

ERICA H. LAWRENCE

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EDUCATION

- 2021 **Ph.D. in Biology**, University of Pennsylvania
Thesis title: The ecophysiological significance of vegetative phase change
Thesis Advisors: R. Scott Poethig and Brent R. Helliker
- 2014 **B.S. in Biology**, Saint Joseph's University
Departmental honors, cum laude
Thesis Advisor: Clint J. Springer

PROFESSIONAL POSITIONS

- 2022- present **NSF Postdoctoral Fellow**, Lasky Lab, Pennsylvania State University
- 2021- 2022 **Postdoctoral Scholar**, Lasky Lab, Pennsylvania State University
- 2019-2020 **Center for Teaching and Learning Graduate Fellow**, University of Pennsylvania
- 2016-2020 **National Science Foundation Graduate Research Fellow**, University of Pennsylvania
- 2015-2020 **Graduate Teaching Assistant**, University of Pennsylvania
- 2014-2015 **Graduate Education Fellow**, University of Pennsylvania
- 2012-2014 **Plant Physiological Ecology Honors Research Student**, Saint Joseph's University
- 2012 **Research Intern**, Eastern Regional Research Center-USDA-ARS
- 2012 **Biodiversity Lab Research Assistant**, Saint Joseph's University
- 2011-2014 **Supplemental Instructor for Cells and Genetics Courses**, Saint Joseph's University

FELLOWSHIPS, AWARDS AND GRANTS

FELLOWSHIPS AND AWARDS

- 2020 Schmidt Science Fellowship Nominee, University of Pennsylvania
- 2019-2020 Center for Teaching and Learning Fellowship, University of Pennsylvania
- 2017 Biology Graduate Student Poster Presentation Award, University of Pennsylvania
- 2016-2020 National Science Foundation Graduate Research Fellowship
- 2015 National Science Foundation Graduate Research Fellowship, Honorable Mention
- 2013 Summer Scholars Fellowship, Saint Joseph's University
- 2010-2014 Dean's List, Saint Joseph's University
- 2010-2014 Medical Alumni Scholarship, Saint Joseph's University
- 2010-2014 Presidential Scholarship, Saint Joseph's University
- 2010-2014 Regis Grant, Saint Joseph's University
- 2010-2014 Assistance Grant, Saint Joseph's University

GRANTS

- 2022 **NSF Postdoctoral Fellowship in Biology**, NSF-IOS Award #2109780 "The role of vegetative development on plant response to environmental stress from genomic and physiological perspectives" (\$216,000)
- 2020 **Ecological Society of America** Real/Brown Travel Award (virtual registration fee, \$60)
- 2020 **University of Pennsylvania** Technology Grants (\$700)

2019	University of Pennsylvania William H. Telfer Graduate Student Travel Award (\$1,750)
2019	Ecological Society of America Travel Award (\$500)
2019	School of Arts and Sciences Graduate Student Government Travel Award (\$300)
2019	Graduate and Professional Student Association Research Travel Award (\$550)
2019	University of Pennsylvania SAS Dean's Travel Subvention Award (\$500)
2017	University of Pennsylvania Dissertation Research Fellowship (\$5,000)
2017	University of Pennsylvania SAS Dean's Travel Subvention Award (\$500)
2017	University of Pennsylvania Peachey Research Grant (\$1,800)
2016	University of Pennsylvania Peachey Research Grant (\$1,400)
2014	Sigma Xi Research Grant, Saint Joseph's University Chapter (\$300)

PEER-REVIEWED PUBLICATIONS

Lawrence, E.H., C.J. Springer, B.R. Helliker, and R.S. Poethig. The carbon economics of vegetative phase change. 2022. *Plant, Cell & Environment*. doi: 10.1111/pce.14281

Lawrence, E.H., A.R. Leichty, E.E. Doody, C. Ma, S.H. Strauss, and R.S. Poethig. Vegetative phase change in *Populus tremula x alba*. 2021. *New Phytologist*. 231(1), 351-364. doi:10.1111/nph.17316

Lawrence, E.H., C.J. Springer, B.R. Helliker, and R.S. Poethig. MiR156-mediated changes in leaf composition lead to altered photosynthetic traits during vegetative phase change. 2020. *New Phytologist*. 231(3) 1008-1022. doi:10.1111/nph.17007 *featured cover article*

Lawrence, E.H., J.R. Stinziano, and D.T. Hanson. Using the rapid A-Ci response (RACiR) in the Li-Cor 6400 to measure developmental gradients of photosynthetic capacity in poplar. 2019. *Plant Cell and Environment*. 42(2), 740-750.

PUBLICATIONS IN PROGRESS (SUBMITTED MANUSCRIPTS ONLY)

Lawrence, E.H., R.S. Poethig, and J.R. Lasky. Vegetative phase change causes age-dependent changes in phenotypic plasticity. 2021. *In revision at New Phytologist* (Preprint available doi.org/10.1101/2021.11.02.467012)

PRESENTATIONS

INVITED SEMINARS

Casper, B.B., and **E.H. Lawrence**. 2020. Physiology and growth responses to climate change vary with plant size and developmental stage. Ecological Society of America 2020, Symposium: Celebrating 50 years of the Physiological Ecology Section. (Virtual)

Lawrence, E.H. 2018. The physiology of vegetative phase change. Department of Biology Seminar. Saint Joseph's University, Philadelphia, PA.

CONTRIBUTED TALKS

Lawrence, E.H., C.J. Springer, B.R. Helliker, and R.S. Poethig. 2020. Leaf carbon economic strategies change during vegetative development. Ecological Society of America 2020. (Virtual)

Lawrence, E.H. 2020. Ontogenetic changes in leaf carbon economics. Plant Biology Seminar. University of Pennsylvania, Philadelphia, PA. (Virtual)

Lawrence, E.H., B.R. Helliker and R.S. Poethig. 2019. Developmental changes in leaf physiology and its implications for environmental adaptation. Ecological Society of America 2019. Louisville, KY.

Lawrence, E.H., B.R. Helliker and R.S. Poethig. 2019. Developmental changes in leaf physiology and its implications for environmental adaptation. Plant Biology 2019. San Jose, CA.

Lawrence, E.H. 2019. Vegetative developmental stage influences photosynthetic response to dynamic light. Plant Environmental Physiology Early Career Research Symposium, Eden Project, Cornwall, UK

- Lawrence, E.H.** 2019. The characteristic leaf fluttering in Poplar is developmentally regulated. CRPPY (Columbia-Rutgers-Penn-Princeton-Yale) Ecology and Evolution Meeting. Princeton University, Princeton, NJ.
- Lawrence, E.H.** 2019. Photosynthetic responses to light during vegetative phase change. Plant Biology Seminar. University of Pennsylvania, Philadelphia, PA.
- Lawrence, E.H.** 2018. The functional significance of vegetative phase change in plants. Evolution in Philadelphia Conference (EPIc). The Academy of Natural Sciences, Philadelphia, PA.
- Lawrence, E.H.** 2018. Photosynthetic variation during vegetative phase change in plants. CRPPY (Columbia-Rutgers-Penn-Princeton-Yale) Ecology and Evolution Meeting. Rutgers University, New Brunswick, NJ.
- Lawrence, E.H.** 2018. Ontogenetic changes in photosynthetic traits in maize and poplar. Plant Biology Seminar. University of Pennsylvania, Philadelphia, PA.
- Lawrence, E.H.** 2017. The role of vegetative phase change in light use characteristics of maize leaves. Plant Biology Seminar. University of Pennsylvania, Philadelphia, PA.
- Lawrence, E.H.** 2016. Vegetative Phase Change and Its Relationship to Physiology and the Environment. Ecology & Evolution Seminar. University of Pennsylvania, Philadelphia, PA.
- Lawrence, E.H.** 2014. Elevated CO₂-Induced Changes in Flowering Time and Its Relation to Altered Expression of *miR156* in *Arabidopsis thaliana*. SJU Department of Biology Seminar. Philadelphia, PA.

POSTERS

- Lawrence, E.H.,** B.R. Helliker and R.S. Poethig. 2019. Developmental changes in leaf physiology and its implications for environmental adaptation. Plant Biology 2019. San Jose, CA.
- Picknally, G., **Lawrence, E.H.,** Newman, T.J., Springer, C.J. 2019. miR156 regulation of flowering time of elevated CO₂-grown plants. ASPB Midwest. West Virginia University, Morgantown, WV.
- Lawrence, E.H.,** B.R. Helliker and R.S. Poethig. 2017. The role of vegetative phase change in plant physiological functioning. Ecological Society of America 2017. Portland, OR.
- Lawrence, E.H.** and C.J. Springer. 2014. Elevated carbon dioxide alters flowering time through changes in *miR156* expression. Plant Biology 2014. Portland, OR.
- Lawrence, E.H.** and C.J. Springer. 2014. Mechanisms leading to altered flowering time of plants grown at elevated atmospheric carbon dioxide concentrations. Sigma Xi Scientific Research Society Symposium. Philadelphia, PA.
- Lawrence, E.H.** 2014. Mechanisms controlling altered flowering time of elevated CO₂-grown plants. Saint Joseph's University Celebration of Student Achievement Symposium. Philadelphia, PA.

TEACHING AND MENTORSHIP

2020	Head Teaching Assistant , Biology 102 Active Learning Section University of Pennsylvania
2020	Teaching Assistant , Genetic Analysis University of Pennsylvania
2018	Course Developer and Instructor , Plants and Their Environment Penn Summer Prep Program, University of Pennsylvania
2017	Exam Proctor and Grader , Biology 102 University of Pennsylvania
2016	Instructor of Record , Biology 102 Laboratory

- University of Pennsylvania
2015, 2019 **Teaching Assistant**, Ecology: Individuals to Ecosystems
University of Pennsylvania
- 2013, 2014 **Teaching Assistant**, Plant Physiological Ecology
Saint Joseph's University
- 2011-2014 **Supplemental Instructor**, Cells and Genetics
Saint Joseph's University

GUEST LECTURES

- University of Pennsylvania** Plant Ecology, Spring 2020
Biology 102, Fall 2020
- Saint Joseph's University** Plant Physiological Ecology, Spring 2020
Plant Physiological Ecology, Spring 2017

STUDENTS MENTORED

- University of Pennsylvania** Edward Barry, Undergraduate
Dafni Papapolyzou, Undergraduate
Anjali Gupta, High School
- Saint Joseph's University** William Majewski, Undergraduate

SERVICE & OUTREACH

- PROFESSIONAL SERVICE **School of Arts and Sciences Teaching Awards Selection Committee member. 2020**
University of Pennsylvania, Graduate student representative

Center for Teaching and Learning workshops leader. 2020
University of Pennsylvania, Topics included; Active learning, diversity and inclusion, leading effective discussions, mentee-mentor relationships, teaching biology to non-majors, designing a new course.

Teaching Assistant (TA) Training panelist, 2016-2018, 2020
University of Pennsylvania Biology Department

Biology Graduate Student Association member. 2015- 2020
University of Pennsylvania, Organizing departmental social events and new student recruitment.

- OUTREACH **National Center for Science Education Fellow, 2017-2018**
Sun Valley High School, Ashton, PA. Developed and taught lessons on evolution, climate change and plant biology

Penn Alexander Expert Expo Scientist, 2017
Penn Alexander Elementary School, Philadelphia, PA. Served and a scientist advisor for students entering the science fair

Early Access to Graduate Research (EAGR) Instructor, 2017
The Franklin Institute, Philadelphia, PA. Developed and lead a climate change learning activity for high school students

Penn Alexander Elementary School Science Fair Judge, 2016-2018
Penn Alexander Elementary School, Philadelphia, PA.

High School Science Day Leader, 2016-2018
University of Pennsylvania, Philadelphia, PA. Developed and lead lab exercises and discussions for Philadelphia area high school students.

Letters to a Pre-Scientist Pen-Pal, 2015 – 2017

Scientist Pen-pal for elementary school students.

Junior Science and Humanities Symposia Mentor, 2015- 2017

The Mayor's Office of Education, STEM city PHL, Philadelphia, PA. Assisted Philadelphia high school students in preparing scientific research papers and presentations to be entered into a regional and national competition for scholarship.

Science Education Outreach to Urban School Children, 2013 –2014

Samuel Gompers Elementary School, Philadelphia, PA. Taught inquiry-based science lessons to fourth grade classes and discussed science education pedagogy.

Gompers' Elementary School Art Club Instructor, 2012

Samuel Gompers Elementary School, Philadelphia, PA.

Gompers' Elementary Afterschool Homework Program, 2011

Samuel Gompers Elementary School, Philadelphia, PA. Provided afterschool activities and homework assistance for Philadelphia elementary aged students.

REVIEWER Acta Physiologiae Plantarum (1), American Journal of Botany (1), Journal of the American Society for Horticultural Science (1), Tree Physiology (1)

PROFESSIONAL SOCIETY FOR EXPERIMENTAL BIOLOGY
MEMBERSHIPS PHILADELPHIA BOTANICAL SOCIETY
ECOLOGICAL SOCIETY OF AMERICA
NATIONAL CENTER FOR SCIENCE EDUCATION
SOCIETY OF WOMEN ENVIRONMENTAL PROFESSIONALS
SIGMA XI, INDUCTED 2014
AMERICAN SOCIETY OF PLANT BIOLOGISTS
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

PROFESSIONAL DEVELOPMENT

- 2020 **Structured, Active, In-class Learning training.** Training program for effective implementation of active learning. University of Pennsylvania Center for Teaching and Learning.
- 2018 **Teaching Certificate in College and University Teaching.** Teaching certification program that includes pedagogical discussion and training, teaching experience, teaching observation and review, and teaching philosophy. University of Pennsylvania Center for Teaching and Learning.
- Course in College Teaching.** University of Pennsylvania Center for Teaching and Learning.
- PHYS-Fest 2.** Plant eco-physiology techniques and science communication workshop and networking. Holden Arboretum, Kirtland, OH.
- 2017 **Mini Course in Online Teaching.** University of Pennsylvania Center for Teaching and Learning,
- 2016 **PHYS-Fest.** Plant eco-physiology techniques workshop and networking. Konza Prairie Biological Station, Manhattan, KS.
- 2015 **AAAS "What We Know Initiative" Climate Change Communicating Science Workshop.** American Association for the Advancement of Science, Washington, DC.
- LI-6400 XT Training Workshop.** Equipment training session for the LI-6400XT portable photosynthesis machine. Brookhaven National Laboratory, Upton, NY.