

## **Dr. P. SUGUNA M.Sc., PGDBMD., Ph.D.,**

Assistant Professor  
Department of Biotechnology  
Lady Doak College



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### **PROFILE SUMMARY**

An academically proficient and research-driven biotechnology professional with an expertise in bioinformatics, molecular biology, and microbial biotechnology. Competent in designing and executing research projects and publishing in peer-reviewed journals. Demonstrates strong teaching acumen with the ability to simplify complex biological concepts, mentor students, and foster scientific inquiry. Skilled in integrating advanced biotechnology tools and techniques into pedagogy, with a commitment to lifelong learning, interdisciplinary collaboration, and student-centric education.

### **EDUCATIONAL QUALIFICATIONS**

- **Ph.D., Biotechnology** (2017), Lady Doak College, Madurai Kamaraj University, Tamilnadu, India
- **PG Diploma., Biomolecular Modeling and Dynamics** (2009), Lady Doak College, Madurai Kamaraj University, Tamilnadu, India
- **M.Sc., Biotechnology** (2008-2010), Lady Doak College, Madurai Kamaraj University, Tamilnadu, India
- **B.Sc., Zoology** (Spl. in Biotechnology) (2005-2008), Lady Doak College, Madurai Kamaraj University, Tamilnadu, India

### **RESEARCH EXPERIENCE**

- **Research Associate** at DBT-BIF Centre, Lady Doak College, Madurai during May 2018 - June 2020.
- **Studentship fellow** at DBT-BIF Centre, Lady Doak College, Madurai for the period of Sep 2014 - Sep 2015.
- **Senior Research fellow** in DBT funded project at Lady Doak College, Madurai from Oct 2012- Sep 2014 (DBT project)

- **Traineeship fellow** at DBT-BIF Centre, Lady Doak College, Madurai during Feb 2012- Sep 2012.
- **Project fellow** in UGC funded project Lady Doak College, Madurai from Aug 2010 - Jan 2012.

### TEACHING EXPERIENCE

- ❖ **Assistant Professor** - Department of Biotechnology at Lady Doak College, Madurai from Nov 2021 to till now.
- ❖ **Assistant Professor** - Department of Zoology at Lady Doak College, Madurai from Sep 2021 to Oct 2021.
- ❖ **Assistant Professor** - Department of Biotechnology at Lady Doak College, Madurai from Sep 2017 to Dec 2017.
- ❖ **Assistant Professor** - Department of Zoology at Lady Doak College, Madurai from Jan 2015 to Apr 2015.

### FIELD OF SPECIALIZATION

- Bioinformatics
- Biopolymer technology
- Animal cell culture
- Microbial biotechnology
- Molecular biology

### COURSES HANDLED

#### Undergraduate Level:

Molecular Biology, Immunology, Immunotechnology, Animal Biotechnology, Introduction to Research Methodology; recombinant DNA technology, microbiology, Computational Biology, Clinical Informatics, Lab in aquarium maintainance.

#### Postgraduate Level:

Molecular Biology, rDNA Technology, Animal Biotechnology, Biostatistics, Bioinformatics, Immunology and immunotechnology, Developmental and stem cell biology, Lab in Genetic engineering, Cell and molecular biology.

### AWARDS/ RECOGNITION

- Awarded **Pankajam Jesudasan Prize** for maintained consistent and distinguished academic record during post graduate studies.
- Cleared the **State eligibility test for lecturership** (2016)

- Awarded **Best poster presentation** in National level Symposium on Ayurveda Biology and Medicine SABM 2019, N Ramavarier Ayurveda Foundation, Madurai, Tamil Nadu
- Published **10 research articles** in reputed international journals.
- Reviewer in the international reputed journal “**Biochemistry and applied Biotechnology**”.
- Awarded **Best oral presentation award** in National level e-conference on “Bioprospecting of marine metabolites for promising biotechnology applications” at Sathyabama institute of science and technology, Chennai.

### PROFESSIONAL ASSOCIATION

- Life time member in Asian Polymer Association
- Life time member in Institute of scholars

### PUBLICATIONS

1. Sakthi Veni Saravanaselvam , Xavier Arulanantham , M. Tamilelakkiya , R. Sakthivadivel , **Suguna Ponnusamy**, P. Pandi, P. Velusamy, S. Esakki Muthu, K. Ashok Kumar (2024). Synthesis and characterization of novel Schiff base ligand and their Cu (II), Zn (II), Co (II), and Ni (II) complexes: DNA binding, antimicrobial activity and docking studies. *Journal of Molecular Structure*, 1325. IF:4.0
2. **Suguna, P. P.**, Saranya, V. V., Abirami, P. P., & Shenbagarathai, R. R. (2020). Optimization and Characterization of PHA (SCL-SCL) Co-polymer by Indigenous *Bacillus thuringiensis* A102 Strain for Biomedical Applications. *Current Microbiology*, 1-12. IF: 1.746.
3. **Ponnusamy, S.**, Viswanathan, S., Periyasamy, A., & Rajaiah, S. (2019). Production and characterization of PHB-HV copolymer by *Bacillus thuringiensis* isolated from *Eisenia foetida*. *Biotechnology and applied biochemistry*. IF: 1.429
4. **P.Suguna**, C.Binuramesh, P.Abirami, V.Saranya, Poornimakkani, V.Rajeswari&R. Shenbagarathai (2014). Immunostimulatory effect of PHB-HV from *Bacillus thuringiensis* in *Oreochromis mossambicus*. *Fish and Shellfish Immunology*. 36:90-97. IF:3.28
5. V.Saranya, K. Poornima,Krishna kumara, **P.Suguna**, P.Abirami, C.BinuRamesh, P.Selvanayagam, R.Shenbagarathai (2012). Quantification of intracellular

Polyhydroxyalkanoates by personalized flow cytometry protocol. *Current Microbiology*.

65(5):589-594. IF:1.423

6. Kkani Poornima, Viswanathan Saranya, PeriyasamyAbirami, Chandrasekaran Binuramesh, **Ponnusamy Suguna**, Peter Selvanayagam, RajaiaShenbagarathai (2012). Phenotypic and genotypic characterization of *B.t.LDC-391* strain that produce cytotoxic proteins against human cancer cells. *Bioinformation*. 8(10): 461-465. IF: 0.5.
7. Saranya, V., Rajeswari, V., Abirami, P., Poornimakkani, K., **Suguna, P.**, & Shenbagarathai, R. (2015). Statistical media design for efficient Polyhydroxyalkanoate production *Pseudomonas sp. MNNG-S*. 46(5): 446-53. *Preparative Biochemistry and Biotechnology*, IF: 0.911.
8. Rajeswari, V., Priyadarshini, S. K., Saranya, V., **Suguna, P.**, & Shenbagarathai, R. (2016). Immunostimulation by phospholipopeptide biosurfactant from *Staphylococcus hominis* in *Oreochromis mossambicus*. *Fish & shellfish immunology*, 48, 244-253. IF:3.18
9. Abirami, P., Kkani, P., **Suguna, P.**, Saranya, V., Selvanayagam, P., &Shenbagarathai, R. (2016). Phenotypic characterization of an indigenous *Bacillus thuringiensis* strain (Bt LDC 501) expressing cancer cell killing protein. *Journal of Experimental Biology and Agricultural Sciences*, 4(2), 232-241.
10. Periyasamy Abirami, Poornima Kkani, Chandrasekaran Binuramesh, **Ponnusamy Suguna**, Viswanathan Saranya, Peter Selvanayagam, Rajaiah Shenbagarathai (2016). Screening and characterization of a non-insecticidal *Bacillus thuringiensis* strain producing parasporal protein with selective toxicity against human colon cancer cell lines. *Annals of Microbiology*. 66 (3), 1167–1178. IF: 1.232

#### **PAPER PRESENTATION IN INTERNATIONAL AND NATIONAL CONFERENCES**

- Ishwarya G, Subhashini V and **Dr. P. Suguna** presented a paper on “Isolation, production, and characterization of bacterial cellulose from indigenous bacteria” in the National Conference on Innovations in Biomedical Science, Department of Biotechnology, Lady Doak College, Madurai on 27th & 28th March 2025.
- **P.Suguna** and R.Shenbagarathai presented a paper on “Molecular cloning of PHA synthase gene (type IV) from indigenous *Bacillus thuringiensis* strain in *E.coli* ” in the e-National conference on Bio prospecting of marine derived metabolites for

promising biotechnology applications: Current and future prospects held at Sathyabama Institute of Science and Technology, Chennai on 29- 31 December 2021

- **P.Suguna**, Nasrin Banu, J.Ananthi, T. MownaSundari, Suresh Govindan, R.Shenbagarathai presented a poster on “Molecular docking of phytoconstituents from *Desmodium gangeticum* against cardiac hypertrophy” at Symposium on Ayurveda Biology and Medicine SABM 2019, N Ramavarier Ayurveda Foundation, Madurai, Tamil Nadu, 18-19th January 2019.
- **P.Suguna**, C.Binuramesh, P.Abirami, V.Saranya, Poornimakkani, V. Rajeswari, R. Shenbagarathai presented a poster on “Immunostimulatory effect of PHB-HV from *Bacillus thuringiensis* in *Oreochromis mossambicus*” at the Energy Fest’14 seminar on Advanced Technologies and Innovations in Energy and Environment School of Energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai.
- **P.Suguna**, P.Abirami and R. Shenbagarathai presented a paper on “Draft genome sequence analysis of *Bacillus thuringiensis* LDC 391” at the national level seminar on Genomics and proteomics – A computational approach, Lady Doak College, Madurai.
- P.Abirami, Poornimakkani, C. Binuramesh, **P.Suguna**, R.Shenbagarathai presented a paper on “Anticancer property of indigenous *Bacillus thuringiensis* strain isolated from marine soils of Mandapam” at the Energy Fest’14 seminar on Advanced Technologieand Innovations in Energy and Environment School of Energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai, March 28, 2014.
- **P.Suguna**, P.Abirami and R.Shenbagarathai presented a poster on “Sequence analysis and Comparative structure prediction of Cry1A family of *B.t* .insecticidal proteins and an insight into its toxicity spectrum” at the National Seminar on Emerging trends in Biological Research organized by PG and Research Department of Zoology, Lady Doak College, Madurai, Tamil Nadu.
- P.Abirami, **P.Suguna**, T.MownaSundari and R.Shenbagarathai presented a poster on “An *in silico* approach for the identification of potential target for parasporin-2, an anticancer protein” at the National Seminar on Emerging trends in Biological Research organized by PG and Research Department of Zoology, Lady Doak College, Madurai, Tamil Nadu.
- **P.Suguna**, V.Saranya, P.Abirami, C. Binuramesh and R.Shenbagarathai, presented a paper on “Biocompatibility evaluation of PHB-HV matrices for tissue engineering application” at the First International Conference on Emerging Trends in Bioengineering SASTRA University Thanjavur

- P.Abirami, Poornimakkani, C. Binuramesh, **P.Suguna**, R.Shenbagarathai., presented a poster on “Screening of novel *Bacillus thuringiensis* strains from Southern coastal regions of India” at the First International Conference on Emerging Trends in Bioengineering, SASTRA University, Thanjavur.

#### Sequences Submitted in NCBI (13):

- o **P. Suguna**, Saranya.V and R. Shenbagarathai, *Bacillus thuringiensis* strain T106 16S ribosomal RNA gene, partial sequence. Ac. No: JX051373.1
- o **P. Suguna** and R. Shenbagarathai. *Bacillus thuringiensis* strain PSA102 16S ribosomal RNA gene sequence, Ac. No: JN 205290.
- o **P. Suguna**, Saranya.V and R. Shenbagarathai. *Bacillus thuringiensis* strain E101 16S ribosomal RNA gene, partial sequence. Ac. No: JX051371.1
- o **P. Suguna**, Saranya.V and R. Shenbagarathai. *Bacillus thuringiensis* strain T103 16S ribosomal RNA gene, partial sequence.,Ac. No: JX051372.1
- o Saranya.V, **P. Suguna**, and R. Shenbagarathai. *Bacillus cereus* strain P2 16S ribosomal RNA gene, partial sequence.,Ac. No: JX051375.1
- o Saranya.V, **P. Suguna**, and R. Shenbagarathai. *Bacillus cereus* strain P1 16S ribosomal RNA gene, partial sequence. Ac. No: JX051374.1
- o Poornima, K., Saranya,V., Abirami,P., Binuramesh,C., **Suguna,P.**, Selvanayagam,P. and Shenbagarathai,R. *Bacillus thuringiensis* strain *B.t.LDC-391* capsule biosynthesis protein CapA (capA) gene, partial sequence.Ac.No: JQ319804.
- o Abirami, P., **Suguna.**, Poornima, K., Binuramesh,C. and Shenbagarathai,R. *Bacillus thuringiensis* strain LDC507 16S ribosomal RNA gene, partial sequence. Ac. No: KF779471.
- o **Suguna P**, Abirami P, ShenbagarathaiRajaiah, Poornima Kkani, Saranya V. Whole genome draft sequence of Indigenous *B.t.LDC 391* strain showing cytotoxic activity. Ac. No: DRA000604.
- o **Suguna,P.**, Abirami,P., BinuRamesh,C. and Shenbagarathai,R. *Bacillus thuringiensis* strain *B.t. A102* RNA-dependent polymerase (rpoB) gene, partial, Ac. No: KJ802830.
- o Abirami,P., **Suguna,P.**, Poornima,K., BinuRamesh,C. and Shenbagarathai,R. *Bacillus thuringiensis* strain *B.t.LDC501* RNA-dependent polymerase (rpoB) gene, partial cds. Ac. No: KJ802831
- o Abirami,P., **Suguna,P.** and Shenbagarathai,R. *Bacillus thuringiensis* strain *B.t.LDC 501* hypothetical protein gene, partial cds. Ac. No: KP327716
- o Abirami, P., Jenifer3 Nisha, A., **Suguna. P** and Shenbagarathai,R. (2019) *Bacillus thuringiensis* LDC 532 16S ribosomal RNA gene, partial Sequence. Accession no: MH482863

## **WORKSHOP/ SEMINARS/SYMPOSIUM/FDP ATTENDED:**

- Workshop on “Being an effective teacher” organized by Centre for Human Resource Development, Lady Doak College, Madurai.
- Faculty Development Programme (FDP) on “Recent Trends in Content Creation” organized by the Centre for Communication and Multimedia, Lady Doak College, Madurai.
- VBC and IVBC Orientation Programme for Faculty organized by the Centre for Value Education, Lady Doak College, Madurai.
- Online Workshop on “Soft Skills for Capacity Building”, conducted by St. Joseph’s College, Tiruchirappalli.
- National level workshop on National level e-conference on “Bioprospecting of marine metabolites for promising biotechnology applications” at Sathyabama institute of science and technology, Chennai.
- National level Faculty Development Programme on “Innovative Pedagogies on online course design” organized by Centre for Communication and multimedia, Lady Doak College, Madurai.
- International Faculty Development Programme on “Soft Skills for Capacity Building” organized by Joseph’s Academy of Soft Skills (JASS), St. Joseph’s College (Autonomous), Tiruchirappalli
- International Webinar on “ A peek into using Next Generation Sequencing for understanding bacterial whole genome sequencing” organized by Department of Physiology, Saveetha Dental college & Hospitals, Chennai.
- Workshop on “Microtomy - an Experiential Learning” organized by Department of Biotechnology, Lady Doak College, Madurai
- Workshop on “Python programming” conducted by ICT Academy at Lady Doak College, Madurai
- National level workshop on “Basic Course on Flow cytometry” at Centre for Cellular and Molecular Platforms, National Centre for Biological sciences (NCBS), Bangalore.
- National level Workshop on “Whole genome sequencing and annotation” at Indian Institute of Spices Research (IISR), Kerala.
- State level workshop on “Good Laboratory Practices” conducted by Department of Zoology, Lady Doak College, Madurai.
- Seminar on “systems biology” held by Department of Biotechnology at Lady Doak College, Madurai.

- National seminar on “Biomolecular modelling from drug discovery to Nanotechnology” by Department of Life Sciences, Lady Doak College, Madurai.
- National seminar “*In silico* analysis of ADMET properties of Drug molecules” conducted by DBT-BIF at Lady Doak College, Madurai.
- Workshop on “Drug Designing” conducted by Department of Biotechnology at Lady Doak College, Madurai.
- Workshop on “Animal Handling” organized by PG and research department of Zoology, Lady Doak College, Madurai.
- Workshop on “Biological Data Handling” organized by Department of Biotechnology, Lady Doak College, Madurai
- National level symposium on “Applications of Systems Biology (2008)” at Lady Doak College, Madurai

#### **TRAININGS ATTENDED :**

- Training Undergone on “Basic Techniques in Biology” at Lady Doak College, Madurai.
- “Hands on training in clinical lab techniques” at Vijay laboratory, Madurai.
- Training on “Entrepreneurship development programme “at Lady Doak College, Madurai.
- Training on “Vermicomposting” at Agricultural college and research institute, Madurai.
- Hands on training on “Small molecule docking using Schrodinger” conducted by DBT-BIF Centre, Lady Doak College, Madurai.

#### **PROJECT DETAILS:**

- Molecular docking of phytoconstituents from *Desmodium gangeticum* against cardiac hypertrophy.
- **Ph.D:** Production and characterization of Polyhydroxyalkanoates (PHAs) produced by indigenous *Bacillus thuringiensis* sp and its applications. This work was focused on the study of isolation of potential microbial strain that synthesize PHB-HV and application of the extracted polymer as immunostimulant in *Oreochromis mossambicus*.
- **M.Sc. Project:** Screening of non-insecticidal *Bacillus thuringiensis* by metagenomic approach.
  - **PG Diploma Project:** Sequence analysis and Comparative structure prediction of Cry1A family of *Bacillus thuringiensis* insecticidal proteins and an insight into its toxicity spectrum.
- **B.Sc. Project:** Vermicomposting using cotton waste and analysis it’s efficiency on the growth of *vigna radiata* and *vigna mungo*  
**Term Paper:** Gene therapy using adenoviral vector.
- **Service Learning Programme** – Public health and hygiene - Creating awareness related to cleanliness and nutrition for children.

## **RESOURCE PERSON ROLES :**

- Hands on training in “Introduction to Bioinformatics for Beginners” organized by Department of Biotechnology, Mary Matha college of Arts and Science college, Periyakulam, Theni.
- Summer internship on “ Analytical and Instrumentation Techniques in Sciences” organized by Science Instrumentation Centre and R&D Cell (2024-25; 2023-24), Lady Doak College, Madurai.
- Workshop on “Biological Databases and Sequence Retrieval” during the “Bioinformatics- Tools and Applications (2015)” conducted at Lady Doak College, Madurai.
- Workshop on “Application of Bioinformatics tools in Molecular Taxonomic studies (Phase II) (2017)” organized by DBT-BIF centre, Lady Doak College, Madurai.
- Summer training on “Clinical Bioinformatics (2018)” organized by DBT-BIF Centre, Lady Doak College, Madurai.
- Workshop on “Network Biology (2019)” organized by DBT-BIF Centre, Lady Doak College, Madurai.
- In house training on “Basics in Bioinformatics (2020)” organized by DBT-BIF Centre, Lady Doak College, Madurai.

## **WORKSHOPS / CONFERENCES ORGANISED**

### **International level:**

- Organizing Committee Member - International Conference on New Avenues in Applied Science, jointly organized by the Internal Quality Assurance Cell (IQAC) and the Departments of Mathematics, Physics, Botany, Computer Science, and Biotechnology, held on 2nd & 3rd February 2023.

### **National Level:**

- Organising Secretary - National webinar on Exploring career prospects in Life Sciences held on 5-7, March, 2018.
- Organising Secretary - National Conference on Innovations in Biomedical Sciences (NCIBS '25), held on 27th & 28th March 2025.

### **State level:**

- Organising Secretary - Workshop on Application of Bioinformatics tools in molecular taxonomic studies (Phase II) at DBT - BIF Centre, Lady Doak College, Madurai held on 5-7, March, 2018.
- Workshop on Network Biology at DBT - BIF Centre, Lady Doak College, Madurai held on 27-28, February, 2019.

- Organising Secretary- Hands-on training, Clinical Applications of Bioinformatics Tools at DBT - BIF Centre, Lady Doak College, Madurai (14<sup>th</sup> – 15<sup>th</sup> May, 2018)
- Organizing Secretary - Biorealm'25, a state-level intercollegiate meet organized by the Department of Biotechnology on 13th March 2025.
- Organizing Secretary - Prof. Whitin Endowment Lecture Series organized by the Department of Biotechnology, Lady Doak College, Madurai (2023–2024)

#### **PANEL MEMBER**

- External examiner for practicals at Department of Zoology and Department of Microbiology Thiagarajar college, Madurai (2024 - till date)
- External examiner at Department of Biotechnology, American college, Madurai (2024-till date)

#### **RESPONSIBILITY AT COLLEGE LEVEL:**

- Member - Discipline committee (2024-25; 2025-26), Lady Doak College, Madurai
- LEB Convenor (2024-25; 2025-26), Lady Doak College, Madurai
- UG Admission Committee (2024-25;2025-26)

#### **RESPONSIBILTIY AT DEPARTMENT LEVEL:**

- Coordinator, Department Prizes for College Day and Graduation Day (2023-24).
- UG academic Club convenor (2023-24; 2024-25 and 2025-26)
- LiFE facilitator (2023-24; 2024-25 and 2025-26)