# Kenneth Acosta, Ph.D.

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## EDUCATION

**Ph.D.** **Rutgers University, NJ, USA** **2018 – 2023**
Plant Biology, Track: Plant Pathology

**B.S.** **Rutgers University, NJ, USA** **2010 – 2013**
Biochemistry, *cum laude*

**A.A.** **Union County College, NJ, USA** **2007 – 2010**
Biology

## PROFESSIONAL EXPERIENCE

**Postdoctoral Associate** **2025 – Present**
*Department of Plant Biology - Rutgers University - NJ, USA*
Plant gall microbial ecology and metabolomics, botanical antimicrobials
Natural products, untargeted metabolomics, cheminformatics
Undergraduate research mentoring

**NCCIH T32 Postdoctoral Fellow** **2023 – 2025**
*Department of Plant Biology - Rutgers University - NJ, USA*
Training in botanical approaches to combat metabolic syndrome
Natural products, untargeted metabolomics, cheminformatics
Undergraduate research mentoring

**Laboratory Researcher** **2013 – 2023**
*Department of Plant Biology - Rutgers University - NJ, USA*
Duckweed biology and genomics, plant microbiome
Genomics, transcriptomics, metagenomics
Identified candidate strain for the biotechnology company *Green Onyx*
Undergraduate research mentoring

**Head Teaching Assistant** **2021 – 2023**
*Department of Life Sciences - Rutgers University - NJ, USA*
developed coursework for General Biology Laboratory (500-800 students)
- curation of lecture material, quizzes, assignments, and grading rubrics
- provided guidance and support for teaching assistants
- implementation of Canvas learning management system

**Teaching Assistant** **2019 – 2021**
*Department of Life Sciences - Rutgers University - NJ, USA*

facilitated General Biology Workshop (in-person) - 1 semester
facilitated General Biology Laboratory (in-person & virtual) - 3 semesters

**Facilities Assistant** **2017 – 2018**
*Department of Plant Biology - Rutgers University - NJ, USA*
oversaw daily operation and repair of autoclaves
managed dry ice, liquid nitrogen, and alcohol distribution
facilitated surplus pick-ups and equipment audits

**Laboratory Manager** **2015 – 2018**
*Department of Plant Biology - Rutgers University - NJ, USA*
ordered laboratory supplies and reagents
maintained laboratory equipment and machines
introduced online software to manage laboratory
- Google Calendars for equipment sign-up
- Quartzy for requesting and approving laboratory orders

**RDSC Manager** **2015 – 2018**
*Department of Plant Biology - Rutgers University - NJ, USA*
maintained the world's largest collection of duckweed with over 1000 strains
prepared and shipped domestic duckweed orders

**NSF IGERT Coordinator** **2015 – 2017**
*Department of Plant Biology - Rutgers University - NJ, USA*
Renewable and Sustainable Fuel Solutions NSF IGERT
coordinated trainee appointments and tuition reimbursements

**Field Research Assistant** **2012 – 2013**
*Department of Plant Biology - Rutgers University - NJ, USA*
assisted in field, greenhouse, and Dogwood fruit maintenance

**Undergraduate Researcher** **2012 – 2013**
*Department of Plant Biology - Rutgers University - NJ, USA*
Advisor: Dr. Eric Lam
Screened for high methionine strain using ethionine resistance and methionine *E. coli* biosensor
Identified candidate strain for the biotechnology company *Green Onyx*

## PUBLICATIONS

14. Mavlonazarova, S., **Acosta, K.**, Abzalimov, R., Satorov, S., and Dushenkov, V. (2026). Untargeted Metabolomics Reveals Organ-Specific and Extraction-Dependent Metabolite Profiles in Endemic Tajik Species *Ferula violacea* Korovin. *Plant Direct*, 10(3), e70123. https://doi.org/10.1002/pld3.70123.

13. Cho, E., **Acosta, K.**, Henkin, J., Abzalimov, R., and Raskin, I. (2026). Synergistic antifungal effects of botanical extracts against *Candida albicans*. *PloS one*, 21(1), p.e0340665. https://doi.org/10.1371/journal.pone.0340665

12. Kaz, A., Thirunavukkarasu, K., Almosd, L., Cho, E., Henkin, J., **Acosta, K.,** Abzalimov, R., and Raskin, I. (2025). Potent surface antimicrobial activity of hydrolyzable tannins from Aleppo oak galls. *Scientific Reports*, 16, 3088. https://doi.org/10.1038/s41598-025-33013-7

11. Ernst, E., Abramson, B., **Acosta, K.**, Hoang, P.T., Mateo-Elizalde, C., Schubert, V., Pasaribu, B., Albert, P.S., Hartwick, N., Colt, K., and Aylward, A. (2025). Duckweed genomes and epigenomes underlie triploid hybridization and clonal reproduction. *Current Biology*, 35(8), 1828-1847.

10. **Acosta, K.**, Sree, K.S., Okamoto, N., Koseki, K., Sorrels, S., Jahreis, G., Watanabe, F., Appenroth, K.J., and Lam, E. (2024). Source of Vitamin B12 in plants of the Lemnaceae family and its production by duckweed-associated bacteria. *Journal of Food Composition and Analysis*, 135, 106603.

9. Pasaribu, B., **Acosta, K.**, Aylward, A., Liang, Y., Abramson, B.W., Colt, K., Hartwick, N.T., Shanklin, J., Michael, T.P., and Lam, E. (2023). Genomics of turions from the Greater Duckweed reveal its pathways for dormancy and re-emergence strategy. *New Phytologist*, 10.1111/nph.18941.

8. **Acosta, K.**, Sorrels, S., Chrisler, W., Huang, W., Gilbert, S., Brinkman, T., Michael, T.P., Lebeis, S.L., and Lam, E. (2023). Optimization of Molecular Methods for Detecting Duckweed-Associated Bacteria. *Plants*, 12(4), 872.

7. Gilbert, S., Poulev, A., Chrisler, W., **Acosta, K.**, Orr, G., Lebeis, S.L., and Lam, E. (2022). Auxin-producing bacteria from duckweeds have different colonization patterns and effects on plant morphology. *Plants,* 11(6), 721.

6. **Acosta, K.**, Appenroth, K., Borisjuk, L., Edelman, M., Heinig, U., Jansen, M., Oyama, T., Pasaribu, B., Schubert, I., Sorrels, S., Sree, S., Xu, S., Michael, T.P., and Lam, E. (2021). Return of the Lemnaceae: Duckweed as a Model Plant System in the Genomics and Post-genomics Era. *The Plant Cell,* 33(10):3207-3234.

5. Huang W., Gilbert S., Poulev A., **Acosta K.**, Lebeis S.L., Long C., and Lam E. (2020). Host-specific and tissue-dependent orchestration of microbiome community structure in traditional rice paddy ecosystems. *Plant Soil,* 452: 379-395

4. **Acosta K.**, Xu J., Gilbert S., Denison E., Brinkman T., Lebeis S.L., and Lam E. (2020). Duckweed hosts a taxonomically similar bacterial assemblage as the terrestrial leaf microbiome. *PloS one,* 15(2): p.e0228560.

3. Gilbert S., Xu J., **Acosta K.**, Poulev A., Lebeis S.L., and Lam E. (2018). Bacterial Production of Indole Related Compounds Reveals Their Role In Association Between Duckweeds And Endophytes. *Frontiers Chemistry,* 6:265

2. Michael T.P., Bryant D., Gutierrez R., Borisjuk N., Chu P., Zhang H., Xia J., Zhou J., Peng H., El Baidouri M., Ten Hallers B., Hastie A.R., Liang T., **Acosta K.**, Gilbert S., McEntee C., Jackson S.A., Mockler T.C., Zhang W., and Lam E. (2017). Comprehensive Definition of Genome Features in

*Spirodela polyrhiza* by High-Depth Physical Mapping and Short-Read DNA Sequencing Strategies. *The Plant Journal,* 89(3): 617-635

1. Borisjuk N., Chu P., Gutierrez R., Zhang H., **Acosta K.**, Friesen N., Sree K.S., Garcia S., Appenroth K.J., and Lam E. (2015). Assessment, Validation, and Deployment Strategy of a Two-Barcode Protocol for Facile Genotyping of Duckweed Species. *Plant Biology,* 17 Suppl 1: 42-49

## PRESENTATIONS

Abzalimov R, Mavlonazarova S, **Acosta K**, Satorov S, Dushenkov V. "Metabolic differences between *F. violacea* roots and seeds". Abstract. *Metabolomics of plants, humans, and microorganisms*. Dushanbe, Tajikistan, Medical-Social Institute of Tajikistan. October 2025

**Acosta K**, Abzalimov R, Mavlonazarova S, Satorov S, Dushenkov V. "*Ferula violacea* metabolomics: organ-and extraction-dependent phytochemical profiles revealed by untargeted UHPLC-QTOF analysis". *Metabolomics of plants, humans, and microorganisms*. Dushanbe, Tajikistan, Medical-Social Institute of Tajikistan. October 2025

Dushenkov V, Mavlonazarova S, Abzalimov R, **Acosta K**, Satorov S. "Effect of organs and sample processing methods on *F. violacea* metabolite composition." *Metabolomics of plants, humans, and microorganisms*. Dushanbe, Tajikistan, Medical-Social Institute of Tajikistan. October 2025

Ehatamm M, **Acosta K**, Raskin I. "Bacterial Communities of Insect-Induced Oak Galls". Poster. *Aresty Undergraduate Research Symposium.* Rutgers University, New Brunswick, NJ. May 2025.

Dhruwa A, **Acosta K**, Kaz A, Thirunavukkarasu K, Almosd L, Raskin I. "Polyphenol Content of Insect-Induced Oak Galls". Poster. *Aresty Undergraduate Research Symposium.* Rutgers University, New Brunswick, NJ. May 2025.

**Acosta K**. "Microbial Ecology of Duckweeds". Presentation. *Plant and Animal Genome Conference 30.* San Diego, CA. January 2023

**Acosta K**. "Duckweed Aquaculture For Bioenergy: A Path Towards Sustainable Platform For Duckweed Production". Undergraduate-level Class Presentation. *Plants For Innovative Technologies For Bioenergy.* Rutgers University, New Brunswick, NJ. November 2019

**Acosta K**, Xu J, Gilbert S, Brinkman T, Denison E, Lebeis S, Lam E. "Structure And Assembly of the Duckweed-Associated Bacterial Community". Poster Presentation. *5th International Conference On Duckweed Research And Applications*. Weizmann Institute of Science, Rehovot, Israel. September 2019. (awarded 2nd Place Poster Prize)

**Acosta K**, Gilbert S, Xu J, Lebeis S, Lam E. "Using A Small Aquatic Plant To Study Plant Microbiome Assembly, Structure, And Function". Poster Presentation. *21st Penn State Plant Biology Symposium*. Penn State University, University Park, PA. June 2018

**Acosta K**, Gilbert S, Xu J, Lebeis S, Lam E. "Using A Small Aquatic Plant To Study Plant Microbiome Assembly, Structure, And Function". Poster Presentation. *EMBO Plant Microbiota Practical Course*. Max Planck Institute For Plant Breeding Research, Cologne, Germany. April 2017.

**Acosta K**, Gilbert S, Xu J, Lam E. "Duckweed As A Facile Model For Studying Plant Microbiome Structure And Function". Poster Presentation. *UMass 14th Annual Symposium In Plant Biology Phytobiomes: The Social Networks Of Plants And Microbes*. UMass, Amherst, MA. October 2016.

Brinkman T, **Acosta K**, Lam E. "Harnessing The Power Of The Plant Microbiome". Poster. *Aresty Undergraduate Research Symposium.* Rutgers University, New Brunswick, NJ. May 2016.

**Acosta K**, Low YC, Huang B, Di R, Lam E. "Exploration Of the BI-1 Gene As A Quantitative Biomarker For Drought Tolerance Improvement In Turfgrasses". Rutgers University, New Brunswick, NJ. March 2016.

**Acosta K**, Gilbert S, Xu J, Lam E. "Duckweed As A Facile Model For Studying Plant Microbiome Structure And Function". Poster Presentation. *Microbiology At Rutgers University: Cultivating Traditions, Current Strengths, And New Frontiers.* Rutgers University, New Brunswick, NJ. February 2016.

Xu J, **Acosta K**, Lam E. "Characterizing The Interaction Between Duckweeds And Microbes In Nutrient-Rich Aquatic Environments". Poster. *Aresty Summer Science Research Program*. Rutgers University, New Brunswick, NJ. August 2015.

**Acosta K**, Lam E. "Duckweed Biology And Applications". Presentation. *INDEAR Instituto De Agrobiotecnologia Rosario*. Rosario, Argentina. February 2015.

**Acosta K**, Pfaff S, Basso J, Lebeis S, Lam E. "Improving Crop Sustainability Through Plant Microbiota". Poster. *8th Annual Rutgers Tripartite Symposium*. Rutgers University, New Brunswick, NJ. November 2014

Pfaff S, **Acosta K**, Lam E. "Sustainable Wastewater Remediation With Duckweed In Argentina". Poster. *Aresty Summer Science Research Program.* Rutgers University, New Brunswick, NJ. August 2014.

Paz C, **Acosta K**, Lam E. "Determining Methionine Content In 5 Genera Of Duckweed Through Ethionine And Biosensor Assays Using Cystathionine-Gamma-Synthase Deficient *E. coli*". Poster. *Green Energy Technology For Undergraduate Program.* Rutgers University, New Brunswick, NJ. July 2013.

**Acosta K**, Lam E. "Improving Future Food Sustainability: Screening For A High Methionine Duckweed Strain". Poster Presentation. *Aresty Undergraduate Research Symposium.* Rutgers University, New Brunswick, NJ. April 2013.

## AWARDS AND HONORS

**2024** Eileen Brennan Graduate Research Award
**2023** Rutgers SGS Research and Travel Award
**2022** Plant Biology Graduate Travel Support Award
**2019** Plant Biology Graduate Travel Support Award
**2018** Rutgers SGS Excellence Fellowship
**2012** Nellis Memorial Scholarship Fund
**2012** Rutgers ARESTY Undergraduate Research Fellowship
**2011** Nellis Memorial Scholarship Fund

## TRAINING AND PROFESSIONAL DEVELOPMENT

**2025** **Torrey Pines Leadership Development Program**
*Virtual*

**2024** **NIH Grant Writing Bootcamp**
*Rutgers University*, New Jersey, USA

**2024** **NIH-Compliant Rigor and Reproducibility Workshop**
*Rutgers University*, New Jersey, USA

**2024** **Genome Assembly and Annotation Course**
*Physalia Courses,* Virtual

**2024** **HPLC and GC Bootcamp**
*Axion Training Institute, Inc.*, Illinois, USA

**2023** **Navigating Difficult Conversations and Enhancing Emotional Intelligence Skills**
*Rutgers University*, New Jersey, USA

**2021** **CyVerse Container Camp**
*Virtual*

**2017** **EMBO Plant Microbiota Practical Course**
*Max Planck Institute for Plant Breeding Research*, Cologne, Germany