

# CURRICULUM VITAE

Linden Elizabeth Higgins

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Education: M.Ed. University of Vermont, Department of Leadership and Developmental Sciences. Thesis: Excellence in college teaching: A synthesis of theory and evidence.  
Faculty Cup Award: "Outstanding academic performance and commitment to program initiatives"  
Ph.D. University of Texas at Austin, Department of Zoology. Thesis: Life history of ecology of giant orb-weaving spider *Nephila clavipes*.  
M.S. University of Chicago, Department of Biology.  
B.A. cum laude. The College of the University of Chicago.  
Continuing education. Relevant recent trainings include Building empathy and disrupting racism, SENECER Summer Science Institute 2019; Gordon Research Institute Undergraduate Biology Education 2015, 2017, 2019; Dendros. D Facilitating difficult conversations, UVM CCPD Making assessment & evaluation work for diversity, The intercultural classroom, Pedagogical & curricular issues of diversity, UVM CTL Teaching and writing in STEM education, Reaching and teaching all students, Evaluating writing by English language learners, Transforming business, society, and self with U.Lab (MITX).  
Certification NBCITI-UWisc (Aug 5, 2016); UVM (Sept 12, 2016); NIHRB (Sept 28, 2016)

## Recent Employment History:

University of Vermont, Department of Biology. 2002-present. Adjunct Assistant Research Professor and Lecturer.  
New Jersey City University, Department of Biology, 2017-present. Consultant: Formative evaluation. Summer STEM Academy learning outcomes and impact on success and retention.  
University of Vermont, Department of Animal Science, 2016-2020. Consultant: Developmental evaluation. Animal disease biosecurity coordinated agricultural project  
Monmouth University, 2016-2018. Consultant: Educational impact evaluation.  
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Introductory Undergraduate:

- Majors: Organismal biology \* (University of Vermont, UVM; Bennington College, BC); Cell and molecular biology \* (Johnson State College, JSC)
- Non-majors: Forensic Biology, Principles in biology (cell, molecular, and organismal; UVM, JSC), Evolutionary Biology (UVM), Insects and Human Society (University of Massachusetts, Amherst), Ecology, Evolution and Society (University of Texas, UT); Science for Business, Law and Liberal Arts (UT)
- Seminars: Biology of sex (UVM); Science as a way of knowing (UVM); Genetically-Modified Organisms: Myth, Opinion, Fact writing-intensive, BC)
- Advanced undergraduate: Behavioral Ecology (UVM), Introduction to Genetics\* (UVM, JSC), Advanced Genetics Laboratory (UVM)
- Graduate: Animal behavior (National Autonomous University of Mexico, UNAM); Seminar in the scientific method (UMass).

Professional Development Workshops:

- Teaching social justice through Mass Incarceration: With Bettie Davis, St. Vincent College (SENCER) Summer Institute (SSI) 2020.
- When biology and chemistry cross paths: Teaching social justice through science With Bettie Davis, St. Vincent College (SSI) 2020.
- Analyzing survey data for reliability and validity: Science Education for New Civic Engagements and Responsiveness (SECRE) SSI 2019. Part of the Designing Assessments of Student Outcomes mini-symposium.
- Using a "jigsaw" approach to designing civic engagement assessments in a high enrollment class. SSI 2018
- Designing open inquiry laboratories: It needn't be chaotic UVM CTL May, November 2018
- Using a "jigsaw" approach to designing civic engagement assessments in a high enrollment class SSI 2018, 2019
- Designing student assessments to stimulate reflection on complex problems. SSI 2018. With M. Devanas.
- Using SENCER courses for research teaching. SSI 2017, 2018. With M. Devanas.
- Beyond Assessment: Designing formative evaluations of student learning. SSI 2017, 2018.
- Managing difficult conversations in the sciences. With C. Duckett. SSI 2017.
- Designing discussion prompts for cognitive work. SSI 2016. NCSCE webinar 2017
- Designing open inquiry laboratories for K-2 students: It needn't be chaotic SSI 2016
- Designing and monitoring discussions for safe learning. [Using Discovery-Doing Science](#). 2016.
- Inquiry 101. Vermont After-schools Professional Development 2016.
- Coaching for quality STEM programs. Vermont After-schools Professional Development 2016.
- Creating multiple choice questions for problem solving, content review, and practice. UVM 2016.

Education Research: General focus: I am interested in developing and documenting the effectiveness of instructional scaffolding that increases student self-reflection and self-assessment, reduces the achievement gap and improves the transfer of critical thinking skills across disciplines.

Major Accomplishments:

- Developing mixed strategies for direct assessment of student skills development.
- Developing training workshops to engage instructors in the use of facilitated discussions to illuminate student positions and individual educational needs.
- Developing on-line formative quizzes and demonstrating the positive impact on student learning outcomes in a lecture setting.
- Developing classroom and laboratory activities encouraging critical thinking, and using proficiency-based rubrics to assess student learning.

Current research:

- Designing assessments to track while identifying students' development as allies in a D1 course.
- Designing assessments to encourage and document students' cognitive development in the first-year classroom.
- Impact of summer STEM bridge programs on belonging and persistence of students at a Hispanic-Serving Institution. Final analysis in progress

Research Involving Undergraduates:

- Impact of exam wrappers on study habits with Maya Sobel in preparation for publication.

Recent presentations:

- Exam wrappers exposing students to learning research change study habits with Maya Sobel. Poster, ASCN, June 2021, ISSOTI October 2021
- Visualizing connections to document development of interdisciplinary collaboration among researchers. Poster, American Entomological Society, 2019 Higgins and Smith.
- Student assessment of learning gains: A reassessment of learning. Higgins, Duckett, and Estes. Poster, SSI 2018, Gordon UBER 2019
- Pairing humanities and the environmental sciences. Evaluating student impact. Higgins, Duckett, and Estes. Poster, Gordon Research Conference for Undergraduate Biology Education, 2017
- Changing student self-efficacy in climate action. Poster, Duckett, Estes, and Higgins, SSI 2017
- Voluntary online computer assessments increase student learning. Poster, Gordon Research Conference for Undergraduate Biology Education. Summer 2015.
- Excellence in college teaching: A synthesis of theory and evidence. Poster, SSI 2015

Biology Research: General focus Evolutionary ecology, physiological ecology, and life history of size differences between male and female animals. Intraspecific plasticity in life history influences the reproductive success of males and females in diverse habitats

Major Accomplishments:

- I have shown that choline, a precursor of acetylcholine and cell membrane components, is an essential nutrient (not synthesized by the spider) spiders use choline for both physiological functions and web synthesis and there are diet-dependent tradeoffs.
- I have shown that family lines vary in their developmental response to environmental conditions, and males and females respond differently to nutritional stress.
- Developmental plasticity varies independently from mean size in species of *Nephila* and male and female size and plasticity are evolving independently.

Research Involving Undergraduates:

- UT: Students accompanied me on trips to Mexico, and were assigned independent projects in the field and in the laboratory
- UVM: Biology Department Students sent to Mexico on collection trips with Mexican collaborators. 10-12 students involved in animal maintenance each year. 2 independent projects each year.
- BC: Student independent research projects, based upon independently developed hypotheses, as part of the organismal biology laboratory class. One tutorial student project resulting in paper that we are preparing for submission.

Fellowships and grants

- National Science Foundation Grant, "Adaptation and migration among populations of *Nephila clavipes*" with Juan Noor (UT Austin). 2002-2007.
- National Science Foundation SGER Grant, "Resource allocation by spiders: possible gene x environment effects" with M.A. Rankin (UT Austin). 1999-2000.
- National Science Foundation Grant "Nutritional ecology of the web of *Nephila clavipes*" with M. A. Rankin. 1993-1996.
- Christenson Research Institute fellowship, 1993

UNAM postdoctoral fellowship, 1990-1991

Organization of American States PRA fellowship, 1998-

National Science Foundation Doctoral Improvement Grant, 1985-1986

Administrative experience: I work to build consensus among diverse stakeholders to identify goals, develop plans for achieving those goals, and assess progress through regular external and internal evaluation procedures.

2014-2016: Member, Board of Directors, Common Ground Center. CGC is a nonprofit, multi-arts, education, and outdoor recreation center dedicated to and modeling sustainability and strengthening families and communities through unique program offerings. The board is responsible for oversight of budget, policy, and staff hiring and evaluation that are aligned with the mission of the organization.

2015: Course evaluation for UVM Center for Teaching and Learning. Implemented an on-line course for faculty moving to hybrid or on-line teaching.

2015: Designed curriculum plan for the Lake Champlain Maritime Museum collaboration with the Addison Northwest Supervisory Union afterschool program at Vergennes Middle School.

2014: Designed and executed a personalized learning evaluation aligned with the Dan Hammond model.

2014: Designed a transformation of pre-service teacher training curriculum from discipline-centered to interdisciplinary, including a written brief and m

Reviewer for:

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2007 L. Higgins. Juvenile Nephila (Araneae, Nephilidae) use various attack strategies for novel prey. Journal of Arachnology. 35: 530

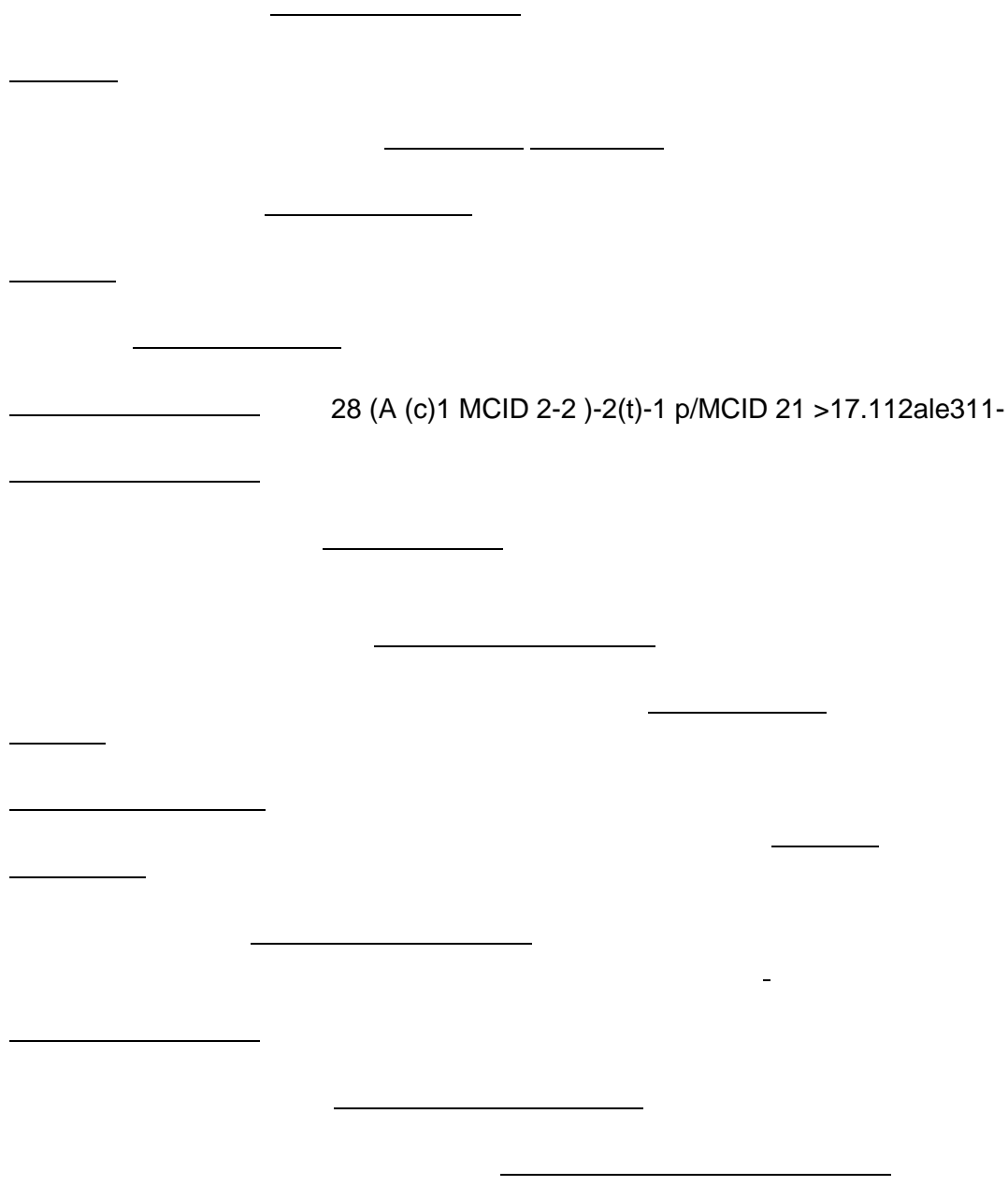
2006 L. Higgins. Quantitative shifts in orb investment during development in *Nephila clavipes* (Araneae: Tetragnathidae). Journal of Arachnology. 34: 374-386

L. Higgins, S. White, J. Nuñez Farfán and J. Vargas. Polymorphism among distinct alleles of the Flajj gene from *Nephila clavipes*. International Journal of Biological Macromolecules 40: 2012-16.

2002 L. Higgins. Female gigantism in a New Guinea population of the spider *Nephila maculata*. Oikos 99: 377-385

2001 L. Higgins and M.A. Rankin. Mortality risk of high rate of weight gain in the spider *Nephila clavipes*. Functional Ecology 15: 242-8

L. Higgins, M. Toyama. Journal of Arachnology 29(1): 1-7 (2001)



1987 L. Higgins. Time budget and prey of *Nephila clavipes* (Linnaeus) (Araneae: Araneidae) in southern Texas Journal of Arachnology 15:40-417.

In preparation:

L. Higgins. Stimulating communication practice through teach your past self lessons. To be submitted to CourseSource

L. Higgins and M. Sel. Exam wrappers exposing students to learning research change study habits. To be submitted to Journal of College STEM Teaching