Anupama Ghosh

Designation: Associate Professor
Affiliation: Department of Biological Sciences Bose Institute,
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Affiliations & Academic Qualification

May 2023-Till date
Associate Professor, Department of Biological Sciences, Bose Institute, Kolkata, India

2020-May 2023
Associate Professor, Division of Plant Biology, Bose Institute, Kolkata, India

2016-2020
Assistant Professor, Division of Plant Biology, Bose Institute, Kolkata, India

2013-2018
DST INSPIRE Faculty, Division of Plant Biology, Bose Institute, Kolkata, India

2010-2013
Post Doctoral Research, Department of Organismic Interaction, Max Planck Institute for Terrestrial Microbiology, Marburg, Germany

2005-2010
PhD in Biotechnology, University of Calcutta, India

2003-2005
M.Sc in Biotechnology, University of Calcutta, India

2000-2003
B.Sc (Hons) in Microbiology, University of Calcutta, India

Publications and Projects (Numbers only)

Research Papers: 17; Book chapters: 4; Invited oral & poster presentations in International/National conferences/symposia: 19; Completed Sponsored projects: 4 (as PI); Ongoing Sponsored Project: 1 (as PI)

Awards and achievements

- **Fulbright-Nehru Academic and Professional Excellence Fellowship,** Fulbright Association & United States India Educational Foundation (USIEF), 2023, 2024
- **Early Career Research Award,** Science and Engineering Research Board (SERB), India (2018).

- **DST-INSPIRE Faculty Award,** Department of Science and Technology (DST), India (2013).
- **Max Planck Postdoctoral Fellowship** (2010-2013).
- Qualified in the **National Eligibility Test,** NET (2005) jointly conducted by UGC and CSIR
- Qualified in the **Graduate Aptitude Test in Engineering**, GATE (2005)
- **Summer Research Fellowship** from Indian Academy of Science, Bangalore (2004)

Students mentored

Ph.D.: 4 (+5 ongoing); Postdoc: 2 (+1 ongoing); M.Sc. Intern: 28; Integrated B.S.- M.Sc.: 4

Detailed list of publication

Research articles in peer-reviewed journal:

1. Roy, A, **Ghosh, A**. A phosphatidic acid and phosphatidylserine targeting secreted lipase Lip3 from Ustilago maydis is involved in the pathogenesis of the fungus. (Manuscript under peer review)
2. Mitra, A, Kar, A, Bhakta, K, Roy, A, Mukherjee, A, Ghosh, A, **Ghosh, A**. Small heat shock protein Hsp20 regulates multiple cellular pathways in Ustilago maydis through its interaction with cytoskeletal proteins. (BioRXiv, 2024.11.08.622622; doi: https://doi.org/10.1101/2024.11.08.622622, Under peer review)
3. Mondal, S, Acharya, U, Mukherjee, T, Bhattacharya, D, **Ghosh, A**, Ghosh, A. Exploring the dynamics of ISR signaling in maize upon seed priming with plant growth promoting actinobacteria isolated from tea rhizosphere of Darjeeling. Archives of Microbiology 2024, Vol 206, 282, doi: 10.1007/s00203-024-04016-1
4. Mitra A, Bhakta K, Kar A, Roy A, Mohid Sk A, Ghosh A, **Ghosh A*.** Insight into the biochemical and cell biological function of an intrinsically unstructured heat shock protein, Hsp12 of *Ustilago maydis*. Molecular Plant Pathology 2023, doi: 10.1111/mpp.13350.
5. Mukherjee S, Bhakta K, Ghosh A, **Ghosh A***. Ger1 is a secreted aspartic acid protease essential for spore germination in *Ustilago maydis* Yeast 2022, doi: 10.1002/yea.3835.
6. Acharya U, Das T, Ghosh Z and **Ghosh A***. Defense surveillance system at the interface: esponse of rice towards *Rhizoctonia solani* during sheath blight infection. Molecular Plant Microbe Interactions, 2022, Vol 35(12), 1081-1095, doi: 10.1094/MPMI-07-22-0153-R.
7.Mukherjee D, Singh N P, Roy A, Mondal R, Acharya U, Chattopadhyay D, **Ghosh A***. The extracellular RNA pool within Zea mays apoplast: composition and differential expression during *Ustilago maydis* infection. BioRxiv 2022, doi: 10.1101/2022.06.03.494492.
8. Roy M, Bhakta K, Bhowmick A, Gupta S, **Ghosh A**, Ghosh A. Archaeal HSP14 drives substrate shuttling between small heat shock proteins and thermosome: insights into a novel substrate transfer pathway. FEBS Journal 2022, Vol 289 (4), 1080-1104, doi: 10.1111/febs.16226. Epub 2021 Oct 24.
9. Bhattacharya C, Banerjee S, Acharya U, Mitra A, Mallick I, Haldar A, Haldar S, **GhoshA**, Ghosh A. Evaluation of plant growth promotion properties and induction of antioxidative defense mechanism by tea rhizobacteria of Darjeeling, India. Scientific Reports 2020, Vol 10 (1), 1-19, doi: 10.1038/s41598-020-72439-z.
10. Mukherjee D, Gupta S, GhoshA, **Ghosh A***. Ustilago maydis secreted T2 ribonucleases, Nuc1 and Nuc2 scavenge extracellular RNA. Cellular Microbiology 2020, Vol 22 (12), doi: 10.1111/cmi.13256.
11. Mukherjee D, Mitra A, **Ghosh A***. Detection of apoptosis like cell death in *Ustilago maydis* by Annexin V-FITC staining. Bioprotocol 2018, Vol 8 (15), doi:10.21769/BioProtoc.2948.
12. Mukherjee D, Gupta S, Saran N, Datta R, **Ghosh A***. Induction of apoptosis-like cell death and clearance of stress induced intracellular protein aggregates: dual roles for Ustilago maydis metacaspase Mca1. Molecular Microbiology 2017, Sep 23, doi: 10.1111/mmi.13848.
13. Ghosh P, Roy A, Hess D, **Ghosh A**, Das S. Deciphering the Mode of Action of a Modified Allium sativum Leaf Agglutinin (mASAL), a Potent antifungal Protein on *Rhizoctonia solani*. BMC Microbiology 2015; Oct 26;15:237.
14. **Ghosh A***, Raha S. Molecular and functional characterization of a stress responsive cysteine protease, EhCP6 from Entamoeba histolytica. Protein Expression and Purification 2015 May;109:55-61. doi: 10.1016/j.pep.2015.02.005.

15. **Ghosh A***. Small heat shock proteins (HSP12, HSP20 and HSP30) play a role in *Ustilago maydis* pathogenesis. FEMS Microbiology Letters 2014 Sep 22; doi: 10.1111/1574-6968.12605
16. Djamei A£, Schipper K£, Rabe F, **Ghosh A**, Vincon V, Kahnt J, Osorio S, Tohge T, Fernie AR, Feussner I, Feussner K, Meinicke P, Stierhof YD, Schwarz H, Macek B, Mann M, Kahmann R. Metabolic priming by a secreted fungal effector. Nature 2011 Oct 5; 478(7369): 395-8. doi: 10.1038/nature10454.
17. **Ghosh AS**, Ray D, Dutta S, Raha S. EhMAPK, the mitogen-activated protein kinase from Entamoeba histolytica is associated with cell survival. PLoS One 2010 Oct 8; 5(10): e13291. doi: 10.1371/journal.pone.0013291.
18. **Ghosh AS**, Dutta S, Raha S. Hydrogen peroxide-induced apoptosis-like cell death in Entamoeba histolytica. Parasitology International 2010 Jun; 59(2): 166-72. doi: 10.1016/j.parint.2010.01.001. Epub 2010 Jan 15.
19. Dutta S, **Sardar A**, Ray D, Raha S. Molecular and functional characterization of EhPAK3 a p21 activated kinase from Entamoeba histolytica. Gene 2007 Nov 1;402 (1-2):57-67.

Book chapters

1. Bhattacharyya, C, Roy, R, Tribedi, P, **Ghosh, A**, Ghosh, A. (2020) Biofertilizers as substitute to commercial agrochemicals. M.N.V Prasad (Eds.), Agrochemicals Detection, Treatment and Remediation, Pesticides and Chemical Fertilizers, February 2020, 11: 263-290 (ISBN 978-0-08-103017-2). https://doi.org/10.1016/C2018-0-02947-3
2. Mallick, I, **Ghosh, A**, Ghosh, A. (2019) Microbe-Mediated Removal of Heavy Metals for Sustainable Agricultural Practices. In: B. Giri et al. (eds.), Biofertilizers for Sustainable Agriculture and Environment, Soil Biology, August 2019, 55: 521-544 (ISBN 978-3-030-18932-7). https://link.springer.com/chapter/10.1007/978-3-030-18933-4_24
3. **Ghosh A***, Raha S. (2017) Proteases from protozoa and their role in infection. In: **Chakraborti,** Sajal, **Dhalla**, Naranjan S. (eds.), Proteases in physiology and pathology. September 2017 Springer, Singapore (ISBN 978-981-10-2513-6). https://link.springer.com/chapter/10.1007/978-981-10-2513-6_8
4. Ray D, **Ghosh A**, Banerjee Mustafi S, Raha S. (2016) Plant stress response: HSP70 in the spotlight. In: Asea A., Kaur P., Calderwood S. (eds), Heat Shock Proteins and Plants. Heat Shock Proteins, vol 10. November 2016 Springer, Cham (ISBN 978-3-319-46340-7) https://link.springer.com/chapter/10.1007/978-3-319-46340-7_7

Conference proceedings

1. R. Datta, A. Kumari, S. N., U. Acharya, S. Saha, **A. Ghosh** (2019) An insight into the apoplast of rice during Rhizoctonia solani AG1-IA infection. Molecular Plant-Microbe Interactions 32:S1.106. https://doi.org/10.1094/MPMI-32- 10-S1.106
2. **A. Ghosh**, S. Dutta, D. Ray and S. Raha (2009) Molecular mechanisms of stress response in the parasitic protozoan Entamoeba histolytica, International Journal of Medical Microbiology. Volume 299, Supplement 1, September 2009. doi:10.1016/j.ijmm.2009.08.001
3. **A. Sardar**, S. Dutta, D. Ray and S. Raha (2007) Survival and death of Entamoeba histolytica under conditions of stress. Tropical Medicine and International Health 12 (suppl 1) p30, doi: 10.1111/j.1365-3156.2007.01866.x