

# MISHI VACHEV

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Davis, CA 95616

## EDUCATION

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<b>PhD</b>	University of California, Davis, Plant Biology	Present
<b>BS</b>	Eckerd College, Biology GPA 3.83	05/2019

## AWARDS AND SCHOLARSHIPS

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<b>Jastro-Shields Graduate Research Award</b>	2022
<b>Best Poster Presentation, Eckerd College Natural Sciences Symposium</b>	2017
<b>Eckerd College Presidential Scholarship</b>	2015

## PROFESSIONAL ORGANIZATIONS

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### **Leaders for the Future**

UC Davis Institute for Innovation and Entrepreneurship

### **Beta Beta Beta Biological Honors Society**

Kappa Delta Epsilon Chapter

### **Conviron Scholars Program**

American Society of Plant Biologists

### **Ford Apprentice Scholars Program**

Eckerd College

## RESEARCH EXPERIENCE

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**Graduate Student Researcher- Plant Biology Graduate Group, Steven Knapp & Gitta Coaker** 03/2020-present

**University of California, Davis, Davis, CA**

- Designed and executed novel molecular experiments to uncover the genetic basis of resistance to Fusarium wilt of strawberry
- Contributed disease resistance data to the statewide Strawberry Breeding Program
- Explored novel protocols for genome editing and transient protein expression in strawberry
- Evaluated the effectiveness of genomic prediction for breeding for resistance to Verticillium wilt in strawberry

**Senior Thesis Researcher- Biology Department, Liza Conrad** 06/2018-05/2019  
**Eckerd College, St. Petersburg, Florida**

- Researched disease resistance to Fusarium wilt in cantaloupe and created molecular markers for resistance/susceptibility to the disease
- Worked independently with weekly update meetings with mentor
- Performed tasks such as fungal screening, marker development, and sequence analysis
- Presented and defended research to a committee in a thesis defense

**Student Research Assistant- Biology Department, Liza Conrad** 08/2016-01/2017  
**Eckerd College, St. Petersburg, Florida**

- Purpose of research was to discover proteins found in a complex in rice flowers
- Performed tasks such as DNA replication, bacterial growth, and sequencing
- Developed skills to allow for independent work with faculty guidance

**Research Assistant-Plant Gene Expression Center, Devin Colemander** 05/2016-08/2016  
**United States Department of Agriculture, Albany, CA**

- Researched the effects of microbes on sorghum plants
- Assisted graduate student with lab work and communicated with lab manager about progress/data
- Engaged in field work including planting, collecting data, and preparing samples for DNA extraction
- Collected and organized data for use in graduate student's paper

## **GREENHOUSE AND LAB EXPERIENCE**

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**Laboratory Teaching Assistant- Biology Department** 02/2018-05/2019  
**Eckerd College, St. Petersburg, Florida**

- Assisted in the teaching of two semesters of Genetics and Molecular Biology lab, and one semester of Advanced Molecular Techniques lab
- Demonstrated molecular biology techniques and assisted students through lab protocols
- Set up laboratory experiments and prepared samples for sequencing

**Greenhouse Assistant- Biology Department** 09/2016-05/2019  
**Eckerd College, St. Petersburg, Florida**

- Worked in greenhouse planting various plants for class or research use
- Practiced sterile planting conditions and pollination techniques for research use
- Collaborated with other volunteers on large scale planting and greenhouse care projects
- Attended meetings and work days with greenhouse volunteers and faculty

## **WORK EXPERIENCE**

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**Grader- BIS180L Genomics Lab**

Spring Quarter 2021 &amp; 2022

**University of California, Davis, Davis, CA**

- Graded weekly student assignments and tests
- Communicated student progress and academic development to TA and professor

**Writing Tutor- Writing Center**

09/2017-05/2019

**Eckerd College, St. Petersburg, Florida**

- Tutored students in writing style, organization, clarity, and grammar
- Edited essays and supplied feedback on areas of improvement
- Attended weekly meetings to discuss tutoring methods and writing mechanics

**Marketing Intern- Marketing Department**

05/2016-09/2016

**MobileIron, Mountain View, CA**

- Assisted coworkers with customer outreach and graphic design
- Created new organizational system to increase availability of graphics for presentations

**INTERNSHIP**

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**IFAL Science Communication Intern, Hanna Bartram**

03/2020-09/2020

**Institute for Food and Agricultural Literacy, UC Davis, Davis, CA**

- Wrote and published topical reviews for a non-expert audience
- Assisted in virtual event planning and execution of roundtable discussions
- Collaborated with campus organizations including the Institute for Food and Health

**NSF REU Intern- Boyce Thompson Institute, Greg Martin**

06/2017-08/2017

**Cornell University, Ithaca, NY**

- Researched disease resistance to Bacterial speck in a wild relative of tomato
- Attended weekly seminars to learn about current research at the institute
- Completed a six-part bioinformatics training and graduate school preparation seminar

**PUBLICATIONS**

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**M. Vachev, J. Cavatorta, L. J. Conrad, “‘Triton’: A Disease Resistant Cantaloupe Hybrid,”**  
*HortScience*, 2022

M. LaPorte, **M. Vachev**, M. Fenn, C. Diepenbrock, “Simultaneous dissection of grain carotenoid levels and kernel color in biparental maize populations with yellow-to-orange grain,” *G3 Genes/Genomes/Genetics*, 2022

D. A. Pincot, M. J. Feldmann, M. A. Hardigan, **M. V. Vachev**, P. M. Henry, T. R. Gordon, A. Rodriguez, N. Cobo, G. S. Cole, G. L. Coaker, S. J. Knapp, “Novel Fusarium Wilt Resistance Genes Uncovered in Natural and Cultivated Strawberry Populations are Found on Three Non-homoeologous Chromosomes,” *Theoretical and Applied Genetics*, 2022

M. A. Hardigan, M. J. Feldmann, D.A. Pincot, R. A. Famula, **M. V. Vachev**, M. A. Madera, P. Zerbe, K. Mars, P. Peluso, D. Rank, S. Ou, C. A. Saski, C. B. Acharya, G. S. Cole, A. E. Yocca, A. E. Platts, P. P. Edger, S. J. Knapp, “Blueprint for Phasing and Assembling the Genomes of Heterozygous Polyploids: Application to the Octoploid Genome of Strawberry”, *bioRxiv*, 2021

C. Mazo-Molina, S. Mainiero, S. R. Hind, C. M. Kraus, **M. Vachev**, F. Maviane-Macia, M. Lindeberg, S. Saha, S. R. Strickler, A. Feder, J. J. Giovannoni, C. D. Smart, N. Peeters, and G. B. Martin, “The *Ptr1* locus of *Solanum lycopersicoides* confers resistance to race 1 strains of *Pseudomonas syringae* pv. Tomato and to *Ralstonia solanacearum* by recognizing AvrRpt2/RipBN,” *Molecular Plant-Microbe Interactions*, 2019

**M. Vachev**, “Development of Molecular Markers for FOM2 Mediated Fusarium Wilt Resistance in Cantaloupe.” *Eckerd Scholar*, Apr. 2019.

#### SCIENCE COMMUNICATION PUBLICATIONS

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“Dreaming of an Alternative Meat Future.” *Science REALLY Says*, November 2021.

“Udderly Complex: Sustainability of Cow and Plant-Based Milks.” *Science REALLY Says*, May 2020.

#### PRESENTATIONS

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**Poster Presentation**, “Genetic Basis of Resistance to Fusarium wilt of Strawberry,” *American Phytopathological Society Conference*, August 2022, Pittsburgh, PA

**Powerpoint Presentation**, “Genetic Basis of Resistance to Fusarium wilt of Strawberry,” *PBGG In-progress Seminar*, January 2022, Davis, CA

**Poster Presentation**, “Triton: A New Fusarium Wilt Resistant Cantaloupe Variety,” *American Society of Plant Biologists Conference*, August 2019, San Jose, CA

**Powerpoint Presentation**, “Development of Molecular Markers for FOM2 Mediated Fusarium Wilt Resistance in Cantaloupe,” *Senior Thesis Defense*, April 2019, Eckerd College, St. Petersburg, FL .

**Powerpoint Presentation**, “Triton: A New Fusarium Wilt Resistant Variety of Cantaloupe,” *Eckerd College Research Symposium*, April 2019, Eckerd College, St. Petersburg, FL .

**Speech**, “Undergraduate Research: Benefits and Improvements to Courses and Faculty Mentoring,” *Think Inside: Shifting Paradigms of Higher Education, Ford Forum 2018*, 1 May 2018, St. Petersburg, FL.

**Poster Presentation**, “Molecular Characterization of Novel Bacterial Speck Disease Resistance in a Wild Relative of Tomato,” *Eckerd College Natural Sciences Symposium*, 4 April 2018, St. Petersburg, FL.

**Poster Presentation**, “Molecular Characterization of Novel Bacterial Speck Disease Resistance in a Wild Relative of Tomato,” *Boyce Thompson Institute Summer Research Symposium*, 10 August 2017, Ithaca, NY.

#### **PROFESSIONAL SERVICE**

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2021-present Genome Editing Club Organizer

2022 Los Altos High School STEAM Week Speaker

2021 Young Women in Biology: Discoveries in Plants and Microbes- Science Stories from PhD Students Speaker

2021 Eckerd College Career Panel Speaker

2019-2022 Walnut Preference Study Volunteer

2019 Melon Preference Study Organizer

2019 ASPB Convivon Scholars Program Science Outreach Project

#### **COMMUNITY SERVICE**

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##### **Science Says Club**

Editor-in-Chief, UC Davis, Davis, CA, 09/2021-present

##### **North Bay Discovery Day**

Graduate Student Volunteer, Santa Rosa, CA, 05/2022

##### **St. Pete Science Fest Eckerd College Tent**

Co-Director of Activity Planning and Operations, St. Petersburg, FL, Fall 2018

##### **St. Pete Science Fest Eckerd College Tent**

Student Volunteer, St. Petersburg, FL, 10/2017

##### **Garden Education Program**

Student Education Volunteer, St. Petersburg, FL, 09/2017-12/2017