Chandigarh Region Innovation and Knowledge Cluster (CRIKC)

Annual Report 2024-2025

In the period from May 2024 to July 2025, CRIKC continued its usual activities of organizing lectures/conferences/seminars as well as interaction with several organizations. A brief report on CRIKC activities is as follows.

- **May 11, 2024:**CSIR-Central Scientific Instruments Organisation (CSIO), Chandigarh, celebrated National Technology Day 2024 at the ISTC Auditorium, showcasing its latest research initiatives and innovations. Prof. Shantanu Bhattacharya, Director, CSIR-CSIO**,** welcomed the gathering and emphasized the importance of technological progress in national development. The chief guest**,** Dr. C. R. Parthasarathy, Director, Technology Development Group, Micron Technology, India**,** delivered a keynote lecture on *"Memory Solutions: Powering the Next Technological Revolution,"* aligning with India's semiconductor mission.

The event was graced by eminent dignitaries,including Air Marshal Rajkaran Shera**,** Prof. A. K. Grover (Former VC, Panjab University)**,** Dr. H. K. Sardana (Director, IIIT Raichur)**,** Prof. Gaurav Verma (Panjab University)**,** and Dr. Piyush Garg(Chitkara University), reflecting the spirit of collaboration in science and technology. As part of the celebration, CSIR-CSIO organized an Open Day for over 200 school students, providing them an opportunity to interact with scientists and explore laboratories, inspiring the next generation towards scientific innovation. The event not only commemorated India's achievements in science and technology but also reaffirmed CSIR-CSIO's commitment to pioneering research and future innovations.

- **September 15, 2024:** An online memorial meeting was held in honour of PU Vigyan

Rattan Dr. Girish Sahni, former Director General of CSIR and distinguished alumnus of Panjab University. Dr. Sahni was remembered for his pioneering work in developing and commercializing the affordable clot-buster drug Streptokinase, which has saved countless lives. The meeting was attended by leading scientists and colleagues who highlighted his legacy as an innovative researcher and mentor. The event was hosted by SPSTI, Panjab University, and CRIKC.

- **September 17, 2024:** The University Institute of Chemical Engineering & Technology(UICET), Panjab University, Chandigarh, celebrated Engineers' Day with an insightful lecture by Prof. Shantanu Bhattacharya, Director, CSIR-CSIO, Chandigarh, on the theme *"Biosensors and Microfluidics."*The event was presided over by Prof. Rumina Sethi, DeanofUniversity Instruction**,** who highlighted the importance of preserving the artistic andcreativespirit in every engineer. The celebration served as a reminder of the role of innovation and creativity in advancing

the engineering profession.

- **October 28, 2024:** A special lecture on the *"Nobel Prize in Physiology or Medicine – 2024"* was held at the Department of Microbiology, Panjab University. Two distinguished academics, Prof. Rajat Sandhir from the Department of Biochemistry, Panjab University, and Dr. Sadhan Das from the Department of Biological Sciences, IISER Mohali, delivered the lecture. They provided valuable insights into the pioneering scientific contributions recognized by this year's Nobel Prize and discussed their wider implications in biomedical research. The lecture enriched the academic community, offering faculty and students a deeper understanding of the global significance of the Nobel-winning work.

- **November 06-08, 2024:**The 17th Chandigarh Science Congress (CHASCON-2024)**,** jointly organized by Panjab University in association with CRIKC**,** was held at the Law Auditorium, Panjab University, Chandigarh**.** The theme for this year's conference was *"Indigenous Technologies for Viksit Bharat."*The official website and brochureof CHASCON-2024 had been launched earlier by Prof. Renu Vig, Hon'ble Vice Chancellor, Panjab University**,** along with Prof. Harsh Nayyar, Director, Research and Development Cell**,** Prof. Y. P. Verma, Registrar**,** Prof. Anu Gupta, Director, Computer Centre**,** and other senior officials from various departments. A total of 32 departments across 9 sections were involved in organizing the event. Prof. Y. K. Rawal, Prof. Sonal Singhal, and Prof. Sakshi Kaushal served as the coordinators for CHASCON-2024. The three-day event brought together researchers, academicians, and students to deliberate on scientific advancements and the role of indigenous technologies in building a self-reliant and developed India.

The program was structured to provide participants with in-depth learning opportunities through case-based tutorials and discussions. A total of 16 lectures and 12 tutorials were held. The tutorial-based design of the program ensured an interactive and practical knowledge sharing, allowing participants to gain insights into real-world clinical decision-making. By bringing together expertise from Japan and India, the program emphasized international collaboration and aims to bridge knowledge gaps in paediatric cardiology and immunology. The event stood as an important platform for fostering academic exchange, professional training, and clinical advancement in these specialized medical domains.

- **November 11, 2024:** A lecture on the occasion of National Education Day was held at the Department of Microbiology, Panjab University, on the topic "How to Be a Successful Researcher?". The lecture was delivered by Dr. Jitendra Kumar Sahu from the Department of Pediatrics and Dr. Sadhan Das from the Department of Biological Sciences, IISER Mohali. The speakers shared their insights on research methodology,

challenges in academic research, and the qualities that contribute to becoming a successful researcher. The session inspired students and faculty to pursue research with dedication and innovation. The session proved to be highly insightful for students and researchers, inspiring them to pursue scientific inquiry with passion and responsibility in the true spirit of National Education Day.

- **November 20, 2024:** A lecture on "Nobel Prize in Literature 2024, Han Kang: Literature of Social Critique and Human Concerns" was delivered by Prof. Pushpinder Syal at the Mulk Raj Anand Auditorium, Arts Block I, Department of English and Cultural Studies, Panjab University, Chandigarh. Prof. Syal discussed the thematic depth of Han Kang's works, highlighting how her writings address issues of memory, trauma, and social critique. The lecture emphasized the relevance of literature in reflecting human concerns and promoting critical thought.

- **December 10, 2024:** The SAIF/CIL at Panjab University, Chandigarh, hosted a full-day, expert-led workshop dedicated to Atomic Force Microscopy and Raman Spectroscopy. Started promptly at 10:30 AM, the workshop brings together academia and industry—featuring technical insights and practical exposure delivered by M/S PARK Systems (S. Korea) and M/D RENISHAW (U.K.).It helped the research scholars and students to learn AFM which excels at characterizing the topography and mechanical properties of surfaces at the nanoscale, while Raman spectroscopy provided detailed information about the molecular composition and structure of materials.

Their combined use, known as correlative microscopy, allowed for a comprehensive understanding of materials by linking their physical and chemical characteristics.

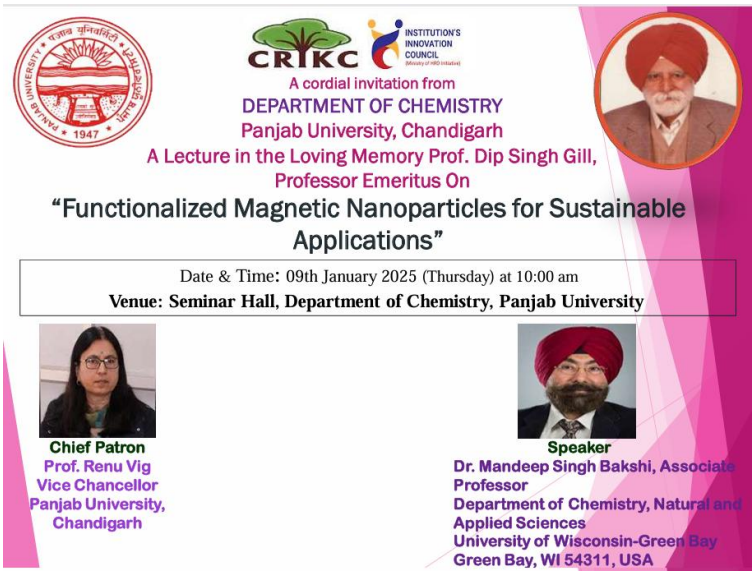
- **December 10, 2024:**The Department of English and Cultural Studies, Panjab University, Chandigarh, hosted a lecture on Han Kang, Nobel Prize winner for Literature 2024, on November 20, 2024, at the Mulk Raj Anand Auditorium. The event, supported by SPSTI, NASI-INYAS, CRIKC, PI-RAHI, and the department's Literary Society, marked the fifth lecture in an expository series by Prof. Pushpinder Syal, former senior professor of the department.

The session was chaired by Prof. Arun K. Grover, former Vice Chancellor of Panjab University, with an introduction by Prof. Akshaya Kumar. Prof. Syal highlighted the interdisciplinary connection between literature and science, emphasizing literature's role in shaping philosophical perspectives on human concerns. She analysed Han Kang's works, particularly *The Vegetarian* and *Human Acts*, exploring their psychological, spiritual, and political dimensions, while also underlining the role of translators in global literary exchange. Quoting Han Kang's haunting prose, Prof. Syal showcased the depth of her narrative power.

The lecture concluded with an engaging audience discussion and a vote of thanks by Prof. Meenu A. Gupta, Chairperson of the department.

- **January 09, 2025:** A memorial lecture in the loving memory of Professor Dip Singh Gill, Professor Emeritus, was organized by the CRIKC at the Seminar Hall, Department of Chemistry, Panjab University, Chandigarh. The lecture on "Functionalized Magnetic Nanoparticles for Sustainable Applications" was delivered by Dr. Mandeep Singh Bakshi, Associate Professor, Department of Chemistry, University of Wisconsin–Green Bay, USA. Dr. Bakshi, an alumnus of Panjab University, shared his research on colloids and bio-nanomaterials, with a special focus on the sustainable applications of functionalized magnetic nanoparticles. The event was held under the patronage of Prof. Renu Vig, Vice Chancellor, Panjab University, with Prof. Gurjaspreet Singh as Convener and Prof. Ganga Ram Chaudhary, Chairperson, Department of Chemistry. The lecture served as an academic tribute to

Prof. Dip Singh Gill and was attended by faculty members, researchers, and students.



- **January 16, 2025:** On the occasion of National Startup Day, an expert talk titled "From Vision to Reality: Who, When and How to Build Startups That Solve Real Problems" was delivered by Mr. Gurjot Singh Narwal, Founder and CEO, Gini Health Inc, at the Department of Chemistry, Panjab University, Chandigarh. Mr. Narwal shared his entrepreneurial journey and provided insights into building startups that address real-world challenges, emphasizing innovation, timing, and strategic decision-making. The session was attended by faculty members, research scholars, and students, and encouraged young minds to pursue entrepreneurship with creativity and purpose.

- **January 23, 2025:**A lecture was held on January 23, 2025, to commemorate and unpack the significance of the 2024Nobel Prize in Physics, which was jointly awarded to John J. Hopfield and Geoffrey Hinton "for foundational discoveries and inventions that enable machine learning with artificial neural networks."

- **January 31, 2025:** The DST-Centre for Policy Research (DST-CPR), Panjab University, Chandigarh, organized the *International Conference on Fostering Industry-Academia Linkage for Effective Technology Transfer*. The event brought together policymakers, industry experts, and academicians to deliberate on strategies for strengthening collaborations and advancing India's innovation ecosystem.

The conference began with the release of a report entitled *"A Comprehensive Analysis of India's Innovation Ecosystem by Mapping Patent Landscape of Higher Educational Institutions and Research Organizations,"* compiled by DST-CPR, followed by the signing of an MoU between DST-CPR (PU) and KIIT-TBI TTO to enhance academic-industry partnerships.Prof. Kashmir Singh, Coordinator, DST-CPR, welcomed the participants, while Prof. Renu Vig, Vice Chancellor, Panjab University, delivered the inaugural address, emphasizing the role of higher

educational institutions in bridging research and commercialization.

Distinguished experts including Dr. Arvind C. Ranade, Director, National Innovation Foundation; Dr. Jatinder Kaur Arora, Former Executive Director, PSCST; Dr. Bijay Kumar Sahu, Regional Manager and Head, NRDC; Ms. Bharti Sood, Regional Director, PHD Chamber of Commerce and Industry; and Dr. DJ Nag, President, Innovaito LLC, USA, shared insights on strengthening India's innovation ecosystem, technology readiness levels, stakeholder engagement, startup policies, and global modalities of technology transfer.The event also featured talks by Dr. Abhijit (Jit) Banerjee, University of Connecticut, and Dr. Jay Kesan, Patent Attorney and Technologist, USA, who discussed the role of academia in supporting startups and effective intellectual property management.Two panel discussions were held: the first on "Challenges in Industry-Academia Collaboration within Higher Education Institutions," chaired by Dr. Arvind Ranade; and the second on "Implementing UGC Guidelines for Strengthening Industry-Academia Linkages for Promoting Technology

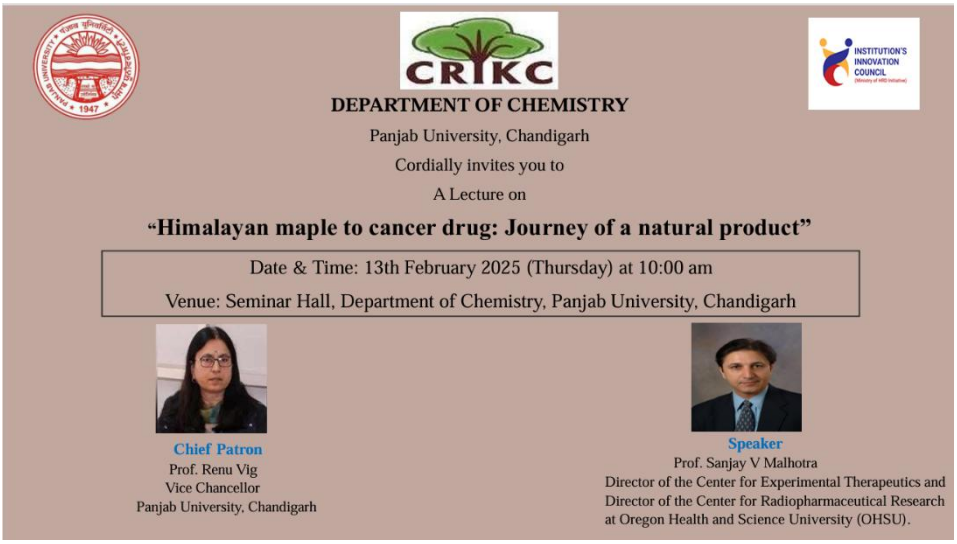
Transfer from HEIs," chaired by Dr. Sukhjinder Singh Thind. Both sessions brought together eminent experts from academia, industry, and policy.The conference successfully provided a platform for dialogue on advancing innovation, strengthening technology transfer, and enhancing collaboration between academia and industry for India's technological growth.

- **February 06, 2025:** To raise awareness about wildlife protection and conservation, Panjab University, Chandigarh, organized a lecture on *"Wildlife Conservation Scenario in India"* on February 6, 2025. The session was delivered by Professor Meva Singh, a renowned expert in wildlife and environmental studies. Prof. Singh, renowned for his pioneering research on lion-tailed macaques, bonnet macaques, and slender loris, enthralled the audience with insights into the critical ecological roles these primate species play within India's forest ecosystems, while also highlighting

how his research has significantly shaped wildlife conservation policies across multiple states. The lecture, presided over by former Vice-Chancellor Prof. R.C. Sobti, drew attendance from distinguished academicians, including former VC Prof.

Arun K. Grover, Prof. Sukhbir Kaur, Prof. Sanjeev Puri, Prof. M.C. Sidhu, and other notable scientists of the region, underscoring the event's academic gravitas.

- **February13, 2025:** A lecture titled *"Himalayan Maple to Cancer Drug: Journey of a Natural Product"* was delivered by Prof. Sanjay V. Malhotra, Director of the Center for Experimental Therapeutics and the Center for Radiopharmaceutical Research at Oregon Health and Science University (OHSU), at the Department of Chemistry, Panjab University, Chandigarh. Prof. Malhotra, an eminent cancer researcher and



Fellow of the Royal Society of Chemistry, UK, shared insights from his pioneering work on drug discovery and development, highlighting how natural products serve as the basis for innovative therapeutics. The event was organized under the patronage of Vice Chancellor Prof. Renu Vig, with Prof. Gurjaspreet Singh as Convener and Prof. Ganga Ram Chaudhary, Chairperson, Department of Chemistry. Faculty members, researchers, and students attended the lecture and engaged in an interactive discussion on advances in cancer therapeutics.

- **February21-22, 2025:**The Department of Chemistry and Centre of Advanced Studies in Chemistry, Panjab University, Chandigarh, in association with the Chandigarh Chapter of NASI, organized the Prof. Ram Chand Paul National Symposium on *"Sustainable Development in Chemical Sciences: Innovations and Start-ups."* The two-day symposium was held in fond memory of Prof. R. C. Paul, former Vice

Chancellor of Panjab University.

The two-day programme began with an inaugural session that brought together faculty members, researchers, and students from across India. It featured plenary and invited lectures by distinguished experts from IITs, JNU, NIPER, and other

institutions, who shared insights on pharmaceutical advancements, industrial pollution control, nanomaterials, green chemistry, and sustainable technologies. With over 160 participants from across India, the symposium showcased groundbreaking research through poster and oral presentations. The symposium successfully fostered scientific collaboration, innovation, and entrepreneurship, underlining the crucial role of chemical sciences in addressing societal and environmental challenges. It also served as a fitting tribute to the legacy of Prof. R. C. Paul, whose vision continues to inspire generations of researchers.

- **February24, 2025:** To celebrate National Science Day, BioNEST and E-YUVA, Panjab University, Chandigarh, organized a vibrant drawing competition titled *"Idea Ignition 1.0"* at Government Model High School, Sector 25, Chandigarh. Fifty-five students from Classes 7, 8, and 9 participated in the competition on the theme *"Science in Everyday Life."* The young participants showcased creativity and innovation through artworks that highlighted solar energy solutions, environmental

sustainability, gene therapy, and other forward-looking ideas for a better future.

The initiative, aligned with the mission of the Government of India and Panjab University to foster grassroots innovation, aimed to ignite curiosity, creativity, and the spirit of scientific exploration among school students.

- **February 28, 2025:** To celebrate Science Day and promote scientific awareness among students, the Department of Chemistry, Panjab University, Chandigarh, organized a lecture titled *"Awareness Talk on the Occasion of Science Day"* on February 28, 2025. The session was delivered by Prof. Satinder Kaur, CBT Practitioner. The lecture was designed specifically for the students of the department with the aim of not only highlighting the significance of scientific inquiry and research but also sensitizing young minds to the importance of mental well-being, motivation, and behavioural balance in pursuing higher studies and research.
  During her address, Prof. Kaur underscored the relevance of science in everyday life and its indispensable role in shaping sustainable solutions for global challenges such as climate change, healthcare, food security, and energy needs. She highlighted how interdisciplinary approaches, particularly the integration of chemistry with biology, materials science, and environmental studies, are paving the way for transformative discoveries. Drawing from her experience as a CBT practitioner, she also emphasized

the importance of mental health awareness among students engaged in scientific studies, pointing out that stress management, resilience, and a positive mindset are as essential as academic excellence in building a strong scientific career.
Overall, the lecture served as a meaningful reminder of the spirit of National Science Day by blending the celebration of scientific achievement with the cultivation of personal and professional awareness among budding chemists. It successfully created an enriching atmosphere that combined academic inspiration with psychological empowerment, leaving the participants motivated to pursue their scientific endeavours with renewed enthusiasm and clarity.

- **March 10-14, 2025:** *International Workshop on Advances in Functional Genomics and Gene Editing*, was held under the Global Initiative for Academic Networks (GIAN) at Panjab University, Chandigarh. The workshop focused on the growing importance of functional genomics and gene editing, emphasizing the role of non-coding RNAs such as lncRNAs, miRNAs, and siRNAs in gene regulation, chromatin remodelling, and biological processes. With thousands of non-coding RNAs yet to be functionally characterized, the event highlighted the challenges of integrating diverse genomic datasets for functional annotation and aims to train participants in computational and experimental methods to study gene regulation, supported by tools like CRISPR-Cas systems.

  The academic programme was structured into 12 lectures and 10 tutorials, which introduced participants to bioinformatics, genome sequencing, gene family characterization, regulatory molecules such as miRNAs and long non-coding RNAs, and their functional interactions in plants. Case studies included barley microRNAs in drought response and genome editing applications for crop improvement in tomato, rice, soybean, potato, and brassica. The tutorials provided hands-on training in bioinformatics tools, sgRNA designing to minimize off-target effects, vector construction, plant transformation using *Agrobacterium tumefaciens*, and genome editing in both model and crop plants.

The workshop featured renowned international and national experts**,** including Prof. Zofia Szweykowska-Kulińska, a distinguished molecular biologist recognized for her work on plant microRNA biogenesis and stress responses. The host faculty comprised Prof. Kashmir Singh, an eminent researcher in plant genetics and genomics, and Dr. Santosh Kumar Upadhyay, an expert in functional genomics and CRISPR-Cas

genome editing in wheat. The programme was coordinated locally by Prof. Gurjaspreet Singh, Department of Chemistry, Panjab University.

With a participation fee of ₹1000, the event provided instructional materials, lab facilities, and internet access, making it a comprehensive training platform. Overall, the workshop successfully combined lectures, tutorials, and practical sessions to strengthen participants' knowledge and skills in functional genomics and advanced genome editing.

- **March 18-19, 2025:**A national conference on *"Harnessing the Power of Microbes for Viksit Bharat"* was organized by the Department of Microbiology, BMS-I, Panjab University, Chandigarh. The event was a significant academic and professional gathering aimed at bringing together students, research scholars, faculty members, school students, industrial delegates, and foreign participants to engage in discussions and knowledge-sharing in the field of microbiology and related disciplines. The conference was conducted in a hybrid mode, with options for both offline participation at the university and online sessions through Google Meet links provided in the document. The registration process was structured with different fee categories depending on the type of participant and the date of registration. This provided an informal networking opportunity for participants to interact with peers, mentors, and experts in the field in a more relaxed setting.

Overall, this conference provided exposure to the latest developments in microbiology, presented their research, and built collaborations with peers and professionals. With a structured registration process, hybrid accessibility, and additional networking opportunities through the Grand Dinner, the Department of Microbiology, Panjab University, ensured the inclusivity and impactfulness.

- **March 22-26, 2025:** A lecture on *"Long-Term Follow-Up and Cardiovascular Management in Pediatric Medium Vessel Vasculitides"* was conducted by CRIKC at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, to enhance clinical understanding and practice in this specialized area of pediatric care. The session featured Prof. Etsuko Tsuda, Professor of Pediatric Cardiology at the National Cerebral and Cardiovascular Center, Osaka, Japan, who is a recognized authority on Kawasaki disease and shared her insights on long-term follow-up and cardiovascular outcomes. Faculty from PGIMER, including Prof. Surjit Singh, Chief of the Pediatric Allergy Immunology Unit and Head of the Department of Pediatrics, and Dr. Kumar Pilania, Assistant Professor in the same unit, also contributed their expertise. The lecture covered best practices for monitoring children with medium vessel vasculitides, strategies to prevent cardiovascular complications, and a case-based discussion on advanced interventions such as Percutaneous Transluminal Coronary Rotational Atherectomy for obstructive coronary lesions. The session provided valuable knowledge-sharing and practical insights for improving outcomes in pediatric patients with vascular and cardiac involvement.

- **March 26, 2025:** The Placement Cell, Department of Chemistry, Panjab University, Chandigarh, in collaboration with the Central Placement Cell and the Institution's Innovation Council (IIC), organized a one-day workshop on *"IPR & Entrepreneurship"* on Wednesday, March 26, 2025. The event was held under the aegis of the Panjab University Incubation Centre (RUSA) at the Seminar Hall, Department of Chemistry.The workshop aimed to create awareness about Intellectual Property Rights (IPR) and entrepreneurial opportunities among students and research scholars. It highlighted the importance of innovation, patent filing, and start-up ventures in translating academic research into industrial and societal applications.

  The program comprised talks and interactive discussions focusing on various aspects of intellectual property, including types of IPR, processes for filing patents, and strategies for protecting innovations. Sessions also emphasized the scope of entrepreneurship, encouraging participants to explore start-up opportunities and incubation facilities available at Panjab University.The workshop witnessed active participation from students, researchers, and faculty members. It served as an informative and motivating platform, equipping participants with knowledge and tools essential for pursuing innovation-driven careers.

- **July07-11, 2025:**An international workshop on *"Advances in Experimental Therapeutics"* was conducted under the Global Initiative of Academic Networks (GIAN) from July 7–11, 2025, at the Seminar Hall, Department of Chemistry, Panjab University, Chandigarh. Organized by the Chandigarh Region Innovation and Knowledge Cluster (CRIKC) and supported by the Ministry of Education, the workshop aimed to provide participants with a comprehensive understanding of experimental therapeutics, an interdisciplinary field at the interface of chemistry, biology, and medicine.

The lead international expert for the workshop was Prof. Sanjay V. Malhotra**,** Department of Cell Development and Cancer Biology, Oregon Health & Science University (OHSU), USA. Prof. Malhotra, an accomplished researcher with significant contributions to translational drug discovery, shared his expertise on chemical tools and small molecule development. The local coordination was led by Prof. Gurjaspreet Singh, Local GIAN Coordinator, CRIKC, and Course Coordinator, and Dr. Aman Bhalla**,** Course Coordinator. Prof. Renu Vig**,** Honourable Vice-Chancellor of Panjab University, served as the Chief Patron.

This five-day course, consisting of 18 hours of lectures and 10 hours of tutorials, aimed to provide participants with a comprehensive understanding of experimental therapeutics, a rapidly advancing field at the intersection of chemistry, biology, and medicine. The program explored how fundamental chemistry and chemical biology are employed to understand biological systems, unravel disease mechanisms, and design innovative therapeutic strategies. With a focus on translational medicine, the course was designed to highlight how modern technological advances enable researchers to probe complex biological systems, discover novel bioactive molecules, and develop new drug candidates. The lectures covered a broad range of topics, including chemical biology and drug discovery, platinum and gold complexes in therapeutics, asymmetric synthesis in drug design, pharmacokinetics, molecular imaging, biological therapeutics, and the structure of clinical trials, along with case studies of the drug development process.

The course was tailored for undergraduate and postgraduate students, research

scholars, postdoctoral fellows, and scientific professionals working in chemistry, life sciences, biotechnology, pharmaceuticals, and related industries. A strong foundation in chemistry was expected, while knowledge of biochemistry and molecular biology would further enhance the learning experience. The participation fee was set at Rs. 1000, which covers instructional materials, laboratory resources, and internet facilities.

Overall, this GIAN course promised to be an enriching academic and professional experience, providing a unique platform for students, researchers, and industry professionals to engage with cutting-edge developments in experimental therapeutics. By combining lectures, tutorials, and case studies, the program not only imparts knowledge but also stimulates participants to develop their own innovative approaches in biomedical research and drug discovery.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