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Previous studies have indicated that microorganisms can alter the behavior of their insect hosts and act as fundamental drivers of host evolution by influencing diverse aspects of host biology viz; mating behavior and thereby restructuring the host population dynamics. With the growing notion that from a holo genomic point of view, the host genome should be considered together with the genomes of its symbiotic microbiota. Importance of microbial ecology study with advanced sequencing techniques is opening up newer frontiers in science and understanding concerted role of these microbes in modelling everything from biogeochemical processes to health care is gaining momentum. My research activities involve in analyzing microbiome community data to understand underlying patterns and their role in host physiology which in turn confer host fitness.

**Area of interest**

Silkworm Gut microbiome, Bacterial genomics, Next generation sequencing.

**Professional Experience**

- ✓ As Scientist-B, Central Muga Eri Research & Training Institute (CMER&TI), Central Silk Board, Lahdoigarh, Jorhat, Assam India from November 2015 till present.
- ✓ As CSIR Senior Research fellow from April 2013 - October 2015 at the Biotechnology Division of North East Institute of Science and Technology (formerly Regional Research Laboratory), Council of Scientific and Industrial Research, Jorhat 785 006, Assam.
- ✓ As Junior Project fellow/Senior Project fellow from 31st March 2010 till 31st March 2013 - in an ICAR funded project entitled "Application of microorganisms in Agriculture and Allied sector-AMASS" at the Biotechnology Division of North East Institute of Science and Technology (formerly Regional Research Laboratory), Council of Scientific and Industrial Research, Jorhat 785 006, Assam.

**Educational Qualification:**

- ✓ Ph.D (Biotechnology) Gauhati University. Thesis work carried out at CSIR-NEIST, Jorhat, India. (Pursuing)
- ✓ Post-graduation (M.Sc) from Bangalore University, Bangalore India (2009).
- ✓ Graduation (B.Sc) from Bangalore University, Bangalore India (2007)

**Awards and achievements:**

- ✓ **CSIR-SRF** scholarship (April 2013-April 2016)
- ✓ **Graduate aptitude test in Engineering (GATE 2011) Category-Biotechnology**.
- ✓ **CSIR National EligibilityTest (NET)-for lecturership (LS)** DECEMBER 2011, Subject-Life science
- ✓ **CSIR National EligibilityTest (NET)-for lecturership (LS)** JUNE 2011, Subject-Life science.

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**Research papers/ Book chapters:**

- ✓ Gohain, Anwesha; Gogoi, Animesh; **Debnath, Rajal**; Yadav, Archana; Singh, Bhim; Gupta, Vijai; Sharma, Rajeev; Saikia, Ratul (2015). Antimicrobial biosynthetic potential and genetic diversity of endophytic actinomycetes associated with medicinal plants. ***FEMS Microbiology Letters*** (doi: 10.1093/femsle/fnv158, Accepted on 01/09/2015)
- ✓ Rupak K. Sarma, Animesh Gogoi, Budheswar Dehury, **Rajal Debnath**, Tarun C. Bora, Ratul Saikia (2014). Community Profiling of Culturable Fluorescent Pseudomonads in the Rhizosphere of Green Gram (*Vigna radiata* L.). ***PLOS one.*** 9(10):e108378
- ✓ **Rajal Debnath**, Ratul Saikia, Rupak K. Sarma, Archana Yadav, Tarun C. Bora, Pratap J. Handique (2013). Psychrotolerant antifungal Streptomyces isolated from Tawang, India and the shift in chitinase gene family. ***Extremophiles.*** 17(6):1045-59.
- ✓ Rupak K. Sarma, **Rajal Debnath**, Archana Yadav, Akhil R Baruah, Pratap J Handique, Ratul Saikia (2014). Rhizosphere Engineering of Crop Plants by Bacterial ACC-deaminase Under Water Stress. In: Singh PD, Singh HB, Eds., **Trends in Soil Microbial ecology** (ISBN: 1-626990-36-0). Studium press LLC, Houston, U.S.A, pp 351-365
- ✓ **Rajal Debnath**, Rupak K. Sarma, Ratul Saikia, Archana Yadav and Tarun C. Bora (2013). Metagenomics: A Hunting Expedition in Microbial Diversity. In: Gaur RK, Gautam HK, Eds., **Molecular Biology of Bacteria** (ISBN: 978-1-62618-189-2), Nova Science Publishers, Inc. pp 19-30
- ✓ Rupak K. Sarma, **Rajal Debnath**, Ratul Saikia*, Pratap J.Handique, Tarun C Bora (2012). Phylogenetic analysis of alkaline protease producing fluorescent pseudomonads associated with green gram (Vigna radiate L.) rhizosphere. ***Folia Microbiologica***. 57(2):129-37.
- ✓ Madhumita Talukdar, Aparajita Duarah, Shruti Talukdar, Manorama Bura Gohain, **Rajal Debnath**, Archana Yadav, Dhruva K. Jha, Tarun C. Bora (2012). Bioprospecting Micromonospora from Kaziranga National Park of India and their anti-infective potential. ***World J Microbiol Biotechnol***. 28(8):2703-12.
- ✓ **R. Debnath**, R.K. Sarma, R. Saikia, T.C. Bora (2010). Microbial diversity and bioprospecting. National Seminar on Medicinal & Microbe Diversity & their Pharmaceuticals. 19-21 Dec. 2010, Tezpur University, Tezpur, India. Pp-27-33. (full paper published in souvenir)
- ✓ Chandan Tamuly, Moushumi Hazarika, **Rajal Debnath,** Ratul Saikia, Manobjyoti Bordoloi, Jayanta Bora, Manash R. Das (2013). Effect of CTAB in biosynthesis of Au-nanoparticles using Gymnocladus assamicus and its biological evaluation. ***Materials Letters***. 113(15):103-106.
- ✓ R. Saikia, Rupak K. Sarma, **Rajal Debnath**, Tarun C. Bora (2012) Trends in bacterial diversity study and its prospects. ***Science & Culture***. 77, Nos. 11-12: 451-455

**Presentations in conferences attended:**

- ✓ **Rajal Debnath**, Rupak K Sarma, Ratul Saikia*, Archana Yadav, Tarun C Bora (2012)- Genetic diversity of cryotolerant antimicrobial Streptomyces isolated from West Kameng District of Arunachal Pradesh, India. National Conference on Biology & Bioinformatics of Economically

Important Plant & Microbes (BBCon2012), University of North Bengal, Feb 17-19, 2012, Pp. 22. (Invited Paper).

- ✓ Rupak K Sarma, **Rajal Debnath**, Ratul Saikia*, Pratap Handique, Tarun C Bora, Archana Yadav (2012). Mining of ACC deaminase producing fluorescence pseudomonads from green gram (Vigna radiata L.) rhizosphere. 18th International Conference (Post ISCBC) Perspective and Challenge in Chemical and biological Sciences: Innovation Cross Road. 28th -30th Jan., 2012, Institute of Advanced Study in Science & Technology (DST), Guwahati, Assam, BPP-73 (Paper No. 287); Pp-269.
- ✓ **Rajal Debnath**, Rupak K Sarma, Ratul Saikia*, Archana Yadav, Tarun C Bora (2012). Molecular phylogeny and detection of chitinase genes in Streptomyces isolated from tea rhizosphere. 18th International Conference (Post ISCBC) Perspective and Challenge in Chemical and biological Sciences: Innovation Cross Road. 28th -30th Jan., 2012, Institute of Advanced Study in Science & Technology (DST), Guwahati, Assam. OL-6, (No. 275), Pp-46.
- ✓ Rupak K. Sarma, **Rajal Debnath**, Ratul Saikia*, Pratap J Hndique, Tarun C Bora (2011).DNA fingerprinting of fluorescent pseudomonads associated with rhizospheric soil of green gram and their role in plant growth promotion under water stress. National Seminar on Biochemical and Biotechnological Research Approaches for Bio-resource Management of North East India towards Sustainable Rural Development. Sponsored by DBT, Govt. of India, 11-12 Nov./2011, Pp. 37; BN College of Agriculture, AAU, Biswanath Chariali, Sonitpur, Assam.
- ✓ **R. Debnath**, R. K. Sarma, T. C. Bora, R. Saikia* (2010). Genetic diversity of antagonistically potential Streptomyces spp. Isolated from Nambor Reserve Forest of Assam, India. First Indian Biodiversity Congress (IBC 2010) organized by CISSA and Kerala University, Thiruvananthapuram from 27th to 31st December 2010, Pp 50.
- ✓ R. K. Sarma, **R. Debnath**, R. Saikia*, T. C. Bora (2010).Exploration of Genetic and Functional diversity of Fluorescent Pseudomonads isolated from Kaziranga National Park, Assam, India. First Indian Biodiversity Congress (IBC 2010), organized by CISSA and Kerala University, Thiruvananthapuram from 27th to 31st December 2010, Pp. 65.

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**Workshop**

- ✓ Workshop on "**Bioinformatics for Gene Discovery**" conducted by University of Aberdeen, Scotland & Assam Agriculture University (AAU) (Department of Biotechnology, Govt. of India funded) from 16$^{th}$ to 20$^{th}$ February, 2015.
- ✓ Training course on "**Gene cloning protein biochemistry, Structural Biology & Bioinformatics**" organized by DBT (Department of Biotechnology, Govt. of India), Advanced Center for Treatment, Research & Education in Cancer (ACTREC), Mumbai, India from 13$^{th}$ to 24$^{th}$ July 2015.

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