

Krishnendu Pramanik, M.Sc., Ph.D.

Assistant Professor

Microbiology and Microbial Bioinformatics Laboratory
Department of Botany, Cooch Behar Panchanan Barma University
Panchanan Nagar, Vivekananda Street, PIN – 736101, WB, India

Former Assistant Professor, SRM University Sikkim, East Sikkim, India
Former UGC – Dr. D.S. Kothari Postdoctoral Fellow, Visva-Bharati, WB, India
Former DST-INSPIRE Fellow, The University of Burdwan, WB, India
Life Member, The Association of Microbiologists of India (AMI), India
Life Member, BIOinformatics CLUB for Experimenting Scientists (BIOCLUES)
M.Sc. Gold Medalist

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Academic career:

Degree	Institute	Year	Thesis / Dissertation title	University Ranking
Ph.D. Botany (Science)	The University of Burdwan, India	2018	“Characterization of Heavy Metal Resistant Plant Growth Promoting Rhizobacteria Isolated from the Industrial Belts of Burdwan District for Sustainable Agriculture.”	NA
M.Sc. Botany	The University of Burdwan (BU), India	2013	“Study of chromium resistant bacteria isolated from industrial belt of Durgapur” Specialization: Microbiology and Microbial Biotechnology	1 st class 1 st
B.Sc. (H.) Botany	Burdwan Raj College, BU, India	2011	NA	1 st class 2 nd

Postdoctoral experience:

Fellowship	Funding agency	University	Duration	Project title
Dr. D.S. Kothari Postdoctoral Fellowship	University Grants Commission (UGC)	Visva-Bharati, Santiniketan, WB, India	22.10.2019 – 21.10.2022	“Transcriptome analysis of a selected rice genotype and plant growth promoting rhizobacteria during plant-PGPR interaction under cadmium stress.”

Research interests:

Environmental Microbiology, Plant-microbe interaction, Heavy metals and metalloids, Environmental stresses, Bioremediation, Bacterial enzymes, Molecular mechanisms, Transcriptomics, Bioinformatics

Research summary (upto 2022):

The major research focus during doctoral thesis in Prof. T.K. Maiti's Lab, was dedicated to microbial-remediation of contaminated agricultural fields with the involvement of plant growth-promoting rhizobacteria (PGPR). A number of multi-heavy metal resistant phytobeneficial PGPR strains (few are available in Microbial Culture Collection, NCCS, Pune, India) were isolated, identified and characterized those exhibited tremendous potential in rice seedling growth enhancement under various heavy metal stresses especially focused on Cadmium (Cd).

During the postdoctoral work in Prof. N.C. Mandal's lab, the major concentration was on transcriptomic analysis (through RNASeq) of rice and bacteria under Cd stress where we were inquisitive to the molecular basis of plant-Cd-microbe interaction exclusively to find out differentially expressed genes (DEGs) therein.

Apart from wet-lab, I've devoted a parallel part of my research in protein Bioinformatics also. The goal of this study is to uncover the structural, functional and phylogenetic relatedness and diversification among various isoforms of different microbial proteins. Recently in 2022, we have published a Springer Nature article on fungal ACC deaminase. Previously, a set of bacterial proteins were also analyzed through open-source bioinformatic tools among various bacterial genera and published our works in Elsevier, Springer Nature journals.

Workshops completed:

Title of the workshop	Level	Organizing Institute	Duration
Basic to Advanced Bioinformatics, Machine Learning, and Multiomics data analysis (Online)	International	Nextgenhelper, New Delhi, India	March 13 – 31, 2022
Next Generation Sequencing for Deciphering Host-Pathogen Interactions (Online)	National	Bionivid Technologies Pvt. Ltd., India	Feb 4 – 5 th , 2021
Advanced Bio-Informatics (Online FDP)	National	E & ICT Academy, National Institute of Technology, Warangal, India	Nov 18 th – 27 th , 2021
Flow Cytometry and its Application in Biomedical Sciences (Online)	International	Trust for Education and Training in Cytometry (TETC), Mumbai, India	July 24 – 26, 2020
Bioinformatics-based Genomic & Proteomic Data Analysis in Microbial Domain (Offline)	National	National Bureau of Agriculturally Important Microorganisms (NBAIM) Indian Council of Agricultural Research (ICAR), Govt. of India	March 04 – 09, 2016

Awards, grants, recognitions, memberships:

Institution granting the award/scholarship	Award Name	Year
BIOinformatics CLUb for Experimenting Scientists (Bioclues) organization, India	Bioclues Innovation, Research and Development (BIRD) Awards 2021	2021
Bioclues organization [Regd. 520/2009], India	Life Membership (Membership No. Bio_LM_2021_005)	2021
Dept. of Botany, Bidhan Chandra College, Asansol, West Bengal, India	Invited speaker in National Webinar on “Current progress in plant biology: implications towards crop improvement”	2021
Dept. of Botany, MUC Women’s College, under The University of Burdwan, India	1 st prize in International Conference on “Engineering biotic interactions in the light of social applicability”	2020
University Grants Commission, Govt. of India	UGC – Dr. D.S. Kothari Postdoctoral Fellowship [Award No. F.4–2/2006 (BSR)/ BL/19–20/0072 dated October 21, 2019]	2019
The Association of Microbiologists of India (AMI)	Life Membership (Membership No. 4937-2019)	2019
The University of Burdwan, India	Best presentation (oral) award in International Conference on “Frontiers in Biological, Environmental and Medical Sciences (FBEMS)”	2018
Department of Science of Technology, Govt. of India	DST-INSPIRE Senior Research Fellowship [Grant No. IF150197 dated 26.10.2017]	2017
Indian Institute of Technology, Roorkee, Govt. of India	Qualified Graduate Aptitude Test for Engineering (GATE) – 2017, AIR – 1558	2017
Department of Science of Technology, Govt. of India	DST-INSPIRE Junior Research Fellowship [Grant No. IF150197 dated 11.03.2015]	2015
The University of Burdwan, India	Gold Medal	2015
The University of Burdwan, India	Monujendranarayan and Gouri Acharya Chowdhury Prize	2015
Burdwan Raj College, under The University of Burdwan, India	Bibhutibhusan Roy Memorial Award-2011	2012

- Mukherjee D.*, **Pramanik K.***, Mandal S., Mandal N.C. (2022) Augmented growth of Cd-stressed rice seedlings with the application of phyto stimulating, root-colonizing, Cd-tolerant, leaf-endophytic fungi *Colletotrichum* spp. isolated from *Eupatorium triplinerve*. **Journal of Hazardous Materials**, 438, 129508. <https://doi.org/10.1016/j.jhazmat.2022.129508>. IF: 14.224.
***Joint first-author.**
- Pramanik K.** & Mandal N.C. (2022). Structural heterogeneity assessment among the isoforms of fungal 1-aminocyclopropane-1-carboxylic acid (ACC) deaminase: a comparative *in silico* perspective. **Journal of Genetic Engineering and Biotechnology**, 20(1), 1-14. <https://doi.org/10.1186/s43141-021-00294-0>.
- Ghosh A., **Pramanik K.**, Bhattacharya S., Mondal S., Ghosh S.K. & Maiti T.K. (2022). A potent cadmium bioaccumulating *Enterobacter cloacae* strain displays phyto beneficial property in Cd-exposed rice seedlings. **Current Research in Microbial Sciences**, 3, 100101. <https://doi.org/10.1016/j.crmicr.2021.100101>.
- Pramanik K.**, Mandal S., Banerjee S., Ghosh A., Maiti T.K., Mandal N.C. (2021). Unraveling the heavy metal resistance and biocontrol potential of *Pseudomonas* sp. K32 strain facilitating rice seedling growth under Cd stress. **Chemosphere**, 274, 129819. <https://doi.org/10.1016/j.chemosphere.2021.129819>. IF: 8.943.
- Karmakar J., Goswami S., **Pramanik K.**, Maiti T.K., Kar R.K. & Dey N. (2021). Growth promoting properties of *Mycobacterium* and *Bacillus* on rice plants under induced drought. **Plant Science Today**, 8(1), 49-57. <https://doi.org/10.14719/pst.2021.8.1.965>.
- Ghosh A., **Pramanik K.**, Bhattacharya S., Mondal S., Ghosh S.K., Ghosh P.K. & Maiti T.K. (2021). Abatement of arsenic-induced phytotoxic effects in rice seedlings by an arsenic-resistant *Pantoea dispersa* strain. **Environmental Science and Pollution Research**, 28(17), 21633-21649. <https://doi.org/10.1007/s11356-020-11816-7>. IF: 5.190.
- Mitra S., Purkait T., **Pramanik K.**, Maiti T.K. & Dey R.S. (2019). Three-dimensional graphene for electrochemical detection of Cadmium in *Klebsiella michiganensis* to study the influence of Cadmium uptake in rice plant. **Materials Science and Engineering: C**, 103, 109802. <https://doi.org/10.1016/j.msec.2019.109802>. IF: 8.457.
- Sarkar A., **Pramanik K.**, Mitra S., Soren T. & Maiti T.K. (2018). Enhancement of growth and salt tolerance of rice seedlings by ACC deaminase-producing *Burkholderia* sp. MTCC 12259. **Journal of Plant Physiology**, 231, 434-442. <https://doi.org/10.1016/j.jplph.2018.10.010>. IF: 3.686.
- Ghosh P.K., Maiti T.K., **Pramanik K.**, Ghosh S.K., Mitra S. & De T.K. (2018). The role of arsenic resistant *Bacillus aryabhattai* MCC3374 in promotion of rice seedlings growth and alleviation of arsenic phytotoxicity. **Chemosphere**, 211, 407-419. <https://doi.org/10.1016/j.chemosphere.2018.07.148>. IF: 8.943.
- Pramanik K.**, Mitra S., Sarkar A., Soren T. & Maiti T.K. (2018). Characterization of a Cd²⁺-resistant plant growth promoting rhizobacterium (*Enterobacter* sp.) and its effects on rice seedling growth promotion under Cd²⁺-stress in vitro. **Agriculture and Natural Resources**, 52(3), 215-221. <https://doi.org/10.1016/j.anres.2018.09.007>.
- Mitra S., **Pramanik K.**, Sarkar A., Ghosh P.K., Soren T. & Maiti T.K. (2018). Bioaccumulation of cadmium by *Enterobacter* sp. and enhancement of rice seedling growth under cadmium stress. **Ecotoxicology and Environmental Safety**, 156, 183-196. <https://doi.org/10.1016/j.ecoenv.2018.03.001>. IF: 7.129.
- Pramanik K.**, Kundu S., Banerjee S., Ghosh P.K. & Maiti T.K. (2018). Computational-based structural, functional and phylogenetic analysis of *Enterobacter* phytases. **3 Biotech**, 8(6), 1-12. <https://doi.org/10.1007/s13205-018-1287-y>. IF: 2.893.
- Pramanik K.**, Saren S., Mitra S., Ghosh P.K. & Maiti T.K. (2018). Computational elucidation of phylogenetic, structural and functional characteristics of *Pseudomonas* lipases. **Computational Biology and Chemistry**, 74, 190-200. <https://doi.org/10.1016/j.compbiolchem.2018.03.018>. IF: 3.737.
- Mitra S., **Pramanik K.**, Ghosh P.K., Soren T., Sarkar A., Dey R.S., Pandey S. & Maiti T.K. (2018). Characterization of Cd-resistant *Klebsiella michiganensis* MCC3089 and its potential for rice seedling growth promotion under Cd stress. **Microbiological Research**, 210, 12-25. <https://doi.org/10.1016/j.micres.2018.03.003>. IF: 5.070.

List of publications (continued):

- **Pramanik K., Mitra S., Sarkar A. & Maiti T.K. (2018).** Alleviation of phytotoxic effects of cadmium on rice seedlings by cadmium resistant PGPR strain *Enterobacter aerogenes* MCC 3092. **Journal of Hazardous Materials**, 351, 317-329. <https://doi.org/10.1016/j.jhazmat.2018.03.009>. IF: 14.224.
- **Pramanik K., Pal P., Soren T., Mitra S., Ghosh P.K., Sarkar A. & Maiti T.K. (2018).** *In silico* structural, functional and phylogenetic analysis of *Klebsiella* phytases. **Journal of Plant Biochemistry and Biotechnology**, 27(3), 362-372. <https://doi.org/10.1007/s13562-018-0445-y>. IF: 1.525.
- **Sarkar A., Ghosh P.K., Pramanik K., Mitra S., Soren T., Pandey S., Mondal M.H. & Maiti T.K. (2018).** A halotolerant *Enterobacter* sp. displaying ACC deaminase activity promotes rice seedling growth under salt stress. **Research in Microbiology**, 169(1), 20-32. <https://doi.org/10.1016/j.resmic.2017.08.005>. IF: 3.946.
- **Pramanik K., Mitra S., Sarkar A., Soren T. & Maiti T.K. (2017).** Characterization of cadmium-resistant *Klebsiella pneumoniae* MCC 3091 promoted rice seedling growth by alleviating phytotoxicity of cadmium. **Environmental Science and Pollution Research**, 24(31), 24419-24437. <https://doi.org/10.1007/s11356-017-0033-z>. IF: 5.190.
- **Pramanik K., Ghosh P.K., Ray S., Sarkar A., Mitra S. & Maiti, T. K. (2017).** An *in silico* structural, functional and phylogenetic analysis with three dimensional protein modeling of alkaline phosphatase enzyme of *Pseudomonas aeruginosa*. **Journal of Genetic Engineering and Biotechnology**, 15(2), 527-537. <https://doi.org/10.1016/j.jgeb.2017.05.003>.
- **Pramanik K., Soren T., Mitra S. & Maiti T.K. (2017).** *In silico* structural and functional analysis of *Mesorhizobium* ACC deaminase. **Computational Biology and Chemistry**, 68, 12-21. <https://doi.org/10.1016/j.compbiolchem.2017.02.005>. IF: 3.737.
- **Pramanik K., Ghosh P.K., Ghosh A., Sarkar A. & Maiti T.K. (2016).** Characterization of PGP traits of a hexavalent chromium resistant *Raoultella* sp. isolated from the rice field near industrial sewage of Burdwan District, WB, India. **Soil and Sediment Contamination: An International Journal**, 25(3), 313-331. <https://doi.org/10.1080/15320383.2016.1137861>. IF: 3.057.
- **Ghosh P.K., Sarkar A., Pramanik K. & Maiti T.K. (2016).** The extracellular polysaccharide produced by *Enterobacter* spp. isolated from root nodules of *Abrus precatorius* L. **Biocatalysis and Agricultural Biotechnology**, 5, 24-29. <https://doi.org/10.1016/j.bcab.2015.12.003>.

Review articles

- **Mondal S., Pramanik K., Ghosh S.K., Pal P., Ghosh P.K., Ghosh A. & Maiti T.K. (2022)** Molecular insight into arsenic uptake, transport, phytotoxicity, and defense responses in plants: A critical review. **Planta**, 255, 87. <https://doi.org/10.1007/s00425-022-03869-4>. IF: 4.540.
- **Mondal S., Pramanik K., Ghosh S.K., Pal P., Mondal T., Soren T. & Maiti T.K. (2021).** Unraveling the role of plant growth-promoting rhizobacteria in the alleviation of arsenic phytotoxicity: A review. **Microbiological Research**, 250, 126809. <https://doi.org/10.1016/j.micres.2021.126809>. IF: 5.070.

Book chapters

- **Mondal S., Pramanik K., Pal P., Mitra S., Ghosh S.K., Mondal T., Soren, T., Maiti T.K. (2023).** Multifaceted roles of root exudates in light of plant-microbe interaction. In: Chandra D., Bhatt P. (eds.) *Unravelling Plant-Microbe Synergy* (pp. 49-76). Academic Press, Elsevier. [eBook ISBN: 978-0-323-99896-3] <https://doi.org/10.1016/B978-0-323-99896-3.00003-5>.
- **Pramanik K., Banerjee S., Mukherjee D., Saha K.K., Maiti T.K., Mandal N.C. (2021).** Beneficial Role of Plant Growth-Promoting Rhizobacteria in Bioremediation of Heavy Metal(loid)-Contaminated Agricultural Fields. In: Hurst C. J. (ed.) *Microbes: The Foundation Stone of the Biosphere*, pp. 441-495. Springer. (Published online on 01 May 2021). [eBook ISBN: 978-3-030-63512-1] https://doi.org/10.1007/978-3-030-63512-1_22.
- **Pramanik K., Maiti T.K., Mandal N.C. (2021).** Potential role of heavy metal-resistant plant growth-promoting rhizobacteria in the bioremediation of contaminated fields and enhancement of plant growth essential for sustainable agriculture. In: De Mandal, Passari A. K. (eds.) *Recent Advancement in Microbial Biotechnology*, pp. 357-385. Academic Press, Elsevier. (Published online on 20 August 2021) [eBook ISBN: 9780128232613] <https://doi.org/10.1016/B978-0-12-822098-6.00014-8>.

Journal Editor:

- Frontiers in Microbiology (Review Editor)
- Frontiers in Plant Science
- Frontiers in Marine Science
- Frontiers in Sustainable Food Systems (GAE)
- Agronomy (GAE, MDPI)
- Plants (GAE, MDPI)
- Microorganisms (GAE, MDPI)
- Molecules (GAE, MDPI)
- International Journal of Molecular Sciences (GAE, MDPI)

Journal Reviewer:

- Scientific Reports (Nature Publishing Group)
- Plant and Soil (Springer Nature)
- Journal of Soil Science and Plant Nutrition (Springer Nature)
- Plant Growth Regulation (Springer)
- Journal of Hazardous Materials (Elsevier)
- Environmental Pollution (Elsevier)
- Journal of Cleaner Production (Elsevier)
- Ecotoxicology and Environmental Safety (Elsevier)
- Bioresource Technology Reports (Elsevier)
- Science of the Total Environment (Elsevier)
- Current Research in Microbial Sciences (Elsevier)
- Journal of Microbiological Methods (Elsevier)
- Physiological and Molecular Plant Pathology (Elsevier)
- Pedosphere (Elsevier)
- Frontiers in Microbiology (Frontiers)
- Frontiers in Plant Science (Frontiers)
- Plant Science Today (Horizon e-Publishing Group)

Sequence and culture submissions:

- Submission of 16S rDNA sequences in NCBI: 13 nos.

KX346257, KX346258, KX346259, KX346260, MH605571, MH605572, KP842826, MH507563, MH507564, MH507565, MH507566, MH507567 and MH507568

- Submission of bacterial strain National Centre for Cell Science (NCCS), Microbial Culture Collection (MCC), Pune: 02 nos.

MCC 3091, MCC 3092

- Submission of *in silico* protein models in Protein Model Database (PMDb): 45 models

PM0079544, PM0080564, PM0081040, PM0080561, PM0080562, PM0083418 – 39, PM0083476 – 93

Other achievements:

- Recipient of FONDECYT postdoctoral fellowship (2020)
Universidad de La Frontera, Temuco, Govt. of Chile, South America.

(Declined the offer due to COVID-19 pandemic)

- Guest Lecturer (Sep. 2018 – Dec. 2018), Dept. of Botany
Bolpur College under The University of Burdwan.

————— End of the CV —————