



सत्यमेव जयते

Department of Sciences & Technology
Ministry of Science and Technology
Government of India

HANDS-ON TRAINING PROGRAM

**“Advanced Trends in Biomedical Sciences:
Research and Skill development”**

(Bioscience for human health mission)

**Under
Synergistic Training Programme Utilizing the Scientific and
Technological Infrastructure (STUTI)**

**Organised by
Department of Biophysics, Panjab University**

**in collaboration with
Sophisticated Analytical Instrumentation Facility,
Panjab University, Chandigarh
(01st August to 07th August, 2022)**

**Prof. Raj Kumar
Patron
Vice-Chancellor,
Panjab University, Chandigarh**

**Prof. G.R Chaudhary
STUTI Program Coordinator
Director SAIF/CIL,
Panjab University, Chandigarh**

**Dr. Simran Preet
Convenor, Training Program
Department of Biophysics
Panjab University, Chandigarh**

**Dr. Avneet Saini
Coordinator, Training Program
Department of Biophysics
Panjab University, Chandigarh**

Website: stuti.puchd.ac.in



Organizers



Prof. Raj Kumar
Chief Patron
Vice Chancellor
Panjab University, Chandigarh



Prof. Ganga Ram Chaudhary
Director, SAIF/CIL
STUTI Coordinator -PMU
Panjab University, Chandigarh



Dr. Simran Preet
Convenor, Training Program
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Panjab University, Chandigarh



Dr. Avneet Saini
Coordinator, Training Program
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Synergistic Training Program Utilizing the Scientific and Technological Infrastructure

“STUTI”

The Scheme ‘Synergistic Training program Utilizing the Scientific and Technological Infrastructure’ (STUTI) is intended to build human resource and its knowledge capacity through open access S&T Infrastructure across the country. As a complement to the various schemes of DST funding for expansion of R&D Infrastructure at academic institutions, STUTI scheme envisions a hands-on training program and sensitization of the state-of-the-art equipment as well as towards sharing while ensuring transparent access of S&T facilities.

Panjab University, Chandigarh



One of the oldest Universities in India, the Panjab University (PU) initiated at Lahore in 1882, has a long tradition of pursuing excellence in teaching and research in science and technology, humanities, social sciences, performing arts and sports. In independent India, Panjab University with its Campus at Chandigarh and nearly two hundred colleges in Punjab state and Chandigarh U.T., has served various societal needs with distinction. The academic institutes on the campus and four Regional Centres are grouped under the Faculties of Arts, Science, Languages, Law, Education and Fine Arts, Business Management and Commerce, Engineering and Technology, Medical Sciences, Pharmaceutical Sciences and Dairying, Animal Husbandry and Agriculture. Most of the departments have their own specialized libraries, and the working period runs for at least 180 days in a year. The University School of Open Learning, a multi-disciplinary department, caters to more than 25000 distance learners and offers over 20 traditional and job oriented courses. The University is participating in various prestigious International High Energy Research Programmes at Fermilab (USA), KEK (Japan) and CERN (Switzerland). At present, the University is involved in a big way in CMS and ALICE Experiments at CERN (European Organization for Nuclear Research) Switzerland and Neutrino Programme at Fermilab, USA. The CMS (Compact Muon Solenoid) project at the Large Hadron Collider is for the discovery of Higgs Boson and other new particles. Under such International Research programs, the University had earlier been involved in the Top Quark Discovery (1995) and CP-violation discovery (2001)

Department of Biophysics, Panjab University, Chandigarh

The Department of Biophysics at Panjab University was established in the year 1964 with a vision to strengthen the field of Basic Medical Science of Panjab University. It originated with Electro-Physiology, Radiation Biophysics and Electron Microscopy. Apart from the traditional areas in Biophysics such as Cell and Molecular Biophysics, Radiation Biophysics, Membrane Biophysics and Neuro-Biophysics, the Department has put in efforts in recent times to move into new emerging areas such as Molecular Modelling, Bioinformatics, Molecular Imaging, Translational research in Cancer, Molecular Medicine Nano-biophysics, structural biology and Nuclear Medicine. Advances in these areas have paved a way for the designing and development of drugs and medical technologies for the welfare of mankind.



SAIF/CIL

SAIF, formerly known as RSIC at Panjab University Chandigarh was incepted in the earlier years of the 6th plan. The complete facilities of SAIF, CIL and UCIM are working in unison in the service of research and also for imparting practical training to the students through workshops. The Centre also undertakes the design, fabrication and repair of electronic instruments required by students and teachers from the University and the colleges around. It also runs training programmes in technical skills for the benefit of scientific community and associated laboratory staff from different institutions.



PROGRAM COST

- *The Hands-on Training is duly funded by DST-STUTI hence registration is free of cost.*
- *Reimbursement for train fare to the outstation participating candidates will be provided as per their entitlement.*
- *Boarding and lodging will be provided by the host institute*
- *For the aforementioned accomodation facility, outstation candidates have to intimate while submitting their application.*

HOW TO REGISTER

- *Candidates are required to apply for the seven days training program by sending their biodata in the given format at biophysicsstuti@gmail.com*
- *Last date for application is 26th July, 2022*
- *Researchers, Ph.D, Scientists, PDFs can apply*

SELECTION CRITERIA

- *The applications received will be screened as per eligibility of the participants by the selection committee (STUTI training program selection committee)*
- *The decision of the selection committee will be final and will be communicated to the selected candidates via E-mail.*

PROGRAM HIGHLIGHTS

- *To get the insight and hands on training on scanning electron microscopy, transmission electron microscopy, CD spectroscopy, cell culture techniques and histological analysis for Academic & Industrial Innovations.*
- *Tissue analysis plays a vital role in academia, clincial settings and industry for the testing of samples for various pathologies. The programme will enable the candidates to get hands on for qualitative and quantitative analysis of the tissue, biomolecules, enzymes.*
- *During the training program the participants will get the opportunity to visit SAIF/CIL and other near by institutions to get glimpse of state of the art instrumentation. The participants will get the golden opportunity to interact with eminent researchers from different fields.*

LEARNING OUTCOMES OF THE PROGRAM

The up gradation of knowledge and hands on expertise of students, researchers, and faculty members on the variety of characterization techniques to gain deeper understanding of sophisticated techniques, develop data analysis, interpretation skills, and gain the ability to apply their theoretical knowledge to practice. Animal handling and tissue processing will be the key highlights and valuable output of the program.

DAY 1

01st August

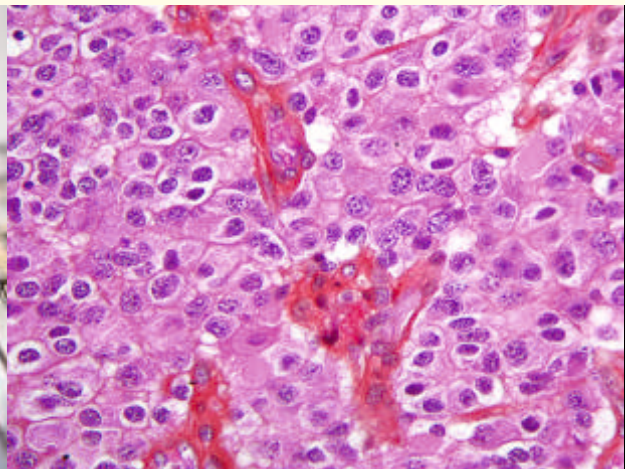
09:00-10:00 a.m	<i>Welcome and Inauguration</i>
10:00-10:30 a.m	<i>HIGH TEA</i>
10:30-12:00 p.m	<i>Introduction to TEM, sample preparation and processing</i>
12:00-01:30 p.m	<i>Hands-on TEM sample processing, visualization</i>
01:30-02:00 p.m	<i>LUNCH</i>
02:00-03:30 p.m	<i>Introduction to SEM, sample preparation and processing</i>
03:30-05:30 p.m	<i>Hands-on SEM sample processing, visualization</i>



DAY 2

02nd August

- 09:00-10:30 a.m** *Use of animal models and animal use ethics in research*
- 10:30-01:00 p.m** *Hands-on training on various injections administration routes (Rats, mice) and animal handling*
- 01:00-02:00 p.m** **LUNCH**
- 02:00-03:30 p.m** *An insight into tissue histoarchitecture and its relevance in disease detection and prognosis*
- 03:30-05:30 p.m** *Hands-on tissue fixation, embedding, sectioning and slides preparation*



DAY 3

03rd August

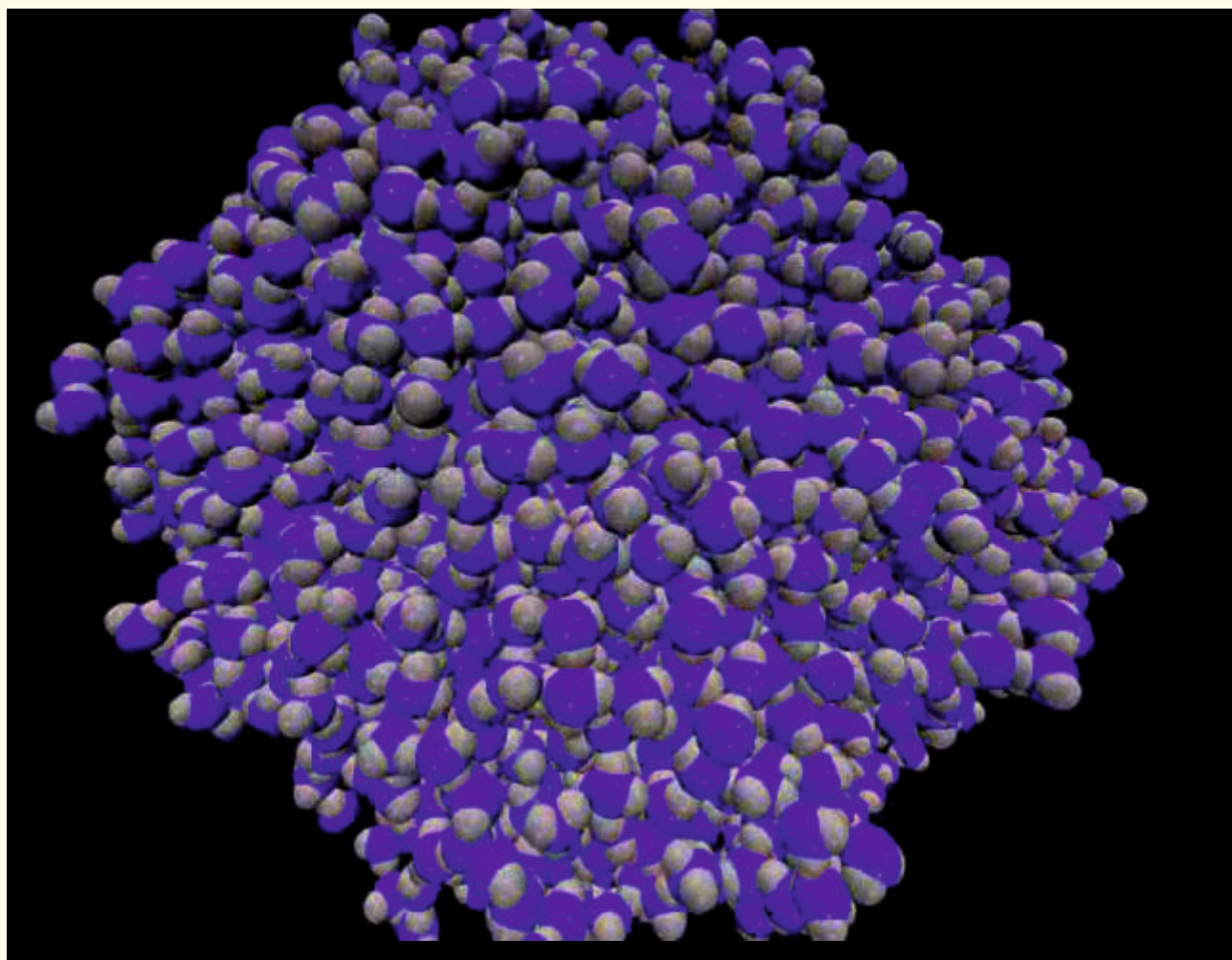
- 09:00-10:30 a.m** *Introduction to basic techniques of cell culture*
- 10:30-12:00 p.m** *Introduction to primary and secondary cell lines, MTT assay, Trypan blue dye exclusion assay, Flow cytometry*
- 12:00-01:30 p.m** *Hands-on media preparation, filtration, maintenance, passaging and cryopreservation*
- 01:30-02:00 p.m** **LUNCH**
- 02:00-05:30 p.m** *Hands-on training on MTT assay, trypan blue dye exclusion assay, flow cytometry*



DAY 4

04th August

<i>9:00-10:30 a.m</i>	<i>Introduction to current trends in structural bioinformatics</i>
<i>10:30-01:00 p.m</i>	<i>Hands-on various bioinformatics tools and softwares</i>
<i>01:00-02:00 p.m</i>	<i>LUNCH</i>
<i>02:00-03:30 p.m</i>	<i>Application of molecular simulations and structural bioinformatics</i>
<i>03:30-05:30 p.m</i>	<i>GROMACS (Hands-on) Bridging gap between wet and dry lab</i>



DAY 5

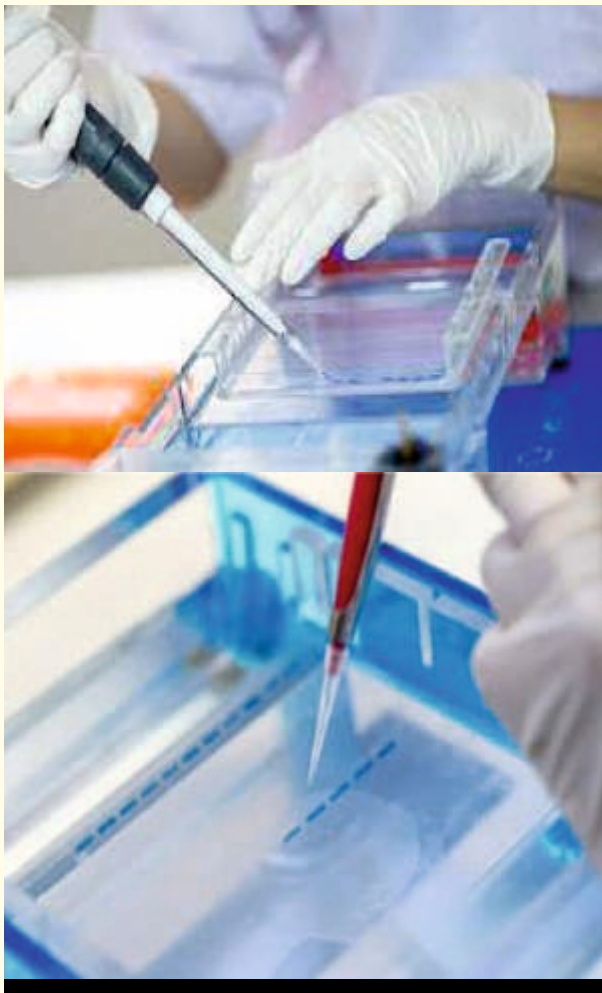
05th August

- 09:00-11:00 a.m** *Lecture on advanced molecular biology techniques and their relevance in disease, diagnostics and therapeutics*
- 11:00-11:30 a.m** *Queries*
- 11:30-01:00 p.m** *Hands-on: Isolation of nucleic acids from tissues*
- 01:00-02:00 p.m** *LUNCH*
- 02:00-05:30 p.m** *Hands-on gel electrophoresis, RT-PCR, real time PCR*

DAY 6

06th August

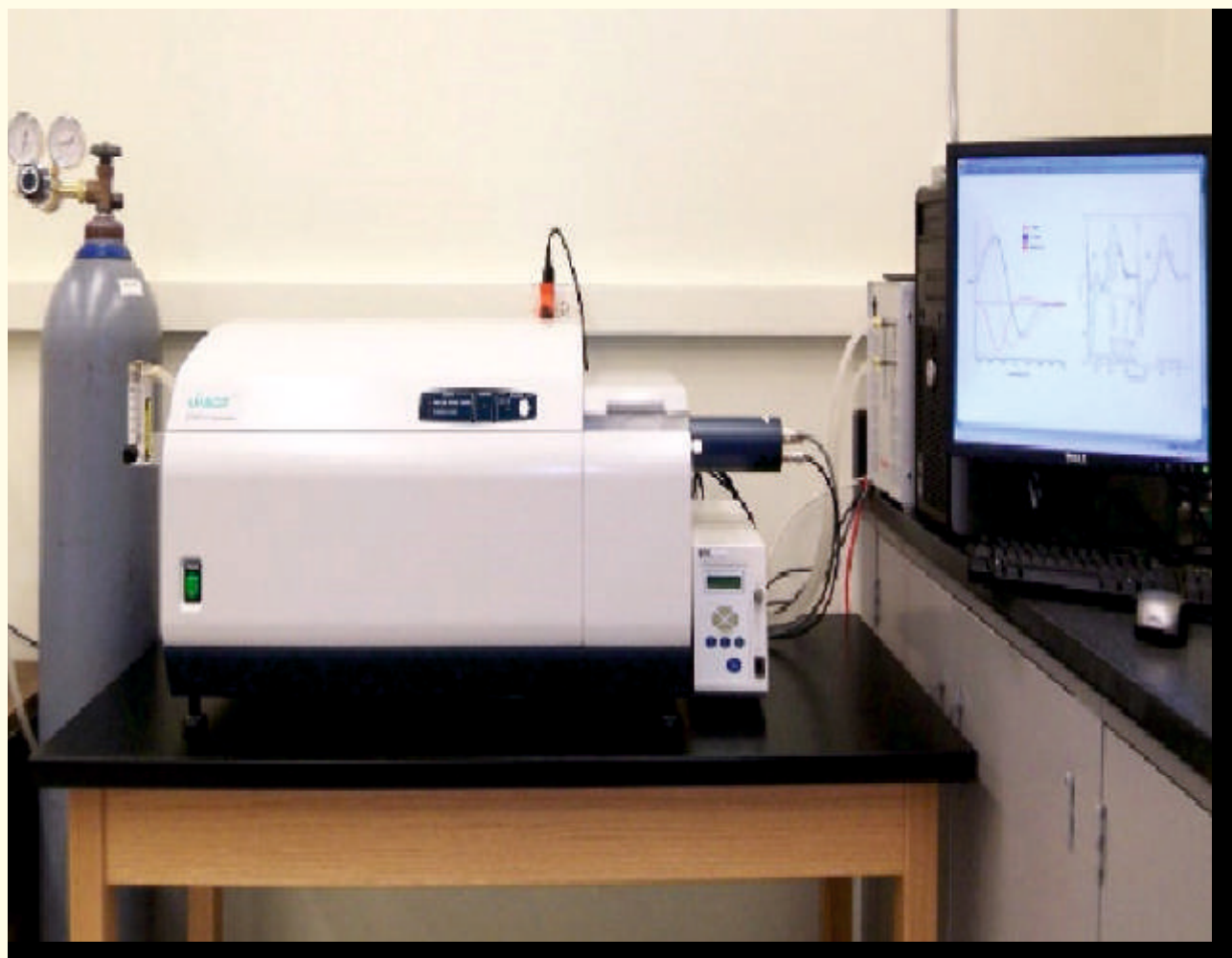
- 09:00-05:30 p.m** *Visit to an Eminent Institute of Research and an insight in to their infrastructural facilities.*



DAY 7

07th August

9:00-10:30 a.m	<i>Introduction to CD spectra and its application(s)</i>
10:30-12:00 p.m	<i>Introduction to NMR and its application(s)</i>
12:00-01:30 p.m	<i>Hands-on CD spectroscopy and atomic absorption microscopy</i>
01:30-02:30 p.m	<i>LUNCH</i>
02:30-05:30 p.m	<i>Valedictory</i>



FORMAT FOR BIODATA

Recent
Photograph

Name (Prof/Dr/Mr/Ms)	
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Designation	
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Organization	
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Date of entry in service	
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Category (General/SC/ST/OBC)	
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Date of birth	
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Sex (M/F)	
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Corresponding address	
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Permanent address	
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Contact details	Phone no.	Mobile no.	E-mail

Educational/ Professional /Qualifications (Graduation onwards)					
Sr. No.	Examination/ Degree	University/ Institute	Year	Subject	Division and Percentage of marks

FORMAT FOR BIODATA

Experience					
Sr. No.	Name of the organization	Designation	From	To	Duty performed

Training attended				
Sr. No.	Year	Name of training program	Name of the institute	Duration

Research experience				
Sr. No.	Year	Name of research	Sponsoring agency	Gist of research

Research paper published/accepted; Patent filed/obtained				
Sr. No.	Year	Title of paper/book	Gist of paper	Name of journal/magazine/publisher

FORMAT FOR BIODATA

Relevance of this program for your current & future activities	
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Have you studied any of these characterization techniques? If yes, please mention	
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Accommodation Requirement (Yes/No)	
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Briefly give details of significant contribution made by you in the field of science & technology during your career. (100 words)

Date:

(signature)