Parul Sharma

✉ parulsharma@vt.edu   🐦 @parul142   🌐 parul-sharma.github.io   🎓 parul sharma

in parul-sharma-77152672   github.com/parul-sharma

Education

2018 – present   **Ph.D.** Bioinformatics
Virginia Tech Blacksburg, USA
Thesis: *Improving pathogen identification and characterization using long- read sequencing methods*

2015 – 2017   **M.Tech.** Computational Biology
Indraprastha Institute of Information Technology Delhi, India
Thesis: *Clinical Genomics and Personalized Medicine initiatives for Arabian Countries*

2011 – 2015   **B.Tech.** Biotechnology
Jaypee Institute of Information Technology Noida, India
Thesis: *Studying the effects of bacteriocin-like-inhibitory substances on bacterial biofilms*

Research Experience

2018 – present   **Graduate Research Assistant,** Virginia Tech Blacksburg, USA.
Project - Improving pathogen identification and characterization using long- read sequencing methods
Advisor: Dr Boris Vinatzer

Aug'17 – Dec'17   **Graduate Research Assistant,** Indraprastha Institute of Information Technology Delhi, India.
Project - Post mitochondrial apoptotic pathway study using Monte Carlo Modelling
Advisor: Dr Subhadip Raychaudhuri

May'16 – Dec'17   **Thesis Student,** Institute for Genomics and Integrative Biology Delhi, India.
Project - Clinical Genomics and Personalized Medicine initiatives for Arabian Countries
Advisor: Dr Vinod Scaria

May'14 – Aug'14   **Intern,** Centre for Genetic Manipulation of Crop Plants Delhi, India.
Project - Analyzing the protein content in different *Brassica* species for improving the quality of mustard seeds
Advisor: Dr Yaspal Singh Sodhi

Dec'13 – Jan'14   **Intern,** Rajiv Gandhi Cancer Hospital And Research Center Delhi, India.
Learning to perform pathological testing in Biochemistry, Microbiology, and Hematology departments

Teaching Experience

Spring 2017   **Probability and Statistics** Undergraduate Level
Graduate Teaching Assistant, IIIT-Delhi
Responsibilities: Weekly tutorials, Grading assignments, Regular Office hours

Fall 2016   **Introduction to Mathematical Biology** Graduate Level
Graduate Teaching Assistant, IIIT-Delhi
Responsibilities: Designing homework assignments, Grading, Regular Office hours

Teaching Experience (continued)

Spring 2016   🔖 **Critical Thinking** Undergraduate Level
Graduate Teaching Assistant, IIIT-Delhi
Responsibilities: Preparing lecture material, Facilitating classroom discussions, Grading, Regular Office hours

Publications

1   Mechan Llontop, M. E., Tian, L., **Sharma**, **P.**, Heflin, L., Bernal Galeano, V. A., Haak, D., … Vinatzer, B. (2021). Experimental evidence pointing to rain as a reservoir of tomato phyllosphere microbiota. *Phytobiomes Journal*, (ja).

2   **Sharma**, **P.**, Jain, A., & Scaria, V. (2021). Genetic landscape of rare autoinflammatory disease variants in qatar and middle eastern populations through the integration of whole-genome and exome datasets. *Frontiers in Genetics-Applied Genetic Epidemiology*. 🔗 doi:10.3389/fgene.2021.631340

3   Vatsyayan*, A., **Sharma, P.***, Gupta, S., Sandhu, S., Venu, S. L., Sharma, V., … Rajab, A. et al. (2021). Dalia-a comprehensive resource of disease alleles in arab population. *PloS one*, *16*(1), e0244567. 🔗 doi:10.1371/journal.pone.0244567

4   Mechan Llontop*, M. E., **Sharma, P.***, Aguilera Flores*, M., Yang, S., Pollok, J., Tian, L., … Li, S. et al. (2020). Strain-level identification of bacterial tomato pathogens directly from metagenomic sequences. *Phytopathology*, *110*(4), 768–779. 🔗 doi:10.1094/PHYTO-09-19-0351-R

5   Roman-Reyna, V., Truchon, A., **Sharma**, **P.**, Hand, F. P., Mazloom, R., Vinatzer, B. A., … Allen, C. (2020). Genome resource: Ralstonia solanacearum phylotype ii sequevar 1 (race 3 biovar 2) strain uw848 from the 2020 us geranium introduction. *Plant disease*, PDIS06201269A. 🔗 doi:10.1094/PDIS-06-20-1269-A

6   Sharma, G., Sharma, S., **Sharma**, **P.**, Chandola, D., Dang, S., Gupta, S., & Gabrani, R. (2016). Escherichia coli biofilm: Development and therapeutic strategies. *Journal of applied microbiology*, *121*(2), 309–319. 🔗 doi:10.1111/jam.13078

7   Sivadas, A., **Sharma**, **P.**, & Scaria, V. (2016). Landscape of warfarin and clopidogrel pharmacogenetic variants in qatari population from whole exome datasets. *Pharmacogenomics*, *17*(17), 1891–1901. 🔗 doi:10.2217/pgs-2016-0130

8   Dangayach, S., **Sharma**, **P.**, Singhai, P., & Gupta, N. (2014). Microbial removal of arsenic: Mechanisms and applications. *As. J. Multidis. Stud*, *2*, 159–170. Retrieved from 🔗 https://parul-sharma.github.io/parul-sharma.github.io/793-2281-1-PB.pdf

Additional Projects

2019 – 2020   🔖 **Verification of a new species of Pseudomonas**
Advisor: Dr Boris Vinatzer & Dr. Carollee Bull
Verifying the identification and taxonomic classification of a new *Pseudomonas* species isolated from wheat in Brazil using different genomic tools.
– phylogenomics, taxonomy, new species, core-genome, R, python

2019 – 2019   🔖 **Multi-omics Pipeline**
Advisor: Dr Song Li
MoP is a pipeline that integrates metagenomics, metatranscriptomics and metaproteomics data and uses all datasets to obtain a broader set of useful and insightful information from the samples.
– metagenomics, clinical data, IBD study, pipeline tool, shell scripting, python

Additional Projects (continued)

2016 – 2017   🔖 **Online tool for reporting of Incidental findings**
Advisor: Dr Vinod Scaria
Developing a web-based tool that checks if a sequencing data has variants falling on any of the ACMG provided minimum list of 59 genes using a manually curated dataset.
– Python, SQL, HTML, CSS

Computational Skills

Coding Languages   🔖   Python, R, shell-scripting, C, C++, MATLAB, SQL, HTML, CSS, LaTeX

Worked on   🔖   Jupyter Notebook, R-studio, Matlab, Eclipse, PyCharm, High Performance computing (cloud/AWS)

Awards and Honors

2020   🔖 **1st prize for Oral Presentation**, American Phytopathological Society – Potomac Division Meeting.

🔖 **1st Prize for Flash Talk**, Graduate Student Association Research Symposium.

2019   🔖 **Best Poster**, School of Plant and Environmental Sciences Graduate Student Poster Showcase.

2015   🔖 **Complete Tuition Waiver for Master's degree**, Department of Biotechnology, India.

🔖 **Scholarship for qualifying the Graduate Aptitute Test in Engineering**, Ministry of Human Resource Development, Government of India.

Oral Presentations

🔖 Genome-based circum- scription of cool-virulent *Ralstonia solanacearum* strains in an attempt to improve their regulation, **Plant Health 2020**, *Online*.

🔖 Genome-based circumscription of cool-virulent *Ralstonia solanacearum* strains in an attempt to improve their regulation, **American Phytopathological Society Potomac Division Meeting**, *2020, Online*.

🔖 Strain-level identification of tomato pathogens from metagenomic sequences obtained with the ONT MinION **Graduate Student Association Research Symposium**, *2020, Online*.

🔖 Strain-level identification of tomato pathogens from metagenomic sequences obtained with the ONT MinION **Nanopore Community Meeting 2019**, *New York*.

🔖 Hi Alexa! What's wrong with my tomato plant?**Nutshell Games 2019**, *Virginia Tech*.

Poster Presentations

🔖 A comparative genomics investigation into cool-virulence in *Ralstonia solanacearum* to improve its phytosanitary regulation, **Plant Health 2021**, *Online*.

🔖 Classification of the *Ralstonia solanacearum* species complex based on population and comparative genomics, **World Microbe Forum**, *2021, Online*.

🔖 Strain-level identification of tomato pathogens from metagenomic sequences obtained with the ONT MinION, **School of Plant and Environmental Sciences Graduate Student Poster Showcase**, *2019, Virginia Tech, USA*.

🔖 Strain-level identification of tomato pathogens from metagenomic sequences obtained with the ONT MinION **Nanopore Community Meeting 2019**, *New York, USA*.

🔖 Pharmacogenetic variant analysis In Arab Populations from Exome Data, **Research Showcase**, *2017, Delhi-India*.

Poster Presentations (continued)

- Antimicrobial peptides as potential therapeutics against bacteria, **National Conference on "Recent Advances in Biological Sciences" organized by Society of young scientists**, *2014, Delhi-India*.

Volunteer and Outreach Activities

- Member of the Graduate Honor Society at Virginia Tech *2020-2021*.
- Served as a Judge for the Western Virginia Regional Science Fair 2020 at Hollins University *Mar 21, 2020*.
- Served as a Judge for the Roanoke County Science Fair 2020 at William Byrd Middle School *Feb 22, 2020*.
- Volunteer at Friendicos Dog Shelter in Delhi, India. *Mar, 2017*.
- Volunteer teacher for low-income schools in Delhi to encourage underprivileged kids towards STEM careers. Taught Math, Science and Computers to 7th Grade students through interactive learning to develop critical thinking. *2015-2016*