FACULTY ACADEMIC PROFILE

SERAMPORE GIRLS COLLEGE

13, T.C. Goswami Street, Serampore, Hooghly-712201, West Bengal, India

Dr. MADHUSREE HALDER

COLLEGE APPOINTED CONTRACTUAL TEACHER

DATE OF JOINING: 11/02/2020

Research History:

Nanotechnology:

a. Myco-synthesis of gold and platinum nanoparticles and their characterization by transmission electron microscopy (TEM) and field emission scanning electron microscopy (FE-SEM), XRD, FTIR, DLS & ZETA POTENTIAL
b. Use of nanoparticles for gene delivery and transformation of fungi, bacteria & plants.
c. Use of nanoparticles as anti-fungal and anti-bacterial agents too.

Plant-Pathogen interaction:

a. First report on Rice-*Curvularia affinis* pathosystem.
b. Worked on Tomato-*Alternaria solani* pathosystem.

Skills

- **Nanotechnology**

  Green synthesis of nanoparticles, Characterization of nanoparticles: UV-Vis spectroscopy, Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), Field Emission Scanning Electron Microscopy (FE-SEM), Dynamic Light Scattering (DLS), Zeta

Potential, Atomic Force Microscopy (AFM), X-RAY Diffraction (XRD), Fourier Transform Infra-Red spectroscopy (FTIR).

- **Molecular Biology:**

  Gene cloning, Restriction digestion-ligation, colony screening, DNA (plasmid, genomic) isolation, PCR. Gel electrophoresis. RNA isolation, cDNA preparation & gene expression study (Real-time PCR)

  Total Protein isolation, SDS-PAGE analysis.

- **Tissue culture techniques:**

  Seed sterilization, callus induction, gene delivery into plant, selection and regeneration of the transgenic plant, micro-propagation, and hormone and media preparation.

- **Microbiology:**

  Antibiotic and media preparation, bacterial cell culture, bacterial transformation, replica plating, stock culture maintain. Bacterial growth curve, Antimicrobial assay, Minimum Inhibitory Concentration (MIC) assay.

- **Molecular plant pathological techniques:**

  Isolation of endo-phytic fungus from plant, study of host pathogen interaction, fungal behavior study on resistant and susceptible host surface. Fungal transformation.

- **Instrumentation:**

  Microscope (light, stereo, electron, fluorescent, confocal), Centrifuge, Autoclave, Colorimeter, Spectrophotometer, Gel electrophoresis apparatus, Gel doc, UV illuminator, PCR, Nanodrop, microplate reader, Dynamic light scattering, Laminar air hood, Fluorescence assorted cell sorting (FACs).

- **Computer proficiencies :**

  Software: Primer 3, NCBI blast, Origin 6, Fluo-view, Image-j, Graph pad prism, Tritek100 (comet score).

  Courses completed: Certificate in Information Technology Application (CITA), & Diploma in Information Technology Application (DITA).

Operating system: DOS, Windows-xp, 7, 8, 10.

- **Language efficiency:** English, Bengali, Hindi.
- **Work Experience:** Contractual Teacher, Department of Botany, Serampore Girls' College, From February, 2020-Till Date.

Research & Education history:

- **Ph.D in Botany, University of Calcutta. (June, 2019)**
  - **Thesis title: "Use of *Curvularia* sp. for production of selected metal nanoparticles with reference to their antimicrobial and gene delivery properties."**

- **Master of Science in Botany, Calcutta University. 2011**
  Marks obtained- 65.5 %

  With special paper Molecular and Applied Plant Pathology. Dissertation on

  "Transformation of Tobacco (*Nicotiana tabacum* var. SR1) using binary vector pCAMBIA 2301 and the assay of transgenic lines carrying *nptII* marker and *gus* reporter gene."

- **Bachelor of Science in Botany, Budge Budge College, Calcutta University. 2009**
  Marks obtained- 66.75 %

- **Higher Secondary examination, W.B.C.H.S.E 2006**
  Marks obtained- 52.6 %

- **Secondary examination, W.B.B.S.E 2004**
  Marks obtained- 63.25 %

- **Conference/ Workshop/Symposium/ Seminar attended:**

- **International conference on "The green planet: Past present and future"** CAS-VII, Department of Botany, University of Calcutta in collaboration with Probir Chatterjee Research Foundation and Botanical Survey of India (BSI).

- **Workshop on "Chromatography"- the catapult for unraveling the facts of nature.** Organized by Department of Botany (Centre of Advance Study), University of Calcutta.

- **National symposium on "Evolving plant biology: From chromosomes to genomics".** Organized by West Bengal Academy of Science and Technology (WAST) in collaboration with Bose Institute, University of Calcutta & Golpark Ramakrishna Mission institute of culture.

- **One day Symposium on "Insight to plant biology through systems approach".** Organized by Division of Plant Biology, Bose institute.

- **One day seminar on "Application of high resolution X-Ray diffraction technique".** Organized jointly by CSIR-Central Glass & Ceramic Research Institute, Jadavpur, Kolkata and PANalytical India.

Poster presented on:

- **Fungal disease resistance in rice: from the skin to the gene.**

- **Nanoparticles from filamentous fungi: synthesis, characterization and utilization as vehicles of drug/gene delivery into prokaryotic/eukaryotic cells.**

List of Publications:

Sonali Bhattacharya, **Madhusree Halder**, Arnab Sarkar, Priyanka Pal, Arpan Das, Surekha Kundu, Deba Prasad Mandal & Shamee Bhattacharjee. Investigating In Vitro and In Vivo Anti-Tumor Activity of *Curvularia*-Based Platinum Nanoparticles. Journal of Environmental Pathology, Toxicology and Oncology, 41(3):13–32. **2022.**

Madusree Halder, Somnath Mondal, Sarmistha Ray and Surekha Kundu. Myco- synthesized silver nanoparticles from *Curvularia affinis* showing inhibitory activity against phyto- pathogenic fungus *Alternaria solani*. Journal of Mycopathological Research. Vol No 56 (1), **2018.**

Madhusree Halder, Somnath Mondal and Surekha Kundu. Genetic engineering of economically important fungi. Botanical Society of Bengal. Vol No 71 (1), **2017**.

Madhusree Halder, Surekha Kundu. Isolation of *Curvularia affinis* Causing Rice Leaf Spot from West Bengal Rice Field and Optimization of Culture Conditions. International Advanced Research Journal in Science, Engineering and Technology. Vol No 4 (8), **2017**.

Somnath Mondal, **Madhusree Halder**, Amitava saha and Surekha Kundu. Differential behaviour of *Magnaporthe oryzae* in the vicinity and on the host surface of tolerant and susceptible Rice varieties. Journal of Mycopathological Research. Vol No 53 (3), **2017.**

S. Ray, S. Lahiri, **M. Halder,** M. Mondal, T. Ray Choudhuri, S. Kundu. An Efficient Method of Isolation and Transformation of Protoplasts from Tomato Leaf Mesophyll Tissue using the Binary vector pCambia 1302. IARJSET Vol. 2, Issue 6, June **2015**

Date: 10.06.2022

MADHUSREE HALDER