Curriculum Vitae

Name : **Prof. (Dr.) Pranab Behari Mazumder**

Present Address (Work) : **Professor and Head**
Department of Biotechnology.
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Academic Record

- Ph.D (Biotechnology) : 1998, Gauhati University, Guwahati, India.
- M.Sc (Biotechnology) : 1991, Gauhati University, Guwahati, India.
- Post Graduate Diploma in Bioinformatics (PGDBI):2010, Assam University, Silchar, India.
- Post Doc in Micro RNA and TALEN Cloning:2012,Univesity of Louisville, USA
- B.Sc (Hons) : 1988, Gauhati University, Guwahati, India.
- B.Ed :1994,Gauhati University, India

Professional experience

- **Professor, Department of Biotechnology(from 01.01.2012 t0 till date)**
- **Dean Students Welfare, Assam University(02.12.2017 To 02.01.2019)**
- **Proctor,Assam University(05.04.2012 to 02.12.2017)**
- **Head, Department of Biotechnology, Assam University, Silchar (8th April,2012 to 23 April,2015 again 25 April,2018 to till date for second term))**
- **Associate Professor, Department of Biotechnology, Assam University Silchar (1st January, 2009 to 31-12-2011).**
- **Reader, Department of Biotechnology, Assam University Silchar (5th November, 2008 to 31st December, 2008).**
- **Coordinator, UGC- Special Assistance Programme (SAP), Department of Biotechnology, Assam University, Silchar (19.05.2017 to till date).**
- **Warden, Sahid Khudiram Basu Boys' Hostel, Assam University, Silchar, India. (2008 to till date).**
- **Associate Professor, Department of Botany & Biotechnology, Karimganj College, Karimganj, India (12.03.2008 to 05.11.2008).**
- **Selection Grade Lecturer, Department of Botany & Biotechnology, Karimganj College, Karimganj, India (12.03.2005 to 12.03.2008).**
- **Senior Scale Lecturer, Department of Botany & Biotechnology, Karimganj College, Karimganj, India (12.03.2000to 12.03.2005).**
- **Lecturer, Department of Botany & Biotechnology, Karimganj College, Karimganj, India (01.08.1994 to 12.03.2000).**
- **Founder Coordinator, UGC Sponsored Centre for Biotechnology (Vocational), Karimganj College, Karimganj, Assam (09.09.2002 – 04.11. 2008)**
- **Assistant Coordinator, Internal Quality Assurance Cell, Karimganj College (2006 -2008), Karimganj, Assam.**

- **Research Fellow, Department Biotechnology, Gauhati University, Gauhati, India (1.4.1991 to 01.08.1994).**

Academic and Professional Award and Honors

2012: Recipient of DBT Overseas Associateship for USA.
2012: Recipient of a Grant as PI for Major Research Project from Department of Biotechnology (DBT-Twinning Project),Govt of India.
2011: Recipient of National Scholarship Programme, Govt. of Slovak, Republic.
2011: Selected as Coordinator, UGC-SAP, Department of Biotechnology, Assam University, Silchar.
2011: Recipient of a Grant as PI for Major Research Project from Department of Biotechnology (DBT),Govt of India.
2009: Recipient of a Grant as Co-PI For Institutional Research Project from Department of Bioechnology (DBT),Govt India.
2008: Recipient of a Grant as PI for Major Research Project from University Grant Commission (UGC), India.
2004: Recipient of a Grant as PI for Minor Research Project from University Grant Commission (UGC), India.
1997: Recipient of a Grant as PI for Minor Research Project from University Grant Commission (UGC), India.
1994: Awarded Best Popular Science Speech Presentation Prize by Gauhati University, India.
1995: Again Awarded Best Popular Science Speech Presentation Prize by Gauhati University, India.

Professional Memberships:

Member, Governing Body, Wild Life Trust of India, Assam University Branch.
Member, National and International Academic Collarabation Cell, Assam University.
Life Member, Indian Science Congress Association.
Life Member, Society for Biometry, Ecology, Econometrics, Assam, India.
Life Member, Asian PGPR Society
Member, Indian Fern Society, The Orchid Society of India.
Member, Society for Biometry, Ecology and Economics, India.
Member, Assam Science Society, India.
Reviewer, Plant Cell Tissue and Organ Culture Journal
Reviewer, African Journal of Biotechnology.
Reviewer, Indian Journal of Biotechnology.
Reviewer, Indian Journal of Microbiology.
Reviewer,Mitochondrion(Elsivier)
Member, School Board, School of Life Sciences, Assam University, Silchar, India.
Chairman, Board of Post Graduate Studies, Biotechnology, Assam University, Silchar, India.
Member, Board of Post Graduate Studies, Department of Mathematics, Assam University, Silchar, India.
Chairman, Board of Under Graduate Studies, Biotechnology, Assam University, Silchar, India.
Member, Standing Committee of Academic Council. Assam University, Silchar, India.
Member, School Board, School of Technology, Assam University, Silchar, India.
Member of court, Assam University, Silchar, India.
Member, Academic Council, Assam University, Silchar

Special assignments:

- **Dean, Students Welfare, Assam University (from 05.12.2016 to 02.01.2019)**
- **Acting as Coordinator, UGC SAP(from 21.12.2016 to till date)**
- **Acted as Proctor, Assam University, Silchar(From 2nd January,2012 to 05.12.2016)**
- **Acting as Deputy Director, National and International Academic Collaboration Cell, Assam University.**
- **Acting as Deputy Coordinator. Biotech Hub, Assam University.**
- **Acting as Coordinator, UGC SAP(from 2016 to Till date)**
- **Acting as Warden, SKB Boys' Hostel Assam University**
- **Served as Assistant Coordinator, Internal Quality Assurance Cell, Karimganj College Karimganj, India. (2006 -2008).**
- **Chief Editor, ECOBIOS, Journal of Society for Biometry, Ecology and Econometrics (BEES), India. ISSN NO. 0972-6446.**
- **Editor, Assam University Journal of Science & Technology ISSN No.0975-2773.**

EX - EDITOR

1. The journal of Karimganj College Science Forum., Karimganj, India
2. Karimganj College News Letter, Karimganj. India

EX – District Coordinator, National Children Science Congress (Karimganj District) and organized **National Children Science Congress two times in Karimganj District (1997 & 2000).** India.

Technical expertise/Techniques used:

- Natural product in signaling pathway of cancer
- Plant Tissue culture and use of Mutagens in induction of mutation and development mutants.
- Fern Spore culture in development Prothallus and Sporophytes.
- Cloning of *Agrobacterium tumefaciens* and transformation.
- microRNA expression studies
- Real Time PCR
- Western blotting Technique.
- Karyotyping of Plant and human chromosome.
- Fluorescent *in situ* hybridization.
- Genomic DNA and Plasmid DNA Isolation.
- RNA isolation.
- PCR and QRTPCR Techniques
- Use of AFLP in Plant DNA Fingerprinting.
- Use RFLP in Molecular Characterization of Plants and microbes.
- Use of RAPD in Molecular Characterization of Plants and microbes.
- Electrophoresis: PAGE, SDS-PAGE,
- 16s rDNA sequencing technique.
- TALEN Cloning
- MicroRNA
- Phytochemical Screening using GCMS, IR, NMR etc.
- Bioinformatics: Pair-Wise alignment of protein sequences, multiple sequence alignments, construction and analysis of phylogenetic tree, secondary structure prediction, ligand molecule construction, molecular docking, etc.

Teaching experience:

1994-2008:Teching, Genetics, Molecular Biology, Microbiology etc to the Undergraduate Honours students and guided more than twenty students for their projects.
2008 to till date: Teaching Genetics, Molecular Biology, Microbiology, Plant Biotechnology to the PG students.
2008 to till date: Guided **Thirty five** PG students in completion of their M.Sc Project.

- **Supervisor:** Acting as supervisor of Ph.D works of **Eight Research students** and **one Post Doctorate student** of Assam University, Silchar, India.
- **Fourteen** students have been awarded Ph.D degree under my guidance.

Visiting Professor: Department of Life Science, Assam University, Silchar, India.

Principal Investigator:
DBT sponsored Project: **Molecular characterization of genetic diversity of N2 fixing Rhizobia of wild and cultivated legumes of Assam and Manipur, India.**

Project Summary:

Taxonomic identification of several unknown nitrogen-fixing organisms can be accomplished through sequencing of the *nif*H gene, which is also useful to analyze their genetic potential for the nitrogen fixation (Zehr *et al.*, 1995). *Nif*H genes can be employed as markers for the detection and study of the genetic diversity of diazotrophic organisms in microbial communities, like those in rice roots (Ueda *et al.*, 1995) or forest soil (Widmer *et al.*, 1999).

Barak Valley of Assam and Manipur, India contains many wild legumes which is associated with many free living and symbiotic nitrogen fixing microbes which are not been investigated till now. Study of nitrogen fixing bacteria is always important in academic and commercial point of view as present world is desperately trying to get rid of chemical fertilizers because its harmful effect on crop. Nitrogen fixing microbes are helpful to decrease use of chemical fertilizers.

In the present study an attempt was made to isolate several bacterial strains from different wild legume plant from Barak Valley, Assam and Manipur and characterized by using phenotypic and genotypic methods in order to assess their taxonomic and genetic diversity and investigate their ability to fix atmospheric nitrogen and the occurrence of *nif*H-like genes. Several PCR techniques such as RAPD analysis, RFLP analysis, ARDRA analysis or 16s r RNA sequencing used for molecular characterization. Suitable tools of bioinformatics were used for phylogenetic analysis.

Sixteen efficient rhizobial strains namely *Burkholderia mimosarum* SMP2, *Mesorhizobium loti* KMP1, *Burkholderia mimosarum* HMP1, *Burkholderia mimosarum* DMP2, *Rhizobium mayense* DCC2, *Burkholderia anthina* SICC1, *Burkholderia cenocepacia* ICC3, *Mesorhizobium loti* ICC1, *Burkholderia seminalis* SCP, *Leifsonia shinuenssis* DCP1, *Mesorhizobium loti* GCP1, Bacillus korcensis HCP2, Bradyrhizobium pachyrhizi SIDL1, Bradyrhizobium lablabi SDL1, Bradyrhizobium elkani HIDL1 and Bradyrhizobium elkani DDL2were isolated . All the above isolates have plant growth promoting abilities, can fix atmospheric nitrogen and submitted to NCBI and obtained accession number.

Principal Investigator:

UGC funded Major Research Project: *In vitro* propagation of rare, endangered **and medicinal ferns and orchids of Southern Assam and extraction of phytochemicals using Plant Biotechnology.**

Project Summary:

Southern Assam, popularly known as Barak Valley is inhibited by many tribes viz. Nagas, Hmars, Reangs, Khasis, Tripuris, etc. They use different herbs for curing diseases. Orchids and ferns are the major plants used by these tribes for medicinal purposes. Major orchids and many ferns are depleting from nature very fast due to environmental as well as anthropogenic reasons. In the present investigation orchid like ***Papilionanthe teres*** (Roxb.)Schltr, ***Bulbophyllum careyanum*** Hk. Spreng. ***Eria pubescens*** (Hook.) Lindle. ex. Stend and fern plants like **Cyathea contaminans (Wall, ex Hook) Copel. Philip, *Dipteris wallichii*** (R.Br.) Moore, ***Helminthostachys zeylanica*** (L.) Hook. etc are selected for *in vitro* propagation and also extraction and identification of phytochemicals on basis of their threatened status and medicinal value as reported by many workers. *In vitro* regenerated plants were established successfully in nature whereas phytochemical screening is going on.

Principal Investigator:

DBT sponsored Project: Ribotyping of *Camellia sinensis* rhizosphere microbial population grown in Assam: Identification and evaluation of efficient biocontrol PGPR strains for the control of Black rot disease caused by *Corticium theae*.

Project Summary:

Southern Assam (Barak Valley) is an important Tea growing belt in India. These tea gardens are affected by tea diseases like Black Rot of Tea caused by *Corticium theae* (Fungus**).** Regular practices of use of fungicides to decrease the intensity of attack has resulted in environmental and health hazard. Hence looking for alternative methods such as use of biological organisms for disease control and nutrient enhancement would be a viable alternative. Determining the total microbial diversity by ribotyping at different stages of plant growth viz., nursery, young plant and plants of different age group will help us to understand the role of the rhizobacteria associated with tea rhizosphere. Soil samples from the rhizosphere of normal Tea plant as well as from fields affected by Black Rot of Tea from different districts of Assam is used in this study. The culturable diversity of the Diazotrophs/PGPR,s (*Pseudomonas* and *Bacillus*) and the pathogen is isolated from different stages of the Tea plant as mentioned above. The Diversity of the culturable diazotrophs, *Pseudomonas*; *Bacillus* and the pathogen characterized by RAPD, ARDRA,16S rRNA and 18S rDNA sequence analysis. *Nif*H genes are employed as markers for the detection and study of the genetic diversity of diazotrophic organisms in microbial communities. The *Pseudomonas* and the Bacillus strains were identified using 16S rDNA. Pseudomonas genus specific primers or *rpoD* genes were used as marker. Efficient Pseudomonas and Bacillus strains with biocontrol activity were identified which will help reducing the use of chemical fungicides which are significant pesticides residue in the tea plants. Suitable antagonist agents to combat most prevalent diseases like Black Rot of Tea caused by fungus *Corticium theae* was developed as this diseases causes serious yield loss. The total microbial diversity was assessed by ribotyping from different locations of different ages of the plant. Further preparation of effective consortia to control the fungus *Corticium theae* is under process.

CO-Principal Investigator:

DBT sponsored Institutional Project: Programme on strengthening and upgradation of biotechnology teaching, training (on Molecular Biology and genomics) **and research** (Fish and Medicinal plant bar-coding) **in the Department of Biotechnology of Assam University in the North East.**

Project Summary:

The afore said project was funded by DBT, Govt of India to the Department of Biotechnology, Assam University to upgrade training(on Molecular Biology and genomics), teaching and research (Fish and Medicinal plant bar-coding)quality of Biotechnology. Moreover, as North Eastern states of India are hot spot of Biodiversity, this project aims to develop DNA Barcode of different medicinal plants, animals and fishes of North East India.

Ph.D. Research Work

Thesis entitled: Mass *in vitro* propagation and effect of mutagens on *Spathoglottis plicata* Bl.

Advisor: Professor G. Bhowmik, Department of Biotechnology, Gauhati University

Place: Guwahati, Assam, India.

Summary: Orchids are the wonderful creation of nature. The orchids are not only famous for their aesthetic value but also for their wide medicinal values. Due to adverse effect of nature like seasonal flood, soil erosion, wild fire and human activity like rapid urbanization, industrialization, extension of agricultural activities these orchids are depleting from nature very fast and they require urgent conservation. In my Ph.D work I selected an orchid viz. *Spathoglottis plicata* Bl., for mass *in vitro* propagation and to study the effect of mutagens viz. Ethyl Methyl Sulphonate (EMS), Gamma ray irradiation and colchicines. All the explants viz. shoot, root leaf, pseudobulb etc were tried in different media for direct regeneration of plants as well as for initiation of callus. Different types of Plant Growth Regulators (PGR) viz. Auxin, cytokinins and Gibberlic acid were tried in different media like MS, Knudson C, B5, Vacin and Went medium, etc. Most of the media responded well for regeneration of plants. Plants regenerated through explant culture as well as callus culture were acclimatized in nature through green and glass house facility. I developed the standard protocol for callus culture and Micropropagation for culture of *Spathoglottis plicata* Bl., the Malayan orchid. On the other hand in mutation studies I found that Gamma rays are more sensitive than EMS and colchicines. Different types of chromosomal abnormalities, mitotic index were studied. We developed different mutant lines for each type of mutagens. All most nine types of chloroplast mutants were developed. Different flower colour mutant were isolated and their anthocyanin pigments were analyzed.

Post-Doctoral Work:

Design and assembly of custom TALEN and other TAL effector-based constructs for targeting Human TP53_3UTR region:

Transcription activator-like (TAL) effectors are a newly described class of specific DNA binding protein ,is unique in manipulating their targeting mechanism .These are produced by plant pathogenic bacteria Xanthomonas, the function of these proteins is to directly modulate host gene expression. Upon delivery into host cells via the bacterial type III secretion system, TAL effectors enter the nucleus, bind to effector-specific sequences in host gene promoters and activate transcription (Bogdanove et al 2010). Their targeting specificity is determined by a central domain of tandem, 33–35 amino acid repeats, followed by a single

truncated repeat of 20amino acids. The majority of naturally occurring TAL effectors examined have between 12 and 27 full repeats (Boch, and Bonas, 2010). Tomas Cermak et al, 2011 and other lab independently discovered that a polymorphic pair of adjacent residues at positions 12 and 13 in each repeat, the 'repeat-variable di-residue' (RVD), specifies the target, one RVD to one nucleotide, with the four most common RVDs each preferentially associating with one of the four bases (Moscou. and Bogdanove. 2009). TAL effectors have attracted great interest as DNA targeting tools. In particular, Tomas Cermak et al,2011 and other groups have shown that TAL effectors can be fused to the catalytic domain of the FokI nuclease to create targeted DNA double-strand breaks (DSBs) in vivo for genome editing .Since FokI cleaves as a dimer, these TAL effector nucleases (TALENs) function in pairs, binding opposing targets across a spacer over which the FokI domains come together to create the break. DSBs are repaired in nearly all cells by one of two highly conserved processes, non-homologous end joining (NHEJ), which often results in small insertions or deletions and can be harnessed for gene disruption, and homologous recombination (HR),which can be used for gene insertion or replacement (Stoddard, 2011; Urnov,2010).Genome modifications based on both of these pathways have been obtained with high frequency in a variety of plant and animal species using zinc-finger nucleases (ZFNs) and homing endonucleases. The TAL effector repeat domain also has been successfully customized to make targeted transcription factors, both in plants in the native protein context and in human cells with the TAL effector activation domain replaced by VP64 (Morbitzeet al,2011; Miller et ai,2011). Fusions to other protein domains for chromatin modification, gene regulation, or other applications can also be envisioned. Thus, an efficient method for assembling genetic constructs to encode TAL effectors and TAL effector fusions to other proteins,with repeat arrays of user-defined length and RVD sequence, is highly desirable.

Encouraged by the work of Tomas Cermak et al,2011 we decided to degine TALEN for inducing SNV in TP53_3UTR region of Human cell line. 3′ untranslated regions (3′UTR) of mRNAs constitute regulatory elements including microRNA targeting sites for post-transcriptional gene regulation. Dr Li and his group sequenced the *TP53* 3′UTR from lymphoma specimens of over 500 diffuse large B-cell lymphoma (DLBCL) patients and found a total of 145 unique SNVs in the *TP53* 3′UTR—120 of them have not been reported previously with xxx occurred twice or more. They found that patients carrying a wild-type *TP53* CDS and a 3′UTR variant had a better 5-year overall survival than patients carrying a wild-type CDS and a native 3′UTR. In contrast, for patients with mutant TP53 CDS, 3′UTR variation predicted poor survival. Most of the newly found 3′UTR SNVs were located in the sites that are complementary to seed sequences of microRNA that are predicted or experimentally validated to target *TP53*. Therefore, we decided to design TALEN to introduce SNV in TP53_3UTR region of Human cell line.

We opted for Golden Gate cloning, a recently developed method of assembling multiple DNA fragments in an ordered fashion in a single reaction (Engler et al 2008,2009). The Golden Gate method uses Type IIS restriction endonucleases, which cleave outside their recognition sites to create unique 4 bp overhangs (sticky ends). Cloning is expedited by digesting and ligating in the same reaction mixture because correct assembly eliminates the enzyme recognition site

We also studied the Expression of mir-301a Target genes in wild type and 301 knockout mice. In the this work we selected the expression studies of 19 miR 301 Target genes and 10 number of cytokine genes. The study was mostly based on Real time PCR and Western Blot data.

Selected Peer-Reviewed Publications:

1.Mazumder,P.B and Bhowmik**:** *In vitro* multiplication of *Spathoglottis plicata* Bl. Gamma ray sensitivity of Orchid embryo and protocorms. Malayan orchid Review. Vol.26/92.P.36-39 Singapore, 1992.

2.Mazumder,P.B and Bhowmik: *In vitro* multiplication of *Spathoglottis plicata*. Arunachal Forest News. Vol.II No.1 P.30 – 33.Itanagar, 1993.(Bl.) Bijid.II.Morphogenetic investigation on tissue and organ culture.

3.Mazumder,P.B and Bhowmik: Effect of mutagens on *Spathoglottis plicata* Bl**.** The J. Orchid Soc. India. Vol.II No1&2 P.67-74. Chandigarh.1997.

4. **Mazumder,P.B** and Bhowmik: Effect of mutagens on mitotic behavior of *in vitro* cultured *S. plicata* Bl. Geobios New Reports. Vol. 18 P.125-129. 1999.

5. **Mazumder,P.B** and Paul, S: Contribution to the orchids of Southern Assam. The J. Orchid Soc. India.Vol.16 (1-2) P.41-45. Chandigarh.2000.

6. **Mazumder,P.B** and Chakraborty,R: Orchid Flora of Papumpare District of Arunachal Pradesh with a note for their conservation. Ecobios, vol.3, No (1&2) P.49-55, 2005.

7.**Mazumder,P.B,** Sharma,G.D,Dutta Choudhury,M and Nath Deepa: *In vitro* propagation and phytochemical screening of *Papilionanthe teres* (Roxb.) Schltr. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.5. No. 1.P37-42.2010. ISSN 0975-2773.

8. **Mazumder,P.B,** Sharma,G.D,Dutta Choudhury,M,Mazumder,B and Nath Deepa: *In vitro* propagation of *Helminthostachys zeylanica*, a rare Medicinal fern. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.5. No. 1.P 129-133.2010. ISSN 0975-2773.

9. **Mazumder,P.B,** Dutta Choudhury,M,Mazumder,B: Effect of growth regulators on *in vitro* propagation of *Bolbitis costata* (Wall ex Hook) C.Chr. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.5. No. 1.P 23-33.2010. ISSN 0975-2773.

10.Roy,Ratna, **Mazumder,P.B, and** Sharma,G.D:Proline catalase and root traits as indices of drought resistance in bold grained rice (*Oryza sativa*) genotypes. African Journal of Biotechnology Vol. 8 (23), pp. 6521-6528, 1 December, 2009Available online at http://www.academicjournals.org/AJB ISSN 1996-0786 © 2009 Academic Journals.

11. Shingh R.K,**Mazumder,P.B** and Sharma,G.D**:** Molecular characterization of genetic diversity of N_2 fixing microbes of some wild legume plants of Manipur- a review. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.6 No. 1.P 102-108.2010. ISSN 0975-2773.

12. **Mazumder, P.B and** L.Shivdutta: Differential approaches for studying Methanogens: Methods, analysis and prospects. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.6. No. 1.P 123-128.2010. ISSN 0975-2773.

13. Bhattacherjee,M.K, **Mazumder,P.B and** Sharma,G.D :Molecular characterization of free living diazotrophs in Tea rhizosphere- A review. Assam University Journal of Science & Technology. Biological and Environmental Sciences. Vol.6. No. 1.P 139-143.2010.. ISSN 0975-2773.

14. **Romila, D and Mazumder, P.B :** A review of Antidiabetic Plants used by the people of Manipur characterized by hypoglycaemic activity. Assam University Journal of Science & Technology. Biological and Environmental Sciences. Vol.6. No. 1.P 167-175. 2010.. ISSN 0975-2773.

15. Nath, S., Chakraborty, P, **.Mazumder**, **P.B** ,.Chetia,P and Dutta Choudhury, M.: matK gene based phylogenetic analysis of some orchids.Biotech.Vol.2 No.1.Silchar. 40- 44.2010

16. Ghosh, S**, Mazumder, P.B** and Mandi, S: Species specific AFLP markers for identification of Zingiber officinale, Z.montanum and Z. zerumbet (zingiberaceae). **Genetics and Molecular Research** 10(1):218-229.2011(IF1.75)

17. **Mazumder P B**, Mazumder, Bonani , Dutta Choudhury, M & Sharma G.D: *In vitro* propagation of *Drynaria quercifolia* (L.) J. Sm., a medicinal fern. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.7. No. 1.P 123-128.2011. ISSN 0975-2773.

18. Mriganko Das*,* **P.B. Mazumder***,* L.Shivadutta Singh*,*Durga Sharma: Isolation, Identification and Screening of Fungi for Cellulose Degradation**.** Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.8. No. 1.P 150-155.2011. ISSN 0975-2773.

19. **Mazumder,P.B,** Sharma,G.D, Dutta Choudhury,M, Mazumder,B and Nath,D *In vitro* propagation, bioactivity evaluation and phytochemical screening of *Dipteris wallichi.* (R. Br. ex Hook. Et Grev.) T. Moore. Status and conservation of Biodiversity in North East India.(Ed Dutta Choudhury et al).P/302-312,2011.ISBN 978-93-81084. Sawastik Publication, New Delhi-110002(India).

20.R.Roy, **Mazumder,P.B,** Sharma,G.D: Genetic Variability of traits conferring drought resistance to bold grained rice genotype(Oryza sativa L.) of Barak Valley, Assam India. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.8 No. 1.P31-36. 2011. ISSN 0975-2773.

21. **Mazumder**, **PB,** Aniruddha Sen, Bonani Mazumder, and M Dutta Choudhury: *In vitro* propagation of *Pronephrium lakhimpurense*(Rosenst.) Holttum, a rare fern of North East India. IFJ vol.**28(1&2)** :105-111. (2011) . ISSN 0970-2741.

22. **Mazumder**, **PB,** Aniruddha Sen, Bonani Mazumder, and M Dutta Choudhury: *In vitro* propagation of *Cyathea gigantea*, a rare and endangered tree fern and the study of the effects of growth regulators on its development. IFJ Vol. **28(1&2)**:P.48-56 (2011). ISSN 0970-2741.

23. Bhattacherjee,M.K, **Mazumder,P.B and** Sharma,G.D: Studies on free living Nitrogen fixing bacteria associated with non leguminous plants. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.9 No. 1. P18-24. 2012. ISSN 0975-2773.

24. L.Shivdutta Singh, **Mazumder,P.B** and Sharma,G.D: Rapid analysis of MDR and XDR Mycobacterium tuberculosis in the clinical isolates of Manipur and neighboring states of India. Assam University Journal of Science & Technology. Biological and Environmental Sciences.Vol.9 No. 1. P139-150. 2012. ISSN 0975-2773.

25.Shamim Ahmed Shah, **Mazumder, P.B** and Dutta Choudhury, M.D: Medicinal Properties of *Paris Ppolyphylla* Smith – A review: Journal of Herbal Medicine and Toxicology.6(1):27-33.2012.ISSN 0973-4643.

26. **Mazumder P.B*:*** In vitro propagation and molecular characterization of rare and endangered medicinal plants. Researches in Medicinal and Aromatics Plants (Eds Duttachoudhury et al).2012. Swastika Publication, New Delhi. (ISBN 10: 9381084955 / ISBN 13: 9789381084953)

27. Mazumder,B Choudhury MD, and **Mazumder, PB***:* Ethno-medico botanical aspects of ferns of Southern Assam and conservation aspects. Medicinal and Aromatics Plants. .(Ed Dutta Choudhury et al). Swastika Publication, New Delhi2012. (ISBN 10: 9381084955 / ISBN 13: 9789381084953)

28. Bhattacherjee, M.K, **Mazumder,P.B and** Sharma,G.D:Isolation and characterization of Nitrogen fixing bacteria Beijerinckia from Tea rhizosphere of Southern Assam, India. Journal of Pure and Applied Microbiology. Volume 6 (2) P.797-801,2012.

29.Kh Bharati Singh, M.D. Choudhury and **P.B.Mazumder**:In Vitro Propagation of Lygodium circinatum(Burm).Sw.: A hope for conservation of threatened fern. Recent Research in Natural Products Research.P63-68.2012.ISBN 987-81-924321-2-0.

30.Kh Bharati Singh, M.D. Choudhury and **P.B.Mazumder**:Growth of *Polypodium hesperium* Maxon in test tube.Bioresources and Traditional knowledge of North East India.(eds. K.K Shingha et al.)p.76-82.2012.ISBN NO 987-81-9924321-3-7.

31 Mrinal Kanti Bhattacharjee, **P.B.Mazumdar** and G.D.Sharma:Isolation and Identification of Bacteria of Genus*Pseudomonas* from Tea Rhizosphere of South Assam, India. Scholarly Journal of Biological Science Vol. 2(1), pp. 5-7, January 2013Available online http:// www.scholarly-journals.com/SJBSISSN 2315-6147 © 2013 Scholarly-Journals.

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12.Ibemhal D. Asem, **,** R.K Imotomba and P**. B. Mazumder:** The deep purple colour and scent are two great qualities of black scented rice (Chakhao) of Manipur.Avances in International Rice Research Chapter 8, Ed. Jinquam Li). Published by In Tech,Janeza Trdine 9,51000,Rijeka,Kroatia.Print ISBN 978-953-51-3009-3.Online ISBN 978-953-51-3010-9. P 125-136. http://dx.doi.org/10.5772/67193.

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14.Rajesh Kumar Prasad,Saumya Chatterjee, Sonalika Sharma, Pranab Behari Mazumder P.S.Raju and Mohan Virale : Insect Gut Bacteria and Their Potential Application in Degradation of Lignocellulosic Biomass: A Review. Bioremediation: Applications for Environmental Protection and Management(Ed Sunita J.Varjani). Chapter -14,**Springer**. DOI: 10.1007/978-981-10-7485-1_14. 2018.

15. Udaya Kumar Vandana, P. Bijoya Singha, Sharmista Chakraborthy, and **P. B. Mazumder**: Integrated Fungal Foliar Diseases of Arid Legumes: Challenges and Strategies of Their Management in Rain-Fed Areas. © Springer Nature Switzerland AG 2020 B. P. Singh et al. (eds.), Management of Fungal Pathogens in Pulses,Fungal Biology, Springer. https://doi.org/10.1007/978-3-030-35947-8_3

16. Udaya Kumar Vandana, Naseema Hayat Barlaskar, Rijusmita Kalita, Islamul Hoque Laskar, and **P. B. Mazumder**: The Vital Foliar Diseases of Cicer arietinum L. (Chickpea): Science, Epidemiology, and Management. © Springer Nature Switzerland AG 2020 B. P. Singh et al. (eds.), Management of Fungal Pathogens in Pulses, Fungal Biology, https://doi.org/10.1007/978-3-030-35947-8_10.

17. Abu Barkat Md Gulzar , Udaya Kumar Vandana, Prosenjit Paul **and Pranab Behari Mazumder**: The Role of Mushrooms in Biodegradation and Decolonization of Dyes , Intech Open. DOI: http://dx.doi.org/10.5772/intechopen.90737.

18.Jina Heikrujam, Rajkumar Kishor and Pranab Behari Mazumder: The Chemistry Behind Plant DNA Isolation Protocols. The Chemistry Behind Plant DNA Isolation Protocols DOI: http://dx.doi.org/10.5772/intechopen.92206.

19. Yahyea Baktiar Laskar, Romen Meitei Lourembam and **Pranab Behari Mazumder**: Herbal Remedies for Breast Cancer Prevention and Treatment. Medicinal Plants - Use in Prevention and Treatment of Diseases. Intech Open.

DOI: http://dx.doi.org/10.5772/intechopen.89669

20. Udaya Kumar Vandana, Bijoya Singha, A.B.M. Gulzar and **P.B. Mazumder:** Molecular mechanisms in plant growth promoting bacteria (PGPR) to resist environmental stress in plants. **Molecular Aspects of Plant Beneficial Microbes in Agriculture. ELSEVIER,2020. DOI: https://doi.org/10.1016/B978-0-12-818469-1.00019-5.**

Book Edited

Bhattacharya,M.K, Dutta Choudhury,M.D and **Mazumder, P.B:** Biodiversity of Assam and its Conservation. Proceedings of UGC Sponsored Seminar on Biodiversity of Assam and its Conservation organized by Dept of Botany, Karimganj College, Karimganj, 30 Jan, 2002.

Author:

Dutta Choudhury M.D, **Mazumder, P.B** and Das B.: Fern Flora and Fern Allies of Southern Assam: Ethno-Medicobotanical Studies and Certain Conservation Aspects. SciChem Publishing House, Udaipur,India.ISBN13: 9788190396547.

Honours:

- **Chaired one technical session in National Seminar on Biodiversity Conservation (Forest and Land Management) organized by Department of Ecology and Environmental Science, Assam University, Silchar. March 4th – 5th, 2010.**

- **Delivered invited talk on Plant Genomics in 15 days DBT sponsored hands on training on "PCR BASED ADVANCED DNA FINGERPRINTING" organized by Department of Biotechnology, Assam University, Silchar on and from 21st April to 5th May, 2010.**

- Delivered invited talk on *In vitro* culture and Molecular Characterization of Medicinal Plants (Orchids, Ferns and Ginger) in **International Conference on Recent Trends in Medicinal and Aromatic Plant Researches organized by Department of Life Science and Bioinformatics, Assam University, Silchar held on 1-5,December,2010.**

- **Acted as Resource Person in 18th National Children's Science Congress held on 27-30 November,2010 at Assam University, Silchar organized by Assam Science Technology & Environment Council, Department of science and Technology, Govt. of Assam.**

- **Acted as Co Chairman in a session in the International Conference on Recent Trends in Medicinal and Aromatic Plant Researches organized by Department of Life Science and Bioinformatics, Assam University, Silchar held on 1-5,December,2010.**

- **Delivered invited talk entitled "Molecular marker and DNA Finger printing of plants" in National Workshop on Biotechnology and Bioinformatics organized by Biotech Hub, Karimganj College, Karimganj, Assam, India on 2nd March,2011.**

- **Acted as Resource Person in DBT sponsored Workshop under Star College Programme on Modern Techniques in Life Science,20 May,2011and delivered talk on Basic Techniques in Tissue Culture.**

- **Acted as Resource Person in DBT, Govt of India sponsored Workshop entitled "National workshop on hands on training course on DNA Barcoding and Genomic Diversity of Bio resources" organized by Department of Biotechnology, Assam University, Silchar, India,27-31January,2012 and delivered invited Talk on "16s rDNA as Marker for Microbial Identification " and "Metagenomics".**

- **Acted as Resource Person in UGC sponsored National Seminar on Biodiversity and its Future Scenario organized by SS College, Hailakandi Assam, India on 20th-21st February,2012.**

- **Acted as Chairman in Technical Session International Seminar organized by Department of Ecology and Environmental Science, Assam University, Silchar. February15th – 20th, 2012.**

- **Acted as resource person and delivered two invited lectures entitled 1. "16 S rDNA as a Marker for Microbial identification" 2. "Genetically modified organisms and ethical issues" in National Work Shop cum short term training course on " Some modern techniques in life Sciences and biotechnology" sponsored by DBT, Govt of India, organized by Karimganj College, Karimganj,Assam,15th to 30th March,2013.**

- **Acted as resource person in National Workshop on " PCR based DNA Fingerprinting" and delivered invited lectures entitled "16 S rDNA as a Molecular Marker for Microbial identification" organized by Assam University Biotech Hub on 21-23 March,2013.**

- **Acted as Chairman in panel discussion on the topic "Manipulating genes for human welfare: where lies the line of control?" organized by Assam University Biotech Hub on 20 May,2013**

- **Delivered an invited lecture on "Molecular characterization of genetic diversity of N2 fixing Rhizobia of wild and cultivated legumes of Assam and Manipur" in UGC sponsored National Seminar titled Biotechnology Vis -A –Vis Rural Development" S.S. College, Hailakandi, India on 14-15 October,2015.**

- **Acted as Chairman in Poster Session in UGC sponsored National Seminar titled Biotechnology Vis - A - Vis Rural Development" S.S. College, Hailakandi, India on 14-15 October,2015.**

- **Acted As Organizing Secretary in Advances in Biotechnology Research: Current trends and future prospects, Organized by Department of Biotechnology,24-25 March,2014.**

- **Acted as organizing Vice President in International Conference on Contemporary Antimicrobial Research,14-17 November,2016 organized by Biotech Hub, Assam University.**

- **Chaired Technical Session II, National Conference on Microbes of North East India (MICRON-2016) on 30.12.2016, organized by Department of Microbiology, Assam University, Silchar.**

- **Acted as Resource Person in DBT sponsored Workshop on "Some Modern Techniques in Microbiology and Immunology" organized by Institutional Biotech Hub, Karimganj College, Karimganj, Assam on 27.02.2017.and delivered a lecture on "Plant Microbe Interaction signaling".**

- **Acted as Resource Person in DBT sponsored Workshop on "Plant Tissue Culture" organized by Institutional Biotech Hub, S.S College, Hailakandi, Assam on 13.02.2017.and delivered a lecture on "Plant Tissue Culture and its application".**

- **Acted as Resource Person in DBT sponsored Workshop on "Some Modern Techniques in Microbiology and Immunology" organized by Institutional Biotech Hub, Karimganj College,Karimganj, Assam from 26.02.2017 to 02..03.2017.**

- **Chaired Technical session IV(Theme: Biotechnological Approach to Genetic Resources) in UGC sponsored National Seminar on "Bioresources Utilization: Special Emphasis on Ethnic Population of North East India"organized by Department of Botany, G.C.College, Silchar on 30 Oct-1st November,2017.**

- **Acted as Resource Person in UGC – Human Resource Development Centre, Mizoram University organized Refreshers Course on Bioinformatics on03.04.2018 and delivered lecture on "Molecular characterization of genetic diversity of Rhizobia from selected leguminous plants of Assam".**

- **Delivered invited talk on "Functional and genetic diversity of the plant growth promoting bacteria grown in Tea rhizospheric soil of Assam, India" in National Seminar on Growth Promoting Rhizobaceria for Sustainability of Agriculture and Environment.organized by Indian Chapter of Asian PGPR Society on 11-12 May,2018 at Mizoram University, Mizoram, India.**

- **Acted as resource Person in workshop titled "Hands on Training on Techniques Used for isolation and Identification of Bacteria" Organized by Biotech Hub(IBTHUB), Cachar College, Silchar, Assam on 04-08 February,2019**

- **Delivered an invited talk on" Anti-cancer property of *Curcuma zedoaria* (christm) roscoe on hepatocellular carcinoma and breast cancer" in International Symposium on Emerging Trends and Challenges in Cancer Chemoprevention, Diagnosis and Therapeutics"organized jointly by Tezpur University,Tezpur,India and Dr. B. Borooah Cancer Institute, Guwahati, India in association with University Colorado, USA, University Pittsburg, USA and Universityof Oklahoma, USA during February 17-18, 2020 at Tezpur University Tezpur, India.**

- **Chaired one technical session of invited guest lecture of PSE-NPS Summit held in Khulna University, Bangladesh on 16-18 January, 2020.**

- **Delivered invited lecture on "Antimutagenic and antigenotoxic activity of *Curcuma caesia* Roxb. against cyclophosphamide at PSE-NPS Summit held at Khulna University, Bangladesh on 16-18 January, 2020.**

- **Delivered invited talk on ANTIVIRAL PHYTOCOMPOUNDS: *PROSPECTS IN DESIGNING POTENTIAL SARS-COV-19 THERAPEUTICS* in National Webinar titled Battle against Covid 19: Challenges and interventions organized by Department of Bioengineering, Birla Institute of Technology, Mesra, Ranchi, India on 27 June 2020.**

- **Delivered invited talk on Study of Genetic and Functional Diversity of Plant Growth Promoting Bacteria Grown in Tea and Legume Rhizosphere of Assam, India for sustainable Agriculture in On line one day conference titled Biodiversity conservation and sustainable future. organized by Higher Education Dept, Govt SAM degree college , Budgam and Govt Degree College ,Pulwama, Jammu and Kashmir on 6 June 2020.**

WORKSHOP ATTENDED

1**.** Recent Techniques in Clinical Cytogenetics &Molecular Human Genetics.Sept16 to Oct 03 (Sponsored by DBT, Govt. of India), organized by Centre for Genetic Disorder and Dept. of Human Genetics, Guru Nanak Dev University, Amritsar Punjab.

2.National Workshop on " DNA Barcode of Life" organized by Department of Biotechnology, Assam University, Silchar on 7 Apri,2009.

3**.** Workshop on "Statistical and Computing Methods for Life Science Data Analysis" organized by Indian Statistical Institute, Kolkata and Dept. of Life Science, Assam University, Silchar.16-24 November, 2004

4. Practical Summer Training Course on Molecular Biology Techniques organized by School of Biotechnology, Chemical &Biomedical Engineering, Vellore Institute of Technology University, Vellore, on 27 May -3 June, 2009.

5. Training Programme on "Bioinformatics and Its Application in Drug Designing, organized Bioinformatics Centre, Assam University, Silchar from 14th to 20th September 2009 and sponsored by Department of Biotechnology (under BIF Scheme), Govt. of India.

6. Specially trained in DNA Finger Printings of Plants at BOSE INSTITUTE, Kolkata under the guidance of Prof. Swati Sen Mandi, Senior Professor, Plant Biology Division on and from 3rdJune, 2010 to 28th June, 2010.

7.Training Programme on Bioinformatics and Biological Sequence Analysis, organized Bioinformatics Centre, Assam University, Silchar from 22nd to 23rd July, 2011 and sponsored by Department of Biotechnology (under BIF Scheme), Govt. of India.

List of Ph.D work supervised by Prof P.B.Mazumder

NAME of Scholar	Status	TOPIC

Leimapokpam Shivdutta SRF	**Ph.D (Awarded)**	Analysis of *Mycobacterium tuberculosis* for their drug susceptibility and strain typing of samples from north-east India.
Mrinal Kanti Bhattacharya SRF	**Ph.D (Awarded)**	Isolation and Molecular characterization of free living diazotrophs from tea rhizosphere of (Barak Valley) Assam, India.
Yumnam Romila SRF	**Ph.D (Awarded)**	Isolation and characterization of antidiabetic compound (s) from *Eugenia operculata* Roxb.
Ratna Roy STA	**Ph.D (Awarded)**	Genetic variation and hormonal regulation for drought resistance traits in rice (Oryza sativa L.)
Supriya Das Teacher Fellow	**Ph.D (Awarded)**	In-vitro multiplication of some rare and endangered medicinal plants of Barak Valley.
Kh. Bharati Singha Teacher Fellow	**Ph.D (Awarded)**	In-vitro propagation of some rare and endangered plants of Barak valley
Rajkumar Suraj Singh SRF	Ph.D **(Awarded)**	Isolation and molecular characterization of nitrogen fixing bacteria from wild legume plants of Manipur, India.
L. Priyadarshini Devi RGNF Fellow	Ph.D **(Awarded)**	Phytochemical screening and molecular characterization of anti-diabetic plant *Cassia alata* Linn.
Ananya Mohanta SRF	Ph.D **(Awarded)**	Isolation and Molecular characterization of *Staphylococcus* species from milk samples of Southern Assam.
Sarmistha Dey SRF	Ph.D **(Awarded)**	Study of the expression profile of phytochelatin synthase (*PCSI*) and metallothionein genes in response to copper stress in *Camellia sinensis* (L) O kuntze.
Biswajit Singha DBT JRF and BSR Fellow	Ph.D (**Awarded**)	Characterization of genetic diversity of rhizobia from selected leguminous plants of Assam.
Ningthoujam Chandni BSR Fellow	Ph.D (**Awarded**)	Isolation and Molecular characterization of polyhydroxybutyrate producing bacteria from the soil samples of different municipal waste areas of Southern Assam.
H. Pushparani Devi BSR Fellow	Ph.D **(Awarded)**	Antimutagenic and antigenotoxic activity of *Curcuma caesia* Roxb. against cyclophosphamide
Udaya Kumar	Ph.D (Ongoing)	Molecular characterization of *Camellia sinensis* (L. kuntze) rhizosphere microbial population grown in Southern Assam for

Vandana DBT JRF and BSR Fellow		identification and evaluation of efficient PGPR strains for their biocontrol activity.
Y. Priyadarshani	M.Phil **(Awarded)**	*In-vitro* regeneration of brinjal (*Solanum melongena* L.cv longai) and analysis of different biochemical markers for pesticidal stress used in brinjal cultivation
Piyali Das Teacher Fellow	M.Phil **(Awarded)**	Characterization of antibiotic resistance *Staphylococcus* species isolated from meat samples collected from southern Assam.
Tanusree Das	M.Phil **(Awarded)**)	Molecular characterization of stress tolerant Plant Growth Promoting Rhizobacteria from Tomato Rhizosphere cultivated in Barak Valley, Assam
Ibemhal DBT Women Scientist	Ph.D **(Awarded)**	Identification and characterization of the genes responsible for scent and pericarp color of the black scented rice (*Oryzae sativa*) of Manipur
Y. Priyadarshani	Ph.D (Thesis submitted)	Regeneration of pesticide resistant *Solanum melongena* L. cv. Longai and expression profiling of pesticide stress responsive gene
Romen Metei	Ph.D (Thesis submitted)	Anti-metastatic and anti-angiogenic properties of *Curcuma zedoaria Curcuma zedoaria* (Christm.) extracts against hepatocellular carcinoma
Jina Heikrujam	M.Phil (Awarded)	*In vitro* propagation and conservation of the endemic orchid *Asconcentrum ampullaceum*(Roxb, var Auranticum Pradhan and production of its hybrids.
Yahyea Baktiar Laskar	Ph.D(on going)	Study of anti-proliferative and apoptotic activity of *Hibiscus sabdariffa* Linn. in breast cancer.
Abu Barkat Md Gulzar	Ph.D(on going)	Study on molecular mechanism of Induced Systemic Tolerance (IST) in plants and profiling of stress responsive gene expression effects elicited by Plant Growth Promoting Rhizobacteria (PGPR)
Ananya Deb DST Inspire Fellow	Ph.D(on going)	A study on anti-cancer property of *Terminalia chebua* Retz by exosome mediated drug delivery in hepatocellular carcinoma.
Sayani Roy	Ph.D(on going)	Studies on Pathogenic and Toxigenic *E. coli* in Environment – Human Interface: Phenotypic and Molecular Characterization.
Jina Heikrujam	Ph.D(on going)	Breeding, *in vitro* propagation and establishment of genetic linkage maps of *Vanda ampullaceal* var. auranticum x *Vanda testacea.*
A.S.M. Islamul Hoque Laskar	M.Phil(on going)	Identification of bacterial community from rhizosphere of *Musa paradisiaca* inhabiting in Barak valley and screening of stress tolerance against heavy metals, salt and pesticides and test of anti-fungal activity for potential biocontrol measures.

Rajesh Kumar Prasad	Ph.D (Thesis submitted)	Study on Diversity, Molecular Characterization and Cellulose degradation potential of Selected Insect Gut Bacteria and Their Application in Degrading Cellulosic Wastes
Shweta Gupta	DBT -RA	Smart, bio-inspired, surface functionalized exosomes as targeted drug delivery vehicles