

# LUANNA PREVOST

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- EDUCATION**    **Ph D.** Plant Biology 2011. University of Georgia, Athens, GA
- M S.** Plant and Environmental Science 2005. Clemson University, Clemson, SC
- B. S.** Biology and Environmental Science 2002. Tuskegee University, Tuskegee, AL

## APPOINTMENTS

- 2013 - present    **Assistant Professor**, Integrative Biology, University of South Florida
- 2011 – 2013      **Postdoctoral Research Associate**, Center for Engineering Education Research, College of Engineering, Michigan State University.

## PUBLICATIONS

\*- denotes graduate student; † -denotes undergraduate student

### In Review

1. Carter\*, K. and **L.B. Prevost**. In Review. Investigating the Effect of Question Order and Student Understanding of Structure and Function.
2. Carter\*, K., M. Romero\*, K. Martinez†, B. MacNeill† and **L.B. Prevost**, In Review. Investigating biology students' writing about matter and energy: a comparison of machine learning and human scoring.

### Published

1. Pelletreau K.N., Knight J.K., Lemons P.P., McCourt J.S., Merrill J.E., Nehm R.H., **Prevost L.B.**, Urban-Lurain M. and Smith M.K. 2018. A Faculty Professional Development Model That Improves Student Learning, Encourages Active-Learning Instructional Practices, and Works for Faculty at Multiple Institutions. CBE-Life Sciences Education. <https://doi.org/10.1187/cbe.17-12-0260>
2. **Prevost L.B.**, Vergara C. E., Urban-Lurain M. and Campa H. 2017. Evaluation of a high-engagement teaching program for STEM graduate students: outcomes of the FAST-Future Academic Scholars in Teaching Fellowship Program. Innovative Higher Education. <https://doi.org/10.1007/s10755-017-9407-x>.
3. **Prevost, L.B.**, M.K. Smith, and J. Knight. 2016. Using student writing and lexical analysis to reveal student thinking about the role of stop codons. CBE Life Science Education 15:ar65
4. **Prevost, L.B.**, and P.P. Lemons. 2016. Step by step: Biology undergraduate's problem-solving steps during multiple-choice assessment. CBE Life Sciences Education 15:ar71 4.
5. Pelletreau, K.N., Andrews, T., Armstrong, N., Bedell, M.A., Dastoor, F., Dean, N., Erster, S., Fata-Hartley, C., Guild, N., Greig, H, Hall, D., Knight, J.K., Koslowsky, D., Lemons, P.P., Martin, J., McCourt, J., Merrill, J., Moscarella, R., Nehm, R., Northington, R., Olsen, B., **Prevost, L.**, Stoltzfus, J., Urban-Lurain, M., Smith, M.K. 2016. A clicker-based case study that untangles student thinking about the processes in the central dogma. CourseSource. <http://www.coursesource.org/courses/a-clicker-based-case-study-that-untangles-student-thinking-about-the-processes-in-the>

6. Camus, M., Hurt, N. E., Larson, L. R., and **Prevost, L.** 2016. Facebook as an online teaching tool: Effects on student participation, learning, and overall course performance. *College Teaching*, 64(2), 84-94.
7. **Prevost, L.**, Moon-Michel\*, L., Romero\*, M., & Lou, Y. 2016. Air potato invaders: Scenario-based digital games for science inquiry learning and assessment. Paper presented at the Society for Information Technology & Teacher Education International Conference.
8. Weston<sup>†</sup>, M., K. C. Haudek, **L. Prevost**, M. Urban-Lurain, and J. Merrill. 2015. Examining the Impact of Question Surface Features on Students' Answers to Constructed-Response Questions on Photosynthesis. *CBE-Life Sciences Education* 14:ar19. doi:10.1187/cbe.14-07-0110
9. Kim\*, H. S., **L. Prevost**, and P. P. Lemons. 2015. Students' usability evaluation of a Web-based tutorial program for college biology problem solving. *Journal of Computer Assisted Learning* 31:362–377
10. Urban-Lurain, M., M.M. Cooper, K. Haudek, J.J. Kaplan, J.K. Knight, P.P. Lemons, C.T. Lira, R. Nehm, **L.B. Prevost**, M.K. Smith, and M.A. Sydlik. 2015. Expanding a national network for automated analysis of constructed response assessments to reveal student thinking in STEM. *Computers in Education Journal* 25 (2): 65-81.
11. **Prevost, L.B.**, Haudek, K.C., Merrill, J.E., Urban-Lurain, M. 2012. Examining student constructed explanations of thermodynamics using lexical analysis. *Proceedings Frontiers in Education*, Seattle WA.
12. Haudek, K.C., **Prevost, L.B.**, Moscarella, R.A., Merrill, J., Urban-Lurain, M., 2012. What are they thinking? Automated analysis of student writing about acid/base chemistry in introductory biology. *CBE - Life Sciences Education*. 11:283-293
13. Hurt, M.E., Moss, G.S., Bradley, C.L., Larson, L.R., **Prevost, L.B.**, Riley, N., Domizi, D, Camus, M. 2012. The 'Facebook' Effect: College Students' Perceptions of Online Discussions in the Age of Social Networking. *International Journal of Scholarship of Teaching and Learning* 61-24.
14. **Prevost, L.B.**, Haudek, K.C., Merrill, J.E., Urban-Lurain, M. 2012. Deciphering student ideas on thermodynamics using computerized lexical analysis of student writing. *Proceeding of the American Society of Engineering Education Annual Conference*, San Antonio, TX.
15. **Prevost L.B.** and P.P. Lemons. 2011. Mildred Using Plants: The Medicinal Value of Plants. National Center for Case Study Teaching in Science.
16. **Prevost, L. B.** and Bruns. B. 2010. Rocks and Minerals. PBIO/ISCI 2001 Life and Earth Sciences Lab Manual.
17. Van Etten M.L., **Prevost, L.B.**, Deen, A.C., Ortiz, B.V., Donovan, L.A., and Chang, S. 2008. Gender differences in reproductive and physiological traits in a gynodioecious species, *Geranium maculatum* (Geraniaceae). *International Journal of Plant Sciences*. 169: 271–279.
18. Allen, C., J. La Bram, A. Garmestani, A. Peck, and **L. Prevost**. 2006. When landscaping goes bad: the incipient invasion of *Mahonia bealei* in the southeastern United States. *Biological Invasions* 8:169- 176.
19. Smith, E.J., Shi L., **Prevost, L.**, Drummond, P., Ramlal, S., Smith, G., Pierce, K., Foster, J. 2001. Expressed sequence tags for the chicken genome from a normalized, ten-day-old white leghorn whole embryo cDNA library. 2. Comparative DNA sequence analysis of guinea fowl, quail, and turkey genomes. *Poultry Science* 80:1263-1272.

**INVITED SEMINARS AND WORKSHOPS**

1. This career did not exist when I started: From field ecology to education research. Inspire Careers Session. Ecological Society of America. August 2018 – upcoming
2. Implementing Four-Dimensional Teaching of Ecology: Successes and Challenges. Organized Oral Session. Ecological Society of America 103<sup>rd</sup> Annual Meeting. Fort Lauderdale, FL. August 2018 – upcoming
3. Automated assessment of student writing in biology. Rutgers University, Rutgers, NY. February 2018
4. Automated approaches for assessing student writing. Transforming Research in Undergraduate STEM Education (TRUSE) Conference. St. Paul, MN, July 2017
5. Bite of Science – Teacher Enrichment Program, Center for Excellence in Education. Tampa, FL March 2017
6. USF Mathematics and Science Partnership Middle School Teachers Workshop. 2015, 2016 2017. Tampa Florida, <http://science4inquiry.com/>
7. Ecology and Cyberlearning: Inherent Paradox or Rich with Potential? Organized Oral Session. Ecological Society of America 101<sup>st</sup> Annual Meeting. Fort Lauderdale, FL. August 2016
8. Assessing student writing in biology using lexical analysis and machine learning. Rochester Institute of Technology, Rochester, NY. April 2017
9. Assessing Student Writing Using Text Analysis: Understanding the Central Dogma. Virginia Tech. Blacksburg, VA. April 2015
10. Writing to Reveal Learning. Maine Research in STEM Education (RiSE) National Conference, Bangor, ME. June 2014

**CONFERENCE PRESENTATIONS**

1. McNeill, B, and L.B. **Prevost**. 2018 (upcoming). Follow that carbon atom! Using machine learning to trace carbon transformation pathways and processes. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
2. MacNeill, B., M. Romero, A, Hoskinson, and L.B. **Prevost**. 2017. Follow that carbon atom! Using machine learning to trace student understanding of the carbon cycle. Ecological Society of America 102<sup>st</sup> Annual Meeting. Portland, OR.
3. **Prevost**, L. 2017. Automated approaches for assessing student writing. Transforming Research in Undergraduate STEM Education (TRUSE) Conference. St. Paul, MN
4. Carter, K., **Prevost**, L. 2017. Text analysis models for assessing understanding of structure and function. Transforming Research in Undergraduate STEM Education (TRUSE) Conference. St. Paul, MN
5. Carter, K., **Prevost**, L. 2017. Building text analysis models for scoring structure and function. Human Anatomy & Physiology (HAPS) Annual Meeting. Salt Lake City, UT
6. Carter, K., **Prevost**, L. 2017. Investigating text analysis models for scoring structure and function. The 38<sup>th</sup> World Congress of the International Union of Physiological Sciences (IUPS). Rio de Janeiro, Brazil

7. **Prevost, L.B.**, Romero, M., Thurman, P.E., Moon-Michel, L. and Y. Lou. 2016. Using web-based gaming to improve engagement and enhance assessment in ecology. Ecological Society of America 101<sup>st</sup> Annual Meeting. Fort Lauderdale, FL.
8. **Prevost, L.** and M. Romero. 2016. Do models matter? Comparing concept mapping and simulations for student learning of ecology concepts. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
9. Carter, K., and **Prevost, L.** 2016. Investigating the effect of question order on student understanding of structure and function. American Physiological Society Workshop: Institute of Teaching and Learning. Madison, WI.
10. McCourt, J.S., Lemons, P., Andrews, T., Knight, J.K. Merrill, J., Nehm, R.H., Pelletreau, K.N., **Prevost, L.B.**, Smith, M.K., and Urban-Lurain, M. 2016. Examining persistence in faculty learning communities by biology faculty. Society for the Advancement of Biology Education Research National Meeting Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
11. Moscarella, R., Bierema, A., Hoskinson, A-M., Knight, J., Pelletreau, K., **Prevost, L.**, Smith, M., Steele, M., Haudek, K., Urban-Lurain, M. and Merrill, J. 2016. Creation of an analytic rubric to evaluate content changes in students' responses about the flow of genetic information. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
12. Urban-Lurain, M., Knight, J., Lemons, P., Merrill, J., Nehm, R., **Prevost, L.**, Smith, M. Haudek, K., Bierema, A., Hoskinson, A-M., Moscarella, R., Steele, M. and Mazur, A. 2016. Insight into student thinking: Informing instruction with the Automated Analysis of Constructed Response Assessments. Society for the Advancement of Biology Education National Meeting. Minneapolis, MN.
13. Moscarella, R.A., Haudek, K.C., Knight, J.K., Mazur, A., Pelletreau, K.N., **Prevost, L.B.**, Smith, M.K., Steele, M., Urban-Lurain, Mark, and Merrill, J.E. 2016. Automated analysis provides insights into students' challenges understanding the processes underlying the flow of genetic information. National Association for Research in Science Teaching Annual International Conference. Baltimore, MD.
14. **Prevost, L.**, Bierema, A., Haudek, K., Kaplan, J., Knight, J. Lemons, P.P., Lira, C.T., Merrill, J.E., Moscarella, R., Nehm, R.H., Sydlik, M. and Urban-Lurain, M. 2016. An iterative approach to developing, refining and validating machine-scored constructed response assessments. AAAS Envisioning the Future of Undergraduate STEM Education (ENFUSE). Washington, DC.
15. Lemons, P.P., McCourt, J., Knight, J., Merrill, J.E., Nehm, R.H., **Prevost, L.**, Smith, M.K. Sydlik, M., and Urban-Lurain, M. 2016. A community of enhanced assessment facilitates reformed teaching. AAAS Envisioning the Future of Undergraduate STEM Education (ENFUSE). Washington, DC.
16. **Prevost, L.B.** and Carter\*, K. and Romero\*, M. and Martinez<sup>†</sup>, K. 2016. Facilitating written biology assessment in large-enrollment courses using machine learning. 18th International Conference on Educational Data Mining. Copenhagen, Denmark.
17. **Prevost, L.B.**, Romero, M., Moon-Michel, L. and Lou, Y. 2016. Air Potato Invaders: Scenario-Based Digital Games for Science Inquiry Learning and Assessment. Proceedings of the Society for Information Technology and Teacher Education (SITE). Savannah, GA.
18. **Prevost, L.B.** 2015. Assessing student ecological understanding using text analysis and machine learning. Ecological Society of America 100<sup>th</sup> Annual Meeting. Fort Lauderdale, FL.
19. Carter, K., & **Prevost, L.** 2015. Assessing student understanding of core principle structure and function. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.

20. McCourt, J., Andrews, T., Crumbs, T., Knight, J., Merrill, J., Merrill, S., Nehm, R., Pelletreau, K., **Prevost**, L., Smith, M., Urban-Lurain, M., & Lemons, P. 2015. Using faculty learning communities to promote the development of student-centered biology instructors. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
21. Moscarella, R., Park, M., Steele, M., Pelletreau, K., **Prevost**, L., Smith, M., Knight, J., & Urban-Lurain, M. 2015. Insights into students' thinking about the central dogma from the automated analysis of constructed response questions. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
22. Romero, M., Carter, K., & **Prevost**, L. 2015. Assessing writing about matter and energy: Comparing text analysis and machine learning. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
23. Hurt, N.E., M. Camus, L.R. Larson, and L **Prevost**. 2015 "Embracing Facebook as an Online Discussion Medium: Is it Worth the Effort?" Paper to be presented at the National Communication Association Convention, Las Vegas, NV.
24. **Prevost** L.B. 2015. Assessing student biological understanding using text analysis and machine learning. "Undergraduate Biology Education Research" Gordon Research Conference. Lewiston, ME
25. **Prevost**, L.B. 2014. Assessing student understanding of matter and energy transformation: Lexical analysis of student writing. Life Discovery Conference. San Jose, CA
26. **Prevost**, L.B. 2014. Exploring students' mental models of matter and energy transformation through lexical analysis of written assessments. Ecological Society of America 99<sup>th</sup> Annual Meeting. Sacramento, CA
27. **Prevost**, L.B. 2014. Automated Text Analysis Facilitates Using Written Formative Assessments for Just-in-Time Teaching in Large Enrollment Courses. Maine Research in STEM Education (RiSE) national conference, Bangor, ME.
28. **Prevost**, L.B. 2014. Automated Text Analysis Facilitates Using Written Formative Assessments for Just-in-Time Teaching in Large Enrollment Courses. Maine Research in STEM Education (RiSE) national conference, Bangor, ME. (Invited)
29. **Prevost**, L.B. 2014. Assessing students' ability to trace matter and energy using lexical analysis of written assessments. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
30. **Prevost**, L. B., Haudek, K.C., and M. Urban-Lurain. 2014. Computerized Lexical Analysis of Students' Written Interpretations of Chemical Representations. National Association for Research in Science Teaching, Pittsburgh, PA.
31. **Prevost**, L.B., H. Campa III. 2013. Student Writing Reveals Their Heterogeneous Thinking about the Origin of Genetic Variation in Populations. National Association for Research in Science Teaching, Rio Grande, Puerto Rico.
32. Urban-Lurain, M., L. B. **Prevost**, H. Campa III. 2013. STEM Doctoral Student Professional Development in Teaching: Outcomes of a High-Engagement Program. National Association for Research in Science Teaching, Rio Grande, Puerto Rico.
33. **Prevost** L. B., Haudek, K.C., Merrill, J.E., Urban-Lurain, M. 2012. Examining student constructed explanations of thermodynamics using lexical analysis. Frontiers in Education. Seattle, WA.
34. **Prevost**, L.B., Haudek, K.C., Merrill, J.E., Urban-Lurain, M. 2012. Lexical Analysis of Writing Reveals Heterogeneous Student Thinking in STEM. Transforming Research in Undergraduate STEM Education (TRUSE) Conference. St. Paul, MN

35. **Prevost, L.B., J.K. Knight, M.K. Smith, R.A., Merrill, J., Haudek, K.C., Urban-Lurain, M.** 2012. Using Lexical Analysis to Explore Students' Written Responses to Genetics Concept Assessment-Derived Items. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
36. Kim H., L. **Prevost** and P. Lemons. 2012. A self-directed online tutorial to teach problem-solving skills in an introductory biology course. Society for the Advancement of Biology Education Research Annual Meeting. Minneapolis, MN.
37. **Prevost, L.B., Haudek, K.C., Merrill, J.E., Urban-Lurain, M.** 2012. Deciphering student ideas on thermodynamics using computerized lexical analysis of student writing. American Society of Engineering Education Annual Conference, San Antonio, TX.
38. **Prevost, L. B.** 2012. Beyond Multiple-Choice: Automated Analysis of Student Writing Reveals Heterogeneous Student Thinking in STEM. Disciplinary Base Education Research Seminar. University of Colorado – Boulder. Boulder, CO
39. **Prevost, L. B.** 2011. Increasing the Impact of Educational Innovation in STEM. College of Engineering Brown Bag Discussion. Michigan State University. East Lansing, MI
40. Lemons, P. and L. **Prevost.** 2011. Documented Problem Solving in Biology: Understanding students' cognitive processes during multiple-choice assessments. Graduate Teaching Assistant Pedagogy Conference, Center for Teaching and Learning, Georgia Tech University. Atlanta, GA.
41. Bradley, C., M. Camus, N. Hurt, L. Larson, M. Lovelace, G. Moss, L. **Prevost**, and N. Riley. 2011. Teaching within Social Networks: Assessing the Relative Value of Facebook as an Online Discussion Forum in College Courses. Graduate Teaching Assistant Pedagogy Conference, Center for Teaching and Learning, Georgia Tech University. Atlanta, GA.
42. **Prevost, L.B.** and C Peterson. Island Biogeography Theory as a Predictor of Species Diversity in Tropical Premontane Forest Fragments. 2010. Sigma Xi Annual Meeting, Raleigh, NC.
43. **Prevost, L., P. McMillan, and T. Spira.** 2004. A new species of *Ambrosia* L. from the Blue Ridge Escarpment of South Carolina. Association of Southeastern Biologist 65<sup>th</sup> Annual Meeting. Memphis, TN
44. **Prevost L., P. McMillan, and T. Spira.** 2004. Characterization of rock outcrop populations of ragweed (*Ambrosia* L.) from the Blue Ridge Escarpment of South Carolina. 2004. South Carolina Native Plant Society. Charleston, SC.
45. **Prevost, L., P. McMillan, and T. Spira.** 2004. Morphological and ecological adaptations of a new species of *Ambrosia* L. from the Blue Ridge escarpment of South Carolina. Southeastern Ecology and Evolution Conference. Atlanta, GA.
46. La Bram, J., A. Garmestani, A. Peck, C. Allen, and L. **Prevost.** 2004. When landscaping goes bad: the incipient invasion of *Mahonia bealei* in the southeastern United States. Southeastern Ecology and Evolution Conference. Atlanta, GA
47. **Prevost, L., J. Perry, J. Woodward.** 2001. Assessing the relationship between habitat and fish communities in determining stream water quality. Ecological Society of America. Madison, WI

**GRANTS AWARDED**

Co-PI: Collaborative Research: Mapping Change in Higher Education- Social Networks and STEM Reforms, NSF DUE. 2017-2020. \$558,531

PI: Collaborative Research: A Community of Enhanced Assessment Facilitates Reformed Teaching, NSF DUE. 2013-2015. \$55,481

Co-PI: Robert Noyce Teacher Scholarship Program for University of South Florida Science Majors, NSF Robert Noyce Teacher Scholarship Program. 2014-2019.

Co-PI: K-12 Math & Science Partnership: Osceola, Okeechobee, Volusia & the University of South Florida. Florida Department of Education. 2014-2017. \$2.26 M

**TEACHING AWARD**

2016 Recipient USF STEM Institute Scholars Teaching Award

**COURSES TAUGHT**

BOT3152C. Field Botany USF Spring 2014 - 2017

BSC1005. Biological Principles for Non Majors USF Fall 2015, Spring 2017 - Spring 2018

BSC6932. Science Pedagogy. USF Fall 2017

BSC6932. Data Mining in Science Education. USF Fall 2014

PBIO 8840 Plant Ecology Seminar – Community Ecology. UGA Spring 2009. Co-Instructor

PBIO 4650/6650. Plant Taxonomy. UGA Spring 2008, 2009. TA

PBIO 4640/6640. Botanical Illustration. UGA Fall 2008. TA

PBIO1220L. Introduction to Plant Biology Lab, UGA Fall 2007, 2008, Guest Lecturer. TA

BIOL 1140 Plants and the Environment. College of Coastal Georgia Summer 2007. Instructor

**STUDENTS MENTORED**

Dissertation Advisor for Kelli Hayes, PhD. Student, 2014-present

Dissertation Advisor for Chris Grissett, PhD. Student, 2017-present

Thesis Supervisor for Margarete Romero, Masters Student, 2014-2016

Graduate Committee member for 1 PhD and 2 MS students in Integrative Biology

Graduate Committee member for 4 PhD and 2 MS students in Chemistry Education

Graduate Committee member for 1 PhD student in Instructional Technology

Mentored 6 Undergraduates & 2 Postgraduates in Biology Education

Honors' Thesis Supervisor of 3 Integrative Biology students 2014 - 2017

**INSTRUCTIONAL RESOURCES & WEBSITES:**

Photosyntheses: [http://science4inquiry.com/LP\\_InsOutsPhotosynthesis.php](http://science4inquiry.com/LP_InsOutsPhotosynthesis.php);

[http://science4inquiry.com/LP\\_YinYangPhotosynthesis.php](http://science4inquiry.com/LP_YinYangPhotosynthesis.php)

Nature of Science: <http://www.cpalms.org/Public/PreviewResourceUrl/Preview/129082>;

[http://science4inquiry.com/LP\\_Snakes.php](http://science4inquiry.com/LP_Snakes.php)

**SERVICE AND SYNERGISTIC ACTIVITIES**

Program Assessment Department Integrative Biology, USF

Faculty Mentor for USF Systemic Transformation through Evidence-Based Reforms (STEER)

Steering Committee member USF Robert Noyce Teacher Scholarship Program

Thought-leader STEM DBER Alliance Meeting May 2017

Manuscript reviewer for CBE-Life Sciences Education, BioScience, Innovative Higher Education

NSF Panel Reviewer

Mentor USF Black Faculty and Staff Mentoring Program

Mentor Ecological Society of America SEEDS Program

Diverse Careers in Ecology Panel, SEEDS Regional Field Trip Archbold Biological Station

Member Ecological Society of America (ESA)

Committee member for the Eugene P. Odum Award for Excellence in Ecology Education awarded by the Ecological Society of America (ESA).

Member Society for the Advancement of Biology Education Research (SABER)

Member National Association for Research in Science Teaching (NARST)