

DHRUV ADITYA SRIVASTAVA, Ph.D.

Interdisciplinary Scientist | Molecular Biology | Bioinformatics | AI & Machine Learning | Plant Microbe Interaction

Location: Pennsylvania, USA

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Profiles: [LinkedIn](#) | [Google Scholar](#)

PROFESSIONAL SUMMARY

An interdisciplinary scientist with over **12 years of international research experience** spanning molecular biology, microbiology, and plant science. Expert in bridging the gap between wet-lab experimentation and computational discovery, with specialized skills in **protein studies, RNA-seq, and Machine Learning**. Proven track record of leading scientific projects, mentoring researchers, and publishing in high-impact journals like *Nature Communications*.

CORE COMPETENCIES

Category	Technical Skills
Molecular Biology	Cloning (Golden Gate, Gateway), CRISPR/RNAi, qPCR, Protein Purification (E. coli), Western Blot
Data Science & AI	Python, R, Shell Scripting, Machine Learning, CNNs, NLP, WGCNA, QIIME
Microbiology	Plant-Microbe Interactions, Fungal Pathogens (<i>Botrytis</i>), Mycorrhizae, Rhizobium, Bio-level Safety 2
Analytical Tools	Confocal/Fluorescence Microscopy, Gas Chromatography, 13C Labeling, Maxquant (Proteomics)

RESEARCH EXPERIENCE

Post-Doctoral Researcher

The Pennsylvania State University | *October 2025 – Present*

- **Multi-Omics Integration:** Applied ML to integrate transcriptomic and metabolomic datasets, deciphering maize responses to AM fungal symbiosis.
- **Pathway Analysis:** Investigated transcriptome reprogramming under N and P stress, focusing on strigolactone biosynthesis pathways.

- **Predictive Modeling:** Trained Random Forests and Deep Neural Networks to correlate transporter gene upregulation with metabolite accumulation.
- **Systems Biology:** Utilized CCA and SNF to identify molecular "hubs" for breeding fertilizer-efficient maize varieties.

Post-Doctoral Researcher

University of Missouri, Columbia, MO | July 2022 – September 2025

- **Project Leadership:** Spearheaded three projects on RNA-seq techniques and drought stress analysis.
- **Nutrient Dynamics:** Conducted ¹³C labeling and carbon allocation studies to understand mycorrhizae-plant interactions.
- **Computational Analysis:** Utilized R and Shell scripting on university clusters for WGCNA co-expression network analysis.
- **Mentorship:** Supervised 2 graduate, 1 post-graduate, and 1 undergraduate student.

Post-Doctoral Researcher

The Hebrew University of Jerusalem, Israel | Oct 2019 – June 2022

- **Transcriptomics:** Led studies on fungal-plant-biocontrol interactions using RNAi silencing and gene knockouts.
- **Biochemistry:** Performed protein expression/purification from *E. coli* and conducted complex biochemical assays.

Post-Doctoral Researcher

Volcani Center, ARO, Israel | Jan 2018 – Oct 2019

- **Pathogenicity Studies:** Deciphered mechanisms of phytopathogenic fungi and oomycetes.
- **Microbiome Analysis:** Conducted sampling and bioinformatic analysis using QIIME and 18S RNA synthesis.

EDUCATION

- **Post Graduate Program in AI & Machine Learning** | *University of Texas at Austin* (2024)
- **Ph.D. in Plant Science in Agriculture** | *The Hebrew University of Jerusalem, Israel* (2018)
- **M.Tech in Biotechnology** | *IIT Guwahati, India* (2012)
- **B.Tech in Biotechnology** | *NIT Durgapur, India* (2010)

SELECTED AI & DATA SCIENCE PROJECTS

- **Stock Market Sentiment Analysis:** Built NLP pipelines using LLMs and Transformers for financial news.
- **Plant Seedling Classification:** Designed CNN models using TensorFlow/Keras to improve agricultural yields.
- **Customer Churn Prediction:** Developed neural network architectures to identify high-risk business churn.

KEY PUBLICATIONS (Total: 11+)

- **Nature Communications (2019):** MFS transporter from *Botrytis cinerea* provides tolerance to glucosinolate-breakdown products.
- **Plants (2021):** Secretion-based modes of action of biocontrol agents.
- **Fungal Genetics and Biology (2022):** BcHnm1 modulates conidial germination and virulence.

AWARDS & ACHIEVEMENTS

- **Postdoctoral Grant (2022):** Awarded \$1,500 for nutrient resource allocation research.
- **Conference Speaker:** Delivered 11 talks and presented 20 posters at international venues (USA, Europe, Israel).