

# KOSHIIKA

UNIT OF LIFE, TECHNOLOGY & COMMUNICATION

VOLUME 03

JUNE 2023



**THEME - CENTRE OF PLANT AND MICROBIAL BIOTECHNOLOGY  
&  
CENTRE OF EXCELLENCE IN TECHNOLOGICAL SOLUTIONS FOR SOIL  
AND WATER REMEDIATION**

Department of Biotechnology  
Jaypee Institute of Information Technology  
(Deemed to be University under Section 3 of UGC Act, 1956)

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# MESSAGE FROM HoD



I congratulate our Editorial Team and all associated with, for bringing out the third issue of our Departmental **Newsletter – Koshika**.

2022 has been a very productive year for our students, faculty members and hence the institute. Notably, the institute was awarded with Grade 'A' in the NAAC accreditation cycle. I congratulate all for the same.

The theme for the present issue of **Koshika** are the **Centre of Excellence in Plant and Microbial Biotechnology** and the newly found **Centre of Excellence – Technological Solutions for Soil & Water Remediation**. The human race is largely dependent on plant, microbes and our environment for its own sustenance. From our basic needs of food, water, clothing etc to entities indicating a developing society such as medicines, industry raw materials etc; plants, microbes and our environment are our primal source. It is all the more important to understand these systems and preserve them for our future generations. The department is carrying out cutting edge research in the areas of soil and water bioremediation, development of novel and functional foods/nutraceuticals, sustainable development of industrially important products, isolation of novel microbes from novel niches, microbial fuel cells, omics approaches to understand crop improvement etc. The present issue of the newsletter will appraise the readership of our recognized research and accomplishments in these domains being carried out in the aforementioned centers of excellence. I am happy to see our strong alumni connect in this issue as well, like the previous volume. The alumni have shared their journey, and their creative inputs. Their willingness to take out time for their alma mater overwhelms me.

Lastly, I also appreciate our students who have contributed interesting articles, sketches and poems. Kudos to them for juggling their academic pursuits as well as keeping the creative juices flowing.

## **Best wishes.**

Prof. Pammi Gauba

Head of the Department,

Dean (Academics & Research I)

Dean (International Affairs and Sponsored Projects)



# MESSAGE FROM EDITORIAL TEAM

We welcome our readers to the third issue of '**KOSHIKA**', the newsletter of the Department of Biotechnology, at IIIT NOIDA, and also take this as an opportunity to express gratitude for the acknowledgement conferred by our readership for the second volume published in September 2022.

**'Success is not final; failure is not fatal: It is the courage to continue that counts'** -  
Winston S. Churchill

Koshika is a unifying platform, showcasing our accomplishments as a Department and our contribution to progress of IIIT. We welcome your continuous involvement in diverse forms - participation in departmental events/contests, anecdotes, experiences, feedbacks etc, along with professional and/or nonprofessional accomplishments.

The Third edition of "Koshika" focuses on the **"Centre of plant and microbial biotechnology"** and the newly established **"Centre of Excellence in Technological Solutions for Soil & Water Remediation"** in our department. The Centres have state-of-the-art technology to carry out research and innovation in the area of plant, microbial and environmental biotechnology, with an underlying focus on sustainability. The intention of this volume is to involve our readership with the ongoing activities in the Centres and encourage our next generation of scientists, academicians and entrepreneurs. We would like to thank our honorable Pro-Chancellor, Vice Chancellor and HOD for facilitating us through this journey and inspiring us continually. We would also like to acknowledge the active involvement of our colleagues in the department who gave valuable suggestions as well as contributions.

Looking forward to your feedback and participation.

With Regards

The Editorial Team.



# VISION AND MISSION

## VISION

To become a Centre of Excellence in the field of IT & related emerging areas education, training and research comparable to the best in the world for producing professionals who shall be leaders in innovation, entrepreneurship, creativity and management.

## MISSION

**MISSION 1:** To develop as a benchmark University in emerging technologies.

**MISSION 2:** To provide state-of-the-art teaching learning process and R&D environment.

**MISSION 3:** To harness human capital for sustainable competitive edge and social relevance.

## DEPARTMENT OF BIOTECHNOLOGY

## VISION

To be a centre of excellence in Biotechnology for providing quality education and carrying out cutting edge research to produce professionals, innovators, researchers and entrepreneurs.

## MISSION

**MISSION 1:** To offer contemporary, futuristic and flexible curricula of Biotechnology for teaching and training.

**MISSION 2:** To carry out globally acceptable cutting edge research through sponsored projects and to provide state of art laboratories for experimental work.

**MISSION 3:** To develop bio-safe, socially, ethically and environmentally acceptable solutions to address health, environmental, industrial, entrepreneurial and societal concerns.

Vision Mission of JIIT and its  
Departments



Programme Educational Objectives  
(PEOs) of UG and PG Programmes





## **PROGRAMMES NAME:**

### **1. B. TECH BIOTECHNOLOGY**

#### **PROGRAMME EDUCATIONAL OBJECTIVES-**

**PEO1:** To provide fundamental and practical knowledge in the field of Biotechnology for pursuing research career in industry and academia.

**PEO2:** To impart analytical and research skills and nurture entrepreneurial endeavors.

**PEO3:** To develop biotechnologists with professional ethics to address global and societal issues for sustainable development.

#### **PROGRAMME OUTCOMES**

**PO1:** Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2:** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3:** Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4:** Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5:** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**PO6:** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.





**PO7:** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8:** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9:** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO11:** Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12:** Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAMME SPECIFIC OUTCOMES**

**PSO1:** Acquire in-depth theoretical and practical knowledge in Biotechnology.

**PSO2:** Able to apply the acquired knowledge to provide cost-effective and sustainable solutions in Biotechnology.

**PSO3:** Translate biotechnological know-how to address environmental, ethical, intellectual property rights and societal issues.





## 2. M.TECH. IN BIOTECHNOLOGY

### PROGRAMME EDUCATIONAL OBJECTIVES-

**PEO1:** To impart advanced theoretical and practical knowledge in Biotechnology and allied fields.

**PEO2:** To provide domain knowledge and expertise for a successful career in academics, research and industry.

**PEO3:** To develop ethically and socially responsible professionals with leadership and entrepreneurship skills.

### PROGRAMME OUTCOMES

**PO1:** An ability to independently carry out research /investigation and development work to solve practical problems

**PO2:** An ability to write and present a substantial technical report/document

**PO3:** Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program.

### PROGRAMME SPECIFIC OUTCOMES

**PSO1:** Able to apply knowledge of Biotechnology for medical and industrial applications.

## 3. M.SC. MICROBIOLOGY

### PROGRAMME EDUCATIONAL OBJECTIVES-

**PEO1:** To impart advanced theoretical and practical knowledge in Microbiology and allied fields of Biotechnology

**PEO2:** To enhance knowledge and expertise for a successful career in academics, research and industry.

**PEO3:** To develop professionals with social, environmental and ethical awareness.





## **PROGRAMME OUTCOMES**

**PO1:** Demonstrate mastery over the subject area

**PO2:** Apply advanced knowledge in academics and research for lifelong learning

**PO3:** Able to develop skill to present and write scientific report(s) using ethical guidelines

**PSO1:** Apply knowledge of Microbiology for health, environmental, industrial, sustainable energy and societal applications in an ethically responsible way.

## **4. M.SC. ENVIRONMENTAL BIOTECHNOLOGY**

### **PROGRAMME EDUCATIONAL OBJECTIVES-**

**PEO1:** To impart advanced theoretical and practical knowledge in Environmental Biotechnology and allied fields.

**PEO2:** To enhance knowledge and expertise for a successful career in academics, research, and industry.

**PEO3:** To develop professionals with social, environmental, and ethical awareness.

### **PROGRAMME OUTCOMES**

**PO1:** Demonstrate mastery over the subject area

**PO2:** Apply advanced knowledge in academics and research for lifelong learning

**PO3:** Able to develop skill to present and write scientific report(s) using ethical guidelines

**PSO1:** Apply knowledge of Environmental Biotechnology for fostering environmental, health, industrial, sustainable energy and societal applications in an ethically responsible way.





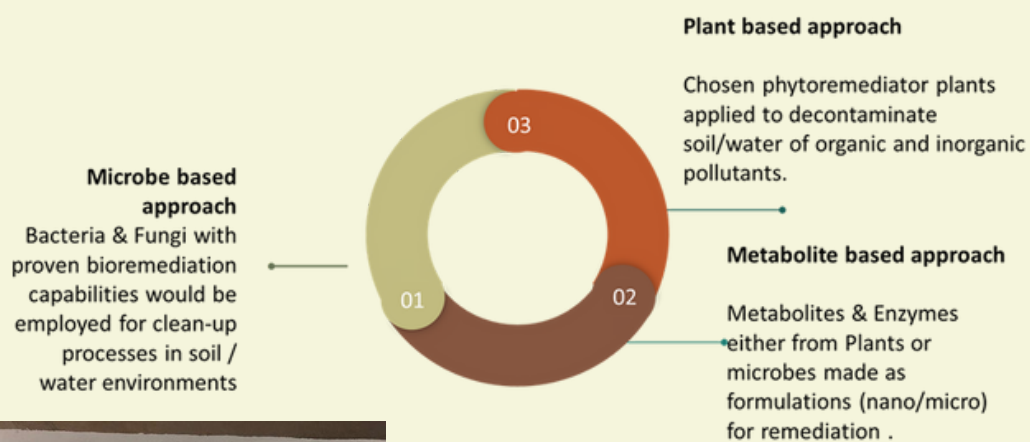
# CENTRE OF EXCELLENCE IN PLANT AND MICROBIAL BIOTECHNOLOGY

- The Centre of Excellence for Microbial and Plant Biotechnology (CEMAP) comprises multiple research dimensions based on the research expertise of faculty working there. However, all of the research has a common ground of involving principles of Microbiology and Plant studies for applications in various fields of Biotechnology. Certain prominent research studies under CEMAP are detailed as under:
- Study the impact of different pollutants, including heavy metals, antimicrobials, and other related pharmaceutical pollutants, and mitigate their impact by applying bio and phytoremediation.
- Native plant growth-promoting microorganisms (PGPMs) promote plant development by encouraging nutrients absorption, reclaiming soil condition and improving resistance against various soil pathogens. Consortia of PGPM are created that may be employed as bioinoculants (biofertilizers/ biopesticides/ biostimulants) for the benefit of crop plants and soil health. Microbes (bacteria/actinomycetes) from niche environments (desert/soil contaminated with hydrocarbons) are screened for the isolation of antibiotics, biosurfactants, and enzymes as well as being described to explore taxonomic diversity. New microorganisms that can provide essential natural compounds, food additives, biopolymers (chitosan, cellulose, and other by-products such as resistant starch from elephant foot yam (gallic acid) also under study.
- Numerous industrial enzymes such as phytase (for improving phosphate utilization in fish/poultry feed), tannase (for industrial waste treatment), protease, keratinase (for management of various solid wastes), tannase (in tea and juice industry and waste management), and amylase (in textile industry) are extensively studied to explore their industrial applications in various areas. Probiotic formulations and the creation of innovative functional food products is another significant area of work. The demand for fresh compounds with improved target profiles is also being addressed through research on new structurally varied natural products of industrial value (extension of fruit shelf life, healthcare - medicines, and environmental remediation - enzymes, biosurfactants). The Centre also had evidence of research for removal of sulfur/aromatic and nitrogen content found in fossil fuels using biorefining, which uses the whole-cell microorganisms or enzymes from local sources.
- The Centre's research projects have received funding of Rs. 551 lakhs in extramural financing from several Indian government departments, including the Department of Biotechnology (DBT), Department of Science & Technology (DST), Ministry of Forest and Environment, AYUSH, GoI, and the All India Council for Technical Education (AICTE).



# CENTRE OF EXCELLENCE IN TECHNOLOGICAL SOLUTIONS FOR SOIL AND WATER REMEDIATION

- Increasing developmental activities to fulfill the demands of human population impose serious threat to the natural resources such as soil, air, and water. Continuous generation of hazardous pollutants in the form of effluent is causing significant contamination in the environment.
- Biotechnological advancement provides plants and microbes based economical solutions to reclaim the quality of these natural resources.
- TSSR center explores the application plants, microbes and their products in remediation of water and soil pollution. Given this, the center has broadly categorized the research areas into: PAR-Plant Assisted Remediation, MAR-Microbe Assisted Remediation, and EAR- Enzyme Assisted Remediation.
- MAR majorly focus on identifying the efficiency of bacteria and fungi to degrade the hazardous pollutants present in soil and water. Similarly, PAR explores different plant species to decontaminate water and soil.
- Further, under EAR, metabolic profiles of microorganisms and plants are studied to identify metabolites and enzymes with significant efficiency in degrading pollutants. These enzymes are also used to develop nano-formulations for better remediation of pollutants.





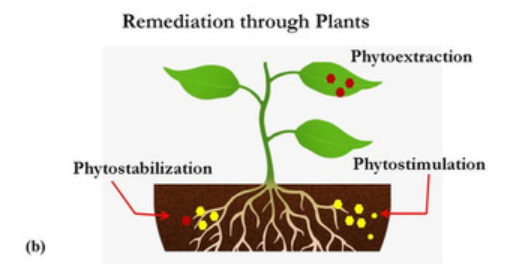
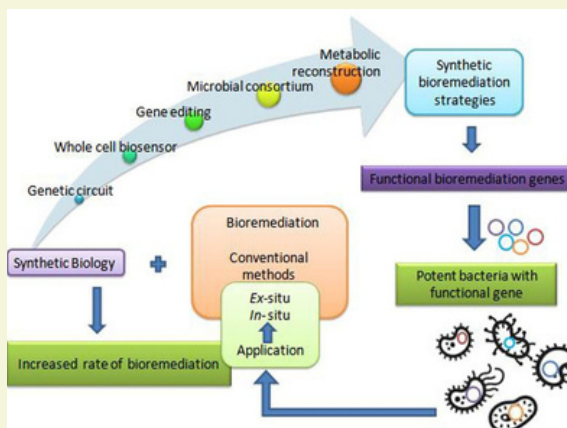
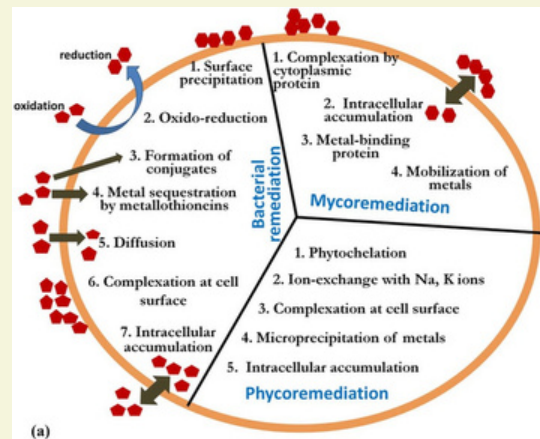
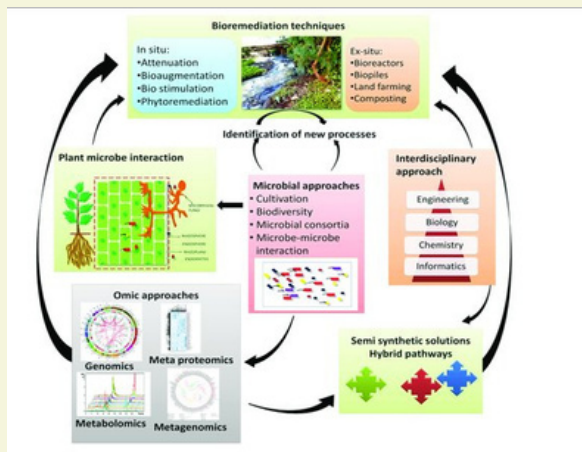
# **MEET THE CENTRES' FACULTY MEMBERS**



# Prof. Pammi Gauba

**Dean (Academics & Research I)**  
**Dean (International Affairs & Sponsored Projects)**  
**Head of the Department (Biotechnology)**

Her research focuses on the optimization of various bioremediation and phytoremediation measures to render soil free from organic (antibiotics, hormones, synthetic chemicals etc.) and inorganic (heavy metals, nitrate ion etc.) pollutants. The work also emphasises on the use of different strains of yeast, bacteria, fungi and algae as chief sources for bioremediation and potential grass, legumes, medicinal plants species for phytoremediation. Prof. Pammi Gauba is successfully carrying out projects in diverse fields with various government funded schemes of repute with a cumulative value of around 2 crore rupees. She is also the member of various prestigious International and National associations and Dean of International Relations & Sponsored Projects in the institution.



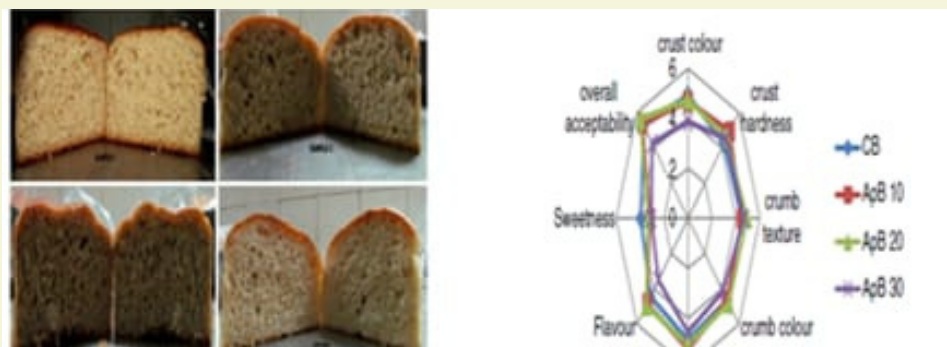


# Prof. Neeraj Wadhwa

Prof. Neeraj is focusing on identifying novel processes for developing valuable products from biodegradable waste material generating from food processing industries. These waste materials impose serious threat to the environment. She utilizes the enzymes secreted by micro-organisms to convert waste products into various valuable bio-products. This sustainable utilization of biodegradable waste generated from food industries assist in managing the negative impact of bio-waste on environment.



## Waste Valorization



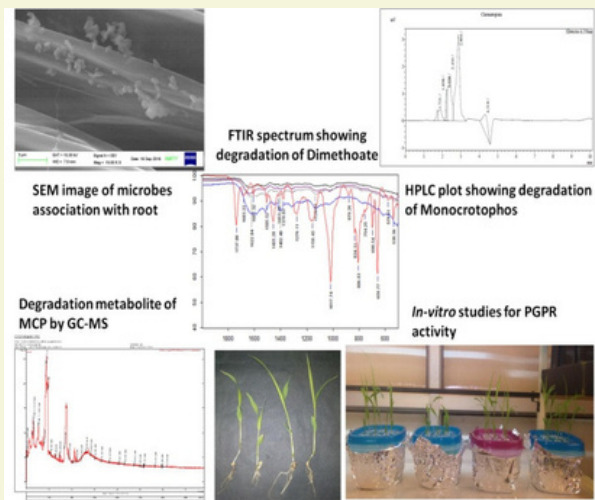
## Development of Functional Food



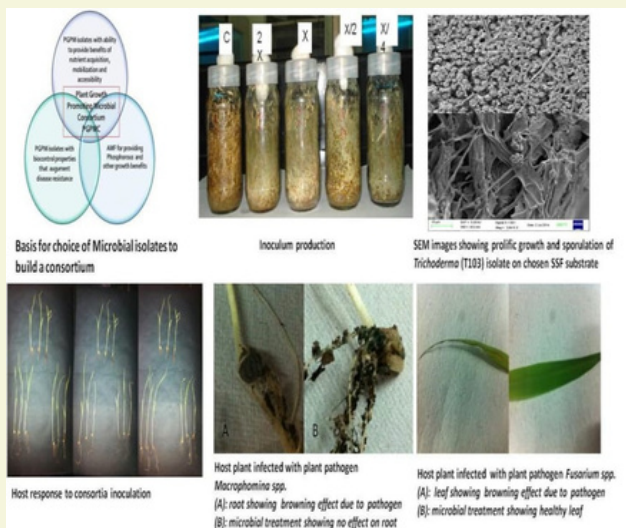


# Prof. Krishna Sundari

Microbial Biotechnology Lab Microbes for Agriculture, Environment and Industrial applications: Prof. Krishna extensively works in the area of Microbial & Environmental Biotechnology. Her main interest is to understand the beneficial impact of micro-organisms on environment and agriculture. She is actively involved in determining microbial bioactive metabolites and metagenome studies for the development of bioformulations from microbes. Prof. Krishna is an active member of several international scientific societies such as: International Mycorrhiza Society (CMR, Teri, New Delhi), American Society of Microbiology (ASM, Washington DC), Asian PGPR Society and Association of Microbiologists of India (AMI).



**Exploring microbe assisted rhizoremediation of residual organophosphate pesticides along with plant growth support**

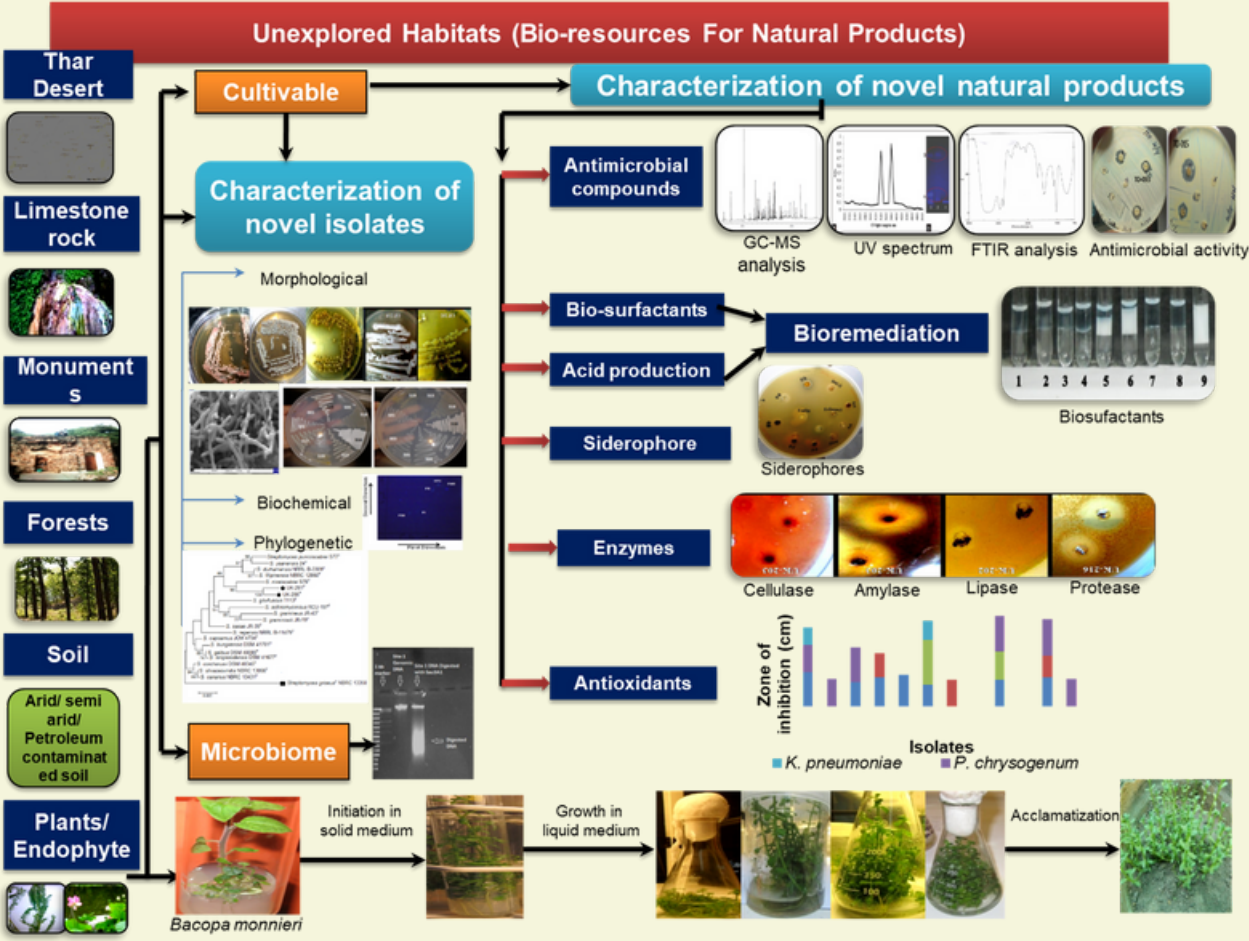


**Developed microbial consortia that promotes plant growth and also offers efficient bio-control against select root pathogens**



# Prof. Indira P. Sarethy

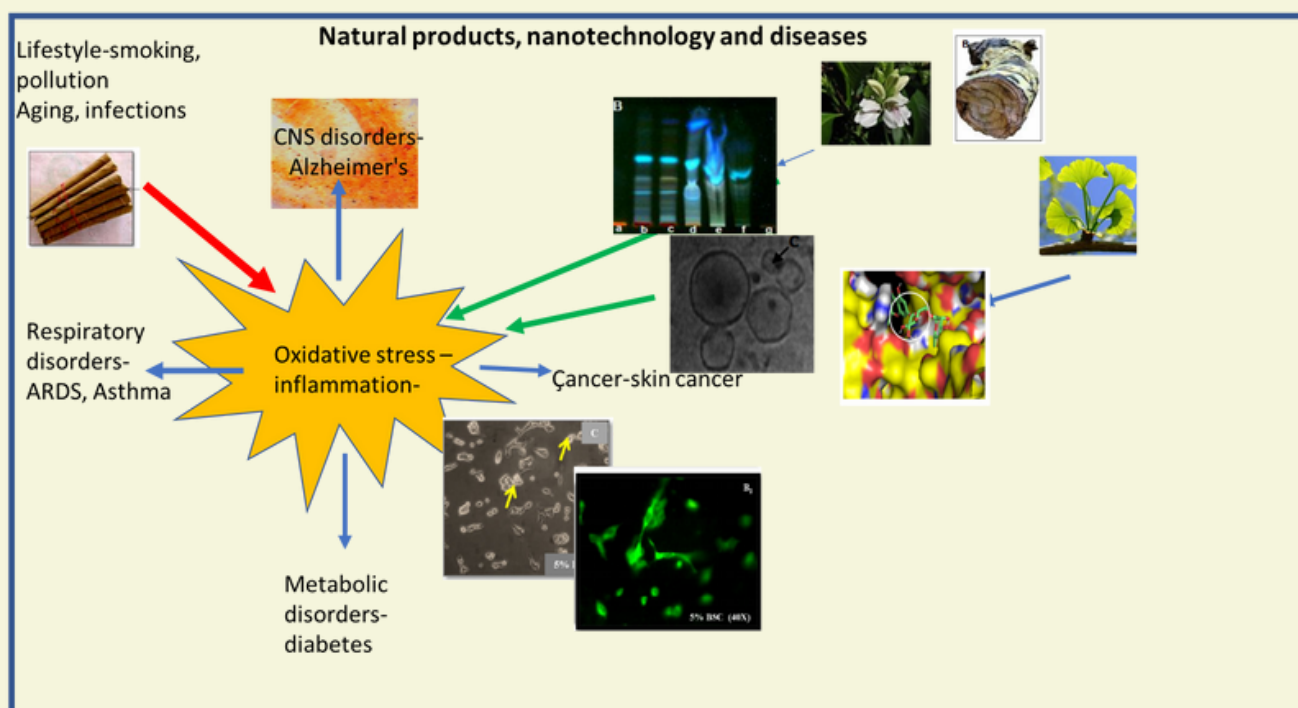
My research interest is in natural products from microbial and plant biodiversity for medical and environmental applications. Cultivable microorganisms from niche habitats are characterized. Metagenomics-based approaches focus on eliciting production of natural products from the environmental DNA. The major works have focused on understudied habitats for bioprospection, discovery of novel antimicrobial and antioxidant compounds, and metagenomic studies for environmental waste management





# Prof. Rachana

The lab is continuing to investigate the underline mechanism for the natural products and formulating advanced formulation to increase the efficacy, shelf life, bioavailability and targetability of the natural products. Major diseases worked upon to treat with are respiratory, neural, metabolic disorders and cancer. The lab is exploring bioinformatics tool as well to identify the key photoactive to be responsible for the pharmacological activity and the targets from the host organisms on which these molecules will bind and act upon.

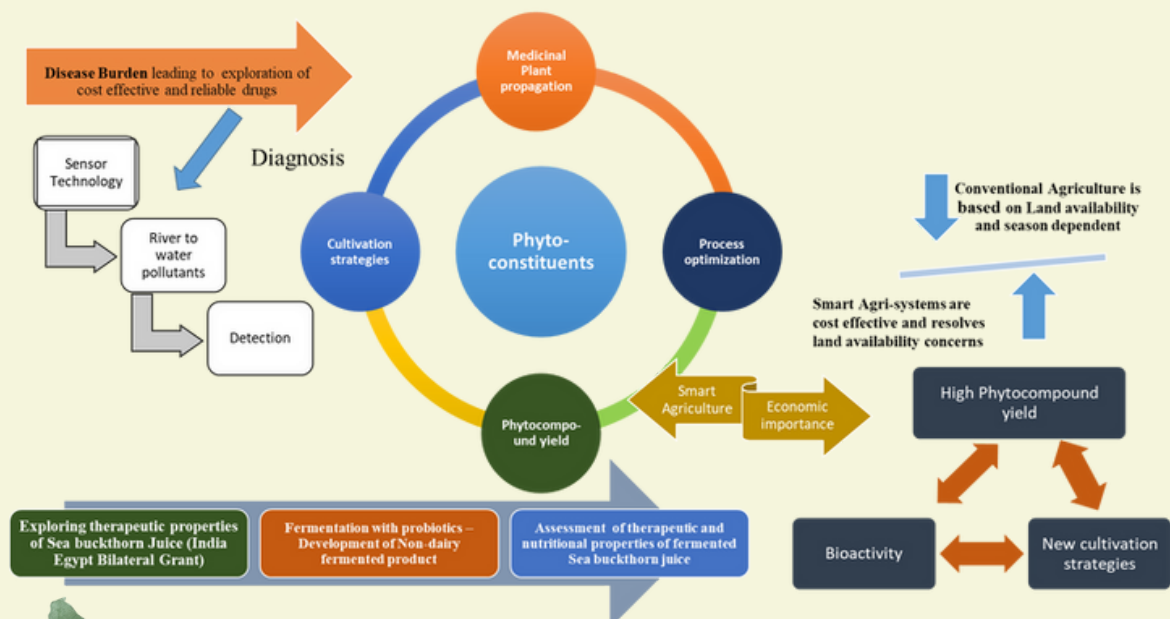




# Dr. Ashwani Mathur

The research work by the group, primarily focuses on designing analytical and biomanufacturing strategies for molecules/ products from plants and microbes. The group works with medicinal plants and explores the solutions to one of the biggest challenges faced by the world i.e, environment mediated variations in the yield of therapeutically important bioactive compounds in cultivated medicinal plants. This brings about variation in the overall efficacy of plant extracts. The group is focused towards developing a sustainable hydroponic system by optimizing various abiotic factors for regulating the yield of phytochemicals of therapeutic importance. Ongoing research work in collaboration with Prof. Pammi Gauba, Head, Department of Biotechnology, JIIT Noida focuses on the development of a biosensor for detection of pollutants in the natural habitat. One of the targeted pollutants is 'Paraben'. The strategies to degrade the pollutants using microbial systems/ enzymes have also been explored. The role of microbes is not limited to remediation strategies in other sectors as well. The research work in collaboration with Prof. S.El-Sohaimy, SARTA City, Egypt with Prof. Pammi Gauba and Dr. Ashwani Mathur be the PI from JIIT Noida, India is focusing towards developing a non-dairy probiotic formulation and assessment of its nutritional and therapeutic properties.

## Optimization strategies for Natural Products and Assessment of Bioactivity

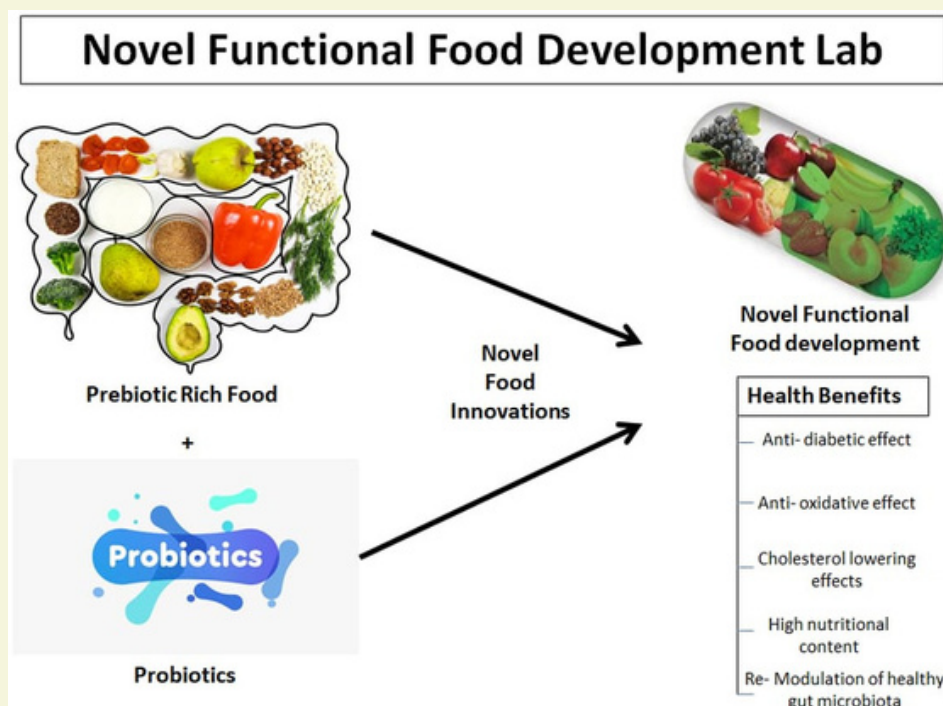






# Dr. Smriti Gaur

Now days, there are several highly prominent health related concerns with high morbidity and mortality rates and treatment includes the use of several drugs which further leads to other major side effects. Hence, the better alternate is to switch on to natural complementary medicaments in the form of functional foods. Research in our lab currently focuses on the development of novel functional food products which could serve as a beneficial product for the human health as well as wellbeing. The ongoing research projects in our lab focus on making use of common edible seeds in development of novel functional food. The other ongoing research project focusses on development of a millet based food product and Milk based bioactive peptides. We have completed the project on development of healthy nutritional bar in the form of synbiotic corn chocolate having higher antioxidants, phenols, proteins and lower fat contents with great survival rates of probiotics without any encapsulation. Her achievements include 22 publications in international journals, 19 book chapters and has filed 2 patents.

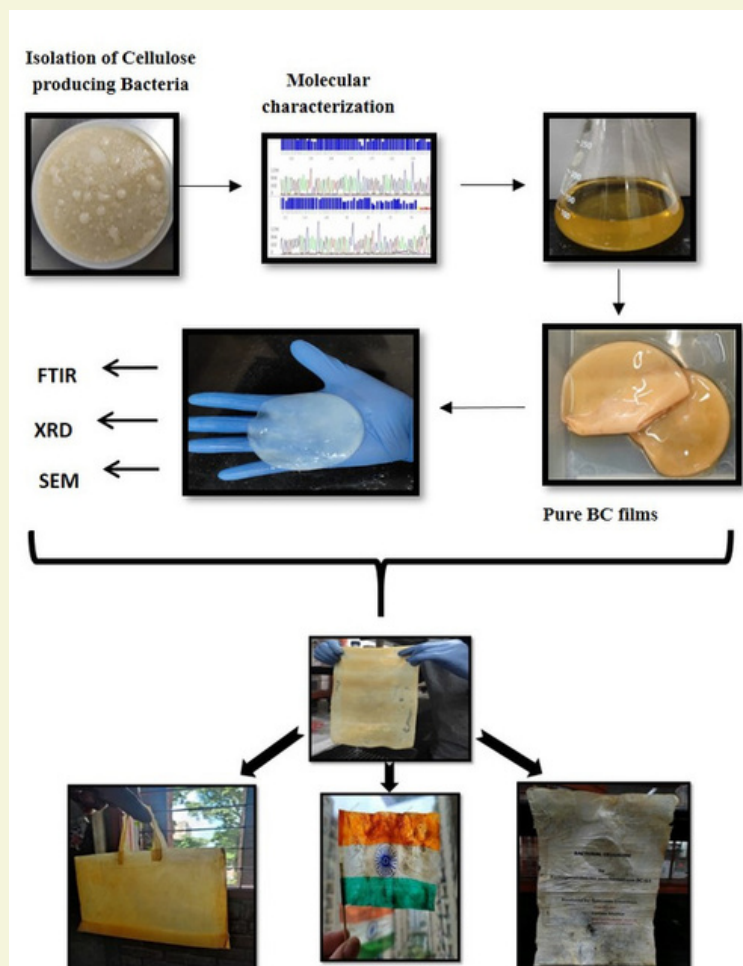






# Dr. Garima Mathur

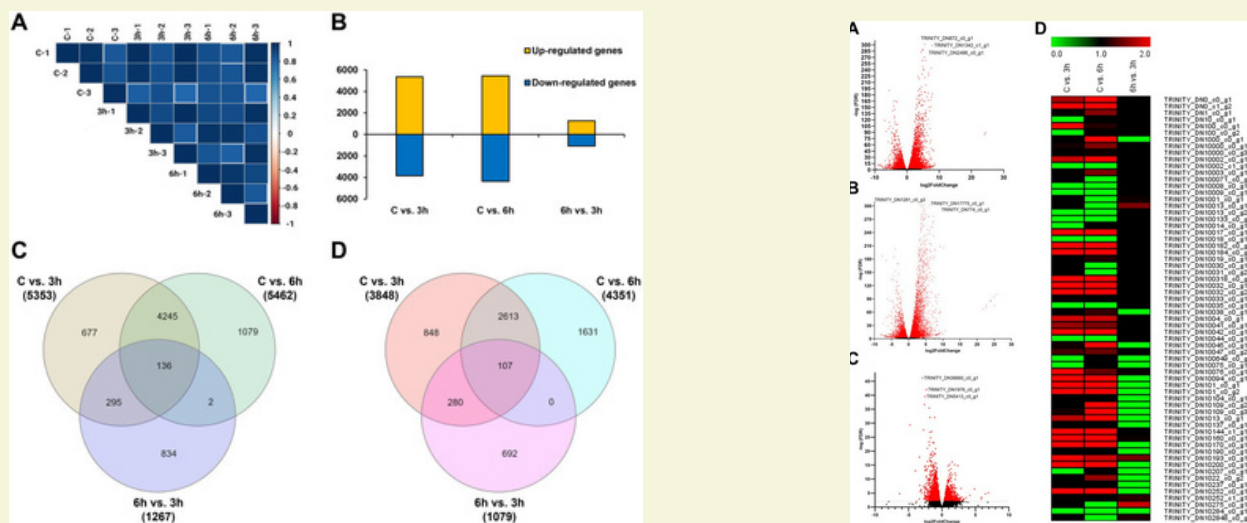
Production of microbial polymers: a sustainable approach Biodegradable microbial polymers are now emerging as an environmental friendly alternative to synthetic polymers. Microbial polymers have tremendous biotechnological potential for use in various industrial applications ranging from medicine to technology. Large scale application of these biopolymers is often limited due to its high cost of production and low yield. The focus of my research is on the production and characterization of microbial polymers Bacterial Cellulose and Fungal chitosan. Our research group is involved into extraction and characterization of fungal chitosan from various fungal isolates of industrial importance with a biorefinery approach. Optimization studies ongoing for large scale production of microbial polymers (bacterial cellulose & fungal chitosan) is also underway. We are also involved in the screening and isolation of cellulose producing bacterial strain from rotten fruits and large-scale production of bacterial cellulose for various applications





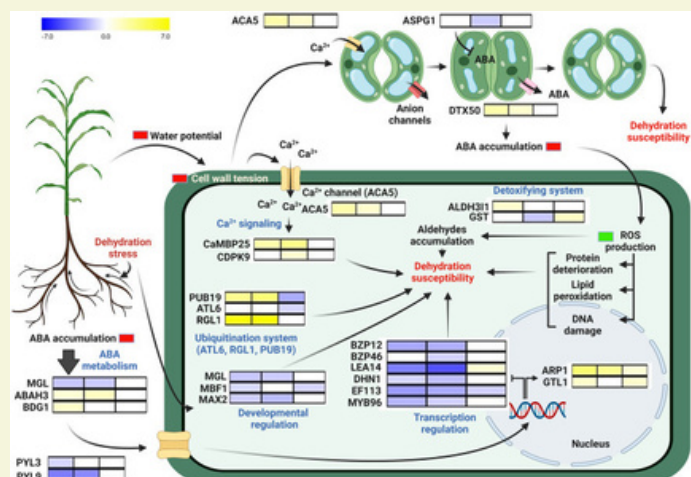
# Dr. Pooja Choudhary

The core research area is understanding the molecular mechanisms of stress responses in cereal crops (majorly millets) against biotic and abiotic stresses. These signaling interactions have been studied through integrated omics approaches such as proteomics and transcriptomics. Additionally, the stress-responsive transcriptome data leads to the identification of potential candidate genes underlying the signaling pathways of susceptibility vs. immunity in crops. My previous research work has identified dehydration responsive candidate genes in millets, on which the functional characterization is in progress.



## Transcriptomics Data Analyses

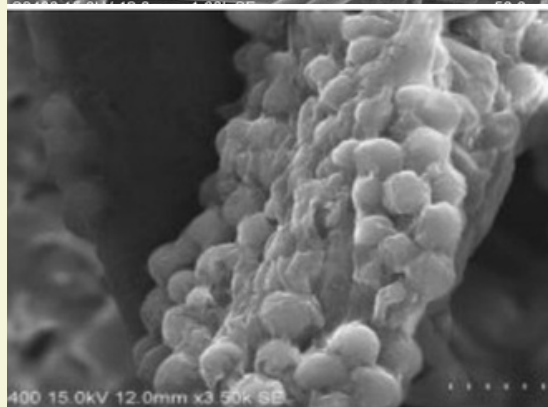
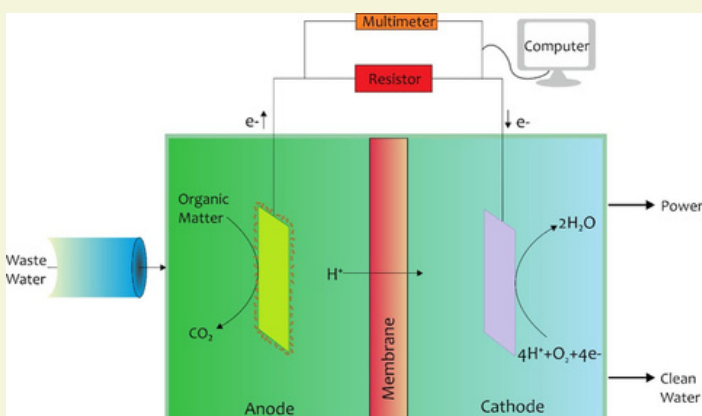
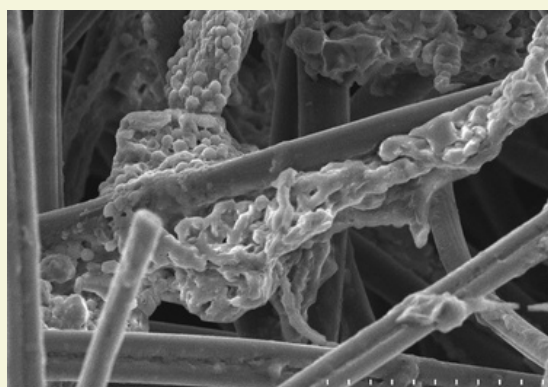
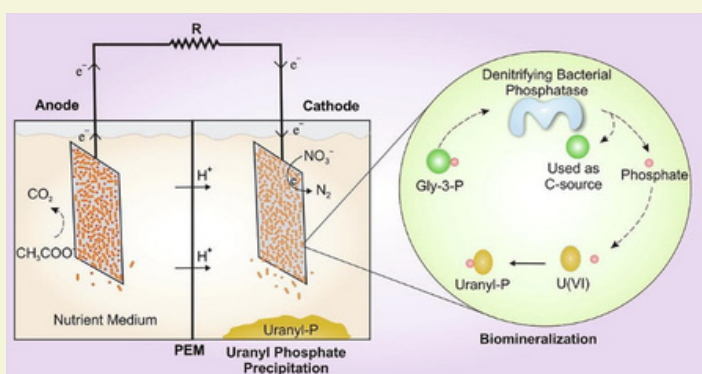
### Illustrating the function of DEGs





# Dr. Ankisha Vijay

The broad area of research interests are wastewater treatment, bioelectrochemistry, microbial fuel cells, bioremediation, simultaneous nitrification-denitrification process, metagenomics and renewable bioenergy. Her research majorly focused on managing environmental pollution by the application of microorganisms. This approach leads to generation of clean energy, and bioremediation of toxic or hazardous waste materials. She is extensively working in converting waste to green energy by developing sustainable biotechnological solutions to curb environment pollution.



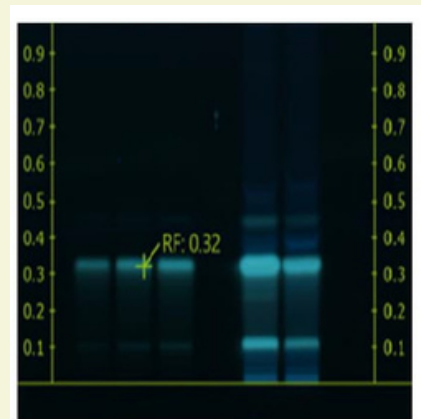
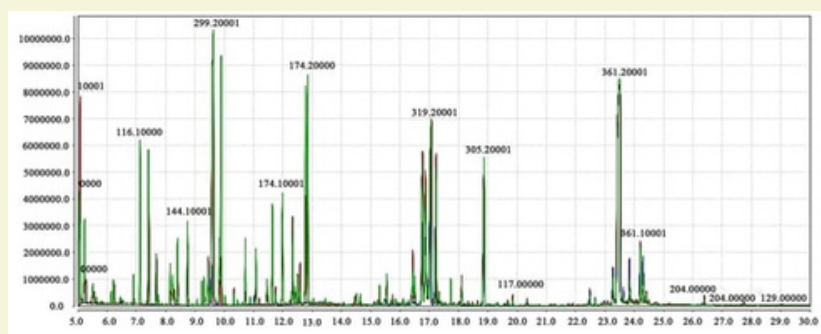
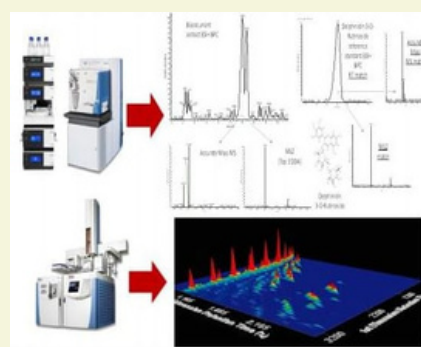
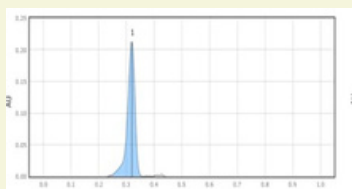
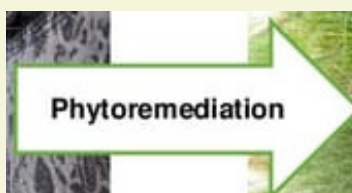
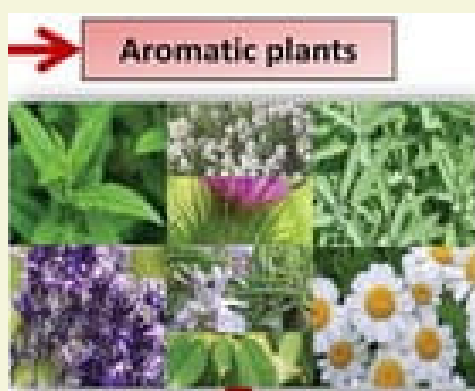
**Microbial fuel cell for wastewater treatment and power generation**

**Biofilm formation on electrode surface**



# Dr. Ekta Bhatt

Dr. Ekta is extensively involved in developing novel approaches for phytoremediation of organic pollutants and their toxicity. She is currently exploring the efficiency of aromatic plants in phytoremediation of organic pollutants present in soil and water. Given this, she has identified the comprehensive profile of secondary metabolites present in aromatic and medicinal plants under diverse range of environmental stresses. She is also actively working towards developing novel approaches for Solid Waste Management, Ecotoxicology, Micro Plastic Pollution.



HPTLC Analysis



## Ph.Ds AWARDED FROM CEMAP & TSSR

S.No	Name	Title	Supervisor	Year
1	Smriti Gaur	Studies of Proteases from Biological Sources	Prof. Neeraj Wadhwa	2010
2	Sarita Agrahari	Production of enzymes and Degradation of feathers by soil microbes	Prof. Neeraj Wadhwa	2011
3	Gajendra Bahadur Singh	Microbial screening and expression of gene involved in carbazole degradation	Dr.Nidhi Gupta	2011
4	N. Kumara Swamy	Paper mill effluent: Decolorization and detoxification studies using chemical and microbial methods	Prof. Indira P Sarethy	2012
5	Mamta Pant	To study the preventive role of <i>Adhatodavasica</i> in oxidatively stressed condition	Prof. Rachana	2015



6	Anuradha Singh	Phytoconstituent characterization and application of <i>Amorphophallus paconiifolius</i> in development of food products	Prof. Neeraj Wadhwa	2015
7	Sujata Basu	Preventive effects of <i>Salacia</i> extract and oxidatively stressed condition	Prof. Rachana	2016
8	Nivedita Mishra	Developing microbial consortia with and remediation of residual pesticides	Prof. Krishna Sunadri	2016
9	Parul Sharma	Evaluating the properties of casted and electrospun chitosan blend membranes as alternative surface for Vero cell culture	Dr.Ashwani Mathur, Prof. S Chand	2017
10	A. Ibeyaima	Bioprospection of Actinomycetes from Indian desert and antimicrobial activity of selected isolates	Prof. Indira P Sarethy, Prof. S. Sharma, Prof. R. Lal	2018

11	Swarna Shikha	Screening Heavy Metal Tolerant plants and Determining their Phytoremediation Potential	Prof. Pammi Gauba	2019
12	Manisha Singh	Development of <i>Ginkgo biloba</i> microemulsion system against Alzheimer's disease for intranasal application	Dr. Rachna	2019
13	Samiya Khan	Development of a biocatalyst for refining diesel	Prof. Pammi Gauba	2019
14	Pragya Bhardwaj	Studies on production of therapeutically important saponins using in-vitro culture of <i>Bacopa monnieri</i>	Dr. Ashwani Mathur, Dr. Chakresh K. Jain	2019
15	Nidhi Srivastava	Bioprospection of Microorganisms from Selected niche habitats (Rock/soil) for Antimicrobial Products	Prof. Indira P Sarethy	2020
16	Pratibha Yadav	Remediation of organophosphate pesticides using PGPM	Prof. Krishna Sundari	2014

## FACULTY MEMBERS' ACHIEVEMENTS

Year of Award	Faculty Member	Name of the award, Fellowship, received from the Government or recognized bodies
2022	Dr.Shazia Haider	Received an Award in Engineering Discipline as Young Woman Researcher in Bioinformatics by the BOARD OF TRUSTEES of Venus International Foundation held on 5th March, 2022
2022	Dr. Shazia Haider	Received an India's Most Prominent Women Empowerment Award as Young Woman Educationist and Researcher in Bioinformatics by the Merit Awards and Market Research, 8th March, 2022
2022	Dr.Manisha Singh	Academic Invitee in press briefing by Dr. Lior Asaf, Water Attache at the Embassy of Israel in India on "Israel's advanced technologies in water management, water cooperation between Israel and India, and future collaborations", 21st March 2022
2022	Prof. Vibha Rani	Board of studies member, Department of Microbiology, University of Kota
2022	Prof. Rachana	Women Prestige award 2022 from Lions Club Veg, New Delhi 20 Feb, 2022

## CONTINUED...

2022	Dr.Manisha Singh	Invited to chair the session on - "Nanotechnology for biomedical applications" by Dept. of Chemical Engineering, Birla Institute of Technology and Science, Pilani, Pilani April 14-16, 2022
2021	Prof. Pammi Gauba	Best paper Award:- Radhika Bansal, Pammi Gauba "Efficacy of <i>Cicer arietinum L.</i> & <i>Vigna mungo L.</i> in Remediation of Cr(VI)". ICECAE 2021, Tashkent, Uzbekistan
2021	Dr.Vibha Gupta	Committee member of Doctoral student, University of Lille, France
2021	Prof.Rachana	Excellence in Phytomedicine and Therapeutics Award, at Healthcare leadership Conclave and Awards at FICCI, New Delhi, by Healthcopeia, Nov 25, 2021
2021	Dr. Manisha Singh	Invited panelist speaker in Healthcare Leadership awards, Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare, govt. of India, 25th November 2021.

# STUDENTS' ACHIEVEMENTS


SNo	Name of Student	Name of competitive exam (NET; SET/SLET: GATE; CAT:GRE; GMAT: IAS; IPS: IFS; UPSC; Others)	JIIT Enrl. No.
1	Ishika Verma	IELTS	17101035
2	Ishika Verma	GRE	17101035
3	Alisha Kush	GRE/IELTS	18101054
4	Aditi Aggarwal	GRE/IELTS	18101002
5	Charu Awasthi	GRE/IELTS	18101003
6	Aanchal Trivedi	GRE/IELTS/GMAT	20915001
7	Karishma Rana	GRE	201915016
8	Mansi Agarwal	GATE	18101034

# RESEARCH SCHOLARS' ACHIEVEMENTS

S. No	Achievements	Student Name and Enrollment Number	Program	Faculty Associated with
1	Best Paper award for flashtalk presentation Pooja in National Conference in Environmental and Industrial Biotechnology. Dr. Ambedkar institute of technology for Handicapped, Kanpur	Pooja Upadhyay 19401011	PhD	Dr. Ashwani Mathur and Prof. Pammi Gauba
2	Best Poster Presentation award at International Conference on Natural Products and Human Health. Deshbandhu College, University of Delhi, New Delhi	Tripti Singh (20401012)	PhD	Dr. Ashwani Mathur
3	Conference on "Advances in Biopolymers and Composites" to sustain Health, Environment and Energy (ABC-HEE, 32022) MNNIT, Praygraj, Uttar Pradesh	Samridhh Srivastava (19401015)	PhD	Dr. Garima Mathur
4	International Travel Grant from DST, to attend "13th World Conference on Targeting Mitochondria" held in Berlin. Germany during October 26-28, 2022	Geeta Swargiary (17401009)	PhD	Dr. Shalini Mani
5	Awarded with ICMR-SRF. Govt of India in April 2022	Sakshi Tyagi (18401016)	PhD	Dr. Shalini Mani



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1. Vijay, A., Ghosh, P. C., & Mukherji, S. (2023). Power Generation by Halophilic Bacteria and Assessment of the Effect of Salinity on Performance of a Denitrifying Microbial Fuel Cell. *Energies*, 16(2), 877.
  2. Yadav, D., Agarwal, S., Pancham, P., Jindal, D., Agarwal, V., Dubey, P. K., ... & Singh, M. (2022). Probing the Immune System Dynamics of the COVID-19 Disease for Vaccine Designing and Drug Repurposing Using Bioinformatics Tools. *Immuno*, 2(2), 344-371.
  3. Maurya, S., & Gabrani, R. Glioblastoma and its Complications. *Biomedical Sciences and Computational Biology*, 62.
  4. Bhatia, P., & Gabrani, R. Mouse Models for Understanding Glioblastoma Multiforme. *Biomedical Sciences and Computational Biology*, 30.
  5. Ibeyaima, A., Sarethy, I. P., & Phurailatpam, A. (2022). Screening and analysis of bioactive compounds of traditional hair shampoo (Chenghi)-A review. *JOURNAL OF RESEARCH IN TRADITIONAL MEDICINE*, 8(2), 44-44.
  6. Garg, H., Mittal, S., Ashhar, M. U., Kumar, S., Dang, S., Nigam, K., ... & Baboota, S. (2022). Bioavailability Enhancement of Paroxetine Loaded Self Nanoemulsifying Drug Delivery System (SNEDDS) to Improve Behavioural Activities for the Management of Depression. *Journal of Cluster Science*, 1-14.
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  8. Mani, S., Jindal, D., Chopra, H., Jha, S. K., Singh, S. K., Ashraf, G. M., ... & Jha, N. K. (2022). ROCK2 Inhibition: A Futuristic Approach for the Management of Alzheimer's Disease. *Neuroscience & Biobehavioral Reviews*, 104871.
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9. Swargiary, G., & Mani, S. (2022). ER and PGR targeting ability of phytochemicals derived from *Centella asiatica* and *Andrographis paniculata*: an in-silico approach. *Journal of Herbal Medicine*, 32, 100541.
10. Mani, S., Swargiary, G., & Ralph, S. J. (2022). Targeting the redox imbalance in mitochondria: A novel mode for cancer therapy. *Mitochondrion*, 62, 50-73.
11. Jha, N. K., Chen, W. C., Kumar, S., Dubey, R., Tsai, L. W., Kar, R., ... & Ojha, S. (2022). Molecular mechanisms of developmental pathways in neurological disorders: a pharmacological and therapeutic review. *Open biology*, 12(3), 210289.
13. Mani, S., Jindal, D., & Singh, M. (2023). Gene Therapy, A Potential Therapeutic Tool for Neurological and Neuropsychiatric Disorders: Applications, Challenges and Future Perspective. *Current Gene Therapy*, 23(1), 20-40.
14. Kumari, A., & Sattiraju, K. S. (2022). In silico modeling, docking of ThPON1-like protein, and in vitro validation of pesticide tolerance in *Trichoderma harzianum*. *Journal of Applied Biology and Biotechnology*, 10(6), 108-116.
15. Kumari, A., & Sattiraju, K. S. (2022). In vitro and in vivo evidence for the mitigation of monocrotophos toxicity using native *Trichoderma harzianum* isolate. *Biologia*, 77(8), 2335-2349.
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17. Gundagatti, S., & Srivastava, S. (2022). Development of Electrochemical Biosensor for miR204-Based Cancer Diagnosis. *Interdisciplinary Sciences: Computational Life Sciences*, 14(2), 596-606.
18. Sharma, N., & Srivastava, S. (2022). Diagnosis of Pancreatic Cancer Using miRNA30e Biosensor. *Interdisciplinary Sciences: Computational Life Sciences*, 14(4), 804-813.
19. Faujdar, C. (2022). Comparative study of hydroalcoholic extracts of *Bryophyllum pinnatum* and *Macrotyloma uniflorum* for their antioxidant, antiurolithiatic, and wound healing potential. *Journal of Applied Biology and Biotechnology*, 10(1), 196-205.
20. N. Gupta, B. Gupta, K. Passi and C.K. Jain, "Applications of Artificial Intelligence Based Technologies in Weed and Pest Detection", *Journal of Computer Science*, vol. 18, no. 6, pp. 520-529, June 2022.





21. Jain, C. K., Bhargava, S., Jain, I., & Varshney, S. (2022). Targeting Notch Pathway in Cancer Diagnostics and Therapeutics: An Emerging Approach. *Recent Patents on Anti-Cancer Drug Discovery*, 17(3), 244-252.
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23. Jain, C. K., Srivastava, P., Pandey, A. K., Singh, N., & Kumar, R. S. (2022). miRNA therapeutics in precision oncology: a natural premium to nurture. *Exploration of Targeted Anti-tumor Therapy*, 3(4), 511.
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27. Antil, M., & Gupta, V. Identification of novel ADP ribosylation sites in Mycobacterium tuberculosis isocitrate lyase by mass spectrometry.
28. Antil, M., & Gupta, V. (2022). Lessons Learnt and the Way Forward for Drug Development Against Isocitrate Lyase from Mycobacterium tuberculosis. *Protein and peptide letters*, 29(12), 1031-1041.
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35. Sharma, N., & Srivastava, S. (2022). Diagnosis of Pancreatic Cancer Using miRNA30e Biosensor. *Interdisciplinary Sciences: Computational Life Sciences*, 14(4), 804-813.
36. Gundagatti, S., & Srivastava, S. (2022). Development of Electrochemical Biosensor for miR204-Based Cancer Diagnosis. *Interdisciplinary Sciences: Computational Life Sciences*, 14(2), 596-606.
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40. Nigam, K., Nematullah, M., Khan, F., Gabrani, R., & Dang, S. (2022). In-vitro investigations of baclofen-loaded PLGA nanoparticles.
41. A. Kaur and S. Dang, “Development of Nanoemulsion loaded with Naringenin for the treatment of Alzheimer disease”, *Nanotechnology Perceptions*, vol. 18, no. 1, pp. 53-63, October 2022.
42. Ashhar, M. U., Vyas, P., Vohora, D., Sahoo, P. K., Nigam, K., Dang, S., ... & Baboota, S. (2022). Amelioration of oxidative stress utilizing nanoemulsion loaded with bromocriptine and glutathione for the management of Parkinson's disease. *International Journal of Pharmaceutics*, 618, 121683.



## PROJECTS SANCTIONED RECENTLY

1. Study to explore cross kingdom regulation of anticancerous Indian herbs derived XenomiRs. **PI:** Prof. Vibha Rani, **CO-PI:** Prof Pammi Gauba, Funded by ICMR. Duration: Feb 2023-Feb 2026. Grant Value: INR 15 lakhs (For 1st year).
2. Nano-carrier based nose to brain delivery for anti-psychotic drugs and natural compounds. **PI:** Prof. Shweta Dang, **CO-PI:** Prof Pammi Gauba, Funded by ICMR. Duration: Feb 2023-Jan 2026. Grant Value: INR 11 lakhs (For 1st year).
3. Validation of blood bag delivery by drones compared to conventional methods of transportation. **PI:** Prof Pammi Gauba, **Co-PI:** Dr. Shweta Dang. Funded by ICMR. Duration: Dec 2022-Dec 2023. Grant Value: INR 10.38 lakhs.
4. Development of Natural Product Laboratory for Advance Research. **PI:** Prof. Pammi Gauba, **Co-PI:** Prof. Vibha Rani, Prof. Shweta Dang, Centre Representatives: Prof. Reema Gabrani, Prof. Indira Sarethy. funded by DST-FIST, Duration: Mar 2022-Mar 2027. Grant value: INR 66.00 lakhs
5. Identification of key regulators and their controlling Mechanism in a combinatorial amyotrophic lateral sclerosis Network: an integrated bioinformatics analysis. **PI:** Dr. Shazia Haider, **Co-PI:** Prof Pammi Gauba. Funded by: Life Sciences Research Board (LSRB), DRDO. Duration: June 2022-June 2025., Grant Value: INR 24 lakhs.
6. Biotechnology Solutions for Soil and Water Remediation. **PI:** Prof Pammi Gauba. Funded by: COE for Biotechnology Solutions, IIIT, Noida. Duration: April 2022-April 2025. Grant value: INR 15.00 lakhs
7. Development of fortified prebiotic cookies using edible seeds. **PI:** Dr. Smriti Gaur. Funded by: IIIT, NOIDA. Duration: Mar 2022-Mar 2024. Grant value: INR 12.07 lakhs

# WELCOMING NEW FACULTY MEMBERS

## DR. ANKISHA VIJAY (Assistant Professor Grade-II)



Dr. Ankisha Vijay joined the Department of Biotechnology, Jaypee Institute of Information Technology as an Assistant Professor in September 2022. Prior to joining JIIT, Dr. Ankisha worked as a Research Scientist at Environmental Science and Engineering Department, IIT Bombay. She did her post doc from Department of Energy Science and Engineering, IIT Bombay. She holds a first-class Bachelor in Science (Chemistry, Botany, Zoology) from Jai Narayan Vyas University, Jodhpur, Masters in Science (Biotechnology) from IIS University, Jaipur, and a Ph.D in Environmental Biotechnology from IIT Jodhpur (Department of Bioscience and Bioengineering). She has worked on waste to energy conversion processes to develop sustainable biotechnological solutions to water pollution and energy. Her doctoral work addressed the challenge of simultaneous removal of U (VI) and nitrate from nuclear waste in microbial fuel cells (MFC). She has further worked on the real nuclear effluents generated from the Bhabha Atomic Research Centre (Mumbai) and tested the efficiency of MFC system successfully. This research was an interdisciplinary work at the interface of microbiology, electrochemistry, and material science. She has published many research papers in the reputed international journals with cumulative impact factor of 62. Her research interests are in the area of wastewater treatment, bioelectrochemistry, microbial fuel cells, bioremediation, and renewable bioenergy. Her research is focused on applications of microorganisms to curb environmental pollution, provide clean energy, and remediate toxic or hazardous waste. Ankisha enjoys traveling, reading, movies, and yoga practicing. She enjoys teaching and is passionate about her research..

# DR. POOJA CHOUDHARY

(Assistant Professor Grade-II)



Dr. Pooja Choudhary, joined Department of Biotechnology, Jaypee Institute of Information Technology as an Assistant Professor in August 2022. Previously, she was working as research associate in the Plant Science department at Central University of Hyderabad. During her post-doctoral research, she majorly focused on the application of various omics approaches to understand the abiotic stress responses in millets. Given this, she has published many articles and reviews to display the role of omics-based techniques in understanding the molecular mechanism underlying stress responses in millet crops, namely, foxtail millet and kodo millet. Additionally, she has determined the detailed pathway of blast disease progression in susceptible rice variety through proteomics and metabolomics approaches during her doctoral research at DBT institute, NIPGR, New Delhi. While working with cereal crop, rice, she has contributed significantly in developing an efficient transformation methodology in legume crop, *Cicer arietinum*. Being a plant biologist, she is extensively working in plant stress biology to understand stress responses. She has published her research work and good reviews in high impact international journals. During her masters, she received Summer Research Fellowship from INSA, NASI, IASc, to work in the field of Protein biochemistry at NMR Research centre of Indian Institute of Sciences (IISc), Bangalore.






# CREATIVE CORNER

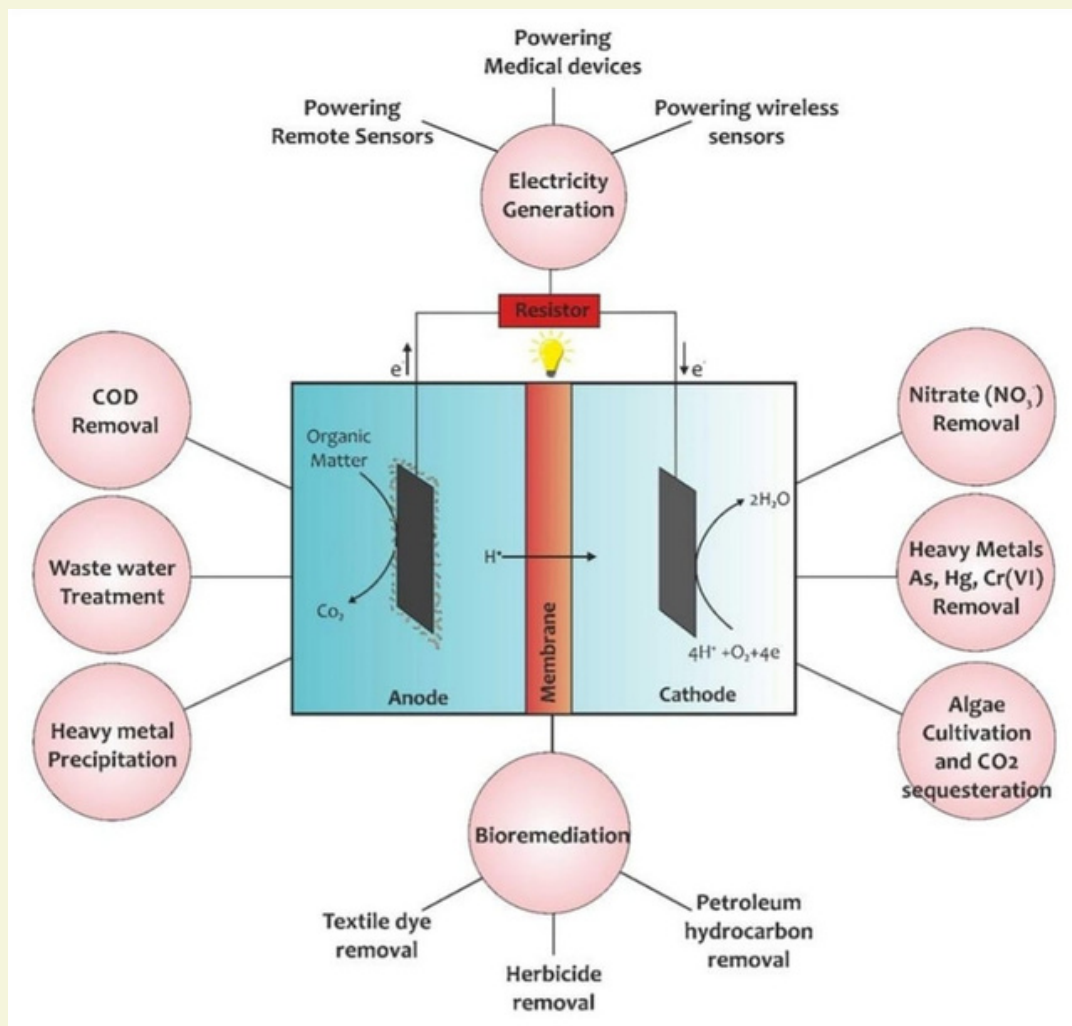
## Waste to Watts- Microbial Fuel Cell

Water pollution is the main concern in the recent era due to industrialization and urbanization. Microbial fuel cells (MFCs) are emerging wastewater treatment systems and a source of renewable energy. MFCs can convert chemical energy stored in the wastes into electrical energy. A typical MFC consists of two chambers namely anode and cathode separated by a proton exchange membrane (PEM). In the anode chamber, anaerobic bacteria carry out the degradation of organic matter resulting in the production of carbon dioxide (CO<sub>2</sub>), electrons, and protons. The electrode acts as a terminal electron acceptor. This phenomenon is called exoelectrogenesis and the bacteria which can carry out this process are called exoelectrogens. Exoelectrogens are microorganisms that are capable of this kind of extracellular electron transfer. Some examples of exoelectrogenic bacteria include *Shewanella putrefaciens*, *Geobacter sulfurreducens*, *Geobacter metallireducens* and *Rhodospirillum rubrum*. The electrons travel from the anode through the external circuit constituting the flow of current. The external circuit comprises of an electrically conducting wire and a load that connects the anode to the cathode. Proportional to the magnitude of the current flowing through the external circuit, protons from the anode chamber pass through the PEM to the cathode chamber maintaining charge balance. The electron acceptor present in the cathode chamber accepts the electrons flowing through the cathode and gets reduced. The MFC performance is commonly measured in terms of power density and current density which is absolute power normalized with electrode surface area or anode/cathode chamber volume.

The idea of MFC dates back to 1911. At this time, M.C. Potter first demonstrated that electrical energy can be generated using *Escherichia coli* and *Saccharomyces cerevisiae*. M. C. Potter stated in his article that “The disintegration of organic compounds by microorganisms is accompanied by the liberation of electrical energy”. In 1931, Barnett Cohen obtained 0.2 mA of current by using a potentiostat poised half-cell. Despite the merits associated with the findings of M.C. Potter, the idea of MFC was not researched for a long time. In 1980, a British researcher H. Peter Bennetto revived the idea of MFC and used the pure culture of bacteria and artificial electron mediators to harness the electrical power from organic substrates. The research on MFCs speeded since then and attracted the attention of many environmental biotechnologists and electrochemical engineers around the world. Significant progress in the field of MFC technology has been achieved



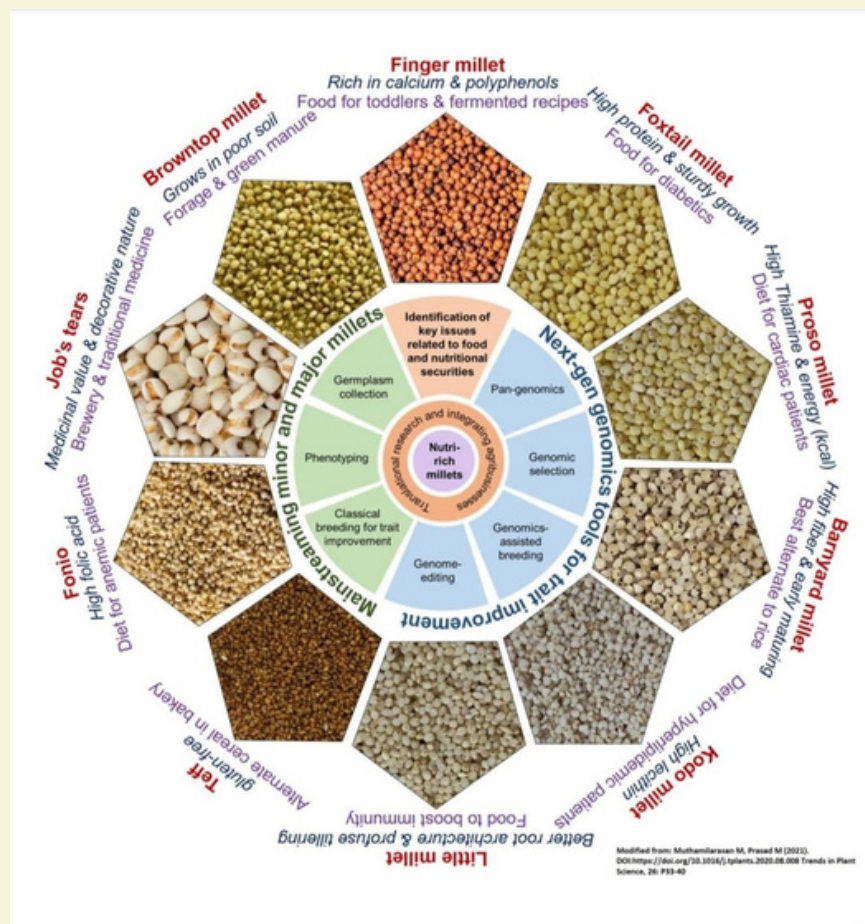
and the technology is getting better every single day. In 2009, the discovery of exo-electrogenic bacteria *Geobacter sulfurreducens* was included in the 50 best types of research by Time magazine. Microbial fuel cells at first catch attention due to their ability to produce electrical energy. The sustainability of the MFC system can be increased if it is coupled with another high-value application. This includes wastewater treatment, biomass/algae generation, biosensors, powering remote sensors, bio-remediation, carbon dioxide capture etc. Large numbers of research are underway worldwide to make MFC technology commercially feasible.



Dr. Ankisha Vijay  
Assistant Professor

## Millets as Nutricereals

Continuously changing climate and increasing population pose a major threat to global food security. In the current scenario, the challenge of hunger underlines the impact of malnutrition and limited access to food supply for the marginal population. Mainstreaming millets can address the challenges of food security, as these crops have the ability to survive arid and semi-arid climatic conditions, poor soil fertility and exceptionally great nutritional qualities as compared to major crops such as rice and wheat. Extensive research on millets in the last decade has demonstrated their plethora of health benefits, thus motivating people and farmers to make them an integral part of their diet. However, millets have been widely cultivated in our country for centuries, but current awareness about their health benefits will further increase their production and consumption. In this direction, the United Nations, at the behest of the Government of India, declared 2023 the International Year of Millets. To commemorate this, MyGov is hosting several interactive activities to enhance millet consumption, thereby achieving food security and welfare of farmers.



Dr. Pooja Choudhary  
Assistant Professor


## Experience as a PhD and a faculty member in Department of Biotechnology

I started my career as a lecturer and pursued research in the Department of Biotechnology, JIIT Noida. I was a postgraduate from the Department of Chemistry, Kumaun University Nainital. I did my PhD under the supervision of Prof. Pammi Gauba, who is Head of the Department of Biotechnology. She has an in-depth understanding and knowledge of her field with more than 30 years of teaching and research experience. Ma'am has a very different style and approach and this was beneficial to me to achieve my research objectives. Ma'am also integrated me into my academic field, which was necessary for me. I've also learned that it's essential for students and faculty working together to consider their mutual expectations. Working hard together, getting to know each other more personally, and being able to speak clearly about expectations coming from both sides is also important, just like I learned from my guide.



My experiences as a research scholar in JIIT Noida, have been diverse. I have thoroughly enjoyed my research work in a JIIT laboratory, for the past five years. I would say, research has been the most important and rewarding component of my education. My research work has been proven to be a fantastic addition in my education and allowing me to strengthen my conceptual understanding which will lead to an improvement in my career. Biotechnology labs in JIIT are interdisciplinary and very advanced. Instead of limiting our research to our department, I believe we should look at labs in all departments. I began my research work, investigating the mechanism of organic pollutants remediation. I also investigated the toxicity caused by the environmental pollutants in selected plants. I learned how to operate Gas chromatography and mass spectrometry (GC-MS) in






Essential oil association Noida and High performance thin layer chromatography (HPTLC) in Anchrome laboratory Mumbai. I also investigated the degradation pathway of organic pollutants within the plants by using Liquid chromatography and mass spectrometry (LC-MS) in collaboration with Indian Pharmacopoeia Commission Ghaziabad. This work provides an opportunity to directly apply plant-based research for field trials, which is essential at present scenarios of the environment. My research work resulted in several published abstracts, presentations, and research and review articles in national and international journals in the area of environmental Biotechnology. Being a faculty and research scholar at a same time in an advanced laboratory has been a great opportunity for me.

However, I struggled with balancing my faculty responsibilities with research, but in the end it was a rewarded experience.

I began teaching and conducting research with the conviction that sharing my knowledge was an important part of my professional development and an important part of giving back to society. I typically spent the first couple of years figuring out how to do this job well, and manage faculty responsibilities. I used to spend more and more time on my teaching in order to thoroughly prepare for class. It was an effort to put more and more information into a course. This frequently cuts into the time I could spend on research. I feel that postgraduate students must be very proactive in their education. Academic Professors always have a great knowledge and bring a unique perspective to the classroom. I always learned from them to go “Beyond the subjects, how to develop the course content and give it a personal touch, aiming for a more "real-life” scenario. Based on my own experiences, here is some advice for research scholars. You will be assigned a research project by the supervisor. Learning about the field and why the work is important will assist you in moving the project in the right direction. In my opinion, research has always required this. Besides learning the techniques, you should also learn how to analyze results and design experiments. After that, don't blame yourself if experiments don't work as fast as you expected. Science is about failing and trying again. We know that in all the universities faculties have a lot of work, and research will need extra time. Talk to your mentor about your lab schedule on a regular basis. Speak with senior students and professors, or search online for all available opportunities. Explore and learn everything you can. Working out on what you want and that is the best preparation for the rest of your career.

Dr. Ekta Bhatt,  
Assistant Professor





## सर्दी की सुबह

अलसायी हुई सी सुबहों से  
जाग कर उठी हूँ,  
मैं गर्मी की गरम सुबहों से  
भाग कर उठी हूँ।  
दौड़ी हूँ ओस से भरी  
घासों के तिनको पर  
मैं चिड़ियों की चहचहाहट के  
साथ में उठी हूँ।


अब राह देखती हूँ सर्दी की धूप की,  
पुरने लगी हूँ तितलियों के रंग की रंगोली,  
चटकी हुई कलियों से रंग माँग के उठी हूँ  
गर्मी की गरम सुबहों से भाग कर उठी हूँ।

कोहरा भी चढ़ेगा अभी  
धुँध घोर छायेगी,  
सूरज के गर्म किरनो की याद आएगी,  
गन्ना की, रेवड़ी की बारात आएगी,  
मीठे-मीठे गुड़ों को अब चाख के उठी हूँ  
गर्मी की गरम सुबहों से भाग कर उठी हूँ।

अब गर्म शाल. नर्म रज़ाई ही तो भाती है,  
अदरक, काली. इलाइची की चाय बुलाती  
है..  
माँ की वही फटकार रसोई से आती है,  
देर तक सोने के सपने मार के उठी हूँ,  
गर्मी की गरम सुबहों से भाग कर उठी हूँ।

Prof. Rachana





# **STUDENTS' CONTRIBUTION**



## **Foldscope a Pocket-Sized Microscope**

A paper microscope called Foldscope was designed to make science more accessible to a wider audience. With that idea, the company has grown into one that provides low-cost tools around the globe! Foldscope has reached over 1.6 million people with foldable paper microscopes, and they have created an online community of explorers unlike any other. For communities around the world, Foldscope creates inexpensive microscopes using low-cost materials and precision optics. Foldscope has a magnification of 140X and can observe tiny things like bacteria and microorganisms as well as larger samples like insects, plants, fabrics, and tissues. Mobile phones can also be attached to Foldscope for imaging. As well as being portable, this microscope is waterproof. Jim Cybulski and Manu Prakash created the Foldscope. The creation took place in Manu's Stanford University lab while Jim was a PhD candidate there. Visits to field stations where they frequently encountered heavy, damaged, or nonexistent microscopes served as the inspiration for the Foldscope. They understood the broad scope of this issue and the need for a low-cost, innovative solution because conventional microscopes are either pricey or inconvenient.

Their goal is to ensure that everyone has access to equitable science and STEM education. Innovative and potent low-cost tools, instructional services, and online community platforms are all offered by Foldscope Instruments Inc. They consider it as a basic human right to have access to research and education. They therefore strive to remove the financial barrier preventing individuals from accessing science by offering solutions that are both affordable and of high calibre. Affordably priced STEM instruments are crucial for improving the state of science education in general as well as for reaching environments with few to no resources. They continue to develop tools and settings that encourage curiosity, openness, and cooperation. They work to promote equity and accessibility across all of their goods and services. Through informal mentoring, they hope to build a community of enquiring individuals committed to global access to scientific resources, open sharing, and discovery. The evolution of the microscope and its innovation allowed for new fields of study and inquiry, as well as a better understanding of the microscopic world. From the earliest microscope with a single glass lens to the most sophisticated electron microscope, they have come a long way in their exploration of the microcosmos and in keeping the large instrument solely for use in labs. Regular microscopes are only used in laboratories due to their expensive cost, hefty weight, fragility, and maintenance requirements.

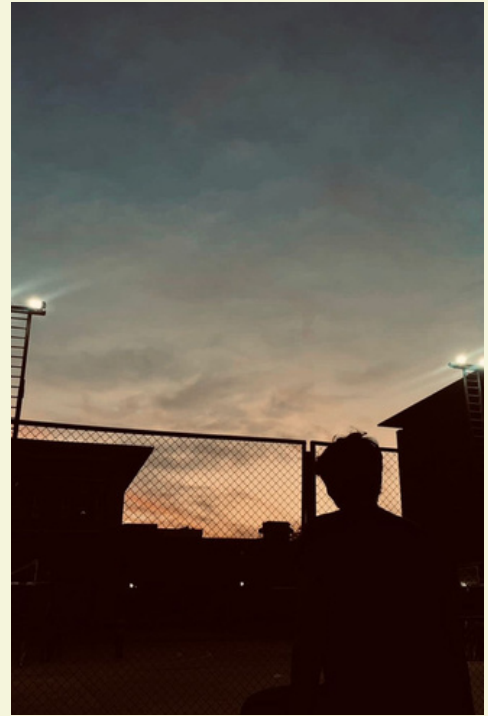
Aindree (M.Sc Microbiology 2nd Semester)





## A CRIMSON DREAM

Once again, my heart is torn apart and drifts away  
lost memories protrude from sealed crevices  
with your eyes made of glass  
what dreams can you see?  
are you consumed by?  
once again my soul's been ripped apart  
pouring out  
from the seam of my patches  
piercing  
are memories  
still you do not answer  
I have abandoned and suppressed them countless times,  
having nowhere to go to,  
my feelings began to awaken  
that pure smile of yours is so cruel  
it makes me realise just how pure your existence is  
these wounds that have yet to heal do haunt, but eat away my heart..  
I can no longer suppress these feelings of mine that now dwell within the darkness  
heading towards swaying crimson dreams..  
we came across one another, causing our fates to revolve  
this secret which no one knows continues to fall  
we can no longer turn back  
even if we were to carve out our sins for sure



Manya (B.TECH Biotechnology)





# **ALUMNI CONTRIBUTION**





## Our Success Journey

When we start a new company from the ground up, it is really important to understand what kind of positive shift we wish to bring to society. We need to evaluate our product on several parameters, understand the investor mindset, and most importantly, how we alleviate the current socio-economic challenges through innovation. For any startup, the first 2-3 years could be really challenging in terms of market entry, raising capital, which is an excruciatingly painful process, and staying committed to the vision that led you to start your startup journey. The initial months could be very exuberant, but with the passing of time, many of us face rejection at different stages and levels of this extraordinary journey in life. During such times, our technical skills, knowledge, mindset, perseverance, patience, and resilience help us see the light.

Our venture, Prakriti AgTech, was founded in 2020 by Dr. Shalini Bhartiya and Dr. Rohan Chhabra. During our journey so far, we have seen a lot of ups and downs, but we have been able to survive on this rollercoaster entrepreneurial journey so far. I personally see that the only reason we were able to survive in this cutthroat competitive journey is because of the qualities that were inculcated by my mentor and supervisor, Dr. Ashwani Mathur, during my time at the Jaypee Institute of Information Technology. Moreover, our course curriculum and faculty members of the Dual Degree (B.Tech./M.Tech.) in Biotechnology honed my skills and imparted an outstanding understanding of the realms of biotechnology. They helped me gain a bioengineer perspective, which comes in very handy and is a helpful tool in my entrepreneurial journey.

The faculty members at the university used to make sure that they broadened our minds through their intellectual talks and interactions. Furthermore, our practical sessions were designed and developed to capacitate us with all the necessary techniques. Moreover, during my master's dissertation at the Center of Plant and Microbial Biotechnology at the Department of Biotechnology, we were also imbued with the knowledge of research methodology, and our head of department made sure that he expanded our mental horizon, which really helped us rise above the mundane way of thinking and strategizing. After I completed my degree at the Jaypee Institute of Information Technology (JIIT), I was determined to pursue a career in science and, therefore, joined a Ph.D. program at the Institute of Chemical Technology, Mumbai. During my time at Ph.D., I was able to design experiments independently, perform routine work along with duties, performed exceptionally good and was able to produce high quality data for my Ph.D. thesis which I believe was only possible due to my time and brainstorming sessions while working under my mentor at JIIT.

Currently, we are working on climate smart fertilizer, innovative controlled environment agriculture technology, IoT-based greenhouse automation, vapor pressure deficit sensors, horticulture grow lights, and hydroponic farming. In the future, we wish to integrate multiplex spatial tissue imaging to unlock the true ased active pharmaceutical ingredients.

Dr. Rohan Chhabra  
Prakriti AgTech

Dual Degree (B.Tech/M.Tech) Biotechnology, (2009-2014)







## **Covid-19: Are we boosting ourselves, or the virus?**

Dawn of the Covid-19 pandemic allowed widespread recognition of the power of advancements in medical community. Availability of not one but several international drug regulatory agency-approved vaccines within a historic span of <48-months (1) gives mankind hope to win the ongoing fight against the virus, albeit stumbled by the emergence of newer, more resistant variants resulting in reduced efficacy of existing vaccines. Health organizations initially recommended one/two doses of the adenoviral/mRNA vaccines targeting the then prevalent alpha, beta, and gamma variants, to which an additional ‘booster’ dose was added to compensate for waning immunity from the previous doses (2). While the emergence of the delta variants brought to light the equivocal efficacy of the additional dose in reducing the rate of infection, its potency in reducing the severity and need for hospitalization was recognized (3, 4). Administration of over 8-billion vaccine doses globally makes it the largest vaccination drive in history (5), which comes at the cost of countries spending significant shares of their national healthcare funds, furthering raising concerns over the quandary of underprivileged nations in providing vaccines for their populations (6). Unfortunately, the emergence of new Omicron variants rendered the existing vaccine regimen of one/two primary and a third booster dose ineffective in providing adequate protection against infection and hospitalization (7, 8). In face of the ongoing surge in global Covid-19 cases as of April 2022 (9), US-FDA approved the emergency use of Pfizer’s second booster- BNT162b2, which was recently shown to significantly reduce the rate and severity of infection of new Omicron variants (10). This back and forth between enhancing booster jabs to target the newer variants of SARS-CoV-2 virus, however, does not come without concerns from immunologists and other global-health researchers, some of whom believe “We’re in totally uncharted territory for vaccinology” and “We’ve stumbled into a de facto programme of frequent mRNA boosters as an emergency measure, but this really doesn’t feel like the way to go” (11). Here we look at some pressing questions that accompany rolling out of newer booster jabs.

### **What’s the magic number of booster shots to confer lasting immunity against Omicron and emerging variants?**

Rolling of a new booster dose to curb the raging Omicron wave has left many perplexed on whether the fourth jab, a.k.a. the second booster, would serve well in conferring long-lasting immunity against emerging variants, or whether there would be the need for a third, or even a fourth follow-up booster? The answer to this question is relative to the intended purpose of boosters, i.e., whether it is to slow viral transmission by preventing infections, or to reduce disease severity and the need for hospitalizations upon infection. Emergence of newer variants that may undermine the effectiveness of existing vaccines would require administration of additional jabs to provide individuals with added layer of protection. For now, these additional jabs aim to complement the efficacy of existing vaccines in prolonging immune memory.





While clinical data demonstrates the fourth dose to revive antibody titers against Omicron infection resulting in significantly reduced hospitalizations compared to only three doses (10), concerns still cloud the durability of newer jabs as past record suggests booster-conferred immunity to wane within few months of administration. This sharpens the concerns over a continuous and indefinite need for boosters, raising possibilities of regular booster doses as for the Spanish flu causing H1N1 lineage of viruses (12).

### **Are we exacerbating the emergence of newer variants of concerns (VOCs)?**


The administration of additional jabs has concerns sprawling around the sustainability of this public health policy, especially with waning protection over time. Evolution of existing VOCs from the original variant detected in Wuhan in 2019, with each new variant displaying enhanced infectivity and transmissibility, raises questions regarding the role of vaccines in emergence of variants harboring novel mutations. Since the virus constantly mutates, it holds the ability to adapt to the immune response and memory elicited due to vaccines, rendering the virus resistant and allowing it to multiply in vaccinated populations. This processes roots from natural selection due to pressure on the virus to evolve against a vaccine that doesn't entirely prevent infection. At present, this process of vaccine escape might not seem alarming as our priority remains to combat the risk of severe infection and hospitalizations, explaining the rapid approval of new booster doses for emergency use. However, researchers debate whether continuous vaccinations could yield a mutant entirely resistant to the available armamentarium of vaccines (13-15). On the bright side, while the issue is pressing and reduction in vaccine efficacy against newer variants has been documented, history shows high unlikelihood of it eroding to zero in near times. Additionally, with available options in approved vaccines and other candidates in the pipeline waiting for approval, heterogeneity in global vaccination helps stall dissemination of mutants overpowering any one of those (14). A variant that escapes one vaccine candidate can likely be treated with another. Albeit nonchalant use newer jabs may subject the viruses to constant mutations, slowly pushing us closer to the beginning of the pandemic with an almost brand-new variant without any effective treatment options.

### **Stay boosted - stay protected, for now**

While administration of more booster doses might be a lucrative strategy to suppress disease severity and hospitalization, there is a growing need to look for better and long-lasting alternatives to control the spread of infection. Apart from social concerns on availability of Covid-19 vaccines irrespective of nationality or economic status, conducting recurrent mass-vaccine drives poses practical issues, on top of maintaining consistent public enthusiasm in taking additional doses. Thus, there is a need to develop pan-covid vaccine candidates conferring adequate protection against existing and emerging variants. However, owing to the uncertainties pertaining to viral evolution, the possibility of pan-covid vaccines seems far-fetched. Until then, prevention of severe disease and need for hospitalization, and shielding vulnerable populations continue to be our top priority. A priority that can be addressed by administration of targeted booster doses.


Deepansh Mody

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University of Ottawa, 451 Smyth Road, Ottawa, ON K1H 8M5, Canada





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- 



## My Start-up Journey

Biotechnology has played a pivotal role in shaping my career and really push me in a way to start MeraMaali. The idea to take up a challenge in entrepreneurship rather than taking a conventional job was much influenced by Biotechnology as a whole in my life.

With a vision to revolutionize how gardening is perceived in the country and providing a scientific and sound solutions to people's everyday gardening problems, was a big gap MeraMaali has been trying to fill. Trying to fill. With a mission to organize the unorganized sector of the horticulture industry and providing a solution under a single platform we have been striving to provide our customers with the best possible solutions.

Four years in IIIT Noida Biotechnology under guidance and mentorship of the dedicated faculty of the college really nurtured my technical acumen and shaped up my vision to really perceive and conceptualize MeraMaali at every stage.

The most important department which helped me specifically were the Centre of Plant and Microbiological Biotechnology which laid the foundation of my journey of research and developing various products and services of the company which now have become a daily norm.

Going on a detailed journey, the theoretical knowledge about NPK's, Fertilizers and many other compounds their utilities and functions in everyday plant life help me devise standardize SOP's for the maintenance of various plants. Applying scientific approach and the process of RnD in various SKU's and verticals which will be a long list, really helped in finding creative solutions by mitigated planning and structuring our goals and needs.

### **A Few Solutions:**

1. Complete Gardening kit guide and maintenance SOPs
2. Vermicomposting Catalyst and enzymes
3. Plant Boosters
4. Bio Insecticide and Bio-fungicides
5. Nutrient Sprayeres
6. Standardizing soil mediums for various plants
7. Hydroponics and efficient nutrient practises







8. SOPs for Polyhouses and Hydroponic farms running's, operations , functions plannings and target settings.

9. Efficient and organic solutions to various plant systems and verticals

10. Stabilizing Ph,EC and TDS of soil systems and various plant growth mediums

The list goes on and on as the whole concept is based around Plant and Microbiology so it's not an end but just the beginning.

To sum it up, four years of grilling under trained teachers of all departments really shaped my vision and perceptions to look at things and solving day to day problems in growth, sustenance and enhancing them every day to provide the best solutions and services to our customers aligning with our company, its vision and mission.

AKASH SUBRAMANIAN

BATCH: 2010-2014

EMAIL: akash.subs@gmail.com, akash@meramaali.com





## गजल - अब गहराई से नही किनारों से डर लगता है....!!

कि अब गहराई से नही किनारों से डर लगता है....!!  
उस मोड़ पर है ज़िन्दगी, कि मुझे अब अपने ही यारों से डर लगता है .....!!  
गर दो इज़ाज़त तुम, बनकर किरायेदार ही सही आ जाएं तुम्हारे मक़ाँ में,  
कें मुझे अब अपने ही घर की दीवारों से डर लगता है....  
और लोग कुछ ऐसे है मेरे शहर के

कि इन्हें ये खुद सच्चे, और झूठा सारा शहर लगता है....  
और मोहब्बत मोहब्बत मोहब्बत तो ठीक  
मगर ये कम्बख्त जुदाई, मानो खुदा का एक ज़िद्दी कहर लगता है ....

और  
बेहोशी छा रही है बदन में मेहबूब के हाथ की चाय पीने के बाद.....  
अरे मुझे तो अपनी चाय में ज़हर लगता है....!  
और घूम रहे हो दर-बदर घर टूटते तुम "पीयूष "  
अरे क्या माँ के बग़ैर कोई घर, घर लगता है ? ....!

-पीयूष (M.Sc Microbiology, Batch: 2020-2022)

# EVENTS ORGANIZED

## FACULTY DEVELOPMENT PROGRAM ON: INNOVATIONS IN DRUG DELIVERY TECHNOLOGIES

JULY 25, 2022 – JULY 30, 2022

ORGANIZED BY : PROF. SHWETA DANG & DR. PRIYADARSHINI

The Department of Biotechnology, Jaypee Institute of Information Technology Noida organized a Faculty Development Program. A set of prominent speakers from the industry and academia who are involved in various areas of drug delivery shared their knowledge and experience. The objective of this programme was to develop new ways of delivering drugs through different means.



**Department of Biotechnology, Jaypee Institute of Information Technology Noida organizes Faculty Development Program (25th - 30th July 2022) Topic: Innovations in Drug Delivery Technologies**

**About the Institute and Department of Biotechnology**  
Jaypee Institute of Information Technology (JIT, NOIDA) was established in the year 2001 and has been declared as a "Deemed to be University" under Section 3 of UGC Act 1956. The undergraduate programs of the University have been accredited by the National Board of Accreditation of AICTE. The Department of Biotechnology and JIT established in 2002, remains committed to provide research informed teaching and learning and a state of art R & D environment. It has been consistently ranked amongst the best institution in India by Biospectrum. Research focus of the Department is on emerging, reemerging and lifestyle diseases, natural bioproducts of therapeutics and industrial importance, their molecular mechanism of action, drug delivery and bioremediation/ phytoremediation strategies. Active research in these areas has resulted in a number of extra mural funded projects and publications of national and international repute.

**About FDP**  
**Innovations in Drug Delivery Technologies**  
Drug delivery is a broad area of research and development which covers the delivery of various drugs and compounds in humans or animals to achieve therapeutic effects.

Innovations in the field of drug delivery have led to improved formulations and novel technologies to deliver the drugs, bioactives and biologics. Selection of a drug delivery method has significantly impacted the efficacy of the drug. Many important physicochemical and pharmacological properties of the drug such as poor solubility and stability, lipophilic nature, low bioavailability, high peripheral circulation etc can be improved by using a desirable drug delivery system. Improvements based upon technologies like inhalers, insulin delivery devices, delivery through extracellular vesicles, i.e. exosomes, to develop new therapeutics etc have been executed by some scientists and researchers and many more are working in this field to develop new ways of delivering drugs through different means.

**Following key areas will be covered:**

- Lipid Nanotherapeutics
- Drug Delivery Devices in Biologics
- Nanoscale Drug Delivery Systems
- IP strategies in drug discovery
- Trends in delivery of bio actives in CPG industry
- Delivery of drugs in combinations



# IPR AWARENESS PROGRAMME

AUGUST 12, 2022

ORGANIZED BY: PROF INDIRA P SARETHY & PROF SHWETA DANG

The Department of biotechnology organized "A National Intellectual Property Awareness Mission (NIPAM)" under the initiative of the Government's "Azadi ka Amrit Mahotsav", has been launched by Shri Anurag Jain, Secretary, DPIIT on 8/12/2021. The pan-India ambitious mission aims to provide awareness on intellectual property and its rights to 1 million students. It aims to inculcate the spirit of creativity and innovation to students of higher education (classes 8 to 12) and ignite and inspire the students of college/Universities to innovate and protect their creations.



Office of the Controller General of Patents, Design & Trademark  
In collaboration with  
Department of Biotechnology, JIIT  
Organizes

## IPR AWARENESS PROGRAMME

(Under National Intellectual Property Awareness Programme)



आज़ादी का  
अमृत महोत्सव

Creative India; Innovative India

NO Registration Fee

Date: 12<sup>th</sup> August, 2022 | Time: 10 AM onwards

e-Certificates to registered participants

Venue: Lecture Theatre 3 (LT-3), JIIT, Sec-62  
Registration Link:  
<https://forms.gle/oHYmsTfK72KJQox2g>

Speaker: **Nitya Tyagi**  
(NIPAM Officer & Examiner of Patents and Design Patent Office)

**Organizers**  
Prof. Parmi Gauba, Prof. Indira P Sarethy, Prof. Shweta Dang

## TALK ON: “NATIONAL NUTRITION WEEK”

SEPTEMBER 7, 2022

ORGANIZED BY: DR. MANISHA SINGH & PROF. NEERAJ WADHWA

The Department of Biotechnology, Jaypee Institute of Information Technology Noida organized a Talk on National Nutrition Week. The speaker for the session was Dr. Mathur. It aims to highlight the significance of eating a well-balanced diet that contains all of the nutrients that our bodies require for various functions and the maintenance of our overall health. The Food and Nutrition Board of India is in charge of the week-long programme, which is undertaken by the Ministry of Women And Child Development.



**Department of Biotechnology**  
**Jaypee Institute of Information Technology (JIIT)**

**'NATIONAL NUTRITION WEEK'**

**SEPT 07, 2022**

**3 – 5 PM**

**“Nutritional upkeep at various stages of maternal health”**



**DR. ANSHU MATHUR RANA**  
**GYNECOLOGIST OBSTETRICIAN**  
**AMAN HOSPITAL, TAGORE GARDEN, DELHI**

**TAP TO JOIN THE MEETING** 



# HALF-DAY TRAINING WORKSHOP ON APTITUDE & LOGIC FOR COMPETITIVE EXAMS & JOB INTERVIEWS

NOVEMBER 18, 2022

ORGANIZED BY: PROF. KRISHNA SUNDARI & DR. GARIMA MATHUR

The Department of Biotechnology conducted half-day training workshop on Aptitude & Logic for Competitive Exams & Job Interviews, jointly organized by the student Counselling centre, Department of Biotechnology & SAP (Student Activities & Progression) unit of IQAC. The objective of the session was to benefit the students in understanding the kind of aptitude questions asked in various competitive exams and job interviews and how to solve them effectively. The workshop included a lecture session by experts followed by the mock test, which was later evaluated and students were informed of their respective performance. The answer key was also discussed at the end of the session.



**Jaypee Institute of Information Technology, Noida**  
Student Counselling Centre, Department of Biotechnology  
&  
Student Activities & Progression, Sub-committee, IQAC  
presents

**“Training Workshop for Students on Aptitude & Logic for Competitive Exams & Job Interviews”**

**Mr. Chandra Shekar Naidu**  
Chief Trainer,  
CLU IAS Academy  
Delhi

**Mr. Ramanuj Mishra**  
Trainer,  
Career Launcher  
Delhi

 **18 November, 2022**       **2- 5pm; LT3**

<b>Highlights of the workshop</b> <ul style="list-style-type: none"><li>• Quantitative Aptitude</li><li>• Data Interpretation</li><li>• Logical Reasoning</li><li>• Conceptual explanation and Mock Test followed by answer key discussion and doubt clearing session</li></ul>	<b>Who can attend-</b> B.Tech 3 <sup>rd</sup> and 4 <sup>th</sup> , M.Tech, Integrated M.Tech, MSc and PhD students
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**Registration Link:**  
<https://forms.gle/RzpB8Ta4oc2Po4Lk9>  
**(No Registration Fees)**

<b>Convener</b> <b>Prof. Pammi Gauba,</b> HoD & Dean (International Affairs & Sponsored Projects) Department of Biotechnology	<b>Event Coordinators</b> <b>Prof. S. Krishna Sundari</b> <b>Dr. Garima Mathur</b>
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# THE GREEN INITIATIVES & WASTE MANAGEMENT CELL OF JIIT NOIDA HAS ORGANIZED THE EVENT IN ASSOCIATION WITH ECOQUENCE HUB AND THE DEPARTMENT OF BIOTECHNOLOGY

NOVEMBER 22, 2022

ORGANIZED BY : PROF. KRISHNA SUNDARI & DR. GARIMA MATHUR

Department of Biotechnology, Jaypee Institute of Information Technology conducted the green event competition, on the occasion of Awareness day on "Oceans of Plastic", competition was organized by hub for students to share their views on ocean of plastic by writing essay on topic "Impact of Plastic Waste on Environment & Green Technologies for Plastic Waste Management".





# EXPERT TALK ON “FUTURE PROSPECTS AND CAREER OPPORTUNITIES IN LIFE SCIENCES

NOVEMBER 25, 2022

ORGANIZED BY: DR. PRIYADARSHINI & DR. EKTA BHATT

Department of Biotechnology, Jaypee Institute of Information Technology conducted the expert talk on “Future prospects and career opportunities in life sciences”. The purpose of this talk series is to provide information regarding scope and career opportunities in Environmental and Microbiology related areas in academics and in various industries also.



**FUTURE PROSPECTS AND CAREER OPPORTUNITIES IN LIFE SCIENCES**



**PREETI TIWARI**  
HEAD CUSTOMER SUCCESS  
Cerebra Integrated Technologies Limited

Preeti Tiwari is Head Customer Success at Cerebra Integrated Technologies Limited, Delhi. Before this she had also served at Exigo Recycling Pvt Limited and Attero Recycling Pvt Ltd. She served as a Speaker in Brand Dealer Meets to create E-waste Awareness in various cities in India.

**THE SCHEDULE OF THE TALK IS AS FOLLOWS:**  
DATE - FRIDAY 25 NOVEMBER, 2022  
TIME - 11:00AM – 12:00PM  
VENUE - LT-3



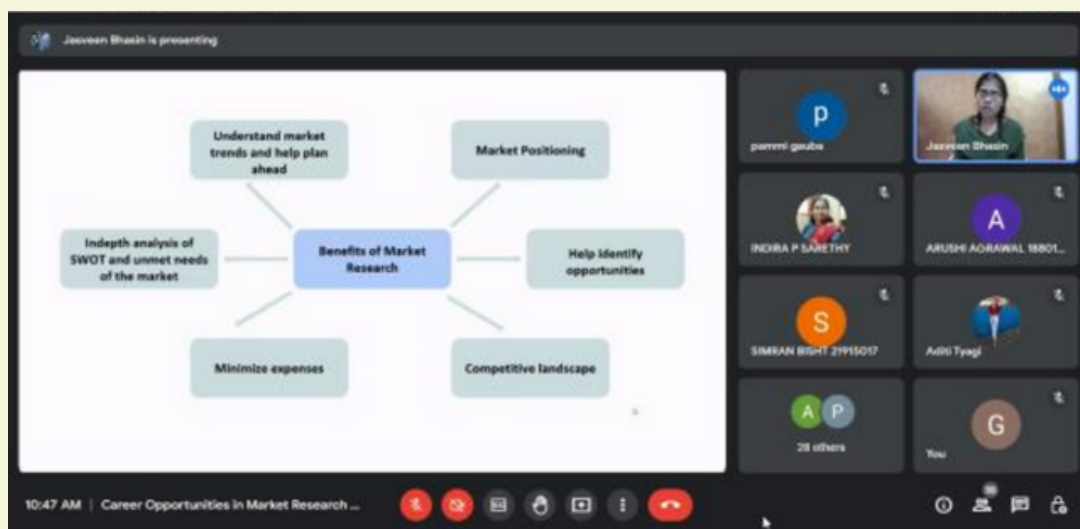
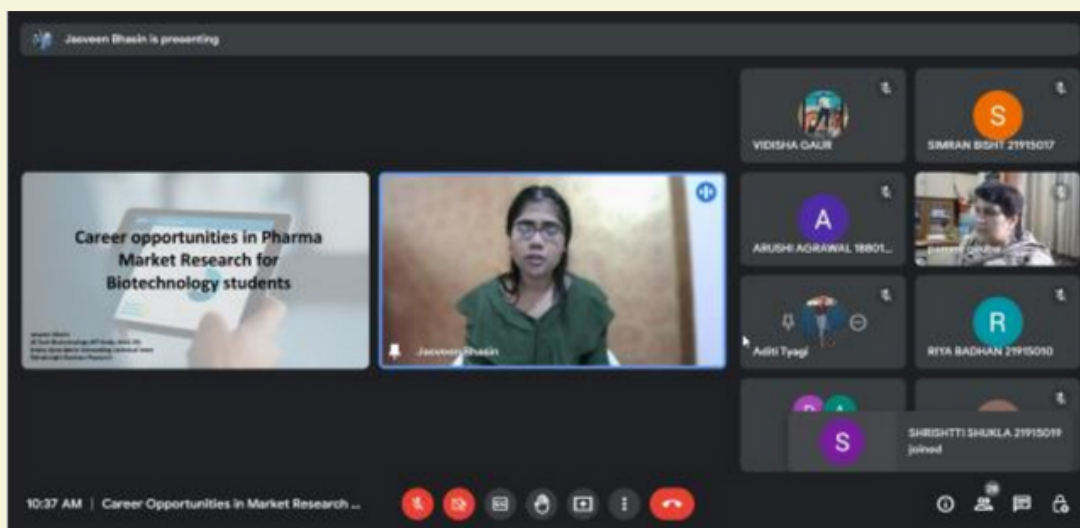
Register here:  
<https://forms.gle/29Q8B7WN284hYIUT9>

# TALK ON: CAREER OPPORTUNITIES IN MARKET RESEARCH FOR BIOTECHNOLOGY STUDENTS

NOVEMBER 26, 2022

ORGANIZED BY: PROF. SHWETA DANG & DR. GARIMA MATHUR

Department of Biotechnology, Jaypee Institute of Information Technology conducted the talk on Career opportunities in Market Research for Biotechnology students. The speaker of the talk was Ms. Jasveen Bhasin, She talked about her journey, the recent boom and the current trends associated with the healthcare sector. She laid down a detailed plan on how to make a successful career in Healthcare Consulting and the various skills a person should possess to gain success in this field.



## **NUKKAD NATAK: SAY NO TO DRUG ABUSE**

**NOVEMBER 25, 2022**

**ORGANIZED BY: PROF. REEMA GABRANI, PROF. SHWETA DANG, DR. EKTA BHATT**

Yoga, Prahari & Health Hub in collaboration with the Thespian organised a Nukkad Natak play on the rising issue of “Drug Abuse in India”.The play focused on the importance of resistance, not falling for peer pressure and most importantly to help and counsel those in need of help. The objective of the play was to clear myths surrounding drug abuse and encourage the addicts to seek proper treatment.





# TALK ON: EFFECTS OF TOBACCO ON HEALTH

DECEMBER 5, 2022

ORGANIZED BY: PROF. REEMA GABRANI, PROF. SHWETA DANG, DR. EKTA BHATT

As a part of UP government initiative "एक युद्ध नशे के विरुद्ध", Yoga, Prahari & Health Hub with Department of Biotechnology of Jaypee Institute of Information Technology organised a virtual talk by Dr. Upendra Baitha on the detrimental effects of tobacco on health and its rise in India. The speaker for the talk was Dr. Upendra Baitha's and the objective of the talk was to provide a solution to tobacco addicts and also guide them the way to live a healthy lifestyle.



# SOIL DAY QUIZ COMPETITION

DECEMBER 5, 2022

ORGANIZED BY: PROF. KRISHNA SUNDARI

Department of Biotechnology, Jaypee Institute of Information Technology conducted the soil day quiz competition to know how connected we are with our soil.



On the occasion of "World Soil Day",  
The Green Initiatives & Waste  
Management Cell and the Department  
of Biotechnology of JIIT Noida are  
organizing  
**KNOW YOUR SOIL**  
**ONLINE QUIZ COMPETITION**

DATE: 5 DECEMBER, 2022  
TIME: 9:00 AM TO 9:00 PM

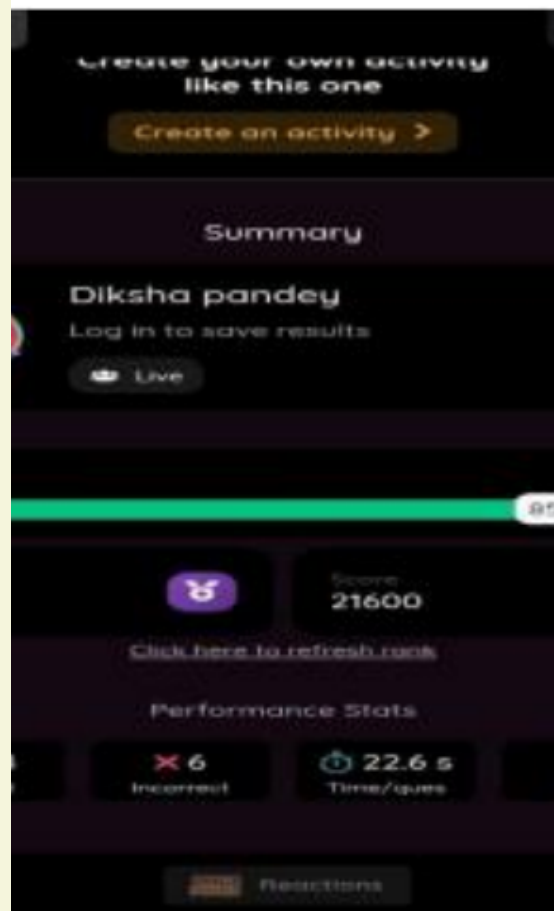


**TO REGISTER, SCAN**

Let's see how connected, we are with the soil,  
that supports our life,  
by participating and guessing songs, movies,  
subject questions, and famous personalities  
associated with soil

Faculty coordinator: Prof. Krishna Sundari  
Convenor: Prof. Pammi Gauba, HoD, Biotech department

Event Coordinators: Shivani Sammelaniya (7683058750), Aditi  
Upadhyay (9667574847), Saman Malik (8810634311)



Create your own activity  
like this one

Create an activity >

Summary

Diksha pandey

Log in to save results

Live

Score  
21600

Click here to refresh rank

Performance Stats

6  
Incorrect

22.6 s  
Time/ques

Reactions

# WORKSHOP ON: NEXT GENERATION SEQUENCING AND ITS IMPLICATIONS IN AGRICULTURE AND HUMAN HEALTH

DECEMBER 5, 2022 - DECEMBER 9, 2022

ORGANIZED BY: DR. POOJA CHOUDHARY & PROF. RACHANA

Department of Biotechnology, Jaypee Institute of Information Technology conducted the 5 days' workshop on "Next Generation Sequencing and its Implications in Agriculture and Human Health". This interdisciplinary workshop aimed to provide students and faculties an exposure to recent advances in next generation sequencing. The course developed multiple lines of reasoning to answer the questions in sustainable agriculture and human health with an approach of genomics, bioinformatics and next generation sequencing.



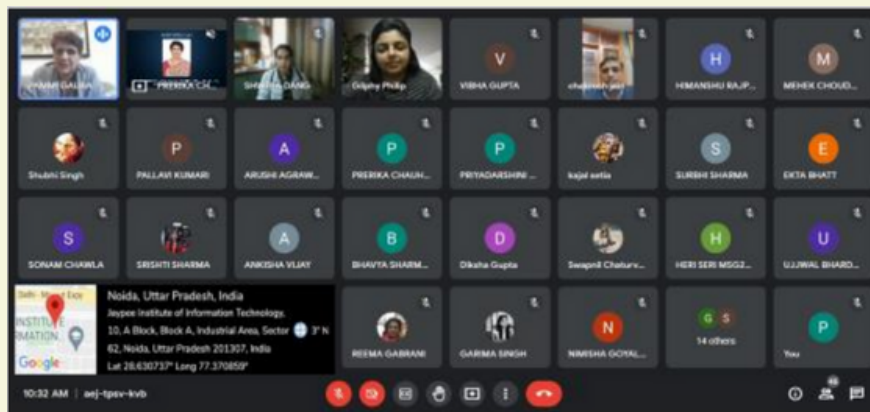


# TALK ON : CORPORATE CAREER IN HEALTHCARE SECTOR AFTER POST-GRADUATION IN BIOTECHNOLOGY

DECEMBER 10, 2022

ORGANIZED BY: PROF. SHWETA DANG & DR. GARIMA MATHUR

“Meet our alumni” series, a session/talk organized by the Alumni Committee of the Department of Biotechnology, Student Counselling Center and Capability Enhancement and Development Cell of JIIT, Noida was organized on December 10, 2022. The topic was: Corporate Career in the Healthcare sector after postgraduation in Biotechnology. The purpose of the series is to provide a platform for our students to interact with our alumni and share their experiences, knowledge, and achievements, with a sense of connecting back to the institution they belong to. Ms. Gilphy Philip graced the session and talked about her journey, the recent boom and the current trends associated with the healthcare sector.



# **INTERNATIONAL CONFERENCE ON ADVANCES IN BIOSCIENCES & BIOTECHNOLOGY (ICABB- 2023)**

**THEME: INNOVATIVE ADVANCEMENTS IN BIOTECHNOLOGY & BIOINFORMATICS**

**JANUARY 18, 2023 -JANUARY 20, 2023**

**ORGANIZED BY: PROF. VIBHA RANI & DR. CHAKRESH JAIN**

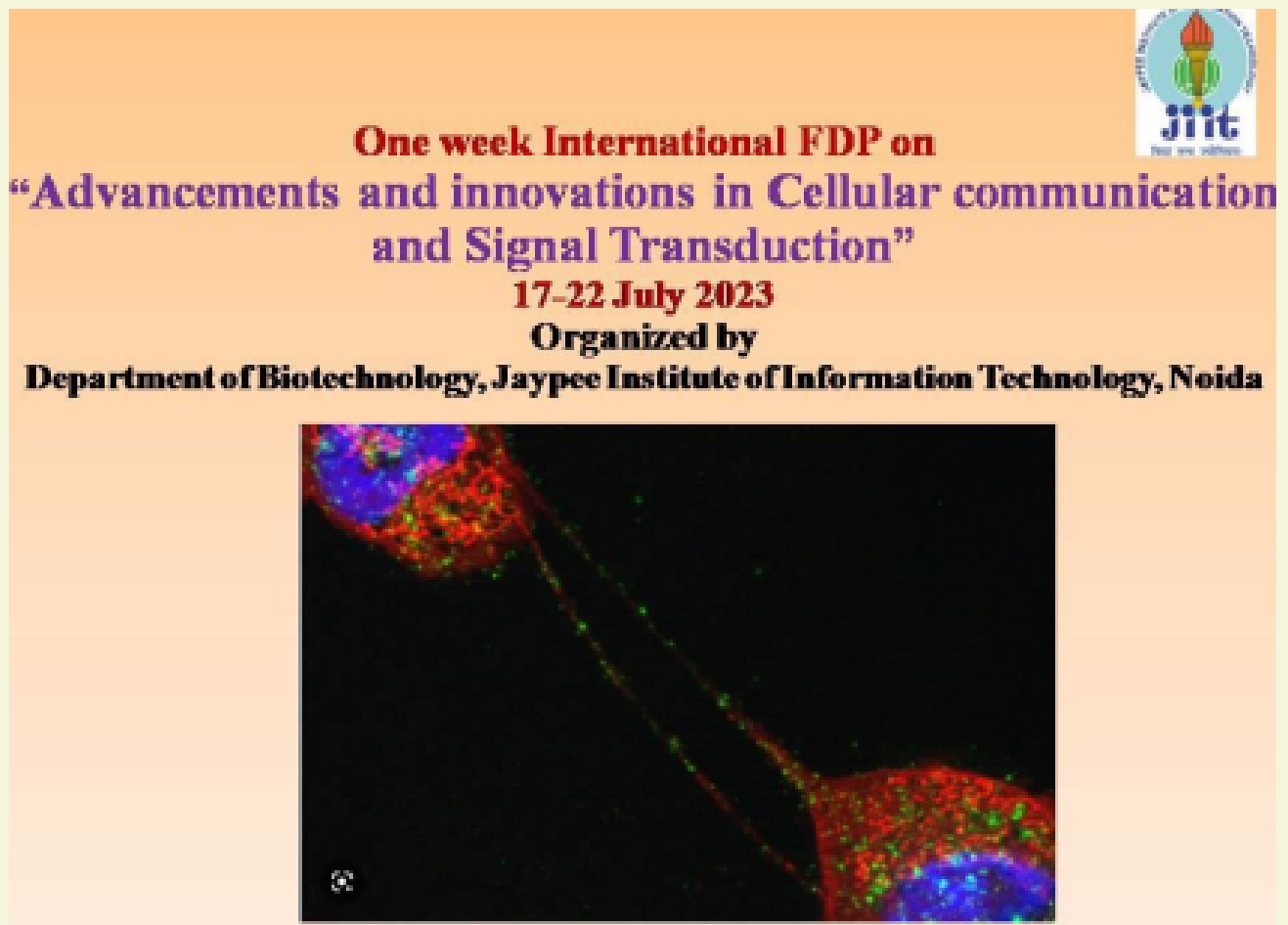
The Department of Biotechnology has successfully organized 6th edition of the International Conference on Advances in Bioscience and Biotechnology (ICABB-23) from 18th – 20th January 2023 in Hybrid Mode at Jaypee Institute of Information Technology, Noida, India. The theme of the conference was “Innovative Advancements in Biotechnology and Bioinformatics”. With this in mind, it aimed to promote and inculcate an innovative and inventive way of thinking among the participants. This conference provided a stage for the budding researchers to showcase their novel ideas, as well as, a platform for globally acclaimed scientists to discuss their findings and the future of the industry. Promoting and encouraging dialogue on all kinds of relevant scientific ideas and research was the key pillar of this conference. In addition, numerous participants from all over the world presented their posters and research presentations across a wide array of topics related to Biotechnology and Bioinformatics.



# UPCOMING EVENTS

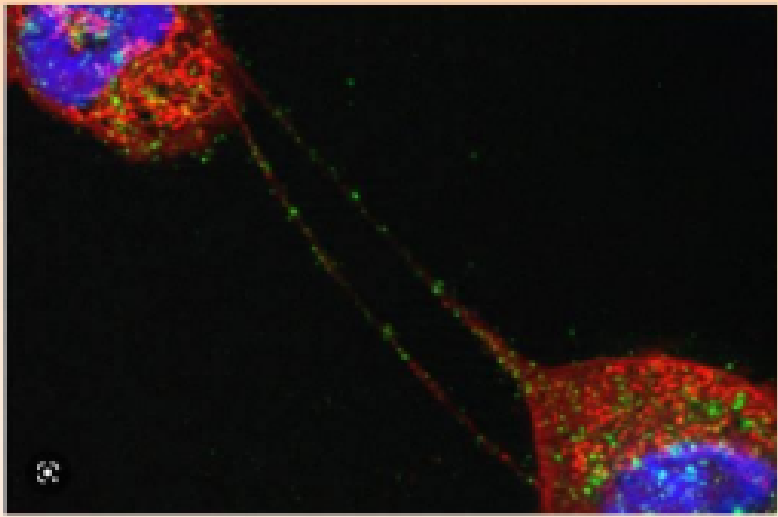
**One-week International FDP on “Advancements and innovations in Cellular communication and Signal Transduction”**

**July 17, 2023 - July 20, 2023**



The poster features a light orange background with a white border. At the top right is the JIIT logo, which includes a stylized lamp and the text 'JIIT' and 'JAY PEE INSTITUTE OF INFORMATION TECHNOLOGY'. The main text is centered and reads: 'One week International FDP on “Advancements and innovations in Cellular communication and Signal Transduction”' in purple, '17-22 July 2023' in red, and 'Organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida' in black. At the bottom is a fluorescence microscopy image of two cells connected by a thin channel, with blue, red, and green fluorescent markers. A small circular logo is in the bottom left corner of the image.

**One week International FDP on  
“Advancements and innovations in Cellular communication  
and Signal Transduction”  
17-22 July 2023  
Organized by  
Department of Biotechnology, Jaypee Institute of Information Technology, Noida**







# CELEBRATIONS CORNER





# NAVRATRI



The Department of Biotechnology at JIIT Noida hosted a lively Navratri celebration to honor the nine-day festival dedicated to Goddess Durga. The event brought together faculty, and staff. It provided a great opportunity for everyone to immerse themselves in the festive spirit and learn about the cultural significance of Navratri. The celebration was a great success and left everyone feeling happy and rejuvenated

# DIWALI



The Department of Biotechnology at JIIT Noida hosted a vibrant Diwali celebration to commemorate the festival of lights. The event brought together faculty, staff, and students to light diyas, enjoy traditional food, and share stories of Diwali. It provided a great opportunity for everyone to experience the festive spirit and learn about the cultural significance of Diwali. The celebration was a great success and left everyone feeling joyful and optimistic.

# NEW YEAR

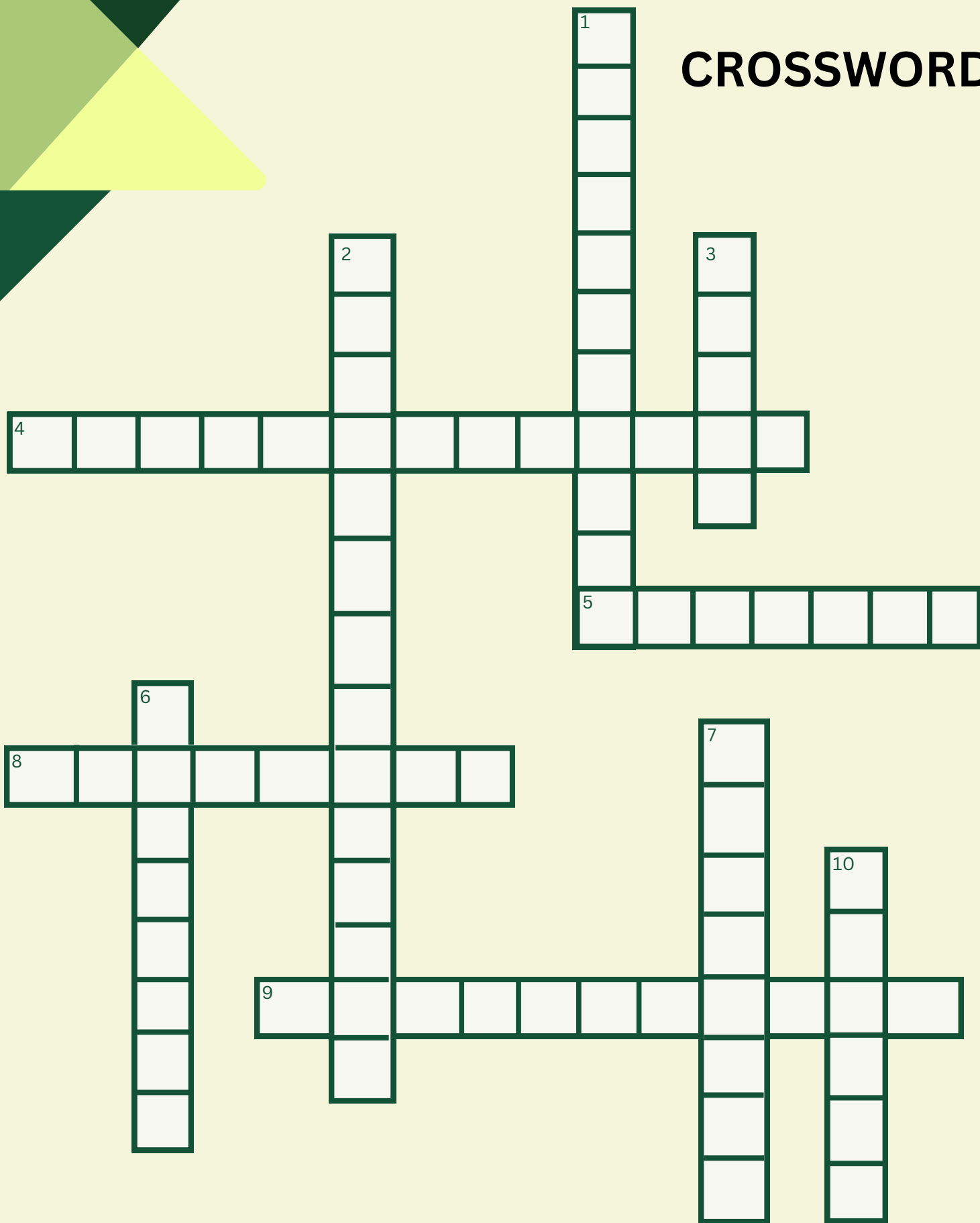


The Department of Biotechnology at JIIT Noida hosted a delightful New Year lunch to welcome the start of 2023. The event brought together faculty, staff, and students to celebrate and indulge in delicious food. It provided a great opportunity for everyone to socialize and share their new year's resolutions. The lunch was a great success and left everyone feeling energized for the upcoming year.





# CROSSWORD





## **INSTRUCTIONS**

Follow the clues below and fill in the words to solve the puzzle. Letters are shared when the words intersect.

### **ACROSS**

4. Bacteria having clusters of flagella at both poles of cells.
5. Excised piece of leaf or stem tissue used in micropropagation.
8. Viral genome integrated into bacterial chromosome during the lysogenic cycle to form \_\_\_\_\_.
9. Plasmids that carry *tra* genes.

### **DOWN**

1. When an organism has a life cycle with alternation of generations, the haploid generation is called \_\_\_\_\_.
2. The degradation of toxic pollutants into nontoxic substances mediated by microbial enzymes.
3. An obligate intracellular parasite that depends on its host's cell for all aspects of its reproduction.
6. Protozoa that eat other organisms are called \_\_\_\_\_.
7. The homologous chromosomes follow the process of synopsis in this stage.
10. A condition with decreased number of healthy red blood cells.



# INTERNSHIPS

S. No	Name	Duration	Link
1	Winter Internship Program, IISER Bhopal	4 weeks	<a href="http://internship.iiserb.ac.in/">internship.iiserb.ac.in/</a>
2	Internship 2022, IASST Guwahati	2 months	<a href="http://iasst.res.in/web/">iasst.res.in/web/</a>
3	Internship Programme, PII Coonoor	1 year - 2 years	<a href="http://pasteurinstituteindia.com/">pasteurinstituteindia.com/</a>
4	Project Training Programme, NCCS Pune	5 months - 10 months	<a href="http://nccs.res.in/Career/2">nccs.res.in/Career/2</a>
5	FSSAI Internship Scheme, FSSAI New Delhi	2 months - 6 months	<a href="http://www.fssai.gov.in/">www.fssai.gov.in/</a>
6	Student Internship, ICAR-IGFRI Jhansi	2 months	<a href="http://igfri.icar.gov.in/">igfri.icar.gov.in/</a>
7	Student Intern/Trainee, NIPGR New Delhi	2 months	<a href="http://nipgr.ac.in/">nipgr.ac.in/</a>
8	Student Intern, CSIR-IMTECH Chandigarh	2 months	<a href="http://www.imtech.res.in/">www.imtech.res.in/</a>
9	Summer Training, CSIR-CCMB Hyderabad	2 months	<a href="http://www.ccmb.res.in/">www.ccmb.res.in/</a>
10	Student Internship, CSIR-IGIB New Delhi	up to 1 year	<a href="http://www.igib.res.in/">www.igib.res.in/</a>

# SCIENTIFIC NEWS

## **Environmental Release of Genetically Engineered Mustard Hybrid (DMH-11) Developed at University of Delhi Approved**

Link for news:

[http://www.du.ac.in/index.phpmact=News,cntnt01,detail,0&cntnt01articleid=6778  
&cntnt01returnid=21](http://www.du.ac.in/index.phpmact=News,cntnt01,detail,0&cntnt01articleid=6778&cntnt01returnid=21)

9



# SCIENTIFIC NEWS

**NATIONAL GREEN HYDROGEN MISSION (Mission will help in India becoming energy independent and in Decarbonisation of major sectors of the economy)**

Link for news:

[https://mnre.gov.in/hydrogen\\_energy\\_government\\_of\\_india](https://mnre.gov.in/hydrogen_energy_government_of_india)



# SCIENTIFIC NEWS

**Tribal Woman's Mission To Preserve Millets Praised By PM Modi** Lahari Bai, who belongs to the Baiga tribe from the Dindori district, has collected over the past decade dozens of varieties of millets and setup a local seed bank.

Link for news: <https://www.ndtv.com/india-news/tribal-womans-mission-to-preserve-millets-praised-by-pm-modi-3780803>



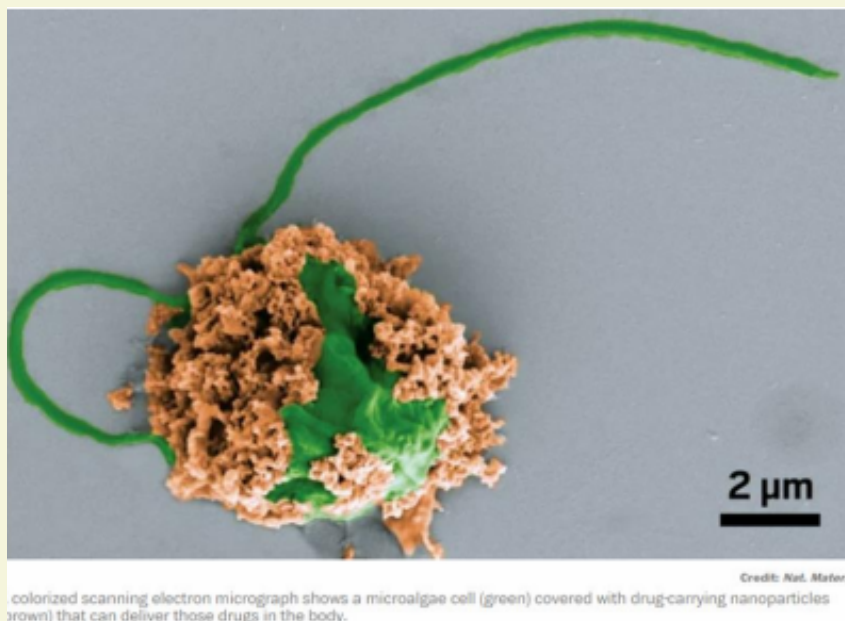


# SCIENTIFIC NEWS

## 4. Algae micromotors join the ranks for targeted drug delivery Microalgae swim long and fast to deliver drugs in the lungs and GI tracts of mice

Link for news: [https://cen.acs.org/biologicalchemistry/biotechnology/Algae-micromotors-join-ranks-targeted/100/web/2022/10#:~:text=Fast%2Dswimming%20algae%20can%20carry,lungs%20to%20treat%20pneumonia%20\(Nat.](https://cen.acs.org/biologicalchemistry/biotechnology/Algae-micromotors-join-ranks-targeted/100/web/2022/10#:~:text=Fast%2Dswimming%20algae%20can%20carry,lungs%20to%20treat%20pneumonia%20(Nat.)

Link of published article: Zhang, F., Zhuang, J., Li, Z. et al. Nanoparticle-modified microrobots for in vivo antibiotic delivery to treat acute bacterial pneumonia. *Nat. Mater.* 21, 1324–1332 (2022). <https://doi.org/10.1038/s41563-022-01360-9>



Colorized scanning electron micrograph shows a microalgae cell (green) covered with drug-carrying nanoparticles (brown) that can deliver those drugs in the body. Credit: *Nat. Mater.*



# COMPETITIVE EXAMS

## ICMR- JRF

Indian Council of Medical Research (ICMR) awards Junior Research Fellowships (JRF) through a national level examination. Usually held once a year in the first or second week of July, the exam awards a total of 150 fellowships, each offering a stipend of INR 31,000, for work in biomedical life sciences and social sciences. The selected awardees are permitted to enroll for the Ph.D. programme, a topic strictly pertaining to ICMR health research of any UGC or MCI recognized University or college.

**Eligibility** – Post graduate in basic science or professional course with 55% marks for General/OBC and 50% marks for SC/ST/PH/VH.


<https://www.icmr.gov.in/>

## DBT JRF

Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India offers Junior Research Fellowships (JRF) with stipend worth INR 31,000. A national level computer-based qualifying examination known as Biotechnology Eligibility Test (BET), conducted by NTA, determines the qualifying fellows. The exam is conducted once a year in April. The shortlisted candidates are eligible to avail benefits at any recognized university/institution across the country for a Ph.D. programme.

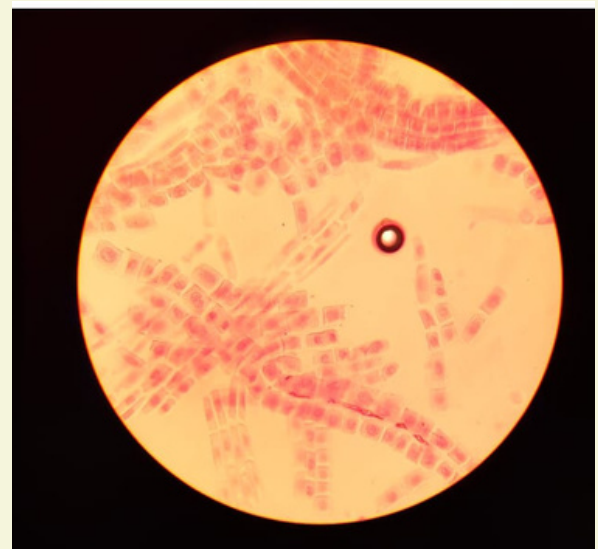
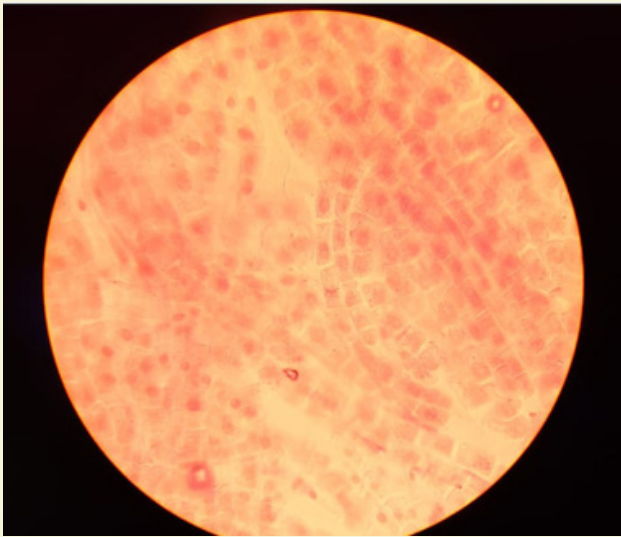
**Eligibility** – Bachelors and Masters in any discipline of biotechnology, life sciences or any other allied areas of biology/life sciences with 60% marks for General/EWS/OBC and 55% marks for SC/ST/Differently Abled.

<https://dbtindia.gov.in/>



# DO YOU KNOW YOUR KOSHIKA?

Identify the different stages of cell cycle in the given cross section images of onion root tip



-Images by Anushka Nayak, B.Tech student,  
taken during Genetics and Developmental Biology Lab



# **EDITORIAL TEAM**

**PROF. PAMMI GAUBA**

**PROF. VIBHA RANI**

**DR. SONAM CHAWLA**

**DR. POOJA CHOUDHARY**

**DR. ANKISHA VIJAY**

**AAYSHA GUPTA**

**MALIKA KAPOOR**

**MUSKAAN DIMRI**

**KINJAL SRIVASTAVA**

**RAJ NANDINI**

**SHRAVYA SHARMA**

**MANYA UPRETI**

**TANYA SRIVASTVA**



**Please give your feedback at:  
[koshika.newsletter@gmail.com](mailto:koshika.newsletter@gmail.com)**





