# Ms. JHUMA BISWAS
## Assistant Professor
## Dept. of Botany
## Asansol Girls' College

**Date of Birth:** 02.05.1983
**Address:** Green Village, P.O. Uchhepota, P.S. Narendrapur, Kolkata 700150
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## EDUCATION

**Ph. D in Microbiology, 2016**
Thesis Title: Production of extracellular polymeric substances by halophilic bacteria from hypersaline environment
Supervisor: Prof. Amal Kanti Paul
Department of Botany, University of Calcutta

**M.Sc. in Microbiology, 2008**
University of Calcutta (60.60%)

**B.Sc in Microbiology (Honors), 2006**
A.P.C College, University of Calcutta (63.63%)
Subjects: Microbiology, Physics, Chemistry, Bengali, English, Environmental Science

**Higher Secondary Examination, 2001**
Bongaon Kumudini Girls High School, West Bengal Council of Higher Secondary Education (66.8%)
Subjects: Chemistry, Physics, Biology, Mathematics, Bengali, English

**Secondary Examination, 1999**
Tangra Colony High School, West Bengal Board of Secondary Education (75.75%)
Subjects: Bengali, English, Mathematics, Physical Science, Life Science, Geography, History, Work Education

## FELLOWSHIPS

- RGNF JRF: 2009-2011 in Life Sciences
- RGNF JRF: 2011-2014 in Life Sciences

- Qualified ICAR-NET 2020 in Agricultural Microbiology of Life Sciences

## Research Experience

Research Associate, 2017-Till date
Department of Microbiology, University of Calcutta
Supervisor: Prof. Sukhendu Mandal

Senior Research Fellow, 2011-2014
Junior Research Fellow, 2009-2013

Department of Botany, University of Calcutta
Supervisor: Prof. Amal Kanti Paul

**Research interest:** Many microorganisms secrete extracellular polymeric substances (EPS) during their life cycle. Halophilic bacteria produce EPS in their natural environment or in laboratory

conditions. EPS produced by halophiles are of great interest to biotechnologists because of their wide range of applications in the pharmaceutical, cosmetics, and food industries as viscofying, gelling, and emulsifying agents. My research interest was to isolate and identify novel halophilic stains with potential production and characterization of EPS with bioactive properties.

## ACHIEVEMENTS

- To design a proper plan of work for time bound projects
- Technical skills to pursue the research project and writing a research proposal for grant
- Trained graduate (M.Sc) students and guide summer projects
- Publication of research (13) and review articles (1)

## PUBLICATIONS


1. Biswas J, Ghosh N, Paul AK. 2010. Production of extracellular polymeric substances by *Halomonas* ORS4 isolated from hypersaline solar saltern soil. *J. Botan. Soc. Bengal*. 64 (2): 149-154. (UGC )
2. Biswas J, Paul AK. 2013. Production of extracellular enzymes by halophilic bacteria isolated from solar salterns. *International Journal of Applied Biology and Pharmaceutical Technology.* 4: 30-36.
3. Biswas J, Paul AK. 2014. Production of extracellular polymeric substances by halophilic bacterial diversity in multi-pond solar salterns. *Chinese J Biol.* Vol 2014: doi.org/10.1155/2014/205731.
4. Biswas J, Mandal S, Paul AK. 2015. Production, partial purification and some bio-physicochemical properties of EPS produced by *Halomonas xianhensis* SUR308 isolated from a saltern environment. *Journal of Biologically Active Products from Nature*. 5: 108-119.
5. Biswas J, Ganguly J, Paul AK. 2015. Partial characterization of an extracellular polysaccharide produced by a moderately halophilic bacterium *Halomonas xianhensis* SUR308. *Biofouling*. 31: 735-744.
6. Biswas J, Paul AK. 2016. Chemical mutagenesis for improvement of production of a biologically active extracellular polymeric substance by *Halomonas xianhensis* SUR308. *American Journal of Microbiology.* DOI: 10.3844/ajmsp.2016.
7. Biswas J, Dutta G, Paul AK. 2016. Optimization of cultural conditions for production of extracellular polysaccharide by *Halomonas xianhensis* SUR308 using Weighted Response Surface Methodology. *Journal of Advances in Biology and Biotechnology* 8: 1-11.
8. Biswas J. Haque FN, Paul AK. 2017. Carotenogenesis in *Haloferax* sp. strain BKW301, a halophilic archaeon from Indian solar salterns. *Journal of Advances in Microbiology*. 1:1-11.
9. Biswas J, Barman R, Paul AK. 2017. Influence of cultural conditions for extracellular lipase production by a halotolerant bacterium, *Bacillus vallismortis* ORS4. *Journal of Microbiology, Biotechnology and Food Sciences.* 7(3):325-331.

10. Biswas J, Paul AK. 2017. Diversity and production of extracellular polysaccharides by halophilic bacteria. *Biodiversity International Journal.* 1(2):1-9.
11. Biswas J, Paul AK. 2017. Factors influencing exopolysaccharide production by *Halomonas xianhensis* SUR308 under batch culture. *Aims Microbiology.* 3(3):564-579.
12. Biswas J, Bose P, Mandal S, Paul AK. 2018. Bioreduction of hexavalent chromium during growth of a halophilic bacterium *Halomonas smyrnensis* KS802. *Environmental Sustainability.* 1(4): 411-423.
13. Biswas J, Saha P, Ganguly J, Paul AK. Production, characterization and bioactive potential of an extracellular galactan produced by an extremely halophilic archaeon, *Haloferax* sp. BKW301*. Journal of Basic Microbiology*. 2020.
14. Biswas J, Paul AK. Bioreduction of hexavalent chromium by whole cells and cell free extract of *H. smyrnensis* KS802. Under review.
15. Biswas J, Jana SK Mandal S. 2022. Biotechnological impacts of *Halomonas*: a promising cell factory for industrially relevant biomolecules. Page no. 1-30. Biotechnology and Genetic Engineering. DOI. 10.1080/02648725.2022.2131916.
16. Biswas J, Sarkar HS, Paul AK, Mandal S. 2023. Simultaneous conversion of chromium and malachite green coexists in halophilic bacterium *Halomonas xianhensis* SUR308 isolated from a solar saltern. Environmental Science and Pollution Research (2023) 30: 118881–118896.

## PRESENTATIONS

1. Attended the international symposium on " Role of fungi and microbes in the 21$^{st}$ century –a global scenario" held on February 20-22, 2014 at University of Calcutta, Kolkata and delivered an oral presentation on "Extracellular lipase production by *Bacillus vallismortis* ORS4"
2. Attended International symposium on "Frontier discoveries and innovations in microbiology and its interdisciplinary relevance (FDMIR-2013)" held on November 17-20$^{th}$, 2013 at MDU, Haryana and presented a poster on "Mutagenesis of *H. xianhensis* for improvement of EPS production".
3. Attended international conference on "Microbial world: recent innovations and future trends" held on November 22-25$^{th}$, 2012 at KIIT University, Odisha and presented a poster on "Optimization of cultural conditions for extracellular polymeric substances (EPS) production by *Halomonas xianhensis* isolated from solar salterns of Orissa"

## WORKSHOPS

1. Participated in "Workshop on chromatography, the catapult for unraveling the facts of Nature" held on December 26-27$^{th}$, 2013 at University of Calcutta, Kolkata.
2. Participated in "Workshop on scanning electron microscope in life science" held on February 7-8$^{th}$, 2013 at NICED, Kolkata.

## SEMINARS

1. Participated in national seminar on “Food security and GM crops” held on October, 28th, 2013 at Department of Botany, University of Calcutta
2. Participated in national seminar on “National perspective of microbiology research in India” held on March, 14-15th, 2013 at Department of Microbiology, University of Calcutta
3. Participated in national seminar on “Research scenario on plant science” held on January, 8th, 2013 at Department of Botany, University of Calcutta

## TECHNICAL SKILLS

### General Microbiology:

Media preparation and sterilization as per general laboratory practice; Isolation and purification of bacteria from soil sample using direct plate and enrichment technique; Isolation of $N_2$-fixing bacteria, isolation of *Rhizobium* from root nodules; Simple and differential staining techniques, Microscopic examination of bacteria; Antibiotic sensitivity test and carbohydrate fermentation test, growth kinetics, counting of cells using haemocytometer and CFU, PC, TLC, CC, Enzyme kinetics (Km and V max), Bacterial Transformation, plasmid DNA extraction; Gel electrophoresis, PCR.

### Doctoral Research:

Production studies of biomolecules like EPS, antibiotics, hydrolytic enzymes; Fermentation techniques in laboratory scale; Purification of biomolecules (polysaccharides, proteins, enzymes); Chemical and physical characterization of biomolecules (FTIR, NMR, GC-MS, XRD, TGA, DSC etc)
Bacterial genomic DNA extraction, Primer designing; DNA sequencing, *in silico* sequence analysis (BLAST, Sequence Alignments, 16SrRNA gene Sequence typing for microbial Identification, Phylogenetic analysis (MEGA6)

### Post Doctoral research:

To explore efficient industrial, agricultural and environmental use of EPS from Halophiles.

### Computational Skills:

Microsoft Office; Adobe Photoshop; EndNote Tool, SPSS, Origin etc.

## PERSONAL SKILLS

- Capable of representing a scientific research efficiently
- Taught according to syllabi in a organized and logistics manner.
- Conducted presentations based on curriculum and a discussion sessions on the course.
- Set question papers and evaluated students' examination.

## TEACHING EXPERIENCE

- Guest lecturer, Microbiology (M.Sc)

Acharya Prafulla Chandra College (West Bengal State University); 01/2019-Till date

- Guest lecturer, Microbiology (B.Sc; M.Sc), Agricultural Science (B.Sc.), Biochemistry (B.Sc; M.Sc)

JIS University, 01.07.2021-Till date

- Guest lecturer, BMLT

  Institute of Advance education and Research (IAER), MAKAUT, 01.01.2023 to till date