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EDUCATION

Ph.D., (2013-2019), Plant Biology, The Pennsylvania State University

B.S., (2009-2013), Biology and Environmental Studies, Gettysburg College

RESEARCH

Postdoctoral Scholar, (2019-present), Jonathan P. Lynch Lab, The Pennsylvania State University

-Conducting FFAR funded research to investigate architectural and anatomical root traits in maize (*Zea mays*) and their integrated effect on water acquisition using *in silico* modeling, laser ablation tomography, and field-based physiology techniques. Working to organize, manage, and collect data from field trials at the Larson Research Station in PA and Tuniche Seed Services Research Station in Rancagua, Chile.

Graduate Fellow, (2013-2019), Jonathan P. Lynch Lab, The Pennsylvania State University

-Conducted USAID funded research on root systems and plant nutrition in legumes (*Phaseolus* sp.) in the field, greenhouse, lab, and *in silico*, including field trials at Larson Research Station in PA; the Arizona Root Biology Center in AZ; the USDA, ARS, Tropical Crops and Germplasm Research center in Mayaguez, PR.

Research Fellow, (2012-2013), Thomas Mitchell-Olds Lab, Duke University

-Conducted and published NSF funded greenhouse and lab experiments examining the effects of abiotic stress on the flux control of three genes in the glucosinolate production pathway in collaboration with Dr. Carrie Olson-Manning.

Research Assistant, (2011), Thomas Mitchell-Olds Lab, Duke University

-Participated in a survey of invasive garlic mustard (*Alliaria petiolata*) populations.

Independent Researcher, (2010-2013), Véronique Delesalle Lab, Gettysburg College

-Conducted lab-based experiments on the effects of hydration/dehydration cycles on germination in two subspecies of *Clarkia xantiana*, as well as experiments on the effects of triploidy on growth and reproductive capability in the genus *Clarkia*.

PUBLICATIONS

Schneider HM, **Strock CF**, Hanlon MT, Vanhees DJ, Perkins AC, Ajmera IB, Sidhu JS, Mooney SJ, Brown KM, Lynch JP (2021) Multiseriate cortical sclerenchyma enhances root penetration in compacted soils. PNAS, *In press*.

Levin KA, Tucker MR, **Strock CF**, Lynch JP, Mather DE (2021) Three-dimensional imaging reveals differences in the position of cyst nematode feeding sites relative to xylem vessels in susceptible and resistant wheat. Plant Cell Reports, *In press*.

<https://doi.org/10.1007/s00299-020-02641-w>

Strock CF, Burrridge JD, Niemiec MD, Brown KB, Lynch JP (2021) Root metaxylem and root architecture phenotypes interact to regulate water use under drought stress. Plant, Cell & Environment, **44**: 49-67. <https://doi.org/10.1111/pce.13875>

Jochua C, **Strock CF**, Lynch JP (2020) Root phenotypic diversity in common bean (*Phaseolus vulgaris* L.) reveals contrasting strategies for soil resource acquisition among gene pools and races. *Crop Science*, **60**: 3261-3277. <https://doi.org/10.1002/csc2.20312>

Strock CF, Lynch JP (2020) Root Secondary Growth: An Unexplored Component of Soil Resource Acquisition. *Annals of Botany*, **126**: 205-218. <http://doi.org/10.1093/aob/mcaa068>

Strock CF, Schneider HM, Galindo-Casteneda T, Hall BT, Van Gansbeke B, Mather DE, Roth MG, Chilvers MI, Guo X, Brown KB, Lynch JP (2019) Laser Ablation Tomography for Visualization of Root Colonization by Edaphic Organisms. *Journal of Experimental Botany*, **70**:5327-5342 <https://doi.org/10.1093/jxb/erz271>

Strock CF, Burridge J, Massas ASF, Beaver J, Beebe S, Camilo SA, Fourie D, Joucha C, Miguel M, Miklas PN, Mndolwa E, Nchimbi-Msolla S, Polania J, Porch TG, Rosas JC, Trapp JJ, Lynch JP (2019) Seedling Root Architecture and its Relationship with Seed Yield Across Diverse Environments in *Phaseolus vulgaris*. *Field Crops Research* **273**: 53-64 <http://doi.org/10.1016/j.fcr.2019.04.012>

Strock CF, de la Riva LM, Lynch JP (2018) Reduction in Root Secondary Growth as a Strategy for Phosphorus Acquisition. *Plant Physiology* **176**: 691-703 <https://doi.org/10.1104/pp.17.01583>

Olson-Manning CF, **Strock CF**, Mitchell-Olds T (2015) Flux Control in a Defense Pathway in *Arabidopsis thaliana* is Robust to Environmental Perturbations and Controls Variation in Adaptive Traits. *G3-Genes Genomes Genetics* **5**: 2421-2427 <https://doi.org/10.1534/g3.115.021816>

IN PREP

Saengwilai P, Chimungu J, Rangarajan H, **Strock CF**, Jirawat S, Lynch JP. Long root hairs enhance nitrogen acquisition from low nitrogen soils. *Annals of Botany*, *Under review*.

Strock CF, Schneider HM, Yang JT, Brown KM, Lynch JP. Integration of nodal root and leaf anatomy for enhanced water and nitrogen use efficiency in maize (*Zea mays* L.). *In Prep*.

Strock CF, Black CK, Lynch JP. The adaptive significance of inhibiting root growth in strong soils. *In Prep*.

TEACHING & OUTREACH

Educational Video Development, Created educational videos providing information on the methodologies and significance of plant science research.

(<https://www.youtube.com/channel/UCR0SJpBrsmksmrScp01hfsg>)

Merit badge counselor (2016-current), Registered with Juniata Valley Council of the Boy Scouts of America to teach the “Plant Science” and “Soil and Water Conservation” merit badges

Graduate teaching assistant (2014-2018), Plant Nutrition (HORT 402), The Pennsylvania State University

Guest Lecturer (2016-2018), *Roots of the Second Green Revolution* (INTAG 100), The Pennsylvania State University

Guest Lecturer (2016), *Root Anatomical Phenomena for Nutrient Capture*, Gettysburg College

Teaching assistant (2013), Earth System Science (ES 232), Gettysburg College

FELLOWSHIPS & AWARDS

NIFA Postdoctoral Fellowship (PI) *Improving soil resource acquisition in maize through optimization of fungal interactions with root anatomy and architecture*. \$165,000 (2019) (declined to work on another project)

Walter Thomas Memorial Scholarship (2017-2018) Awarded to students exhibiting research and teaching potential in topics of plant nutrition.

Syngenta Agricultural Scholarship (2015). Competitive award for ideas contributing to improved agricultural productivity.

Graham Endowed Fellowship, The Pennsylvania State University (2013-2015). Awarded for academic achievement.

Presidential Scholarship, Gettysburg College (2009-2013). Competitive award for academic achievement.

ORGANIZATIONS & SOCIETIES

Penn State Postdoctoral Society Advisory Committee (2019-present). Plans professional, leadership, and communication related events for postdoctoral scholars at Penn State University.

Huck Graduate Student Advisory Committee (2016-2018). Plans professional, leadership, and communication related events for graduate students in the life sciences.

Penn State Life Science Symposium Committee (2017-2018). Organizes the annual Penn State Life Science Symposium; a scientific meeting for graduate, postdoctoral, and faculty researchers in the life sciences.

American Society of Agronomy (ASA)

Crop Science Society of America (CSSA)

Soil Science Society of America (SSSA)

American Society of Plant Biologists (ASPB)

Bean Improvement Cooperative (BIC)

National Eagle Scout Association (NESAs)