DBT- BUILDER PANJAB UNIVERSITY

Interdisciplinary Life Science Programme for Advanced Research and Education

at

Panjab University, Chandigarh

Biotechnology Dept, UIET; Dept of Biochemistry, Center for Stem Cell and Tissue Engineering

INTRODUCTION

The DBT Builder Programme is a comprehensive initiative focused on enhancing research capabilities in life sciences and biotechnology. This program aims to enhance research infrastructure by upgrading postgraduate labs, implementing power backup solutions, and completing renovation projects. The program also places a strong emphasis on building top-notch research facilities to further life sciences research, such as the zebrafish and inhalation labs. Significant progress includes procuring bioinformatics tools and training personnel. Furthermore, the program promotes knowledge dissemination, with 65 articles published and multiple patents filed to benefit society.

Programme Coordinator:- Prof. Sanjeev Puri

Grant No:- BT/INF/22/SP41295/2020

Programme Objectives

Group Wise

Environmental Biotechnology

1. **Evaluating** the **toxicological impa**ct of emerging **environmental contaminants** using cellular, acellular and model organism based biosensor
2. **Developing cost effective**

Immunotechnology

1. To **develop** a disease specific panel of **biomarker** by developing a **microarray facility** with focus on immunology
2. To **develop** and inhalation toxicology **laboratory**

Cancer Biology and Bioinformatics

1. To provide a comprehensive and integrative data centric **approach in cancer biology** and other disease using various available database and bioinformatics tools.

ESTABLISHING RESEARCH

Procurement, purchase, and equipment installation & upgradation of the already existing equipment

Facilities Established	
Mobile Work Station	Stand-alone zebra fish racks
Micromanipulator with microscope, camera/ other accessories	Live Cell Imager
Real Time PCR	Photo-reactor
Power backup system	Vertical electrophoresis system
Luminex Microarray system	Cold room
Sophisticated inhalation system (plethysmograph)	Polytron (Homogenizer)
Liquid nitrogen tank	Work-station & IPA software
-80 degree freezer	Incubator
-20 degree freezer	Miscellaneous equipment for PG labs: Water bath, pH meter, refrigerator, rotary shaker, cold centrifuge, vertical gel electrophoresis system, benchtop centrifuge, vacuum pump
Biosafety cabinet	Ultra-centrifuge
	Vacuum oven

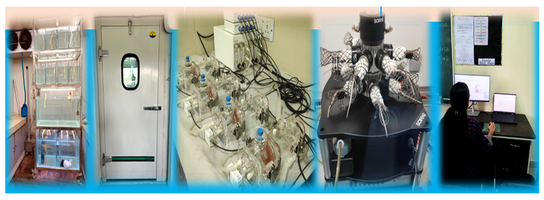
Facilities Upgraded	
Incubators shaker	Culture lab microscope
Gel imaging and analysis system	Centrifuge
Fluorescence spectrophotometer	Fluorescence microscope

ENABLING RESEARCH WORK

To create world-class research facility to perform high-end research in Life Sciences

- Fabrication of zebra fish & inhalation lab facility
- Procurement of Hardware (workstation) & software (IPA Analysis) for Bioinformatics analysis

Zebra fish facility	Inhalation Lab facility	Computational facility
Established at Biotechnology, UIET, equipped with **controlled environmental conditions** create an optimal environment for toxicology research.	The Sophisticated inhalation exposure system with a **plethysmograph facility** was installed in the Biochemistry Department.	The **workstation and IPA** software installed Centre for Stem Cell & Tissue Engineering and Biomedical Excellence.



INFRASTRUCTURE ESTABLISHED

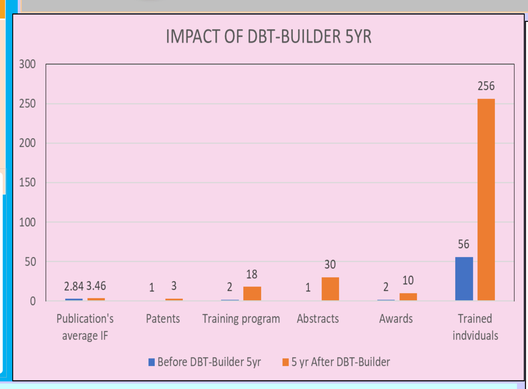
The renovation and upgradation of PG laboratories at the Department of Biochemistry and Biotechnology, UIET has been completed.

The civil works in laboratories renovation to modular lab structures viz. lab working, cupboards, flooring, lighting, ventilation, plumbing, painting, drainage, and overall functionality of the labs.

Installing new electrical systems in all departmental laboratories have been upgraded to support the latest research equipment.

Specialized lab furniture like benches, and chemical storage cabinets were installed in departmental laboratories to ensure lab meets.

A dedicated zebra fish facility has been established that includes all the necessary civil works modifications and electrical installations to create an optimal environment for zebra fish research



HIRED AND TRAINED and MANPOWER

MANPOWER HIRED		
Designation	**Count**	**Remarks (if any)**
Assistant Professor	02	•Dr. Alka Khera (Biochemistry, PU) (Date of joining 07.02.2023) •Mr. Harpreet Singh (Biotechnology, UIET, PU): (Date of joining: 31.03.2023, Date of leaving: 31.08.2023)
Administrative Assistant	03	•Mr. Mohd. Aqeeb (Date of joining: 1.11.2021, Date of leaving: 18.03.2024) •Mr. Prakash Kumar (date of joining 04.12.2025, Date of leaving 11.08.2025), •Sakshi (date of joining 17.10.2025)
Project Assistants	04	•Ms. Manvinderpreet Kaur (Date of joining :12.09.2022) •Mr. Rohit Bansal (date of joining 15.11.2021) •Ms. Parwati Pant (date of joining 28.03.2022 Date of leaving 30.09.2025) •Mr. Dinesh Kumar (Date of joining 7.01.2022- Date of resignation: 30.06.2022)
PG Student fellowship	05	•Ms. Veenushah Bakshi (Date of joining: 01.08.2022) •Ms. Nishtha Goel (Date of joining: 29.9.2022) •Ms. Prerna (Date of joining: 2023) •Ms. Shelja (Date of joining:11.8.2021) •Mr. Yadu (Date of joining: 4.2.2022)

MANPOWER TRAINED/TRAINING	
Detail	**Count**
PG students (M.E., M.Sc.) received support from DBT BUILDER	84
Ph. D scholars receiving support from DBT BUILDER	12
Ph. D scholars have completed their Ph. D with DBT BUILDER support	11
No. of students who attended training sessions (equipment installation/ demonstration/workshop) under DBT BUILDER	645

FOSTERED COLLABORATIONS

Fostered new collaboration with academia and industry.

Inter-departmental collaborations	Student exchange programs and collaboration between supervisors from two different departments for Master's thesis has been initiated.	New collaborations with
between 1.Biotechnology (UIET, PU), 2.Biochemistry (PU), 3.Centre for Stem Cell & Tissue Engineering 4.Biomedical Excellence (PU) 5.UIPS 6.Dr HSJIDSHR have been established.		•Institute of Nano science & Technology (INST, Mohali), •NABI, •PGI •IISER Mohali and •NIPER

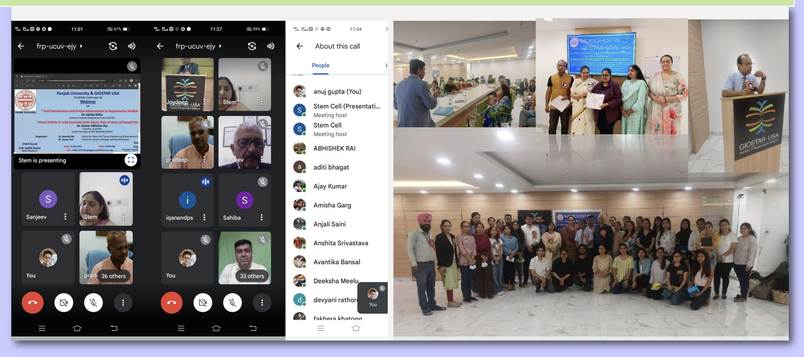
LIST OF PATENTS

1. A novel formulation for the prevention of asthma associated airway inflammation; Inventors: Amarjit Singh Naura, Kanthi Kiran Kondepudi, Naina Monga; Applicant: Panjab University (PU), Chandigarh; National Agri-Food Biotechnology institute (NABI), Mohali; Department of Biotechnology (DBT), Government of India, New Delhi
2. Fluorescent nano adsorbent films for simultaneous detection and removal of tartrazine in environmental and food samples; Neha Bhardwaj, Harpreet Singh, Sanjeev Puri, Madhu Khatri; Applicant: Panjab University, Chandigarh; Department of Biotechnology (DBT), Government of India, New Delhi.

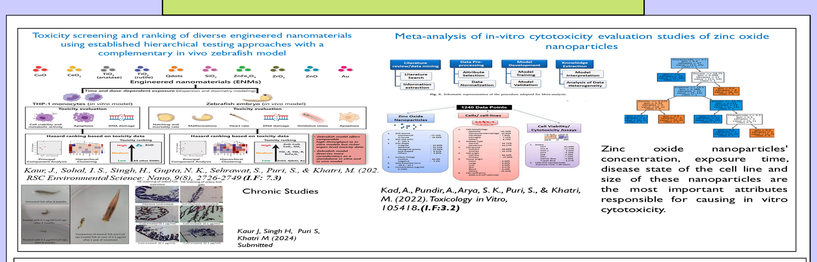
RESEARCH PROGRESS

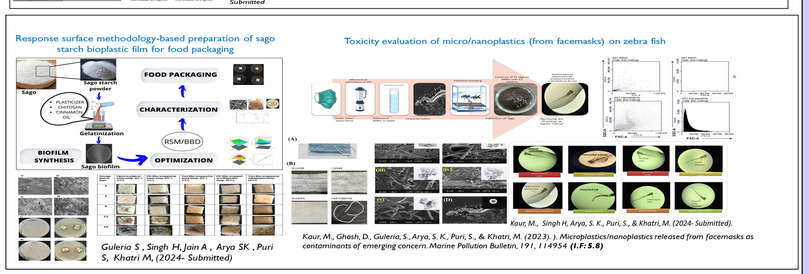
Environmental Science and Pollution Research (2025)	International Journal of Polymer Analysis and Characterization (2024) (I.F. 1.6)	Cell Biochemistry and Biophysics (2024) (I.F. 2.5)	ShodhKosh: Journal of Visual and Performing Arts (2024)	Cellular Immunology (2023) (I.F. 2.9)	Marine Pollution Bulletin (2023) (I.F. 4.9)	Environmental Nanotechnology (2022)	Asian Journal of Organic & Medicinal Chemistry (2022) (I.F. 5.7)
Journal of Fluorescence (2025) (I.F. 3.1)	Neuroscience (2024) (I.F. 2.8)	Cell Biochemistry and Biophysics (2024) (I.F. 2.5)	Journal of Applied Biology & Biotechnology (2025)	Journal of Ethnopharmacology (2023) (I.F. 5.4)	Materials Science and Engineering: B (2023) (I.F. 4.6)	Toxicology in Vitro (2022) (I.F. 2.7)	IJFANS International Journal of Food and Nutritional Sciences (2022) (I.F. 7.83)
Environmental Technology (2025) (I.F. 2.3)	Toxicology and Environmental Health Sciences (2024) (I.F. 1.0)	Pulmonary Pharmacology & Therapeutics (2025) (I.F. 2.5)	Frontiers in Nephrology (2024)	Rheumatology International (2023) (I.F. 3.5)	Archives of Microbiology (2023) (I.F. 2.8)	Food Chemistry (2022) (I.F. 9.8)	Free Radical Research (2022) (I.F. 3.6)
Environmental Technology Reviews (2026) (I.F. 6.9)	Journal of Environmental Health Science and Engineering (2024) (I.F. 2.8)	Food & Function (2025) (I.F. 4.6)	Biotechnology and Bioprocess Engineering (2024) (I.F. 3.0)	IJFANS International Journal of Food and Nutritional Sciences (2023) (I.F. 7.83)	Journal of Ethnopharmacology (2023) (I.F. 5.4)	Chemical Papers (2022) (I.F. 2.5)	Inflammation Research (2022) (I.F. 5.7)
Toxicology and Applied Pharmacology (2026) (I.F. 3.58)	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy (2025) (I.F. 4.6)	ACS Omega (2024) (I.F. 4.3)	Food Chemistry (2023) (I.F. 9.8)	bioRxiv (2023)	In Biodiversity Threats and Conservations (2023)	Materials Today: Proceedings (2022)	International Journal of Pharmaceutical Sciences and Research (2022)
Chemical Papers (2024) (I.F. 2.5)	Chemical Papers (2025) (I.F. 2.5)	Reumatología Clínica (2025) (I.F. 1.3)	American Chemical Society (2023)	Handbook of Oncobiology: From Basic to Clinical Sciences, Springer, Singapore (2023)	Journal of Basic Microbiology (2022) (I.F. 2.7)	Biocatalysis and Agricultural Biotechnology (2022) (I.F. 3.8)	Journal of Cleaner Production (2022) (I.F. 10.0)
Food Control (2024) (I.F. 6.3)	Food Analytical Methods (2025) (I.F. 3.0)	Mitochondrion (2024) (I.F. 1.3)	Letters in Applied Microbiology (2023) (I.F. 2.4)	ACS Applied Bio Materials (2023) (I.F. 4.7)	Chemical Papers (2022) (I.F. 2.5)	Environmental Technology & Innovation (2022) (I.F. 7.1)	International Journal of Biological Macromolecules (2021) (I.F. 8.5)
Journal of Food Measurement and Characterization (2024) (I.F. 3.3)	The Canadian Journal of Chemical Engineering (2025) (I.F. 1.9)	ShodhKosh: Journal of Visual and Performing Arts (2024)	Energy, Ecology and Environment (2023) (I.F. 3.7)	Scientific Reports (2023) (I.F. 3.9)	Environmental Science: Nano (2022) (I.F. 5.1)	Bioresource Technology (2022) (I.F. 9.0)	

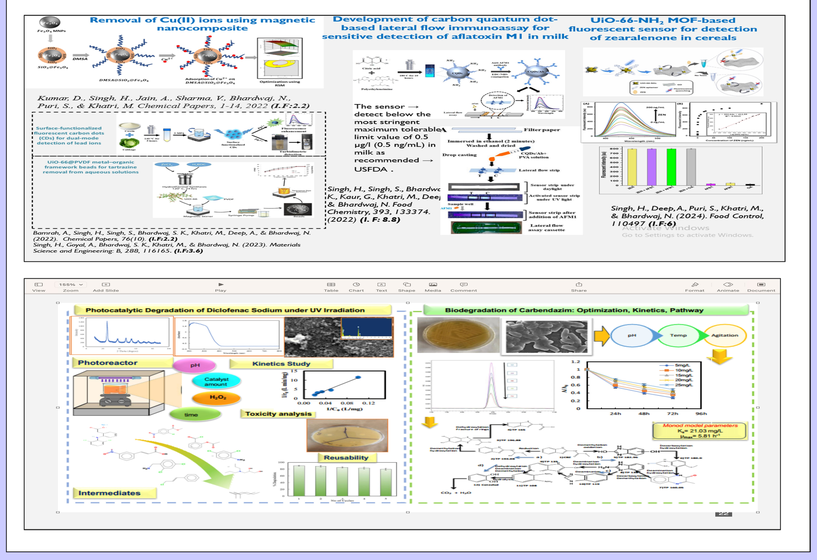
TRAINING MANPOWER



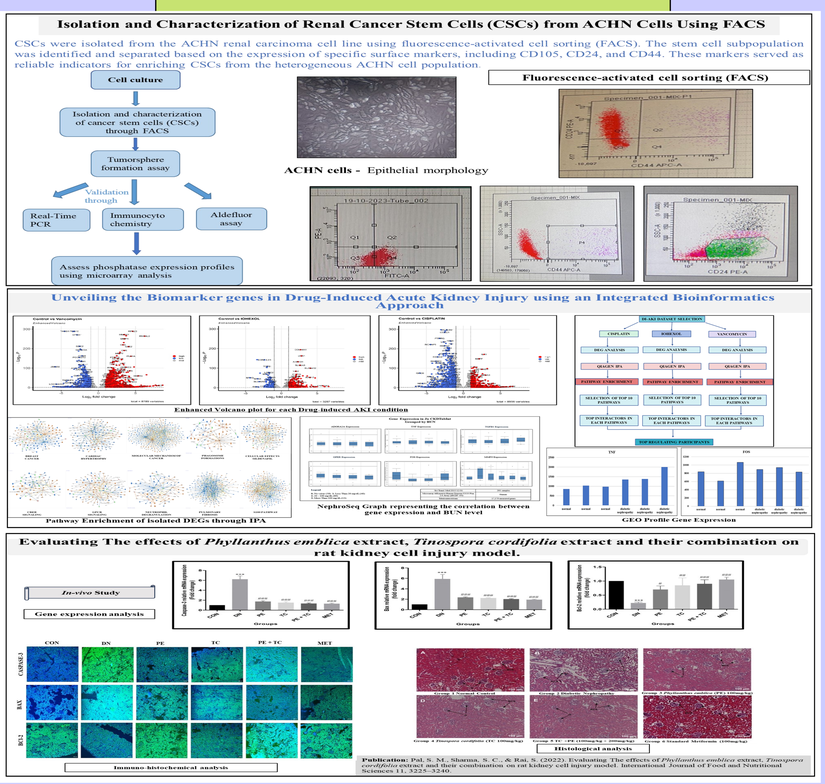
Environmental Biotechnology



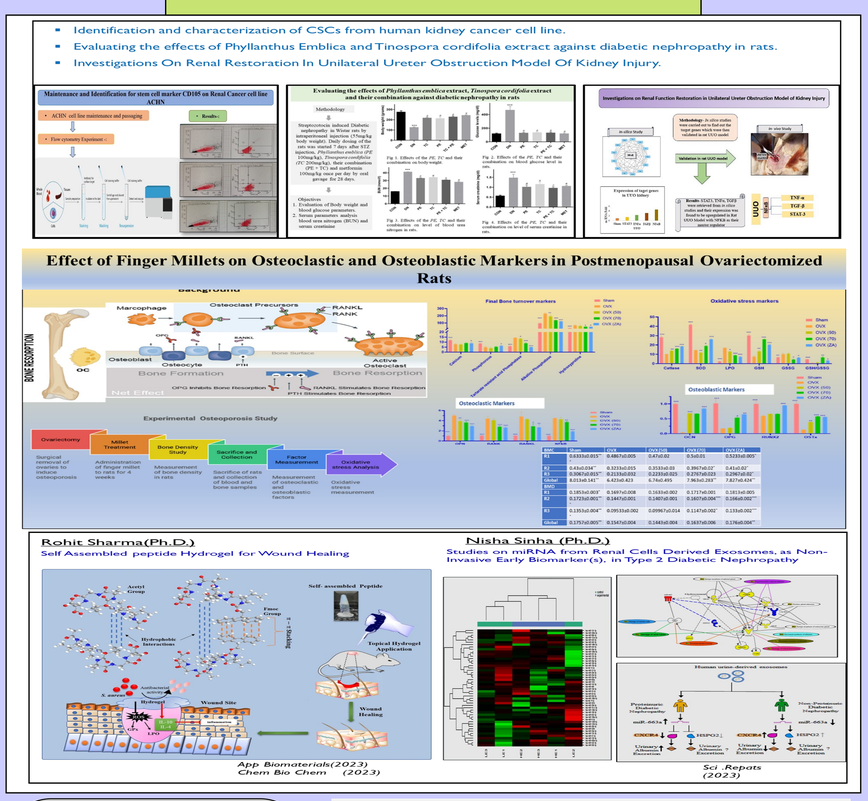




Immuno-technology



Cancer Biology & Bio-Informatics



Conclusion

With significant progress achieved in infrastructure, research facilities, manpower training, and intellectual contributions like patents and publications, the DBT Builder Programmer is well-positioned to continue advancing scientific knowledge and fostering industry-academic partnerships, ultimately benefiting both the academic community and society.

Overall Progress