

ACADEMIC PROFILE

Dr. M. Lakshmi Prasuna

Department of Botany

Avvaiyar Government College for Women, Karaikal

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EDUCATION

2008-2015	University of Hyderabad Ph.D in Plant Sciences Thesis supervisor: Prof. Ch. Venkata Raman Graduation date: 1 st October 2015 Thesis title: “L-Phenylalanine catabolic multitasking and metabolic shift in <i>Rubrivivax benzoatilyticus</i> JA2” Outcome: • Study revealed the stable isotope assisted-metabolomics approach revealed the novel multiple catabolic pathways of Phenylalanine under varied growth conditions in <i>Rubrivivax benzoatilyticus</i> JA2 • Study also revealed the novel anthocyanin-like pigments production. • The study resulted in 4 publications
2006-2008	University of Hyderabad M.Sc in Plant Sciences (Biotechnology) Graduated with 76%
2003-2006	Sri Krishnadevaraya University, B.Sc in Biotechnology, Botany and Chemistry Graduated with 70%

RESEARCH

RESEARCH EXPERIENCE

1. **SERB NPDF** (National Postdoctoral Fellow) – (2016-2018)
2. **CSIR RA**(Research Associate) – (2015-2016)

2016-2018	Jawaharlal Nehru Technological University National Postdoctoral Fellowship –SERB Advisor: Dr. Sasikala Ch
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Project title “Deciphering the global and carbon metabolic adaptations of *Prochlorococcus* sp. to elevated CO₂: An integrated omics approach”

Outcomes:

- Stable isotope assisted metabolomic profiling revealed potential adaptation strategies of photosynthetic bacterium.
- RNA-sequencing data analysis under progress

2015-2016

Voluntary work at University of Hyderabad

Advisor: Prof. Ch. Venkata Ramana

Work done: “Characterisation of novel pigments produced by *Rubrivivax benzoatilyticus* JA2”

Outcomes:

Precursor feeding and altered growth conditions driven metabolic profiling revealed production of novel pigments by an anoxygenic photosynthetic bacterium, *Rubrivivax benzoatilyticus* JA2

This resulted in one publication in the Journal - **Biotechnology Letters** **2019**.

PROJECTS FUNDED BY

SERB

National Postdoctoral Fellowship (2016-2018), Govt. Of INDIA

Role: Principal Investigator, JNTUH, INDIA

Project title: “Deciphering the global and carbon metabolic adaptations of *Prochlorococcus* sp. to elevated CO₂: An integrated omics approach”

Outcome: Currently manuscripts are in pipeline

CSIR

Govt. Of INDIA

Role: Research Associate

Project Title: “Functional Insights into flavonoid –like pigments biosynthesis in *Rubrivivax benzoatilyticus* JA2: An Integrated Omics approach”.

RESEARCH INTEREST & SPECIALISATION

Microbial Physiology & Metabolism

Microbial Metabolomics

SUBJECT SPECIALISATION IN TEACHING

Plant Physiology, Plant Tissue Culture and Plant Biotechnology

RESEARCH ACTIVITIES (Till Date)

Currently I am working as Assistant Professor at Avvaiyar Government College for Women Karaikal,

I was simultaneously pursuing basic research in the form of M.Sc Dissertations (M.Sc Projects) during 2018-2020.

Total Dissertations supervised (Till Date) : 3

Details of the M.Sc Dissertations

S.No	Title of the Dissertation	Year
1.	Enrichment of anoxygenic and oxygenic phototrophic bacteria from selected paddy fields in Karaikal	2019
2.	Isolation of Plant Growth Promoting Rhizobacteria (PGPR) from the selected paddy fields in Karaikal	2020
3.	Anoxygenic Phototrophic Bacteria (APB):Its Potential Applications	2021

FELLOWSHIPS/AWARDS AND ACADEMIC HONORS

2016-2018	National Postdoctoral Fellowship, SERB, Gov. of India
2014	Best Poster Award - 3rd International Conference and Exhibition on Metabolomics and Systems Biology, San Antonio, USA
2011-2013	SRF, Council of Scientific & Industrial Research, Govt. of India
2008	M.Sc -SC/ST Gold Medal

TEACHING EXPERIENCE AND TRAINING

2018 - till date	Working as Assistant Professor, Department of Botany, Avvaiyar Government College for Women, Karaikal, Puducherry U.T, Courses: UG & PG Introductory Botany, Plant Physiology & Biochemistry, Plant Tissue Culture, Plant Biotechnology, Bioinformatics & Computer Applications in Biology, Plant Biotechnology, Ecology & Plant Resource Utilisation, Environmental Studies
23 rd Aug – 12 th Sep 2019	Completed the 21 days Orientation programme for young teachers under Life Science5s Stream at University of Hyderabad, Hyderabad. Organised by UGC-Human Resource Development Center(HRDC). Course taught teaching methodology, training in ICT based teaching,

course content development, and exposed to contemporary issues related to teaching-learning process.

13th–25th Sep 2021 Completed Refresher Course under Life Sciences Stream at Sri Venkateswara University, Tirupati organised by UGC-Human Resource Development Center(HRDC).

28th June 2022 Completed Workshop on NEP-2020 at Sri Venkateswara University, Tirupati organised by UGC-Human Resource Development Center(HRDC).

COLLEGE SERVICES

2018	Activity	Period
1.	Acted as Invigilator for the assigned Pondicherry University Examination Invigilation Duties (End Semester Exams Nov/Dec - 2018)	16 th , 20 th , 26 th Nov 1 st , 4 th , 6 th , Dec
2019		
1.	Organised one day Science Exhibition entitled “Plants- The Source of Life” at Department of Botany, AGCW	15 th March
2.	Acted as In-Charge of the college Conference Hall	
3.	Acted as a member in Constitution Committee for the Celebration of College & Sports Day 2019	11 th April
4.	Acted as a member in Constitution Committee for the Inauguration of newly constructed Academic Block for AGCW	8 th Feb
5.	Acted as Invigilator for the assigned University Examination Duties (End Semester Exams)	26 th , 29 th April, 3 rd May
6.	Completed Orientation Programme in Life Sciences from UGC-HRDC, University of Hyderabad, Hyderabad	23 rd Aug to 12 th Sep
2020		
1.	Organised one day Seminar at Department of Botany, AGCW on “Recent Advances in Plant Sciences and Traditional Medicines”	5 th March 2020
2021-22		
1.	Acted as Assistant Chief Superintendant for University Examinations at AGCW scheduled during the period March 2021 (End Semester Exams)	(March-July)

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| 2. Member of Eco Club at AGCW | 2021 |
| 3. Acted as Presiding Officer in General Elections to the Puducherry Legislative Assembly - 2021 | 6 th April 2021 |
| 4. Completed Refresher Course in Life Sciences from UGC-HRDC, Sri Venkateswara University, Tirupati. | 13 th to 25 th Sep 2021 |
| 5. Acted as Internal Examiner in the University Practical Exams for UG B.Sc Botany III, II & I year courses | Dec 2021 – Feb 2022 |

2021-22

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| 1. Organised One Day Exhibition cum Poster presentation on “Plants – Treasure of the Earth” on event of Earth Day | 25 th April 2023 |
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PRESENTATIONS:

Oral Presentations

1. M. Lakshmi Prasuna, Venkata Ramana, Ch (10th Jan 2012). Insights into the L-phenylalanine metabolism of *Rubrivivax benzoatilyticus* JA2^T coupled to production of phenolic compounds and their bioprospecting. Plant Sciences Colloquium, University of Hyderabad, INDIA.
2. M. Lakshmi Prasuna, Mujahid. Md, Ch. V. Ramana, (25th March 2014). Metabolomics reveals altered metabolic pathways to L-phenylalanine and its catabolic shift in *Rubrivivax benzoatilyticus* JA2. 3rd International Conference and Exhibition on Metabolomics & Systems Biology, San Antonio, USA

Poster Presentations

1. Shabbir Ahmad*, **M. Lakshmi Prasuna**, Mujahid M, Ch.V. Ramana. (2015). Novel melanoid-like pigment production by a betaproteobacterium, *Rubrivivax benzoatilyticus* JA2. **The Association of Microbiologists of India (AMI- 2020), New Delhi, INDIA**
2. **Lakshmi Prasuna, M.**, Mujahid, M., Ramana, Ch., Sasikala, Ch. (2014). Stable isotope based metabolic profiling revealed catabolic multitasking of L-phenylalanine in *Rubrivivax benzoatilyticus* JA2. **3rd International Conference on Metabolomics and Systems Biology. San Antonio, USA.**

PUBLICATIONS:

RESEARCH ARTICLES:

1. Shabbir Ahmed, Mujahid, M., **Lakshmi Prasuna M.**, Sasikala, Ch., Ramana, Ch.V. Stable isotope assisted metabolic profiling reveals new insights into L-tryptophan

- chemotrophic metabolism of *Rubrivivax benzoatilyticus* JA2. **World Journal of Microbiology and Biotechnology**, 2023, 39:4:1-14
2. Shabbir Ahmed, Mujahid, M., **Lakshmi Prasuna M.**, Sasikala, Ch., Ramana, Ch.V. Tryptophan, a non-canonical melanin precursor: New L-tryptophan based melanin production by *Rubrivivax benzoatilyticus* JA2. **Scientific Reports** 2020 10:8925
 3. Mujahid, M., **Lakshmi Prasuna M.**, Sasikala, Ch., Ramana, Ch.V. New insights into aniline toxicity: Aniline exposure triggers envelope stress and extracellular polymeric substance formation in *Rubrivivax benzoatilyticus* JA2. **Journal of Hazardous Materials**. 2020, 385/121571
 4. **Lakshmi Prasuna M.**, Mujahid, M., Sasikala, Ch., Ramana, Ch.V. Precursor feeding and altered-growth conditions driven metabolic profiling revealed production of novel pigments by an anoxygenic photosynthetic bacterium, *Rubrivivax benzoatilyticus* JA2. **Biotechnology Letters**. 2019, 41:813-822
 5. Deepshikha Gupta, Mujahid, M., **Lakshmi Prasuna M.**, Sasikala, Ch., Ramana, Ch.V. iTRAQ-based quantitative proteomics reveals insights into metabolic and molecular responses of glucose-grown cells of *Rubrivivax benzoatilyticus* JA2. **Journal of Proteomics**, 2019, 194: 49-54.
 6. **Lakshmi Prasuna M.**, Mujahid, M., Sasikala, Ch., Ramana, Ch.V. Pyomelanin production: Insights into the incomplete aerobic l-phenylalanine catabolism of a photosynthetic bacterium, *Rubrivivax benzoatilyticus* JA2. **International Journal of Biological Macromolecules**. 2019, 126: 755-764
 7. **Lakshmi Prasuna M.**, Mujahid, M., Sasikala, Ch., Ramana, Ch.V. Stable Isotope-Assisted Metabolic Profiling Reveals Growth Mode Dependent Differential Metabolism and Multiple Catabolic Pathways of L-Phenylalanine in *Rubrivivax benzoatilyticus* JA2. **Journal of Proteome Research**, 2018, 17: 189-202.
 8. Mujahid, M., **Lakshmi Prasuna M.**, Sasikala, Ch., Ramana, Ch.V. Proteo-metabolomics reveals systemic responses of *Rubrivivax benzoatilyticus* JA2 to aniline stress. **Journal of Proteome Research**, 2015, 14(2): 711-727.
 9. **M. Lakshmi Prasuna**, Md. Mujahid, Ch. Sasikala, Ch. Venkata Ramana. 2014. Metabolomics reveals altered metabolic pathways to L-phenylalanine and its catabolic shift in *Rubrivivaxbenzoatilyticus* JA2 published as “ Proceedings of 3rd International Conference and Exhibition on Metabolomics and Systems Biology” in **Metabolomics** 2014, 4:2.
 10. **Lakshmi Prasuna M.**, Mujahid, M., Sasikala, Ch., Ramana, Ch.V.. L-Phenylalanine catabolism and l-phenyllactic acid production by a phototrophic bacterium, *Rubrivivax benzoatilyticus* JA2. **Microbiological Research**, 2012, 167:526-31
 11. Mujahid Mohammed, Arvind Isukapatla, Lakshmi Prasuna Mekala, Rama Prasad Eedara Veera Venkata, Sasikala Chintalapati, and Venkata Ramana Chintalapati. (2011). Genome Sequence of the Phototrophic Betaproteobacterium *Rubrivivax benzoatilyticus* Strain JA2^T. **Journal of Bacteriology**, 2011, 193: 2898–2899.

BOOK CHAPTER

1. Debashish Dey, Lakshmi Prasuna Mekala, Mujahid Mohammed Integrating Omics Technologies to Understand Microbial Systems 2021, 1:191-212