

CURRICULUM VITAE

Dr. Priyanka Chakraborty

Assistant Professor
Department of Microbiology

Swami Vivekananda University, Barrackpore, West Bengal



CONTACT INFORMATION

Address	Khardaha, Mission Para, Rahara, Kolkata – 700118, West Bengal, India
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Date of Birth	01 May 1988
Nationality	Indian
Gender	Female

RESEARCH INTERESTS

- Environmental microbiology and bioremediation (heavy metal detoxification, chromium remediation)
- Vermicomposting technology and soil health management
- Nanoparticle synthesis, characterization, and antiviral applications
- Plant-microbe interactions and stress-tolerant microbes (nitrogen fixers, phosphate solubilizers)
- Antimicrobial activity of medicinal plant extracts

EDUCATIONAL QUALIFICATIONS

Degree	Institution / Board	Year	Marks / Grade
Ph.D. (Life Sciences)	ISI, Kolkata (Registration under Jadavpur University)	2026 (Viva: 24 April 2026)	8.74 CGPA
M.Sc. (Microbiology)	Kalyani University	2011	62.3%
B.Sc. (Microbiology)	Kalyani University	2009	56.3%
Higher Secondary (12th)	West Bengal Board	2005	66.8%
Madhyamik / Secondary (10th)	West Bengal Board	2003	76.875%

ACADEMIC APPOINTMENTS

Position	Institution	Department / Subject	Period
Assistant Professor	Swami Vivekananda University, Barrackpore	Microbiology	Present
Assistant Professor	Guru Nanak Institute of Pharmaceutical Science & Technology (GNIPST), Sodepur, Kolkata	Life Science	Dec 2023 – Dec 2024 (1 year)
Project Linked Person (ISI Funded Project)	Indian Statistical Institute (ISI), Kolkata (Dr. Pradip Bhattacharyya)	AERU Division, Soil Science	June 2018 – 2025 (Thesis submission)
Project Linked Person (ISI Funded Project)	Indian Statistical Institute (ISI), Kolkata (Dr. Pradip Bhattacharyya)	AERU Division, Soil Science	April 2016 – March 2017 (Extended)
Project Linked Person (DBT Funded Project)	Indian Statistical Institute (ISI), Kolkata (Dr. Arunava Goswami)	Nanotechnology Laboratory	Dec 2012 – June 2014
Project Linked Person (DBT Funded Project)	Indian Statistical Institute (ISI), Kolkata (Dr. Arunava Goswami)	Nanotechnology Laboratory	June 2014 – March 2015

Additional Teaching Experience:

- 6 months teaching experience in Post-Graduate Diploma course in Soil Microbiology at ISI, Giridih.
- Theoretical and practical teaching in BMLT, BBAHM, Microbiology, Biotechnology, Molecular Biology, and Genetics at GNIPST.

RESEARCH EXPERIENCE

1. Ph.D. Research (ISI Kolkata / Jadavpur University)

Thesis Title: "Utilization of Tannery Sludge in Agriculture through Application of Vermitechnology"

Supervisor: Dr. Pradip Bhattacharyya, ISI Kolkata

- Investigated vermicomposting-based remediation of chromium toxicity in Kolkata Bantala tannery sludge.
- Isolated novel stress-tolerant nitrogen fixers (Jensen agar) and phosphate solubilizers (Pikovskaya agar) using spread plate technique.
- Conducted physico-chemical and microbiological characterization of soil systems.

- Performed heavy metal fractionation study using chemical synthesis techniques.
- Evaluated vermi-incubation at 0, 15, 30, 60, and 90 days; achieved 50–60% chromium toxicity reduction.
- Validated compost utility in field trials (rice, mustard — RBD system) and pot studies (tomato).
- Confirmed no heavy metal uptake in grain parts of rice and mustard; seed germination studies validated safety.

2. Summer Project — Antimicrobial Activity (ISI Kolkata, 2012)

Supervisor: Dr. Suparna Mandal Biswas, AERU, BSD, ISI Kolkata

Title: "Strong Sour Tamarind Flavor of Methyl-2,3,4-trihydroxyHexanoate isolated from Leaves of Tamarindus indica play a role in plant defense mechanism"

- Evaluated antimicrobial activity of Piper chaba and Tamarindus indica extracts against Gram-positive and Gram-negative bacteria.
- Performed chemical extraction (hexane, ethyl acetate) and column chromatography; NMR analysis supported findings.

3. DBT Funded Project — Nanoparticle Mediated Viral Transformation (ISI Kolkata)

Supervisor: Dr. Arunava Goswami | Collaboration: Saha Institute of Nuclear Physics (SINP), Kolkata; Dr. Alok moy Datta

Title: "Understanding the Molecular Basis of Nanoparticle Induced Transformations in Viral Morphology and their Biological Functionalities"

- Synthesized and characterized silica, copper, magnetite, mesoporous silica, carbon, and ZnO nanoparticles.
- Investigated nanoparticle-mediated structural and morphological changes in Bombyx mori nucleopolyhedrosis virus (BmNPV).
- Performed SEM, TEM, FE-SEM, FTIR, UV spectroscopy, and AFM characterization.

4. DBT Funded INDO-BRAZIL Project — Rotavirus Detection (ISI Kolkata)

Title: "Rotavirus Detection Tools with Novel Nanoparticles"

- Theoretically gathered experience in fluorescently tagged nanoparticle synthesis.
- Focused on RITC/FITC tagging of nanoparticles with rotavirus surface molecules to prevent diarrheal spread.

5. Industrial Training

Institution: West Bengal University of Animal and Fishery Sciences, Mohanpur Campus

Topic: "Microbial Quality of Milk and Milk Products" (2 weeks)

6. Nanoparticle Antimicrobial Activity Study

Cultured *Aspergillus niger* in nutrient broth with shaker bath incubation.

Tested ZnO nanoparticle antimicrobial activity at varying concentrations to determine MIC values.

PUBLICATIONS (Peer-Reviewed Journal Articles)

1. Chakraborty, P., Sarkar, S., Mondal, S., Agarwal, B.K., Kumar, A., Bhattacharya, S., Bhattacharya, S.S., & Bhattacharyya, P. (2022). *Eisenia fetida* mediated vermi-transformation of tannery waste sludge into value added eco-friendly product: An insight on microbial diversity, enzyme activation, and metal detoxification. *Journal of Cleaner Production*, Elsevier. (Impact Factor: 11.1)
2. Chakraborty, P., Ghosh, S., Banerjee, S., Bhattacharya, S., & Bhattacharyya, P. (2024). Evaluating the efficacy of vermicomposted products in rain-fed wetland rice and predicting potential hazards from metal-contaminated tannery sludge using novel machine learning tactic. *Chemosphere*. (Impact Factor: 8.8)
3. Chakraborty, P., Charan, K., Chakraborty, S., Banerjee, S., Ghosh, S., Sarkar, S., & Bhattacharyya, P. (2024). Evaluating the impact of vermicomposted products on tomato and forecasting risks from metal-contaminated tannery sludge through innovative machine learning insights. *Journal of Environmental Sustainability*. (Impact Factor: 3.7)
4. Biswas, S.M., Chakraborty, N., Chakraborty, P., & Sarkar, S. (2012). Antioxidant and Antimicrobial Activities of the Hot Pungent Chabbarin are Responsible for the Medicinal Properties of *Piper chaba*, Hunter. *Research Journal of Medicinal Plant*, 6(8). (Impact Factor: 5.69)

RESEARCH PROJECTS & GRANTS

Project Title	Funding Agency	Role	Period
Understanding the Molecular Basis of Nanoparticle Induced Transformations in Viral Morphology and their Biological Functionalities	DBT	Project Linked Person	Dec 2012 – June 2014

Rotavirus Detection Tools with Novel Nanoparticles	DBT (INDO-BRAZIL)	Project Linked Person	June 2014 – March 2015
Vermi-technology & Tannery Sludge Remediation	ISI Funded	Project Linked Person / PhD Scholar	April 2016 – 2025

SEMINARS / CONFERENCES / WORKSHOPS / FDP ATTENDED

- Attended and presented poster papers at various National and International Seminars.
- Participated in Faculty Development Programmes (FDP) at IACS, Kolkata; ISI, Kolkata; ISI, Giridih; University of Kalyani; Amity University; GNIPST, Kolkata.
- **NPTEL-FDP Topper (Top 5%) – Scored 90% in Microbial Biotechnology** (12-week course, Jan–Apr 2026), conducted by IIT Guwahati under Dr. Utpal Bora.

INSTRUMENTATION & TECHNICAL SKILLS

Instrumentation Expertise:

- Centrifuges (various types), FTIR, UV-Visible Spectroscopy, Rotary Vacuum Evaporator, SDS-PAGE Gel Electrophoresis
- Shaker Bath Incubator, Laminar Air Flow, Microscopy
- SEM, TEM, FE-SEM, XRD, AFM (sample preparation and analysis)
- Soil pH & EC Meter, Flame Photometer, Column Chromatography, Kjeldahl Apparatus (soil nitrogen analysis)
- Autoclave, Water Bath Incubator, BOD Incubator, Acid Digestion Hot Plates, ICP-MS

Soil & Microbiological Techniques:

- Soil physico-chemical and microbial characterization, Heavy metal fractionation studies
- Culture plate techniques, Pure culture isolation, Seed germination studies
- Pot experiments, Field trials (RBD), Fertilizer application and mixing in field systems

Statistical & Computational Skills:

- Biostatistics, Statistical software applications
- Machine learning applications in environmental risk prediction

RESEARCH ACHIEVEMENTS

- Demonstrated 50–60% chromium toxicity reduction in tannery sludge through vermicomposting (1:1 and 2:1 cow dung mixtures) without compromising nitrogen and organic content.
- Documented nanoparticle-mediated structural changes in BmNPV viral morphology.

- Isolated novel stress-tolerant nitrogen-fixing and phosphate-solubilizing microbes from tannery sludge.

COLLABORATIONS

- Saha Institute of Nuclear Physics (SINP), Kolkata — Nanoparticle characterization (Dr. Alok moy Datta)
- SN Bose Institute — Nanoparticle characterization
- Ranchi Institute — ICP-MS analysis
- ISI, Kolkata — ICP-MS analysis
- CRNN — Nanoparticle characterization
- Barui pur Agricultural Farm, Calcutta University — Soil characterization and stress-tolerant microbe isolation (Dr. Sudipta Tripathi)
- Pune Research Institute — PLFA study

REFERENCES-

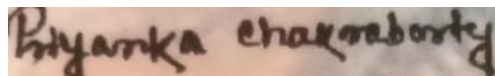
Dr. Pradip Bhattacharyya Associate Professor, AERU Division Indian Statistical Institute, Kolkata email: bpradip@isical.ac.in	Dr. Arunava Goswami Professor, Nanotechnology Laboratory Indian Statistical Institute, Kolkata email: agoswami@isical.ac.in
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DECLARATION

I hereby declare that all the information furnished above is true to the best of my knowledge and belief.

Date: 19 May 2026

Place: Khardaha, Kolkata



(Dr. Priyanka Chakraborty)