

Melissa Borla McElligott, Ph.D.
Curriculum Vitae

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Education

Doctor of Philosophy in Biology, 2004. Northeastern University, Boston, MA.

Dissertation: The kinematics and neural control of the prey capture behavior in the larval zebrafish, *Danio rerio*.

Advisor: Donald M. O'Malley

Bachelor of Science Degree, *cum laude*, 1998. University of North Carolina, Wilmington, NC.

Employment History

- 2014-present *Assistant Teaching Professor*, Biology Department. Northeastern University.
- Design and instruct “BIOL1107: Foundations of Biology” and one section of “BIOL2299: Inquiries in Biology”.
 - Implement first round of a 5-year curriculum assessment protocol.
 - Coordinate multi-section “Inquiries in Biology” course.
 - Conduct research on pedagogical practices to enhance student learning.
 - Led faculty team to develop and implement Biology Project Lab.
 - Coordinated department curriculum retreat during May of 2016.
- 2011-2014 *Biology Instructor*, Biology Department. Northeastern University.
- Revised and Instructed BIOL1115-General Biology I for Engineers.
 - Instructed BIOL1118 and BIOL1120-Labs for Anatomy and Physiology.
- 2005-2008 *Biology Instructor and Director of Biology and Instructional Laboratories*, Biology Department. Boston University.
- Developed and instructed ‘Advanced Cell Techniques’, a pedagogy seminar for teaching fellows, and an Introductory Biology laboratory.
 - Coordinated the Introductory Biology course with enrollments exceeding 1,000 students annually. Responsibilities included: curriculum development, lab manual revisions, supervising lab personnel, managing student conduct issues, and overseeing the peer-tutoring program.
 - Managed a budget in excess of \$100,000, maintained teaching facilities, developed grants and proposals for infrastructure improvements.
- 2004-2005 *Visiting Assistant Professor*, Biology Department. Wellesley College.
- Designed and instructed the lectures and laboratories for a Human Biology course and an advanced Introductory Cell Biology course.
 - Revised lab manual to enhance inquiry-based experimental components.

Employment History cont.

- 2002-2004 *Instructor of Biology*, School of General Studies. Northeastern University.
- Instructed ‘Principles of Biology’ and ‘Anatomy and Physiology’.

Scholarship

Refereed articles

- McElligott, MB** and O’Malley, DM (2005) Prey-tracking by larval zebrafish: Axial kinematics and visual control. *Brain Behavior and Evolution*. 66:177-196.
- Hill SA, Liu X-P, **Borla MA**, José JV and O’Malley DM (2005) Neurokinematic modeling of complex swimming patterns of the larval zebrafish. *Neurocomputing*. 65:61-68.
- O’Malley DM, Sankrithi NS, **Borla MA**, Parker S, Banden S, Gahtan E and Detrich HW (2004) Optical Physiology and Locomotor Behaviors of Wild-Type and Nacre Zebrafish. In: *The Zebrafish: Cellular and Molecular Biology*, Detrich HW, Westerfield M and Zon LI, eds., Academic Press, San Diego, CA.
- Borla, MA**, Palecek, B, Budick, S, and O’Malley, DM (2002) Prey capture by larval zebrafish: Evidence for fine axial motor control. *Brain Behavior and Evolution*. 60:207-229.

Abstracts

- O’Malley DM and **McElligott MB** (2017) How Reflective and Adaptive Learning Strategies relate to a Nodal Theory of Neocortical Computation. Gordon Conference on Undergraduate Biology Education, Stonehill College, Easton, MA July 9-14, 2017.
- O’Malley, DM, Waszczak, B, **McElligott, MB** (2016) Neuroscience perspectives on motivational and integrative elements in game-based learning. Lightning round presented at: Conference for Advancing Evidence-Based Teaching; 2016 May 3; Boston, MA.
- McElligott, MB** (2015) From Reflections to Learning Progress Blogs: Interventions to Promote Self- Directed Learning in Honors and Non-Honors Students. Poster session presented at: Conference for Advancing Evidence-Based Teaching; 2015 May 5; Boston, MA.
- Borla, MA**, Hill, SA, Jose, JV and O’Malley, DM (2004) Disruption of the neural controls mediating prey capture in the larval zebrafish, *Danio rerio*. Society for Neurosciences. Abstract. Program No. 601.1.
- Hill, SA, **Borla, MA**, O’Malley, DM and Jose, JV (2004) Neurokinematic modeling of the locomotive repertoire of the larval zebrafish. Society for Neurosciences. Abstract. Program No. 601.2.
- Hill, SA., Liu, XP., **Borla, MA.**, Jose, JV., and O’Malley, DM (2003) Modeling of neural control of zebrafish locomotive behaviors. Society for Neurosciences. Abstract. Program No. 278.10.
- Borla, MA** and O’Malley, DM (2001) High-speed imaging of tracking used in the larval zebrafish prey capture behavior. Society for Neurosciences. Abstract. Program No. 361.18. 9.
- Borla, MA** and O’Malley, DM (2000) High-speed imaging of larval zebrafish prey capture: Implications for descending motor control. Society for Neurosciences. Abstract. Program No. 830.7.

Presentations

February 23, 2015 “Cooperative Learning to reinforce the 5 Core Concepts in your classroom” presented in collaboration with Donald M. O’Malley, to the Northeastern Biology Department.

November 2, 2015 “Teaching your whole class: evidence-based methods to reach diverse students” presented in collaboration with Gail Begley, to the Northeastern Biology Department.

Grants*External-Unfunded*

Powers-Lee, S, Begley, G, Bergman, K, Roth, A, McElligott, M, Poe, M, Lerner, N.
 "Interdisciplinary Design of Authentic Communication Tasks for the Lab (IDACTL): Synergistic Focus on Writing-to-Learn and Learning-to-Write," Sponsored by National Science Foundation. (July 1, 2015 - June 30, 2018), Effort: 20%, Total Proposed: \$591,299.23.

Teaching and Advising*Teaching Awards*

2015-2016 College of Science Excellence in Teaching Award

2014-2015 *Nominated* for university-wide Excellence in Teaching Award

Courses Instructed

Course Number	Course Title	Year	Semester	# of Students Enrolled	Regular (R) or Extra Compensation (EC)
BIOL2299 (HON)	Inquiries in Biology	2017	Spring	13	R
BIOL2299	Inquiries in Biology-- <i>a service learning course</i>	2017	Spring	28	R
BIOL1107	Foundations of Biology	2016	Fall	111	R
BIOL2299 (HON)	Inquiries in Biology	2016	Fall	27	R
BIOL1000 (HON)	Biology at Northeastern	2016	Fall	15	EC
BIOL2299	Inquiries in Cell and Molecular Biology	2016	Spring	30	R
BIOL2299	Inquiries in Cell and Molecular Biology	2016	Spring	30	R
BIOL1000 (HON)	Biology at Northeastern	2015	Fall	14	EC

BIOL2299 (HON)	Inquiries in Cell and Molecular Biology	2015	Fall	22	R
BIOL1107	Foundations of Biology	2015	Fall	151	R
BIOL2299	Inquiries in Cell and Molecular Biology	2015	Spring	34	R
BIOL2299 (HON)	Inquiries in Cell and Molecular Biology	2015	Spring	23	R
BIOL2299	Inquiries in Cell and Molecular Biology	2014	Fall	35	R
BIOL1107	Foundations of Biology	2014	Fall	130	R
BIOL1000 (HON)	Biology at Northeastern	2014	Fall	27	EC

Courses Developed and Redesigned

- Developed BIOL1107: Foundations of Biology in 2014. I redesigned the course in 2016 to enhance student collaboration, increase active learning, add two-stage exams, and use an e-textbook that aligns with the *AAAS Vision and Change in Undergraduate Biology Education Core Concepts*.
- Developed a new section of ‘BIOL2299: Inquiries in Biology’ on stem cells and neurobiology, Fall 2014.
- Developed a service-learning section of BIOL2299: Inquiries in Biology, Spring 2017.
- Collaborated on the development of BIOL2309: Biology Project Lab (previously titled ‘Techniques in Biology’), Spring 2015-Fall 2015.

Advising Activities

- Capstone advisor for approximately 5-8 students per year.

Service to the Institution

Service to the Department of Biology

- 2017 Assessed departmental learning outcomes (extra compensation was received for this service).
- 2017-present Working with faculty and graduate TA's to identify and develop a training and mentoring program to better support first-year TA's.
- 2016 Organized departmental retreat with NU's Center for Advancing Teaching and Learning Through Research to develop measurable criteria and rubrics for assessment.
- 2015 Chair of BIOL2309 search committee to hire two full-time instructors.
- 2015-2016 BIOL2309 faculty liaison: met periodically with instructors to discuss curriculum, complete Biosafety registration, and develop an Undergraduate Assistant program.
- 2015 Northeastern University Scholars Program Mentor.
- 2014-present Biology Curriculum Committee member.
- 2014-present *Inquiries in Biology* Coordinator. In this capacity, I organize meetings with faculty to coordinate group activities, schedule and organize poster sessions each semester, and mentor new faculty.
- 2014-present Conduct 2-4 teaching reviews per year for departmental tenure-track and nontenure-track faculty.

Service to College of Science and University

- 2017 Excellence in Teaching Award Committee.
- 2017 Developed and Instructed Master Class for COS Welcome Days.
- 2016 Commencement marshal.
- 2016 Guest faculty presenter to Northeastern's Community Service Living Learning Community, Stetson East Dorm: I developed and instructed a workshop for Northeastern students on animal behavior and accompanied the students to the Franklin Park Zoo.

Service to the Community/Public

- 2017 Guest speaker, Girls STEM Meet-up, The School to Careers Partnership.
- 2014-present Sciencefest Organizer, Holliston, MA.

Professional Development

- 2017 Connecting Campuses with Communities Research Academy, IUPUI, May 17-19.
- 2016-2017 Faculty Scholars Program-Lead Scholar, Northeastern University.
- 2016 Using Two Stage Exams in STEM to improve content retention, March 14, 2016.
- 2015 HHMI/National Academies Summer Institute on Undergraduate Education in Biology, Spring retreat, March 6-7, 2015.
- 2014-2105 Faculty Scholars Program, Northeastern University.
- 2014 HHMI/National Academies Summer Institute on Undergraduate Education in Biology, June 15-20, 2014.

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