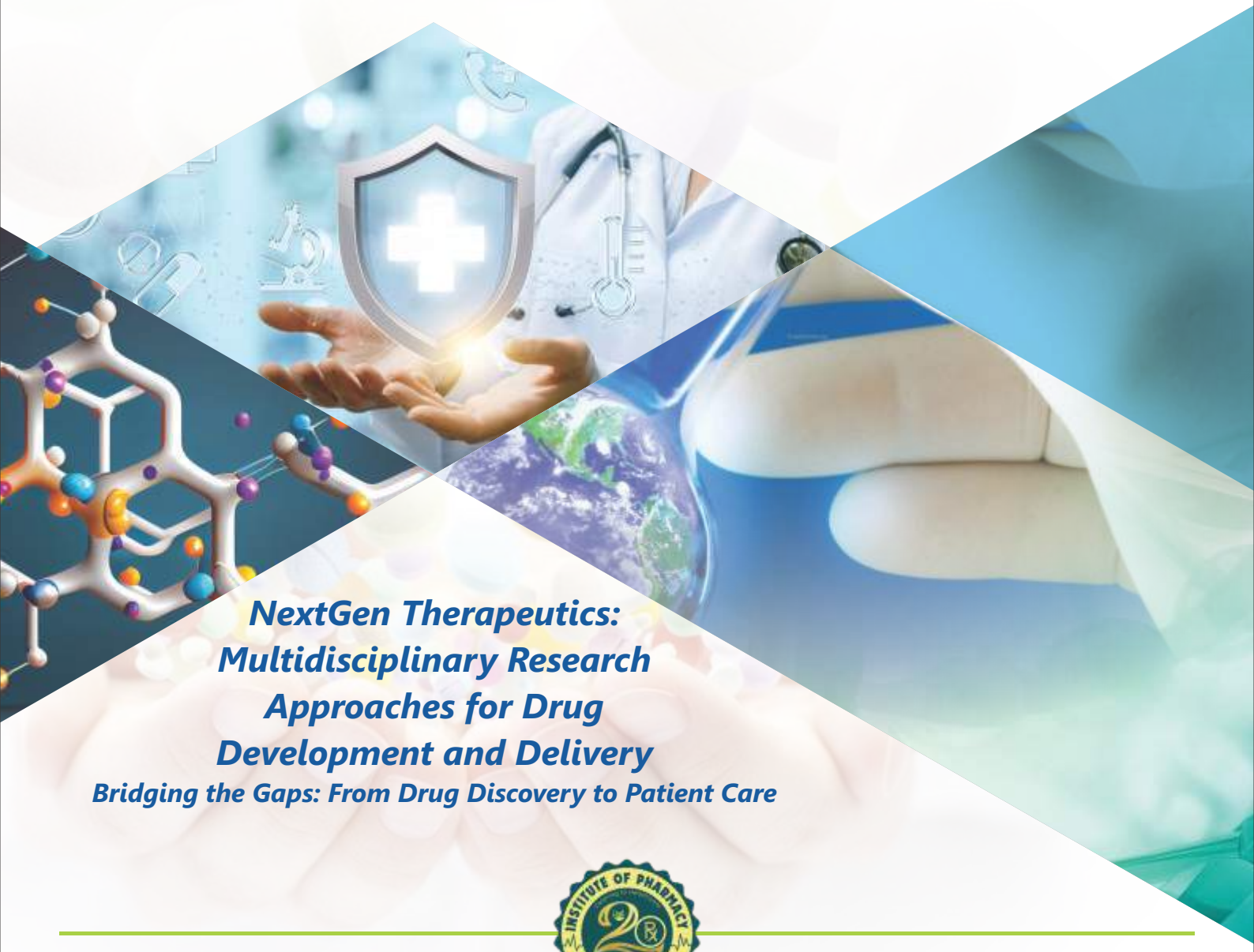
NIRMA UNIVERSITY
INSTITUTE OF PHARMACY
NAAC ACCREDITED 'A+' GRADE

NIPiCON 2024

7th Nirma Institute of Pharmacy International Conference

February 7-9, 2024



NextGen Therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery

Bridging the Gaps: From Drug Discovery to Patient Care

Institute of Pharmacy, Nirma University
S. G. Highway, Ahmedabad - 382481, Gujarat, INDIA

Aculife has been associated with the healthcare segment since over last 30 years now.

It enjoys a market leader position in one of the largest economies of the world.

Aculife boasts of a customer-centric vision, and is committed to offer quality products and services that maximize value to its customers.

Aculife is one of the world's largest sterile manufacturing facility spread over 550 acres, and has evolved to be one of world's largest manufacturers of large and small volume Infusions, Ophthalmics, Respules, Liquid and Gaseous Anaesthesia, Electrolytes Special Solution and Complete range of Parenteral Nutrition and General injectable.

Aculife is a Global Leader in Parenteral Infusion which includes I.V electrolyte infusions, Electrolytes solution, Diuretics, Dialysis solutions, Irrigation solutions, available in different presentations to cater to diverse requirements of worldwide markets.

Aculife exports to over 70 countries and boasts of a strong team of over 4000 dedicated employees.

Customer Centric Vision, Commitment to Offer Quality products with an aim to maximize value to patients

Global Leaders in Parenterals

Sterile Injectable and Preparations

Also have developed niche capabilities for developing and manufacturing

- Ophthalmic suspension
- Micro-emulsion
- Pre-filled syringes
- Development and Characterization of respiratory suspension for Inhalation and Sterile topical products

Message from President

NIRMA UNIVERSITY
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Dr. Karsanbhai K. Patel
President

I am very happy to learn about the organization of 7th Nirma Institute of Pharmacy International Conference (NIPiCON 2024) on the theme: **"NextGen therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery - *Bridging the Gaps: From Drug Discovery to Patient Care*"** by Institute of Pharmacy at Nirma University, Ahmedabad campus from February 7-9, 2024.

The conference theme is apt as it emphasizes the importance of collaboration among researchers from various disciplines and helps in building multidisciplinary approach for a more holistic and effective solutions in drug development.

I am confident that the conference will help in exploring emerging trends and technologies that are likely to shape the future of therapeutics and drug development.

I am appreciative of the dedication demonstrated by the Institute of Pharmacy, Nirma University in orchestrating this conference and extend my best wishes for its resounding success.

(Dr. Karsanbhai K. Patel)

Message from Vice-president

NIRMA UNIVERSITY
NAAC ACCREDITED 'A+' GRADE

K.K. Patel
Vice President

I am very pleased to learn that Institute at Pharmacy is holding 7th Nirma Institute of Pharmacy International Conference (NIPiCON 2024) on the theme: **"NextGen therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery - *Bridging the Gaps: From Drug Discovery to Patient Care*"** by Institute of Pharmacy at Nirma University, Ahmedabad campus from February 7-9, 2024.

The event theme is quite relevant in current scenario as by fostering collaboration across diverse fields, it can usher in a new era of innovation. The conference on such a multidisciplinary approach will help not only accelerate the drug development process, but also address sustainability concerns by considering environmental impact and resource optimization. I sincerely hope that this conference would serve as a dynamic platform for participants to delve into the latest advancements, exchange valuable insights, and spark innovative ideas.

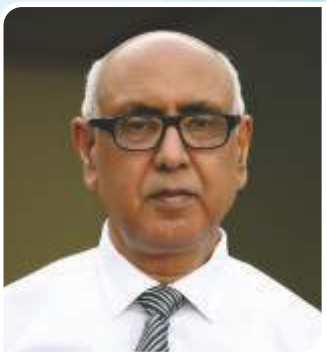
I genuinely commend the endeavour of the Institute of Pharmacy, Nirma University and extend my best wishes for the triumphant success of this remarkable event.

(Shri K.K. Patel)

Message from Director General

NIRMA UNIVERSITY
NAAC ACCREDITED 'A+' GRADE

Dr. Anup Singh
Director General



I am delighted to learn about the upcoming 7th Nirma Institute of Pharmacy International Conference (NIPiCON 2024) organized by the Institute of Pharmacy at Nirma University, Ahmedabad campus, scheduled from February 7-9, 2024. The chosen theme, **"NextGen therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery - *Bridging the Gaps: From Drug Discovery to Patient Care*"** reflects a forward-thinking approach in the ever-evolving landscape of healthcare and pharmaceuticals.

In the contemporary realm of drug development, the conference theme serves as a beacon of innovation and collaboration, highlighting the shift from isolated efforts to a multidisciplinary journey. The phrase "Bridging the Gaps" encapsulates the transformative era we are in, emphasizing our collective ambition to seamlessly integrate all aspects of drug development and patient care. This integration ensures that ground-breaking discoveries translate into tangible benefits for those in need.

The conference aims to harness the collaborative strengths of various disciplines, unlocking novel pathways and targets for more effective, sustainable, and personalized treatments. By addressing critical gaps from drug discovery to patient care, this event has the potential to shape the future of therapeutics collectively.

The past conferences organized by the Institute of Pharmacy at Nirma University stand as a testament to ground-breaking innovations and transformative discoveries. These achievements are not mere milestones but testimonies to our collective commitment to advancing knowledge and making a meaningful difference in the world.

I am confident that the upcoming event will continue to be a platform for fruitful discussions and boundless possibilities. I commend the sincere efforts of the Institute of Pharmacy at Nirma University and extend my best wishes for the success of the conference.

Warm regards,

Anup Singh, Ph.D.

Message from Convener and Organizing Secretary

Welcome to the 7th Nirma Institute of Pharmacy International Conference (NIPiCON 2024) on "NextGen Therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery - *Bridging the gaps from drug discovery to patient care*"!

It is our great pleasure to extend a warm welcome to all our esteemed participants, speakers, delegates, and guests.

Keeping the existing scenario of research in mind, the theme of this conference was kept onto NextGen Therapeutics is a herculean task involving the knowledge from various disciplines to be combined so that the molecule is successful hit in the market. It is very true that great ideas emerge from interdisciplinary communication.

Over the course of three days, from February 7-9, 2024, we wish the conference will prove fruitful to all the delegates, budding scientists and industry personnel providing them an opportunity to interact with leading scientists across the globe. We will embark on an enriching journey delving into the latest advancements, innovations, and challenges in the field of pharmaceutical sciences through scientific sessions that would benefit to the community and the country.

Set against the vibrant backdrop of Ahmedabad, Gujarat, India, renowned for its rich cultural heritage and dynamic academic atmosphere, this conference promises not only an intellectually stimulating experience but also serves as a platform for sharing knowledge, fostering collaborations, and exploring ground breaking research approaches that pave the way for the development and delivery of next-generation therapeutics along with ample opportunities for networking and cultural exchange.

We extend our heartfelt gratitude to all our sponsors, partners, organizing committee members, and volunteers for their invaluable contributions in making this event possible. Together, we strive to drive progress and excellence in pharmaceutical research and healthcare delivery.

We wish you all a rewarding and memorable conference experience filled with insightful discussions, fruitful interactions, and lasting connections.

Welcome to NIPiCON 2024!

Prof Dr Gopal Natesan
Convener, NIPiCON 2024
&
Director, Institute of Pharmacy, Nirma University

Dr Niyati S Acharya
Organising Secretary,
NIPiCON 2024

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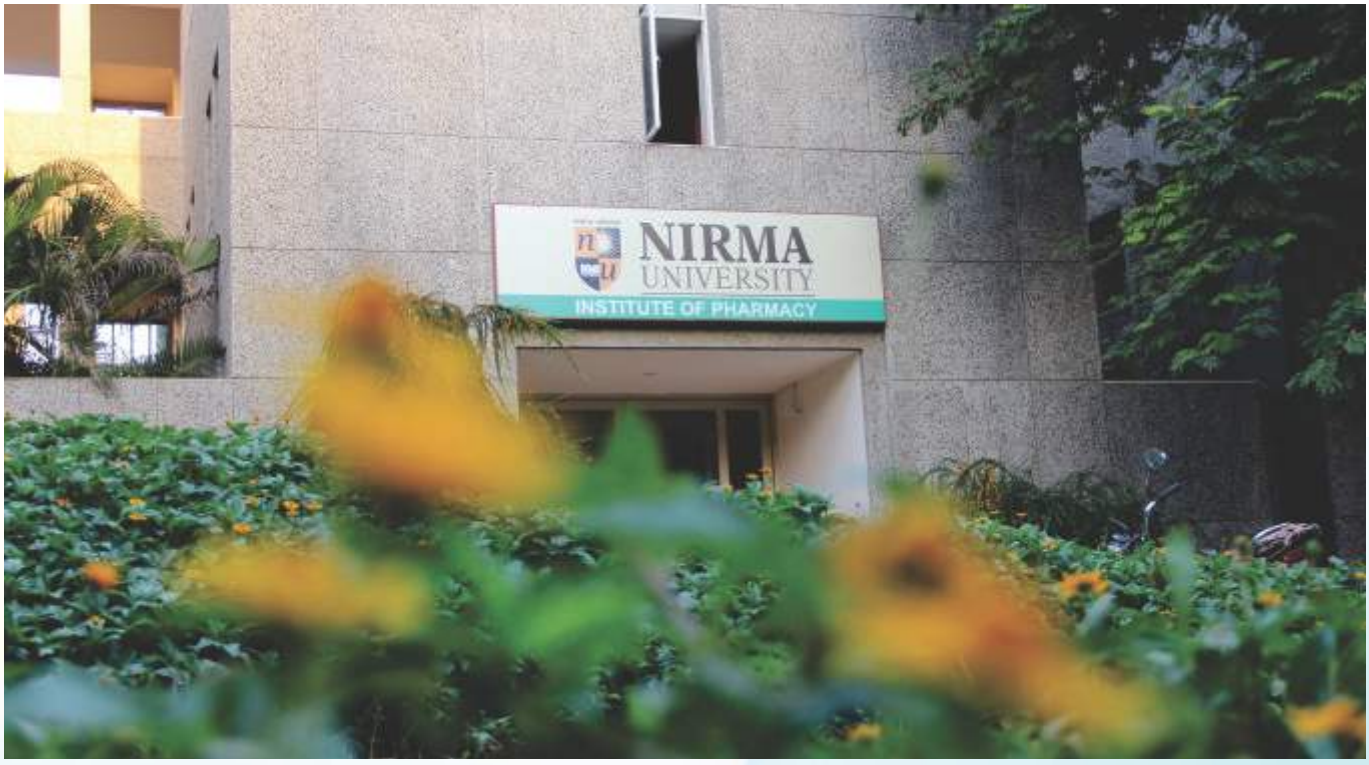


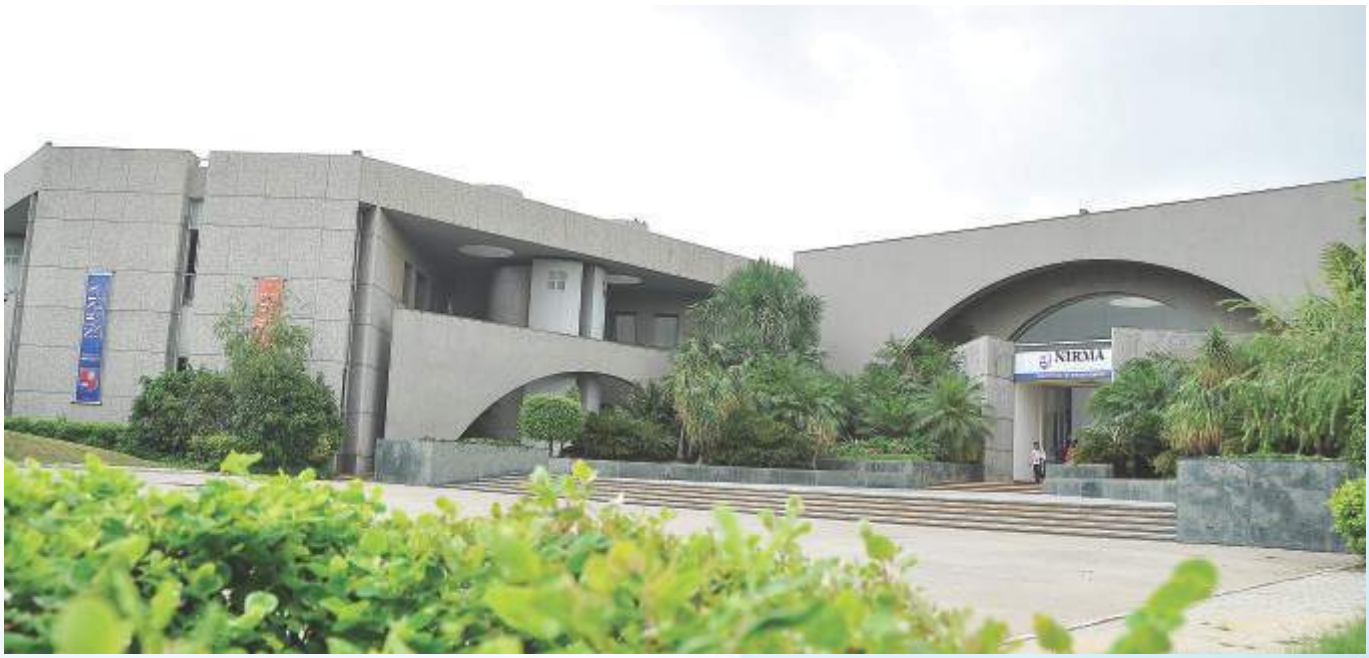
About Nirma University

Nirma University, Ahmedabad has been established in the year 2003 as a statutory university under the Gujarat State Act by the initiative of the Nirma Education & Research Foundation (NERF). The University is a value-driven, research-oriented and student-centered not-for-profit state private university.

The University and its constituent institute are highly ranked by different ranking agencies. The University is recognized by the University Grants Commission (UGC) under section 2(f) of the UGC Act. Nirma University has been accredited with Grade "A+" by National Assessment and Accreditation Council (NAAC) in 2022. Nirma University has also been awarded the Centre of Excellence (CoE) status by the Government of Gujarat in the International Conference of Academic Institutions, part of the Vibrant Gujarat Education Summit 2022. Nirma University is a member of the Association of Indian Universities (AIU) and the Association of Commonwealth Universities (ACU). The University has SIRO (Scientific and Industrial Research Organization) recognition from DSIR, Department of Science and Technology, Government of India. Dr. Karsanbhai K. Patel, Chairman, Nirma Group of Companies and Chairman, NERF is the President of the University.

Spread across the sprawling lush green 115-acres campus, the University has a host of institutes, departments and centers, including Institute of Technology, Institute of Management, Institute of Pharmacy, Institute of Science, Institute of Law, Institute of Architecture and Planning, Institute of Commerce, Institute of Design, Institute of International Study, Faculty of Doctoral Studies and Research, Directorate of Research and Innovation, Centre for Continuing Education, Centre for Entrepreneurship, Centre for Advanced Instrumentation, Centre for Robotics and Automation and Centre for Excellence in Data Science. All the institutions offer undergraduate, postgraduate, doctoral and post-doctoral programmes which are rated high by industry, business magazines and by the students.

Today the campus vibrates with not only world class curricular activities but also with myriad activities like international conventions symposia, conferences, student competitions, conclaves, short-term industry relevant Programmes, cultural activities, etc. The facility helps them to carry out cutting edge interdisciplinary research of national and international importance.



About Institute of Pharmacy

Institute of Pharmacy was established in the year 2003 under Nirma University with the aim of developing able professionals in the field of pharmaceutical sciences. In a short span of time, it has become one of the leading institutions in the country, offering pharmaceutical education at the undergraduate, postgraduate, doctoral and postdoctoral level.

Institute has been ranked 37th in India Ranking 2023 by Ministry of Human Resource Development, (MHRD), Government of India in its National Institutional Ranking Framework (NIRF). The institute received 1st rank by GSIRF 2023 with Five Star Rating.

The B.Pharm. Programme has been re-accredited by National Board of Accreditation (NBA) for three years (2022-23 to 2025-26). The Institute offers B. Pharm, Pharm D, M. Pharm. (Pharmaceutics, Pharmacology, Pharmaceutical Analysis and Regulatory Affairs), Full time and Part time Ph.D. and Post-doctoral Programmes.

The Institute has adopted Outcome Based Education (OBE) to further advance the development of professional knowledge, inculcate employability skills in addition to development of character and social responsibility. To achieve the same objective, vision and mission of the institute was also defined in line with University's vision and mission. The Institute has also framed its programme educational objectives and programme outcomes. The Institute has more than 5.0 crore rupees grant from government agencies and has collaboration with various research centres and industries. The Institute houses state-of the-art instruments, like supercritical fluid extractor and chromatogram, HPTLC, HPLC, MPLC, GC, Fluorescence Spectrometer, Raman Spectrometer, UV-VIS-NIR Spectrophotometer, FTIR, DSC, ELISA, PCR, Electrophoresis, Texture Analyser, Automated Dissolution Apparatus, Extruder-Spheronizer, Multiple diffusion Assembly, High Pressure Homogenizer, Particle Size Analyser, Microwave synthesizer, Stereotaxic apparatus with Micro-dialysis as well as software's, like Gold Suit, eCTD, Design Expert, etc.

The Institute has a two-storied animal house facility registered with the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Government of India. Besides, there is also a medicinal plant garden "Nirma Herbal Wealth", having an area of 3356.5 sqm with around 150 genera and 500 plants. Institute is equipped with Cell Culture Laboratory and Aseptic Laboratory (Class 1000) facilities for advanced research. It also has machine room with manufacturing and testing equipment's.

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Scientific Schedule

Day 1: *February 07, 2024 (Wednesday)*
Venue: M-Block, Nirma University

Time	Agenda
0900	**Registration & Arrival of Distinguished Guests** Venue: Auditorium, M-Block
1030	**Inaugural Function** Venue: Auditorium, M-Block
1130	**Keynote Address 1** *In silico drug discovery: Molecular design, pharmacokinetic modelling, and artificial intelligence* **Assoc Prof Ian Haworth** *University of Southern California (USC), Los Angeles, California, USA* Moderator: **Assoc Prof Hardik Bhatt,** IPNU Venue: Auditorium, M-Block
1230	**Lunch Break, Poster Viewing & Judging and Networking** Poster Presentation -1: **Abstract No. PTP001 to 051** Venue: Back Lawn, New Building
1330	**Keynote Address 2** *In vitro performance testing for complex pharmaceutical products* **Mr Samir Haddouchi** *SOTAX Pharma Services, France* Moderator: **Prof Tejal A. Mehta,** IPNU Venue: Auditorium, M-Block

Concurrent Plenary Talks	**Theme: Novel Drug Delivery Systems** **Chair:** **Dr Ramaswamy Lakshmanan** *Sotax India Pvt. Ltd., Mumbai* Venue: Auditorium, M-Block	**Theme: Translational Medicines** **Chair: Prof Ramesh K. Goyal** *Delhi Pharmaceutical Sciences and Research University (DPSRU), New Delhi* Venue: Classroom T1, M-Block
1430	**Plenary Session 1** Non-invasive strategies for therapeutic peptide delivery **Prof Vandana B. Patravale** *Institute of Chemical Technology (ICT), Mumbai*	**Plenary Session 3** Ayurveda, nutritional supplements, phytopharmaceuticals and botanical drug development **Dr Lal Hingorani** *Pharmanza Herbal Pvt. Ltd., Dharmaj*

1510	**Plenary Session 2** Patient-centric drug delivery systems: Innovative solutions to unmet clinical needs **Prof Sanjay Garg** *University of South Australia, Adelaide, Australia*	**Plenary Session 4** Analytical strategies and metabolomics: A multidisciplinary approaches from drug development to patient care **Dr Mohana Krishna Reddy Mudiam** *Institute of Pesticide Formulation Technology, Haryana, India*
1550	**Coffee Break and Networking**	

Concurrent Plenary Talks	**Theme: Novel Drug Delivery Systems** **Chair:** **Prof Vandana B. Patravale** *Institute of Chemical Technology, Mumbai* Venue: Auditorium, M-Block	**Theme: Translational Medicines** **Chair:** **Prof Sivasankaran Ponnusankar** *JSS College of Pharmacy, Ooty* Venue: Classroom T1, M-Block	**Theme: NextGen Therapeutics** **Chair:** **Dr Pradeep Kumar M.R.** *KLE University, Hubli* Venue: Classroom T3, M-Block
1610	**Invited Talk 1** Impact of technology 4.0 in biopharma drug development. **Dr Pratiksha Palahe** *National Facility for Biopharmaceuticals, Mumbai*	**Invited Talk 3** Enhancing clinical research through technological innovations **Mr Nayan Prajapati** *Cliantha Research and Cliantha Academy, Ahmedabad*	**Invited Talk 5** Next Gen imaging and therapy: recent approaches for nuclear and allied imaging **Dr Shubhra Chaturvedi** *Institute of Nuclear Medicine and Allied Sciences (INMAS), New Delhi*
1640	**Invited Talk 2** Sustained release of PAMAM dendrimer-drug conjugated drug delivery system against Lymphoma therapy **Dr Ugir Hussain Sk** *Chittaranjan National Cancer Institute, Kolkata*	**Invited Talk 4** A novel Wnt-sterol axis regulating RTK/ MAPK signalling **Dr Babita Madan** *DUKE NUS Graduate Medical School, Singapore*	**Invited Talk 6** Artificial intelligence in accelerating drug discovery and development **Dr A. Sankaranarayanan** *Vivo Bio Tech Ltd, Hyderabad*
1710	**Online Parallel Sessions (Plenary and Invited Talks)**		
	Plenary Session 5 From bench to bedside: Advancing drug discovery and development with artificial intelligence **Prof Hardeep Saluja** *Southwestern Oklahoma University, USA*	**Invited Talk 7** Dissecting AChE regulation in stress and cognitive aging: From biomarker to therapeutic target **Assoc Prof Vinay Parikh** *Neuroscience Program, Temple University, USA*	**Plenary Session 6** Enzyme inhibition - from past to present day proteolysing targeting chimeras (PROTACS) **Prof Stephen Kerr** *Massachusetts College of Pharmacy and Health Sciences, USA*

1740	**Poster Viewing, Oral Presentation, & Judging and Networking** Poster Presentation -2: **Abstract No. PTP052 to 102** Venue: Back Lawn, New Building		
1755			
Parallel Oral Presentation 1	**Pharmaceutical Technologies** Venue: Auditorium, M-Block **Abstract Nos.** PTO- 001 to 005	**NextGen Therapeutics** Venue: Classroom T1, M-Block **Abstract Nos.** NTO- 001 to 005	**Translational Medicines** Venue: Classroom T3, M-Block **Abstract Nos.** TMO- 001 to 006
1855	**Cultural Programme** Venue: Auditorium, M-Block		
2000	**Gala Dinner** Venue: Back Lawn, New Building		

Day 2: *February 08, 2024 (Thursday)*
Venue: M-Block, Nirma University

Time	Agenda		
0900	**Keynote Address 3** Next-Gen sequencer to Next-Gen therapeutics **Prof Ramesh K. Goyal** *Delhi Pharmaceutical Sciences and Research University (DPSRU), New Delhi* Moderator: **Prof Jigna S. Shah,** IPNU Venue: Auditorium, M-Block		
Concurrent Plenary Talks	**Theme: Novel Drug Delivery Systems** **Chair:** **Prof Sanjay Garg** *University of South Australia, Adelaide, Australia* Venue: Auditorium, M-Block	**Theme: NextGen Therapeutics** **Chair:** **Dr Vikaram Chaudhary** *Operant Pharmacy Federation* Venue: Classroom T3, M-Block	**Theme: Translational Medicines** **Chair: Prof Rosnah Binti Mohd Zain** *MAHSA University, Malaysia* Venue: Classroom T1, M-Block
1000	**Plenary Session 7** Compartmental concepts in pharmacokinetics (Online) **Prof Sunil S. Jambhekar** *LECOM, School of Pharmacy, USA*	**Plenary Session 9** The enzymology of C-nucleoside biosynthesis (Online) **Prof Nigel G. J. Richards** *School of Chemistry, Cardiff University, UK*	**Plenary Session 11** Targeting proinflammatory transcription factors by natural agents for cancer prevention and therapy (Online) **Dr Gautam Sethi** *Yong Loo Lin School of Medicine, National University of Singapore, Singapore*
1040	**Plenary Session 8** Technology transfer challenges for new product & method **Mr Vijay Kshirsagar** *TRAC Pharma Consulting, Mumbai*	**Plenary Session 10** Reverse vaccinology, an omics-based approach to vaccine design (Online) **Prof Mohammad Asif Khan** *University of Doha for Science and Technology (UDST), Doha, Qatar*	**Plenary Session 12** Beyond prescriptions: modernization of pharmacy practice in era of precision medicine and big data **Prof Mahadev Rao** *Manipal College of Pharmaceutical Sciences, Manipal*

1120	**Coffee Break and Networking** Venue: Back Lawn, New Building	
Concurrent Plenary Talks	**Theme: NextGen Therapeutics** **Chair: Dr Vikram Chaudhary** *Operant Pharmacy Federation* Venue: Auditorium, M-Block	**Theme: Translational Medicines** **Chair: Prof Rosnah Binti Mohd Zain** *MAHSA University, Malaysia* Venue: Classroom T1, M-Block
1135	**Invited Talk 8** Cold plasma- A new frontier in low-temperature plasma applications for healthcare **Dr Alphonsa Joseph** *Institute of Plasma Research, Gandhinagar*	**Invited Talk 10** Navigating the metabolic-redox-inflammatory terrain of cancer: Cartography for therapeutics **Prof Ellora Sen** *National Brain Research Centre, Haryana*
1205	**Invited Talk 9** Blending computational studies in drug discovery: Design of dual inhibitors for Alzheimer's disease **Prof Hemant R. Jadhav** *Birla Institute of Technology and Science (BITS), Pilani, Rajasthan*	**Invited Talk 11** Drug repositioning/repurposing: Future drug developmental strategy against viral infections **Prof Anirban Basu** *National Brain Research Center, Haryana*
1235	**Lunch Break, Poster Viewing & Judging and Networking** Poster Presentation -3: **Abstract Nos. NTP001 to 062** Venue: Back Lawn, New Building	
1400	**Keynote Address 4** Bridging the gap for patient care: Scope & opportunities in drug development, an Ayurveda perspective **Dr Manoj Nesari** *Ministry of AYUSH, New Delhi* Moderator: **Dr Niyati S. Acharya,** IPNU Venue: Auditorium, M-Block	
1500	**Industry Talk (USP)** **Dr Annu Uppal** *Scientific Affairs USP*	

Concurrent Plenary Talks	**Theme: Translational Medicines** **Chair:** **Assoc Prof Dr Ian Haworth** *University of Southern California (USC), Los Angeles, California, USA* Venue: Auditorium, M-Block	**Theme: NextGen Therapeutics** **Chair:** **Prof Hemant R. Jadhav** *Birla Institute of Technology and Science (BITS), Pilani, Rajasthan* Venue: Classroom T1, M-Block	**Theme: Herbal Technology/ Translational Medicines** **Chair:** **Prof Ellora Sen** *National Brain Research Centre, Haryana* Venue: Classroom T3, M-Block
1520	**Plenary Session 13** Integrating network pharmacology approaches to uncover the therapeutic potential of herbals in the management of diabetic retinopathy **Prof Sivasankaran Ponnushankar** *JSS College of Pharmacy, Ooty*	**Plenary Session 15** Targeting human dihydroorotate dehydrogenase (hDHODH) using bioisosterism: An effective way to design preclinical candidates against a golden target (Online) **Assoc Prof Marco L. Lolli** Medicinal Chemistry - University of Turin (UNITO), Italy	**(Herbal Technology)** **Invited Talk 12 (1520)** Harnessing the potential of nanotechnology in phytochemical-loaded drug delivery system **Assoc Prof V. Badireenath Konkimalla** *School of Biological Sciences, DAE-National Institute of Science Education and Research (NISER), Odisha*
1600	**Plenary Session 14** Oral cancer control strategies - Epidemiology, early detection and research advancement **Prof Rosnah Binti Mohd Zain** *MAHSA University, Malaysia*	**–**	**(Translational Medicines)** **Invited Talk 13 (1550)** Early phase drug development in India- Regulatory, rigor and reported outcomes **Dr Hiren Mehta** *Veeda Clinical Research Limited, Canada*
1640	**Coffee Break, Poster Viewing & Judging and Networking** Poster Presentation -4: **Abstract Nos. NTP063 to 095, HTP- 001 to 018, TMP- 001 to 030** Venue: Back Lawn, New Building		
1655 **Parallel Oral Presentation 2**	**Pharmaceutical Technologies** Venue: Auditorium, M-Block **Abstract Nos.** PTO- 006 to 010, TMO- 007 to 008	**NextGen Therapeutics** Venue: Classroom T1, M-Block **Abstract Nos.** NTO- 006 to 012	**Translational Medicines** Venue: Classroom T3, M-Block **Abstract Nos.** TMO- 009 to 015

Day 3: *February 09, 2024 (Friday)*
Venue: M-Block, Nirma University

Time	Agenda	
0900	**Keynote Address 5** Multidisciplinary research approaches in cancer nanotherapeutic development (Online) **Prof Wong Tin Wui** *University Teknologi, MARA, Malaysia* Moderator: **Prof Priti J. Mehta,** IPNU Venue: Auditorium, M-Block	
Concurrent Plenary Talks	**Theme: NextGen Therapeutics** **Chair:** **Prof Sarat Dalai** *Institute of Science, Nirma University, Ahmedabad* Venue: Auditorium, M-Block	**Theme: Herbal Technology** **Chair:** **Prof Mamta B. Shah** *L. M. College of Pharmacy, Ahmedabad* Venue: Classroom T1, M-Block
1000	**Plenary Session 16** Ensuring integrity in sports and medicine: The fusion of anti-doping science with NextGen therapeutics **Dr Puran L. Sahu** *National Dope Testing Laboratory (NDTL), New Delhi*	**Plenary Session 18** Development of wound healing herbal formulation from sea buckthorn **Prof Inder Pal Singh** *National Institute of Pharmaceutical Education and Research (NIPER), S.A.S Nagar*
1045	**Plenary Session 17** Global drug development - Current trends, challenges and opportunities **Mr Gurpreet Singh** *Data Sciences, Safety and Medical IQVIA, UK*	**Plenary Session 19** Music medicine as alternative therapy for neurological disorders (Online) **Assoc Prof Neelima Chauhan** *University of Illinois at Chicago, Illinois, USA*
1115	**Coffee Break and Networking**	
Concurrent Plenary/ Invited Talks	**Theme: NextGen Therapeutics** **Chair:** **Dr Sarat Dalai** *Institute of Science, Nirma University, Ahmedabad* Venue: Auditorium, M-Block	**Theme: Translational Medicines** **Chair:** **Prof Mamta Shah** *L. M. College of Pharmacy, Ahmedabad* Venue: Classroom T1, M-Block

1130	**Invited Talk 14** Studies on new class of TLK (Tousled-like kinase) inhibitors: A novel therapy for prostate cancer **Assoc Prof Sivapriya Kirubakaran** *Indian Institute of Technology (IIT), Gandhinagar*	**Plenary Session 20** Pharmaceutical care in geriatric patients **Prof Pramil Tiwari** *National Institute of Pharmaceutical Education and Research (NIPER), S.A.S Nagar*
1210	**Invited Talk 15** Unveiling the potential of molecular hybridization: DNA-targeted cytotoxic agents in cancer drug discovery **Assoc Prof N. Shankaraiah** *National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad*	
1250	**Lunch Break, Poster Viewing & Judging and Networking** Poster Presentation -4: **Abstract No. TMP- 031 to 081** Venue: Back Lawn, New Building	

1400 **Parallel Oral Session 3**	**Herbal Technology** Venue: Auditorium, M-Block **Abstract Nos.** HTO- 001 to 004, TMO-024	**NextGen Therapeutics** Venue: Classroom T1, M-Block **Abstract Nos.** NTO- 013 to 014, TMO- 021 to 023	**Translational Medicines** Venue: Classroom T3, M-Block **Abstract Nos.** TMO- 016 to 020
1515	**Coffee Break and Networking**		
1530	**Valedictory Function** Venue: Auditorium, M-Block		

Abbreviations:

- M-Block — Institute of Management, Nirma University
- NDDS: — Novel Drug Delivery Systems
- TM: — Translational Medicines
- NT: — NextGen Therapeutics
- HT: — Herbal Technology

NIPiCON 2024

7th Nirma Institute of Pharmacy International Conference

Nirma Institute of Pharmacy International Conference (NIPiCON) was initiated in the year 2013 to offer a common platform for academicians, researchers, industrialists, clinical practitioners and young budding pharmacists to share their ideas, knowledge and research findings which finally emerge with new concepts using interdisciplinary approach in the pharmaceutical field. Gujarat is at the forefront of the growth in the pharmaceutical industry in India. Accounting for nearly 42 percent share of India's pharmaceutical turnover, 22 percent of its drug exports and 20 percent of its chemicals output, Gujarat's pharmaceutical industry has evolved into an innovation-driven, knowledge-focused industry. Ahmedabad, being the largest city in the state of Gujarat, houses several established companies which have operations in the world's major pharma markets.

Institute of Pharmacy, Nirma University is organizing 7th NIPiCON 2024 with the aim to provide a common platform for dissemination of multidisciplinary research on the theme of **"NextGen Therapeutics: Multidisciplinary Research Approaches for Drug Development and Delivery"** *Bridging the Gaps: From Drug Discovery to Patient Care.*

The conference intends to provide networking opportunities for different stakeholders of the pharmaceutical and healthcare sector i.e., industrialists, physicians, pharmacologists, biotechnologists, entrepreneurs and regulators. The conference will feature expert discussions on the emerging trends and corresponding opportunities and challenges for the development of innovative solutions related to healthcare.

The conference features plenary and invited lectures from eminent national and international researchers from varied disciplines of healthcare, medical and pharmaceutical field. The conference will also provide researchers and students to share their research developments and innovative ideas by means of deliberations, discussions as well as oral and poster presentations.

MAIN THEMES OF THE CONFERENCE

1. **Novel Drug Delivery Systems**
2. **Translational Medicines**
3. **NextGen Therapeutics**
4. **Herbal Technology**

MAIN TRACKS OF THE CONFERENCE

Pharmaceutical Formulation Development, Biotechnology

- **Pharmaceutical Formulation Development, Biotechnology & Nanotechnology**
- **Pharmacognosy, Natural Products & Herbal Technology**
- **Computer Aided Drug Design & Pharmaceutical Chemistry**
- **Pharmacology, Clinical Pharmacy, Pharmacovigilance & Pharmacy Practice**
- **Pharmaceutical Analysis & Quality Assurance**
- **Regulatory Affairs & Intellectual Property Rights**
- **Pharmaceutical Management & Ethics in Pharmacy**


SCIENTIFIC
SESSIONS

KEYNOTE LECTURES

In Silico Drug Discovery: Molecular Design, Pharmacokinetic Modeling, and Artificial Intelligence

Dr Ian S. Haworth

Associate Professor and Vice Chair of the Department of Pharmacology & Pharmaceutical Sciences, Mann School of Pharmacy & Pharmaceutical Sciences at the University of Southern California.

BIOGRAPHY

Dr. Ian Haworth is an Associate Professor and Vice Chair of the Department of Pharmacology & Pharmaceutical Sciences in the Mann School of Pharmacy & Pharmaceutical Sciences at the University of Southern California. He received his Ph.D. in Physical Organic Chemistry from the University of Liverpool, UK, and then spent three years as a Postdoctoral Fellow at the University of Oxford, UK before joining USC. His research work lies at the interfaces of chemistry, biochemistry, and computation. This work involves development and utilization of algorithms for prediction of drug-protein molecular interactions and simulation of ADME properties of drugs. Dr. Haworth's laboratory has published more than 100 scientific articles on this work. Current projects include examining the relationship of affinity with solvation at drug-protein interfaces; physiologically based pharmacokinetic (PBPK) modeling aimed at mechanistic understanding of drug disposition; and use of cheminformatics and machine learning in prediction of molecular association. Dr. Haworth also has a major role in teaching of medicinal chemistry and biopharmaceutics at USC, and he has lectured and taught courses on this content worldwide. He is also currently co-Director of the International Summer Program in the USC Mann School of Pharmacy. Dr. Haworth has utilized problem-based learning in teaching of science courses for many years, and he has published and presented widely on these educational approaches. He is also interested in utilization of computational methods in evaluation of educational outcomes, including new approaches to curriculum mapping and assessment.

ABSTRACT

In silico methods are increasingly important in drug discovery and development. These methods include molecular-based computational approaches using molecular modeling and docking; simulation of pharmacokinetics using compartmental and physiologically based pharmacokinetic (PBPK) modeling, and use of machine learning to build complex models of molecular events and use these models for prediction. In this talk, examples of these three areas will be discussed based on recent work in our laboratory. First, modeling approaches using explicit solvation can improve understanding of the role of water at molecular interfaces. We have developed Solvate/Watgen as an algorithm for prediction of interface solvation, as a basis for ligand design incorporating solvent retention and exclusion. Second, compartmental and PBPK methods will be described for prediction of environmental toxicological effects and for detailed understanding of molecular events modulating drug disposition, using GastroPlus software. Finally, a machine learning approach using molecular descriptors will be discussed for prediction of inhibitors of tau fibril formation, using the KNIME software platform.

In vitro performance testing for complex pharmaceutical products

Mr Samir Haddouchi
Managing Director,
SOTAX Pharma Services, Orleans, France

BIOGRAPHY

Mr. Samir Haddouchi is presently the Managing Director of SOTAX Pharma Services (SPS), Orleans, France. Prior to joining SPS, Samir spent more than 10 years at Sandoz and Novartis, in Switzerland and France, participating to the development of analytical methods for agrochemical and pharmaceutical compounds and formulations. During the Novartis merger, he moved to Orléans (France) in 1998 to join the analytical group in the technical development department where he became responsible for dissolution. In 2005, he resigned from Novartis to create SPS Pharma Services which is the first and only CRO specializing in Dissolution and Release Testing. In April 2013, SPS moved to a new larger facility in Orleans (France) to provide a broader range of services to its clients, including cGMP routine testing. The facility has been successfully inspected by US FDA and is registered as Pharmaceutical Establishment for both US and Europe. Since beginning of 2022, SPS is fully integrated within SOTAX Group and Samir is now in charge of the business segment Pharma Services, which comprises of 3 sites located in Europe, America and Asia.

ABSTRACT

New types of formulations and drug delivery technologies call for a new approach to in-vitro drug release testing and traditional dissolution methods are not tailored to these novel dosage forms.Products such as medical devices, combination products, injectable suspensions, microspheres and other Long Acting Injectables can be challenging when it comes to the development of an in vitro release or dissolution method. More flexible techniques such as the flow through cell may be needed to fulfill the requirements of such complex formulations.It is of importance to use suitable method development strategies to characterize the release properties of the formulation as well as the dissolution properties of the Active Ingredient (API). That way, in vitro methods may serve either as formulation screening tools, to correlate in vitro results with in vivo performance or to control the quality of commercial products thus ensuring batch-to-batch consistency. This lecture will discuss current and new applications related to non-conventional dosage forms

Next-Gen Sequencer to Next-Gen Therapeutics

Prof Ramesh K. Goyal
Vice Chancellor
Delhi Pharmaceutical Sciences and Research University

BIOGRAPHY

Prof. Ramesh K. Goyal, the Vice Chancellor, Delhi Pharmaceutical Sciences and Research University (DPSRU) was also the Vice-Chancellor of M. University of Baroda, Executive Director (Research & strategies) at V ClinBio Labs., Chennai, Director (Pharmacology) at NMIMS University, Mumbai; Director ISF College of Pharmacy, Moga, Punjab and Professor at L. M. College of Pharmacy, Ahmedabad. Recently he has been given Honorary Professor of Stavropol State Medical University, Russia and he is the Second non-Russian Professor being bestowed upon this title in 80 years of the University. He has over 45 years of experience in Teaching and Research particularly in Cardiovascular Pharmacology & Diabetes. He was a post-doctoral scholar, visiting scientist and Visiting Professor in University of British Columbia Vancouver and University of Manitoba, Winnipeg, Canada. Dr. Goyal got three patents awarded, 4 under consideration, 35 books and book chapters, 400 full papers, and book chapters ('h' index 48), over 500 abstracts published in National and International journals. He has guided 46 Ph.D. and 201 Post-graduate students. He is the recipient of 79 national & International Awards. Some of the notable awards include Best Pharmacy Teacher and Best Pharmaceutical Research Scientist Awards from APTI, Life Time Achievement & Distinguished Leadership Award from International Academy of Cardiovascular Sciences, Canada (IACS) and R. J. Wegmann Award from Indian Society of Hypertension, and Award of Millennium from International College of Nutrition. He is the Fellow of eight professional bodies (FIPS, FIACS, FAMS, FIC, FICN, FNASc. FSCH, FIVSPT). He has been the President of Indian Pharmacological Society, Society of Pharmacovigilance, India and Indian Society of Hypertension. He is currently Council member of the IACS, Canada and the Vice President of IACS, (India Chapter). He has attended number of seminars, workshops and conferences as resource Person and also chaired various sessions. Dr. Goyal has delivered over 269 invited lectures in India and 40 lectures abroad including many prestigious orations. He has worked on anti-diabetic herbal plants from preclinical to clinical studies and identified biomarkers not only for quality assessment but also as leads for specific targets involved in the prevention of cardiovascular complications associated with diabetes. He has also been involved in research related to personalized medicine and new drug development through 505 B2 mode. He also served as the Expert member for the Indian Medicinal Plants Review being published by ICMR, New Delhi (2003-1016). Currently he is the Chairman of Scientific Advisory Board, National Dope Testing Laboratory, Member of South Asia Regional Chapter of United States Pharmacopoeia, Scientific Advisory Group in Herbal Division of Indian Council of Medical Research, New Delhi, Scientific Advisory Committee of Indian Pharmacopoeia Commission, Faridabad, Delhi NCR and Phytopharmaceutical Group of Central Drugs Standards Control Organization (CDSCO) New Delhi. He has also served as the Chairman of the many committees including Endosulfan Committee of Govt. of Gujarat and Oxytocin Committee of the CDSCO.

ABSTRACT

In the world of pharmaceutical sciences, strategies of drug discovery and development has always been changing from time to time. It used to be herbal based in 19th century, turned into chemical based in 20th century and now in 21st century, it is genomic based. While there are number of drug options available for almost all diseases with plenty of cellular, and molecular based targets, genomic variability has become one of the newest challenges in the disease management; May it be simple analgesics to be used for headache for which we had medicine in 18th century or cardiac problems for which we got digoxin like drug in 19th century, or antibiotics for infectious diseases or today the major lifestyle disease the cancer. Human Genome Project provided largest opportunity ever till date for the medical scientists by the turn of 20th century, added to this has been the Next-Gen Sequencer with in imaginable low cost and astonishing high speed. From many decades, the medical and pharmaceutical researchers will be engaged in not only genome based accurate and personalised diagnostics, but also the precision medicine utilising plethora of molecular targets. Latest being the nano-theranotics and crisper technology in addition to opening of several 'omics'. In conclusion, Next Gen Sequencer is the most dynamic technology for Forthcoming Next Gen Therapeutics for Next Generations.

Bridging the gap for patient care: Scope & opportunities in drug development, an Ayurveda perspective

Ayurveda Maharshi Dr. Manoj Nesari
Advisor, Ayurveda, Ministry of AYUSH, New Delhi

BIOGRAPHY

Dr. Nesari MD PhD advises the Government of India at the Ministry of AYUSH on strengthening the health system and integrating Ayurveda and other Indian traditional systems of medicine into public health care. He is the Head of the International Cooperation Division in the Ministry of AYUSH and holds a PhD in Policy Research. As an Ayurvedic physician MD, he specializes in internal medicine (Kayachikitsa).

He has also successfully completed the Post Graduate Diploma in Disaster Preparedness and Rehabilitation' from Guru Govindsingh Indraprastha University, Delhi. Dr. Nesari has 30 years of experience in Ayurvedic science and clinical practice as well as in policy planning, international cooperation and public health. Many new initiatives to expand Ayurvedic services and their use in public health etc. are to his credit. Prior to his current role, he served as Director of the National Academy of Ayurveda and Chief Medical Officer in the Central Govt. Health Scheme.

ABSTRACT

In recent years, world has witnessed many new pandemics and endemics where the disease management has been a major challenge and drugs for targeted therapy have not been developed yet. Increasing burden of the non communicable diseases and unforeseen events due to infectious diseases has led to the developing need of wholesome solution. Increasing life expectancy has also resulted in increased prevalence of degenerative disorders and dementia.

Ayurveda, an ancient and holistic healthcare system from India, offers a unique perspective on patient care with a focus on personalized treatment, preventive healthcare, and promoting overall balance and harmony.

Ayurveda's healthcare approach addresses lifestyle modifications, dietary guidelines, and the utilization of herbs and natural remedies to maintain optimal health, self-healing through detoxification therapies, rejuvenation techniques, and stress management. Integration of Ayurveda with conventional medicine can offer comprehensive patient care.

The phrase "Bahugunam Bahukalpam Sampannam Yogyam" alludes to the concept of providing diverse options and therapies that are suitable for different individuals.

The fundamental principles of Ayurveda, includes the concept of doshas (Vata, Pitta, and Kapha) and their influence on individual's constitution indirectly advocating the personalized treatment plans for each patient. With the concept of holistic care, Integrating Ayurveda into mainstream healthcare practices has the potential to bridge the existing gaps in patient care, providing individuals with comprehensive and individualized approaches to enhancing their overall health and vitality.

Ayurveda recognizes that each person is unique, with a distinct constitution and health needs. The "Bahugunam" aspect emphasizes the importance of offering multiple treatment modalities for developing with tailor treatment plans to suit individual requirements and preferences.

The term "Bahukalpam" further signifies the diversity of treatment options available within Ayurveda to offer tailormade solution for each patient's specific health concerns.

"Sampannam" refers to the completeness and efficacy of the treatment approach of Ayurveda aiming to address the root cause of illness rather than merely alleviating symptoms. The principle of "Yogyam" explains the importance of suitability and compatibility. Ayurveda recognizes that not every treatment or remedy is suitable for everyone. Factors such as age, constitution, and the specific imbalances present in an individual must be considered when selecting appropriate therapies. This ensures that the treatments are safe and effective for each person's unique circumstances.

In conclusion, "Bahugunam Bahukalpam Sampannam Yogyam" represents the holistic approach of Ayurveda in providing diverse and tailored treatment options to individuals. By recognizing the uniqueness of each person and employing a wide array of therapeutic modalities, Ayurveda strives to provide comprehensive and individualized care, promoting health and well-being.

Multidisciplinary Research Approaches in Cancer Nanotherapeutic Development

Prof Tin Wui Wong

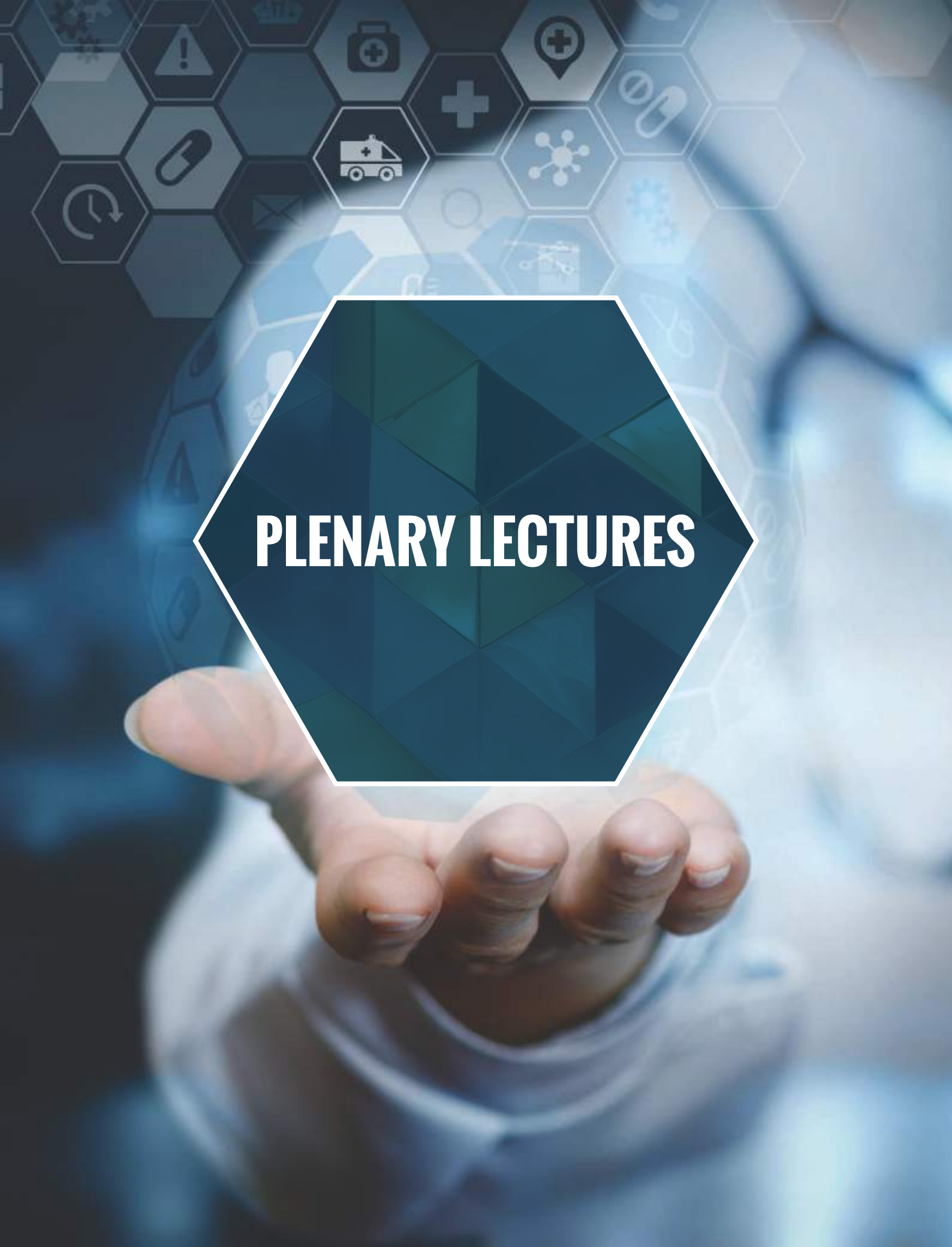
Non-Destructive Biomedical and Pharmaceutical Research Centre, Smart Manufacturing Research institute, Universiti Teknologi MARA Selangor, Puncak Alam, 42300, Selangor, Malaysia

BIOGRAPHY

Professor Dr Wong Tin Wui obtained his PhD degree from the National University of Singapore in 1999.He is presently the lecturer and principal fellow at the Faculty of Pharmacy and Smart Manufacturing Research Institute, Universiti Teknologi MARA. His research areas are primarily focused on precision oral, skin and pulmonary nanodrug delivery. He has published over 135 peer reviewed articles. He is the editor of Asian Journal of Pharmaceutical Sciences, Associate Editor of Drug Development and Industrial Pharmacy, Drug Design, Development and Therapy, Frontiers in Pharmacology and Technology in Cancer Research and Treatment, and Regional Editor of Current Drug Delivery. Professor Wong is the founder and head of Non-Destructive Biomedical and Pharmaceutical Research Centre, Malaysia and Sino-Malaysia Molecular Oncology and Traditional Chinese Medicine Delivery Joint Research Centre, Medical College, Yangzhou University, China. He is the jury for Maurice-Marie Janot Award and Lecture, and founder and chief jury for Malaysia Technology Expo Sustainable Development Goals International Innovation Awards. He serves as the visiting/adjunct/lecture professor of UCSI University, Taylor's University and Universiti Malaya, Malaysia; National University of Singapore; Yangzhou University, China; Nirma University, India and is the postgraduate faculty member of Chulalongkorn University, Thailand as well as the fellow of Academy of Sciences Malaysia. He is the winner of Federation of Asian Pharmaceutical Associations 2023 scientific award.

ABSTRACT

Nanoparticles, such as solid polymeric nanoparticles, solid lipid nanoparticles, nanostructured lipid carrier, ethosomes, niosomes, nanoemulsion and nanosuspension, have been adopted in the development of cancer nanomedicine. Ideally, the constituent materials used in nanoformulation development must possess physicochemical attributes that allow efficient entrapment of cytotoxic drugs in nanoparticles with no premature release and protection of biomolecules that are susceptible to degradation such as peptides and condensed genetic materials. In systemic circulation, the nanoformulations are required to exhibit a high level of serum stability, minimal aggregation, protein corona formation and opsonisation, and preferentially be accumulated at cancer sites via passive and/or active targeting mode. At the cancer sites, nanoformulations are required to interact with the cancer cells, mediate cellular uptake, intracellular drug release and drug action. The biological fate of nanoformulations is dictated by their physicochemical attributes such as size, polydispersity index, zeta potential, shape, morphology, hardness, and cell surface composition of which are governed by chemistry and physical properties of the constituent materials and their assembly approaches. These constituent materials, translating in nanoscale geometry, are preferably cheap, available in abundance, non-toxic, biodegradable, biocompatible, and can be green manufactured for commercial and clinical applications. Past intensive research investigations have the improved benefits of nanoparticulate carrier proven. Nonetheless, few nanoparticles have passed the clinical trials, let alone achieve commercial success. This presentation highlights the recent progress in cancer nanomedicine development from the perspectives of synthesis and manufacturing, dosage form design, patent administration, in vivo stability, premature clearance and metabolism, and targeting and cell uptake. It provides an overview on the related challenges and hurdles where experts from multi- disciplinary backgrounds are required for future research explorations.



PLENARY LECTURES

Non-invasive Strategies for Therapeutic Peptide Delivery

Prof Vandana B. Patravale
Professor of Pharmaceutics
Institute of Chemical Technology, Mumbai, India

BIOGRAPHY

Dr. Vandana B. Patravale is currently a Professor of Pharmaceutics at the Institute of Chemical Technology, Mumbai, India. She has more than 30 years of teaching and research experience. She has over 200 refereed publications with over 12295 citations 32 granted patents , 15 patents in pipeline and 2 trademark registries. She has published 5 books and 35 book chapters with international publishers. Dr. Patravale has been active in teaching, research and service throughout her career. She is listed consecutively in top 2% of World Scientist's in pharmacy on basis of publications and citations from the time the list is published by Stanford University. Her areas of research include development of nanocarriers with major emphasis on infectious diseases, cancer and neurodegenerative disorders; medical device development, nanodiagnostics and nanovaccines. She was awarded Most Iconic healthcare (Global) leader award 2023,Topmost healthcare leader Global award(education) 2022,Abdul Kalam Technology Innovation National Fellowship 2021,Fellowship of Indian Chemical Society 2020, Kukreja Oration award 2020,APTIs Dr. Manjushree Pal Best Pharmaceutical Scientist Award 2019, Shri Amrut Mody distinguished researcher award 2018, OPPI women scientist award 2015, Bill Melinda Gates grant award 2015,Best Pharmaceutical Scientist award 2014, VASVIK award 2013, Veneto nanotech award 2013, APTI best teacher award 2012, Fellowship of Maharashtra Academy of Sciences, 2011and K.H. Garda Distinguished researcher award 2009. She is Convener, APTI Women forum, President-CRS Indian chapter, editor CRS IC and APTI women forum newsletters and on editorial board of peer reviewed journals. She is actively collaborating with researchers as well as industries within country and abroad and has completed Indo-Swiss, Indo-Ireland, Indo-Japan, Indo-US,Indo-UK projects. She is executing all major grants from Indian Government focusing on product development besides projects from USA and Europe being currently undertaken. She has transferred about 20 + technologies to industry including drug eluting stents being marketed in more than 65 countries.

ABSTRACT

Peptide based therapeutics, in the current biopharmaceutical market, are majorly available as parenteral formulations. Inherent physicochemical properties of peptides including hydrophilicity, bulky size, enzymatic degradation, and stress induced denaturation make their delivery challenging. Global quest for delivery of biomolecules by non-invasive routes like nasal, oral, transdermal, or pulmonary has been ongoing with limited commercial success. When dealing with the chronic conditions like osteoporosis, diabetes, etc., patient adherence is critical, emphasizing the need for non-invasive therapy. Salmon calcitonin is a 32 amino acid peptide which is approved by the US FDA for use in postmenopausal osteoporosis (PMO), hypercalcemia, and Paget's disease, mandating long-term therapy. First part of the project was designed for development of oral peptide formulation by devising suitable delivery strategies. As a part of pre-formulation, computational tools viz. molecular docking and molecular dynamics simulations were used for the development of a prediction module. A library of excipients

was screened along with an in-house synthesized lipomer P-lipid, which was found to exhibit a remarkable dual mechanism to enable chymotrypsin inhibition and intestinal membrane permeation, further demonstrated via ex vivo studies. Preliminary evaluation of P- lipid showcased its surfactant property and thus a lipid based mixed micellar system was developed. P-lipid based mixed micelles loaded onto silica carrier enabled oral delivery of salmon calcitonin using enteric coated capsules. The capsules were evaluated for in vitro pharmacopeial parameters followed by in vivo X-ray imaging which confirmed jejunal release of the capsule contents. The results obtained in the in vivo pharmacokinetic studies reveal affirmative prospective of this proof-of-concept platform for oral delivery of peptides. Second part of the project tackled formulation challenges pertaining to transdermal delivery of biomolecules. The project focused on transdermal delivery of biomolecular drugs using novel polymeric microneedle array patch (MAP) systems using salmon calcitonin as a model peptide therapeutic. This work comprised of development and evaluation of dissolving MAPs loaded with lipid micelles formulations fabricated using lipomer P-lipid and soy phosphatidylcholine, respectively. A series of pre-formulation studies involved in designing a triple layer MAP were performed utilizing multiple techniques like mould casting and 3D printing. Developed MAPs were evaluated in vitro and ex vivo using neonatal porcine skin models. The in vivo pharmacokinetics and organ biodistribution revealed the potential of this platform to enable transdermal peptide delivery.

Patient-centric Drug Delivery Systems: Innovative Solutions to Unmet Clinical Needs

Prof Sanjay Garg
Director, Centre for Pharmaceutical Innovation, University of South Australia, Adelaide, Australia

BIOGRAPHY

Professor Sanjay Garg is a pharmaceutical scientist with a passion for research and teaching in translational drug development and delivery and a mission to make lives better for our patients. He is the Director of the Centre for Cancer Diagnostics and Therapeutics (CCDT) and Pharmaceutical Innovation and Development Group (PIDG). His interdisciplinary research is based on the principles of engagement, innovation, translation and impact. Prof Garg is a pharmacist and completed PhD from the National Institute of Immunology, India. He joined the Program for Topical Prevention of Conception and Disease (TOPCAD) Rush University, Chicago (1995-1998) the USA, developing novel microbicides compounds and formulations. A number of his patented formulations have reached clinical stages and market in the USA, India, New Zealand, UK, and Australia, e.g. Acidform, an acid-buffering formulation (USA Patent 6706276) has been approved by US FDA as a non-hormonal contraceptive (Phexxi) and is now available in the USA market. During the tenure with the University of Auckland, New Zealand (2003-2011), he established AnQual Good Laboratory Practice (GLP) compliant analytical laboratory. Acting as Deputy Head of the Auckland Pharmacy School, he played a critical role in establishing research and post-graduate program.

ABSTRACT

At the Centre for Pharmaceutical Innovation, we address unmet clinical needs for both human and animal patients. Our commitment to innovation is exemplified through four distinctive case studies. The first example is the successful journey from conceptualization to the attainment of the coveted US FDA- approved prescription product status with Phexxi, a non-hormonal contraceptive. This remarkable achievement spans over two decades and encompasses every facet of new drug development. Our second example highlights the impact of our patented equine long-acting omeprazole injection, currently available in multiple countries. This revolutionary product has significantly improved the quality of life for horses suffering from gastric ulceration, underscoring our dedication to advancing veterinary pharmaceuticals. The third case study delves into our pivotal role in transforming hospital practices worldwide through the assessment of the stability of components within the penicillin allergy kit. This research has ushered in a new era in healthcare protocols, reflecting our influence on a global scale, and improving pharmacy practice. Lastly, our fourth project contributes to the well-being of nursing mothers by examining drug excretion in human milk. By providing valuable data to physicians and medicine information pharmacists, we empower them to make informed decisions when prescribing specific medications to breastfeeding mothers. This presentation offers a comprehensive view of our impactful contributions to pharmaceutical innovation, showcasing our commitment to addressing critical clinical challenges and advancing healthcare on both human and animal fronts.

Ayurveda, Nutritional Supplements, Phytopharmaceuticals and Botanical Drug Development

Dr Lal Hingorani
Chairman and Managing Director
Pharmanza Herbal Pvt. Ltd., Dharmaj

BIOGRAPHY

Dr. Lal Hingorani is the Director of Pharmanza Herbal Pvt. Ltd. He did his PhD in Chemistry from IIT Bombay. He has previously worked as the CEO of Arbitee Chem Pharma Ltd. India. He also worked as R&D Assistant manager for Merin Ltd., R&D incharge for Walter Bushnell Ltd and an R&D executive for Searle India. Before joining industry, Dr. Hingorani also worked as a lecturer at the National College, University of Mumbai, India. He has supervised 3 PhD students and more than 20 master students. His area of research specialization includes Phytochemistry and analytical chemistry, Pharmacology of Herbal Products, Pre-clinical, clinical pharmacokinetics of botanical ingredients, Safety and efficacy clinical trials of herbal nutraceutical supplements and herbal nutraceutical product development.

ABSTRACT

Botanical drugs can be marketed in different segments in India and the Regulated market, difference in the market segments and registration requirements are required for selling as Ayurvedic products, Phytopharmaceuticals, Nutritional segments, and as Botanical drugs. There is requirements of Toxicity and clinical trials on how to conduct the same.

Analytical Strategies and Metabolomics: A Multidisciplinary Approach From Drug Development to Patient Care

Dr Mohana Krishna Reddy Mudiam
Director
Institute of Pesticide Formulation Technology (IPFT), Gurugram

BIOGRAPHY

Dr. Mohana Krishna Reddy Mudiam presently working as Director, Institute of Pesticide Formulation Technology (IPFT), Gurugram having expertise in Analytical and Bioanalytical Chemistry with specialization in Food Safety, Environmental Toxicology and Biopharmaceuticals characterization. He has 24 years of research experience in Analytical and Bioanalytical Chemistry with applications in Environmental, Health, Food, Pharmaceutical and Forensic Sciences. His group research interests are mainly focused in understanding the occurrence/fate, transport and accumulation of chemicals in Pharmaceuticals, Food, Environment and Biological samples using latest analytical and metabolomics approaches. His group efforts yielded several miniaturized analytical methods for the analysis of toxicants/contaminants in various food, biological and environmental matrices. He successfully established metabolomics in India as a comprehensive screening tool to understand/evaluating the (i) toxicity of xenobiotics in various model organisms, (ii) effect of ripening agents on the fruit metabolome and (iii) metabolic profiles in plants through Phytometabolomics. He is instrumental in the establishment of GLP compliant analytical facility for biologics and biosimilars characterization at CSIR-IICT, Hyderabad. He guided 15 Ph.Ds. so far and currently 05 Ph.D. students are working in his laboratory. He authored 120 publications in peer-reviewed international journals with more than 4050 citations (h index of 40). He is recipient of BRSI Industrial Medal Award, CSIR Technology Award for Innovation for his work on COVAXIN, Fellow of Andhra Pradesh and Telangana Academies of Sciences (FTAS & FAPAS) and several other appreciations. He visited countries like USA, Germany, France, Australia, China and Taiwan as part of his scientific collaborations and/or assignments.

ABSTRACT

The drug discovery and development has five stages from the invention of molecules to preclinical studies to clinical development to regulatory review to post-market surveillance. From invention to regulatory review for a new molecule involves huge expenditure and long time. To avoid this, in recent times, the pharmaceutical industry mainly focussing on the development of generics (off-patent molecules), repurposing of old drugs for new applications and biosimilars (off-patent biologics) for which, the process may not involves cost and time in developing them and getting approved from the regulators. However, the analytical tools plays a vital role during this process from the identifying the compound and related impurities, pharmacokinetics, toxicology, bioavailablity studies, post-market surveillance etc. The advancement and sophistication in the analytical techniques made possible to design effective analytical strategies for an effective work solutions in the drug discovery and development. The emergence of - omics approaches like metabolomics, which is the measurement of ideally all metabolites in a biological samples at defined temporal conditions finds applications in drug discovery and development for the toxicological assays, phytopharmaceuticals development and even predicting the mechanistic insights about the drug action in the biological systems. In my talk, I will be able to elaborate on the importance of analytical techniques and their utilization in designing the effective strategies to develop analytical methods and validation followed by their measurement uncertainty to make them enable to use for regulatory testing. Further, also illustrates about the importance of metabolomics and their application in toxicological, food, environmental and herbal applications.

From Bench to Bedside: Advancing Drug Discovery and Development with Artificial Intelligence

Prof Hardeep Saluja

Professor of Pharmaceutical Sciences Bernhardt Scholar PharmD./MBA Program Coordinator, Southwestern Oklahoma State University's College of Pharmacy, Oklahoma, Weatherford, USA

BIOGRAPHY

Dr. Hardeep S. Saluja is a distinguished professor of Pharmaceutical Sciences at Southwestern Oklahoma State University's College of Pharmacy. In addition to his teaching responsibilities, he also coordinates the prestigious PharmD/MBA dual degree program. Dr. Saluja holds a PhD in Pharmaceutics from MCPHS university in Boston. During his academic career, Dr. Saluja conducted his master's research at the Harvard University. His groundbreaking work in the field of total parental admixture has garnered widespread acclaim and has been published in high impact journals.Dr. Saluja's diverse educational background also includes a MBA degree from Southwestern Oklahoma State University (SWOSU). The unique combination of Pharmacy and business education has enables him to apply a multifaceted approach to his research and teaching, and has helped him become a leading figure in the field of pharmaceutical sciences. His contributions have been recognized by several prestigious awards including the 2020 Bernhardt Academic Excellence awardat SWOSU. He is currently serving as the president of American Association of Indian Pharmaceutical Scientist. He has published numerous research articles and book chapters and presented his work at various national and international conferences.

ABSTRACT

From Bench to Bedside: Advancing Drug Discovery and Development with Artificial Intelligence" presents a comprehensive overview of how artificial intelligence (AI) is reshaping the landscape of the pharmaceutical industry. This presentation tunnels into the groundbreaking role of AI in transforming the entire drug development process, from initial discovery through to the delivery of treatments to patients. Key highlights include AI's capabilities in identifying new drug candidates, refining molecular structures, and accurately predicting the efficacy and safety profiles of drugs, surpassing the limitations of traditional methodologies. Additionally, the presentation will shed light on the innovative use of AI in clinical trial design, particularly in improving patient selection and monitoring, thereby enhancing the overall efficiency of trials. The utilization of AI in drug development is not only streamlining the process but also holds the promise of discovering novel treatments for complex diseases that have been challenging to address. This presentation aims to illustrate the synergistic relationship between AI and pharmaceutical research, emphasizing its pivotal role in forging a future in healthcare that is more efficient, effective, and centered around patient needs.

Enzyme inhibition - from past to present day proteolysing targeting chimeras (PROTACS)

Prof Stephen Kerr
Associate Provost Massachusetts College of Pharmacy & Health Sciences, USA

BIOGRAPHY

Stephen Kerr is Professor of Medicinal Chemistry and Associate Provost of Academic and International Affairs at the Massachusetts College of Pharmacy and Health Sciences (MCPHS University) in Boston, MA (USA). He did his BSc (Chemistry) from St. Xavier's College, Mumbai, his BSc(Tech) - Pharma from ICT, Mumbai and completed his PhD from University of Buffalo (USA) and post-doctoral fellowship from Yale University (USA). His research interests are in the areas of anti-viral / anti-cancer drug design, DNA polymerases as well as drug metabolism and anti-oxidants cellular toxicity. He has been a long standing author of the chapter, 'Enzyme Inhibitors and Catalytic Receptors' in Foye's Principles of Medicinal Chemistry.

ABSTRACT

The talk will discuss the evolution of enzyme inhibitors focusing on anti-cancer drugs from structural analogs of nucleotides to present day targeted therapies including the exciting development of PROTACS.

Compartmental Concepts in Pharmacokinetics

Prof Sunil S. Jambhekar
Professor of Pharmaceutical Sciences Chair, ASP Committee
LECOM, School of Pharmacy, USA

BIOGRAPHY

Prior to joining LECOM-Bradenton, School of Pharmacy, Dr. Jambhekar was an Assistant and Associate professor of Pharmaceutics/Industrial Pharmacy at Massachusetts College of Pharmacy and Health Sciences (MCPHS) in Boston and a Professor of Pharmaceutics at South University School of Pharmacy, Savannah, Georgia. Additionally, Dr. Jambhekar has worked in the pharmaceutical industry for three years and, while a faculty member at MCPHS, Dr. Jambhekar worked on a number of product development formulation projects for various pharmaceutical companies. In his previous position at MCPHS, Dr. Jambhekar directed the research of nine doctoral (Ph.D.) students and fifteen master's degree students. Additionally, he served on the supervisory committee of thirty-five graduate students. Dr. Jambhekar is an author or co-author of many presentations at national and international conferences, peer- reviewed scientific publications, book chapters, and a textbook in Basic Pharmacokinetics. Dr. Jambhekar has also reviewed many books and scientific research articles for a number of professional journals. Dr. Jambhekar has served as an external examiner of many doctoral students from four different overseas universities. In 1993-94, Dr. Jambhekar was awarded the Fulbright Scholarship in the lecture/research category for India and, in the year 2006, he was chosen as a Fulbright Senior Specialist for a five-year appointment. In 2006, he was a recipient of a grant from the Fulbright Foundation as a Fulbright Senior Specialist in the global/public health category.

ABSTRACT

Compartmental concepts in pharmacokinetics are used to obtain an adequate description of drug plasma concentrations versus time data and accurate estimates of pharmacokinetics parameters of administered drugs that obey passive diffusion and linear pharmacokinetics. The accurate description and estimation of the pharmacokinetics parameters, in turn, enables clinical pharmacists and pharmaceutical scientists to accurately calculate the dose of drug necessary to elicit pharmacological effects and therapeutic outcomes. In this presentation, the author will attempt to explain the criteria used to select the appropriate compartment model, the information necessary to choose the appropriate model, the importance of frequency of data collection, the accuracy and sensitivity of an analytical method, and data fitting. Furthermore, authors will elucidate on the importance of using parsimonious approach in model selection to describe the data and model dependent and model independent pharmacokinetic parameters.

Technology Transfer Challenges for New product & Method

Mr Vijay Kshirsagar
Director-TRAC Pharma Consulting, Mumbai, India

BIOGRAPHY

Mr. Vijay Kshirsagar is the Director of TRAC Pharma consulting based in Mumbai, India. He completed his Post Graduate degree (M.Sc.) in organoanalytical chemistry by research from Mumbai University. He has 39 years of experience in QA, regulatory and analytical research. He has worked for reputed Indian & Multinational Pharmaceutical firms like Unichem, Ranbaxy, Sun Pharma, Lupin, IPCA & German Remedies. Till April 2013, Mr. Kshirsagar worked for Unichem Laboratories Ltd, Mumbai as the Executive Vice President responsible for Corporate Quality, Regulatory, Analytical Research & Pkg Development for almost 7 years. He still continues to serve as the Technical Advisor for Unichem. He started TRAC Pharmacy consultancy in 2013 offering services for Training, Regulatory, Auditing and Compliance. He has successfully represented his company in US & UK courts regarding IP related matters (Para IV). Mr. Kshirsagar has been a frequent trainer in India & abroad through platforms like ISPE, IDMA, IPA, CPHI, USP, PPS, SPDS etc. and has spoken on variety of topics related to cGMP, GLP, CV, AMV, Stability testing, Dissolution testing, Microbiological Validations, OOS, OOT, QbD, PAT, Aseptic Monitoring, Handling Regulatory Queries, Root Cause Analysis, CAPA etc. Mr. Kshirsagar was Conferred upon with an 'Outstanding Analyst Award 2012' by IDMA (Indian Drug Manufacturers Association) for his contribution towards pharmaceutical analysis. University. Mr. Kshirsagar is also a member of ISPE for more than 10 years as its Director on board. He is also the President of Society for Pharmaceutical Dissolution Science (SPDS) & Chairman of Stake holder's forum for Western India.

ABSTRACT

From my experience across pharma industry as a consultant, it is realised that technology transfer remains a major challenge due to various reasons. Reasons could be lack of implementation of principles of Quality by Design during development/analytical method development, inadequacies in design space verification, different equipment design/operating principles; scale difference, different skill levels, lack of technology absorption teams etc. This happens not only when transfer takes place from R& D to manufacturing unit but also from one site to another site of the same company, mergers, acquisitions or a shift to a contract manufacturer (CMO). The delay in the technology transfer can lead to loss of opportunity which is critical especially for generic manufacturers. So lot of care needs to be taken starting from development itself. Technology transfer is a complex process which involves knowledge transfer, tips & tricks (often non-documented) , experience transfer, immense hand holding, prior training & good planning which ensures proper inter & intra-company cooperation. It needs to be done in a real life situation as it exists every day & not under ideal conditions as it has to sustain not only for technology transfer batches but batches that will be manufactured later on. The presenter intends to cover all these aspects in his presentation based on practical experience involving case studies too.

The Enzymology of C-Nucleoside Biosynthesis

Prof Nigel G. J. Richards
Professor of Biological Chemistry
School of Chemistry, Cardiff University, UK

BIOGRAPHY

Nigel G. J. Richards is currently Professor of Biological Chemistry in the School of Chemistry at Cardiff University. Dr. Richards carried out his post-doctoral training at Columbia University, New York (1983-1985, with W. Clark Still) after receiving his Ph.D. in Organic Synthesis at Cambridge University in 1983 (with Ralph Raphael) and his B.Sc. in Chemistry from Imperial College, University of London in 1980. As a young researcher, he participated in the design and coding of the MacroModel® software package for modeling the properties of organic and biological molecules. He is well known for his work on the mechanistic enzymology of oxalate catabolism, and is the leading expert on asparagine synthetase, an enzyme that seems to lie at the heart of human cancer biology and neural development. These research efforts have been described in approximately 130 papers and numerous lectures worldwide. His most recent work is focused on studying the molecular properties of non-natural nucleobase pairs that can be used for the creation of organisms possessing expanded genetic alphabets. Prior to taking up his current position as a Professor of Biological Chemistry at Cardiff University, he was Professor and Department Head of Chemistry & Chemical Biology at IUPUI (Indianapolis, USA) from 2012-2015. He has also held positions at the University of Florida (1991-2012), where he obtained the rank of Full Professor and Distinguished Teaching Scholar, and the University of Southampton in the UK. He is a co-founder of the Florida-based company AP Lifesciences, LLC, which is seeking to develop novel diagnostic tools and therapies for the treatment of kidney disease. He is an elected Fellow of the American Association for the Advancement of Science, and a Fellow of the Royal Society of Chemistry.

ABSTRACT

There is renewed interest in the synthesis and clinical application of modified nucleosides and nucleotides. Notably, the effectiveness of remdesivir in treating SARS-CoV-2 infections has prompted a re-evaluation of the clinical utility of C-nucleosides; compounds in which the nucleobase is connected to the sugar by a C-C rather than a C-N bond. In this seminar, I will describe recent progress in understanding the structural and mechanistic enzymology of biosynthetic pathways that are used to make C-nucleoside natural products that exhibit antiviral and anti-cancer properties. These findings set the scene for the production of novel, anti-viral C- nucleoside, and C-nucleotide, analogues using biocatalysis.

Reverse vaccinology, an omics-based approach to vaccine design

Prof Mohammad Asif Khan
Associate Dean, Computing and IT
University of Doha for Science and Technology, Qatar

BIOGRAPHY

Dr. Asif Khan is the Professor and Dean of Computing and Information Technology at the University of Doha, Qatar. He is also the executive board member of Global Organisaiton for Bioinformatics Learning, Education and Training (GOBLET) and the President of Asia Pacific Bioinformatics Network (APBioNET). He completed his masters and PhD from National Singapore University. After completing his PhD in 2010, he accepted a full-time, faculty position at Johns Hopkins University (JHU), USA. He was selected by Johns Hopkins as one of the pioneer team members to settle in Malaysia to help build a bioinformatics research capacity, as part of the collaboration with the then newly established Perdana University. Dr. Khan's research interests are in the area of biological data warehousing and applications of informatics to the study of immune responses, vaccines, viruses, venom toxins, drug design, and disease biomarkers. He has authored/co-authored close to 50 international, peer-reviewed research and review articles, published in various international journals, books and conferences, and presented his work at numerous international conferences. He has been involved in the development of several novel bioinformatics methodologies, tools, and specialized databases. His teaching experiences have been in bioinformatics, imparting to undergraduate/postgraduate students; and mentored research projects of more than 50 students. His publications include peer-reviewed, journal articles and book chapters on bioinformatics education.

ABSTRACT

Reverse vaccinology represents a transformative shift in vaccine development, leveraging omics technologies to revolutionize our approach to combating infectious diseases. Aligned with the conference theme, this talk will delve into reverse vaccinology as a quintessential example of multidisciplinary innovation in therapeutics. Reverse vaccinology, an omics-based strategy, revolutionizes traditional vaccine development by utilizing genomic, proteomic, and bioinformatics techniques. This approach facilitates the identification of novel antigens, especially for pathogens that are challenging to culture or have complex life cycles. The talk will particularly focus on the application of bioinformatics for vaccine target discovery.

Targeting proinflammatory transcription factors by natural agents for cancer prevention and therapy

Dr Gautam Sethi
Associate Professor
Yong Loo Lin School of Medicine
Department of Pharmacology,
National University of Singapore, Singapore

BIOGRAPHY

Dr. Gautam Sethi is a tenured Associate Professor in Department of Pharmacology, Yong Loo Lin School of Medicine, National University of Singapore. The focus of his research over the past few years has been to elucidate the mechanism (s) of activation of oncogenic transcription factors by carcinogens and inflammatory agents and the identification of novel inhibitors of these proteins for prevention of and therapy for cancer. The findings of his research work have so far resulted in more than four hundred and fifty scientific publications in high impact factor peer reviewed journals and several international awards. He also serves as an editorial board member for more than 15 international journals including Antioxidants & Redox Signaling, Cancer Letters, Pharmacological Research and International Journal of Cancer. He has been also ranked among the world's most highly cited scientists according to the list of Highly Cited Researchers TM released in both 2020 and 2021 by Clarivate and featured in Stanford University's World's Top 2% Scientists List, which recognizes the most- cited scientists in various disciplines, in the fields of oncology and carcinogenesis (2019-2023). He has been also bestowed with two of the highest Indian diasporic awards namely Hind Rattan award 2020 and Nav Rattan award 2023 by the NRI Welfare Society of India in recognition of his outstanding contributions and achievements in the field of pharmacology.

ABSTRACT

Chronic inflammation plays a vital pathophysiological role in several diseases, including cancer, diabetes, obesity, and neurodegenerative conditions. Deregulation of several classes of transcription factors has been linked with the process of chronic inflammation. Signal Transducers and Activators of Transcription (STATs) constitute an important class of transcription factors that have been implicated in a wide variety of essential cellular functions related to proliferation, survival, and angiogenesis. Among various STAT members, STAT3 is often overexpressed in tumor cells as well as tissue samples and regulates the expression of numerous downstream oncogenic genes. It can play an important role in initiation and progression of both solid and hematological malignancies. Hyperactivation of STAT3 signaling can maintain the cancer stem cell phenotype by modulating the tumor microenvironment, cellular metabolism, and immune responses to favor drug resistance and metastasis. Thus, targeted inhibition of this transcription factor can serve as an attractive target for cancer therapy. I will briefly discuss the importance of STAT3 as a potential target for cancer therapy and will provide novel insights into various inhibitors of this transcription factor based on natural products developed by our group as potential anti- cancer drugs.

Beyond Prescriptions: Modernization of Pharmacy Practice in Era of Precision Medicine and Big Data

Prof Mahadev Rao
Manipal College of Pharmaceutical Sciences, Manipal

BIOGRAPHY

Mahadev Rao is currently the Professor at Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences. Dr. Rao completed his PhD in pharmaceutical sciences at Manipal College of Pharmaceutical Sciences, studying free radical-induced nephrotoxicity of cisplatin and its protection by selenium compounds. His PhD research work won him the Simon Wolf Charitable Foundation award (Cambridge, UK) in 1998. Determined to pursue a career in research, Mahadev moved to National Cancer Institute, NIH, Bethesda, MD as a Fogarty International Postdoctoral Fellow where he worked for two years in basic cancer genetics. In 2003, Dr Rao moved to Lombardi Cancer Center, Georgetown University to purse signal transduction mechanisms of cyclins in breast and prostate cancer. In 2006, Dr. Rao joined Surgery/thoracic gastro-intestinal branch at NCI where he rose from a position of Postdoctoral Scientist to that of a Staff Scientist at National Cancer Institute. Dr. Rao has worked extensively on basic, translational and clinical research at NCI. His major expertise include repurposing old antitumor agents, personalized medicine in thoracic cancers (lung, malignant pleural mesothelioma, esophageal and gastric), genetic mechanisms for tobacco mediated cancers, induction of cancer testis antigens in thoracic cancer by epigenetic drugs for adoptive immunotherapy and the metabolome. Dr. Rao has numerous papers in peer reviewed journals such as Nature, Nature immunology, Cancer Research, Clinical Cancer Research, Journal of immunology, Journal of immunotherapy, Molecular Cell, MCB, JBC, PNAS, Cell metabolism, Cell cycle, Molecular Cancer, etc.

Targeting human dihydroorotate dehydrogenase (hDHODH) using bioisosterism: an effective way to design preclinical candidates against a golden target

Dr Marco L. Lolli

Associate Professor in Medicinal Chemistry, Dep of Science and Drug Technology, University of Torino, Italy

BIOGRAPHY

Prof Marco L. Lolli is an internationally recognized expert in Medicinal Chemistry specialized in hit- to- led optimization process and the design of bioactive using innovative bioisosteric tools. After a Master's degree in Chemistry, he has been trained in prestigious national (Istituto Ricerche Farmacologiche "Mario Negri", Bracco Industria Chimica s.p.a, Research and Development Division) and foreigners (College of Pharmacy, The Ohio State University, Columbus, OH, (USA), School of Pharmacy - University of Wisconsin at Madison, Madison (WI, USA)) laboratories. Since 2022, he is Associate Professor in Medicinal Chemistry (03/D1) at the Dept of Science and Drug Technology of the University of Turin. In February 2022, he also obtained National Scientific Qualification (ASN) as Full Professor in Medicinal Chemistry (03/D1, February 1th, 2022 - February 1th, 2031). He has been Visiting Professor in Eu (Denmark, Sweden, UK, Spain) and no-Eu countries (Bolivia, India, US) countries. Since 2012, he has held key roles as PI, MedChem Unit Coordinator or Scientific Lead, in 15 competitive projects (IT and European) raising around 3.2 million Euros in research funds. Inside them, he is playing the Pi role in the prestigious Science for Peace and Security Programme 2022, funded by NATO. To these funds must be added 1.63 million Euros acquired from Drug Discovery and Clinic s.r.l. where he holds the role of CEO. See www.medsynth.unito.it for details about his research / activities. In order to move his best research to the market, he cofounded the SpinOff at UniTo Drug Discovery and Clinic (DDC) s.r.l. (2020 - present, www.DDCpharmaceutical.com) whose mission is to lead a new patented dihydroorotate dehydrogenase (hDHODH) inhibitor until human clinical trials for curing Acute Myeloid Leukemia (AML) and COVID-19.

ABSTRACT

At the end of 2016, the connection between Acute Myelogenous Leukemia (AML) and dihydroorotate dehydrogenase (hDHODH), a key enzyme in de novo pyrimidine biosynthesis, generated considerable interest from the pharmaceutical industry as a possible new therapeutic opportunity for this unmet clinical need. Since the COVID-19 outbreak, the use of hDHODH inhibitors as Host Targeting Antivirals (HTA) became one of the most promising therapeutic options for COVID-19 treatment as well as other pandemic outbreaks. In 2023, the discovery of the hDHODH role in blocking ferroptosis in solid tumors cells open other scenarios also in these fields. In this occasion, the program active since 2010 at the University of Turin dedicated to design innovative hDHODH inhibitors will be fully presented. By using an innovative bioisosteric approach supported by structure-based techniques, MEDS433, a potent hDHODH inhibitor (IC 50 = 1.2 nM) was discovered. MEDS433 is able to induce myeloid differentiation in AML cell lines (THP1 and U937) in the low nM range (EC 50 = 40 and 26 nM), superior to the AML phase I/II lead brequinar (EC 50 = 249 nM (THP1) and 189 nM (U937)). By leading the cell into pyrimidine starvation, MEDS433 inhibits the in vitro replication of a large panel of viruses, with EC 50 always in the low nM range. On SARS-CoV-2, the replication is inhibited at EC 50 = 63 nM, being MEDS433 five folds superior of the

antiviral Molnupiravir (EC 50 = 300 nM), recently approved for COVID-19. Beside detailing the MEDS433 design & SAR, PK, ADME, toxicity (acute/subacute on different species) as well as the in vivo efficacy in different AML models (leukemic xenograft and IV (mouse, IP, PO)), its synthetic technological transfer (8 g batches, purity > 98.5 %) is also presented. To reinforce the scenario, the pathway that allowed the discovery of the backup compound MEDS700 (EC 50 = 17 nM, THP1), is also presented. All these studies, most of them still unpublished, are directed to open the incoming MEDS433 certified preclinical studies necessary for prepare it's Phase I clinical trial for AML. Moving to the conclusion the lecture, the clinical scenario that involve hDHODH inhibitors will be detailed. In particular, the most recent strategies investigated for overcame possible hDHODH resistance at clinical level will be presented. This final step will try to answer the question: who is going to win the hDHODH golden rush.

Integrating network pharmacology approaches to uncover the therapeutic potential of herbals in the management of diabetic retinopathy

Prof S. Ponnusankar
Head, Dept. of Pharmacy Practice
JSS College of Pharmacy, JSS Academy of Higher Education and Research, Ooty, Tamil Nadu

BIOGRAPHY

Dr. Sivasankaran PONNUSANKAR is presently working as Professor and Head at Dept. of Pharmacy Practice, JSS CoP, Ooty and involved in developing the clinical pharmacy education and concept in India. He received his clinical pharmacy training at Repatriation General Hospital, Daw Park, Adelaide, South Australia. His area of research interest is community pharmacy practice research and social pharmacy; herb-drug interaction studies; pharmaceutical care and its outcome. He has published several research articles (International: 22; National: 53) in his area of research and contributed two book chapters. He is member of various professional national and international organizations. He is currently involved in developing model simulation lab for the training of Pharm D students.

ABSTRACT

Diabetic retinopathy is a progressive and potentially sight-threatening complication of diabetes mellitus that affects the retina, the light-sensitive tissue at the back of the eye. It is a specific microvascular complication resulting from prolonged periods of high blood sugar levels in individuals with diabetes. The condition primarily affects the small blood vessels within the retina, leading to structural changes and functional abnormalities. Diabetic Retinopathy (DR) stands as a global health challenge, necessitating innovative approaches beyond current therapies. For thousands of years, herbal medicines have been used to treat various diseases. The presentation highlights the bioactive components of Triphala and DR and the specific target proteins of Triphala and DR, providing mechanistic insights derived from Network Pharmacology. Network Pharmacology, an emerging discipline of Bioinformatics, has been increasingly applied in research in recent years. It uses computational power to systematically catalog the molecular interactions of a drug molecule in a living cell. Network Pharmacology, an experimental approach is a multidisciplinary approach elucidating complex interactions between biological systems and drugs, including target identification and validation, establishing a systematic framework for uncovering herbal therapeutic potential in DR. Network pharmacology contributes to the overarching goal of bridging the gap between drug discovery and patient care. By exploring innovative avenues in NextGen Therapeutics particularly the integration of Network Pharmacology and herbal therapeutics, in revolutionizing the management of diabetic retinopathy we can pave the way for future directions in research and development.

Oral cancer control strategies - Epidemiology, early detection and research advancement

Prof. Dr Rosnah Binti Mohd Zain
Specialists in Oral Pathology and Oral Medicine at MAHSA University, Malaysia and
Honorary Professor at the University of Malaya, Malaysia

BIOGRAPHY

Dr. Rosnah Binti Zain is currently the Deputy Vice-Chancellor for Research, Innovation and Enterprise, MAHSA University and the Chief Executive Officer (CEO) for the MAHSA Research and Innovation Sdn Bhd (CEO). She was formerly Dean, Faculty of Dentistry (December 2016 – April 2023) and Senior Director of Industry, Placement and Employment Committee, MAHSA University in Malaysia until December 2022. She was with the University of Malaya for more than 35 years with more than 15 years as an administrator including as Dean at the Faculty of Dentistry (2010-2014). She has extensive research experience in the field of Oral Potentially Malignant Disorders (OPMD) and Oral Cancer. In the research setting, she strongly believes in collective efforts so as to gather a wider scope of ideas benefitting others as well. Through this belief, she had embarked on numerous projects with numerous co-researchers within the country and from countries of the region. One major research endeavors is a collaborative research project with colleagues from Oral Health Division Malaysia and Aichi-Gakuin University, Nagoya, Japan in 1993/1994. This nationwide project on the prevalence of oral mucosal lesions produced the first population-based prevalence data on oral cancer and OPMD in Malaysia. This study emphasizes her leadership and organizational skills where fund limitations, with national and international support, she was able to successfully manage and organize human resource infrastructure and logistics towards the successful completion of the project. As the Founding Director of Oral Cancer Research and Coordinating Center at University of Malaya (OCRCC), she had led OCRCC from 2005 to 2015 in ensuring the standardization of lesion criteria and methodologies, quality control for research on oral cancer. Dr Rosnah Zain's another significant contribution in the field of oral cancer is the establishment of the Malaysian Oral Cancer Database & Tissue Bank System (MOCDTBS), which is coordinated by OCRCC. The MOCDTBS was initially funded by a 'Top Down' grant from the Ministry of Science and Technology under the 'Intensified Research in Priority Areas (IRPA/RMK 8)'. Under the framework of this biobank which is a multi-institution collaborative effort, data and specimen from oral cancer patients were collected in a standardized manner from participating hospitals all over the country to facilitate research in various areas. This biobank also serves as a repository for future research endeavors, contributing to advancement of research in this area. Availability of data and specimen from the biobank facilitates postgraduate training and undergraduate industrial attachment, thus contributes to development of human resource for the nation. She continues as the Advisor to OCRCC from 2016 till now. Dr Rosnah Zain's research interests on Oral Cancer in the Asia Pacific Region includes studies on established risk factors for oral cancer with her current focus being screening and intervention for betel-quid chewing as one of the risk factors. Throughout the organization of these research and in collaboration with Japanese, Swedish and German colleagues, she has developed calibration and training packages/programme. These packages are aimed at tackling methodologic issues such that data on oral mucosal lesions will be standardized for meaningful global comparison. This training programme (OralDETECT) is currently being used widely in Malaysia and in parts of the South-east Asian region. Since 1993, Dr Rosnah Zain has been training dentists using clinical

oral/visual examination (COE) for early detection of oral cancer. This structured training package 'OralDETECT' has been validated through many training sessions and is currently being used by Ministry of Health Malaysia and some Dental Schools in Malaysia. She has also contributed to the WHO Blue book on Head and Neck Tumors Vol 5 & 6; is one of the International Experts for the IARC Handbook of Cancer Prevention: Oral Cancer Prevention; and also one of the International Experts for the ICCR (International Collaboration on Cancer Reporting) for 'Carcinomas of the Oral Cavity Dataset Dr Rosnah Zain has published more than 170 research and consensus papers. Her research expertise and experience lead her to receive the 'Top Research Scientists Award 2014 (TRSM 2014) and in 2016, she has been inducted as the 'Distinguished Fellow for Asia, International College of Dentists (FICD)'. She recently received the 'Honorary Life Membership Award by the International Association of Oral and Maxillofacial Pathologists' in August 2023.

ABSTRACT

Oral cancer remains a significant public health concern, particularly prevalent in South and Southeast Asia, parts of Central and Eastern Europe, and specific countries in Africa and Latin America. The primary global risk factors for oral cancer include tobacco smoking, smokeless tobacco use, areca nut and alcohol consumption. A recent publication by the International Agency for Research in Cancer (IARC) namely, the IARC Handbook on Oral Cancer Prevention, have provided evidence-based evaluations of the impact of cessation interventions for products containing smokeless tobacco and/or areca nut, shedding light on effective prevention strategies. Early detection of oral cancer encompasses routine clinical examinations, screening programs, and the utilization of advanced diagnostic technologies. These methods play a critical role in identifying oral cancer at its early stages, thus improving patient outcomes and reducing the disease's burden. Research advancements in oral cancer control have significantly enhanced our understanding of the disease's molecular mechanisms and led to the development of improved diagnostic and treatment strategies. These advancements encompass molecular profiling, targeted therapies, immunotherapy, novel imaging and diagnostic techniques, and the modification of risk factor interventions. As a result, public health initiatives have been informed by these research findings, leading to more effective prevention and risk factor modification strategies. This lecture will provide an in-depth exploration of the epidemiology of oral cancer, the importance of early detection, and the latest research advancements, offering valuable insights into comprehensive oral cancer control strategies.

Ensuring Integrity in Sports and Medicine: The Fusion of Anti-Doping Science with NextGen Therapeutics

Dr. Puran L. Sahu
Director & CEO (I/c)
National Dope Testing Laboratory (NDTL),
Government of India, New Delhi

BIOGRAPHY

Dr. Sahu has a Master degree followed by Ph. D. in Chemistry from Central University, Sagar, Madhya Pradesh. He has over 29 years of rich & varied experience in analytical research & development working on various positions in top ranking Pharmaceutical companies in India and abroad including Lupin Ltd., Ipca Laboratories, Dr. Reddy`s Laboratory, Jubilant Life Sciences, Abdi Ibhrahim Pharmaceutical, Turkey and Teva API India Ltd. Initiating his career as Analytical Chemist at Lupin; over the period of time he has risen to the level of Head of R & D at Indian Pharmacopoeia Commission, Ministry of Health; Family Welfare, Government of India, and now currently heading the National Dope Testing Laboratory (NDTL) which is only such WADA accredited Laboratory in India and among 30 Laboratories in the World. He is accustomed to taking up professional challenges and had consistently been contributed in Indian/Foreign Pharmaceutical companies, focused on analytical method development, validations, standard setting for drugs and other drug development activities. He is also Technical Assessor for ISO/IEC: 17025 and ISO 17034 at National Accreditation Board for Testing and Calibration Laboratories (NABL) He has played a significant role in strengthening the National Dope Testing Laboratory and collaborated with National and International Institutes in the field of Anti-Doping Science. He has done innovative work in NDTL by synthesizing Referece Materials used in Anti-Doping Science. He has number of pulication in repute Journals including two patents. He has come across the opportunities of sharing his vision at numerous national & international forums and organised national and global symposium/workshps. He has travelled widely within India and abroad representing Government of India and also as a special invite in his personal capacity.

ABSTRACT

In the evolving landscape of sports and medicine, maintaining integrity is paramount to upholding fair play and safeguarding the well-being of athletes. This abstract delves into the status of the Anti-Doping program in India and the intersection of anti-doping science and next-generation therapeutics, exploring how the fusion of these two realms can contribute to a more robust framework for ensuring integrity. The first facet of this synthesis involves a thorough examination of the current state of anti-doping science. Existing methodologies, advancements, and challenges are scrutinized, emphasizing the need for a dynamic and adaptable approach to counter the evolving strategies employed by those seeking to undermine the sanctity of sports. From traditional testing methods to cutting-edge detection technologies, the arsenal available to anti-doping authorities is explored, along with potential improvements and innovations. The second aspect of exploration centers on the integration of next-generation therapeutics within the realm of sports and medicine. As novel treatment modalities emerge, including gene therapies, cell therapies, precision medicine, and advanced regenerative techniques, it becomes imperative to strike a balance between medical progress and ethical considerations. The potential

implications of these innovative therapies on athletic performance are examined, emphasizing the importance of distinguishing between legitimate medical interventions and performance-enhancing endeavors. Building upon these individual analyses, a cohesive framework is proposed to synergize anti-doping efforts with the responsible incorporation of next- generation therapeutics. This framework aims to proactively address challenges, such as the inadvertent use of performance-enhancing interventions under the guise of legitimate medical treatment. Advocacy is made for collaborative efforts between anti-doping agencies, medical professionals, and sports governing bodies to establish guidelines that distinguish between acceptable medical practices and illicit performance enhancement. Furthermore, the importance of education and awareness within the sports and medical communities is underscored. Fostering a shared understanding of the ethical implications surrounding performance-enhancing interventions is aimed at creating a culture that values fair competition and athlete well-being.

Global Drug Development - Current Trends, Challenges and Opportunities

Mr Gurpreet Singh
Vice President, Managing Director Integrated Safety, IQVIA, United Kingdom

BIOGRAPHY

Gurpreet Singh is currently the Vice President, Managing Director Integrated Safety at IQVIA. He is based in UK and has a total of 18 years' experience in Pharma Industry of which 16+ years have been in Global Drug Development. During these years he has had the opportunity to work with some top Global companies like Cognizant, Tata Consultancy, Novartis and Parexel. At Novartis he was the Global Head of PV Operations managing all Global PV activities. At Parexel he was the Senior Director PV Operations responsible for managing PV projects of top Global Pharma and Biotech companies. Gurpreet is a certified Six Sigma and Project Management Professional. He has keen interest in Digital Transformation and Organization Culture and has successfully led various projects during his tenure in the Pharma Industry. He is an avid runner and a speaker at various Pharma conferences.

ABSTRACT

The entire process of developing a drug from preclinical research to marketing can take approximately 12 to 18 years and often costs well over $1 billion. Global Top Pharmaceutical Companies based on projected R&D spending in 2026 are Roche, Johnson & Johnson, Merck & Co, Pfizer and Novartis. The global CRO services market in terms of revenue was estimated to be worth $76.6 billion in 2023 and is poised to reach $127.3 billion by 2028.

Global Drug Development Trends

- Increased Focus on Quality, Compliance and Quality Management System
- Requirements of Audit and Inspection readiness
- Process Enhancements, Changes, Improvements
- Further adoption of Technology and Tools, Database migrations
- Focus on Data Analytics and Trends
- Organisational Culture Enhancement –Focus on People Development, Training and Retention
- Change Management – Mergers / Acquisitions and Integrations

Global Drug Development Challenges & Opportunities

- Requirement of skilled resources • Retention of Talent
- People Development Needs
- Standard Operating Procedures • Better quality and compliance • Need for better productivity
- Adoption of Technology
- Reduce cost per transaction • Improve Efficiency

Development of herbal formulation from Seabuckthorn

Prof Inder Pal Singh
Department of Natural Products, National Institute of Pharmaceutical Education and Research (NIPER), S. A. S. Nagar

BIOGRAPHY

Dr. Inder Pal Singh, M.Sc., Ph.D., is a Professor of Natural Products Chemistry at National Institute of Pharmaceutical Education and Research (NIPER), SAS Nagar. He has nearly 30 years of experience in research. His research interests include isolation of bioactive molecules from natural sources, biomimetic synthesis of bioactive natural products and their analogs for therapeutic areas such as HIV, cancer, and leishmaniasis, and standardization of herbal/Ayurvedic formulations using various analytical techniques such as HPTLC, HPLC, and quantitative NMR (qNMR). Inder Pal has been awarded Honorary Visiting Professorship of Shizuoka University, Japan. Inder Pal also served as Dean - Pharmacy, Maharaja Ranjit Singh Punjab Technical University, Bathinda. Dr. Inder Pal earned his Ph.D. from Punjab Agriculture University, Ludhiana and a second Ph.D. from Shizuoka University, Japan in 1998. He worked as a post-doctoral fellow at Oregon State University, USA for two years and was awarded JSPS post-doctoral fellowship to work at Kyoto University, Japan. He has been working at NIPER since 2002. He has published more than 125 research articles and 30 reviews/book chapters. He is co-author of two books. He has supervised 17 students for their PhD program and more than 100 students for their M.S. (Pharm.) program. Inder Pal has served as an expert in various national and international committees.

ABSTRACT

Seabuckthorn (Hippophae rhamnoides) has garnered scientific attention due to its diverse therapeutic properties, encompassing antimicrobial, antiulcerogenic, antioxidative, anticarcinogenic, radioprotective, hepatoprotective, antihypertensive, anti-inflammatory, and immunomodulatory effects. Rich in essential nutrients such as vitamins (notably C and E), flavonoids, carotenoids, amino acids, fatty acids, and mineral elements, Seabuckthorn holds promise for various health applications. This study delves into the anti-inflammatory potential, stability, bioavailability, and toxicity aspects of a Seabuckthorn polyphenol enriched fraction, when formulated as phospholipid complexes (phytosomes). Furthermore, this study extends the exploration to the efficacy and safety of topical cream and gel formulations enriched with Seabuckthorn fruit oil for wound healing in male and female SD rats. The results of this study will be presented.

Music Medicine as Alternative Therapy for Neurological Disorders

Dr Neelima B. Chauhan
Associate Professor, University of Illinois at Chicago, Chicago, IL, USA

BIOGRAPHY

Dr. Neelima Chauhan is an Associate Professor at the University of Illinois, Chicago. She did her PhD in Biochemistry from M.S. University, Baroda. She also holds a B. ED. In Psychology, and Developmental physiology from M.S. University, Baroda. She is a recipient of Fulbright Professional & Educational Excellence USIEF Award (APE 2023-24) "Neurologic Music Therapy". She has supervised 3 PhD, 4 MD/PhD and 9 Post-doctorate students. Dr. Chauhan is a member of Society for Neuroscience (SFN), American Society for Neurochemistry (ASN), International Society to Advance Alzheimer's Research and Treatment (ISTAART), Society for Neurotrauma and Grant committees of NIH BDCN, MDCN (DDNS) study Sections, RRD6-Aging and Neurodegenerative Diseases Review Panel. Dr. Chauhan also serves as the editorial board member of scientific journals including Restorative Neurology and Neuroscience, American Journal of Alzheimer's Disease & Dementia, Journal of Alzheimer's Disease, Journal of Neurology and Neurosurgery, The Scientific Pages of Alzheimer's Disease, The Scientific Pages of Translational Neuroscience, Neurology & Neuroscience, Journal of Depression and Anxiety. She is the Editor-in-Chief of The Neuroscience Chronicles (ProBiologists LLC). She has published more than 60 publications in national and international journals has received grants from NIH, VA and private foundations.

ABSTRACT

Neurological disorders are on rise all around the world with limited treatment options. There is an increasing recognition that neurological diseases begin decades before the onset of disease-specific symptoms. These prodromal changes are mainly attributed to deregulated Hypothalamo-pituitary axis (HPA) resulting in subtle deficits of neurotransmitters and their down- stream signaling. Deficient neurotransmitters impair intrinsic brain connectivity leading to dysfunctional brain networks reflected as altered electroencephalography (EEG) paralleling with psychobehavioral changes preceding disease- specific neurodegeneration. Pharmacological restoration of neurotransmitters using synthetic drugs, and rebalancing of EEG/intrinsic connectivity using deep brain stimulation (DBS), transcranial direct current stimulation (tDCS), electroconvulsive therapy (ECT), and repetitive transcranial magnetic stimulation (rTMS), all are associated with adversities. While psychobehavioral deficits managed by applied behavioral analysis (ABA), cognitive behavior therapy (CBT), and validation therapy (VT) are invasive and/or stigmatic. Music is known to rebalance neurohormones. Daily music exposure, at least for 30 min for ~2 months, is known to induce dopamine by ~9%. In that regard, Indian classical music is postulated to exert added benefits over conventional music by virtue of its structured melody called "Raga" producing pleiotropic effects. Unique notational structure of Raga induces specific emotions while simultaneously restoring neurotransmitter deficits, and correcting brain EEGs, leading to improved psychobehavioral deficits via emotional upliftment, making Raga Therapy a safe and effective alternative in treating neurological disorders.

Pharmaceutical Care in Geriatric Patients

Prof Pramil Tiwari
Head, Department of Pharmacy Practice
National Institute of Pharmaceutical Education and Research (NIPER), SAS Nagar, Punjab

BIOGRAPHY

Professor Pramil Tiwary is the Head of Department of Pharmacy Practice at NIPER, SAS Nagar. He completed his PhD in Pharmacology from Banaras Hindu University (BHU). Before Joining NIPER as the Associate Professor, he previously worked as the Assistant Professor of Pharmacology and Toxicology at Amman University, Jordan. Before entering academics, Prof. Tiwary also worked as a development scientist for Dabur Research Foundation. In addition to his academic career, Dr Pramil Tiwari held several managerial positions in the United Arab Emirates and New India. He has published more the 150 publications in national and international journals.

ABSTRACT

While medical care keeps dominating the thought process many of us, very few realize that the outcomes of the medical care are met well when it is supplemented by pharmaceutical care. Pharmaceutical care is a patient-centred practice in pharmacy that focuses on optimizing medication therapy outcomes and improving patients' overall health and well-being. The geriatric patients have worked all their lives and are often on multiple medications. While non-pharmacological modes of treatment are always preferred, the medicines become a must. As India ages in the coming 25 years of time, there is a need to train the practicing pharmacists for this special group of patients. This requires understanding the problems faced by the geriatric patients and the likely solutions. But then, one size does not fit all. Based upon the clinical work carried out so far. This talk shall focus on strengthening the pharmaceutical care for geriatric patients.

INVITED LECTURES

Impact of technology 4.0 in Biopharma Drug Development

Dr Pratiksha Palahe
National facility for Biopharmaceuticals, Mumbai and NFB Lab, G.N. Khalsa College, Matunga, Mumbai, Maharashtra, India

BIOGRAPHY

Dr. Pratiksha Palahe is the head of National Facility for Biopharmaceuticals, Mumbai. She completed her PhD in environmental sciences from Mumbai University. Dr. Palahe is an enthusiastic molecular biologist with expertise in the immunology, oncology, environmental sciences, protein purification, mammalian tissue culture, flow cytometry and DNA sequencing. Her lab is sponsored by the Department of Science and Technology, Govt. of India and provides training to students and industry professionals on various aspects of biopharmaceutics. Her lab is actively involved in research on key areas like TB, Cancer, photochemistry, nanotechnology and environmental sciences She is an appointed IEC member for Ozone Forum of India and also as a Medical Advisor to Epigeneres Biotech Pvt.Ltd

ABSTRACT

The global biopharmaceutical market has been experiencing a boost in the recent decade. All the companies are steadily increasing their investment in the biologic drug R & D. Accompanying the change, are their rapidly growing demands for outsourcing service in both biologic drug R&D and biopharmaceutical manufacturing. Global market is attracted by the fast growth of the Indian biopharmaceutical market and the flourishing Indian biopharmaceutical industry. Thus, a growing numbers of biopharma companies, large or small around the world are now becoming interested to conduct biologic drug R&D and manufacturing in India, in addition to marketing their products in the country. Although at a nascent stage at present, their entrance and gradually expansion of their local presence prompt them to seek various types of service from the local companies. Their demands for all types of services to support their local activities are expected to drive up the rapid growth of the Indian biopharmaceutical outsourcing market. The main reason for outsourcing is that the large companies are unable to conduct complete in-house drug development or characterization and quantification either due to lack of equipment or trained manpower and expertise. This in turn leads to offering higher productivity, higher quality, time to market, generating more profit and achieving higher customer satisfaction. The annual sales for pharmaceuticals has shown a negative growth since 2012 in comparison to a positive trajectory for biologics. The projection is still greater with the market size to grow from USD 478.20 billion in 2023 to USD 704.91 billion by 2028, at a CAGR of 8.07%. This growth is a strong indication of the growing demand of biologics where India is not far behind. India is ranked 12th in the world in biotech and third in Asia-Pacific. India is among the top 12 biotech destinations in the world. India has the second-highest number of US Food and Drug Administration (USFDA)–approved plants, after the USA and is the largest producer of recombinant Hepatitis B vaccine. Out of the top 10 biotech companies in India (by revenue), seven have expertise in bio-pharmaceuticals and three specialize in agri-biotech. India is becoming a leading destination for clinical trials, contract research and manufacturing activities which is leading to the growth of bio services sector. Integrating advanced digital technology with biopharma will not only impact the sector growth but will leverage

technology like more connectivity, increased productivity, simplified compliance, and the ability to leverage production information, to enhance the efficiency and effectiveness of the manufacturing process, leading to the production of high-quality drugs in a shorter time frame. This revolution is based on the principles of Industry 4.0, which focuses on the digitization of industrial processes to increase productivity and efficiency. This will enable real-time monitoring of manufacturing processes, allowing for quick identification and resolution of issues. It will help identify quality issues early in the manufacturing process. This helps reduce product defects and ensures consistent product quality. The amalgamation of technology with drug development will greatly impact the society at large by reducing the lead time of drugs to market, better efficacious drugs, personalized treatment and high throughput data management. All these impacts will be discussed in details in my upcoming talk.

Sustained Release of PAMAM Dendrimer-drug conjugated drug delivery system against Lymphoma Therapy

Dr Ugir Hossain Sk
Senior Scientific Officer,
Chittaranjan National Cancer Institute, Kolkata, India

BIOGRAPHY

Dr. Ugir's career in scientific research spans over 12 years, with his current role as a Quick Hire Scientist Fellow at the CSIR-Institute of Himalayan Bioresource Technology. Based in Palampur, Himachal Pradesh, he is actively involved in interdisciplinary research focused on the pre-clinical development of dendrimer-drug conjugates for various diseases, including cancer. His expertise covers medicinal chemistry, nanotechnology-based drug delivery, and biological and animal studies. Dr. Ugir's research interests also extend to dendrimer-based targeted delivery of therapeutic drugs, aiming to minimize toxicity and enhance treatment efficiency. He holds the position of DST-Young Scientist, Principal Investigator from 2012 to July 2015. His international experience includes being a TAKEDA International Science Foundation PostDoc Fellow at Osaka Prefecture University, Japan, where he worked on the synthesis of polymer-conjugated tumor homing peptides for drug delivery systems. Dr. Ugir has contributed significantly to anti-cancer and anti-asthmatic drug development, with postdoctoral roles at Pennsylvania State University College of Medicine and National Brain Research Centre. He holds a Ph.D. in Chemistry from Chittaranjan National Cancer Institute, with a thesis on the synthesis and evaluation of antioxidative properties of organoselenium and thiazolidinedione derivatives. His educational journey includes a Master's degree in Organic Chemistry from Jadavpur University. Dr. Ugir's commitment to advancing drug discovery is evident in his extensive research experience and contributions to the field.

ABSTRACT

Polyamidoamines (PAMAM) are widely used in drug delivery applications because of their biocompatibility and low toxicity and are effective in solubilized lipophilic drugs in the aqueous media. Herein, we have synthesized a polyamidoamine (PAMAM) dendrimer conjugated with anticancer therapeutices to enhance the stability of the active drug or metabolites. The results indicate that the active drug showed stable and sustained release from the PAMAM–drug conjugate, telling the suitability of the polymer device for therapy. Besides growth inhibition and direct killing, the dendrimer–drug construct induced extensive apoptosis not only in parental Dalton lymphoma tumor cells but also in the doxorubicin-resistant form of the tumor cells. Dendrimer conjugates significantly reduced the solid tumor growth and increased the lifespan with better prognosis, including improved histopathology of the treated mice.

Enhancing Clinical Research Through Technological Innovations

Mr Nayan Prajapati
General Manager,
Head Training at Cliantha Research and Cliantha Academy, Ahmedabad

BIOGRAPHY

Meet Nayan Prajapati is a dedicated Coach at heart and a seasoned Trainer by profession, boasting over 15 years of invaluable experience within the Clinical Research Industry. As a Certified Trainer accredited by the Indian Society for Training & Development, Nayan embodies a firm belief in the perpetual journey of learning. He champions the idea that innovative concepts enhance our understanding, making the learning process richer and more effective. Nayan's expansive tenure in clinical research spans various domains, including Quality Assurance and spearheading the establishment and evolution of an advanced eLearning training system at a prestigious Clinical Research Organization, Cliantha Research. His commitment and passion for training and coaching have garnered recognition, earning him prestigious accolades such as the Best In Class Learning and Development Young Learning Leader Award by TIMES Ascent in 2018, and the honor of being named Gujarat Top Training and Development Leader by the World HRD Congress in 2019. With academic qualifications including a B'Pharm, MBA, Diploma in Training & Development, he embodies a holistic approach to empowerment and growth. Certified as an NLP Master Practitioner and Life Coach, Nayan brings a wealth of expertise in the realms of Neuro- Linguistic Programming and coaching methodologies. He is also an Author of #1 best seller book on amazon title as "Unlock High Performance Blue print" Currently steering the Training Department at Cliantha Research, he orchestrates comprehensive training programs spanning multiple locations in India, Canada, and the US. Nayan Prajapati also leads Cliantha Academy, an Educational initiative by Cliantha Research.

ABSTRACT

Clinical research is witnessing a remarkable transformation fueled by technological advancements. In my talk, I aim to explore how digital tools and technologies are making clinical trials better. These tools help us gather data more easily, keep track of a patient's health in real-time, and involve patients more in their own care. We'll talk about how using these technologies can speed up research, improve how we care for patients, and make sure we collect information safely and effectively. We'll also look at the challenges we face when using technology in research, like making sure we follow rules about data privacy and helping researchers learn to use these tools well. By sharing examples, this talk aims to show how technology is making clinical research faster and better, which means we can develop new treatments more quickly and help patients sooner.

A Novel Wnt-sterol axis regulating RTK/MAPK signaling

Dr Babita Madan
Program in Cancer and Stem Cell Biology Duke-NUS Graduate at Medical School, Singapore

BIOGRAPHY

Babita Madan's Academic journey began with a Ph.D. in Molecular Immunology from the University of Delhi, India. She pursued her postdoctoral training in Germany before assuming roles at a biotech firm S*Bio Pte. Ltd in Singapore, and Duke-NUS Medical School, where she currently holds the position of Assistant Professor. Her work has significantly contributed to the development of anti-cancer drug ETC- 159, that reached clinical trials. Her present research interests are centred around harnessing the potential of pan-Wnt inhibitors to unveil novel Wnt-regulated pathways. These endeavours have uncovered previously unrecognized roles of Wnts in diverse processes such as ribosomal biogenesis, DNA repair, and cholesterol biosynthesis. Her future studies seek to unravel the regulation of metabolic signaling intermediates by Wnts, shedding light on the interaction of between Wnts and additional signaling pathways. This exploration promises to provide nuanced insights into the roles of Wnts in cancer progression and tissue homeostasis.

ABSTRACT

Activating mutations in Wnt pathway are implicated in various cancers, but the specific targets and pathways activated by Wnt ligands are not fully understood. To bridge this knowledge gap, we conducted a comprehensive temporal analysis of Wnt-dependent signaling pathways in cancer with high Wnt signaling. Our study revealed a central role of Wnt signaling in regulation of ribosomal biogenesis, a key driver of cancer proliferation. Notably, we also identified that several genes associated with homologous recombination and Fanconi anemia repair pathways, including BRCA1, FANCD2, and RAD51 are dependent on Wnt/β-catenin signaling in Wnt-high cancers. This underscores the contribution of Wnt/β- catenin signaling in DNA repair, crucial for maintaining genomic stability in cancers. Furthermore, our assessment of the Wnt-regulated transcriptome unveiled an interaction of Wnt and MAPK pathways. Contrary to the conventional belief that "Wnt/β-catenin triggers gene activation," we discovered a more nuanced view, where Wnt/β-catenin signaling both induces widespread gene activation and repression. Additionally, inhibiting Wnt signaling lead to a marked increase in gene expression, partly by activating ERK and JNK. Intriguingly, we found that Wnts repress MAPK activity by regulating the recycling of multiple receptor tyrosine kinases and hence their abundance and activation. Mechanistically, a Wnt- regulated and previously uncharacterized enzyme, fatty acid hydroxylase domain containing 2 (FAXDC2) in the cholesterol biosynthetic pathway links Wnts to RTK/MAPK signaling. This Wnt/β- catenin/FAXDC2/sterol axis is also active in primary human colorectal cancers. Our results link three ancient pathways: Wnt/β-catenin, cholesterol biosynthesis, and RTK/MAPK signaling, a finding with broad implications in cancer biology.

Next Gen Imaging and Therapy: Recent Approaches for Nuclear and Allied Imaging

Dr Shubhra Chaturvedi

Scientist F, RNAIS- Division: Radiopharmaceutical Development, Institute of Nuclear Medicine and Allied Sciences-INMAS Laboratory of the Defence Research and Development Organisation, Timarpur, India

BIOGRAPHY

Dr. Shubhra Chaturvedi is currently working as the Scientist F at the Institute of Nuclear Medicine and Allied Sciences-INMAS Laboratory of the DRDO, Timarpur, India. She completed her PhD in Chemistry from INMAS and Banaras Hindu University and masters in Chemistry from IIT Delhi. Her research is Involved in the development of novel radiopharmaceuticals for application in oncology and neuro-imaging at all the three levels- theoretical design, organic synthesis and in-vitro and in-vivo bioevaluation of the novel ligands with Primary focus on the development of small biomolecules and nucleosides for the development as ligands and Secondary focus involves synthesis of peptides. She has expertise in computer based drug-design method, organic synthesis, in-vitro methods based on cytotoxicity assays and nuclear imaging techniques. She also works in the additional areas including metabolic profiling of biofluids using Nuclear Magnetic Spectroscopy along with the statistical analysis, DNA, RNA and protein isolation from human cultured cell lines, reverse transcription, PCR, Northern and Western Hybridization, Dot Blot, Flow cytometry, SDS-PAGE, Agarose gel electrophoresis. She is a member of American Chemical Society and Society of Nuclear medicine, India. She has authored more than 25 research articles published in national and international journals.

ABSTRACT

Precision medication will be an essential aspect for the management of diseases in future. The key to precision medication is to develop targeted molecules with high specificity and selectivity. Further, clubbing diagnosis and therapy in a single targeted system having unique targeting and pharmacokinetic behaviour will provide platform for next generation theranostics. In recent times, management of malignancies has benefited significantly by the use of targeted theranostic agents. The targeting moiety can be based on protein- ligand interactions or target specific metabolic pathways. This talk aims to apprise on the current approaches for the development of targeted theranostic agents particularly for neuro-imaging. Brain Imaging and theranostics presents multiple challenges- the organ is highly selective towards the permeability of drugs, and the neuro-receptors modulating the activity are complex in expression and cross-talk along with high similarity thereby requiring highly selective ligands. Meeting all the challenges in one single molecule requires innovative design strategies. Further, new radioisotopes with better availability, longer half- life, and potential for theranostics need to assimilate in the design without compromising on the affinity of the ligands. The sectioned presentation will introduce the importance of diagnosis, in particular early diagnosis followed by the basics of targeting and different genres of the targeted molecules. The next section will detail in the present approaches adopted for designing targeted molecules, primarily, bivalent ligands for enhanced affinity, strategies for permeation across the CNS, framework versatility to incorporate theranostics, and novel delivery systems. The insights will be based on in-house developed molecules and correlation with other molecules developed world wide. Subsequently, the presentation concludes with future insights on design intricacies.

Artificial Intelligence in Accelerating Drug Discovery and Development

Dr A. Sankarnarayanan
President, Vivo Bio Tech Ltd.,
Hyderabad

BIOGRAPHY

Dr. A. Sankarnarayanan is presently working as the President of Vivo Biotech Ltd where he previously worked as the Director and CEO. He completed his PhD in Pharmacology from the Postgraduate Institute of Medical Education and Research in 1975. He also worked previously with GVK biosciences as the head of biology where he developed a drug discovery lab for lead optimization of early NCEs. He also served as the senior advisor for Torrent Research Centre where he helped setting up drug discovery groups of departments and completed several drug discovery projects in the area of cardiovascular disorders and metabolic diseases and filed various patents. He also worked as an additional professor of Pharmacology for 15 years at the Postgraduate Institute of Medical Education and Research. He guided several research theses in the areas of Pharmacology, Toxicology and Clinical Pharmacokinetics for candidates undergoing MSc, MD and PhD degrees and published several research papers in these areas in National &International scientific Journals.

ABSTRACT

Artificial Intelligence (AI) has brought about enormous changes in almost all scientific disciplines. Its growing applications in drug research is quite impressive. Identifying and developing new medicines is a complex and time-consuming process and rely on labour intensive trial-and-error experimentation. Deep Learning and Natural Language Processing accelerate and improve these processes. AI systems take advantage of the improved efficiency and accurate analysis of 'big data' for generating causality models and identify drug targets. Deep Neural Networks (DNNs) trained on thousands of chemical structures enable rapid and efficient design of compounds with novel structures and desirable properties. Development of AI systems like AlphaFold has enabled prediction of 3D-protein structures and contribute to structure-based drug design of novel targets. Several innovative pharma companies have demonstrated their ability in accelerating their discovery pipelines using generative adversarial network (GAN)-based AI platforms. Examples of such successful innovations shall be presented in detail. All these point out that, in future, AI technology shall play a significant role in new drug discovery and development.

Dissecting AChE Regulation in Stress and Cognitive Aging: From Biomarker to Therapeutic Target

Dr Vinay Parikh

Associate Professor, Department of Psychology and Neuroscience Associate Professor, Center for Substance Abuse Research
Head, Neurochemistry and Cognition Laboratory Director, Neuroscience Program - College of Liberal Arts Temple University, USA

BIOGRAPHY

Dr. Vinay Parikh is a tenured Associate Professor in the Department of Psychology and Neuroscience, and Head of the Neurochemistry and Cognition Research Group at Temple University, Philadelphia. He also serves as the Director of Neuroscience Program in Temple's College of Liberal Arts and provides strategic leadership, direction, and guidance for all educational and professional activities in the program. Dr. Parikhs research interests broadly focus on neuromodulation of cognition in health and disease. For many years, his laboratory has been engaged in delineating the contributions of cholinergic and glutamatergic signaling in the modulation of distinct cognitive processes, specifically those involved in attention and executive functions. His research has also focused on the role of neurotrophins as key regulators of neurochemical circuit adaptations and top-down control of behavior. In his ongoing research, Dr. Parikh is examining how dynamic interactions between genes and environment shape the vulnerability and resilience to cognitive and mental decline with a goal to identify biomarkers and therapeutic targets for age-related dementia and Alzheimer's disease. Dr. Parikh has authored more than 90 publications and delivered over 150 scientific presentations and invited talks. He currently serves as an Associate Editor for Frontiers in Integrative Neuroscience, and is on the editorial board for European Journal of Neuroscience. Dr. Parikh also routinely serves on scientific advisory and review committees of numerous biomedical research agencies including the NIH, Alzheimer's Association, and Michael J Fox Foundation.

ABSTRACT

Although cognitive changes occur as a normal process of aging, it is unclear why certain people are more vulnerable to age-related cognitive decline than others. Understanding the neurobiological underpinnings of cognitive aging is crucial. Acetylcholinesterase (AChE) is a hydrolytic enzyme which promotes ultra- fast cholinergic signaling in brain circuits critical for cognition. In this presentation, we discuss the role of AChE splice variants and transcriptional control mechanisms in cholinergic modulation of cognition in aging. We will also discuss how physiological stressors could impact epigenetic regulation of AChE transcripts which may potentially contribute to an accelerated cognitive vulnerability in aging. Lastly, the translational implications of this research to categorize AChE transcripts as biomarkers of cognitive fragility in aging, and to design therapeutic strategies based on upstream and downstream targets of AChE regulation for Alzheimer's disease-related dementia, will be discussed.

Cold Plasma- A New Frontier in Low-temperature Plasma Applications for Healthcare

Dr Alphonsa Joseph

Head, Plasma Surface Engineering Division (PSED) & Cold Plasma Coating Application Section (CPCAS), Scientific Officer -H, Institute for Plasma Research, Gandhinagar, Gujarat, India

BIOGRAPHY

Dr. Alphonsa Joseph is currently the Head of Plasma Surface Engineering Division (PSED) & Cold Plasma Coating Application Section (CPCAS) and the Scientific officer-H the Institute for Plasma Research, Gandhinagar, She completed her PhD in corrosion science and engineering from IIT Bombay. Her research works are focused on plasma based surface modification processes like plasma nitriding and plasma carburizing processes, Plasma based processes for biomedical applications, Plasma based processes for agriculture and Corrosion testing. She has worked on projects aimed at Developing prototype plasma carburizing system for surface hardening, Promotion of Plasma Nitriding/Nitrocarburising process for surface hardening of industrial components and as Project Coordinator for Plasma Technologies for industrial and societal benefits. She has authored more than 60 research articles in reputed journals.

ABSTRACT

The recent tremendous progress in the development of new plasma sources has put a growing focus on the application of plasma in health care. Active plasma components, such as molecules, atoms, ions, electrons and photons, reactive species, ultraviolet radiation, optical and infrared emission, and heat have the ability for activating, controlling, and catalyzing reactions and complex biochemical procedures. Non-thermal (i.e. cold) plasmas are already widely established in medicine and used for various therapeutic applications.

In collaboration with several medical institutes and hospitals, the Institute of Plasma Research has developed an atmospheric plasma jet and its variants for different application in biomedical sector. An atmospheric pressure plasma jet using dielectric barrier discharge has been developed for the coagulation of blood for emergency situations and for the treatment of cancer and skin diseases. Invitro studies on cell viability for cancer treatment have been completed and show high cell viability after treatments. Efforts have also been made to use Cold Atmospheric Plasma (CAP) for the treatment of tumor tissues resected from glioma patients and it has shown to be effective in the targeted killing of tumor cells in various glioma cell lines without affecting non-tumor cells through Reactive Oxygen and Nitrogen Species (RONS). Hence, plasma applications hold a big potential, for example, in wound healing, such as efficient disinfection or sterilization, therapy of various skin infections, or tissue regeneration.

Blending computational studies in Drug Discovery: Design of dual inhibitors for Alzheimer's disease

Prof Hemant R Jadhav, Professor
Department of Pharmacy, BITS Pilani, Pilani Campus.

BIOGRAPHY

Dr. Hemant R Jadhav is presently working as a Professor, at the Department of Pharmacy, BITS Pilani, Pilani Campus. He received his Ph.D. degree in the year 2004 from the National Institute of Pharmaceutical Education and Research (NIPER), Mohali, India. He has been involved in research for the last 24 years and in teaching for the last 20 years. His research area is Pharmaceutical Chemistry, particularly, the design, synthesis, and evaluation of anti-Alzheimers, anti-cancer, anti-HIV compounds, and compounds for diabetic cardiomyopathy. He has successfully completed several research projects sponsored by DST, UGC, and the industry. Presently, he has a SERB CRG, and an ICMR project as Principal Investigator and is a co-investigator in a DBT BUILDER project worth 9.2 crores. He has supervised seven Ph. D students, and seven students are pursuing Ph.D. under his guidance. He has authored more than 60 research papers and 3 book chapters, as well as his work is presented at more than 50 national and international conferences. He is a member of the Board of studies, a member of the Academic Council, and an external DRC member of various Universities. He also is an expert reviewer of many national and international journals. At BITS Pilani, Pilani campus, he has served in various administrative positions such as Head of the department, Associate dean, Academic Research (Ph. D. Programme) division, and sponsored research and consultancy division for many years.

ABSTRACT

Drug discovery generally employs a design-make-test-analyse (DMTA) cycle. With recent advances in computer calculation ability, machine learning, and data accumulation, the integration of computers in drug discovery is accelerated, wherein data-driven computer-aided drug design as well as synthesis has received much attention. In this talk, three aspects of computer-aided drug design will be discussed: the reasons and solutions for the lack of in silico-in vitro/vivo correlation, the design of beta-secretase inhibitors, and the exploitation of in silico data for the development of dual inhibitors for Alzheimer's.

Navigating the metabolic-redox-inflammatory terrain of cancer: Cartography for therapeutics

Prof Ellora Sen
National Brain Research Centre, Manesar, Haryana, India

BIOGRAPHY

Ellora Sen is the Professor and Scientist VII at National Brain Research Centre, Haryana. She completed her PhD from CSIR Indian Institute of Chemical Biology with specialization in immunology, and her post-doctoral training in neuroscience and Transcription Regulation of Viral Oncogene from Rutgers University, New Jersey and Pennsylvania State University, respectively. She is the recipient of numerous awards including the Women Scientist Award Organization of pharmaceutical producers of India (OPPI) Scientist Award (2023) in Pharmaceutical Biotechnology, Haryana Vigyan Ratna Award by Department of Science and Technology, Govt. of Haryana, 2021, SERB POWER (Promoting Opportunities for Women in Exploratory Research), Fellowship, Science and Engineering Research Board, DST, 2022, Novartis Oration Award Indian Council of Medical Research (ICMR), 2018, Kshanika Oration Award, Indian Council of Medical Research (ICMR), 2016, Indian Society of NeuroOncology, ISNO President's Award for outstanding work in neuro-oncology 2016, National Bioscience Award for career development, Department of Biotechnology DBT (2013), OPPI Scientist Award (2013) in Pharmaceutical Biotechnology, NASI–SCOPUS Young Scientist Award conferred jointly by National Academy of Science and Elseviers 2010, Shakuntala Amir Chand Award, Indian Council of Medical Research (ICMR), 200 and Innovative Young Biotechnologist Award (IYBA) Department of Biotechnology, Government of India, 2007. In 2014, she was elected as fellow of National Academy of Science (NASI). Her research interests She has authored 61 publications in peer reviewed journals.

ABSTRACT

Common genetic/epigenetic alterations co-opt transcriptional programs that control cellular metabolism crucial for adaptation of tumor cells to an inflammatory tumor promoting micro-environment. Glioma- the most malignant of brain tumors are characterized by aberrant inflammation and deregulated metabolism. Besides, oxidative stress and inflammation being inter-related processes, the induction of one trigger the other. Though the crosstalk between metabolism–inflammation in tumor progression is well established, their combined role in therapeutic resistance remains in an undulating redox landscape remains largely unresolved. Therefore, understanding how metabolic-redox-inflammatory terrain can be exploited therapeutically to confer chemosensitivity warrants investigation. Insights into the molecular basis of glioma progression based on the emerging observations linking inflammation-metabolism-redox state would foster identification of innovative and targeted therapeutics in gliomas bearing diverse driver mutations.

Keywords: Cancer, Inflammation, Metabolism, Oxidative stress, Chemotherapeutics

Drug repositioning/repurposing: Future drug developmental strategy against viral infections

Prof Anirban Basu
National Brain Research Centre, Manesar, Haryana, India

BIOGRAPHY

Anirban Basu is a Senior Scientist and Professor at National Brain Research Center, Manesar, Haryana. He has received his Ph.D. degree in Immunology from the CSIR- Indian Institute of Chemical Biology, Kolkata. He then obtained Postdoctoral training in Neuro-immunology at Neural and Behavioral Science Department at Pennsylvania State University College of Medicine, Hershey, Pennsylvania. So far, he has trained eleven Masters students, fifteen PhD students and eleven postdoctoral fellows, and numerous short term and long term research trainees in his lab. Dr. Basu has long been interested in curing diseases of the nervous system. His current research is focused on studying innate immune mechanism in the healthy and diseased central nervous system, with specific reference to Central Nervous System (CNS) infections, and neurodegenerative diseases. The group of students who currently working with him is testing strategies to develop disease-modifying therapy by abrogating inflammation in CNS disorders. Dr Basu sits on the editorial boards of the Journal of Neurochemistry (handling editor), and Journal of Neuroinflammation, and Metabolic Brain Disease. He is also an editorial advisory board member of F1000 Research. At present, Dr Basu is co-section Head for the Infectious Diseases of the Nervous System Section in F1000 (which forms part of the Neurological Disorders Faculty). Several National Awards from different bodies have recognized Dr Basu's scientific accomplishments. He is the recipient of National Bioscience Award for Career Development (2010) from DBT, Vasvik Industrial Research Award (2011), Dr. J.B. Srivastav Oration Award (2011) from ICMR, Rajib Goyal Prize (2012), NASI- Reliance Industries Platinum Jubilee Award (2013), Senior Scientist Oration Award (2015), from the Indian Immunology Society, Sreenivasaya Memorial Award (2017) of Society of Biological Chemist (India), Basanti Devi Amir Chand Prize (2017) from ICMR, Prof S S Katiyar Endowment Lecture (2018) of The Indian Science Congress Association (ISCA), Dr. Y.S. Narayana Rao Oration Award (2018) from ICMR, K T Shetty Memorial Oration Award (2019) from Indian Academy of Neurosciences, and Drs. Kunti & Om Prakash Oration Award (2020) from ICMR. Dr Basu is a recipient of Tata Innovation Fellowship from the Department of Biotechnology (DBT), and J C Bose Fellowship from Science and Engineering Research Board (SERB). He is also an elected fellow of all three national academy of sciences of India, Indian Academy of Neuroscience and American Academy of Microbiology. At present Dr Basu is serving as an elected member to INSA council, and he is also serving as a Vice President to the Indian Academy of Neurosciences.

ABSTRACT

Development of a new drug being a high-risk, time consuming and very laborious process, repositioning/repurposing of drugs has been the focus of many groups working in the field of drug discovery. Drug repositioning (DR) aims to find new uses of existing safe drugs in different disease settings. Not only in the developed nations has this approach revolutionized drug discovery, many developing countries are also currently focusing on the same strategy thus seeking for an alternative to high costs and failure rates associated with the

drug discovery pipeline. Traditional drug development strategy consists of five steps, i.e. 1) discovery and preclinical studies, 2) review of its safety, 3) Clinical research, 4) FDA review, 5) assessment of post-marketing safety by FDA. On the other hand, repositioning of drug entails four steps: 1) compound identification, 2) Retrieval of the same, 3) development, 4) FDA post-market safety monitoring, thus cutting off a significant cost and time when compared to traditional drug development. Reports suggest that while repositioning strategy for a drug development costs around 1.2 billion dollars, nearly about 16 billion dollars is being demanded by the traditional approach. Use of drugs such as sildenafil, bupropion & thalidomide for erectile dysfunction, smoking cessation, and multiple myeloma respectively also represents the high rewarding nature of the repositioning approach at a very low cost thus warranting further research in the same line of study. Absence of safe, efficient as well as cost effective vaccine and anti-viral drug prompts us to explore the potential of known drug as a therapeutic strategy for Japanese Encephalitis Virus (JEV) infection. By exploring the pathways which are involved in inflammation, we have identified Minocycline, which is an approved drug with a long standing record of acceptable safety and has a similar spectrum to Doxycycline, as a potential therapeutic candidate against JEV infection. Based upon pre-clinical study undertaken in our laboratory at National Brain Research Centre, a Phase III clinical trial has been completed at King George Medical University (KGMU), Lucknow, where minocycline has been used as a therapy for JE patients and the patients with Acute Encephalitis Syndrome (AES). Results of the trial indicates a potential benefit that Minocycline confers upon patients, especially in those who survive the initial days in hospital. These findings could form the basis for planning a larger study and possibly including minocycline in the management of AES and JE. Recently we have explored the efficacy of atorvastatin (AT) calcium trihydrate in JEV & CHPV (Chandipura Virus)-infected mice models. AT calcium trihydrate is a well-established statin drug that is being prescribed by medical practitioners against hypercholesterolemia. Apart from its established role, AT has been implicated as an anti-oxidative and anti-neurodegenerative agent. AT being able to cross the blood brain barrier (BBB) demonstrates promising results in our preliminary studies, providing resistance to viral replication and enhancing the survival of the virus-infected animals. At present we are conducting studies regarding molecular mechanisms by which AT imparts its role in the context of JEV and CHPV infections. More recently, we have shown the therapeutic potential of AMG487, an antagonist of CXCR3, in Dengue virus (DV) as well as in JEV infection. We have reported the crucial role platelet cytokine PF4 plays in enhancing replication and propagation of both DV and JEV in host cells including monocytes by inhibiting IFN response of these immune cells. Definitely the PF4-CXCR3-IFN axis acts as a potential target for developing treatment regimens against viruses including DV and JEV.

Harnessing the Potential of Nanotechnology in Phytochemical-Loaded Drug Delivery System

Dr V Badireenath Konkimalla
School of Biological Sciences DAE-National Institute of Science Education and Research (NISER), Odisha

BIOGRAPHY

Dr. V Badireenath Konkimalla joined DAE-NISER in 2010 and is currently an Associate professor at the School of Biological Sciences. He has a bachelor's degree in pharmacy from the Tamil Nadu Dr. MGR Medical University; an M. Tech. in Biotechnology from the Center for Biotechnology (CBT), Anna University; and a Ph.D. in Biochemistry and structural biology from the University of Heidelberg, Germany. Following this, he pursued his post-doctoral research as a project leader for an independent grant at the German Cancer Research Center, Germany. Notably, he is a recipient of the Mike Price Fellowship Award 2009, jointly sponsored by the European Association for Cancer Research (EACR) and the European Cancer Organization (ECCO) and Innovative Young Biotechnologist Award (IYBA) 2012, Dept of Biotechnology (DBT), India. Conducted research as principal investigator of extramural grants from DBT and SERB, GoI. Has 20 years of experience in various aspects of drug discovery and delivery and has published research articles with novel approaches that focus on this area.

ABSTRACT

Rheumatoid arthritis (RA), a systemic autoimmune disease, dramatically affects patients' quality of life. The RA pathophysiology is intricate, and a single treatment cannot completely halt the disease progression, which often results in severe side effects due to the long-term usage of conventional drugs (NSAID, DMARD, etc.). The development of novel therapeutics is a need of the hour to treat chronic disease conditions like cancer, autoimmune disorders, etc. However, they are neither affordable nor feasible as they are time- and task-intensive, expensive, and often hurdled by ethical approval. Nature has gifted us with a treasure of medicinal plants that served humanity over several centuries, either in traditional medicine as crude extracts or as purified compounds in modern medicine. Despite being beneficial, most phytochemicals were never studied for a complete bioactivity spectrum as the isolated/extracted phytochemicals often have undesirable pharmaceutical properties. The advent of nanotechnology is indeed a boon to phytochemicals as this can immensely boost the novel therapeutic applications of phytochemicals.

In the talk, I will present our work where we initially studied a least explored property of SFN (an ITC). The SFN-induced plasticity in macrophages was established from the cell- based model, which can have implications in RA conditions. However, the proof of principle for this activity in in vivo conditions took a lot of work to obtain as ITCs have poor absorption, stability, and quick clearance. Here, by adopting a nanotechnology approach, we report the fabrication of a dual-nanoparticulate hydrogel formulation (DDHG) of Methotrexate and ITC as a co-delivery system to mask their pharmaceutical limitations and to achieve better efficacy. In the FCA-induced RA model, an intra-articular DDHG injection significantly reduced chronic inflammation and helped recover the bone morphology of diseased rats. Such a smart co- delivery system would be ideal, especially for treating diseases where combination therapy is unavoidable.

Early-Phase Drug Development in India: Regulatory, Rigor and Reported Outcomes

Dr Hiren Mehta
Vice President (Clinical Affairs) at Veeda Clinical Research, Canada

BIOGRAPHY

Hiren Mehta, Vice President - Clinical Affairs (medical writing, pharmacokinetics, biostat and data management), boasts over two decades of honed expertise in Clinical Pharmacology, Drug Development, and regulatory compliance. With a track record of orchestrating 24+ successful new drug submissions to FDA, EMEA, and CDSCO, he navigates the complete development spectrum. Proficiency in PK/PD, data analysis, and adherence to compliance standards underscores his capabilities. A skilled leader adept at driving operational efficiency and nurturing team excellence, dedicated to guiding organizational triumph through astute leadership and technical acumen.

Quote: In India, the CRO industry has significantly matured and the perception has changed over the last

several years, which is also reflected in the increasing volunteer participation in clinical research

ABSTRACT

1. How do regulatory nuances in India influence the rigor of early-phase drug development, and what strategies ensure compliance without compromising quality?

Over the years, India has established itself as one of the leading pharmaceutical hubs and a preferred destination for outsourcing research, leveraging our strong industry ecosystem that includes scientifically skilled human resources, global quality infrastructure and compliances, and cost competitiveness. Progressive regulatory changes streamlining the approval process and oversight for studies have benefitted the CRO market. The New Drugs and Clinical Trial Rules – NDCT-2019, provides clear guidelines for the application and approval for clinical trials besides strengthening the ethical oversight and the responsibilities and obligations of the sponsors thereby providing a predictable, transparent, and effective regulatory framework for clinical trials in India. These have supported the increase in clinical trials in India. The introduction of a three-tier review process is also expected to enhance regulatory standards while ensuring patient safety. There is further scope for developing the clinical research ecosystem, including regulatory pathways, to support more global clinical trials in India.

2. In the context of India, what regulatory hurdles stand out in early-phase drug development, and how does the industry navigate them effectively?

In India, the regulatory environment significantly influences early-phase drug development. With the emergence of high-quality CROs that operate in compliance with global safety, ethical, and regulatory norms, stronger regulatory oversight of the industry and active industry forums bring together diverse stakeholders to enhance the operating ecosystem for the industry. In India, the CRO industry has significantly matured and the perception has changed over the last several years, which is also reflected in the increasing volunteer participation in clinical research. We are seeing significantly more innovation development happening here in India both from large and emerging companies. The Indian government has placed a concerted effort on building capacity within the industry and supporting innovation. The government is also working on building industry capacity to support innovation, such as phase 1 clinical pharmacology, and analytical and

bioanalytical facilities. There are discussions currently underway regarding how to build this infrastructure, in collaboration between the government, academia, and industry to create the right ecosystem. The Council for International Organizations of Medical Sciences (CIOMS) has emphasized the need to create a research-friendly environment, infrastructure, and capacity. The establishment of product development centers under the National Virtual Centre for Clinical Pharmacology has increased the capacity to carry out phase I – IV studies, including studies on COVID-19 drugs. Additionally, a Technical Committee announced that companies would be required to include Indian patients in global clinical trials in order to market in India a new drug developed outside of the country, demonstrating the government's focus on ensuring the safety and efficacy of drugs marketed in India.

3. What industry practices can be employed to ensure early-phase clinical trials in India mirror real-world conditions while maintaining high standards?

In order to achieve desired results in real-world conditions, the contract research industry must emphasize three key management practices – implement robust Quality Systems, practice a culture of stringent compliance, and rigorous adherence to timelines. To support these practices, the industry has to play a proactive role in providing comprehensive training to investigators and site staff, ensuring protocol compliance along with a diverse participant pool, representing India's real-world patient population. Clinical researchers can consider adaptive trial designs for flexibility based on accumulating data and encourage using more electronic health records along with implementing patient-centric approaches like remote monitoring can give an extra edge. The medical monitoring team can implement risk-based monitoring strategies for optimal data quality and operational efficiency. The clinical research investigators shall embrace transparency in reporting all the relevant data including patient-reported outcomes and consider sharing outcomes to contribute to the scientific community for external validity of the data.

4. Could you share key methods for upholding patient safety and ethical conduct during the early phase of drug development, particularly within the Indian context?

To ensure ethical conduct and patient safety during the early phase of drug development in India, adherence to regulatory guidelines set by the Central Drugs Standard Control Organization (CDSCO) and the Drugs Controller General of India (DCGI) is crucial. Subject Expert Committees (SECs) and Ethics Review Committees (ERCs/ECs) play pivotal roles in reviewing clinical trial applications and ensuring adherence to ethical principles. Qualified investigators and staff, regular monitoring, independent audits, and a clear adverse event reporting mechanism are essential for maintaining compliance and data integrity. Data management systems must prioritize confidentiality, and community engagement is necessary to build awareness and address concerns. Transparency in reporting results, cultural sensitivity, and respect for traditional practices and beliefs are also important considerations. By incorporating these methods, researchers can enhance patient safety, uphold ethical standards, and contribute to the success of clinical trials in the Indian context, fostering trust within the community and ensuring the validity and integrity of the drug development process.

5. How does the pharmaceutical industry collaboratively engage with regulatory bodies to optimize and fortify early-phase drug development in India while addressing practical constraints?

This can be achieved through a multifaceted approach that addresses practical constraints. The Indian regulator, DCGI has initiated discussions with the industry by recently started inviting representatives from associations of CROs, pharma companies, and researchers to understand the areas of improvement in global clinical trial approval and execution. Additionally, open communication channels are established through regular meetings, workshops, and conferences, fostering a constructive and meaningful dialogue between the two. The proactive approach of Indian regulators is encouraging for drug developers, as early engagement allows companies to seek guidance on regulatory requirements, aligning trial designs and outcomes with regulatory expectations and minimizing delays. Harmonization with global standards and best practices along with timely and constructive feedback mechanisms by the industry experts back to the regulators can foster continuous improvement, allowing the industry to learn from experiences, and adapt alternative strategies.

Studies on new class of TLK (Tousled-like kinase) inhibitors: A novel therapy for Prostate cancer

Dr Sivapriya Kirubakaran
Associate Professor, Department of Chemistry, Indian Institute of Technology, Gandhinagar

BIOGRAPHY

Dr. Sivapriya Kirubakaran did her Ph.D. (Organic chemistry) from Indian Institute of Science, Bangalore under the supervision of Prof. S. Chandrasekaran, and did her Postdoctoral Fellowships from Harvard Medical School and Whitehead Institute, MIT. She is an associate professor and Kankuben Bakshiram Gelot Chair in chemistry at Indian Institute of Technology, Gandhinagar. She is the current Dean of students at IITGN. She has co-authored about 42 publications, 1 book chapter and have 8 US and 14 Indian patents to her credit. She is also a recipient of the prestigious DST Ramanujan Fellowship (2013- 2018). She is also featured as top 25 scientists in India in a book titled India's science geniuses in 2022.

Her current areas of interest include targeted drug discovery and medicinal chemistry. Her lab focuses on studying mechanistic pathways of DDR kinases using small molecules to develop novel therapeutics as well exploring Helicobacter pylori survival pathways for developing drugs against the infection. Her long-term goal would be to make affordable medicines for cancer.

ABSTRACT

Targeting protein kinases is an attractive strategy in cancer therapy owing to their importance in cell signaling pathways. Tousled-like kinases (TLKs) are associated with chromosomal integrity, DNA replication, and repair. However, the dysregulation of these genes can give rise to different aberrations. An isoform of TLK, TLK1B activity is found to be attenuated in the case of prostate cancer and breast cancer, as it can phosphorylate many proteins of the DNA Damage Response (DDR) pathway, making TLK1B a druggable target. Our work focuses on the development of a new class of TLK1B inhibitors to broaden the spectrum of understanding TLK1B inhibition. As an approach, we designed, synthesized, and validated indole-based molecules with potent TLK1B inhibition via in-silico studies. We further explored the synthesized inhibitors to understand their inhibition against recombinantly purified TLK1B in the presence of its different substrates. We found that the inhibitors are more potent in prostate cancer cell lines, as observed by the lowered downstream phosphorylation levels in those cells as well in initial animal model studies. The overall studies on prostate cancer will be discussed in the presentation.

Unveiling the Potential of Molecular Hybridization: DNA-targeted Cytotoxic Agents in Cancer Drug Discovery

Dr Nagula Shankaraiah
Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad.

BIOGRAPHY

Dr. N. Shankaraiah did his graduation and post-graduation from Kakatiya University, Warangal and completed doctoral work in the year 2007 at CSIR-Indian Institute of Chemical Technology, Hyderabad. Later, he moved to University of Talca for his postdoctoral studies and visited University of CAMPINAS, Brazil to probe some important catalyzed reactions with ESI-MS/MS. Subsequently in 2009, he joined as an Assistant Professor in the Department of Medicinal Chemistry, NIPER-Hyderabad and presently, he is an Associate Professor. He was elected as Fellow of Telangana Academy of Sciences (FTASc) for the year 2021. He is also a recipient of OPPI Young Scientist Award, year 2010 and Associate Fellow of AP and Telangana Academy of Sciences, year 2014 and Best Research Scientist Award year 2016 from NIPER-Hyd. He received Young Scientist start-up grant from SERB, DST, Govt. of India, year 2015 and also received funding from ICMR. From last three years, he is featured in the list of top 2% scientists world-wide published by Elsevier, a study conducted by Stanford University, USA. He has made significant contributions in diverse areas of research emphases on discovery of cytotoxic NCEs towards cancer therapy using promising biological targets as well as development of sustainable synthetic methodologies and asymmetric total synthesis of complex molecules. He published more than 185 research articles in reputed international journals which include 2 book chapters and 5 patents granted, delivered more than 50 invited talks at various national and international scientific platforms. His research articles have cited 5426 citations, h-index 43, i-10 index 129. Till date, he has supervised 18 PhDs and 129 MS (Pharm.) students. He is a member in many academic bodies (Board of Studies), senate and governing body member at various academic Institutions/ Universities.

ABSTRACT

Over the past four decades, the prevalent global threat posed by cancer has prompted an urgent quest for alternative therapeutic avenues. In recent years, a wide range of strategies have been meticulously reviewed and investigated in an effort to create an effective therapy, to slow the concerning rise in the number of cancer cases worldwide. This can be attributed to the rapid proliferation of cancer cells and the multi-drug resistance. 1 In this endeavour, DNA has emerged as a highly promising and pivotal biological target for the development of potent anticancer agents. The pursuit of cancer treatments has led to a strategic exploration of molecular structural modifications and the integration of pharmacophoric elements into these frameworks. This strategic amalgamation, as illustrated in Figure 1 2 , entails a novel paradigm in drug design and development. It involves ingeniously fusing two distinct pharmacophores, giving rise to new hybrid scaffolds that might exhibit enhanced affinity and efficacy compared to their parent compounds.

In continuation of our efforts in the design, development and synthesis of new chemical entities (NCEs) of anticancer agents through this pioneering approach, our research team has methodically curated a versatile collection of compounds by employing different heterocyclics such as β-carbolines, isatin, benzimidazoles, 3-alkenyl oxindoles, 1,2,3-triazoles/tetrazoles, chalcones, phenanthrenes, thiazolidinediones, etc. Furthermore, with the aid of molecular docking studies, we explored the interaction of these designed molecules with various key protein targets specifically, tubulin and topoisomerases accounting for its ability to be involved in various DNA-dependent processes. 3 This detailed analysis offers insights into the potential mode of action, shedding light on the binding interactions that underlie their potency against cancer cells. Selected compounds from this library have demonstrated noteworthy anticancer efficacy within the sub-micromolar scale across specific human cancer cell lines.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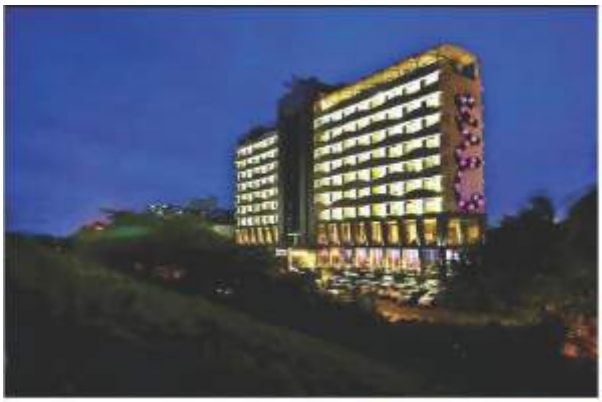

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