

Bomba Dam, PhD

Personal Information:

Contact Address

Institute Microbiology Laboratory, Department of Botany, Institute of Sciences,
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Contact No. +91-9475444801 (Mobile)
Nationality Indian
Date of Birth 1st October 1980
Sex Male
Marital Status Married

Educational Details:

Ph.D. Department of Microbiology, **Bose Institute**, Kolkata, India;
(2004-2008) (Registered under Jadavpur University, Kolkata, India)
Supervisor: Prof. **Sujoy K. Das Gupta** (Initially registered under Late Dr. Pradosh Roy)
Thesis Title: Identification and molecular characterization of a novel plasmid from the sulfur-
chemolithotrophic betaproteobacterium *Tetrathiodacter kashmirensis* and
construction of shuttle vector systems for the family *Alcaligenaceae*

Master of Science Botany (specialization in **Microbiology**)
(2000-2002) University of North Bengal, West Bengal, India
1st Class 1st with distinction, 80.2% marks (Gold Medalist)

Bachelor of Science Botany (Hons.), Chemistry and Zoology (Pass)
(1997-2000) University of North Bengal, West Bengal, India
1st Class 1st with 64.25% marks (Gold Medalist)

Schooling: C.B.S.E. Board; **1st Class and stood first** throughout

Professional Career:

Teaching Experience:

12/04/2008-till date: **Assistant professor of Microbiology**, Department of Botany, Visva-Bharati (A Central University), Santiniketan-731 235, West Bengal, India.

2003-2004: **Full-time Lecturer**, Department of Microbiology, Ananda Chandra College, Jalpaiguri, West Bengal, India.

Research Experience:

- 2010-2012:** **Alexander von Humboldt Postdoctoral Research Fellow** at the Max Planck Institute for Terrestrial Microbiology, Karl-von-Frisch-Strasse 10, D-35043 Marburg, Germany
- 2006-2008:** **CSIR-Senior Research Fellow (SRF)**, Department of Microbiology, Bose Institute, Kolkata-54, West Bengal, India
- 2004-2006:** **CSIR-Junior Research Fellow (JRF)**, Department of Microbiology, Bose Institute, Kolkata-54, West Bengal, India

Research Area of Interest:

- Exploration of microbial community structure and function in different natural environments
- Biotechnological exploration of microorganisms
- Mining novel microbial genes with biotechnological potential by functional metagenomics
- Genomics and molecular analysis of core microbial physiologies related to carbon and sulfur metabolism
- Development of functional feed for poultry animals and fish
- Understanding the complexity of animal gut microbiome and their modulations

Research Guidance Experience:

No. of PhD students (registered under my supervision): 4 awarded; 1 submitted; 4 pursuing

Projects sanctioned as Principal Investigator (PI):

Project entitled, “Shift in microbial community structure in poultry (chicken) gut along its growth phase with special emphasis to their antibiotic resistance capability” sanctioned under the **Young Scientists Scheme** by SERB [No. SB/YS/LS- 16/2013. Amount: Rs. **23.95 Lakhs**, 20/08/2013 to 19/08/2016

Project entitled, “Microbial community structure and function in a lignocellulose degrading natural saline environment and their molecular detection: A step forward towards lignocellulosic biofuel production” of UGC [MRP-MICR-2013-7113 having F. No. 43-462/2014(SR)]. Amount: Rs. **6.76 Lakhs**. 01/07/2015 to 30/06/2018

Project entitled, “Exploring extreme saline environment to understand transport mediated ionic liquid resistance mechanism by functional metagenomics: A step forward towards lignocellulosic bioenergy” of CSIR [38(1410)/15/EMR-II]. Amount: Rs. **17.84 Lakhs**. 01/11/2015 to 31/10/2018

Project entitled, “Impact of sulphate on microbial population dynamics and carbon cycling due to sea water intrusion in Mangrove ecosystem: A future Global warming scenario” of WB-DST [No. ST/P/S&T/5G-18/2017]. Amount: Rs. **11.99 Lakhs**. 09/07/18 to 08/07/21

Project entitled, “Prebiotic feed supplement for growth improvement of Indian major carps, *Labeo rohita*, *Cirrhinus mrigala* and *Catla catla* under composite culture system: A gut microbiome and nutrigenomics based approach” of DBT Approved for Funding. Amount Rs. **91.43 Lakhs** [VB Component: Rs. **55.16 Lakhs**]. Network Project with University of Burdwan. 18/06/2019 to 178/06/2022

Awards and Fellowships:

- **Alexander von Humboldt Research Fellowship for Postdoctoral Researchers** at the Max Planck Institute for Terrestrial Microbiology (MPITM), Karl-von-Frisch-Strasse 10, D-35043 Marburg, Germany.
 - **1st May 2010 to 30th April 2012** (2 years)
- **Max Planck Postdoctoral Research fellowship for short research stay** at the Max Planck Institute for Terrestrial Microbiology, Marburg, Germany.
 - 19th may to 15th June 2013 (1 month)
 - 1st October to 30th November 2012 (2 months)
 - 01st May to 14th June 2012 (1.5 months)
 - 1st February 30th April 2010 (3 months)
- **CSIR National Eligibility Test (NET-2003)** – CSIR Junior Research Fellowship (JRF) and Lectureship (LS) (Remarks: first 20% of the qualified candidate (Qualified for the SPM Fellowship Test, CSIR))
- **State Level Eligibility Test (SLET - 2003)** – for Research and Lectureship
- **Graduate Aptitude Test for Engineering (GATE - 2003)** – For Research
- **National Scholarship, Government of West Bengal**, from January 2001 – September 2002 (for standing first class first in graduation)

Publications:

1. Bhattacharya S, Mapder T, Fernandes S, Roy C, Sarkar J, Rameez MJ, Mandal S, Sar A, Chakraborty A, Mondal N, Chatterjee S, **Dam B**, Peketi A, Chakraborty R, Mazumdar A and Ghosh W. (2021) Sedimentation rate and organic matter dynamics shape microbiomes across a continental margin. *Biogeosciences Discussion* <https://doi.org/10.5194/bg-2021-25> (ISSN: 1726-4170; Impact factor: **3.480**).
2. Sar A, Pal S, **Dam B**. (2021) An alkali-halostable endoglucanase produced constitutively by a bacterium isolated from Sambhar Lake in India with biotechnological potential. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*. In Press. (ISSN: 0369-8211; Impact factor: 0.396) <https://doi.org/10.1007/s40011-021-01230-5>
3. Pal S, Sar A, Biswas, R. Misra A, Banerjee S, **Dam B**. (2021) Assessment of bacterial community structure in saline sediment microcosms exposed for the first time to the ionic liquid 1-ethyl-3-methylimidazolium chloride. *Water Air Soil Pollution*. 232: 51. (ISSN: 0049-6979; Impact factor: 2.01)
4. Ghosh S, **Dam B**. (2020) Genome shuffling improves pigment and other bioactive compound production in *Monascus purpureus*. *Applied Microbiology and Biotechnology*. 104: 10451–10463 (ISSN: 0175-7598; Impact factor: **3.530**).
5. Pal S, Biswas, R. Misra A, Sar A, Banerjee S, Mukherjee P, **Dam B**. (2020) Poorly known microbial taxa dominate the microbiome of hypersaline Sambhar Lake salterns in India. *Extremophiles* 24: 875-885. (ISSN: 1431-0651; Impact factor: **2.462**).

6. Banerjee S, Misra A, Sar A, Pal S, Chaudhury S, **Dam B.** (2020) Poor nutrient availability in opencast coalmine influences microbial community composition and diversity in exposed and underground soil profiles. *Applied soil ecology* 152: 103544. (ISSN: 0929-1393; Impact factor: **3.187**).
7. Pal S, Sar A, Misra A, Banerjee S, **Dam B.** (2020) Adaptation of ethidium bromide fluorescence assay to monitor activity of efflux pumps in bacterial pure cultures or mixed population from environmental samples. *Journal of King Saud University-Science* 32(1): 939-945. (ISSN: 1018-3647; Impact factor: **3.819**).
8. Pal S, Sar A, **Dam B.** (2019) Moderate halophilic bacteria, but not extreme halophilic archaea can alleviate the toxicity of short-alkyl side chain imidazolium-based ionic liquids *Ecotoxicology and Environmental Safety* 184: 109634. (ISSN: 0147-6513; Impact factor: **4.872**).
9. Sinha S, Sen S K, & **Dam B.** (2019) Comparative sequence analysis identified multiple replication systems and virulence determinants to be frequently encoded on large plasmids of *Escherichia coli*. *Ecological Genetics and Genomics*. 12: 100039. (ISSN: 2405-9854; Impact factor: **0.704**).
10. Banerjee S, Misra A, Chaudhury S, **Dam B.** (2019) A *Bacillus* strain TCL isolated from Jharia coalmine with remarkable stress responses, chromium reduction capability and bioremediation potential. *Journal of Hazardous Material* 367: 1-7. (ISSN: 0304-3894; Impact factor: **9.038**).
11. Sar A, Pal S, **Dam B.** (2018) Isolation of high molecular weight and humic acid-free metagenomic DNA from lignocellulose-rich samples compatible for direct fosmid cloning. *Applied Microbiology and Biotechnology* 102(14): 6207-6219. (ISSN: 0175-7598; Impact factor: **3.530**).
12. Roy A, Mukherjee R, **Dam B.**, Dam S and Roy P. (2018) Is it possible to control metal ion selectivity of rhodamine-6G based chemosensor by varying its substitution? *New Journal of Chemistry*. 42(11): 8415-8425. (ISSN 1369-9261; Impact factor: **3.288**)
13. Banerjee S, Sar A, Misra A, Pal S, Chakraborty A, & **Dam B.** (2018) Increased productivity in poultry birds by sub-lethal dose of antibiotics is arbitrated by selective enrichment of gut microbiota, particularly short-chain fatty acid producers. *Microbiology-SGM* 164: 142-153. (ISSN: 1350-0872; Impact factor: **2.1**).
14. **Dam B.**, Dam S, Kim Y, Liesack W. (2014) Ammonium induces differential expression of methane and nitrogen metabolism-related genes in *Methylocystis* sp. strain SC2. *Environmental Microbiology*. 16(10): 3115-27. (ISSN: 1462-2920; Impact factor: **5.147**).
15. **Dam B.**, Dam S, Blom J, Liesack W. (2013) Genome analysis coupled with physiological studies reveals a diverse nitrogen metabolism in *Methylocystis* sp. strain SC2. *PLoS ONE*. 8(10): e74767. (ISSN: 1932-6203; Impact factor: **2.776**).
16. **Dam B.**, Dam S, Kube M, Reinhardt R, Liesack W. (2012) Complete genome sequence of *Methylocystis* sp. strain SC2, an aerobic methanotroph with high-affinity methane oxidation potential. *Journal of Bacteriology*. 194(21): 6008-6009. (ISSN: 0021-9193; Impact factor: **3.234**).
17. **Dam B.**, Kube M, Dam S, Reinhardt R, Liesack W. (2012) Complete sequence analysis of two methanotroph-specific *repABC* containing plasmids from *Methylocystis* sp. strain SC2. *Applied and Environmental Microbiology*. 78 (12): 4373-4379. (ISSN: 0099-2240; Impact factor: **3.960**).

18. Nauer PA, **Dam B**, Liesack W, Zeyer J, Schroth MH. (2012) Activity and diversity of methane-oxidizing bacteria in glacier forefields on siliceous and calcareous bedrock. *Biogeosciences*. 9: 2259-2274. (ISSN: 1726-4170; Impact factor: **3.480**).
19. Pan I, **Dam B**, Sen SK. (2012) Composting of common organic wastes using microbial inoculants. *3 Biotech*. 2(2): 127-134. (ISSN: 2190-5738; Impact factor: **2.389**).
20. Shrestha PM, Kammann C, Lenhart K, **Dam B**, Liesack W. (2011) Linking activity, composition and seasonal dynamics of atmospheric methane oxidizers in a meadow soil. *ISME Journal*. 6(6): 1115-1126. (ISSN 1751-7370; Impact factor: **10.712**).
21. Majumdar T, Das B, Bhadra RK, **Dam B**, Mazumder S. (2011) Complete nucleotide sequence of a quinolone resistance gene (*qnrS2*) carrying plasmid of *Aeromonas hydrophila* isolated from fish. *Plasmid*. 66(2): 79-84. (ISSN: 0147-619X; Impact factor: **2.805**).
22. **Dam B**. (2011) A type Ib plasmid segregation machinery of the *Advenella kashmirensis* plasmid pBTK445. *Plasmid*. 65(2): 185-191. (ISSN: 0147-619X; Impact factor: **2.805**).
23. Ghosh W and **Dam B**. (2009) Biochemistry and molecular biology of lithotrophic sulfur-oxidation by taxonomically and ecologically diverse bacteria and archaea. *FEMS Microbiology Reviews*. 33(6): 999-1043. (ISSN: 0168-6445; Impact factor: **13.920**).
24. **Dam B**, Ghosh W, and Das Gupta S K. (2009) Conjugative Type 4 Secretion System of a novel large plasmid from the chemoautotroph *Tetrathibacter kashmirensis* and construction of shuttle vectors for *Alcaligenaceae*. *Applied and Environmental Microbiology*. 75(13): 4362-4373. (ISSN: 0099-2240; Impact factor: **3.960**).
25. **Dam B**, Mandal S, Ghosh W, Das Gupta S K, and Roy P. (2007) The S4-intermediate pathway for the oxidation of thiosulfate by the chemolithoautotroph *Tetrathibacter kashmirensis* and inhibition of tetrathionate oxidation by sulfite. *Research in Microbiology*. 158: 330-338. (ISSN: 0923-2508; Impact factor: **3.217**).
26. Mandal S, Chatterjee S, **Dam B**, Roy P, and Das Gupta S K. (2007) The dimeric repressor SoxR binds cooperatively to the promoter(s) regulating expression of the sulfur oxidation (*sox*) operon of *Pseudaminobacter salicylatoxidans* KCT001. *Microbiology-SGM* 153: 80-91. (ISSN: 1350-0872; Impact factor: **2.1**).
27. Lahiri C, Mandal S, Ghosh W, **Dam B** and Roy P. (2006) A novel gene cluster *soxSRT* is essential for the chemolithotrophic oxidation of thiosulfate and tetrathionate by *Pseudaminobacter salicylatoxidans* KCT001. *Current Microbiology*. 52: 267-273. (ISSN: 0343-865; Impact factor: **1.746**).
28. Ghosh W, Bagchi A, Mandal S, **Dam B** and Roy P. (2005) *Tetrathibacter kashmirensis* gen. nov., sp. nov., a novel mesophilic, neutrophilic, tetrathionate-oxidizing, facultatively chemolithotrophic betaproteobacterium isolated from soil from a temperate orchard in Jammu and Kashmir, India. *International Journal of Systematic and Evolutionary Microbiology*. 55(Pt 5): 1779-87. (ISSN: 1466-5026; Impact factor: **2.4**).

Book Chapters

1. Dam B, Misra A, Banerjee (2019) Role of gut microbiota in combating oxidative stress. In Oxidative stress in microbial diseases. Editors: Chakraborti S, Chakraborti T, Chattopadhyay D, and Saha C. Springer Nature Singapore Pte Ltd. 43-82 ISBN: 978-981-13-8762-3

Invited/keynote lectures in Academic Conferences/Symposiums

1. Present and future strategies to combat “How Gut Microbes help to fight COVID-19 and other diseases” **Invited speaker** in Two days International webinar on “An insight into the recent global pandemic: Chemical and Biological approach”. 11-12th July, 2020, Seth Anandram Jaipuria College, Kolkata.
2. “Metagenomic Exploration of Hypersaline Environments for Ionic Liquid and Salt Stable Cellulases: A Step Forward to Lignocellulosic Bioenergy”. **Invited speaker** in International Conference on Sustainable technologies for industrial hazardous waste management and bioenergy, 2019. 7-9th August 2019, SRM University, Chennai, India.
3. “Modulation of gut microbes determines growth performance of an animal”. Presented paper in Golden Jubilee International Conference on Trends in Zoology, 2019. 3-4th January 2019, The University of Burdwan.
4. “Seawater inundation of mangrove ecosystem and its impact on microbial carbon cycling”. **Invited speaker** and **Chaired a Plenary Lecture** in International Symposium on “Microbiology in the new Millenium: from Molecules to Communities. 27-29th October 2017, Bose Institute, Kolkata.
5. “RNA-Seq: A Novel Approach for Global Transcriptome Analysis”. **Invited speaker** in International Seminar on “The progress and prospect of 21st century research in advance life sciences”. 15th Feb, 2014, Vivekananda Mahavidyalaya, Haripal, Hooghly, West Bengal, India.
6. “RNA-seq analysis reveals differential expression of methane and nitrogen metabolism related genes in *Methylocystis* sp. strain SC2 due to ammonia amendment”. **Invited Promise speaker** in National Symposium on “Micro and Macro resources in Biomolecular Technology (MIBISEM)”. 25-26th February 2013, University of North Bengal, India.
7. “Harnessing the power of next-generation sequencing technologies to study microbial community structure (metagenomics) and function (metatranscriptomics) in biogas plants: Opportunities and challenges”. **Invited speaker** in International Symposium on “New Horizons in Bioenergy Research (NHBR)”. 14-16th January 2013, IIT Kharagpur, India.
8. “Genome analysis and transcriptome profile of *Methylocystis* sp. strain SC2”. Session speaker in Annual Conference of the Association for General and Applied Microbiology, 03-06th April, 2011, Karlsruhe, Germany.

Other Scientific Information

- Involved in several sequencing projects using various sequencing platforms like Sanger, 454 and Illumina and submitted them in public sequence databases.
- Reviewed papers for all major Microbiology journals such as Environmental Microbiology, Scientific Report, PlosONE, Biogeochemistry, Frontiers, Microbiological Research, Microbiology SGM, and 3 Biotech
- Editor of the International Journal, Microbiological Research (2013-2014)
- External Member, PGBS, Department of Microbiology, The University of Burdwan (2020 to till date)