BHARATHKUMAR R.

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EDUCATION

MSc in Biotechnology **Aug 2022 – Jun 2024**

Amity Institute of Biotechnology, Amity University, Uttar Pradesh
- First Division with Distinction – CGPA 8.75/10

Relevant Modules: Advanced Molecular Biology, Advanced Animal Biotechnology, Advance Applied Biostatistics for Biotechnologists, Molecular Cell Biology, Advanced Biochemistry, Advanced Genetics, Advanced Immunology, Enzymes and Enzyme Technology, Python, Applied Genomics and Proteomics, Advanced Microbiology

BSc in Biotechnology **Jun 2019 – May 2022**

PSG College of Arts & Science, Bharathiar University, Tamil Nadu
- First Class – CGPA 6.8/10

Relevant Modules: Environmental Biotechnology, Molecular Biology, Recombinant DNA Technology, Chemistry of Biomolecules, Microbiology, Computer Applications in Biotechnology, Analytical Techniques, Metabolism, Biopharmaceuticals, Animal Biotechnology, Immunology

RESEARCH EXPERIENCE

Dissertation Trainee **Jan 2024 – May 2024**

Thesis Title	**In Vitro Toxicity Assessment of Polystyrene Nanoplastics in Chinese Hamster Lung fibroblast cells (V-79)**
Supervisor	Dr. Alok Kumar Pandey
Institute	CSIR - Indian Institute of Toxicology Research, Lucknow
Aim	To characterize and assess the cytotoxicity and genotoxicity of nanoplastics in mammalian lung fibroblast cells.
Responsibilities	• Characterized polystyrene nanoplastics using Dynamic Light Scattering (DLS) and Nanoparticle Tracking Analysis (NTA). • Conducted cytotoxicity and genotoxicity assessments on Chinese Hamster Lung Fibroblast Cells (V-79) exposed to varying concentrations of nanoplastics. • Analysed the statistical significance of results using GraphPad. • Evaluated potential adverse effects of nanoplastics at the cellular level.
Conclusion	A concentration-dependent increase in irregular cell morphology was observed, with decreased cell viability in the Trypan Blue and Comet assays. ROS assay indicated varied response, suggesting alternative toxicity pathways at higher PS NPs exposure.

Postgraduate Research Assistant **Jul 2023 – Dec 2023**

Title	**Microbeads preparation with Bacterial Consortia**
Supervisor	Dr. Shashi Sharma
Institute	Centre for Biotechnology and Biochemical Engineering, Amity Institute of Biotechnology, Amity University Uttar Pradesh.
Aim	To develop microbeads incorporating bacterial consortia capable of degrading pesticides, enhancing their storage and transport efficiency over prolonged periods.
Responsibilities	• Made microbeads with bacterial consortia. • Analysed the consistent release of bacterial consortia.
Conclusion	The microbeads, created using bacterial consortia that degrade pesticides, facilitate the storage and transport of these consortia for extended periods.

Summer Research Intern **Jun 2023 – Jul 2023**

Title	**Biogenic Synthesis of Silver Nanoparticles using Endophytic Bacteria Isolated from *Andrographis paniculata* and its Potential Applications as Anticancer and Antibacterial Agents**
Supervisor	Dr. R. Ragunathan
Institute	Centre for Bioscience and Nanoscience Research, Coimbatore.
Aim	To explore the biogenic synthesis of silver nanoparticles using endophytic bacteria isolated from a traditional medicinal plant available locally and to evaluate their potential applications as anticancer and antibacterial agents.
Responsibilities	• Synthesized silver nanoparticles using endophytic bacteria, *Priestia megaterium strain BAR* (GENBANK Accession number: OR234764). • Conducted molecular identification and phylogenetic analysis of the isolated bacteria. • Explored potential medical applications, laying the foundation for future advancements in nanotechnology and therapeutic research.
Conclusion	Endophytic bacteria identified as Priestia megaterium were used to synthesize silver nanoparticles, which were characterized by UV-Visible Spectrophotometry, FTIR, and SEM. The nanoparticles showed significant antibacterial activity and reduction in cell viability in the Hep G2 cell line.

Thesis

Rajagopal B. (2024). *In Vitro Toxicity Assessment of Polystyrene Nanoplastics in Chinese Hamster Lung fibroblast cells (V-79)*[Unpublished Master's thesis]. Amity University Uttar Pradesh.

RESEARCH SKILLS

- Performed toxicological assays like MTT, Neutral red dye uptake assay, LDH, Internalised ROS generation assay, Trypan blue dye exclusion assay, and Alkaline single-cell electrophoresis (comet assay).
- Applied computational techniques for nucleotide and protein sequence analysis using tools like BLAST, PSIPRED, and SWISS-MODEL; biomolecular visualization with Rasmol and Pymol; phylogenetic analysis with Mega X; and molecular docking using CB Dock.
- Executed molecular biology methods, including DNA isolation and purification, PCR, agarose gel electrophoresis, SDS-PAGE, and Western blotting.
- Performed microscopy proficiently throughout my projects and gained foundational experience in operating FACS.
- Utilized analytical techniques, including chromatography (column, affinity, HPLC, GC-MS/MS), spectrophotometry, western blotting, Dynamic Light Scattering(DLS), and Nanoparticle Tracking Analysis(NTA).

ADDITIONAL COURSES

Introduction to Professional Scientific Communication **Jan 2024 – Feb 2024**

National Programme on Technology Enhanced Learning (NPTEL), MoE, Government of India

- Studied various aspects of professional science communication, such as developing creative research ideas, setting up and testing hypotheses, and learning the structure of scientific reports and research articles. Learned the importance of ethics in biomedical research and publication, which strengthened my commitment to honest research practices.

Certificate in Bioinformatics **Sep 2019 – May 2020**

PSG College of Arts & Science, Bharathiar University

- Learned the basics of bioinformatics, including biological databases, data communication, and key bioinformatics tools and software.

Certificate course on Bionanotechnology (CBNT) **May 2020**

Association of Indian Biologists (AIB)

- Learned the principles and applications of nanotechnology in biological sciences, gaining a strong understanding of nanomaterials, their interactions with biological systems, and their potential uses in medicine and biotechnology.

Human Molecular Genetics **Jan 2020 – Feb 2020**

National Programme on Technology Enhanced Learning (NPTEL), MoE, Government of India

- Gained a strong foundation in the basics of the central dogma, DNA cloning, hybridization techniques, mutation analysis, molecular pathology, and the identification of human disease genes. Participated in HapMap projects, which improved my skills in genetic mapping and identifying genes related to diseases.

SPECIALISED TRAINING

Hands-on training on "HPLC and GC-MS/MS: Instrumentation, Operation and Application" **Feb 2020**

ICFRE - Institute of Forest Genetics and Tree Breeding, Coimbatore.

ADDITIONAL SKILLS

- Applications: GraphPad.
- Programming language: Python - Biopython (Foundational), LaTeX.

ENGLISH LANGUAGE PROFICIENCY

The International English Language Testing System (IELTS) **Oct 2024**

Band - 7 & CEFR - C1 (Advanced); Candidate Number - 508942.

REFEREES

- **Dr. Alok Kumar Pandey**
  Senior Principal Scientist - CSIR - Indian Institute of Toxicology Research, Lucknow
  alokpandey@iitr.res.in
  Relationship – Dissertation Project Supervisor
- **Dr. Ravi Kant Singh**
  Professor - Amity Institute of Biotechnology, Amity University Uttar Pradesh.
  rksingh1@amity.edu
  Relationship – Postgraduate advisor
- **Dr. Boobal Rangaswamy**
  Assistant Professor – Department of Biotechnology, PSG College of Arts & Science, Tamil Nadu.
  boobal@psgcas.ac.in
  Relationship – Undergraduate advisor