

# Krishnendu Pramanik

M.Sc., Ph.D.

## Assistant Professor

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## Career

9<sup>th</sup> Mar 2023 – Present: Assistant Professor, Cooch Behar Panchanan Barma University, WB  
1<sup>st</sup> Nov 2022 – 3<sup>rd</sup> March 2023: Assistant Professor, SRM University Sikkim, East Sikkim  
22<sup>nd</sup> Oct 2019 – 21<sup>st</sup> Oct 2022: UGC-Dr. D.S. Kothari Postdoctoral Fellow, Visva-Bharati, WB  
Sep 2018 – Dec 2018: Guest Lecturer, Dept. of Botany, Bolpur College, Burdwan University  
Mar 2015 – Jul 2018: DST – INSPIRE Fellow, The University of Burdwan, WB, India

## Academics

2018 – Ph.D. in Botany (Science) from The University of Burdwan, West Bengal, India  
2017 – Qualified Graduate Aptitude Test for Engineering (GATE), Life Sciences  
2013 – M.Sc. in Botany from The University of Burdwan (Rank: 1<sup>st</sup>, M.Sc. Gold Medalist)  
2011 – B.Sc. (Hons.) in Botany from The University of Burdwan (Rank: 2<sup>nd</sup>)

## Memberships

- Life Member, The Association of Microbiologists of India (AMI), India  
Membership No.: 4937-2019
- Life Member, BIOinformatics CLUB for Experimenting Scientists (BIOCLUES), India  
Membership No.: Bio\_LM\_2021\_005
- Life Member, Hariharpur Friends of Environment (HFOE), WB, India  
Membership ID: FOE/NE/0029/2022-23

## Broad areas of research

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

## Awards and achievements

- **2021:** “Bioclues Innovation, Research and Development (BIRD)” Awards from BIOinformatics CLUB for Experimenting Scientists (Bioclues) organization, India
- **2020:** Recipient of ‘FONDECYT postdoctoral fellowship – 2020’ from Universidad de La Frontera, Temuco, Govt. of Chile, South America (unable to join due to pandemic)
- **2020:** 1<sup>st</sup> prize in International Conference on “Engineering biotic interactions in the light of social applicability” organized by Dept. of Botany, MUC Women’s College, under The University of Burdwan, India
- **2019:** UGC – Dr. D.S. Kothari Postdoctoral Fellowship [Award No. F.4–2/2006 (BSR)/BL/19–20/0072 dated October 21, 2019] from the University Grants Commission (UGC), Govt. of India

- **2018:** Best presentation (oral) award in International Conference on “Frontiers in Biological, Environmental and Medical Sciences (FBEMS)” organized by The University of Burdwan, India
- **2017:** DST-INSPIRE Senior Research Fellowship [Grant No. IF150197 dated 26.10.2017] from Department of Science of Technology, Govt. of India
- **2015:** DST-INSPIRE Junior Research Fellowship [Grant No. IF150197 dated 11.03.2015] from Department of Science of Technology, Govt. of India
- **2015:** University ‘Gold Medal’ from The University of Burdwan, India for 1<sup>st</sup> class 1<sup>st</sup> position in M.Sc. (Botany), 2013
- **2015:** Monujendranarayan and Gouri Acharya Chowdhury Prize for securing the highest percentage of marks among the students of M.Sc. (Botany), 2013
- **2012:** Bibhutibhusan Roy Memorial Award-2011 Burdwan Raj College, under The University of Burdwan, India for securing the highest percentage of marks among the students of B.Sc. (Botany), Burdwan Raj College, 2011

### Publication summary (till 11<sup>th</sup> December, 2023)

- Total no. of research papers published: 22
- Total no. of review articles published: 03
- Total no. of edited books: 01
- Total no. of book chapters published: 03
- Google scholar citations: 1329 (as on 11-12-2023)
- Google scholar h-index: 17, i10-index: 18
- Total impact factor (Thomson Reuters, 2023): 120+

### Publications

#### 2023:

##### Review article(s):

- Banerjee S., Gupta N.\*, **Pramanik K.** \*, Gope M., GhoshThakur R., Karmakar A., Gogoi N., Hoque R.R., Mandal N.C., Balachandran S. (2023) Microbes and microbial strategies in carcinogenic polycyclic aromatic hydrocarbons remediation: a systematic review. Environmental Science and Pollution Research <https://doi.org/10.1007/s11356-023-31140-0> (\*equally contributed).

##### Edited Book(s):

- **Pramanik K.**, Cornejo P., Mandal N.C., eds. (2023). Heavy metal(loid) stress-alleviating and phytostimulating microorganisms: Dual-performing warhorses in soil-bioremediation. Lausanne: Frontiers Media SA. Published on July 2023. doi: 10.3389/978-2-8325-2923-2

##### Book Chapter(s):

- 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>

## 2022:

### Research article(s):

- 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> (\*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>

### Review article(s):

- 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>

## 2021:

### Research article(s):

- **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>
- 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>

### Review article(s):

- 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>

### Book Chapter(s):

- **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](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>

**2020:** NIL

**2019:**

Research article(s):

- 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>

**2018:**

Research article(s):

- 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>
- Ghosh P.K., Maiti T.K., **Pramanik K.**, Ghosh S.K., Mitra S. & De T.K. (2018). The role of arsenic resistant *Bacillus aryabhatai* 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>
- **Pramanik K.**, Mitra S., Sarkar A., Soren T. & Maiti T.K. (2018). Characterization of a Cd<sup>2+</sup>-resistant plant growth promoting rhizobacterium (*Enterobacter* sp.) and its effects on rice seedling growth promotion under Cd<sup>2+</sup>-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>
- **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>
- **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>
- 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>
- **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>
- **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>

- 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>

## 2017:

### Research article(s):

- 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>
- 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>

## 2016:

### Research article(s):

- 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>
- 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>

## Invited Lectures

- 2021: Invited speaker in National Webinar on “Current progress in plant biology: implications towards crop improvement” from the Dept. of Botany, Bidhan Chandra College, Asansol, West Bengal, India

## 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 <sup>th</sup> , 2021
Advanced Bio-Informatics (Online FDP)	National	E & ICT Academy, National Institute of Technology, Warangal, India	Nov 18th – 27th, 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

### Sequence, strain and protein model submissions (bacteria and fungi)

- Submission of 16S rDNA sequences in NCBI database: 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): 85 models  
PM0079544, PM0080564, PM0081040, PM0080561, PM0080562, PM0083418 – 39, PM0083476 – 93, PM0083418 – 39, PM0083476 – 93

### Academic/administrative roles and responsibilities

- Examiner, Paper Setter, Moderator and Scrutinizer of selected PG Botany Papers, Cooch Behar Panchanan Barma University (CBPBU)
- Member of Post Graduate Board of Studies (PG-BOS), Dept. of Botany, CBPBU

### Supervision of M.Sc. Dissertation students (Microbiology Special Paper):

- **2023** – Bipasha Paul, Jhiliik Barman, Pallabi Sarkar, Sayani Dey, Souvik Barman and Sunanda Biswas.

### 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)

### Research Topics Edited:

- **2023:** “Heavy Metal(loid) Stress-alleviating and Phytostimulating Microorganisms: Dual-performing Warhorses in Soil-bioremediation”





Editors: Krishnendu **Pramanik** (India), Pablo Cornejo (South America), Naryan Chandra Mandal (India)

Journals: Frontiers in Microbiology and Frontiers in Sustainable Food Systems.

[Click here](#) for more details.

- **2023**: “ACC Deaminase Producing Microorganisms in Stress Agriculture: From Hypothesis to Omics”

Editors: Krishnendu **Pramanik** (India), Yinglong Chen (Australia), Naryan Chandra Mandal (India), Sandipan Banerjee (India)

Journals: MDPI journals (Agronomy, International Journal of Molecular Sciences, Microorganisms, Molecules and Plants)

[Click here](#) for more details.

### 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 Nature)
- Current Microbiology (Springer Nature)
- The Protein Journal (Springer Nature)
- 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)
- Current Plant Biology (Elsevier)
- Pedosphere (Elsevier)
- Frontiers in Microbiology (Frontiers)
- Frontiers in Plant Science (Frontiers)
- Plant Science Today (Horizon e-Publishing Group)

### Referees

- **Prof. Dr. Tushar Kanti Maiti**  
Ph.D. Supervisor  
Microbiology Laboratory, Department of Botany  
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- **Prof. Dr. Narayan Chandra Mandal**  
Postdoc Mentor  
Mycology and Plant Pathology Laboratory  
Department of Botany, Visva-Bharati, Santiniketan, West Bengal, India  
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