhwada 2020 from September 14th to 28th, 2020. The Hindi Pakhwada started on 14th September 2020 on the occasion of “Hindi Diwas” with the inauguration of the program by the Director, NIPER Raebareli. The faculty members, staff and students participated in various activities of Rajbhasha Hindi Pakhwada. Rajbhasha committee organized activities such as Lekhan Pratiyogita, Online Prashnottary Pratiyogita, Online Kavita Pratiyogita, Online Expert Talk and, Online Vad-Vivad Pratiyogita.



World Pharmacist Day

The Pharmacist day was celebrated on September 25, 2020, at NIPER-R. The event began with the lighting of Lamp by Director, NIPER-R Dr. S. J.S. Flora where he addressed the Faculty, Staff and Students . Dr. Flora discussed the role of Pharmacy, their challenges, and opportunities in today's world. Faculty, Staff, and Students of NIPER Raebareli took Pharmacist Day oath on the occasion of World Pharmacists Day 2020. Students celebrated World Pharmacists Day 2020 by delivering short lectures on "Transforming Global Health". A webinar was also organized on this occasion by Dr Yogeshwar Bachachav.



National Institute of Pharmaceutical Education and Research (NIPER) - Raebareli

WEBINAR SESSION
ON THE OCCASION OF WORLD PHARMACISTS DAY

Title : Enhancing skin permeation of the small and macromolecules using passive and active enhancement techniques.

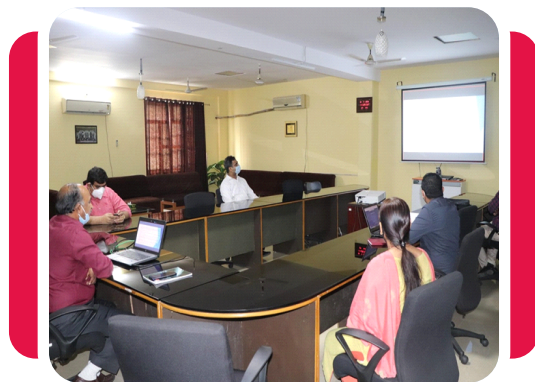
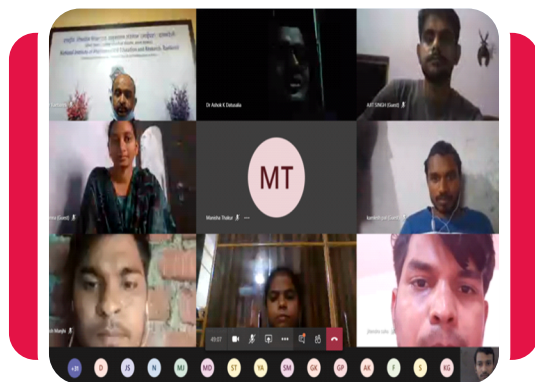
Dr. Yogeshwar Bachchav
Director
Adeex Pharmaceutical Consultancy Services
Mumbai

Sept 25, 2020
4:00 PM - 5:00 PM



Constitution Day Activities

NIPER-R participated in a campaign on Constitution Day and Citizen's Duties launch by Govt of India on the 70th anniversary of the adoption of the Constitution on November 26. Various programs and activities were conducted under this campaign throughout the year. At the beginning, mass pledge was administered by the Director to the faculty/staff and students of the institute. The Registrar NIPER-R also explained the values of Indian Constitution and all members of the Institute read the constitution Preamble on July 10, 2020. In this drive, Prof. Priti Saxena delivered an expert talk on "Indian Constitution and Citizens Duties" and emphasized our role in upholding the constitutional duties and individual rights. Various other events were also organized i.e. quiz competition, poster competition and display of banners as part of this campaign to increase our awareness and understanding about the Constitution of India and Citizens's Duties.



Presentations

1. Dr Saba Naqvi gave Oral Talk at International conference on biomaterial-based therapeutic engineering and regenerative medicine; 28 Nov - 01 Dec, 2019 at IIT Kanpur, India
2. Dr Gopal L Khatik delivered a talk for the drug discovery hackathon training program on August 12, 2020 on “Fragment-based drug design: A tool for design and discovery of lead compounds”. During the talk, he elaborated the key role of Fragment-based drug design (FBDD) in drug discovery programs. FBDD is a powerful tool for the rational design of lead compounds to be drug leads and currently, there are more than 30 drugs derived from FBDD are under clinical trial. Three drugs are already approved by the FDA include the first drug is Vemurafenib which was approved in 2011. Many participants have attended it online and actively involved in the discussion on its exploration. The same event was broadcasted live on YouTube

YouTube

(<https://www.bing.com/videos/search?q=DDH+live+gopal+lal+khatik&docid=608049077445394816&mid=FB14BDA479AD962D9909FB14BDA479AD962D9909&view=detail&FORM=VIRE>).



3. Dr. Rakesh K Singh was been chosen as an expert in the drug discovery hackathon 2020 (DDH2020). DDH2020 was a program focused on ways to combat Covid-19 and jointly initiated by AICTE, CSIR supported by the Govt. of India, NIC, and MyGov. Dr. Singh proposed a problem statement titled as “Computational screening of synthetic/natural compound databases to identify Furin enzyme inhibitors and *in silico* prediction of their toxicity potential in host”. Currently, this problem is open and many participants are working on it.

1. Dr. Anoop Kumar presented several talks during the year whose details are given below-

- (a) Invited talk's on “Pharmacokinetic and Pharmacodynamics, ADMET predictions, repurposing of drugs” in Drug Discovery Hackathon 2020 joint initiative of AICTE, CSIR, and Govt. of India
- (b) Invited talk on “Basic techniques of meta-analysis & COVID-19” Bharat Technology, West Bengal.
- (c) Invited talk on “Risk and Benefit Analysis of Medicines” Amity University of Madhya Pradesh, Maharajpura, Gwalior.
- (d) Invited talk on “Repurposing of drugs against COVID-19” Lisie College of Pharmacy, Kerala.
- (e) Invited talk on “Pharmacovigilance of drugs” CT university, Punjab.

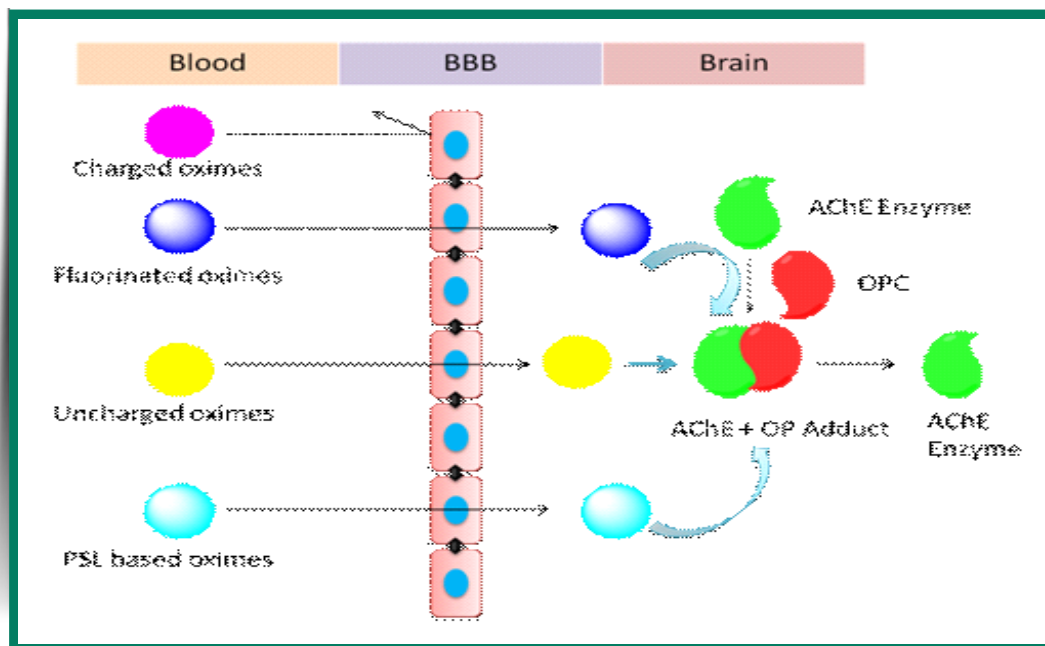
Research Activities

Department of Medicinal Chemistry

The department of medicinal chemistry is working in the areas of synthesis of new drugs and fluorescent diagnostic agents for applications in various diseases such as Alzheimer's and tuberculosis. In addition to this, we are also working to make new chemical agents for reversing organophosphorous poisoning and for sensing metal cations as well as associated anions.

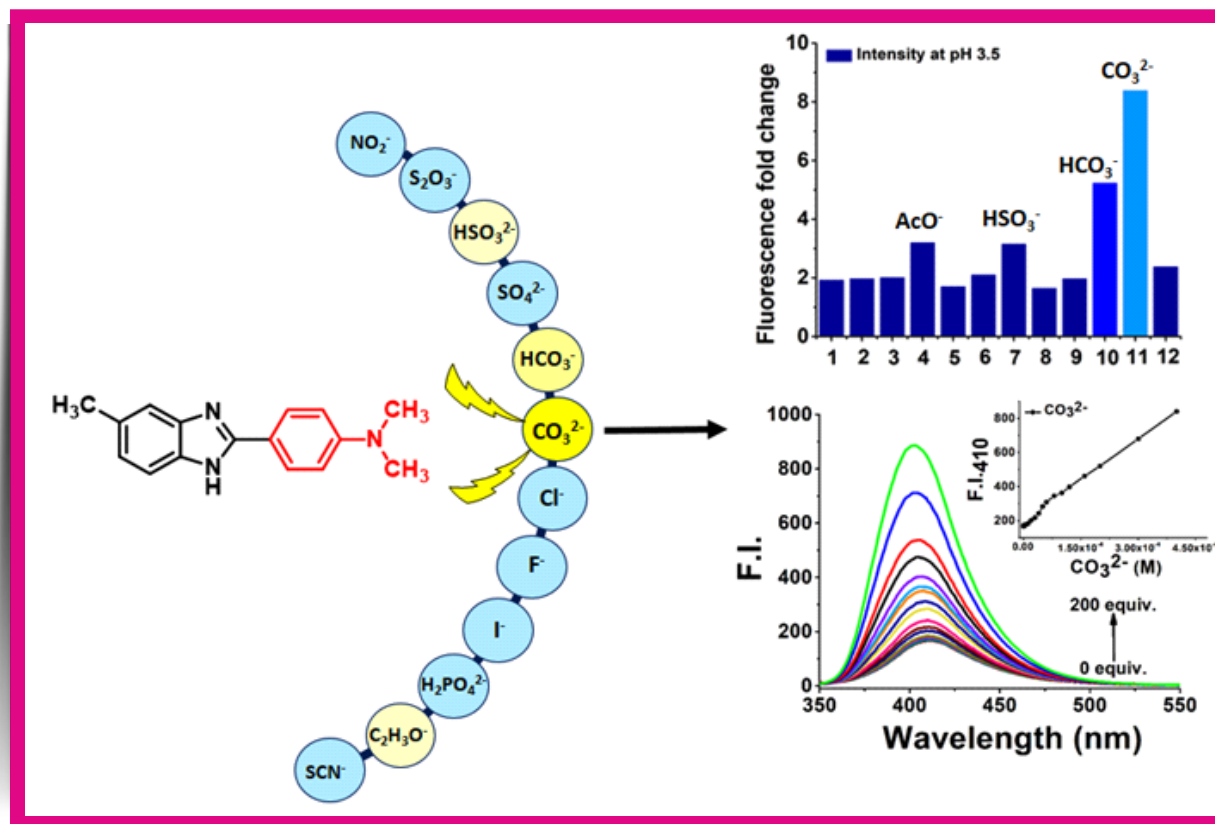
New Agents Reversing Organophosphorous Poisoning

Organophosphorous pesticides such as parathion, malathion, chlorpyrifos, monocrotophos, diazinon, and dichlorvos are commonly employed in agriculture to kill crop damaging pest in order to enhance agricultural productivity. The mechanism of toxicity exerted by organophosphorus poisoning is irreversible inhibition of acetylcholinesterase (AChE) that leads to failure of transmission of nerve impulse which further causes various neurological disorders such as convulsion and finally leading to death of victims. We are designing and synthesizing new oxime, non-oxime based scaffold and exploring their efficiency as reactivator against organophosphorus intoxication.



Alzheimer's disease (AD) is the most common form of dementia. According to the World Alzheimer Report 2018, currently, 50 million populations are suffering from AD that will reach 82 million in 2030 and 152 million in 2050. In India, more than 4 million people have some form of dementia. We are involved in the designing, synthesizing multi target molecules and evaluated to various targets of Alzheimer disease.

Fluorescence based anion sensing by small molecules is another area of exploration within the department.

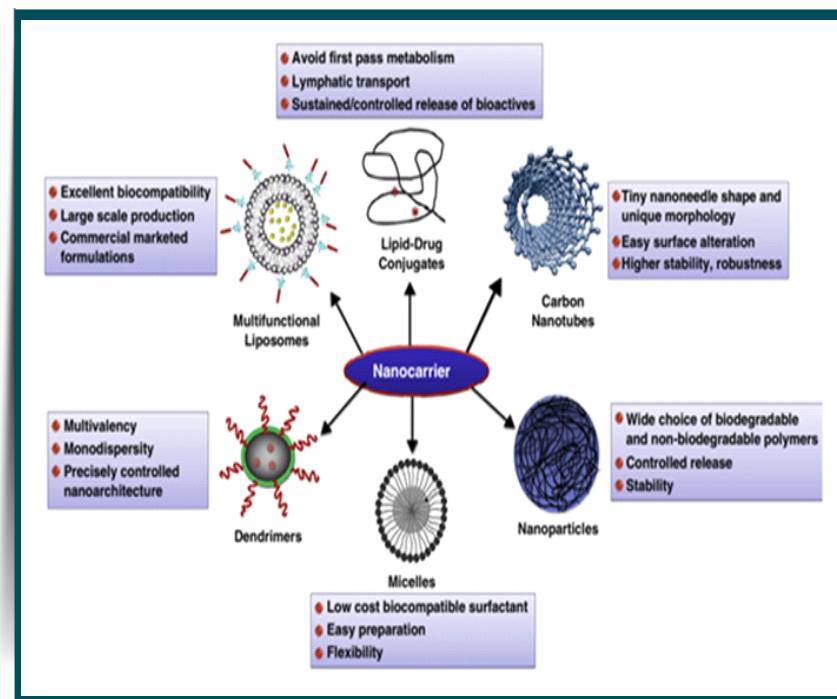
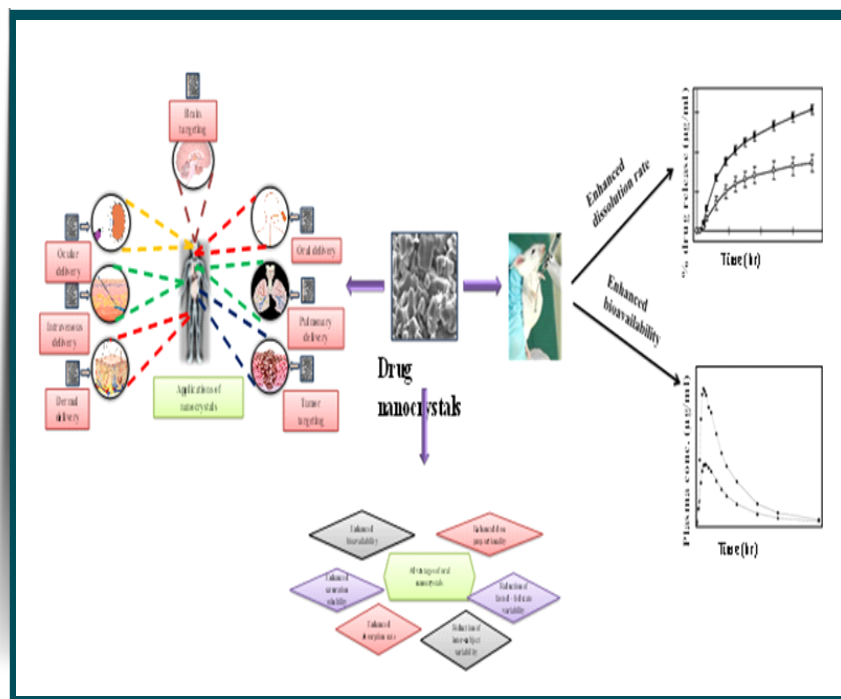


Department of Pharmaceutics

The Department of Pharmaceutics is actively involved in research and development of novel drug delivery systems being one of the mandate research areas of the institute particularly for antitubercular drugs, neurodegenerative disorders and Japanese encephalitis. The department of pharmaceutics has several well equipped laboratories with sophisticated analytical equipments available such as ultrasonicator, tablet compression machine, high speed homogenizer, probe sonicator, high pressure liquid chromatography, differential scanning calorimeter, Karl Fischer titrator, Mastersizer and Zetasizer for particle size and zeta potential measurement of micro/nanoparticles, instrument for rheology and microrheology measurement, lyophilizer, coating machine, Franz diffusion cell, stability chambers, tablet dissolution apparatus, bulk density/tapped density apparatus, Spray dryer, hot stage microscope and UV spectrophotometer. In-house double/tripled distilled water is available through Millipore water purification unit. Online UPS for power backup for instruments and other necessary smaller equipment are available for smooth running of experiments. Nanoformulations

- a) Nanocrystals/cocrystals
- b) Dendrimers
- c) Silica lipid hybrid systems and Lipid micro/nanoparticles
- d) Targeted drug delivery
- e) Amorphous solid dispersion
- f) Gastroretentive drug delivery systems
- g) Topical and transdermal drug delivery systems
- h) siRNA delivery systems

The department is also engaged in formulation & evaluation of Tretinoin loaded NLC for Topical delivery, Voriconazole loaded NLC based gels for therapeutic applications, Formulation and Evaluation of Self Emulsifying drug delivery System of Montelukast sodium, Preparation and Evaluation of DEC (Diethylcarbamazine citrate) loaded NLC for oral lymphatic delivery, Fabrication, Optimization and Evaluation of Decitabine Liposome for Lymphatic Targeted Drug Delivery system, Nose to Brain delivery of Azacitidine loaded polymeric nanoparticles, Preparation and Evaluation of Amoxapine Piperine loaded NLC for brain targeted delivery system and Nanocrystals for therapeutic applications in drug delivery.



Department of Pharmacology & Toxicology

The Department of Pharmacology and Toxicology was established in 2012 with an intake capacity of six MS Pharm students, and has initiated PhD program in Pharmacology and Toxicology with yearly intake of two students. During the 2019-20 the department has seen significant expansion, both in terms of infrastructure and functional capacities. Our student intake for the MS program expanded to 15 students every year. The department has CPCSEA approved small animal house facility. The *in-vitro* facility is also available in the department to facilitate lead optimization and identification. The department is in process to set up a whole body animal imaging and Confocal microscopic imaging facility.

The department aims towards development of a world-class scientific research laboratory alongside imparting education and training in Pharmacology and Toxicology discipline. The vision of the Department of Pharmacology and Toxicology is to expand the current research capabilities to address health issues prevalent in India along with local regions of Uttar Pradesh. We aim to achieve this by exploiting latest advances and innovations in diagnostics, therapeutics and preventive strategies. Our current understanding of neurodegenerative diseases shares common pathological features with the neurological consequences of environmental toxins and Japanese Encephalitis (JE). Hence, our focus of research is on neurodegenerative diseases, Japanese Encephalitis & environmental toxins (metals/organophosphates) induced toxicities. The environmental toxins are thought to be the major contributors in the various diseases like cancer, neurological and metabolic disorders etc. Our one of the major focus is on chelation therapy to provide safe and effective treatment for metal toxicity. The department has explored diverse research tools including *in-vitro* and *in-vivo* animal models of neurodegenerative diseases to study the molecular mechanisms of the disease and to screen novel compounds for treatment of these diseases.

The department is well-equipped with various technical tools relevant to study immunological markers, alteration in neurotransmitter levels, oxidative stress, biochemical markers, pro-inflammatory signaling in cellular and animal-based models. Changes in these biomarkers may further be corroborated by neurobehavioral abnormalities using a rodent behavioral test battery. NIPER-R has ample resources as well as specialized professionals to provide adequate training to the students in M.S. (Pharm) and PhD course, and to perform novel research in these therapeutic areas.

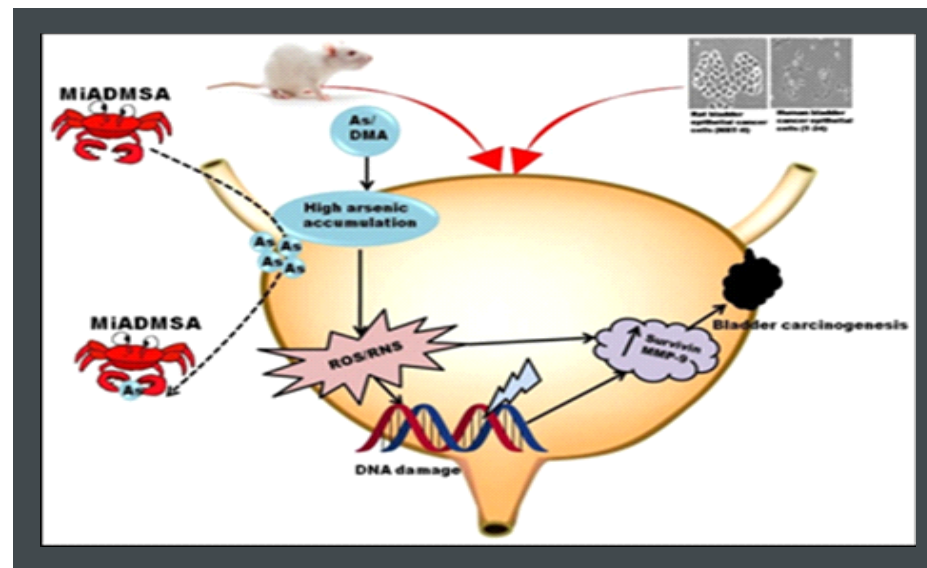
Research Theme in the Department of Pharmacology & Toxicology

1. Mechanistic understanding of the metal/pesticide exposure induced neurotoxicity, and development of novel therapeutic approaches for their management.
2. Identification and validation of new therapeutic targets to control chronic neuroinflammation and screening of novel compounds for these targets.
3. Lead identification and optimization of novel targets for Japanese Encephalitis.
4. Use of nanotechnology as nanomedicine in neurotherapeutics and assessment of their potential toxicity.

Research highlights

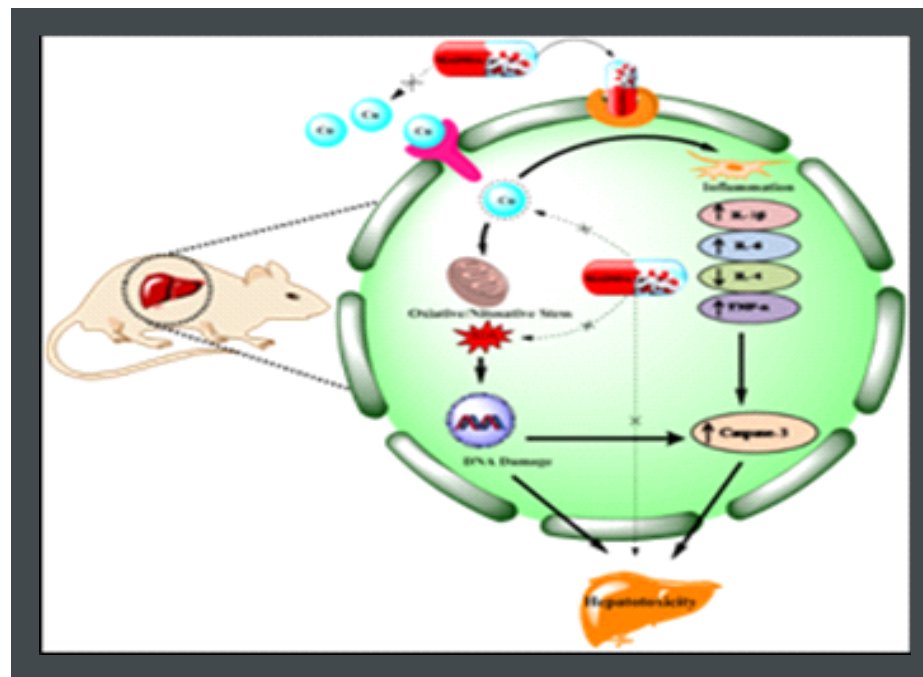
MiADMSA on bladder carcinogenesis

Arsenicosis is a major threat to public health and is a major cause of the development of urinary bladder cancer. Oxidative/ nitrosative stress is one of the key factors for these effects but the involvement of other associated factors is less known. There is a lack of data for the efficacy of chelator against urinary bladder carcinogenesis. This study demonstrates the early signs of arsenic exposed urinary bladder carcinogenesis and its attenuation by Monoisoamyl dimercaptosuccinic acid (MiADMSA).



MiADMSA on Wilsons Disease

Wilson disease (WD) is an autosomal-recessive disorder associated with the impaired copper metabolism, resulting in hepatic and neurologic manifestations. d-Pencillamine (DPA) is a first-line of treatment however, monoisoamyl 2, 3-dimercaptosuccinic acid (MiADMSA), is gaining recognition recently as a future chelating agent of choice. We evaluated the effects of MiADMSA against copper-induced (20 mg/kg, orally, once, daily for 16 weeks) hepatic and immunological changes in the male Sprague Dawley (SD) rats. MiADMSA treatment reduced the hepatic and brain oxidative stress and inflammation in chronic copper exposed rats. We conclude that MiADMSA could be a promising antidote for the chronic copper toxicity and possibly in the clinical management of WD.



Multi-metal induced reproductive toxicity

We investigated the effects of individual or combined (binary and ternary) exposure to aluminum, copper, and zinc on (i) sperm and testosterone levels (ii) oxidative stress and (iii) structural changes in testis of male Wistar rats. Animals were exposed to aluminum, copper, and zinc either individually in combination for 24 weeks. The exposure to aluminum, copper individually and in combination led to a significant decrease in sperm counts and an increased oxidative stress compared to the control group. Exposure to zinc caused significant decrease in oxidative stress and an increase in different sperm variables. In summary, while co-exposure to zinc with aluminum or copper produced reproductive toxicity the co-exposure to all the three metals may lead to a significant testicular toxicity and these changes were related to increase in oxidative stress in rats.

Department of Regulatory Toxicology

The Department of Regulatory Toxicology was introduced in NIPER-R in the academic year 2018-19 with intake capacity of 10 M.S. (Pharm) students. The main focus of the Department is to inculcate the young researchers with the theoretical and practical aspects of toxicological studies with special focus on the approved regulatory guidelines implemented by various national and international regulatory agencies. The department is earnestly involved in various inter and intra collaborative efforts within NIPER and pharmaceutical industries to address the safety and regulatory aspects of drug development. The research activities are carried out in close collaboration and resource sharing in close association with the Department of pharmacology and toxicology. The main focuses of the Department of Regulatory Toxicity are:

- To provide trained manpower to drug discovery industries under rapidly changing regulatory requirements.
- To improve and update the technical skills in the area of regulatory toxicology according to the new knowledge and regulatory agencies.
- To carry out toxicological studies for in-house new chemical entities (NCEs).
- To provide support to the technical and scientific support to pharmaceutical companies/ industries and research organizations to test their New Chemical Entities (NCEs).

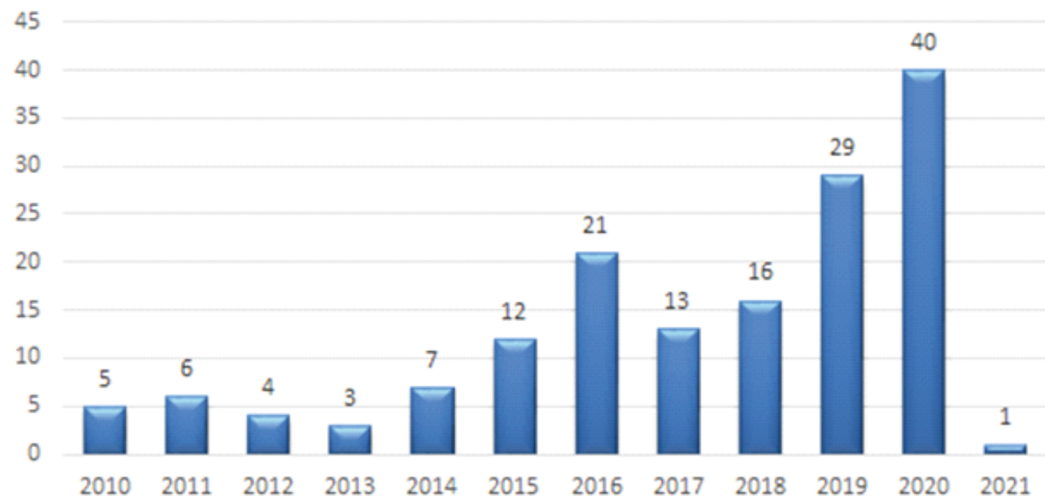
This year, the first batch from the department have been awarded the M.S. (Pharm) in Regulatory Toxicology with 100% placement (out of opted for placement) in various reputed pharmaceutical industries.

Department of Biotechnology

The Department of Biotechnology at the NIPER-Raebareli is being started from academic session 2020-21 to contribute to the fascinating and emerging role in the drug discovery process and development of biologicals. The department initially started with a master programme (M. S. Pharm; 10 seats) and will soon have a Ph.D. programme too. The department is focused on imparting quality education and providing an excellent research environment in the area of drug discovery process and biotechnology. The department has developed adequate facilities and infrastructure to support these teaching and research initiatives in specialized areas of Biotechnology.

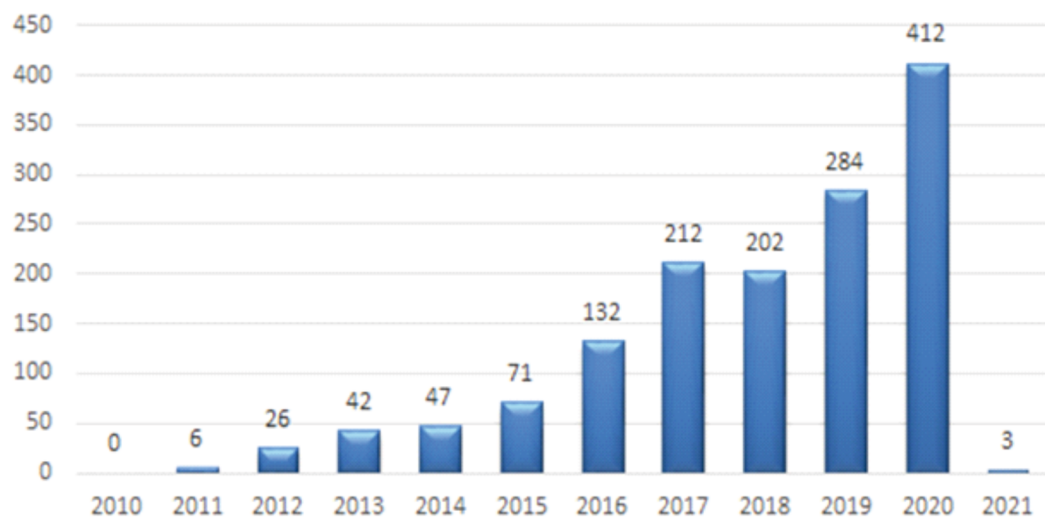
Publications in Journals Articles/ Book Chapters

Publications as on 01.11.2020



Source: Scopus

Citations as on 01.11.2020



Source: Scopus

S. No.	Name of the Faculty	Publication (Google)	Citation (Google)	H-index (Google)	i10-index (Google)
1	Dr. SJS Flora	331	13573	59	198
2	Dr. Abha Sharma	17	257	9	9
3	Dr. Rakesh Kumar Singh	16	475	7	5
4	Dr. Nihar Ranjan	34	613	14	18
5	Dr. Awesh Kumar Yadav	40	1179	13	16
6	Dr. Gopal Lal Khatik	82	924	14	22
7	Dr. Ashok Kumar Datusalia	33	498	13	14
8	Dr. Keerti Jain	54	2868	23	32
9	Dr. Anoop Kumar	53	475	12	17
10	Dr. Saba Naqvi	21	545	7	6
11	Dr. Rahul Shukla	49	253	9	8

Google Scholar Data as on 19-10-2020

Patents

S.No	Title	Inventors	Patent No.
1.	Combinatorial Formulation For Solubilization of Poorly Water Soluble Drugs & Method of Preparation Thereof	Dr. Rahul Shukla, Mr. Mayank Handa, Dr. SJS Flora	201911046999
2.	Novel Pharmaceutical Compositions of Montelukast for Self-Emulsifying Drug Delivery System	Dr. Rahul Shukla, Mr. Mayank Handa, Mr. Nikhil Chauhan, Dr. SJS Flora	201911042226
3.	Novel pharmaceutical gastroretentive sustained release composition and process of preparation thereof	Dr. Ujwal D Kolhe, Mr. Mahesh G Baspure and Dr. SJS Flora	201911022807
4.	Novel formulations of Lurasidone with improved solubility,	Dr. Ujwal D Kolhe and Dr. SJS Flora	201911006780
5.	Novel Bedaquiline Formulations With Improved Solubility	Dr. Ujwal Dkolhe, Ms. G Pant and Dr. SJS Flora	201911020164
6.	Molecular probe for organophosphorus compounds detection & method of preparation	Ashima Thakur, Muskan Gori, Dr. Abha Sharma, Dr. SJS Flora	CBR Number: 194 (3 Jan 2020)

Patents

S.No	Title	Inventors	Patent No.
7.	Novel Lurasidone Solution Compositions and Method of Preparation Thereof	Dr. Ujwal D Kolhe, A Prabakaran, Dr. SJS Flora	File on 13 Jan, 2020
8.	Novel Composition of Zein Polymeric Nano-Particles and Method of Preparation Thereof	Dr. Rahul Shukla, Mayank Handa, Ajit Singh, Abhas Saxena, Dr. SJS Flora	202011024072, File on 9 June 2020
9.	Apparatus for Testing Recognition Memory and Spontaneous Locomotor Activity of Laboratory Animal	Dr. Anoop Kumar, Dr. SJS Flora	TEMP/E-1/2869 8/2020-DEL, File on 20 June 2020
10.	Natural Oil Based Herbal Sanitizer Hydrogel Composition and Method of Preparation Thereof	Dr. Awesh K Yadav, Dr. Rahul Shukla, Dr. Saba Naqvi, Dr. SJS Flora	20201103348, Filed on 5 August 2020
11.	Coating Composition having Pathogen Deactivation Properties for 3-Ply Surgical - Mask and Method of Preparation Thereof	Dr. Rahul Shukla, Dr Anoop Kumar, Dr Awesh K Yadav, Dr. SJS Flora	202011033702, Filed on 6 August 2020
12.	Antitubercular Pharmaceutical Solid Dispersion of Bedaquiline Fumarate and Method of Preparation Thereof	Vishwas P. Pardhi, Dr. Keerti Jain, Dr. SJS Flora	202011040038, File on 16 September 2020

Extramural Projects

Dr Nihar Ranjan

Aminoglycoside (Tobramycin) Based Hybrid Small Molecules Targeting Bacterial rRNA A-site for Developing New Anti-tuberculosis Agents.

SERB-Core Research Grant (CRG/2018/001860)

Dr Saba Naqvi

DST Women Scientist (DST/WOS-A) (In collaboration with IIT-Roorkee)

Development of Tumor Targeted Multifunctional Calcium Phosphate Nanocarrier for Gene-Directed Enzyme Prodrug Therapy (GDEPT)

Project Cost: 32 lakhs

NPDF

Dr. Rewati Raman Ujjwal

Fabrication of biodegradable and biocompatible polymeric nanocomposites for anticancer targeted therapeutics.

Funding Agency: DST-SERB

DST No: PDF/2018/002905/CS (Ver-1)

Infrastructure Development

The doctoral research program was started in the institute in the year 2017 in three disciplines: Medicinal Chemistry, Pharmaceutics and Pharmacology & Toxicology. Soon, the need of an advanced instrumentation was realized to help in the smooth conduct of experiments, cut the lag time on external instrument access, reduce the sample analysis charges and also to generate user charges towards self-sustenance of the Central Instrumentation Facility (CIF). Adding to the diversity of the instruments in the center, more instruments were added whose applications range from material characterization to microscopy. Following is the list of instruments added in the CIF recently-

Circular Dichroism Spectrometer

Circular dichroism (CD) spectrometer is routinely used in the conformation analysis of biomolecules. Our instrument is equipped with a peltier thermal control unit as well a microcouette flow cell assembly to allow linear dichroism analysis in oriented conditions. In addition to conformational analysis of different biomolecules, this instrument can also be used to perform thermal denaturation and kinetic studies. We have a JASCO- J 1500 CD spectrometer which is one of the latest versions of the instrument.



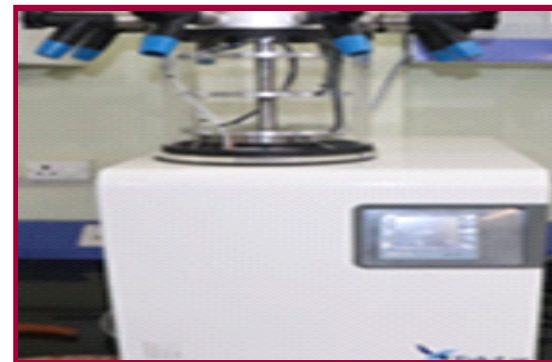
Isothermal Calorimeter

Isothermal calorimeter is used to accurately analyse drug-biomolecule interactions at fixed temperatures. Using these instruments different thermodynamic parameters such as enthalpy, entropy, Gibbs free energy, heat capacity among other related parameters such as binding stoichiometry determination. We have a MicroCal PEAQ ITC instrument which is equipped with an automatic washing module.



Benchtop Lyophilizer

Lyophilizers are used to dry aqueous samples using the sublimation process. In laboratories, it is used to completely dry aqueous chemical and biochemical samples in different storage types such as flasks, bottles, vials and microcentrifuge tubes. Our instrument is a Lyoquest Telstar Freeze drying system which can enable cooling/freeze of samples from very low temperatures (-80 degree Celsius and below). It has eight ports attached to it to allow drying of multiple samples together.



Digital polarimeter

Digital Polarimeter is used to assist in the stereochemical analysis of chiral molecules. We have an Anton Parr digital polarimeter to enable analysis of chiral samples. The services of the polarimeter can also be availed by external users on payment basis.

Isothermal Calorimeter

Hot-stage microscopy is used to examine the thermal transitions, visually, on heating and cooling the sample when the sample is heated or cooled. In this technique you can observe the thermal transition occurring in a sample when it is heated or cooled which helps in understanding the physics of transition. The furnace with a heating element above and below the sample is an important part which helps in maintaining the temperature uniformity of sample throughout the measurement.



Spray Dryer

Spray drying is a well-known method of particle production which comprises the transformation of a fluid material into dried particles, taking advantage of a gaseous hot drying medium, with clear advantages for the fabrication of medical devices. Spray dryer is commonly used in the production designing of microspheres and microcapsules for drug delivery. Process of Spray drying works at different stages viz. atomization, droplet-to-particle conversion and particle collection.



UV-Vis Spectrophotometer

The Cary 60 UV-Vis spectrophotometer has a wavelength range of 190–1100 nm that can be scanned in under three seconds. The system can be fitted with long pathlength cuvettes and solid sample transmission or reflectance accessories, and is ideal for remote UV-Vis absorbance analysis, when fitted with fiber optic probes.



Dissolution Test Apparatus

Dissolution Test is one of the vital quality control tools in the Pharmaceutical industry to evaluate the stability of the product, oversee the changes in the formulation and to examine the drug release pattern of the modulated drug products.



Probe Sonicator

Probe Sonicator is widely used in nanotechnology for even dispersion of nanoparticles in liquids as well to break down particles into nano size. Probe Sonicator is also used to disrupt cell membranes and release cellular contents, to fragment molecules of DNA.



Ultra High Performance Liquid Chromatography (UHPLC)

An ultra-high performance LC that is designed for the lowest dispersion for the most challenging ultra-HPLC experiments. It is designed to be both a HPLC and high-end UHPLC system in a single flow path.

High-performance liquid chromatography (HPLC) is a chromatographic technique which is used for identifying, quantifying and purifying the individual components of the mixture in the field of pharmaceutical sciences as well as in other scientific fields like biochemistry, biotechnology, industrial chemistry and analytical chemistry.



iBright ChemiDoc Imaging System

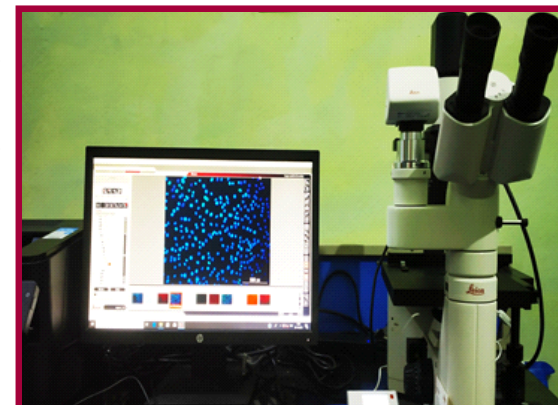
The iBright ChemiDoc Imaging system provides support to acquire images from a wide range of gels and blots. The instrument uses a super-sensitive camera with a charged-coupled device (CCD) and a large maximum aperture sensitive lense, which provides high chemiluminescent activity. The instrument also has five additional high sensitive LEDs for detection of a range of fluorophores and dyes.



Immuno-fluorescence Microscope

Immunofluorescence (IF) microscopy is a widely used example of immunostaining and is a form of immunohistochemistry based on the use of fluorophores to visualize the location of bound antibodies. It is a particularly robust and broadly applicable method generally used by researchers to assess both the localization and endogenous expression levels of proteins of interest.

Immunofluorescence can be used on tissue sections, cultured cells, or individual cells that are fixed by a variety of methods. Antibodies can be used in this method to analyze the distribution of proteins, glycoproteins, and other antigen targets, including small biological and non-biological molecules.



Cytoflex LX Flow Cytometer

Flow cytometry is a technique used to detect and measure physical and chemical characteristics of a population of cells or particles. It provides a rapid analysis of multiple characteristics (both qualitative and quantitative) of the cells. The Cytoflex LX Flow Cytometer expands research possibilities with up to six lasers and 21 color parameters. Six spatially separated lasers allows panels to be spread across the spectrum reducing cross talk and spectral overlap.



Cytoflex LX Flow Cytometer

Ultracentrifuge has attained incredible levels of speed and sophistication, without sacrificing usability. This is most commonly used in molecular biology, biochemistry, and cell biology. The applications of ultracentrifuges include the separation of small particles such as viruses, viral particles, proteins and/or protein complexes, lipoproteins, RNA, and plasmid DNA.

