

Dr. Meenu R Mridula, Ph.D.

✉ m.r.meenakshi@gmail.com



☎ 9020085604

☰ Reg: no: 7184

Education

- 2012 – 2018  **Ph.D., University of Kerala, Thiruvananthapuram** in Botany.
Thesis title: *In vitro* culture and isolation of Tryptanthrin from *Wrightia tinctoria* R. Br. (Apocynaceae).
- 2012  **Junior Research Fellowship, Council Of Scientific and Industrial Research, New Delhi** in Life Science.
Proficiency: 0028/0644 rank.
- 2011-2012  **KSCSTE Research fellowship, Kerala State Council for Science Technology and Environment, Government of Kerala** in Life Sciences.
- 2009 – 2011  **M.Sc. Genetics and Plant Breeding, University of Kerala, Kariavattom** with weighted average of 81 (Eighty One).
Thesis title: *Genetic diversity analysis in six varieties of Abelmoschus esculentus* Linn. (Malvaceae).
Proficiency: University Fourth rank.
- 2006 – 2009  **B.Sc. (Hons) Botany, University of Kerala, Mar Ivanios College, Thiruvananthapuram.** with first class honours (93.6 percent)
Proficiency: University Second rank.
- 2007  **Certificate course in Communicative English** from Institute of distance education, University of Kerala with first class (72.5 percent)
- 2006  **All India Senior School Certificate Examination, Central Board of Secondary Education, Delhi.** from Arya Central School, Pattom with first class (68 percent)
- 2004  **Secondary School Examination, Central Board of Secondary Education, Delhi.** from Arya Central School, Pattom with first class (86 percent)

Employment History

- 2023-2025  **Guest Lecturer.** Department of Botany and Biotechnology, Mar Ivanios College (Autonomous), Trivandrum, Kerala.
- 2020 - 2023  **Guest Lecturer.** PG Department of Botany, Iqbal College Peringamala, Kerala.

Courses taught and other services provided to students and the home institution

2024-25  Contributed to the development of the Four-Year Undergraduate Programme (FYUGP) curriculum in Botany at Mar Ivanios College (Autonomous), University of Kerala. Played an active role in designing and structuring interdisciplinary papers such as Medicinal Plant Merchandising, Food Processing, Carbon Metabolism in Plants, Germplasm Management, and Phytoremediation and Environmental Biotechnology.

Current Research Interests

My research focuses on the intersection of plant specialized metabolism, biotechnology, and sustainable natural product discovery. Specifically, I am working to elucidate the biosynthetic pathway of tryptanthrin, an indoloquinazoline alkaloid with documented presence in traditional anti-inflammatory formulations. This work integrates plant tissue culture, elicitor-mediated secondary metabolite enhancement, and computational biology to identify and validate gene candidates involved in biosynthesis.

I am particularly interested in applying bioinformatics, transcriptomic profiling, and in vitro pathway reconstruction techniques to characterize unknown enzymatic steps in medicinal plant metabolism. By bridging traditional ethnobotanical knowledge with modern synthetic biology, my goal is to enable sustainable and scalable bioproduction

of bioactive compounds. Long-term, I aim to develop a research and teaching framework that connects plant-based drug discovery with bioengineering tools to promote health innovation and capacity-building in both India and the U.S.

Research Publications

Journal Articles

- 1 **Mridula, Meenu R.** (2021). Methyl jasmonate induced tryptanthrin augmentation in cell suspension cultures of *Wrightia tinctoria*. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 9(11), 52–61.
- 2 **Mridula, Meenu R & Nair, A. S.** (2018). Rapid micro-propagation of *Wrightia tinctoria* (Roxb.) R. Br. : A medicinal tree. *International Journal of Botany Studies*, 3(1), 126–131.
- 3 **Mridula, Meenu R, Nair, A. S., & Kumar, K. S.** (2018). Genetic programming based models in plant tissue culture: An addendum to traditional statistical approach. *PLoS Computational Biology*, 14(2).
- 4 Nair, B. R., Vadhyar, R. G., **Meenu, R M**, Chandran, R. P., Resmi, S., Sreeja, J., & Valsaladevi, G. (2013). Identification of molecular markers in species of *Abelmoschus* Medik. (Malvaceae) for inter-and intra-specific discrimination. *Indian Journal of Fundamental and Applied Life Sciences*, 3(1), 52–61.

Books and Chapters

- 1 **Meenu Mridula.** (2019). *Symbolic Regression In Plant Tissue Culture An Addendum To Traditional Statistical Approach*. LAMBERT Academic Publisher, ISBN 978-613-9-95927-3.

Skills

Languages	Strong reading, writing and speaking competencies for English and Hindi.
Misc.	Academic research, R, teaching, training, Molecular analysis, L ^A T _E X typesetting and botanical illustration.

Miscellaneous Experience

Presentation/Awards and Achievements

- | | |
|------|---|
| 2017 | Poster presentation at XIX International Botanical Congress, Shenzhen Convention and Exhibition Centre, China. |
| 2016 | Resource person at National workshop on plant tissue culture, cell culture and cryopreservation technology, Department of Botany , University of Kerala. |
| | Keynote address at International Symposium on Science Education and Sustainable Development, Department of Botany , University of Kerala, Hard Rain Project, UK and Canterbury Christ Church University. |
| 2015 | Best paper award, " In vitro approaches for tryptanthrin production in <i>Wrightia tinctoria</i> R. Br." at National symposium on CHANGING PRESPECTIVES IN LIFE SCIENCES, Multidisciplinary Annual Research Conference in Life Sciences (MARC Life Sciences 2015) . |
| 2012 | Paper presentation,"Screening the genetic variability in two cultivated species of <i>Abelmoschus</i> Medik." at Eleventh All India conference on Cytology and Genetics,Bangalore. |

