

PROFILE

Name & Qualification : Dr. B. Roja, M.Sc., DMLT., Ph.D.,
Designation : Assistant Professor and Head
Department : Biotechnology
Email Id : rojaariya@gmail.com
Official Mail Id : roja@sigc.edu
Subject Specialization : Biotechnology, Molecular Biology,
Drug Discovery and Systems Biology.



Total Teaching Experience : 07 years
Research Experience : 06 years
No. of Research paper published : 16

Academic Identity

Google Scholar : O3k9B1EAAAAJ
Orcid Id : 0000-0003-2726-9651
Vidwan : 215517
Web of Science Researcher (Publons) : ABH-4294-2020

Academic Excellence

Ph.D Biotechnology, 2023
Bharathidasan University, Trichy.

M. Sc. Biotechnology
First Class, 2015
Srinivasan College of Arts and Science, Perambalur. Affiliated to Bharathidasan University, Trichy.

B.Sc. Biotechnology
First Class, 2013
Srinivasan College of Arts and Science, Perambalur. Affiliated to Bharathidasan University, Trichy.

Diploma in Medical Laboratory Technology (DMLT)
First Class, 2012
Universal Board of Alternative Medicines, Chennai.

Professional Experience

- Shrimati Indira Gandhi College, Trichy, Tamil Nadu, India.**
Assistant Professor and Head-Biotechnology **June 2024 to till date**
- Bharathidasan University, Trichy, Tamil Nadu, India.**
Guest Lecturer-Bioinformatics **July 2022 to May 2024**
- Dhanalakshmi Srinivasan College of Arts and Science for Women (Autonomous), Perambalur, Tamil Nadu, India.**
Assistant Professor-Biotechnology **August 2018 to May 2022**

Role as Assistant Professor

- Prepare a course study using an approved curriculum that incorporates lectures labs
- Collaborate with faculties in developing the curriculum of the program
- Incorporating new research ideas and facilities for the development of the department and students.
- Acted as a member in Board of Studies for regularization of Designing new courses, as appropriateSyllabus.
- Involved in preparing departmental input reports for Assessment Committee.
- Preparing research proposals for funding agencies.
- Assisting students in making decisions regarding career choices and higher education.
- Handling theory classes to the students via using visual aids, slides, and the good materials.
- Handling laboratories and training students' practical skills and knowledge.
- Ability to prioritize responsibilities, meets deadlines, and responds to students' legitimate needs in atimely manner.
- Acted as examiners for the theory and practical examinations at University and College levels.
- Organizing various class and interclass activities to increase the interaction between students
- Conducting paper presentation for the students on different topics to enhance their presentation skill.
- Conducting extra classes for the slow learners.

TECHNICAL PROJECTS EXPERIENCE

Ph.D Research

Jan. 2016 –Jan. 2023

➤ **Molecular virulence mechanisms of *Clostridium botulinum* A3 str. Loch Maree on human gastrointestinal tract: A systems biology approach”**

- Conducted groundbreaking research to uncover novel virulence mechanisms in *Clostridium botulinum* type A3 through comprehensive genome-wide analysis.
- Spearheaded functional prediction and assignment of the *Clostridium botulinum* type A3 operome contributed to the prioritization of drug targets.
- Reconstruction and analysis of the transcriptome regulatory network of *Clostridium botulinum* type A3 str. Loch Maree (CBL), shedding light on its genetic regulatory pathways.
- Designed innovative subunit vaccines targeting *Clostridium botulinum* type A3, advancing strategies for combatting this pathogen.
- A multi-epitope vaccine against novel virulence in *Clostridium botulinum* type A3 str. Loch Maree (CBL), enhancing approaches to mitigate its virulence.
- Explored the intricate molecular mechanisms underlying host-microbe-drug interactions in the human gastrointestinal tract, uncovering vital insights into disease pathways and therapeutic interventions.

Master’s Researcher

Apr. 2015

➤ **Elucidation of Amino acids Catabolism in *Clostridium sticklandii* HF”:**

- Detailed experiments were conducted to measure the growth rates of the organisms in assay media composed of mixed amino acids as the exclusive carbon source.
- Explored the organism's growth patterns across various growth media containing free amino acids and proteins as the sole carbon sources, providing insights into its diverse metabolic responses in different environments.
- Investigate the organism's growth patterns on assay media exclusively consisting of free amino acids, delineating its utilization and adaptation to specific carbon sources.
- Delved into the organism's growth patterns on assay media with specific amino acid pairs as the sole carbon source, revealing nuanced metabolic behaviors and preferences.
- Employed sophisticated analyses to discover and establish correlations among the uncovered amino acid degradation pathways by leveraging comprehensive metabolic databases. This research

contributes significantly to the understanding of the organism's metabolic versatility and adaptive strategies in diverse nutritional environments.

ACHIEVEMENTS

PATENT

- Patent obtained on 03/12/2021 entitled “Nanoparticles Based Compositions Having Nucleic Acid and Cationic Copolymers” **Patent No. 202141052207.**
- Patent obtained on 09/02/2022 entitled “Smart Gloves with Flexi Sensor for Gesture Operation” **Patent No. 358289-001.**

AWARDS RECEIVED

- Received the “**Young Scientist Award**” on 2021 by VDGGOOD Technology Factory, Salem.
- Received the “**Innovation Excellence Award**” on 2021 for impactful dedication in the field of Academic Research by American Association of Higher Education & Accreditation.

SEQUENCES SUBMITTED IN GENBANK

- *Clostridium botulinum* strain PCP07 16S ribosomal RNA gene, partial sequence is submitted in GenBank. **Accession No: KT367811**
- *Bacillus sp.* strains PCP01-PCP11 16S ribosomal RNA gene, partial sequence is submitted in GenBank. **Accession No's: OR125624, OR125625, OR125626, OR125627, OR125641, OR125642, OR125643, OR125644, OR125645, OR131300 and OR131301**
- *Enterococcus lactis* strain PCPLAB 16S ribosomal RNA gene, partial sequence is submitted in GenBank. **Accession No's: OR637012**

Publications

International: 09; National: 07

1. R. Sasikumar, L. Lourdu Lincy, S. Saranya, **B. Roja**, L. Thamanna , Anish Sathyan, P. Chellapandi (2024) Field trial evaluation of sensor-based aquaculture automation for improved biofloc shrimp culture. Journal of Water Process Engineering. 64- 105661 **(IF: 7) (Scopus indexed).**
2. **B. Roja**, S Saranya, L Thamanna, P Chellapandi (2023) Inferring molecular mechanisms of host-microbe-drug interactions in the human gastrointestinal tract. Medicine in Omics: 100027. **(Scopus indexed).**

3. **B. Roja**, P. Chellapandi (2023) Design and characterization of a multi-epitope vaccine against *Clostridium botulinum* A3 Loch Maree intoxication in humans. *Gene*: 892:147865. **(IF: 3.913) (Scopus indexed)**.
4. **B. Roja**, S. Saranya, P. Chellapandi (2023) Discovery of novel virulence mechanisms in *Clostridium botulinum* type A3 using genome-wide analysis. *Journal of Gene* : 147402. . **(IF: 3.913) (Scopus indexed)**.
5. **B. Roja**, R. Sasikumar and P Chellapandi (2023) Development of dietary multi-strain probiotics on banana peel powder for sustainable shrimp aquaculture in India. *Research Journal of Agricultural Sciences* 14 (01): 178–182. **(IF: 4.633) (Scopus indexed)**.
6. **B. Roja**, L. Thamanna and P. Chellapandi (2023) Reconstruction and analysis of the transcriptome regulatory network of *Clostridium botulinum* type A3 str. Loch Maree. *Asian Journal of Microbiology, Biotechnology and Environmental Science*. **(IIF: 5.00)(SCOPUS EMBASE)**.
7. **B. Roja**, P. Gajalakshmi, K. Rajesh, Nitha V Ravi, Gayathri (2021) Antioxidant Anti-Bacterial and Anti – Inflammatory Activity of with Aniya Somnifera *International journal of life science and pharma research*. 2250 – 0480: 76-81. **(IF: 0.106) (WEB OF SCIENCE)**.
8. Nitha V Ravi, K. Rajesh, **B. Roja** (2021) A Review on Antibiotic Resistance in Urinary Tract Infections. *International journal of life science and pharma research*. 2250 – 0480:82-85. **(IF: 0.106) (WEB OF SCIENCE)**.
9. Prisilla, M. Deena Remin, **B. Roja**, P. Chellapandi (2019) A human–food web–animal interface on the prevalence of food-borne pathogens (*Clostridia* and *Enterococcus*) in mixed veterinary farms. *Food science and biotechnology* 28 (5), 1583-1591. **(IF: 2.9) (Scopus indexed)**.
10. **B. Roja**, C. Sangavai, A. Raja, R. Karthik (2019) Green Synthesis of Silver Nanoparticles Using Ginger Extract and Its Antioxidant (In Vitro) And Anticancer (Insilico) Study. *Scholar: National School of Leadership* 8 (2.2). 2019
11. **B. Roja**, C. Sangavai, K. Manjula, R. Mahadevi (2019) Growth and Characterization of Calcium Hydrogen Phosphate Dihydrate Urinary Stone and Inhibitory Effect of Juice and Seed of *Vituv vinifera*. *Scholar: National School of Leadership* 8 (2.2).
12. **B. Roja**, M. Haseena, K. Shanmathi, R. Shree Vaishnavi (2019) Impact of Thermogram and Mammogram as an Early Diagnostic Tool for Breast Cancer *Scholar: National School of Leadership* 8 (2.2).
13. **B. Roja**, V. Mahesh Priya, E. Angel Jemima, C. Muthusamy (2019) Preparation of Polyherbal Formulation for Common Cold and Toxicity Analysis in Zebra Fish Model *Scholar: National School of Leadership* 8 (2.2).

14. **B. Roja**, T. Banumathi, M. Haseena, G. Praveena, R. Shree Vaishnavi (2019) Impact of Human Papilloma Virus in Indian Women Scholar: National School of Leadership 8 (2.2).
15. **B. Roja**, M. Karuppaiya, C. Sangavai (2019) Assessment of Invitro Propagation and Conservation of Swertia Chirayata. Scholar: National School of Leadership 8 (2.2).
16. **B. Roja**, C. Sangavai, M. Karuppaiya (2019) Industrial Application of Marine *Actinobacteria* from Mangrove Sediment. Scholar: National School of Leadership 8 (2.2).

OTHERS

- Guided 25 project students at PG level Research Topic

ADDITIONAL PROFESSIONAL ACTIVITIES

- Organized (**Co-Organizing Secretary**) National Conference on “Engineering in Biological Applications-2024”, Bharathidasan University, Trichy. – 12.04.2024.
- Acted as **Recourse Person** in National Level Farmer Training Program on “Automatic Biofloc Shrimp Cultivation” NFTABSC-2023 Organized by Department of Bioinformatics, Bharathidasan University, Tiruchirappalli-24 & C-DAC, Trivandrum- 31.03.2023.
- Organized (**Co-Organizing Secretary**) National Level Farmer Training Program on “Automatic Biofloc Shrimp Cultivation” NFTABSC-2023 Organized by Department of Bioinformatics, Bharathidasan University, Tiruchirappalli-24 & C-DAC, Trivandrum- 31.03.2023.
- Organized (**Co-Organizing Committee**) International Seminar on “Recent trends in Biological Science”, Dhanalakshmi Srinivasan College of Arts and Science for Women (A), Perambalur – 15.02.2019.
- Organized (**Co-Organizing Committee**) International Seminar on “Cancer Research”, Dhanalakshmi Srinivasan College of Arts and Science Women (A), Perambalur – 23.01.2020. **SEMINARS ATTENDED**

AND TRAININGS ATTENDED

- Attended two days conference on “Modelling and Tackling Complex Biological Systems” Conducted by department Mathematical Sciences (IMSc), Chennai.

- Attended one day workshop on “Artificial Intelligence (AI) - assisted scientific writing and publishing” Conducted by department of Botany, PSG College of Arts and Science is a College of Arts and Sciences, Coimbatore.
- Presented **paper** in **DBT, Ministry of Science & technology, Government of India** Sponsored two days national conference on “Post Covid-19 Complications – A Biotechnological approach (PCBA’22)” Conducted by Department of Biotechnology, Jamal Mohamed College, Trichy.
- Presented **paper** in two days International conference on “Research Trends, Strategies and Technical Advancements in Biological and Biomedical Sciences for Sustainability - RTSTA'22 (Hybrid Mode)” Conducted by Department of Zoology, Seethalakshmi Ramaswami College, Trichy.
- Presented **poster** in **DBT Sponsored** two days national conference on “Achievements, Challenges and Opportunities in Biotechnology for Sustainable Livelihood Security” Conducted by Tamilnadu Scientific Research Organisation, Pudukkottai.
- Attended one day Dr.V.Balakrishnan Memorial CEM Programme on “Oral Cancer” Conducted by department of Biotechnology, St. Joseph’s College, Trichy.
- Attended two-day hand and Training Programme on “Laboratory Animals Handling (Care, Breeding, Managements and Ethics)” conducted by the Department of Biochemistry, St. Joseph’s College, Trichy.
- Attended two days national symposium on “Commercial Aspects of Bioscience” Conducted by department of Microbiology and Biotechnology, Srinivasan college of Arts and Science, Perambalur. Got a 3rd prize for poster presentations.
- Attended two days Training Programme on “Mushroom Cultivation” Conducted by department of Microbiology and Biotechnology, Srinivasan college of Arts and Science, Perambalur.
- Participated in “NSCEMR” Conducted by department of Microbiology, Bharathidasan University, Trichy.
- Participated in “CENITTERZ 2013” conducted by the Department of Microbiology, Bharathidasan University, Trichy.
- Attended one day seminar on “Trends in stem cell therapy” Conducted by department of Microbiology and Biotechnology, Srinivasan college of Arts and Science, Perambalur.
- Attended one day seminar on “Trends in Bio- Informatics” Conducted by department of Microbiology and Biotechnology, Srinivasan college of Arts and Science, Perambalur.