

PROSANTA SAHA

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Introduction:

Presently I am working as Assistant Professor of Botany under West Bengal Education Service. My research interest is to understand physiological response of plants to abiotic stresses and develop stress tolerant plants by biotechnological approaches.

During PhD I developed a robust method of stable genetic transformation of the recalcitrant biodegradable fibre crop, jute. During postdoctoral research as SERB NPDP and DS Kothari PDF, I tried to study plant response to osmotic stress and characterize a protein involved in mRNA surveillance mechanism.

Educational Qualifications:

Degree	Discipline	University	Year of award	Percentage of marks	Class obtained
Doctor of Philosophy in Science (Ph.D.)	Botany <u>Specialization:</u> Plant Biotechnology, <u>Thesis title:</u> Development of an efficient genetic transformation system of jute	University of Calcutta	2017	-	-
Master of Science (M.Sc.)	Botany <u>Specialization:</u> Plant Physiology, Biochemistry and Plant Molecular Biology	University of Calcutta (Scottish Church College)	2008	68.20	I

Research and Teaching positions held:

Position	Awarding agency	Tenure
Assistant Professor of Botany (W.B.E.S.)	West Bengal Education Service, Government of West Bengal.	August 2021 - Present
University Grants Commission - Dr. D.S. Kothari Postdoctoral Fellow (UGC DSKPDF; higher fellowship)	UGC, Govt. of India	March 2019 – August 2021
National Postdoctoral Fellow (NPDP) and Principal Investigator of project	DST SERB, Govt. of India	April 2017 – March 2019

Guest Faculty of Botany	Vivekananda College, Kolkata	September 2016 – January 2017
Senior Research Fellow (SRF)	UGC BSR, RFSMS, Govt. of India	September 2014 – August 2016
Junior Research Fellow (JRF)	UGC BSR, RFSMS, Govt. of India	September 2012 – September 2014
Senior Research Fellow (SRF)	UGC UPE, Govt. of India	January 2011 – September 2012
Junior Research Fellow (JRF)	UGC UPE, Govt. of India	January 2009 – January 2011

Awards and Fellowships:

- ❖ Awarded University Grants Commission - Dr. D.S. Kothari Postdoctoral Fellowship (**UGC DSKPDF; higher fellowship**), at the Department of Life Science and Biotechnology, Jadavpur University (March 2019 – March 2022).
- ❖ Awarded Department of Science and Technology SERB National Postdoctoral Fellowship (**DST SERB NPDF**), at the Department of Life Science and Biotechnology, Jadavpur University (April 2017 – March 2019).
- ❖ Awarded University Grants Commission Research Fellowship in Sciences for Meritorious Students (**UGC RFSMS**), at the Department of Botany, University of Calcutta, India (September 2012 – 26.08.2016).
- ❖ Qualified for Lectureship (rank 44 in LIFE SCIENCES) in **CSIR-UGC NET** held on June 2010.
- ❖ Qualified **ARS NET 2017** for lectureship in the discipline Agricultural Biotechnology.
- ❖ Qualified **GATE Examination 2008**, with 94.82 percentile & all India rank of 676.

Technical proficiency:

- ❖ Plant tissue culture and genetic transformation by *Agrobacterium* mediated method and by particle bombardment.
- ❖ Molecular analyses of transgenic plants by PCR, RT PCR, quantitative Real time PCR, Southern blotting and hybridization (using radioactive and non – radioactive probes).
- ❖ Protein isolation and quantification, biochemical assays for enzymes and metabolites, SDS-PAGE and 2-Dimensional gel electrophoresis, Western blotting, Co-immunoprecipitation to study protein-protein interactions, GCMS-based analyses of total metabolites from plant samples.
- ❖ Gene cloning, pyramiding and targeted deletion – work planning and approach using molecular techniques such as restriction digestion, ligation, bacterial transformation by CaCl₂ method and electroporation, yeast transformation by Lithium acetate method and electroporation, colony screening and primer designing, protein expression and analysis in bacterial and yeast systems by Western blotting, Targeted deletion by inverse PCR method, Construction of gene disruptor strains in yeast.
- ❖ Mitotic chromosome preparation and karyotyping using light and fluorescent microscopes with appropriate dyes and stains.
- ❖ Genome size quantification using FACS-Calibur flowcytometer, ISSR.

Research Experience:

- ❖ Previously worked as **Dr. D.S. Kothari Postdoctoral Fellow (UGC DSKPDF; higher fellowship)** under the mentorship of Prof. Biswadip Das, Professor at the Department of Life

Science and Biotechnology, Jadavpur University, Kolkata. The research aims at **biochemical and genetic characterization of a novel cofactor of the nuclear exosome in yeast**.

- ❖ Previously worked as **National Postdoctoral Fellow** and **Principal Investigator of DST SERB funded project** under the mentorship of Prof. Biswadip Das, Professor at the Department of Life Science and Biotechnology, Jadavpur University, Kolkata. The research is to **identify and characterize the differential protein expression** of *Corchorus depressus* in response to osmotic stress.
- ❖ Worked on **Plant Biotechnology** as a full time Ph.D. Research Scholar under the supervision of Dr. Karabi Datta, and Prof. Swapan K. Datta at the Department of Botany, University of Calcutta, Kolkata. **The work involved plant tissue culture and development of reproducible protocols of stable genetic transformation of the recalcitrant crop, jute.** Both *in vitro* and *in vivo* methods of *Agrobacterium* infiltration were standardized by transient expression studies of reporter genes and selectable markers. This was followed by implementing the optimized protocols for stable genetic transformation. Stable integration and inheritance of the transgene, and its segregation into progeny of transgenic plants were further studied. The transformation protocols were further employed to impart osmotic stress tolerance trait to the crop by incorporating *AtDREB1A* transgene, under the control of the osmotic-stress inducible *rd29A* promoter.
- ❖ As a part of Doctoral thesis, worked on **Jute Genomics** at Central Research Institute for Jute and Allied Fibres (CRIJAF) under the supervision of Prof. Swapan K. Datta, Dr. Karabi Datta and Dr. Debabrata Sarkar. The work involved preparation of karyotypes and studying the karyotype asymmetry parameters of the Asian *Corchorus* species, flow cytometry based genome size estimation of three genotypes for the first time, and studying the inter-relationship of the Asian *Corchorus* species using molecular markers.
- ❖ Completed M.Sc. dissertation entitled “**Effect of arsenic on rice seedlings**” under the supervision of Dr. Chandan Mukherjee at the Department of Botany, Scottish Church College under University of Calcutta, India. The toxic effect of arsenic on rice seedlings and its reversal by glycine and phosphate was studied and validated by several enzyme assays and metabolite analyses.

Teaching Experience:

- ❖ Presently working as an Assistant Professor of Botany (W.B.E.S.) at the Department of Botany, Durgapur Government College, under Kazi Nazrul University (04.08.2021 – present). Take theoretical and practical classes of **Botany** of B.Sc. Botany Honors and Program students, following the curriculum of Kazi Nazrul University.
- ❖ Worked as a **guest lecturer of Botany** at Vivekananda College, under University of Calcutta, Kolkata (01.09.2016 – 28.01.2017). Took theoretical and practical classes on **Plant Physiology and Biochemistry**, of final year B.Sc. Botany Honors curriculum of University of Calcutta.

Principal Investigator of Project:

- ❖ **DST SERB** funded project entitled “**A proteo-genomic approach, to decipher the osmotic stress induced gene expression of the drought-tolerant wild relative of jute, *Corchorus depressus***”. Project duration: 03.04.2017 to 13.03.2019. Total cost of project: Rs. 1,747,785.00.

Publications:

I. Research Articles

- ❖ **Saha P**, Datta K, Majumder S, Sarkar C, China SP, Sarkar SN, Sarkar D, Datta SK (2014) *Agrobacterium* mediated genetic transformation of commercial jute cultivar *Corchorus capsularis* cv. JRC 321 using shoot tip explants. *Plant Cell Tissue Organ Cult.* 118(2): 313-326.
- ❖ **Saha P**, Sarkar D, Kundu A, Majumder S, Datta SK, Datta K (2014) Karyotype analysis and chromosomal evolution in Asian species of *Corchorus* (Malvaceae s.l.). *Genet Resour Crop Evol.* 61(6): 1173-1188.
- ❖ Majumder S, Sarkar C, **Saha P**, Gotyal BS, Satpathy S, Datta K, Datta SK (2018) Bt Jute expressing fused δ -endotoxin cry1Ab/Ac for resistance to Lepidopteran pests. *Front Plant Sci.* 8: 2188.
- ❖ Mondal R, Madhurya K, **Saha P**, Chattopadhyay SK, Antony S, Kumar A, Roy S, Roy D (2021) Expression profile, transcriptional and post-transcriptional regulation of genes involved in hydrogen sulphide metabolism connecting the balance between development and stress adaptation in plants: a data-mining bioinformatics approach. *Plant Biol.* doi:10.1111/plb.13378

II. Book Chapter

- ❖ Majumder S, **Saha P**, Datta K, Datta SK (2019) Fibre crop, jute improvement by using genomics and genetic engineering. In: Tuteja N, Tuteja R, Passricha N, Saifi S (eds) *Advancement in Crop Improvement Techniques*. Elsevier, Amsterdam, Netherlands, pp. 363-384.

Invited lecture:

- ❖ Delivered invited lecture on the topic “**Genetic Engineering approaches for crop improvement**” in the online Add-On Certificate Course on Advanced Techniques in Biology, Organised by The Department of Microbiology, Mrinalini Datta Mahavidyapith.

Workshops and Seminars:

- ❖ Participated in “**Hands on laboratory course on CRISPR-Cas Gene Editing**” – Jointly organized by Shree Guru Govind Singh Tricentenary (SGT) University, Gurugram and Alliance of Biodiversity International and CIAT, New Delhi on March 23 – 27, 2021.
- ❖ Participated in “**Bioinformatics workshop on Genomics, Proteomics, Drug Design and High Performance Computing**” – Organized by Supercomputing Facility for Bioinformatics & Computational Biology (SCFBio), Indian Institute of Technology, New Delhi on September 12 – 22, 2016.
- ❖ Participated as Organizing Secretary of the One day International Webinar on “**Conventional and Advanced Air Sampling Techniques for Airborne Pathogens and Allergens**” – Organized by the Department of Botany, in collaboration with IQAC, Durgapur Government College, West Bengal on September 20, 2021.

Communication Skills:

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| ❖ English | Read, Write and Speak. |
| ❖ Hindi | Read and Speak. |
| ❖ Bengali | Read, Write and Speak. |

Declaration:

I, Prosanta Saha, hereby declare that the above information provided by me are accurate and correct to the best of my knowledge and belief.

Date: 18.03.2022

Place: Kolkata

Signature:

A handwritten signature in black ink that reads "Prosanta Saha". The signature is written in a cursive style and is positioned above a horizontal line.