

Mitchell J. Feldmann

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Research Interests

Quantitative & Population Genetics
Plant Breeding & Biology
Theoretical & Applied Statistics
Computer Vision & Machine Learning

Research Skills

Experimental design and statistical analysis
Genetic analyses including variance component estimation, genome-wide mapping and prediction
Familiarity with existing bioinformatics and genomics tools for variant calling and alignment
Programming and scripting using R, Unix, and Python
Running and managing jobs on a server or computing cluster
Experience managing field labor teams of up to 10 people and research assistants/interns
Handling/QC of NGS data (WGS, GBS, and RAD-seq)
Handling/QC of array-based genotyping data (Affymetrix SNP arrays)
Basic wet lab skills including DNA/RNA extraction, PCR, and library preparation

Education

University of California, Davis

Ph.D. in Horticulture and Agronomy
GPA: 3.76

Expected June 2020

University of Arizona

B.Sc. in Ecology and Evolutionary Biology
Minor in Mathematics
GPA: 3.73

Aug 2012-May 2015

Research Experience

Graduate Research Assistant

Strawberry Genetics
University of California, Davis
Advisor: Dr. Steven J. Knapp

Sept 2015-Present

Undergraduate Research Assistant

Plant-Herbivore Evolution
University of Arizona
Advisor: Dr. Noah K. Whiteman

May 2014-Sept 2015

Undergraduate Research Assistant

Arabidopsis Genetics
University of Arizona
Advisor: Dr. Frans E. Tax and Dr. Kenneth A. Feldmann

Aug 2012-Sept 2015

Teaching Assistant and Lecturer Experience

Guest Lecturer

"Breeding for fruit quality and disease resistance in strawberry"

June 6, 2018

Strawberry Field Day to Demonstrate Pest Management Research University of California, Davis	
Guest Lecturer <i>"Plant architecture and bearing habit of Fragaria spp."</i> Fruit and Nut Cropping Systems (PLS 170B) University of California, Davis	Apr 4, 2018
Guest Lecturer <i>"On the estimation of variance components"</i> Quantitative Genetics and Selection Theory (PLS 290) University of California, Davis	Jan 25, 2018
Guest Lecturer <i>"Plant architecture and bearing habit of Fragaria spp."</i> Fruit and Nut Cropping Systems (PLS 170A) University of California, Davis	Nov 17, 2017
Teaching Assistant Experimental Design and Analysis (PLS205) University of California, Davis	Jan 2017-Apr 2017
Teaching Assistant Experimental Design and Analysis (PLS205) University of California, Davis	Jan 2018-Apr 2018
Departmental and Professional Service	
Admissions Committee Member of the Horticulture Grad Group University of California, Davis	Jan 2019-May 2019
Admissions Committee Member of the Horticulture Grad Group University of California, Davis	Jan 2018-May 2018
Admissions Committee Member of the Horticulture Grad Group University of California, Davis	Jan 2017-May 2017
Plant Sciences Seminar Leader Student Discussions in Plant Sciences (PLS290-008) University of California, Davis	Sept 2016-Sept 2018
2017-2018 Elected Horticulture and Agronomy Graduate Group Officer University of California, Davis	Sept 2017-Sept 2018
2016-2017 Elected Horticulture and Agronomy Graduate Group Officer University of California, Davis	Sept 2016-Sept 2017
2018 UC Davis Plant Science Symposium Committee President University of California, Davis	Sept 2016-Apr 2017
2017 UC Davis Plant Science Symposium Committee Member University of California, Davis	Sept 2016-Apr 2017
Professional Development	
Maricopa NSF Field-Based High Throughput Phenotyping Workshop University of Arizona Maricopa Agricultural Center, Maricopa, AZ	Oct 2017
RNA-seq Library Preparation and Data Analysis Workshop UC Davis DNA Tech Core, Davis, CA	Feb 2017
Genome Assembly and Analysis Workshop UC Davis Bioinformatics Core, Davis, CA	Dec 2016
Writing a Dissertation or Thesis University Writing Program, Davis, CA	Nov 2016
Tucson Winter Plant Breeding Institute	Jan 2015

University of Arizona
Certificate Received

Publications

- Tabb A*, Medeiros H, Feldmann MJ, Santos TT. (2019) “Calibration of Asynchronous Camera Networks: CALICO.” *Submitted*. doi: <https://arxiv.org/abs/1903.06811>
- Hardigan MA*, **Feldmann MJ**, Lorant A, Famula RA, Acharya CB, Cole GS, Edger PP, Knapp SJ. (2019). “Chromosome evolution of octoploid strawberry.” *Submitted*. doi: <https://doi.org/10.1101/861526>
- Feldmann MJ**, Hardigan MA, Famula RA, López CM, Tabb A, Cole GS, Knapp SJ. (2019). “Multi-dimensional machine learning approaches for fruit shape recognition and phenotyping in strawberry.” *Submitted*. doi: <https://doi.org/10.1101/736397>
- Gloss AD*, Brachi B, **Feldmann MJ**, Groen SC, Bartoli C, Gouzy J, LaPlante ER, Meyer CG, Pyon HS, Rogan SC, Roux F, Bergelson J, Whiteman NK. (2017). “Genetic variants affecting plant size and chemical defenses jointly shape herbivory in *Arabidopsis*.” *Submitted*. doi: <https://doi.org/10.1101/156299>

Articles in Prep

- Feldmann MJ**, Piepho HP, Bridges WC, Knapp SJ. “Overestimation of Genomic Heritability.” *In prep*.
- Feldmann MJ**, Pincot DDA, Ledda M, Hardigan MA, Poorten TJ, Heffelfinger C, Cole GS, Acharya CB, Dellaporta S, Knapp SJ. “Genealogy spanning the 300-year history of garden strawberry.” *In prep*.
- Feldmann MJ**, Tabb A, Knapp SJ. “Cost-effective, high-throughput 3-D reconstruction method for fruit phenotyping”. *In prep*.

Data Releases

- Feldmann MJ**, Hardigan MA, Poorten TJ, Acharya CB, Colle M, Edger PP, VanBuren R, Knapp SJ. (2019). “Genotyping-By-Sequencing and Reference Genome Enabled Variant Discovery in Octoploid Strawberry [Data set].” Zenodo. <http://doi.org/10.5281/zenodo.3576540>
- Feldmann MJ**. (2019). “Classification and Quantification of Strawberry Fruit Shape [Data set].” Zenodo. <http://doi.org/10.5281/zenodo.3528385>
- Tabb, A and Feldmann, MJ. (2019). Data and Code from: Calibration of Asynchronous Camera Networks: CALICO (Version 1.0) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.3520866>

Extended Abstracts

- Feldmann MJ**, Tabb A, Knapp SJ. (2019). “Cost-effective, high-throughput 3-D reconstruction method for fruit phenotyping.” CVPPP 2019: workshop on Computer Vision Problems in Plant Phenotyping. Peer reviewed. IPPN.

Posters

- Feldmann MJ**, Hardigan MA, Lopez-Ramirez CM, Famula RA, Cole GS, Knapp SJ. (2020). “Genomic Prediction of Hybrid Performance in Strawberry.” Plant and Animal Genome XXVIII. San Diego, CA.
- Feldmann MJ**, Hardigan MA, Lopez-Ramirez CM, Famula RA, Cole GS, Knapp SJ. (2019). “Heterosis and genome-scale diversity among high-yielding hybrids of strawberry.” American Society of Horticultural Science. Las Vegas, NV.
- Feldmann MJ**, Tabb A, Knapp SJ. (2019). “Cost-effective, high-throughput 3-D reconstruction method for fruit phenotyping.” Computer Vision and Pattern Recognition. Long Beach, CA. Poster.

- Feldmann MJ.** (2019). “Ordination, quantification, and quantization of strawberry fruit shape”. UC Davis Plant Science Symposium. Davis, CA.
- Feldmann MJ,** Pincot DD, Poorten TJ, Heffelfinger C, Cole GS, Hardigan MA, Acharya CB, Dellaporta S, Knapp SJ. (2019). “Highly accurate forensic approaches for authenticating pedigrees and protecting intellectual property in octoploid strawberry using high-density SNP genotyping arrays.” Gainesville, FL. North American Strawberry Growers Association.
- Feldmann MJ** and Knapp SJ. (2019). “Semi-supervised quantization of strawberry shape diversity in elite germplasm.” Phenome. Tucson, AZ.
- Feldmann MJ,** Bhartia YV, Newell SA, Harshman JM, Knapp SJ. (2018). “Quantitative methods for studying fruit morphology in strawberry.” Phenome. Tucson, AZ.
- Feldmann MJ,** Hardigan MA, Poorten TJ, Acharya CB, Colle M, Edger PP, VanBuren R, Knapp SJ. (2018). “Genotyping-by-sequencing and reference genome enabled variant discovery in octoploid strawberry.” Plant and Animal Genome XXVI. San Diego, CA.
- Feldmann MJ,** Bridges WC, Knapp SJ. (2017). “Heritability of a quantitative trait locus.” National Association of Plant Breeders Annual Meeting. Davis, CA.
- Feldmann MJ,** Gloss AD, Groen SC, Rogan S, Brachi B, Bergelson J, Whiteman NK. (2015). “Identification of genomic regions associated with adult herbivore preference and larval performance in *Arabidopsis thaliana*.” University of Arizona EEB Undergraduate Conference. Tucson, AZ.

Presentations

- Feldmann MJ.** (2020). “Multi-Dimension Fruit Shape Phenotyping in Strawberry.” Flavor, Nutrition, and Post-Harvest Genomics. Plant and Animal Genome XXVIII. San Diego, CA.
- Feldmann MJ.** (2020). “Genomic Prediction of Hybrid Performance in Strawberry.” Strawberry Genomics. Plant and Animal Genome XXVIII. San Diego, CA.
- Feldmann MJ.** (2019). “Tractable Quantitative Genetic Approaches for High-Dimensional Phenotypes.” University of Chicago, Chicago, IL.
- Feldmann MJ.** (2019). “Genetics and Breeding of Garden Strawberry (*Fragaria* × *ananassa*).” UC Davis SCOPE.
- Feldmann MJ.** (2019). “Ordination, quantification, and quantization of strawberry fruit shape.” UC Davis Plant Science Symposium. Davis, CA.
- Feldmann MJ** and Knapp SJ. (2019). “Semi-supervised quantization of strawberry shape diversity in elite germplasm.” Phenome. Tucson, AZ.
- Feldmann MJ.** (2018). “Forensic approaches for authenticating pedigrees and protecting intellectual property in breeding programs.” Plant Breeding Annual Retreat. Monterey, CA.

Fellowships, Awards, and Features

- 2019 UC Davis Henry A. Jastro Graduate Research Fellowship (\$3,000)
- 2019 UC Davis Horticulture & Agronomy Graduate Fellowship (\$1,000)
- 2018 UC Davis Henry A. Jastro Graduate Research Fellowship (\$3,000)
- 2018 UC Davis Horticulture & Agronomy Graduate Fellowship (\$1,000)
- 2018 UC Davis January Plant Breeding Center Featured Student
- 2018 UC Davis Henry A. Jastro Graduate Research Fellowship (\$2,580)
- 2017 UC Davis Horticulture & Agronomy Graduate Fellowship (\$1,000)
- 2017 NSF Field-Based High Throughput Phenotyping Travel Award

Journals Reviewed

- G3: Genes | Genomes | Genetics
- Plant Phenome Journal
- Plant Methods

References

Steven J. Knapp

Professor and Director of the Strawberry Breeding Program.
Department of Plant Sciences
University of California, Davis
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Glenn S. Cole

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