

# BIOCHEMICAL ENGINEERING AND BIOTECHNOLOGY

IIT DELHI

<https://beb.iitd.ac.in/>



Year End Review 2024 - Highlights



**Department of Biochemical Engineering and Biotechnology  
Annual Report CY 2024**

**Table of Contents**

|   |    |
|---|----|
| 1. Faculty Awards and Recognition .....                                       | 3  |
| 2. Student awards and Recognition .....                                       | 4  |
| 3. Significant Research Activities .....                                      | 6  |
| 4. Scientific articles published in the CY 2024 .....                         | 7  |
| 5. IPR applications filed and technology licenses executed in the CY 2024 ... | 16 |
| 6. Research Grants and Support .....  | 17 |
| 6.1 Intramural Projects awarded in the CY 2024 .....                          | 17 |
| 6.2 Intramural Projects currently under progress .....                        | 18 |
| 6.3 Extramural Projects awarded in the CY 2024 .....                          | 19 |
| 6.4 Extramural Projects currently under progress .....                        | 20 |
| 7. Students who graduated in the CY 2024 .....                                | 22 |
| 7.1 Doctor of Philosophy (PhD) .....  | 22 |
| 7.2 Master of Science (Research) (MSR) .....                                  | 23 |
| 7.3 M.Tech .....  | 24 |
| 7.4 B.Tech .....  | 24 |
| 8. Miscellaneous .....  | 25 |

## 1. Faculty Awards and Recognition

### **Prof. Shilpi Sharma**

1. Research featured as Front Matter in Proceedings of the National Academy of Sciences (121 (46) e2421369121, <https://doi.org/10.1073/pnas.2421369121>)
2. Member of the DBT-RA selection committee, 2024-2025
3. Elected as Fellow, The National Academy of Sciences, India, 2024
4. Mercator Fellow at Technical University of Munich, Germany in the Research Training Group 2679 - Urban Green Infrastructure (1-15<sup>th</sup> July 2024)
5. Selected for the Women Leadership in STEM program 2024 (inaugural cohort), by Grand Challenges India (GCI) (partnership of Department of Biotechnology, Government of India, and Bill and Melinda Gates Foundation) and WomenLift Health, India (<https://www.womenlifthealth.org/southasia-india/2024-women-leadership-in-stem-cohort/>).

### **Prof. Preeti Srivastava**

1. Teaching excellence award, awarded in 2024 by IIT Delhi
2. TATA innovation fellowship awarded in 2024 by Department of Biotechnology, Ministry of Science and Technology, Government of India.

### **Prof. D. Sundar**

1. Faculty Research Award, awarded in 2024 by IIT Delhi
2. Outstanding Contribution Award, Asia Pacific Biochemical Technology and Drug Discovery (BT&D2) Alliance [APBA], Taiwan

### **Prof. Ritu Kulshreshtha**

1. CSIR ASPIRE Awardee, 2024
2. Appointed as member of the Selection committee for the Fulbright-Nehru Postdoctoral Research Fellowships (USIEF)
3. Appointed as member of the Expert Committee for QUAD fellowships
4. Indian Society for Extracellular Vesicles (InSEV)- Executive Committee Member

## 2. Student Awards and Recognition

### Adhiraj Goel (BTech, 2024 Passing Batch)

1. **Institute Silver Medal** for BTech in Biochemical Engineering and Biotechnology

### Pranjalee Pankaj Raj

1. **Mrs. Chander Kanta Nanda Excellence Award** for demonstrating excellence in academic and Cultural Activities

### Niraj Gandhi

1. **BOSS Award** for the best hard core experimental/design project

### Tathagat Sah, M.Tech 2023-25 Batch.

1. Awarded the **Reliance Foundation Postgraduate Scholarship** for the year 2023-2024 with an additional support of **₹6 lakhs**. [Link to Post](#)
2. **Impact Challenge winner** at Harvard Project for Asian and International Relations (HPAIR) Asia Conference 2024 hosted by Banpu NEXT Company Limited held in Bangkok, Thailand. [Certificates](#), [Impact Challenge Case](#)

### Dr. Soumya Rajpal (PhD) Supervisor- Prof. Prashant Mishra

1. **Prof. T.K. Ghose Memorial Award for Best PhD thesis** in the area of Biochemical Engineering and Biotechnology. She received the award jointly with Dr. Sumit Sharma (CRDT)

### Distinction in Doctoral Research

#### 1. Indranil Mondal (PhD)- Supervisor- Prof. Ritu Kulshreshtha

Thesis Topic- miRNA therapy for Glioblastoma Treatment

#### Nidhi Nitin Patil (Ph.D.)- Supervisor- Prof. Preeti Srivastava

1. Won best “**3 minute thesis**” in Research communication award 2024 and a cash prize worth INR 25,000, in March 2024
2. Won “**Best poster award**” for her poster entitled “Biological synthesis of porous carbon for varied applications” in the International symposium on advanced materials for sustainable energy applications (2025) Department of Material Science and Engineering, IIT Delhi, in January 2025.
3. Was awarded a **travel grant** by the Department of Science and Technology, Government of India for attending the American Society of Microbiology conference, in June 2024 in Atlanta, USA, June 2024
4. “**Best oral presentation**”, Biosphere, 2024.

#### Aditi Keshav (Ph.D.) Supervisor- Prof. Preeti Srivastava

1. Won the “**best poster prize**” by the RSC (Royal Society of chemistry) Advances, At the International conference on Innovations in Biotechnology for Sustainability at JNU, New Delhi, November 2024.

#### Asheemita Bagchi (Ph.D.) Supervisor- Prof. Preeti Srivastava

1. Was awarded the **DBT-CTEP Travel grant** by the Department of Biotechnology, Government of India, for attending the International Union of Microbiological Societies, in Florence, Italy, in October 2024.

### Deva S (Ph.D.)

1. Participated in the Open House - 2024 IIT Delhi held on 9<sup>th</sup> November 2024 for poster presentation and won a cash reward of Rs. 10,000.

**Shriya Grover (Ph.D) Supervisor- Prof Lucinda E Doyle**

1. Selected to participate in **SCELSE Summer course** 2024 on Biofilms at NTU Singapore (24th June-12th July 2024)

**Shubham Sharma (Ph.D) Supervisor- Prof. Prashant Mishra**

1. Joined in INTPART 2024 **Student exchange program** for 3 months (from 2nd September to 28th November, 2024) at University of Tromsø, Tromsø, Norway

**Rashi Tyagi (Ph.D.) Supervisor- Prof. Shilpi Sharma**

1. Selected by the University of Fribourg, Switzerland for a **5 month internship** (June – October 2024).

**Kolli Venkata Supraja (Ph.D) Supervisor- Prof. Ziauddin A Shaikh & Prof. Rohan Jain**

1. Selected by Indo-German Science and Technology Centre (IGSTC) for a **6 month Ph.D Industrial exchange program** to Germany (September 2024 - February 2025).

**Ravi Raj Singh (Ph.D.) Supervisor- Prof. Ritu Kulshreshtha and Prof. Amirali Popat**

1. **Best Oral Presentation Prize** in DBT sponsored National Symposium by Sharda University, 2024
2. **Best Research Scholar Award** conferred by Samagra Vikas Welfare Society (SVWS), Januray, 2025 for overall accomplishment and achievements in the field of Biotechnology and Allied Sector, Dec, 2024

**Ritanksha Joshi (PhD) Supervisor- Prof. Ritu Kulshreshtha**

1. **Travel Grant-** Non-Coding RNA world- Exploring mechanisms, designing medicine held in Basel, Switzerland, 7<sup>th</sup>-9<sup>th</sup> October, 2024
2. Won best “**3 Minute Thesis**” in Research communication award 2024 and a cash prize worth INR 25,000, in March 2024
3. **Best Poster Prize**, Biosphere, 2024

**Garima Yadav (PhD) Supervisor- Prof. Ritu Kulshreshtha**

1. Selected for **India Connect Internship programme** at Nanyang Technological University (Singapore), January-May, 2024

**Deepshikha Shahdeo (Ph.D.) Supervisor- Prof. Ritu Kulshreshtha and Prof. Amirali Popat**

1. **Best HDR (Higher Degree by Research) presentation** in Drug Delivery Conference, Melbourne
2. **Top finalist** in International Conference in Drug Delivery Australia (DDA), Malaysia

### 3. Significant Research Activities

#### 1. Completion of sequencing of 10,000 Genomes of Indian Population as part of the 'GenomeIndia' project

The Union Minister of State (Independent Charge) for Science and Technology, Dr. Jitendra Singh, announced the "Completion of Sequencing of 10,000 Genomes of Indian Population" on February 27, 2024. The pan-India initiative by the Department of Biotechnology (DBT), Government of India (<https://genomeindia.in>), is focused on whole-genome sequencing to identify genetic variations among 10,000 healthy individuals from various ethnic groups, setting the stage for breakthroughs in Precision Healthcare and Personalized Medicine.

**Prof. D. Sundar** (Principal Investigator) and **Prof. Ishaan Gupta** (Co-Principal Investigator) from IIT Delhi's Department of Biochemical Engineering and Biotechnology played a significant role as key data science partners in the 'GenomeIndia' project. PhD student at IIT Delhi, Nirmal Singh Mahar, also contributed significantly to the project. This is a multi-institution consortium project involving 20 institutions across the country, and IIT Delhi is excited to be contributing to the development of algorithms and pipelines for de novo assembly of the mitochondrial genome. The IIT Delhi team aims to generate the Indian mitochondrial genome reference to help in enumerating variation, identifying mitochondrial disorders, and tracing the genetic history of the Indian subcontinent.



#### 2. Work from Prof. Ritu Kulshreshtha's group was featured in the High Impact Publications and International Research Story of IIT Delhi

##### Nanomedicine And Gene Therapy To Treat Glioblastoma

Treating Glioblastoma using ultrasmall mesoporous silica nanoparticles for co-delivery of therapeutic antisense oligonucleotides

Glioblastoma (GBM) is one of the most lethal and malignant forms of cancer affecting the central nervous system, with a very poor prognosis and high post-diagnosis mortality. Global statistics indicate that it affects, on average, 3-4 people/100,000 population with a median survival of not more than ~15 months following surgery, chemotherapy, and radiation therapy. Conventional treatment options have failed to help clinicians eradicate the tumour and provide relief and comfort to GBM patients and their loved ones. New gene therapy treatment options such as co-targeting oncogenic microRNA known to promote cancer progression can help target the GBM at the molecular level. However, oligonucleotide therapy comes with its own challenges, such as degradation by enzymes in blood serum and off-target effects. We sought to address such challenges by engineering ultra-small delivery carriers. These nanomachines can safely transport cancer-killing oligonucleotides, keeping them safe, hidden, and wrapped till they reach the targeted location within the tumour core and disrupt them from within their engineered safe zone.

- Targeting smart and notorious criminals like GBM needs cops like antisense oligonucleotides with smart strategies such as ultra-small nanocarriers to hit them to their core.
- With the help of these molecular cops, we were able to arrest criminals like GBM and put them behind bars with a ~40% reduction in GBM tumour spheroid growth and tumorigenesis potential.

**Prof. Ritu Kulshreshtha**  
Department of Biochemical Engineering and Biotechnology

**Dr. Anirudh Popat**  
Professor and Director of Research, School of Pharmacy,  
The University of Queensland

##### MicroRNA therapeutics and nanomedicine for brain tumor treatment

Engineering Nanocarrier-mediated Co-Targeting of Dysregulated MicroRNAs Using Antisense Oligonucleotides (ASOs) to treat Glioblastoma (GBM)

Glioblastoma (GBM) is an aggressive malignancy of the central nervous system (CNS) that remains incurable despite the improvements in cancer therapeutics. The conventional chemo- and post-surgery radiotherapy have only been able to improve the prognosis slightly; however, the development of resistance and/or tumour recurrence is almost inevitable. Thus, there is a pressing need for adjuvant molecular therapies that can successfully and efficiently block tumour progression. Research has validated the therapeutic potential of several types of ncRNAs, including miRNAs, lncRNAs, and circRNAs, in both *in vitro* and *in vivo* models of GBM, and shown microRNAs such as miR-210 to be a prognostic marker regulating different hallmarks of gliomagenesis. However, the delivery of these RNA-based therapeutics is highly challenging, especially to the tumours of the brain, as the blood-brain barrier (BBB) poses a major obstacle, among others. Also, since RNA is extremely fragile in nature, designing a delivery agent requires meeting careful considerations. Smart nanomaterials such as transglutaminase nanoflowers (TGNF) and surface-modified ultra-small mesoporous materials can aid in the safe and targeted delivery of nucleic acids to treat GBM, overcoming the limitations of conventional therapy.

**Singh, Ravi Raj ; Mondal, Indranil ; Janjua, Taskesh ; Popat, Anirudh ; Kulshreshtha, Ritu ;** Engineered smart materials for RNA based molecular therapy to treat Glioblastoma, 2024; *Bioactive Materials*, 33, 396-423

#### 4. Scientific articles published in the CY 2024

\* equal contribution

1. AK Subudhi, JL. Green, R Satyam, RP. Salunke, T Lenz, M Shuaib, I Isaioglou, S Abel, M Gupta, L Esau, T Mourier, R Nugmanova, S Mfarrej, R Shivapurkar, Z Stead, F B Rached, Y Ostwal, R Sougrat, A Dada, AF. Kadamany, W. Fischle, J. Merzaban, E. Knuepfer, DJP. Ferguson, **I Gupta**, KG. Le Roch, AA. Holder & A Pain. DNA-binding protein Pfap2-p regulates parasite pathogenesis during malaria parasite blood stages. *Nature Microbiology*, pages 1–16, 2023.
2. A. Santhosh, A. Sharma, S. Bakhshi, A. Kumar, V. Sharma, P. S. Malik, R. Pramanik, A. Gogia, C. P. Prasad, T. Sehgal, S. Gund, A. Dev, W. Y. Cheung, R. Pandey, S. Kumar, **I. Gupta**, A. Batra. Topical diclofenac for prevention of capecitabine-associated hand-foot syndrome: A double-blind randomized controlled trial. *Journal of Clinical Oncology*, 42(15):1821–1829, 2024.
3. A. K. Mukherjee, S. Dutta, A. Singh, S. Sharma, S. S. Roy, A. Sengupta, M. Chat- terjee, S. Vinayagamurthy, S. Bagri, D. Khanna, M. Verma, D. Soni, A. Budharaja, S. K. Bhisade, Vivekanand, A. Perwez, N. George, M. Faruq, **I. Gupta**, R. Sabarinathan, and S. Chowdhury. Telomere length sensitive regulation of interleukin receptor 1 type 1 (il1r1) by the shelterin protein trf2 modulates immune signalling in the tumour microenvironment. *ELife* Nov. 2024.
4. N. S. Mahar, S. Kohli, B. Biswas, I. Xess, A. Thakur, and **I. Gupta**. Complete genome assembly of *Candida auris* representative strains of three geographical clades. *Microbiology Resource Announcements*, 13(10):e00882–23, 2024.
5. P. Gupta, H. O’Neill, E. Wolvetang, A. Chatterjee, and **I. Gupta**. Advances in single-cell long-read sequencing technologies. *Nucleic Acid Research GAB*, 6(2):lqae047, 05 2024.
6. S. Das, **I. Gupta**, and S. Singh Bahga. Universal correlation for the criti- cal diameter of deterministic lateral displacement devices with polygonal posts. *Biomicrofluidics*, 18(4):044104, 07 2024.
7. M. Birla, Rajan, P. G. Roy, **I. Gupta**, and P. S. Malik. Integrating ai-driven wearable technology in oncology decision making: A narrative review. *Oncology*, July 2024.
8. Tanwar, P; Bhattacharya, D; Dasari, A; Bijwe, M; Rana, R; **Gupta, I\***; Minocha, S\*. Dynamic gene expression pattern in zebrafish gallbladder - an experimental study. *International Journal of Surgery*:10.1097/JS9.0000000000002135, November 22, 2024.
9. Juwayria, P. Shrivastava, K. Yadav, S. Mittal, S. Kumar, D. Jain, P.M. Malik, **I. Gupta**. Microarray integrated spatial transcriptomics (MIST) for affordable and robust digital pathology. *Nature Partner Journals Systems Biology and Applications* 10, 142 (2024). <https://doi.org/10.1038/s41540-024-00462-1>
10. S. Seal, D. N. Basu, K. Ghosh, A. Ramachandran, R. Kutum, T. Shelke, **I. Gupta**, and I. Khan. Pathogen growth and virulence dynamics drive the host evolution against coinfections. bioRxiv, 2024, <https://www.biorxiv.org/content/early/2024/05/04/2024.05.01.592035.full.pdf>
11. P. Prakrithi, T. Vo, H. Vu, Z. Xiong, L. Nguyen, A. Newman, V. Whitehall, J. L. Gonzalez Cruz, **I. Gupta\***, and Q. Nguyen\*. Unraveling Incrna diversity at a single cell resolution and in a spatial context across different cancer types. bioRxiv, 2024, <https://www.biorxiv.org/content/early/2024/10/02/2024.08.12.607523.full.pdf>.
12. S. Kohli, D. Abhilash, Hemlata, P. P. Srivastava, V. Kumar, S. Minocha, and **I. Gupta**. Discovery of novel long non-coding RNAs with potential role in zebrafish brain regeneration. bioRxiv, 2024, <https://www.biorxiv.org/content/early/2024/07/15/2024.06.03.597135.full.pdf>.
13. S. Srivastava, R. Tyagi, **S. Sharma** (2024) Seed biopriming as a promising approach for stress tolerance and enhancement of crop productivity: A review. *Journal of the Science of Food and Agriculture*, 104: 1244-1257. <https://doi.org/10.1002/jsfa.13048>
14. A. Sharma, B. Gupta, A. Ghosh, **S. Sharma**, A. J. Rodriguez-Morales, A. Zumla, Z. A. Memish (2024) Raising awareness and mitigating risk of transmission of antimicrobial resistance during the upcoming 2024 Gangasagar religious mass gathering. *New Microbes and New Infections*, 56: 10121. <https://doi.org/10.1016/j.nmni.2023.101213>.

15. S. Khatri, A. Bhattacharjee, Y. S. Shivay, **S. Sharma** (2024) Transplantation of soil from organic field confers disease suppressive ability to conducive soil. *World Journal of Microbiology and Biotechnology*, 40: 112. <https://doi.org/10.1007/s11274-024-03895-2>
16. V. L. Shrivastava, A. K. Choudhary, S. Shidture, A. Rambia, P. Hariprasad, A. Sharma, **S. Sharma** (2024) Organic amendments modulate the crop yield and rhizospheric bacterial community diversity: A three-year field study with *Cajanus cajan*. *International Microbiology*, 27: 477-490. <https://doi.org/10.1007/s10123-023-00396-4>
17. V. L. Shrivastava, A. K. Choudhary, A. Dass, P. Hariprasad, **S. Sharma** (2024) Impact of different farming practices on soil nutrients and functional bacterial guilds in pigeonpea-wheat crop rotation. *Journal of Soil Science and Plant Nutrition*, 24: 684-699. DOI: [10.1007/s42729-023-01575-y](https://doi.org/10.1007/s42729-023-01575-y)
18. A. Dutta, R. Tyagi, A. Chattopadhyay, D. Chatterjee, A. Sarkar, B. Lall, **S. Sharma** (2024) Early detection of wilt in *Cajanus cajan* using satellite hyperspectral images: Development and validation of disease-specific spectral index with integrated methodology. *Computers and Electronics in Agriculture*, 219: 108784. <https://doi.org/10.1016/j.compag.2024.108784>
19. A. S. F. Araujo, A. P. de Araujo Pereira, D. P. da Costa, E. V. de Medeiros, F. F. Araujo, **S. Sharma**, L. W. Mendes (2024) Enhancing plant resilience to pathogens through strategic breeding: Harnessing beneficial bacteria from the rhizosphere for progeny protection. *Rhizosphere*, 30: 100890. <https://doi.org/10.1016/j.rhisph.2024.100890>
20. V. L. Shrivastava, A. K. Choudhary, P. Hariprasad, **S. Sharma** (2024) Transmission of antibiotic resistance through organic amendments in arable land: A 3-year field study with pigeonpea-wheat cropping system. *Journal of Hazardous Materials*, 471: 134378. <https://doi.org/10.1016/j.jhazmat.2024.134378>
21. S. Khatri, P. Sazinas, M. L. Strube, L. Ding, S. Dubey, Y. S. Shivay, **S. Sharma**, L. Jelsbak (2024) *Pseudomonas* is a key player in conferring disease suppressiveness in organic farming. *Plant and Soil*, 503: 85-104. <https://doi.org/10.1007/s11104-023-05927-6>
22. S. Dixit, S. Varshney, D. Gupta, **S. Sharma** (2024) Factors affecting biofilm formation by bacteria on fabrics. *International Microbiology*, 27: 1111-1123. <https://doi.org/10.1007/s10123-023-00460-z>
23. A. Dutta, R. Tyagi, **S. Sharma**, M. Datta (2024) Hyperspectral reflectance assessment for preliminary identification of degraded soil zones in industrial sites, India. *Photogrammetric Engineering & Remote Sensing*, 90: 503-509. doi: [10.14358/PERS.24-00005R2](https://doi.org/10.14358/PERS.24-00005R2)
24. P. Chaudhary, A. Bhattacharjee, S. Khatri, R. Dalal, P. Kopittke, **S. Sharma** (2024) Delineating the soil physicochemical and microbiological factors conferring disease-suppression in organic farms. *Microbiological Research*, 289: 127880. <https://doi.org/10.1016/j.micres.2024.127880>
25. S. Srivastava, A. Bhattacharjee, S. Dubey, **S. Sharma** (2024) Bacterial exopolysaccharide amendment improves the shelf life and functional efficacy of bioinoculant under salinity stress. *Journal of Applied Microbiology*, 135: 1xae166. <https://doi.org/10.1093/jambio/1xae166>
26. A. S. F. Araujo, **S. Sharma**, J. P. Pinheiro, A. C. de Almeida Lopes (2024) Beyond plant genetics: Microbiome enhancing heterosis in plants. *Trends in Plant Science*, *In Press*. <https://doi.org/10.1016/j.tplants.2024.07.015>
27. R. Devrani, P. Vangla, **S. Sharma** (2024) Exploring the potential of native urease-producing bacteria of hilly terrain for soil strength enhancement. *Geomicrobiology Journal*, 41: 818-829. <https://doi.org/10.1080/01490451.2024.2388823>



28. T. Northen, M. Kleiner, M. Torres, Á. T. Kovács, M. Nicolaisen, D. Krzyżanowska, **S. Sharma**, G. Lund, L. Jelsbak, O. Baars, N. Kindtler, K. Wippel, C. Dinesen, J. Ferrarezi, M. Marian, A. Pioppi, X. Xu, T. A. Andersen, N. Geldner, P. Schulze-Lefert, J. Vorholt, R. Garrido-Oter (2024) Community standards and future opportunities for synthetic communities in plant-microbiota research. **Nature Microbiology**, 9: 2774-2784 <https://doi.org/10.1038/s41564-024-01833-4>
29. Priyanka, S. Kumar, **S. Sharma** (2024) Development of bacterial bioformulations using response surface methodology. *Journal of Applied Microbiology*, *In Press*. <https://doi.org/10.1093/jambio/lxae263>
30. **S. Sharma** (2025) Crafting friendly microbiomes as plant bodyguards against pests. **Trends in Plant Science**, *In Press*. <https://doi.org/10.1016/j.tplants.2024.10.001>
31. S. Dixit, S. Rai, D. Gupta, **S. Sharma** (2024) Biofilm formation on different fabrics in the presence of sweat. *Indian Journal of Microbiology*, *In Press*. <https://doi.org/10.1007/s12088-024-01409-0>
32. **S. Sharma**, A. S. F. Araujo (2024) Microbial crosstalk: decoding interactions to generate efficient SynComs. **Trends in Plant Science**, *In Press*.
33. S. Mondal, M. Karande, S. Srivastava, A. Sharma, **S. Sharma**, A. Ghosh (2024) Unravelling the microbiome perspective to variations in tea metabolome. *Industrial Crops and Products*, *In Press*.
34. Mukherjee, D., & **Doyle, L. E.** (2025). Electrochemical enrichment of a community of weak electricigens and characterisation of three halotolerant electroactive isolates: *Micrococcus* sp. YH-1, *Gordonia* sp. RH-1 and *Stutzerimonas* sp. CH-1, **Electrochimica Acta**, 510, 145350.
35. Grover, S. and **Doyle, L.E.** 2024. Advanced Electrode Materials for Microbial Extracellular Electron Transfer, **Trends in Chemistry**, 6(3), 144-158.
36. Parwin, S. and **Srivastava, P.** (2024) Role of orphan ParA proteins in replication and cell division in *Rhodococcus erythropolis* PR4. *Journal of basic microbiology*. 3:e2400428
37. Bagchi, A. and **Srivastava, P.** (2024) Genetic and metabolic engineering approaches for enhanced biodesulfurization of petroleum fractions. *Frontiers in Bioengineering and Biotechnology*. 12:1482270.
38. Kumar, A., Jain, D., **Srivastava, P.** and Nebhani, L. (2024) Solvent-responsive macroporous polymer gel possessing inherent antimicrobial activity based on quaternized 2-(methyl(pyridine-4-yl) amino)ethyl methacrylate. *ACS Applied Polymer materials*. 6, 17, 10218–10228,
39. Deedwania, A., Karmakar, S., Kumar, S., Shefrin, S., Sundar. D. and **Srivastava, P.** (2024). Construction and characterization of a temperature sensitive pRC4 replicon for *Rhodococcus* and *Gordonia*. *Gene* 896, 147990.
40. Mondal I., Gupta N., Sharma V., Sarkar C., Mishra D.P., **Kulshreshtha R.** ALDH5A1/miR-210 axis plays a key role in reprogramming cellular metabolism and has a significant correlation with glioblastoma patient survival (2024) *Cancer Cell International*, 24 (1), art. no. 259, Cited 0 times. DOI: 10.1186/s12935-024-03432-z <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85199160410&doi=10.1186%2fs12935-024-03432-z&partnerID=40&md5=5f9d062719838d49006bbfa94f5ce765>
41. Taneja N., Chauhan A., **Kulshreshtha R.**, Singh S. HIF-1 mediated metabolic reprogramming in cancer: Mechanisms and therapeutic implications (2024) *Life Sciences*, 352, art. no. 122890, Cited 0 times. DOI: 10.1016/j.lfs.2024.122890 <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85197515579&doi=10.1016%2fj.lfs.2024.122890&partnerID=40&md5=c7fc434749fe1de62bbc6a7885c45f25>

42. Sharma V., Vinchure O.S., Yadav G., Sarkar C., **Kulshreshtha R.** A novel interplay between PRC2 and miR-3189 regulates epithelial–mesenchymal transition (EMT) via modulating COL6A2 in glioblastoma (2024) *Journal of Cellular Physiology*, 239 (8), art. no. e31326, Cited 0 times. DOI: 10.1002/jcp.31326  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85195580179&doi=10.1002%2fjcp.31326&partnerID=40&md5=dfd8a8a69c76505fde394caea419b4a2>
43. Joshi R., Sharma A., **Kulshreshtha R.** Noncoding RNA landscape and their emerging roles as biomarkers and therapeutic targets in meningioma (2024) *Molecular Therapy Oncology*, 32 (1), art. no. 200782, Cited 3 times. DOI: 10.1016/j.omton.2024.200782  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203834098&doi=10.1016%2fj.omton.2024.200782&partnerID=40&md5=ec503c97b727ca61bd3dfea758df82b3>
44. Bisht A., Dey S., **Kulshreshtha R.** Integrated meta-analyses of genome-wide effects of PM2.5 in human cells identifies widespread dysregulation of genes and pathways associated with cancer progression and patient survival (2024) *Science of the Total Environment*, 938, art. no. 173448, Cited 1 times. DOI: 10.1016/j.scitotenv.2024.173448  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85194559337&doi=10.1016%2fj.scitotenv.2024.173448&partnerID=40&md5=ac7e228649c764f902e4cbb60648a45>
45. Singh R.R., Mondal I., Janjua T., Popat A., **Kulshreshtha R.** Engineered smart materials for RNA based molecular therapy to treat Glioblastoma (2024) *Bioactive Materials*, 33, pp. 396 - 423, Cited 11 times. DOI: 10.1016/j.bioactmat.2023.11.007  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85181704372&doi=10.1016%2fj.bioactmat.2023.11.007&partnerID=40&md5=7cbfc6309dda933a6f2ec1019f81cedf>
46. Yadav G., **Kulshreshtha R.** Pan-cancer analyses identify MIR210HG overexpression, epigenetic regulation and oncogenic role in human tumors and its interaction with the tumor microenvironment (2024) *Life Sciences*, 339, art. no. 122438, Cited 1 times. DOI: 10.1016/j.lfs.2024.122438  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184286587&doi=10.1016%2fj.lfs.2024.122438&partnerID=40&md5=3f670367ec05ea83698f08d98c06d426>
47. Rajpal S., Batista A.D., Groß R., Münch J., Mizaikoff B., **Mishra P.** Rational design based on multi-monomer simultaneous docking for epitope imprinting of SARS-CoV-2 spike protein (2024) *Scientific Reports*, 14 (1), art. no. 23057, Cited 1 times. DOI: 10.1038/s41598-024-73114-3  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205799586&doi=10.1038%2fs41598-024-73114-3&partnerID=40&md5=892f8978350002f456559e5887ac1437>
48. Saha A., **Mishra P.**, Biswas G., Bhakta S. Greening the pathways: a comprehensive review of sustainable synthesis strategies for silica nanoparticles and their diverse applications (2024) *RSC Advances*, 14 (16), pp. 11197 - 11216, Cited 4 times. DOI: 10.1039/d4ra01047g  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189757131&doi=10.1039%2fd4ra01047g&partnerID=40&md5=11d27e8124fb7fae74fdb8e896f3ae4a>
49. Yadav V.K., Pathak P., Ganguly P., **Mishra P.**, Das S., Mallick D. Infrared-Driven Rapid Quantification of Magnetophoretically Trapped Drug (2024) *Journal of Microelectromechanical Systems*, 33 (2), pp. 127 - 129, Cited 1 times. DOI: 10.1109/JMEMS.2024.3365538  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85186086439&doi=10.1109%2fJMEMS.2024.3365538&partnerID=40&md5=1f5328bfd6095e51514b5b2ed342fe46>

50. Deshwal A., Tripathi R.M., Saxena K., Sheikh F.A., **Mishra P.** Auriferous nanozymes: advances in diagnostic and therapeutic applications (2024) *Nanotechnology*, 35 (50), art. no. 502003, Cited 0 times. DOI: 10.1088/1361-6528/ad7f5d  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85206019094&doi=10.1088%2f1361-6528%2fad7f5d&partnerID=40&md5=69f7a977b91a4a5853854965ea84909b>
51. Yadav S., Kulanthaivel S., **Mishra P.**, Singh J.D. Cytotoxicity assessment of Pt(II) complexes with tridentate organoselenium based ligands against MCF-7 cancer cell line (2024) *Inorganic Chemistry Communications*, 164, art. no. 112441, Cited 0 times. DOI: 10.1016/j.inoche.2024.112441  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191294365&doi=10.1016%2fj.inoche.2024.112441&partnerID=40&md5=f5d706b2f02743400c817d6cb392093f>
52. Sharma S., Kar D., Khanikar P.D., Moudgil A., **Mishra P.**, Das S. Hybrid MoSe<sub>2</sub>/P3HT Transistor for Real-Time Ammonia Sensing in Biofluids (2024) *ACS Applied Materials and Interfaces*, 16 (24), pp. 30648 - 30657, Cited 3 times. DOI: 10.1021/acsami.4c02352  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85195599441&doi=10.1021%2facami.4c02352&partnerID=40&md5=c9015fa2137fcb8df10050fd7f693306>
53. Chand P., Narula K., Vs R., Sharma S., Kumari S., Mondal N., Singh S.P., **Mishra P.**, Prasad T. Mechanistic Insights into Cellular and Molecular Targets of Zinc Oxide Quantum Dots (ZnO QDs) in Fungal Pathogen, *Candida albicans*: One Drug Multi-Targeted Therapeutic Approach (2024) *ACS Infectious Diseases*, 10 (6), pp. 1914 - 1934, Cited 2 times. DOI: 10.1021/acsinfecdis.3c00562  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85195289112&doi=10.1021%2facinfecdis.3c00562&partnerID=40&md5=fb3866f0c9191299780f3e54520e3e67>
54. Narula K., Rajpal S., Bhakta S., Kulanthaivel S., **Mishra P.** Rationally designed protein A surface molecularly imprinted magnetic nanoparticles for the capture and detection of *Staphylococcus aureus* (2024) *Journal of Materials Chemistry B*, 12 (23), pp. 5699 - 5710, Cited 2 times. DOI: 10.1039/d4tb00392f  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193819847&doi=10.1039%2fd4tb00392f&partnerID=40&md5=b372cf0a5be605a37087524686835a02>
55. Rajpal S., Mizaikoff B., **Mishra P.** Rational design of MIPs for the detection of Myxovirus resistance protein A (MxA), a biomarker for viral infection (2024) *International Journal of Biological Macromolecules*, 266, art. no. 131101, Cited 2 times. DOI: 10.1016/j.ijbiomac.2024.131101  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189498152&doi=10.1016%2fj.ijbiomac.2024.131101&partnerID=40&md5=011c53107915b79ca345b206b31971e4>
56. Sharma S., Kar D., Moudgil A., Das S., **Mishra P.** Tungsten oxide thin film field-effect transistor based real-time sensing system for non-invasive oral cancer biomarker detection (2024) *Sensors and Actuators B: Chemical*, 407, art. no. 135486, Cited 5 times. DOI: 10.1016/j.snb.2024.135486  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85187696849&doi=10.1016%2fj.snb.2024.135486&partnerID=40&md5=b0af08c92616cbedfcb7ceb58d4cc3d>
57. Bhardwaj R., **Mishra P.** Multiresponsive Nanoscale Self-Assembly of Azurin-Elastin-like Polypeptide Fusion Protein for Enhanced Prostate Cancer Therapy (2024) *Biomacromolecules*, 25 (1), pp. 508 - 521, Cited 3 times. DOI: 10.1021/acs.biomac.3c01125  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85180111517&doi=10.1021%2fac.biomac.3c01125&partnerID=40&md5=5e5ffa36211bf9a756298240a964477c>
58. Rais A., Sharma S., **Mishra P.**, Khan L.A., Prasad T. Biocompatible carbon quantum dots as versatile imaging nanotrackers of fungal pathogen – *Candida albicans* (2024) *Nanomedicine*, 19 (8), pp. 671 - 688, Cited 1 times. DOI: 10.2217/nnm-2023-0292  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85187785826&doi=10.2217%2fnnm-2023-0292&partnerID=40&md5=6c3cd5daba31b8a1b66f729dafab5bc0>

59. Jaswal A.S., **Elangovan R.**, Mishra S.  
Optimization of dilution rate and mixed carbon feed for continuous production of recombinant plant sucrose:sucrose 1-fructosyltransferase in *Komagataella phaffii* (2024) *Bioprocess and Biosystems Engineering*, 47 (9), pp. 1499 - 1514, Cited 0 times. DOI: 10.1007/s00449-024-03045-w  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85196515219&doi=10.1007%2fs00449-024-03045-w&partnerID=40&md5=53dc22ddc912bdc5ce5668fddff1bc81>
60. Jaswal A.S., **Elangovan R.**, Mishra S.  
Fructooligosaccharides: Production by recombinant fructosyltransferase from *Festuca arundinacea* in a continuous reactor and kinetic modeling profile (2024) *Carbohydrate Polymer Technologies and Applications*, 7, art. no. 100511, Cited 0 times. DOI: 10.1016/j.carpta.2024.100511  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193800791&doi=10.1016%2fj.carpta.2024.100511&partnerID=40&md5=2aba3d2801027239d0d4083b7a1fe162>
61. **Nath S.**  
Size matters in metabolic scaling: Critical role of the thermodynamic efficiency of ATP synthesis and its dependence on mitochondrial H<sup>+</sup> leak across mammalian species (2024) *BioSystems*, 242, art. no. 105255, Cited 4 times. DOI: 10.1016/j.biosystems.2024.105255  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85196151731&doi=10.1016%2fj.biosystems.2024.105255&partnerID=40&md5=1ec0bdb49c6433fbeb846e896de21dae>
62. **Nath S.**, Balling R.  
The Warburg Effect Reinterpreted 100 yr on: A First-Principles Stoichiometric Analysis and Interpretation from the Perspective of ATP Metabolism in Cancer Cells (2024) *Function*, 5 (3), art. no. zqae008, Cited 5 times. DOI: 10.1093/function/zqae008  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85192304144&doi=10.1093%2ffunction%2fzqae008&partnerID=40&md5=fe1f022bccfcef58ba6de05f5714932>
63. **Nath S.**  
Thermodynamic analysis of energy coupling by determination of the Onsager phenomenological coefficients for a 3x3 system of coupled chemical reactions and transport in ATP synthesis and its mechanistic implications (2024) *BioSystems*, 240, art. no. 105228, Cited 4 times. DOI: 10.1016/j.biosystems.2024.105228  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85192765455&doi=10.1016%2fj.biosystems.2024.105228&partnerID=40&md5=5fbd0e25ccf5930351b073fd68fcd740>
64. **Nath S.**  
2-Site versus 3-site models of ATP hydrolysis by F1-ATPase: definitive mathematical proof using combinatorics and conservation equations (2024) *Theory in Biosciences*, 143 (3), pp. 217 - 227, Cited 1 times. DOI: 10.1007/s12064-024-00421-8  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85200048797&doi=10.1007%2fs12064-024-00421-8&partnerID=40&md5=8602530fea8d1358d1abe6f5a11e2b29>
65. **Nath S.**  
Coupling and biological free-energy transduction processes as a bridge between physics and life: Molecular-level instantiation of Ervin Bauer's pioneering concepts in biological thermodynamics (2024) *BioSystems*, 236, art. no. 105134, Cited 8 times. DOI: 10.1016/j.biosystems.2024.105134  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184034625&doi=10.1016%2fj.biosystems.2024.105134&partnerID=40&md5=97c2f07e6c8b1b12d52f1ba18ef0e72d>
66. **Srekrishnan T.R.**  
Foreword(2024) *Solid Waste Management: Volume 2 - Biological/Biochemical Approaches*, pp. iii - iii, Cited 0 times.  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191261487&partnerID=40&md5=45c42e280950f793247e7a5b9864ee18>
67. Bakobie N., Essandoh H.M.K., Oduro-Kwarteng S., Appiah-Adjei K.A., **Ahammad SZ**, Chakma S.

Self-supply groundwater in five communities: Moshie Zongo, Aboabo, Kotei, Ayeduase and Apemso in Kumasi Metropolis, Ghana (2024) *Heliyon*, 10 (1), art. no. e23823, Cited 2 times. DOI: 10.1016/j.heliyon.2023.e23823

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184169298&doi=10.1016%2fj.heliyon.2023.e23823&partnerID=40&md5=e955e9771b1a2bd008d7d2178c4a5c13>

68. Pant A., **Ahammad S.Z.**, Ali S.W.  
Investigating bio-based innovative materials for removing antibiotic resistance genes from wastewater: a comparative study (2024) *Clean Technologies and Environmental Policy*, 26 (6), pp. 1947 - 1963, Cited 1 times. DOI: 10.1007/s10098-023-02694-x  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85182199890&doi=10.1007%2fs10098-023-02694-x&partnerID=40&md5=53dda279a11f9fdea0b904d95beb3f9d>
69. Prasad D.K., Shukla R., **Ahammad S.Z.**  
Antibiotic resistance in the Ganga River: Investigation of antibiotic resistant bacteria and antibiotic resistance genes, and public health risk assessment (2024) *Journal of Environmental Chemical Engineering*, 12 (6), art. no. 114931, Cited 0 times. DOI: 10.1016/j.jece.2024.114931  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85210537276&doi=10.1016%2fj.jece.2024.114931&partnerID=40&md5=39c3f242046451d32f974e4ce8cd23d3>
70. Ashraf M., Guleria A., **Ahammad S.Z.**, Chakma S.  
Implementation of temporal moments to elucidate the reactive transport of metformin and erythromycin in the saturated porous media (2024) *Environmental Science and Pollution Research*, 31 (35), pp. 47801 - 47817, Cited 2 times. DOI: 10.1007/s11356-024-34357-9  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85198537597&doi=10.1007%2fs11356-024-34357-9&partnerID=40&md5=e0ff39d2d65221bea712137edabd13e7>
71. Prasad D.K., Shukla R., **Ahammad S.Z.**  
Pharmaceuticals and personal care products and heavy metals in the Ganga River, India: Distribution, ecological and human health risk assessment (2024) *Environmental Research*, 263, art. no. 119993, Cited 0 times. DOI: 10.1016/j.envres.2024.119993  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85204633598&doi=10.1016%2fj.envres.2024.119993&partnerID=40&md5=e021a4a26e2036faec05e60a9f1a429d>
72. Galodha A., Lall B., **Ahammad S.Z.**, Anees S.  
Geospatial and Hydrochemical Analysis of Surface Water and Groundwater Quality of Inland Water Bodies for the Region of India Using Interpolation Techniques and Kriging Methods (2024) 2024 IEEE Mediterranean and Middle-East Geoscience and Remote Sensing Symposium, M2GARSS 2024 - Proceedings, pp. 255 - 259, Cited 3 times. DOI: 10.1109/M2GARSS57310.2024.10537572  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85195388366&doi=10.1109%2fM2GARSS57310.2024.10537572&partnerID=40&md5=d752e2488a1016e21a0d369afb5c6f13>
73. Ashraf M., Gupta P.K., Malik A., Chakma S., **Ahammad S.Z.**  
Unraveling the competitive transport of metformin and erythromycin in saturated sandy soil: Experimental investigation, modeling insights and implications on SDGs (2024) *Journal of Hazardous Materials Letters*, 5, art. no. 100124, Cited 2 times. DOI: 10.1016/j.hazl.2024.100124  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203453772&doi=10.1016%2fj.hazl.2024.100124&partnerID=40&md5=30c8e0f4d0bb117893ab1ec59b4bd0d1>
74. Pant A., **Ahammad S.Z.**, Ali S.W.  
Development and analysis of diethylaminoethyl silica-based adsorption column for removing antibiotic resistance genes from wastewater (2024) *Journal of Water Process Engineering*, 61, art. no. 105335, Cited 0 times. DOI: 10.1016/j.jwpe.2024.105335  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85190579062&doi=10.1016%2fj.jwpe.2024.105335&partnerID=40&md5=0467925d7c4f500756b7bbc3c0b0accf>

75. Ashraf M., Siddiqui M.T., Galodha A., Anees S., Lall B., Chakma S., **Ahammad S.Z.**  
Pharmaceuticals and personal care product modelling: Unleashing artificial intelligence and machine learning capabilities and impact on one health and sustainable development goals (2024) *Science of the Total Environment*, 955, art. no. 176999, Cited 0 times. DOI: 10.1016/j.scitotenv.2024.176999  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85207921051&doi=10.1016%2fj.scitotenv.2024.176999&partnerID=40&md5=6380090fa85ec19c8b1115cf8f66e37c>
76. Hirst R.W., Giesen M.J., Peppas M.-V., Jobling K., Jadhav D., **Ahammad S.Z.**, Namdeo A., Graham D.W.  
Modeling of Air Quality near Indian Informal Settlements Where Limited Local Monitoring Data Exist (2024) *Atmosphere*, 15 (9), art. no. 1072, Cited 0 times. DOI: 10.3390/atmos15091072  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205094680&doi=10.3390%2fatmos15091072&partnerID=40&md5=5062cf727635700307135bbc492d5f75>
77. Shukla R., Prasad D.K., **Ahammad S.Z.**  
Investigating antimicrobial resistance determinants and micropollutants in urban sewage treatment plants of India: Occurrence, removal and ecotoxicological risk (2024) *Journal of Environmental Chemical Engineering*, 12 (1), art. no. 111654, Cited 3 times. DOI: 10.1016/j.jece.2023.111654  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85181086263&doi=10.1016%2fj.jece.2023.111654&partnerID=40&md5=196fd3a32ba5601b0d2741b0ccbb9e3a>
78. Galodha A., Sai K.N., Lall B., **Ahammad S.Z.**, Anees S.  
Deep and Machine Learning for monitoring groundwater levels and hydrological changes using GRACE and SENTINEL-1 for the Ganga River basin (2024) *2024 International Conference on Machine Intelligence for GeoAnalytics and Remote Sensing, MIGARS 2024*, Cited 0 times. DOI: 10.1109/MIGARS61408.2024.10544513  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85196057417&doi=10.1109%2fMIGARS61408.2024.10544513&partnerID=40&md5=f8eedc765705f0977920c9e6055c7861>
79. Huifu H., Shefrin S., Yang S., Zhang Z., Kaul S.C., **Sundar D.**, Wadhwa R.  
Cucurbitacin-B inhibits cancer cell migration by targeting mortalin and HDM2: computational and in vitro experimental evidence (2024) *Journal of Biomolecular Structure and Dynamics*, 42 (5), pp. 2643 - 2652, Cited 2 times. DOI: 10.1080/07391102.2023.2206914  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85158874196&doi=10.1080%2f07391102.2023.2206914&partnerID=40&md5=e53de73a272865fda5b662c9eddbc570>
80. Yadav S., Vora D.S., **Sundar D.**, Dhanjal J.K.  
TCR-ESM: Employing protein language embeddings to predict TCR-peptide-MHC binding (2024) *Computational and Structural Biotechnology Journal*, 23, pp. 165 - 173, Cited 2 times. DOI: 10.1016/j.csbj.2023.11.037  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85178495754&doi=10.1016%2fj.csbj.2023.11.037&partnerID=40&md5=cb4720cc648178e4d9c90123b8c73880>
81. Nazim T., Kumar V., Ahmed F., Ehtesham N.Z., Hasnain S.E., **Sundar D.**, Grover S.  
Investigating the interaction pattern of FDA approved compounds with Mycobacterium tuberculosis GidB to understand their potential as antibiotics (2024) *Journal of Biomolecular Structure and Dynamics*, Cited 0 times. DOI: 10.1080/07391102.2024.2434026  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85210762499&doi=10.1080%2f07391102.2024.2434026&partnerID=40&md5=1a7bb07b4ee817fcfed94186cb585226>
82. Kumar V., Dhanjal J.K., Sari A.N., Khurana M., Kaul S.C., Wadhwa R., **Sundar D.**  
Effect of Withaferin-A, Withanone, and Caffeic Acid Phenethyl Ester on DNA Methyltransferases: Potential in Epigenetic Cancer Therapy (2024) *Current Topics in Medicinal Chemistry*, 24 (4), pp. 379 - 391, Cited 2 times. DOI: 10.2174/1568026623666230726105017

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85186172028&doi=10.2174%2f1568026623666230726105017&partnerID=40&md5=445a345a861026e64d775f9a97257a1e>

83. Shenoy A., Kalakoti Y., **Sundar D.**, Elofsson A.  
M-Ionic: prediction of metal-ion-binding sites from sequence using residue embeddings (2024) *Bioinformatics*, 40 (1), art. no. btad782, Cited 2 times. DOI: 10.1093/bioinformatics/btad782  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85182781206&doi=10.1093%2fbioinformatics%2fbtad782&partnerID=40&md5=47f2392c1a80de882d4e92d900d8b1ae>

84. Kalakoti Y., Gawande S., **Sundar D.**  
Estimating protein–ligand interactions with geometric deep learning and mixture density models (2024) *Journal of Biosciences*, 49 (4), art. no. 97, Cited 0 times. DOI: 10.1007/s12038-024-00478-z  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85207393649&doi=10.1007%2fs12038-024-00478-z&partnerID=40&md5=967a2aafe5510f480abebe6cba0e57d7>

85. Wadhwa R., Wang J., Shefrin S., Zhang H., **Sundar D.**, Kaul S.C.  
Molecular Insights into the Anticancer Activity of Withaferin-A: The Inhibition of Survivin Signaling (2024) *Cancers*, 16 (17), art. no. 3090, Cited 1 times. DOI: 10.3390/cancers16173090  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203870844&doi=10.3390%2fcancers16173090&partnerID=40&md5=9190cb9d3c9ad3032f0a92becac464aa>

86. Kumar V., Shefrin S., **Sundar D.**  
Molecular insights into the binding interactions and energetics of the omicron spike variant with hACE2 and a neutralizing antibody (2024) *Journal of Structural Biology*, 216 (2), art. no. 108087, Cited 0 times. DOI: 10.1016/j.jsb.2024.108087  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85188734513&doi=10.1016%2fj.jsb.2024.108087&partnerID=40&md5=a403c4d81d4658094634921fd0b3c900>

87. Kaushal S., Gupta S., Shefrin S., Vora D.S., Kaul S.C., **Sundar D.**, Wadhwa R., Dhanjal J.K.  
Synthetic and Natural Inhibitors of Mortalin for Cancer Therapy (2024) *Cancers*, 16 (20), art. no. 3470, Cited 0 times. DOI: 10.3390/cancers16203470  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85207523633&doi=10.3390%2fcancers16203470&partnerID=40&md5=3833383ca205e348ff6fe6faa91b722f>

88. Deedwania A., Karmakar S., Kumar V., Shefrin S., **Sundar D.**, Srivastava P.  
Construction and characterization of a temperature-sensitive pRC4 replicon for *Rhodococcus* and *Gordonia* (2024) *Gene*, 896, art. no. 147990, Cited 0 times. DOI: 10.1016/j.gene.2023.147990  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85179802123&doi=10.1016%2fj.gene.2023.147990&partnerID=40&md5=42d36b30f89bde9300b7412b1df77f3b>

89. Peter S.C., Kalakoti Y., **Sundar D.**  
Identifying High-Quality Leads among Screened Anticancerous Compounds Using SMILES Representations (2024) *ACS Omega*, 9 (28), pp. 30645 - 30653, Cited 0 times. DOI: 10.1021/acsomega.4c02801  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85197658647&doi=10.1021%2facsomega.4c02801&partnerID=40&md5=53be350b55251f9db0dc edc7baeac43>

90. Kumar V., Sari A.N., Gupta D., Ishida Y., Terao K., Kaul S.C., Vrati S., **Sundar D.**, Wadhwa R.  
Anti-COVID-19 Potential of Withaferin-A and Caffeic Acid Phenethyl Ester (2024) *Current Topics in Medicinal Chemistry*, 24 (9), pp. 830 - 842, Cited 0 times. DOI: 10.2174/0115680266280720231221100004  
<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85190847028&doi=10.2174%2f0115680266280720231221100004&partnerID=40&md5=8b3e4b974c65d097e938d1d2894e1b0e>

91. Vora D.S., Bhandari S.M., **Sundar D.**

DNA shape features improve prediction of CRISPR/Cas9 activity (2024) *Methods*, 226, pp. 120 - 126, Cited 1 times. DOI: 10.1016/j.ymeth.2024.04.012

[https://www.scopus.com/inward/record.uri?eid=2-s2.0-](https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191184728&doi=10.1016%2fj.ymeth.2024.04.012&partnerID=40&md5=5a65f565eae79be11d406d128e28b176)

[85191184728&doi=10.1016%2fj.ymeth.2024.04.012&partnerID=40&md5=5a65f565eae79be11d406d128e28b176](https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191184728&doi=10.1016%2fj.ymeth.2024.04.012&partnerID=40&md5=5a65f565eae79be11d406d128e28b176)

## **5. IPR applications filed and technology licenses executed in the CY 2024**

### **IPR Applications**

1. Nidhi Patil and **Preeti Srivastava**. A method for enzymatic biotransformation of polyaromatic hydrocarbon. Filed on 01/11/2024. Application number 202411083744
2. Asheemita Bagchi, Aayushi Agarwal, Nischal Gupta, D. Sundar and **Preeti Srivastava**. A method for producing recombinant biosurfactant. Filed on 08/11/2024. Application number 202411086112

### **Technology Transferred**

1. The technology named “**DNA Aptamer for Prostate Cancer Detection**” has been transferred to Dr. Swapnil Sinha, HUMMSA Biotech Pvt. Ltd., Kolkata, India. The aptamer is developed by **Prof. Prashant Mishra** and team from IIT Delhi and is capable of binding to the specific oncogenes and could be useful as **theranostics for prostate cancer**.



2. **Prof. Ravikrishnan Elangovan's group** transferred five technologies to Ayukriyam Innovations Private Limited

The following five technologies were transferred to Ayukriyam Innovations Pvt. Ltd. This innovative technology was developed by Prof. Ravikrishnan



Date of Licensing: 18th October 2024  
Company: Ayukriyam Innovations Pvt. Ltd.

Elangovan, Department of Biochemical Engineering and Biotechnology at IIT Delhi.

- **Microfluidic Analyser for In-Vitro Biosensing and Diagnostics:** A device for simultaneous bioassay processing of multiple biological samples to detect biomarkers like proteins, DNA, and metabolites with high precision.
- **Autostain:** An automated platform for uniform smear preparation and staining of up to four slides, ideal for Pap and TB sample analysis.

- **Composition for Mucus or Sputum Liquefaction:** A safe and efficient solution for liquefying sputum samples to detect pathogens and biomarkers with high specificity and reproducibility.
- **Autoscope:** An AI-assisted slide scanner that processes six slides simultaneously, detects abnormalities, and generates detailed reports for seamless diagnostic integration.
- **iScope:** A portable, high-resolution slide scanner that captures and uploads images for remote pathology and analysis.



## 6. Research Grants and Support

### 6.1 Intramural project awarded in CY2024

| S.No | Project Title  | Sponsoring Agency  | Amount of support (in INR lacs) | Period                   | Name               |
|------|--|--|---------------------------------|--------------------------|--------------------|
| 1    | Equipment Matching Grant from IRD to Prof. Kumari Priti Sinha, DBEB (Under Main Project No.RP04720G)   | IRD, IIT Delhi<br>India  | 20                              | 19-04-2024<br>18-01-2025 | Kumari Priti Sinha |
| 2    | SEED Grant to Prof. Jatin Panwar, DBEB (under main Seed Grant Project No. MI02794)   | Planning Unit, IIT Delhi<br>India                                | 20                              | 30-04-2024<br>29-04-2027 | Jatin Panwar       |
| 3    | Artificial antibody drug conjugate targeted to HER3 for delivery of anti-cancer agent against breast cancer cells (Under IRD MFIRP Scheme in Collaboration with Sorbonne , Paris, France)  | IRD, IIT Delhi<br>India  | 5                               | 14-06-2024<br>13-06-2025 | Prashant Mishra    |
| 4    | Dissecting the molecular drivers of characteristic microenvironment in Atrial Fibrillation (AF) using spatially resolved and single cell genomics (under MFIRP Scheme of IRD in collaboration with Sorbonne Uiv., Paris, France) | IRD, IIT Delhi<br>India  | 5                               | 14-06-2024<br>13-06-2025 | Ishaan Gupta       |
| 5.   | Equipment Matching Grant to Prof. Amit Das, Department of Biochemical Engineering & Biotechnology (Under Main Project # RP04743G)  | Institute of eminence Funds,<br>Planning Unit IIT Delhi<br>India | 14.99                           | 17-10-2024<br>16-04-2025 | Amit Das           |

## 6.2 Other Intramural project currently under progress CY2024

| S. No | Project Title  | Sponsoring Agency  | Amount of support (in INR lacs) | Period                   | Name                   |
|-------|--|--|---------------------------------|--------------------------|------------------------|
| 1.    | Microbiome-based strategy for mitigation of drought stress: a physical answer to a biological observation (Under MFIRP Scheme of IRD in collaboration with HUJI) | IRD, IIT Delhi<br>India                                  | 10                              | 01-08-2022 31-07-2024    | Shilpi Sharma          |
| 2.    | MI for the operation of DBEB Instrumentation Facility  | IIT Delhi - DBEB Instrumentation Facility users<br>India | 1.00                            | 08-02-2022 07-02-2025    | Ritu Kulshrestha       |
| 3.    | Development of a low-cost, wide-range, and on-line sensor of biomass concentrations in bioreactors. (Under FIRP Scheme of IRD )                                  | IRD, IIT Delhi<br>India                                  | 6                               | 19-04-2021 18-04-2024    | Atul Narang            |
| 4.    | Biotech Club (iGEM) (Sub Project No. 04 under CAIC Main Project No. MI00995)   | IRD, IIT Delhi<br>India                                  | 6                               | 01-01-2023<br>31-07-2024 | Preeti Srivastava      |
| 5.    | MI for the operation of DDF at DBEB  | Indian Institute of Technology Delhi India               | 20                              | 15-06-2009 30-06-2030    | Ritu Kulshrestha       |
| 6.    | Oral microbiome as a predictor of eventual progressive liver disease (Under MFIRP Scheme of IRD in collaboration with ILBS)                                      | IRD, IIT Delhi<br>India                                  | 10                              | 14-03-2022<br>31-01-2025 | Ishaan Gupta           |
| 7.    | BETA (Biotech Society) Sub Project under main CAIC Project No. MI00995   | IRD, IIT Delhi<br>India                                  | 0.5                             | 15-12-2023<br>31-07-2024 | Ravi Krishan Elangovan |

### 6.3 Extramural project awarded this CY2024

| S. No | Project Title  | Sponsoring Agency                                      | Amount of support (in INR lacs) | Period                       | Name                       |
|-------|--|--|---------------------------------|------------------------------|----------------------------|
| 1.    | Automated cartridge-based molecular assay for the screening and confirmation of Tuberculosis infection from saliva samples in low-resource settings  | ICMR<br>India  | 52.07                           | 01-03-2024<br><br>28-02-2027 | Ravi Krishnan<br>Elangovan |
| 2.    | Development and validation of a lab-on-a-chip integrated DNA extraction and LAMP-based detection of high-risk HPV genotypes.   | Indian Council of Medical Research, New Delhi<br>India | 51.86                           | 01-03-2024<br><br>28-02-2027 | Ravi Krishnan<br>Elangovan |
| 3.    | Development of microvasculature-on-a-chip platform for the assessment of cardiovascular diseases   | Science and Engineering Research Board (SERB)<br>India | 25.96                           | 23-02-2024<br><br>26-02-2026 | Kumari Priti<br>Sinha      |
| 4.    | Decoding Biophysical principles of Dynamic Cell-Cell Adhesions: Local Cell Control of tissue-scale processes   | Science and Engineering Research Board (SERB)<br>India | 29.58                           | 13-03-2024<br><br>12-03-2026 | Amit Das                   |
| 5.    | Development of an electromechanical technique for on-chip manipulation of diseased blood in therapeutics   | QIAGEN INDIA PVT.LIMITED<br>India                      | 5.37                            | 01-04-2024<br><br>31-03-2025 | Kumari Priti<br>Sinha      |
| 6.    | Advanced centre for clinical evaluation of Diagnostics of National Importance (Centre of Excellence)   | ICMR<br>India  | 146.33                          | 01-05-2024<br><br>30-04-2029 | Ravi Krishnan<br>Elangovan |
| 7.    | Centre for Excellence, Healthcare in AI  | MoE and MoHFW  | 200                             | 01-06-2024<br><br>31-03-2025 | Ishaan Gupta<br>(Co-PI)    |
| 8.    | 16S rDNA amplicon and metagenomic nanopore sequencing for rapid detection of bacterial pathogens in febrile neutropenia for pediatric acute leukemia and hematopoietic stem cell transplantation | ICMR   | 22.69                           | 07-02-2024<br><br>06-02-2027 | Ishaan Gupta<br>(Co-PI)    |
| 9     | Targeted engineering of rhizosphere microbiome for enhancing growth parameters of tomato under abiotic stress  | SERB   | 49.25                           | 10-10-2024<br><br>09-10-2027 | Shilpi Sharma              |
| 10    | Transfer of general soil suppressiveness to conducive soil: An eco-friendly alternative to pesticides (Under SPARC Scheme)   | MHRD   | 40.95                           | 01-01-2024<br><br>31-12-2025 | Shilpi Sharma              |
| 11.   | Advancing Water Quality Monitoring: Development of a Bioelectrochemical Sensor as an Early Warning System  | SERB (CRG)   | 41.44                           | 23-02-2024 –<br>22-02-2027   | Lucinda Doyle              |
| 12    | Molecular and Structural   | Department of Biotechnology<br><br>India               | 89.23                           | 28-10-2024<br>27-10-2027     | Preeti<br>Srivastava       |

|    |   |  |    |                          |                   |
|----|---|--|----|--------------------------|-------------------|
|    | insights into the regulation of a catabolic dsz operon  |  |    |                          |                   |
| 13 | Improved biocatalysts for plastic biodegradation with focus on polyethylene (PE) and polypropylene (PP) | ITC Ltd                                  | 75 | 01-04-2024<br>31-03-2025 | Preeti Srivastava |
| 14 | DBT TATA innovation Fellowship  | Department of Biotechnology<br><br>India | 39 | 03-12-2024<br>02-12-2027 | Preeti Srivastava |

#### 6.4 Other extramural project currently under progress CY2024

| S. No | Project Title  | Sponsoring Agency   | Amount of support | Period                       | Name                    |
|-------|--|---|-------------------|------------------------------|-------------------------|
| 1.    | Design of self-assembled electrodes for enhanced microbial electron transfer in bioelectrochemical systems   | Department of Biotechnology, Ministry of Sc.& TechIndia         | 33.95             | 22-09-2022<br>21-09-2025     | Lucinda Elizabeth Doyle |
| 2.    | Engineering rhizosphere microbiota for enhanced resistance to plant disease and human pathogens through compost amendments (IFCPAR)                                    | IFCPAR (CEFIPRA), India Habitat Centre<br><br>India             | 82.20             | 15-04-2022<br>14-04-2025     | Shilpi Sharma           |
| 3.    | Recovery of Ga and Ge through innovative biotechnology and process integration   | Ministry of Mines<br>India                                      | 14.98             | 25-11-2022<br><br>20-11-2024 | T.R.SREEKRISHN AN       |
| 4.    | Development of systematic methods for overcoming catabolite repression in Escherichia coli   | Science and Engineering Research Board (SERB)India              | 31.31             | 23-02-2022<br>22-02-2025     | Atul Narang             |
| 5.    | Elucidating the role of circular RNA circLIFR in the pathogenesis of small cell lung cancer  | Science and Engineering Research Board (SERB)India              | 1.65              | 21-01-2022<br>20-01-2025     | Ishaan Gupta            |
| 6.    | APP-DIP: Development of AI based prognostic platform for an early detection of infections in immunocompromised patients  | Department of Biotechnology, Ministry of Sc.& Tech<br><br>India | 58.58             | 03-01-2022<br>02-01-2025     | Ishaan Gupta            |
| 7.    | Enhanced production of Piperine using elicitation by endophytes (Under TARE Scheme of SERB awarded to Dr. S. Mishra under the Mentorship of Prof. Shilpi Sharma, DBEB) | Science and Engineering Research Board (SERB)<br><br>India      | 10.05             | 13-12-2021<br>12-12-2024     | Shilpi Sharma           |

|     |  |  |         |                          |                         |
|-----|--|--|---------|--------------------------|-------------------------|
| 8.  | Development of colorimetric immunoassay for detection of cholangiocarcinoma using peroxidase-mimetic activity of Pd@SiO <sub>2</sub> core/shell nanoparticles (Under SERB TARE Scheme awarded to Dr. Ravi Mani Tripathi, Under the mentorship of Prof. Prashant Mishra, DBEB)  | Science and Engineering Research Board (SERB) India      | 10.05   | 07-02-2023<br>06-02-2026 | Prashant Mishra         |
| 9.  | DOSA Urinary Tract Infection Diagnostic for Low- and Middle-Income Countries   | University of Edinburgh United Kingdom                   | 25.69   | 01-05-2023<br>31-10-2024 | Ravi Krishnan Elangovan |
| 10. | Development of Genome engineering tools for <i>Gordonia</i> based on recombination machinery from phages   | Department of Biotechnology India                        | 60.18   | 06-09-2023<br>05-09-2026 | Preeti Srivastava       |
| 11. | Inflammation-on-a-Chip: Molecular dissection of inflammatory bowel disease on a nanoliter droplet-based microarray platform (Under DST Inspire Faculty Fellowship Scheme awarded to Dr. Shraddha Chakraborty under the mentorship/supervision of Prof. Ritu Kulshrestha, DBEB) | Department of Science and Technology (DST) India         | 112.40  | 22-05-2023<br>21-05-2028 | Ritu Kulshrestha        |
| 12. | Design and Development of Treatment Plants for Explosives Manufacturing Industry Wastewater  | DRDO, Ministry of Defence, New Delhi -10 India           | 200     | 06-03-2023<br>05-09-2025 | T R Sreekrishnan        |
| 13. | Dissecting the mechanism and role of polyploidy associated alternative splicing in liver aging and disease   | Department of Biotechnology, GOI India                   | 42.50   | 16-02-2020<br>15-02-2025 | Ishaan Gupta            |
| 14. | Protecting Human Health Through a One Health Approach  | IWMI Sri Lanka   | 76.21   | 06-02-2023<br>05-02-2025 | Shaikh Ziauddin Ahammad |
| 15. | Local Treatment of Urban Sewage Streams for Healthy Reuse (LOTUS)(INDO-DUTCH Joint project)  | Department of Biotechnology, Ministry of Sc.& Tech India | 1648.67 | 01-04-2017<br>31-12-2024 | T.R.SREEKRISHNAN        |
| 16. | Deciphering the role of microRNA-191 in regulation of chemoresistance and stemness in breast cancer  | Department of Biotechnology, Ministry of Sc.& Tech India | 39.33   | 22-09-2021<br>21-03-2025 | Ritu Kulshrestha        |

|     |   |  |        |                          |                         |
|-----|---|--|--------|--------------------------|-------------------------|
| 17. | Torrefaction based technology for the recovery of bio-coal, furfural and acetic acid from agriculture wastes  | Department of Science and Technology (DST) India         | 193.65 | 28-06-2021<br>04-07-2025 | Shaikh Ziauddin Ahammad |
| 18. | ResPharm: Resolving the fate and studying the impact of pharmaceutical wastes on the environment and local community of a pharmaceutical manufacturing hub. | Department of Biotechnology, Ministry of Sc.& Tech India | 50.61  | 30-12-2020<br>29-12-2024 | Shaikh Ziauddin Ahammad |
| 19. | SELECTAR: Selection for antimicrobial resistance by antimicrobial production waste  | Department of Biotechnology, Ministry of Sc.& Tech India | 89.85  | 16-12-2020<br>15-12-2024 | Shaikh Ziauddin Ahammad |
| 20. | GenomeIndia: Cataloguing the Genetic Variation in Indians   | Department of Biotechnology, Ministry of Sc.& Tech India | 123.84 | 16-01-2020<br>15-01-2025 | Ishaan Gupta            |
| 21. | PAVITRA GANGA - Unlocking wastewater treatment, water re-use and resource recovery opportunities for urban and peri-urban areas in India                    | Department of Biotechnology India                        | 217.72 | 21-10-2019<br>31-12-2024 | T.R.SREEKRISHNAN        |

## 7. Students who graduated in the CY 2024

### 7.1. Doctor of Philosophy (Ph.D.)

#### a) PhD Thesis details

| Sl. | Name of the Student  | PhD Thesis Title  | Supervisor(s)                           | Current Affiliation                                  |
|-----|----------------------|---|---|--|
| 1.  | Ngangom Pravina Devi | Metabolic engineering of bacillus subtilis for xylose utilisation and production of 2,3-butanediol and d-lactic acid` | Ashish Misra                            |  |
| 2.  | Ritu Bhardwaj        | Azurin and its derivatives for prostate cancer detective and therapy  | Prashant Mishra                         |  |
| 3.  | Soumya Rajpal        | Rational design and molecular engineering of synthetic receptors for biomarker-based pathogen detection               | Prashant Mishra                         | Postdoc fellow, Ulm University, Germany              |
| 4.  | Avijeet Singh Jaswal | Fructan synthesis using whole-cell-based and recombinant enzyme system  | Ravikrishnan Elangovan and Saroj Mishra | Research associate , CIAB-DBT SAS Nagar, Mohali (PB) |
| 5.  | Sneha Kumari         | Development of high-resolution imaging methods for myosin motor study   | Ravikrishnan Elangovan                  |  |
| 6.  | Deepchandra Joshi    | Development of an advance treatment system for the effective removal of emerging contaminants from wastewater         | TR Sreekrishnan                         | Postdoc at IIT Madras                                |
| 7.  | Navodit Kumar Singh  | Production & characterisation of medical grade biopolymers  | TR Sreekrishnan                         | Postdoc at IIT Delhi                                 |

|     |                  |  |                   |  |
|-----|------------------|--|-------------------|--|
| 8.  | Shabnam Parwin   | Molecular events responsible for switching of the cell shape with respect to cell cycle in <i>Rhodococcus erythropolis</i> PR4 | Preeti Srivastava |  |
| 9.  | Seyad Shefrin. N | Mechanistic insights into the bioactivity and bioavailability of natural compounds against cancer                              | D Sundar          | Postdoc fellow, University of Connecticut, USA |
| 10. | Shivani Khatri   | Understanding the role of soil microbes in disease suppression under different farming practices                               | Shilpi Sharma     |  |
| 11. | Priyanka         | Enhancement of growth attributes of <i>Cajanus Cajan</i> by the synergistic action of bioinoculants                            | Shilpi Sharma     |  |
| 12. | Shubham Dubey    | Microbiome based rhizosphere engineering for mitigation of salinity stress in <i>Vigna radiata</i>                             | Shilpi Sharma     | Post Doc at                                    |
| 13. | Indranil Mondal  | miRNA therapy for Glioblastoma Treatment   | Ritu Kulshreshtha | Postdoc Fellow, NIH                            |
| 14. | Anirban Jana     | Elucidation of the role of neuronal differentiation factors belonging to the neurod family in glioblastoma                     | Ritu Kulshreshtha |  |

(b) Current position of graduated PhD students

| Sl. | Name of the Student  | Current Position            | Current Affiliation              |
|-----|----------------------|-----------------------------|----------------------------------|
| 1   | Anirban Jana         | Assistant Professor         | Techno India University, Kolkata |
| 2   | Ngangom Pravina Devi |                             |                                  |
| 3   | Ritu Bhardwaj        | Principal Project Scientist | IIT Delhi                        |
| 4   | Soumya Rajpal        | POST DOC                    | ULM UNIVERSITY, GERMANY          |
| 5   | Avijeet Singh Jaswal | Research associate          | CIAB-DBT SAS Nagar, Mohali (PB)  |
| 6   | Deepchandra Joshi    | Postdoctoral Fellow         | IIT Madras                       |
| 7   | Navodit Kumar Singh  | Early Doc                   | IIT Delhi                        |
| 8   | Shabnam Parwin       | Early Doc                   | IIT Delhi                        |
| 9   | Seyad Shefrin. N     | Postdoctoral Fellow         | University of Connecticut, USA   |

**7.2 Master of Science (Research) in Biochemical Engineering and Biotechnology (MSR)**

(a) MSR thesis details

| Sl. | Name of the Student | MSR Thesis Title   | Supervisor(s)          |
|-----|---------------------|--|------------------------|
| 1   | RHYTHM SARDANA      | Catabolite repression in batch cultures of escherichia coli growing on a mix of glucose and lactose    | Atul Narang            |
| 2   | Bhavika Mahajan     | Catabolite repression in batch cultures of escherichia coli growing on a mix of glucose and lactose    | Ravikrishnan Elangovan |
| 3   | Itube Hegui         | Overcoming the glucose-mediated repression of the galactose regulon of <i>saccharomyces cerevisiae</i> | Atul Narang            |
| 4   | Shreyoshi Karmakar  | Development of genome engineering tools for <i>Gordonia</i> sp. IITR100                                | Preeti Srivastava      |

(b) Current position of graduated MSR students

| Sl. | Name of the Student | Current Position     | Current Affiliation           |
|-----|---------------------|----------------------|-------------------------------|
| 1   | RHYTHM SARDANA      | Research coordinator | IONCUREX Tech Pvt Ltd         |
| 2   | Bhavika Mahajan     |                      |                               |
| 3   | Itube Hegui         | Junior Scientist     | Mithun Research Lab, Nagaland |

**7.3 M.Tech. in Biochemical Engineering and Biotechnology (first batch)**

| Serial No. | Entry Number | Name                            | CURRENT AFFILIATION   |
|------------|--------------|---------------------------------|---|
| 1          | 2022BEM2405  | Ashutosh Khaswal                | PhD @ UTS Sydney, Australia   |
| 2          | 2022BEM2406  | Ashutosh Vasisth                | Senior Business Analyst, Accordion India Pvt. Ltd.                  |
| 3          | 2022BEM2408  | Shivam Kumar                    | Looking for PhD abroad.   |
| 4          | 2022BEM2410  | Nalini Sankaran                 | Senior Scientist, Biocon Ltd, Bengaluru                             |
| 5          | 2022BEM2411  | Sriya Mistry                    | Looking for PhD abroad  |
| 6          | 2022BEM2412  | Krati Garg                      | Looking for PhD abroad  |
| 7          | 2022BEM2413  | Sugata Lahiri                   | Scientist, Labex Recombinant Proteins Pvt Ltd                       |
| 8          | 2022BEM2414  | Preeti Yadav                    | Bioinformatics Instructor, OmicsLogic                               |
| 9          | 2022BEM2415  | Pogiri Venkata Narayana Avinash | Associate Bioinformatics Engineer @ Strand Life Sciences            |
| 10         | 2022BEM2416  | Manisha Kuanr                   | Scientist at Labex Recombination Protein                            |
| 11         | 2022BEM2417  | Purushotam Singh Thakur         | PhD in Bioengineering from IIT Roorkee (Bioprocess Engineering Lab) |

**7.4. Bachelor of Technology in Biochemical Engineering and Biotechnology**

List of Students who Graduated this Year- 66

| S. No | Student Name               | S. No | Student Name                 |
|-------|----------------------------|-------|------------------------------|
| 1.    | Arya Ladhani               | 2.    | Aaryan Goyal                 |
| 3.    | Aayushi Agrawal            | 4.    | Adhiraj Goel                 |
| 5.    | Amba Aditya Anegundi       | 6.    | Amritansh Priyam             |
| 7.    | Ani Jaiswal                | 8.    | Anup Tiwari                  |
| 9.    | Arquam Rahman              | 10.   | Arsh Gulammohammed Saiyad    |
| 11.   | Aryan Godara               | 12.   | Aryan Sharma                 |
| 13.   | Ashutosh Yadav             | 14.   | Bansode Shrikrishna Rajabhau |
| 15.   | Bharti Mina                | 16.   | Chirag Griyam                |
| 17.   | Farman Chauhan             | 18.   | Gaurav Borah                 |
| 19.   | Harsh Vardhan Singh Patel  | 20.   | J. Ajai                      |
| 21.   | Kabeer Singh               | 22.   | Kanishka                     |
| 23.   | Krishna Singh              | 24.   | Lakshay Dagar                |
| 25.   | Luvleen Lodha              | 26.   | Madhurya Panwar              |
| 27.   | Megha Dharawat             | 28.   | Neetan Kumar                 |
| 29.   | Nilesh Kumar               | 30.   | Niraj Gandhi                 |
| 31.   | Nischal Gupta              | 32.   | Nishant Mittal               |
| 33.   | Nived Kizhakkumbadan Pacha | 34.   | Pranjalee Pankaj Raj         |
| 35.   | Prashita Saxena            | 36.   | Prince Kumar                 |
| 37.   | Priyansh Shrivastava       | 38.   | Priyanshu                    |
| 39.   | Priyanshu Verma            | 40.   | Raj Kumar Meena              |
| 41.   | Raj Kumar Ravidas          | 42.   | Raman Kumar Pandey           |



|     |                         |     |                        |
|-----|-------------------------|-----|------------------------|
| 43. | Rehan Singh Dhaka       | 44. | Rudransh Choudhary     |
| 45. | Sahitya Raj             | 46. | Saksham Goel           |
| 47. | Sandeep Singh Rathore   | 48. | Sanjay Singh Poonia    |
| 49. | Sanskritya Shaurya      | 50. | Sarthak Singh Chauhan  |
| 51. | Satyakam Singhal        | 52. | Shaganpreet Singh      |
| 53. | Shantanu Kartha         | 54. | Shreyas Vilas Khedekar |
| 55. | Shwinder Singh          | 56. | Snigdha Malhotra       |
| 57. | Sonal Silaich           | 58. | Sonali Kanwar Rathore  |
| 59. | Sunny                   | 60. | Vaibhav Agarwal        |
| 61. | Virender                | 62. | Vishal Singh           |
| 63. | Vishvesh Prakash Shinde | 64. | Yash Gupta             |
| 65. | Yash Singh              | 66. | Yashika Yadav          |

## **8. International Collaborations**

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan
2. University of Queensland
3. Hebrew University of Jerusalem Israel
4. INRAE France
5. Leibniz Institute of Vegetable and Ornamental Crops, Großbeeren, Germany
6. Technical University of Denmark (DTU), Denmark
7. EMBL Australia
8. University of Southern California
9. Sorbonne University, France
10. UiT, Arctic University of Norway

Ritu Kulshreshtha  
HoD, DBEB