



Dr. ARKA PRATIM CHAKRABORTY
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Department of Botany, Raiganj University
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CURRICULUM VITAE

Name: **Dr. ARKA PRATIM CHAKRABORTY**

Designation: Assistant Professor, Department of Botany, Raiganj University

Date of Birth: 11.07.1983

Name of the Institution with Address: Department of Botany, Raiganj University, University Road, UttarDinajpur, Pin-733134

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Website: www.raiganjuniversity.ac.in

Teaching Interest: MICROBIOLOGY, PLANT PATHOLOGY, ARCHEGONIATES, PHYCOLOGY, BIOCHEMISTRY & BIOMOLECULES, PLANT PHYSIOLOGY, BIostatISTICS, MORPHOLOGY & ANATOMY

Research Interest: Microbiology, Plant Pathology, Biotic Stress, Plant Growth Promoting Rhizobacteria, Plant-Microbe Interactions.

EDUCATIONAL QUALIFICATION

Sl.No	Year	Name of the Examinations	Board/University	Percentage (%)	Division/Grade
1	2014	Ph.D. (UGC Regulation 2009) (Thesis Title: Studies on <i>Bacillus megaterium</i> and <i>Serratia marcescens</i> as plant growth promoters and biocontrol agents)	North Bengal University	89.5%	A+ (obtained in Ph.D. course work Examination)
2	2017(17 th DEC)	CSIR UGC NET LS	CSIR, NEW DELHI	*AIR 46	*AIR 46
3	2007	GATE	-	Gate score-317	GATE Percentile 83.0 percentile
4	2006	M.Sc (Botany) Spl. Paper- Microbiology	North Bengal University	80.41%	1 st class 1 st (Gold Medalist) (Distinction)
5	2004	B.Sc (Botany Hons.)	North Bengal University	65.12%	1 st class (Distinction)
6	2001	Higher Secondary	WBCHSE	65.1%	1 st Division
7	1999	Madhyamik Pariksha	WBBSE	81.37%	1 st Division

*AIR= ALL INDIA RANK.

TEACHING EXPERIENCE

Time Period	DESIGNATION	INSTITUTE
01.11.2017-22.01.2020	Full time Assistant Professor in Botany on contractual basis	GYAN JYOTI COLLEGE, affiliated to North Bengal University
24.01.2020- Continuing	Assistant Professor in Botany, Raiganj University	Raiganj University, University Road, Uttar Dinajpur

RESEARCH EXPERIENCE

YEAR	DESIGNATION	INSTITUTE
01.06.2007-31.05.2009	Junior Research Scholar for two years under DBT sponsored project entitled “ <i>Studies on two rhizobacterial isolates of tea for development as biofertilizer and biocontrol agent</i> ”	North Bengal University
01.06.2009-02.05.2010	Senior Research Scholar for one year under DBT sponsored project entitled “ <i>Studies on two rhizobacterial isolates of tea for development as biofertilizer and biocontrol agent</i> ”	North Bengal University
27.05.2011- 26.06.2012	Senior Research Scholar for one year in the CSIR sponsored project “ <i>Amelioration of abiotic stresses in wheat varieties by osmo-tolerant and plant growth promoting rhizobacteria and elucidation of their mechanism of action</i> ”	North Bengal University
01.12.2012-31.03.2014	Senior Research Scholar for one year and three months in ICAR funded research project of NBAIM entitled “ <i>Application of Microorganisms in Agriculture and Allied Sectors</i> ”	North Bengal University
13.08. 2014 – 31.03.2016	Post Doctoral Fellow (Research Associate- CSIR) in a CSIR sponsored project “Screening for resistance in wheat germplasm against spot blotch disease and immunological characterization of defense proteins triggered by <i>Bipolaris sorokiniana</i> ”	North Bengal University

ADMINISTRATIVE EXPERIENCE

1. Member, PG Board of Studies in Botany, Raiganj University
2. Member, UG Board of Studies in Botany, Raiganj University
3. Member, UG Board of Moderators in Botany, University of North Bengal and in University of Gour Banga
4. Member, UG & PG Board of Moderators in Botany, Raiganj University
5. Course Coordinator for the Diploma Course in Fishery, Raiganj University w.e.f. 15.02.2021-Feb, 2023
6. Member, COVID-19 MONITORING COMMITTEE, 2021- RAIGANJ UNIVERSITY CAMPUS
7. Member, NAAC COMMITTEE, 2021- RAIGANJ UNIVERSITY for preparation of SSR, RE-DVV
8. Assistant Controller (Officiating) of Examinations, Raiganj University w.e.f. 15.12.2021 to 22.09.2023
9. Member, UG Board of Studies of Environmental Studies, Raiganj University
10. Convener of the Committee for preparation of Association of Indian Universities related data for Raiganj University
11. One of the Committee members for preparation of AISHE related data for Raiganj University
12. Act as Raiganj University Representative at EILLM, Jalpaiguri campus for PG 1st semester exam, 2022
13. One of the members of the Ph.D. Committee, Department of Botany from 20.04.2023 for four years tenure
14. One of the members of the students’ hand book preparation committee, Raiganj University
15. Act as Raiganj University Representative at EILLM, Jalpaiguri campus for UG 2nd & 4th semester exam, 2023
16. One of the members to prepare the diary, calendar for RGU for year 2024
17. A member of the board of examiners in Microbiology practical examination for M.Sc. 1st

semester examination, 2023 in Botany at the Department of Botany, NBU on 12.02.2024

18. Appointed as Centre in Charge of Raiganj- II Centre (1407) by the W.B. Council of H.S. Education for Higher Secondary Examination, 2024 from 16.02.2024 to 29.02.2024.

19. Acted as a Raiganj University Representative at EILM, Jalpaiguri campus to conduct MBA PG examination 2023, held in March, 2024 from 11.03.2024 to 15.03.2024

EXAMINATION DUTY PERFORMED IN UG & PG EXAMINATION, 2020 onwards
Department of Botany, Raiganj University

1. **PAPER SETTER:**
- a) UG BOTANY (HONS.)- SEMESTER-VI- BOTDSE-4 (THEO+PRAC)
 - b) B. Sc. Part – III (1+1+1 System)- Paper – VII
 - c) B. Sc. Part – II (1+1+1 System)- Paper – IV
 - d) B. Sc. Part – I (1+1+1 System)- Paper – II
 - e) PG- Semester II- BOTPG-2305 (Theoretical Course)
 - f) UG BOTANY (HONS.)- SEMESTER-IV-PAPER-X
 - g) PG- Semester I- BOTPG-1305 (Theoretical Course)
 - h) PG- Semester I- BOTPG-1204 (Practical Course)
 - i) PG- Semester III- BOTPG-3203 (Practical Course)
 - j) UG BOTANY (HONS.)- SEMESTER-V- BOTDSE-2 (Theoretical Course)
 - k) UG BOTANY (HONS.)- SEMESTER-V- BOTDSE-2 (Practical Course)
 - l) UG 1st Semester Hons. & Program Course- Environmental Studies- AECC 1 Examination 2020 and Exam, Dec 2021
 - m) *BOTPG-2202, BOTPG-4201, BOTDSE-3, BOTHC-X* (Theoretical Course)
 - n) *BOTPG-2204, BOTPG-4202, BOTDSE-3, BOTHC-X* (Practical Course)
 - o) *Ph.D. Course Work Examination 2020- Paper I and Paper II*
 - p) *Ph.D. Course Work Examination 2021- Paper I and Paper II*
 - q) *Ph.D. Course Work Examination 2022- Paper I and Paper II*
 - r) *BOTHC-I (PHYCOLOGY AND MICROBIOLOGY)*
 - s) *BOTHC-7 (GENETICS)*
 - t) *BOTPG 1204- PRACTICAL PAPER*
 - u) *BOTPG3201*
 - v) *BOTPG3203, BOTPG34F5, BOTPG34H5- PRACTICAL COURSE*
2. **MODERATOR:**
- a) UG BOTANY (HONS.)- SEMESTER-VI- BOTHC-XIII, BOTHC-XIV, BOTDSE-3 & BOTDSE-4
 - b) UG General Elective (for Back Candidates of final semester only) Semester-II- GE-II
 - c) UG General Elective (for Back Candidates of final semester only) Semester-IV- GE-IV
 - d) UG Prog. Course (for Back Candidates of final semester only) Semester-II- BOTDSC-2
 - e) UG Prog. Course (for Back Candidates of final semester only) Semester-IV- BOTDSC-4
 - f) UG Programme Course- Semester-VI- BOTDSE-2
 - g) B. Sc. Part – II (1+1+1 System)- Paper – IV and Paper- V

h) PG- Semester IV- BOTM-4102, BOTM-4103- Microbiology
 i) PG- Semester IV- BOTM-4102, BOTM-4103- Plant Physiology, Biochemistry and Molecular Biology)
 j) PG- Semester I- BOTPG-1201, BOTPG-1202, BOTPG-1203
 k) PG- Semester III- BOTPG-3201, BOTPG-3202, BOTPG-34A4 (Biochemistry & Mol. Bio.); BOTPG-34E4 (Microbiology); BOTPG-34G4 (Mycology & Plant Pathology); BOTPG-34I4 (Plant Physiology & Metabolism)

l) UG General Elective- Semester-I- GE-I
 m) UG General Elective- Semester-I- GE-III
 n) UG BOTANY (HONS.)- SEMESTER-I- BOTHC-I, BOTHC-II
 o) UG BOTANY (HONS.)- SEMESTER-III- BOTHC-V, BOTHC-VI, BOTHC-VII & BOTHSEC-1
 p) UG BOTANY (HONS.)- SEMESTER-V- BOTHC-XI, BOTHC-XII, BOTDSE-1, BOTDSE-2

q) UG 1st Semester Program Course- Environmental Studies- AECC 1

1. BOTPG-2201 BOTPG-2202 BOTPG-2203, BOTPG-2305
2. BOTPG-4201, BOTPG-44A3, BOTPG-44E3, BOTPG-44G3, BOTPG-44I3
3. BOTHC-XIII, BOTHC-XIV, BOTDSE-3, BOTDSE-4 (*Analytical Techniques in Plant Sciences; Horticulture*)
4. BOTHC-VIII, BOTHC-IX, BOTHC-X, BOTHSEC-2, BOTHC-III, BOTHC-IV
5. GE-IV-Economic Botany and Biotechnology, GE-II Plant anatomy & Embryology
6. UG Program Course- DSE-2- Cell and Molecular Biology
7. UG General Part-III(1+1+1) ENVS examination 2021
8. Ph.D. Course Work Examination 2020- Paper I and Paper II
9. Ph.D. Course Work Examination 2021- Paper I and Paper II
10. BOTHC-I, BOTHC-II, BOT-GE I
11. BOTHC-5, BOTHC-6, BOTHC-7, BOTHSEC-I, BOTGE-3
12. BOTHC-11, BOTHC-12, BOTDSE-3, BOTDSE-4
13. UG SEMESTER- VI BOTANY PROGRAM COURSE- BOTDSE-2 (Cell Biology)
14. BOTPG1201, BOTPG1202, BOTPG1203, BOTPG1305
15. BOTPG3201, BOTPG3202, [BOTPG34A4/34E4/34G4/34I4- Special Paper]
16. UG BOT(H)- IV- BOTHC-VIII, IX, X and BOTHSEC-2
17. UG BOT(H)- II- BOTHC-III,IV AND UG BOTGE-2

3. EXAMINER:

- a) UG BOTANY (HONS.)- SEMESTER-VI- BOTDSE-4
- b) [PRACTICAL]- PG- Semester IV- BOTM-4202 (Microbiology)
- c) [PRACTICAL]- PG- Semester IV- BOTM-4202 (Mycology & Plant Pathology)
- d) PG- Semester II- BOTPG-2305 (Theoretical Course)
- e) UG BOTANY (HONS.)- SEMESTER-IV-PAPER-X
- f) PG- Semester I- BOTPG-1305 (Theoretical Course)
- g) PG- Semester I- BOTPG-1204 (Practical Course)
- h) PG- Semester III- BOTPG-3203 (Practical Course)
- i) UG BOTANY (HONS.)- SEMESTER-I- BOTHC-I (Practical Course)
- j) UG BOTANY (HONS.)- SEMESTER-III- BOTHC-VII (Practical Course)
- k) UG BOTANY (HONS.)- SEMESTER-V- BOTDSE-2 (Theoretical Course)
- l) UG BOTANY (HONS.)- SEMESTER-V- BOTDSE-2, BOTHC-XI (Practical Course); Head Examiner- SEMESTER-V- BOTDSE-2B theory paper

- m) *BOTPG-2202, BOTPG-4201, BOTDSE-3, BOTHC-X* (Theoretical Course)
- n) *BOTPG-2204, BOTPG-4202, BOTDSE-3, BOTHC-X* (Practical Course)
- o) UG 1st Semester Program Course- Environmental Studies- AECC 1
- p) UG General Part-III(1+1+1) ENVS examination 2021 (Head Examiner)
- q) Ph.D. Course Work Examination 2020- Paper I and Paper II
- r) Ph.D. Course Work Examination 2021- Paper I and Paper II
- s) Ph.D. Course Work Examination 2022- Paper I and Paper II
- t) BOTHC-I (PHYCOLOGY AND MICROBIOLOGY)
- u) BOTHC-7 (GENETICS)
- v) BOTDSE [BIOINFORMATICS]- PRACTICAL
- w) BOTPG 1204- PRACTICAL PAPER
- x) BOTPG3201
- y) BOTPG3203, BOTPG34F5, BOTPG34H5, BOTPG44F4, BOTPG44H4- PRACTICAL COURSE
- z) External Practical Examiner at Darjeeling Govt. College for DBOTCCP0102N : Mycology & Plant Pathology for the M.Sc. 1st Semester Examination, 2023

4. SCRUTINISER:

- a) UG BOTANY (HONS.)- SEMESTER-VI- BOTHC-XIII, BOTHC-XIV, BOTDSE-3 & BOTDSE-4, SEMESTER-I-BOTHC-2
- b) PG- Semester IV- BOTM-4102, BOTM-4103- Plant Physiology, Biochemistry and Molecular Biology)
- c) UG BOTANY (HONS.)- SEMESTER-III & IV- BOTHC III/ BOTHC IV/ BOTHC VIII/ BOTHC IX
- d) PG- Semester I- BOTPG-1201, BOTPG-1202, BOTPG-1203
- e) PG- Semester III- BOTPG-34A4 (Biochemistry & Mol. Bio.); BOTPG-34E4 (Microbiology); BOTPG-34G4 (Mycology & Plant Pathology); BOTPG-34I4 (Plant Physiology & Metabolism)
- f) UG BOTANY (HONS.)- SEMESTER-I- BOTHC-I, BOTHC-II
- g) UG BOTANY (HONS.)- SEMESTER-III- BOTHC-VII
 - h) *BOTPG-44A3, BOTPG-44E3, BOTPG-44G3, BOTPG-44I3*
 - i) UG 1st Semester Program Course- Environmental Studies- AECC 1
 - j) UG SEMESTER- I BOTANY HONOURS
 - k) BOTHC-5 (MORPHOLOGY AND ANATOMY OF ANGIOSPERM)
 - l) UG SEMESTER- III BOTANY HONOURS
- m) BOTHC-12, BOTDSE-3, BOTDSE-4 [DSE- BIOINFORMATICS, STRESS BIOLOGY, PLANT BREEDING]
- n) UG SEMESTER- V BOTANY HONOURS
- o) BOTPG1305
- p) BOTPG3201, BOTPG3202, [BOTPG34A4/34E4/34G4/34I4- Special Paper]

Special Paper]

UG BOT(H)- IV- BOTHC-VIII, IX, X and BOTHSEC-2

5. REASSESSOR:

- a) UG General Elective (for Back Candidates of final semester only) Semester-II- GE-II
- b) UG General Elective (for Back Candidates of final semester only) Semester-IV- GE-IV
- c) UG Prog. Course (for Back Candidates of final semester only) Semester-II- BOTDSC-2

- d) UG Prog. Course (for Back Candidates of final semester only)
Semester-IV- BOTDSC-4
- e) UG Programme Course- Semester-VI- BOTDSE-2
- f) UG General Elective- Semester-I- GE-I
- g) UG General Elective- Semester-I- GE-III
- h) UG BOTANY (HONS.)- SEMESTER-III- BOTHSEC-1
- i) UG BOTANY (HONS.)- SEMESTER-V- BOTDSE-1, BOTDSE-2
- j) *BOTDSE-4- Analytical Techniques in Plant Sciences*
- k) *GE-IV-Economic Botany and Biotechnology*
- l) UG 1st Semester Program Course- Environmental Studies- AECC 1
- m) UG BOT(H)- IV- BOTHC-VIII, IX, X and BOTHSEC-2

- 6. TABULATOR:**
- a) UG BOTANY (HONS. & PROGRAM)- SEMESTER-II & IV
 - b) UG BOTANY (HONS.)- SEMESTER- V EXAMINATION 2020
 - c) UG PROGRAM COURSE 2nd AND 4th SEMESTER EXAMINATION, 2020
 - d) UG PROGRAM COURSE 1st AND 5th SEMESTER EXAMINATION, 2020
 - e) UG BOTANY (HONS.)- SEMESTER- VI EXAMINATION 2021
 - f) UG B.A. PROGRAM COURSE SEMESTER-III EXAMINATION, 2020
 - g) UG SEMESTER- I BOTANY HONOURS examination 2021-22
 - h) UG SEMESTER- III BOTANY HONOURS examination 2021-22
 - i) UG SEMESTER- V BOTANY HONOURS

EXAMINATION DUTY PERFORMED IN UG EXAMINATION

(2018-2020)

University of North Bengal

1. **PAPER SETTER:** a) UG BOTANY (HONS.)- SEMESTER-IV- SEC-II
b) UG BOTANY (Prog.)- SEMESTER-IV- SEC-II
c) UG BOTANY (Prog.)- SEMESTER-II- BOTDSC-2
2. **SPOT EVALUATOR:** a) UG BOTANY (HONS.)- SEMESTER-IV-BOTCC8
3. **Paper Setter** and Spot Evaluator in B.Sc. Part III (1+1+1) system-Microbiology (Honours/Paper-VIII- Food & Industrial Microbiology) Theoretical Examination, 2018.
4. **External Examiner** at A.C. College, Jalpaiguri in B.Sc. Part II (1+1+1) system- Botany (Honours) Practical Examination, 2018.
5. **External Examiner** at North Bengal St. Xavier's College, Rajganj campus, Jalpaiguri in B.Sc. Part I (1+1+1) system-Botany (General) Practical Examination, 2018.
6. **Internal Examiner** at Gyan Jyoti College, Siliguri in B.Sc. Part I (1+1+1) system-Botany (General) Practical Examination, 2018.
7. **Spot Evaluator** in evaluating answer scripts in Botany (HONS)-paper-CC1(Algae & Microbiology) & Botany (GENERAL)-paper-DSC1 (Biodiversity-Microbes, Algae, Fungi and Archegoniate)- CBCS U.G 1st Semester Examination, 2018.
8. **Examiner** for re-assessment of evaluated answer scripts in Botany (HONS)-paper-CC1, CC2 & Botany (GENERAL)-paper-DSC1, GE1 & GE4 for the CBCS U.G 1st Semester Examination, 2018.
9. **Paper Setter** in Botany (GENERAL)-paper-DSC1(paper-2) for the CBCS U.G 2nd Semester(B.Sc. Program) Examination, 2019.

10. **External Examiner** at North Bengal St. Xavier's College, Rajganj campus, Jalpaiguri in CBCS U.G. 2nd Semester Botany (Honours) Practical Examination, 2019.
 11. **External Examiner** at Raiganj University, Raiganj in U.G. Botany (Pass) (1+1+1) system Part III General Practical Examination, 2019.
 12. **External Examiner** at PMS College Centre, Malbazar in U.G. Botany (Pass) (1+1+1) system Part III General Practical Examination, 2019.
 13. **Internal Examiner** at Gyan Jyoti College, Siliguri in CBCS U.G. 2nd Semester Botany (Honours) & General (DSC 2) Practical Examination, 2019.
 14. **Paper Setter** in Botany (SKILL ENHANCEMENT COURSE-HONS+PROG.)-papers-Herbal Technology and Nursery & Gardening for the CBCS U.G 3rd Semester (B.Sc. HONS + Program) Examination, 2019.
 15. **Spot Evaluator** in Botany (General)-paper-IV and I&II in U.G 2nd & 1st year (1+1+1) Examination, 2019.
 16. **Moderator** in U.G 3rd semester examination (CBCS Mode) 2019.
 17. **Examiner** for re-assessment of evaluated answer scripts in Botany (HONS)-paper-CC3, CC4 & Botany (GENERAL)-paper-DSC2, GE2 for the CBCS U.G 2nd Semester Examination, 2019.
 18. **Internal Examiner** at Gyan Jyoti College, Siliguri in CBCS U.G. 1st Semester Botany (Honours)-papers- CC1 & CC2 Practical Examination, 2019.
 19. **Internal Examiner** at Gyan Jyoti College, Siliguri in CBCS U.G. 3rd Semester Botany (Honours)-paper- CC5 Practical Examination, 2019.
 20. **External Examiner** at A.C. College, Jalpaiguri in CBCS U.G. 3rd Semester Botany (Honours)-paper- CC6 Practical Examination, 2019.
 21. **External Examiner** at North Bengal St. Xavier's College, Rajganj campus, Jalpaiguri in CBCS U.G. 3rd Semester Botany (Honours)- paper- CC5 Practical Examination, 2019.
 22. **Examiner** as post publication scrutinizer in BOT(H) & BOT(G)- Paper-VI, Part II examination, 2019.
 23. **Internal Examiner** at Gyan Jyoti College, Siliguri in CBCS U.G. 3rd Semester Botany (GE)-paper- GE (Biodiversity-Microbes, Algae, Fungi & Archegoniate) Practical Examination, 2019.
 24. **Spot Evaluator** in Botany (HONS)-paper-CC1 & Botany (Generic Elective)-paper-GE1 in CBCS U.G 1st Semester Theoretical Examination, 2019.
 25. **Spot Evaluator** in Botany (HONS)-paper-CC6, Botany (SEC/HONS)-paper-SEC1 & Botany (General)- paper- DSC3 in CBCS U.G 3rd Semester Theoretical Examination, 2019.
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TECHNICAL KNOW HOW

1. Characterization of Microorganisms

(a) Morphological Characterization: *In vitro* characterization of microorganisms for Agriculturally Important properties like phosphate solubilization, chitin degradation, protein hydrolysis, IAA production, HCN production, Siderophore production.

(b) Molecular characterization: 16S rDNA and 18S rDNA sequencing, NCBI BLAST.

2. Instrumentation

(a) Spectrophotometric analysis of important phytochemical compounds

(b) HPLC analysis of different phytochemical compounds

(c) SDS-PAGE analysis of total soluble protein (TSP)

- (d) PAGE analysis of isozymes
- (d) Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM)
- (e) Freeze dry techniques (Lyophilization) for sample processing

3. Immunotechniques

- (a) Preparation of plant/fungal/bacterial antigens
- (b) Production of polyclonal antibodies and IgG purification for immunological studies
- (c) Enzyme Linked Immuno Sorbent Assay (ELISA)
- (d) DOT immunobinding assays (DIBA)
- (e) Immunofluorescence
- (f) Western blotting

4. Molecular Techniques

- (a) DNA isolation
- (b) Polymerase chain reaction (PCR) techniques
- (c) RAPD-PCR analysis
- (d) DGGE analysis
- (e) cDNA Microarray analysis
- (f) Quantitative RT PCR

Sequence of following microorganisms submitted to NCBI

NCBI Accession No	Name of Organism	Category
NCBI JX312687	<i>Bacillus megaterium</i> (TRS 7)	PGPR
NCBI JN020963	<i>Serratia marcescens</i> (TRS1)	PGPR
NCBI JN983127	<i>Bacillus amyloliuefaceins</i> (TRS 6)	PGPR
NCBI KJ917553	<i>Pseudomonas poae</i> (RM K03)	PGPR
NCBI KM066950	<i>Bacillus stratosphericus</i> (CL.RH.01)	PGPR
NCBI KM117174	<i>Bacillus amyloliquefaciens</i> (M RH 131)	PGPR
NCBI KM117175	<i>Bacillus methylotrophicus</i> (M RH 130)	PGPR
NCBI KM192206	<i>Bacillus thuringiensis</i> (M RH 127)	PGPR
NCBI KX894280	<i>Streptomyces tricolor</i> (ARHS/PO26)	Actinomycetes
NCBI KX894281	<i>Streptomyces flavogriseus</i> (ARHS/PO27)	Actinomycetes
NCBI JX660689	<i>Bacillus safensis</i> (W10)	Salt tolerant PGPR
NCBI JX660688	<i>Ochrobactrum pseudogregnonense</i> (IP8)	Salt tolerant PGPR
NCBI KJ917554	<i>Bacillus mycoides</i> (MHB)	Mycorrhiza Helper Bacterium
NCBI KT768093	<i>Enterobacter asburiae</i> (E/B/L/P-2)	Endophyte
NCBI KM066949	<i>Bipolaris sorokiniana</i> (WH.PBW.IP.04)	Foliar pathogen
NCBI KT768092	<i>Bipolaris oryzae</i> (R1.DO.01)	Foliar pathogen
NCBI KM491736	<i>Colletotrichum gloeosporioides</i> (SOM.CL.02)	Foliar pathogen
VERSION	<i>Enterobacter</i> sp. ASE, whole genome shotgun sequencing project.	<i>Enterobacter</i> sp. ASE isolated

JAJTNE000000000.1 GI:2170964662 DBLINK BioProject: PRJNA786204 BioSample: SAMN23636983		from the gut of an infected <i>Bombyx mori</i> L. (Lepidoptera: Bombycidae)
NCBI KM491737	<i>Curvularia sp</i> (SOM.CV.03)	Foliar pathogen
NCBI ON783721	<i>Fusarium equiseti</i> (MUS LD 01)	Foliar Pathogen
NCBI ON783696	<i>Bacillus pumilus</i> (MUSRH 05)	PGPR
NCBI OP541600	<i>Bipolaris oryzae</i>	Leaf pathogen of rice
NCBI OP541862	<i>Priestia flexa</i>	Actinomycetes
NCBI OQ267607	<i>Cerrioporus squamosus</i>	Basidiomycetes Fungus
NCBI OQ415951	<i>Bacillus thuringiensis</i>	PGPR
NCBI OR196770	<i>Aspergillus niger</i>	Leaf pathogen of rice
NCBI OR236221	<i>Talaromyces aurantiacus</i>	Leaf spot pathogen of banana
NCBI OR365417	<i>Aspergillus niger</i>	Leaf spot pathogen of banana
NCBI ON246070	<i>Curvularia lunata</i> (MLP-01)	Leaf spot pathogen of banana
NCBI ON955844	<i>Enterobacter cloacae</i> (MRH06)	Endophytic bacterium
NCBI ON955872	<i>Achromobacter xylosoxidans</i> (MRH 11)	Endophytic Bacterium

RESEARCH TEAM MEMBERS

1. Sri Papan Chowhan- Ph.D. Research Scholar (Registered)
2. Sri Shambhu Swarnakar- Ph.D. Research Scholar (Registered)
3. Miss Sumi Paul- Ph.D. Research Scholar
4. Miss Oindrila Chakraborty- Ph.D. Research Scholar (Registered)

RESEARCH GUIDANCE

1. Ph.D. thesis- 04 ongoing
2. P.G. Dissertations: 06 completed

P.G. Dissertations Co-supervised

1. "**Cultivation, Importance and Diseases of Dragon Fruit**" by Tanjan Roy, Student of M.Sc (Botany) 4th semester- 2022
2. "**Morphological Characters of Dragon fruit, cultivation process and its fungal diseases**" by Md Motawakkel Haque, Student of M.Sc. (Botany) 4th semester-2022
3. "**Studies on Dragon fruit plant: Overview, Health benefits, cultivation process and diseases of Dragon fruit**" by Subhajit Das, Student of M.Sc (Botany) 4th semester- 2022
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P.G. Dissertations Supervised

1. Isolation of fungal pathogens from diseased leaves of *Musa paradisiaca* from Uttar Dinajpur District, their molecular identifications along with their natures of mode of infections in detached leaf and in field grown plant by Debarati Das, Student of M.Sc (Botany) 4th semester- 2023

2. Isolation of fungal pathogens from diseased leaves of *Oryza* sp. and observation of natures of infections by the pathogens
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1. Growth enhancement of tea seedlings induced by application of *Serratia marcescens* and *Bacillus megaterium* and associated biochemical changes.
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In: Review of Plant Pathology (Eds. B.N.Chakraborty and U.Chakraborty) vol.6: 215-268, (2014), Scientific Publishers, Jodhpur, ISBN-978-81-7233-916-6, ISSN-0972-9712.

4. Zinc solubilizing rhizobacteria as soil health engineer managing zinc deficiency in plants

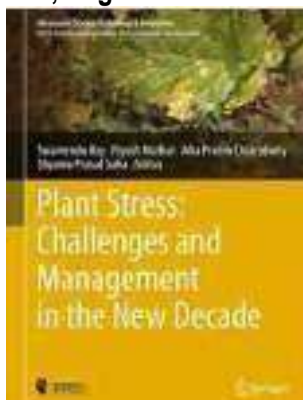
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Book=Rhizosphere Engineering- Elsevier - 1st Edition ISBN: 9780323899734, Pages= 570, Publisher- Elsevier- Academic Press, Publication date- 2022/2/1



5. Editor in a book published by Springer- Plant Stress: Challenges and Management in the New Decade (Advances in Science, Technology & Innovation) ISBN-10 : 3030953645, ISBN-13: 978-3030953645

Authors: Swarnendu Roy (Editor), Piyush Mathur (Editor), **Arka Pratim Chakraborty (Editor)**, Shyama Prasad Saha (Editor); **Publication date- 2022; Volume- 1; Pages- 590**



6. Remote Sensing Technology—A New Dimension in Detection, Quantification, and Tracking of Abiotic and Biotic Stresses; chapter-27; pages- 1-13.

Papan Chowhan and **Arka Pratim Chakraborty**

Book chapter published in a book published by Springer- Plant Stress: Challenges and Management in the New Decade (Advances in Science, Technology & Innovation) ISBN-10 : 3030953645, ISBN-13: 978-3030953645

Authors: Swarnendu Roy (Editor), Piyush Mathur (Editor), **Arka Pratim Chakraborty (Editor)**, Shyama Prasad Saha (Editor); **Publication date- 2022; Volume- 1; Pages- 590**



7. Heavy Metal Toxicity and Phytoremediation by the Plants of Brassicaceae Family: A Sustainable Management

Authors

Ball, K., Tiru, Z., **Chakraborty, A.P.**, Mandal, P., S, Sadhukhan

Publication date- 2022/10/27; Pages- 237-264; online published- 05.11.2022

Book- Sustainable Management of Environmental Contaminants: Eco-friendly Remediation Approaches, Publisher- Springer, ISBN: 978-3-031-08446-1

BOOK PUBLISHED:

1. Model Objective Question Bank- Botany For B.Sc. Undergraduate Students

Author: Arka Pratim Chakraborty

Publishing house: LAP LAMBERT Academic Publishing; <https://www.lap-publishing.com>

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2. QUESTION BANK ON PHYCOLOGY (WITH MULTIPLE CHOICE QUESTIONS AND ANSWERS)

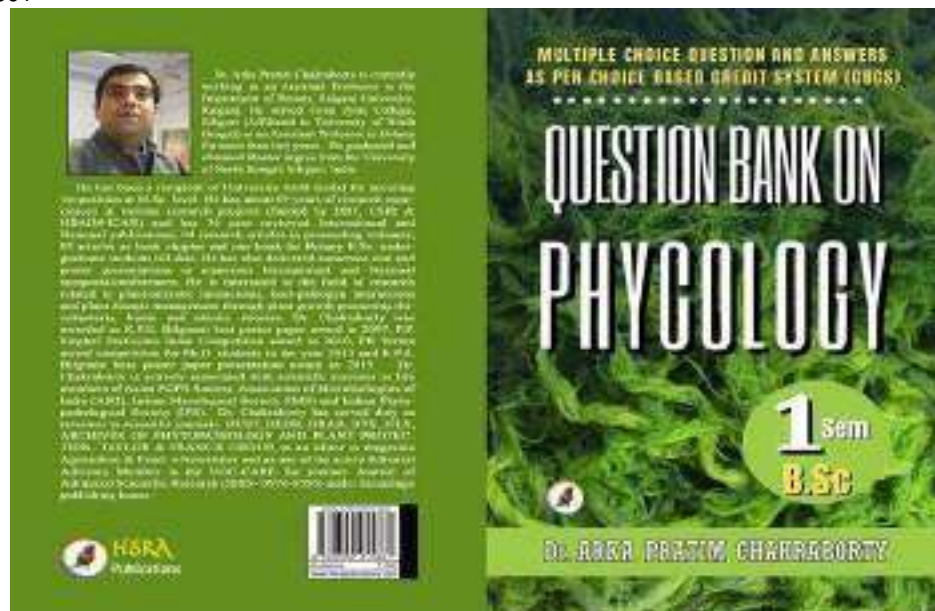
(For B.Sc. Semester-I students) As per Choice Based Credit System (CBCS)

AUTHOR: Dr. ARKA PRATIM CHAKRABORTY

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3. MUSHROOM CULTURE TECHNOLOGY

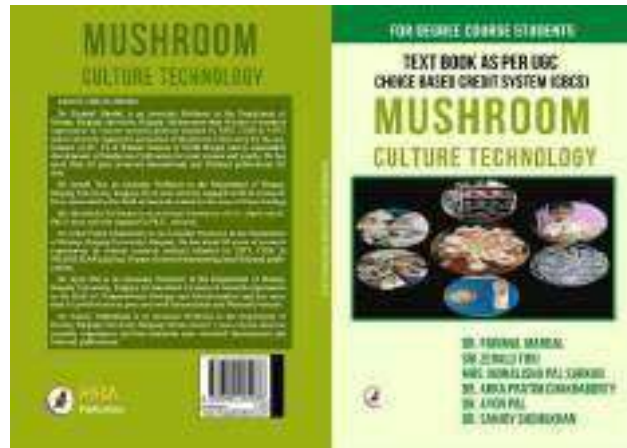
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Co-AUTHOR: Dr. ARKA PRATIM CHAKRABORTY

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4. MUSHROOM CULTIVATION TECHNIQUES AND APPLICATIONS

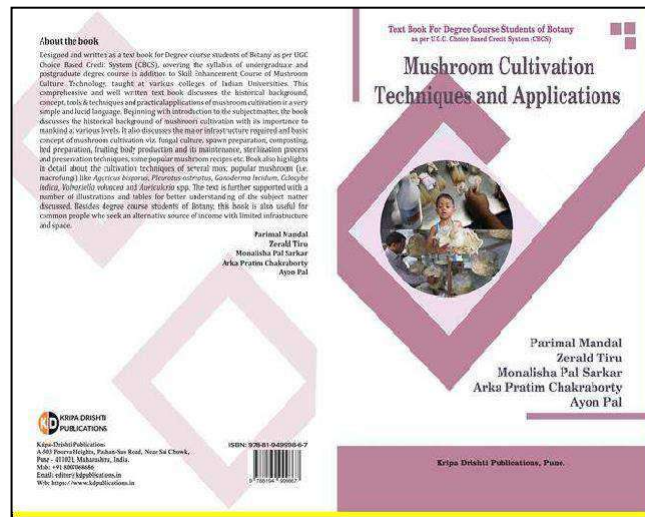
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Co-AUTHOR: Dr. ARKA PRATIM CHAKRABORTY

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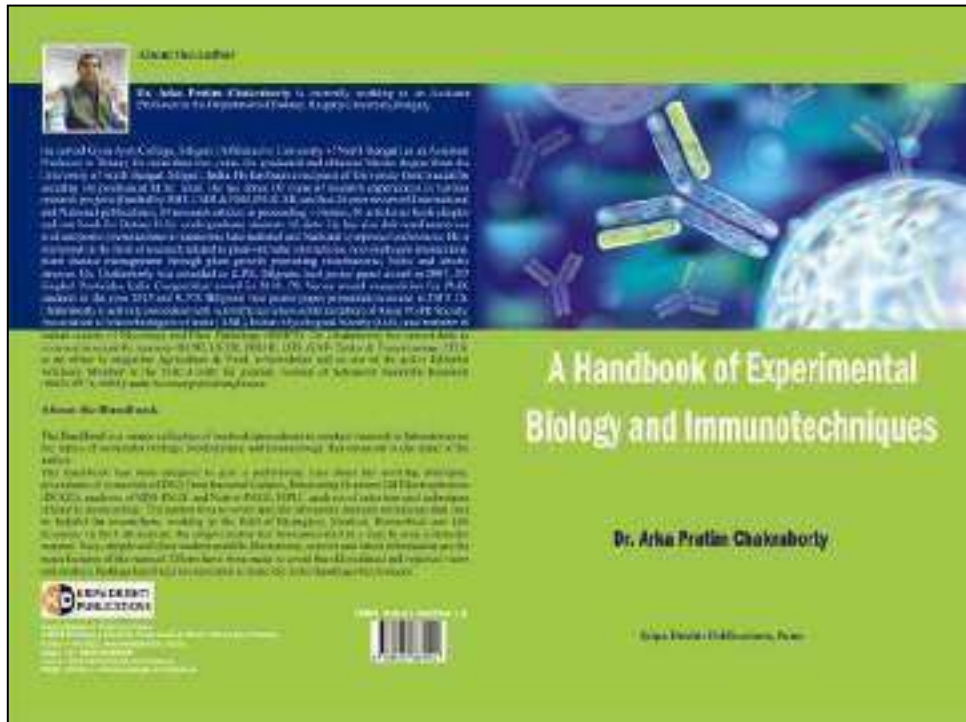
5. A Handbook of Experimental Biology and Immunotechniques

AUTHOR: Dr. ARKA PRATIM CHAKRABORTY

PUBLISHING HOUSE: Kripa Drishti Publication (KD PUBLICATIONS)

<https://www.kdpublications.in/>

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6. Objective Environmental Studies

Author: Arka Pratim Chakraborty

Publishing house: LAP LAMBERT Academic Publishing; <https://www.lap-publishing.com>

<https://www.morebooks.shop>

ISBN- 9786203923254



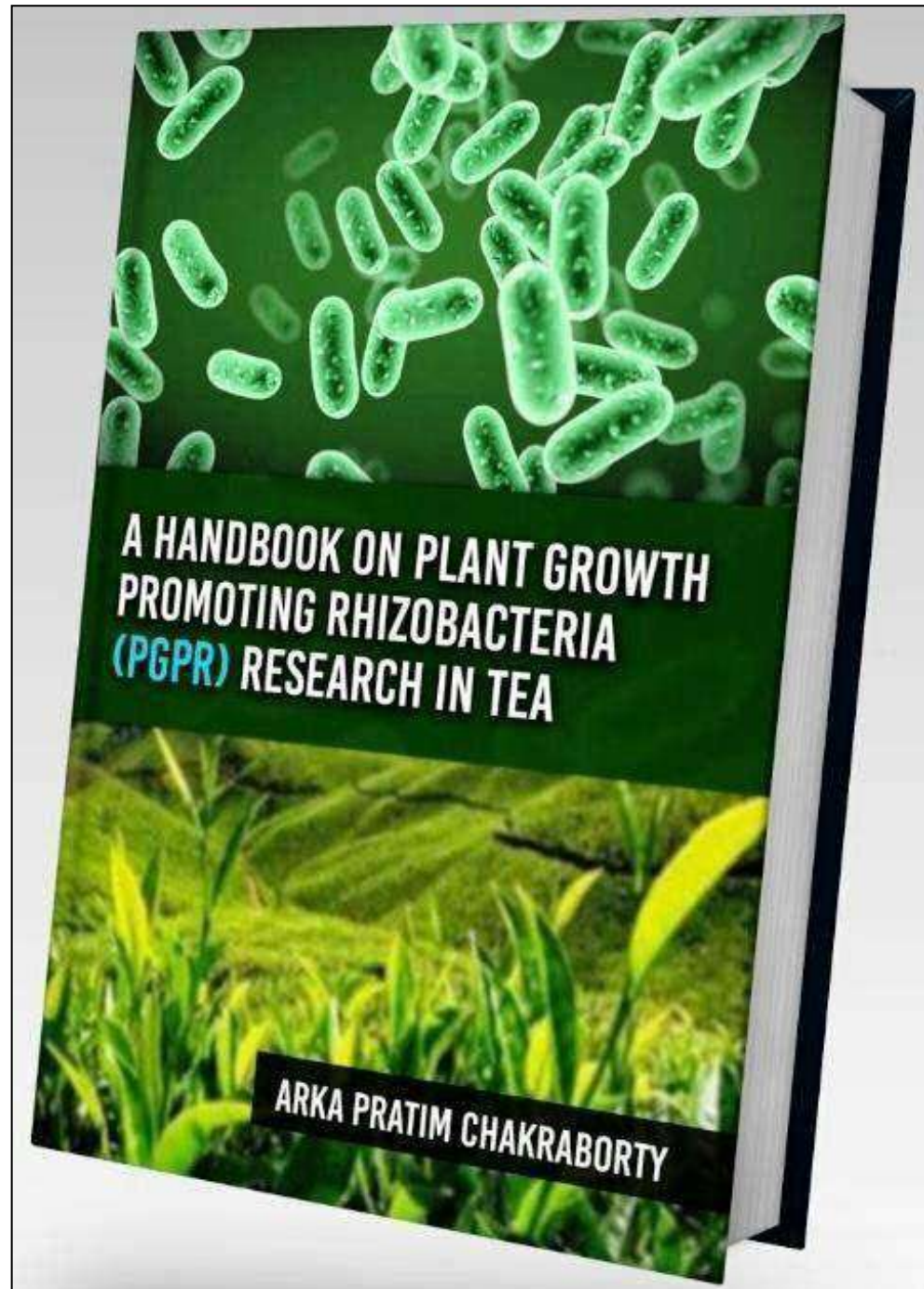
7. A HANDBOOK ON PLANT GROWTH PROMOTING RHIZOBACTERIA (PGPR) RESEARCH IN TEA
AUTHOR: Dr. ARKA PRATIM CHAKRABORTY
PUBLISHING HOUSE: HSRA Publications October, 2021



H.S.R.A PUBLICATIONS

www.hsrapublications.com

ISBN: 978-93-5506-048-8



8. MUSHROOM CHASH BEGALI BOOK

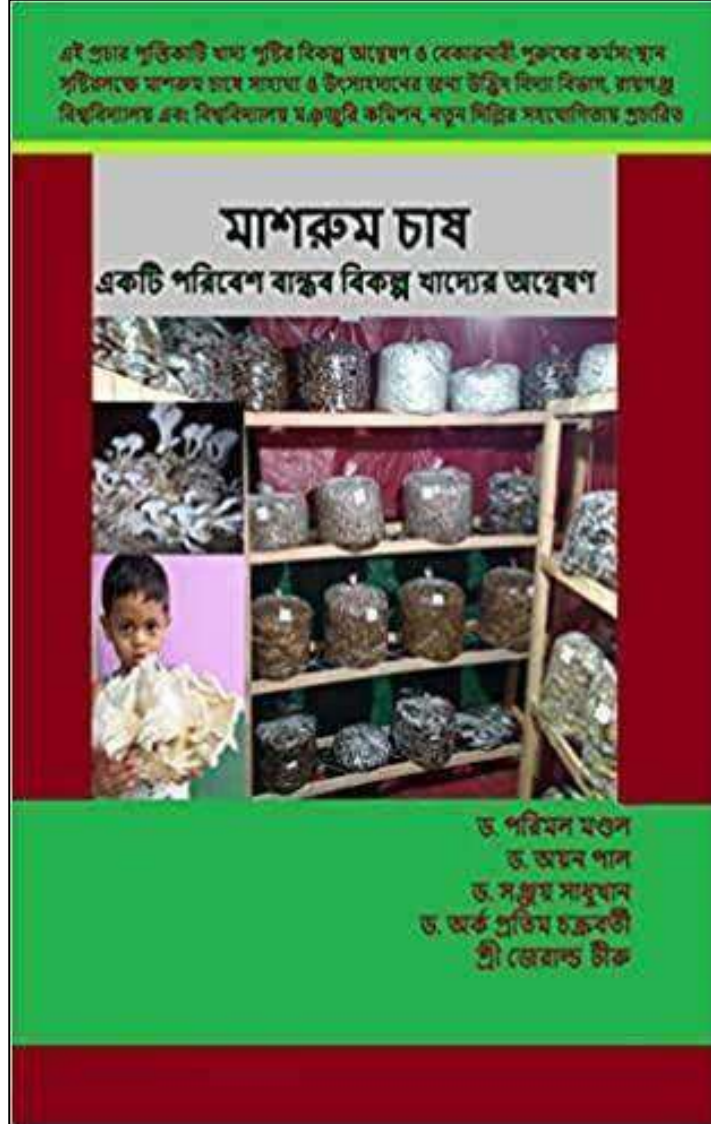
Authors

Dr. Parimal Mandal (Author), Dr. Ayon Pal (Author), Dr. Sanjoy Sadhukhan (Author), **Dr. Arka Pratim Chakraborty (Author)**, Sri Zerald Tiru (Author)

Publication date: 2021/12/31; Volume- 1; Pages-30

Publisher

https://www.amazon.in/MUSHROOM-CHASH-Dr-Parimal-Mandal/dp/B09RKP1SZQ/ref=sr_1_1?crid=3446K6HESI1NP&keywords=mushroom+chash+hsra+publications&qid=1644774233&prefix=mushroom+chash+hsra+publications+%2Caps%2C553&sr=8-1



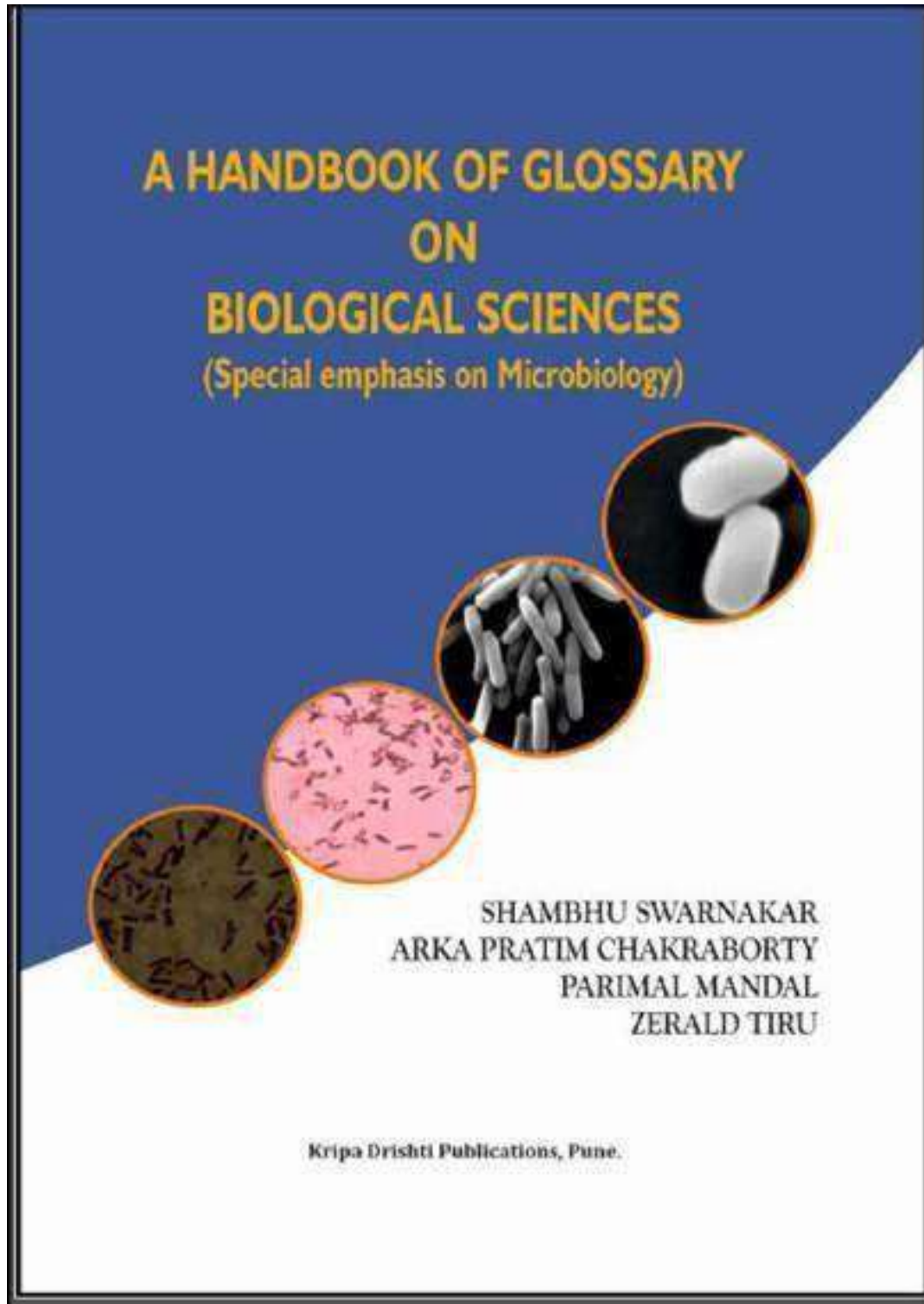
9. A HANDBOOK OF GLOSSARY ON BIOLOGICAL SCIENCES

(Special emphasis on Microbiology)

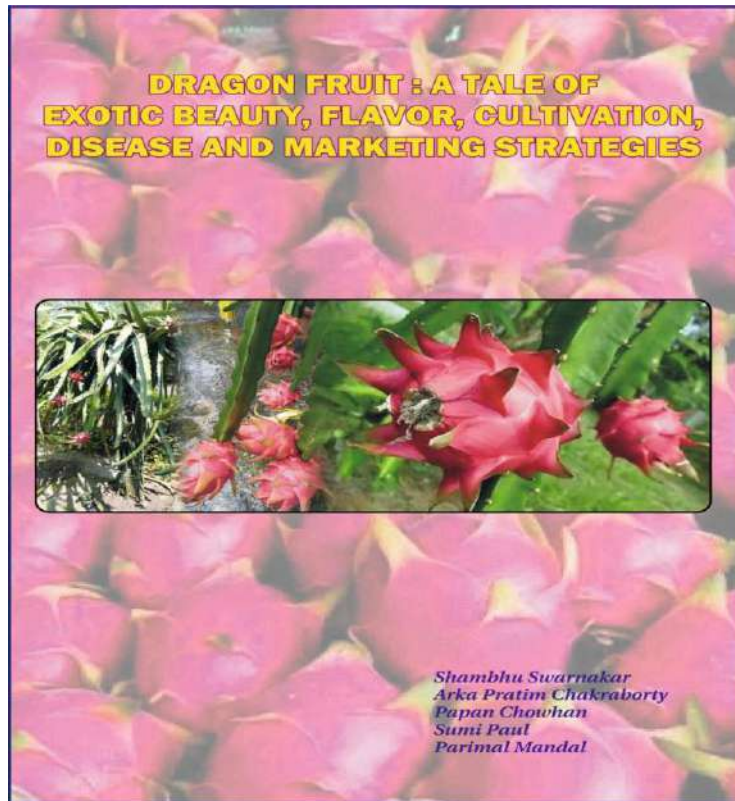
1st Edition, ISBN: 978-93-94570-51-1, Published: June 2022

Shambhu Swarnakar, Arka Pratim Chakraborty, Parimal Mandal, Zerald Tiru

Publisher: Kripa-Drishti Publications, Email: editor@kdpublishations.in, Web: <https://www.kdpublishations.in>



10. Dragon Fruit: A Tale of Exotic Beauty, Flavor, Cultivation, Disease and Marketing Strategies
Authors- Mr. Shambhu Swarnakar, **Dr. Arka Pratim Chakraborty**, Mr. Papan Chowhan, Miss. Sumi Paul,
Dr. Parimal Mandal
Publication date- 2024/2/12, Volume- 1, Pages- 1-115; Publisher- ISBN-13 (15) 978-81-969534-1-6-
Kripa Drishti Publications



1. **BOOK CHAPTERS PUBLISHED IN A BOOK:**

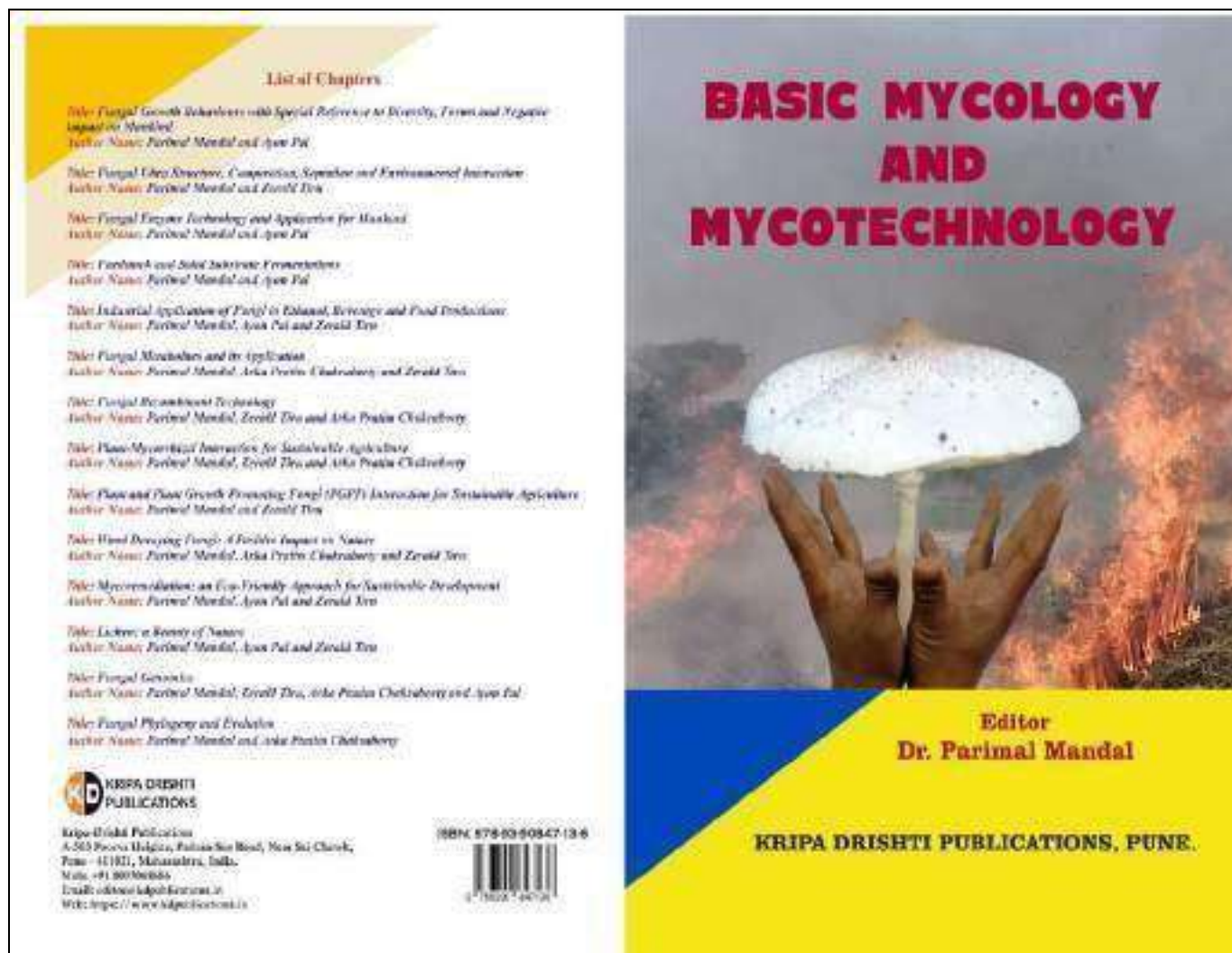
Basic Mycology and Mycotechnology

Co-AUTHOR in book chapters: Dr. ARKA PRATIM CHAKRABORTY

PUBLISHING HOUSE: Kripa Drishti Publication (KD PUBLICATIONS)

<https://www.kdpublications.in/>

ISBN- 978-93-90847-13-6



6. Fungal Metabolites and Its Application

Parimal Mandal

Associate Professor,
Department of Botany, Raiganj University,
West Bengal.

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7. Fungal Recombinant Technology

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8. Plant-Mycorrhizal Interaction for Sustainable Agriculture

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10. Wood Decaying Fungi: A Positive Impact on Nature

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13. Fungal Genomics

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14. Fungal Phylogeny and Evolution

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West Bengal.

Arka Pratim Chakraborty

Assistant Professor,
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West Bengal.

2. BOOK CHAPTERS PUBLISHED IN A BOOK:

Laboratory Manual- Mycology and Plant Pathology

Co-AUTHOR in book chapters: Dr. ARKA PRATIM CHAKRABORTY

PUBLISHING HOUSE: Kripa Drishti Publication (KD PUBLICATIONS)

I. Microscopy of Fungi and Plant Pathogens

Parimal Mandal

Associate Professor,
Department of Botany, Raiganj University,
West Bengal.

Arka Pratim Chakraborty

Assistant Professor,
Department of Botany, Raiganj University,
West Bengal.

Laboratory Manual

MYCOLOGY & PLANT PATHOLOGY



Editor
Dr. Parimal Mandal

Topics and Contributors

Chapter 1: Microscopy of Fungi and Plant Pathogens

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Arka Pratim Chakraborty, Assistant Professor, Department of Botany, Raiganj University
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Arnab Dey, Assistant Professor, Department of Botany, Raiganj University

Chapter 2: Serological Study of Host-Pathogen Interaction

Parimal Mandal, Associate Professor, Department of Botany, Raiganj University
Arka Pratim Chakraborty, Assistant Professor, Department of Botany, Raiganj University

Chapter 3: Chemical and Physiological Study of Biological Active Compound

Parimal Mandal, Associate Professor, Department of Botany, Raiganj University
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Arnab Dey, Assistant Professor, Department of Botany, Raiganj University

Chapter 4: In vitro, In vivo and In planta Assays of Disease

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Arka Pal, Assistant Professor, Department of Botany, Raiganj University

Chapter 5: Study of Different Parameters of Plant Growth Induced by Plant Growth Promoting Fungi (PGPF) in Sustainable Agriculture

Parimal Mandal, Associate Professor, Department of Botany, Raiganj University
Arka Pratim Chakraborty, Assistant Professor, Department of Botany, Raiganj University
Biswajit Pal Sarkar, Research Scholar, Department of Botany, Raiganj University
Arnab Dey, Assistant Professor, Department of Botany, Raiganj University, West Bengal
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Chapter 6: Induction of Defense Related Enzymes in Plant for Sustainable Agriculture

Parimal Mandal, Associate Professor, Department of Botany, Raiganj University
Arka Pratim Chakraborty, Assistant Professor, Department of Botany, Raiganj University
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Chapter 7: Molecular Detection of Fungal Pathogen Using Pathogen

Parimal Mandal, Associate Professor, Department of Botany, Raiganj University
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Kripa Drishti Publications, Pune

2. Serological Study of Host Pathogen Interaction

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4. Isolation, Identification of Fungi and Assessment of Disease

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Associate Professor,
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5. Study of Different Parameters of Plant Growth Induced by Plant Growth Promoting Fungi (PGPF) for Sustainable Agriculture

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6. Induction of Defence Related Enzymes in Plant for Sustainable Agriculture

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7. Molecular Identification of Fungal Isolates/Fungal Pathogens

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Arka Pratim Chakraborty

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Department of Botany, Rajgarh University,
West Bengal*

3. Book- MUSHROOM CHASH

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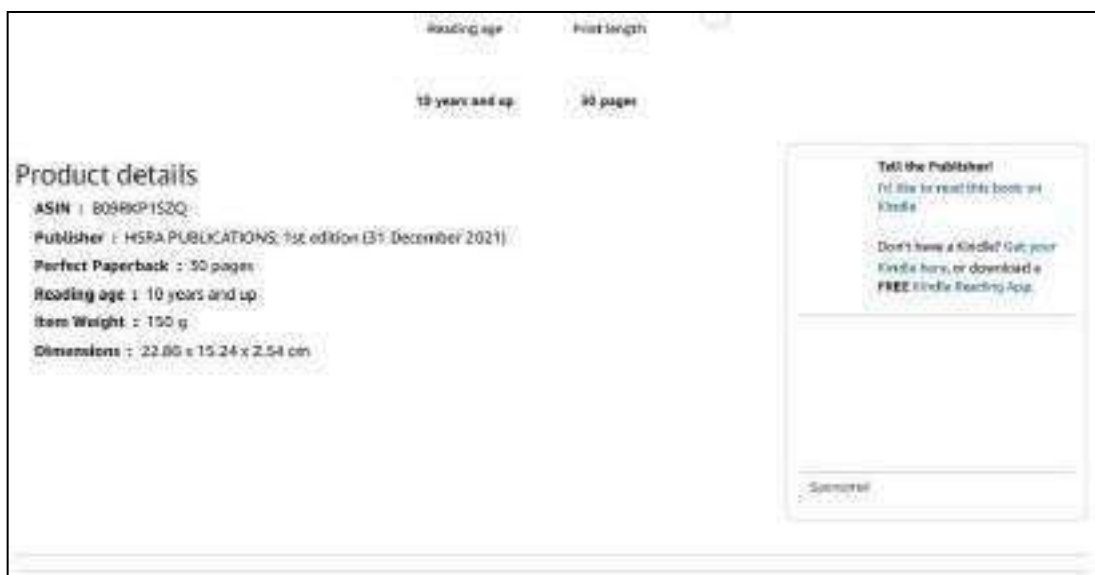
Dr. Parimal Mandal (Author), Dr. Ayon Pal (Author), Dr. Sanjoy Sadhukhan (Author),
Dr. Arka Pratim Chakraborty (Author), Sri Zerald Tiru (Author)

Publication date- 2021/12/31

Volume- 1; Pages- 30

PUBLISHING HOUSE: HSRA Publications; H.S.R.A PUBLICATIONS

www.hsrpublications.com



10. *A Laboratory Manual on Scanning and Transmission Electron Microscopy*

Authors

Shambhu Swarnakar, Papan Chowhan, Sumi Paul, Arka Pratim Chakraborty, Zerald Tiru, Parimal Mandal

Publication date 2022/10/15

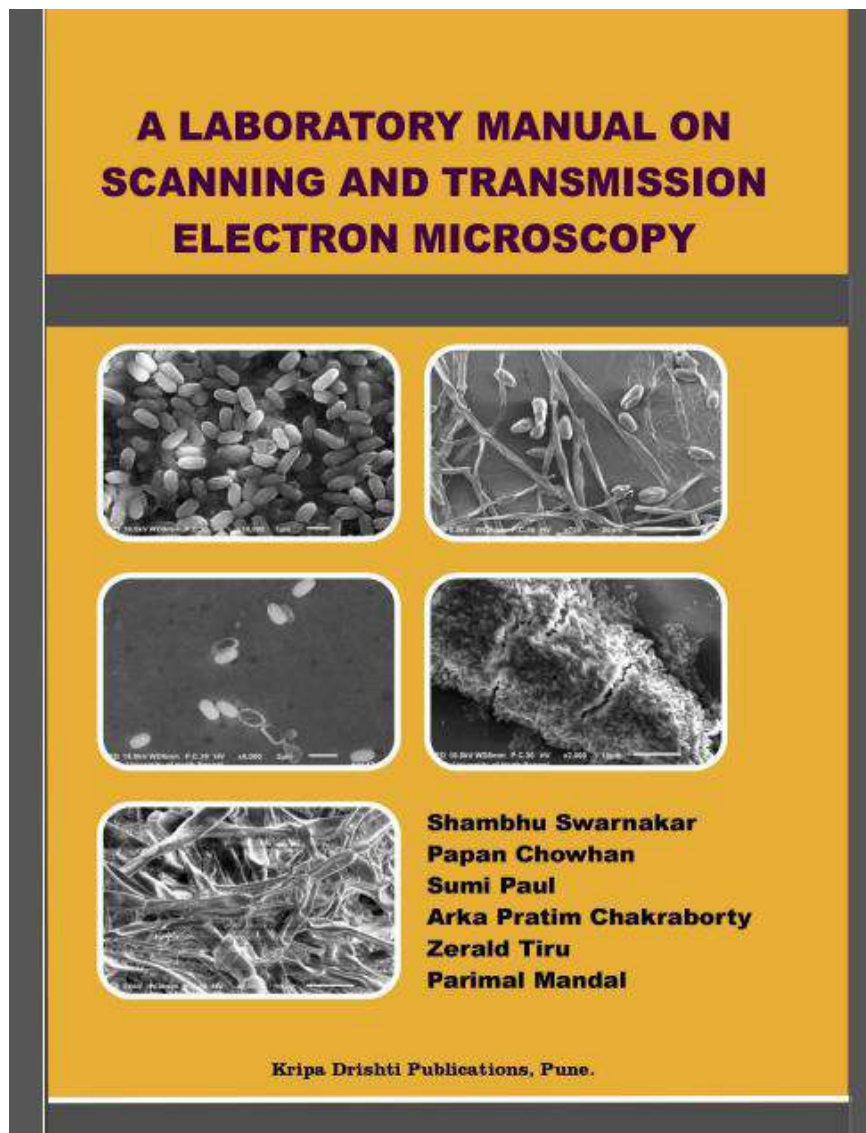
Volume 1

Pages 1-84

PUBLISHING HOUSE: Kripa Drishti Publication (KD PUBLICATIONS)

<https://www.kdpublications.in/>

ISBN-13 (15) 978-93-94570-78-8



11. Studies on Orchidoid Mycorrhizae and Mycobionts, Associated with Orchid Plants as Plant Growth Promoters and Stimulators in Seed Germination

Authors- Chakraborty, O., Agrawala, D.K., Chakraborty A.P. - 2023

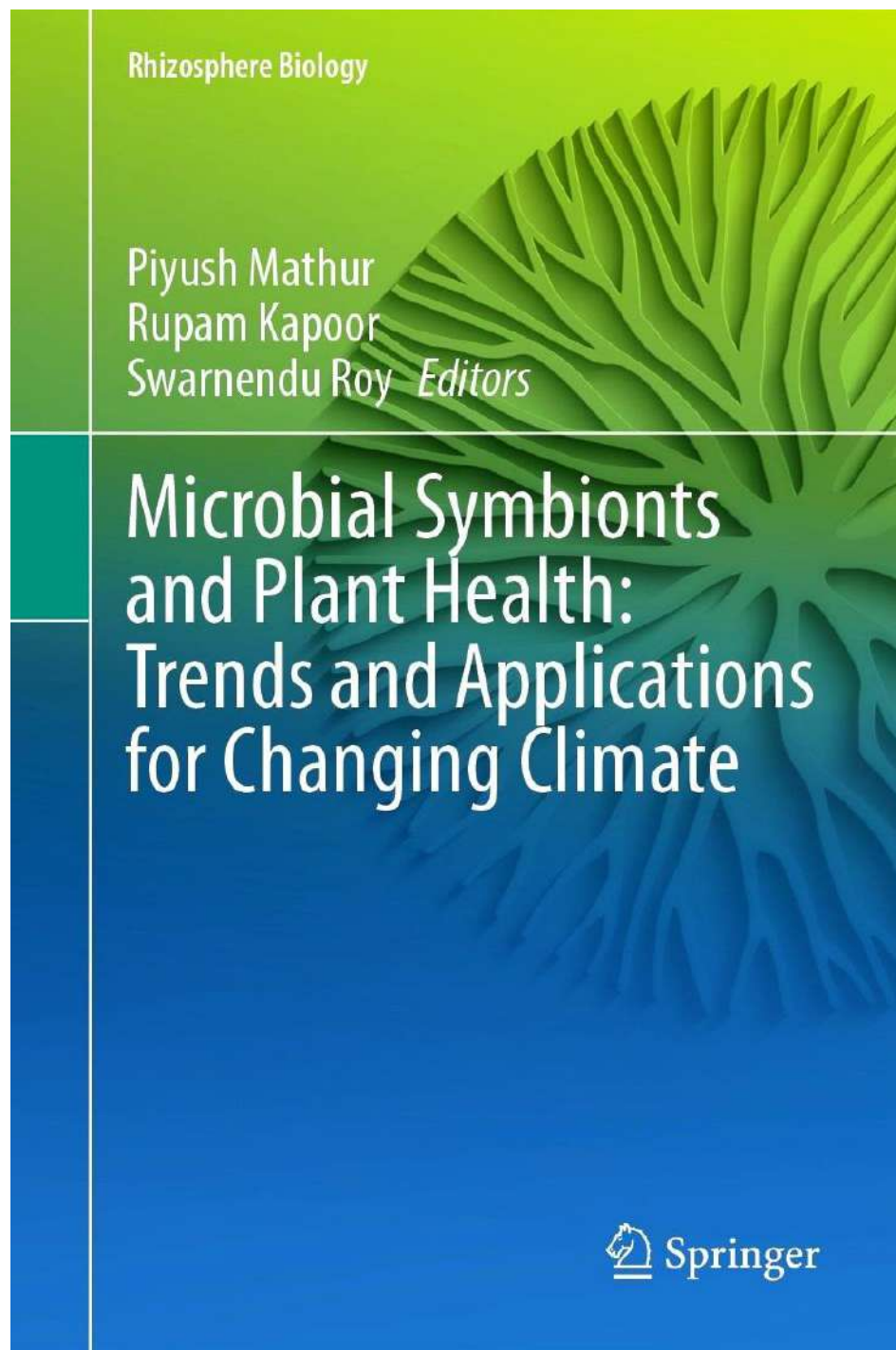
Publication date 2023/5/3; Journal

In: Mathur, P., Kapoor, R., Roy, S. (eds) *Microbial Symbionts and Plant Health: Trends and Applications for Changing Climate*. Rhizosphere Biology. Springer, Singapore. https://doi.org/10.1007/978-981-99-0030-5_16; Volume 1; Issue 1;

Pages- 439-463; Publisher

Rhizosphere Biology. Springer, Singapore.

<https://media.springernature.com/full/springer-static/cover-hires/book/978-981-99-0030-5?as=webp>



Awards Received

Awards	Title of Paper	Authors	Presented at
1. K.P.S. Bilgrami best poster paper award 2007	Suppression of sclerotial blight and induction of resistance in tea by <i>Glomus fasciculatum</i> and rhizobacteria	U.Chakraborty, B.N.Chakraborty, I. Bhagat, K.Rai and A.P.Chakraborty	2 nd Asian Congress of Mycology and Plant Pathology, December 19-22, 2007, organized by ISMPP and Osmania University
2. Best poster paper award 2009	Dual application of <i>Serratia marcescens</i> and <i>Bacillus megaterium</i> for plant growth promotion and root disease management of tea	U.Chakraborty, B.N.Chakraborty and A.P.Chakraborty	5 th International Conference on Biopesticides: Stakeholders' Perspectives, 26-30 April, 2009
3. P.P. Singhal Memorial Pesticides India Award Competition (2 nd prize) 2010	Protection of tea plants against pest and pathogen through combined application of pesticide and plant growth promoting rhizobacterium	A.P.Chakraborty , B.N.Chakraborty and U.Chakraborty	32 nd Annual Conference & Symposium of ISMPP, NOV 24-26, 2010; organized by Junagadh Agricultural University
4. K.P.S. Bilgrami best poster paper presentation award (2 nd prize) 2013	Utilization of microbial resources for crop improvement and disease management	B.N.Chakraborty, U.Chakraborty, P.L.Dey, K.Sunar, A.P.Chakraborty , U.De and S.Allay	34 Annual Conference & Symposium of ISMPP, January 21-23, 2013; organised by Department of Plant Pathology, Navsari Agricultural University, Gujarat
5. K.P.S. Bilgrami best poster paper presentation award (1 st prize) 2014	Harnessing the power of metabolomics and biopriming wheat plants to improve tolerance against biotic stress	B.N.Chakraborty, U.Chakraborty, A.P.Chakraborty , P.L.Dey, K.Sunar and Luis A.J.Mur	35 th Annual Conference & Symposium of ISMPP, January 8-10, 2014; organized by Dr. Panjabrao Desmukh Krishi Vidyapith, Akola, Maharashtra
6. PR VERMA Award competition for Ph.D students (1 st Prize) 2015	Development of Immunological Formats for Detection of <i>Bipolaris sorokiniana</i> in Wheat Leaf and Strategies for Induction of Resistance against Spot Blotch disease using Bioinoculants	Arka Pratim Chakraborty , Usha Chakraborty and Bishwanath Chakraborty	37 Annual Conference & Symposium of ISMPP, April 4-6, 2016; organized by Rajendra Agricultural University, Bihar Samatipur in collaboration with ISMPP.
7. K.P.S. Bilgrami best poster paper presentation award, (1 st Prize) 2015	Biochemical Responses of <i>Sorghum bicolor</i> and <i>Triticum aestivum</i> to spot blotch disease and induction of resistance by Plant Growth Promoting Rhizobacteria	Priyanka Bhattacharjee, Jayanwita Sarkar, Arka Pratim Chakraborty , Usha Chakraborty, Biswanath Chakraborty	37 Annual Conference & Symposium of ISMPP, April 4-6, 2016; organized by Rajendra Agricultural University, Bihar Samatipur in collaboration with ISMPP.

Published Abstracts in National/International Symposia/Conferences

1. Suppression of sclerotial blight and induction of resistance in tea by *Glomus fasciculatum* and rhizobacteria.

U. Chakraborty, B. N. Chakraborty, I. Bhagat, K. Rai and **A.P.Chakraborty**

Presented at 2nd Asian Congress of Mycology and Plant Pathology, December 19-22, 2007, organized by Indian Society of Mycology and Plant pathology and Osmania University Hyderabad.

Obtained K.P.S.Bilgrami first best poster paper award.

2. Application of PGPRs in tea rhizosphere for plant growth promotion and disease suppression.

U. Chakraborty, B.N.Chakraborty, M.Basnet and **A.P.Chakraborty**

Presentation of a paper in oral session in the National Symposium on "Diversity and Functionality of Plant and Microbes", January 24-25, 2008, organized by DRS Department of Botany, University of North Bengal.

3. An integrated approach for enhancing growth and yield of tea.

U. Chakraborty, B. N. Chakraborty and **A.P.Chakraborty**

Presented in poster session in the National Symposium on "New Biology in Agriculture", held at Panjab University, Chandigarh in collaboration with All India Biotech Association (AIBA), New Delhi on 7-8th November, 2008.

4. Evaluation of *Serratia marcescens* (TRS1) as a plant growth promoter of tea plants.

U. Chakraborty, B. N. Chakraborty and **A.P.Chakraborty**

Participated and presented the paper in oral session at Silver Jubilee National Symposium on "Sustainable Utilization of Plant and Microbial Resources", Feb 28-March 1, 2009; organized by DRS Department of Botany, University of North Bengal.

5. Dual application of *Serratia marcescens* and *Bacillus megaterium* for plant growth promotion and root disease management of tea.

U. Chakraborty, B. N. Chakraborty and **A.P.Chakraborty**

Presented at 5th International Conference on Biopesticides: Stakeholders' Perspectives, 26-30 April, 2009.

Obtained First Best poster paper award.

6. Isolation, biochemical and molecular characterization of salt-tolerant bacteria from rhizosphere of a facultative halophyte.

U. Chakraborty, B.N.Chakraborty, S. Roy, P.L.Dey and **A.P.Chakraborty**

Participated and Presented the paper in poster session at the 31st Annual Conference & Symposium on "Microbial Wealth- Plant Health", October 23-25, 2009; organized by Indian Society of Mycology and Plant Pathology and DRS- Department of Botany, University of North Bengal.

7. Dual application of *Glomus mosseae* and *Bacillus pumilus* in enhancing growth of tea and suppression of sclerotial blight disease.

U. Chakraborty, B.N.Chakraborty, U. De, **A.P.Chakraborty** and K. Rai
Presented the paper in oral session at the 31st Annual Conference Symposium on “ Microbial Wealth- Plant Health”, October 23-25, 2009; organized by Indian Society of Mycology and Plant Pathology and DRS- Department of Botany, University of North Bengal.

8.Application of bioformulations of PGPRs for plant growth promotion in tea seedlings.

U. Chakraborty, B.N. Chakraborty and **A.P. Chakraborty**

Participated and presented a paper in oral session at the 31st Annual Conference & Symposium on “Microbial Wealth- Plant Health”, October 23-25, 2009; organized by DRS- Department of Botany, University of North Bengal in collaboration with Indian Society of Mycology and Plant Pathology.

9.Protection of tea plants against pest and pathogen through combined application of pesticide and plant growth promoting rhizobacterium.

A.P. Chakraborty, B.N. Chakraborty and U. Chakraborty

Participated and presented a paper in oral session for **P.P.Singhal Memorial Pesticides India Award competition** at the 32nd Annual Conference & Symposium on “Innovations in plant pathology research and human resource development”, Nov, 24-26, 2010; organized by Junagadh Agricultural University in collaboration with Indian Society of Mycology and Plant Pathology.

Obtained 2nd prize in P.P.Singhal Memorial Pesticides India Award Competition.

10. Participated at the National seminar on “Diversity conservation and sustainable utilization of plants and traditional knowledge in Eastern Himalaya”, Dec 14-16, 2010; jointly organized by DRS- Department of Botany, University of North Bengal and East Himalayan Society for Spermatophyte Taxonomy.

11.Growth improvement of wheat plants by halo-tolerant PGPR in salt stressed conditions and associated changes in antioxidative and defense enzyme activities.

Chakraborty A.P., Chakraborty B.N., Pradhan B and Chakraborty U.

Participated at the National seminar on “Advances in abiotic and biotic stress management of plants.”, September 23-24, 2011; organized by DRS- Department of Botany, University of North Bengal in collaboration with Indian Society of Mycology and Plant Pathology.

12.Amelioration of salinity stress in crop plants by *Bacillus cereus* and elucidation of their mechanism of action.

A.P. Chakraborty, B.N. Chakraborty, S.Roy, P.L.Dey and U. Chakraborty

Presented in poster session at the International conference on “Microbial biotechnology for sustainable development”, Nov.3-6, 2011; jointly organized by Panjab University, Chandigarh and Association of Microbiologists of India(AMI).

13. Search for agriculturally important microorganisms from different regions of North Bengal for their utilization in the improvement of crop health.

B.N.Chakraborty, U. Chakraborty, P.L.Dey, K.Sunar, P.Ray and **A.P.Chakraborty**

Participated and presented a paper in poster session at the 3rd Global Conference on “Plant Pathology For Food Security”, January 10-13, 2012, jointly organized by Maharana Pratap University of Agriculture and Technology and Indian Society of Mycology and Plant Pathology.

14. Evaluation of plant growth promoting rhizobacteria for growth improvement of mandarin seedlings in nursery.

B.N.Chakraborty, U.Chakraborty, S.Allay and **A.P.Chakraborty**

Participated and presented a paper in oral session at the National Conference on “Biology and Bioinformatics of Economically Important Plants and Microbes”, Feb. 17-19, 2012, jointly organized by DRS-Department of Botany and Bioinformatics Facility, University of North Bengal.

15. Functional and genetic diversity of bacterial isolates from soils of North Bengal and utilization of the beneficial traits for crop improvement.

U.Chakraborty, B.N.Chakraborty, P.L.Dey, K.Sunar and **A.P.Chakraborty**

Participated at the National Seminar on “Biodiversity and sustainability vis-à-vis economic development in the Northern parts of West Bengal”, August 26-27, 2012, jointly organized by Department of Botany, Raiganj Surendranath Mahavidyalaya in collaboration with Department of Zoology, Alipurduar College, Jalpaiguri.

16. Alleviation of salinity and water stress in crop plants by osmo-tolerant plant growth promoting rhizobacteria.

U. Chakraborty, B.N.Chakraborty, **A.P.Chakraborty** and P.L.Dey

Participated at the National Symposium on Biotic and Abiotic Stresses on plants under changing climate scenario, **November 29-30, 2012**, jointly organised by Department of Plant Pathology, Uttar Banga Krishi Viswavidyalaya in collaboration with Indian Society of Mycology and Plant Pathology.

17. Utilization of Microbial Resources for Crop Improvement and Disease Management.

B.N.Chakraborty, U. Chakraborty, P.L.Dey, K. Sunar, **A.P.Chakraborty**, U. De and S. Allay

Presented at the 34th Annual Conference & Symposium of ISMPP on the theme “**Crop disease management: advances and challenges**”, **January 21-23, 2013**, jointly organised by Department of Plant Pathology, Navsari Agricultural University, Gujarat in collaboration with ISMPP.

Obtained 2nd prize for Prof. Krishna Sahai Bilgrami best poster paper presentation award 2013.

18. Participated at the National seminar (**PlamiSymp 2013**) on “Recent Trends in Plant and Microbial Research”, **March 22-23, 2013**, organized by the Department of Botany, NBU.

19. Induction of resistance in tea against root pathogens by plant growth promoters and arbuscular mycorrhizal fungi

U. Chakraborty, B.N. Chakraborty, **A. Chakraborty** and U.K. De

Paper was presented at 10 International Congress of Plant Pathology, held at Beijing, China, **August 25-30, 2013**. (*Acta Phytopathologia Sinica*, Vol. 43, 2013).

20. Biopriming of *Brassica juncea* and *Lycopersicon esculentum* seeds by PGPR isolates for growth promotion and induction of resistance against root rot pathogen. K.Sunar, P.L.Dey, **A.P.Chakraborty**, A. Subba, U.Chakraborty and B.N.Chakraborty
Paper was presented at the National Conference on New Frontiers in Medicinal Plant Research, **Oct. 3-4, 2013**, organized by Department of Ethnobotany and Social Medicine Studies, Sikkim University.

21. Dual application of *Bacillus pumilus* and *Glomus mosseae* for improvement of health status of mandarin plants.

Chakraborty U, Chakraborty B.N., Allay S, De U and **Chakraborty A.P.**

Paper was presented at the Second International *Citrus* Biotechnology Symposium, held at Catania, Italy, **Nov. 30- Dec. 2, 2009**.

22. Growth enhancement of tea seedlings induced by application of *Serratia marcescens* and *Bacillus megaterium* and associated biochemical changes. (CL-21)

A.P.Chakraborty, B.N.Chakraborty and U. Chakraborty

Participated and presented a paper at the National Conference on Biodiversity and Natural Resource Utilization, jointly organized by the Department of Botany, Visva-Bharati, Shantiniketan and NBARD, **March 14-16, 2010**.

23. Improvement of health status of plantation and horticultural crops by PGPR and AMF.

U. Chakraborty, B.N.Chakraborty, **A.P.Chakraborty**, P.Roy Chowdhury, U.De and S. Allay.

Paper was presented at the National Symposium on "Microbial Diversity and Bio-prospecting" and ISMPP North zone meet, held at University of Jammu, **Oct. 29-30, 2010**.

24. Exploitation of salt tolerant bacteria for induction of growth promotion and alleviation of salinity stress in plants and analysis of their mechanism of action.

U. Chakraborty, S. Roy, **A.P.Chakraborty**, P.L.Dey and B.N.Chakraborty

Paper was presented at the **International Conference on Plant Science in Post Genomic Era (ICPSPGE-2011)**.

25. Harnessing the power of metabolomics and biopriming wheat plants to improve tolerance against biotic stress.

B.N.Chakraborty, U. Chakraborty, **A.P.Chakraborty**, P.L.Dey, K. Sunar and Luis A.J.Mur

Presented at the 35th Annual Conference & Symposium of ISMPP on the theme "**Innovative and Ecofriendly Research Approaches for Plant Disease Management**", **January 8-10, 2014**, jointly organised by Dr. Panjabrao Desmukh Krishi Vidyapith, Akola, Maharashtra in collaboration with ISMPP.

st

Obtained 1 prize for Prof. Krishna Sahai Bilgrami best poster paper presentation award 2014.

26. HARNESSING THE POWER OF METABOLOMICS AND BIOPRIMING RICE PLANTS TO IMPROVE TOLERANCE AGAINST BIOTIC STRESS

B.N.CHAKRABORTY, U. CHAKRABORTY, S. KHATI, **A.P.CHAKRABORTY** AND LUIS A.J.MUR

st

Presented at International Symposium on Role of fungi and microbes in the 21 century- a global scenario, 20-22 February, 2014, Organised by Indian Mycological Society, Kolkata in collaboration with Department of Botany, University of Calcutta, Kolkata.

27. Search for potential PGPR isolates from Darjeeling hills, their molecular characterization and application for improvement of crop health status.
B.N.Chakraborty, U. Chakraborty, **A.P.Chakraborty**, K. Sunar and P.L.Dey
Presented at National Workshop on “**Advances in PGPR Research**” organised by Department of Mycology & Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi in collaboration with Asian PGPR Society for Sustainable Agriculture, Hyderabad, India on **October 7-8, 2014.**

28. Evaluation of multi-functional traits of rhizospheric bacteria for induction of tolerance in wheat plants against abiotic and biotic stresses.
B.N.Chakraborty, U. Chakraborty, **A.P.Chakraborty** and P.L.Dey
Presented at National Workshop on “**Advances in PGPR Research**” organised by Department of Mycology & Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi in collaboration with Asian PGPR Society for Sustainable Agriculture, Hyderabad, India on October 7-8, 2014.

29. Screening for resistance of wheat plants against *Bipolaris sorokiniana* causing spot blotch disease. B.N.Chakraborty, U.Chakraborty, **A.P.Chakraborty** and J.Sarkar
Presented at National Symposium on “**Unraveling plant-microbe interactions for supporting plant health**” organised by Department of Botany, Gauhati University, Gauhati in collaboration with Indian Society and Plant Pathology on October 27-28, 2014.

30. Evaluation of growth status of rice varieties following seed bacterization with plant growth promoting rhizobacteria
P Bhattacharjee, P Sashankar, **A P Chakraborty**, U Chakraborty, B N Chakraborty
Presented at National Symposium on “Unraveling plant-microbe interactions for supporting plant health” organised by Department of Botany, Gauhati University, Gauhati in collaboration with Indian Society and Plant Pathology on October 27-28, 2014.

31. Screening of wheat germplasm and utilization of plant growth promoting rhizobacterium for induction of resistance in wheat plants against spot blotch disease
A. P. Chakraborty, P.L.Dey, J.Sarkar, U.Chakraborty and B. N. Chakraborty
Presented at National Symposium on “Advances in Plant and Microbial Research” organised by the Department of Botany, University of North Bengal, Siliguri on December 12-13, 2014.

32. *Bipolaris sorokiniana*, a cereal pathogen causing spot blotch disease in wheat (**BT21**)

Arka Pratim Chakraborty, Bishwanath Chakraborty and Usha Chakraborty
nd

Presented (Oral) at 22 West Bengal State Science and Technology Congress organised by Science and Technology Division, Govt. of West Bengal in collaboration with University of North Bengal on February 28-March 01, 2015.

33. Resistance in tea plants against root rot pathogens induced by arbuscular mycorrhizal fungi and plant growth promoters
U. Chakraborty, B.N. Chakraborty, A.P. Chakraborty and U.K. De
Paper was presented in oral session in National Symposium on **Microbial Diversity and Its Impact**, jointly organised by Indian Mycological Society, Kolkata in collaboration with Department of Botany, University of Calcutta during February 18-19, 2016.

34.

P(S9)417: Development of bioformulations with PGPR, PGPF and AMF for induction of resistance in wheat plants against *Bipolaris sorokiniana* causing spot blotch disease

A.P. Chakraborty, P. Sashankar, P. Bhattacharjee, U. Chakraborty and B.N.Chakraborty

Participated and presented a paper in the poster **session 9- Bio-prospecting in biocontrol agents for sustainable agriculture** in the 6th International Conference on Plant, Pathogens and People with the mission Challenges in Plant Pathology to benefit humankind, held at NASC Complex, New Delhi during February 23-27, 2016.

35.

MJN(E)01: Serological formats for screening inherent immunity and attempt to develop induced immunity in wheat plants using bioinoculants against *Bipolaris sorokiniana* causing spot blotch disease

A.P. Chakraborty, U. Chakraborty and B.N. Chakraborty

Participated and presented a paper in the **oral session for M.J. Narasimhan Academic Merit Award Contest** in the 6th International Conference on Plant, Pathogens and People with the mission Challenges in Plant Pathology to benefit humankind, held at NASC Complex, New Delhi during February 23-27, 2016.

36. Biochemical Responses of *Sorghum bicolor* and *Triticum aestivum* to spot blotch disease and induction of resistance by Plant Growth Promoting Rhizobacteria (PP-11).

Priyanka Bhattacharjee, Jayanwita Sarkar, **Arka Pratim Chakraborty**, Usha Chakraborty and Bishwanath Chakraborty

Participated and a paper was presented in the poster **session under theme & Technical session IV: Disease Management** in the 37th Annual Conference & Symposium of ISMPP on the theme “**Food security through Plant Health Protection**”, **April 4-6, 2016**, jointly organised by Rajendra agricultural University, PUSA, SAMASTIPUR in collaboration with ISMPP.

st

Received 1 prize for K.P.S. Bilgrami best poster paper presentation award, 2015

37. Development of Immunological Formats for Detection of *Bipolaris sorokiniana* in Wheat Leaf and Strategies for Induction of Resistance against Spot Blotch disease using Bioinoculants

Arka Pratim Chakraborty, Usha Chakraborty and Bishwanath Chakraborty

Participated and a paper was presented in the oral **session in PR VERMA AWARD Competition for Ph.D student, 2015** in the 37th Annual Conference & Symposium of ISMPP on the

theme “**Food security through Plant Health Protection**”, **April 4-6, 2016**, jointly organised by

Rajendra agricultural University, PUSA, SAMASTIPUR in collaboration with ISMPP.

st

Received 1 prize in PR VERMA Award competition for Ph.D students, 2015

38. Induction of defense responses in cereal crops against foliar fungal pathogens using bioinoculants

Bishwanath Chakraborty*, Usha Chakraborty, **Arka Pratim Chakraborty**, Amrita Acharya, Priyanka Bhattacharjee and Sweata Khati

A paper was presented in the poster **session under theme & Technical session III: Molecular Plant Pathology** in the 38th Annual Conference & National Symposium of ISMPP on the theme

“**Challenges towards Plants Health under Changing Climate Scenario for Sustainable Agriculture**” **November 24-26, 2016**, jointly organised by **Department of Plant Pathology, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, WB** in collaboration with ISMPP.

39. Innovative strategies for biotic and abiotic stress alleviation in wheat plants.

B.N. Chakraborty, U. Chakraborty, **A.P. Chakraborty**, J. Sarkar and P. Bhattacharya

A paper was presented at the National symposium & Delhi chapter meeting on **Innovative strategies for the management of plant disease under climate change scenario** at the Division of Plant Pathology, ICAR – Indian Agricultural Research Institute, New Delhi on **December 19, 2017**.

40. Participated in the *Interdisciplinary National Seminar on “Vistas in Life Science Research”* on **29.03.2019**; jointly organized by the Department of Biotechnology, Department of Microbiology, Department of Tea Science and Department of Bioinformatics, University of North Bengal, West Bengal, India.

41. Participated and *acted as Organising Secretary* in Organising Committee for organising **ONE DAY NATIONAL SEMINAR** on **“WOMEN EMPOWERMENT; LIVELIHOOD, EDUCATION, RIGHTS AND SUSTAINABILITY”** on **03.05.2019**, jointly organised by the Department of Political Science and Department of Geography, Gyan Jyoti College, Dagapur, Siliguri and submitted *abstract* entitled:

“Environmental Sustainability: Negative correlation between sustainability of ecosystem and climate change: challenges and remedial approach linked with special reference to plant-microbe interactions”

Dr. Arka Pratim Chakraborty, Asst. Professor, Department of Botany, Gyan Jyoti College.

42. SCREENING OF WHEAT GERMPLASM FOR RESISTANCE AGAINST SPOT BLOTCH DISEASE AND ANALYSIS OF DEFENSE MECHANISMS

ARKA PRATIM CHAKRABORTY, USHA CHAKRABORTY AND BISHWANATH CHAKRABORTY

Abstract of the paper published in the abstract book under the technical session- **MICROBES AND PLANT HEALTH** in the International Symposium on “Nature, Microbes & Society”, jointly organized by the **Indian Mycological Society, Kolkata** and the Department of Botany, University of Kolkata during **February 06-08, 2020**.

43. CULTIVATION OF MUSHROOM ON DIFFERENT AGRO RESIDUES TO REDUCE GLOBAL WARMING

Parimal Mandal, **Arka Pratim Chakraborty** and Zerald Tiru

Participated in poster session (**PP-15**) in the National Seminar on **“New Horizon in Botanical Research”**- Botsem 2020, organized by the Department of Botany, NBU during **February 20-21, 2020**.

44. Participated in the *Webinar on “HUMAN ORIGIN, HEALTH AND DISEASES”* on **23.05.2020** through online video conferencing (Link with Google Meet-meet.google.com/wkx-uokr-pep); **organized by the Centre for the Advanced Studies in Botany, University of Madras.**

Speaker: Dr. K. Thangaraj, Chief Scientist, CSIR-Centre for Cellular and Molecular Biology, Hyderabad- 500 007.

45. Participated in the *International Webinar on “Past and Future of Dermatobotanicals in Dermatopharmacology”* on **26.05.2020** through online YouTube video conferencing; **organized by the Department of Advanced Zoology & Biotechnology, Loyola College (Autonomous), Chennai, Tamil Nadu, India.**

46. Participated in the *International Webinar on “Science Communication and Analysis of Scientific Publications for enhanced visibility”* on 29.05.2020 through online video conferencing; organized by the Department of Zoology, Mizoram University, Aizawl, India.

47. Participated in the *Webinar on “Scope for the utilization of herbal medicines for human health in COVID-19 like scenario”* on 29.05.2020 through online Zoom Webinar video conferencing; organized by the PG & Research Department of Botany, V.O.Chidambaram College, Thoothukudi, India.

48. Participated in the *International Webinar on “STRATEGIES TO CONTROL COVID-19”* on 30.05.2020 through online Zoom Webinar video conferencing; organized by the Department of Botany, St.Joseph’s College (Autonomous), Tiruchirappalli, Tamil Nadu, India.

49. Participated in the *Webinar on “Covid and Digital Transformation”* on 30.05.2020 through online video conferencing (Link with Google Meet); organized by the Department of Management, University of North Bengal, West Bengal, India.

50. Participated in the *Indo-UK Virtual Conference ‘Current Innovations and the Future of Therapeutic Developments’ CIFTD-2020* during 1st-3rd June, 2020, organized by Centre for Biomaterials Cellular & Molecular Theranostics (CBCMT) at Vellore Institute of Technology (VIT), Vellore, India and Swansea University, United Kingdom

51. Participated in the *Webinar on “Microbes, Biology and Defences of the Chocolate Tree”* on 03.06.2020 through online video conferencing; organized by the Department of Botany, Mizoram University, Aizawl, India.

52. Participated in the *International Webinar Series on ‘Infectious Disease - Biology, Diagnosis, Preventive Strategies of Coronaviruses’* during 1st-4th June, 2020, organized by the Department of Plant Biology & Biotechnology, Loyola College (Autonomous), Chennai, Tamil Nadu, India.

53. Participated in the *Two Days International Webinar on ‘Current trends in chemical and material sciences’* during 3rd-4th June, 2020, organized by the Department of Chemistry, Kazi Nazrul University, West Bengal, India.

54. Participated in the *National Level Webinar on “Biodiversity Conservation with Special Reference to Agrobiodiversity”* on 04.06.2020 through online Zoom Webinar video conferencing; organized by the PG & Research Department of Botany, V.O.Chidambaram College, Thoothukudi, India.

55. Participated in the *National Webinar on “Waste Management during the Covid-19 Pandemic”* on 05.06.2020; organized by the School of Studies in Chemistry, Jiwaji University, Gwalior, India.

56. Participated in the *Webinars on “SALIVARY METABOLOMES AS A TOOL FOR SCREENING CANCERS AT AN EARLY STAGE”* and *“ADVANCES IN REGENERATIVE MEDICINE – THROUGH INDO-JAPANESE COLLABORATION”*

on **05.06.2020** through online video conferencing; **organized by the Department of Biotechnology, Mizoram University, Aizawl, India.**

57. Participated in the *Webinar on “The Importance of Symbiotic Microorganisms in Drug Discovery”* on **06.06.2020** through online video conferencing; **jointly organized by the Department of Forestry, Department of Environmental Science, School of Earth Science & Natural Resource Management, Mizoram University, Aizawl, India.**

58. Participated in the *Webinar on “Study of biomarkers for diagnosis and prognosis of tuberculosis infection”* on **06.06.2020** through online video conferencing; **jointly organized by the Department of Chemistry and Department of Biotechnology, Mizoram University, Aizawl, India.**

Resource Person: Dr. Amador Goodridge, Tuberculosis Biomarker Research Unit, Instituto de Investigaciones Científicas y Servicios de Alta Tecnología, INDICASAT-AIP, Panama.

59. Participated in the *Webinar on “Contribution of B-1 Cells during Mycobacterium infection”* on **06.06.2020** through online video conferencing; **jointly organized by the Department of Chemistry and Department of Biotechnology, Mizoram University, Aizawl, India.**

Resource Person: Dr. Ciara Ordonez, Tuberculosis Biomarker Research Unit, Instituto de Investigaciones Científicas y Servicios de Alta Tecnología, INDICASAT-AIP, Panama.

60. Participated and presented a paper in *One Day International Webinar on “COVID-19, THE FACTS AND FINDINGS”* on **08.06.2020**, through online video conferencing; **organized by the Department of Chemistry, Sidho-Kanho-Birsha University, Purulia-723104, West Bengal, India and submitted e-abstract entitled:**

“Targeting apoptosis signaling pathways through multiple mechanisms during infection induced by Coronavirus (CoV)”

Subash Kumar Gupta¹ and Arka Pratim Chakraborty^{2}*

¹Assistant Professor, Department of Botany, Gyan Jyoti College, Dagapur, Dist-Darjeeling, P.O.- Salbari- 734002, West Bengal India, Ph- 7908138116, E-mail: guptasubash60@yahoo.in

²Assistant Professor, Department of Botany, Raiganj University, Raiganj, Uttar Dinajpur-733134, West Bengal, India, Ph-8945518753

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61. Participated in the *Online Lecture Series Webinar-2 on ‘BIOLOGICALLY ACTIVE MUDFLATS’* on **13.06.2020**, organized by the **CHENNAI SCIENCE COLLOQUIUM (CSC), Chennai, India.**

62. Participated in the *Webinar on “Biomedical Sciences: A touch of Medicinal Plants”* on **17.06.2020** through online video conferencing; **organized by the Department of Horticulture, Aromatic and Medicinal Plants (HAMP), Mizoram University, Aizawl, India.**

63. Participated in the *Two Days International Webinar on ‘COVID-19: Impact, Preventive measures and Best Practices’* during **21st-22nd June, 2020**, organized by the Department of Physics, Bhairab Ganguly College, West Bengal, India.

64. Participated and presented a paper in *Three Days International Webinar on “Emerging Trends in Biotechnology: Current and Future Challenges in Biotechnology Research”* during 24th-26th June, 2020, through online video conferencing; jointly organized by the Department of Biotechnology, Pachhunga University College (PUC) and Mizoram University (MZU), Aizawl, India and submitted e-abstract entitled:

“A brief study of expressions of defense genes and genes involved in phytoalexin biosynthesis through Microarray and RT PCR analysis during induction of resistance in *Triticum aestivum* by plant growth promoting rhizobacterium against *Bipolaris sorokiniana* causing spot blotch disease”

Arka Pratim Chakraborty

Assistant Professor, Department of Botany, Raiganj University, Uttar Dinajpur-733134, West Bengal, India, Email: arkapratimchakraborty83@gmail.com

65. Participated in the *Two Days Online Special Lecture Series on ‘Current Trends in Basic Sciences and Career Opportunities’* during 25th-26th June, 2020, organized by the Department of Botany, Chemistry and IQAC, BMMV, Balurghat Mahila Mahavidyalaya, Balurghat, Dakshin Dinajpur, West Bengal, India.

66. Participated in *One Day ICPR sponsored International Webinar on “Yoga for Mankind: Peace and Practice”* on 08.07.2020, through online video conferencing; organized by the Department of Philosophy, Cooch Behar Panchanan Barma University, Cooch Behar, West Bengal, India.

67. Participated in the Webinar on *“Tropical Parasites and their Treatments”* on 16.07.2020 through online video conferencing; organized by the Mizoram University, Aizawl, India.

68. Participated in One Day Webinar on *“Recent Trends in Science and Technology”* on 17th July, 2020, through online Google Meet; jointly organized by the Department of Botany, Chemistry, Physiology and Zoology & Internal Quality Assurance Cell (IQAC), Netaji Nagar Day College, affiliated to the University of Calcutta, West Bengal, India.

69. Participated in the Webinar on *“Antibiotic Resistance”* on 17.07.2020 through online video conferencing; organized by the Mizoram University, Aizawl, India.

70. Participated in Two Days National Webinar on *“PLANT RESEARCH IN WELFARE OF HUMAN BEING”* on 17th & 18th July, 2020, through online Google Meet; jointly organized by the Department of Botany, South Calcutta Girls’ College & Dinabandhu Mahavidyalaya, West Bengal, India.

71. Participated in the National Webinar on *“EMERGING FRONTIERS IN BIOLOGICAL SCIENCES”* on July 20-21, 2020 through online video conferencing; jointly organized by the Department of Botany & Zoology, Manipur University, Canchipur, India.

72. Participated in the Webinar on *“Unexpected tough time in this pandemic time- will have to adapt to deal with it since it is what it is; given by Dr. Siddeswar Gubba, Ph.D., Innovative Informatics & Technologies, Inc., Texas, USA,”* on 21.07.2020 through online video conferencing; organized by the Mizoram University, Aizawl, India.

73. Participated in the National level Webinar on ***“THE ENIGMA OF COVID-19: FEATURES, GENOMIC PLASTICITY AND TREATMENT MODALITIES”*** on 22.07.2020 through online video conferencing; jointly organized by the Department of Botany & IQAC, Krishnagar Government College, Krishnagar, Nadia, West Bengal-741101, India.

74. Participated in the Webinar on ***“Peptide Nanoparticle and their Significance in Drug Development, delivered by Dr. Palanirajan Vijayara Kumar, UCSI University, Malaysia”*** on 23.07.2020 through online video conferencing; organized by the Department of Chemistry, Mizoram University, Aizawl, India.

75. Participated in the Webinars on ***“COVID-19 PANDEMIC IN INDIA: DIAGNOSTIC TOOLS AND NATIONAL REGULATIONS AND PATIENTS WITH CHRONIC LUNG DISEASES DURING THE COVID-19 PANDEMIC”*** on 24.07.2020 through online video conferencing; organized by the Mizoram University, Aizawl, India.

76. Participated in the International level Webinar on ***“THE COVID-19 PANDEMIC: MYTHS, SCIENCE AND HOPE”*** on 26.07.2020 through online video conferencing; jointly organized by the Department of Botany & IQAC, Krishnagar Government College, Krishnagar, Nadia, West Bengal-741101, India.

77. Participated in *International Colloquium (Online)* on ***“Science and Society: Institutional approaches during pandemic”*** on 30.07.2020 & 31.07.2020; organised by the Science Departments and IQAC, Dinhata College in collaboration with the Department of Botany, Cooch Behar Panchanan Barma University, West Bengal, India.

78. Participated in One Day National Webinar on ***“Digital Teaching during COVID-19 Pandemic with Special Reference to Teaching learning Process”*** on 03.08.2020, through online Google Meet; jointly organized by the Department of Education & IQAC, South Calcutta Girls' College, Kolkata, West Bengal, India.

79. Participated in the Webinar on 3rd August, 2020, organized by the Mizoram University, Aizawl, entitled ***‘An International Webinar on Biometric Recognition Techniques for Authentication in Smart Cities’*** delivered by Shi-Jinn Horng, Chair Professor, National Taiwan University of Science and Technology, Taipei, Taiwan-106.

80. Participated in the Webinar on 3rd August, 2020, organized by the Department of Horticulture, Faculty of Agriculture, Annamalai University, entitled ***“Annona- the super fruit of the 21st century”***.

81. Participated in the Webinar on 3rd August, 2020, jointly organized by the Central Library, Manipur University in collaboration with Springer Nature, entitled ***“ACADEMIC AND SCIENTIFIC WRITING CATAPULTING INSTITUTIONAL VISIBILITY”***.

82. Participated in One Day National Webinar on ***“Plant Through Ages: Extinct to Extant”*** held on August 4th, 2020; organized by the Department of Botany in association with IQAC of the Mrinalini Datta Mahavidyapith, Birati, Kolkata-700051.

83. Participated in the Webinar on *“Bench to Bedside: An overview of Drug Development Process, delivered by Dr. Prakash Bolleddula, Ph.D Director, DMPK and Clinical Pharmacology Agios Pharmaceuticals Cambridge, MA, USA”* on **04.08.2020** through online video conferencing; organized by the Department of Biotechnology, Mizoram University, Aizawl, India.

84. Participated in the Webinar on **4th August, 2020**, organized by the Department of Horticulture, Faculty of Agriculture, Annamalai University, entitled *“Neutraceuticals in flower crops”*.

85. Participated in the Webinar on **5th August, 2020**, organized by Proquest in collaboration with Annamalai University, entitled *“Best Practices in Using ProQuest Databases for Research, Teaching and Learning”*.

86. Participated in the Webinar on *“IMMUNOTHERAPY APPROACHES IN CANCER DRUG DISCOVERY”* on **05.08.2020** through online video conferencing; organized by the Mizoram University, Aizawl, India.

87. Participated in the Webinar on **6th August, 2020**; on *“Understanding the Complexity of Cancer Progression and Biology of DNA Structures”*; organized by the Department of Botany in association with IQAC of Gurudas College.

88. Participated in the international web conference on **7th August, 2020**; on *“Climate Change & Human Health”*; jointly organized by the Faculty of Science, Tufanganj Mahavidyalaya and the Department of Zoology, Ananda Chandra College.

89. Participated in ONE DAY NATIONAL LEVEL WEBINAR ON *“PROMOTION OF COLLEGE TEACHERS AND LIBRARIANS UNDER CARREAR ADVANCEMENT SCHEME (CAS)”* on **8th August, 2020**; organised by IQAC, Alipurduar College as per registration Ref. No. APDC/IQAC/2020/069.

90. Participated in One Day International Webinar on *“Corona Virus Disease (COVID-19): A review of It's Pathophysiology and Epidemiology”* on **9th August, 2020**; organized by the Department of Food and Nutrition, Tara Devi Harakh Chand Kakaria Jain College, Affiliated to University of Calcutta.

91. Participated in Webinar On *“Personalized Precision Cancer Therapy”* On **13 Aug 2020**.

92. Participated in the *One Day International Webinar on “Viral infection and immunity: physiological aspects and preventive strategy”* on **14th August, 2020**; organized by the Department of Physiology in association with IQAC, Belda College, Belda, W.B.

93. Participated in the Online Lecture Series entitled *“Virtual Journey Through Botanical World”* held from **12th-15th of August, 2020**, organized by the Department of Botany in association with IQAC, T.H.K Jain College, Kolkata.

94. Participated in the **Bilateral Indo-US Webinar on COVID Biology**, dated **August 16-19, 2020**; organized by **Indian Institute of Science education and Research Kolkata, India** in collaboration with **IISc, Bangalore, India, University of Pennsylvania, and the University of Colorado, School of Medicine, USA.**

95. Participated in the **National Webinar on “Plant Science in New Era, Part-I”** on **19.08.2020**; organized by the **Department of Botany, Kabi Nazrul College, Murarai, Birbhum.**

96. Participated in **One Day National Level Webinar on “The New Horizon: Omics in Microbial Research”** on **22.08.2020**; organized by the **Department of Botany, Kalimpong College, Kalimpong.**

97. Participated in the **International Webinar on “Neoteric Approaches in Applied Sciences”** jointly organized by **UG & PG Department of Botany and Department of Physics** in collaboration with **IQAC, Darjeeling Government College** on **24th and 25th August, 2020.**

98. Participated in **One Day National Level Webinar on “Jal Shakti Campus and Jal Shakti Gram: SDGs for Natural Resources During COVID-19 and Beyond”** on **25.08.2020**; jointly organized by **NSS & IQAC, Maynaguri College** in collaboration with **Mahatma Gandhi National Council of Rural Education (MGNCRE).**

99. Participated in **One day International Webinar on “Science, Biology and the world’s Future”** on **25.08.2020**; organized by the **Department of Botany** in collaboration with **Internal Quality Assurance Cell (IQAC), Dinabandhu Andrews College, Kolkata.**

100. Participated in the **National Webinar on “National Education Policy 2020”** on **26.08.2020**; organized by the **Department of Education, Mizoram University, Aizawl.**

101. Participated in the **International Webinar on “IPR and Recent Advancement in Pharmaceutical Research”** held on **29th August 2020**; organized by the **Department of Pharmaceutical Technology, University of North Bengal, Raja Rammohunpur, Darjeeling 734013, West Bengal, India.**

102. Participated in the **One-day State Level Webinar on “Emerging Bio-based Industrial Sectors & Job Prospects: Indian Scenario with Special Reference to West Bengal”** organized by **UG & PG Department of Botany** in collaboration with **IQAC, Darjeeling Government College** on **30th August, 2020.**

103. Participated in the **International Webinar on “COVID-19 Pandemic and Co-infections: Challenges, Prospective Treatments and Societal Impact”** held on **31st August, 2020**, organized by the **Department of Microbiology, Raiganj University.**

104. Participated in the **Inaugural Talk of Bio-Illumination on “Present trends and future prospects of herbal medicines”** held on **05.09.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

105: Participated in the **ONE-DAY NATIONAL WEBINAR ON “ROLE OF INDIGENOUS TRADITIONAL KNOWLEDGE AND HERBAL DRUGS IN COMBATING AGAINST PANDEMIC COVID-19”** held on the **11th September, 2020**; organized by the **Department of Botany and Internal Quality Assurance Cell, Maulana Azad College, Kolkata.**

106. Participated in the **Bio-Illumination Talk** on “*Single Molecule Technologies: A New Window To See Complex Biological Phenomenon*” held on **12.09.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

107. Participated in the **Bio-Illumination Talk** on “*Applied Phytochemistry as an Interdisciplinary Research Concept*” held on **12.09.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

108. Participated in **One Day Webinar** on “*Biodiversity: Concept, Conservation and Challenges*” held on **13th September, 2020**; organized by the **Department of Botany and Zoology in collaboration with IQAC, FAKIR CHAND COLLEGE, DIAMOND HARBOUR, SOUTH 24 PGS, WEST BENGAL, INDIA. (Certificate Id: IBJT0E-CE000112).**

109. Participated in the **Bio-Illumination Talk** on “*Host-pathogen interaction: Crosstalk between nuclear DNA sensor. IFI16 and Herpesvirus*” held on **19.09.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

110. Participated in **INDIAN PHYTOPATHOLOGICAL SOCIETY, NEW DELHI- IPS WEBINAR SERIES on INTERNATIONAL YEAR OF PLANT HEALTH 2020- IPS Webinar of Central Zone** on **July 17, 2020.**

111. Participated in **DBT Sponsored Webinar** on “*Beginners’ Bioinformatics*”; organised by the **Department of Botany, Jhargram Raj College** on **24th September, 2020.**

112. Participated in the **Bio-Illumination Talk** on “*Flooding of Pulmonary Alveoli (edema) in COVID-19: The Pathophysiology*” held on **26.09.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

113. Participated in the **Bio-Illumination Talk** on “*VENOM-SELEX: An aptamer based method for identification of biomarker for differential detection of snake venom*” held on **03.10.2020**, organized by the **Department of Biological Sciences, Aliah University, Kolkata.**

114. Participated in **DBT Sponsored Webinar** on “*Bio Energy & Energy Conservation*”; organised by the **Department of Botany, Jhargram Raj College** on **2nd October, 2020.**

115. Participated in **online Webinar** on “*Next Generation Sequencing For Deciphering Host-Pathogen Interactions*” on **4th and 5th February, 2021**; jointly organized by the **Indian Phytopathological Society (IPS) and Bionivid Technology Pvt. Ltd.**

116. Participated in **online Webinar** on “*Biodiversity Day*” on **22nd May, 2021**; jointly organized by **Shakti Manipur and Society for Environmental Education and Development (SEED), Manipur.**

117. Participated in **online State level Webinar** on “*Mucormycosis: The Black Fungus infection maiming COVID-19 patients in India*” on **03.06.2021**; organized by the **Government General Degree College, Chapra.**

118. Participated in **online one day Webinar** on “*Observation of World Environmental Day*” on **05.06.2021**; organized by the **Government General Degree College, Chapra**.

119. Participated in **online one day National Webinar** on “*THINK GREEN, LIVE GREEN*” commemorating the VAN-MAHOTSAV WEEK, on **07.07.2021**, jointly organized by the IQAC and PG Department of Conservation Biology, Durgapur Government College.

120. Acted as **ONE OF THE JOINT ORGANIZING SECRETARIES** in **online one day webinar** (*SIR J.C.BOSE MEMORIAL LECTURE SERIES, 2021- 1ST RGUBOT WEBINAR SERIES-1*) ON “*Metagenomics in Microbial Ecology: Microbial Community Structure and its Functional Implications*” on **11.08.2021**; organized by the Department of Botany, Raiganj University.

121. Acted as **ONE OF THE JOINT ORGANIZING SECRETARIES** in **online one day webinar** (*SIR J.C.BOSE MEMORIAL LECTURE SERIES, 2021- 2nd RGUBOT WEBINAR SERIES-2*) ON “*Think outside the box: Be an Entrepreneur!*” on **24.08.2021**; organized by the Department of Botany, Raiganj University.

122. Acted as **ONE OF THE JOINT ORGANIZING SECRETARIES** in **online one day webinar** (*SIR J.C.BOSE MEMORIAL LECTURE SERIES, 2021- 3rd RGUBOT WEBINAR SERIES-3*) ON “*Taxonomy-What, Why and How??*” on **18.09.2021**; organized by the Department of Botany, Raiganj University.

123. Participated and presented an abstract entitled “*UNRAVELLING THE BENEFICIAL TRAITS OF PGPR FOR GROWTH ENHANCEMENT AND DISEASE MANAGEMENT IN TEA PLANTATION- A. P. Chakraborty**, U. Chakraborty, B.N.Chakraborty” in **online Two days National Seminar-“ADVANCEMENT OF PLANT SCIENCES FOR FOOD DIVERSITY AND NUTRITIONAL SECURITY”** ; jointly organized by the Department of Botany and UGC-HRDC center, University of North Bengal from **30.09.2021-01.10.2021**.

124. Participated and presented an abstract entitled “*HARNESSING THE ROLE OF ORCHIDOID MYCORRHIZAE AND MYCOBIONTS IN STIMULATING GERMINATION OF ORCHID SEEDS AND SUPPRESSION OF DISEASE OF ORCHID PLANTS- Oindrila Chakraborty¹, Dinesh Kumar Agrawala² and Arka Pratim Chakraborty^{3*}*” in **online Two days National Seminar-“ADVANCEMENT OF PLANT SCIENCES FOR FOOD DIVERSITY AND NUTRITIONAL SECURITY”** ; jointly organized by the Department of Botany and UGC-HRDC center, University of North Bengal from **30.09.2021-01.10.2021**.

125. Participated and presented an abstract entitled “*ENDOPHYTIC ACTINOMYCETES AS PLANT GROWTH PROMOTERS AND BIOCONTROL AGENTS- Sumi Paul¹, Arka Pratim Chakraborty^{2*}*” in **online Two days National Seminar-“ADVANCEMENT OF PLANT SCIENCES FOR FOOD DIVERSITY AND NUTRITIONAL SECURITY”** ; jointly organized by the Department of Botany and UGC-HRDC center, University of North Bengal from **30.09.2021-01.10.2021**.

126. Evaluator in Poster Session in **Two Days National Seminar (Online Mode)** on *Advancement of Plant Sciences for Food Diversity and Nutritional Security*, organized by the **Department of Botany, University of North Bengal** in collaboration with **UGC-Human Resource Development Center, University of North Bengal** on **30.09.2021**.

127. Abstract (A-23) entitled “First evidence of *Curvularia lunata* (ON246070) causing leaf spot disease of banana from Sarai, Raiganj, Uttar Dinajpur District, West Bengal, India” by Papan Chowhan and **Arka Pratim Chakraborty**, Department of Botany, Raiganj University, Raiganj was presented during *one day seminar on “Science and Technology”, organized by the University of Gour Banga, Malda in collaboration with District Science & Technology and Biotechnology, Malda on 07.07.2022.*

128. Abstract entitled- New report of root endophyte- *Enterobacter cloacae* (ON955844) having *in vitro* growth promoting attributes and biocontrol potential against *Curvularia lunata* (ON246070) causing leaf spot disease of banana by **Arka Pratim Chakraborty**, Papan Chowhan, Shambhu Swarnakar was presented (**Oral**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

129. Abstract entitled- Diversity and distribution of five sub-tribes Gastrochilinae, Aeridinae, Diplocentrinae, Pelatantheriinae and Taeniophyllinae under tribe Vandeeae (Orchidaceae) in India by Oindrila Chakraborty, Dinesh Kumar Agrawala, **Arka Pratim Chakraborty** was presented (**Oral**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

130. Abstract entitled- Harnessing the role of root endophytic bacterium- *Achromobacter xylosoxidans* (ON955872) having *in vitro* growth promoting attributes and its role as antagonist against *Curvularia lunata* (ON246070) causing leaf spot disease of banana from Raiganj, Uttar Dinajpur, West Bengal by Papan Chowhan, **Arka Pratim Chakraborty** was presented (**Oral**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

131. Abstract entitled- Yellow leaf disease of *Brassica juncea* by *Fusarium equiseti* (ON783721) by Shambhu Swarnakar, **Arka Pratim Chakraborty**, was presented (**Oral**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

132. Abstract entitled- *Priestia flexa* (OP541862)- a phosphate solubilizing and IAA producing actinobacterium from the rhizosphere of *Oryza sativa* showing *in vitro* antagonism against *Bipolaris oryzae* (OP541600) by Sumi Paul, **Arka Pratim Chakraborty**, was presented (**Oral**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

133. Abstract entitled- Studies on morphological variabilities among the isolates of leaf pathogens isolated from diseased leaves of *Musa paradisiaca* from Uttar Dinajpur District by Debarati Das, Papan Chowhan, Tanmoy Das, Parimal Mandal, **Arka Pratim Chakraborty** was presented (**Poster**) during *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

134. Co-Chairperson in Technical Oral Session-I in *APMAS-2023 NBU International Seminar from 2-4 March, 2023*, organized by the Department of Botany, NBU.

135. Abstract entitled- Unraveling the *in vitro* Plant Growth Promoting (PGP) traits of one potent PGPR- *Bacillus pumilus* and its biocontrol potential against *Fusarium equiseti* causing yellow leaf disease of *Brassica juncea* by Shambhu Swarnakar, **Arka Pratim Chakraborty**, Papan Chowhan was presented (**Oral**) during 1st Botanical Congress 2023 organised by the Department of Botany, University of Calcutta, during 23-25th March, 2023.

Professional Memberships

Life Member

1. Asian PGPR Society (ASPS)
2. Association of Microbiologists of India (AMI)
3. Indian Mycological Society (IMS)
4. Indian Phytopathological Society (IPS)
5. National Academy of Molecular Biology and Genetics (NAMBAG)
6. National Academy of Molecular Biology and Genetics (NAMBAG),
Biswa Bangla Genome Center (BBGC), University of North Bengal

Member

1. Indian society of Mycology and Plant Pathology (ISMPP)
 2. North Bengal University Alumni Association (NBUEA- Reg. No.- S/IL/7445 of 2001-02)
w.e.f. 05.12.2019.
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Manuscript Reviewer for Scientific Journals

1. 2020: AS *REVIEWER* IN THE REVIEWER & EDITORIAL BOARD MEMBER COMMITTEE OF THE JOURNAL- "*INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS-IJCRT- ISSN- 2320-2882*"

NAME: **Dr. ARKA PRATIM CHAKRABORTY**

Reviewer Profile ID: 115845

Education qualification: Ph.D.

Designation: ASSISTANT PROFESSOR, RAIGANJ UNIVERSITY

Subject: Research Interest: Microbiology, Plant Pathology, Biological Science

IJCRT- REVIEWER since 31st MARCH, 2020 (www.ijcrt.org)

2. 2020: AS *REVIEWER* IN THE REVIEWER & EDITORIAL BOARD MEMBER COMMITTEE OF THE JOURNAL- "*INTERNATIONAL JOURNAL OF ENGINEERING DEVELOPMENT AND RESEARCH-IJEDR- ISSN- 2321-9939*"

Reviewer Profile ID: 115845

IJEDR- REVIEWER since 31st MARCH, 2020 (www.ijedr.org)

3. 2020: AS *REVIEWER* IN THE REVIEWER & EDITORIAL BOARD MEMBER COMMITTEE OF THE JOURNAL- "*INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS-IJRAR-E- ISSN- 2348-1269; P-ISSN-2349-5138*"

Reviewer Profile ID: 115845

IJRAR- REVIEWER since 31st MARCH, 2020 (www.ijrar.org)

4. 2020: AS *REVIEWER* IN THE JOURNAL- *INTERNATIONAL JOURNAL OF TEA SCIENCE (IJTS)- JOURNAL ACRONYM (ISSN): IJTS (0972-544X)- <http://teascience.in/index.php/ijts>*

5. 2020, 2021, 2022: AS *REVIEWER* IN THE JOURNAL- *ARCHIVES OF PHYTOPATHOLOGY AND PLANT PROTECTION- TAYLOR & FRANCIS GROUP-Print ISSN: 0323-5408 Online ISSN: 1477-2906.*

6. 2020, 2021: AS *REVIEWER* IN THE JOURNAL-*JOURNAL OF TROPICAL LIFE SCIENCE- UGC-CARE list journal- E-ISSN:2527-4376, ISSN: 2087-5517.*

7. 11/01/2021-11/01/2029: AS *REVIEWER* IN THE JOURNAL- *Advances in Zoology and Botany- UGC-CARE list journal- Horizon Research Publishing (USA)- ISSN-2331-5083.*

8. 2022- AS *REVIEWER* IN JOURNAL OF PLANT GROWTH REGULATION
SPRINGER JOURNAL Electronic ISSN 1435-8107; Impact factor: 4.640

Editor in magazine Agriculture & Food: e-Newsletter

1. As an editor in magazine Agriculture & Food: e-Newsletter from 03.09.2020 to 03.09.2022.

Agriculture & Food: e-Newsletter

www.agrifoodmagazine.co.in

ISSN: 2581 8317

- *Article published in online magazine Agriculture & Food: e-Newsletter- Volume 2 Issue 10, October 2020- Microbial Induced Calcite Precipitation (MICP) and its Application in Self-Healing Concrete- Article ID: 32056.*
- **Book Review of Horror, Loss & Hope: The Emperor of All Maladies Article ID: 12116; Volume 3 - Issue 10, October 2021.**

❖ **2021- Editorial Board member of the journal- International journal of Botany Studies (Web of Science)- ISSN: 2455-541X**

❖ **2021- Editorial Board member of the journal- International Research Journal of Plant Science- ISSN-2141-5447, UGC CARE LISTED**

2. Science

REPORTER

Vol. 58 No. 5 May 2021 ISSN: 2582-6492 (Online) ISSN 0036-8512 (Print)

National Institute of Science Communication and Information Resources (NISCAIR)

Council of Scientific & Industrial Research (CSIR)

Article published in online magazine- May issue 58(05): 44-46, 2021

Microgreens: Food for the Future

Sourav Dey & Arka Pratim Chakraborty

Editorial Advisory Member

1. As one of the Editorial Advisory Member in the UGC-CARE list journal- *Journal of Advanced Scientific Research* (ISSN- 0976-9595) under *ScienSage* publishing house.



2. EDITORIAL MEMBER IN

Kripa-Drishti Publications

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Email: editor@kdpublications.in

Web: <https://www.kdpublications.in>

Workshops attended (2006-2024)

1. A two day training workshop on cultivation of Medicinal Plants jointly organised by the Department of Adult, Continuing Education and Department of Botany, NBU.
2. **WORKSHOP-National workshop on Bioinformatics held from 18- 20th January, 2008**, Bioinformatics Facility, Department of Botany, North Bengal University.
3. **WORKSHOP-UGC sponsored Research Scholar's Training from 30-06-2011 to 01-07-2011**, North Bengal University.
4. One day user awareness programme on "*Access to E-resources under N-LIST Programme*", organized by University Library, NBU in collaboration with the INFLIBNET Centre, Ahmedabad (An Inter-University Centre of UGC) held on **10th February, 2012** at University of North Bengal.
5. One day workshop on "*Cultivation and post-harvest processing of edible mushrooms*", organised by the Department of Botany, NBU in collaboration with Uttar Banga Krishi Viswavidyalaya, Coochbehar under the project entitled "*Establishment of rural bioresource complex in North Bengal*" on **December 29, 2014**.
6. Three days workshop on "*Exploitation of Plant and Microbial resources of North Bengal* ", organised by the Department of Botany, NBU during **December 14-16, 2015**.
7. One day workshop entitled **PGPRs for sustainable crop productivity** organized by the Indian Phytopathological Society in the 6th International Conference on Plant, pathogens and People with the mission Challenges in Plant Pathology to benefit humankind, held at NASC Complex, New Delhi on **February 25, 2016**.
8. One day workshop cum seminar on "*Bioresource Utilization*" organized by Department of Botany, NBU in collaboration with Uttar Banga Krishi Viswavidyalaya, Coochbehar under the project entitled "*Establishment of rural bioresource complex in North Bengal*" on **September 05, 2016**.
9. Attended and as joint organizing secretary organized "**ONE DAY WORKSHOP CUM HANDS ON TRAINING ON BIOINFORMATICS**" at the premises of Gyan Jyoti College on **September 28, 2018** in **joint collaboration with the Department of Botany, Gyan Jyoti College and NBU-Bioinformatics Centre, NBU, Siliguri**.
10. Participated in **ONE DAY SEMINAR CUM WORKSHOP ON "EXPLORING THE HISTORY OF DEVELOPMENT OF INDIAN SCIENCE IN THE LATE COLONIAL ERA"**, held on **September 16, 2019** in **joint collaboration with Gyan Jyoti College and North Bengal Alumni Association (NBAAA), a registered society bearing Reg. No.- (S/IL/7445 of 2001-02)**.
11. Participated in **ONE DAY WEB-BASED WORKSHOP ON "QUALITATIVE RESEARCH AND ACADEMIC WRITING"**- QRAW- SERIES-1; held on **27.07.2020**; organized by the **Department of Library & Information Science, Manipur University, Canchipur, India**.
12. Participated in the **THREE DAY NATIONAL LEVEL e-WORKSHOP on "MOLECULAR VISUALIZATION AND MODELING USING PYTHON PROGRAMMING"** held from **10th to 12th August, 2020**; jointly organized by the **Departments of Physics, Microbiology & Zoology, Maulana Azad College (DBT Star College Programme), Kolkata**.

13. Participated in Emerald Publishing’s workshop on “Accessing indexed journals for quality research” on 12th August, 2020; conducted by Annamalai University, Tamil Nadu in association with Emerald Publishing, India.

14. Participated in **ONLINE QUIZ CELEBRATING INDIAN INDEPENDENCE DAY (15th August, 2020)**; jointly organized by the All NSS Units and IQAC, Maynaguri College, University of North Bengal.

15. Participated in **ONLINE QUIZ CELEBRATING INDIAN INDEPENDENCE DAY (15th August, 2020)** on “People & their art, culture & heritage”; organized by the All NSS Units, Bangabasi Morning College, Kolkata. (Certificate Id- A1PN9A-CE000351).

16. Participated in **One Day Orientation Programme on NAAC & CAS on 23.08.2020**; organized by IQAC, Malda College, Malda.

17. Participated in the online International Lecture Series organized by IQAC and Department of Botany, Government General Degree College, Singur from 4th August, 2020 to 31st August, 2020.

18. Participated in awareness campaign on office administration and maintenance of records following the Standard Operating Procedure (SOP) for Higher Education Institutes (HEIs), on 25.01.2024, organized by the committee for special campaign 3.0. Swachhata hi Sewa and mainstreaming mission life, Raiganj University.

19. Participated in two day’s workshop on 29th and 30th January, 2024 on National Education Policy- 2020 and development of curriculum framework at Higher Educational Institutions; jointly organized by the Committee for special campaign 3.0, Swachhata hi Sewa and mainstreaming of mission of life in assistance with IQAC, Raiganj University, Uttar Dinajpur, West Bengal.

Academic Staff College Orientation/ Refresher Course attended during the year 2022

Name of the Course/Summer School	Place	Duration	Sponsoring Agency
Faculty Induction Program (FIP-09) at NBU-HRDC	UGC-HUMAN RESOURCE DEVELOPMENT CENTRE UNIVERSITY OF NORTH BENGAL RAJA RAMMOHUNPUR, DARJEELING	30 days 18.07.2022 To 18.08.2022	UGC AND NBU HRDC CENTRE
NEP-2020 at NBU-HRDC ONE DAY WEBINAR ON 12.09.2022 FROM 2.30 PM TO 4 PM THROUGH GOOGLE MEET	UGC-HUMAN RESOURCE DEVELOPMENT CENTRE UNIVERSITY OF NORTH BENGAL RAJA RAMMOHUNPUR, DARJEELING	12.09.2022 FROM 2.30 PM TO 4 PM Virtual Mode	UGC AND NBU HRDC CENTRE and HRDC CENTRE, CALCUTTA UNIVERSITY

Refresher Course (RC) in Emerging Dimensions in Biological Sciences at NBU MMTTC- UGCHRDC	NBU MMTTC-UGCHRDC UGC-HUMAN RESOURCE DEVELOPMENT CENTRE UNIVERSITY OF NORTH BENGAL RAJA RAMMOHUNPUR, DARJEELING	15 days 24.11.2023 to 08.12.2023	UGC AND NBU MMTTC-UGCHRDC Centre
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