



અહમદાબાદ
AHMEDABAD

**National Institute of Pharmaceutical
Education and Research, Ahmedabad (NIPER-A)**
(Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Govt. of India)

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ANNUAL REPORT 2017-18



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From the Director's Desk

Greetings and welcome to the National Institute of Pharmaceutical Education and Research (NIPER)-Ahmedabad. NIPER-Ahmedabad was established in the year 2007, with an aim 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 outstanding pharmaceutical scientists, researchers, and academicians. The institute is functioning from transient temporary building on 60-acre land site at Gandhinagar since August 2016. Located in the industrial hub of Gujarat, NIPER offers several experiential learning opportunities for its students including extramural internships at pharmaceutical companies. Here we believe that creating good 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 vigilant selection of faculty members in which NIPER-Ahmedabad has not made any compromise. It has gone to outreach and fetch 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 # 1 in TLR** (teaching, learning, and research) and in OI (outreach and inclusivity) with **overall Rank #14 in NIRF-2018** ranking of MHRD. Today, 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 collaborating 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 all our 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.

A handwritten signature in black ink, appearing to read 'Kiran'.

Prof. Kiran Kalia
Director
NIPER-Ahmedabad

Jai Hind!

About NIPER-Ahmedabad

The wave of globalization has propelled the expansion of Indian Pharma sector. India is amongst the top 10 countries of the world, regarding 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 transient temporary building on 60-acre landsite at Gandhinagar since August 2016. NIPER-Ahmedabad is currently offering 7 MS and Ph.D program in Pharmaceutics, Pharmaceutical Analysis, Pharmacology & Toxicology, Biotechnology, Natural Products, Medicinal Chemistry and Medical Devices. Plan to establish National Centre for Medical Devices (NCMD) to cater as well as nurture the need of booming medical device industries with-in 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 year 2018, it has achieved all India Rank # 1 in TLR (teaching, learning and research) and in OI (outreach and inclusivity) with overall Rank #14 in NIRF-2018 ranking of MHRD. NIPER-Ahmedabad aspire 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.



NIRF-2018 Ranking of NIPER-Ahmedabad

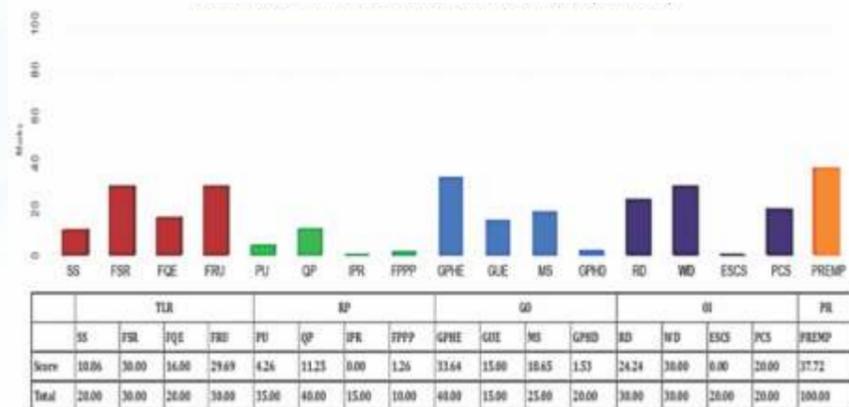
NATIONAL INSTITUTIONAL RANKING FRAMEWORK (NIRF), MHRD 2018: NIPER-A secures 1st Rank in TLR, OI and overall 14th best Pharma Institute in India @ NIRF 2018 Rankings



NIPER Ahmedabad, under the stimulating 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 sparks the spirit of innovative research and all-round development of its students. NIPER Ahmedabad has served as a good launching platform to revamp the pharma 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 2018 on 3rd April, 2018 by, Hon'ble Minister of Human Resource Development (Shri. Prakash Javadekar), at Vigyan Bhavan, New Delhi in which NIPER – Ahmedabad has been Ranked 1st in two most prestigious sections namely Teaching and Learning Resources & Outreach and Inclusivity from all Institutions in Pharma Education and Research in India. NIPER-Ahmedabad has been ranked number with an overall All India Ranking of 14 as per The National Institutional Ranking Framework (NIRF) released by Ministry for Human Resource Development, Government of India.

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



NIRF-2018 Ranking of NIPER-Ahmedabad

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-A has made its position in the country in a very short period of time. The TLR ranking of NIPER-Ahmedabad was on the basis of the ratio of a number of faculty members in the institute, their outstanding qualification, and intake of students in all its existing programs. The OI ranking was based on the number of educational, refresher and orientation courses and outreach activities that NIPER-A has organized. It has also been credited outstanding for its participation in e-content creation programmes, interactions, and collaboration with industries and facilitation of outside faculty in quality improvement. These initiatives of NIPER-A has added enormously to the skilled development initiative of Government of India.

Engineering | Colleges | Management | Pharmacy | Medical | Architecture | Law



Vision and Mission

Vision

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



Mission

- To ensure that departmental and administrative associates are provided with necessary resources to excel in learning, research, teaching, and administration.
- To establish National Centre of Medical Devices (NCMD) for contributing to Medical Technology education through collaborative programs of mutual interest.
- To evolve Medical Technology clusters with common facilities for creating an ecosystem for the benefit of SMEs focusing on Medical Technology.
- Development of human resource by skill up-gradation of students through specialized courses and training.
- To encourage students for innovative translational research through interdisciplinary research team.
- 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.
- To organize International and National conferences and structured workshops for the benefit of students and professionals.



Central Instrumentation Facility Inauguration

NIPER - Ahmedabad has established a Central Instrumentation Facility (CIF) with sophisticated equipments to satisfy the departmental research requirements of M.S. (Pharm.) and Ph.D. students. The CIF is equipped with latest technology instruments to carry out cutting edge research in the field of pharmaceuticals and medical devices. The facility is now open for outside projects from industry, colleges and other institutes. A comprehensive booklet has been prepared including details of analytical equipments and associated fees. The booklet was released by honorable Shri. Jai Priye Prakash, Secretary, Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Government of India on 14th January 2018. The booklet will play a crucial role to spread the news about CIF, NIPER-Ahmedabad.



Faculty

Name, Designation and Research Interest



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



Akshay Srivastava, Ph.D.
Assistant 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



Pallab Bhattacharya, Ph.D.
Assistant 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 and nano particle mediated drug delivery to the brain.



Rakesh Kumar Tekade, Ph.D.
Assistant Professor

Research Interest:

- Development of smart drug delivery system for targeted drug and gene therapy
- Biopolymer nanoconstructs for endosomal escape of gene therapeutics and its cytosolic delivery
- Development of implantable Chemo-Magneto-Photothermal pulsatile Nanoseeds to tackle resistant Cancers
- Cancer diagnosis and therapy (Brain, Prostate and Breast cancer)



Govinda Kapusetti, Ph.D.
Assistant Professor

Research Interest:

- Synthesis and fabrication of smart nano-biomaterials 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

Faculty



Abhijeet Kate, Ph.D.
Assistant Professor

Research Interest:

- Implementation of various LC-MS based dereplication strategies to discover novel scaffolds from biological sources such as marine and terrestrial bacteria, fungi and plants.
- Fingerprinting of extracts by LC-UV-MS in Natural Products based drug discovery program.
- Development of novel approaches for the separation and characterization of marine natural products to accelerate the discovery of drug leads



Anita Mahapatra, Ph.D.
Assistant Professor

Research Interest:

- Target oriented and lead-based design and development of New Chemical Entities (NCEs) of natural scaffolds against Diabetes, TB, and Cancer
- Discovery of new bioactive leads from natural sources for cancer and neuroprotection
- Development of National repository of secondary metabolites



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



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



Satyasheel Sharma, Ph.D.
Assistant Professor

Research Interest:

- Transition metal catalyzed C-H activation reactions for the synthesis of anticancer agents
- Design and construction of 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
- Peripheral functionalization of porphyrin ring system

Faculty



Amit Khairnar, Ph.D.
Assistant Professor

Research Interest:

- Development of breast cancer metastatic mouse model.
- Detection of patho-physiological mechanism behind metastasis, using IVIS imaging system.
- Detection of role of neuroinflammation in alpha synuclein pathology progression in Parkinsons disease.



Aditya Sunkaria, Ph.D.
Assistant Professor

Research Interest:

- Reactivation of proteasome mediated protein degradation in microglial cells.
- Understanding the microglial dynamics in different microenvironments.
- Learning and memory impairments in proteinopathies.



Manju Misra, Ph.D.
Assistant Professor

Research Interest:

- Exploring the potential of bovine lipid as carriers for targeted drug delivery to brain and posterior segment of eye
- Nanocrystals and other solubility enhancement techniques and application in pharmaceutical formulation development
- Thermal and solid-state characterization of different pharmaceutical process



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.

Administrative & Technical Staff



Prof. Kiran Kalia, Ph.D.
Director



Mr. Ajay Kumar Pathak
Registrar



Mr. Kunal Maheshwari
Assistant Registrar



Mr. Nishant Nadan, BBA
PA to Director



Mr. D. R. Trivedi, L.L.B.
Senior Accounts Officer



Dr. Deo Kumar Singh, Ph.D.
Veterinarian



Mr. Sujeet Pathak, B.Com.
Assistant Grade-III



Mr. Parth Thakkar, MBA
Assistant Grade-III



Ms. Boni Halder, BBA
Assistant Grade-III



Mr. Prakash Ravi Das, B.A.
Junior Assistant (Store)



Mr. Madhavanand Jha, B.A.
Junior Assistant (Computer)



Mr. Akil Malek, M. Lib
Library & Information Assistant

Technical Staff



Ms. Rajeshwari Rathod, M.Sc
Scientific Officer



Ms. Himat Thakkar
IT Administrator



Ms. Aaysha Sataniya, M. Pharm.
Junior Technical Assistant



Mrs. Vakta Parth Belani
Office Assistant



Mr. Babubhai Rathod, I.T.I.
Electrician

5th Convocation



NIPER - Ahmedabad witnessed its 5th convocation on 10th March 2018. During this ceremony, 54 M.S. (Pharm.) and 3 Ph.D students were conferred with their degree. Prof. K. N. Ganesh, Director, Indian Institute of Science Education and Research (IISER), Tirupati graced the occasion as Chief Guest of the ceremony. Honorable Dr. Ketan Patel, Chairman & Managing Director, Troikaa Pharmaceuticals Ltd., Ahmedabad along with Prof. Dr. V. Nagarajan, MD MNAMS DM, DSc (Neuroscience), DSc (Hons) were present as guest of honor. Members from industry,

Steering Committee (SC), directors from NIPER-SAS Nagar and NIPER-Guwahati, registrar NIPER-Hyderabad, representatives of other NIPERs, NIPER-Ahmedabad alumni, family members of graduating students, and faculties of NIPER-Ahmedabad attended the ceremony.

The convocation started with academic procession in the midst of musical environment of "Pomp and Circumstance" headed by registrar holding flag of NIPER-Ahmedabad followed by chief guest Prof. K. N. Ganesh, other dignitaries, faculties, and graduating students. Dr. V. Ravichandiran, Director, NIPER-Kolkata declared the opening of convocation. Director NIPER-Ahmedabad Prof Kiran Kalia presented welcome address and briefed the journey of NIPER-Ahmedabad. The chief guest of the function Prof. K. N. Ganesh presented gold medals to the toppers and Dr. Ketan Patel gave the book prizes to the selected students. The chief guest of the function, Prof. K. N. Ganesh, addressed the gathering and heartily congratulated all the successful graduates. In his address, he highlighted the general ailments of Indian science education and methods to overcome it to make a world-class institution. He also emphasized on the importance of basic and translational research, innovation & entrepreneurship. Toward the end of his address, he put forward his view on the deep association of science and society.

In his address, Dr. Ketan Patel briefly elaborated on each of the six attributes which are immensely important for professional growth. Prof. Dr. V. Nagarajan in his address added the importance of patriotism in daily life and women empowerment in India. He also expressed his happiness on choosing "Neurodegenerative Disorders" as one of the thrust area by NIPER-Ahmedabad and wished for new molecules emanating from NIPER-Ahmedabad. Student representative Ms. Krushali Powale extended vote of thanks on behalf of all graduates, where she mentioned how NIPER curriculum, teaching and course has brought the positive transformation in student's life. Dr. V. Ravichandiran on behalf of representative, Chairman, SC, declared the closing of the 5th convocation, which was followed by the national anthem.

5th Convocation



5th Convocation



Degrees Awarded during 5th Convocation

Ph.D. Degree Awarded	Name of Student
Biotechnology	Heta Shah
Biotechnology	Dilawar Upadhyay
Medicinal Chemistry	Triveni Pardhi

M.S. (Pharm) Degree Awarded	Total Number of students
Biotechnology	06
Medicinal Chemistry	08
Medical Devices	07
Natural Products	06
Pharmaceutical Analysis	09
Pharmacology & Toxicology	07
Pharmaceutics	11

First Rank M.S.(Pharm) Programme			
Students Name	Roll No.	Discipline	CGPA
Ms. Powale Krushali Kiran Krutika	NIPERA1517BT04	Biotechnology	9.74

Gold Medal Awardees	Name of Students
Biotechnology	Powale Krushali Kiran Krutika
Medicinal Chemistry	Nuneshwar Saiprasad Niranjana
Medical Devices	More Namdev Bapurao
Natural Products	Shevkar Chaitrali Devidas
Pharmaceutical Analysis	Dhurjad Pooja Sukhdev
Pharmacology & Toxicology	Fernandes Valencia Vincent
Pharmaceutics	Rao Kunal Jayaraman Sushila

Book Prize Awardees

Book Prize was given to five students from the collective merit list of the batch. The Winners of book prize in 5th convocation are presented below:

Book Prize Awardees	Name of Students
Biotechnology	Powale Krushali Kiran Krutika
	Fernandes Valencia Vincent
Pharmacology & Toxicology	Patel Shivangi Samir Ruchira
	KM Kuhu Sharma
Pharmaceutics	Rao Kunal Jayaraman Sushila

Students Admitted During 2017-18

NIPER-Ahmedabad has a total sanctioned intake of total 75 Masters and 09 Ph.D. students. NIPER-Ahmedabad has conducted orientation program for the M.S. Pharm. batch 2016-18 during 31st July 2017 to 2nd August 2017. The statistics of students admitted in various programs at NIPER-Ahmedabad is shown below.

Discipline	No. of Students admitted
Biotechnology	09
Medicinal Chemistry	10
Medical Devices	09
Natural Products	06
Pharmaceutical Analysis	14
Pharmacology & Toxicology	10
Pharmaceutics	14



The New Student Orientation Program

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 year 2017 entrant students of NIPER – Ahmedabad was held between 31st July 2017 to 2nd August 2017. The program included a series of extended events that provides 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 with their family members arrived on 30th July 2017 to check in the hostel. Additional details about this program has been shared with the students in-hand by the coordinators of Orientation Program (Dr. Manju Misra and Dr. Rakesh K. Tekade).

The New Student Orientation Program was designed to:

- 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 key 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 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



The New Student Orientation Program



On the first day of Student Orientation Program, the new students including their accompanied family members were introduced to the campus. The registrar, Shri H.C Trivedi gave the words of confidence to all parents that their students are in safe and responsible umbrella; and that whole NIPER team will take parental care of their wards. Followed by this inspirational session, the Director "Prof. Kiran Kalia" narrated a quick outline about the Institutes faculty members, grants received, publications, national and international collaboration, Industrial MOUs, and other achievements of the institute. She also opened a parent's forum where all parents and relatives of new students were encouraged to put forward their queries as well as seek resourceful resolutions to the same. The faculty members of NIPER-Ahmedabad also talked about their educational background, and their thrust area of research and details of their teaching portfolio. It was then followed by an orientation which was given by "Dr. Mukul Jain" Senior Vice President-Pharmacology, Zydus Healthcare where he talked about the current status pharmaceutical field and its related scenario.

The second day of Student Orientation Program on 1st August 2017, NIPER-Ahmedabad started with a boastful talk of Shri. Sunil Parekh, Chief Corporate Affairs at Advisor @ Zydus Group. During this session, he talked about the change in scenarios of GDP's between nations across centuries and about the effect of research and innovation on it. He also spoke about the importance of incubators to generate new ideas, emphasizing the need of start-ups in pharmaceutical and healthcare industry. He expressed that he was feeling very proud to visit NIPER-Ahmedabad and was impressed with the progress it had done in a short time. It was followed by a session on 'Ethics in Publishing' by Dr. Akshay Srivastava where he talked about the do's and don'ts in publishing and also explained about the consequences which awaited if the ethics were not followed. The program was resumed with the brief introduction of NIPER administration and support staff, and briefing the students with institution's norms and rules regarding leaves. There was an orientation by Semester I and II examination committee followed by orientation by Semester III and IV examination committee. The third day of New Student Orientation program on 2nd August 2017 started with a talk by Nilesh Deshmukh and Dinesh Patel from Cadila Pharmaceuticals about 'Careers in pharma industry'.



The New Student Orientation Program



They talked about the importance of working as a team in a pharmaceutical company and also explained why they prefer NIPER students after others. They also told us about the skills needed to work and progress needed in pharmaceutical industry. There was a session by Journal club committee lead by Dr. Vinod and Dr. Rakesh where they shared the importance of journal club and what activities are going to be covered under this club. Then a session was conducted by secretaries of the clubs in NIPER-A, Ms Deepaneeta Sarmah (Ph.D 2nd year, Cultural Club), Bharat Chaudhary (Ph.D 3rd year, Sports Committee), Ms Ashika Advankar (MS 2nd year, Media Club) and Ms Vishakha Tambe (Ph.D 1st year, Innovation Club). They talked about the mission of the club along with the work they did till date. They also had interactive session with the students regarding their suggestions for the betterment of the club.

The placement cell members (Dr. Rakesh and Dr. Manju) updated new students about the past recruitment activities, placement statistics, and placement procedure at NIPER-Ahmedabad. NIPER-Ahmedabad alumni then delivered a session which was facilitated by Gopal Aggarwal and Bharat Chaudhary.



Project Titles of MS Dissertation

Batch: 2016-2018

Department of Biotechnology

- Collagen-based nerve conduit for the repair of injured Spinal Cord
- Metabolic synthetic lethality approach for cancer treatment.
- Targeting sirtuin-3(sirt3) deleted cells using synthetic lethality approach
- Evaluation of microrna 29b mediated regulation of HDAC4 activity in Diabetic Nephropathy
- Affinity Cryogel Matrix for the Separation of Exosomes
- Identification and Validation of CD44 Isoforms in Tobacco Addicted Oral Squamous Cell Carcinoma Patients in Gujarat Population.
- Validation of expression profile of CD44, EGFR, RAC pathway genes in Tobacco addicted Oral Squamous Cell Carcinoma patients in Gujarat Population

Department of Pharmaceutical Analysis

- In-vitro metabolite identification of anticancer molecules targeting M2 pyruvate kinase using LC - MS/MS.
- Biomarker discovery for parkinson's disease by LC-MS/MS.
- Development and validation of LC-MS/MS method for simultaneous quantification of eliglustat and miglustat in rat plasma and application to pharmacokinetic.
- Stability indicating RP-HPLC method for lesinurad by QbD approach and characterisation of degradants by LC-MS/MS.
- Development and validation of a stability-indicating RP-HPLC method for the determination of empagliflozin and sitagliptin by QbD approach.
- In-vitro metabolite profiling of imidazo-pyridine based anticholinestrase inhibitor moiety using LC-MS/MS.
- In-vitro metabolite Identification of thiazole based Bcl-2 inhibitor using LC-MS/MS.
- Development of Stability Indicating Assay Method for Combination Drugs (Acebrophylline, Levocetirizine and Montelukast) Applying QbD Approach and In Vivo Pharmacokinetic Study by Developed Bioanalytical Method Using RPLC and LC-MS/MS.
- Development and validation of stability indicating HPLC method for cariprazine and characterization of degradants by LC-MS/MS.
- Development and validation of bioanalytical method for paclitaxel and its application to pharmacokinetic study of paclitaxel nanoparticles in animal model.
- Development and validation of stability indicating RP-HPLC method for determination of bedaquilline by QbD approach and characterisation of degradation products by LC-MS.
- Bioanalytical method development and discovery of biomarkers for schizophrenia disease.
- Development and Validation of Stability Indicating RP HPLC Method For Apremilast and Diclofenac Using QbD Approach and Identification and Characterization of Major Impurities by LC-MS/MS.

Project Titles of MS Dissertation

Department of Medical Devices

- Electrochemical Based Biosensor for Liver diseases
- Magnetic layered double hydroxide for cancer theranostics
- Gadolinium based cobalt ferrite nanoparticles for cancer targeted chemotherapy and hyperthermia
- Thromboresistance PLGA-b-PVP nanoparticles for drug eluting cardiac stent coating
- Light emitting carbon quantum dots embedded into contact lenses for treating nightblindness
- Study of Smart Injectable Hydrogel for Sustained Delivery of Drug Used in Intra-Articular Therapy
- Preparation and modification of hydrogel for the artificial cornea.
- Development of controlled release bioadhesive coating for drug eluting balloon
- Drug loaded cryogel based punctal plug for dry eye disease.
- Gag decorated isoelectrically focused align collagen patch to repair annulus fibrosus

Department of Natural Products

- Isolation and characterization of anticancer molecules from medicinal plants by using dereplication strategy
- LC-MS based screening of medicinal plants for isolation of novel anti-diabetic molecule
- Identification of chemical marker from anti-diabetic herbal formulation with the help of HPLC and LC-MS
- Chemical screening and in-vitro anticancer activity of Magnolia champaca
- Studies on in vitro anticancer activity of Origanum majorana
- Value addition to Acorus calamus constituents

Department of Pharmacology & Toxicology

- Exploring myeloperoxidase inhibition by trigonelline therapy in tMCAo model of cerebral ischemia
- Modulating the expression of NLRP1 inflammasome by intra-arterial mesenchymal stem cell therapy in rodent model of ischemic stroke.
- Role of melatonin to obviate inter feron- β -mediated cortical and hippocampal monoamine turnover in rodent model of ischemic stroke.
- Exploring the influence of intra-arterial mesenchymal stem cells on calcineurin in the cardiac arrest model of global cerebral ischemia.
- Determination of neuroprotective effect of α -mangostin against rotenone-induced model of Parkinson's disease.
- Dutogliptin inspired synthesis of boronic acid based molecule as DPP-4 inhibitor for the treatment of Diabetes Neuropathy.
- Targeting peripheral neurons for the treatment of neuropathic pain.
- Dissecting key signalling mechanism involved in pain relief induced reward.
- Neuroprotective effect of Pentacyclic triterpenoid in animal model of cognitive dysfunction.

Project Titles of MS Dissertation

Department of Pharmaceutics

- To study the effect of process and formulation variables on solubility enhancement through porous formulations.:
- Exploring the potential of lipid vesicle-based formulation for trans follicular drug delivery in androgenic alopecia treatment.
- Investigating the potential role of Omega fatty acid enriched colloidal nanocarriers of Memantine on brain targeting and neurogenesis.
- Evaluating the role of LIPID BASED Colloidal Nanocarriers enriched with permeation enhancers for ocular targeting
- Formulation of topical Combination therapy of retinoid compounds with curcumin for treatment of Acne
- Design and development of combination therapy comprising of memantine, donepezil and omega 3 fatty acids for alzheimer disease and its evaluation
- Investigating the dual role of TPGS as Pgp inhibitor and stabilizer in naosuspension formulation of poorly water soluble pgp substrate candidate
- Podocyte targeted gene delivery for treatment of diabetic nephropathy
- Development of a polymeric gene transfecting reagent for cancer therapy
- Thiolated-Chitosan Nanoparticle enclosed tablet for extended oral delivery of 5-fluorouracil
- Nanogold-core Multifunctional Dendrimer for pulsatile chemo-, photothermal- and photodynamic therapy of Cancer.
- MRI image guided theranostic nanoseeds for magneto-thermal ablation and targeted chemotherapy of metastatic tumors
- To study the effect of process and formulation variables on solubility enhancement through porous formulations.
- Exploring the potential of lipid vesicle-based formulation for trans follicular drug delivery in androgenic alopecia treatment.

Department of Medicinal Chemistry

- 3-Aryl indoles as Histone Deacetylase (HDAC) inhibitor: Quest for novel anti-cancer drugs
- Development of indole-based Histone Deacetylase (HDAC) inhibitors as cancer therapeutics
- Development of N-aryl indoles as Histone Deacetylase (HDAC) inhibitors
- Synthesis and biological evaluation of boronic acid derivatives as anti-cancer agents
- Synthesis and bio-evaluation of dihydropyrimidinone derivatives as anti-cancer agents
- Design, synthesis and biological evaluation of aryl heteroaryl amines as anti-cancer agents
- Design, synthesis, and evaluation of carbamate-based molecules as analgesics
- Design, synthesis and evaluation of coumarin-based molecules as analgesics
- Design, synthesis and anti-psychotic evaluation of 7-O-alkoxy coumarin derivatives

Students Pursuing Ph. D.

Department	Name of Student	Year	Supervisor
Pharmaceutics	Ms. Kritika Nayak	2015	Dr. Manju Misra
	Ms. Shreya Thakkar	2015	Dr. Manju Misra
	Mr. Dignesh Khunt	2016	Dr. Manju Misra
	Ms. Nidhikumari Raval	2016	Dr. Rakesh K. Tekade
	Mr. Surya Narayana	2017	Dr. Manju Misra
	Ms Vishakha Tambe	2017	Dr. Rakesh K. Tekade
	Mr. Dyaneshwar Kalyane	2017	Dr. Rakesh K. Tekade
Biotechnology	Mr. Piyush Gondaliya	2015	Dr. Kiran Kalia
	Ms. Heena Jariyal	2015	Dr. Akshay Shrivastava
	Mr. Chintan Chaudhary	2016	Dr. Akshay Shrivastava
	Mr. Gopal Agarwal	2016	Dr. Akshay Shrivastava
	Mr. Ashok Kumar	2017	Dr. Aditya Sunkaria
Pharmaceutical Analysis	Mr. Manish Sharma	2015	Dr. Pinaki Sengupta
	Mr. Prakash Niguram	2015	Dr. Abhijeet Kate
	Ms. Disha Thakkar	2016	Dr. Abhijeet Kate
Medicinal Chemistry	Mr. Amit Kumar Sahu	2017	Dr. Pinaki Sengupta
	Mr. Bharat Chaudhary	2015	Dr. Satyasheel Sharma
	Mr. Sagarkumar Patel	2016	Dr. Amit Shard
Natural Products	Ms.Gargi Nikhil Vaidya	2017	Dr. Dinesh Kumar
	Ms. Komal Pandey	2016	Dr. Abhijeet Kate
Pharmacology & Toxicology	Mr. Ashutosh Goswami	2017	Dr. Abhijeet Kate
	Mr. Dilip Sharma	2015	Dr. Kiran Kalia
Pharmacology & Toxicology	Ms. Deepaneeta Sarmah	2016	Dr. Pallab Bhattacharya
	Ms. Harpreet Kaur	2017	Dr. Pallab Bhattacharya
	Ms. Monika Sharma	2017	Dr. Amit Khairnar
	Ms. Lakshmi Vineela Nalla	2017	Dr. Amit Khairnar
	Mr. Nishant Sharma	2017	Dr. Amit Khairnar
Medical Devices	Mr. Namdeve More	2017	Dr. Akshay Shrivastava
	Ms. Mounika Choppadandi	2017	Dr. Govinda Kapusetti

Placement Cell

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

Placement Statistics

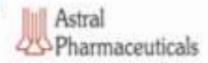
Batch	Total Students	% Placement	Package secured (In Lakh)	Feedback from Recruiters
2014-16	32	100	2.2- 2.7	Students are technically sound
2015-17	55	94	2.5-3.7	Students have good analysing and problem-solving skills.
2016-18	63	60% (till 31 st March 2018)	2.5-4.7	Students are very sincere, diligent, knowledgeable and are well acquainted with recent advances in the their field of study

Placement Committee

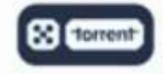
Chairperson	Member	Member
Dr. Manju Misra Asst. Professor Phone: 91-79-66745555 manju@niperahm.ac.in	Dr Govinda Kapusetti Asst. Professor Phone: 91-79-66745555 govinda@niperahm.ac.in	Dr Rakesh k. Tekade Asst. Professor Phone: 91-79-66745555 rakesh.tekade@niperahm.ac.in



Our Recruiters

Our Recruiters

2nd Job Fair

NIPER-Ahmedabad Organized Second Job Fair on 24th March 2018 for masters and doctoral students of pharma and biomedical sciences. The table shows the detailed summary of the participated companies and selections. Pharmaceutical and medical devices companies like Lupin, Accuprec, Sahajanand Laser Technologies, Torrent Pharmaceuticals Ltd, Fedora Inc, Green Surgicals, Uteshiya Medicare pvt Ltd, Baroque Pharmaceuticals Pvt. Ltd, Meril life sciences, Halewoods labs participated in the same and offered the placements to the students of NIPER-Ahmedabad as well as students from other campuses who participated in the event. In total, more than 60 job seekers from various pharma institutes participated in the job fair, including students from other NIPERs. The event was highly successful as many students got the opportunity to appear for interviews with HR and technical teams of companies and were given offer or called for subsequent rounds of screening the participating companies. Below table gives an overview of the outcome of Job fair

Name of company	Candidates Appeared	Openings in Streams	Students screened and called for subsequent rounds	No. of student selected	Waitlisted
Torrent Pharmaceuticals Ltd	60	PE, PA, Quality	17		
Shahajanand Laser technologies Pvt. Ltd	17	PE, PA, Quality	17	4	3
Accuprec Labs Ltds	57	All	24	7	
Lupin Labs Ltd	18	PA, quality	10	6	
Fedora Inc	10	All streams	6	2	2
Green Surgicals Pvt. Ltd	10	MD, QA	10	2	
Uteshiya Medicare Pvt. Ltd	7	MD, QA	7	3	
Baroque Pharmaceuticals Pvt. Ltd.	36	MD, QA, PA, PE, CM, BT	20	2	
Meril life sciences	12	MD, PC, BT	8		
Halewoods labs	16	All streams	35		



2nd Job Fair



Publications

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Publications

72. Mukty Sinha, Tanvi Gupte. (2017) Design and evaluation of artificial cornea with core–skirt design using polyhydroxyethyl methacrylate and graphite. *International Ophthalmology*,1-9. <https://doi.org/10.1007/s10792-017-0586-3>
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75. Rakesh Sharma, Govinda Kapusetti, Sayali Yashwant Bhong, Partha Roy, Santosh Kumar Singh, Shikha Singh, Biswajit Ray, Pralay Maiti, and Nira Misra.(2017) Osteoconductive Amine Functionalized Graphene-Poly (methylmethacrylate) Bone Cement Composite with Controlled Exothermic Polymerization. *Bioconjugate Chemistry*, 28(9), 2254-2265. DOI: 10.1021/acs.bioconjchem.7b00241
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77. Jennifer Wickens, Hashem Alsaab , Prashant Kesharwani, Ketki Bhise, Mohd Cairul Iqbal Mohd Amin, Rakesh Kumar Tekade, Umesh Gupta, Arun Iyer (2017) Recent advances in hyaluronic acid-decorated nanocarriers for targeted cancer therapy. *Drug Discovery Today*,22,4, 665-680. <https://doi.org/10.1016/j.drudis.2016.12.009>
78. Vishakha Tambe, Shreya Thakkar, Nidhi Raval, Dilip Sharma, Kiran Kalia, Rakesh Kumar Tekade (2017) Surface Engineered Dendrimers in siRNA Delivery and Gene Silencing. *Current Pharmaceutical Design*,23,20, 2952-2975. DOI: 10.2174/1381612823666170314104619
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Publications

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Patents/Poster Presentations / Oral Presentations / Invited Talks / Workshops

Patents

1. Govinda Kapusetti, Jaicy Jacob, Kiran Kalia and Piyush Gondaliya, Cartilage Regeneration Using Piezoelectric Based Scaffold. Indian Patent no. 201621008797

Poster Presentations

1. Namdev More, Mounika Choppadandi, Govinda Kapusetti, Mukty Shinha. Electrospinning Piezoelectric Scaffold for Rapid Regeneration of Cartilage Arylic based vertebral bone cement detoxification by radical scavenging. IMDI / IMDI 2017 Conferences. Ahmedabad, 2017.
2. Pratiksha Kochar, Viral Shah. Design, Development and Optimization of Novel Trilayered Tablet Formulation For Controlled Delivery of Metoprolol Succinate. Ramanbhai Foundation /8th International Symposium on Current trends in Pharmaceutical Sciences: "Advances in New Drug Discovery and Development" 2017, Ahmedabad, February, 2017.
3. Chintan Chaudhary*, Gopal Agarwal, Akshay Srivastava. Biofunctional Aligned Collagen Type-I Matrix for IVD Repair. 14th National Conference and Technology Exhibition on Indian Medical Device and Plastic Disposables/Implant Industry 2017, March, 2017.
4. Gopal Agarwal*, Chintan Chaudhary, Akshay Srivastava. Supermacroporous affinity cryogel device for cell separation. Indian Medical Device Industry Conference, Ahmedabad, March, 2017.
5. Amol Pople*, Gopal Agarwal, Akshay Srivastava. Collagen based nerve conduit for regeneration of spinal cord. IBRO/APRC CHANDIGARH NEUROSCIENCE SYMPOSIUM, Chandigarh, October, 2017.
6. Heta Thakar*, Chintan Chaudhary, Akshay Srivastava. Isoelectrically focus aligned collagen patch to repair annulus fibrosus. IC-NACMBM 2017, D. Y. Patil Education Society, Kolhapur. November 2017.
7. Anup Kumar, Mukty Shinha. Nanocomposite based electrochemical biosensor for liver diseases. IIT-Gandhinagar/ Innovation Conference(ICON) of AMALTHEA'17, Gandhinagar, November, 2017.
8. K.V.V.N.S.K. Aditya Teja Guduru, Mukty Shinha. Nanofibrous coating for bare metal stents : a comparative study of coaxial and monoaxial modes. IIT- Roorkee/ International conference on Nanotechnology : Idea, Innovations and Initiatives-2017(ICN3i_2017). Roorkee. December, 2017
9. Aashika Advankar, Ashwini Ghagare, Nilam Athawale, Priyanka Kanukuntla, Abhishek Kulkarni, Anita Mahapatra. Medicinal Plants as Potential Source for therapy of Alzheimer's Disease. Panjab University, 2017, Chandigarh, October, 2017.
10. Dignesh Khunt, Manju Misra. Exploring the Potential of Bovine oil Enriched Microemulsion of Fluvoxamine Maleate for Brain Targeting via Intranasal Route. The Ramanbhai Foundation 8th International Symposium on Current Trends in Healthcare "Advances in New Drug Discovery & Development", Ahmedabad, India. February, 2017.
11. Shreya Thakkar, Nidhi Raval, Brijesh Lodhi, Manju Misra. Development and optimization of nanocrystalline formulation of drug Nebivolol for solubility enhancement. The Ramanbhai Foundation 8th International Symposium on Current Trends in Healthcare "Advances in New Drug Discovery & Development" Ahmedabad, India. February, 2017.
12. Kritika Nayak, Manju Misra. Dexamethasone loaded microemulsion for enhanced ocular bioavailability via topical route. 24th International Conference on Researchers in Science and Technology, Singapore. November, 2017.

Patents/Poster Presentations / Oral Presentations / Invited Talks / Workshops

13. Anup Kumar, Mukty Sinha. Nanocomposite based electrochemical cholesterol biosensor. IIT –Gandhinagar /ISRAPs Discussion Meeting-2017 on Radiation and Photochemistry, Gandhinagar, August 2017
14. Shivani Vaidya, Dilip Sharma, Kiran Kalia, Vinod Tiwari. Reward circuitry associated with pain relief and addiction. 2nd IBRO/APRC CHANDIGARH NEUROSCIENCE SYMPOSIUM, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh, October, 2017
15. Shital Shinde, Amit Sharda. Dynamic covalent Chemistry: Modulating the Bioactivity of Molecules. International Conference on Medicinal Chemistry/SELECTBIO, Bangalore, 14-15 Sept, 2017.
16. 1st prize for poster presentation Pallavi Rane, Pallab Bhattacharya IBRO School, Jaipur/ International Brain Research Organization. Jaipur. August, 2017
17. Shubangi Mahajan, Rakesh Kumar Tekade. Therapeutic and diagnostic applications of gold nanoparticles and its mechanism. International conference on Nanotechnology addressing the convergence of material science, biotechnology and medical science. D Y Patil Deemed education society, 9th-11th Nov, 2017, Kolhapur.
18. Kaushik Kuche, Rakesh Kumar Tekade. Cationized-Albumin Crusted polymeric nanoformulation Improves BBB Penetration and Anticancer Activity of Doxorubicin 2nd IBRO/APRC Chandigarh neuroscience symposium, 12 Oct, 2017, Chandigarh.
19. Nidhi Raval, Rahul Maheshwari, Rakesh Kumar Tekade. Chitosan layered vesicular system for topical drug delivery in the eye. RBF-Symposium, 2th-4thFeb, 2017, Ahmedabad.
20. Silvy Mary Sebastian*, Gopal Agarwal, Akshay Srivastava. Drug loaded cryogel based punctal plug for dry eye disease. Emerging areas in biosciences and biomedical technologies (eBBT), IIT Indore, Madhya Pradesh, January, 2018.
21. Gopal Agarwal*, Amol Pople, Akshay Srivastava. High density collagen cryogel Bridge for the regeneration of injured spinal cord. NIPERA\CPSBT2018, Gandhinagar, March, 2018.
22. Sumit Mandal*, Chintan Chaudhary, Akshay Srivastava. Affinity Cryogel Matrix for the Separation of Exosomes. NIPERA\CPSBT2018, Gandhinagar, March, 2018.
23. Manish Sharma, Priyanka Lohar, Rajeshwari Rathod, Pinaki Sengupta. Development and validation of a bioanalytical method for simultaneous quantification of acebrophylline, levocetirizine and pranlucaast in rat plasma by RP-HPLC. APA India 2018, Pune, February, 2018.
24. Disha Thakkar, Abhijeet kate . In silico and in vitro metabolite identification and characterization of brexpiprazole by LC-QTOF mass spectrometry. Boston society./ Applied Pharmaceutical Analysis-India2018 conference, Pune, February 2018
25. Anup Kumar, Mukty Shinha . Electrochemical biosensor based on nanocomposite for the detection of biomarkers of liver diseases. IIT-Indore/ Biosciences and Biomedical Technologies (eBBT) 2018, Indore, January, 2018.
26. Pratiksha Kochar, Viral Shah. Exploring the potential of lipid vesicle based formulation for transfollicular drug delivery in androgenic alopecia treatment. IIT-Indore/ Biosciences and Biomedical Technologies (eBBT) 2018, Indore, January, 2018.

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27. Abhishek Kulkarni, Chaitrali Shevkar, Anita Mahaparta*. In vitro anticancer activity of some Indian medicinal plants against neuroblastoma. NIPiCON-2018 Institute of Pharmacy, Nirma University, 2018, Ahmedabad, January, 2018.
28. Priyanka Kanukuntla, Chitralkha Nag, Anita Mahapatra. Activation of glucose uptake in skeletal muscle (C2C12) and adipocyte (3TL1) cells by some medicinal plants. eBBT, IIT, Indore, 2018, Indore, January, 2018.
29. Nripendra Madhab Biswas, Pinaki Sengupta. Physicochemical characterization and metabolism site prediction of NIPER1517MC01AR04 using computational and experimental methods. CPSBT-2018, Ahmedabad, March, 2018.
30. Aarati Zagade, Pinaki Sengupta. Physicochemical characterization of boronic acid derivative AMS-AZ-13 by computational and experimental methods. CPSBT-2018, Ahmedabad, March, 2018.
31. Kavya Sri Nemani, Pinaki Sengupta. Physicochemical characterization of NIPER1416MCRT16 using computational and experimental methods. CPSBT-2018, Ahmedabad, March, 2018.
32. Chevuri Venkata Krishna Reddy, Pinaki Sengupta. Comparison of extraction techniques in preparation of rat plasma samples for bioanalytical study of eluglustat. CPSBT-2018, Ahmedabad, March, 2018.
33. Maria Bandoowala, Pooja Dhakne, Rajeshwari Rathod, Pinaki Sengupta. An insight on extractables and leachables profiling from pharmaceutical packaging components: A review on current analytical techniques. CPSBT-2018, Ahmedabad, March, 2018.
34. Naresh Gaddala, Priyanka Lohar, Rajeshwari Rathod and Pinaki Sengupta. Development and validation of bioanalytical method for NIPERAMCD1214JKAF, a potent anti-diabetic agent: application to pharmacokinetic study. CPSBT-2018, Ahmedabad, March, 2018.
35. Ch.Narayana Swamy and Pinaki Sengupta. Development of a stability indicating RP-HPLC method for trimethobenzamide by QbD approach. CPSBT-2018, Ahmedabad, March, 2018.
36. Lakshmi Vineela Nalla, Kiran Kalia, Amit Khairnar: Stemness signalling crosstalks in Breast cancer. National conference on New Horizons in Cancer Biology, organized by Gujrat Cancer Research Institute, Ahmedabad, India, March 2018
37. Abhijeet Parkhe, Lakshmi Vineela Nalla, Abhijeet Kate, Kiran Kalia, Amit Khairnar: Neuroprotective Effect of α -Mangostin in animal model of Parkinson's Disease Convergence of Pharmaceutical sciences and biomedical technology – 2018 organised by national institute of pharmaceutical education and research Ahmedabad, India, March 2018
38. Pranathi Tata, Gondaliya Piyush, Aditya Sunkaria, Akshay Srivastava, Kiran Kalia. Modulation of various genes in Epithelial Cancers. NIPiCON-2018, Nirma University, Ahmedabad, January, 2018.
39. Tanvi Pataskar, Pranathi Tata, Gondaliya Piyush, Aditya Sunkaria, Akshay Srivastava, Kiran Kalia. Identification and Validation of CD44, its isoforms, EGFR, RAC and WAVE genes in tobacco-addicted Oral Squamous Cell Carcinoma patients of Gujarat Population. National Conference on Convergence of Pharmaceutical Sciences and Biomedical Technology (CPSBT) – 2018, AMA-Ahmedabad, March 2018.
40. Aashu gupta, Kritika Nayak, Manju Misra. Evaluating the role of lipid based colloidal nanocarriers for ocular drug delivery. Nirma Institute of Pharmacy International Conference, Ahmedabad, India. 2018.

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41. Aashu gupta, Kritika Nayak, Manju Misra. Evaluating the role of lipid based colloidal nanocarriers for ocular drug delivery. Convergence of pharmaceutical sciences and biomedical technology. Ahmedabad, India. March, 2018.
42. Akshant Kumawat, Devilal Kethavath, Bhushan Shirsikar, Narendra Kumar, Manju Misra. Application of hot stage microscopy for determination of the active pharmaceutical ingredient particle size in a pharmaceutical blend. Convergence of pharmaceutical sciences and biomedical technology. Ahmedabad, India. March, 2018.
43. Anuradha Gadeval, Meenakshee Shrivastava, Manisha Chaudhary, Lalit Darji, Keval Shah, Manju Misra. Comparative evaluation of top-down, bottom-up and combination methods for nanosuspension formulation of poorly soluble antipsychotic drug. Convergence of pharmaceutical sciences and biomedical technology. Ahmedabad, India. March, 2018.
44. Bhavesh Kshirsagar, Kiran Katrajkar, Sunita Chawla, Prachi Dapse, Manju Misra. Role of steric stabilizers in nanosuspension formulation of anti-psychotic drug. Convergence of pharmaceutical sciences and biomedical technology. Ahmedabad, India. March, 2018
45. Shital Shinde, Sagarkumar patel, Amit Shard. Utilizing Boronic acid derivatives to target sweet spot of tumour. National Conference on Chemistry of Materials and Biologicos/ IIT Gandhinagar, Gandhinagar . 4-5th Jan, 2018
46. Sagarkumar Patel, Preethi Parameswaram, Amit Shard. Computer Assisted Design and Synthesis of Thiazole Based Molecules as Anticancer Agents. National Conference on Chemistry of Materials and Biologicos./ IIT Gandhinagar, Gandhinagar, 4-5th Jan, 2018
47. Madasu Jayasree, Sagarkumar Patel, Amit Shard. Synthesis of Dihydropyrimidinones and their In Silico Interactions with Kinesin Proteins towards Anticancer Activity. National Conference on Chemistry of Materials and Biologicos/IIT Gandhinagar, Gandhinagar, 4-5th Jan, 2018
48. Madasu Jayasree, Amit Shard. Monastrol Inspired Design, Computational Validation, and Synthesis of Dihydropyrimidinone Analogues as Anticancer agents. Convergence of Pharmaceutical and Biomedical Technology (CPSBT-2018)/ NIPER-A, Ahmedabad, 21st -23rd March, 2018.
49. Khemchand Surana, Satyasheel Sharma. Design, synthesis and in-silico studies of carbamate based coumarin derivatives as analgesics. CPSBT/NIPER Ahmedabad 2018, Ahmedabad, March 2018.
50. Monika Diwaker, Satyasheel Sharma. Regioselective palladium catalyzed decarboxylative acylation of o-coumarin carbamate with α -oxocarboxylic acid. CPSBT/NIPER Ahmedabad 2018, Ahmedabad, March 2018.
51. Pooja Todke, Rakesh Kumar Tekade. Transfersome-imbibed-gel 'TIG' for Dual-Antipsoriatic Drug Delivery in Dermal T-lymphocytes. CPSBT-2018, 21st-23rd Mar 2018, Ahmedabad.
52. Pramina Pandey, Rakesh Kumar Tekade. Multifunctional Gold Core-Methotrexate conjugated Nanocomposite for the targeted therapy of rheumatoid arthritis. CPSBT-2018/ NIPER-A, 21st-23rd Mar 2018, Ahmedabad.
53. Hardi Jogi, Rakesh Kumar Tekade. Optimization of albumin nanoparticles by QbD and its preliminary characterization. CPSBT-201/NIPER-A, 21st-23rd Mar, 2018,

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54. Kanta Pravalika, Deepaneeta Sarmah, Harpreet Kaur, Kanchan Vats, Jackson Saraf, Madhuri Wanve, Pallab Bhattacharya. INHIBITION OF MYELOPEROXIDASE BY TRIGONELLINE THERAPY IN HYPOXIA CPSBT-2018/ NIPER-A, Ahmedabad, March, 2018.
55. Gargi Vaidya, Sneha Fiske, Sandeep R Vemula, Gregory R Cook, Dinesh Kumar. Highly chemo- and regioselective allylic substitution with tautomerizable heteroarenes. CPSBT-2018/NIPER-A, Ahmedabad, March, 2018
56. Harpreet Kaur, Pallavi Rane, Deepaneeta Sarmah, Shashikala Bhute, Kanchan Vats, Jackson Saraf, Kanta Paravalika, Madhuri Wanve, Pallab Bhattacharya *. Neuroprotective Effect of Nordihydroguaiaretic acid (NDGA) in In Vitro model of Parkinson's Diseases. CPSBT 2018/ NIPER-A, Ahmedabad, March, 2018.
57. Nidhi Mishra, Deshmukh Amol Anilrao, Govinda Kapusetti, Magnetic layered double hydroxide for cancer theranostic, Emerging Areas in Biosciences and Biomedical Technologies (eBBT) 2018/ IIT-Indore, Indore, January 2018
58. Kamarapu Mounika, Mukty Sinha, Preparation and modification of hydrogel for the artificial cornea, Biocalyx-2018 SXCA/ St. Xavier college, Ahmedabad, Ahmedabad, March 2018
59. Dipesh Kumar Shah, Mukty Sinha, Smart injectable therosensitive hydrogel for sustained delivery of drug in Rheumatoid Arthritis, Emerging Areas in Biosciences and Biomedical Technologies (eBBT) 2018/ IIT-Indore, Indore, January 2018
60. Neelam Athawale, Komal Pandey, Ashika Advankar, Ashwini Ghagare, Abhijeet Kate*. Advances in chromatographic method for fingerprinting of polar components from aqueous extract of medicinal plants, CPSBT, Gandhinagar, March 2018.
61. Ashwini Ghagare, Komal Panday, Ashika Advankar, Neelam Athawale and Abhijeet Kate, Isolation and Characterization of Anticancer Molecules from Medicinal Plants by using Dereplication Strategy, CPSBT/ NIPER, Ahmedabad, March 2018
62. Ashika Advankar, Ashwini Ghagare, Neelam Athawale, Komal Panday and Abhijeet Kate, LC-HRMS based Dereplication for Identifying Novel Scaffold from medicinal plants, CPSBT/ NIPER, Ahmedabad, March 2018
63. Anand Gugale and Anita Mahapatra, In vitro anti cancer potential of Acorus calamus constituents on neuroblastoma cells, CPSBT/NIPER, Ahmedabad, March 2018

Oral Presentations

1. Aishwarya P. Dasare*, Piyush Gondaliya, Akshay Srivastava, Kiran Kalia. Presented an Oral Paper on "Evaluation of microRNA29b mediated regulation of HDAC4 activity in Diabetic Nephropathy" during the 2nd International Diabetes Summit-2018 on 9th-11th March 2018 at Pune.
2. Amit Shard. Presented an Oral Paper on "Boronic Acid Based Small Molecules as Potential Anticancer Agents". Two day International Conference on Medicinal Chemistry, SELECTBIO-Bangaluru, 14-15 Sept, 2017.

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Invited Talks

1. Manju Misra, Department of Pharmaceutics delivered a talk on Exploring the potential of bovine lipid enriched microemulsion of Quetiapine Fumarate for brain targeting via intranasal route at 15th Annual Congress of International Drug Discovery Science & Technology held at (IDDST-Japan 2017) 2017 at Osaka, Japan.
2. Dr Akshay Srivastava, Department of Medical Devices, National Institute of Pharmaceutical Education and Research-Ahmedabad, Invited Talk at Central University of Gujarat, Gandhinagar 2018
3. Dr Anita Mahapatra, Department of Natural Products delivered talk on Synthesis, anticancer activity and molecular docking studies of novel 3-Substituted 1,4-naphthoquinone analogues at IIT, Indore Invited Talk at Emerging Areas in Biosciences and Biomedical Technologies(eBBT) Conference, 2018
4. Dr. Anita Mahapatra, Department of Natural Products delivered talk on Artemisinin and Analogues: A SAR Study at Institute of Pharmacy, Expert Faculty Invited Talk at NIRMA University, Ahmedabad. November 2017
5. Dr Amit Shard, Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research-Ahmedabad, Invited Talk at Central University of Gujarat, Gandhinagar 2018
6. Dr. Abhijeet S. Kate, Department of Natural Products delivered talk on Innovative strategies to discover novel molecules from Natural sources, as a drug candidate at SSGM college, Kopergaon Invited Talk at National Conference on "Advances in Biodiversity, Biotechnology and Environment, 2017

Workshops

1. Vishakha Tambe attended workshop on "Design and analysis of Experiments DOEWS-2017", 6th- 11th November, 2017, Indian statistical Institute, Kolkata.
2. Nidhi Raval attended workshop on "Design and analysis of Experiments DOEWS-2017", 6th- 11th November, 2017, Indian statistical Institute, Kolkata.
3. Dnyaneshwar Kalyane attended workshop on "Design and analysis of Experiments DOEWS-2017", 6th- 11th November, 2017, Indian statistical Institute, Kolkata.

Honours and Awards

- 1 Best Poster Award for:- Anup Kumar, Mukty Shinha . Electrochemical biosensor based on nanocomposite for the detection of biomarkers of liver diseases. IIT-Indore/ Biosciences and Biomedical Technologies (eBBT) 2018, Indore, January, 2018.
- 2 Best Poster Award for:- Pratiksha Kochar, Viral Shah. Exploring the potential of lipid vesicle based formulation for transfollicular drug delivery in androgenic alopecia treatment. IIT-Indore/ Biosciences and Biomedical Technologies (eBBT) 2018, Indore, January, 2018.
- 3 Best pharmacist Award:- Namdev More from Dept. Of Medical Device Awarded as "Best pharmacist Award (student)" from Green cross Foundation Maharashtra
- 4 Best Poster Award for:- Abhishek Kulkarni, Chaitrali Shevkar, Anita Mahaparta*. In vitro anticancer activity of some Indian dedicial plants against neuroblastoma. NIPiCON-2018 Institute of Pharmacy, Nirma University, 2018, Ahmedabad, January, 2018. Received Best Poster Award (2nd) for the Poster presentation
- 5 Best Poster Award for:- Disha Thakkar, Abhijeet kate . In silico and in vitro metabolite identification and characterization of brexpiprazole by LC-QTOF mass spectrometry. Boston society./ Applied Pharmaceutical Analysis-India2018 conference, Pune ,February 2018
- 6 2nd Prize in State level Quiz competition:- Kamarapu Mounika, . Anjali Arepalli,. Awarded 2nd Prize in biocalyx state level competition Quiz 2018" held at St. Xavier's College, Ahmedabad. March 2018
- 7 1st prize for poster presentation:- Shital Shinde, Sagarkumar patel, Amit Shard. Utilizing Boronic acid derivatives to target sweet spot of tumour. National Conference on Chemistry of Materiales and Biologicos. IIT Gandhinagar. 4-5th Jan, 2018
- 8 3rd Prize in National level Quiz competition:- Vedika Bhatt, Aishwarya Dasare, Neelam Chauhan. Awarded third Prize in National level Quiz competition at Nirma Quest, Ahmedabad in Feb 2017
- 9 Best Poster Award for:- Namdev More, Mounika Choppadandi, Govinda Kapusetti, Mukty Shinha. Electrospinning Piezoelectric Scaffold for Rapid Regeneration of Cartilage Arylic based vertebral bone cement detoxification by radical scavenging. IMDI / IMDI 2017 Conferences. Ahmedabad, 2017
- 10 2nd prize for poster presentation:- Pallavi Rane, Pallab Bhattacharya, International Brain Research Organization (IBRO) School, Jaipur
- 11 Best Poster Award for:- Anup Kumar, Mukty Sinha. Nanocomposite based electrochemical cholesterol biosensor. IIT –Gandhinagar /ISRAPS Discussion Meeting-2017 on Radiation and Photochemistry, Gandhinagar, August 2017
- 12 1st prize for poster presentation:- Shivani Vaidya, Dilip Sharma, Kiran Kalia, Vinod Tiwari. Reward circuitry associated with pain relief and addiction. 2nd IBRO/APRC CHANDIGARH NEUROSCIENCE SYMPOSIUM, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh, October, 2017
- 13 1st prize for poster presentation:- Anup Kumar, Mukty Shinha. Nanocomposite based electrochemical biosensor for liver diseases. IIT-Gandhinagar/ Innovation Conference(ICON) of AMALTHEA'17, Gandhinagar, November, 2017.
- 14 2nd prize for poster presentation:- Heta Thakar*, Chintan Chaudhary, Akshay Srivastava. Isoelectrically focus aligned collagen patch to repair annulus fibrosus. IC-NACMBM 2017, D. Y. Patil Education Society, Kolhapur. November 2017.
- 15 Ramalingaswamy Fellowship Award :- Dr. Akshay Srivastava, Asst. Professor, NIPER-A
1st prize for poster presentation:- K.V.V.N.S.K. Aditya Teja Guduru, Mukty Shinha. Nanofiberous coating for bare metal stents : a comparative study of coaxial and monoaxial modes. IIT- Roorkee/ International conference on Nanotechnology : Idea, Innovations and Initiatives-2017(ICN3i_2017). Roorkee. December, 2017

Extramurally Funded Research Projects

Project Title	Amount	Duration	Principal Investigator	Funding Body
Bioprospecting endolichenicfungi from Mangroves in Negombo lagoon in Sri Lanka and Gulf of Khambat, Gulf of Kutch from Gujarat India; An untapped treasure trove for discovery of special structures and bioactive compounds (Grant No: DST/INT/SL/P-22/2016)	47 lakhs	2017-2020	Prof. Kiran Kalia Sri Lankan Partner: Prof. Priyali Pranagama University of Kelniya, Sri Lanka	DST, Indo Sri Lanka Joint Research Programme
Mitochondrial protection in ischemic stroke by using microRNA mediated engineered stem cells (Grant No: 27319924)	10000 USD	2016-2017	Dr. Pallab Bhattacharya	ISN, USA
Bio-engineered three-dimensional stem cell niche for intervertebral Disc repair and regeneration (Grant No: ECR/2016/002038)	38.13 lakhs	2017-2020	Dr. Akshay Srivastava	DST, SERB
Aptamer targeted dendronized polymeric nanoparticles to deliver Anti-miRNA for treatment of Triple Negative Breast Cancer (Grant No: ECR/2016/001964)	49 lakhs	2017-2021	Dr. Rakesh Tekade	DST, SERB
Triple punch approach for triple negative breast cancer by delivering siRNA and doxorubicin using graphene oxide wrapped polymeric nanoparticles (Grant No: PDF/2016/003329)	25 lakhs	2017-2019	Dr. Rakesh Tekade	DST, SERB

Extramurally Funded Research Projects

Project Title	Amount	Duration	Principal Investigator	Funding Body
Regulatory non-coding RNA mediated mesenchymal stem cell engineering: Safety and efficacy study in rodent model of ischemic stroke (Grant No: SB/YS/LS-196/2014)	29.30 lakhs	2016-2019	Dr. Pallab Bhattacharya	DST, SERB
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
Exploring the molecular mechanism of butter oil enriched nanoformulation in enhancing nasal to brain delivery and its potential role in promoting neurogenesis (Grant No: EMR/2016/007966)	34.69 lakhs	2017-2020	Dr. Manju Mishra	DST SERB
Regulatory non-coding RNA mediated mesenchymal stem cell engineering: Safety and efficacy study in rodent model of ischemic stroke (Grant No: SB/YS/LS-196/2014)	29.30 lakhs	2018-2020	Dr. Pallab Bhattacharya	DST
Industrial Project from Natreon Inc, USA Exploring neuroprotective effects of Phyllanthus embilica in animal model of ischemic stroke. Grant amount: Role: Principal Investigator	\$25,800	2018-2020	Dr. Pallab Bhattacharya	Natreon Inc, USA
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	re-entry fellowship, Department of Biotechnology, Government of India

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, USA, Massachusetts Institute of Technology, USA; University of Washington, Seattle, USA; 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 partnership with the faculty members from NIPER-Ahmedabad.

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

Faculty from Harvard Medical School, Boston, USA; Massachusetts Institute of Technology, 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, Harvard Medical School, Boston, USA	Stem Cell Biology / Neuroscience Research
 Dr. Ali Sultan Chief, Division of Vascular and Endovascular Neurosurgery, Department of Neurosurgery, 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
 Prof. Emilio Bizzi McGovern Institute for Brain Research, Massachusetts Institute of Technology, USA	Stroke Biology

International Collaborations

Dr. Rakesh K. Tekade, Assistant Professor, Department of Pharmaceutics has established a 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 NIPER-A collaborated with 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 and Microbiology, bacterial and viral infections and obstructive airway diseases such as asthma

Faculty from NIPER-A collaborated with De Montfort University, The Gateway, Leicester, UK

Area of Research



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

Dendrimer based nanoformulation, Formulation site-specific polymeric Drug Delivery systems

Faculty from NIPER-A collaborated with University of Mississippi School of Pharmacy, USA

Area of Research



Prof. Mahavir B. Chougule,
Associate Professor of Pharmaceutics,
Department of Pharmaceutics and Drug Delivery,
School of Pharmacy, University of Mississippi,
Mississippi, TCRC 204 A, MS, USA

Drug and Gene Co-delivery, Multifunctional Nanoparticle, Cancer Therapy,

Faculty from NIPER-A collaborated with Liverpool John Moores University, Liverpool, UK

Area of Research



Prof. Gillian Hutcheon,
Faculty in 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

International Collaborations

Faculty from NIPER-A collaborated with Wayne State University Use-inspired Biomaterials Laboratory, Detroit, USA

Area of Research



Prof. Arun K. Iyer,
Director, Use-inspired Biomaterials & Integrated Nano Delivery Systems Laboratory
Department of Pharmaceutical Sciences
Wayne State University
259 Mack Ave,
Detroit, MI 48201 USA

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

Dr. Govinda Kapusetti, Assistant Professor, Department of Medical Devices, NIPER-A has 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, Assistant Professor, Department of Medical Devices has research collaboration with faculty from Centre for Research in Medical Device National University of Ireland, Galway

Faculty from NIPER-A collaborated with Faculty from the 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. Pinaki Sengupta, Assistant Professor, Department of Pharmaceutical Analysis has research collaboration with faculty from International Islamic University Malaysia.

Faculty from NIPER-Ahmedabad collaborated with International Islamic University Malaysia

Area of Research



Dr. Bappaditya Chatterjee
Asst. Professor,
Dept. of Pharmaceutical technology,
International Islamic University Malaysia
Head, Research and Development,
IKOP Sdn. Bhd, Malaysia

Formulation development and Pharmacokinetic profiling

Adjunct Faculty

NIPER-A 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 on-line. They have also expressed their interest to personally visit NIPER-Ahmedabad at mutually agreed times in near future. NIPER-A expresses deeply thanks to all Adjunct Professors and looks forward for their key role in the development of NIPER-A and the partner institute.

Name of Adjunct Faculty and affiliation



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



Prof. Srinivasa N. Raja
Professor of Anesthesiology and Critical Care Medicine
Institute: The Johns Hopkins University School of Medicine, USA



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



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

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 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 genomic data of the affected patients. This data is ultimately being useful to find out the Up regulated and down regulated genes and significant biomarkers in the samples and their respective validation 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.

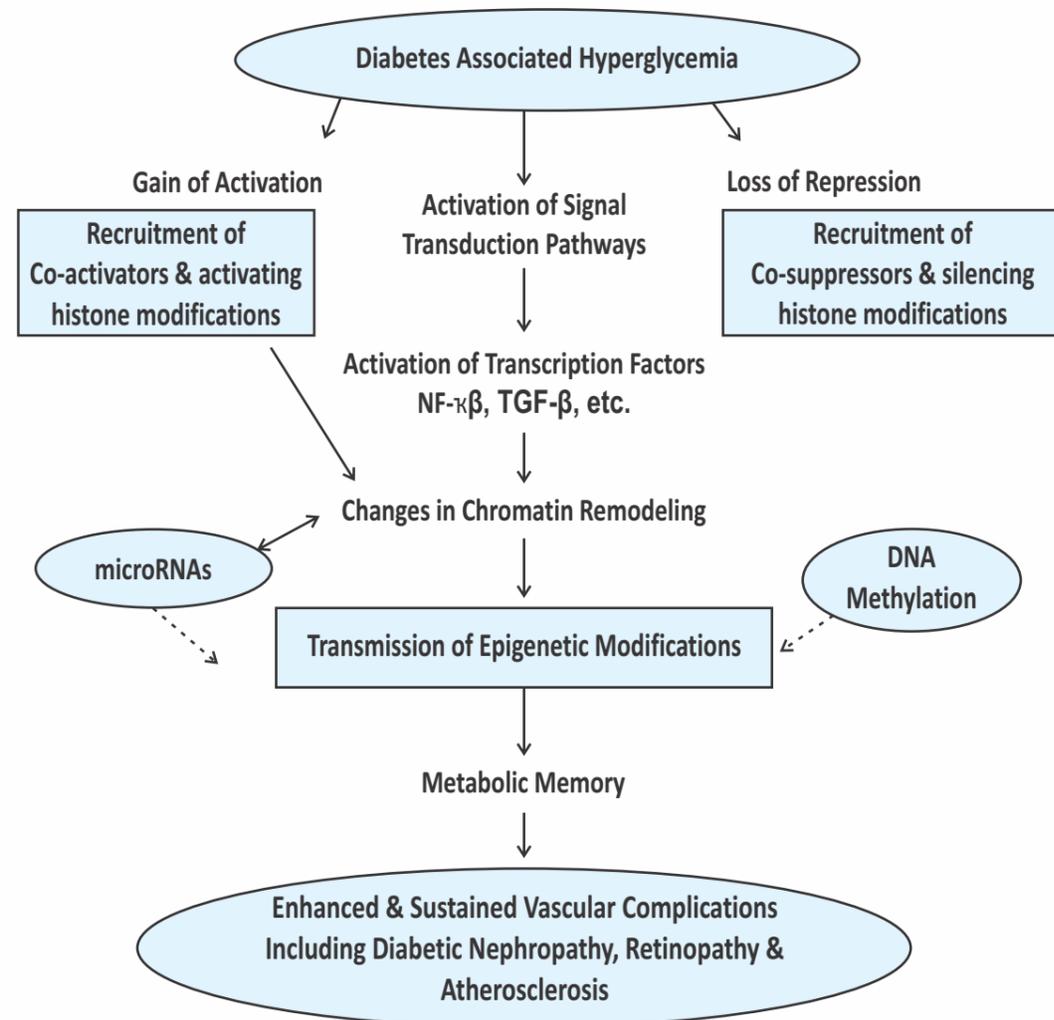


Departmental Research Activities

Epigenetic modulation in diabetic nephropathy through miRNA

We are currently working on emerging epigenetic mechanisms underlying Diabetic nephropathy, which involves micro vascular complications associated with both type 1 & type 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. Epigenetics comprises a study of heritable changes in gene expression without alterations in the underlying DNA sequences. Key epigenetic regulators are micro RNAs which are a family of small non-coding RNAs. In the case of Diabetes Mellitus, due to engagement of cytokines & growth factors with their receptors trigger signal transduction cascades, these affect epigenetic states such as DNA methylation & chromatin histone modification to augment the expression of pro-fibrotic & inflammatory genes which further leads to Diabetic Nephropathy. Hence, miRNAs could serve as the new therapeutic targets for Diabetic Nephropathy.

Targeting breast cancer stem cells using collateral lethality approach



Departmental Research Activities

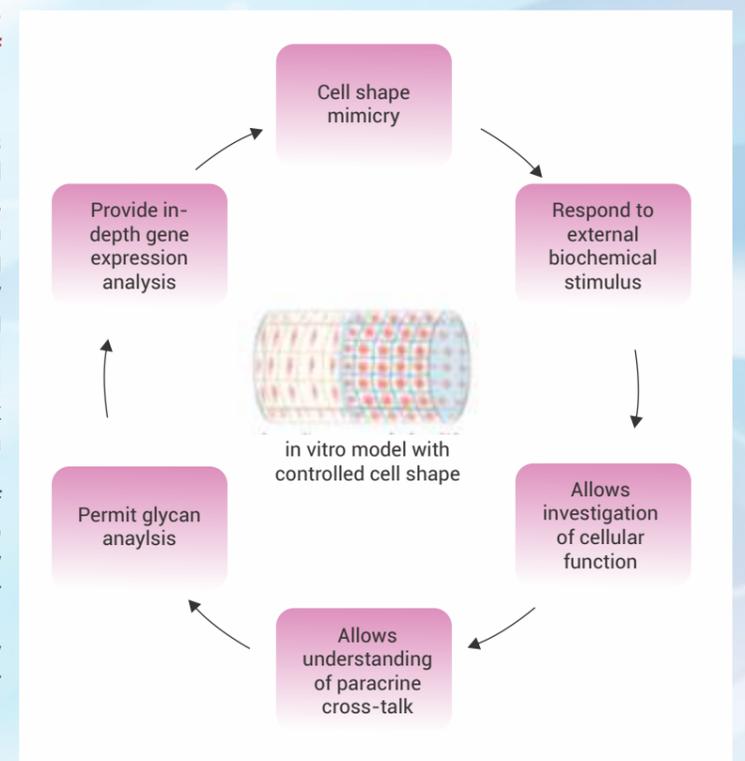
Collateral lethality, also known as synthetic lethality of housekeeping genes is a new trend for the discovery of cancer specific vulnerabilities caused by passenger deletions or deletions in non-tumor suppressor genes. It explains the concept that some of the genes are co-deleted with tumor suppressor genes which perform housekeeping functions and can be targeted. Sometimes passenger gene deletions render non-essential pathways to become essential. We are working on enzymes from these pathways, which may act as specific targets to sensitize cancer cells and mediate cellular death.

Bioengineered three-dimensional stem cell niche for intervertebral disc repair and regeneration

Low back pain (LBP) is a common health problem that affects 60–80% of the population of developed countries at some stage in their lives. Degeneration of the intervertebral disc (IVD) is a major pathological process implicated in LBP, which is characterized by cellular apoptosis and senescence with reduced synthesis of extracellular matrix (ECM). A healthy disc is a cushion like material present between the two vertebrae, function as essential shock absorbers, allows bending, flexion, and torsion of the spine. IVD is composed of central nucleus pulposus (NP) and peripheral concentric annulus fibrosus (AF) region. Recent advances in cellular and molecular biology have provided an exciting approach to regenerate 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 fibrosus cells present in highly controlled IVD microenvironment, will help in regeneration of herniated AF region of IVD using functional biomaterial niche. This approach may also help in maintaining disc osmotic pressure and water retention.

Lab-on-a-chip: Bioengineered three-dimensional inflammatory disease model of degenerated tissues

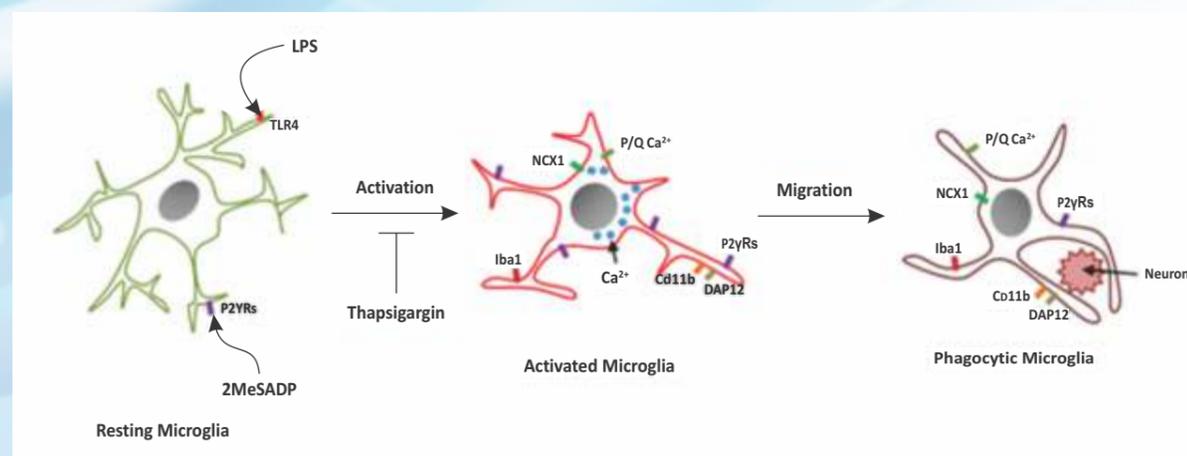
A biomaterial based in vitro three-dimensional hydrogel model will enable us to study inflammatory crosstalk in diseased conditions e.g. IVD degeneration, diabetes, cartilage, etc. The model will be based on controlling cell shape, mimicking extracellular matrix, encapsulating key inflammatory molecules and maintaining physical properties. The developed model (Srivastava et al., 2017, Biomaterials) will allow the study of paracrine crosstalk between cells and molecular changes at a genetic level under inflammatory condition. The model also enables the investigation of modulation in the glycans expression to understand the inflammatory microenvironment. We are further evaluating the impact of the mechanical stimulus on developed model to identify altered molecular pathways and cellular functions.



Departmental Research Activities

Migration and phagocytic ability of activated microglia during post-natal development

Microglia play an important role in synaptic pruning and controlled phagocytosis of neuronal cells during developmental stages. Recent evidence has revealed that microglia participate in important developmental functions like phagocytic elimination of cell debris, guiding newly formed axons in the white matter tracts and maintaining synaptic plasticity. However, the mechanisms that regulate these functions are not completely understood. So we designed a study to investigate the role of purinergic signalling in microglial migration and phagocytic activity during post-natal brain development. Our results showed that lipopolysaccharide (LPS) treatment induced microglial activation preceded by up-regulation of the purinergic receptors (P2Y2, P2Y6 and P2Y12). We also observed that intracellular Ca^{2+} plays an important role in purinergic receptor-mediated microglial activation. In addition, activated microglia also showed increased expression of DAP12/CD11b which suggest induction of the phagocytic activity of microglia during post-natal brain development. Hence, strategies aimed at activation of purinergic and adenosine receptors may trigger or suppresses the activity of microglia during development which may be helpful in designing treatment paradigms in neurodevelopmental disorders (Sunkaria et al., 2015, Molecular Neurobiology).



Postnatal proteasome inhibition promotes amyloid- β aggregation

Ubiquitin-proteasome system (UPS) is involved in many biological processes, including aspects of neuronal development ranging from axon morphogenesis and synapse refinement. Postnatal brain development has been considered as crucial period which comprises formation and refinement of synaptic connections. Previous studies have shown that ubiquitin and UPS proteins are abundant in newly formed presynaptic terminals and mice incapable of degrading the ubiquitinated proteins had defective synapse formation. Although, exact period of synapse development is not completely understood but initial postnatal weeks are crucial for the synaptogenesis in pyramidal neurons. Ever increasing evidence has shown that $A\beta$ peptides have detrimental effects on synaptic function. However, not much has been studied about the relationship between $A\beta$ aggregation, synaptic and neuron loss during early stages of brain development. It has been shown that early intraneuronal accumulation of $A\beta$ peptides is one of the key events leading to synaptic and neuronal dysfunction. To understand this relationship, we examined the effect of postnatal proteasome inhibition on hippocampus-based spatial memory formation during adulthood. The molecular, behavioral and histological data suggested that inhibiting proteasome activity during postnatal brain development could impair spatial learning during later stages of life (Sunkaria et al., 2017, Neuroscience).

Departmental Research Activities

Re-activating proteasomal machinery: Exploring isothiocyanates as potential molecules to target age related neurodegenerative disorders

Synapse formation during initial stages of brain development as well as synaptic plasticity in adulthood is essential for proper nervous system functioning. It has been observed that nervous system build more synapses than it actually required during development. Numerous studies have revealed that proteasome mediated protein degradation play an important role during pruning of extra synapses. It has been shown that most of the connections attain maturity in the hippocampus during 2–3 postnatal weeks. Hippocampal development is very crucial for spatial learning and memory formation in rodents. Injuries to the brain during this period have shown to be detrimental for cognitive functions and impart behavioral changes due to modifications in brain structure. Studies have shown that various naturally occurring dietary phytochemicals could play significant roles in maintaining health of neurons. Recently, it has been shown that sulforaphane (SFN) could induce expression of cytoprotective genes through nuclear factor (erythroid-derived 2)-like 2 (Nrf2) pathway. Until today mechanism of action of SFN is not clearly understood, however various reports have shown that it has antiinflammatory, anti-oxidant, and anti-cancer activities.

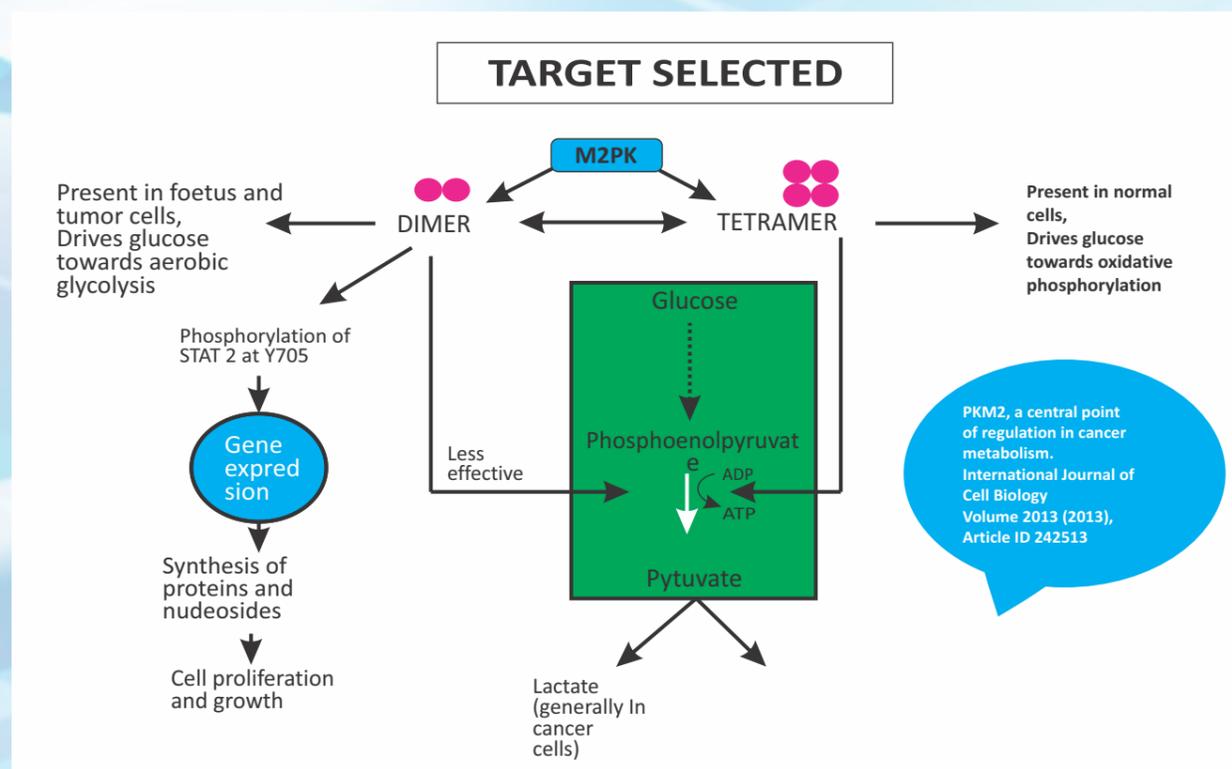
As SFN is cytoprotective and could also induce catalytic activity of proteasome, currently we are exploring whether it could attenuate the effects of MG132 induced proteasome inhibition. Our results have shown that SFN could increase proteasome activity by increasing the expression of subunit- $\beta 5$. We also found that SFN administration could induced the Nrf2 activation and prevented the deleterious effects of postnatal proteasome inhibition on hippocampal development and improve spatial reference as well as spatial working memories during adulthood. Moreover, SFN treatment has also enhanced the expression of CaMKII, Creb, and Bdnf, which play a central role in learning and memory consolidation. Taken together, these results suggest that SFN has the potential to attenuate the effects of postnatal proteasomal inhibition (Sunkaria et al., 2018, Journal of Nutritional Biochemistry).

Medicinal Chemistry

Reversible anticancer covalent inhibitors:

Proliferating cells, especially tumour cells, express a special isoenzyme of pyruvate kinase, termed M2-PK, 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 tumour cells, the dimeric form is usually predominant and is therefore termed Tumour M2-PK. Tumor M2-PK can be elevated in many tumor types (Colorectal, breast, ovarian), rather than being an organ-specific **tumor marker**. Previous attempts to target this enzyme using various agents like bisulfonamides, piperazine derivatives as inhibitors are yet to ascend into clinic. Serine, ML-265 have been established as activators of M2PK 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 M2PK towards anticancer activity. Here we intend to focus on the design and synthesis of boronic acid-based molecules with high affinity towards M2PK enzyme and dragging them towards tetramer formation. We presume that the boronic acid moiety established for superior biological profile will be engaged in dynamic covalent bond formation leading to activation of M2PK 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 fragment-based drug discovery approach that will eventually avoid all the aforementioned side effects and will have adequate druggability.

Departmental Research Activities

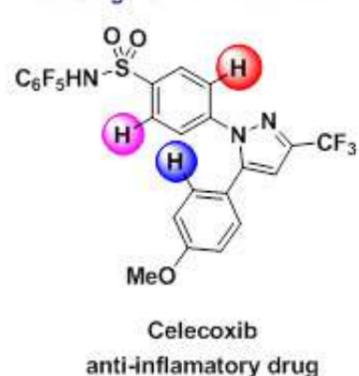


Alzheimer's disease: In the case of neurodegenerative diseases, Alzheimer's disease involves multiple enzymes like GSK-3 Beta, Monoamine oxidase (MAO) and acetylcholinesterase (Ache). In the current scenario, it's strongly emphasized that one molecule which can target multiple enzymes will be more effective rather than a cocktail of drugs. Here we are designing multi-target directed ligand (MTDL) to nail down the disease from across the corners. The molecule has shown potent inhibitory activity against acetylcholinesterase enzyme and currently being investigated against other enzymes for similar effects.

Construction of pharmaceutically important molecules through C–H bond activation

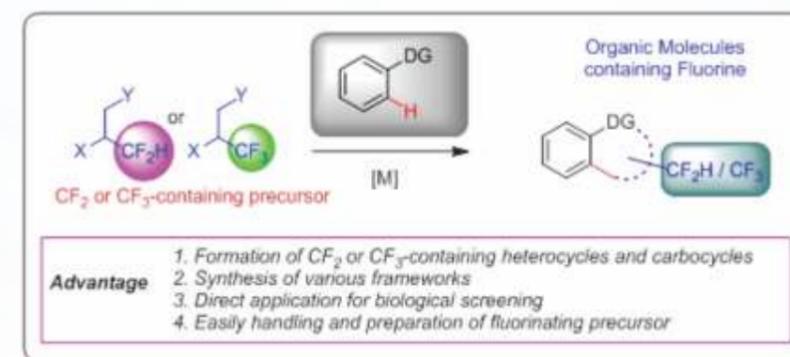
The direct transformation of C–H bonds provides shorter approach than classical organic synthesis, thus rendering straightforward and atom-economical synthetic routes. Even more appealing is that this new approach enables previously unachievable synthetic disconnections. The employment of C–H bond activation protocol in chemistry 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 analogues.

Late Stage C-H Functionalization



Departmental Research Activities

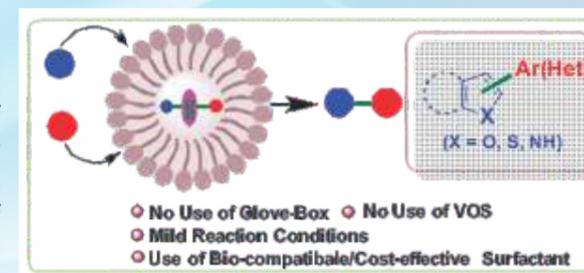
Given the importance of difluoro- and trifluoromethyl groups in bioactive compounds and the fact that a large majority of modern medicines and agrochemicals contain one or more heterocyclic rings, it is not surprising that the synthesis of fluorine containing scaffolds is a topic of current interest to the chemical community. Our research group focuses on the designing, synthesis and functionalization of novel heterocyclic scaffolds by using C–H activation strategy, particularly toward the synthesis of fluorinated molecules as anticancer and anti-inflammatory agents by employing C–H activation strategy.



Sustainable functionalization of heterocycles using water as reaction medium

The development of green approaches (sustainable development) is an ongoing demand and a subject of current interest due to the adverse effect of the manufacturing processes of pharmaceuticals and fine chemicals on the environment. The major drive towards this initiative is the replacement of volatile organic solvents (VOSs) by green reaction media, as VOSs are the major contributors to environmental pollution due to their abundant use (more than 85% of the total mass utilization of a chemical process) and incomplete recovery efficiency (50–80%). In this context, water is the most preferred solvent and the use of water as a non-classical medium for organic reactions has received increasing popularity with several advantages such as (i) non-toxic, non-inflammable, and cheap; (ii) it eliminates the additional efforts required to make the substrates/reagents dry before use and thus reduces/eliminates the consumption of drying agents, energy and time; (iii) the unique physical and chemical properties of water often increase the reactivity or selectivity unattainable in organic solvents; and (iv) the product may be easily isolated by filtration in many cases. However, the poor solubility of most organic compounds in water often makes an adverse impact on water mediated organic synthesis and this has brought to light the use of surfactants in aqueous organic reactions.

Transition metal catalyzed direct functionalization is a popular strategy for diversification of small carbo/heterocycles for the generation and optimization of hit and lead molecules in pharmaceuticals and materials science applications. However, such reactions are often limited in water; require specially designed surfactants which limit their practical utility. In this context, we are currently working on the micelle-enabled direct functionalization employing biocompatible, non-toxic, cost-effective surfactant under mild and glove-box free. Although the use of surfactants in aqueous organic reactions is popularly correlated with the beneficial effect of the surfactants as solubility aids, we here described the specific role of the surfactants enabling the site-selective functionalization of heterocycles.

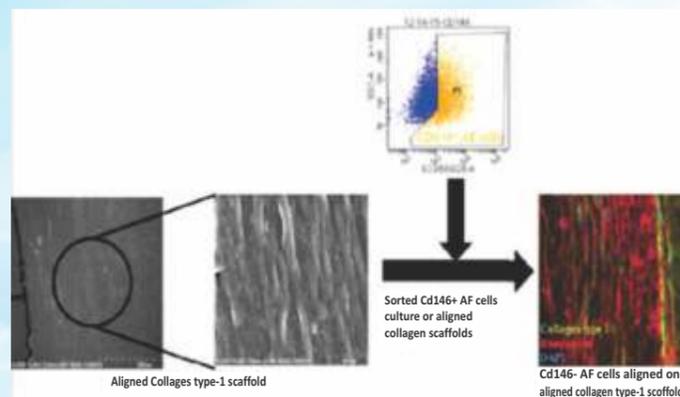


Departmental Research Activities

Medical Devices

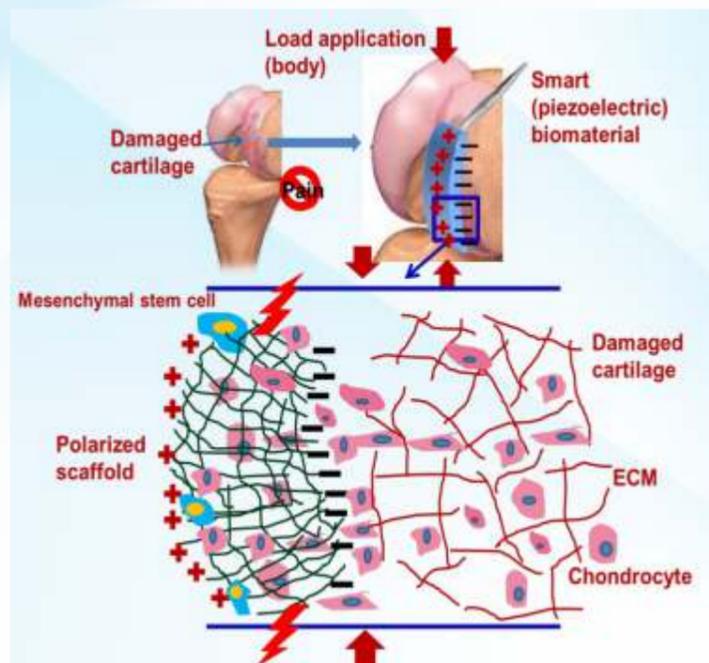
Biomaterial Platforms: Applications in developing medical devices and biotechnology products

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 chromatography matrix for the separation of 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.



3D Smart biomaterials for tissue regeneration and repair by nanotechnology intervention

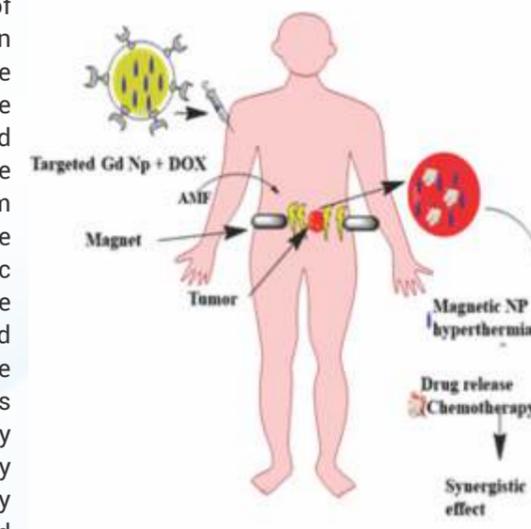
Piezoelectric materials are smart materials owing to transduce the applied mechanical pressure into electrical signals and vice-versa. The cartilage regeneration and repair is a major challenge till date due to its complex structure. The major intention of the study is the utilization of piezoelectric mechanism to stimulate the cartilage regeneration without addition of stimulating factors. The piezoelectric polymeric scaffold is prepared by electro spinning method. The scaffolds are exposed to corona poling to develop surface charge density by strong electric field. The poled scaffolds are subjected physical, chemical and biological evaluations to optimize the scaffold for cartilage regeneration and repair.



Departmental Research Activities

Advanced strategies for cancer theranostics

Cancer is an abnormal growth of cells in any tissue or organ of the body and these cells have ability to spread and grow in other parts of the body. Various conventional approaches are available to treat the cancer but they possess lack of absolute success and presence of various side effects. Studies carried out to achieve absolute cure by combination of alternative engineering therapies. The MRI contrasting agent gadolinium is doped with ferrite nanoparticles along with cobalt. The magnetic nanoparticles are loaded with chemotherapeutic drug and targeted to tumor cells with suitable ligand molecule to minimize the adverse effects. The drug loaded nanoparticles along with contrast agents helps to image tumor sites during therapy. The hyperthermia effect is generated by applying alternate magnetic field at tumor site by thermally induced apoptosis. Hence, the proposed strategy may give optimum results to destroy the cancer cell by synergistic effect of targeted chemotherapy and hyperthermia.



Natural Product

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

Natural products play a very important role in the discovery of new drugs. Dereplication technique has reinvigorated the natural product based drug discovery process by improving the time required for isolation of novel molecules. LC-HRMS based dereplication method has been established at NIPER-A to identify known compounds from medicinal plants. Punica granatum plant extract was selected for a case study of LC-MS based dereplication and identified 4-Hydroxy-2-H-pyran carboxaldehyde, ellagic acid rhamnoside, gallic acid and coumaric acid hexoside successfully. Various projects are undergoing to identify novel bioactive compounds from natural sources.

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

Diabetes is a major disease ruining lives of people worldwide and the menace is expected to increase even more because of the current life style issues. World Health Organizations global report on diabetes indicates that nearly 422 million adults are suffering with diabetes and this figure is expected to rise to 642 million people worldwide by 2040. Recent WHO reports have given emphasis on herbal preparations for treatment of diabetes. 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 reversed phase C18 column. These columns usually do not retain polar compounds and hence elution occurs at void volume. Natural Products research team at NIPER-Ahmedabad is making efforts to retain and resolve polar components of herbal extracts by applying advance chromatographic methods, which is crucial in the analysis of herbal formulations. As a case study, the aqueous extract of Momordica charantia (also known as MCAQ) plant was used that showed most of the peaks eluted at void volume when analyzed by reversed phased HPLC using C18 column. The developed analytical method could successfully retain and separate polar components from MCAQ extract.

Departmental Research Activities

Bio-prospecting of endolichenic fungi to discover novel bioactive scaffolds

Natural Products based drug discovery has given so many novel scaffolds and almost 40% of approved drug has its origin from nature. Recently, several reports have been published on chemical diversity of endolichenic fungi, however they have not 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 chemical diversity of endolichenic fungi associated with mangroves present in Gulf of Kutch, Khambhat (Gujarat, India) and Gulf of Negombo (Sri Lanka) is the prime objective of this project. LC-MS based dereplication methodology will be applied for early identification of known metabolites. Isolation and characterization work will be focused only on shortlisted extracts with higher probability of finding novel molecules. The compounds will be screened for anti-cancer and anti-diabetic activity. This is a collaborative project between University of Kelaniya, Sri Lanka and NIPER-A, India.

Target oriented synthesis of New Chemical Entities (NCEs) of natural scaffolds as anti-cancer, antitubercular and anti-diabetic leads

Higher plants continue to retain their historical significance as important sources of novel compounds useful directly as bioactive leads, model compounds for semisynthetic structure modifications and as a source of inspiration for drug discovery. Despite the attractive potency and selectivity, the limitations like toxicity, solubility, and stability of natural compounds prompt for chemical modification of the scaffolds.

We pursue research in finding new and more effective chemotherapeutic agents against various types of cancers and infectious diseases, such as tuberculosis and diabetes.

Our research efforts are directed towards the target oriented analogue synthesis and development of new chemical entities of pentacyclic triterpenoid, alkaloid, and quinone scaffolds as anti-tubercular, anti-cancer, and anti-diabetic leads. Also, we design and synthesise thiazolidinedione and thiophene analogues for drug development in these areas. Also, the In-silico and Structure-Activity Relation studies aimed at improving the therapeutic efficacy of lead compounds.

Novel drug delivery formulations using plant extracts and phytoconstituents.

One more research area we are exploring for the natural product is the development of novel drug delivery system incorporating plant extracts to address the problems associated with it. In the current research, we have worked on the development of herbosomal formulation development incorporating *Aegle marmelos* extract. *Aegle marmelos* (L.) Corr (Rutaceae) commonly known as the bale fruit is a highly reputed medicinal plant in the ayurvedic system of medicine. It has been known in folklore medicine as an antidiabetic. Various phyto-chemi-constituents like alkaloids, coumarins, and steroids have been isolated and identified from different parts of the tree. Leaf extract and fruit extract of *Aegle marmelo* shave shown potent antidiabetic effect. Despite being proved to be effective as antidiabetic extract is associated with few major challenges like less physical stability & less lipid solubility, to overcome this problem few novel approaches have been developed by researcher like development of gold nanoparticles. In the current research we have worked on development of Herbosomes incorporating *Aegle marmelos* fruit extract. The developed formulation has been evaluated for its physicochemical properties such as particle size, zeta potential, etc. The formulation was evaluated for its stability and in vitro release study as well. Developed formulation showed significant results when compared with parent extract.

Departmental Research Activities

Isolation, structural elucidation and biological evaluation of new natural products from terrestrial sources

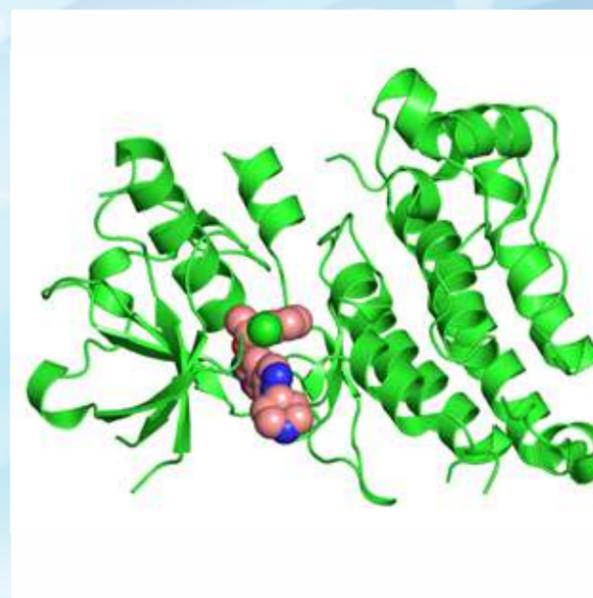
With an increasing incidence of cancer, diabetes in an ageing society and the steady spread of tuberculosis along with a growing resistance to current drugs, there is a continuous need for new and more effective drugs. Natural products chemistry is a principal area of research at the interface of the fields of chemistry and biology, and natural products are a prolific source of many life-saving drugs and functional ingredients and have played an important role in the development of pharmaceutical drugs for some diseases including cancer and infection. Ongoing drug discovery research requires a constantly expanding library of compounds with a wide range of molecular and chemical diversity.

Our research in natural products encompasses the exploration of enormous terrestrial biodiversity for novel drug lead discovery, isolation and structure elucidation of various classes of natural products of medicinal significance followed by biological activity screening for cancer, diabetes and neuroprotection, cognition enhancement.

Studies on in vitro anticancer activity of *Origanum majorana*

Cancer is a multifactorial disease that is characterised by an abnormal growth of cells and the migration of those cells from their original site to other sites in the body. Most of the available drugs are having side effects and increased incidence of drug resistance, motivates for new drug discovery. It is significant that over 60% of currently used anti-cancer agents are derived in one way or other from natural sources including plants, marine and microorganisms. It has been started with the discovery of vinca alkaloids i.e., vincristine and vinblastine and isolation of cytotoxic podophyllotoxins. Hence, in this project, we attempt to explore the cytotoxicity and antioxidant potential of *Origanum majorana* which is also known as sweet marjoram has been explored for treatment of diseases in traditional and folklore medicines, including gastrointestinal, cardiac, rheumatologic, and neurological disorders. It is one of the most important aromatic plants that contain major antioxidants like flavonoids, triterpenoids, phenolic terpenoids and phenolic glycosides.

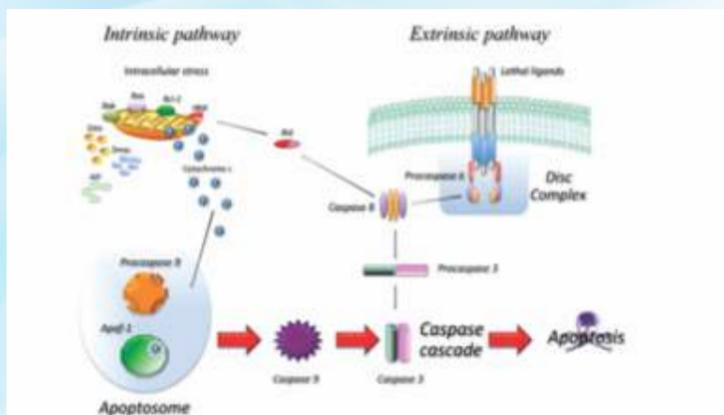
The objectives of the study are to perform in silico studies to know the interaction of the reported pentacyclic triterpenoids with ALK protein, which plays a significant role in neuroblastoma. Also to perform in vitro studies to determine the cytotoxicity of the extracts and isolated compounds on human cancer cell lines IMR32 and PC12 cell lines. Anaplastic lymphoma kinase (ALK) plays a significant role in the development and function of the nervous system, where it controls the basic mechanisms of cell proliferation, survival, and differentiation in response to extracellular stimuli. Targeting these signaling pathways has been a promising strategy against cancer. In silico studies revealed encouraging results to move forward for in-vitro studies. In-vitro studies also revealed a potent cytotoxicity against IMR32 than PC-12 cell lines. Future studies will throw more light on the mechanisms i.e. induction of apoptosis.



Departmental Research Activities

Value Addition to *Acorus calamus* Constituents

Neuroblastoma is the most common and the most complicated solid tumour in childhood, showing a striking high incidence of the in-situ form, and finally being resistant even to aggressive chemotherapy. Natural products play vital role in new drug development in area of cancer, contributing 83% in development of molecules (NCE) in area of cancer. *Acorus calamus* rhizomes has been reported in folklore medicine for neuroprotection, neuroinflammation, epilepsy, weak memory, pain and so on.



Studies have also suggested that therapeutic properties of *Acorus calamus* may be attributed to β -asarone, the major constituent and α -asarone, the minor in Indian *Acorus*. The interest of the current study is to explore the potential of the asarone enriched extract and the isolated compounds for their in vitro anticancer activity on IMR32 (neuroblastoma) and PC12 (pheochromocytoma) human cancer cell lines. The preliminary result reveals that the extract and compounds are more active against IMR32 cells. Molecular docking of the compounds showed good interaction with ALK protein as compared to standard drug crizotinib supporting the in vitro results. Further screening of extract and compounds for induction of apoptosis and cell cycle analysis will throw more light on the mechanism.

Chemical Screening and In-vitro Anticancer Activity of *Magnolia champaca*

Cancer is the most life-threatening disease amidst the list of invincible diseases. It witnessed around 8.8 million deaths in 2015. Neuroblastoma (NBL) is cancer of the sympathetic nervous system (SNS) arising from developing neural crest tissue. It is the most common extracranial pediatric solid tumor and is responsible for 15% of pediatric cancer deaths. Limited numbers of drugs are available for treatment of neuroblastoma. Natural products are playing the role of commander-in-chief, conquering area of invincible diseases by contributing 72% among the sources available to produce drugs for cancer. Extensive literature survey and ethnopharmacological reports reveal that various parts of plant *Magnolia champaca* has been explored for neuroinflammation, neuroprotection and brain diseases. The objective of present study was designed with an aim to investigate the in vitro anticancer activity of new chemical constituents of *Magnolia champak* leaves, we performed the extraction, isolation of single compounds by different chromatographic (column and Flash) techniques and evaluated the anticancer potential of the extracts and compounds against the human cancer cells i.e. IMR32 (neuroblastoma) and PC12. The results obtained were encouraging, and future work on induction of apoptosis will be helpful to establish the mechanism.

Departmental Research Activities

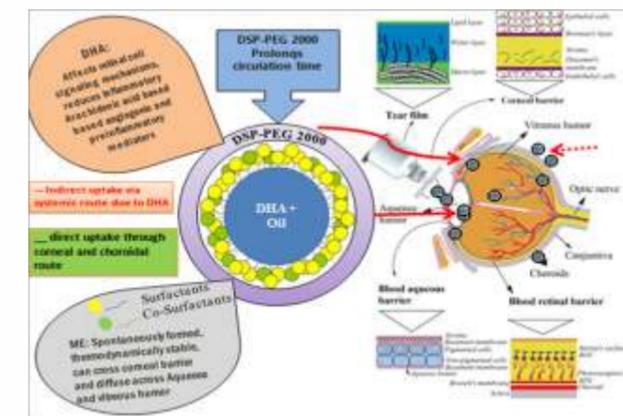
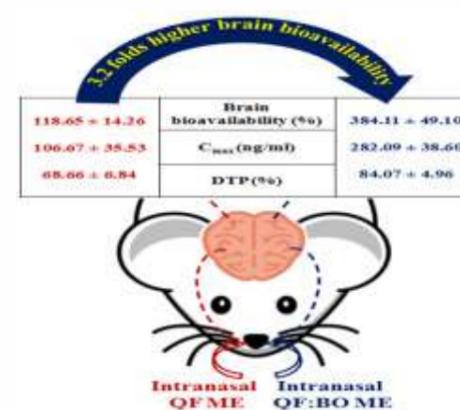
Pharmaceutics

Nasal to brain delivery: Role of natural lipids

The blood-brain barrier (BBB), a specialized interface between the systemic circulation and brain parenchyma, effectively attenuates and regulates the flux of chemicals between these two environments. This protective barrier poses a formidable obstacle to drug delivery as inability to achieve pharmacologically active central nervous system (CNS) concentrations leads to difficulties in development of effective pharmacotherapeutic for diseases of the brain and CNS. Intranasal delivery has come to the forefront as an alternative to invasive delivery methods to bypass the BBB and rapidly target therapeutics directly to the CNS utilizing pathways along olfactory and trigeminal nerves innervating the nasal passages. We are exploring the role of butter oil from bovine origin reportedly known to be rich in omega 3 fatty acids and its role in membrane remodelling and neurogenesis. Additionally we are also investigating the potential of using butter oil as permeation enhancer for delivery of formulation to ocular compartments. The outputs of the work could be path breaking in terms of projecting butter oil in altogether new light as till date it is rich source of cholesterol in food only.

Application of thermal analysis in Drug excipients interaction and blend uniformity analysis

Assessing mixing uniformity of a powder blend in pharmaceutical formulation of a low dose potent drug is a very critical step, failing which the entire formulation needs to be reworked from the beginning. Thermal analytical methods like differential Scanning calorimetry [DSC] are rapid method requiring very lesser sample for quantification. In this project, we are using enthalpy values obtained from DSC for estimation of mixing uniformity in powder blend mixed using high shear mixture granulator. Influence of various parameters like melting behaviour of drug and excipients, bulk density of excipients and mixing time on the results of enthalpy values was also evaluated. It was observed that at lower levels of drug i.e. 0.5%, 1% and 2%, the relative standard deviation values obtained using DSC were higher than that using HPLC but at concentration above 5% of drug, the results of DSC and HPLC were quite similar. It was concluded that DSC could reliably predict the uniformity of powder blend where drug loading was above 5%, however results accuracy was somewhat less below this level. We are working further on exploring the use of DSC in assessing mixing uniformity during scale up studies and role of DSC in compatibility prediction especially in fixed dose combination.



Departmental Research Activities

Impact of drying process on Solid state properties of drug Nanosuspension

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 bioavailability. Currently use 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 the 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 cryoprotectant used during lyophilisation of nanosuspension to obtain nanocrystal. We are also investigating solid state properties of nanocrystals obtained using lyophilization and those obtained using electro spinning to evaluate their impact on bulk level properties of nanocrystals. 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 (Recent patents on nanotechnology, 2016).

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

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 postgraduate students and researchers 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 anti-cancer drugs and small interfering and microRNA. An overarching goal of his current research interests encompass development of novel polymeric nanomaterial for effective cytosolic delivery of anticancer bioactives. The research is also focused towards 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.

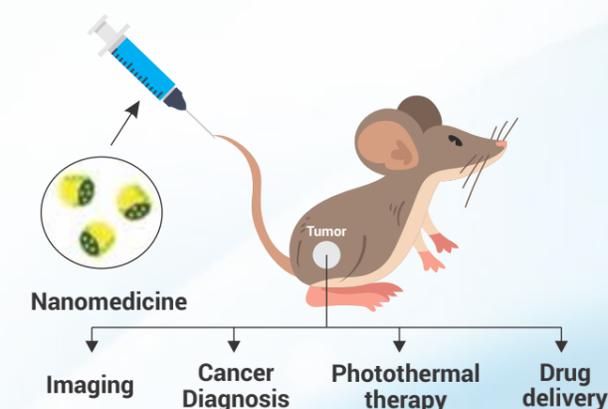
Formulation Development of Injectable RNA interfering nanoparticle for targeted therapy of diabetic nephropathy

Diabetic nephropathy (DN) is chronic kidney disease with microvascular complications leads to renal dysfunction, podocytes effacement leads to proteinuria (albuminuria), glomerulosclerosis and tubulointestinal 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 this podocytes targeted Nanotherapeutics, novel polymers are being synthesized by bioconjugation to form protonation active polymer. This novel polymeric bioconjugate were formulated in as nanoparticle loaded with genes and drugs. For the specific targeting purpose those nanoparticles bears ligand that can recognize the site for binding to attain targeted delivery. It is hypothesized that prepared ligand gated nanoparticle could easily phagocytes via take up by cell, then endosome will be form and finally polymeric nanoparticle undergo proton sponge effect release the genetic material and drug. Further formulation evaluation done for its physicochemical and biological properties. Cellular uptake studies would be performing via in-vitro podocytes cell line model and induced diabetes mouse model.

Departmental Research Activities

Tripartite approach for 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 drug delivery. This research project involves development of novel formulations for the treatment of cancer using nanotechnology-based platform, which involves the development of polymeric nanoparticles (NPs) trenced with multiple approaches including hyperthermia and chemotherapy for effective and promising treatment of aggressive triple negative breast cancer (TNBC). One of the component is also to establish the effective correlation between the various approaches and their individual effects towards the treatment of TNBC. For this, we consider to develop the anti-breast cancer formulation with greater 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 treat various forms of cancer.



Pharmaceutical Analysis

Metabolite profiling of drugs by using HPLC and LC-MS/MS

Drugs are considered as xenobiotics, which are metabolized in the body and converted to more polar compounds and eliminated easily. These are metabolized by phase 1 and phase 2 reactions. Enzymes involved in the phase 1 reactions are Cytochrome P450s, flavin-containing monooxygenases and epoxide hydrolases. In the phase I reactions, oxidation, reduction and hydrolytic reactions were observed. In the phase II reactions, enzymes involved are sulfotransferases (SULT), UDP-glucuronosyltransferases (UGT), glutathione-S-transferases (GST), N-acetyltransferases (NAT), and methyltransferases. In these reactions

addition of sulphate, glucuronic acid, glutathione, an acetyl group and methyl group may take place. Human liver microsomes and rat liver microsomes are commonly used for in vitro drug metabolism studies. Microsomes are used for phase I metabolism studies. Cytosol is used for phase II enzymatic reactions. S9 fractions contain both phase I and phase II enzymes and used to study both metabolic reactions.

Departmental Research Activities

Microsomal studies were performed by suspending microsomes in 0.1 M phosphate buffer, add NADPH solution, drug solution and incubate at 37°C for 60 min. Samples were withdrawn at 0, 30 and 60 min. The reaction was terminated by adding few micro litres of cold methanol or acetonitrile, centrifuge the sample and supernatant was injected into HPLC or LC-MS-MS. Simultaneously run blank (without drug), control 1 (without cofactor), control 2 (without microsomes), control 3 (without microsomes and cofactor). Control 1 is to determine whether the reaction is energy dependent or not; control 2 is to determine whether the reaction is protein dependent or not and control three is to determine the stability of the drug in phosphate buffer solution.

Forced degradation and impurity profiling of drugs by HPLC and LC-MS-MS

Forced degradation studies were performed by exposing the drug to acidic, basic, neutral, oxidative, photo and thermal stress conditions. After exposing drug to stress conditions, those samples were analyzed by HPLC and LC-MS-MS. This involves development and validation of HPLC method and application of that method to the analysis of stability samples. Degradants were characterized by analyzing the samples by LC-MS-MS. Degradants were isolated by preparative HPLC and were characterized by NMR, IR and mass. Kinetic investigations were also performed by taking samples at different intervals during stress, and the samples were analysed by HPLC. Amount of drug remained after each time point is calculated and determine the order, rate constant and shelf life of the drug under each condition. Impurity profiling is performed by separating drug and its impurities, Impurities may be obtained from the official compendia source or synthesized in-house and characterized by MS, NMR, and IR spectroscopy. Identify different impurities generated under forced degradation conditions by comparing the retention time of standard impurities.

Drug-excipient compatibility studies using isothermal stress testing

Compatibility between drugs and various excipients is determined by isothermal stress testing. The HPLC method is developed and applied to the analysis of stressed samples. The drug content and percentage of the drug is remained and the degradants are characterized by using LC-MS-MS, NMR and IR. These studies can be used for selection of suitable excipients in the formulations.

Bioanalysis, Drug Metabolism and Pharmacokinetics:

Development of HPLC/ LC-MS-MS methods of analysis of NCEs and generic drugs in biological fluids, validation of method of analysis in different matrices, analysis of samples of clinical trials for NCEs using HPLC/ LC-MS-MS, 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.

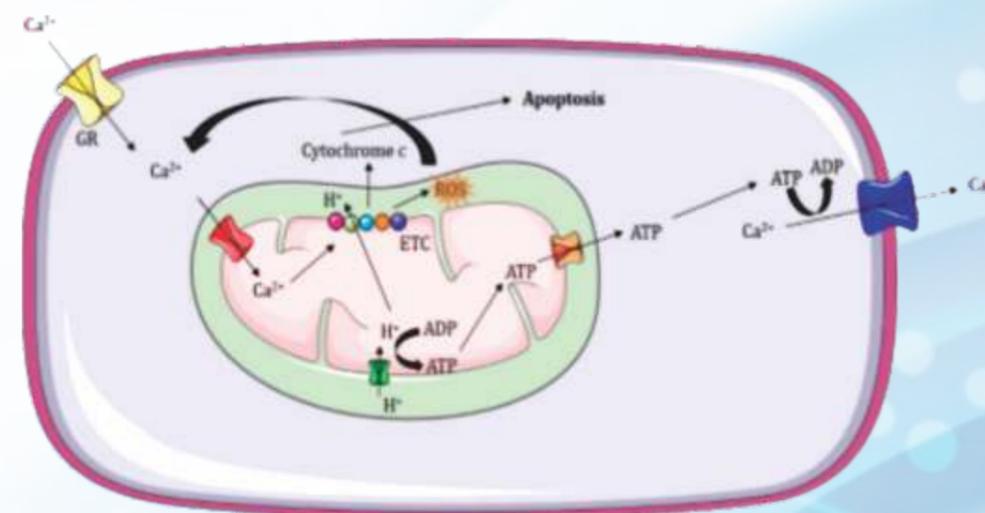
Pharmacology and Toxicology

Regulatory non-coding RNA-mediated mesenchymal stem cell engineering: Safety and efficacy study in rodent model of ischemic stroke

Ischemic stroke is one of the most common neurological diseases which ranks third in the leading cause of death after heart disease and cancer. The poor prognosis of cerebral ischemia is contributed majorly to the acute irreversible loss of brain cells before the patient receives medical aid, which is exacerbated by the void in delayed clinical intervention, options to protect against secondary insult. Mesenchymal stem cells (MSCs) are an especially attractive therapeutic agent due to their ease of isolation, established safety, and potential to target multiple pathways involved in neuronal regeneration. Engineering of Mesenchymal stem cell by regulatory non-coding RNA and its administration can be a tool to bring about desired benefits after ischemic insult.

Departmental Research Activities

As per best of our knowledge, studies relating to the intra-arterial administration of regulatory non-coding RNA (rncRNA)-engineered MSCs in the early and late phase of brain stroke has not been reported yet. Most importantly, a late phase study of intra-arterial delivery of engineered MSCs are greatly needed as there is a need of therapy for those who already had a stroke in the past. Thus, we propose a study to evaluate the safety and efficacy of intra-arterial administration of rncRNA-engineered MSCs in rodent rMCAo. The primary objectives of the proposed project involves: (i) Bioengineering of MSCs using rncRNA-miR-210 followed by hypoxic preconditioning, (ii) to determine the optimal timing and efficacy of intra-arterial administration of engineered MSCs (eMSCs) in the early and late phase of cerebral ischemia. Another major aim is to determine the extent of effective localization and integration of newly transformed eMSCs to neurons into the persistent neuronal circuitry leading to functional recovery. Next method is to elucidate the mechanism of action recruited by rncRNA-engineered MSCs on the post-ischemic brain. Our future plan shall be to explore the beneficial role of different long non-coding RNAs in manoeuvring mesenchymal stem cell property that can be used for cell transplantation therapy in an animal model of ischemic brain stroke.



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

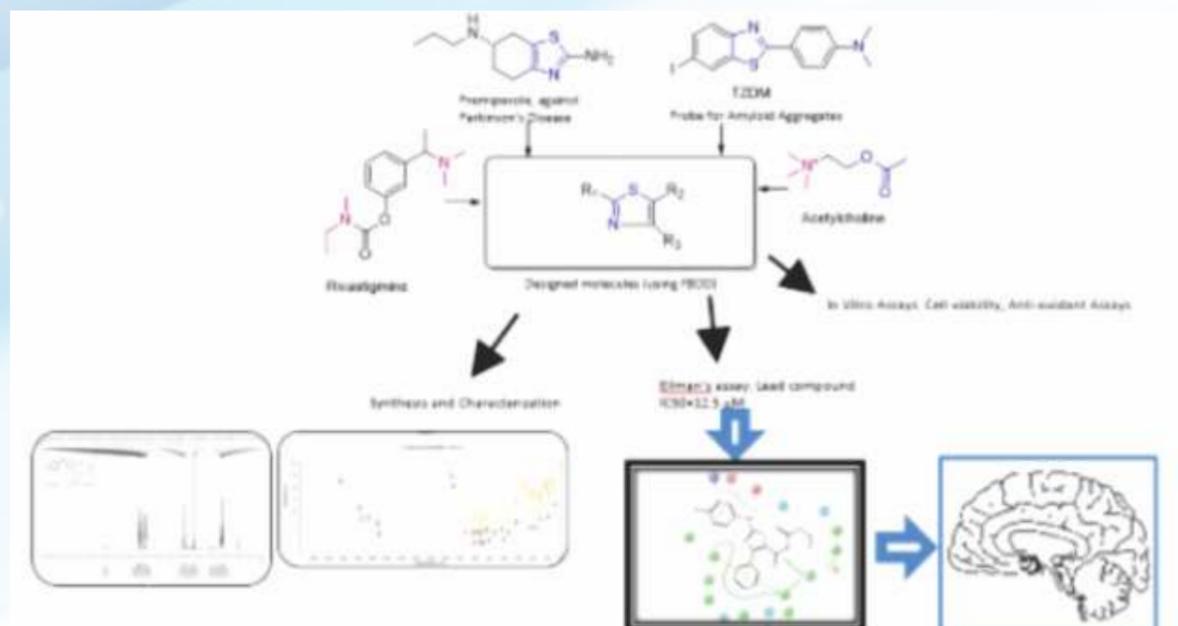
In last decade, laboratory studies suggest stem cell therapy as a prospective treatment for stroke. Studies demonstrate that the post-ischemic delivery of mesenchymal stem cells (MSCs) significantly reduces ischemic brain damage in the animal models of ischemic stroke. Furthermore, MSCs are delivered either by direct transplantation, intravenous or intra-arterial/carotid route. 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. Additionally, IA MSC therapy is minimally invasive than direct transplantation. Post-ischemic 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. Highly interconnected and complex reticular mitochondrial networks continuously undergoes cycles of fusion and fission as a part of performing the normal physiological functions.

Departmental Research Activities

Earlier studies have demonstrated that neuronal death following cerebral ischemia involves mitochondrial fission and preventing post-ischemic mitochondrial fission can lower cerebral ischemic damage. Protecting post-ischemic mitochondrial function by cell therapy can be an important strategy for post-ischemic neuroprotection. Therefore, we shall also dissect the mechanism for the same via mitochondrial dynamic studies. To achieve our purpose, we will first determine the optimal timing and efficacy of intra-arterial administration of MSCs in the rodent model of MCAo in the early and late phases of cerebral ischemia for reducing tissue damage and improving functional and neurological outcome. Secondly, we will be considering neuroprotection by rescuing mitochondrial functions using IA stem cells. Finally, we will study the extent of effective localization of administered MSCs and look to elucidate the mechanism of mitochondrial protection in the post-ischemic brain by IA stem cells.

An in silico and in vitro evaluation of the role of small heterocyclic moiety in intervening cognitive dysfunction

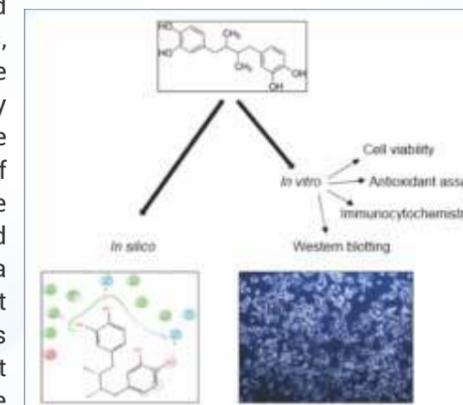
Mild cognitive impairment may eventually develop into Alzheimer's and other types of dementia. Alzheimer's disease (AD) is a chronic neurodegenerative disorder that manifests into disturbances of cognitive functions such as amnesia. The present study is designed to investigate the anti-amnesic effect of a small heterocyclic lead compound on neurochemical changes in in vitro model of cognitive impairment. All compounds were designed considering Lipinski's rule of five. We firstly performed an in-silico testing of the lead compound. The parameters that were analysed for determining in silico competence were docking score, site of metabolism, QikProp, DFT calculations. Further, the test compound was analyzed for the cytotoxicity and antioxidant properties on PC12 cell line. The compound exhibited a significant in vitro anticholinesterase activity in Ellman's assay giving an inhibitory concentration IC₅₀ value of 12.5 μM.



Departmental Research Activities

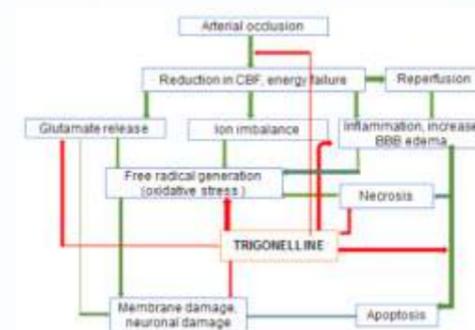
Neuroprotective effect of nordihydroguaiaretic acid (NDGA) in in vitro model of Parkinson's Disease

Parkinson's disease (PD) is associated with motor dysfunction and clinical symptoms associated with the disease are tremors, bradykinesia, muscle rigidity, postural instability, and akinesia. The neuropathological hallmarks of PD are characterized by progressive and profound loss of dopaminergic neurons in the Substantia Nigra pars compacta (SNpc) and a depletion of postsynaptic dopamine within the striatum along with the presence of protein alpha-synuclein (αS) in Lewy bodies (LBs) and Lewy neurites (LNs). Nordihydroguaiaretic acid (NDGA) is a polyphenol compound and has also shown to inhibit αS filament assembly by forming soluble, non-cytotoxic, oligomeric complexes with the αS protein. So we propose that NDGA may show the effect by treating the cause in rotenone-induced Parkinson model. We have performed in silico test (docking) of NDGA on αS protein molecule. NDGA has a good docking score of -5.2 as compared to that of curcumin which has a docking score of -3.3. Further, we have performed cell viability assays, antioxidant assays, and immunocytochemistry which proves that NDGA may show the neuroprotective effect by inhibiting αS and can be further tested in in vivo.



Elucidating the effect of trigonelline in in-vitro model of hypoxia

Ischemic stroke is caused due to obstruction in blood flow to a part of the brain leading to brain damage. Energy failure, excitotoxicity, acidosis, an increase in intracellular calcium level, oxidative stress, mitochondrial dysfunction, inflammation, apoptosis and finally neurodegeneration are the outcome of such a cerebrovascular event. Although there are increasing evidence that trigonelline exhibits neuroprotective effects against ischemic brain damage, little is to know about the mechanism. In silico work was performed to check the binding affinities of trigonelline to ASIC1a (4NYK), MMP2 (3AYU) and MMP9 (5I12) and docking scores were found to be -2.982, -3.405 and -3.26 respectively in comparison to standards. We have also performed cell viability assays, antioxidant assays and western blotting which give evidence that trigonelline has protective effects against hypoxia; and can be further tested under in-vivo settings. This could lead to the development of novel therapeutic strategies by exploring different pathophysiological mechanisms and pave ways for advanced research into this field.



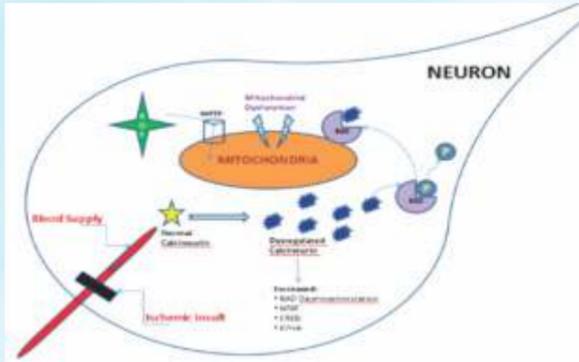
Stroke-Parkinsonism complex: model validation and a systematic study exploring the link between cerebral stroke & Parkinson's disease

Stroke and Parkinson's disease have been studied individually, and their biochemical assays have been performed in the past. Studies have reported that patients with transient stroke may develop Parkinson's disease in the late stage. Hence, in our proposal, we plan to validate an animal model of stroke with Parkinson's disease and further explore the associated molecular mechanism of such a transition. We will explore different biomarkers and perform a battery of behavioral tests to validate the model having both pathologies. Furthermore, our investigation objective is to analyze different neurotransmitters in this study and explore their influence in either of the stroke or parkinsonism pathologies.

Departmental Research Activities

Exploring the influence of intra-arterial mesenchymal stem cells on calcineurin in the cardiac arrest model of global cerebral ischemia

During ischemic insult, there is the generation of oxidative stress and inflammation which insidiously damage the cerebral neurons, leading to various complications. During ischemic insult, many signaling pathways become abnormal in their processes and exacerbate the rapid neuronal cell death. One of these endogenous signaling molecules is calcineurin which is a calcium/calmodulin-dependent phosphatase having a vast role in maintaining many homeostatic processes for neurons in the CNS. However, during ischemic insult, it has been observed that not only does calcineurin become overly-expressed during stroke but it also behaves in a dysregulated manner and switches over to triggering apoptotic signals and accelerates neuronal cell death. Past studies, both in vitro and in vivo, have shown that inhibition of calcineurin post-ischemic insult leads to attenuation of neuron degeneration and mitigates cell death and prolongs neuronal survival. Although calcineurin inhibition displays this neuroprotective effect, the current calcineurin blockers have shown undesired side-effects. MSCs inhibit this neurotoxic effect of dysregulated calcineurin while also mitigating the associated side-effects since they can effectively modify and regulate factors like calcineurin in a more judicious manner. MSCs have the unique capability of homing towards the infarct site and releasing neurotrophic factors which protect the neurons from apoptosis and stimulate neurogenesis to form new synapses and help regain and maintain lost functions of the damaged neurons in the brain after ischemic insult.



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Exploring myeloperoxidase inhibition by trigonelline therapy in tMCAo model of cerebral ischemia

Cerebral ischemia is a condition in which there is insufficient blood flow to the brain to meet metabolic demand. This clinical situation leads to poor oxygen supply or cerebral hypoxia and thus to the death of brain tissue or cerebral infarction. It is the third most common cause of death in developed countries. As reported in the past, trigonelline prevents oxidative stress during reperfusion injury and attenuates the behavioral deficits with histopathological alterations secondary to hypoperfusion. The present study will also be done to find out the neuroprotective effect of trigonelline on transient cerebral ischemia (MCAo). Myeloperoxidase (MPO) is a hemoprotein, which is abundantly expressed by active neutrophils, monocytes, macrophages, and microglia. On the one hand MPO has been found to propagate the inflammatory cascade and delay resolution of inflammation, but on the other hand, MPO inhibition has been reported to decrease the infarct size after stroke markedly. Hence, a mechanistic relationship between inflammation and neurogenesis in stroke needs further exploration. We hypothesize that trigonelline may inhibit MPO to impact neurogenesis in ischemic stroke

Role of melatonin to obviate interferon- β -mediated cortical and hippocampal monoamine turnover in rodent model of ischemic stroke

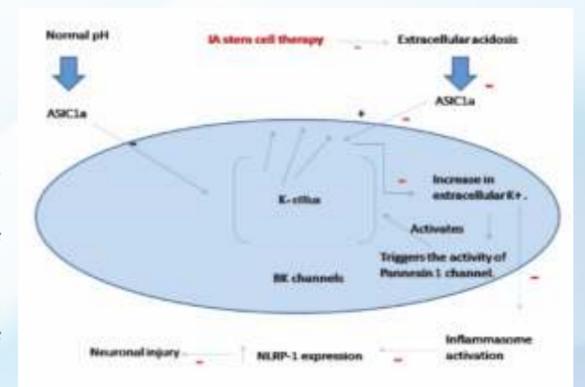
Use of melatonin as a drug has been explored by many researchers in the past due to its intrinsic free radical scavenging potential and contributing role in modulating physiological processes including regulation of circadian rhythm, blood pressure, oncogenesis, retinal, physiology, seasonal reproduction, ovarian physiology, and osteoblast differentiation. The neuroprotective potential of melatonin and its possible involvement in the regulation of cerebral metabolism, antioxidant and anti-excitotoxic properties, neurotransmitter modulation, influence on neuronal apoptosis also makes it a molecule of choice to intervene complex neurological disorders like a stroke.

Departmental Research Activities

Interferon beta (IFN- β) therapy improves stroke outcome but has a downside of producing depression. Although interferon treatment in stroke is not so common, it still has a scope to evolve as one of the supplementary drugs of choice if the limitations are counteracted. Hence, to move further to study the spectrum of other beneficial effects of melatonin in stroke, we propose to explore its role in counteracting IFN- β -induced depression in the stroke which stands to be one of the limiting factors for IFN- β therapy in clinical settings. This present study is designed to understand the role of melatonin in modulating the interferon- β -mediated monoamine turnover that will be helpful in improving ischemic stroke outcome by using MCAo in the rat model.

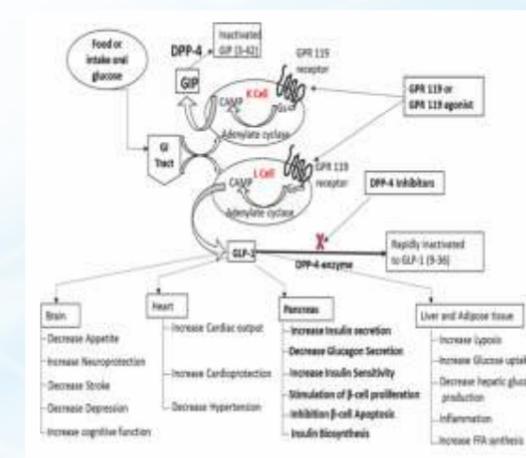
Modulating the expression of NLRP1 inflammasome by intra-arterial stem cell therapy in rodent model of ischemic stroke

The increase in extracellular proton concentrations in stroke activates ASIC1a in the brain. This activated ASIC1a increases the expression of the NLRP1 inflammasome in a pH-dependant manner. This NLRP1 inflammasome is a key component that is formed after ischemic stroke. The NLRP1 inflammasome is a key player in the inflammatory mechanism and contributes to the progression of ischemic damage. This inflammasome worsens the pathology of stroke by the production of inflammatory cytokines. Intra-arterial (IA) mesenchymal stem cells (MSCs) carry minimal risks and prove efficacious through the secretion of trophic, protective, neurogenic and angiogenic factors. We hypothesize that IA MSC therapy may inhibit the formation of inflammasomes to render neuroprotection.



Potent and active GPR119 Agonists for the Treatment of Diabetes

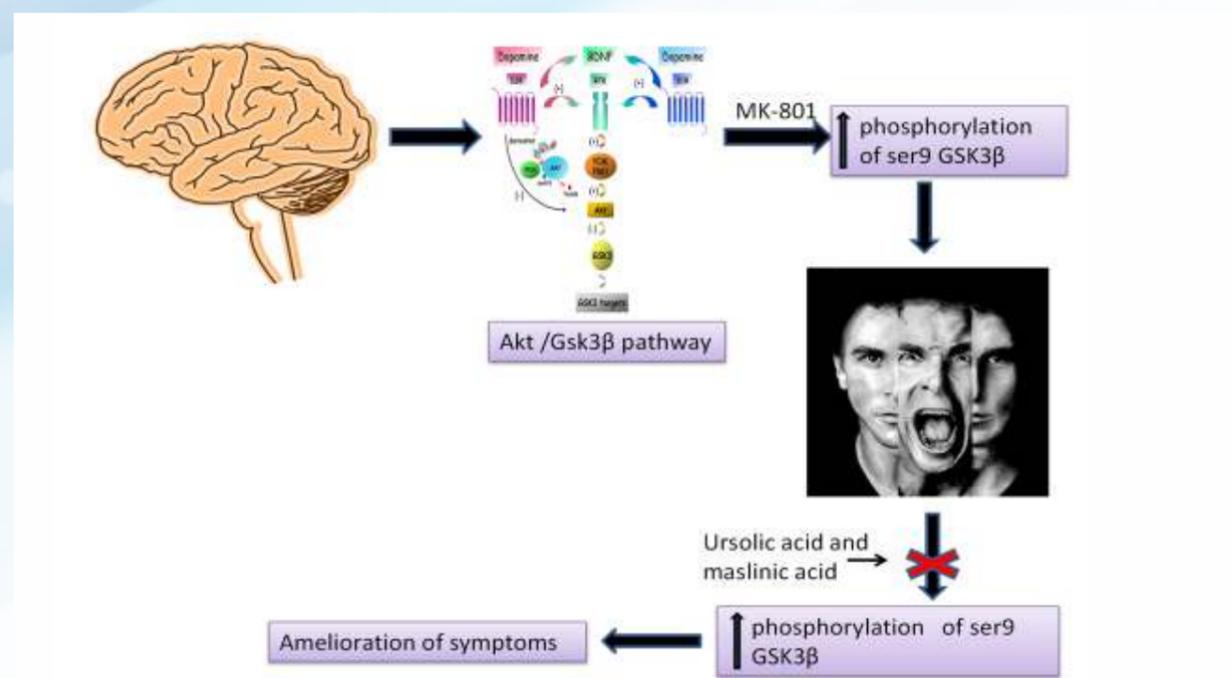
Diabetes is a chronic metabolic disease, which is characterized by hyperglycemia, glycosuria and hyperlipidemia that in long-term increases the probability of developing diabetic complication such as macrovascular and microvascular complications which in turn increases mortality and morbidity. The number of people living with diabetes is expected to rise from 366 million in 2011 to 552 million by 2030, including nearly 183 million people with undiagnosed diabetes for a long duration. Microvascular complications include diabetic cardiomyopathy, nephropathy, retinopathy, and neuropathy. Currently, available drug therapies like TZD (insulin sensitizers), sulphonylureas and insulin (insulin secretagogue) have a major drawback of hypoglycaemia and weight gain due to an insulin-dependent mechanism of action. GPR119 is one of the numerous candidates of G-protein coupled receptors; many other modulators like GPR40, GPR41, GPR43, and GPR120 are currently under investigation as a potential target for elevating GLP-1. It can be used with a great added advantage of the improvement in glucose handling and homeostasis in treating diabetes.



Departmental Research Activities

Neuroprotective potential of pentacyclic triterpenoids in animal model of schizophrenia

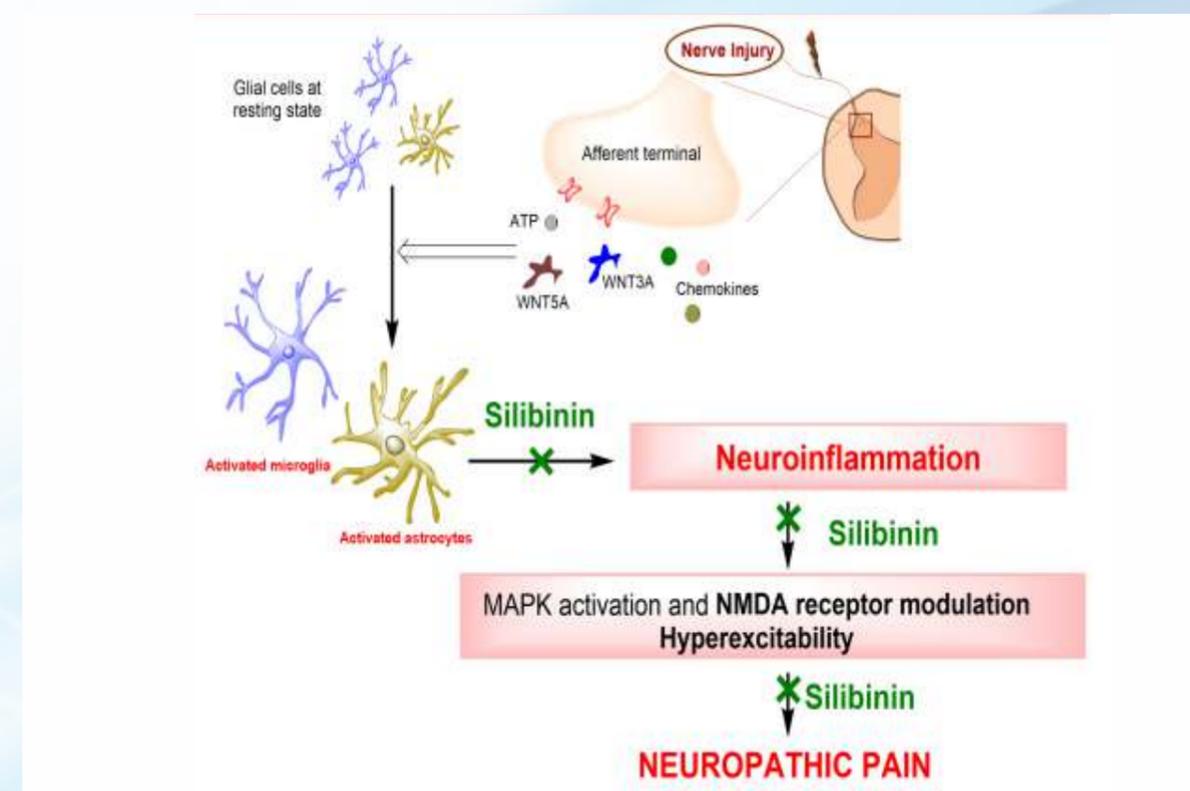
Schizophrenia is a heterogeneous chronic neurological disease that affects approximately 1% of the world's population making it the seventh most costly medical illness. It is characterized by severe behavioural perturbations including positive (e.g., hallucinations, delusions, disorganized speech and thought), negative (e.g. blunted affect and social isolation), and cognitive symptoms (e.g. executive and memory dysfunction). The main pathophysiology of this disease includes dopaminergic over activity in the mesolimbic region of the brain. The severity of symptoms of schizophrenia depends on the antioxidant levels. Various antioxidants are related to the positive, negative and cognitive symptoms, poor premorbid functions and computed tomography abnormalities since oxidative stress is considered a potent intracellular signalling mechanism that induces changes in the dopamine D2 receptor. Reactive oxygen species (ROS) produced in any tissue is directly proportional to its oxygen consumption. Since the brain is continuously under oxidation/antioxidant process, it is prone to oxidative stress. Aberration in the Akt/GSK3 β pathway also partly contributes to the pathophysiology of schizophrenia. Currently, the anti-psychotics which are available in the market are successful in treating the positive and negative symptoms but not the cognitive symptoms. We still require alternative options to successfully treat the cognitive symptoms and reduce the side effects of the available antipsychotics. Therefore, in this project, we attempt to elucidate the neuroprotective potential of two pentacyclic triterpenoids, ursolic acid and masilinic acid in ameliorating the symptoms of schizophrenia by acting on the Akt/GSK3 β pathway and oxido-inflammatory cascade. The objectives of the study are to perform insilico studies to determine the binding of these pentacyclic triterpenoids to GSK3 β , PPAR α , acetylcholinesterase, D2 and D3 receptor, to perform invitrostudies to determine the effect of oxidative stress on PC-12 cell lines and to generate a subchronic model of schizophrenia by using MK-801. Insilico studies revealed encouraging results to move forward for in-vitro studies. In-vitro studies also revealed a neuroprotective effect against LPS-induced oxidative stress in PC-12 cell lines. Future studies will throw more light on the novel mechanisms and pathways which can be targeted to demonstrate the potential of pentacyclic triterpenoids in schizophrenia.



Departmental Research Activities

Targeting neuroinflammatory signaling cascade using natural polyphenols for the treatment of neuropathic pain

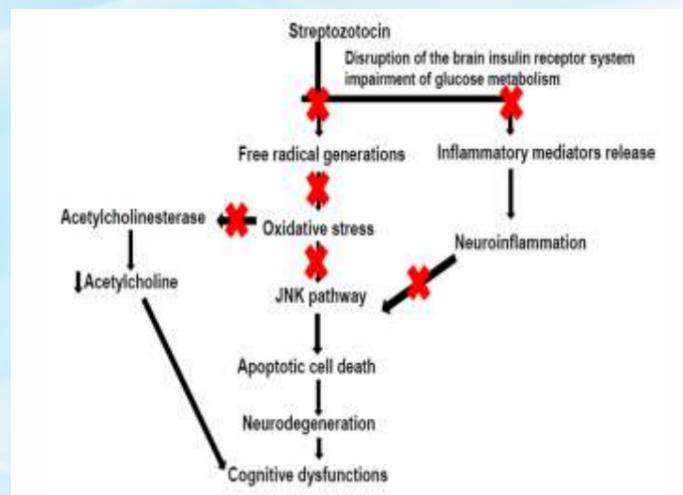
Neuropathic pain is a debilitating condition affecting millions of individuals worldwide. Current pharmacotherapeutic for neuropathic pain such as opioids and non-steroidal anti-inflammatory drugs (NSAIDs) predominantly act on symptomatic relief lacking satisfactory efficacy owing to tolerance development and undesirable side effects. Contemporary studies have found that tissue injury activates glial cells in the peripheral and central cellular circuitry. Microglia, the immune and defence glia, respond very quickly to a noxious stimulus and enter an activated state. Histological analysis shows proliferation and hypertrophy of this activated microglia in neuropathic pain. These cells not only exert morphological changes but also exhibit some functional alterations when activated compared with when in a quiescent state. p38 MAPK (p38 mitogen-activated protein kinase) activation plays a characteristic feature in the pathophysiology of pain leads to the activation of microglia and astrocytes present in the dorsal horn and dorsal root ganglia (DRG) and subsequent neuroinflammation cascade. Thus, in this project, we focus on suppressing the activation of glial cells targeting the p38 MAPK specifically to resolve the neuroinflammation cascade using natural polyphenols and thereby offering a better therapeutic alternative for the treatment of neuropathic pain. In-silico results have shown better affinity of silibinin (which is a flavanolignan obtained from Milk thistle (*Silybummarianum*, Asteraceae) seeds) with p38 MAPK as compared to purino-P2X4 receptor and chemokine CX3CR1 receptors (The latter two receptors are also involved in the activation of glial cells). In-vitro results have shown a protective effect of silibinin against oxidative stress and decrease in p-p38 MAPK (phosphorylated p38 MAPK) levels in the LPS-induced C6 glial cells. In-vivo studies which are to be done using L5 spinal nerve ligation (SNL) will further justify the use of milk thistle's active constituent, silibinin for the treatment of neuropathic pain.



Departmental Research Activities

Neuroprotective effect of pentacyclic triterpenoid molecule in animal model of cognitive dysfunction

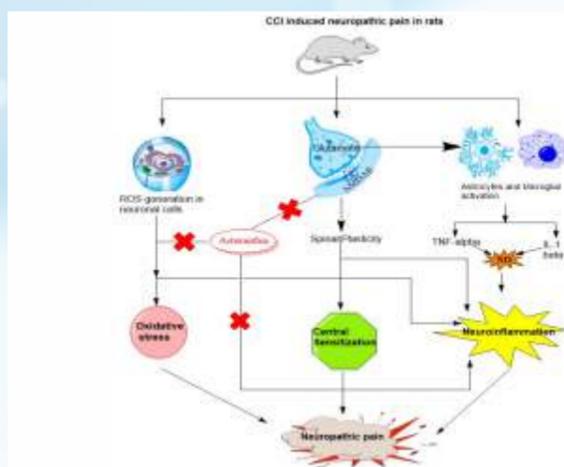
Cognitive dysfunction is one of the most common hallmarks of several disorders including Alzheimer's, schizophrenia, chronic fatigue syndrome, multiple sclerosis, and depression that primarily affect learning, memory, perception, and problem solving, and include amnesia, dementia, and delirium. Most often it is associated with enhanced inflammation and neuronal cell death in brain regions associated with cognition. Intracerebroventricular Streptozocin (ICV-STZ)-induced animal model of cognitive dysfunction is widely used to study memory improving effects of novel therapeutics. The objective of present study was designed with an aim to investigate the neuroprotective effect of Lupeol, a pharmacologically active triterpenoid, having potent anti-inflammatory and neuroprotective properties in in-silico, in-vitro and in-vivo models of cognitive dysfunction. We performed in silico studies to evaluate the effect of Lupeol on inhibition of acetylcholinesterase activity, one of the biomarkers of cognitive dysfunction. Our preliminary findings suggest the inhibition of acetylcholinesterase activity by lupeol. The results obtained were encouraging, and we moved further to in-vitro studies where we found the neuroprotective effect of lupeol against H2O2 induced oxidative stress in PC-12 cell lines. Further, in-vivo studies on rodents are on the way to investigate the effect of Lupeol on oxidative stress, mitochondrial dysfunction, neuroinflammation and cognitive function. Therefore, this elucidates the neuroprotective potential of pentacyclic triterpenoid in cognitive function associated disorders.



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Ameliorative effects of marine natural drug in animal model of neuropathic pain

The research studies focused on therapeutic targeting of the marine natural drug against mechanical and thermal hypersensitivity. An animal model of neuropathic pain will be developed by sciatic nerve ligation. The CCI-induced nerve injury involves the release of pro-inflammatory cytokines and nociceptive mediators which increase the sensitivity of peripheral and central pain pathways by activating N-methyl-D-aspartate (NMDA) receptors. This model of nerve injury combined with pain hypersensitivity testing provides a model system to investigate the effectiveness of potential therapeutic agents to modify chronic



Departmental Research Activities

neuropathic pain. Many therapeutic options are available, but they still are unable to effectively cure the mechanical and thermal hypersensitivity associated with neuropathic pain. The study is proposed to elucidate the neuroprotective effect of Astaxanthin, a marine natural drug, having potent anti-oxidant and anti-inflammatory activities, in an animal model of CCI-induced neuropathic pain. Reports confirm the involvement of NMDA receptor up-regulation in the spinal cord after chronic constriction injury. An attempt will be made to evaluate the effect of marine natural drug Astaxanthin on oxido-inflammatory and NMDA receptor down-regulation pathway by performing in-silico, in-vitro and in-vivo studies.

In in-silico studies, molecular modelling was performed to dock the test compound astaxanthin into the active site of NR2A, and NR2B receptor proteins. In-silico molecular docking study ascertains the binding affinity of the drug to NMDA receptor and shows antagonistic effects. The results obtained were encouraging enough to proceed further for in-vitro and in-vivo studies. We further investigated the effect of marine natural bioactive Astaxanthin in-vitro on neuroinflammatory events associated to the production of reactive oxygen species (ROS) generation, nitric oxide (NO) release, MDA production, intracellular GSH level in LPS stimulated rat C6 astrocytoma cell line and explored the regulation of cytokines. The in vitro protective effect of Astaxanthin against LPS-induced neuroinflammation in the C6 glial cell is duly supported by molecular docking studies. In-vivo studies include therapeutic targeting of marine natural drug Astaxanthin using various behaviour assessments, CNS toxicity assessments, ELISA tests for quantification of inflammatory cytokines (TNF- α , IL-1 β), biochemical assays for oxidative and nitrosative stress assessment and further down-regulation of NMDA receptor using western blot analysis. This study may provide insight of the role of NMDA receptor, oxidative and nitrosative stress, and neuroinflammation involved in disease progression. Findings from the present study may open new therapeutic avenues for the prevention and treatment of neuropathic pain.

Determination of neuroprotective effect of α -mangostin against rotenone-induced model of Parkinson's disease

Parkinson's disease (PD) is the second most frequent progressive neurodegenerative disease after Alzheimer's disease (AD). PD affects approximately 1% of the population with age more than 65 years. Till date, we were unable to find cure for PD and current available treatment gives only symptomatic relief along with many serious adverse effects, such as motor fluctuations, dyskinesia, impulse control disorders. Therefore, there is a need for disease modifying therapy which will provide both symptomatic relief and halt or reverse the progression of PD. It has been found that alpha mangostin a compound of natural origin from *Garcinia Mangostana* is neuroprotective in Alzheimer's and other neurodegenerative diseases. Hence, we are would like to evaluate neuroprotective effect of α -mangostin in rotenone induced PD rat model. Our Objective is to isolate α -mangostin by flash chromatography from the crude extract of *Garcinia Mangostana* (GM). To elucidate the neuroprotective role of α -mangostin by evaluating 1. whether α -mangostin is able to inhibit the oxidative stress induced by rotenone, 2. Anti-aggregating property of α -mangostin on alpha-synuclein (α S) accumulation induced by rotenone 3. To evaluate the effect of α -mangostin on decreased level of dopamine, DOPAC, HVA and serotonin in substantia nigra and striatum induced by rotenone. To achieve these objectives, in silico studies were done to examine the molecular interaction between α -M and rat α -syn (416H) by schrodinger software. Isolation and further characterization of α -M from crude extract of *Garcinia mangostana* was done. Rotenone model of Parkinsons disease in rats was optimized. Findings from in-silico studies showed a docking score of -7.14, suggesting that α -M can bind with rat α -syn and stabilize the α -syn to prevent its further accumulation. Characterization studies indicated α -M isolated was 98.7 % pure. Now we have optimized the rotenone model of Parkinson's disease in rats and we will be testing neuroprotective effect of alpha mangostin in optimized rotenone model of Parkinsons disease.

Instrumentation Facilities

Central Instrument Facility

National Institute of Pharmaceutical Education and Research (NIPER)- Ahmedabad provides the facilities of Research Laboratories with sophisticated instruments to fulfil the departmental needs based on the research programs of M.S. (Pharm.) and Ph.D. students. The Central Instrumentation Facilities are constantly upgraded as per the latest advancements in research, developments and technologies.



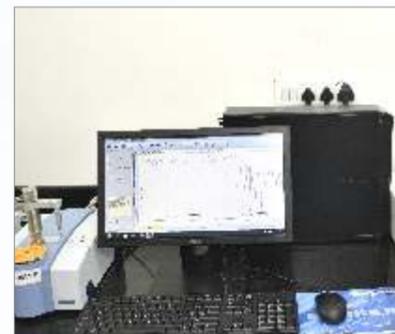
CIF Laboratory



Q-TOF-LCMS



FTIR



ATR



Gas Chromatography



HPLC-UV/RI



Gel Permeation Chromatography

Instrumentation Facilities



HPLC-PDA/FLD



Flash chromatography



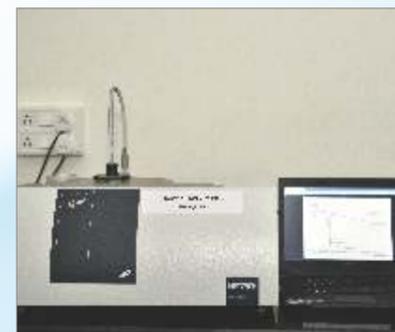
Semi Preparative HPLC



Porosity Meter



Ultracentrifuge



Thermogravimetric Analyzer



Multimode Reader



UV Plate Reader



Differential Scanning Calorimeter



Polarimeter



UV-VIS Spectrophotometer



Microbalance

Instrumentation Facilities

Chemical Biology Laboratory



Gel Doc System



Inverted Microscope



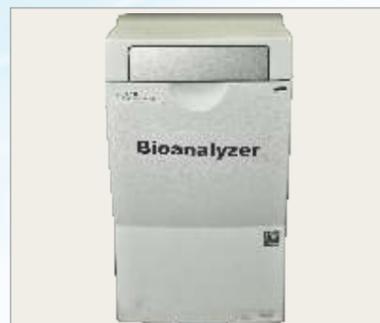
Co2 Incubators



Nanodrop



Real-Time PCR



Bioanalyzer



Rotary Evaporator



Temperature Controlled Centrifuge



Parallel Synthesizer



Deep Freezer (-80°C)



Rotary Shaker



Biosafety Cabinet (Class II)

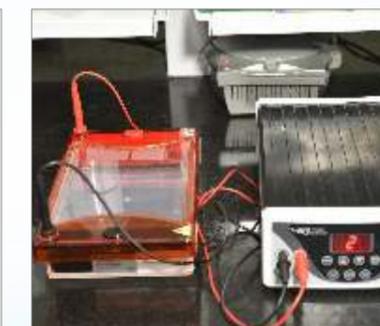
Instrumentation Facilities



Cryo Can



Western Blot Unit



Gel Electrophoresis Unit



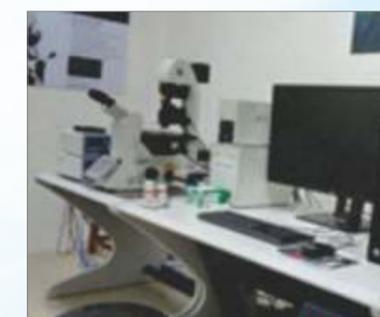
Melting Point Apparatus



Fumehood



Electroporator



Confocal Microscope: Leica TCS SP8



Bio Rad S3eTM Cell Sorter

Regulatory Laboratory



Passive Avoidance Apparatus



Refrigerated Centrifuge



Rota Rod

Instrumentation Facilities

Drug Discovery and 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

Instrumentation Facilities



Disintegration Apparatus



Poling Setup



Universal Testing Machine



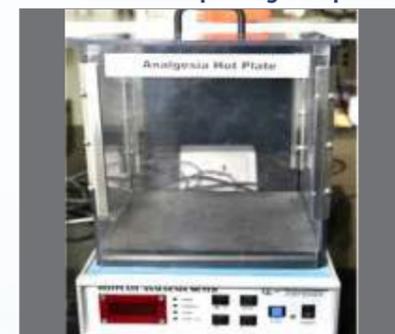
Electron Spinning Setup



Piezometer



Probe Sonicator



Hot Plate Analgesimeter



IVC Cages



Metabolic Cages



Electronic Von-Frey



Hargreaves Apparatus



Surgical Microscope

Instrumentation Facilities



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 bioanalyser



Small animal in vivo-imaging system

Instrumentation Facilities



Micro-dialysis



Probe sonicator



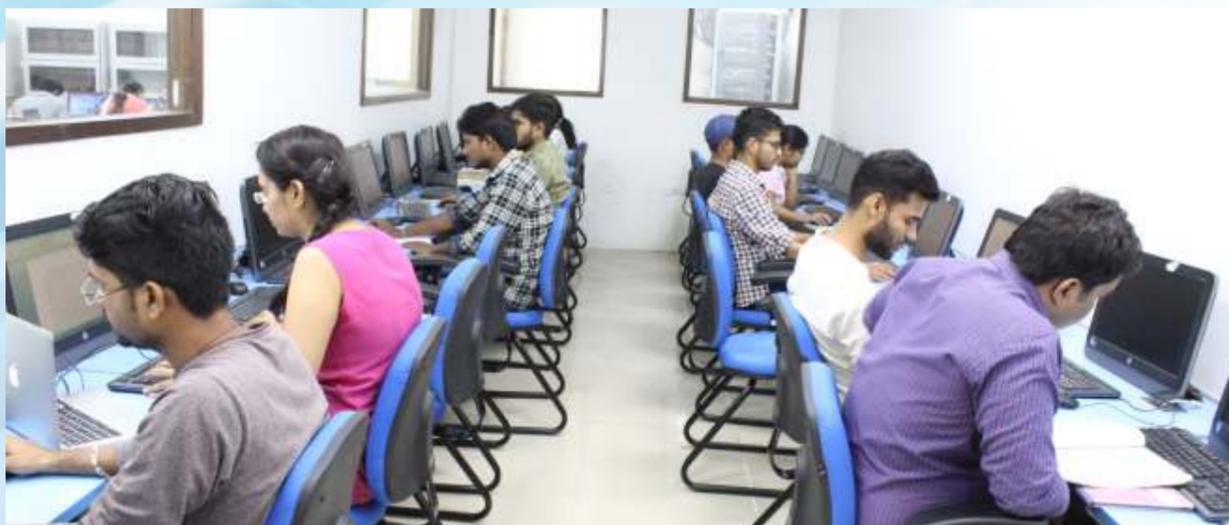
Isoflurane anesthesia system

ANIMAL HOUSE AND THEIR FACILITIES



Institutional facilities

NIPER-Ahmedabad has central computer facility for the students and staff to avail a high-speed Internet facility. A dedicated Internet leased line with 10 Mbps accessing speed has been installed to provide uninterrupted Internet service to all students, faculty, and staff. The adequate security mechanism is implemented to protect and monitor against virus, worms, phishing and hacking incidents. All the computers are connected through Local Area Network (LAN) using 1 GB Dlink managed the switch. HP Proliant Server is installed to work as an application server to host applications like Koha Library Management Software, ERPnext, TallyERP, etc. These applications can be easily accessed by students, faculty, and staff via LAN. 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, Schrodinger (QSAR and Molecular Modelling), Microsoft Office 2013, etc is available for use. All faculty rooms, seminar halls, class rooms, library, and laboratories equipped with Wi-Fi facility. Apart from this, all class rooms, seminar rooms, and the auditorium is equipped with Projector, TV, video conference facility etc. for the conducive learning environment.



Institutional facilities

NIPER-Ahmedabad library comprises more than Fourteen hundred books and around 42 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, pharmaceuticals, 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 simply Library Catalog) is an online database of materials held by NIPER Ahmedabad library. It is a computerized library catalog available to the NIPER-A user. OPAC is accessible over the Local Area Network to the users. Users search a library catalogue 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. Our library is also having Turnitin software to check submitted documents against its database and the content of other websites with the aim of identifying 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 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 Munshi Premchand, etc. Further, to generate curiosity and to inculcate reading habit in students, it is planned to equip Library with much more fiction, scientific novels, biographies, autobiographies and story books.



Hostel / Canteen

Hostels

The Institute has separate hostel for boys and girls, which are in the nearby locality. The transport facility is provided for the students residing in hostel. The hostel rooms are spacious and well-furnished. Each student is provided with basic furniture including bed, chair, study table and cupboard at the beginning of the academic year. The hostels have sports and other recreational facilities, such as gym, 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 services.



Canteen

Canteen is located on 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 hours as well as during weekends. We at NIPER-Ahmedabad believe that research ideas are germinated at places like canteen where students can openly interact and discuss their prepositions. Canteen has a large well-covered shaded sitting area, where the students carry out the off-classroom brainstorming 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 etc.



Sports Complex / Recreation / Gymnasium

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 flood lights to play in evening and night. Our students have used these facilities to sharpen their skills in these sports. NIPER-A has received runners up position in volleyball at inter-NIPER sports organized by NIPER-S.A.S. Nagar.



Recreation

Students of NIPER - Ahmedabad participate in a variety of indoor games and outdoor games. Instead of confining a student to research and classroom studies, such recreational activities are largely encouraged by NIPER - Ahmedabad to promote an all-round personality development of a student. NIPER - Ahmedabad conducts various sports activities in a dedicated sports week to keep the enthusiasm of students towards sports and health. The students take part in running, tug-of-war, badminton, cricket, volleyball, chess and carom.



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 an important 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 have developed the gymnasium facility at student's hostel. The gymnasium was inaugurated by Director NIPER-Ahmedabad, Prof. Kiran Kalia on 26th October, 2017. The student gym is equipped with treadmills, exercise cycle, cross-trainer and multi-gym. A gym trainer is looking after the facility and coaching our students both in morning and evening sessions.



Visits of Dignitaries

Visits of Hon'ble Minister Ananth Kumar, Honourable Union Cabinet Minister for Parliamentary Affairs, Chemicals and Fertilizers visited NIPER-Ahmedabad

Shri. Ananth Kumar, Honourable Union Cabinet Minister for Parliamentary Affairs, Chemicals and Fertilizers visited NIPER-Ahmedabad on 2nd July 2017. He was warmly welcomed by Director NIPER-Ahmedabad Prof. Kiran Kalia along with the faculty members, students and administrative staffs. During her speech, Prof. Kalia gave informative highlights regarding the accomplishments of the institute over the years along with a brief abstract of the institute's annual report for academic year 2015-2016. During his speech, Honourable Minister expressed immense pleasure and satisfaction for the progress made by the institute in the fronts of Teaching, Research, Grants, Collaborations and leadership role played by NIPER in recent years under the directorship of Prof. Kiran. The Union Minister announced that among all the new NIPERs, NIPER-Ahmedabad will be the first to have its own independent campus within a short span of four months. He also talked about the graciousness of Government of Gujarat in granting the land for the construction of NIPER- Ahmedabad campus.



After his speech, Shri. Ananth Kumar joined Prof. Kalia to unveil the institute's annual report for the academic year 2016-17; and a documentary regarding the teaching and research activities of NIPER-Ahmedabad (<http://www.niperahm.ac.in/annual-report.htm>). He also assured that the first phase of NIPER-Ahmedabad will be completed within one year from today. He expressed concern regarding the 100% placements of students of NIPER-Ahmedabad, stating that NIPERs are not built only to provide placements to the students but to train the students in the world-class research so that they can discover the new molecules and therapies for the treatment of cancer and other deadly diseases. He wrapped up his speech with best wishes to the students and advised to work hard to make NIPER-Ahmedabad the world class teaching and research institute.



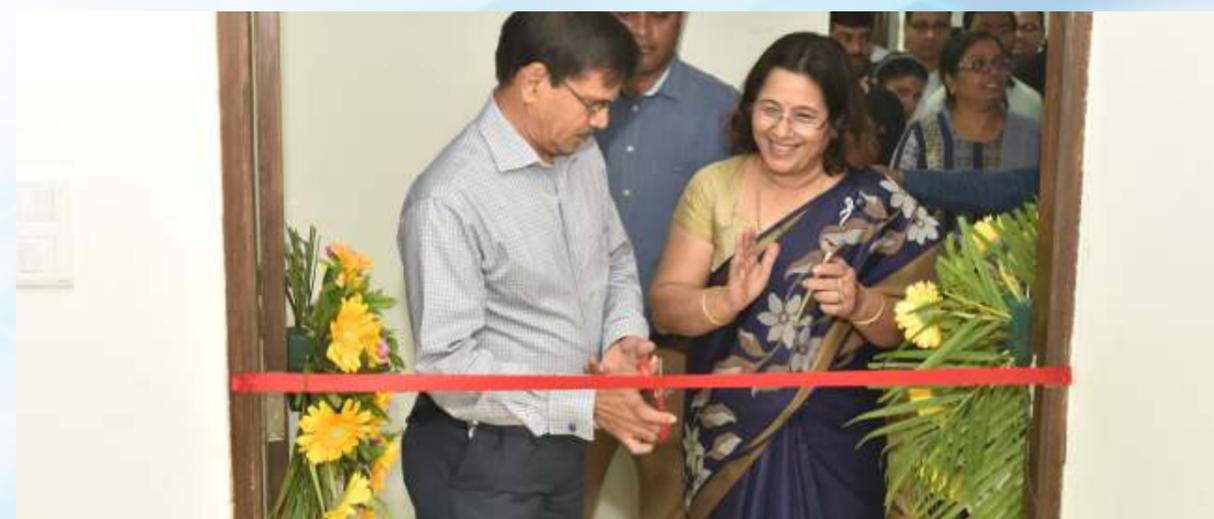
Visits of Dignitaries

Visits of Shri Jai Priye Prakash, Secretary, Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers visited NIPER-Ahmedabad campus

Shri Jai Priye Prakash, Secretary, Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers visited NIPER-Ahmedabad campus on 14th January 2018. He addressed the students and faculty members of NIPER-Ahmedabad; and thanked them for their whole-hearted welcome. Shri Jai Priye Prakash released the Central Instrumentation Booklet of NIPER-Ahmedabad and inaugurated the central instrumentation facility for outsourcing and paid services. He also inaugurated the Confocal Microscope and Small Animal Imaging facilities, which were the latest additions to the instrumentation facility of NIPER-Ahmedabad. Shri Jai Priye Prakash also had a meeting with the faculty members and motivated them to prepare students to meet the future technology demands. He also advised to incorporate Industrial internship programs into the academic curriculum to enhance the industry-



academia interaction, which in-turn will help students in getting better remunerative salary packages. He visited animal house and various labs of the institute as well as interacted with the students. He talked with the students very informally and inquired about the presently available facilities in the institutes as well as their future requirements. He also queried the student's expectations from the government to facilitate their research to accelerate the output. Shri Jai Priye Prakash appreciated the developments and was comfortable with the progress made by NIPER-Ahmedabad. He extended his wishes for accelerated growth, self-sufficiency and recognition to the NIPER-Ahmedabad in near future.



Visits of Dignitaries

Visit of Ms. Meenakshi Gupta, Additional Secretary & Financial Advisor, Ministry of Chemicals and Fertilizers, GoI

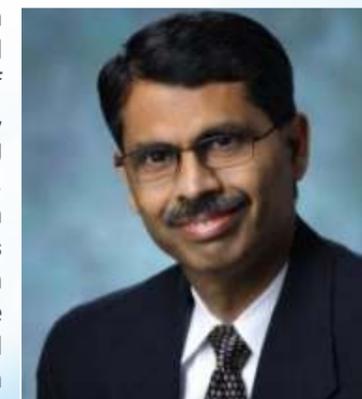
Ms. Meenakshi Gupta, Additional Secretary & Financial Advisor, Ministry of Chemicals and Fertilizers, Govt. of India visited NIPER-Ahmedabad 11th August, 2017. During this visit Ms Meenakshi interacted with the Director, Dr Kiran Kalia and the faculty members of NIPER Ahmedabad. During a tour to the campus facilities she was largely seen interacting with the students of NIPER-Ahmedabad where she tried to understand the application principles and working of some instruments. Out of interest, she also queried the type of ongoing research activities with NIPER-Ahmedabad students as well as its prospective outcome values. Ms Meenakshi highly appreciated the progress which NIPER-Ahmedabad has shown in a short span of time and wish many more success to this institute in near future.



Invited Lectures

Invited lecture by Professor Srinivasa N. Raja, Director of Pain Research, Division of Pain Medicine at Department of Anesthesiology and Critical Care Medicine, and Professor of Department of Neurology, Johns Hopkins University School of Medicine

Professor Srinivasa N. Raja, Director of Pain Research, Division of Pain Medicine at Department of Anesthesiology and Critical Care Medicine, and Professor at Department of Neurology, Johns Hopkins University School of Medicine has visited the NIPER-Ahmedabad campus on Monday, July 17th, 2017. He has visited NIPER-Ahmedabad as a part of his ongoing collaborative research project with a faculty member of NIPER-Ahmedabad. During his NIPER-A visit, he gave a very intriguing talk on "Explorations in Pain Research: From Bench to Bedside and back to the Bench" to students and faculty members. Apart from discussing on scientific aspects of pain research he also highlighted the importance of team work in research. He also mentioned that students should not be discouraged with failures and should try to find out their answers from failed experiments as well which sometimes may lead to highly novel directions. He also mentioned that only reading literature is not enough, as a researcher, we should try to find out the gaps in existing literature which are a key to discoveries. During his talk, he shared data from his previous and currently ongoing studies at Johns Hopkins where he discussed the use of HSV virus for the over-expression of mu-opioid receptors in DRG neurons, wind up phenom enon and role of central sensitization in development and maintenance of chronic neuropathic pain. He also discussed the current ongoing research on new devices to stimulate the spinal cord dorsal horn neurons for the treatment of neuropathic pain. Prof. Raja was very happy to see the research facilities and growing advanced equipment at NIPER-Ahmedabad and appreciated the efforts by Director-NIPER-Ahmedabad, Prof. Kiran Kalia in building the institute from scratch. He expressed his satisfaction regarding the success of the institute in a short span of time.



Invited Lectures

Invited lecture of Dr. Ketan R. Patel, Chairman and Managing Director, Troikaa Pharmaceuticals

Dr. Ketan R. Patel, Chairman and Managing Director, Troikaa Pharmaceuticals visited NIPER-Ahmedabad on 3rd August 2017 to deliver an invited talk on topic entitled "Innovation - Improving Lives." The Director, Prof. Kiran Kalia graciously welcomed Dr. Ketan R. Patel and gave a detailed description of his achievements, which was truly inspiring. Dr. Patel addressed the students and faculty members of NIPER-Ahmedabad, and thanked for this opportunity to share his experiences in front of the youngsters "The future of the country." He initiated his talk by briefing the importance of 'Innovation' in the betterment and sustainable growth of a country. He also shared the milestones of his journey from generic medicine to a leading innovator of new formulations. He gave a decent description of the emerging therapeutic markets, where pharmaceutical sectors are currently lagging behind, and ways to move ahead in future. After an inspiring talk, Dr. Patel gave abundant time to answer questions and queries of students about innovation and how to go about it. He said that the first step towards a valuable innovation is to have a niche idea and then to work persistently towards it until we reach our translatable goal. He insisted that even a small idea can get converted into a worthy innovation with a persistent effort. Off course, failure will be a part of this journey, but one should self-motivated. Teamwork is often a crucial part of an innovation process, as it is often necessary for colleagues to work well together, trying their best in any circumstance. Teamwork means that people will try to cooperate, using their skills and providing constructive feedback. After the talk, Prof. Kiran Kalia presented a memento to Shri Patel and appreciated him for his tremendous talk, which was full of energy and motivation. Later he visited the labs of NIPER-Ahmedabad and interacted with faculty members. Dr. Patel was very happy by the way NIPER-Ahmedabad is progressing. He also congratulated Prof. Kalia for his continuous efforts to progress NIPER-Ahmedabad, as well as recruiting such a finest teaching faculty, which he believed the heart of any teaching and research institute of National importance like the one "NIPER-Ahmedabad is!"



Invited Lectures

Invited lecture of Dr. K.N. Ganesh, Director, IISER-Tirupati

Dr. K.N. Ganesh, Director, IISER-Tirupati visited NIPER-Ahmedabad campus on 20th December 2017. As a curious scientist, Dr Ganesh started his visit by visiting the laboratory and instrumentation facilities. During his lab visit, he was continuously chatting with the faculties and students with a zeal to understand the vivid types of research activities going on in NIPER-Ahmedabad. Dr. Ganesh largely applauded the infrastructure and facility build with NIPER-Ahmedabad in such a short span of time. During his visit, Dr. Ganesh delivered an informative talk on "New Generation PNA analogs for effective cellular permeation" at the auditorium of NIPER-Ahmedabad. He initiated his lecture with basics of DNA and later beautifully connected the same with science on how silencing genes can help in combating the disease. His views on looking at DNA from a chemist perspective was novel to many of the researchers and students. After his talk, Prof Kiran Kalia, Director, NIPER-Ahmedabad offered him a token of appreciation with kind words expressing thanks for his visit to NIPER-Ahmedabad. Both the directors extended their commitment to work together to excel the depth of science, technology and research in the country. This visit was also an eminent opportunity for the new faculty members of NIPER-Ahmedabad, wherein, they got several key guiding tips towards their career growth and future directions in context to their academic, research and funding opportunities.



Invited Lectures

Invited lecture by Prof. N. Jayaraman, Professor and Chairman, Department of Organic Chemistry, Indian Institute of Science, Bangalore

Prof. N. Jayaraman, Professor and Chairman, Department of Organic Chemistry, Indian Institute of Science, Bangalore visited NIPER-Ahmedabad on 4th January 2018. He delivered a talk on an interesting topic entitled "Development of Poly (Ether Imine) Dendrimers for Gene Delivery". He was welcomed graciously by the Director of Institute Prof. Kiran Kalia followed by a comprehensive introduction of Prof Jayaraman to the audience. Prof. N. Jayaraman initiated his talk with a brief introduction of gene delivery and successfully got connected with the audience in soon time. During this introduction session, he also explained the importance of developed module in targeting various disease. He enlightened the audience about Dendrimer, which he said is neither a drug nor a polymer. He also talked about his work on hepatic targeting. He highlighted that working in collaboration fasten the projects and give better results. In the end he conveyed his best to all the students and faculties of NIPER-A. He largely appreciated the infrastructure of the institute during his campus visit and expressed his consent to cross collaborate with the faculty members of NIPER-Ahmedabad on several projects.



Invited Lectures

Invited lecture by Dr. S. K. Varshney, Scientist G/ Advisor (International Bilateral Co-operation from DST)

Dr. S. K. Varshney, Scientist G/ Advisor (International Bilateral Co-operation from DST) visited NIPER-Ahmedabad on the morning of 27th September 2017. During this visit, Dr. Varshney delivered a seminar concerning different funding schemes, scholarship plans and sponsorship programmes offered by DST for supporting the research as well as higher education of faculties and the students. His seminar was very informative and displayed the willingness of government to support worthy research for the betterment of our country. During his seminar, he also suggested NIPER-Ahmedabad to initiate establishment of pharmaceutical incubation centre. After his seminar, Shri Varshney toured the campus and interacted with the MS research and Ph.D. students. He was quite contented as well as astonished by the infrastructure/equipment facilities available at NIPER-Ahmedabad.



Invited Lectures

Invited lecture by Dr. Meghana Trivedi (Associate Professor, University of Houston, Houston, USA)

Dr. Meghana Trivedi (Associate Professor, University of Houston, Houston, USA) visited NIPER-Ahmedabad at on 14th August 2017. This visit was a follow through of the joint research activities between University of Houston, Houston, USA and NIPER-Ahmedabad. Dr. Meghana delivered a lecture on research topic entitled 'Translational Pharmacology in Breast Cancer Therapeutics' where she explained about individualization of therapy in breast cancer and development of method to diagnose tumors through blood. She also explained the concept of circulatory tumor cells and its prospective role in tumor diagnosis and therapy. One parallel objective for the visit of Dr. Meghana was to discuss the possible ways to move joint collaborative research between their institutes.



Invited lecture by Dr. Vihang Narkar (Assistant Professor, McGovern Medical School at UTHealth, Houston, USA)



Dr. Vihang Narkar (Assistant Professor, McGovern Medical School at UTHealth, Houston, USA) visited NIPER-Ahmedabad at on 14th August 2017. This visit was a follow through of the joint research activities between University of Houston, Houston, USA and NIPER-Ahmedabad. Dr. Vihang delivered his talk on topic entitled 'Nuclear Receptors, co-activators and Exercise mimetics: Road to medicine and sports doping gone Awry.' It was a very interesting talk, during which he talked about his research work and underlying principles of molecular mechanisms involved exercise adaptation towards development of a new concept 'Exercise in a pill'. During his lecture, Dr. Vihang elaborated on the animal models developed by his lab in association with his collaborator for the assessment of exercise like effect of some bioactives identified by his group; as well as the effect of this bioactives in treating diseases diabetes, obesity and muscular dystrophy to name the few. Dr. Vihang welcomed the Faculty members of NIPER - Ahmedabad to jointly explore the new fangled applications of this strategy.

Invited Lectures

Invited lecture by Prof. Appa Rao Podile, Vice Chancellor, University of Hyderabad

Prof. Appa Rao Podile, Vice Chancellor, University of Hyderabad visited NIPER-Ahmedabad on 6th September 2017. He was graciously welcomed by the Prof. Kiran Kalia and the faculty members of NIPER-Ahmedabad. During his visit, he shared exciting updates on the research work going on in his laboratory. He also shared his experience and future research directions, which basically focuses in the field of treatment of plant diseases. During his talk, he mentioned that even though his area of interest is different from the focus of NIPER-Ahmedabad, the relish of research direction is very similar to each other. He also expressed his willingness to extend his expertise and institutional facilities for all the students and faculty members of NIPER-Ahmedabad.



Invited Lectures

Dr. Vishwa Mohan Katoch Secretary, Department of Health Research, MoHFW, Government of India & Director-General, Indian Council of Medical Research.

Dr. V.M. Katoch delivered an invited lecture at NIPER-Ahmedabad on 14th November 2017 during which he shared the noble narrative of our Prime Minister Shri. Narendra Modi pertains to medical device industries in India. He explained the necessity of medical devices Industries in India and connected its niche importance in 'Make in India' vision of Prime Minister Shri Narendra Modi. Dr. Katoch encouraged that the healthcare industries should spend more on research and development of medical devices as much as the revenue spent on development of drugs. He also mentioned that the medical devices industry is a largely overlooked industry; and suggested that certain measures should be taken to rectify the existing situation. He expressed that for better healthcare there is a need to combine medical devices and drugs. Notably, he emphasized on the growing importance of institutions like NIPER-Ahmedabad that may tremendously help in the growth of medical devices industry and provide the country with young enthusiastic researchers who will help in the betterment of the field. Dr. Katoch thanked Prof. Kiran Kalia for inviting him to NIPER-Ahmedabad and wished everyone the best out of this venture.



Workshop / Seminar / Conference / Training

'One Day Seminar on Medical Devices: Current Needs and Solutions'

NIPER-Ahmedabad organized a 'One Day Seminar on Medical Devices: Current Needs and Solutions' on 14th November 2017. The main motive of the seminar is to amalgamate the entire medical device fraternity, which includes doctors, researchers and industry to understand each other's problems and try to come with appropriate solution at the end of the day. The event was inaugurated by **Dr. Kirit Solanki** (Member of Parliament, Ahmedabad-West), **Dr. V.M. Katoch** (Former Director General, ICMR, New Delhi), **Prof. Kiran Kalia** (Director NIPER-Ahmedabad), and **Dr. Arvind Patel** (Chairman, Sahjanand Laser Technologies, Gandhinagar) with other invited guests, that marked the start of this one-day seminar. During the welcome remark, Prof. Kiran Kalia resourcefully enlightened the audience vis-à-vis on medical devices field that currently contributes to approximately 50% of industries in Gujarat. **Dr. Jawahar Jethwa** (Orthopaedic surgeon from Ahmedabad), **Dr. Anil Jain** (a cardiac surgeon from SAL Hospital) talked about the cardiac surgery perspective in Indian scenario. Succeeding to these lectures, **Dr. Sanjeev Bhatt** (VP, Merrill Life Science) delivered a talk on topic entitled "Contributing to Growth in India's Healthcare Scenario- Meril Life Sciences". Post lunch session was initiated by an eye-opening talk by **Mr. Jayesh Patil**, who mainly focused on the difference in scenario regarding the healthcare industry in India and USA. **Mr. Bhavdeep Doshi** (Director, Marketing and Sales, Envision Scientific-Surat) delivered a lecture on "Key Challenges & Solutions In Development Of Cardiovascular Devices". **Shri Pratap Pokale** (Director, QA & RA, Advanced MedTech Solutions Pvt. Ltd, Vadodara) also delivered an exceptional speech on topic "Title of speech: Making medical devices in India – Drivers & Challenges". Subsequently, **Mr. Jignesh Uteshiya** (Director, Uteshiya Medi Care, Ahmedabad) delivered a talk on "Current needs and solutions in orthopedic implant industry".

The lectures were followed by a panel discussion chaired by **Dr. V Nagarajan** (MD MNAMS DM DSc-Neurology; Dsc, Sr consultant Neurologist) and co-chaired by **Dr. Vinay Kumar** where the dignitaries from the industry and academia were on the panel and had a fruitful discussion regarding the topics discussed during the sessions conducted earlier. The panel discussion composed of other executive members including Dr. Vinay Kumar (Greens Surgicals Pvt. Ltd.), Mr. Bhavdeep Doshi (Envision Scientific Pvt. Ltd.); Mr. Pratap Pokale (Advance MedTech Solutions Pvt. Ltd.); Mr. Jignesh uteshiya (Uteshiya Ltd.); Mr. Siddharth Jain (CEO and Chief Regulatory Advisor Symbiorph Clinical Trialogy); Dr. DL Pandya (Medical Plastics Data Service); Dr. Rajesh Shah (Sahjanand Laser Technologies Pvt. Ltd); Mr. Chetankumar Halani (CTquest LLP). Finally, the conference concluded with uniform commitment of all attendees to motivate Medical Devices research in India, by enhanced participations led by the leads they obtained from this conference at NIPER-A.



National Conference on Convergence of Pharmaceutical Sciences and Biomedical Technology (CPSBT)-2018

National Conference on Convergence of Pharmaceutical Sciences and Biomedical Technology (CPSBT)-2018 is a scientific meeting organized by NIPER-A between 21-23rd March 2018. The main objective of this flagship event is to provide a platform to academicians and research personnel from industry to share their innovative ideas, experiences, and cutting-edge research. It strongly strives for excellence in teaching, research and application of research in order to provide useful insights in materials and medicine. Hosting the CPSBT-2018 is a manifestation of the commitment of NIPER-A to promote research and stimulate scientific cross talk across various disciplines. The conference had several themes which had several discussions on chemistry, biology, medicine and materials. The august gathering of almost 300 persons was attended by masters' students, Ph.D, postdocs and researchers from academia and industry. The poster presentation, invited and oral talks were very useful and informative. The discussions were scientifically stimulating and led to healthy cross talks and possible collaborations. The conference was a successful venture with generous funding from Department of Pharmaceuticals.



NIPER-Ahmedabad hosted 30th Meeting of the Steering Committee of National Institute of Pharmaceutical Education and Research (NIPERs)

The 30th Meeting of the Steering Committee of National Institute of Pharmaceutical Education and Research (NIPERs) was hosted by NIPER-Ahmedabad on 10th February 2018 attended by Shri Jai Priye Prakash, Secretary- Department of Pharmaceuticals; Shri Rajneesh Tingal, Joint Secretary- Department of Pharmaceuticals; Shri Jitendra Trivedi, Director- Department of Pharmaceuticals; Dr V. Ravichandran, Director-NIPER-Kolkata; Dr. Kiran Kalia, Director, NIPER-Ahmedabad; Dr. USN Murty, Director, NIPER-Guwahati; Dr. SJS Flora, Director-NIPER-Raebareli; Prof. Raghuram Rao Akkinapally, Director, NIPER-Mohali, Prof. Rajeshwara Reddy, Registrar, NIPER-Hyderabad; Dr. Kislay K. Sinha, Associate Professor, NIPER-Hajipur. During this crucial meeting the attending members did a follow-up discussion on critical matters regarding starting B. Pharma course in NIPERS, holding NIPER-JEE, increment in numbers of MS (Pharma) seats, initiating construction activities, student placements etc.



Co-Curricular Activities

Personal Development

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-A 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

Sports teach us that it is good to compete, good to achieve, good to sweat, good to get dirty and tired and feel fit, fine and refreshed - Martina Navratilova. With the above objectives, NIPER- Ahmedabad held its Annual Sports week during the December 2017. After an informal inauguration, various games were held for both boys and girls like cricket, kabaddi, volleyball, throwball, chess, carom, arm wrestling, and badminton. The event was a week long and opens for all. It witnessed an enthusiastic participation by students, faculty, and staff. It was good to see that everybody were encouraging their teams during the play, and sweating it out in the sun. As students were trained because of this sports week, NIPER-Ahmedabad also won various prizes in inter-NIPER sports meet "Spardha-2018".



INTER-NIPER Scientific, Sports and Cultural meet-2018, NIPER SAS Nagar, Mohali between 21st to 25th February 2018

Students of NIPER-Ahmedabad has participated in Inter-NIPER Scientific, Sports and Cultural meet-2018 held at NIPER SAS Nagar, Mohali between 21st to 25th February 2018. A total of 40 player's from NIPER-Ahmedabad participated in various games viz: Volleyball, Cricket, Football, Badminton, Throwball, table tennis, Kabbadi, and Athletics. Both Boys and girls from NIPER- Ahmedabad has participated with true sportsmanship spirit. It was a remarkable performance from the NIPER- Ahmedabad Volleyball (Boys and Girls) teams and the boy's Football



team demonstrated themselves as dark horses by winning the runner-up trophies in all these games. Besides that, the girls Badminton team got the fair play award. In spite of initial winning nods, the subsequent decisive matches of Kabbadi and badminton were abandoned due to the rain that leads to disappointed expel of the team from the league. The meet was ended with a spectacular cultural event followed by dinner and DJ night which was equally enjoyed by all the players irrespective of their wins-and-loses deciphering true sportsmanship of NIPER- Ahmedabad students.

Co-Curricular Activities

The results of NIPER-A annual sports week and winners of NIPER-A in Spardha-2018 are as follows:
NIPER-Ahmedabad annual sports week

CRICKET BOYS		ARM WRESTLING GIRLS	
▪ Cricket Boys	Faculty team &	▪ Arm Wrestling girls winner is	Jayashree Chini
▪ Combine winners are	1 st - year Team	▪ Arm Wrestling girls runner up is	Pushpanjali
▪ Cricket girls winners are	2 nd year team	BADMINTON BOYS SINGLES	
CRICKET GIRLS		▪ Badminton boys	Abhijit Pawar
▪ Cricket girls runner up are	1 st year team	▪ Badminton boys	Surya Polaka
KABADDI BOYS		▪ Badminton Boys	Ashok Kumar
▪ Kabaddi boys winners are	2 nd year team	▪ Badminton Boys	Ashok Kumar
▪ Kabaddi boys runners are	1 st year team	▪ Badminton Boys	Ashok Kumar
KABADDI GIRLS		▪ Badminton Boys	Ashok Kumar
▪ Kabaddi girls winners are	2 nd year team	▪ Badminton Boys	Ashok Kumar
▪ Kabaddi girls runners are	1 st year team	▪ Badminton Boys	Ashok Kumar
VOLLEYBALL BOYS		BADMINTON GIRLS SINGLES	
▪ Volleyball boys winners are	Phd team	▪ Badminton girls	Harprit Kaur
▪ Volleyball boys runner up are	1 st year team	▪ Badminton girls	Soumya Kondi
THROWBALL GIRLS		▪ Badminton girls	-
▪ Throw ball Girls winner are	2 nd year team	▪ Badminton girls	-
CHESS BOYS		BADMINTON BOYS DOUBLES	
▪ Chess boys winner is	Sitesh Shah	▪ Badminton boys	Surya Polaka &
▪ Chess boys runner up is	Surya Polaka	▪ doubles winner are	Madhab Bisbas
CHESS GIRLS		▪ Badminton Boys	Kaushik Kuche &
▪ Chess girls winner is	Jayashree Chini	▪ doubles 1 st runner up are	Abhishek Kulkarni
▪ Chess girls runner up is	Sonali Jain	▪ Badminton Boys	Abhijit Pawar &
CARROM		▪ doubles 2 nd runner up are	Harsh Thakkar
▪ Carrom winners are	Luximan Vilip &	Winners of NIPER-A in Inter-NIPER sports meet	
▪ Carrom runner up are	Gautham Reddy	"Spardha-2018"	
	Mahesh Darshanwad	▪ Runner up team in Volleyball (Boys team)	
	& Soumya Kondi	▪ Runner up team in Volleyball (Girls team)	
ARM WRESTLING BOYS		▪ Runner up team in Football (Boys team)	
▪ Arm Wrestling Boys winner is	Harsh Thakkar	▪ Runner up team in Badminton (Girls team)	
▪ Arm Wrestling	Sunil Rathi		
▪ Boys runner up is			

Extra-Curricular Activities

Cultural Activity

Festivals and celebrations in college campus add colours to the academic life of students and carry fun filled memories to be cherished forever. The celebrations in NIPER-Ahmedabad for the year 2014-15 started with Independence Day which was followed by various other celebrations including Teacher's day, Annual day, Ganesh Chaturthi and Navratri festivals. While the end of 2014 was marked with Christmas celebrations, the New Year 2015 was welcomed by students and faculties alike with a grand party. The Valentine's Day celebrations were filled with different themes like Rose day, Twins day, Group day, etc. The College Annual day function on 4th March 2017 was a great event for the students of NIPER-Ahmedabad to showcase their different talents.



Celebration of Navaratri (Garba Night)

As part of cultural enrichment the students organised garba program on Sharad Purnima. Faculty and students actively participated in this event



NIPER-Ahmedabad 4th Alumni Meet cum Annual Day Celebration

National Institute of Pharmaceutical Education and Research (NIPER) – Ahmedabad (NIPER-A) have organized 4th Alumni Meet at their new campus located at Palaj, Gandhinagar. The event was organized by Alumni Association of NIPER-Ahmedabad (AANA) to strengthen the relationship between alumni, current students, and institution. A formal meeting with alumni and representative members of AANA was held where different agendas regarding the more active participation of alumni were discussed. The formal meeting was followed by a welcome speech by Prof. Kiran Kalia, President of AANA and Director, NIPER Ahmedabad. Prof. Kalia recognized the achievements of all the alumni and motivated them for their active participation in the growth of NIPER-Ahmedabad. A presentation of recent events and achievements of NIPER-Ahmedabad was presented by Secretary of AANA, Mr. Bharat Chaudhary. Prof. Kiran Kalia presented awards for 'Most Inspiring Researcher' to Dr. Shivang Chaudhary and 'Most Active NIPERIAN' to Ms Harshita Gupta. A panel discussion by NIPER-Ahmedabad alumni was conducted to inspire and solve doubts regarding career of current students. Various cultural activity was also the part of this meet and students of NIPER-Ahmedabad have shown their talent in singing, dancing, mimicry, drama etc. The event was enjoyed by all and it helped in bridging the gap between the alumni and current students.



National Festivals and Events

Independence Day Celebration

The Independence Day was celebrated at NIPER-Ahmedabad campus with high enthusiasm and energy. Prof. Kiran Kalia along with semester topper students Shivani Vaidya, Kanchan Vats and Jackson Saraf unfurled the tricolour with security guards and attendees saluting the flag when National Anthem being played. The Institutional premises adopted a festive look with tricolours, flowers, sweets and musical environment adding to the ambiance. The 'Highlights of the program included "Hum Honge Kamyab..." song lead by Prof. Kiran Kalia, which set the radiance of beautiful patriotism among all the attendees. After unfurling the National



Flag, Prof. Kiran Kalia delivered the Independence Day speech where she urged all to work towards the betterment of our country and promote unity and integrity of the nation. During her address, she expressed her happiness on the progress of the nation and motivated the people to strive for innovation and invention. She quoted various engaging success stories of the country and stressed that one should endeavor to be a better version of oneself, and for the same, we all should work hard each day. The sweets were distributed to all followed by inauguration of basketball court and tennis court to facilitate physical well-being of the research students.

68th Republic Day was celebrated at NIPER-Ahmedabad on January 26th 2017. The event started with flag hosting where the girl student who has recently ranked top in the semester exam, hosted the flag along with the Director and Registrar of NIPER-Ahmedabad. Many sports competitions were organized for the students and staff. All students and staff participated in the sports enthusiastically.



Hindi Pakhwada Celebration

हिंदी पखवाड़ा समारोह, नाईपर-अहमदाबाद (१-१५ सितम्बर, २०१७)

राष्ट्रीय औषधीय शिक्षा एवं अनुसंधान संस्थान (नाईपर) अहमदाबाद में १ सितम्बर से १५ सितम्बर २०१७ तक हिंदी पखवाड़ा मनाया गया। राजभाषा समिति नाईपर-अहमदाबाद द्वारा आयोजित इस कार्यक्रम में विभिन्न प्रतियोगिताओं का समायोजन किया गया, जिनमें निबंध-लेखन, प्रार्थना-पत्र लेखन, सुलेख, व्याकरण, प्रश्नोत्तरी, चित्र-प्रदर्शनी, लघु कहानी, वाद-विवाद, हिन्दी बोलचाल की भाषा एवं स्वरचित कविता पाठ प्रमुख रहीं। इस आयोजन में विद्यार्थियों का उत्साह देखते ही बनता था। सम्पूर्ण नाईपर-अहमदाबाद में हिन्दीमय वातावरण हो गया था। विद्यार्थी अपने नियमित अनुसन्धान के साथ-साथ विभिन्न प्रतियोगिताओं की तैयारियों में भी तल्लीन देखे गए। कोई हिन्दी-व्याकरण की तैयारी कर रहा थो, कोई निबंध की, तो कोई प्रश्नोत्तरी की, इस प्रकार का वातावरण देखकर कोई भी हिन्दी प्रेमी बड़ा प्रसन्न होता।

इस आयोजन में उल्लेखनीय बात यह रही थी कि जो विद्यार्थी हिन्दी-भाषी राज्यों से नहीं आये हैं, जैसे आंध्र प्रदेश, महाराष्ट्र, केरल आदि उन्होंने भी विभिन्न प्रतियोगिताओं में बढ़-चढ़ कर हिस्सा लिया और उनका प्रदर्शन सभी निर्णायक गणों एवं दर्शक गणों ने सराहा। विभिन्न प्रतियोगिताओं में निर्णायक स्थानीय प्राध्यापक रहे।

इस हिन्दी पखवाड़ा का शुभारम्भ १ सितम्बर को संस्थान की निदेशिका महोदया प्रो. किरण कालिया के कर-कमलों के द्वारा भारत माता के समक्ष दीप प्रज्वलन एवं पुष्पार्पण करके हुआ। इस अवसर पर उन्होंने कहा की भाषा अपने आप को व्यक्त करने का माध्यम है जो सोच से जुड़ा है। डॉ. अमित शरद ने अपने अभिभाषण में भाषा के विज्ञान के बारे में बताया। इस कार्यक्रम में आयोजित चित्र प्रदर्शनी की आभा विलक्षण थी। विभिन्न प्रतियोगियों ने अपने विचार नियत विषय "बालश्रम" पर चित्र एवं नारे के माध्यम से उकते और वो चित्र और नारे आत्ममंथन करने पर बाध्य कर रहे थे। कृतियाँ इतनी सुन्दर और भावपूर्ण थीं कि निर्णायक मंडल के सदस्य दुविधा में पड़ गए कि किस कृति को पुरस्कृत करें किसे नहीं।

इसके अलावा निबंध लेखन, शीर्षक "भारत का विश्व में बढ़ता प्रभुत्व" में प्रतियोगियों ने अपने विचार, लेखन के माध्यम से प्रकट किया। हिन्दी व्याकरण (लिखित) में व्याकरण से सम्बंधित वस्तुनिष्ठ प्रश्न पूछे गए। प्रश्नोत्तरी (मौखिक) में सबसे अधिक प्रतियोगियों ने भाग लिया जिसमें सामान्य-ज्ञान, सामान्य-विज्ञान, हिन्दी साहित्य एवं सामान्य हिन्दी से सम्बंधित प्रश्न पूछे गए। इस प्रतियोगिता में दर्शकगणों ने बहुत ज्ञान और आनंद लिया तथा प्रतिभागियों का निरंतर उत्साह वर्धन किया। लघु कहानी में २ मिनट में कम से कम शब्दों में अपनी कहानी बतानी थी। हिन्दी बोलचाल की भाषा प्रयोग प्रतियोगिता में स्पर्धकों को तत्कालीन एक परिस्थिति दी जाती थी उसमें दल को जो की दो सदस्यों होता का था आपस में उस मुद्दे पर बात करनी होती थी। जिसका मूल्यांकन कम से कम अंग्रेजी शब्दों के प्रयोग पर था। वाद-विवाद जिसका विषय "विमुद्रीकरण" था उस पर अधिकतम स्पर्धियों ने विपक्ष में अपना मत दिया।

इस पखवाड़े का समापन १५ सितम्बर को गुजरात विश्व विद्यालय के हिन्दी भाषा के प्राध्यापक एवं विभागाध्यक्ष अतिथि प्रो. रंजना अरगडे की उपस्थिति में हुआ। उन्होंने कुछ महत्वपूर्ण मुद्दों पर बात जैसे की, क्यों हिन्दी राष्ट्रीय स्तर पर पहचान नहीं बना पाई एवं हिन्दी को खतरा अंग्रेजी से नहीं बल्कि हिन्दी से उत्पन्न बोलियों से है। इसके अलावा लोग जो गलत भाषा और शब्द का उच्चारण करते हैं उस पर बात की और इस समस्या के लिए विडिओ और ऑडियो बनाने की बात पर जोर दिया। इसके अलावा हिन्दी में कुछ लोग अपनी कृतियाँ बनाते हैं, उसको इन्टरनेट पर सॉफ्टवेयर के माध्यम से रखने की बात की, ताकि वो ज्यादा से ज्यादा लोगों तक पहुँच सके। जबकि निदेशिका महोदया ने राष्ट्रीय स्तर पर कार्यलय का काम अधिक से अधिक हिन्दी में करने की बात की। अपनी भाषा का महत्व बताते हुए उन्होंने कहा की चीन, जापान ऐसे देश हैं जो अपना व्यवहार अपनी भाषा में करते हैं और विकसित भी है। अगर हमारे देश को आगे लाना हो तो देश को हिन्दी का अच्छे से स्वीकार करना होगा। राजभाषा समिति की प्रभारी डॉ. अनीता महापाल ने कार्यक्रम विवरण देते हुए, कार्यक्रम की प्रतियोगिताओं, स्पर्धकों की संख्या और उनके उत्साह के बारे में बताया। कार्यक्रम के अंत में विभिन्न प्रतियोगिताओं के विजेताओं के नामों की घोषणा की गई। अतिथि श्री को स्मृति चिन्ह प्रदान कर आभार प्रकट किया गया। संस्थान की विद्यार्थी प्रमिना पाण्डेय ने सभी को धन्यवाद ज्ञापित किया। इस समारोह की सफलतापूर्वक आयोजन में राजभाषा समिति की प्रभारी डॉ. अनीता महापाल एवं उसके सदस्य डॉ. अमित शरद, सुश्री कोमल पाण्डेय, श्री निशांत शर्मा का सहयोग सराहनीय था।



Teachers Day Celebration

On 5th September 2017, Teacher's Day was celebrated with high enthusiasm at NIPER-Ahmedabad. Several activities and series of event were planned by students of NIPER-Ahmedabad to dedicate the eve towards the teachers and appraise the role of a teacher in their life. The live and humorous anchoring by MS student Ms Kanchan Vats and Namrata Prajapati added the live-hood and fun to the event. The teaching and non-teaching staff introduced in riddles and students in the audience side were asked to guess the faculty members. Astonishingly, students promptly recognized the teachers with exact matching with the riddles. Following this, faculty members were called upon the stage and presented with mementos by students. Some fun-filled games were organised for teacher's which included musical chair and antakshari. The event ended with a merry note from students and teachers!



*A Teacher presents the past, reveals the present, and creates the future.
A good teacher can inspire hope, ignite the imagination, and instill a love of learning*

Celebration of National Unity Day

History teaches us that unity is strength and cautions us to submerge and overcome our differences in the quest for common goals, to strive, with all our combined strength, for the path to true INDIAN brotherhood and unity. On the occasion of birth anniversary of Sardar Vallabhbhai Patel, NIPER-Ahmedabad organised 'Run for Unity' attended by all the associated members of NIPER-Ahmedabad. For this event, all the faculty members, students and staff members took pledge for maintaining and promoting the Unity of our nation. Everyone recited the Unity pledge lead by the Director Prof. Kiran Kalia towards the unification of our country. The unity run was organized from NIPER-A campus up to IIT-Gandhinagar. All students and staff enthusiastically participated as evinced by the loud chanting of slogans throughout the run. The event got concluded with happy, contented, united and motivated faces and a group photo.



Integrity Pledge for Citizens

I believe that corruption has been one of the major obstacles to economic, political and social progress of our country. I believe that all stakeholders such as Government, citizens and private sector need to work together to eradicate corruption.

I realize that every citizen should be vigilant and commit to highest standards of honesty and integrity at all times and support the fight against corruption.

I, therefore, pledge:

- To follow probity and rule of law in all walks of life;
- To neither take nor offer bribe;
- To perform all tasks in an honest and transparent manner;
- To be accountable for my actions;
- To act in public interest;
- To lead by example exhibiting integrity in personal behaviour;
- To report any incident of corruption to the appropriate agency.



Vigilance Awareness Week Celebration

NIPER-Ahmedabad celebrated vigilance awareness week from 30th October to 4th November, 2017. The theme of the week would be "My Vision-Corruption Free India" ("मेरा लक्ष्य - भ्रष्टाचारमुक्त भारत"). It may be noted that the Vigilance Awareness Week commenced with the Integrity Pledge by public servants in the Ministries / Departments / Central Public - Sector Enterprises (CPSEs)/Public Sector Banks (PSBs) and all other Organizations including the NIPER-Ahmedabad.

The Director of NIPER-Ahmedabad Prof. Kiran Kalia inaugurated the function and while addressing a gathering, Prof. Kalia shared that the purpose of observing Vigilance Awareness Week is to educate the students, faculties, staffs and the public at large about the corruption related practices and also educating them how to report about it. She expressed such event as an opportunity to initiate a mass movement involving people in saying "a big no to the corruption". She also explained that the NIPER-Ahmedabad is firm in developing an Integrity rich working environment in the campus and expressed and with this intention she continually approaches the opportunities to organize such as Lecture series by eminent speakers on various topics events throughout the year. Prof. Kalia reiterated that the observance of Vigilance Awareness Week every year is part of a multi-pronged approach of the Government of India to encourage collective participation of stakeholders in the prevention and the fight against corruption.

During this event, NIPER-Ahmedabad conducted activities that include enacting of Integrity Pledge by all employees, competitions on preventive vigilance activities, panel discussion on anti-corruption measures, quiz, essay writing, slogans writing competitions on moral values, debates on sensitization policies/procedures of the organization and preventive vigilance measures.



USFDA team visited NIPER-A

The USFDA team visited NIPER-Ahmedabad. The team comprised of Mr Carl Sciachhitano, Senior Advisor for scientific international affairs, OIP, USFDA, Ms. Letitia Robinson, Country Director OIP, USFDA India office, Mr Ademola Daramola, International relations specialist, OIP, USFDA, Mr Thomas Arita Deputy Director, OIP, USFDA. They were accompanied by Mr Dipesh Shah, Consumer safety officer, OIP, INO and Dr H G Koshia Commissioner, FDCA, Gujarat. The team had lab visit and interaction with students. After the visit there was an interaction with faculty members and the team had a detailed discussion for future association of NIPER-Ahmedabad with USFDA. The USFDA team appreciated the efforts of Director, NIPER-Ahmedabad and also wish to extend support for the future scientific growth of NIPER-Ahmedabad.



Swachhata Pakhwada

Mahatma Gandhi dreamt of an India which was not only free but also clean and developed. Mahatma Gandhi secured freedom for Mother India. Now it is our duty to serve Mother India by keeping the country neat and clean. I take this pledge that I will remain committed towards cleanliness and devote time for this. I will devote 100 hours per year that is two hours per week to voluntary work for cleanliness. I will neither litter nor let others litter. I will initiate the quest for cleanliness with myself, my family, my locality, my village and my work place. I believe that the countries of the world that appear clean are so because their citizens don't indulge in littering nor do they allow it to happen. With this firm belief, I will propagate the message of Swachh Bharat Mission in villages and towns. I will encourage 100 other persons to take this pledge which I am taking today.

I will endeavor to make them devote their 100 hours for cleanliness. I am confident that every step I take towards cleanliness will help in making my country clean. NIPER-Ahmedabad celebrated "Swachhata Pakhwada" between 16th - 31st August 2017. The program was inaugurated by a pledge for cleanliness under leadership of Dr. Kiran Kalia. The pledge involved maintaining cleanliness and taking its responsibility individually. The students thoroughly cleaned their respective labs. It was followed by a collective cleaning activity of NIPER-Ahmedabad garden, canteen area, playground, and corridors. The drive was followed by cleaning Palaj village near NIPER-Ahmedabad campus. Hostel premises were also cleaned actively by all the students, faculty members and non-teaching staff of the institute. In light of this event, poster competition and debate competition were also held, which was participated proactively by a large squad of students.

As a part of "Swachhata Pakhwada," NIPER-Ahmedabad had organized a trip to clean hostel and the area around the institute. All the students accompanied by the faculty willingly cleaned the hostel and the area around it. The students cleaned our rooms, dustbins, flat, gallery and common area. There was a huge pile of garbage in front of the hostel, and the group collected it in the trash bags and disposed it gently. Students and faculty of NIPER-Ahmedabad visited Palaj village for cleaning its premises and to educate the locals about importance of cleanliness and hygiene. The groups were divided, and each was given a specific part to clean which included hospital area, temple area, main square and road lanes. The students cleaned the area with high enthusiasm, and some of the areas looked completely different after cleaning. The garbage collected was disposed-off appropriately. Many students interacted with the locals explaining the hazards and diseases that could happen due to improper disposal of garbage. During this event, the cultural team also organized Punch Line, Poster, and Rangoli competitions to persuade the theme of cleanliness and hygiene among students.

Swachhat Pledge:

Mahatma Gandhi dreamt of an India which was not only free but also clean and developed
 Mahatma Gandhi secured freedom for Mother India
 Now it is our duty to serve Mother India by keeping the country neat and clean
 I take this pledge that I will remain committed towards cleanliness and devote time for this
 I will devote 100 hours per year that is two hours per week to voluntary work for cleanliness
 I will neither litter nor let others litter
 I will initiate the quest for cleanliness with myself, my family, my locality, my village and my work place.
 I believe that the countries of the world that appear clean are so because their citizens don't indulge in
 littering nor do they allow it to happen
 With this firm belief, I will propagate the message of Swachh Bharat Mission in villages and towns.
 I will encourage 100 other persons to take this pledge which I am taking today.
 I will endeavor to make them devote their 100 hours for cleanliness.
 I am confident that every step I take towards cleanliness will help in making my country clean.

Swachhata Pakhwada

Winners of Competitions:

Name of Competition	Name of Winner	Class
Punch Line	Hetaben Thakar (1 st)	MS 2 nd year
Punch Line	Sujeet Pathak (2 nd)	Staff
Punch Line	Kanchan Vats (3 rd)	MS 2 nd Year

Poster	Monika & Preethi (1 st)	MS 2 nd Year
Poster	Kavya & Chanchal (2 nd)	MS 1 st Year
Poster	Abhimanyu (3 rd)	MS 2 nd Year

Rangoli	Pravalika and Group (1 st)	MS 2 nd Year
Rangoli	Priyanka and Ajitha (2 nd)	MS 2 nd Year



I am confident that every step I take towards cleanliness will help in making my country clean.