Curriculum Vitae

Moirangthem Selena

PROFILE: Motivated researcher with interest in identifying and characterizing natural products for industrial applications in the food and biotechnology sector.

EDUCATION

Jul 2016 – Aug 2021	**M. Sc. Biotechnology (5-year integrated program)** Vellore Institute of Technology (VIT), Vellore, India **CGPA – 3.7/4 (magna cum laude)**

RESEARCH EXPERIENCE

Feb 2024 - present	**PhD student at Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen-Bolzano, Italy** **Supervisor: Prof. Raffaella Di Cagno (Micro4food lab)** - Development of alternate biotechnological solutions for bio preservation of bread - In silico prediction of antifungal peptides by a data mining pipeline for potential applications as preservatives - Identification of antimicrobial compounds and bioactive peptides from various plant matrices
Jan 2022 – Dec 2023	**Project Associate at National Center for Biological Sciences (NCBS – TIFR), Bengaluru, India** Supervisor: Dr. Anjana Badrinarayanan (DNA repair lab) - Identification of pigmented microbes through metagenomics from environmental samples - Optimization of microbial growth using bioreactors and identification of the microbial metabolites using advanced spectroscopic techniques, including discovery of novel compound - Stability testing of the pigment metabolites for potential applications, such as sustainable textile dyeing. - Cloning of pigment synthesis pathways in expression strains for higher production of the metabolites
Jan 2021 – Jun 2021	**Dissertation student at Central Food Technological Research Institute (CFTRI), Mysore, India** Supervisor: Dr. Jayadeep A. (Department of Grain Science and Technology) - Development of bioactive rich fractions of black rice bran and flour for formulation of dietary supplements - Isolation and characterization of the bioactive compounds in black rice such as polyphenols, flavonoids, oryzanol, tocopherols and tocotrienols - Assessment of the antioxidant capacity of the black rice extracts using DPPH free radical scavenging assay - Learnt microencapsulation of bioactive compounds using drum drying, spray drying using maltodextrin and other substrates
Jan 2020 – Mar 2020	**Project student at Vellore Institute of Technology (VIT), Vellore, India** Supervisor: Dr. Rajasekaran C. (Department of Biotechnology) - Extraction and analysis of the phytocompounds profile present in wild black rice and commercial black rice. - Optimized extraction protocol utilizing solvents gradient system in soxhlet apparatus to obtain maximum yield of phytocompounds from black rice - Detection of polyphenols in black rice anthocyanin rich extracts and quantification of crude extract yield
Sep 2019 – Nov 2019	**Project student at Vellore Institute of Technology (VIT), Vellore, India** Supervisor: Dr. Vimala R. (Center for Nanotechnology Research) - Investigation of the phytoremediation capability in eliminating heavy metals from aqueous systems by the aquatic plant species *Salvinia minima Baker*, cultivating it in both synthetic metal solutions and heavy metal-contaminated sewage water. - Conducted an in-depth assessment of physico-chemical parameters (BOD/COD/pH/turbidity) in sewage water to optimize conditions for plant growth and reproducibility. - Employed atomic absorption spectroscopy (AAS) to estimate heavy metals amount absorbed from water, specifically lead and cadmium

CONFERENCES AND WORKSHOPS

- 28th conference on the Developments in the Italian PhD research on Food Science, Technology and Biotechnology, 18th – 20th September, Catania
- Workshop on Introduction to nutritional metabolomics course at the University of Copenhagen, July 1st - 5th, 2024

PUBLICATIONS

Patent (Indian Provisional Patent Application No. 202341039415) – *"Method for extraction and drying of polar soluble pigment with cohesive properties from microbes"*

AWARDS AND SCHOLARSHIPS

Dec 2022 Winner of NBEC grant - Dr. Anjana Badrinarayanan (Founder), Prachi Mehrotra (Co-founder), Moirangthem Selena (Lead Researcher), Suchitha Ragunathan (Lead Researcher) -won Curadev cash prize of 3,700 USD & investment opportunities from Sangam Ventures of upto 10,000 USD & from C-CAMP of upto 2,500 USD for textile dyeing via microbe-driven solutions

2021 – 2017 Vellore Institute of Technology Merit Scholarship - annual recipient for outstanding academic performance in program course for four years

HONOR SOCIETIES

- Mar 2023 – Student member of the American Society for Microbiology (**ASM**)
- Feb 2021 – Student attendee of the Association of Food Scientists and Technologists of India (**AFSTI**)

SKILLS

WET LAB SKILLS

- Metagenomics, environmental isolation and identification of microbes using 16srRNA & 18srRNA sequencing and whole genome sequencing methods
- Optimization of microbial cultures for metabolite production in flasks and chemostats, testing different substrates for microbial growth including utilization of waste media
- Cloning and engineering of metabolite production microbial systems, antimicrobial and antioxidant activity assays
  Colony PCR, gel extraction, PCR purification, restriction digestion, ligation, plasmid prep, Gibson assembly, deletions, insertions, transformations, mutagenesis screening
- Solvent based isolation of plant and microbial metabolites, drying of extracts using lyophilizer, rotary evaporator, vacuum dryer, drum dryer, and devise stability protocols for the compounds w.r.t. time, temperature, light and pH
- Microscopy for morphological characterization of microbes, scanning electron microscopy for visualization of pigments
- Compound identification using UV-Vis spectroscopy, TLC, HPLC, GC, Mass Spectrometry, NMR, FTIR, AAS.

DRY LAB SKILLS

- Bioinformatic tools – BLAST analysis, COG, KEGG metabolome analysis, String dB interactome analysis, Alphafold, ColabFold, trRosetta for protein structure elucidation
- Imaging tools – ImageJ, Oufti, DeLTA
- Programming language - basic coding in Python, beginner in Rstudio

LANGUAGES

English (Fluent), Manipuri (Native), Hindi (Proficient), Italian (learning online)