

CURRICULUM VITAE



NAME – Dr. PANKAJ LOSAN SHARMA
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EDUCATIONAL DETAILS:

- Completed Ph. D. from the Department of Molecular Biology and Biotechnology, Tezpur University in the area of Plant-Microbe Interaction and bio-control of bacterial wilt disease
- **Thesis title: “A study on bacteria isolated from tomato seedlings and their effect against *Ralstonia solanacearum* pathogenicity.”**

Examination Passed	Institute/Board/University	Year	Percent/CGPA/ Division/Class
Ph.D.	Tezpur university	2023	NA
M.Sc. (Molecular Biology and Biotechnology)	Tezpur University	2013	7.94 (CGPA)
B.Sc. (Biotechnology)	Sikkim Manipal University (Central IT College, Ghy)	2010	78.83% 1 st Div.
Class XII th	A.H.S.E.C (D. K. College)	2007	56% 2 nd Div.
Class X th	S.E.B.A (R.K.C. HighSchool)	2005	66.5% 1 st Div.

RESEARCH EXPERIENCE:

During my Ph.D. tenure I got opportunity to work in the research area of molecular plant-microbe interactions.

The lab works on a plant pathogenic bacterium called *Ralstonia solanacearum*, which causes lethal bacterial wilt disease in many plants including economically important crops like tomato, brinjal, chili, potato etc.

The lab isolated the bacterium from local area of Tezpur and has developed two methods named root inoculation and leaf clip inoculation to study its pathogenicity in seedlings stages of tomato and brinjal. The seedlings that are used for pathogenicity assays are grown in gnotobiotic condition in the absence of soil. Also the infection process of the seedlings is done in hydroponic environment.

I was curious to find if the six to seven days seedlings carry different bacteria and if present what is their role inside the host. I observed that the seedlings carry different bacteria and five of them were found to be antagonistic to *R. solanacearum* (anti-RS) in vitro. I further checked the anti-RS isolates for their efficacy in controlling the disease caused by RS in tomato and brinjal seedlings by co-inoculating them individually with RS by root and leaf inoculation method. I found that all the isolates could control the disease in seedlings stage. Also I found that one anti-RS isolate *Pseudomonas putida* N4T (N4T) could protect grown up tomato plants in a greenhouse study. To prove that N4T is an endophyte, I tagged it with GFP and GUS and inoculated in tomato and brinjal seedlings and also in grown up tomato plants and observe the bacterium could colonizes tomato seedlings and grown up plants also in brinjal seedlings. I further sequenced and annotated the N4T genome and performed comparative genomics with related pathogenic and non-pathogenic *Pseudomonas* species. During this study I got an exposure to different bioinformatics tool and protocols. In one of my work I could create insertion mutation in *gacA* gene of N4T and studied the role of *gacA* gene, a part of two component regulatory system in N4T, in antibacterial activity.

PROFESSIONAL EXPERIENCE:

- Worked as a Junior Research Fellow (JRF) and Senior Research Fellow in a DBT-U-EXCEL, NER project entitled “ **sequencing genomes of some bacteria that invade/resides in tomato plants.**” from March, 2014 to June, 2017 in the Dept. of Molecular Biology and

Biotechnology, Tezpur University.

- Worked as a Junior Research Fellow (JRF) in a DBT funded project entitled “**Integrating genome scale metabolic analysis of model plant pathogen *Ralstonia solanacearum* with RNAseq and fluxomics**” from 2nd August to 31st December, 2017 in the Dept. of Computer Science & Engineering, Tezpur University.
- Worked as Project Assistant in an ICMR funded project entitled “**Integrated Information System to Interpret, Integrate and mitigation of cardio-metabolic health care in Northeast tribes of Assam and Mizoram**” in NIPER, Ghy from 1st January 2020 to 18th September 2020.

FIP/RC/FDP:

- Completed 14 days refresher course (IDRC) on “**Curriculum and Pedagogy**” conducted by Teaching Learning Centre (MMTTC), Tezpur University from 7th June to 20th June.
- Continuing a 30 days faculty induction program conducted by MMTTC, JNU

Projects/Grants:

Selected for the second stage of **Tomato Grand Challenge** conducted by Department of Consumers affairs, Govt. of India, and Department of Education Innovation Cell. The evaluation for the final round is still on process.

PUBLICATION:

1. Singh, N., Phukan, T., **Sharma, P.L.**, Kabyashree, K., Barman, A., Kumar, R., Sonti, R., Genin, S., and Ray, S. An Innovative Root Inoculation Method to Study *Ralstonia solanacearum* Pathogenicity in Tomato Seedlings. *Phytopathology*, 108(4): 436-442, 2018.
2. Phukan, T., Kabyashree, K., Singh, R., **Sharma, P.L.**, Singh, N., Barman, A., Jena, B., Ray, S.K. *Ralstonia solanacearum* virulence in eggplant seedlings by the leaf-clip inoculation. *Phytopathology Research*, 23(1).
3. Dowarah, B., Agarwal, H., Krishnatreya, D., **Sharma, P.L.**, Kalita, N., and Agarwala, N. Evaluation of seed associated endophytic bacteria from tolerant chilli cv. Firingi Jolokia for their biocontrol potential against bacterial wilt disease. *Microbiological Research*, <https://doi.org/10.1016/j.micres.2021.126751>

4. **Sharma P.L.**, Singh N., Agarwala N., Mandal M. and Ray S.K. Genome sequence analysis and comparative phylogenomics of a potential biocontrol agent *Pseudomonas putida* N4T against a bacterial phytopathogen *Ralstonia solanacearum* F1C1. *Microbiological Research* (Under Communication)

Book Chapter:

Konwarh, R., and **Sharma, P.L.** “Nanosensor platforms for surveillance of plant pathogens and phytometabolites/analytes vis-à-vis plant health status”. In Book “Nanomaterials for Agriculture and forestry applications”, *Elsevier*, 2020.

CONFERENCES:

- **Sharma, P.L.**, et al. Isolation and characterization of bacteria from tomato seedlings exhibiting antagonistic activity against *Ralstonia solanacearum*, a bacterial pathogen of tomato. TIMR, ADNAT, 4th and 5th Feb, 2018, Tezpur University, Assam
- **Sharma, P. L.**, et al. Effect of a bacterial endophyte isolated from tomato seedlings in control of bacterial wilt disease caused by *Ralstonia solanacearum*. AMI 2017, BBAU, Lucknow. Page no. 292
- **Sharma, P. L.**, et al. Tomato seedlings isolated bacteria exhibit antagonistic activity towards a bacterial phytopathogen, *Ralstonia solanacearum*, causal agent of bacterial wilt. Host-Microbe Interactions, IASST, 1-2 Feb, 2019
- **Sharma, P.L.**, et al. *Pseudomonas puida* N4T isolated from tomato seedlings shows bio-control activity against phytopathogen *Ralstonia solanacearum*, causal agent of bacterial wilt. ABC-01, International conference on plant science, GU, 4-6 Feb, 2019
- **Sharma, P.L.**, et al. Evaluation of antagonistic activity of bacterial endophytes isolated from tomato seedlings against tomato pathogen *Ralstonia solanacearum* in seedling condition. ISPBCI, 21-22 January, 2017, IIT, Guwahati. Page No.
- **Sharma, P.L.**, et al. Protection against *R. solanacearum* infection in tomato seedling using an endophyte isolated from tomato seedlings. IBWS, 3-7 July, 2016, Toulouse, France. Page No. 51
- **Sharma, P.L.**, et al. Tomato seedling endophytic bacteria inhibiting the growth of *Ralstonia solanacearum*, a bacterial pathogen of tomato plant. MCB 75, IISc, Bangalore. Page No. 72

PROJECT & TRAINING:

- M.Sc. Project work on “**Computational studies of intrinsically disordered region of proteins: SRP19 kDa of Human and pectate lyase of *Bacillus* sp.**” Under the guidance of **Dr. Anupam Nath Jha**, Department of Molecular Biology and Biotechnology, Tezpur University.

ACHIEVEMENTS

- **ICAR NET 2018**(61.56%),**GATE 2013** (348 score , 93.6 percentile) , **SLET 2015**(18th Rank, Life-Science)

OTHER QUALIFICATION

EXTRA - CURRICULAR ACTIVITIES / HOBBIES: Singing, playing cricket, travelling

PERSONAL DETAIL:

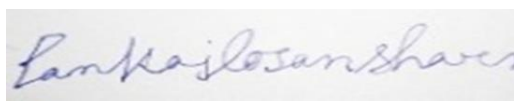
Date of Birth: 25th Dec, 1989
Gender: Male
Marital Status: Married, Nationality: Indian
Languages Known: *Speak:* English, Assamese, and Hindi *Write:* English, Assamese, Hindi

I hereby declare that the particulars furnished above are true to the best of my knowledge.

Place: Tezpur University, Assam

Date: 13.08.2022

Yours Sincerely



Pankaj Losan Sharma