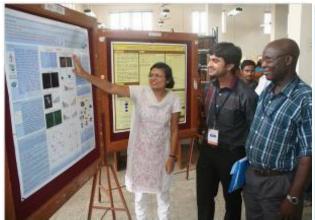
National Institute of Pharmaceutical Education & Research (NIPER)

National Institute of Pharmaceutical Education & Research (NIPER), SAS Nagar, Mohali, was set up in terms of provisions of NIPER Act, 1998 to nurture and promote pharmaceutical education & research at Post Graduate level. The NIPER Act, 1998 was subsequently amended by The National Institute of Pharmaceutical Education & Research (Amendment) Act, 2007. The Amendment Act, 2007 inter-alia empowered the Central Government to establish similar institutes in different parts of the country.

In terms of the amended NIPER Act, 2007 the Central Government established New NIPERs at Hyderabad, Ahemdabad, Kolkata, Guwahati, Raebareli and Hajipur. Notifications were published in the Gazette of India.

The students are selected for admission through All India Common Admission Test conducted by NIPER, SAS Nagar, Mohali in association with the new NIPERs. At present these NIPERs impart Ph.D and PG level education and grant degree under the NIPER Act, 1998.









**

NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION & RESEARCH (NIPER), S.A.S. NAGAR

NIPER, SAS Nagar, Mohali was initially registered as a society under the Societies Act. The faculty for the institute was appointed in 1994. In 1998, Parliament enacted National Institute of Pharmaceutical Education and Research Act, 1998. NIPER was declared as an "Institute of National Importance" under the Act of Parliament on 26th June 1998. NIPER is a member of Association of Indian Universities.

The main objectives of the Institute:

- 1. Nurture and promote quality and excellence in pharmaceutical education & research.
- 2. Toning up the level of pharmaceutical education and research by training the future teachers, research scientists and managers for the industry and profession.
- 3. Creation of National Centers to cater to the needs of the pharmaceutical industry and other research and teaching institutes.
- 4. Collaboration with Indian industry to help it meet global challenges.
- 5. National/International collaborative research.
- 6. Study of sociological aspects of drug use and abuse and rural pharmacy etc.
- 7. Running programmes in drug surveillance, community pharmacy and pharmaceutical management.

NIPER has ten Departments:

- 1. Medicinal Chemistry 2. Pharmaceutics
- 3. Natural Products 4. Pharmacology & Toxicology

- 5. Pharmaceutical Analysis 6. Biotechnology
- 7. Pharmaceutical Technology 8. Pharmacy Practice
- 9. Pharmaceutical Management 10. Pharmacoinformatics

Disciplines:

The first batch of students was admitted in 1998. NIPER offers **Masters' and Ph.D. degrees** in 15 streams and caters to the various needs of pharmaceutical industry:

- 1. Medicinal Chemistry
- 2. Natural Products
- Traditional Medicine
- 4. Pharmaceutical Analysis
- 5. Pharmacology & Toxicology
- 6. Regulatory Toxicology
- 7. Pharmaceutical Technology (Biotechnology)
- 8. Pharmaceutical Technology (Formulations)
- 9. Pharmaceutical Technology (Process Chemistry)
- 10. Pharmaceutics
- 11. Biotechnology
- 12. Pharmacy Practice
- 13. Clinical Research
- 14. Pharmacoinformatics
- 15. Pharmaceutical Management

Infrastructure:

NIPER conducts regular education programmes for academia and industry in various disciplines and helps the Indian Pharmaceutical Industry in solving their R&D related requirements. NIPER has upgraded facilities for achieving the highest level of efficiency in imparting education and events.

There are state-of-art classrooms with installation of TV panels and laptop systems. NIPER laboratories are fully equipped with modern equipments that are equivalent to other state-of-the-art laboratories in the world. All the available facilities are of international level and standards. A Technology Development Centre has also been set up. In addition, there has been significant improvement in research infrastructure as several high value sophisticated instruments have been added which has helped in increased thrust in R&D activities.

Central Research Facilities:

Following **central facilities** provide support to the research groups within the Institute as well as from outside:

- Central Instrument Laboratory
- 2. Computer Centre
- 3. Library and Information Centre
- 4. Central Animal facility
- 5. National Toxicology Centre (GLP compliant)
- 6. Technology Development Centre
- 7. National Bioavailability Centre(WHO accredited)
- 8. Impurity Profiling & Stability Testing Laboratory
- 9. Pharmacological & Toxicological(GLP compliant) Screening Facilities

Seats for admission to P.G. Courses, Ph.D in NIPER, S.A.S. Nagar:

Since 2010, NIPER, S.A.S. Nagar, has increased seats for admission to postgraduate courses and Ph.D. programme

Courses	Students admitted in year 2013		
Ph.D.	20		
M.S.	174		
M.B.A.	28		
Total	222		

In July 2013, 232 Masters' students [including M.S. (Pharm.), M. Pharm. and M.Tech.(Pharm.)]and 52 M.B.A. (Pharm.) students graduated from the Institute.

Academic excellence: During 2013 (till date), the Institute has published 150 articles in journals of repute. As on date, NIPER has filed 06 patents in 2013;01 patent was granted. Since the inception of academic programme, 1,881 students have passed out (Masters-1,359, MBA-358& Ph.D.-164).

International collaborations: The Institute entered into several International collaborations and a number of visitors from abroad and within the country visited the Institute, thus highlighting the ever-rising status of the Institute. NIPER started conducting training programs at the newly established Small and Medium Pharmaceuticals Industry Centre (SMPIC) for Small and Medium Pharmaceuticals industry on the aspects of Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP), Instrumental analysis and manufacturing of APIs and Formulations. The centre also provides a focal point to industry academia interaction.

Recent Developments at NIPER, S.A.S. Nagar

(General)

- 1. The Institute has played mother role to all the new NIPERs started in different parts of the country by helping them in variety of ways including centralized admissions.
- 2. A Technology Development Centre has been set up in the NIPER, S.A.S. Nagar.
- The WHO accredited National Bioavailability Centre has been established with support of Deptt. of Science & Technology, Govt. of India, which is one of the two centers of the world to conduct the bioavailability studies for oral fixed-dose combination of anti-tubercular drugs.
- 4. The Institute has also set up the Good Laboratory Practices (GLP) compliantNational Toxicology Centre, National Centre of Pharmacoinformatics, National Centre for Safety Pharmacology and Centre for Nanotechnology with the support of Department of Science & Technology (DST) under Pharmaceutical Research & Development Support Fund (PRDSF programme).
- 5. NIPER, S.A.S. Nagar, has now started trainingprogrammes for Small and Medium Pharmaceutical industry on the aspects of Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP), Instrumental analysis and manufacturing of APIs and Formulations. An important aspect of the training programs is the demonstration in the Technology Development Center (TDC), Central Instrument Laboratory (CIL), and Central Animal Facility (CAF), etc. Separate hands-on training modules are available for High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC), and Atomic Absorption Spectroscopy (AAS).
- NIPER has more than 1800 publications, most of them in reputed, peer-reviewed, international journals.

(Research)

1. Neglected diseases

- A new methodology for the direct one-step arylation procedure for the quinolone ring was developed andten new quinolines-based potential anti-TB compounds were synthesized.
- A novel pathway of transferrin mediated iron uptake in *M. tuberculosis* has been identified, which
 is independent of the established siderophore-mediated uptake.
- One potential anti-malarial compound (NP-1962), designed and synthesized in the Institute, was found to be curative at 100 mg/kg/day x 4 dose in Plasmodium bergheimouse model; detailed testing is underway.

2. Other diseases

- In vitro pancreatic lipase (PL) inhibition and in vitro assays targeting adipocyte life cycle in 3T3L1
 preadipocytes, viz. lipolytic activity and antiadipogenic activity, were established for testing antiobesity potential of medicinal plants and synthetic compounds.
- Screening of 18 compounds from four medicinal plants, viz. Ajugabracteosa, Dysophyllastellata,
 Inulacuspidata and Rumexnepalensis for in vitro COX-1, COX-2 and anti-inflammatory activity in
 vivoshowed five compoundsto be highly active and provided stellatin as a lead molecule.
- Hyperglycemic and hyperinsulinemic conditions were found to induce various post-translational modifications of histone H3 leading to different chromatin re-modelling in breast cancer.
- A mouse model of ulcerative colitis has been established by administering dextran sulphate sodium, a non-genotoxic sulphated polysaccharide. The potential of interventional agents such as melatonin, α-lipoic acid and β-carotene to modulate multiple targets such as cytokines, nuclear factor kappa B, cyclooxygenase-2, nuclear erythroid 2-related factor 2, NADPH: quinone oxidoreductase-1, matrix metalloproteinase-9 and connective tissue growth factor in the colon of mice with colitis was deciphered.

3. Drug development and formulation

- Studies have established the structure property relationship between compaction behaviour and crystal structure of the pharmaceutical materials using polymorphic systems.
- Studies to administer insulin through the oral route have yielded success in a rat model of diabetes. Efforts are on to make this a technologically and economically viable approach.

4. Other areas

- All water chemistry has been developed for the total synthesis of the novel class anti-anginal drug (RS), (R), and (S)-ranolazine and (RS)/(S)-Lubeluzole.
- Ethyl acetate and methanol extracts of *Selaginellabryopteris* whole plants, ethyl acetate extract of *Desmodiumgangeticum* aerial parts, hexane and ethyl acetate extracts of *Pongamiapinnata* barks, ethyl acetate extract of *Puerariatuberosa* tubers, dichloromethane and ethyl acetate extracts of *Pinusroxburghii* barks, ethyl acetate extract of *C. occidentalis*roots, dichloromethane and ethyl acetate extracts of *Operculinaturpethum* roots were found to significantly inhibit LPS-induced production of TNF-α, IL-1β and NO in mouse macrophage RAW 264.7 cell line.
- Standardization and quantification of various plant extracts and ayurvedic formulations
 of Mukkamukkatuvadigutika and Satpalaghirta were carried out using advanced chromatographic
 techniques like HPLC, HPTLC and GC-MS-HS.

- Sophisticated hyphenated equipment like high resolution mass spectrometer (HRMS), multi-stage mass spectrometer (MSⁿ); and 500 MHz NMR were utilized to identify and characterize the degradation products were used to perform forced degradation studies of many drug molecules.
- Nanotoxicology studies showed that high concentration of ZnO nanoparticles caused irreparable damage to the lungs whereas rats treated with low dose could recover at a later time point.
- Evidence of involvement of Nrf2 and NF-κB in the pathophysiology of diabetic neuropathy.Pharmacological interventions targeting Nrf2 and NF-κB showed beneficial effects in experimental diabetic neuropathy has been provided.
- Various drugs (Esmolol, Levobunolol, Acebutolol, and Guaifenesin, Practolol, Alprenolol, Atenolol, etc.) were chemo-enzymatically synthesised using lipase as catalyst.
- Probiotic co-culture system has been developed and the changes in their surface properties have been studied.
- Study of the effect of a series of stabilizing and destabilizing osmolytes on the fibrillation pattern
 of a model amyoidogenic protein showed that changes during exposure of a protein to denaturing
 conditions in the presence of osmolyes cannot be extrapolated from their role as anti-fibrillation
 agents.
- The role of the chaperone Hsp104 in propagation of misfolded protein aggregates in the cell was deciphered.
- Some synthetic peptidesdeived from of human apolipoprotein E specifically bind to pro-inflammatory lipid
 molecules and inhibit/reduce their pro-inflammatory effects. Further characterization of these peptides is in
 progress.
- Expression and purification of fully human paraoxonase 1 (PON1) from E. coli cells has been achieved in good yield.
- Epidemiological (effectiveness of therapies; cholecalceferol, antiepileptics and antidepressants, quality of life, disability assessment and pharmacoeconomic analysis) and clinical trials (both pharmacological management and invasive interventional management with epidural steroid injection; parasaggitalvstransforaminal surgical approaches) have been initiated in two clinical models of chronic pain of neuropathic origin, i.e. painful diabetic neuropathy and lumbosacral pain with radiculopathy.

(Events and Activities)

- 1. The following awardshave been granted to the Institute:
 - a. OPPI Scientist Award in pharmacology and toxicology
 - b. SOT/AstraZeneca/SOT Endowment Fund Travel Award
 - c. Bharat Jyoti (The Glory of India) Award2013
 - d. CL Malhotra Prize 2013 of Annual Physiology and Pharmacology Society of India

- e. In addition, students have received awards at various national and international symposia, in recognition of the work carried out by them.
- 2. The following events were conducted by the Institute:
 - a. Brainstorming conference on Science, Technology and Innovation (STI) policy 2013 (April 16, 2013); implemented with Department of Science and Technology
 - b. Seminar on "Quality Aspects of Sterile Preparations" (July 2, 2013)
 - c. Seminar on "Formulation Development of Oral Solid Dosage Forms" (Sept. 13, 2013)
 - d. Hindi Pakhwada (Sept. 13-26, 2013)
 - e. Seventh Convocation (Oct. 12, 2013)
 - f. Intensive Course on Quality Assessment of Drugs and Pharmaceutical for Export –"ITEC-2013" (Nov. 11-22, 2013)
 - g. Communal Harmony Campaign Week (Nov. 19-25, 2013)
 - h. Seminar on "Recent trends in regulation of medical devices" (Nov. 27, 2013)
 - i. Seminar on "GLP and GMP A Regulatory Perspective" (Dec. 27, 2013)

New NIPERs

In terms of the amended National Institute of Pharmaceutical Education and Research (NIPER) Act, 1998, the Government of India has set up six new NIPERs at **Hajipur**, **Hyderabad**, **Ahmedabad**, **Rae Bareli**, **Guwahati and Kolkata**. New NIPERs are poised to cater to the future demand of the pharmaceutical industry for highly trained man power for continuous growth of the pharmaceuticals sector with increased focus on R&D, particularly after the amendment of Indian Patent Act. At present, new NIPERs are functioning with the assistance of the Mentor Institutes while construction of NIPER Campus is completed.

	New NIPERs	Mentor Institute			
1.	NIPER, Ahmedabad	B.V. Patel Pharmaceutical Education and Research Development (PERD) Centre, Ahmedabad.			
2.	NIPER, Hajipur	Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna.			
3.	NIPER, Hyderabad	Indian Institute of Chemical Technology (IICT), Hyderabad.			
4.	NIPER, Guwahati	Guwahati Medical College and Hospital, Guwahati.			
5.	NIPER, Kolkata	Indian Institute of Chemical Biology (IICB), Kolkata.			
6.	NIPER, Rae Bareli	Central Drug Research Institute (CDRI), Lucknow.			

Starting of Classes at New NIPERs.

Pursuant to the approval of the Cabinet to the setting up of six new NIPERs, classes were started from the academic Session 2007-08 with the help of Mentor Institutes at Ahmedabad, Hyderabad, Kolkata and Hajipur. The classes were started at NIPER, Guwahati and Rae Bareli in 2008-09.

MS (Pharma) course: Stream wise details:

SNo	Name of Institute	Existing Disciplines			
1.	NIPER, Ahmedabad	Natural Products, Pharmaceutics, Biotechnology, Pharmaceutical Analysis, Medicinal Chemistry,			
2.	NIPER, Guwahati	Pharmacology and Toxicology. Pharmacology & Toxicology, Pharmacy Practice, Biotechnology.			
3.	NIPER, Hajipur	Biotechnology, Pharmacy Practice, Pharmacoinformatics.			
4.	NIPER, Hyderabad	Medicinal Chemistry, Pharmaceutical Analysis, Pharmacology & Toxicology, Pharmaceutics.			
5.	NIPER, Kolkata	Medicinal Chemistry, Natural Products, Phamacoinformatics.			
6.	NIPER, Rae Bareli	Medicinal Chemistry, Pharmaceutics.			

National Institute of Pharmaceuticals Education and Research (NIPERs) Contact List

Address	Fax No.	Tel No.& Mobile No.	E-mail
K.K. Bhutani Officiating Director National Institute of Pharmaceuticals Education and Research S.A.S. Nagar, Punjab 160062	0172-2214692 0172-2230068	0172-2214690 M- 09417203802	bhupindersingh@niper.ac.in director@niper.ac.in
Dr. Neeta Shrivastava Project Director NIPER Ahmedabad B.V. Patel Pharmaceutical Education and Research Development (PERD) Centre Thaltej-Gandhinagar highway, Thaltej, Ahmedabad 380054	079-27450449	079-27439375 079-27416409	perd@perdcentre.com neetas@percentre.com
Dr. Ahmed Kamal Project Director NIPER Hyderabad IDPL R&D centre, Balanagar Hyderabad 500037	040-23073751	040-23073741 M- 9440802784	niperhyd@yahoo.com registrar@niperhyd.ac.in
Dr. Pradeep Das, Project Director NIPER Hajipur Rajendra Memorial Research Institute of Medical Sciences (RMRIMS) Agam Kuan, Patna 800 007	0612-2634379	0162-2631565 0612-2636651 M-09431012380 Mr. Uday- 09334107622	Drpradeep.das@gmail.com
Dr. Asish Kumar Banerjee, Project Director NIPER Kolkata Indian Institute of Chemical Biology 4, Raja S.C.Mullick Road, Jadavpur, Kolkata 700032	033-24735197 033-24723967	033-24735368 033-24723967 M-09830141666	asishbanerjeeiich@gmail.com
Prof. (Dr.) B.K. Bezbaruah Project Director NIPER Guwahati Guwahati Medical College and Hospital (Guwahati) 781001	0361-2529457	0361-2134538 0361-2132751 09864066772	gmch-asm@nic.in Bez_bikki@yahoo.co.in niperghy@gmail.com
Dr. P. K. Shukla Project Director, NIPER Rae Barelli, Central Drug Research Institute Chattar Manzil Lucknow 226001	0535-2700857 0522-2623938 0522-2629504	M-9335866066 0522-3290093	pk_shukla@cdri.res.in

M.S. (Pharma) Degree awarded by NIPERs

National Institute of Pharmaceutical Education & Research (NIPER), SAS Nagar, Mohali, was set up in terms of provisions of NIPER Act, 1998. The NIPER Act, 1998 was subsequently amended by The National Institute of Pharmaceutical Education & Research (Amendment) Act, 2007. The Amendment Act, 2007 inter-alia empowered the Central Government to establish similar institutes in different parts of the country.

- 2. Central Government accordingly established new NIPERs at Hyderabad, Ahmedabad, Kolkata, Guwahati, Raebareli and Hajipur. At present these new NIPERs impart Ph.D and PG level education with the help of scientific Mentor Institutes and grant degree under the NIPER Act, 1998.
- 3. Section 7(ii) of the NIPER Act, 1998 inter-alia empowers NIPERs to concentrate on courses leading to Master's Degree, Doctoral and Post Doctoral courses and research in pharmaceutical education. Section 7(iii) of the Act empowers NIPERs to hold examination and grant degrees.
- 4. Section 32 of the NIPER Act, 1998 provides as follows: "Notwithstanding anything contained in the University Grants Commission Act, 1956 or in any other law for the time being in force, the Institute shall have power to grant degrees and other academic distinctions and titles under this Act."
- 5. By virtue of the provisions of the NIPER Act, 1998, as aforesaid, NIPERs have power to grant degrees and other academic distinctions and titles under the Act.
- 6. In terms of Ministry of Home Affair's OM No.6/1/64-Estt.D dated 19th April, 1964 degrees/diplomas awarded by Universities in India which are incorporated by an Act of the Central or State Legislature in India and other educational Institutes established by an Act of Parliament, no formal orders recognizing such degrees / diplomas need be issued by Government. Such degrees / diplomas should be recognized automatically, for the purpose of employment under the Central Government.
- 7. This being the position PG degrees awarded by NIPERs under the NIPER Act, 1998 do not call for any recognition by any other authority.
