

Jennifer H. Doherty

Curriculum vitae

Assistant Professor of Physiology

567 Wilson Rd
East Lansing, MI 48824

dohert59@msu.edu

Education

Ph.D. in Biology, University of Pennsylvania 2009
Major Professor: Brenda B. Casper
Certificate of College Teaching and Learning
B.A. *cum laude* in Biology, with Distinction, University of Pennsylvania 2000

Appointments

Assistant Professor, *Department of Physiology & Lyman Briggs College,* 2022-present
Michigan State University
Teaching Professor, *Department of Biology, University of Washington* 2020-2022
Principal Lecturer, *Department of Biology, University of Washington* 2019-2020
Senior Lecturer, *Department of Biology, University of Washington* 2014-2019
Assistant Professor-Fixed Term 2013-2014
Departments of Teacher Education and Plant Biology, Michigan State University
Curriculum Advisor, Bio-Inspired Technology and Systems Research Experience 2010-2011
College of Engineering, Michigan State University
Post-doctoral Research Associate, PIs: Charles W. (Andy) Anderson, Tammy Long 2009-2013
Departments of Teacher Education and Plant Biology, Michigan State University

Recent Unfunded proposals

National Science Foundation IUSE 2023-2026
Student reasoning about vaccines: \$38,998
Developing a reasoning framework of Conceptual Learning in Immunology & Microbiology (CLIMb)
Role: Co-PI of grant, PI of MSU SubAward with PI Justine Liepklaus, Colorado State University.
Total project funding requested is \$400,000.

National Science Foundation IUSE 2023-2026
Collaborative Research: Four-Dimensional Ecology Education for \$708,852
Undergraduates: Elaborating, Validating and Advancing ESA's 4DEE Framework
Role: Senior Personnel with writing and research roles with PI Luanna Prevost, University of South Florida. This is a collaborative proposal with University of South Florida as the lead. Total project funding is \$1,200,000 with collaborating institutions Ecological Society of America and Cary Institute for Ecosystem Studies.

Past Funding

UW Diversity & Inclusion Seed Grant	2019-2021
<i>UW Biology Majors: Building Community and Diversifying Leadership</i>	\$2,800
Role: Lead collaborating with Brian Buchwitz, Department of Biology, University of Washington	
National Science Foundation Robert Noyce Research Program (NSF 1758264)	2018-2021
<i>Effective Novice Teachers - How Systems of Support Can Transform the Clinical Experience During Teacher Preparation</i> http://mentorteachers.org/	\$800,000
Role: Co-PI with PI Karin Lohwasser, College of Education, University of Washington	
National Science Foundation IUSE (NSF 1725149)	2017-2021
<i>CAUSE for transformation: The Consortium for the Advancement of Undergraduate Student Education</i>	\$917,793
Role: Co-PI with PI Mary Pat Wenderoth, Department of Biology, University of Washington	
National Science Foundation EHR Core Research NSF (NSF 1661263)	2017-2021
<i>Collaborative Research: Learning Progressions on the Development of Principle-based Reasoning in Undergraduate Physiology (LeaP UP)</i>	\$993,793
Role: Lead PI (This is a collaborative proposal with UW as the lead. Total project funding is \$1,458,990 with collaborating institution Michigan State University — NSF 1660643)	
National Science Foundation Robert Noyce Research Program (NSF 1540678)	2015-2018
<i>The clinical experience for pre-service science educators: An exploratory study of their collegial networks and "opportunity to learn" trajectories</i>	\$799,003
Role: Co-PI with PI Mark Windschitl, College of Education, University of Washington	
Math and Science Partnership WA Office of the Superintendent of Public Instruction	2015-2018
<i>Partnership for Science and Engineering Practices II</i>	
Role: Institution of Higher Education Core Partner with Seattle Public Schools	
National Science Foundation Discovery Research K-12 Grant (NSF 1221188)	2012-2015
<i>Unifying Life: Placing Urban Tree Diversity in an Evolutionary Context</i>	\$450,000
Role: Co-PI with Yael Wyner, City College of New York	
National Science Foundation Doctoral Dissertation Improvement Grant (DDIG 0808273)	2008-2010
<i>Is there niche partitioning among arbuscular mycorrhizal fungi?</i>	\$11,896
Math and Science Partnership PA Department of Education Sub-Award	2007-2009
<i>Teacher Professional Development Related to Inquiry In the 10th grade Biology School District of Philadelphia Core Curriculum</i>	\$105,000
Role: PI	
Sigma Delta Epsilon/Graduate Women in Science Eloise Gerry Fellowship	2008-2009
<i>Do different mycorrhizal fungal species serve different functions?</i>	\$9,705

Peer Reviewed Publications

The standards of the biology education research field are that the senior lead author is the last author of the publication and the first author is the trainee or person who conducted the majority of the research or writing. When the senior lead author is the first author who conducted the majority of the research or writing, that will be indicated by †. Trainees are indicated: *undergraduate mentored, #graduate student co-mentored on project, ^postdoctoral scholar or junior staff scientist mentored.

Accepted and Published

30. **Doherty, J.H.** †, **Scott, E.E.** ^, **Cerchiara, J.A.** ^, Jescovitch, L.N., Mcfarland, J., Haudek, K.C., & Wenderoth, M.P. **2023**. What a difference in pressure makes: A framework describing undergraduate students' reasoning about bulk flow down pressure gradients. *CBE Life Sciences Education*, 22(2), ar23. <https://doi.org/10.1187/cbe.20-01-0003>
29. **Doherty, J.H.** †, **Cerchiara, J.A.** ^, & Wenderoth, M.P. **2023**. Undergraduate students' neurophysiological reasoning: What we learn from the attractive distractors students select. *Advances in Physiology Education*. 47(2), 222–236. <https://doi.org/10.1152/advan.00128.2022>
28. **Doherty, J.H.** †, **Cerchiara, J.A.** ^, **Scott, E.E.** ^, Jescovitch, L.N., Mcfarland, J., Haudek, K.C., & Wenderoth, M.P. **2023**. Oaks to arteries: The Physiology Core Concept of "flow down gradients" supports transfer of student reasoning. *Advances in Physiology Education*. 47(2), 282–295. <https://doi.org/10.1152/advan.00155.2022>
27. Dunster, G. P., Hua, I. J., Grahe, A., Fleischer, J. G., Panda, S., **Doherty, J. H.**, de la Iglesia, H. O. **2023**. Daytime light exposure is a strong predictor of seasonal variation in sleep and circadian timing of university students. *Journal of Pineal Research*. <https://doi.org/10.1111/jpi.12843>
26. **Scott, E.E.** ^, **Cerchiara, J.A.** ^, Mcfarland, J., Wenderoth, M.P., **Doherty, J.H.** **2023**. How students reason about matter flows and accumulations in complex biological phenomena: an emerging learning progression for mass balance. *Journal of Research in Science Teaching*. <https://doi.org/10.1002/tea.21791>
25. **Jackson, M. A.** ^, **Moon, S.** ^, **Doherty, J. H.**, & Wenderoth, M. P. **2022**. Which evidence-based teaching practices change over time? Results from a university-wide STEM faculty development program. *International Journal of STEM Education*, 9(1), 1-15. <https://doi.org/10.1186/s40594-022-00340-4>
24. Wyner, Y.† & **Doherty, J.H.** **2022**. Caring to know a name: An examination of New York City student attitudes towards knowing a tree's name. *Plants, People, Planet*. 1–20. DOI: [10.1002/ppp3.10249](https://doi.org/10.1002/ppp3.10249)
23. **Moon, S.** ^, **Jackson, M.A.**, **Doherty, J.H.**, Wenderoth, M.P. **2021**. Evidence-based teaching practices correlate with increased exam performance in biology. *PLoS ONE* 16(11): e0260789. DOI: [10.1371/journal.pone.0260789](https://doi.org/10.1371/journal.pone.0260789)
22. **Jescovitch, L.N.** ^, **Scott, E.E.** ^, **Cerchiara, J.A.** ^, Merrill, J., Urban-Lurain, M., **Doherty, J.H.**, Haudek, K.C. **2020**. Comparison of Machine Learning Performance Using Analytic and Holistic Coding Approaches Across Constructed Response Assessments Aligned to a Science Learning Progression. *Journal of Science Education and Technology*. DOI: [10.1007/s10956-020-09858-0](https://doi.org/10.1007/s10956-020-09858-0)
21. **Scott, E.E.** ^, Wenderoth, M.P., & **Doherty, J.H.** **2020**. Design-based research: A methodology to extend and enrich Biology Education Research. *CBE Life Sciences Education*. 19(3), es11, 1–12. DOI: [10.1187/cbe.19-11-0245](https://doi.org/10.1187/cbe.19-11-0245)
20. **Kolpikova, E.P.** *, **Chen, D.C.** * & **Doherty, J.H.** † **2019**. Does the format of pre-class reading quizzes matter? An evaluation of traditional and gamified, adaptive pre-class reading quizzes. *CBE Life Sciences Education*. 18(4), ar52. DOI: [10.1187/cbe.19-05-0098](https://doi.org/10.1187/cbe.19-05-0098)

19. Scott, E.E.[^], Wenderoth, M.P., & Doherty, J.H. 2019. Learning Progressions: An Empirically Grounded, Learner-Centered Framework to Guide Biology Instruction. *CBE Life Sciences Education*. 18(4), es5. DOI: [10.1187/cbe.19-03-0059](https://doi.org/10.1187/cbe.19-03-0059)
18. Alred, A.R.[#], Hartley, L.M., Doherty, J.H., Harris, C., & Dauer, J.M. 2019. Exploring student ideas about biological variation. *International Journal of Science Education*. 41(12), 1682-1700. DOI: [10.1080/09500693.2019.1635289](https://doi.org/10.1080/09500693.2019.1635289)
17. Cerchiara, J.A.[^], Kim, K.J., Meir, E., Wenderoth, M.P., & Doherty, J.H. 2019. A new assessment to monitor student performance in introductory neurophysiology: Electrochemical Gradients Assessment Device (EGAD). *Advances in Physiology Education*. 43(2), 211–220. DOI: [10.1152/advan.00209.2018](https://doi.org/10.1152/advan.00209.2018)
16. Jescovitch, L.N.[^], Scott, E.E.[^], Cerchiara, J.A.[^], Doherty, J.H., Wenderoth, M.P., Merrill, J.E., Urban-Lurain, M., Haudek, K.C. 2019. Deconstruction of Holistic Rubrics into Analytic Rubrics for Large-Scale Assessments of Students' Reasoning of Complex Science Concepts. *Practical Assessment, Research and Evaluation* <https://pareonline.net/getvn.asp?v=24&n=7>
15. Moorleggen, D.*^{*}, Oli, N.*^{*}, Crowe, A.J., Liepkalns, J.S., Self, C.J. & Doherty, J.H.[†] 2019. Impact of Automated Response Systems on In-Class Cell Phone Use. *Biochemistry and Molecular Biology Education*. DOI: [10.1002/bmb.21257](https://doi.org/10.1002/bmb.21257)
14. Wyner, Y. & Doherty, J.H. 2019. Seeing the trees: What urban middle school students notice about the street trees that surround them. *Journal of Biological Education*. 0(0), 1-23. DOI: [10.1080/00219266.2019.1667407](https://doi.org/10.1080/00219266.2019.1667407)
13. Le, P.T.[#], Hartley, L.M., Doherty, J.H., Harris, C., & Moore, J.C. 2018. Is being familiar with biodiversity related to reasoning about ecology? *Ecosphere* 9(12):e02532. DOI: [10.1002/ecs2.2532](https://doi.org/10.1002/ecs2.2532)
12. Jackson, M.A.*^{*}, Tran, A.*^{*}, Wenderoth, M.P., & Doherty, J.H.[†] 2018. Peer- vs. self-grading of practice exams: Which is better? *CBE-Life Sciences Education*. 17:ar44 DOI: [10.1187/cbe.18-04-0052](https://doi.org/10.1187/cbe.18-04-0052)
11. Doherty, J.H. & Wenderoth, M.P. 2017. Implementing an Expressive Writing Intervention in a Large College Course. *Journal of Microbiology & Biochemistry Education*. 18(2). DOI: [10.1128/jmbe.v18i2.1307](https://doi.org/10.1128/jmbe.v18i2.1307)
10. Wyner, Y. & Doherty, J.H. 2017. Developing a learning progression for three-dimensional learning of the patterns of evolution. *Science Education*. 00:1–31. DOI: [10.1002/sce.21289](https://doi.org/10.1002/sce.21289)
9. Dauer, J.M., Doherty, J.H., Freed, A., Miller, H., & Anderson, C.W. 2014. Connections between student explanations and inquiry for plant photosynthesis and cellular respiration. *CBE Life Science* 13:397-409. DOI: [10.1187/cbe.14-02-0028](https://doi.org/10.1187/cbe.14-02-0028)
8. Rice, M.J., Doherty, J.H., & Anderson, C.W. 2014. Principles, First and Foremost: A Tool for Understanding Biological Processes. *Journal of College Science Teaching*. 43(3): 74-82.
7. Harris, C., Berkowitz, A.R., Doherty, J.H., & Hartley, L.M. 2013. Exploring biodiversity's big ideas in your school yard. *Science Scope* 36:8.
6. Momsen, J.L., Clark, S.K., Doherty, J.H., Schramm, J.W., & Geraghty Ward, E.M. 2012. Lost in translation: Quantifying the overlap of popular media and non-majors science course assessment vocabulary. *Ecosphere* 3:43. DOI: [10.1890/ES11-00311.1](https://doi.org/10.1890/ES11-00311.1)
5. Doherty, J.H., Harris, C., & Hartley, L.M. 2011. Using Stream Leaf Packs to Explore Community Assembly. *Teaching Issues and Experiments in Ecology*, Vol. 7: Experiment #3.
4. Spindler, L.H.* & Doherty, J.H.* 2009. Assessment of the teaching of evolution by natural selection through a hands-on simulation. *Teaching Issues and Experiments in Ecology*, Vol. 6: Research #2.

*These authors contributed equally

3. Casper, B.B, Bentivenga, S.P., Ji, B., **Doherty, J.H.**, Edenborn, H.M., & Gustafson, D.J. **2008**. Plant-soil feedback: Testing the generality with the same grasses in serpentine and prairie soils. *Ecology*. [89\(8\): 2154-64](#). DOI: [10.1890/07-1277.1](#)
2. **Doherty, J.H.**, Ji, B., & Casper, B.B. **2008**. Testing nickel tolerance of *Sorghastrum nutans* and its associated soil microbial community from serpentine and prairie soils. *Environmental Pollution*. 151(3): 593-598. DOI: [10.1016/j.envpol.2007.04.002](#)
1. Nobel, P.S., De la Barrera, E., Beilman, D.W.*, **Doherty, J.H.***, & Zutta, B.R.* **2002**. Temperature limitations for cultivation of edible cacti in California. *Madroño*. [49\(4\): 228-236](#). *These authors contributed equally

Under review & In revision

Shiroda, M.[^], Scott, E.E.[^], Doherty, J.H., Haudek, K.C. Covariational reasoning and item context affect language in undergraduate mass balance written explanations. *Revision requested for Advances in Physiology Education*.

Invited talks and Webinars

2023 American Physiological Society Webinar. *Getting Started in Educational Research*
 2022 University of Pennsylvania. Department of Biology. Philadelphia, PA. Casper Career Symposium. *What are your students thinking?*
 2022 Michigan State University. Department of Physiology. East Lansing, MI. *What are your students thinking about Bulk Flow?*
 2019 SimBio Webinar. *Using flux reasoning and the Action Potential Extended Tutorial to improve students' understanding of ion movement*.
 2019 University of Minnesota. Department of Biology Teaching and Learning Seminar. Minneapolis, MN. *Principle-based Reasoning: A Tool for Understanding Biological Processes*.
 2019 Life Discovery Conference Keynote. Gainesville, FL. *Is the ability to identify organisms a prerequisite for understanding biodiversity, ecology and the patterns of evolution?*
 2018 STEM Leadership Summit Key Note. Lake Stevens School District. *Talkin' 'bout a Revolution in Undergraduate STEM Education*.

Invited publications

Miller, H., Johnson, W., Freed, A., **Doherty, J.H.**, & Anderson, C.W. The Role of Crosscutting Concepts in Developing a Three-dimensional Learning Progression Framework. *Revision requested for Handbook on Science Learning Progressions*. Invited peer-reviewed chapter.
 Prevost, L., Sorensen, A. E., **Doherty, J. H.**, Ebert-May, D., & Pohlrad, R. **2019**. 4DEE—What's Next? Designing Instruction and Assessing Student Learning. *The Bulletin of the Ecological Society of America*, 0(0), e01552. DOI: [10.1002/bes2.1552](#)
 Anderson, C.W. & **Doherty, J.H.†** **2016**. Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics. In Duncan, R.G., Krajcik, J., Rivet, A. (Eds.) [Disciplinary Core Ideas: Reshaping Teaching and Learning](#). NSTA press. Arlington, VA. Invited peer-reviewed chapter.

Honors and Awards

University of Washington Distinguished Teaching Award, 2019
 University of Washington Distinguished Teaching Award Nomination, 2018
 McLoughlin High School Hall of Fame, Class of 2017
 Ecological Society of America 2017 Education Scholar

NSF FIRST IV Post-doctoral teaching fellowship, 2011-2013
 Chair's Award in Biology at the University of Pennsylvania, 2000
 Rose Award for Undergraduate Research, 2000

Teaching Experience

Michigan State University

Introductory Biology: Cells and Molecules (<i>2 semesters</i>)	2022-present
Introductory Organismal Biology: Genes, Evolution, Ecology (<i>2 semesters</i>) <i>Once for Lyman Briggs College, once for the College of Natural Sciences</i>	2011-2012
Science for Elementary Schools (<i>pre-service teachers</i>)	2011
Teaching Science to Diverse Learners—Elementary (<i>pre-service teachers</i>)	2010
Professional Development Workshops and Institutes for Michigan Biology Teachers	2009-2014

University of Washington

Introductory Biology III: Animal and Plant Physiology (<i>22 quarters</i>) <i>Mentor for Graduate Student Instructor of Record and two Mentored Teaching Opportunity Postdocs</i>	2014-2022
Plant Physiology and Development with CURE lab (<i>2 quarters</i>)	2019, 2020
Intensive Introductory Biology: Human Health Emphasis with CURE lab <i>Coordinator and Instructor, Course combined all of Intro Bio into an intensive 10 wk, 15 credit course</i>	2018
Professional Development Workshops for Seattle and Renton Biology Teachers	2014-2020

University of Pennsylvania

Teaching Secondary School Biology (<i>2 semesters, in-service teachers</i>)	2008-2009
Professional Development Workshops and Institutes for Philadelphia Biology Teachers	2004-2009
Learning Biology by Teaching Biology in an Urban High School (<i>4 semesters</i>)	2003-2007

Mentored Undergraduate Research Projects

Sensemaking and Principle-based Reasoning Kylie Todd, Jess Cherniawsky	2022-present
What is the impact of auto-pausing lecture on students' behavior and performance? Sheharbano Jafry, Jennifer Chen	2020-present
Undergraduate's Understanding of Ventilation Anushka Ladha, Aida Moghadasi	2020-present
Equity in Automated Scoring of Constructed Response Assessments Abigail Gilbert, Jill Kimasaka	2020-present
Poll Everywhere's Impact on Cell Phone Use in Introductory Biology Dylan Moorleghen, Naresh Oli	2017-2019
Adaptive Learning Reading Quizzes in Introductory Biology Elena Kolpikova	2017-2019
Demographics Impact Random Call Participation Derek Chen	2017-2018
Impact of In-Class Question Characteristics on Quality of Student Reasoning During Peer Discussions Edith Serna, Melissa Mallen	2017-2018
How Biology Students Think About Cardiovascular Pressure Gradients and Flux Bryan Day, Aquene Reid	2017-2018
Self- or Peer-grading on Practice Exams: Which is Better? Mallory Jackson, Alina Tran	2016-2018

Study Resources of Undergraduate Students in Introductory Biology Osman Salahuddin	2016-2017
The Key to Successful Problem Solving: Identifying Keywords? Sarah Farrell	2016-2017
Designing Learning Progression Assessments that Assess Principles First Kathryn Oleszkowicz	2012-2013

Service at City and National Levels

American Physiology Society Center for Physiology Education Physiology Education Research Resource Working Group, Member https://www.physiology.org/professional-development/career/cpe/physiology-education-research	2022-present
Advances in Physiology Education, Guest Editor <i>Core Concepts in Physiology Special Issue</i>	2021-2022
Anatomy & Physiology Teaching and Learning Community, Founder and Organizer <i>A faculty learning community for physiology and anatomy faculty</i> https://sites.google.com/uw.edu/ap-tlcl/	2021-present
Ecological Society of America's (ESA) <i>Ecosphere</i> Editorial Board	2020-2022
Society for Biology Education Research (SABER) Award Committee, Chair	2019-present
ESA Four-Dimensional Ecology Education Subcommittee, Member	2019-present
ESA Committee for Diversity and Education, Member	2019-2021
AAU Undergraduate STEM Education Initiative UW Representative	2018-2022
ESA Education Section, Vice Chair-Chair-Past Chair	2017-2021
SABER Anatomy and Physiology SIG, Organizer	2016-present
ESA EcoEd Digital Library, Editor	2015-2022
ESA Four-Dimensional Ecology Education Taskforce Framework available: https://www.esa.org/4DEE/	2015-2019
NSF Review Panel, Member	2017
Northwest PULSE UW Biology group, Member	2015
ESA CourseSource Ecology Framework developer Framework available: http://www.coursesource.org/courses/ecology	2014
ESA Education and Human Resources Committee, Member	2007-2010
Reviewer for Journals, Textbooks, Annual meetings: Science Education, Advances in Physiology, CBE-Life Sciences Education, Journal of STEM Education, Ecosphere, Life by Sadava et al., SABER	

Departmental Service Biology Service

MSU Physiology Education Committee, Member	2022-present
MSU LBC Chemistry Education Research Tenure-stream Search Committee, Member	2022-2023
UW Biology Teaching Professor Pod Captain	2021-2022
UW Biology Introductory Series Textbook Faculty Review Committee, Member	2021
UW Biology Majors Building Community Project, Lead	2020-2022
UW Biology Greenhouse Committee, Member	2020-2021
UW Biology Graduate and Postdoc Program Committee, Member	2020-2021
UW Biology Research Committee, Member	2016-2018, 2019-2020, 2021-2022
UW Biology Learning & Teaching Community, Member and presenter	2014-2022
UW Biology Integrated Physiologist Faculty Search Committee, Member	2018-2019
UW Biology Mentored Teaching Opportunity Post-doc for Hiring Committee, Member	2015, 2018, 2019
UW Biology Research Committee <i>ad hoc</i> sub-committee for Teaching Equipment, Lead	2017-2018

UW Biology BIOL 240 (All three quarters of Intro Bio into 10-wk course), Course organizer	2017-2018
UW Biology Faculty Search Committee, <i>ad hoc</i> Reviewer	2017-2018
UW Biology UPC <i>ad hoc</i> sub-committee for the Introductory Series Textbook, Chair	2016
UW Biology Physiology Lecturer Search, Requested contributor	2015
UW Biology Undergraduate Program Committee (UPC), Member	2014-2016
UW Biology Greenhouse Planning Committee, Member	2014-2015
UW Biology HHMI Authentic Research in Intro Bio Research Scientist Hiring Committee	2014

Workshops at National Meetings, Lead or Organized

SABER Conference, Virtual	2021
"Assess what's important: Creating assessments that show how students use their knowledge and how instruction promotes that knowledge"	
106 th Ecological Society of America (ESA) Annual Meeting, Virtual	2021
"Assess What's Important: Creating Assessments That Show How Students Use Their Ecological Knowledge"	
SABER West Virtual Conference, UC Irvine	2021
"Assess what's important: Creating assessments that show how students use their knowledge"	
ESA Four-Dimensional Ecology Education, Meeting organizer and presenter	2020
"Virtual Workshop Extravaganza"	
SABER West Conference, UC Irvine	2020
"Assess what's important: Creating assessments that show how students use their knowledge"	
SABER West Conference, UC Irvine	2020
"Using computer-scorable, constructed-response formative assessments to transform your teaching of principle-based reasoning in biology"	
Human Anatomy and Physiology Society (HAPS) Conference, Portland, OR	2019
"Using Learning Progression Frameworks and Assessments to Improve Principle-based Physiology Instruction."	
104 th ESA Annual Meeting, Louisville, KY	2019
"Resources for Ecology Education – Fair and Share (REEFS)"	
SABER West Conference, UC Irvine	2019
"Using Learning Progression Frameworks and Assessments to Improve Principle-based Instruction" Workshop	
103 rd ESA Annual Meeting, New Orleans, LA	2018
"Turn Your Research Figures or Educational Resource into a Peer-reviewed Product for Teaching: Submit to ESA' EcoEd Digital Library"	
Northwest BIO, Portland, OR	2018
"Using Learning Progression Assessments to Inform Your Physiology Teaching"	
SABER West Conference, UC Irvine	2018
"Using Whiteboards to Leverage Learning in Multiple Settings"	
HAPS Conference, Salt Lake City, UT	2017
"Using an Action Potential Simulation"	
SABER West Conference, UC Irvine	2017
"Developing a learning progression framework and assessments Workshop"	

- NARST Annual Conference 2014
Co-organizer, "Developing and validating learning progression-based written assessments"
Pre-Conference Workshop
- Introductory Biology Project Summer Conference, Washington, D.C. 2012
Co-Organizer, "Whole course transformation for introductory biology" Workshop for faculty with D'Avanzo, C., Dauer, J.M., Hartley, L.M. and Momsen, J.L. <http://ibp.ou.edu/>
- National Science Teachers Association National Conference, Indianapolis, IN 2012
Co-leader, "Using Learning Progressions to Improve Science Teaching and Learning" Short Course for educators
- 96th ESA Annual Meeting, Austin, TX 2011
Organizer, "From Reasoning to Action: Environmental Literacy for Effective Earth Stewardship" Organized Oral Session
Co-leader, "Using Qualitative Data in Ecology Research and Teaching: An Introduction to Conducting and Analyzing Interviews" Workshop
- Learning Progressions Footprint Conference for the National Science Foundation 2011
Postdoctoral assistant to conference organizers
- 95th ESA Annual Meeting, Pittsburgh, PA 2010
Organizer, High School Educators' Ecological Literacy and Research Day
Co-Organizer, "Training the next generation of ecologists: how universities are doing it"
Organized Oral Session
- National Science Teachers Association National Conference, Philadelphia, PA 2010
Organizer, "A Hands-On/Minds-On Activity for Teaching Molecular Biology" Workshop
- 94th ESA Annual Meeting, Albuquerque, NM 2009
Co-Organizer, "Mentoring for success" workshop
- 93rd ESA Annual Meeting, Milwaukee, WI 2008
Co-Organizer, High School Educators' Ecological Literacy and Research Day
Organizer, "The Art of Mentoring: How to get out of your box" workshop; Co-Organizer, "Extending Your Research into Policy and Adult Education: 2 for the Price of 1" workshop

K-12 Professional Development

-
- Renton Public Schools 2016-2020
Once yearly curriculum consultant for middle school and high school biology teachers.
- Seattle Public Schools 2014-2017
Co-organized and led summer institutes and quarterly professional development for middle school biology teachers.
- College of Engineering, Michigan State University 2010-2011
As curriculum advisor, assisted teachers in translating their summer Bio-Inspired Technology and Systems Research Experience in engineering into curricula for their classrooms.
- Western Michigan Schools 2009-2014
Co-organized and led summer institutes and quarterly professional development for elementary, middle and high school science teachers through Michigan State's Kellogg Biological Station.
- School District of Philadelphia 2004-2009
Co-developed and co-taught a monthly professional development and summer institutes for High School Biology Teachers. When Penn's NSF GK-12 grant ended (see above), I leveraged my performance as a GK-12 fellow into a grant from the School District of Philadelphia to continue my work with teachers and the District.

K-12 Curricula

Doherty, J.H., Harris, C., and Hartley, L.M. September 2012. Biodiversity: Diversity in a Leaf Pack. [High school and middle school unit.](#)

Doherty, J.H., Mohan, L., Cisterna, D., and Anderson, C.W. April 2010. How Do Plants Grow? Plant Cells and Processes. [High school and middle school units.](#)

[Carbon: Transformation in Matter and Energy \(TIME\)](#) units contributing author

[Hands-on, minds-on biology activities](#) coordinated with the School District of Philadelphia's Core Curriculum and the Next Generation Science Standards.

Professional Memberships and Associations

Since

American Physiological Society	2018
Society for the Advancement of Biology Education Research	2011
National Association of Research in Science Teaching	2010
Ecological Society of America	2000

Oral Presentations

***undergraduate mentored, #graduate student co-mentored on project, ^ post-doc mentored**

Bender, H.*, Duong, K.*, Laoprasert, M.*, Saroyan, A.*, Taneja, P.*, Eco, S.*, Dreyer, E.*, Doherty, J.H., & Liepkalns, J.S. (2023) Concept-based Learning in Immunology & Microbiology (CLIMb): A Reasoning Framework for the Biology of Vaccines and Key Immunological Concepts. Poster presented at SABER West Meeting.

Doherty, J. H., Scott, E. E., Moghadasi, A. * & Wenderoth, M. P. (2022). A learning progression characterizing student reasoning about bulk flow in animals and plants. Talk presented at SABER, Minneapolis, MN.

Scott, E. E.^, Wenderoth, M. P., & Doherty, J. H. (2021). How do we support deep learning? Instructional tools grounded in conceptual frameworks. Talk presented at SABER West Virtual Meeting.

Doherty, J. H., Scott, E. E.^, & Wenderoth, M. P. (2021). Student reasoning about changes in amount in dynamic biological systems. Talk presented at SABER West Virtual Meeting.

Doherty, J. H., Scott, E. E.^, & Wenderoth, M. P. (2021). Student reasoning about changes in amount in dynamic biological systems. Talk presented at University of Washington Department of Biology Virtual Retreat.

Scott, E. E.^, Wenderoth, M. P., & Doherty, J. H. (2020). A learning progression characterizing how students use mass balance reasoning to understand biology. Talk presented at SABER Virtual Meeting.

Doherty, J. H., Scott, E. E.^, Cerchiara, J. A.^, McFarland, J. L., & Wenderoth, M. P. (2019). A Learning Progression Characterizing How Biology Students Understand Ion Movement. Talk presented at NARST, Baltimore, MD.

Scott, E. E.^, Cerchiara, J. A.^, Jescovitch, L. N.^, Wenderoth, M. P., & Doherty, J. H. (2019). An emerging learning progression characterizing how students use mass balance reasoning to understand physiology. Talk presented at NARST, Baltimore, MD.

Jescovitch, L. N.^, Doherty, J. H., Scott, E. E.^, Cerchiara, J. A.^, Wenderoth, M. P., Urban-Lurain, M., ... Haudek, K. C. (2019). Challenges in developing computerized scoring models for principle-based reasoning in a physiology context. Paper Set: Measuring complex constructs in science education: Applications of automated analysis. Poster presented at NARST, Baltimore, MD.

- Doherty, J.H., Moon, S.**[^], Weigand, D., Wenderoth, M.P. 2019. Differential implementation of evidence-based teaching is correlated to student achievement gaps Presented at ESA Annual Meeting, Louisville, KY.
- Wenderoth, M.P, **Moon, S.**[^], Jackson, M.A., **Doherty, J.H.** 2019. Evidence-based teaching: Which Parts Impact Student Learning? Presented at SABER, Minneapolis, MN.
- Doherty, J.H., Scott**[^], **E.E., Cerchiara**[^], **J.A.**, McFarland, Parker, J, & Wenderoth, MP. 2018. Developing a learning progression in physiology to characterize how students reason about ion movement. Presented at SABER, Minneapolis, MN.
- Wenderoth, M.P., **Doherty, J.H.**, McFarland, J., **Cerchiara**[^], **J.A.** & **Scott**[^], **E.E.** 2018 Monitoring Students' Principle-Based Reasoning in Animal and Plant Physiology Using Computer-Scorable Constructed Response Assessments. Northwest BIO 2018, Portland, OR.
- Doherty, J.H., Scott**[^], **E.E., Cerchiara**[^], **J.A.**, McFarland, J., Haudek, K., Urban-Lurain, M., Merrill, J., & Wenderoth, M.P. 2018. Developing Learning Progressions in Undergraduate Physiology (LeaP UP). SABER West, UC Irvine.
- Cerchiara**[^], **J.A., Scott**[^], **E.E.**, Wenderoth, MP, & **Doherty, J.H.** 2018. Student performance and ability increases following a novel neurophysiology simulation. SABER West, UC Irvine.
- Jackson**^{*}, **M., Tran**^{*}, **A., Farrell**^{*}, **S., Salahuddin**^{*}, **O., Wenderoth**, M.P., & **Doherty, J.H.** 2017. Self-Versus Peer-Grading of Practice Exams: Which is Better? SABER, Minneapolis, MN.
- Wenderoth^{*}, M.P. & **Doherty**^{*}, **J.H.** 2017. Implementing an intervention for test anxiety in a biology classroom. SABER West Meeting, UC Irvine, CA. ^{*}These authors contributed equally
- Doherty, J.H.**, Kim, J., Draney, K. & Anderson, C.W. 2016. Does Principle-oriented Instruction Improve Student Performance in Novel Contexts? Presented at the annual meeting of NARST, Baltimore, MD.
- Scott, E.E, Dauer, J.M., **Doherty, J.H.**, & Anderson, C.W. 2016. Refining an Inquiry-Based Learning Progression Framework That Describes Students' Approach to Scientific Practices and Uncertainty. Presented at the annual meeting of NARST, Baltimore, MD.
- Draney, K., **Doherty, J.H.**, Anderson, C.W. & Kim, J. 2016. What We've Learned About Learning Progressions, Items, and Scoring Guides From Using Item Response Models. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.
- Irish, T., Berkowitz, A.R., Parker, S., **Doherty, J.H.**, Johnson, M., Yestness, N., Caplan, B., Hartley, L.M., Class, F.N., & Moore, J.C. 2015. Learning Progressions in Environmental Science: The Impact of a Professional Development on Teacher Practice. Presented at the annual meeting of NARST, Chicago, IL.
- Doherty, J.H.**, Hartley, L., Harris, C., & Anderson, C.W. 2014. Developing Understanding of Evolution in Complex Contexts. Presented at the 4th Annual Meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Doherty, J.H.**, Hartley, L., Harris, C., & Anderson, C.W. 2014. Developing Understanding of Evolution in Complex Contexts. Presented at the annual meeting of NARST, Pittsburgh, PA.
- Freed, A.L., Dauer, J. M., **Doherty, J.H.**, Johnson, W.R., & Anderson, C.W. 2014. Connections between students' explanations and interpretations of arguments from evidence. Presented at the annual meeting of NARST, Pittsburgh, PA.
- Hartley, L., **Doherty, J.H.**, Harris, C., Moore, J.C., Berkowitz, A.R., & Anderson, C.W. 2014. Learning Progression Framework and Assessments for Community Ecology. Presented at the annual meeting of NARST, Pittsburgh, PA.
- Miller, H.#**, Freed, A.L., **Doherty, J.H.**, Johnson, W.R., & Anderson, C.W. 2014. Components of Productive Level 3 Reasoning. Presented at the annual meeting of NARST, Pittsburgh, PA.

- Moore, J.C., Hartley, L., **Doherty, J.H.**, Harris, C., Berkowitz, A.R., & Anderson, C.W. 2014. Ecological Systems and Learning Progressions: Applications of Basic Principles across Multiple Scales of Organization. Presented at the annual meeting of NARST, Pittsburgh, PA.
- Wyner, Y. & **Doherty, J. H.** 2014. Unifying Life: Placing Urban Tree Diversity into an Evolutionary Context. Presented at the annual meeting of NARST, Pittsburgh, PA.
- Harris, C., Berkowitz, A.R., Hartley, L. M., & **Doherty, J.H.** 2013. Teaching Biodiversity Using a Learning Progression Framework and Leaf Packs. 42nd North American Association for Environmental Education Annual Conference. Baltimore, Maryland.
- Doherty, J.H.**, Hartley, L.M., Harris, C., Anderson, C.W., Berkowitz, A., & Moore, J.C. 2013. Using learning progressions to describe how students develop increasingly sophisticated understandings of biodiversity. 98th ESA Annual Meeting. Minneapolis, MN.
- Anderson, C.W., Dauer, J.M., & **Doherty, J.H.** 2013. Learning progression theory: Background and application to ecology teaching and learning. 98th ESA Annual Meeting. Minneapolis, MN.
- Doherty, J.H.**, Rice, J., & Anderson, C.W. 2013. Principles, First and Foremost: A Tool for Understanding and Teaching Biological Processes. 3rd Annual Meeting of SABER, Minneapolis, MN.
- Hartley, L., **Doherty, J.H.**, Harris, C., Anderson, C.W., Berkowitz, A., & Moore, J. 2013. Using scenario-based assessments to build a learning progression framework for reasoning about ecosystems. Paper presented at annual meeting of NARST, Rio Grande, PR.
- Oleszkowicz, K.***, **Doherty, J.H.**, & Anderson, C.W. 2013. Designing Learning Progression Assessments that Assess Principles First. Paper presented at the Annual Conference of NARST, Rio Grande, PR.
- Doherty, J.H.**, Anderson, C.W., Gunckel, K., Hartley, L.M., Schramm, J.W., & Covitt, B. 2012. Using Learning Progression Frameworks and Assessments to Guide Research and Professional Development. Paper presented at the Annual Meeting of the American Educational Research Association, Vancouver, BC.
- Doherty, J.H.**, Draney, K., & Anderson, C.W. 2012. Methodological Issues in Developing a Learning Progression based Assessment System. Paper presented at the Annual Conference of NARST, Indianapolis, IN.
- Schramm, J.W., **Doherty, J.H.**, & Anderson, C.W. 2012. Analyzing College Students' Learning About Carbon Transforming Processes. Paper presented at the Annual Conference of NARST, Indianapolis, IN.
- Doherty, J.H.**, Schramm, J.W., & Anderson, C.W. 2011. The Role of Heredity and Environment in Students' Accounts of Adaptation by Selection and Phenotypic Plasticity. 96th ESA Annual Meeting. Austin, TX.
- Covitt, B., **Doherty, J.H.**, & Pitot, L. 2011. Developing an environmental science citizenship learning progression framework. 96th ESA Annual Meeting. Austin, TX.
- Berkowitz, A.R., Parker, S., Tschillard, R., Caplan, B., **Doherty, J.H.**, Whitmer, A., & Moore, J.C. 2011. How can professional development help teachers use learning progressions in teaching for environmental science literacy? 96th ESA Annual Meeting. Austin, TX.
- Doherty, J.H.** & Anderson, C.W. 2011. The Role of Heredity and Environment in Students' Accounts of Adaptation by Selection and Phenotypic Plasticity. 2011 NARST Annual International Conference. Orlando, FL.
- Zhan, L., Cisterna, D., **Doherty, J.H.**, Anderson, C.W., Choi, J., Lee, Y., & Draney, D. 2011. The Effects of Teaching Materials and Teachers' Approaches on Student Learning about Carbon-transforming Processes. 2011 NARST Annual International Conference. Orlando, FL.

- La Due, N.#, Doherty, J.H., Gunkel, K., & Covitt, B. 2010. Exploring teacher and student conceptions of groundwater through drawings. 39th North American Association of Environmental Education Meeting. Buffalo, NY.
- Anderson, C.W., D'Avanzo, C., Hartley, L.M., Wilke, B., & Doherty, J.H. 2010. Comparing student understanding of carbon-transforming processes across colleges and universities: Why do misunderstandings persist? 95th ESA Annual Meeting. Pittsburgh, PA.
- Momsen, J.L., Clark, S., Haudek, K., Geraghty Ward, E., Schramm, J.W., Doherty, J.H., & Vergara, C. 2010. Lost in translation: Quantifying the overlap of popular media and non-majors science course assessment vocabulary. 95th ESA Annual Meeting. Pittsburgh, PA.
- Hartley, L.M., Doherty, J. H., Anderson, C.W., Burke, M., Garcia, Y., Harris, C.B., MacGregor, M., McMahon, S., Moore, J.C., Simon, S.E., & Wilke, B. 2010. Pathways to environmental literacy: Developing a biodiversity learning progression. 95th ESA Annual Meeting. Pittsburgh, PA.
- Spindler, L. H.*, Doherty, J. H.*, Bowman, C.*, & Stovall, I.* 2010. Transforming undergraduate education: Institutionalizing outreach with academically-based community service courses. 95th ESA Annual Meeting. Pittsburgh, PA. *These authors contributed equally
- Spindler, L. H.* & Doherty, J. H.* 2008. Evaluating science process skills in high school students: Establishing a baseline. 93rd ESA Annual Meeting. Milwaukee, WI. *These authors contributed equally
- Doherty, J. H. and Casper, B. B. 2008. Do Soil Factors Shape Arbuscular Mycorrhizal Fungal Communities in a Serpentine Grassland? 93rd ESA Annual Meeting. Milwaukee, WI.
- Spindler, L. H.* & Doherty, J. H.* 2007. The efficacy of teaching content knowledge through hands-on activities in high school biology. 92nd ESA Annual Meeting. San Jose, CA. *These authors contributed equally
- Doherty, J. H. & Casper, B. B. 2007. Investigating the Maintenance of Arbuscular Mycorrhizal Fungal Communities. 92nd ESA Annual Meeting. San Jose, CA.

Poster and Roundtable Presentations

*undergraduate mentored, #graduate student co-mentored on project, ^ post-doc mentored

-
- Jafry, S.*, Chen, J-T. * & Doherty, J.H. (2022). The Effectiveness of Autopausing to Elicit Active Learning. UW Undergraduate Research Symposium.
- Jafry, S.* & Doherty, J.H. (2021). Effectiveness of Autopausing Asynchronous Videos to Elicit Active Learning. Roundtable at SABER Virtual Meeting.
- Lahda, A.*, Scott, E. E.^, & Doherty, J.H. (2021). Investigating Patterns in Students' Flux Reasoning in Respiratory Physiology. Roundtable at SABER Virtual Meeting.
- Gilbert, A.*, Scott, E. E.^, & Doherty, J.H. (2021). Investigating the Accuracy and Equity of Constructed-Response Computer Scoring. Roundtable at SABER West Virtual Meeting.
- Jafry, S.* & Doherty, J.H. (2021). The Effectiveness of Autopause Questions in Changing Students' Approach to Classroom Questions. Roundtable at SABER West Virtual Meeting.
- Kumasaka, J.*, Scott, E. E.^, & Doherty, J.H. (2021). Investigating Biases in Physiology Learning Progression Computer Models. Roundtable at SABER West Virtual Meeting.
- Lahda, A.*, Scott, E. E.^, & Doherty, J.H. (2021). Using the respiratory system as a model to understand flux and animal physiology. Roundtable at SABER West Virtual Meeting.
- Moghadasi, A.*, Scott, E. E.^, & Doherty, J.H. (2021). Investigating Patterns in Student Flux Reasoning. Roundtable at SABER West Virtual Meeting.

- Jackson, M.A., Moon, S.[^], Doherty, J.H., Wenderoth, M.P. (2020). A CAUSE for change: Exploring faculty adoption of evidence-based teaching. Poster presented at SABER West Conference, Irvine, CA.
- Jescovitch, L. N.[^], Doherty, J. H., Merrill, J. E., Urban-Lurain, M., & Haudek, K. C. (2019). Developing a learning progression for flux in physiology and aligned automated assessment tools. Poster presented at the Conference for Student Learning and Success, MSU, East Lansing, MI.
- Wenderoth, M. P., Scott, E. E.[^], Cerchiara, J. A.[^], McFarland, J. L., & Doherty, J. H. (2019). Developing learning progressions in undergraduate physiology. Poster presented at the Experimental Biology, Orlando, FL.
- Wenderoth, M. P., Scott, E. E.[^], Cerchiara, J. A.[^], McFarland, J. L., & Doherty, J. H. (2019). Developing learning progressions in undergraduate physiology. Poster presented at the PMIG, Minneapolis, MN.
- Scott, E. E.[^], Cerchiara, J. A.[^], McFarland, J. L., Wenderoth, M. P., & Doherty, J. H. (2019). Developing learning progressions in animal physiology. Poster presented at the UW Symposium on Teaching and Learning, Seattle, WA.
- Cerchiara, J. A.[^], Scott, E. E.[^], McFarland, J. L., Wenderoth, M. P., & Doherty, J. H. (2019). Oaks to Arteries: Principle-based Reasoning Varies with Physiological Context. Poster presented at the UW Symposium on Teaching and Learning, Seattle, WA.
- Cerchiara, J. A.[^], Scott, E. E.[^], McFarland, J. L., Wenderoth, M. P., & Doherty, J. H. (2019). Oaks to Arteries: Principle-based Reasoning Varies with Physiological Context. Poster presented at the HAPS, Portland, OR.
- Reid*, A., Day*, B., Scott, E.E., Cerchiara, J.A., Wenderoth, MP & Doherty, J.H. May 2018. How Biology Students Think About Cardiovascular Pressure Gradients and Flux. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Serna*, B.E., Mallen*, M., & Doherty, J.H. May 2018. Characteristics of In-class Questions Impact the Quality of Student Reasoning. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Oli*, N., Moorleghen*, D., Crowe, A., Leipkalns, J., Self, C. & Doherty, J.H. May 2018. Cellphones as a Classroom Tool: Swipe Right or Left? University of Washington Teaching & Learning Symposium, Seattle, WA.
- Kolpikova*, E., Chen*, D., & Doherty, J.H. May 2018. Adaptive Learning Quizzes Show no Impact on Student Learning. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Chen*, D., Kolpikova *, E., & Doherty, J.H. May 2018. In Active Learning Environments, Student Demographics Affect Random Call Participation. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Farrell*, S., Wenderoth, M.P., & Doherty, J.H. May 2017. The Key to Successful Problem Solving: Identifying Keywords! University of Washington Teaching & Learning Symposium, Seattle, WA.
- Salahuddin*, O., Wenderoth, M.P., & Doherty, J.H. May 2017. Studying Resources of Undergraduate Students in Introductory Biology. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Jackson*, M., Tran*, A., Wenderoth, M.P., & Doherty, J.H. May 2017. Self- Versus Peer-Grading of Practice Exams: Which is Better? University of Washington Teaching & Learning Symposium, Seattle, WA.

- Doherty, J.H.**, Wenderoth, M.P., Urban -Lurain, M., Merrill, J., McFarland, J., Haudek, K.C. May 2017. Developing Learning Progressions in Undergraduate Physiology (LeaP UP). Human Anatomy and Physiology Conference, Salt Lake City, UT.
- Doherty, J.H.**, Wenderoth, M.P., Urban -Lurain, M., Merrill, J., McFarland, J., & Haudek, K.C. 2017. Developing Learning Progressions in Undergraduate Physiology (LeaP UP). Pearson Biology Leadership Conference, Tucson, AZ.
- Doherty, J.H.** & Wenderoth, M.P. 2016. A Novel Pathway to Expertise in Physiology. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Doherty, J.H.** & Wyner, Y. 2016. Student Learning of Local Tree Diversity and Common Ancestry. University of Washington Teaching & Learning Symposium, Seattle, WA.
- Draney, K., **Doherty, J.H.**, Anderson, C.W. & Kim, J. 2016. What We've Learned About Learning Progressions, Items, and Scoring Guides From Using Item Response Models. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.
- Moore, J.C., Anderson, C.W., Berkowitz, A.R., Covitt, B., Gunkel, K., Hartley, L.M., **Doherty, J.H.**, Jin, H., Johnson, M., Hauk, S., Pressler, Y., & Yestness, N. 2015. Defining Common Elements of Environmental Science Literacy Learning Progressions: Implications for Research and Teaching. Presented at the annual meeting of the NARST, Chicago, IL
- Wyner, Y. & **Doherty, J.H.** 2015. Urban Middle School Student Learning of Local Tree Diversity & Common Ancestry. Presented at the annual meeting of the NARST, Chicago, IL.
- Hartley, L.M., **Doherty, J.H.**, Harris, C., Moore, J.C., Berkowitz, A.R., & Anderson, C.W. 2015. A Learning Progression-based Biodiversity Teaching Unit: Investigating the impact of Teacher Knowledge and Implementation Fidelity on Student Learning. Presented at the annual meeting of the NARST, Chicago, IL.
- Doherty, J.H.**, Hartley, L.M., Harris, C., Anderson, C.W., Berkowitz, A., & Moore, J.C. 2013. Using learning progressions to describe how students develop increasingly sophisticated understandings of biodiversity. 98th ESA Annual Meeting. Minneapolis, MN.
- Anderson, C.W., Dauer, J.M., & **Doherty, J.H.** 2013. Learning progression theory: Background and application to ecology teaching and learning. 98th ESA Annual Meeting. Minneapolis, MN.
- Doherty, J.H.**, Rice, J., & Anderson, C.W. 2013. Principles, First and Foremost: A Tool for Understanding and Teaching Biological Processes. 3rd Annual Meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Rice, J., Markham, L., Jackson, S., Wilson, D., Maldonado, P., **Doherty, J.H.**, & Anderson, C.W. 2012. Integrating science for preservice elementary teachers through foundational big ideas. 244th American Chemical Society National Meeting & Exposition. Philadelphia, PA.
- Dauer, J.M., **Doherty, J.H.**, Covitt, B.A., Gallagher, D., & Anderson, C.W. 2012. Carbon TIME Project: Inquiry activities and learning progression. 97th ESA Annual Meeting. Portland, OR.
- Doherty, J.H.**, Schramm, J.W., & Anderson, C.W. 2011. The Role of Heredity and Environment in Students' Accounts of Adaptation by Selection and Phenotypic Plasticity. 1st Annual Meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Anderson, C.W., D'Avanzo, C., Hartley, L.M., Pelaez, N., **Doherty, J.H.**, Schramm, J. W., & Wilke, B., A. 2011. Faculty Development Model for Transforming Introductory Biology Courses. 1st Annual Meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Schramm, J.W., **Doherty, J. H.**, & Anderson, C. W. 2011. Building principled reasoning in biology and ecology courses: a diagnostic question cluster approach. 1st Annual Meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.

- Newmiller, R.E. #, Doherty, J. H. & Casper, B. B.** 2008. Attack of the Native: Evaluating How the Expanding *Smilax rotundifolia* Affects a Grassland Microbial Soil Community as Measured by the Growth of *Schizachyrium scoparium*. 93rd ESA Annual Meeting. Milwaukee, WI. #High School Student
- Doherty, J. H. & Casper, B. B.** 2008. Investigating the Maintenance of Arbuscular Mycorrhizal Fungal Communities. Sixth International Conference on Serpentine Ecology. Bar Harbor, ME.
- Leinhauser, J. #, Doherty, J. H., Bentivenga, S., & Casper, B. B.** 2008. Arbuscular Mycorrhizal Fungal Communities Across a Heavy Metal Contamination Gradient and their Relationships with Indigenous *Deschampsia flexuosa*. 93rd ESA Annual Meeting. Milwaukee, WI. #High School Student
- Doherty, J. H.* & Spindler, L. H.*** 2006. Teaching evolution by natural selection through a hands-on simulation. 91st ESA Annual Meeting. Memphis, TN. *These authors contributed equally
- Ji, B., Doherty, J. H., Bentivenga, S., & Casper, B. B.** 2005. Arbuscular Mycorrhizal Fungi Associated with the Same Grasses in Eastern Serpentine Grasslands and Midwestern Prairies. 90th ESA Annual Meeting. Montréal, Canada.
- Doherty, J.H., Rundel, P. W., & Nobel, P.S.** 2004. Soil Water Movement Around a Rock is Dependent on Soil Texture. 89th ESA Annual Meeting. Portland, OR.
- Doherty, J. H. & Casper, B. B.** 2000. The Effects of Nutrient Heterogeneity on Root Allocation in *Pisum sativum*: A Split-Root Experiment. 85th ESA Annual Meeting. Snowbird, UT.