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EDUCATION:

St. Lawrence University, Canton NY	Environmental Studies and Biology	B.S.	1994
Salutatorian and <i>summa cum laude</i> Phi Beta Kappa Honor Society			
University of Washington, Seattle WA	Botany	M.S./Ph.C.	1999
<i>Spore dispersal and its potential evolutionary consequences to populations of fungi in Pacific Northwest Forests</i>			
Curtin University, Perth, Australia	Science & Mathematics Education Centre	Ph.D.	2008
<i>Peer Review in an Undergraduate Biology Curriculum: Effects on Students' Scientific Reasoning, Writing and Attitudes</i>			

PROFESSIONAL EXPERIENCE

Assistant Vice President, Office of Research and Graduate Education, University of South Carolina, January 2011 to present

Associate Dean, South Carolina Honors College, University of South Carolina, July 2008 – January 2011

Assistant Dean, South Carolina Honors College, University of South Carolina, January 2008- July 2008

Associate Research Professor, Department Biological Sciences, University of South Carolina, January 2008-present

Director of the Biology Undergraduate Program, Department of Biological Sciences, University of South Carolina, Columbia, SC. December 2002 – August 2007

Lecturer/ Lab Coordinator for Introductory Biology, Department of Biological Sciences, University of South Carolina, Columbia, SC. December 2001 – July 2003

Education Director, Land, Water and Conservation Division, South Carolina Department of Natural Resources, Columbia SC 29201, June 1999-November 2001

EXTERNAL FUNDING

Caicedo, J., Pierce, C., **Timmerman, B.** and Flora, J. **(2010-2013)** Collaborative Research: Implementing and Assessing Strategies for Environments for Fostering Effective Critical Thinking (EFFECTs) Development and Implementation National Science Foundation Curriculum, Course and Laboratory Improvement Program (NSF DUE CCLI-2 # 1022971) **\$390,758**

Feldon, D.F., **Timmerman, B.E.**, Thompson, S., Lyons, J. and Maher, M. **2007-2010** “Effects of Inquiry-Based Teaching Experiences on Graduate Students’ Research Skill Development” National Science Foundation Research and Evaluation on Education in Science and Engineering Program Award (**NSF DRL REESE # 0723686**), **\$614,481**

Caicedo, J., Flora, J.R., Nichols, A.P., **Timmerman, B.E.** and Watkins, R. **2007-2009.** “Developing an Engineering Environment for Fostering Effective Critical Thinking (EFFECT) through measurements” National Science Foundation Curriculum, Course and Laboratory Improvement Program, (**NSF DUE CCLI #0633635**) **\$199,431**

Feldon, D.F., **Timmerman, B.E.** and Showman, R. **2007-2010** “Improving STEM Retention through Instruction: Leveraging Faculty Expertise.” National Science Foundation Science Technology Engineering and Mathematics Talent Expansion Program Award (**NSF STEM STEP # 0653160**), **\$943,842** (I stepped down as co-PI in 2008 due to increased administrative responsibilities with the Honors College).

Timmerman, B.E., Woodin, S., Singer, J. and Reeves, T. **2004-2007** “Peer review as a mechanism for both curriculum reform and assessment” National Science Foundation Curriculum, Course and Laboratory Improvement Program, (**NSF DUE CCLI #0410992**). **\$199,813**

Timmerman, B. **1995-1998.** A first principles approach to mycorrhizal spore dispersal and its consequences for forest succession. (**NSF Graduate Research Fellowship**) **\$67,200**

PUBLICATIONS

Feldon, D.F, Peugh, J., **Timmerman, B.E.**, Maher, M.A., Hurst, M., Strickland, D.C., Gilmore, J.A. Stieglmeyer, C. (*in review*) Teaching improves graduate student research skills. *Science*

Maher, M.A., **Timmerman, B.C.**, Feldon, D.F., and Strickland, D.C. (*in review*) Factors Affecting the Occurrence of Faculty – Doctoral Student Coauthorship *Journal of Higher Education*

Vieyra, M., Gilmore, J. and **Timmerman, B.** **(2011)** Mandatory research experiences may improve STEM retention for under-represented females *Council on Undergraduate Research Quarterly (in press)*

Feldon, D.F., Maher, M.M. and **Timmerman, B.E.** (2010) Performance-Based Data in the Study of STEM PhD Education. *Science*. 329(5989): 282-283

Feldon, D.F., **Timmerman, B.C.** and Maher, M. (2010) *Response to Best Test of Ph.D. Student Success*. *Science* 330(6004): 587

Timmerman, B.E., Strickland, D.C., Johnson, R.L. and Payne, J. (2010). Development of a 'universal' rubric for assessing students' scientific reasoning skills using scientific writing. *Assessment and Evaluation in Higher Education* advance online publication DOI [10.1080/02602930903540991](https://doi.org/10.1080/02602930903540991)

Feldon, D.F., **Timmerman, B.E.**, Showman, R. and Stowe, K. (2010). Translating expertise into effective instruction: The impacts of cognitive task analysis (CTA) on laboratory report quality and student retention in the Biological Sciences *Journal of Research in Science Teaching* 47(10): 1165-1185

Gilmore, J., Strickland, D., **Timmerman, B.**, Maher, M. and Feldon, D. (2010). Weeds in the Flower Garden: An Exploration of Plagiarism in Graduate Students' Research Proposals and Its Connection to Enculturation, ESL, and Contextual Factors. *International Journal of Educational Integrity* 6(1): 13-28

Caicedo, J. M., Pierce, C. E., Flora, J., **Timmerman, B.**, Nichols, A. P., Graf, W., Ray, T. (*In press*). Instructional environment to stimulate critical thought of freshmen civil engineering students, *Advances in Engineering Education*

Timmerman, B.E., Gilmore, J, Strickland, D.C., Maher, M. and Feldon, D.F. (*in review*) Performance-based assessment of graduate student research skills: Timing, trajectory, and potential thresholds *Studies in Higher Education*

Feldon, D., Hurst, M. Maher, M. and Timmerman B. (*in review*) Seldom Right but Never in Doubt: Research Mentors' and Graduate Students' Perceptions of Mentee Research Skill Development. *Science Education*

Timmerman, B., & Strickland, D. C. (2009). Faculty Should Consider Peer Review as a Means of Improving Students' Scientific Reasoning Skills. *Journal of the South Carolina Academy of Science*, 7(1), 1-7.

Timmerman, B.E., Strickland, D.C. and Carstensen, S.M. (2008). Curricular reform and inquiry teaching in biology: where are our efforts most fruitfully invested? *Integrative and Comparative Biology* 48(2): 226-240

Caicedo, J. M., Flora, J., Pierce, C., Nichols, A., **Timmerman, B.**, and Graf, W., (2008). "Environments For Fostering Effective Critical Thinking (EFFECTS)", *Proceedings of the ASEE Annual Conference and Exposition*. Pittsburgh, PA, June 22-25, 2008

Timmerman, B. (2005). *Chapter 30: Fungi In Test Bank for Assessment: Biological Science* Nickla, H. and Perkins, M. (Eds). Pearson Prentice Hall: Upper Saddle River NJ pgs. 459-476

Timmerman, B. (2004). *Biological Principles II Lab Manual: University of South Carolina Biological Sciences.* Hayden McNeil (author of original material in Chps. 1-4, 11; Editor. of remainder.)

Timmerman B. (2003). (Ed.) *Biological Principles II Lab Manual: University of South Carolina Biological Sciences* Hayden McNeil Publishing: Plymouth MI

Timmerman, B.E.H. (1999). *Dispersal in epigeous basidiomycetes: implications of varying probabilities of spore settlement and genet size and relatedness to the evolution of fungal populations.* University of Washington MS Thesis

Timmerman, B. and Helmuth B. (1998). Chapter 9: Marine Life. *In: The Ecotravellers' Wildlife Guide to Belize and Northern Guatemala.* (Ed.) Les Beletsky. Academic Press

Johns, C. and **Timmerman, B.E. (1998).** Total cadmium, copper and zinc in two Dreissenid mussels, *Dreissena polymorpha* and *Dreissena bugensis*, at the outflow of Lake Ontario. *Journal of Great Lakes Research* 24(1): 55-64

Helmuth, B.S.T., **Timmerman, B.E.H.** and Sebens, K.P. (1997). The interplay of host morphology and symbiont microhabitat in coral aggregations. *Marine Biology* 130: 1-10

MANUSCRIPTS

Timmerman, B.E., (*in prep*) Peer review: a natural way to develop students as future scientists. Literature review and policy recommendations to be submitted to *Innovative Higher Education*

Timmerman, B.E., Dahlke, K.S., Powell, L., Stowe, K. and Carstensen, S. (*in prep*) Undergraduate students' perceptions of peer review as a learning tool and its role in the scientific community. Empirical research to be submitted to *Bioscience*

Feldon, D.F., Gustainis, J., Timmerman, B.E. (*in prep*) Do Advanced Placement Courses in Biology Really Prepare Students for Higher Level Biology Courses in College? to be submitted to *Research in Higher Education*

INVITED KEYNOTE PRESENTATIONS

Timmerman, B. (2007). The effect of peer review on students' scientific reasoning and writing abilities. Calibrated Peer Review Symposium, Texas A&M University. College Station, TX, June 19th

Timmerman, B. (2006). Improvement of student scientific reasoning skills: the effect of peer review and a lab report rubric. *National Academy: Integrating Science and Mathematics Education Research into Teaching*. University of Maine. Orono, ME, June 25-30

Timmerman, B. (2006). Biology Undergraduate Curriculum Reform: Goals, Reforms, Data, and Future Directions. *Bio2010 Workshop*. University of South Carolina. Columbia SC, March 9th <http://www.scepscor.org/outreach/bio2010/workshop-summary.html>

SELECTED PRESENTATIONS

Maher, Timmerman and Feldon, (2011) “Do you want to write with me?” EERA conference

Maher, M., Hurst, M., Timmerman, B., Feldon, D., & Gilmore, J. (2011). “*I start with turning to the literature*”: *Opening the door to research skill development*. Paper to be presented at the annual meeting of the American Educational Research Association, New Orleans, LA: April, 2011.

Maher, M., Timmerman, B., Feldon, D., & Strickland, D. (2011). *Faculty Mentor - Graduate Student Coauthoring: The Precursors, Processes, and Outcomes of ‘Scholarly Bricklaying.’* Paper to be presented at the National Association for Research in Science Teaching, Orlando, FL: April 2011.

Maher, M., Timmerman, B., & Feldon, D. (2011). *Do you want to write with me? Factors influencing faculty mentor – graduate student writing activities*. Paper to be presented at the Eastern Educational Research Association, Sarasota, FL: February 2011.

Timmerman, B., Maher, M., Strickland, D. and Feldon, D. 2010. Crossing the Threshold Concept: A Transformative View of Research Skill Development. *Annual Meeting of the National Association of Research in Science Teaching*. Philadelphia, PA March 22-24

Maher, MA, Hurst, M., Timmerman, B.C. and Feldon, D. 2010. Crossing the Threshold in the Research Skill Development: Engagement with Primary Literature. *Annual meeting of Association for the Study of Higher Education (ASHE)* November 17-20 Indianapolis

Stiegelmeyer, C. Maher, M., Feldon, D. and **Timmerman, B. 2010.** Factors That Facilitate Inquiry-Based Teaching. *Annual Meeting of the National Association of Research in Science Teaching*. Philadelphia, PA March 22-24

Maher, M., Gilmore, J., **Timmerman, B.** and Steigelmeyer, C. 2010. The Influence of Environmental Variables on Doctoral Students’ Perception of Teaching and Research Integration. *Annual Meeting of the American Educational Research Association*. Denver, Colorado. April 30-May 4

Glab, P., Gilmore, J., Maher, M., **Timmerman, B. 2010.** Graduate Students’ Views of the Relationship Between Teaching and Research Across the Disciplines *SC Educators for the Practical Use of Research Annual Conference*. Columbia SC Feb. 25-26

Gilmore, J., **Timmerman, B.**, Maher, M., and Strickland, D. **2009**. Surprising Plagiarism Amongst Graduate Students in Science, Math and Engineering Disciplines. *Center for Academic Integrity Annual International Conference*. St. Louis, MS, Oct. 16-18

Hurst, M., Maher, M., Gilmore, J., **Timmerman, B.**, Feldon, D., Strickland, D, and Stieglmeyer, C., **2009**. Research Values Revisited: The Next Phase of Defining Research Values and Attributes Across the Academic Spectrum. *Annual Meeting of the American Educational Research Association*, San Diego, CA, April 13 – 16

Timmerman, B.E., Strickland, D.C., Maher, M., Hurst, M. and Gilmore, J. **2009**. Arc and trajectory: Patterns in how graduate students in science, engineering and social science fields develop research skills. *Annual Meeting of the American Association of Educational Research*. San Diego CA, April 13-17

Hurst, M., Gilmore, J., Maher, M., **Timmerman, B.**, Feldon, D., Strickland, D, and Stieglmeyer, C., **2009**. Exploring the Professional Identity Formation of Researchers in Science, Technology, Engineering, and Math. *Annual Meeting of the National Association for Research in Science Teaching*, Garden Grove, CA, April 17 – 21

Strickland, D.C., **Timmerman, B.E.**, Maher, M. and Feldon, D. **2009**. The Great Debate: The Value of Teaching and Research in Graduate Student Research Skill Development. *The Annual Meeting of the National Association of Research in Science Teaching*. Garden Grove CA, April 17-20

Caicedo, J. M., Flora, J., Pierce, C., Nichols, A., Graf, W. and **Timmerman, B.** **2009**. Assessment of environments for fostering effective critical thinking (EFFECTS) on a first-year civil engineering course. *Annual meeting of American Society for Engineering Education*, Austin, TX June 14-17

Caicedo, J. M., Flora, J., Pierce, C., Nichols, A., Graf, W., and **Timmerman, B.** **2008**. Introducing the Environments For Fostering Effective Critical Thinking (EFFECTs). *International Modal Analysis Conference, Society of Experimental Mechanics*, Orlando, FL, February 4-8

Timmerman, B. **2008**. Peer Review as a Mechanism for Both Curriculum Reform and Assessment. Course Curriculum and Laboratory Improvement (CCLI) program PI conference (AAAS and NSF) Washington DC: August 13 to 15th

Caicedo, J. M., Flora, J., Pierce, C., Nichols, A., **Timmerman, B.**, and Graf, W., **2008**. "Environments For Fostering Effective Critical Thinking (EFFECTS)", *Proceedings of the ASEE Annual Conference and Exposition*, Pittsburgh, PA, June 22-25

Timmerman, B.E., Johnson, R.L. and Payne, J. **2007**. Development of a universal rubric for assessing students' science inquiry skills. *National Association of Research in Science Teaching 2007 Annual Meeting* New Orleans LA, April 15-18th

- Timmerman, B.E., Johnson, R.L. and Payne, J. 2007.** Development of a Universal Rubric for assessing students' science inquiry and scientific reasoning skills using written lab reports. *Association of Southeastern Biologists*. Columbia SC April 19-20th
- Feldon, DF. , Gustainis, J., and **Timmerman, B. 2007.** Do Advanced Placement courses in biology really prepare students for higher level biology courses in college? *SC Educators for the Practical Use of Research (SCEPUR)*, Columbia SC, Feb. 22-23rd
- Timmerman, B. Strickland, D., Carstensen, S. and Singer, J. 2006.** In: Evolution for All: Multi-paper set on Theoretical and Practical Approaches L. Amiri, S. Fowler, L. Jones, G. Branch, A. Cavallo, and M. Gleason *National Association for Research in Science Teaching Annual Meeting* San Francisco CA April 7-11,
- Timmerman, B. Strickland, D., Carstensen, S. and Singer, J. 2006.** Using Inquiry-Based Curricula to Improve Undergraduate Science: Where Are our Efforts Most Fruitfully Invested? *American Educational Research Association Annual Meeting* San Francisco, April 3-7
- Timmerman, BE and Strickland, DC, 2006.** Can peer review improve undergraduate lab reports and does experience with peer review improve students' scientific reasoning skills? *Society for Integrative and Comparative Biology Annual Meeting*, Orlando FL Jan. 3-8
- Timmerman, B and Feller, B. 2005.** Measuring the impact of a professional development experience on Teacher participants understanding of biology content. Part of Multiple Paper Set: Reconceptualizing the structure of professional development: Threading content, pedagogy and the classroom (J. Singer and R. Lacrosse). *American Educational Research Association Annual Meeting* Montreal Canada, April 11-15
- Timmerman, B. Strickland, D., Carstensen, S. and Singer, J. 2005.** Lessons learned from the first two years of an inquiry-based reform of introductory biology laboratories: Assessment methods, invalid assumptions and the mediating effect of students' alternate conceptions. *American Educational Research Association Annual Meeting* Montreal Canada, April 11-15
- Timmerman, B., and Strickland, D.. 2005.** Effect of peer review on biology undergraduates' scientific writing skills. *National Association of Research in Science Teaching Annual Meeting* Dallas TX April 4-7
- Timmerman, B., Strickland, D., Carstensen S., Singer J. and Woodin, S. 2005.** Students' prior knowledge mediates the effectiveness of an inquiry-based laboratory curriculum in introductory biology. *Society for Integrative and Comparative Biology Annual Meeting* San Diego CA Jan.
- Singer, J, **Timmerman, B** and USC Secondary MAT and MT students. **2004** 'Exploring technology to support student science learning.' *South Carolina Science Council Conference* North Charleston SC

Timmerman, B., Singer, J., and Strickland, D. 2004 “Student prior conceptions mediate the effectiveness of an inquiry-based curriculum.” Presentation at the annual *National Association of Research in Science Teaching*, Vancouver BC

Singer, J., **Timmerman, B.** and McGuiness, C.. **2003.** “*BioLogica*: A computer simulation to support student understanding of genetics.” and “Molecular: A simulated Chemical workbench.” *Educational Technology Conference* Myrtle Beach SC 2003

Timmerman, B. 2000. “Inquiry-based activities for K-12 students using Department Natural Resources materials/SC Envirothon” and “Inquiry-based activities to meet the 6th grade science standards on fungi” *South Carolina Science Council Conference* Myrtle Beach 2000

Timmerman, B.E.H. Population dynamics of wind-dispersed basidiomycetes. Presented at the Daniel E. Stuntz Memorial Symposium, Seattle 1998.

Timmerman, B.E.H., B.S.T. Helmuth and K.P. Sebens. Localized photoadaptation and branch spacing in *Agaricia tenuifolia*. Presented at *8th International Coral Reef Symposium*, Panama City, Panama, 1996.

Timmerman, B.E.H. and G. Muller-Parker. Intracellular Symbiosis: governed by biotic or abiotic factors? A comparison of photosymbiont distributions in *Anthopleura elegantissima*. Presented to the *Society for Integrative and Comparative Biology*, Washington, D.C. 1995.

TEACHING EXPERIENCE

- BIOL 101L: Biological Principles I Laboratory (introductory biology for majors)
- BIOL 102L: Biological Principles II Laboratory (introductory biology for majors)
- BIOL 110: General Biology (Honors, non-majors)
- BIOL 270 and 270 L: Intro to Environmental Biology (Honors, non-majors)
- BIOL 398 and SCHC 391D: Peer Teaching in Biology and Chemistry
- BIOL 599: Special topics: Biological Perspectives on Education
- SCCC 383R / EDPY 835 Special Topics: Development of Scientific Expertise
- SCHC 392B Research Skills

UNDERGRADUATE RESEARCH MENTORED

Alisha Owensby, Howard Hughes Award and Honors thesis: Spore color as a predictor of mycorrhizal fungal genetic diversity. 2005-06

Laura Hunter, Honors thesis: Use of simulated dissection to aid student understanding of mammalian anatomy and physiology, University of South Carolina 2003-04

Jessica Marshall, Honors thesis: Effectiveness of *BioLogica* (Mendelian genetics software) as a teaching tool in non-majors biology and its effect on teaching strategy 2003-04

SYNERGISTIC WORK

External Evaluator for Winthrop University, Biology Department, Accreditation Review, April 2008

Advisory Board member for *Biological Science* (Scott Freeman author) introductory biology textbook for majors and **contributing author** for assessment materials Chapter 30 (2nd Ed) 2003-2008

Editorial Experience:

- Reviewer
Advances in Physiology Education
Assessment and Evaluation in Higher Education
American Educational Research Association
Journal of Research in Science Teaching
National Association for Research in Science Teaching
National Science Foundation Course, Curriculum and Laboratory Improvement Program Panelist
- Textbook reviews
Brooks/Cole Thomson: Textbook on “*How to read Science Papers*”
Wadsworth Media: *BioActive Learning* Textbook and multi-media materials
McGraw Hill Higher Education: various *non-majors Biology texts*
Prentice Hall: content reviewer, Focus Group participant, Advisory Panel member 1st Edition; 2nd, 3rd and 4th Edition Chapter Reviews *Biological Science*
Content Connections: multi-media and introductory textbook for biology majors
- Journal Section Editor (Science Education) *Journal of the South Carolina Academy of Science*

External Committees

- **Council on Undergraduate Research (CUR)** national level **Councilor-at-Large** www.cur.org elected 2009-2012
- **SC Academy Science Councilor** 2008-2010
- **Section Editor, Journal of the SC Academy of Science** 2009 - present

University Service

- **Advisory Board Member for Office of Undergraduate Research** (2008 – present).
- **Member of the Goldwater Fellowship Committee** (2008-present)
- **Advisory Board USC Center for Teaching Excellence** Spring 2005-2007
- **Faculty Senate Committee on Instructional Development** Fall 2005-2009
- **Focus Carolina Teaching and Learning Committee** 2009
- **University-wide Teaching Assistant Orientation**

- **Plenary Presentation** “Designing effective assessments” (2006, 2009)
- **Session Leader** “Everything you ever needed to know about laboratory teaching (in an hour)” (2002 to 2006) (DVD available upon request).
- **Grant reviewer NSF CCLI program, Jan 2005**

COLLABORATORS AND OTHER AFFILIATIONS:

Recent Collaborators:

David Feldon, Jed Lyons, Michelle Maher, Stephan Thompson, Juan Caicedo, Joseph Flora, Andrew Nichols, Kirk Stowe

Graduate and Post Doctoral Advisors:

David Treagust, Chair Doctoral Committee (Curtin University, Australia)
Joseph Ammirati (PhD/MS advisor, University of Washington)