

Pallavi Shakya, MSc

Curriculum Vitae

Summary

Versatile and highly skilled researcher with interdisciplinary expertise in bioinformatics, genomics, nematology and plant pathology. Proficient in both computational and wet lab techniques, combining molecular biology, data science, and high-performance computing to address complex biological questions. Extensive experience working in collaborative, multidisciplinary research environments across multiple leading institutions.

Education

- 2021–present **PhD**, *Plant Pathology (Nematology)*, University of California Davis, Davis (The USA)
- 2018–2020 **Master of Science (MSc)**, *Plant Biotechnology*, Wageningen University, Wageningen (The Netherlands)
- 2012–2016 **Bachelor of Science (BSc)**, *Biotechnology*, SANN International College - Purbanchal University, Kathmandu (Nepal)

Experience

- 04/2024–
06/2024 **Disease Diagnosis Intern**, *Eskalen Lab*, PI: Dr. Akif Eskalen, Mentor: Dr. Marcelo Bustamante, University of California Davis, Davis, USA
- 01/2024–
03/2024 **Teaching Assistant for Climate Change Course (SAS25)**, Instructor: Prof. Dr. Arnold Bloom, University of California Davis, Davis, USA
- 09/2023–
12/2023 **Teaching Assistant for Animal Biology Course (ABI50A)**, Instructor: Prof. Dr. Robert Kimsey, University of California Davis, Davis, USA
- 01/2023 –
03/2022 **Teaching Assistant for Climate Change Course (SAS25)**, Instructor: Prof. Dr. Arnold Bloom, University of California Davis, Davis, USA
- 03/2020 –
09/2020 **Intern**, *Laboratory of Nematology*, PI: Dr. Mark Sterken, Mentor: Joris van Steenbrugge, Wageningen, MSc Thesis: Exploring the available transcriptome datasets of Potato Cyst Nematodes: *Globodera pallida* and *Globodera rostochiensis*
- 07/2019 –
02/2020 **Intern**, *Plant Physiology and Seed Lab*, PI: Prof. Dr. Leonie Bentsink, Wageningen, MSc Thesis: The role of stored RNA in seed dormancy and longevity
- 01/2018 –
06/2018 **Admin and Comms Officer**, *International Citizenship Service (ICS)*, Raleigh International, (Kathmandu, Nepal)
- 09/2017 –
12/2017 **Team leader in Livelihoods Project**, *International Citizenship Service (ICS)*, Raleigh International & Rural Awareness and Development Organization, (Kathmandu, Nepal)

Skills

Programming Languages R, Python, TensorFlow, Bash, Markdown, LaTeX

Computational Tools Unix/Linux systems, SLURM-based HPC clusters, version control (Git/Github), Conda, Docker, Snakemake

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| Bioinformatics | Genome assembly (PacBio HiFi, Oxford Nanopore, Hi-C, Illumina), Genome Annotation, Variant Calling (SNPs, Indels, Structural Variants), Differential Gene Expression Analysis (RNA-seq, TagSeq), Functional Annotation, Comparative Genomics, Orthology Analysis, Phylogenetic Analysis |
| Molecular Biology | DNA and RNA extraction, PCR, RT-PCR, Gel Electrophoresis, Primer Design, Pathogen Infection assays |
| Data Science | Unsupervised Learning (k-means clustering, Principal Component Analysis (PCA)); Supervised Learning including Linear and Logistic regressions; Enrichment analyses; Permutation-based testing |
| Language | English, Nepali, Hindi, Nepal Bhasa; Limited Proficiency in German (A1) and Dutch (A2) |

Honors & Awards

- 2024 **Mary Allen Travel Award** – University of California Davis, USA - **\$1500**
- 2023 **Bayer CropScience Student Travel Award** – Society of Nematologists Conference, USA - **\$600**
- 2023 **Jastro-Shields Research Award** – University of California Davis, USA - **\$2500**
- 2022 **Jastro-Shields Research Award** – University of California Davis, USA - **\$3000**
- 2018 **University Fund Wageningen (UFW) Fellowship** – Wageningen University, The Netherlands - **€38,600**
- 2018 **Anne van den Ban Fund Scholarship** – Wageningen University, The Netherlands - **€21,360**
- 2018 **HM Queen’s Scholarship** – Asian Institute of Technology, Thailand - **1,150,400 Baht; declined**
- 2017 **Second best poster presentation award** – Biotechnology Society Nepal and National Academy of Science and Technology - International DNA day 2017 (**Rs. 5000**)

Oral & Poster Presentations

- 05/2024 **Poster**, *A chromosome-scale genome assembly reveals novel chromosomal end repeats in a parasitic nematode*, The Biology of Genomes Conference, Cold Spring Harbor Laboratory, New York, USA
- 08/2023 **Oral**, *Unraveling the virulence mechanism of *Meloidogyne hapla* through genomics and functional genetics*, Society of Nematology Conference, Ohio State University, Ohio, USA
- 05/2022 **Oral**, *Meloidogyne hapla with improved assembly and genome annotation*, International Congress of Nematology, Antibes, France
- 04/2016 **Poster**, *Isolation of Polyhydroxybutyrate (PHB) Producing Bacteria, Optimization of Culture Conditions for PHB production, Extraction and Characterization of PHB*, National Academy of Science and Technology (National DNA Day), Kathmandu, Nepal

Publications

- 2025 A Chromosome-scale Genome Assembly of *Meloidogyne hapla* Reveals Localized Recombination Hotspots Enriched with Effector Proteins. **Shakya, P.**, Maulana, M. I., Danchin, E. G., Voogt, M. L., Ruitenbeek, S. J. S. van de, Gimeno, J., Taranto, A. P., Blundell, A. C., Despot-Slade, E., Meštrović, N., Mota, A. Z., Dai, D., Williamson, V. M., Sterken, M. G., & Siddique, S. *bioRxiv*. <https://doi.org/10.1101/2025.05.21.654606>

- 2019 Isolation of Polyhydroxybutyrate (PHB) Producing Bacteria, Optimization of Culture Conditions for PHB production, Extraction and Characterization of PHB
Thapa, C., **Shakya, P.**, Shrestha, R., Pal, S., & Manandhar, P.,
Nepal Journal of Biotechnology, Volume 6, No 1, Pages 62-68, January 2019,
10.3126/njb.v6i1.22339

Certifications

- 2021 **Machine Learning**, *Stanford University(Online)*, The USA
2017 **Cambridge English C1 Proficiency**, *British Council*, Kathmandu (Nepal)
2017 **German A1 Proficiency**, *Goethe Zentrum*, Kathmandu (Nepal)
2017 **Advanced Hands-On Molecular Training**, *Intrepid Nepal & Harvard Medical School*,
With focus on DNA Extraction / Real-time PCR / Introductory Bioinformatics (Data
Analysis and primer design) / Gel Electrophoresis, Kathmandu (Nepal)

Extracurricular Activity

- 2024 **Education and Outreach**, *Picnic Day*, University of California, Davis
Volunteer and Nematode collection representative
2023 **Plant Disease Ecology Faculty Search Committee**, Plant Pathology Department,
University of California, Davis
Graduate Student Representative
2022–2024 **Education and Outreach**, *Biodiversity Museum Day*, University of California, Davis
Volunteer and Nematode collection representative
2019 **6th Workshop on the Molecular Aspects of Seed Dormancy and Germination**,
International Society for Seed Science Conference, Volendam (The Netherlands)
Member of organizing committee
2017 **International Citizenship Service (ICS) – Water, Sanitation and Hygiene
Project**, *Raleigh International & Rural Awareness and Development Organization*, Mak-
wanpur (Nepal)
Volunteer
2014–2017 **Biotech Open Forum for Research and Development (BOFRD)**, Kathmandu
(Nepal)
Executive member
2012 **Dreamland Kindergarten**, Kathmandu (Nepal)
Volunteer Teacher
2011–2012 **Maha Manjushree Higher Secondary School**, Kathmandu (Nepal)
Volunteer Teacher