

## EDUCATION

2016 | MS., Botany & Plant Pathology,  
Purdue University, West Lafayette, IN

2012 | B.A., Horticulture Science  
Purdue University, West Lafayette, IN

## AWARDS & HONORS

2016 | Nominated for Excellence in Teaching Award  
2015 | Teaching Academy Graduate Teaching Award  
2014 | Botany & Plant Pathology Travel Award

## TEACHING ASSISTANTSHIPS

BTNY 110 | Introduction to Plant Science  
Laboratory Instructor, Spring 2014, Spring 2015, Summer  
2015, Fall 2015, Spring 2016

BTNY 316 | Plant Anatomy  
Fall 2013, Fall 2014

## SKILLS

### Microscopy

Transmission Electron Microscopy (TEM), Scanning Electron  
Microscopes (SEM), CryoSEM, Electron Dispersive X-ray analysis  
(EDX), light, stereo, polarized, dark-field and fluorescent

### Microscopy Support

Cressington turbo-pumped sputter coater, Pelco Oven for microwave  
fixation, critical point drying, resin and paraffin fixation and embedding,  
plant tissue clearing, free-hand sectioning, microtomy, ultramicrotomy

### Laboratory

RNA extraction, tissue culture, sterile technique, northern blot, plant  
nucleic acid purification, protoplast isolation, electrophoresis, osmolality,  
media preparation, bacterial and fungal culture, spectroradiometry

### Field

Herbicide application, field plot management

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## RESEARCH EXPERIENCE

Laboratory Manager/Microscopist | Department of Botany & Plant Pathology, Purdue University

2016 – Present | Mentor: Dr. Anjali Iyer-Pascuzzi | Microscopy specialist, research technician and general laboratory/greenhouse  
management duties.

Research Assistant, Department of Botany & Plant Pathology, Purdue University

2015-2016 | Mentor: Dr. Anjali Iyer-Pascuzzi | Investigated the role of root anatomy and root architecture in resistance to *Ralstonia  
solanacearum* using paraffin processing and histological techniques using light and scanning microscopy.

2013-2015 | Mentor: Dr. Mary Alice Webb | Investigated calcium oxalate crystals in *Aptenia cordifolia* using a wide array of  
microscopy to include light, stereo, scanning and transmission electron.

2013 | Mentor: Dr. Nicolas Carpita | Investigated Flax (*Linum usitatissimum*) seed coat development in regards to mucilage  
development and expression using RNA extraction and light microscopy.

Lab Technician, Department of Botany & Plant Pathology, Purdue University

2013 | Mentor: Dr. Catherine Aime | Mycology media preparation and bacterial and fungal culture transfer.

Research & Discovery Intern, Dow AgroSciences LLC, Indianapolis, IN

2012 | Mentor: Dr. Yang Yang | Evaluated performance of light emitting diode (LED) as sole/primary light source I growing  
soybean seedlings and seedlings of other crops such as wheat and weed species in a conviron growth chamber.

Research Lab Assistant, Department of Horticulture, Purdue University

2010-2012 | Mentor: Dr. Steve Weller | Managed heirloom tomato competition trial, researched breaking seed dormancy in  
*Ambrosia trifida*.

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## PUBLICATIONS

**Caldwell, D.**, and Anjali S. Iyer-Pascuzzi. "A Scanning Electron Microscopy Technique for Viewing Plant– Microbe Interactions at  
Tissue and Cell-Type Resolution." *Phytopathology* (2019): PHYTO-07.

**Caldwell, D.**, Bong-Suk Kim, and Anjali S. Iyer-Pascuzzi. "Ralstonia solanacearum differentially colonizes roots of resistant and  
susceptible tomato plants." *Phytopathology* 107.5 (2017): 528-536.

Kim, B. S., French, E., **Caldwell, D.**, Harrington, E. J., & Iyer-Pascuzzi, A. S. (2016). Bacterial wilt disease: Host resistance and  
pathogen virulence mechanisms. *Physiological and Molecular Plant Pathology*, 95, 37-43.

**Caldwell, D.**, "The Role of Root Anatomy and Root Architecture in Resistance to *Ralstonia solanacearum*." (2016).

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