

**DESTINY J. DAVIS, PHD.**

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**EXPERIENCE**

Sept/2022–current

**AAAS Science and Technology Policy Fellow**

at the United States Botanic Garden (USBG)

Project(s): Developed five-year strategic plan for science; scientific editing of public facing materials, science communication (blogging, social media), scientific consulting, research project management.

Sept/2020—Aug/2022

**Post-doctoral scholar, Lawrence Berkeley National Lab (LBNL)**

Laboratory of Dr. Jenny Mortimer

Projects:

- Roots 2.0: Reimagining a root system optimized for plant microbe interactions

Skills: Microscopy, ecoFAB construction, bacterial culture/maintenance, image analysis.

- Sorghum Metabolic Atlas DOE

Skills: Transformation (transient, stable, Agro, CNTs), tissue culture, leaf infiltration, microscopy.

Sept/2012 – Sept/2020

**Graduate Student Researcher, University of California, Davis**

Laboratory of Prof. Georgia Drakakaki

Project: Using a chemical genomics approach to dissect de novo formation of the plant cell wall and the role of callose during cytokinesis with an evolutionary perspective.

Skills: Confocal microscopy, immunoprecipitation, western blotting, immunolabeling, forwards genetics experimental design and analysis, microtome sectioning, electron microscopy sample prep, fixation and resin embedding of tissue, tissue culture (plants, algae, moss), PCR, gel electrophoresis.

June/2019 – Sept/2019

**Research Intern with the Intrexon Corporation\*** (Ag Bio division)

\*now “Green Venus”

Supervisor: Jyoti Rout

Project: Led an independent project on highly regenerative cells

May/2011 – Aug/2011

**Arkansas INBRE summer fellow, University of Arkansas, Little Rock**

Laboratory of Prof. Stephen Grace

Project: Identifying high-light regulated genes involved in increasing antioxidant and metabolite response in tomato.

Skills: HPLC, RNA extraction, cDNA synthesis, PCR, gel electrophoresis, metabolite extraction, hydroponics.

Aug/2010 – Dec/2011

**Research Assistant, University of Central Arkansas**

Laboratory of Prof. J.D. Swanson

Project: Understanding trichome development as a model for cell-cell communication and cell differentiation.

Skills: tissue culture, sterile technique, literature review, database maintenance.

## **EDUCATION**

Sept/2012--Sept/2020

**University of California, Davis**

**PhD**, Plant Biology with a Designated Emphasis in Biotechnology

**Dissertation or Thesis:** "Dissecting the role of callose during plant cell cytokinesis"

**Dissertation Advisor(s):** Prof. Georgia Drakakaki

**DEB Advisor:** Dr. Denneal Jamison-McClung

Aug/2008 –May/2012

**University of Central Arkansas (UCA)**

**BS:** Biology with minor in Honors Interdisciplinary Studies

**Honors Thesis:** "Biotechnology of Tomatoes: a metabolic approach to nutritional improvement"

**Advisor(s):** Prof. J.D. Swanson (UCA) and Prof. Stephen Grace (University of Arkansas, Little Rock)

## **HONORS, AWARDS AND FELLOWSHIPS**

2022

**AAAS Science and Technology Policy Fellowship (Executive Branch)**

2021

**Best Early Career flashtalk** at Environmental Genomics and Systems Biology Annual Meeting (LBNL)

2017

**American Society of Plant Biologists (ASPB) travel grant**

2016

**Selected for NAIST International Student Workshop in Nara, Japan.**

Collaborative international student workshop and symposia between UC Davis, NAIST and Beijing Institute of Technology.

2016

**Monsanto Endowed Student Fund in Agricultural Biotechnology Award**

2015

**1<sup>st</sup> place oral presentation at UCD Plant Biology Colloquium**

2014

**National Science Foundation Honorable Mention**

2013, 2016, 2017, 2018

**Plant Sciences travel award**

Funding travel to the Western section ASPB meeting 2013, Midwest Plant Cell Dynamics meeting 2016, ASPB national meeting 2017 and the 6<sup>th</sup> PanAmerican Conference on Plant Membrane Biology 2018.

2013, 2014, 2015

**Henry A. Jastro Graduate Research Award**

2013-2017

**Graduate Student Research Assistantship**

## **TEACHING**

Sept/2017-Jan/2021\*

**Lecturer** – Professional Presentations, International English and Professional Programs, UC Davis Extension.

As a workshop style course, I led a group of international students from participating universities or institutes (primarily in Japan) through practice professional presentations on their graduate research in English. This included facilitated group work, demonstrations, discussion of effective presentation strategies and preparation of a one-minute elevator pitch. \*Six iterations of this course during timeframe; includes synchronous and asynchronous instruction.

June/2013-March/2018

**Research Mentor** – University of California, Davis.

Advised and trained high school and undergraduate students in experimental design and techniques, data analysis, record-keeping, research summary and report writing, and professional presentations.

Winter/2014 and 2015	<b>Teaching Assistant</b> – University of California, Davis. <b>Plants and Society/PLS012</b> Graded exams and essays, held weekly office hours, lectured on the history of agriculture and population dynamics, organized library resource workshops, designed and graded participation assignments.
Spring/2015	<b>Cell Biology lab/MCB140L</b> Co-led microscopy section with instructor, graded exams, instructed students during weekly office hours.
Fall/2017	<b>Foundations: From Molecules to Individuals/NPB110A</b> Instructed students during weekly discussion sections and office hours, graded exams, prepared and led exam review sessions.
Winter/2016, Spring/2017, and Fall/2018	<b>Biochemistry lab/MCB120L</b> Instructed students during class and weekly office hours, prepared and led Excel workshops, graded exams, oversaw laboratory safety.
Spring/2018	<b>Bioethics/BIT171</b> Held weekly office hours, facilitated in-class discussions, graded essays.

## **SCIENTIFIC COMMUNICATION**

### **PUBLICATIONS:**

- Sinclair, R., Hsu, G., **Davis, D.J.**, Chang, M., Rosquete, M., Iwasa, J., Drakakaki, G. (2022). Plant cytokinesis and the construction of the new cell wall. FEBS Letters.  
<https://febs.onlinelibrary.wiley.com/doi/10.1002/1873-3468.14426>
- Shao, Y., Cheng, Y., Pang, H., Chang, M., He, F., Wang, M., **Davis, D.**, ... Drakakaki, G. (2021). Investigation of Salt Tolerance Mechanisms Across a Root Developmental Gradient in Almond Rootstocks. Frontiers in Plant Science. <https://doi.org/10.3389/fpls.2020.595055>
- Davis, D. J.**, Wang, M., Sørensen, I., Rose, J. K. C., Domozych, D. S., & Drakakaki, G. (2020). Callose deposition is essential for the completion of cytokinesis in the unicellular alga *Penium margaritaceum*. Journal of Cell Science. <https://doi.org/10.1242/jcs.249599>
- Davis, D.J.** Dissecting the Cell Biology and Evolution of Land Plant Cell Cytokinesis with Chemical Genomics. (2020) UC Davis ProQuest Dissertations Publishing.  
<https://www.proquest.com/openview/610aaf82a053365cdb245dc80c7c72b7/1?pq-origsite=gscholar&cbl=18750&diss=y>
- Wilkop, T., Pattathil, S., Ren, G., **Davis, D. J.**, Bao, W., Duan, D., ... Drakakaki, G. (2019). A hybrid approach enabling large scale glycome analysis of post-Golgi vesicles reveals a transport route for polysaccharides. The Plant Cell, tpc.00854.2018. <https://doi.org/10.1105/tpc.18.00854>
- Rosquete, M.R., **Davis, D.J.**, Drakakaki, G. (2018) The plant trans-Golgi network: not just a matter of distinction. Plant Physiology, 176(1), 187-198.  
<https://academic.oup.com/plphys/article/176/1/187/6117022>

- Davis, D.**, Wilkop, T. E., & Drakakaki, G. (2017). The Golgi apparatus. In *Plant Cells and their Organelles* (pp. 61–87). Chichester, UK: John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118924846.ch4>
- Davis, D. J.**, McDowell, S. C., Park, E., Hicks, G., Wilkop, T. E., & Drakakaki, G. (2016). The RAB GTPase RABA1e localizes to the cell plate and shows distinct subcellular behavior from RABA2a under Endosidin 7 treatment. *Plant Signaling & Behavior*, 11(3), e984520. <https://doi.org/10.4161/15592324.2014.984520>
- Davis, D. J.**, Kang, B.-H., Heringer, A. S., Wilkop, T. E., & Drakakaki, G. (2016). Unconventional Protein Secretion in Plants. *Methods in Molecular Biology* (Clifton, N.J.), 1459, 47–63. [https://doi.org/10.1007/978-1-4939-3804-9\\_3](https://doi.org/10.1007/978-1-4939-3804-9_3)
- Park, E., Díaz-Moreno, S. M., **Davis, D. J.**, Wilkop, T. E., Bulone, V., & Drakakaki, G. (2014). Endosidin 7 specifically arrests late cytokinesis and inhibits callose biosynthesis revealing distinct trafficking events during cell plate maturation. *Plant Physiology*. <https://doi.org/10.1104/pp.114.241497>

#### **ORAL PRESENTATIONS:**

##### **CONFERENCES/INVITED:**

- Davis, D.J. “Seeding Science at the USBG.” STPF Year End Summitt and Send Off. August 3rd, 2023. Washington D.C.
- Davis, D.J., Park, E., Wang, M. Domozych, D., Drakakaki, G. “Callose, cytokinesis, and a Charophyte.” *Plantae Presents* invited presentation. December 7th, 2020. Davis, CA. ([virtual](#))
- Davis, D.J., Wilkop, T.E., Pattathil, S., Ren, G., Bao, W., Duan, D., Peralta, A.G., Domozych, D.S., Hahn, M.G., Drakakaki, G. “Packaged Polysaccharides and Their Pathways to the Cell”. The 6<sup>th</sup> PanAmerican Conference on Plant Membrane Biology. June 25<sup>th</sup>, 2018. Vancouver, Canada.
- Davis, D.J., Worden, N., Rosquete, M.R., Wilkop, T., Drakakaki, G. “Endomembrane Trafficking and the Plant Cell Wall”. ASPB Annual Meeting. June 24<sup>th</sup> 2017. Honolulu, HI.
- Davis, D.J. “Imagine You’re in an Elevator.” ASPB Annual Meeting [Pitch Your Science](#). June 25th 2017. Honolulu. HI.
- Davis, D.J., Wang, H. Rosquete, M.R., Park, E., Wilkop, T., Drakakaki, G. “Uncovering the Mystery of How Plant Cells Divide”. NAIST International Student Workshop. November 13<sup>th</sup> and 15<sup>th</sup>, 2016. Nara, Japan.
- Davis, D.J., Rosquete, M.R., Wang, H., Wilkop, T., Drakakaki, G. “Dissecting Plant Cell Cytokinesis with Endosidin 7”. Midwest Plant Cell Dynamics Meeting, June 23, 2016. St. Louis, Missouri.
- Davis, D.J., Park, E., McDowell, S.C., Drakakaki, G. “Chemical dissection of cell plate formation”. Midwest Cell Dynamics Meeting, June 6, 2014. Madison, Wisconsin.

##### **INTERNAL (DEPARTMENTAL, DIVISIONAL):**

- Davis, D.J. “Rhizobacterial Colonization Patterns on Plant Roots and Progress Localizing Enzymes in Sorghum.” LBNL Feedstocks Seminar. June 1st, 2022. Emeryville, CA.
- Davis, D.J. “Callose, cytokinesis, and a Charophyte.” LBNL Feedstocks Seminar. November 11th, 2020. Emeryville, CA.
- Davis, D.J., Diab, J., Eudes, A., Mortimer, J. “Roots 2.0: Reimagining a root system optimized for plant-microbe interactions”. 2021. LBNL Environmental Genomics and Systems Biology Division Annual Meeting flash talk. Emeryville, CA.

Davis, D.J. "How plants build big, beautiful, powerful cell walls during cytokinesis". Dissertation Exit Seminar. June 4th, 2019. Davis, CA.

Davis, D.J., Domozych, D.S., Drakakaki, G. "Cytokinesis, the Cell Wall, and a Charophyte". Plant Biology Retreat. October 21<sup>st</sup>, 2018. Tahoe City, CA.

Davis, D.J., Wang, H., Wilkop, T., Drakakaki, G. "Dissecting Plant Cell Cytokinesis with the Small Molecule Inhibitor, Endosidin 7". Plant Cell Biology Retreat. October 8<sup>th</sup>, 2016. Point Reyes, California.

Davis, D.J., Park, E., McDowell, S.C., Le, T., Comai, L., Drakakaki, G. "Uncovering specialized trafficking pathways during cytokinesis". Plant Cell Biology Retreat, Oct. 3, 2015. Davis, California.

Davis, D.J., Park, E., McDowell, S.C., Le, T., Comai, L., Drakakaki, G. "Something About Vesicles and Cell Division". Plant Biology Fall Colloquium. September 9, 2015. Davis, California.

#### **POSTER PRESENTATIONS:**

Davis, D.J., Wang, W., Diab, J., Zhao, Z., Eudes, A., Mukhopadhyay, A., Yoshikuni, Y., Northen, T., Mortimer, J. American Association of Plant Biologists Annual Meeting. July 9th, 2022. Portland, OR.

Davis, D.J., Domozych, D.S., Drakakaki, G. "Cytokinesis in *Penium margaritaceum*: a model for land plant cell wall formation". Presented at UC Davis Plant Biology Retreat, October 20<sup>th</sup>, 2018. Tahoe City, CA.

Davis, D.J., Comai, L., Drakakaki, G. "Dissecting de novo cell wall formation with a small molecule". Presented at the 6<sup>th</sup> PanAmerican Conference on Plant Membrane Biology. June 25<sup>th</sup>, 2018. Vancouver, Canada.

Davis, D.J., Rosquete, M., Wang, H., Park, E., McDowell, S., Comai, L., Drakakaki, G. "A chemical genomics approach to understanding the role of callose during de novo formation of the cell wall". Presented at the 2017 ASPB national meeting. June 25<sup>th</sup>, 2017. Honolulu, Hawaii.

Davis, D.J., Rosquete, M.R., Wang, H., Park, E., McDowell, S., Le, T., Comai, L., Drakakaki, G. "Using a small molecule inhibitor of plant cell plate maturation". Presented at UC Davis Plant Sciences Symposium. April 24, 2017, Davis, CA. and at NAIST International Student Workshop. November 16<sup>th</sup>, 2016. Nara, Japan.

Davis, D.J., Park, E., McDowell, S., Le, T., Comai, L., Drakakaki, G. "Using a small chemical to dissect polysaccharide deposition at the cell plate". Presented at Midwest Plant Cell Dynamics Meeting. June 21-24, 2016. St. Louis, Missouri.

Davis, D.J., Park, E., McDowell, S.C., Le, T., Comai, L., Drakakaki, G. "Using a small chemical to dissect polysaccharide deposition at the cell plate" (updated from 2014 version). Presented at the Bay Area Meeting on Organelle Biology, March 18, 2015. San Francisco, California.

Davis, D.J., Park, E., McDowell, S.C., Le, T., Comai, L., Drakakaki, G. "Using a small chemical to dissect polysaccharide deposition at the cell plate" (updated from 2013 version). Presented at the Midwest Cell Dynamics Meeting, June 4-6, 2014. Madison, Wisconsin.

Davis, D.J., Park, E., Le, T., Comai, L., Drakakaki, G. "Using a small chemical to dissect polysaccharide deposition at the cell plate". Presented at UC Davis Plant Biology Retreat, Oct. 25-27, 2013 Asilomar, California & American Society of Plant Biologists Western Section Meeting May 3-4, 2014 Santa Clara, California.

#### **PROFESSIONAL SKILLS**

##### **RESEARCH:**

Tissue culture, gel electrophoresis, confocal microscopy (Leica and Zeiss platforms), PCR, western blot, microtome sectioning, electron

microscopy sample prep, fixation and resin embedding of tissue, vesicle isolation, immunoprecipitation, immunolabeling, RNA extraction and cDNA synthesis, HPLC, transient transformation.

**LAB MANAGEMENT:**

Lab safety officer (Fall 2013-Fall 2020) overseeing training and adherence to departmental safety policies, development of SOPs, inventory and waste disposal.

**DATA ANALYSIS:**

Image analysis (Image J), R statistical software, Zen image analysis software, LAS-X image analysis software, Imaris.

**SCIENTIFIC/PROFESSIONAL  
COMMUNICATION:**

Technical editing, internal communications, science blog writing, manuscript and research proposal preparation, PowerPoint for posters and presentations, figure preparation (Adobe Photoshop and Illustrator).

**COMMUNITY SERVICE**

Jan/2013-Sep/2020

**Outreach volunteer (Designated Emphasis in Biotechnology)**

Supervisor: Denneal Jamison-McClung

Service: I have led high school students on a tour of campus and my PhD laboratory following a 5 minute lay-summary of my research; served as a judge for the Teen Biotech Challenge and FFA/4H science fair; helped prepare material for DNA extraction during Picnic Day; and attended local elementary school science fairs with scientific demonstrations.

Feb/2015

**Committee member (Plant Biology Graduate Group, PBGG)**

Recruitment committee, Prospective PBGG student recruitment

Service: As a student representative, I helped organize, plan, and run the recruitment events, including organizing speakers, tours, transportation, and student hosts during the weekend visit of 20 prospective graduate students.

Aug/2015 – Sept/2020

**Leadership team member and co-founder ("Science Says")**

Science Communication student group, UC Davis Plant Sciences dept.

Supervisor: Prof. Pamela Ronald

Service projects: Since founding the group with a small group of grad students in 2015, I have served as social media co-chair, chair of membership and president. I have led a community science book club, created a scientist exhibit at the Elk Grove Scarecrow Contest and designed a creative, scientific drawing for the Chalk It Up! event in Sacramento. I have volunteered at Picnic Day, local elementary school science fairs, farmer's markets, and classroom visits. As part of the leadership team I have helped develop and lead science communication training events for students, faculty and staff; prepare fun, interactive exhibits geared towards kids and adults at local events; and maintain and contribute to our website, blog, and social media presence.

Website: <https://davissciencesays.ucdavis.edu/>