Madhumita Maitra M.Sc. Ph.D

Present Status: Assistant Professor, Department of Microbiology,

St. Xavier's College (Autonomous), Kolkata

Email: msirkar_70@hotmail.co.in / madhumitamaitra@sxccal.edu

Ph.D Thesis:

"Variation in mutants of *Streptomyces kanamyceticus* M1 and production of new antibacterial antibiotic by a mutant *Streptomyces kanamyceticus* M27. The thesis concentrates on aerobic fermentative production of an antibacterial antibiotic from an isolated mutant strain of *Streptomyces kanamyceticus*, isolation and purification of the antibiotic in semi pure form, studying the physio – chemical and biological properties of the antibiotic and prediction of the tentative chemical structure. Ph.D Guidance from Prof. S.K Mukherjee, Dept. of Food Technology and Biochemical Engineering (FTBE) and Prof. S.K Majumdar, Dept. of Life Science and Biotechnology, Jadavpur University.

Post-Doctoral Research Work:

1. Worked as a Post-Doctoral Fellow in the Dept. of Microbiology, Bose Institute from Sept. 1999 till June 2003.The research involved Study of Signal Transduction Pathway during pathogenesis of Tuberculosis in Human Peripheral Blood mononuclear cells.

2. Worked as CSIR Pool Officer in the Dept. of Microbiology, Bose Institute, Kolkata- 54 from June 2003 to Dec 2004.

Research Activities

1. Co PI of multi component major project of DBT Builder

2. Collaborative research work going on with the faculty member, Dr. Nirmalendu Das, Department of Botany, Benthune Government College.

3. Completed a UGC sponsored Minor research project in the year 2015, entitled "Identification and characterization of Actinomycetes isolated from soil and exhibiting intriguing antibiotic resistance profiles"

4. Worked in a collaborative research work with Prof. RanjanaChoudhury, Head, Dept. of Chemical Engineering, J.U regarding a development of Probiotic strain in the year 2009-2012.

5. Completed a UGC Minor research project entitled "Microbial Production of laccase and its comparison with fungal laccase" in the year 2011.

6. Completed a college sponsored minor research project in the year 2010 entitled "Microbial production of amino acids especially L – lysine: Fermentation and recovery for pharmaceutical industry.

7. Guiding the summer training research work of M.Sc. Microbiology students and summer intern students.

ORCID ID. 0000-0002-1943-4306

Research Guidance:

Working as Ph.D. guide in St. Xavier's College, Kolkata and as Co-guide enrolled in Vidyasagar University.

- Two PhD scholars have already been awarded.
- One PhD scholar has submitted thesis.

Resource person

1. In Microbial sciences Module of Summer Training camp on Basic Science at Bose Institute Kolkata in the year 2008, 2009 and 2010.

2. As a resource person in Calcutta University for the course work lectures of Ph.D students.

3. Invited as a resource person to deliver a talk in Ph.D course work, in the Department of Microbiology, Bose Institute, Kolkata 2018.

4. Invited as a Resource person and judge in The University of Engineering and Management, Kolkata on 25th and 26th August 2017.

5. Invited as Resource person in Yubavani Programme of All India Radio on 08 Jan. 2021 for discussion on the scope of Microbiology for Indian students.

6. Delivered a talk in a webinar on "Introduction to Industrial Microbiology" on October 2020 at Sarojini Naidu College for Women.

7. Member of Green audit committee of General Degree College Keshiary, Paschim Medinipore, West Bengal.

Paper Published:

1. **M.Sirkar** & S.Majumdar. Lipoarabinomannan induced cell signaling involves ceramide and mitogen activated protein kinase". Clinical & Diagnostic Laboratory Immunology, Vol. 9(6) Nov. 2002: 1175- 1182.

2.S.Ghosh, S.Bhattacharyya, **M.Sirkar**, G.S Sa, T.Das, D.Majumdar, S.Roy and S.Majumdar. "Leishmaniadonovani suppresses activated protein 1 and Nf-kB activation in host macrophages via ceramide generation: Involvement of extracellular signal regulated kinase: Infection and Immunity Dec. 2002 Vol.70 (12): 6828-6838.

3. N.Majumdar, R.Dey, RK Mathur, S Dutta, **M Maitra** and S.Majumdar. " An unusual proinflammatory role of IL-10 induced by AraLAM in murine peritoneal macrophages" Glycoconjugate Journal Dec.2006 Vol 23(9) 675-686.

4. A.Nath, S.Sarkar, **M Maitra**, C Bhattacharjee and R Chowdhury. "An experimental study on production of intracellular β-galactosidase at different conditions by batch process using isolated Bacillus safensis (JUCHE1) & characterization of synthesized β galactosidase. J.Inst.Eng.IndiaSer.E 93(2) 55-60.2013.

5. Arijit Nath, Ranjana Chowdhury, Chiranjib Bhattacharjee and **Madhumita Maitra**. Production of β-galactosidase in a Batch Bioreactor Using Whey through Microbial Route – Characterization of Isolate and Reactor Model. Periodica Polytechnica Chemical Engineering 60(4) DOI: 10.3311/PPch.8286

6. **M.Maitra** and N.K Maitra. "Exploitation of the soil isolates for the production of amino acids" Int. J adv. Res. In science & Engineering. Mar 2018 Vol.07 Special issue 02 651-656.

7. Paul C., **Maitra M**., Das N. (2019) Comparative study of three *Pleurotus spp.* cultivated on two different substrates with special reference to their biochemical and antibacterial activities. **Mushroom Research** 28 (1): 39-46.DOI: 10.36036/MR.28.1.2019.91004

8. Atrayee Roy, Anindya S. Panja, **Madhumita Maitra** , Bidyut Bandopyadhyay. Isolation and Characterizations of Probiotics from Bovine (Cow) Milk. Research & Reviews in Biotechnology & Biosciences.Volume: 6, Issue: 2, Year: 2019 PP: 12-20.

9. Atrayee Roy, **Madhumita Maitra** and Bidyut Bandyopyadhyay. Phenotypic Characterization and Genotypic Identification of Local Milk Fermented Probiotics. Biotechnology: An Indian journal Vol. 15 issue 4.2019

10. Agnihotri, P., Banerjee, S., **Maitra, M**., Mitra, A.K. Isolation, Characterization And Identification Of An As(V)-Resistant Plant Growth Promoting Bacteria For Potential Use In Bioremediation. Asia-Pacific Journal of Science and Technology. 26(2): Jan. 2021.

11. Agnihotri, P., **Maitra M**., Mitra, A.K. Effect Of an As(V)-Resistant Plant Growth Promoting Bacterial Consortium On Growth, Antioxidant Content And Arsenic Accumulation In *Azolla microphylla* Kaulf. under As(V) Stress. Russian Journal of Plant Physiology 2021.

12. Paul C., **Maitra M**., Das N. (2023). Study of growth-improving and sporophore-inducing endobacteria isolated from *Pleurotus pulmonarius*. World Journal of Microbiology and Biotechnology, 39:349 https://doi.org/10.1007/s11274-023-03776-0

13. Paul C., Pal N., **Maitra M** and Das N. 2024. Laccase-assisted bioremediation of pesticides: Scope and challenges. *Mini Reviews in Organic Chemistry*.21(6): 633-654.. https://dx.doi.org/10.2174/1570193X20666221117161033

14. Chandana Paul, Tina Roy, Madhurima Roy, Athira C. Rajeev, Archana Pan, **Madhumita Maitra**,Nirmalendu Das. Genome wide analysis of *Priestia aryabhattai* OP, an endobacterium, modulating growth, development and biochemical compositions of sporophores in edible oyster mushroom Pleurotus ostreatus (MTCC 1802).World Journal of Microbiology and Biotechnology (2025) 41:194 https://doi.org/10.1007/s11274-025-04438-z.

Books/Book chapters

1. Author of one of the chapters of the Book, entitled “Practical Manual of Modern Microbiology” published by Himalaya Publishing House in the year 2013.

2. Paul C., **Maitra M**., Das N. (2020) Fungal lignocellulolytic enzymes: Physiological roles and biotechnological applications.In Research advances in the fungal world-Culture, isolation, identification, classification, characterization, properties and kinetics. Chapter 16 PK Chaurasia SL Bharati (editors) **Nova Science Publishers, Inc**., New York. Pp. 321-371. ISBN: 978-1-53617-197-6.

3. Paul C., **Maitra M**., Das N. (2021) An Overview of Endophytic Bacteria in the Production of Bioactive Compounds of Nutraceutical Importance. In Hand book of agriculture and plant sciences.(Ed. Sinha D). **ABS Books Publisher and Exporter**. Delhi .Pp.118-145. ISBN: 978-93-91002-25-1.

Honors and awards

1. Sir Ganga Ram Memorial Prize on the Paper entitled “An experimental Study on the production of Intracellular β-galactosidase at different conditions by Batch Process using isolated *Bacillus safensis* (JUCHE1) and characterization of synthesized β-galactosidase by The Institution of Engineers (India) 2013.

2. Outstanding paper award entitled “Low Cost Arsenic Mitigation Strategy in Paddy Cultivation Using Plant-Microbe Interaction” in 26th West Bengal State Science and Technology Congress. Dept. of Science & Technology and Biotechnology, Govt. of West Bengal held at Science City in 2019.

Participation in MOOC

1. Member of the Pool of Resource persons since September 2012 for the development of e-content on Microbiology under the NME-ICT project of the MHRD, Govt. of India, assigned to EMMRC Kolkata. Prepared and developed 37 modules for MOOC (Massive Open Online Courses) on Bacteriology and Virology, which was run on platform – “Swayam” under ministry of MHRD from 4th Sept. to 3rd Nov. 2017.

2. Course co-ordinator for MOOC online course on Bacteriology & Virology to be run in Swayam platform from 14th July to 31st Oct 2025.