14th ANNUAL REPORT

2020 2021

NIRF-2020

Rank #2nd TLR & Rank #8th AIR

Top 2% Scientists in the world

Stanford University, USA

ARIIA-2020

Band A (Rank Between 11th-25th)

CAS Registry Number

15 Novel compounds

अहमदाबाद
AHMEDABAD

National Institutes of Pharmaceutical Education and Research - Ahmedabad (NIPER-A)

राष्ट्रीय औषधीय शिक्षा एवं अनुसंधान संस्थान - अहमदाबाद

CONTENT

It does not matter how slowly you go as long as you do not stop!

From the Director's Desk

Greetings and welcome to the National Institute of Pharmaceutical Education and Research Ahmedabad (NIPER-Ahmedabad). NIPER-Ahmedabad was established in the year 2007 to train individuals displaying competency in the pharmaceutical sector to meet the requirements of the ever-growing healthcare sector. Ever since then, the Institute has an outstanding record of producing exceptional pharmaceutical scientists, researchers, and academicians. The Institute is functioning from a transient, temporary building on a 60-acre land site at Gandhinagar since August 2016.

Located in the industrial hub of Gujarat, NIPER-Ahmedabad offers several experiential learning opportunities for its students, including extramural internships at pharmaceutical companies. Here we believe that creating competent pharmacists begins with cultivating compassion, respect, and academic integrity. Diversity is one of our core values, and we strive to inspire our students to be forces of positive change in the world.

The brilliance in academics and research activities comes from the thoughtful selection of faculty members in which NIPER-Ahmedabad has not made any compromise. It has gone to outreach and fetches scholars with excellent postdoctoral and teaching experiences from all over the world to enrich the education and research quality of the Institute. With these exceptional faculties, the Institute motivates its students to achieve the highest standards of excellence in their courses. With its fascinating team, NIPER-Ahmedabad is on an engrossing path of growth and development. I am glad to share that we have attained All India **RANK # 2nd in TLR** (teaching, learning, and research in Pharmacy) with **Overall Rank # 8th in NIRF-2020 ranking of MHRD.** Today, in recently released ARIIA Ranking 2020, NIPER-Ahmedabad was placed in **Band A** category of public funded Institutes. NIPER-Ahmedabad has established itself as one of the top technological pharmacy research institutes in the country, but that is just the tip of the iceberg equated to the gigantic initiatives and evolutions the Institute is making. Research collaboration is an integral part of our growth strategy. NIPER-Ahmedabad has expanded its outreach to the industry as well as collaborated with the best academic institution of USA, UK, Australia, Ireland, and Malaysia for collaborative research, faculty visit, syllabus up-gradation, and regulatory reforms with several industries and leading institutes. We have made a spectacular start, but there is a long way to go nevertheless I am pretty certain that with the dynamic teamwork of our entire faculty, staff, employees, collaborators, stakeholders, students, parents of the students, constitutional organizations, funding agencies and public at large, we will be able to achieve the maxims of NIPER-Ahmedabad.

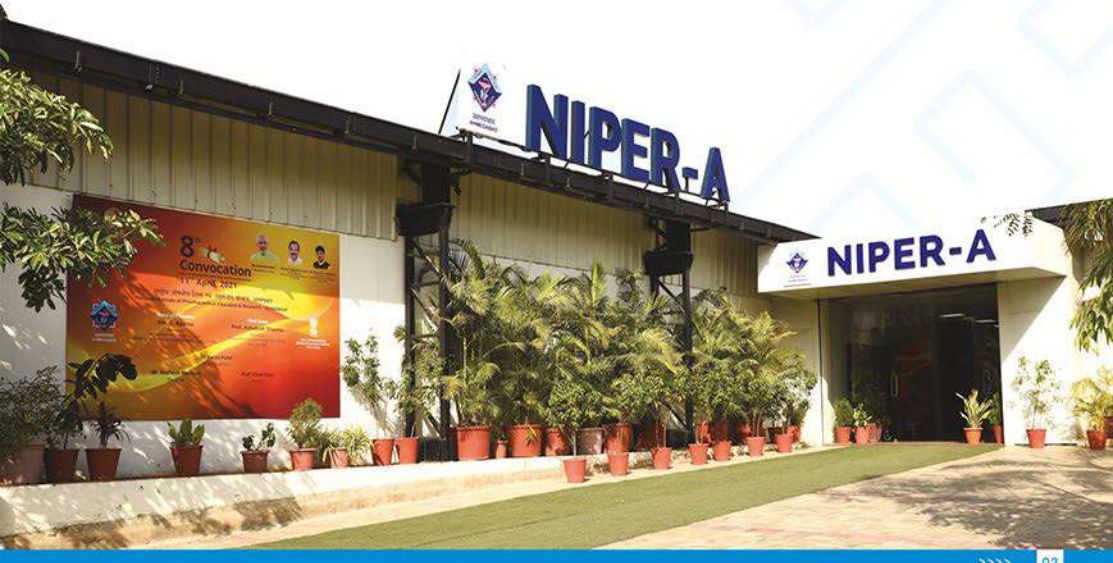
Prof. Kiran Kalia
Director - NIPER-Ahmedabad

अहमदाबाद
AHMEDABAD

National Institute of Pharmaceutical Education and Research, Ahmedabad

राष्ट्रीय औषधीय शिक्षा एवं अनुसंधान संस्थान, अहमदाबाद

A BIG SALUTE TO CORONA WARRIORS



ABOUT
NIPER-AHMEDABAD

The wave of globalization has propelled the expansion of the Indian Pharma sector. India is amongst the top 10 countries of the world, regarding the volume and value of Pharmaceutical products. Enthusiastic and entrepreneurial efforts have turned Gujarat into the hub of Pharma Manufacturing, Research & Development activities. The innovative and translational approach of the Indian scientists resulted in the paradigm shift from the industrial age to knowledge enriched economy.

Pharmaceutical education has played a vital role in human resource development, catalyzing the growth of life sciences and healthcare industry. The visionary augmentation of the Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Government of India has led to the establishment of six new NIPERs in 2007. It is currently functioning from a transient, temporary building on a 60-acre land site at Gandhinagar since August 2016. NIPER-Ahmedabad is presently offering **M.S. and Ph.D.** programs in **08 streams** (Pharmaceutics, Pharmaceutical Analysis, Pharmacology & Toxicology, Biotechnology, Natural Products, Medicinal Chemistry, Medical Devices, Pharmaceutical management). Plan to establish the **National Centre for Medical Devices (NCMD)** to cater as well as nurture the need for booming medical device industries within and outside India. The interdisciplinary courses and cultural diversity at NIPER-Ahmedabad sparks the spirit of innovative research and all-round development of its students. The location of the Institute ensures a symbiotic association with Pharmaceutical Industries, Medical centers, and technological universities. In the year 2020, it has achieved all India Rank # 2nd in TLR (teaching, learning, and research) with overall **Rank # 8th in the NIRF-2020** ranking of MHRD. ARIIA Ranking 2020, NIPER-Ahmedabad was placed in **Band A** category of public funded Institutes. NIPER-Ahmedabad aspires to serve as a good launching platform to revamp the pharmaceutical education and research and to initiate the new era of pharmaceutical and biomedical sciences.

VISION & MISSION

VISION

To be a Nationally and Internationally recognized premier Centre of Excellence in Teaching, Research and Entrepreneurial Training in Pharmaceutical Science and Biomedical Technologies.

MISSION

- To ensure that departmental and administrative associates are provided with the necessary resources to excel in learning, research, teaching, and administration.
- To establish the National Centre of Medical Devices (NCMD) for contributing to Medical Technology education through collaborative programs of mutual interest.
- To evolve Medical Technology clusters with shared facilities for creating an ecosystem for the benefit of SM Es focusing on Medical Technology.
- Development of human resources by skill up-gradation through specialized courses and training programs.
- To encourage students for innovative translational research through interdisciplinary research teams.
- To promote national and international collaboration with Pharmaceutical Industries, Medical Centres, and Universities.
- To facilitate international student and faculty exchange programs to enhance the diversity on the campus.

Faculty

Prof. Kiran Kalia, Ph.D., — Director

Research Interest:

- Proteomic and genomic biomarkers for diabetes and its microvascular complications
- Role of miRNA in epigenetics and pathogenesis of diabetic nephropathy
- Transcriptome analysis of Oral Squamous Cell Carcinomas patients from Gujarat, India

Dr. Akshay Srivastava, Ph.D. — Associate Professor

Research Interest:

- Translational biomedical research involving fabrication of biomaterial-based medical devices.
- Finding novel therapeutic strategies for tissue regeneration and developing in vitro platforms to understand disease pathology.

Dr. Pallab Bhattacharya, Ph.D. — Associate Professor

Research Interest:

- Intra-arterial delivery of mesenchymal stem cells in small/large animal model of ischemic stroke and study mechanisms of neuroprotection
- Regulatory RNA-mediated mesenchymal stem cell engineering-based drug delivery to the brain

Dr. Rakesh Kumar Tekade, Ph.D. — Associate Professor

Research Interest:

- Polymeric Transfecting Reagent for targeted drug and RNA Interference (RNAi) therapy
- Targeted Nano Drug delivery in Cancer, Arthritis, Neurodegenerative disorders, etc.
- Implantable Chemo-Photothermal Nanoseeds to tackle resistant Cancers

Dr. Abhijeet Kate, Ph.D. — Associate Professor

Research Interest:

- Implementation of various LC-MS based dereplication strategies to discover novel scaffolds from biological sources, fingerprinting of extracts by LC-UV-MS
- Development of novel approaches for the separation and characterization of marine natural products to accelerate the discovery of drug leads

Dr. Bichismita Sahu, Ph.D. — Associate Professor

Research Interest:

- Design and synthesis of Peptides and Modified Peptide Nucleic Acids (PNAs) for therapeutic and diagnostic applications
- Design and synthesis of Bio-inspired hybrid molecular scaffolds and conjugates for Cancer, Metabolic and Neurological Disorder therapy

Dr. Rachana Garg, Ph.D. — Associate Professor

Research Interest:

- Elucidating the nature of the dysregulated signaling networks in cancer, as well as the association of oncogenic kinases
- Finding novel targeting molecules for cancer therapeutics using varied cellular, biochemical, genetic, and molecular approaches

Dr. Ravi Shah — Associate Professor

Research Interest:

- Characterization of complex APIs, Formulations, and Biosimilars; biopolymers and complex generic formulations towards sameness strategy for regulatory submission
- In-vitro release profiling through advance dissolution methods
- LC-MS and NMR based characterization of impurities, drug-drug/ drug-excipient interaction products, degradation products

Dr. Alok Jain, Ph.D. — Assistant Professor

Research Interest:

- Develop a therapeutic application using various computational techniques. Current research areas are drug delivery, tissue engineering, drug design, and structural biology
- Comparative simulation study of human and rat Aß aggregation for the development of a potential therapeutic application for Alzheimer's.

Dr. Amit Mandoli, Ph.D. — Assistant Professor

Research Interest:

- Focuses on using high-throughput assays such as NGS, CRISPR screen
- Protein Mass-spec to identify unique molecular processes that are involved in cancer
- Translate the fundamental insights gained through his research into diagnostics and drug discovery processes.

Faculty

Dr. Dinesh Kumar, Ph.D. — Assistant Professor

Research Interest:

- Development of new strategies and concepts in synthetic organic chemistry to address the challenging problems in biomedical research, particularly anti-cancer drug discovery
- Development of sustainable organic reactions (Green Chemistry)
- Total synthesis of pharmaceuticals and natural products

Dr. Amit Shard, Ph.D. — Assistant Professor

Research Interest:

- Synthesis of BAX activating compounds and neuroprotective molecules
- Microwave-assisted organic synthesis
- Novel and sustainable protocols for bioactive molecules targeting kinesin proteins towards anticancer activity

Dr. Neha Arya, Ph.D. — Assistant Professor

Research Interest:

- Explore biomaterials for applications in tissue engineering, drug delivery and diagnostics
- Improve precision in cancer diagnosis and treatment through an enhanced relationship between bench-side research and bed-side applications.

Dr. Govinda Kapusetti, Ph.D. — Assistant Professor

Research Interest:

- Synthesis and fabrication of smart nano-bio materials for articular surfaces and musculoskeletal tissue regeneration and care
- Alternative strategies for cancer theranostics like magnetic hyperthermia and photodynamic therapy
- Engineered approaches such as electrical and mechanical stimulations for regenerative medicine

Dr. Satyasheel Sharma, Ph.D. — Assistant Professor

Research Interest:

- Transition metal-catalyzed C-H activation reactions for the synthesis of anticancer agents
- Fluorine-containing scaffolds of pharmaceutical importance via C-H Bond Activation
- Unreactive C(sp2)-H, C(sp3)-H bond functionalization
- Cross dehydrogenative coupling (CDC), Catalysis, functionalization of the porphyrin ring

Dr. Siddheshwar Chauthe, Ph.D. — Assistant Professor

Research Interest:

- Bioassay-guided isolation and structure elucidation of bioactive compounds from medicinal plants
- Development of methods for standardization of polyherbal formulations using hyphenated techniques
- To establish Q-markers for the quality standards of traditional Ayurvedic /herbal medicines

Dr. Pinaki Sengupta, Ph.D. — Assistant Professor

Research Interest:

- Pharmacokinetic, toxicokinetic, metabolic profiling of chemical entities in discovery and formulation development phase.
- Analytical and Bioanalytical method development, validation using HPLC, UPLC, LC-MS/MS, Impurity profiling.
- Compatibility and stability analysis of pharmaceuticals

Dr. Amit Khairnar, Ph.D. — Assistant Professor

Research Interest:

- Development of breast cancer metastatic mouse model.
- Detection of the pathophysiological mechanism behind metastasis using the IVIS imaging system.
- Detection of the role of neuroinflammation in alpha-synuclein pathology progression in Parkinson's disease.

Dr. Hemant Kumar, Ph.D. — Assistant Professor

Research Interest:

- The death of the endothelial cell continues throughout the acute phase of the spinal cord injury (SCI), predominantly at the injury epicenter.
- To find the target or NCEs for endothelial protection/stabilization within penumbral microvasculature and preserving the blood-spinal cord barrier integrity.
- Parkinson's disease, neuropathic & inflammatory pain, multiple sclerosis, and arthritis.

Dr. Derajram Benival, Ph.D. — Assistant Professor

Research Interest:

- Physico-chemical characterization of small molecules, peptides
- Proteins and phytopharmaceuticals development of oral, nasal, and injectable
- Formulations. Development of a new dosage form to meet unmet medical needs.

Faculty

Dr. Giriraj Sahu, Ph.D. — **Assistant Professor**

Research Interest:

- Focuses on studying the cellular mechanisms that regulate the excitability of principal neurons of the brain
- Targeting specific ion channel proteins and their interacting protein partners. In a healthy brain

Nadiminti Rajesh Kumar — **Assistant Professor**

Research Interest:

- He is expert in Pharmaceutical Marketing, Marketing Research, Advertising Research.
- He is an experienced Pharmaceutical Sales and Marketing Professional with more than 3 years of experience in India specific roles. Previously he is associated with NIPER Hyderabad as the Assistant Professor from past 6 years. Rajesh has extensive market research experience across diverse therapy areas like Diabetology, Cardiology, Malnutrition.

Dr. Aakanchha Jain, Ph.D. — **Assistant Professor**

Research Interest:

- Anticancer drug delivery
- Role of caspase in cancer treatment
- Colon targeting
- Development of novel delivery systems of proteins and drugs for different diseases
- Topical & Transdermal Drug delivery.

Dr. Ravindra Taware, Ph.D. — **Assistant Professor**

Research Interest:

- Bio prospecting of endophytic fungi for sustainable production of novel bioactive natural products.
- Implementation of genomic, proteomics and metabolomic approaches for the strain prioritization for isolation of bioactive natural products.
- Biotransformation of natural products to obtain chemically hard to synthesize derivatives with enhanced selectivity and bioactivity.
- Cancer Metabolomics.

Dr. Santosh Kumar Behera, Ph.D. — **Scientist**

Research Interest:

- To explore the gut microbiota in newly diagnosed diabetic patients, I have performed NGS analysis
- Presently, involved in various aspects of health informatics such as an In-silico analysis of various inhibitors using combinatorial tools for development and identification of potential inhibitors as anti-cancer and anti-viral, therapeutics
- Taking the advent computational chemistry in drug discovery process has emphasized the development of new technologies for design, synthesis, screening and decoding of combinatorial library of drugs.

Visiting Faculty

Prof. Anil Kumar Gupta

Professor of Management Education
Institute: Indian Institute of Management, Ahmedabad (Retired).

Prof. Danith H. Ly

Director
Institute: Institute for Biomolecular Design and Discovery, Department of Chemistry, Carnegie Mellon University, USA.

Prof. Amrita Cheema

Professor of Oncology and Biochemistry
Associate Director: Center for Metabolomic Studies (GUMC)
Co-Director: Proteomics and Metabolomics Shared Resource (GUMC)
Institute: Deptt of Oncology and Biochemistry Center for Metabolomic Studies, Georgetown University Medical Center (GUMC), Washington DC.

Dr. Dhaval Shah

Associate Professor of Pharmaceutical Sciences
Institute: School of Pharmacy and Pharmaceutical Sciences, University at Buffalo, State University of New York.

Prof. Hajime Hirase

Professor
Institute: Center for Translational Neuromedicine, University of Copenhagen, Denmark.

Prof. Anne-Marie Rodriguez

Professor
Institute: INSERM, France.

Dr. Prasad Shastri

Professor
Institute: University of Freiburg, Germany.

Mr. Koushik Nayak

Director of Sales & business Development
Institute: Aker Bio Sciences.

Ms Rama Durga

General Manager, Marketing
Institute: Aurobindo Pharma.

Mr O. P. Singh

President Sales & Marketing
Institute: Cadilla Healthcare.

Mr Soham Wagh

Senior Marketing Manager
Institute: GSK, Mumbai.

Visiting Faculty

Mr Rahul Singh Meena
Manager – Forecasting
Institute: Novartis

Mr Virendra Kumar
CEO
Institute: AdamNext

Mr Sudheendra Kulkarni
MD
Institute: Ferring India

Mr Venkatesh Karthikeyan
Vice President - Marketing
Institute: Dr Reddys Labs

Mr Bharat Gajuvarthi
CEO
Institute: Pragmatica

Mr Debashish Roy
Vice President – HR
Institute: FDC India Ltd.

Mr Ashish Ambasta
Managing Director - Life Sciences
Institute: Accenture Life Sciences.

Mr. Ameesh Masurekar
Director of Sales & business
Development
Institute: AIOCD Awacs.

Mr Mansoor
General Manager – Sales
Institute: Astrazeneca

Dr Akhilesh Mishra
Director – HR
Institute: Bharat Serums & Vaccines India Ltd.

Mr Keshav Poojary
Director – Sales
Institute: Biocon

Mr Selva Kumar
Director – Operations
Institute: Cognizant Technology Solutions

Mr Vyom Kesar
Manager - Business Analytics
Institute: Novartis

Ms. Shravani
Manager - Market Access
Institute: Novartis

Mr. Vivek Padgoankar
Former Director
Institute: OPPI

Adjunct Faculty

NIPER-Ahmedabad has engaged following eminent academicians and research scientists as Adjunct Professors, who can give their expert guidance on research and teaching. Adjunct professors agreed to undergo vibrant sessions of scientific discussions as well as engage classes online. They have also expressed their interest in personally visiting NIPER-Ahmedabad at mutually agreed times shortly. NIPER-Ahmedabad expresses profound thanks to all Adjunct Professors and looks forward to their crucial role in the development of NIPER-Ahmedabad and the partner institute.

Prof. Larry Benowitz
Professor of Surgery and Ophthalmology
Institute: Harvard Medical School, USA

Prof. Dileep R Yavagal
Professor of Clinical Neurology and Neurosurgery
Institute: Miller School of Medicine, USA

Prof. Antony D'Emanuele
Professor of Pharmaceutical Sciences
Institute: De Montfort University, UK

Prof. Philp M. Hansbro
Professor
Institute: The University of Newcastle, Australia

Dr. Mukul Jain
Senior Vice President
Institute: Zydus Research Centre, India

Prof. Abhay Pandit
Professor of Biomedical Engineering
Institute: NUI, Galway, Ireland

Dr. Anurag Saxena
Assistant Professor
Institute: Indian Institute of Public Health

Prof. N. Ravichandran
Retired Professor
Institute: Indian Institute of Management Ahmedabad

Adjunct Faculty

Dr. Vishal Jani
Assistant Professor
Institute: Indian Institute of Public Health

Ms. Esha Shah
Corporate trainer, Tedx Speaker

Ms. Shikha Bhagawat
Chartered Accountant
Institute: Gujarat National Law University, Gandhi Nagar

Dr. Dhyani Mehta
Assistant Professor
Institute: Nirma University

Dr. D. V. Ramana
Vice President, Data Scientist
Institute: Wissen Infotech, Hyderabad

Administrative & Technical Staff

Prof. Kiran Kalia Ph.D.
Director

Ms. Shweta Pardal
PA to Director

Mr. Avdhesh Nautiyal
Registrar

Mr. Manish Bhomia
Finance and Account Officer

Mr. Kunal Maheshwari
Assistant Registrar

Mr. Tushar Sharma
System Engineer

Mr. Sushant Rawal
Administrative Officer

Dr. Shirish Bhatiya
Veterinarian (Animal House)

Mr. Javid Babubhai Shaikh
Chief Executive Officer - Incubator BioNEST

Mr. D. R. Trivedi
Senior Accounts Officer

Ms. Nisha Tahiliani
Accountant

Mr. Sunil Parate
Store-Keeper

Ms. Pratiksha Mishra
Senior Assistant
(Administration)

Mr. Raju Prasad
Junior Hindi Translator

Mr. Sujeet Pathak
Assistant Grade-II
(Accounts)

Mr. Akil Malek
Assistant Grade-II
(Library)

Administrative & Technical Staff

Mr. Preet Goswami
Junior Technical Assistant

Mr. Prakash Ravidas
Hostel Supervisor

Ms. Shivani Gosai
Office Assistant

Research Scientist

Dr. Rina Kumari
Research Scientist

Dr. Nawneet Kumar Kurrey
Research Scientist

Dr. Piyushkumar Gondaliya
Research Scientist

Technical Staff

Ms. Rajeshwari Rathod
Scientist / Technical Supervisor Grade – I

Ms. Monika Seervi
Scientist / Technical Supervisor Grade – II

Mr. Murugaboopathy Kalusulingam
Technical Assistant

Mr. Ashish Revar
Technical Assistant (Computer Section)

NIRF Ranking 2020

NIPER-Ahmedabad, under the inspiring leadership of Prof. Kiran Kalia, aspires to be an internationally recognized premier center of excellence in teaching, research, and entrepreneurial training. The interdisciplinary courses and cultural diversity at NIPER-Ahmedabad spark the spirit of innovative research and all-round development of its students. NIPER-Ahmedabad has served as a good launching platform to revamp the pharmaceutical education and research, to initiate the new era of pharmaceutical and biomedical sciences.

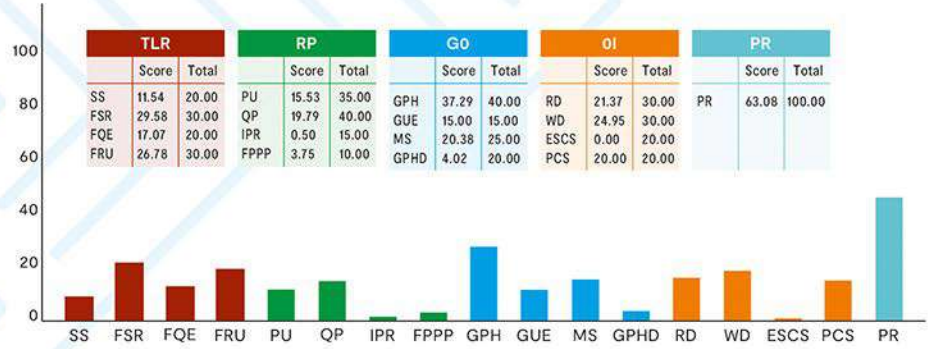
National Institutional Ranking Framework (NIRF), Ministry of Human Resource Development, Govt. of India, has released All India Rankings 2020 on 11th June, 2020 by Honorable Ministry of HRD **(Shri Ramesh Pokhriyal 'Nishank')**, in which NIPER- Ahmedabad has been **Ranked # 2nd in Teaching and Learning Resources (TLR) and All India Ranking of # 8th** among all Pharmacy Educational and Research Institutions in India.

National Institute of Pharmaceutical Education and Research Ahmedabad (IR-1-P-P-N-14)

NIPER-Ahmedabad has evolved as one of the premier institutes from Gujarat that has grabbed top position among the leading pharmacy Institutes in the country. Under the leadership of Director Prof. Kiran Kalia with a strong faculty team,

NIPER-Ahmedabad has made its position in the country in a short period. The TLR ranking of NIPER-Ahmedabad was based on the ratio of the number of faculty members in the Institute, their outstanding qualification, and the intake of students in all its existing programs.

National Institute of Pharmaceutical Education and Research Ahmedabad (IR-P-N-14)



TLR		
	Score	Total
SS	11.54	20.00
FSR	29.58	30.00
FQE	17.07	20.00
FRU	26.78	30.00

RP		
	Score	Total
PU	15.53	35.00
QP	19.79	40.00
IPR	0.50	15.00
FPPP	3.75	10.00

GO		
	Score	Total
GPH	37.29	40.00
GUE	15.00	15.00
MS	20.38	25.00
GPHD	4.02	20.00

OI		
	Score	Total
RD	21.37	30.00
WD	24.95	30.00
ESCS	0.00	20.00
PCS	20.00	20.00

PR		
	Score	Total
PR	63.08	100.00

The ranking was based on the number of educational, refresher, and orientation courses and activities that NIPER Ahmedabad has organized. It has also been credited outstanding for its participation in e-content creation programs, interactions, and collaboration with industries and facilitation of outside faculty in quality improvement. These initiatives of NIPER-Ahmedabad have added enormously to the skilled development initiative of the Government of India.

"ARIIA" Atal Ranking of Institutions on Innovation

ARIIA | Atal Ranking of Institutions on Innovation Achievements 2020, Ministry of Human Resource Development, Govt. of India, has e-released of ARIIA 2020 on 18th August, 2020 by Honorable Vice President of India **Shri M. Venkaiah Naidu** and Honorable Ministry of MoE **(Shri Ramesh Pokhriyal 'Nishank')**, in which NIPER-Ahmedabad has been placed in Band A (Rank Between 11th–25th) Under the category of Institute of National Importance, Central Universities & CFTIs as per ARIIA- 2020 released by Ministry for Human Education, Government of India.

NIPER JEE 2020

अहमदाबाद
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On 28th September 2020, NIPER Joint Entrance Examination (Computer Based Test) was successfully conducted for admission in Master's and Ph.D. programs of all seven NIPERs. A total of 19 TCS ion centers all over India were allocated for conducting NIPER JEE-2020 online test. JCC meetings at regular intervals were conducted with the participation of all NIPER Directors, Chairman JCC, and Chairman NIPER JEE-2020 to discuss issues and progress regarding the smooth conduct of NIPER JEE-2020. The online logistic support for carrying out this exam was provided by Tata consultancy services (TCS), which made the entire process smooth and hassle-free. Considering a lot of late entries and last-minute rush, the date for online registration was extended till 25th June 2020 to accommodate last-minute entrants. For each center, NIPER-Ahmedabad faculty was sent as an observer to monitor the smooth and fair conduct of the exam. NIPER JEE-2020 results were declared on the 30th September 2020. Looking to the COVID-19 pandemic NIPER JCC has decided to conduct of admission counselling for M.S. (Pharm.) / M.Pharm. / M.Tech. (Pharm.), MBA and Ph.D. courses through ONLINE MODE. A seat up gradation facility for candidates was also provided so that they can get NIPERs of better choice / preference in subsequent round. Online counselling was done for admission to all for Seven NIPERs, in 3 different phases for M.S. (Pharm.) / M.Pharm. / M.Tech. (Pharm.), MBA and Ph.D. courses. The Online counselling work was completed in all respect, in a perfect time bound manner with high accuracy.

Students Admitted During 2020-2021

NIPER-Ahmedabad has a total sanctioned intake of a total of 145 Masters and 24 Ph.D. students. NIPER-Ahmedabad has conducted an orientation program for the M.S. Pharm. and MBA pharm batch 2020-22 from 5th November 2020 to 6th November 2020. The statistics of students admitted in various programs at NIPER-Ahmedabad is shown below.

Discipline	No. of Students admitted	
	Ph.D.	M.S. Pharm./MBA Pharm.
Biotechnology	4	13
Medicinal Chemistry	6	22
Medical Devices	1	14
Natural Products	1	10
Pharmaceutical Analysis	3	22
Pharmacology & Toxicology	5	22
Pharmaceutics	4	22
MBA Pharm.	0	20

Orientation Programme-2020

The New Student Orientation Program is designed to support new students as they begin their journey at NIPER–Ahmedabad. This Orientation Program is mandatory for all students entering NIPER-Ahmedabad. During this program, the coordinators gradually introduce new students to life at the NIPER–Ahmedabad, from academics and community norms to resources and support services. The orientation program for the year 2020 entrant students of NIPER–Ahmedabad was held from 5th November 2020 to 6th November 2020. The program included a series of extended events that provide an introduction to the stimulating intellectual and social environment at

NIPER–Ahmedabad, as well as the abundant resources available in the institute. New students accompanied by their family members arrived on 4th November 2020 to check in the hostel. Additional details about this program have been shared with the students in-hand by the coordinators of the Orientation Program. The New Student

Orientation Program was designed to:

- Help students navigate the environment of a research tuned academic institute and meet fellow incoming students.
- Familiarize students with the standards of the Institutes and principles of its academic community
- Help students navigate the campus and identify the many resources available

- Present tips and critical information that will make students' first days, and their transition to NIPER–Ahmedabad, go smoothly!
- Introduce students to faculty, staff and existing students of the Institute
- Acquaint students with the history and traditions of NIPER–Ahmedabad within the context of the history of NIPER's.
- Share a portrait of the incoming class in all its diversity and richness as new students are welcomed into the vibrant community.

On the first day of the Student Orientation Program, the new students were introduced to the campus. The Dean, Dr. Pallab Bhattacharya, gave the words of confidence to all parents that their students are in a safe and responsible umbrella; and that whole NIPER team will take parental care of their wards. Followed by this inspiration session, the Director "Prof. Kiran Kalia", Director NIPER-Ahmedabad welcomed the students and motivated them to dream big and fulfill all their scientific dreams to make NIPER-Ahmedabad a world-class Institute, narrated a quick outline about the Institute's faculty members, grants received publications, national and international collaboration, Industrial MOUs, and other achievements of the institute.

Orientation Programme-2020

Shri Ketan R. Patel, Chairman Board of Governors, NIPER–Ahmedabad addressed the Students at the Orientation Programme 2020. As a part of the Orientation Programme 2020, an Orientation speech was delivered by our Chief Guest **Dr. V. Nagarajan**, Chairman & Head, Neurosciences Research & Translational task force, ICMR, New Delhi.

On the 2nd day of Orientation Programme 2020, Shri Avdhesh Nautiyal, Registrar NIPER-Ahmedabad addressed the students and welcomed them to NIPER-Ahmedabad Family. As a part of the Orientation Programme 2020, orientation Speech was delivered by Prof. Anil Gupta, Founder, Honey bee Network, SRISTI, GIAN, NIF, Visiting Fac, IIMA and IITB, and Dr. Mukul Jain, President at Zydus Research Centre, Ahmedabad addressed the Students at the Orientation Programme 2020 at NIPER-Ahmedabad.

5th Foundation day Celebration

NIPER-Ahmedabad celebrated 5th Foundation Day on 16th of December 2020. Chief Guest **Dr. Sudhir Jain** (Padma Shri), Director, IIT Gandhinagar with Guests of Eminence **Dr. Sudhir Shah** (Padma Shri), renowned Neurologist and **Dr. Anurag Sood**, Research Director, Zoetis, Mumbai graced the occasion. Prof. Kiran Kalia, Director NIPER-Ahmedabad addressed the students, faculties and staff and shared the journey of NIPER-Ahmedabad since its inception. Dr. Sudhir Jain highlighted the importance of collaboration in progression of science and technology, Dr. Sudhir Shah emphasized on the benefits of close association of medicos and academic fraternity, Dr. Anurag Sood discussed the recent updates and trends in the pharmaceutical industries. All the guests congratulated NIPER-Ahmedabad on the day. Cultural program was organized at NIPER-Ahmedabad during the closing ceremony of 5th Foundation day.

Students Pursuing Ph.D.

Department	Name of Student	Year	Supervisor
Biotechnology	Mr. Gopal Agarwal	2016	Dr. Akshay Srivastava
	Ms. Swarali Joshi	2018	Prof. Kiran Kalia
	Ms. Ambika Chamoli	2019	Dr. Amit Mandoli
	Ms. Medha Bhattacharya	2020	Dr. Akshay Srivastava
	Ms. Nidhi Singh	2020	Dr. Giriraj Sahu
	Ms. Priyanka Patel Vatsa	2020	Dr. Amit Mandoli
	Ms. Rutuja Maruti Satvase	2020	Dr. Giriraj Sahu
Medical Devices	Mr. Namdev More	2017	Dr. Akshay Srivastava
	Ms. Mounika Choppadandi	2017	Dr. Govinda Kapusetti
	Ms. Priyanka Pulugu	2018	Dr. Akshay Srivastava
	Mr. Vamshi Naik Azmeera	2020	Dr. Govinda Kapusetti
Medicinal Chemistry	Mr. Sagarkumar Patel	2016	Dr. Amit Shard
	Ms. Gargi Vaidya	2017	Dr. Dinesh Kumar
	Ms. Suchita Shinde	2018	Dr. Satyasheel Sharma
	Mr. Dinesh Satpute	2019	Dr. Dinesh Kumar
	Mr. Neeraj Kulkarni	2019	Dr. Bichismita Sahu
	Mr. Rudradip Das	2019	Dr. Amit Shard
	Mr. Bhaskar Dewangan	2020	Dr. Bichismita Sahu
	Mr. Govinda Shivaji Jadhav	2020	Dr. Bichismita Sahu
	Ms. Haritha Sindhe	2020	Dr. Satyasheel Sharma
	Ms. Moumita Chowdhury	2020	Dr. Amit Shard
	Ms. Sangita Shinde	2020	Dr. Dinesh Kumar
	Mr. Shyam Lokhande	2020	Dr. Dinesh Kumar
Natural Products	Ms. Komal Pandey	2016	Dr. Abhijeet Kate
	Mr. Ashutosh Goswami	2017	Dr. Abhijeet Kate
	Ms. Chaitrali Shevkar	2018	Dr. Abhijeet Kate
	Ms. Parusu Kavya Teja	2019	Dr. Siddheshwar Chauthe
	Mr. Amardeep Singh	2020	Dr. Satyasheel Sharma
	Ms. Disha Thakkar	2016	Dr. Abhijeet Kate
	Mr. Amit Kumar Sahu	2017	Dr. Pinaki Sengupta
Pharmaceutical Analysis	Mr. Harsh Thakkar	2018	Dr. Ravi Shah
	Ms. Sonali Jain	2019	Dr. Ravi Shah
	Mr. Tarang Jadav	2019	Dr. Pinaki Sengupta
	Mr. Niraj Hukumsingh Rajput	2020	Dr. Pinaki Sengupta
	Mr. Sumit Kumar	2020	Dr. Ravi Shah
Pharmacology & Toxicology	Ms. Deepaneeta Sarmah	2016	Dr. Pallab Bhattacharya
	Ms. Harpreet Kaur	2017	Dr. Pallab Bhattacharya
	Ms. Monika Sharma	2017	Dr. Amit Khairnar

Department	Name of Student	Year	Supervisor
Pharmacology & Toxicology	Ms. Lakshmi Vineela Nalla	2017	Dr. Amit Khairnar
	Mr. Nishant Sharma	2018	Dr. Amit Khairnar
	Mr. Abhishek Roy	2019	Dr. Hemant Kumar
	Ms. Aishika Datta	2019	Dr. Pallab Bhattacharya
	Mr. Sayan Chatterjee	2019	Dr. Amit Khairnar
	Ms. Antra Chaudhary	2020	Dr. Pallab Bhattacharya
	Mr. Manjeet Chopra	2020	Dr. Hemant Kumar
	Ms. Namrata Vadak	2020	Dr. Pallab Bhattacharya
	Ms. Zarna Pathak	2020	Dr. Hemant Kumar
Pharmaceutics	Ms. Vishakha Tambe	2017	Dr. Rakesh K. Tekade
	Mr. Dyaneshwar	2017	Dr. Rakesh K. Tekade
	Mr. Polaka Suryanarayana	2017	Dr. Rakesh K. Tekade
	Ms. Neelima Anup	2018	Dr. Rakesh K. Tekade
	Ms. Anuradha Gadeval	2019	Dr. Rakesh K. Tekade
	Mr. Sagar Ashok Salave	2019	Dr. Derajram M. Benival
	Ms. Jyotsna Vitore	2020	Dr. Derajram M. Benival
	Ms. Nupur Vasdev	2020	Dr. Rakesh K. Tekade
	Mr. Tejas Agnihotri	2020	Dr. Aakanchha Jain

Students Pursuing M.S. (Pharm.)

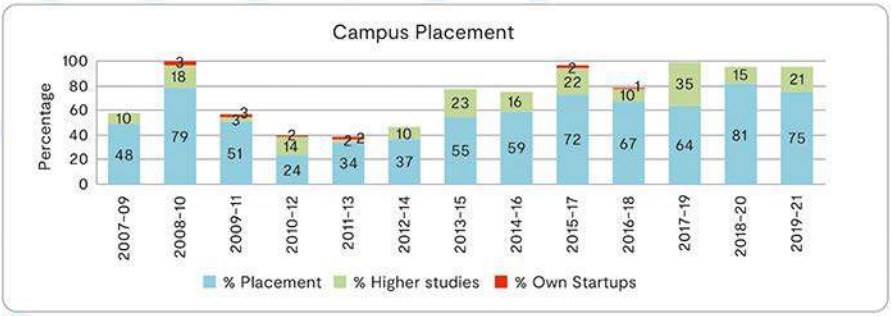
Department	Name of Student	Year	Supervisor
Biotechnology	Mr. Abhishek Gosavi	2019-21	Dr. Amit Mandoli
	Mr. Khushal Wangdale	2019-21	Dr. Amit Mandoli
	Mr. Mukund Mali	2019-21	Prof.Kiran Kalia
	Ms. Neha Pandit	2019-21	Dr. Giriraj Sahu
	Mr. Vaghela Nirmal	2019-21	Dr. Giriraj Sahu
	Ms. Palak Bhat	2019-21	Prof.Kiran Kalia
	Ms. Priyanka Masurkar	2019-21	Dr. Giriraj Sahu
	Ms. Sakshi Bhatele	2019-21	Dr. Neha Arya
	Ms. Shital Lokhande	2019-21	Dr. Neha Arya
	Ms. Urjita Shirwadkar	2019-21	Dr. Amit Mandoli
Medicinal Chemistry	Mr. Akshay Ramesh Kamble	2019-21	Dr. Satyasheel Sharma
	Ms. Anoushka Bhat	2019-21	Dr. Dinesh Kumar
	Ms. Ashlesha Singh	2019-21	Dr. Dinesh Kumar
	Ms. Asmita Choithramani	2019-21	Dr. Amit Shard
	Ms. Astha Gupta	2019-21	Dr. Amit Shard
	Mr. Datta Khude	2019-21	Dr. Amit Shard
	Ms. Diksha Adsare	2019-21	Dr. Bichismita Sahu
	Mr. Gourav Bothra	2019-21	Dr. Amit Shard
	Mr. Hansal Kumar	2019-21	Dr. Amit Shard
	Ms. Kamya Rao	2019-21	Dr. Bichismita Sahu
	Mr. Mihir Kachhia	2019-21	Dr. Bichismita Sahu

Students Pursuing M.S. (Pharm.)

Department	Name of Student	Year	Supervisor
Medicinal Chemistry	Mr. Mohit Maingle	2019-21	Dr. Bichismita Sahu
	Mr. Ramesh Choudhary	2019-21	Dr. Dinesh Kumar
	Ms. Shivkanya Bhujbal	2019-21	Dr. Dinesh Kumar
	Mr. Shubham Patil	2019-21	Dr. Bichismita Sahu
	Ms. Vaidehi Patel	2019-21	Dr. Dinesh Kumar
	Mr. Vivek Kumar	2019-21	Dr. Satyasheel Sharma
Medical Devices	Mr. Adarsh	2019-21	Dr. Akshay Srivastava
	Ms. Akanksha Wakhare	2019-21	Dr. Neha Arya
	Mr. Gourang Gupta	2019-21	Dr. Govinda Kapusetti
	Ms. Hemani Dara	2019-21	Dr. Akshay Srivastava
	Mr. Hrushikesh Aher	2019-21	Dr. Neha Arya
	Ms. Khyati Parmar	2019-21	Dr. Govinda Kapusetti
	Mr. Prafullakumar Patil	2019-21	Dr. Neha Arya
	Mr. Pranav Kumbhkarn	2019-21	Dr. Akshay Srivastava
	Mr. Sumanta Ghosh	2019-21	Dr. Govinda Kapusetti
	Mr. Sumedh Vaidya	2019-21	Dr. Govinda Kapusetti
	Ms. Sweety Malli	2019-21	Dr. Akshay Srivastava
Natural Products	Ms. Aishwarya Vinod Lad	2019-21	Dr. Satyasheel Sharma
	Ms. Bindusri Chintakindi	2019-21	Dr. Siddheshwar Chauthe
	Ms. Divya Gudavalli	2019-21	Dr. Abhijeet Kate
	Ms. Drashti Bhavsar	2019-21	Dr. Siddheshwar Chauthe
	Ms. Kishori Jadhav	2019-21	Dr. Siddheshwar Chauthe
	Mr. Neelanjan Chowdhury	2019-21	Dr. Satyasheel Sharma
	Ms. Prachi Patel	2019-21	Dr. Siddheshwar Chauthe
	Ms. Pranali Pradhan	2019-21	Dr. Abhijeet Kate
	Mr. Rohit Raut	2019-21	Dr. Abhijeet Kate
	Ms. Sai Sowmya Juvvalapalli	2019-21	Dr. Abhijeet Kate
Pharmaceutical Analysis	Mr. Amol Khandu Jadhav	2019-21	Ms. Rajeshwari Rathod
	Mr. Anish Kumar Sharma	2019-21	Ms. Rajeshwari Rathod
	Ms. Anuradha Reddy	2019-21	Dr. Pinaki Sengupta
	Ms. Deeki Sherpa	2019-21	Dr. Pinaki Sengupta
	Ms. Dipali Sonawane	2019-21	Dr. Pinaki Sengupta
	Ms. Fatema Soni	2019-21	Dr. Pinaki Sengupta
	Ms. Gauri Jahagirdar	2019-21	Ms. Rajeshwari Rathod
	Ms. Habeeb Saleha	2019-21	Dr. Ravi Shah
	Ms. Kalyani Sharma	2019-21	Dr. Ravi Shah
	Ms. Mounika Katamneni	2019-21	Ms. Rajeshwari Rathod
	Ms. Muktabai Shinde	2019-21	Dr. Ravi Shah
	Mr. Mustafa Modiwala	2019-21	Dr. Pinaki Sengupta
	Ms. Nikita Tapkir	2019-21	Dr. Pinaki Sengupta
	Ms. Rameswari Eerla	2019-21	Dr. Ravi Shah
	Ms. Roshitha Gundapaneni	2019-21	Dr. Ravi Shah
	Mr. S. Pranush Kumar	2019-21	Dr. Pinaki Sengupta
	Ms. Sai Madhavi Bondiga	2019-21	Ms. Rajeshwari Rathod

Department	Name of Student	Year	Supervisor
Pharmaceutical Analysis	Ms. Shriya Gangakhedkar	2019-21	Dr. Ravi Shah
	Mr. Sohel Anasari	2019-21	Dr. Ravi Shah
	Ms. Sushmita Salve	2019-21	Ms. Rajeshwari Rathod
	Ms. Yogita Bahiram	2019-21	Ms. Rajeshwari Rathod
Pharmacology & Toxicology	Mr. Abhijeet Pawar	2019-21	Dr. Amit Khairnar
	Mr. Adil Ali	2019-21	Prof. Kiran Kalia
	Mr. Amandeep Patial	2019-21	Dr. Hemant Kumar
	Ms. Chandana Kambalapally	2019-21	Dr. Pallab Bhattacharya
	Ms. Fehmina Malim	2019-21	Dr. Amit Khairnar
	Ms. Kirti Adhikari	2019-21	Dr. Hemant Kumar
	Ms. Manasi Ghatage	2019-21	Dr. Amit Khairnar
	Mr. Mohd Mukarram	2019-21	Dr. Amit Khairnar
	Ms. Nidhi Parihar	2019-21	Dr. Amit Khairnar
	Mr. Pramod Suthar	2019-21	Dr. Pallab Bhattacharya
	Ms. Priti Madhavrao Patale	2019-21	Dr. Pallab Bhattacharya
	Ms. Smreeti Dhiman	2019-21	Dr. Pallab Bhattacharya
	Ms. Sonam Dolma	2019-21	Dr. Hemant Kumar
	Ms. Sulogna Sarkar	2019-21	Dr. Hemant Kumar
	Ms. Teena Mamidi	2019-21	Dr. Hemant Kumar
	Mr. Vishal Gupta	2019-21	Dr. Pallab Bhattacharya
	Ms. Vrushal Thongire	2019-21	Dr. Pallab Bhattacharya
Pharmaceutics	Ms. Aayushi Ditani	2019-21	Dr. Rakesh K. Tekade
	Mr. Ajinkya Jadhav	2019-21	Dr. Derajram M. Benival
	Mr. Bhagwat Sirsat	2019-21	Dr. Rakesh K. Tekade
	Ms. Dhwani Rana	2019-21	Dr. Derajram M. Benival
	Ms. Hari Priya Koppisetti	2019-21	Dr. Rakesh K. Tekade
	Mr. Havish Shukla	2019-21	Dr. Rakesh K. Tekade
	Mr. Nimeet Desai	2019-21	Dr. Rakesh K. Tekade
	Ms. Pragyan Mallick	2019-21	Dr. Rakesh K. Tekade
	Ms. Prajakta Bule	2019-21	Dr. Derajram M. Benival
	Mr. Prakash Amate	2019-21	Dr. Derajram M. Benival
	Ms. Pravallika Chittemreddy	2019-21	Dr. Derajram M. Benival
	Mr. Rishabh Agarwal	2019-21	Dr. Derajram M. Benival
	Ms. Rupali Pardhe	2019-21	Dr. Derajram M. Benival
	Ms. Sai Pranavi Bollampally	2019-21	Dr. Rakesh K. Tekade
	Ms. Sayali Chaudhari	2019-21	Dr. Rakesh K. Tekade
	Mr. Shailesh Fartade	2019-21	Dr. Derajram M. Benival
	Ms. Shreya Pande	2019-21	Dr. Rakesh K. Tekade
	Mr. Shrinivas Sangole	2019-21	Dr. Derajram M. Benival
	Mr. Shubham Gupta	2019-21	Dr. Derajram M. Benival
	Mr. Suraj Longre	2019-21	Dr. Derajram M. Benival
	Mr. Umesh Kathar	2019-21	Dr. Rakesh K. Tekade

Placement Statistics



The goal of Placement Cell is to provide a platform to the students to gain valuable experience of working in the Industries. This cell also acts as an interface between various companies seeking well-trained postgraduates in different disciplines. During the placement process, companies are encouraged to visit the campus for pre-placement talks and personal interviews.

Placement Committee

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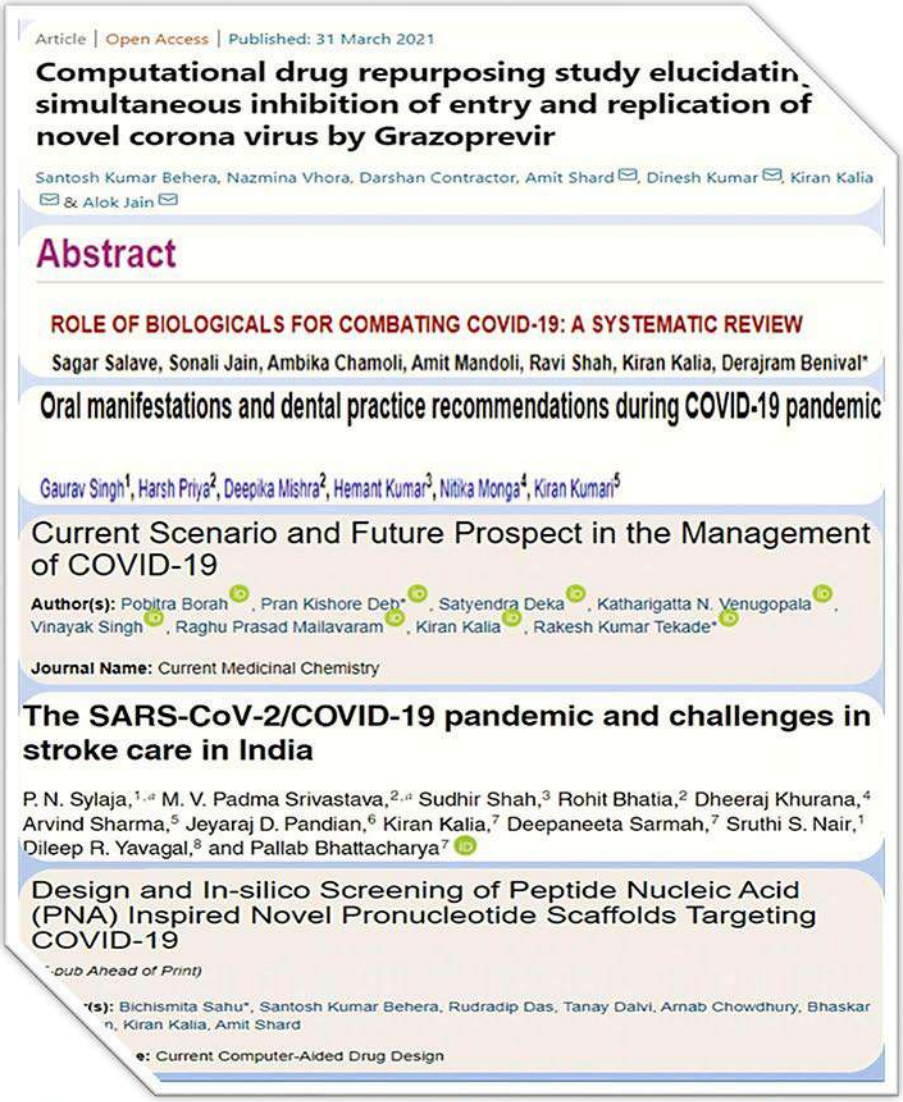
NOVARTIS · LAMBDA · FEDORA ADVANTAGE HEALTHCARE SOLUTIONS · IQVIA · Astral Pharmaceuticals

Aizant · MATRIX Laboratories Limited · WOCKHARDT · Sahajanand · COREL PHARMA CHEM

Covid-19 Publications



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Computational drug repurposing study elucidatin simultaneous inhibition of entry and replication of novel corona virus by Grazoprevir

Santosh Kumar Behera, Nazmina Vhora, Darshan Contractor, Amit Shard, Dinesh Kumar, Kiran Kalia & Alok Jain

Abstract

ROLE OF BIOLOGICALS FOR COMBATING COVID-19: A SYSTEMATIC REVIEW

Sagar Salave, Sonali Jain, Ambika Chamoli, Amit Mandoli, Ravi Shah, Kiran Kalia, Derajram Benival*

Oral manifestations and dental practice recommendations during COVID-19 pandemic

Gaurav Singh[1], Harsh Priya[2], Deepika Mishra[2], Hemant Kumar[3], Nitika Monga[4], Kiran Kumari[5]

Current Scenario and Future Prospect in the Management of COVID-19

Author(s): Pobitra Borah, Pran Kishore Deb*, Satyendra Deka, Katharigatta N. Venugopala, Vinayak Singh, Raghu Prasad Mallavaram, Kiran Kalia, Rakesh Kumar Tekade*

Journal Name: Current Medicinal Chemistry

The SARS-CoV-2/COVID-19 pandemic and challenges in stroke care in India

P. N. Sylaja,[1,a] M. V. Padma Srivastava,[2,a] Sudhir Shah,[3] Rohit Bhatia,[2] Dheeraj Khurana,[4] Arvind Sharma,[5] Jeyaraj D. Pandian,[6] Kiran Kalia,[7] Deepaneeta Sarmah,[7] Sruthi S. Nair,[1] Dileep R. Yavagal,[8] and Pallab Bhattacharya[7]

Design and In-silico Screening of Peptide Nucleic Acid (PNA) Inspired Novel Pronucleotide Scaffolds Targeting COVID-19

-pub Ahead of Print)

r(s): Bichismita Sahu*, Santosh Kumar Behera, Rudradip Das, Tanay Dalvi, Arnab Chowdhury, Bhaskar n, Kiran Kalia, Amit Shard

e: Current Computer-Aided Drug Design

Publications and Presentations 2020-21

Patents

1. Patent Title: NanoGold topical pharmaceutical composition and method for the treatment of rheumatoid Arthritis, Indian Patent Application No. 202121006994 (Date: 19/02/2021)

Name of Inventor: Rakesh K. Tekade, Sayali Chaudhari, Sai Pranavi Bollampally, Dnyaneshwar Kalyane, Surya Narayana Polaka, Amit Khairnar, Nishant Sharma, Kiran Kalia

2. Patent Title: Carbonate Browsing Technology Enabled Allylic Amination Using Allyl Alcohols under Nickel Catalysis, Indian Patent Application No. 202021016956 (Date: 20/04/2020)

Name of Inventor: Dinesh Kumar, Gargi Nikhil Vaidya.

3. Patent Title: Quantum Dot Based Technology Platform for ColorimetricImmunosensor for Specific and Rapid Detection, Indian Patent Application No. 202021019757 (Date: 11/05/2020).

Name of Inventor: Govinda Kapusetti, Kiran Kalia, B. Divya Latha, Namdev More, Mounika Choppadandi

4. Patent Title: Ultrafast, label-free, Boronic Acid-Functionalized Graphene- based Electrochemical Biosensor, Indian Patent Application No. 202021021337 (Date: 21/05/2020).

Name of Inventor: Akshay Srivastava, Kiran Kalia, Mit Patel.

5. Patent Title: Green Process for the Synthesis of Flunarizine, Indian Patent Application No. 202021024185 (Date: 09/06/2020).

Name of Inventor: Dinesh Kumar, Mithilesh Nagpure, Gargi Nikhil Vaidya.

6. Patent Title: Neuroprotective P. emblica containing compositions and methods, Indian Patent Application No. 202041056217 (Date: 24/12/2020).

Name of Inventor: Pallab Bhattacharya, Deepaneeta Sarmah, Kiran Kalia, Sanni Raju (Filed by Natron USA)

Books

Tekade, R. K. (Ed.). (2020). The Future of Pharmaceutical Product Development & Research (1st ed.). 2020, pp. 976,

Hardcover ISBN: 9780128144558, **eBook ISBN:** 9780128144565, **Publisher:** ELSEVIER, **ISBN:** 978-0128144879

Place of Publication: USA

Research Publications

1. Nimeet Desai, HariPriya Koppisetti, Shreya Pande, Havish Shukla, Bhagwat Sirsat, Aayushi S Ditani, Pragyan P Mallick, Umesh Kathar, Kiran Kalia & Rakesh K Tekade. (2021). Nanomedicine in the treatment of diabetic nephropathy, Future Medicinal Chemistry.doi: 10.4155/fmc-2020-0335.
2. Nimeet Desai, Anuradha Gadeval, Umesh Kathar, Pinaki Sengupta, Kiran Kalia, Rakesh Kumar Tekade. (2021). Emerging Roles and Biopharmaceutical Applications of Milk Derived Exosomes, Journal of Drug Delivery Science and Technology. 102577. doi.org/10.1016/j.jddst.2021.102577
3. Anuradha Gadeval, Sayali Chaudhari, Sai Pranavi Bollampally, Polaka Suryanarayana, Dnyaneshwar Kalyane, Pinaki Sengupta, Kiran Kalia Rakesh Kumar Tekade. (2021). Integrated nanomaterials for non invasive photothermal therapy of rheumatoid arthritis, Drug Discovery Today. doi.org/10.1016/j.drudis.2021.04.026
4. Neelima Anup, Tejas Chavan, Shruti Chavan, Suryanarayana Polaka, Dnyaneshwar Kalyane , Sara Nidal Abed, Katharigatta N Venugopala, Kiran Kalia, Rakesh K Tekade. (2021). Reinforced electrospun nanofiber composites for drug delivery applications, Journal of Biomedical Materials Research Part A.
   DOI:10.1002/jbm.a.37187
5. V.Ramana, K. Srinivasa Rao, K. Raghu Kumar, Govinda Kapusetti, Mounika Choppadandi, J.N. Kiran K.H. Rao. (2021). A study of uncoated and coated nickel-zinc ferrite nanoparticles for magnetic hyperthermia, Materials Chemistry and Physics.
   doi.org/10.1016/j.matchemphys.2021.124546
6. Mustafa Modiwala, Tarang Jadav, Amit Kumar Sahu, Rakesh K Tekade, Pinaki Sengupta. (2021). A Critical Review on Advancement in Analytical Strategies for the Quantification of Clinically Relevant Biological Transporters, Critical Reviews in Analytical Chemistry.
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7. Saraswathisreeram Pranush Kumar, Deeki Doma Sherpa, Amit Kumar Sahu, Tarang Jadav, Rakesh Kumar Tekade & Pinaki Sengupta. (2021). Innovation in bioanalytical strategies and in vitro drug–drug interaction study approaches in drug discovery, Bioanalysis.
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8. Neeraj Kulkarni, Suchita Dattatray Shinde, Govinda Shivaji Jadhav, Diksha Ramesh AdsareDiksha Ramesh Adsare, Kamya Rao, Mihir Kachhia, Mohit Maingle, Shubham Prakash Patil, Neha Arya, and Bichismita Sahu. (2021). PeptideChitosan Engineered Scaffolds for Biomedical Applications, Bioconjugate Chemistry.
   doi.org/10.1021/acs.bioconjchem.1c00014
9. Gaurav Singh, Harsh Priya, Deepika Mishra, Hemant Kumar, Nitika Monga, Kiran Kumari. (2021). Oral manifestations and dental practice recommendations during COVID-19 pandemic, Journal of Family Medicine and Primary Care. 10 (1), 102-109.
   DOI:10.4103/jfmpc.jfmpc_1605_20
10. Shivani Vaidya, Shantanu P.A., Vinod Tiwari. (2021). Attenuation of Ongoing Neuropathic Pain by Peripheral Acting Opioid Involves Activation of Central Dopaminergic Neurocircuitry, Neuroscience Letters. 135751
11. Niraj Kumar Panday, Disha Thakkar, Sagarkumar Patel, Amit Shard, Pinaki Sengupta. (2021). Metabolite profiling of IMID-2, a novel anticancer molecule of piperazine derivative: In silico prediction, in vitro and in vivo metabolite characterization using UPLC–QTOF–MS/MS, biomedical chromatography. e5082,
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12. Ruchi Singh, Mini Dhiman, Arvind Saklani, C. Immanuel Selvaraj & Abhijeet S. Kate. (2021). Isolation and characterization of a novel flavanone glycoside from an endemic plant Haplanthodes neilgherryensis, Journal of Asian Natural Products Research.
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13. Heena Jariyal, Chanchal Gupta, Shambhavi Andhale, Sonali Gadge & Akshay Srivastava. (2021). Comparative stemness and differentiation of luminal and basal breast cancer stem cell type under glutamine-deprivation, Journal of Cell Communication and Signaling.
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    doi.org/10.1016/j.jpba.2021.113933
16. Gargi Nikhil Vaidya, Mithilesh Nagpure, and Dinesh Kumar. (2021). Borrowing Carbonate-Enabled Allylic Amination Reactions under Additive- and Reductant-Free Nickel Catalysis Employing Allylic Alcohols, ACS Sustainable Chemistry & Engineering.
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105. Akshant Kumawat, Nidhi Raval, Gautham Reddy, Kuldeep Rajpoot and Rakesh K. Tekade. "Chapter 15- Gene delivery to tackle diabetic nephropathy" In The Future of Pharmaceutical Product Development and Research (1st ed.), Elsevier Academic Press, 2020, pp. 515-537. doi.org/10.1016/B978-0-12-814455-8.00015-3

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115. Viral Shah, Amee Jobanputra, Bhagawati Saxena & Manish Nivsarkar. (2021). Development and Characterization of Saturated Fatty Acid Engineered, Silica-Coated Lipid Vesicular System for Effective Oral Delivery of Alfa Choriogonadotropin, AAPS Pharm SciTech.22,118.
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Peer-Reviewed Abstracts

1. Roshni Thakkar, Mitsuyoshi Watanabe, Pallab Bhattacharya, Chuanhui Dong, Ami P Raval, Aisha Khan, Joshua M Hare, Dileep R Yavagal. (2021). Abstract P764: Single versus Dual Dose of Intra Arterial Stem Cell Therapy for Stroke, International Stroke Conference 2021 Poster Abstracts Session Title: Translational Basic Science Posters, Stroke. 2021;52:AP764.
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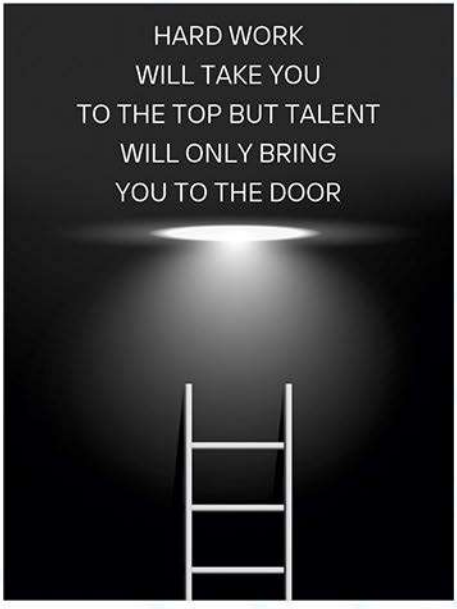
2. D. Sarmah , A. Rodriguez , Kiran Kalia , D. Yavagal and Pallab Bhattacharya. (2020). Mitochondrial Transfer By Mesenchymal Stem Cells (Mscs) Protect Hypoxic Neuronal Cells, International Journal of Stroke. 15 (1_ SUPPL), 610-610

3. A Datta, D Sarmah, Kiran Kalia, D Yavagal, Pallab Bhattacharya. (2020). Intra-Arterial Mesenchymal Stem Cell Treatment Regulates Protein Kinase C Delta Mediated Aquaporin-4 Expression In Animal Model Of Ischemic Stroke, International Journal Of Stroke. 15 (1_ SUPPL), 475-475

4. Pallab Bhattacharya, Deepaneeta Sarmah, Aishika Datta, Harpreet Kaur, Kiran Kalia, Dileep R. Yavagal. (2020). Stem cell therapy modulates inflammasome signaling in stroke: Possible involvement of Mitochondria? (1588), Neurology. 94/15_Supplement/1588.abstract

5. Deepaneeta Sarmah, Anne-Marie Rodriguez, Kiran Kalia, Dileep R. Yavagal, Pallab Bhattacharya. (2020). Mesenchymal Stem Cells (MSCs) Protect Hypoxic Neuronal Cells by Mitochondrial Transfer (1749),Neurology.94/15_Supplement/1749.abstract



Invited Talks

1. Dr. Rakesh K. Tekade, faculty NIPER-Ahmedabad delivered expert talk in CRS 2021, 19th International E-Symposium on Advances in technology & business potential of new drug delivery systems.
2. Dr. Pinaki Sengupta, faculty, NIPER-Ahmedabad Delivered a talk on "Current Trends in Drug Discovery and Formulation Development", organized by Parul Institute of Pharmacy & Research, during 18th to 24th March 2021.
3. Dr. Santosh Behera, Scientist, NIPER-Ahmedabad delivered talk on "Computer Aided Drug Designing: A Customized and Innovative Solution to the Greatest Challenges in Chemistry" at AICTE Sponsored Six Days Online Short-Term Training Programme (STTP) entitled on 18th March 2021 organized by Amar Shaheed Baba Ajit singh Jujhar Singh Memorial College of Pharmacy, Bela Punjab.

4. Dr. Amit Shard, Assistant Professor, Department of Medicinal Chemistry, NIPER-Ahmadabad, delivered a talk virtually on "Drug Repurposing post COVID era" at a Faculty Development Programme at Dr D Y Patil Institute of Pharmaceutical Sciences and Research, Pune from 18th - 22nd May 2020.
5. Dr. Amit Shard, Assistant Professor, Department of Medicinal Chemistry, NIPER-Ahmedabad attended 6th India International Science Festival (IISF 2020) from December 22th-25th, 2020 in virtual mode in New Delhi. He was a Member of the scientific committee and served as Jury member for the theme "Pandemic Crisis and Challenges.
6. Dr. Amit Shard, Assistant Professor, Department of Medicinal Chemistry, NIPER-Ahmadabad Attended the E Workshop on 'Structure Based and Ligand Based Drug Design' as a Resource person held on 13th and 14th July 2020 Organized by Department of Pharmaceutical Chemistry JSS College of Pharmacy, Mysuru.

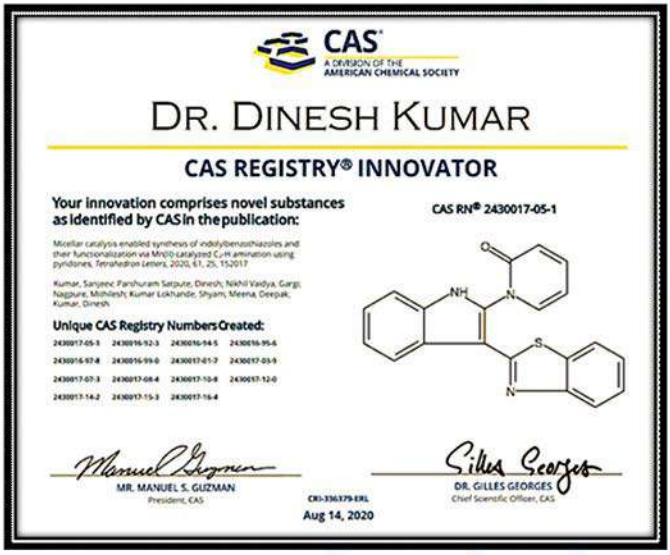
National-International Conference/ Workshops/ Seminar/ Symposium attended

- **Ms. Neha Pandit**, M.S. Student, NIPER-Ahmedabad successfully completed one Month Summer Internship on PYTHON PROGRAMMING, Organized by St. Aloysius Institute of Technology Incubation Center, Jabalpur. Sponsored by MHRD, Govt. of India under DIC-IIC scheme. (1st June – 30th June, 2020).
- **Mr. Umesh Kathar**, M.S. Student, NIPER-Ahmedabad successfully completed one Month Summer Internship on PYTHON PROGRAMMING, Organized by St. Aloysius Institute of Technology Incubation Center, Jabalpur. Sponsored by MHRD, Govt. of India under DIC-IIC scheme. (1st June – 30th June, 2020).
- **Mr. Abhishek Gosavi**, M.S. Student, NIPER-Ahmedabad successfully completed one Month Summer Internship on PYTHON PROGRAMMING, Organized by St. Aloysius Institute of Technology Incubation Center, Jabalpur. Sponsored by MHRD, Govt. of India under DIC-IIC scheme. (1st June – 30th June, 2020).

Honors and Awards/Achievements

Institute Achievements

1. **National Institute Ranking Framework-2020 (NIRF)**: NIPER–Ahmedabd has been **Ranked # 2nd in Teaching and Learning Resources (TLR)** and **All India Ranking of # 8th** among all Pharmacy Educational and Research Institutions in India as per NIRF 2020 released by Ministry for Human Resource Development, Government of India.
2. **Listing of NIPER-Ahmedabad faculty** (Dr. Rakesh K. Tekade) in **Top 2% Scientists in the world** in the world list published by **Stanford University, USA** in the field of Pharmacology & Pharmacy.
3. **Atal Ranking of Institutions on Innovation Achievements-2020 (ARIIA)**: NIPER-Ahmedabad has been placed in Band A (Rank Between 11th – 25th) Under the category of Publicly Funded Institutions.
4. **CAS Registry Number**: 15 Novel compounds synthesized at NIPER-Ahmedabad received CAS Registry Number. Many congratulations to Dr. Dinesh Kumar and his team.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Kumar, Sanjeev; Parshuram Satpute, Dinesh; Nikhil Vaidya, Gargi; Nagpure, Mithilesh; Kumar Lokhande, Shyam; Meena, Deepak; Kumar, Dinesh

Unique CAS Registry Numbers Created:

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2430016-97-8	2430016-99-0	2430017-01-7	2430017-03-9
2430017-07-3	2430017-08-4	2430017-10-8	2430017-12-0
2430017-14-2	2430017-15-3	2430017-16-4	

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Aug 14, 2020

Faculty Achievements

1. **Listed in Top 2% Scientists in the world: Dr. Rakesh K. Tekade**, Associate Professor NIPER-Ahmedabad as Top 2% Scientists in the field of Pharmacology & Pharmacy in the world list published by Stanford University, USA. The indexing is based on Scopus publication & citation record assessing scientists for long-term citation impact.

   PS: Dr. Tekade is the **Youngest Scientist in the elite list** with debut research publication in year 2007
2. **Start-up Research Grant (SRG)**: Dr. Hemant Kumar Assistant Professor, NIPER-Ahmedabad for getting awarded with Start-up Research Grant (SRG) From the Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Govt. of India
3. **Start-up Research Grant (SRG)**: Dr. Govinda Kapusetti Assistant Professor, NIPER-Ahmedabad for getting awarded with Start-up Research Grant (SRG) From the Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Govt. of India
4. **Start-up Research Grant (SRG)**: Dr. Amit Mandoli, Assistant Professor, NIPER-Ahmedabad for getting awarded with Start-up Research Grant (SRG) From the Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Govt. of India
5. **Start-up Research Grant (SRG)**: Dr. Dinesh Kumar Assistant Professor, NIPER-Ahmedabad for getting awarded with Start-up Research Grant (SRG) From the Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Govt. of India
6. **Start-up Research Grant (SRG)**: Dr. Bichismita Sahu Associate Professor, NIPER-Ahmedabad for getting awarded with Start-up Research Grant (SRG) From the Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Govt. of India
7. **Ramanujan Fellowship 2020**: Dr. Giriraj Sahu, Assistant Professor, NIPER-Ahmedabad for getting awarded Ramanujan fellowship 2020 from the Science & Engineering Research Board (SERB), Department of Science & Technology (DST) Govt. of India
8. **IBRO Regions Connecting Grant**: Dr. Pallab Bhattacharya, Associate Professor NIPER-Ahmedabad has been awarded IBRO Regions Connecting Grant of 6000€ to pursue collaborative research with the University of Copenhagen, Denmark.

Student Achievements

1. **Ms. Anoushka Bhat** for securing **admission in the Ph.D. program** at the University of Louisville (Kentucky, USA) with full funding support.
2. ICMR-Senior Research Fellowship:- Ms. Aishika Datta from the Department of Pharmacology and Toxicology has been awarded the ICMR-Senior Research Fellowship for her study titled "Therapeutic Strategy Based on Targeting Growth Hormone Releasing Hormone (GHRH) Receptors for Mitochondrial Protection in Ischemic Stroke" under the esteemed guidance of **Dr. Pallab Bhattacharya.**
3. ICMR-Senior Research Fellowship:- Mr. Polaka Suryanarayana from the Department of Pharmaceutics has been awarded the ICMR-Senior Research Fellowship (2020-2023) for his study entitled "Exploring the molecular mechanism of Omega-3 fatty acid-enriched rasagiline mesylate microemulsion in enhancing brain delivery and its synergistic role to enhance the antiparkinsons efficacy od drug" under the esteemed guidance of **Dr Rakesh K. Tekade.**

Extramural Funded Research Projects

Sr.No.	Project Title	Amount	Duration	Principal Investigator	Funding Body
1	Bioprospecting endo-lichenic fungi from Mangroves in Negombo lagoon in Sri Lanka and Gulf of Khambat, Gulf of Kutch from Gujarat India; An untapped treasure trove for the discovery of special structures and bioactive compounds (Grant No: DST/INT/SL/P-22/2016)	47 Lakhs	2017-2021	Prof. Kiran Kalia Sri Lankan Partner: Prof. Priyali Pranagama University of Kelniya, Sri Lanka	DST, Indo Sri Lanka Joint Research Programme
2	Bio-engineered three dimensional stem cell niche for intervertebral Disc repair and regeneration (Grant No: ECR/2016/002038)	38.1 Lakhs	2017-2020	Dr. Akshay Srivastava	DST, SERB
3	Aptamer-targeted dendronized polymeric nanoparticles to deliver Anti-miRNA for treatment of Triple-Negative Breast Cancer (Grant No: ECR/2016/001964)	38.1 Lakhs	2018-2021	Dr. Rakesh Tekade	DST, SERB
4	Aptamer Targeted Nanohybrid for Chemo-Photothermal Therapy of Leukemia: An In vitro Proof of Concept (Grant No: 5/3/8/33/ITR-F/2018-ITR)	12.7 Lakhs	2019-2022	Dr. Rakesh Tekade	ICMR
5	Near-Infrared (NIR) laser triggered polymeric nanoshell for chemo-photothermal therapy of arthritis (Grant No: 5/2/8/23/ITR-F/2020-ITR)	23 Lakhs	2020-2023	Dr. Rakesh Tekade	ICMR
6	Exploring The Molecular Mechanism Of Omega-3 Fatty Acid Enriched Rasagiline Mesylate Microemulsion In Enhancing Brain Delivery And Its Synergistic Role To Enhance The Antiparkinsons Efficacy (Grant No.: 5/3/8/53/ITR-F/2020)	2.7 Lakhs	2020-2023	Dr. Rakesh Tekade	ICMR
7	Stem Cell Therapy to Counteract Endoplasmic Reticulum Stress in Ischemic stroke (Grant No: 5/3/8/16/ITR-F/2019-ITR)	12.7 Lakhs	2019-2022	Dr. Pallab Bhattacharya	ICMR

Extramural Funded Research Projects

Sr.No.	Project Title	Amount	Duration	Principal Investigator	Funding Body
8	Design and Construction of Fluorine-Containing Scaffolds via C-H Bond Activation (Grant No: DST/INSPIRE/04/2016/000414)	35 Lakhs	2017-2021	Dr. Satyasheel Sharma	DST, INSPIRE
9	Bioengineered Cell Ramalingaswamy Instructive collagen hydrogel patch for intervertebral disc repair and regeneration (BT/HRD/35/02/2006)	83.50 Lakhs	2018-2023	Dr. Akshay Srivastava	DBT
10	Light amplifying carbon quantum dot embedded contact lenses for treatment of night blindness (Grant No: BT/PR27025/NNT/28/1535/2017)	47 Lakhs	2018-2021	Dr. Govinda Kapusetti	DBT
11	Is Enteric Neuronal inflammation a starting point of Parkinson's Disease Pathogenesis (Grant No: BT/HRD/35/02/2006)	113.60 Lakhs	2019-2024	Dr. Amit Khairnar	DBT
12	Development of Potential antiTB Drugs Targeting Energy Inhibition Pathway Utilizing C-H Bond Functionalization as Key Synthetic Tool (Grant No: SB/S2/RJN-135/2017)	109.10 Lakhs	2018-22	Dr. Dinesh Kumar	DST-SERB
13	Intra-arterial delivery of brainderived neurotrophic factor BDNF loaded DSSAN for the treatment of ischemic stroke	34 Lakhs	2019-2022	Dr. Pallab Bhattacharya	ICMR
14	To test the efficacy of IA versus IV GFP positive MSCs in an animal model of stroke with timebound expression study of SDF-1	$ 20000	2019-2021	Dr. Pallab Bhattacharya	US Sub Contract Grant from Miller School of Medicine, USA
15	To develop a robust synthesis process for PLLA polymer	7 Lakhs	2019-2021	Dr. Govinda Kapusetti	Uthesia Medicare Pvt. Ltd (Industry)
16	Deciphering the role of glucose dynamics towards mitochondrial distribution in ischemic stroke	€ 6,000	2020-2021	Dr. Pallab Bhattacharya	IBRO Regions Connecting Grant

Sr.No	Project Title	Amount	Duration	Principal Investigator	Funding Body
17	Developing novel targeted therapeutics for (8;21) acute myeloid leukemia (AML)	30 lakhs	2020-2021 (24 months)	Dr. Amit Mandoli	DST- SERB
18	Targeting spinal cord injury-induced TRPV4 expression with specialized pro-resolving mediator Maresin-1	27,62,560	2020-2021 (24 months)	Dr. Hemant Kumar	DST- SERB
19	The Next Generation Piezoelectric Radiopaque Agent for High Strength and Osteoconductive Bone Cement	29,62,000	2020-2021 (24 months)	Dr. Govinda Kapusetti	DST- SERB
20	Merging Vinylic and Allylic C–H Bonds Activation under Single Component Serial Palladium Catalysis: Development of Topoisomerase I (ToP I) - Histone Deacetylase (HDAC) Dual Inhibitors	29,48,019	2020-2021 (24 months)	Dr. Dinesh Kumar	DST- SERB
21	Novel peptido-hyaluronates; Synthesis and evaluation as hydrogel for the treatment of head and neck cancer induced oral mucositis"	27,97,560	2020-2021 (24 months)	Dr. Bichismita sahu	DST- SERB
22	Visualization of brain blood flow reorganization during stroke treatment	DKK 258, 198	2 year extendable (2020-2021)	Dr. Pallab Bhattacharya	Multilateral grant India, USA and Denmark
23	Seton Hall University is looking forward to working with NIPER-Ahmedabad to advance scientific knowledge in areas of current interests.	$10000	2020-2021	Dr. Ravi Shah	Seton Hall University, USA

International Collaborations

NIPER-Ahmedabad is pleased to announce its initiative to establish an International Research Collaboration with faculties from Harvard Medical School, Boston, USA, Johns Hopkins University School of Medicine, Baltimore, MD, USA, Massachusetts Institute of Technology, USA; University of Washington, Seattle, USA; the University of Newcastle, School of Biomedical Sciences and Pharmacy, Australia; University of Mississippi School of Pharmacy, USA; Wayne State University Use-inspired Biomaterials & Integrated Nano Delivery Systems Laboratory, USA; and National University of Ireland, Galway, Ireland. Under this initiative, research faculties from these foreign Universities/Institutes have agreed to establish future research collaborations and academic partnerships with the faculty members from NIPR-Ahmedabad.

Dr. Pallab Bhattacharya, Associate Professor, Department of Pharmacology and Toxicology has a research collaboration with following faculties from Harvard Medical School, Boston, USA and Massachusetts Institute of Technology, USA.

	Faculty from Harvard Medical School Boston, USA	Area of Research
	**Prof. Larry Benowitz** F.M. Kirby Neurobiology Center, Boston Children's Hospital, Harvard Medical School, Boston, USA	Stroke Biology
	**Prof. Nutan Sharma** Director, Department of Neurology, Massachusetts General Hospital, Harvard Medical School,Boston, USA	Neuroscience Research
	**Dr. Khalid Shah** Director, Center for Stem Cell Therapeutics and Imaging, Department of Radiology and Neurology, Massachusetts General Hospital, Harvard Medical School, Boston, USA	Stem Cell Biology / Neuroscience Research
	**Dr. Ali Sultan** Chief, Division of Vascular and Endovascular Neurosurgery, Department of Neurosurgery, Brigham and Women's Hospital, Harvard Medical School, Boston, USA	Stroke Biology
	**Dr. Nirav J. Patel** Cerebrovascular and Endovascular Neurosurgery, Brigham and Women's Hospital, Harvard Medical School, Boston, USA	Stroke Biology

Faculty from Massachusetts Institute of Technology, USA		Area of Research
	**Prof. Emilio Bizzi** McGovern Institute for Brain Research, Massachusetts Institute of Technology, USA	Stroke Biology

Faculty from Miller School of Medicine USA		Area of Research
	**Prof. Dileep R Yavagal** Dept. of Neurology, Miller School of Medicine, USA	Stroke Biology
	**Nobel Laureate Andrew Scally,** Sylvester Cancer Research Centre, Miller School of Medicine, USA	Stroke Biology
	**Dr. Kunjan R Dave** Dept. of Neurology, Miller School of Medicine, USA	Stroke Biology

Dr. Rakesh K. Tekade, Associate Professor, Department of Pharmaceutics has established research collaboration with the following faculty members from the University of Newcastle, School of Biomedical Sciences and Pharmacy, Australia; the University of Mississippi School of Pharmacy, USA; and the Wayne State University Use-inspired Biomaterials & Integrated Nano Delivery Systems Laboratory, USA.

Faculty from university of Newcastle, School of Biomedical Sciences and Pharmacy, Australia		Area of Research
	**Prof. Philp M. Hansbro** Professor, NHMRC Fellow and Brawn Fellow School of Biomedical Sciences and Pharmacy (Immunology and Microbiology) Faculty of Health and Medicine The University of Newcastle, Callaghan, NSW 2308, Australia.	Immunology & Microbiology, bacterial & viral infections & obstructive airway diseases such as asthma

International Collaborations

Faculty from De Montfort University, The Gateway, Leicester, UK	Area of Research

Prof. Antony D'Emanuele
Professor and Head of School
School/department: Leicester School of Pharmacy, De Montfort University,
The Gateway, Leicester, LE1 9BH UK

Dendrimer-based nanoformulation approaches, Formulation development of sitespecific polymeric Drug Delivery systems

Faculty from University of Mississippi School of Pharmacy, USA	Area of Research

Prof. Mahavir B. Chougule
Associate Professor of Pharmaceutics,
Research Associate Professor in the Research Institute of Pharmaceutical Sciences,
Department of Pharmaceutics and Drug Delivery,
School of Pharmacy, University of Mississippi,
Mississippi, TCRC 204 A, MS, USA

Drug and Gene Codelivery, Multifunctional Nanoparticle, Cancer Therapy, Inhalation delivery

Faculty from Liverpool John Moores University, Liverpool, UK Photograph	Area of Research

Prof. Gillian Hutcheon
Faculty in the Department of Pharmacy and Biomolecular Sciences
Liverpool John Moores University, Liverpool, UK
Rodney House, 70 Mount Pleasant
Liverpool L3 5UX, UK

Polymer chemistry and drug delivery biodegradable polymers for the Micro & nanoparticle delivery

Faculty from Wayne State University Use-inspired Biomaterials & Integrated Nano Delivery Systems Laboratory, USA	Area of Research

Prof. Abhay Singh Chauhan
Director, Use-inspired Biomaterials &
Integrated Nano Delivery Systems Laboratory
Department of Pharmaceutical Sciences
Wayne State University
Office: 259 Mack Ave, Room 3601, U-BiND
Systems Lab: Room 3330, Detroit, MI 48201 USA

Use-inspired Biomaterials, Polymeric Drug and Gene Delivery, Nanomedicine, and Nanotechnology

Dr. Govinda Kapusetti, Assistant Professor, Department of Medical Devices, NIPER-Ahmedabad has a research collaboration with the following faculty from Johns Hopkins University School of Medicine, Baltimore, MD, USA.

	Faculty from Johns Hopkins University School of Medicine, Baltimore, MD, USA	Area of Research
	**Dr. Anirudha Singh** Assistant Professor, Department of Urology, Brady Urological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD, USA	Smart 3D scaffolds for articular cartilage regeneration

Dr. Akshay Srivastava, Associate Professor, Department of Medical Devices has research collaboration with faculty from Centre for Research in Medical Device National University of Ireland, Galway.

	Faculty from National University of Ireland, Galway.	Area of Research
	**Dr. Abhay Pandit** Director of a Science Foundation Ireland-funded Centre for Research in Medical Devices (CÚRAM) at the National University of Ireland, Galway.	Medical Devices

Dr. Abhijeet S. Kate, Associate Professor, Department of Natural Products has research collaboration with the following faculty members from the University of Kelaniya, Sri Lanka and Atlantic Veterinary College, UPEI, Canada.

	**Prof. Priyani A. Paranagama** Senior Professor of Chemistry (Chair), University of Kelaniya, Sri Lanka	Natural Products
	**Prof. Russell G. Kerr** Professor & Canada Research Chair, Department of Biomedical Sciences, Atlantic Veterinary College, UPEI, Canada	Natural Products

Dr. Giriraj Sahu, Assistant Professor, Department of Biotechnology has research collaboration with the following faculty members from the University of Calgary, Canada.

	Faculty from University of Calgary, Alberta, Canada	Area of Research
	**Dr. Ray W Turner** Professor, Associate Dean (Research Grants) Hotchkiss Brain Institute, Department of Cell Biology & Anatomy, Cumming School of Medicine, University of Calgary, Canada	Structural & functional Characterization of hippocampal slow afterhyperpolarization (sAHP)

International Collaborations

Faculty from University of Calgary, Alberta, Canada		Area of Research
	**Dr. Wilten Nicola** Assistant Professor, Hotchkiss Brain Institute, Department of Cell Biology & Anatomy, Cumming School of Medicine, University of Calgary, Canada	Structural elucidation of the hippocampal slow after hyperpolarization (sAHP) multiprotein complex using computational tools

> *Individually, we are one drop.*
> *Together, we are an ocean*

MOU Signed

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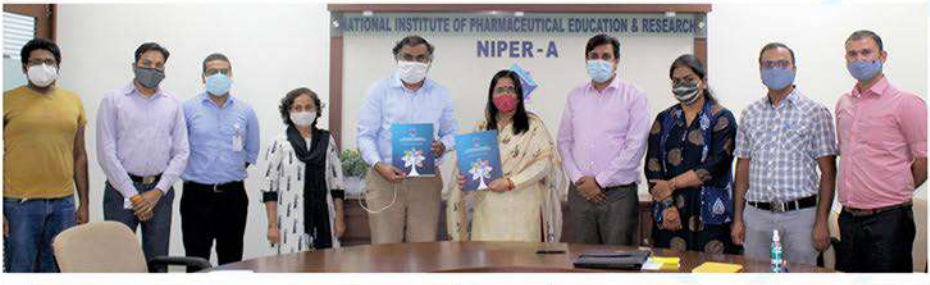
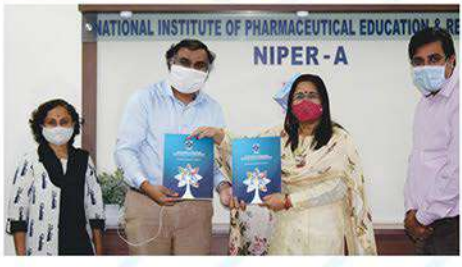
NIPER-Ahmedabad and **IIT Gandhinagar** join hands for academic, research and knowledge exchange

NIPER-Ahmedabad and IIT-Gandhinagar have entered into a MoU to facilitate various academic and research activities as well as foster knowledge transfer. The MoU was signed and exchanged by **Prof. Sudhir K Jain**, Director, IIT-Gandhinagar and Prof. Kiran Kalia, Director, NIPER-Ahmedabad on October 12th, 2020. As part of this agreement, the faculty, students, and researchers of both institutions would also be able to use each other's lab infrastructure.

NIPER-Ahmedabad and **Intas Pharmaceuticals Ltd.** have entered into a MoU to promote research and knowledge exchange





On 9th November 2020, NIPER-Ahmedabad and **Intas Pharmaceuticals Ltd.** have entered into a **MoU** to promote research and knowledge exchange. This is an initiative to bridge the gap between academia and industry towards progressive transnational research.

> *Success is the sum of small efforts, respected day in and day out.*

Departmental Research Activities

Biotechnology

Genetic profile and biomarker identification of OSCC patients through transcriptome analysis

We are currently working in an extensive area of transcriptome analysis of tobacco-addicted patients of oral squamous cell carcinoma. This study is being carried out on tumour samples taken from the Gujarat population. The idea or importance of this work seems to lie within the fact that Gujarat has been reported to be having the highest number of oral cancer reports, which is increasing year-by-year. Transcriptome analysis is an aspect which comprises of whole transcriptomics data of the affected patients. This data is ultimately being useful to find out the upregulated and downregulated genes and significant biomarkers and drug targets in the samples, and their respective validation is under process. The results obtained can pave the way for identifying better targeting approaches and the idea of personalized medicine, which is presently in the boom.

Dissecting the molecular mechanisms by which healthy cells become cancerous and metastasize

We are working in the area of signal transduction in carcinogenesis. Our laboratory investigates the intracellular pathways that contribute to malignant transformation and metastatic dissemination of cancer cells in various models, including oral, breast, prostate, and lung cancer. Through a transcriptome analysis of oral cancer patients, we have identified several genes and transcription factors that are significantly upregulated in oral cancer. Of the many altered protein, we have chosen two upregulated target candidates for further evaluation: Interleukin-8 (IL-8) and Lama3. One of our primary goals is to elucidate the role of IL-8 and Lama3 as a modulator of proliferation, survival, apoptosis, differentiation, transformation, and set mechanistic bases for targeting this protein for cancer treatment. Lama 3 belongs to the laminin family of secreted molecules that are known to play an essential role not only in the formation and function of the basement membrane but also in regulating cell migration and signal transduction. Serum IL-8 has been shown to acts as a biomarker for oral cancer. However, understanding of IL-8 regulation in oral cancer remains in infancy. Using varied in silico web-based tools, we have identified miRNAs that regulate singly or in conjunction with the aberrant expression of IL-8. Targeting these miRNAs may offer a potential approach to combat IL-8 aberrant expression associated with oral carcinogenesis.

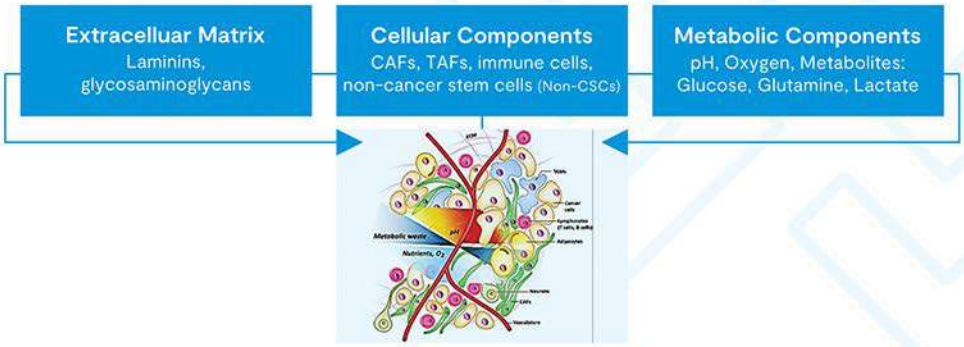
Epigenetic modulation in diabetic nephropathy through miRNA

Besides, our big challenge is to elucidate such complex signalling mechanisms for other upregulated candidate genes identified from the oral cancer transcriptome analysis, with the ultimate goal of finding novel targeting molecules for cancer therapeutics, using cellular, genetic and pharmacological approaches. We are also in the process of evaluating the various natural and/or chemical compounds synthesized if they (a) possess anticancer activity, and (b) have inhibitory activity towards IL-8 and/or Lama3. Currently working on emerging epigenetic mechanisms underlying Diabetic nephropathy, which involves microvascular complications associated with both type 1/2 Diabetes Mellitus. It may be noted that Diabetes Mellitus is a leading cause of renal failure. Epigenetics plays a vital role in Diabetic Nephropathy comprises a study of heritable changes in gene expression without alterations in the underlying DNA sequences. In Diabetes Mellitus, due to engagement of cytokines & growth factors with their receptors trigger signal transduction cascades, these affect epigenetic states to augment the expression of pro-fibrotic & inflammatory genes which further leads toDiabetic Nephropathy. Hence, miRNAs could serve as the new therapeutic targets for Diabetic Nephropathy.

Modulating breast cancer stem cells using exogenous hyaluronic acid induction

The reoccurrence of breast cancer is a significant concern due to the presence of cancer stem cells (CSCs).

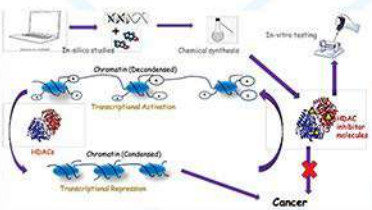
Considering the critical role of hyaluronic acid (HA) in modulating the inflammation and cellular migration in cancer, the response of high molecular weight (HMW) and low molecular weight (LMW) HA towards various subtypes of breast cancer and breast cancer stem cells remain elusive. This study aims to determine the effect of exogenous HMW-HA and LMW-HA on the stemness of CSCs and epithelial-to-mesenchymal transition, which may help in designing HA-based therapeutic strategies. Moreover, glutamine metabolism has emerged as a therapeutic cancer target in the past few years. Dependency on extracellular glutamine varies among different breast cancer subtypes due to lineage-specific gene expression. However, the effect of the ECM component, e.g., hyaluronic acid on glutamine flux and its metabolism in CSCs, remains elusive in breast cancer.



Combining experimental and computational approaches to design and validation of anticancer molecules

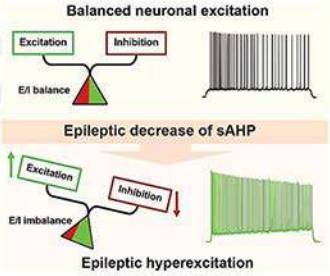
Effective abolition of cancer warrants treatment modalities directed towards specific pathways dysregulated in tumor proliferation and survival. The anti-apoptotic Bcl-2 proteins are significantly altered in several tumor types, positioning them as striking targets for therapeutic intervention. In this work, we designed, synthesized, computationally validated, and biologically evaluated structurally optimized thiazole-based small molecules. The virtually designed molecules were subjected to rigorous docking and ADMET studies. It led to the qualification of 23 skeletally diverse thiazole based molecules, which were synthesized and in vitro evaluated against normal and cancers cell lines. The molecules simultaneously inhibited Bcl-2 Jurkat cells in vitro without causing detectable toxicity to normal cells. Among them, five molecules showed potent activities against Bcl-2 Jurkat and A-431cell lines at μM concentrations. A molecule that was showing almost equipotent in both the cell line was subjected to molecular dynamics (MD) simulation with death-defying anti-apoptotic Bcl-2 proteins. It was shown that it interacted with protein majorly via hydrophobic interactions, and few electrostatic interactions were also observed. During the MD simulation, conformational changes in Bcl-2 protein were observed that facilitates the movement of a ligand inside the cavity of protein. Finally, flow cytometry analysis of this compound proved that cells followed the apoptotic pathway leading to cell death. The chemical intuition was fully validated by computation and biological results, which confirms that molecules have the potential to be developed downstream into potent and safer anticancer agents. (Eur. J. Pharm. Sci., 2019; doi: 10.1016/j.ejps.2019.04.005)

Structural and Functional Evaluation of Indole Based Anti-Cancer Compounds targeting Histone deacetylases (HDACs)



The HAT (Histone acetyltransferases) and HDACs (Histone deacetylases) are two distinct families of enzymes. They are responsible for the reversible change of the chemical state of the ε-amino group of the lysine residues residing at the N-termini of the core histone proteins in the nucleus of the cell. The catalytic activity of the HDAC enzymes is directly related to the pathogenesis of cancer as well as several other diseases. In cancer states, hyperacetylation ultimately causes cell cycle arrest and apoptosis. Therefore, HDAC inhibition leads to a hyperacetylated state of the histones, initiating the transcriptional activation of suppressed genes. Currently, certain existing HDAC inhibitors such as Vorinostat, Trichostatin A, Valproic acid, etc. have been shown to have the potential to treat several types of cancers, but not with effective efficacy and selectivity. Thus, available HDAC inhibitors are not very useful as anticancer agents. In this study, we have systematically analysed the three-dimension structures of all the isoforms of HDACs by employing the various tools of structural bioinformatics and molecular modelling including structural-based sequence alignments, phylogenetic tree construction, and homology modelling. A careful structural analysis identified the set of critical residues at the 11Å deep active site and 14 Å wide cavity of the HDACs, especially specific to HDAC8, which is overexpressed in case of breast cancer. By targeting these important residues, HDAC inhibitors are designed which are expected to show more selectivity and better efficacy to HDAC8. This is further confirmed by docking studies, and based on this, further optimization of the designed compounds is done, via substitution at the specific sites of the compounds and further docking them at the active site. Thus, molecules are selected, which have proper binding orientation and docking score. These results will be further confirmed by experimental techniques.

Molecular characterization of hippocampal sAHP modulation in temporal lobe epilepsy



Temporal lobe epilepsy (TLE) is considered to be one of the most prevalent neurological disorders without having effective treatment strategies. Further, one-third of patients develop treatment-resistant and intractable TLE, which results in the appearance of future recurrent seizures. Thus, a detailed understanding of the key molecular and cellular mechanisms of the acquired TLE is of critical importance for developing novel antiepileptic therapies. We are focusing our work on a region of the brain called Hippocampus, which shows drastic alterations in TLE, resulting in synchronous firing patterns and generation of recurrent seizures. A major source of this recurrent seizure mediated excitatory and inhibitory (E/I) imbalance in TLE proves to arise from downregulation of intrinsic inhibitory mechanism of slow afterhyperpolarization (sAHP), that regulates the firing pattern of hippocampal neurons. Results from our work established that the sAHP is generated by a coordinated interplay between plasma membrane (PM) and endoplasmic reticulum (ER) localized calciumpermeable ion channels and calcium-activated potassium channels that work as a multiprotein assembly. In this investigation, the Here we are addressing the molecular mechanisms that modulate the structural organization and functional properties of the sAHP generating multiprotein complex in TLE using established animal models of acquired TLE. The results of this work will guide the development of novel drug discovery for the treatment of epilepsy.

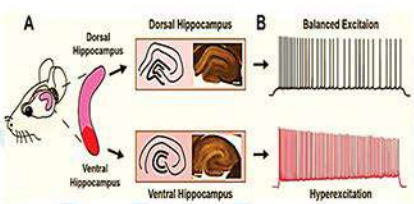
Role of ER-PM connecting junctional proteins in the potentiation of sAHP in aging

Normal non-pathological aging is characterized by the decrease or impairment in the cognitive tasks. This is attributed to a change in neuronal excitability patterns, particularly, in the hippocampal brain region that is known to be involved in learning and cognition. The excitability of hippocampal neurons is fine-tuned by an intrinsic inhibitory mechanism termed slow afterhyperpolarization (sAHP). Importantly, a potentiation of the sAHP and reduction of hippocampal neuronal firing is reported in aged animals leading to

cognitive abnormalities. Recent results from our work highlighted the contribution of endoplasmic reticular (ER) and plasma membrane (PM) connecting junctional proteins called junctophilins (JPH) in assembling a multiprotein complex of Cav1 voltage-gated calcium channel, KCa3.1 potassium channel, and RyR2 store calcium release channels at specialized ER-PM junctions that help to generate the hippocampal sAHP. shRNA knockdown of JPH-3 and JPH-4 disassembles the multiprotein assembly and sAHP induction. Although an increase of Cav1 and RyR2 channel functions has been found in aged neurons, very little is known about the expression profile of these ER-PM junctional proteins and the kinetics of its interaction with the multiprotein complex during aging. With this work, we vision to develop small peptide fragments in the form of tatpeptide conjugates to be delivered into the bloodstream that can be used in the functional improvement of neuronal firing patterns and cognitive performances in aging.

Molecular identification of the regulatory mechanisms that control the differential excitability pattern of dorsoventral hippocampal neurons

The hippocampus is an important brain region widely involved in memory and cognition tasks. Though the structural organization pattern of the hippocampus remains identical throughout, the circuit connectivity pattern and functional properties vary along the dorsoventral longitudinal axis. Intriguingly, ventral hippocampus is the region where recurrent seizures originate in temporal lobe epilepsy, making this an ideal target for novel drug design. This increased sensitivity for epileptic seizure induction is majorly attributed to the differences in the cellular and excitability pattern of ventral hippocampal neurons. More importantly, the pyramidal neurons of the ventral hippocampus are intrinsically more excitable than the dorsal ones for a given stimulus. However, the cellular mechanisms that lead to this varied excitability pattern between dorsal and ventral hippocampal neurons remained a mystery to date. Among the factors that control excitability, slow afterhyperpolarization (sAHP) is one of the largest intrinsic inhibitory mechanism known in brain that lasts for about 5-10 sec in duration. The phenomenon of sAHP is more pronounced in hippocampal pyramidal neurons that controls the firing pattern, frequency, and degree of action potential firing. With this project, we are elucidating the roles of the hippocampal cell sAHP as a regulatory mechanism that controls the differential excitability of hippocampal neurons.



Differential regulation of L-type calcium channels in ischemic brain injury

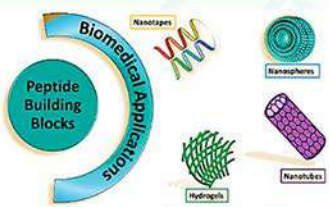
Reduction of blood flow to the brain regions induces brain or cerebral ischemia that results in brain damage or death due to alterations of various neuronal structures. Among these, the functions of voltage-gated L-type calcium-permeable ion channels (Cav) are highly compromised in ischemic insult. This has consequences in normal brain functions as L-type Cav channels play an essential role in intracellular calcium signalling, neuronal excitability, and synaptic plasticity. Further, the vulnerability of brain ischemia varies among different neuronal populations. The CA1 region of the Hippocampus has shown a higher degree of sensitivity towards brain ischemia than that of CA3 brain regions. Intriguingly, there is a differential effect of brain ischemia on L-type Cav channel properties. L-type channel currents decreased to a greater extent in the CA1 region of the Hippocampus than that of the Ca3 region, where insignificant reduction of L-type currents observed after ischemic treatment. With this project, we are deciphering the molecular details of ischemic modulation of the L-type Cav channels and the mechanisms that govern differential regulation of L type calcium channels in the hippocampal brain region during ischemic brain injury. Outcomes of this study will aid in providing crucial information about the mechanisms that operate in the brain ischemia, one of the most commonly occurring neuropathological disease conditions.

Development of targeted therapeutics for acute myeloid leukemias (AMLs)

India has the third-highest number of blood cancer patients in the world, and blood cancer contributes to 7% of all cancer cases in India. Acute myeloid leukemia (AML) is a cancer of the myeloid lineage of blood cells, is the most common acute leukemia affecting adults, and its incidence increases with age. As acute leukemia, AML progresses rapidly and is typically fatal within weeks or months if left untreated. However, AML is a potentially curable disease, although only a minority of patients are cured with current therapy. Many cases of AML are associated with non-random chromosomal translocations that often result in gene rearrangements. The four most prevalent ones being t(15;17), t(8;21), inv(16), and 11q24 translocations, which result in the expression of the oncofusion proteins PML-RARA, AML1-ETO, CBFB-MYH11, and MLL-fusions,respectively. Our main research goal is to elucidate the molecular function of these oncofusion proteins in acute myeloid leukemia and translate the fundamental insights gained through our research into diagnostics and drug discovery process. To this end, we have been using next-generation sequencing (NGS) assays (ChIP-seq, RNA-seq, ATAC-seq, 4C, Hi-C, Hi-ChIP), molecular and proteomics tools, CRISPR-Cas9 genome editing technologies, and bioinformatics pipelines, to identify the transcriptional and epigenetic networks that are dysregulated in acute myeloid leukemias (AMLs). These functional and bioinformatics analyses are leading us towards the development of novel therapeutics for leukemia.

Medicinal Chemistry

Peptides and peptidomimetics based soft material for biomedical applications

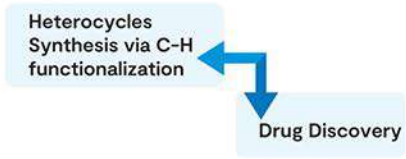


Peptides are interesting class of molecules ubiquitously present in biological system and are the controller of various vital biological signalling pathways. Due to nontoxic and specificity, it is considered to be very promising class of molecules and investigated for numerous applications in drug discovery and developments. Short to ultra-short peptides are economically viable candidates for their low cost, easy synthesis, and tunability. Our objective is to explore such short peptides as novel biomaterial for tissue regeneration. Although natural polymers such as chitosan, hyaluronic acids, alginate, etc. have been used routinely as scaffolding material, they devoid of signalling elements for any biological response. Short peptides through molecular self-assembly form supra molecular structure and offer requisite properties of material as any of the natural polymer. However, the major limitations associated with these peptide-based biomaterials is their proteolytic degradation, thus impose a challenge for in-vivo applications. With the incorporation of chemical changes, we are aiming to develop peptidomimetics which can retain the activity with improved enzymatic stability. These peptides and peptidomimetics are being developed as hydrogel, organogels, films, and fibre without/with various natural, biodegradable polymers for therapeutic applications in the area of oncology and neurological disorder.

Medicinal Chemistry

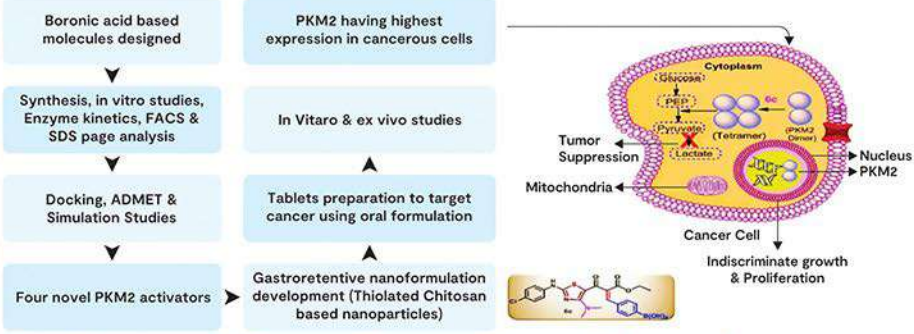
Construction of drug candidate(s) through C–H bond activation

The direct transformation of C–H bonds provides a shorter approach towards organic synthesis, thus rendering straightforward and atom-economical synthetic routes for the drug-like molecules. Even more appealing is that this new approach enables previously unachievable synthetic disconnections. The employment of C–H bond activation protocol does not simply represent a gradual synthetic advance. It has implications beyond organic chemistry and through the compounds made using this methodology it reaches other fields of science such as materials science, biology, physics, and energy research. Owing to the existence of C–H bonds in all kinds of organic molecules, the ability to transform selectively, efficiently, and in a predictable manner a specific C–H bond opens the door for the almost unlimited exploitation of this strategy for the late-stage modification of various complex molecules, enabling a rapid diversification of chemical entities into a panel of closely related analogs. In this context, we are focusing on the designing, synthesis, and functionalization of novel carbo/heterocyclic scaffolds by using C-H bond activation strategy, toward the synthesis of NCEs as therapeutic candidates for cancer and neurological disorders.



Development of reversible anticancer covalent inhibitors

Proliferating cells, especially tumour cells, express a special isoenzyme of pyruvate kinase, termed PKM2, which can occur in a tetrameric form with a high affinity to its substrate, phosphoenolpyruvate (PEP), and in a dimeric form with a low PEP affinity. In tumor cells, the dimeric form is usually predominant and is therefore termed Tumour PKM2. PKM2 can be elevated in many tumor types (oral, colorectal, breast, ovarian), rather than being an organ-specific tumor marker. Medicinal Chemistry NIPER-Ahmedabad Annual Report 2020-21 29 Previous attempts to target this enzyme using various agents like bissulfonamides, piperazine derivatives are yet to ascend into the clinic. Serine, DASA-58, and ML- 265 have been established as activators of PKM2, which can drag the protein towards the normal tetrameric state for thwarting the progression of cancer, but clinical success is awaited. In this category, although boronic acid derivatives have esteemed biological profile but they have never been explored as activators of PKM2 towards the anticancer activity. Here we intend to focus on the design and synthesis of boronic acid-based molecules with high affinity towards PKM2 enzyme and dragging them towards tetramer formation. We presume that the boronic acid moiety established for the superior biological profile will be engaged in dynamic covalent bond formation leading to activation of PKM2 thwarting cancerous cells towards death. This will smartly orchestrate the normal glycolytic pathway and will certainly bypass functional consequences associated with kinase inhibitors like leukopenia, hepatic disorders, hypertension, thrombocytopenia, and several others. The rationally designed molecules will incorporate the fragments from well-marketed drugs using a fragment-based drug discovery approach that will eventually avoid all the aforementioned side effects and will have adequate drug ability. Apart from this design, synthesis and computational studies of novel pyrazolopyrimidines, and ferrocene-based organometallic compounds are also undertaken. The molecules have shown promising drug metabolism and pharmacokinetic properties.

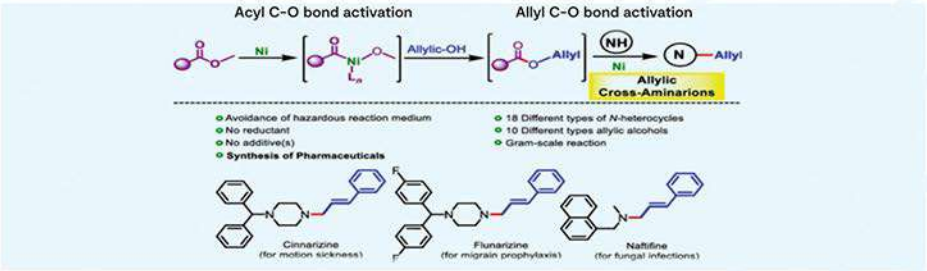


Targeted therapy for CNS related disorder and Injury

Alzheimer's disease (AD) is one of the most prevalent form of neurodegeneration that is associated with severe cognitive impairment and memory loss primarily among the geriatric population. Complex pathophysiology of AD involves mitochondrial dysfunction, neuroinflammation, tau protein phosphorylation, ROS, and metal dysregulation which eventually leads to neuronal death. Therefore, a therapeutic molecule which can target multiple pathways is an attractive approach to tackle such complex disease. However, till date, none of the molecule find success as therapy and only four small molecule-based drugs are available in market for symptomatic relief. Therefore, our objective is to design and develop multi-target directed ligands (MTDL) based on small molecules and peptides towards the treatment of AD.The central nervous system (CNS), which comprises the brain and spinal cord, is the most important and complex part of the nervous system. Two of the most common causes of injury to the CNS are rauma and haemorrhage. Injury to the CNS causes significant mortality and morbidity, which results in a heavy economic burden on society. Our objective is to develop peptides, nucleopeptides, and peptide-based biomaterial for the nerve tissue regeneration taking the advantages of the micro environment of site of injury.

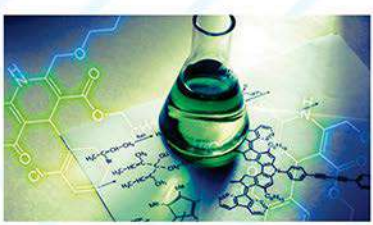
Borrowing Carbonate-Enabled Allylic Amination Reactions under Additive- and Reductant-Free Nickel Catalysis Employing Allylic Alcohols

N-Heterocycles constitute the fundamental building blocks of pharmaceuticals, agrochemicals, natural products, and functional materials. This has catalyzed the discovery and development of new reactions for their syntheses and functionalization. In this context, we developed a "borrowing carbonate"-enabled allylic cross-amination reactions employing allylic alcohol via merging acyl/allyl C–O bonds activation under nickel catalysis. The key component of this protocol is the ability of nickel [Ni(II)-Ni(0)] to execute a relay process via the nucleophilic trapping of the generated acyl Ni complex, resulting from the acyl C–O bond cleavage of dialkyl carbonates, followed by selective allylic C–O bond activations (allylic C–O vs alkyl C–O vs acyl C–O) to yield π-allylNi-complexes. The finding truly represents Ni-catalyzed green allylic amination reactions under additive(s)-free conditions with excellent chemo- (N vs O), regio- (linear vs branched), and stereoselectivity (E vs Z) with a wide range of fundamentally challenging Nheterocycles and allylic alcohols. The reaction is scalable, does not require harmful reaction media and a globe box, and is successfully applied to the gram scale reactions with promising yields.



Green chemical process toward the synthesis of pharmaceuticals (drugs)

The pharmaceutical industry is very receptive to the "greener" alternatives process (greener raw materials, catalysis, less use of toxic organic solvents, less waste, protection of workers, and minimization of environmental pollution) in the context of production of APIs with a sense of responsibility towards modern society. Keeping this philosophy intact, we are working towards the synthesis of drugs or drug intermediates employing the fundamental principles of Green Chemistry, to suit the industrial demand and to bridge the gap between academics and industries. In this context, we recently developed an "all-water" synthesis of pharmaceuticals where the step-reactions were promoted by water and led to the development of new water-assisted chemistries for the synthesis of marketed pharmaceuticals, flunarizine, with promising overall yields. Compared to the conventional manufacturing process of flunarizine using organic solvents, the aqueous process developed by us avoid the organic reaction media, bypass the protection deprotection strategies, and utilizes earth-abundant nickel catalysis for the introduction of allyl functionality.



Medical Devices

Biomaterial Platformsin developing medical devices & biotechnology products

New concepts in material fabrication methods have been utilized in developing advanced forms of hydrogel and particles for specific medical and biotechnological applications. The research work is focusing on designing new types of materials using physical concepts and chemical engineering tools. We develop materials as a chromatography matrix for the separation of a large particle such as mammalian cells, as a three dimensional matrix for mammalian cell bioreactor, and as particles in various forms for the delivery of biomolecules. The advanced forms of materials have been fabricated with enhanced biological properties for developing medical devices e.g., lab-on-a-chip, tissue repair patch, and cell delivery vehicles. The appropriate type of biomaterial can be fabricated based on the desired application. We develop materials from natural (collagen, hyaluronic acid, alginate, and other GAGs) and synthetic (poly (N-isopropyl acrylamide), poly(acrylamide), polycaprolactone, etc.) polymers.

Bioengineered three-dimensional aligned scaffold for intervertebral disc repair

Recent advances in cellular and molecular biology have provided an exciting approach to regenerate intervertebral disc (IVD) that focuses on the delivery of viable and therapeutically important cells to the degenerating disc. AF cell population has shown progenitor cell-like functions, which can differentiate into osteogenic and adipogenic cell lineage. However, these stem cells reside in the highly specialized microenvironment in healthy IVD and tend to lose their phenotype in successive sub-culturing in vitro. The aligned collagen-based biomaterial scaffold would mimic the IVD microenvironment by providing an artificial functional niche for maintaining progenitor cell function. Hence, my hypothesis is, a population of proliferative annulus fibrosis cells present in a highly controlled IVD microenvironment, will help in the regeneration of herniated AF region of IVD using functional biomaterial niche.

Polymeric conduit for spinal cord regeneration

Due to irreversibly neuronal loss and glial scar deposition, spinal cord injury causes a permanent neurological dysfunction. The developed conduit allows a faster axonal regeneration rate. The porous network of the nerve conduit will enable the transfer of nutrients and oxygen through the nerve conduit. Slow degrading polymeric conduit will help in nerve regeneration at the site of the injury for prolonged period. The conduit also allows the incorporation of mesenchymal stem cells, which would help in regeneration of injured spinal cord. The MSC-loaded scaffolds provide axonal regeneration in the injured spinal cord and improve locomotor movements and function associated with the spinal cord. These materials can also be incorporated with nerve growth factor for the sustained release of nerve growth factor will also provide nerve growth factor supply for the over the time period. Overall, the developed nerve conduits will fulfil the ideal characteristic of nerve guidance conduit, and the porous network of the nerve guidance conduits will add an advantage for faster neuron regeneration.

Smart 3D smart scaffolds for musculoskeletal tissue regeneration and repair

Piezoelectric materials are known as smart materials owing to transduction of applied mechanical pressure into electrical signals and vice-versa. Musculoskeletal tissue regeneration and repair is a major challenge due to its complex structure and function. The smart piezoelectric scaffolds can regenerate tissues by utilizing their intrinsic electric stimulation capability. The electric stimulus controls the calmodulin pathway way by rapid influx of Ca+2, thereby rapid regeneration of tissues.

Osteoconductive and high strength bone cements for joint arthroplasties

Since 1950's the PMMA based bone cement widely used in joint arthroplasties. It acts as grouting material to provide stability of joint arthroplasty by making mechanical bonding between bone and metallic implant. However, the life of cemented joints is around 15-18 years later needing a revision of the surgery due to lack of osseointegration and poor mechanical properties of bone cement. We developed a bone cement of high strength and osteoconductive by nanotechnology intervention. The cement can significantly improve life up to 30 years. The nanoparticles like layered double hydroxides, carbon nanomaterials, and barium titanate are utilizing for the development.

Advanced strategies for cancer theranostics

Cancer is an abnormal growth of cells in any tissue or organ of the body and these cells have the ability to spread and grow in other parts of the body. Various conventional approaches are available to treat cancer but they possess a lack of absolute success and the presence of various side effects. Studies were carried out to achieve absolute cure by the combination of alternative engineering therapies. Magnetic hyperthermia with the combination of photodynamic therapy and chemo has been exploring for cancer therapy and diagnoses. In-house synthesized quantum dot conjugated SPIONS are exploring for the diagnosis and therapy. The same complex is loaded with anticancer drugs and PDT elements for chemo and photodynamic therapy, respectively. We observed a synergistic effect in combination therapy against a single approach.

Paper-based microfluidics for diagnostic applications

The quest for affordable diagnostics has been major thrust in the bioengineering and clinical domain. The advent of domain of microfluidics have shown a great promise in developing highly sensitive, accurate, and minimally invasive diagnostic solutions. However, the major road block is the design and manufacturing of these microfluidics-based biosensors in an affordable manner. Therefore, we propose a paper microfluidics based diagnostic solution that are affordable, accurate, and highly sensitive. We work on the fundamental and applied aspect of driving bio-fluid through a porous material, immobilization of bio-elements through surface modifications, and detecting the required analytes.

Micro/nanodevices for life-sciences and biomedical applications

Developing a tissue models have been seen as an alternative to animal trials for drug/medical device development. These tissue models can also serve as an alternative to understand the biology of a given tissue. The complex tissue architecture development is limited by scaffolding techniques that can facilitate better tissue engineering. We propose the combination of different micro/nanofabrication technology to design and develop biomimetic, multi-scale, multi-material, 3D tissue-specific scaffolds devices structures that can accelerate the developments in tissue engineering and fundamental understanding of tissue biology. Further, we propose to expedite these devices for applications like separation devices; extra-corporeal membrane oxygenators and kidney dialyzers, drug delivery devices; microfluidics device for wound healing, cold storage device; micro-cooling device, and others.

Development of bioengineered 3D disease models with a focus on cancer

One of the first steps in anticancer drug/anti-metastatic agent development is to screen potent biomolecules on two- dimensional (2-D) tissue culture substrates followed by in vivo screening (Industrial gold standards). However, due to the associated drawbacks, there is a shift towards in vitro tumor models that can act as a bridging gap between the conventional 2-D culture and in vivo tumors. Using tissue-engineering platform, we propose to develop patient-derived tumoroids on three-dimensional (3-D) scaffolds for studying tumor pathophysiology as well as for screening anticancer drugs towards personalized therapy. In this regard, we aim to explore 3-D bioprinting, which will allow capturing the tumor heterogeneity and complexity as in vivo by exerting precise control over cell organization and biomaterial/biomolecule placement. Additionally, the drug screening/testing data thus generated can further be used to predict the response of patients towards small molecule treatment through machine learning tools.

Fabrication of in vitro biophysical micro environment to understand disease biology

Breast cancer is the leading cause of cancer-related deaths in women wherein distant metastasis by itself accounts for roughly 90% deaths, thereby demanding newer therapeutics that target breast cancer metastasis. During metastasis, a cancer cell encounters complex tumor environment comprising multitude of physicochemical cues. Therefore, through precise control over the extracellular matrix using a 3-D in vitro model, we are investigating the role of biophysical factors in breast cancer metastasis. We also propose to investigate the role of varying biophysical profiles in epigenetic reprogramming of breast cancer cells. The establishment of these models will help derive correlation between breast cancer aggression and underlying biophysical cues and could be used as a model for screening modifiers of the biophysical tumor microenvironment as well as epigenetic drugs. We further propose to develop a microfluidic platform that would aid in excellent optical properties for time-lapse microscopy for visualizing various aspects of cancer cell migration in appropriate biophysical microenvironments. The model could also be extended towards high-throughput drug screening platforms.

Medical Devices

Non-invasive screening platforms for early detection of cancer

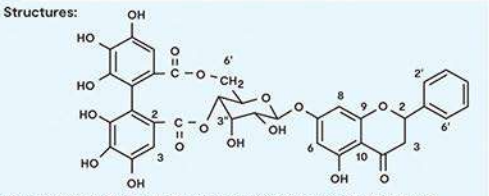
Despite significant advances in diagnostic tools for breast cancer (such as physical examination, mammography, fine needle aspiration cytology, and tissue biopsy), they are associated with sub-optimal sensitivity and specificity. Therefore, there is a need to develop efficient screening and diagnostic tools that detect breast cancer at an early stage, with enhanced specificity and sensitivity, and using non-invasive strategies. Saliva, often termed as the "mirror of the body", has been reported to show proteins or mRNA analogous to patients' tumor status. Currently, available detection tools are based on techniques such as Real time PCR and ELISA, that involve tedious sample processing. In order to reduce processing time while maintaining the assay specificity and sensitivity, we propose the development of an aptamer-based electrochemical sensor for biomarker detection using patient saliva for early detection of breast cancer.

Natural Products

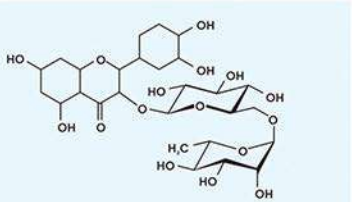
LC-MS based dereplication strategy for isolation of novel bioactivenatural products from plant sources

Natural products play a very important role in the discovery of new drugs. The Dereplication technique has reinvigorated the natural product-based drug discovery process by improvising the time required for the isolation of novel molecules. LC-HRMS based dereplication method has been established at NIPER-A to identify known compounds from medicinal plants using the Dictionary of Natural Products. Macrosolencapitellatus, a South Indian Mistletoe was selected for LC-MS based dereplication and identified Rutin and Pinocembrin-7-O-[4",6"-(S)-HexahydroxyDiphenoyl]-β-D-Glucose successfully. The plants namely Alstoniascholaris, Bahuniapurpuria, Enicostemma littorale, and Costusigneus are currently under investigation using the dereplication strategy to identify novel anticancer and anti-diabetic leads.

Structures:



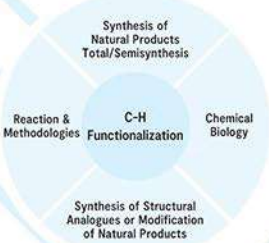
Pinocembrin-7-O-[4",6"-(S)-HexahydroxyDiphenoyl]β -D-Glucose



Rutin

C-H activation strategy for the total synthesis and/or semi-synthesis of Natural Products

Natural products display widespread structural diversity and possess important bioactivities; however, they are present in trace amounts representing a major challenge for sustainable production. Thus, the chemical synthesis of natural products constitutes an important area of research. Therefore, newer approaches for their synthesis and product diversification are the need of the hour. In this context, our research group is focused on the development of C–H functionalization reactions, which are now possible for the selective conversion of strong, inactivated C–H bonds into C–X, C–O, C–N, and C–C. These strategies have been used in-house for total synthesis or semi-synthesis of selected bioactive natural products (7-hydroxy flavone)



Establishment of Q-Marker system for standardization of traditional Ayurvedic polyherbal formulations

Ayurvedic system of medicine is one of the world's oldest holistic healing systems in India. According to WHO, around 80% of the world's population relies on the traditional system of medicines for their healthcare needs. Ayurvedic polyherbal formulation (PHF) uses multiple herbs in medicinal preparation which makes it challenging to maintain the quality standards. The safety and effectiveness of ayurvedic medicine in clinical practice are directly related to the quality of Polyherbal formulations. Quality aspects of herbal medicine are documented in guidelines and monographs in official texts but these standards are neither associated with the efficacy of the formulation nor represent the medicine as a whole. Q marker is a new concept recently coined by Prof. Liu for traditional Chinese medicine. It refers to the morphological, chemical, biological, and ecological characteristics that influence the quality of end products. Three quality markers have been identified for anti-diabetic activity in Tinospora cordifolia using this concept and HPLC and LC-MS methods have been developed for the standardization of marketed product "Guduchi Ghana Vati". In addition to this, Q marker identification from Tribulus terristries and Costusigneusis in progress.

Fingerprinting herbal extracts by LC-UV-MS for chemical marker identification and extraction efficiency

The herbal products typically contain aqueous plant extracts, polar and water-soluble components from the plants, most likely responsible for bioactivity. However, common chromatographic methods include analysis of plant extracts using a reversed-phase C18 column. These columns usually do not retain polar compounds and hence elution occurs at void volume. The Natural Products research team at NIPER-A is making efforts to retain and resolve polar components of herbal extracts by applying the HILIC stationary phase, which is crucial for the analysis of herbal formulations (Momordica charantia). The method was also applied to check the extraction efficiency of swertiamarin by applying different techniques such as maceration, ultrasonication, microwave-assisted, and semi-bionic methods. The results revealed the maximum yield of swertiamarin in ultrasonication extract, which was about 9 times higher than that of the conventional method.

Bio-prospecting of endolichenic fungi to discover novel bioactive scaffolds

Recently, several reports have been published on the chemical diversity of endolichenic fungi, however, they have not been extensively studied from all geographical locations. Mangrove-associated endolichenic fungi is a relatively new niche in the natural products realm but shown tremendous potential of delivering important bioactive compounds. Study of the chemical diversity of endolichenic fungi associated with mangroves present in the Gulf of Kutch, Khambhat (Gujarat, India), and Gulf of Negombo (Sri Lanka) was the prime objective of this project. Different endolichenic fungi (ELF) from the collected lichens were isolated and identified by rDNAITS sequence homology. In this project, lichen from Sri Lanka and India have led to the isolation of greater than 50 ELF and the ethyl acetate extract have been screened by LC-HRMS dereplication technique. The selected fungi have been grown in larger quantities and isolated the bioactive metabolite with >95% purity by applying flash chromatography and preparative HPLC. The results showed the isolation of several compounds with anti-cancer activity having potency less than 5 µM. Few of these molecules are already been characterized and for others, structure elucidation is in progress. The observed scaffold belongs to macrocyclic esters, azaphilone derivatives, cyclic peptide, and bioxanthracenes class of compounds. It is important to note that few molecules were first time isolated from the lichen ecosystems. This is a collaborative project between the University of Kelaniya, Sri Lanka, and NIPER-Ahmedabad, India.

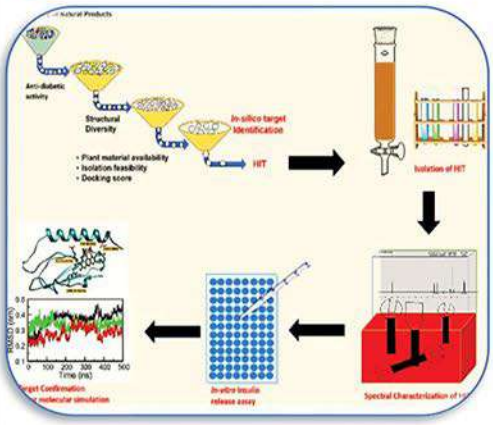
Endophytic fungi as a source of sustainable and novel bioactive molecules

Endophytic fungi offer an excellent source for isolation of potential bioactive metabolites with a higher probability of discovery of Novel Chemical Entities (NCEs). It's a well-known fact that virtually every plant is infected with one or more endophytic fungi and its isolation provides us with a unique opportunity to bio prospect potential microbial cultures for an ecologically sustainable way to produce bioactive metabolites.Endophytic fungi mimic the chemistry of their respective host plants and make the same bioactive natural products or derivatives that are more bioactive than those of their respective host. This is exemplified with the case of Taxol being produced by a series of endophytes from Yews as well as other plant sources. Apart from that, endophytic fungi are also known to produce a variety of ergot alkaloids, indoles, prenylated indoles, lollitrem, C28 sterols, amino acid derivatives, and peptide leucinostatins, etc. NIPER-A has initiated a project on the isolation of endophytes from Tinospora cordifolia to establish a sustainable production method for anti-diabetic bioactive.

Natural Products

Identification of plant-derived Natural Products possessing GLP-1R agonist activity

Diabetes mellitus is a chronic metabolic disorder responsible for morbidity in the western world and is gradually becoming prevalent in developing countries too. Available therapies which are currently in the market have some major issues like hypoglycaemia (Sulfonylurea), diarrhoea (Biguanide). So, there is a need to develop novel targets. Extensive research brings out various new targets including Glucagon like Peptide-1 receptor (GLP-1R). GLP-1R agonist molecule increases insulin secretion, reduces gastric emptiness, increase glucose uptake and storage in skeletal muscle and liver. Natural products have an immense history for curing diseases and it contains different scaffolds/ring structures with bioactivities. This provides a great opportunity for the development of a new lead or drug with potent GLP-1R agonist activity. Initially, 236 small molecules were selected for in silico study based on their preliminary in vitro antidiabetic activity in the different cell lines. Among these 236 compounds, 10 compounds have shown "hit" in different molecular docking software based on their binding affinity and interaction with different amino acids against the GLP-1 model. The selected three molecules have been isolated and conducted simulation studies for one of the molecules to propose the mechanism of action. Insulin secretion assay has been established in-house to check the overall efficacy. However, optimization of in vitro GLP-1R agonist assay is in progress.



Pharmaceutical Analysis

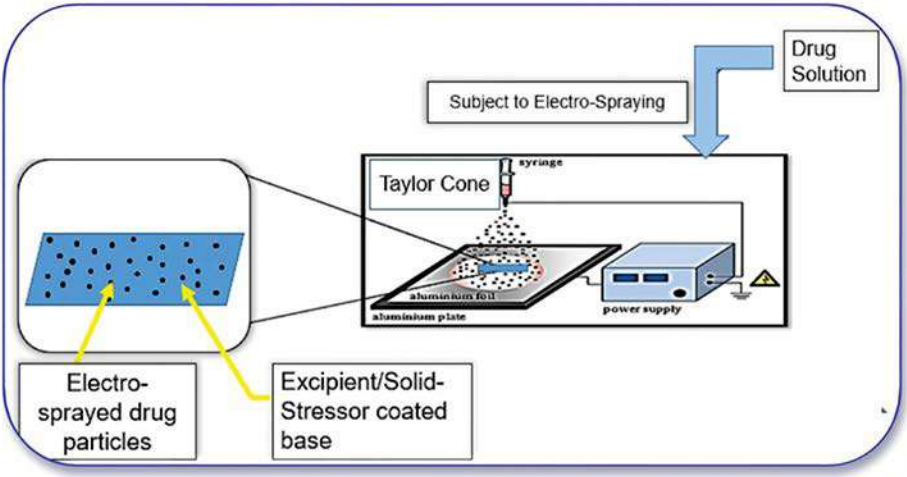
The Pharmaceutical analysis department is working on dynamic topics in the field of drug discovery, drug development, and medical device with cutting-edge analytical technologies. The below figure describes diversity in research on-going at the Pharmaceutical analysis department at NIPER-Ahmedabad.

Drug Discovery	Drug Development	Medical Devices	New Technologies
• Analytical Method for Stress Marker • Bioanalytical and DMPK • C13 Labelling and understanding impact on Kreb Cycle kinetics	• Solid State • PK profiling & comparison • Degradation • D:E Compatibility • Biosimilar Characterization • Bioanalytical for FDCs • Polymer Characterization	• Drug: Excipient of bone cement • Dissolution Study	• 31P NMR (Bringing new methods) • Electro Spinning • H/D Exchange

The glimpse of research is described below

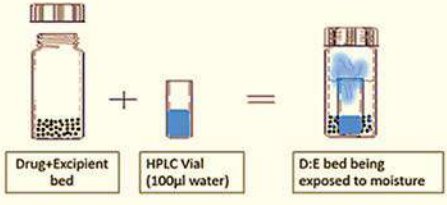
Drug-excipient compatibility studies

We explore novel approaches for drug-excipient compatibility studies which can rapidly identify any drug-excipient incompatibility and help in the selection of suitable excipients for dosage forms. Hence the novel approaches fasten development phase of the drug. One of the novel approaches involves electrospraying of drug solution onto the excipient coated base. The second approach is to place an HPLC vial containing water on the drug-excipient bed lying in a big vial to mimic the moisture. The HPLC method is developed and validated for analysis of isothermally stressed samples. The amount of drug degraded is determined and further degradants are characterized by FT-IR, LCMS/MS, and NMR spectroscopy.



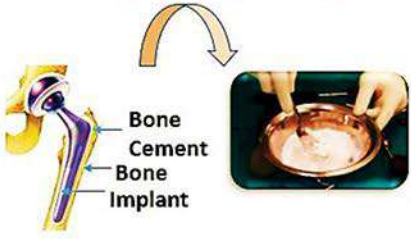
Forced degradation studies of APIs and NCEs using HPLC, LC-MS/MS and qNMR

The drug is exposed to different stress conditions (acidic, basic, neutral, oxidative, thermal, and photon) to generate all the possible degradants. Stability indicating HPLC assay method is developed and validated to analyse the stressed samples at each time point. The percentage degradation is calculated and degradants are then identified using LC-MS/MS and NMR spectroscopy after isolating through preparative HPLC. We also employ qNMR for the rapid, easy, and accurate determination of drug degradation.



Drug-Device compatibility and drug release study

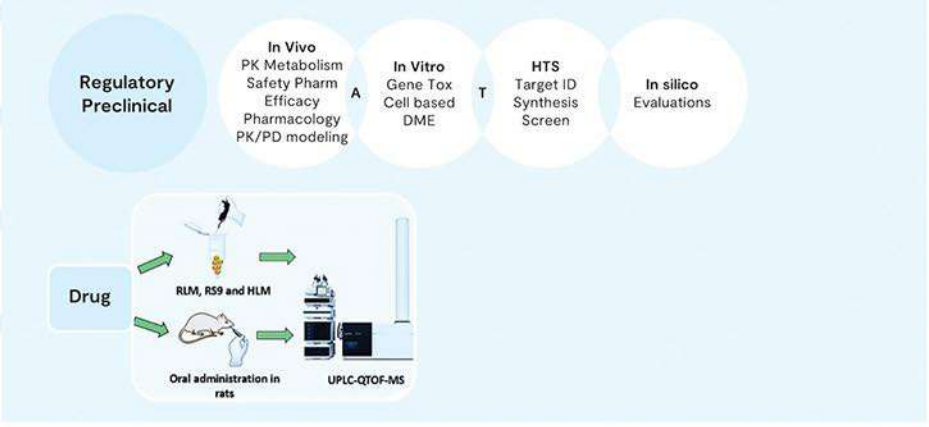
The compatibility study involves the exposure of accelerated conditions of temperature and humidity to the drug-bone cement components. The processed samples are analyzed using HPLC, DSC, and FT-IR. The HPLC method is developed and validated to determine the in vitro release of drug from the bone cement into simulated body fluid.



Pharmaceutical Analysis

Bioanalysis, drug metabolism, and pharmacokinetics

The development and validation of bioanalytical methods using instruments like HPLC, LC-MS/MS is one of the major research areas. It is used for quantitative measurement of a compound or their metabolites in biological fluids majorly blood, plasma, serum, urine, cerebrospinal fluid, etc. Quantitative measurement of the active drug or their metabolites are used for the accurate assessment of pharmacokinetics (PK), toxicokinetics (TK), bioavailability (BA), bioequivalence (BE), and exposure-response (pharmacokinetics/ pharmacodynamics) relationships. It shows how bioanalysis is mainly restricted to in vitro and in vivo analysis which helps in identifying the lead compound with desired pharmacokinetic parameters, metabolites, toxicity, etc. Analysis of NCEs and generic drugs in biological fluids, validation of method of analysis in different matrices, preclinical in vivo pharmacokinetic study of NCEs in animal species, plasma protein-binding studies, drug-drug interaction studies, tissue distribution studies, toxicokinetic studies, in vitro metabolism studies are the major area of our research in this field. Metabolite profiling itself is a vast area for research. The identification and quantification of metabolites will indicate the routes of drug elimination, drug-drug interaction & safety profile. Metabolism takes place by Phase-I and phase-II reactions. The rat liver microsomes are commonly used for in vitro drug metabolism studies. For in vivo metabolism study plasma, urine, faeces, and tissue are collected after drug administration and injected in LC-MS.



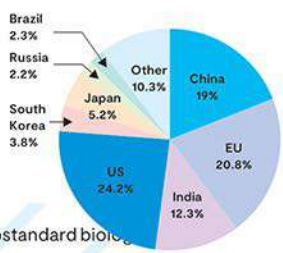
Analytical Approaches for Polymer Characterization

We characterize polymers by evaluating various CQAs against the QTPP of the formulation by different analytical techniques along with QbD approach. The evaluation of CQAs is done with analytical tools such as the ratio of monomer by NMR, Molecular weight by Gel Permeation Chromatography (GPC), Glass transition temperature from DSC, and viscosity by rheometer, particle size distribution by zeta sizer.

Biosimilars characterization

We also develop orthogonal analytical methods to extensively characterize biological products which can identify potential product differences affecting purity, safety, and efficacy of biosimilar candidates compared with the reference product. These orthogonal methods include SDS-PAGE for molecular weight and purity determination, Isoelectric focusing for isoelectric point and charged heterogeneities determination, 2D Gel electrophoresis for quantification of impurity, LC-Q/TOF for intact mass, disulfide bridge analysis, and peptide mapping, NMR for principal component analysis. These orthogonal methods can be adopted by IP for the quality assessment of biological products to prevent the entry of substandard biolo

Projected Regional Composition of the Biosimilars Market in 2028: Market Shares (%)



Mitochondrial protection in ischemic stroke using intra-arterial mesenchymal stem cell treatment

Laboratory studies suggest stem cell therapy as a prospective treatment for stroke. Studies demonstrate that the post-ischemic delivery of mesenchymal stem cells (MSCs) significantly reduces ischemic brain damage in animal models of ischemic stroke. The intra-arterial (IA) administration of MSCs is promising for ischemic stroke treatment because it delivers cells directly to the site of injury as unlike systemic delivery of MSCs following traditional intravenous approach. Postischemic mitochondrial dysfunction plays an important role in cerebral ischemic damage. This dysfunction involves a drastic change in the activity of mitochondrial respiratory chain complexes, increased production of reactive oxygen species (ROS), mitochondrial swelling, the release of mitochondrial pro-apoptotic molecules, and related cellular damage. We aim to elucidate the mechanism by which mitochondria can be salvaged and protected following an ischemic episode by IA MSCs delivery. Protecting post-ischemic mitochondrial function by cell therapy can be an important strategy for post-ischemic neuroprotection.

Stem Cell Therapy to Counteract Endoplasmic Reticulum Stress in Ischemic stroke

Endoplasmic reticulum (ER) stress is an intricate mechanism that mediates several responses during stroke, thus being essential in determining the fate of neurons. The role of ER stress is highly important. In addition to resulting in neuronal cell death through calcium toxicity and apoptotic pathways, ER stress also triggers a series of adaptive responses including unfolded protein response (UPR), autophagy, the expression of pro-survival proteins, and the enhancement of ER self-repair ability, minimizing the ischemic damage. Mesenchymal stem cells (MSCs) can be used as a therapeutic agent for stroke. Many studies have shown that transplanted MSCs could secrete cytokines and growth factors, which could enhance the process of angiogenesis and neurogenesis, and subsequently improve the neurological functions. Our aim is to understand the mechanism by which IA MSCs can protect neural tissue against ER stress.

Therapeutic strategy based on targeting growth hormone-releasing hormone (GRH) receptors for mitochondrial protection in ischemic stroke

Many neuropeptides and hormones are reported to be neuroprotective following ischemic stroke. To date, neuroendocrine modulation following ischemic stroke has not been explored in detail. Our collaborator, Nobel Laureate Prof. Andrew Schally, has synthesized few GHRH analogs (MR409/MIA-602) and investigated their biological activity in different pathologies reporting those as beneficial. The exact molecular mechanism behind these effects is yet to be deciphered. Mitochondrial dysfunction plays an important role in cerebral ischemic damage. Hence, protecting post ischemic mitochondrial function is considered as an important therapeutic strategy for neuroprotection. Therefore, the novelty of this study lies in deciphering the role of GHRH receptors as a therapeutic target in ischemic stroke by modulating mitochondrial dynamics.

Investigating the role of inosine on inflammasome signaling in animal model of ischemic stroke

At the early stage of cerebral ischemia, activation of immune response causes invigoration of microglia that induces TNF-α to act on TNFR1 receptor. Activation of TNFR1 receptor further activates NFB and promotes its nuclear translocation. This leads to increase in the expression of inflammasome components, namely, NLRP3, ASC, and Procaspase-1 and also promotes the assembly of inflammasomes. Pharmacology and Toxicology NIPER-Ahmedabad Annual Report 2020-21 41 The activation of inflammasome signaling activates the conversion of procaspase-1 to caspase-, which in turn promotes the conversion of proinflammatory cytokines (pro IL-1β,pro IL-18) into inflammatory cytokines (IL-1β, IL-18). This ultimately leads to pyroptosis and neuronal cell death. Inosine, a naturally occurring purine nucleoside, has shown to promote axonal collateral growth and maybe useful in ischemic stroke. We aim to see whether inosine plays a role in preventing the activation and assembly of inflammasomes in a rodent model of cerebral ischemia.

Exploring the effect of endoplasmic reticulum stress in exacerbation of stroke

pathology in chronic kidney disease Chronic Kidney Disease (CKD) is now known as an established risk factor for cardiovascular diseases. Stroke is a major player of cardiovascular disease and has a deep two-way relationship with CKD. Homocysteine (Hcy) is a non-proteiogenic amino acid which is found to be increased in CKD and may exacerbate stroke pathology. Hcy is a toxic, sulfurcontaining intermediate of methionine metabolism. Hyperhomocysteinemia (hHcy), as a consequence of impaired Hcy metabolism or defects in crucial co-factors that participate in its recycling, is assumed as an independent human stroke risk factor. The endoplasmic reticulum (ER) plays an important role in the maintenance of protein homeostasis through its control of conformation, folding, and trafficking of client proteins. Disturbances such as hypoxia, glucose depletion, and oxidative stress may lead to ER dysfunction, which can induce ER stress and the subsequent unfolded protein response (UPR). UPR leads to activation of downstream signaling pathway and finally transcription of CHOP protein that is an apoptosis-inducing factor. We hypothesize that homocysteine increases ER stress, leading to altered apoptosis. This over time may lead to exacerbation of stroke pathology in CKD.

Statins for stroke: Deciphering the involvement of endoplasmic reticulum

Ischemic stroke leads to glutamate excitotoxicity. Glutamate, being a major neurotransmitter in the brain, its dysregulation causes ion imbalance within the neuronal cell and oxidative stress that cause dysregulation of ER function. ER dysfunction eventually induces ER stress and subsequently initiates unfolded protein response (UPR). The UPR initially serves as an adaptive response, but overtime induces apoptosis in cells under severe or prolonged ER stress. In this study, we aim to evaluate whether prophylaxis or treatment with simvastatin may be able to reverse the ER stressinduced as a result of an ischemic insult.

Exacerbation of ischemic stroke pathology in CKD: Involvement of mitochondrial dysfunction

Renal impairment has been associated with poor neurological outcomes with functional declination and higher morbidity. Mitochondrial dynamics comprising of continuous fission and fusion processes is vital as it is involved in the maintenance of mtDNA integrity, redox signaling, and its morphology. Excessive mitochondrial fission leads to increase in fragmentation of mitochondria and results in dysfunction of mitochondria. Following ischemia, due to ATP depletion, there is increased calcium influx leading to the activation of NMDA receptors. Further, there is an activation of calcineurin (CaN) due to elevated intracellular calcium levels. CaN dephosphorylates Drp1 at ser637,causing its translocation towards theouter mitochondrial membrane (OMM) instigating the fission process. Increased fission leads to mitochondrial dysfunction promoting the release of cytochrome c and activation of caspase 3 initiating apoptosis. CKD leads to hyperhomocysteinemia and Hcy being a NMDA agonist causes its hyperactivity and hence inciting the downstream pathway. Thus, there might be exacerbation in the severity of mitochondrial dysfunction and apoptosis in the case of both CKD and stroke. We hypothesize that mitochondrial dysfunction may play a role in the exacerbation of ischemic stroke pathology due to CKD.

Exploring the role of statins in protecting mitochondria following ischemic stroke

Deciphering the role of statins in altering mitochondrial function in ischemic stroke the pathophysiology of stroke is complex and involves various mechanisms like excitotoxicity, inflammation, oxidative/nitrosative stress, ionic imbalance, and apoptosis. The ultimate result of the ischemic cascade activation is neuronal death along with an irreversible loss of neuronal function. Under normal condition, mitochondria play a crucial role in maintaining various cellular process, with cardiolipin playing an important role in maintaining mitochondrial membrane integrity and apoptosis. Past studies have shown, duringischemic insult, mitochondrial DNA gets oxidized and when oxidized mitochondrial DNA gets exposed to cardiolipin, it leads to inflammasome activation resulting in caspase 1 activation and maturation of proinflammatory cytokines. Statins are HMG-CoA reductase inhibitors. Along with this activity, statins have many other pleotropic effects, as a result, it has potential to be used in other pathologies. For this study,we aim to understand the effect of simvastatin on mitochondrial functionality and inflammasome-mediated cell death in rodent model of ischemic stroke.

Investigating the role of inosine in cerebral ischemia via pi3k/akt pathway

This study aims in investigating the role of inosine in neuroprotection via PI3K/Akt pathway. Under normal physiological conditions, neurotropic factors like brain derived neurotropic factor (BDNF) act as ligand for receptor tyrosine kinase (RTK) which results in its autophosphorylation. RTK further activates PI3K pathway via conversion of phosphatidylinositol (3,4)-bis-phosphate (PIP2) to phosphatidylinositol (3,4,5)-tris phosphate (PIP3). PI3K then translocates phosphoinositide-dependent kinase-1 (PDK-1) from cytoplasm to cell membrane which leads to phosphorylation of Akt at threonine 308 and activation of mammalian target of rapamycin (mTOR). Activation of mTOR ultimately results in cell survival via activation of transcription factors like eukaryotic initiation factor 4B (eIF4B) and ribosomal protein S6 kinase. After ischemic insult, there is reduction in BDNF resulting in inhibition of the downstream signaling which ultimately culminates in neuronal death. We hypothesize that inosine via adenosine receptor, a G-protein coupled receptor may stimulate RTK and may further activate PI3K. Once it is activated it will stimulate several downstream processes leading to enhances neurogenesis.

Neuroprotective role of apelin-13 in post-stroke depression

Focal cerebral ischemia leads to glutamate excitotoxicity, resulting in increased influx of calcium in cells. Abnormal increase in Ca2+ levels cause changes in the physiological ratio of Tyrosine kinase B (TrkB) due to calpains, matrix metalloproteinases, γ-secretase cleavage. Ectodomains are formed by the cleavage which results in inhibition of Brain-derived Neurotrophic Factor (BDNF). Inhibition of BDNF leads toactivation of phosphorylated Forkhead Box O (FOXO) by Protein kinase B (AKT) leading to apoptosis, decrease in neurogenesis which triggers depressive symptoms and cause post-stroke depression. Apelin 13 is reported to exhibit antidepressant activity. For this study, we aim to see whether ICV administration of apelin 13 can attenuate the progression of post-stroke depression in ischemic rats.

Parkinson's Disease

Idiopathic Parkinson's disease (PD) is a late-onset, chronic progressive neurodegenerative disorder related to prominent death of neuromelanin containing dopaminergic neurons in the Substantia nigra pars compacta (SNc) and the presence of intra cytoplasmic Lewy body inclusions containing α-synuclein (α-syn) aggregates. This, of course, is an oversimplified view of the disorder. In actuality, PD is a complex, multisystem disease of unknown etiology with multiple pathological features and a broad array of non- motor symptoms. NIPER-Ahmedabad Annual Report 2020-21 43 The non-motor symptoms include cognitive dysfunction, sleep disorders, psychiatric symptoms, and, most commonly, gastrointestinal and olfactory dysfunctions which occur in the pre-motor stage of the disease and dominate in its later stages. Gastrointestinal and olfactory dysfunction usually occur years or even decades before the emergence of motor feature, which reflect an early involvement of enteric nervous system and olfactory bulb in the development of α-Syn pathology. German histologist Heiko Braak has hypothesized that the α-syn pathology either starts from enteric nervous system or olfactory bulb due to exposure to environmental toxin and progress to SNc in retrograde manner.

The major challenges in PD are

1. Identification of biomarker which can diagnose the PD patients at early stage.
2. Development of diseasemodifying agent which can stop or reverse the progression of PD.
3. Development of progressive animals models which can recapitulate the exact pathology observed in clinical situations. Our lab is focused on development of progressive animal models targeting either enteric nervous system or olfactory bulb.

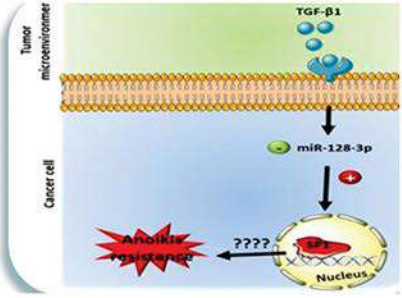
Development of progressive mouse model of Parkinson's disease targeting olfactory bulb

Pathological changes following long-term inhalation exposure of pesticides were proven to contribute to the initiation of pathological protein aggregation in the olfactory bulb, which then triggers the spread of the pathology within the brain in a prion-like manner. Thus, three main issues will be addressed in this project: Is stereotactic or intranasal administration of rotenone able to induce alpha-synuclein aggregation in the OB with a later transfer of this pathology into the brain as hypothesized by Braak? B) Whether aging plays a vital role in rotenone-induced alpha-synuclein aggregation and its progression to other brain regions.

Is enteric neuronal inflammation a starting point of Parkinson's Disease pathogenesis?

Experimental, clinical, and epidemiological data suggests that peripheral intestinal inflammation or the disease condition like inflammatory bowel disease is likely to be critical in the deposition of toxic α-synuclein in the ENS and it also serve as a conduit for the initiation and propagation of the distinctive retrograde neurodegeneration and development of PD. Keeping this viewpoint in mind, we would like to examine the susceptibility of enteric neurons towards α-Syn accumulation and its further progression to the substantia nigra through dorsal motor nucleus of vagus in presence or absence of environmental toxin. We want to detect the role of enteric neuroinflammation in development of α-Syn pathology and its further progression to brain.

Exploring the role of miR 128 3p in the breast cancer metastasis by regulating PKM2 & CD98 expression



Metastatic breast cancer is a major burden in the worldwide females. Anoikis resistance is one of the major factors that help in cancer cell survival while executing the process of metastasis. Moreover, tumor milieu controls the anoikis resistance mechanisms which allows them to survive in anchorage-independent conditions by sustaining several cell death cascade processes and high ROS levels. Reports suggested the role of TGF-β1, an important cytokine in tumor milieu for promoting the anoikis resistance and helps in maintaining redox balance.This cytokine even regulates miRNA-128-3p which usually gets downregulated in the breast cancer patients and its upregulation showed to NIPER-Ahmedabad Annual Report 2020-21 44 improve the survival outcome. Additionally, TGF-β1 role in upregulating the expressions of proteins like Pyruvate Kinase M2 and CD98 has been explained in the literature. These proteins have a major role in the regulation of cancer cell survival, proliferation, amino acid transport, and alleviating aerobic glycolysis. Therefore, we are interested to decipher the role of TGF-β1 in inducing anoikis resistance by regulating miR-128-3p and PKM2, CD98 levels in breast cancer.

Exploring the role of glycated α-Syn on Receptor for Advanced Glycation End products

(RAGE) signaling pathway in development of Parkinson's disease Advanced glycation end products (AGEs) are also known as glycotoxins and are a diverse group of highly oxidant compounds with pathogenic significance in metabolic neurodegenerative disorders. It has been observed in Parkinson's disease due to aging, increase in oxidative stress induces glycation of α-Syn, which causes formation of glycated alpha-synuclein and ultimately inducesformation of toxic oligomeric α-Syn. The present study would like to understand the effect of glycated α-Syn on dopaminergic neurodegeneration through its action on receptors for advanced glycation end products.

Evaluation of the therapeutic potential of Swertiamarin in rotenone-induced mouse

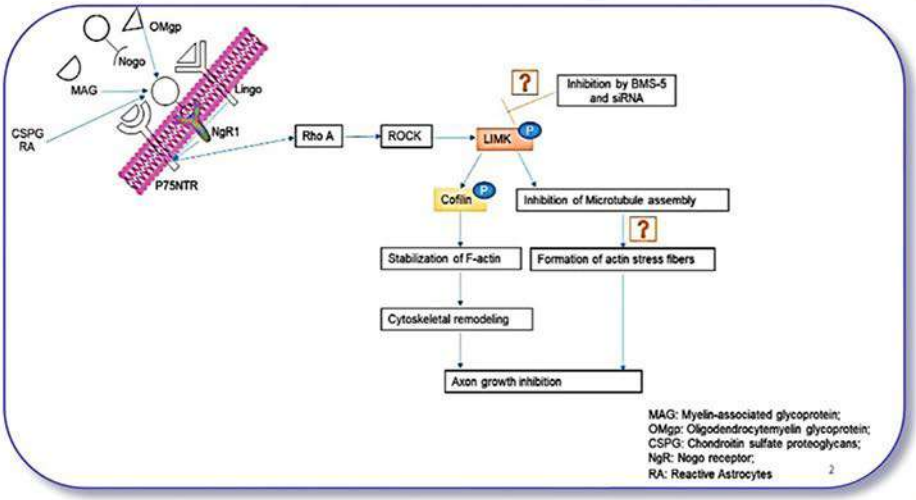
model of Parkinson's disease α-Syn aggregation is the main pathological hallmark for the Parkinson's disease (PD). It isreported that the neuroinflammation in the substania nigra is mainly responsible for theaggregation of the α-synuclein in dopaminergic neurons. Swertiamarin is a major secoiridoidglycoside isolated from Enicostemmalittorale Blume (Gentianaceae) which has been reported topossess anti-inflammatory properties. This study was designed to evaluate the effect ofswertiamarin on microglial activation, α-Syn aggregation, and NF-κBsignaling pathway in PD mouse brain.

Exploring the effect of indole-benzothiazole and aminoindane derivatives as selective MAO-B inhibitors in mouse model of Parkinson's disease

Current pharmacological treatment is centred upon dopamine replacement to alleviate the symptoms. Due to the limitations of the current MAO-B inhibitors there are insisting needs to develop novel, safer, and disease modifying drug for treatment of Parkinson's disease. Therefore, we will be exploring the effect of newly synthesized compound of indole benzothiazole derivative for its selective MAO-B inhibitory activity in vivo studies using rotenone-induced mice model of Parkinson's disease.

Exploring the role of LIM Kinase(s) on Microtubule stabilization and Actin microfilaments dynamics in experimental model(s) of Spinal cord injury

Experimental model includes modulation of LIMK, a major downstream regulator of RhoA/ROCK, the major pathway responsible for the obstruction in growth after a Spinal cord injury (SCI), and by this way to show a new therapeutic approach for axonal regeneration and regaining of neuronal communication after SCI.



Tomographic imaging and correlation to quantify vascular changes and inflammation

after experimental spinal cord injury The experimental model of SCI by compression technique is an animal model that captures most of the hallmarks of the SCI, including the blood spinal cord barrier breakdown, inflammation, and axonal destruction.Therefore, to assess these three dimensional morphologic changes after spinal cord injury is a challenging task due to lack of effective imaging modality. The purpose of this study is to apply the novel optical imaging technique that offers the advantage of rapid imaging of relevant bio markers in live animals.

Evaluating the role of Ethamsylate on fibrotic scar formation after spinal cord injury

Deficits in the neuronal connection that leads to the loss of sensation and motor function after SCI. Occurrence of haemorrhagic condition at the site of injury leads to hypoxia, tissue necrosis, and destruction of ECM which in turn activates inflammatory cells, release of matrix metalloproteinase, and alteration in endothelial cell function. These factors assist in activation of TGF-ß1signalling pathway. Ethamsylate, an anti-haemorrhagic drug, has the potential to maintain early haemostasis as well as restores capillary resistance. Therefore, we hypothesized ethamsylate can be used to maintain early haemostasis and for stabilization of blood spinal cord barrier after spinal cord injury.

Investigating the multimodal action of phenserine after spinal cord injury in mice

Spinal cord injury (SCI) is a devastating condition that leads to temporary or permanent disability worldwide. Phenserine is AchE inhibitor which in turn increases levels of Ach in spinal cord and leads to deprivation of primary and secondary pathologies by decreasing pro inflammatory cytokine levels. Increase levels of Ach in spinal cord also increases the chances of functional recovery. Due to its multiple actions like anti-apoptotic, anti-inflammatory action of the drug it can be utilised as a neuroprotective agent for the treatment of the SCI.

Pharmacology & Toxicology

Deciphering the activity of coumarin derivatives in attenuation of inflammatory pain

Inflammatory pain occurs in response to tissue injury. Mechanism behind the inflammatory pain is the release of different pro-inflammatory cytokines, interleukins, and chemokines. Coumarin derivatives are synthetic derivatives that may have anti-inflammatory activity. These derivates are supposed to inhibit NF-kB pathway and thus reduce inflammatory pain.

Exploring the role of Pyruvate Kinase M2 inhibitor (PKM2) in relieving neuropathic pain

Neuropathic pain is caused by lesion or disease of the somatosensory nervous system. These results in release of neurotransmitters, neurotrophic factors, cytokines, and chemokines. According to reports, neuropathic pain leads to significant up-regulation of pyruvate kinase M2 (PKM2) in spinal cord and spinal nerves. After peripheral nerve injury like partial sciatic nerve ligation (PSNL), glial cells are initially activated and subsequently generate numerous pro-inflammatory mediators, contributing to the development of neuropathic pain. We hypothesise to evaluate the efficacy of novel PKM2 inhibitor in partial sciatic nerve ligation-induced neuropathic pain in rats.

Evaluation of the role of exosomal miR-155 inhibitor on cisplatin resistance in oral cancer xenograft mouse model

Cisplatin resistance has emerged as major concern in the treatment of oral squamous cell carcinoma. Accumulating evidences suggest microRNA dysregulation is one among the factors mediating chemoresistance. In the same line, our previous study highlighted the role of exosomal miR-155 in developing the cisplatin chemoresistance, via downregulating its direct target FOXO3a and inducing epithelial-to mesenchymal transition in OSCC. In the present study, we demonstrated the therapeutic potential of exosomal miR-155 inhibitor in the chemosensitization of cisplatin resistant oral cancer xenograft mouse model. The treatment with exosomal miR-155 inhibitor showed restoration of FOXO3a levels with concomitant decline in epithelial-to-mesenchymal transition in turn improved the sensitization to cisplatin. Moreover, exosomal miR-155 inhibitor treatment subdued the stem-cell-like properties and efflux transporter proteins. Taken together, our findings for the first time established that exosomal miR-155 inhibitor reverse cisplatin chemoresistance in OSCC thereby providing an alternative strategy in the management of refractory oral cancer.

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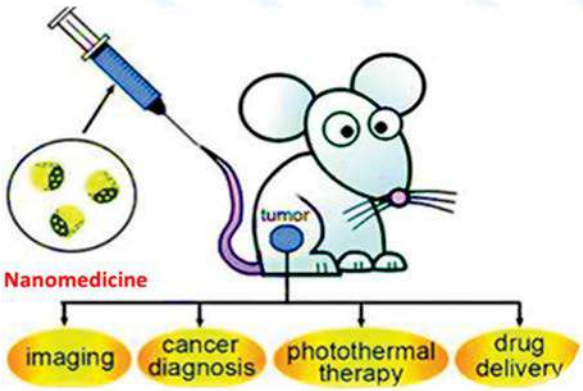
Development of novel polymeric nanomaterial for effective cytosolic delivery of anticancer bioactive



The focus of this research is towards the successful delivery of therapeutic agents in a controlled and targeted manner and the development of advanced delivery systems for a variety of applications. Projects ranging from fundamental science to industrially relevant applications are undertaken by Postdoc, Ph.D., and postgraduate students within the cluster. The research interests include the use of biodegradable polymers for the micro and nanoparticle delivery of drugs and proteins, particularly for cancer therapy. Specific examples of ongoing projects include the delivery of anticancer drugs and small interfering and microRNA. An overarching goal of his current research interests encompasses the development of novel polymeric nanomaterials for effective cytosolic delivery of anticancer bioactive. The research is also focused on designing a new generation of nanoparticles, which could identify the cancer cells and selectively deliver anticancer drugs and genes to inhibit the growth of cancer while sparing healthy tissues. His research work involves the applications of polymer chemistry, nanotechnology, molecular biology, pharmacokinetics/pharmacodynamics, and imaging techniques. Tekade lab is also involved in investigating the anticancer activity and molecular mechanism of several nanoformulations against cancer cell lines.

Formulation Development of Injectable RNA interfering nanoparticle for targeted therapy of diabetic nephropathy

Diabetic nephropathy (DN) is chronic kidney disease with microvascular complications leads to renal dysfunction; podocytes effacement leads to proteinuria (albuminuria), glomerulosclerosis, and tubulointerstitial fibrosis. In this context, research is focused towards the formulation development of novel nanotherapy for the treatment of the DN bearing a cocktail of the gene therapeutic cargo and drug. For development of these podocytes targeted Nanotherapeutics, novel polymers are being synthesized by bioconjugation to form protonation active polymer. This novel polymeric bioconjugate was formulated as nanoparticle-loaded with genes and drugs. For the specific targeting purpose, those nanoparticles bear ligand that can recognize the site for binding to attain targeted delivery. It is hypothesized that prepared ligand-gated nanoparticle could easily phagocyte via take-up by cell, then endosome will be formed, and finally, polymeric nanoparticle undergoes proton sponge effect release the genetic material and drug. Further formulation evaluation is done for its physicochemical and biological properties. Cellular uptake studies would be performing via the in-vitro podocytes cell line model and induced diabetes mouse model.

Tripartite approach for the treatment of triple-negative breast cancer (TNBC) using graphene oxide wrapped polymeric nanoparticles

The research interest of this cluster is to develop innovative strategies to tackle barriers associated with drug delivery. This research project involves the development of novel formulations for the treatment of cancer using nano technology-based platform, which consists of the development of polymeric nanoparticles (NPs) trenched with multiple approaches including hyperthermia and chemotherapy for effective and promising treatment of aggressive triple-negative breast cancer (TNBC). One of the components is also to establish an effective correlation between the various approaches and their individual effects on the treatment of TNBC. For this, we consider developing the anti-breast cancer formulation with higher in vitro and in vivo outcomes to render it liable for clinical trials and to explore the research area based on the use of RNAi mediated gene silencing as a novel and very effective approach to treating various forms of cancer. The proposed research methodology involves systemic and long-term solutions for the TNBC by employing triple punch therapy includes the delivery of chemotherapeutic drugs under the influence of induced photothermal effect and gene silencing.

Pharmaceutics

NIR laser activatable Nanoplates for the treatment of resistant tumors

Despite accelerating research and huge scientific affords to find out the clinically appropriate solution for complete cure from cancer, it is still one of the deadliest diseases threatening the lives of humans across the world. Conventional drug chemotherapy is no longer an effective strategy, and a combinatorial treatment approach is primarily warranted. We, in the proposed research, aiming to combine treatment methods such as chemotherapy and photothermal therapy via in house optimized and synthesized nano shells as a multi functional nano-delivery system with inherent photo thermal potential. As one of the thrust areas of research Dr. Tekade's lab in NIPER-Ahmedabad is trying to develop a combination of chemo with photo thermal hyperthermia therapy by formulating Nanoplates by green route using anti-cancer agents for the dual effect that will eliminate and reduce side effects as well as the toxicity profile associated with the existing therapies with improved selective and potency. It is proposed that the pulsatile behavior will serve as a better and effective option as well as an alternative to cure and prevent the regeneration of the tumor after removal from the surgery. The long-term goal is to develop nanoplate to serve as a combined drug carrier, the active photo thermal system as well as the theragnostic platform.

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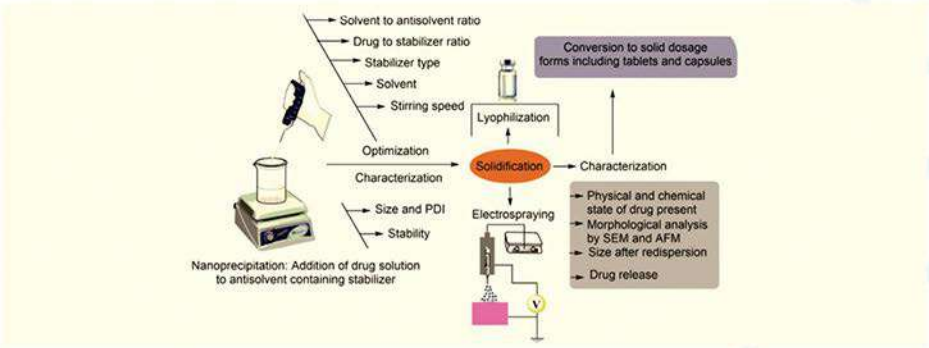
NIR laser activatable Nanoseeds for the prevention of post-surgical relapse of the resectable tumor

In the past few years, several attempts have been made to detect as well as treat post-surgical relapse of cancer. But to date, no reliable therapeutic strategy has been devised for the prevention of post-surgical relapse. At the same time, only chemotherapy, radiotherapy, and surgical resection are the only treatment options in hand. We propose to formulate NIR-Laser activatable Gold-Nanoseeds for the prevention of post-surgical relapse of tumor, which will provide photo-chemo therapy (PCT), including chemotherapy, as well as photothermal therapy using the in-house optimized and developed nanoshell with high Laser-driven photothermal potency. The long-term goal is to develop a simple and radiation-free alternative for post-surgical interventions in breast and prostate cancer. One of the thurst research in the department focuses on developing chemo-photothermal therapy for the post-surgical treatment of cancer patients. This research aims to explore the potential of the biodegradable electrospun patch to encompass both the photothermal agent reduced graphene oxide and a chemotherapeutic agent and to act as a long-term implant within the body. We are also investigating and optimizing the photothermal efficacy of reduced graphene oxide and the parameters of significance in photothermal therapy like the laser power, duration of exposure, etc. NIPER-Ahmedabad Annual Report 2020-21 49 This platform is expected to exhibit the pulsatile release of the chemotherapeutic agent in response to NIR irradiation, which will act synergistically with the thermal effect to increase the sensitivity of the cancer cells to the drug. It can prevent not just the local recurrence, but the systemically absorbed drug can also prevent the metastatic progression of the disease. Successful application of this system in vivo can lead to the emergence of a new platform for chemo photothermal therapy in cancer. This research involves the combined application of polymer science, material science, nanotechnology, pharmacokinetics or pharmacodynamics, molecular biology, imaging techniques, and analytical science.

Electrospraying Vs Lyophilization: Impact of on Solid-state properties of drug Nano suspension

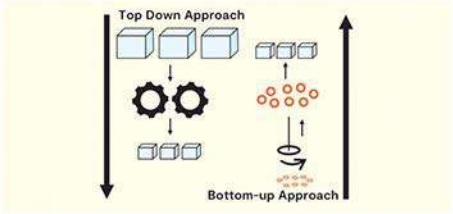
Poor aqueous solubility is the leading hurdle for formulation scientists working on oral delivery of drugs and has led to use of novel formulation technologies. Size reduction in nano range can enhance the dissolution rate of the poorly water-soluble drugs and increase oral bio availability. Currently used methods like "top-down" or "bottom-up" approaches, decrease particle size but leads to enormous surface area and drastically amplified Gibbs free energy making it difficult to retain the nanosize of fresh precipitates due to physical (aggregation/particle fusion) and/or chemical instability (chemical reactivity of drug during storage) upon storage. We are at present involved in studying the complex interplay between stabilizers and cryoprotectants used during lyophilisation of nano suspension to obtain nanocrystal. We are also investigating solid-state properties of nano crystals obtained using lyophilization and those obtained using electrospinning to evaluate their impact on bulk level properties of nano crystals. It is expected that this will help us in identifying markers of instability at earlier stages and reduce the overall time required for stability assessment of final dosage form.

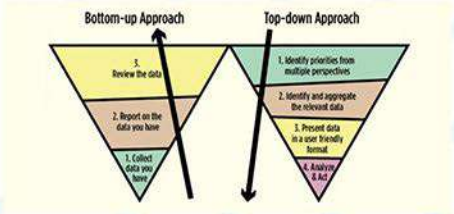


Formulating the poorly soluble drugs in conventional dosage forms for bio enhancement

The utilization of high-throughput screening (HTS) strategy has led to an increased number of highly efficacious therapeutic compounds. However, many of these compounds are poorly water-soluble, creating a new challenge for formulation scientists. While it might be possible to overcome poor solubility by simply increasing the drug dose, this approach is not only wasteful, but often results in high variability and potential toxicity. Therefore, it is vital to work on various approaches to improve drug solubility. Nano crystal: A viable and effective strategy for imparting rapid dissolution rate to poorly soluble therapeutic compounds.

For a drug to be absorbed into systemic circulation, it must first be dissolved in the fluid at the site of absorption. This dissolution relies on surface area of drug particles (as per Noyes–Whitney equation given below) and which in turn depends on their particle size. Nano crystal technology is a practical and commercially viable approach for enhancing the surface area available for dissolution. We work on top-down and bottom-up approaches for the generation of nano crystals of poorly soluble drugs. As the size reduction of the crystal increases their surface free energy and therefore this may lead to the formation of agglomeration, which sometimes may be larger than the input drug, and hence as a result, it may lead to a decrease in dissolution rate. Stabilization of this formed nano crystals can be achieved by judicious incorporation of surface stabilizers, which have a very high affinity to the crystal surface. We explore various kinds of nano crystal stabilizers that are already approved for human consumption, where they serve a different functional role in other dosage forms. During the evaluation, we also consider the amount and route of administration for such stabilizers.

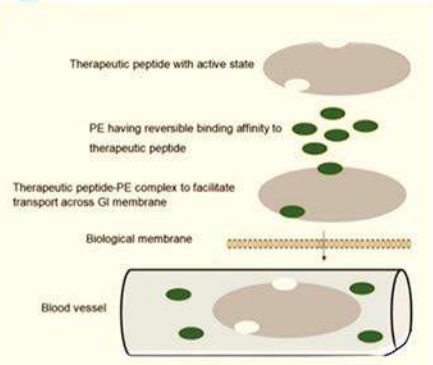




Pharmaceutics

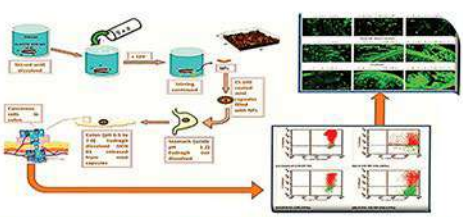
Exploiting the oral route for delivery of macromolecular therapeutics using penetration enhancer(s)

The trend of drug discovery and development is increasing in favour of macromolecule-based therapeutics such as proteins and peptides. The oral route always remains the first choice for drug administration due to high patient compliance. However, inherent limitations of these macromolecule therapeutics like susceptibility to pH and gastric/small intestinal enzymes, as well as low intestinal epithelial membrane permeability, limit their oral administration. Now it has been well documented in the literature that penetration enhancer (PE) could enhance the oral absorption of these macromolecules, specifically smaller peptides. Our lab explores various kinds of PE for improving the oral delivery of peptides, which are currently administered as injectables for treatments of multiple chronic diseases like type 2 diabetes mellitus, osteoporosis, etc. It has been postulated that increased lipophilicity of these therapeutic peptides due to reversible binding with PE is responsible for increased membrane permeability. Further, binding of PE with the peptide may also be providing protection against the gastrointestinal (GI) enzymatic degradation.



Minicapsules encapsulating nanoparticles for targeting, apoptosis induction, and treatment of colon cancer

Cancer is the second leading cause of death worldwide. Deaths from cancer worldwide are projected to continue rising, with an estimated 12 million deaths in 2030. Cancer therapies are aimed at eliminating the rapidly growing tumor cells by surgery and radiotherapy. The present therapies are only fruitful in early identified cases. The present study involves the preparation and characterization of eudragit S100-coated mini-capsules filled with chitosan nano particles, unconjugated and folic acid (FA)-conjugated encapsulating caspase 3 activator (7-hydroxystaurosporine). The formulated nano particles were compared for the cancer targeting and curing ability of the same by pre-investigation through drug release in organ-imitated fluids and ex vivo studies (cell viability, DNA fragmentation, caspase 3 activity), and then its confirmation through in vivo studies (tumor regression and distribution). The prepared nano particles were nearly spherical in shape, having positive zeta potential. From the cell line studies, it can be concluded that both the conjugated formulations showed better uptake, apoptosis, caspase 3 activation, and DNA fragmentation. Stability study was performed according to ICH guidelines and formulation stored at 5 ± 3 C was found to be most stable. The in vivo studies also supported the findings and showed better comprehensive residence time 23.61± 1.75 h), tumor distribution profile than UCN 01 alone. The results of in vitro, ex vivo, and in vivo studies lead to the conclusion that the coated minicapsules specifically deliver the drug in the colon showing high therapeutic value and



Instrumentation Facilities

CIF Laboratory

Q-TOF-LCMS

FTIR

ATR

Gas Chromatography

HPLC-UV/RI

Gel Permeation Chromatography

HPLC-PDA/FLD

Flash Chromatography

Semipreparative HPLC

Porosity meter

Ultracentrifuge

Thermogravimetric Analyzer

Instrumentation Facilities

CIF Laboratory

Multimode Reader

UV Plate Reader

Differential Scanning Calorimeter

Polarimeter

UV-VIS Spectrophotometer

Microbalance

Lyophilizer

FESEM_CRYO SIGMA 300

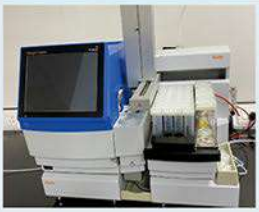
NMR

HPLC-ELSD

HSGC-MS Triple quadrupole

LC-MS-MS Triple quadrupole

Ion chromatography



Peptide synthesizer

Chemical Biology Laboratory

Gel Doc System

Inverted Microscope

CO2 Incubator

Nanodrop

Real-Time PCR

Bioanalyzer

Rotary Evaporator

Temperature Controlled Centrifuge

Parallel Synthesizer

Instrumentation Facilities

Chemical Biology Laboratory

Deep Freezer (-80°C)

Rotary Shaker

Biosafety Cabinet (Class II)

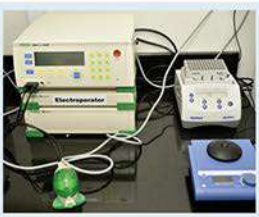
CryoCan

Western Blot Unit

Gel Electrophoresis Unit

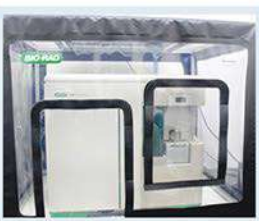
Melting Point Apparatus

Fumehood



Electroporator

Confocal Microscope Leica TCS



Bio-Rad S3eTM Cell Sorter

Hypoxia Chamber

Tape station

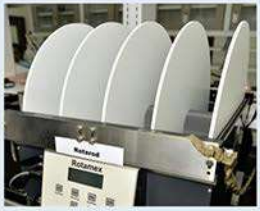
Sonicator

Glove box

Regulatory Laboratory

Passive Avoidance Apparatus

Refrigerated Centrifuge



Rotarod Apparatus

Vibratome

Paraffin Embedder

Microtome

Instrumentation Facilities

Drug Discovery & Delivery Laboratory

Rapid Mixer Granulator

Autocoater

Potentiostat-Galvanostat

Stability Chamber

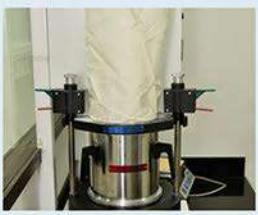
Mastersizer

Zetasizer

Hot stage Microscope

Rheometer

Magneto Meter



Fluid Bed Dryer

Texture Analyzer

Rotary Compression Machine

Disintegration Apparatus

Poling Setup

Universal Testing Machine

Electron Spinning Setup

Piezometer

Probe Sonicator

Hot Plate
Analgesiometer

IVC Cages

Metabolic Cages

Electronic Von-Frey

Hargreaves Apparatus

Surgical Microscope

Instrumentation Facilities

Drug Discovery & Delivery Laboratory

Stroke Apparatus

Animal Ventilator

Stereotaxic Instrument

Cryostat

Small Animal Anesthetizer

Deep Freezer (-80°C)

Hot-cold Plate Analgesiometer

Activity Wheels

Respirometer

Operant Conditioning Chamber

Semi-automatic Bioanalyzer

Small Animal in Vivo-imaging System

Micro-dialysis

Probe Sonicator

Isoflurane anesthesia system

FDM 3D printer

NIR_LASER Diode

Photostability chamber

Sotax Type-IV dissolution Apparatus

“The goal is to turn data into information, and information into insight.”

Our Clients

Service offered to INDUSTRY

Service offered to Academic Institute / University

"The best way to find yourself is to lose yourself in the service of other"

Institutional Facility

Computer Lab

NIPER-Ahmedabad has a central computer facility for the students and staff to avail a high-speed Internet facility. A dedicated Internet leased line with 100 Mbps bandwidth is installed to provide uninterrupted Internet service to all students, faculty, and staff. An adequate security mechanism is implemented to protect and monitor against viruses, worms, phishing, and hacking incidents. All the computers are connected through Local Area Network (LAN) and managed switches. Rack servers and workstations are installed to work as application server to host applications like Koha Library Management Software, Dictionary of Natural Products, Tally ERP, various scientific tools etc. Students, faculty, and staff via LAN can easily access these applications. The Computer Centre is also equipped with various open-source operating systems like Linux Centos 7, Ubuntu, etc. along with licensed Operating Systems like Microsoft Windows 8 and Windows 10. Software including SPSS, Electronic Notebook, Schrodinger (QSAR and Molecular Modelling), Microsoft Office 2013, etc. is available for use. All faculty rooms, seminar rooms, classrooms, Library, and laboratories are equipped with a Wi-Fi facility. Apart from this, all classrooms, seminar rooms, and the auditorium are equipped with Projector, TV, video conference facility, etc. for the conducive learning environment.

Library

NIPER-Ahmedabad library comprises more than sixteen hundred books, 505. Theses/Dissertations, 199 Journal Bound Volumes, 32 Print journals (National & international), and 153 E-Journals from Publishers like Science direct, ACS, Nature, Springer, Taylor & Francis. encompassing all disciplines of pharmaceutical sciences and technology viz. analytical chemistry, medicinal chemistry, pharmacology, pharmaceutics, natural products, biotechnology, and medical devices. It has ample collection of e-books, huge reading hall, photocopy facility, many Ph.D. & M.S. Pharm. thesis copies, and NIPER workshop & conference Reports. The Library is efficiently equipped with open source Library Management Software - KOHA. An Online Public Access Catalog (often abbreviated as OPAC or only Library Catalog) is an online database of materials held by NIPER Ahmedabad library. OPAC is accessible over the Local Area Network to the users. Users search a library catalog principally to locate books and other material physically located at a library. Apart from KOHA we also have digital Library Software (Greenstone Digital Library (GSDL) for Creating in house Institutional repository (Research Publication from NIPER-A, Dissertation theses of pass out student) to allow the online Access to the Student from NIPER-Ahmedabad. Library has Turnitin software to check documents against its database and the content of other websites to identify plagiarism. Library resources and facilities being updated from time to time as per the requirements of the students as well as faculty recommendations. The Library has elaborated arrangements for the conservation and preservation of books, journals, and thesis for posterity. The Library is also well equipped with a good collection of motivational books by Robin Sharma, textbooks from renowned authors including classic literature from the likes of Munshi Premchand, etc. Further, to generate curiosity and to inculcate reading habits in students, it is planned to equip Library with much more fiction, scientific novels, biographies, autobiographies, story books also. SciFinder (Chemical Abstracts Service, American Chemical Society, USA) is the latest addition to the cutting-edge research support facility of NIPER-Ahmedabad. Notably, SciFinder aid in cutting-edge novel research. It has now become a core research tool for chemistry, biochemistry, chemical engineering, materials science, nanotechnology, and other science and engineering disciplines. The SciFinder is easy-to-use and enables the research process to be morecreative and productive.

Hostel

The Institute has a separate hostel for boys and girls, which are in the nearby locality. The transport facility is provided for the students residing in the hostel. The hostel rooms are The institute has spacious and well furnished. Each student is provided with basic furniture, including a bed, chair, study table, and a cupboard at the beginning of the academic year. The hostels have sports and other recreational facilities, such as gym, activity room, and common area for interaction, playing and festival celebration, etc. All the hostel rooms have internet connectivity round the clock. The hostels are under 24 x 7 CCTV surveillance. Apart from this day and night security persons are engaged. Hostel mess serves nutritious food throughout the year. Hygiene and cleanliness within the hostel premises are well taken care of by providing round the clock housekeeping services and breakdown maintenance service.

Canteen

The canteen of NIPER-Ahmedabad is located in the Institute campus, which provides a variety of hygienic and healthy food, snacks and beverages, etc. Keeping in view the requirements of research students, the canteen remains open until extended working hours as well as during weekends. We at NIPER-Ahmedabad strongly believe that research ideas are germinated at places like canteen where students can openly interact and discuss their prepositions and research ideas. Canteen has a large well-covered shaded sitting area, where the students carry out the off-classroom brain storming sessions on their innovative ideas. It is also a place for students to celebrate fun-filled events like laboratory parties, birthday celebrations, marriage anniversaries, awards and successes, publications, patents, scholarships, funding grants, etc.

Recreation

Students of NIPER Ahmedabad participate in a variety of indoor games, outdoor games, and gym activities. Instead of confining a student to research and classroom studies, such recreational activities are primarily encouraged by NIPER-Ahmedabad to promote an all-round personality development.

Animal House

NIPER-Ahmedabad animal house is a state-of-the-art facility and is spread over 2800 square feet with a 50% area dedicated to animal care and behavioral studies. The facility is equipped with the generation of animal models of neurodegenerative disorders, traumatic CNS injuries, diabetes, and cancer. Our animal house facility is registered with the committee for the purpose of control and supervision of experimental animals (CPCSEA), Govt of India, and all the experimental protocols work in compliance with the institutional animal ethics committee of NIPER Ahmedabad (IAEC, NIPER-Ahmedabad). The animal house can accommodate around 1250 small animals. The strain for rats includes Wistar and Sprague Dawley, while for mice includes Balb C, Swiss albino, and C57BL/6. The animal house is also equipped with individually ventilated cages (IVC) procured from Allentown, USA. The facility provides sterile Food and water with corn cob bedding to the animals. NIPER-Ahmedabad animal house provides different services to industries to perform laboratory animal research and conducts different field workshops to train them in handling the animal.

Sports Complex

The sports complex was established at NIPER-A in September 2017. The sports complex includes badminton courts, volleyball court, basketball court, and lawn tennis court. The sports complex is equipped with floodlights to play in evening and night. Our students have used these facilities to sharpen their skills in these sports

Gymnasium

"Healthy mind resides in a healthy body" is a much-clichéd saying. Students participating in sports are more likely to succeed in the classroom. A good physical education program plays a vital role in the all-round development of students. It is an integral part of the total education of any student and is closely related to skill acquisition in other areas. NIPER-Ahmedabad was having an agreement with Ekalavya Sports Academy, Ahmedabad, for using its facilities. After shifting to a new campus at Gandhinagar, new Gymnasium facility is currently being installed for all the students at the hostel premises.

Biopharma Incubation Center

Biopharma Incubation Center at National Institute for Pharmaceutical Education and Research (NIPER) – Ahmedabad is a Technology Business Incubator supported through BioNEST of Biotechnology Industry Research Council (BIRAC), Department of Biotechnology, Government of India.

Biopharma Incubation Center is an initiative of NIPER-Ahmedabad to foster innovation and to build a good start-up ecosystem. The Biopharma Incubation Center is spread across 5000 sq. ft. and is dedicated to start-ups in the field of Bio-Pharma, Medical Devices and Biotechnology with a Shared Office space and Laboratory space. It also provides facilities of NIPER-Ahmedabad such as Common Instrumentation Facilities, Animal House Facility, Medical Device Lab, Conference Room, Auditorium, Library and Other Resources. Biopharma Incubation Center at NIPER-A also helps innovators to refine their idea, help them connect with the right technical mentors and business mentors, help write grant proposals for funding, mentoring on legal compliance and regulatory compliances in terms of Mentoring & Hand-holding.

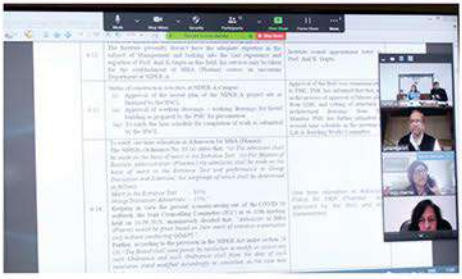
BOG/Senate/JCC/APDC Meeting/ Other Meeting

6th Board of Governors Meeting

6th Meeting of Board of Governors of NIPER-Ahmedabad was held on September 25th, 2020, through video conferencing under the chairmanship of **Dr. Ketan R Patel,** CMD, Troikaa Pharmaceuticals Ltd. The meetimg with several agendas took several constructive steps to excel NIPER-Ahmedabad to next level of accomplishments and governance.

7th Board of Governors Meeting of NIPER-A

7th Board of Governors Meeting of NIPER-Ahmedabad held on 12th February, 2021 under the chairmanship of **Dr. Ketan Patel,** Chairman BoG NIPER-Ahmedabad and attended by other esteemed members



4th Senate Meeting

4th Senate Committee meeting of NIPER-Ahmedabad held on 16th September 2020 through video conferencing under the chairmanship of Prof. Kiran Kalia, Director NIPER-Ahmedabad.

5th Senate Meeting

On 11th February 2021, 5th Senate online meeting held at NIPER-Ahmedabad chaired by Prof. Kiran Kalia, Chairman Senate & attended by other esteemed members.

BOG/Senate/JCC/APDC Meeting/ Other Meeting

4th Finance Committee Meeting

4th Finance Committee Meeting of NIPER-Ahmedabad held on 18th September 2020 through video conferencing under the chairmanship of Prof. Kiran Kalia, Director NIPER-Ahmedabad.

5th Finance Committee Meeting of NIPER-Ahmedabad

5th Finance Committee Meeting of NIPER-Ahmedabad held on 5th February 2021 under the Chairmanship of Prof. Kiran Kalia, Director NIPER-Ahmedabad.

Online meeting with Medical Device Industry leaders & Associations

On 28th October 2020, NIPER-Ahmedabad conducted a meeting with west zone **Medical Device Industry leaders** and Associations for bridging the gap between Industry and Academia for Medical Device Sector

NIPER-Ahmedabad conducted an online meeting with Director NIPERs

On 27th November 2020, NIPER-Ahmedabad conducted a meeting with Director NIPERs, CDSCO representatives and BIS representative to discuss the development of Medical Device testing facility at NIPERs

Visitors Awards 2020 Selection Committee meeting

Prof. Kiran Kalia, Director NIPER-Ahmedabad attended the first Selection Committee meeting for the Visitors Awards 2020 through Video Conferencing on 10th December, 2020

First Meeting of Sub-Committee of Visitor's Awards, 2020

Prof. Kiran Kalia, Director NIPER-Ahmedabad attended the first Meeting of Sub-Committee of Visitor's Awards, 2020 held through Video Conferencing on 19th January, 2021.

BOG/Senate/JCC/APDC Meeting/ Other Meeting

Second Academic Planning and Development Committee (APDC) meeting

Second Academic Planning and Development Committee (APDC) online meeting was held on 10th February, 2021 at NIPER-Ahmedabad under the chairmanship of **Prof Dr. V Nagaraajan** and other esteemed members

Prof. Kiran Kalia, Director NIPER-A participated in the Round Table Discussion on Making of New India

On 8th January 2021, Prof. Kiran Kalia, Director NIPER-Ahmedabad participated in the **Round Table Discussion** on Making of New India: Prospects and Perspectives on implementation of **New Education Policy – 2020** organised by Central University of Gujarat, Gandhinagar in association with **Bhartiya Shikshan Mandal.** The purpose of this discussion is to provide platform for the academicians, academic administrators, and policy planners to bring new perspectives, insights and dynamics of New Education Policy – 2020.

Invited Lecturer

Talk Delivered by Dr. Derajram Benival

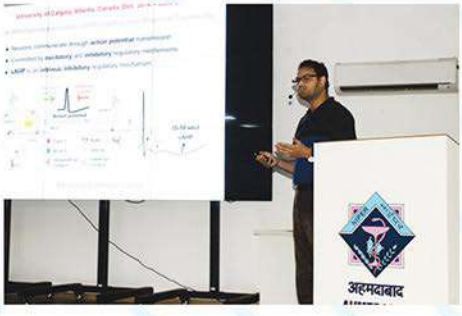
On 18th August, 2020 NIPER-Ahmedabad faculty, Dr. Derajram Benival delivered an insightful talk and discussed various aspects of the translational research experience gained during his tenure at the industry.

Talk Delivered by Prof. Sandeep Verma, Secretary, SERB, DST, GoI

On 20th August 2020, **Prof. Sandeep Verma,** Secretary, SERB, DST, GoI addressed and interacted with NIPER-Ahmedabad faculty members. He provided valuable guidance about Drug development research and discussed different funding opportunities of SERB with NIPER-Ahmedabad team.

Talk Delivered by Dr. Giriraj Sahu

On 25th August 2020, NIPER-Ahmedabad faculty, Dr. Giriraj Sahu delivered a informative talk on the importance of the neuronal ion channel protein complexes in the regulation of neuronal excitability. His talk ignited young research minds of NIPER-Ahmedabad.



Invited Lecturer

Talk Delivered by Dr. Siddheshwar Chauthe

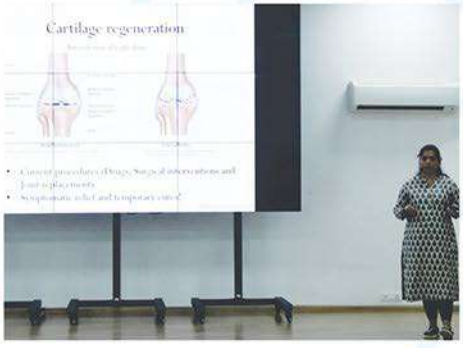
On 26th August 2020, NIPER-Ahmedabad faculty Dr. Siddheshwar Chauthe shared his research experience and learning from industry. He delivered a talk about different analytical techniques on identification and quantitative analysis of biomarkers. His talk will definitely motivate young minds to pursue a career in R&D.

Talk Delivered by Dr. Amit Mandoli

On 31st August 2020, NIPER-Ahmedabad faculty Dr. Amit Mandoli delivered an insightful talk on his research on epigenetic and transcriptional mis-regulations in cancer for targeted drug discovery. His talk will definitely motivate students of NIPER-Ahmedabad towards translational research.

Talk Delivered by Dr. Neha Arya

On 4th September 2020, NIPER-Ahmedabad Faculty, Dr. Neha Arya, delivered an exciting talk entitled "Tissue engineering: perspective regenerative medicine and modeling of disease". Her talk will definitely inspire the young minds towards translational research.



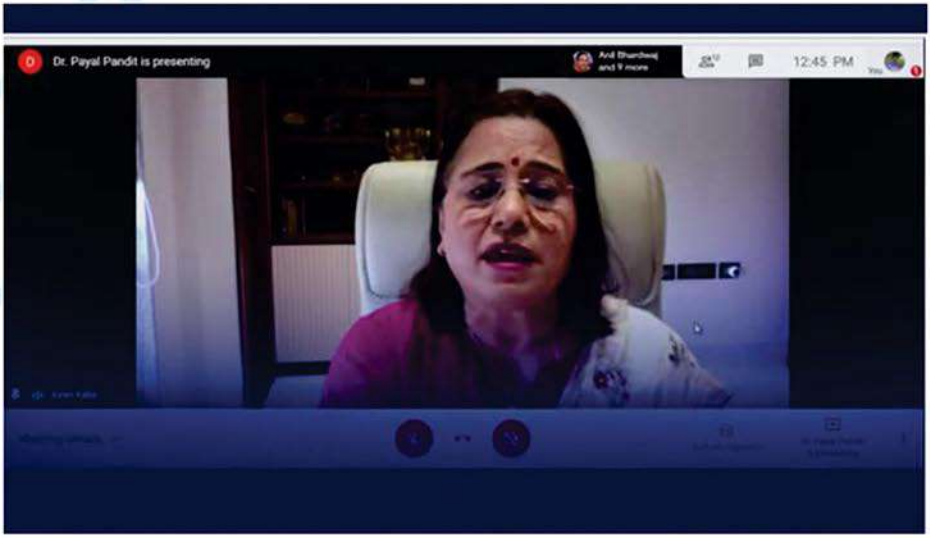
Pre-Placement talk by Mr. Kapil Jhawar

On 19th September 2020, Mr. Kapil Jhawar, Associate Clinical Project Management Director, Project Leadership, IQVIA delivered a talk on "Career opportunities for pharmacists in clinical research"

Invited Lecturer

GUJCOST Organizes Live-Talks On The Future Of Science, Technology & Innovation (STI): Impact On Education, Skills and Work To Mark The National Science Day

Gujarat Council on Science & Technology (GUJCOST), in association with the Space Applications Centre (SAC-ISRO), Physical Research Laboratory, National Innovation Foundation, NIPER-Ahmedabad, and Gujarat Science City, Ahmedabad came together on a single platform to celebrate the National Science Day on 28th February 2021, Sunday on virtual mode. The theme of the national science day celebration was the Future of Science, Technology & Innovation (STI), Impact on Education, Skills, and Work. On the occasion of National Science day, Prof. Kiran Kalia, Director, NIPER-Ahmedabad delivered an expert informative talk on "Opportunities in life sciences" in a virtual session organized by GUJCOST on 28th February 2021. The lecture educated young minds with wide zones of opportunities lying with life sciences



Ph.D. Students Viva Voce

Piyush Gondaliya, Ph.D. student of NIPER-Ahmedabad, successfully defended his thesis work

On 27th August 2020, Mr. Piyush Gondaliya, Ph.D. student of NIPER-Ahmedabad, successfully defended his Ph.D. thesis work on "miRNA MEDIATED EPIGENETIC MODIFICATIONS IN DIABETIC NEPHROPATHY" through video conference. He conducted his doctoral work under the **Supervision** of **Prof. Kiran Kalia and Dr. Akshay Srivastava.**

Dilip Sharma, Ph.D. student of NIPER-Ahmedabad, successfully defended his thesis work

On 15th September 2020, Dilip Sharma, Ph.D. student of NIPER-Ahmedabad, successfully defended his thesis work on "A GLP-1 SECRETAGOGUE WITH RHO-KINASE INHIBITORY ACTION AGAINST DIABETIC NEPHROPATHY" through video conference. He conducted his doctoral work under the Supervision of Prof. Kiran Kalia. His research work and presentation was appreciated by the examiner as well as the audience.

Ph.D. Students Viva Voce

Shreya Thakkar, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

On 19th October 2020, Shreya Thakkar, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "Development and Evaluation of Formulation Based Combination Therapy for the Treatment of Lung Cancer" through video conference. She conducted her doctoral work under the **supervision** of **Dr. Rakesh K. Tekade.**

Nidhi Rawal, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

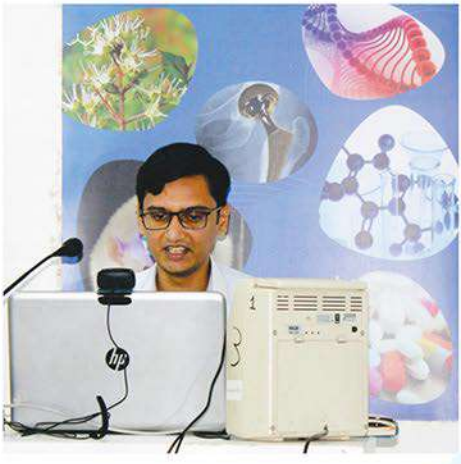
On 22nd October 2020, Nidhi Rawal, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "RNAiCOCKTAIL LOADED NANOPLEX FOR TARGETED THERAPY DIABETIC NEPHROPATHY" through video conference. She conducted her doctoral research work under the **supervision** of **Dr. Rakesh K. Tekade.**

Kritika Nayak, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

On 17th December 2020, Kritika Nayak, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "OCULAR DRUG DELIVERY SYSTEM FOR POSTERIOR SEGMENT OF EYE" through video conference. She conducted her doctoral work under the **supervision** of **Dr. Ravi Shah.**

Dignesh Khunt Ph.D. student of NIPER Ahmedabad, successfully defended her thesis work

On 18th December 2020, Dignesh Khunt, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "INTRANASAL DRUG DELIVERY USING COLLOIDAL CARRIER FOR BRAIN TARGETING: ROLE OF OMEGA FATTY ACIDS" through video conference. He conducted her doctoral work under the **supervision** of **Prof. Kiran Kalia**



Ph.D. Students Viva Voce

Manish Sharma, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

On 22nd January 2021, Manish Kumar Sharma, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "CHARACTERIZATION OF DEGRADATION PRODUCTS, PHARMACOKINETICS AND METABOLITE PROFILING OF SELECTED PERFORMANCE ENHANCING SUBSTANCES USING LC-MS/MS" through video conference. He conducted his doctoral work under the **supervision** of **Dr. Pinaki Sengupta.**

Bharatkumar Chaudhary Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

5th March 2021. Mr. Bharatkumar Chaudhary, Ph.D. student under the **mentorship** of **Dr. Satyasheel Sharma** successfully defended his thesis work on "SYNTHESIS OF DIVERSE TRIFLUOROMETHYLATED MOLECULES VIA C–H ACTIVATION STRATEGY AND THEIR ANTI-CANCER EVALUATION" through video conference.

Prakash Nirugam, Ph.D. student of NIPER-Ahmedabad, successfully defended his thesis work

On 15th March 2021, Mr. Prakash Nirugam, Ph.D. student of NIPER-Ahmedabad, successfully defended his thesis work on "STRESS DEGRADATION, METABOLITE IDENTIFICATION, AND DRUG EXCIPIENT COMPATIBILITY STUDIES OF SELECTED DRUGS BY LIQUID CHROMATOGRAPHY-HIGH RESOLUTION MASS SPECTROMETRY". He conducted his doctoral work under the **supervision** of **Dr. Abhijeet Kate.**

Ms. Heena Jariyal, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work

On 18th March 2021, Ms. Heena Jariyal, Ph.D. student of NIPER-Ahmedabad, successfully defended her thesis work on "ROLE OF TUMOR MICROENVIRONMENT IN MODULATING. BREAST CANCER STEM CELLS" through video conference. She conducted her doctoral work under the **supervision** of **Dr. Akshay Srivasta**

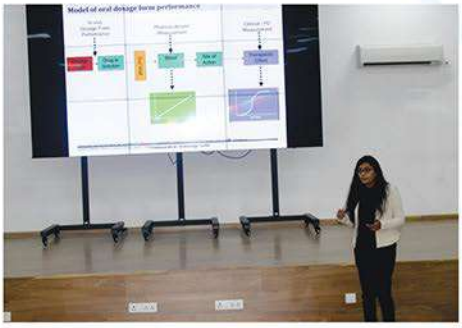
Workshop/Seminar/Conference/ Webinar /Training

India Pharma 2021

On 25th February 2021, NIPER-Ahmedabad Students, Faculty, and Staff virtually attended the inaugural function of India Pharma 2021 & India Medical Device 2021 organized by the Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Govt. of India in association with Federation of Indian Chambers of Commerce and Industry.

One day seminar on Particle Size Measurement and Basics of IVIVC

NIPER-Ahmedabad organized a one-day seminar on "Particle Size Measurement and Basics of IVIVC" on 2nd January 2021. Experts from different pharmaceutical industries joined as speakers to train the participants on current and advanced approaches of particle size measurement and IVIVC. The session was initiated with the welcome note and briefing of the seminar objectives by Dr. Pinaki Sengupta, faculty, NIPER-Ahmedabad. The scientific session was started by Dr. Ravi Shah, faculty, NIPER-Ahmedabad with his talk on 'Basics of IVIVC''. In session III, Prakash Muthudoss, HoD Advance Analytics, Oncogen Pharma (Malaysia) Sdn. delivered a talk on ''PSD Measurement and Meaningful Interpretation with Statistical Advancement''. In session III, Maitri Sanghavi, Associate Manager, Cadila Healthcare Ltd. delivered a talk on 'Development & Application of IVIVC/IVIVR to Accelerate the Formulation Development-Case studies & Regulatory Considerations''. Session IV was conducted by Ghanshyam C Patel, Biostatistician, Veeda Clinical Research on the topic ''Statistical concepts and calculations of BA/BE studies''. The day concluded with the concluding remarks and vote of thanks by Dr. Pinaki Sengupta.



A Workshop on Career in Medical Writing and Project Management: From an Expert's Perspective

On 27th October 2020, NIPER-Ahmedabad organized an in house workshop entitled "A Workshop on Career in Medical Writing and Project Management: From an Expert's Perspective." The distinguished speakers elaborated on medical writing and project management.

Webinar "Drug Discovery from Bench to Bedside Messages from Industry

NIPER-Ahmedabad organized a webinar on drug discovery titled as "Drug Discovery from Bench to Bedside – Messages from Industry" on Aug 7th 2020. Distinguished speakers from industries like Glenmark Pharma Ltd., Piramal Life sciences Ltd., and Indoco Remedies Pvt. Ltd. have delivered lectures in different areas including Drug discovery, IPR, and Discovery Informatics. Nearly 700 participants from all corners of the country have registered and attended this online seminar. The audience includes bachelors/masters/ and Ph.D. students, young investigators from academics as well as industries from various NIPERs, Central universities, IIT's, VIT, Medical colleges, Govt and private Universities which was very encouraging.

Workshop/Seminar/Conference/ Webinar /Training

ACS webinar 'Research Projects: Conceptualization to Implementation

On 4th August 2020, NIPER-Ahmedabad Students and Faculty members attended ACS webinar on 'Research Projects entitled Conceptualization to Implementation' by Prof. Sandeep Verma, Secretary, Science, and Engineering Research Board DST Govt. of India.

Webinar on "Quality and Regulatory Aspects in Development of Pharmaceuticals and Nutraceuticals"

NIPER-Ahmedabad organized a webinar on "Quality and Regulatory Aspects in Development of Pharmaceuticals and Nutraceuticals" on August 28th 2020 to bridge the gap between industry and academia. Industry experts **Dr. Venugopala Rao**, Head, Analytical Research Development (ARD-1), Novartis India and Dr. Atul Jadhav, General Manager, Himalaya Global Research Center, Himalaya wellness company, Dubai, delivered very informative and enlightening talks on various aspects of development of pharmaceuticals and nutraceuticals. This webinar was telecasted live on Facebook and Youtube. Nearly 800 plus participants from all corners of the country have registered and attended this online webinar. The audience includes Bachelors/Masters/ and PhD students, young investigators from industries as well as academia from various NIPERs, Central universities, IIT's, VIT, Medical colleges, Govt and private Universities

International (3D Virtual) Health & Wellness Expo & Conference-2020

NIPER-Ahmedabad, an official partner in 3D-Virtual Health and Wellness Expo 2020 (from 21st August to 25th August 2020) participated in the inaugural ceremony and experienced the real-time expo on Pharma, Medical device, Healthcare delivery, Diagnostics, Clinical trial, Research & Innovation, AYUSH, Wellness on the virtual platform. On 23rd August 2020, Prof. Kiran Kalia, Director NIPER-Ahmedabad interacting with the delegates at the technical Session on the Future of Global Clinical Trials–CRO perspective at International 3D Health and Wellness Expo and Conference-2020 NIPER-Ahmedabad, an official partner in 3D-Virtual Health and Wellness Expo 2020 (from 21st August to 25th August 2020) participated in the inaugural ceremony and experienced the real-time expo on Pharma, Medical device, Healthcare delivery, Diagnostics, Clinical trial, Research & Innovation, AYUSH, Wellness on the virtual platform. On 23rd August 2020, Prof. Kiran Kalia, Director NIPER-Ahmedabad interacted with the delegates at the technical Session on the Future of Global Clinical Trials – CRO perspective at International 3D-Health and Wellness Expo and Conference-2020

Webinar on "Peptide nucleic acids (PNA): How to make them enter cells?

NIPER-Ahmedabad organized a webinar on "Peptide nucleic acids (PNA): How to make them enter cells?" on September 2nd 2020 to bridge the gap between industry and academia. **Dr. K. N. Ganesh,** Director IISER-Tirupati delivered very informative and enlightening talks on various aspects of Peptide nucleic acids (PNA). This webinar was telecast live on Facebook and Youtube. Nearly 500 plus participants from across the globe had registered and attended this online webinar. The audience includes Bachelors/Masters/ and PhD students, young investigators from industries as well as academia.There are participants from various NIPERs, govt and private universities, IIT's, BITS, IACS, IISERS, Medical colleges, CSIR, AYUSH, INST, Govt and also from abroad like Tel Aviv university Israel, Council for national research in Italy (former) which was very encouraging. The event was attended online by more than 9500 participants across the country.

Workshop/Seminar/Conference/ Webinar /Training

Webinar on "Altered Lifestyle: Neurological and Cardiovascular

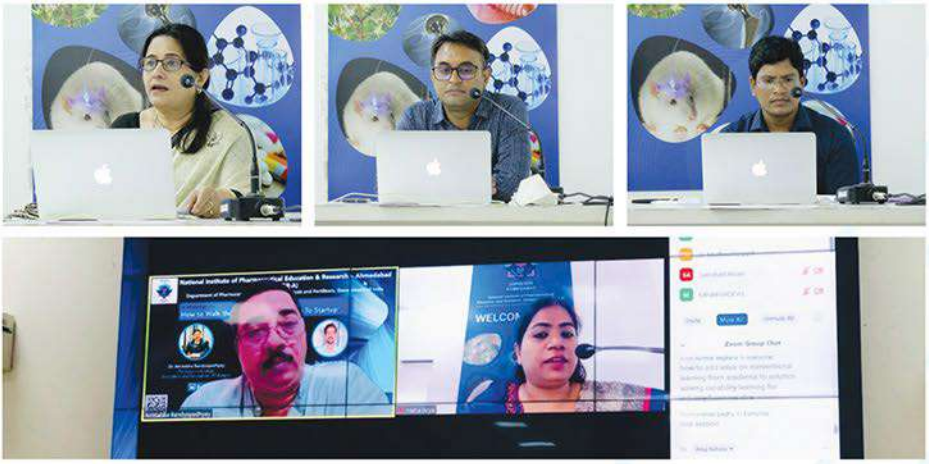
NIPER-Ahmedabad, organized a webinar on "Altered LifeStyle: Neurological and Cardiovascular Complications" on the 11th of September to bring scientists and clinicians closer to strengthen the translational aspects of research. **Prof.Amal Kant Bera** from IIT Madras represented academia and Prof. Banshi Saboo as a renowned clinician discussed different caveats of translational research and steps towards taking it from bench to bedside. Several participants from all corners of the country registered/attended the online Webinar. The audience includes bachelors/masters/ and Ph.D. students. There was ample presence of faculties and scientists from industry across the country and outside the country in the webinar. There were participants from various NIPERs, central universities, IIT's, VIT, Medical colleges, Govt and private Universities which was very encouraging.

International Webinar on " Research Future with Interdisciplinary Collaborations"

NIPER-Ahmedabad, organized International webinar on " Research Future with Interdisciplinary Collaborations" @Indo UK-Jordan Forum on 15th Sept. 2020 at 2:00 – 5:00 PM (IST). In this series, **Prof. Anant Paradkar** (University of Bradford, UK), **Prof. Nizar Al-Shar'i** (Jordan University of Science and Technology, Jordan) and **Mr. Arun Mishra** (Unilever, India) delivered fantastic lectures. Close to 550 participants from all corners of the country registered/attended the online Webinar. The audience includes bachelors/masters/ and Ph.D. students. There was ample presence of faculties and scientists from industry across the country and outside the country in the webinar. There were participants from various NIPERs, central universities, IIT's, VIT, Medical colleges, Govt and private Universities.

Webinar entitled "How to Walk the Talk : From Academia To Startup

NIPER-Ahmedabad, organized a webinar on "How to Walk the Talk: 'From Academia To Startup" on the 18th of September 2020, to highlight the importance of startups in academia. One of the speakers, Prof. Amitabha Bandyopadhyay, the Professor-in-Charge of the Incubation and Innovation Centre at IIT Kanpur, discussed the importance of incubation centres in Institutions and their role in nurturing startups. Other speakers included Dr. Sandip Patil (founder of E-spin Nanotech) and Dr. Satish Kalme (founder of Comofi Medtech), who discussed their journeys as entrepreneurs. More than 600 participants (from various parts of the country and overseas) registered/attended the online Webinar. The audience included bachelors/masters/ and Ph.D. students as well as faculties across the country. These included participants from various NIPERs, IIT's, VIT, Medical colleges, central universities, and various private Universities.



International webinar on "Coming closer to Nature for Impactful Publications"

NIPER-Ahmedabad organized the International webinar on "Coming closer to Nature for Impactful Publications" on 22nd Sept. 2020 at 2:30 – 5:00 PM (IST). Dr. Stuart Cantrill (Editor in chief NATURE Chemistry) and Dr. Klaus Pors (Uni of Bradford, UK) delivered informative talks on Publication landscape Close to 1200 participants from all corners of the country registered/attended the online Webinar. The audience includes bachelors/masters/ and Ph.D. students. There was plentiful presence of faculties and scientists from industry across the country and outside the country in the webinar. There were participants from various NIPERs, central universities, IIT's, VIT, Medical colleges, Govt and private Universities which was very encouraging the organizing team.

Workshop/Seminar/Conference/ Webinar /Training

Webinar on 'Career in Clinical Research: Mere a Job Tag or More'

NIPER-Ahmedabad, organized a webinar on "'Career in Clinical Research: Mere a Job Tag or More " on the 5th of February 2021. Mr. Sachin Sadekar and Mr. Devang Chauhan delivered informative talks on Clinical Data management and career opportunities in clinical research. Participants from all corners of the country registered/attended the online Webinar. The audience includes bachelors/masters/ and Ph.D. students. There was plentiful presence of faculties and scientists from industry across the country in the webinar. There were participants from various NIPERs, central universities, IIT's, VIT, Medical colleges, Govt and private Universities and was highly appreciated by all attendees.

Training sessions

NIPER-Ahmedabad faculties delivered 6 Training sessions from 15th to 24th July 2020 on 'LC-MS Techniques and Method Development for Drug Development' to Novugen Pharma and Oncogen Pharma, Malysia. Topics covered:

1. Role of LC-MS on API development for DMF filling
2. Impurity Profiling as per regulatory requirement
3. LC-MS Basics, Instrumentation & Method Development
4. MS Data Interpretation
5. GTIs strategy for regulatory filling

ELN Training session by Dr.Ravi Shah

NIPER-Ahmedabad purchased and deployed Perkin Elmer's electronic laboratory notebooks (ELN) to meet the needs of faculties and research scholars. It helps us to organize and share experimental data efficiently and communicate seamlessly with the common instruments and devices. Dr. Ravi delivered training session on 28th July 2020 to utilize this facility.

NIPER-Ahmedabad organized Hands-on Training in Fire Extinguisher Safety

NIPER-Ahmedabad organized an Hands-on **Training in Fire Extinguisher Safety** on 23rd July 2020 for its faculty, Staff and Students. The programme aimed to impart methods of raising alarm and reaction drills expected from the environment on any fire incidents on the campus. The participants were made aware of the various types of fire extinguishers and their locations in the campus. They were trained on the usage according to the nature of fire. Participants also got to make ready a fire extinguisher for use and operated it on a live fire lit for the training purpose. The programme was well received and was very educative. It made the participants confident on their abilities to react to any incident concerning fire on the campus.

Co-Curricular Activities

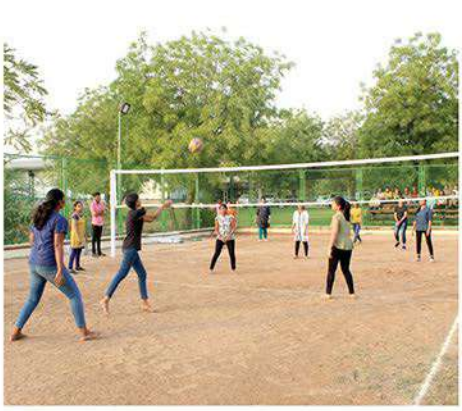
Personal Development

The personal development club of NIPER-Ahmedabad provides a forum for open discussion on topics relevant to overall personality development and grooming of students. The club conducts activities like group discussions, debating, SWOT analysis, resume building, and other skills required for facing job interviews.

Journal Club

It is a platform to provide exposure to the researchers at NIPER-Ahmedabad with recent updates in scientific Diaspora. Utilizing all the available resources, including the past and recent peer-reviewed journal articles, it acts as a tool that gives insight into approach, opportunity, and application aspects of ongoing research. It provides an opportunity to improve presentation skills, learn and practice critical thinking, share ideas, knowledge, and experience.

Sports



Extra-Curricular Activities

Kite festival Celebration at NIPER-Ahmedabad

Being at the heart of Gujarat, celebrating kite festival has became an integral tradition of NIPER-Ahmedabad. A like every year, this year too, NIPER-Ahmedabad celebrated the kite festival with all its students, faculty members, and staff on 14th January 2021. The gathering filled the blue sky with floating colorful kites. Rangoli competition & Dance performance were organised on the occasion of Makar Sankranti at NIPER-Ahmedabad. The student, faculty, and staff enjoyed the mismerizing Jalebi lunch after the kite festival celebration.










Extra-Curricular Activities

Christmas Celebration at NIPER-Ahmedabad

On 24th December 2020, Faculty, Students & Staff of NIPER-Ahmedabad celebrated Christmas in the campus.






NIPER-Ahmedabad students visited Rahelba Vruddhashram, Gandhinagar

On the occasion of Independence Day 15th August 2020, students on behalf of NIPER-Ahmedabad, under initiative NIPER-Ahmedabad Cares initiative, visited Rahelba Vruddhashram, Gandhinagar. This Vruddhashram is situated nearly 10 kms from NIPER-Ahmedabad in the village named Magodi. The team was led by faculty coordinators, Dr. Satyasheel Sharma, Dr. Neha Arya and Dr. Bichismita Sahu. Towards this initiative, several student volunteers of M.S. (Pharm.) reached out to Rahelba Vruddhashram.

At the Vruddhashram, NIPER-Ahmedabad team first hoisted the national flag following which the managing team at Vruddhashram explained the working culture of the place. Following that, Dr. Neha addressed the gathering about the initiative of NIPER-Ahmedabad. One of our students named Anoushka also sung a patriotic song and garba at the end. Under the NIPER-Ahmedabad Cares initiative, we distributed immunity boosters, bathing essentials and ration (approximately for one month) for 50 residents of the Vruddhashram. It was a great learning experience for everyone and this interaction with the members of the Vruddhashram made everyone understand the importance of spending time with the old members of the society. The interaction was very fruitful and this step is definitely an inspiration for the young generation towards the realization of their societal responsibilities!!



NIPER-Ahmedabad Cares 2nd Event : visited "Manav Aastha Day School for "Mentally Challenged Boys", Bhadol

On the occasion of Teacher's Day, 5th September 2020, teachers and students of NIPER-Ahmedabad, under the program of "NIPER-Ahmedabad Cares", visited "Manav Aastha Day School for "Mentally Challenged Boys", Bhadol, Gandhinagar. The team was led by faculty coordinators, Dr. Deraj Banival, Dr. Giriraj Sahu, and Dr. Amit Mandoli. Towards this NIPER-Ahmedabad Cares initiative, several student volunteers of M.S. (Pharm.) reached out to Manav Aastha Day School for Mentally Challenged Boys, that is situated in the village named Bhadol.

As soon as the team reached at the day school, the team was introduced to the mentally challenged boys of the day school and to the head organizer of the day school. The faculty coordinators described in detail about the NIPER-Ahmedabad Cares initiative and in turn get to know about the mentally challenged day school program, their schedule, management, and requirements from the head of the organization. The NIPER-Ahmedabad team distributed NIPER-Ahmedabad Cares printed T-Shirts, a white board, markers, drawing kits, a wall clock, a weighing balance, a pouch sealing machine, and footballs to the mentally challenged boys according to their requirements. Along with this, variety of fruits were also supplied under the NIPER-Ahmedabad Cares program. Afterward, the team of NIPER-Ahmedabad organized one painting event among the mentally challenged boys in which all the volunteers actively participated. One eye catching thing was, a few mentally challenged boys came forward and sang a few Hindi songs, which was a wonderful experience. Altogether, it was a great learning experience for everyone and this interaction of NIPER-Ahmedabad students with the members of the day school made everyone to understand the importance of good health and well-being of individuals.






On August 05th, 2020 Students of NIPER-Ahmedabad prepared 10 liters of hand sanitizer

#Budding #Corona #Warriors #NIPER-Ahmedabad

Extra-Curricular Activities

NIPER-Ahmedabad observed two minutes silence to condole the sudden demise of former President of India Shri Pranab Mukherjee

On 1st September 2020, NIPER-Ahmedabad observed two minutes silence to condole the demise of former President of India & Bharat Ratna Shri Pranab Mukherjee May his soul rest in peace.

JanAndolan Campaign

On 14th October 2020, The Faculty, Staff, and Students of NIPER-Ahmedabad took pledge as a part of the JanAndolan Campaign to prevent the spread of the COVID 19 pandemic. We believe that we can fight against COVID-19 together and prevent the spread of the Virus with appropriate measures.

National Festivals and Events

74th Independence day celebrations at NIPER-Ahmedabad

On 15th August 2020, NIPER-Ahmedabad celebrated the 74th anniversary of India's independence. The celebration began with the flag hoisting by the Director Prof. Kiran Kalia, followed by an eloquent speech that imparted message to everyone to 'Respect freedom'. She urged the gathering to work with absolute dedication towards the betterment of our great country and promote unity as well as the integrity of the nation. During her address, she expressed her happiness on the progress-path, which the nation has taken and motivated the faculties and students to join the revolution by striving hard to bring innovations and inventions to the country. In her speech, she said that we should all together fight against the adverse situation that arose in the country due to COVID-19 pandemic. She also emphasized that everyone should reduce the fear due to COVID-19, rather take necessary steps to keep ourselves safe. Prof. Kiran Kalia quoted various engaging success stories of the country and emphasized that one should endeavor to be a better version of oneself, and for the same, we all should work hard each day. As an ever-followed tradition as well as to mark the celebration, sweets were distributed with the exchange of greetings among all peers.









72nd Republic Day Celebration at NIPER-Ahmedabad

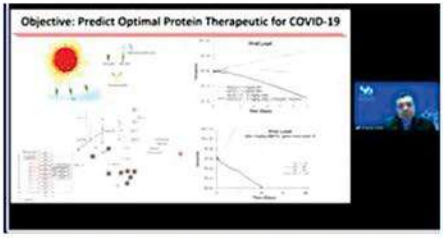
72nd Republic Day was celebrated at NIPER-Ahmedabad on January 26th 2021. The event started with flag hosting by the Director of NIPER-Ahmedabad. Students, Faculty and staff members performed on the occasion of Republic day to pay tribute to country's achievements and achievers. Prof. Kiran Kalia, Director NIPER-Ahmedabad and Mr. Avdhesh Nautiyal, Registrar NIPER-Ahmedabad addressed the Students, Faculty and Staff. Students, Faculty and Staff expressed their views on 72nd Republic Day. After the flag hoisting, sports events were organized by the sports committee of NIPER-Ahmedabad.




National Festivals and Events

National Science Day Celebration at NIPER-Ahmedabad

NIPER-Ahmedabad celebrates National Science Day with online lecture on Novel Biologics and Application of PK-PD Modelling and Simulation for their Development by Dr. Dhaval Shah, Associate Professor of Pharmaceutical Sciences, University of Buffalo.



Teachers Day Celebration

On 11th September 2020, Teacher's Day was celebrated with high enthusiasm at NIPER-Ahmedabad. Several activities at the event were planned by students of NIPER-Ahmedabad to dedicate the eve to the teachers and appease the role of a teacher in their life. The live and humorous anchoring by MS students Mr. Nirmal, Ms. Shreya, Mr. Mehul, Ms. Kishori, and Ms. Ashmita added the life and fun to the event. Following this, faculty members were called upon the stage and presented with mementos by students. Some fun-filled games were organized for teacher's which included Antakshari and Pictionary. The event ended with cake cutting and a merry note from students and teachers! Director delivered thank you address to all the students for everlasting memories.

Celebrated World Environment Day

On 5th June 2020, NIPER-Ahmedabad celebrated World Environment Day. Director NIPER-Ahmedabad addressed the Faculty members and Staff and planted a sapling on this occasion. NIPER - Ahmedabad Family actively engaged in the tree Plantation Drive.





Celebrated 6th International Yoga Day

The 6th International Yoga Day was celebrated at NIPER-Ahmedabad on 21st June 2020. As per the notification received from Ministry of Ayush, Govt of India faculty, staff, and students joined from their respective homes for doing a 45- minute long Common Yoga Protocol (CYP) drill at 8.00 AM. The theme of International Day of Yoga this year was "Yoga at Home and Yoga with family". It is necessity of the people to strive for good health and lifestyle practices in this dynamic and ever demanding world.


National Festivals and Events

Celebration of International Day of Women & Girls in Science

On 11th February 2021, NIPER-Ahmedabad celebrated International Day of Women & Girls in Science. This year the theme of celebrating this day was "Women Scientists at the forefront of the fight against COVID-19".

Meditation

NIPER-Ahmedabad organizes meditation sessions regularly for its employee and students to bring inner peace and self awareness to focus on day to day activities.

Celebrated World Pharmacy Day

On 25th September 2020, to commemorate Worlds Pharmacists Day, NIPER-Ahmedabad Organized webinar "Essentials of entrepreneurship". During this by Dr. Ketan R Patel, CMD Troikaa Pharmaceuticals Ltd. Delivered a motivational talk. Prof Kiran Kalia, Director, NIPER-Ahmedabad remembered the frontline roles played by all pharmacists at healthcare, research, manufacturing, drug promotion as well as awareness level.



New Year 2021 Celebration at NIPER - A Campus

On 1st January 2021, New Year celebration with Students, Faculty, and Staff at NIPER-Ahmedabad campus.


Celebrating Constitution Day

On 26th November 2020, NIPER-Ahmedabad Celebrated Constitution Day.


National Festivals and Events

Vigilance Awareness Week

The Vigilance Awareness Week is observed at NIPER-Ahmedabad from 27th October to 2nd November, 2020 with the theme, Satark Bharat, Samriddh Bharat (Vigilant India, Prosperous India). An 'Integrity pledge' was taken by Students,Faculty and Staff of NIPER-Ahmedabad.





International Women's Day

On the occasion of International women's day 8th March 2021, NIPER-Ahmedabad organized a program to celebrate the presence of successful, hardworking , determined, and multitasking women of our institute and of all over the globe, not only their presence but also their success in different areas whether they are teachers those received awards and got many achievements in different areas or staff members who are the supportive pillars of our institute or the students who are excellent in every area including academics, sports, debates, and cultural programmer.


INTRA-NIPER Painting Competition

Good painting is like silent poetry. NIPER-Ahmedabad organises Sketching and Painting competition. Director, NIPER-Ahmedabad Prof. Kiran Kalia inaugurated the sketching and drawing competition.

हिन्दी पखवाड़ा २०२०

राष्ट्रीय औषधीय शिक्षा एवं अनुसंधान संस्थान (नाईपर-अहमदाबाद) में आदरणीय निदेशक महोदया प्रो. किरण कालिया जी की अध्यक्षता में हिन्दी दिवस २०२० के कार्यक्रमों का आयोजन किया गया। हिन्दी दिवस के उपलक्ष्य में दिनांक ०१ सितम्बर, २०२० (मंगलवार) को संस्थान के प्रेक्षागृह में हिन्दी दिवस उद्घाटन समारोह का आयोजन किया गया। इस कार्यक्रम का शुभारंभ संस्थान के निदेशक, कुलसचिव एवं राजभाषा समिति सदस्य सचिव द्वारा दीप प्रज्वलन एवं पुष्पार्पण से हुआ। इसके पश्चात निदेशक महोदया ने संस्थान के समस्त कर्मचारियों, संकाय सदस्यों एवं विद्यार्थियों को संबोधित किया कि १४ सितम्बर १९४९ को संविधान सभा ने एक मत से यह निर्णय लिया कि हिन्दी ही भारत की राजभाषा होगी। इसी महत्वपूर्ण निर्णय के महत्व को प्रतिपादित करने तथा हिन्दी को हर क्षेत्र में प्रसारित करने के लिये वर्ष १९५३ से पूरे भारत में १४ सितम्बर को प्रतिवर्ष हिन्दी दिवस के रुप में मनाया जाता है। इस वर्ष केन्द्र सरकार द्वारा समय-समय पर जारी दिशा-निर्देशों, मानक प्रचालन प्रक्रिया (एस.ओ.पी.) को ध्यान में रखते हुए दिनांक ०१ सितम्बर, २०२० से १४ सितम्बर, २०२० तक आयोजित हिन्दी पखवाड़ा में हिंदी तथा हिंदीतर भाषी संकायों, कर्मचारियों एवं विद्यार्थियों के लिए निम्नलिखित सूची के अनुसार हिन्दी दिवस/पखवाड़ा कार्यक्रम एवं प्रतियोगिताओं का आयोजन किया गया।

National Festivals and Events

हिन्दी पखवाड़ा २०२०

क्र.सं.	दिनांक	प्रतियोगिताएं
१	०१ सितम्बर, २०२०	हिन्दी निबंध लेखन प्रतियोगिता
२	०२ सितम्बर, २०२०	हिन्दी पाठन प्रतियोगिता
३	०३ सितम्बर, २०२०	हिन्दी काव्य रचना प्रतियोगिता
४	०४ सितम्बर, २०२०	हिन्दी श्रुतलेख प्रतियोगिता
५	१० सितम्बर, २०२०	चित्रकला प्रदर्शनी प्रतियोगिता
६	११ सितम्बर, २०२०	हिन्दी वाद विवाद प्रतियोगिता
७	१४ सितम्बर, २०२०	मुख्य समारोह

संस्थान के इस कार्यक्रम में सभी का योगदान सराहनीय था। समस्त प्रतियोगिताओं के सफल प्रतिभागियों को पुरस्कार एवं प्रमाण पत्र से सम्मानित किया गया एवं अन्य प्रतिभागियों को प्रोत्साहन प्रमाण पत्र प्रदान किया गया। दिनांक १४ सितम्बर, २०२० (सोमवार) को हिन्दी दिवस के मुख्य समारोह का आयोजन किया गया। इस समारोह में निदेशक महोदया ने अपने अभिभाषण में सचिव (औषध) के संदेश को भी बताया और उसको परिचालित करने का संकल्प लिया। इस शुभ अवसर पर हमारे मुख्य अतिथि प्रो. अवनीश कुमार जी, वैज्ञानिक और तकनीकी शब्दावली आयोग के अध्यक्ष तथा विशिष्ट अतिथि डॉ. सर्वेश उनियाल जी, हेमवती नंदन बहुगुणा केन्द्रीय गढ़वाल विश्वविद्यालय, पर्यटन विभाग के परियोजना अधिकारी ऑनलाईन माध्यम से इस कार्यक्रम में जुड़कर कार्यक्रम की प्रतिष्ठा को बढ़ाया एवं समस्त प्रतिभागियों, कर्मचारियों एवं अधिकारियों को शुभकानाएं एवं बधाई व्यक्त करते हुए हिन्दी के प्रति सबका उत्साह बढ़ाया एवं अपने महत्वपूर्ण भाषणों से सभी का ज्ञानवर्धन किया। अंत में संस्थान के कुलसचिव महोदय श्री. अवधेश नौटियाल जी ने सभी को हिन्दी दिवस की हार्दिक शुभकामनाएं एवं बधाई संदेश दिया । इस सफल कार्यक्रम का समापन श्री. राजू प्रसाद (कनिष्ट हिन्दी अनुवादक) के धन्यवाद ज्ञापन से हुआ।

Newspaper & Media Coverage


GUJARAT

Gujarat scientists bag global honour

Around 12 Selected In World's Top 2% List

STANFORD REPORT


NIPER-A launches MBA

The National Institute of Pharmaceutical Education and Research Ahmedabad (NIPER-A) became the third NIPER in India to launch an MBA course in pharmaceutical management from the academic year 2020-21 with 20 seats. Prof Kiran Kalia, director of NIPER-A, said that the course curriculum was designed in collaboration with Prof Anil Gupta, founder of SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) and superannuated professor at IIM-A. "With the pharmaceutical industry in Gujarat, we believe that the specialization in medical devices and biopharma sector will be a win-win development," said Kalia.


આઈઆઈટી ગાંધીનગર અને નાઈપર વચ્ચે શૈક્ષણિક, સંશોધન અને જ્ઞાન વિનિમય માટે એમઓયુ

Source: Gandhinagar Bhaskar (Page No. 6)

Date: 17-10-2020


NIRF રેન્કિંગમાં ટોપ-૧૦૦ યુનિવર્સિટીમાં પ્રથમ વાર ગુજરાત યુનિવર્સિટીને ૯૦મું સ્થાન


'Amdavadis took booster shots of turmeric, ginger during lockdown'

Gujaratis adopted home remedies from experiential knowledge


UNI United News of India

IIT, NIPER ink MoU for academic, research

Time is always right to do "what is right"

Don't watch the clock; do what it does. "Keep going"

अहमदाबाद
AHMEDABAD

National Institutes of Pharmaceutical Education and Research - Ahmedabad (NIPER-A)

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