SCIENTIST PROFILE

<table>
<tr><td>Name</td><td>Raju Mondal</td><td rowspan="4">  </td></tr>
<tr><td>Designation</td><td>Scientist C</td></tr>
<tr><td>Employee No.</td><td>6022</td></tr>
<tr><td>Educational qualifications</td><td>M.Sc. in Botany, Specialization: Cytogenetics & Plant Breeding.
Ph.D. pursuing from Dept. of Botany, Center of Advanced Study in Botany; ISc, Banaras Hindu University, Varanasi 221005.</td></tr>
<tr><td>Area of Specialization</td><td colspan="2">Cytogenetics & Plant Breeding</td></tr>
<tr><td>e-mail</td><td colspan="2">rajum.csb@nic.in</td></tr>
<tr><td>Salient Achievements</td><td colspan="2">• Developed a protocol for metaphase chromosome count and estimated chromosome number of 200 mulberry accessions.
• Identified polyploidy-associated traits in mulberry.
• Developed a user-friendly RNASeq analysis strategy and prediction function.
• Cloned (CDS) and promoter from different model and non-model plants.
• Developed transgenic plants through tissue culture and floral dip transformation.
• Developed protocol somatic embryogenesis mediated plant regeneration in non-model plants.</td></tr>
<tr><td>Awards / Honours</td><td colspan="2">• 2nd prize for the Oral presentation: National seminar and Conference: Climate Smart Sericulture-2022: Climate-smart mulberry through the implementation of trait-specific mulberry accessions; Organized by Central Silk Board, Bengaluru, Karnataka 560102
• Qualified ICAR-ASRB NET in Ag. Biotechnology (2016).
• Qualified MHRD-CSIR NET in Life Science (2017).
• JRF Fellowship funded by DST-SERB, New Delhi (2026-18).
• SRF Fellowships funded by ICAR-CRIJAF (2013-16).
• Dr. N.K. Bhattacahryya Memorial Prize for obtained Highest marks in M.Sc. special paper Cytogenetics & Plant Breeding.</td></tr>
<tr><td>Number of publications:</td><td colspan="2">1) Research Papers: 32
2) Book chapters: 04
3) Popular articles: Nil
4) Conference/Seminar abstracts: 04</td></tr>
<tr><td>Top 5 publications</td><td colspan="2">1. Mondal, R. *, Antony, S., Gnanesh, B.N., Thanavendan, G., Ravikumar, G., Sreenivasa, B.T., Doss, G.S. and Vijayan, K., 2023. A Protocol for Mitotic Metaphase Chromosome Count Using Shoot Meristematic Tissues of Mulberry Tree Species. Bio-protocol, 13(17). (*Corresponding author).
2. Gnanesh, B.N.*, Mondal, R.*, GS, A., HB, M., Singh, P., MR, B., P, S., Burji, S.M. and V, S., 2023. Genome size, genetic diversity, and phenotypic variability imply the effect of genetic variation instead of ploidy on trait plasticity in the cross-pollinated tree species of mulberry. PloS one, 18(8), p.e0289766. (*Corresponding author).
3. Biswas, S., Mondal, R., Srivastava, A., Trivedi, M., Singh, S.K. and Mishra, Y., 2022. In silico characterization, molecular phylogeny, and expression profiling of genes encoding legume lectin-like proteins under various abiotic stresses in Arabidopsis thaliana. BMC</td></tr>
</table>

	genomics, *23*(1), 480. 4. **Mondal, R.**, Biswas, S., Srivastava, A., Basu, S., Trivedi, M., Singh, S.K. and Mishra, Y., 2021. In silico analysis and expression profiling of *S*-domain receptor-like kinases (SD-RLKs) under different abiotic stresses in Arabidopsis thaliana. *BMC genomics*, *22*, 1-15. 5. **Mondal, R.***, Kumar, A. and Chattopadhyay, S.K., 2021. Structural property, molecular regulation, and functional diversity of glutamine synthetase in higher plants: a data-mining bioinformatics approach. *The Plant Journal*, *108*(6), 1565-1584. (*Corresponding author). **[Google Scholar:** https://scholar.google.com/citations?user=xaDE3ikAAAAJ&hl=en**]**
Work Experience	**Working Experience as Scientist:** (01.11.20218 to continuing) At CSGRC-Hosur involved in 09 different projects as PI or CI. **Working Experience as Research Fellow:** • **As JRF (27.01.2017- 31.10.2018):** 1. Elucidation of the role of *S-locus receptor kinases* (SRKs) and *S-locus glycoproteins* (SLGs) in response to reactive oxygen species (ROS) in *Arabidopsis thaliana*; Supervisor Dr. Yoges Mishra (PI), Assistant Professor, Dept. of Botany, ISc, Banaras Hindu University, Varanasi-221 005. • **As SRF (30.04.2013- 10.06.2016):** 1. Development of high-yielding and better-quality jute genotype by integrating conventional and advanced strategies; Supervisor Dr. Pratik Satya (PI), Principal Scientist, at ICAR-CRIJAF, Kolkata. 2. Towards development of transgenic jute and allied fibres for abiotic and biotic stress tolerances for enhanced productivity at sustainable scale; Supervisor Dr. Asit B. Mandal (Ret.), Principal Scientist, ICAR-CRIJAF, Kolkata **Hands-on experience in details:** • **Transgenic Development**: *Agrobacterium*-mediated genetic transformation and transgenic development (Tobacco, Jute, Rice, *A. thaliana*). • **Genetics & Molecular Biology:** Plasmid & genomic-DNA/ protein /RNS isolation, purification & Quantification, PCR optimizations, SemiqPCR/Real Time-PCR, expression analysis, cDNA/gDNA-Cloning, GATEWAY cloning, Marker analysis & RE-mapping. • ***In vitro* cell technology and tissue culture:** Micro-propagation, single cell suspension culture, organogenesis and somatic/ zygotic embryogenesis. • **Microscopy (Cyto-Histochemical/Anatomical Analysis):** Tissue sectioning and staining. *Gus* histology. *In situ* localization and detection. • **Microbiology**: Competent cell preparation, Bacterial cell transformation (*E coli*: DH 5alpha, DH10D, *A. tumefaciens* -GV3101, LBA4404). • **Proteomic tools**: SDS-PAGE and 2-Dimensional gel electrophoresis • **Bioinformatics tools & Statical Software**: RNA-Seq data analysis; Co-expression analysis; Gene interaction analysis; Co-functional gene

	networks analysis; Gene structure, evolution and relationship analysis; GO analysis; Gene duplication and block analysis; Promoter and CREs analysis; Pro-Motif analysis, Primer design, Statical analysis, etc.
Projects Handled	**<u>Total Ongoing Projects: 04</u>** **As Principal Investigator (PI)**: **01** • **PIG06010SIC** (Studies on cytological status of mulberry genetic resources, Phase II (Feb 2024 to Jan 2027). **As Co-Investigator (CI)**: **03** • **PIE-06008SI**: Exploration, Collection, Characterization, Evaluation, Re-establishment, Conservation and Supply of Mulberry Genetic Resources (MGRs) (Phase-X). • **AIG-06007MI**: Molecular characterization and assessment of genetic diversity in silkworm (*Bombyx mori*) germplasm (Jan.2023-Dec.2025). • **MTL01025MI**: Life Cycle Assessment of Mulberry Silk: A National Assessment 3 years (Mar. 2022 – Feb. 2025). **<u>Total Concluded Projects: 05</u>** **As Principal Investigator (PI)**: **01** • **PIG06004SI**: Studies on cytological status of mulberry genetic resources. (Mar, 2020 - Feb, 2023). **As Co-investigator (CI)**: **04** • **PIG 06005 SI:** Molecular characterization of mulberry genetic resources for the identification of duplicates and effective utilization (Mar.2020 to Feb.2023). • **PIT08004 MI**: Study on epigenetic and autophagy modifiers on induction of haploid microspore embryogenesis in mulberry (Mar, 2020 - Feb, 2023) • **PIE 06001 SI:** Collection, characterization, evaluation, conservation, and supply of mulberry genetic resources (Phase IX); (Nov. 2018 – Oct.2021). • **PIE-3575**: Evaluation of mulberry genetic resources for functional traits associated with resilience to climate change (2019-2020).
Training imparted	• Act as organizing committee member as well as take Technical Session on "Characterization and Evaluation of Mulberry Germplasm Resources" in Capacity Building and Training for the Year 2022-23, Under Step Programme at CSGRC, Hosur (09.01.2023 &10.01.2023). **Trained JRF/SRF: 01** • **Ms. Sreya Antony**, under the project PIT 08004 MI: Study on epigenetic and autophagy modifiers on induction of haploid microspore embryogenesis in mulberry (March 2020 – February 2023). **Trained Project Assistant: 01** • **R. Gokulraj**, under the project MTL01025MI: Life cycle assessment of mulberry silk; a National Assessment (16.03.2023-continuing). **M.Sc. Dissertations: 06** • Decoding leaf anatomy and morin content in *Morus indica* and *Morus notabilis* by **Gayathri. R** and **Suryamathi. J** Dept of Biotechnology, M.G.R College, Hosur (Dec, 2023-Feb, 2024). • Physiological efficiency and cyto-molecular characterization of four

	mulberry verities by **Mr. N. Mohamed Thowfeek**, Biotechnology by Hindusthan College of Arts & Science, Bharathiar University, Coimbatore, Tamil Nadu (January to March 2022). • Anatomical, cytological and molecular characterization of potential four mulberry accessions by **Mr. S. Vishwa Rahul** Biotechnology by Hindusthan College of Arts & Science, Bharathiar University, Coimbatore, Tamil Nadu (January to March 2022). • Morphological, physiological and molecular characteristics of Mulberry Genetic Resources By **Ms. Pavithra.U**, Dept of Biotechnology, M.G.R College, Hosur (Dec, 2019-Feb, 2020) • Anatomical, Biochemical and Molecular characterization of Mulberry Genetic Resources by **Ms. Harini S**, Dept of Biotechnology, M.G.R College, Hosur (Dec, 2019-Feb, 2020). **M.Sc. Internship: 01** • **Dhanushiya R S, M.Sc. (4th Sem)** from Erode Sengunthar Engineering College (autonomous), Perundurai, Tamil Nadu, (One month-Jan 2024). **B.Sc. Dissertations and Theses: 02** • Morpho-anatomical and biochemical attributes of different ploidy of *Morus* spp. by **Thaseen.R** and **Latha. R B.** Tech in Biotechnology of IV-Year, from Department Of Biotechnology, Adhiyamaan College Of Engineering (19th December 2022 to 4th February 2023).
Training attended	• "Introduction to Genomics and 3 Bioinformatics" 3-day (22nd -24th September 2021) conducted by C-CAMP and Bengaluru Genomics Center. • "Foundation Training" (2nd Nov-31st Dec, 2018; two months) organized by Capacity Building & Training Division, CSB, Ministry of Textiles, Govt. of India in C.O-Bengaluru, C.T.R.& T.I- Ranchi, M.S.S.O- Guwathi, C.S.R&T.I-Mysure and C.S.T.R.IBengaluru.
Any other information	**Brief Description of R&D: Institute Level** ➢ Identification of major areas of research in the conservation of mulberry genetic resources. ➢ Responsibilities to function the research projects: Overall execution of the projects; Identification of accessions; Procurement of instruments, consumables, and stationery items; Recruitment and Hands-on tanning of JRF/PA; Hands-on tanning of Dissertations/Thesis; Step-by-step and time-to-time activity as per project milestone; Validation and Compilation of data; Statistical analysis; Presentation, Submission of reports and Publication. ➢ Collection, conservation, and maintenance of mulberry genetic resources. Evaluation of new germplasm for registration. ➢ Preparation of Scientific and Technical report/documents. ➢ Maintenance of equipment/instruments. ➢ Teaching, Training, and Demonstration. ➢ Acting as a Member in different committees.