

**Mitchell J. Feldmann**  
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### **Research Interests**

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

### **Current Title(s)**

<b>University of California, Davis</b> Post-doctoral Researcher Strawberry breeding and research	June 2021-Present
<b>Board Member the Plant Phenome Journal</b> Social Media Editor @plantphenomej	Jan 2022-Present

### **Education**

<b>University of California, Davis</b> Ph.D. in Horticulture and Agronomy	Sept 2015-Sept 2020
<b>University of Arizona</b> B.Sc. in Ecology and Evolutionary Biology Minor in Mathematics	Aug 2012-May 2015

### **Industry Experience**

<b>HM Clause (Limagrain Group)</b> Genetics Application Leader – Hot and Sweet Pepper	July 2020-June 2021
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### **Publications**

\*Corresponding author

1. Ubbens, J, Feldmann MJ, Stavness I, Sharpe AG. (2022) “Quantitative Evaluation of Nonlinear Methods for Population Structure Visualization & Inference.” *G3: Genes, Genomes, Genetics*.  
<https://doi.org/10.1101/2022.02.22.481549>
2. **Feldmann MJ**, Piepho H-P, Knapp SJ. (2022) “Average Semivariance Directly Yields Accurate Estimates of the Genomic Variance in Complex Trait Analyses.” *G3: Genes, Genomes, Genetics*.  
<https://doi.org/10.1101/2021.09.19.460999>. \*
3. Pincot DDA, Henry PM, **Feldmann MJ**, Vachev MV, Rodriguez A, Cobo N, Cole GS, Gordon TR, Coaker GL, Knapp SJ. (2022). “Association Studies Uncover an Arsenal of Fusarium Wilt Resistance Genes on Non-Homoeologous Chromosomes in Ancestrally Diverse Strawberry Populations.” *Theoretical and Applied Genetics*. <https://doi.org/10.1101/2021.12.07.471687>
4. **Feldmann MJ** and Tabb A. (2021) “Cost-effective, high-throughput phenotyping system for 3D reconstruction of fruit form.” *The Plant Phenome Journal*. <https://doi.org/10.1002/ppj2.20029>. \*
5. Petrasch S, Mesquida-Pesci SD, Pincot DDA, **Feldmann MJ**, López CM, Famula RA, Hardigan MA, Cole GS, Knapp SJ, Blanco-Ulate B. (2021) “Genomic Prediction of Strawberry Resistance to Postharvest Fruit Decay Caused by the Fungal Pathogen *Botrytis cinerea*.” *G3*. <https://doi.org/10.1093/g3journal/jkab378>
6. **Feldmann MJ**, Gage JL, Hissong-Turner SD, Ubbens JR. (2021) “Images Carried Before the Fire: The Power, Promise, and Responsibility of Latent Phenotyping.” *The Plant Phenome*.  
<https://doi.org/10.1002/ppj2.20023> \*

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7. **Feldmann MJ**, Piepho H-P, Bridges WC, Knapp SJ. (2021). "Average semivariance yields accurate estimates of the fraction of marker-associated genetic variance and heritability in complex trait analyses," *PLoS Genetics*. <https://doi.org/10.1371/journal.pgen.1009762>
8. **Feldmann MJ**, Hardigan MA, Famula RA, López CM, Tabb A, Cole GS, Knapp SJ. (2020). "Multidimensional machine learning approaches for fruit shape phenotyping in strawberry." *GigaScience*. <https://doi.org/10.1093/gigascience/giaa030>
9. Hardigan MA, Lorant A, Pincot DDA, **Feldmann MJ**, Famula RA, Acharya CB, Lee S, Verma S, Whitaker VM, Bassil N, Zurn J, Cole GS, Bird K, Edger PP, Knapp SJ (2020). "Unraveling the Complex Hybrid Ancestry and Domestication History of Cultivated Strawberry." *Molecular Biology and Evolution*. <https://doi.org/10.1093/molbev/msab024>
10. Pincot DDA, Ledda M, **Feldmann MJ**, Hardigan MA, Poorten TJ, Runcie DE, Heffelfinger C, Dellaporta SL, Cole GS, Knapp SJ (2020). "Social Network Analysis of the Genealogy of Strawberry: Retracing the Wild Roots of Heirloom and Modern Cultivars." *G3*. <https://doi.org/10.1093/g3journal/jkab015>.
11. Hardigan MA, **Feldmann MJ**, Lorant A, Famula RA, Acharya CB, Cole GS, Edger PP, Knapp SJ. (2020). "Genome synteny has been conserved among the octoploid progenitors of cultivated strawberry over millions of years of evolution." *Frontiers in Plant Science*. <https://doi.org/10.3389/fpls.2019.01789>

### **Preprint Publications**

1. Hardigan MA, **Feldmann MJ**, Pincot DDA, Famula RA, Vachev MV, Madera MA, Zerbe P, Mars K, Peluso P, Rank D, Ou S, Saski CA, Acharya CB, Cole GS, Yocca AE, Platts AS, Edger PP, Knapp SJ. (2021). "Blueprint for Phasing and Assembling the Genomes of Heterozygous Polyploids: Application to the Octoploid Genome of Strawberry." *Biorxiv*. <https://doi.org/10.1101/2021.11.03.467115>
2. Tabb A, Medeiros H, **Feldmann MJ**, Santos TT. (2019) "Calibration of Asynchronous Camera Networks: CALICO." *Arxiv*. <https://arxiv.org/abs/1903.06811>

### **Submitted Articles**

1. Jiménez NP, **Feldmann MJ**, Famula RA, Pincot DDA, Bjornson M, Cole GS, Knapp SJ. "Harnessing underutilized gene bank diversity and genomic prediction of cross usefulness to enhance resistance to *Phytophthora cactorum* in strawberry." *The Plant Genome*.

### **Grants**

1. Knapp SJ, Cole GS, **Feldmann MJ**, Pincot DDA. (2022) "Enhancing Resistance to Soil-Borne Pathogens in Strawberry through Traditional and Genome-Informed Breeding Approaches." California Strawberry Commission. Funded.
2. Knapp SJ, Coaker GI, Whitaker VM, Peres N, Henry PM, Zilberman D, Lee S, **Feldmann MJ**, Bjornson M, Debenardi J, Holmes G, Hewavitharana S, Daugovish O, Lloyd MG. (2022) "Delivering Breeding and Management Solutions to Prevent Losses to Emerging and Expanding Disease Threats in Strawberry." USDA NIFA SCRI. Pre-proposal submitted.

### **Data Releases**

1. **Feldmann MJ**, Piepho H-P, Bridges WC, Knapp SJ. (2020). "Data for 'Accurate Estimation of MarkerAssociated Genetic Variance and Heritability in Complex Trait Analyses' [Dataset]." Zenodo. <http://doi.org/10.5281/zenodo.3742421>
2. **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>
3. **Feldmann MJ**. (2019). "Classification and Quantification of Strawberry Fruit Shape [Data set]." Zenodo. <http://doi.org/10.5281/zenodo.3528385>
4. 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>

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### **Extended Abstracts**

1. **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**

2. **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.
3. **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.
4. **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](#).
5. **Feldmann MJ**. (2019). "Ordination, quantification, and quantization of strawberry fruit shape". UC Davis Plant Science Symposium. Davis, CA.
6. **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.
7. **Feldmann MJ** and Knapp SJ. (2019). "Semi-supervised quantization of strawberry shape diversity in elite germplasm." Phenome. Tucson, AZ.
8. **Feldmann MJ**, Bhartia YV, Newell SA, Harshman JM, Knapp SJ. (2018). "Quantitative methods for studying fruit morphology in strawberry." Phenome. Tucson, AZ.
9. **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.
10. **Feldmann MJ**, Bridges WC, Knapp SJ. (2017). "Heritability of a quantitative trait locus." National Association of Plant Breeders Annual Meeting. Davis, CA.

### **Invited Talks**

1. **Feldmann MJ**. (2022) "Molecular Genetic Applications Enabled by Platinum Quality Reference Genome Assemblies in Octoploid Strawberry". Pacific Biosciences session Plant and Animal Genome XXIX. San Diego, CA
2. **Feldmann MJ**. (2021) "Targeted genotyping for genomic evaluation in cultivated strawberry" LGC Biosearch (Lucigen Corp). Webinar.
3. **Feldmann MJ**. (2021). "Complex traits and candidate genes: assumption-free estimation of genetic variance components." UC Davis Plant Science Seminar. Davis, CA.
4. **Feldmann MJ**. (2020). "Molecular Genetic Applications in Octoploid Strawberry." HM Clause, Davis, CA
5. **Feldmann MJ**. (2020). "Multi-Dimension Fruit Shape Phenotyping in Strawberry." Flavor, Nutrition, and Post-Harvest Genomics. Plant and Animal Genome XXVIII. San Diego, CA.
6. **Feldmann MJ**. (2020). "Genomic Prediction of Hybrid Performance in Strawberry." Strawberry Genomics. Plant and Animal Genome XXVIII. San Diego, CA.
7. **Feldmann MJ**. (2019). "Tractable Quantitative Genetic Approaches for High-Dimensional Phenotypes." University of Chicago, Chicago, IL.
8. **Feldmann MJ**. (2019). "Genetics and Breeding of Garden Strawberry (*Fragaria* × *ananassa*)." UC Davis SCOPE. Davis, CA.
9. **Feldmann MJ**. (2019). "Ordination, quantification, and quantization of strawberry fruit shape." UC Davis Plant Science Symposium. Davis, CA.
10. **Feldmann MJ** and Knapp SJ. (2019). "Semi-supervised quantization of strawberry shape diversity in elite germplasm." Phenome. Tucson, AZ.
11. **Feldmann MJ**. (2018). "Forensic approaches for authenticating pedigrees and protecting intellectual property in breeding programs." Plant Breeding Annual Retreat. Monterey, CA.

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### **Teaching Assistant and Lecturer Experience**

<b>Guest Lecturer</b> Quantitative Genetics and Selection Theory (PLS 225) University of California, Davis	Feb 11, 2021
<b>Guest Lecturer</b> Quantitative Genetics and Selection Theory (PLS 290) University of California, Davis	Jan 30, 2020
<b>Guest Lecturer</b> Quantitative Genetics and Selection Theory (PLS 290) University of California, Davis	Jan 8, 2020
<b>Teaching Assistant</b> Quantitative Genetics and Selection Theory (PLS 290) University of California, Davis	Jan-Apr 2019
<b>Guest Lecturer</b> Strawberry Field Day to Demonstrate Pest Management Research University of California, Davis	June 6, 2018
<b>Guest Lecturer</b> Fruit and Nut Cropping Systems (PLS 170B) University of California, Davis	Apr 4, 2018
<b>Guest Lecturer</b> Quantitative Genetics and Selection Theory (PLS 290) University of California, Davis	Jan 25, 2018
<b>Guest Lecturer</b> Fruit and Nut Cropping Systems (PLS 170A) University of California, Davis	Nov 17, 2017
<b>Teaching Assistant</b> Experimental Design and Analysis (PLS205) University of California, Davis	Jan-Apr 2017
<b>Teaching Assistant</b> Experimental Design and Analysis (PLS205) University of California, Davis	Jan-Apr 2018

### **Departmental and Professional Service**

<b>2022 North American Plant Phenotyping Network 2022 Committee</b>	Jan 2021-Present
<b>Admissions Committee Member of the Horticulture Grad Group</b> University of California, Davis	Jan 2019-May 2019
<b>Admissions Committee Member of the Horticulture Grad Group</b> University of California, Davis	Jan 2018-May 2018
<b>Admissions Committee Member of the Horticulture Grad Group</b> University of California, Davis	Jan 2017-May 2017
<b>Plant Sciences Seminar Leader</b> University of California, Davis	Sept 2016-Sept 2018
<b>2017-2018 Horticulture and Agronomy Graduate Officer</b> University of California, Davis	Sept 2017-Sept 2018
<b>2016-2017 Horticulture and Agronomy Graduate Officer</b> University of California, Davis	Sept 2016-Sept 2017
<b>2018 UC Davis Plant Science Symposium Committee President</b> University of California, Davis	Sept 2016-Apr 2017
<b>2017 UC Davis Plant Science Symposium Committee Member</b> University of California, Davis	Sept 2016-Apr 2017

### **Professional Development**

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**Board Member at the Plant Genome Journal**

Social Media Editor @plantgenome

June 2020-Sept 2021

**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**

Davis DNA Tech Core, Davis, CA

UC

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**

University of Arizona

Jan 2015

**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

2017 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**

Emerging Technologies in Life Science

G3: Genes | Genomes | Genetics

The Plant Phenome Journal

The Plant Genome Journal

Horticulture Research

Plant Methods

Heredity

Genome Biology