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EDUCATION

Ph.D. in Biology, Tufts University, Medford, MA, 2013

Dissertation Title: Repair and regeneration of the pronephric kidney in *Xenopus laevis* tadpoles

B.S. in Biological Chemistry, Bates College, Lewiston, ME, 2005

Senior Thesis in Biology

TEACHING EXPERIENCE

Lecturer, Northeastern University, Boston, MA

Techniques in Biology: An Inquiry-Based Lab (BIOL 2309), Spring 2016-present

- Introducing students to the scientific method, including the proper design and execution of independent research projects.
- Student projects model the use of bacterial genes in the creation of genetically modified organisms (GMOs) in agriculture by examining the effects of nematicidal factors produced by several bacterial strains on various species of nematodes.
- Coordinating weekly laboratory sessions, teaching appropriate laboratory etiquette and safety procedures, and demonstrating proper execution of a wide variety of biological techniques.
- Advising student projects, with equal emphasis on both written and oral communication skills.
- Holding office hours to provide individualized attention to complement student learning styles.
- Working alongside a team of biology lecturers and professors to enhance course curriculum.

Lecturer, Adjunct Faculty, Northeastern University, Boston, MA

- Molecular Cell Biology (BIOL 3407), Fall 2016 and Spring 2015
- General Biology 2 (BIOL 1113), Fall 2016 and Fall 2014
- Cell Biology (BIOL 2319), Fall 2015
- Microbiology (BIOL 2321), Summer I (May-June) 2015
- Comparative Vertebrate Anatomy (BIOL 3401), Fall 2014
- Promote active student learning via interactive lectures, small group discussions, group projects and poster presentations (when applicable) and enhance student understanding of course material via online resources and educational media (National Geographic, NOVA, etc.).
- Focus on both written and oral science communication, and hold weekly office hours to provide individualized attention to complement student learning styles.
- Organized a field trip to Harvard University Museum of Comparative Zoology for Comparative Vertebrate Anatomy students to observe practical application of studying comparative relationships in vertebrate groups and to network with museum professionals.

Laboratory Instructor, Adjunct Faculty, Northeastern University, Boston, MA

- General Biology for Engineers Laboratory (BIOL 1116), Fall 2015 and Spring 2015
- Microbiology Laboratory (BIOL 2322), Summer I (May-June) 2015
- Introduced engineering students to basic cellular, molecular, and physiological principles, and oversaw execution of several techniques including microscopy, bacteriology, enzyme inhibition, cellular respiration, fermentation, muscle physiology, and electrocardiogram analysis.
- Prepared prelab lectures and handouts, and demonstrated essential microbiology techniques including: microscopic examination of various bacteria; metabolic testing via differential and selective media; and analysis and chemical control of microbial growth.
- Held weekly laboratory office hours for both courses to further assist students struggling with concepts and/or techniques.

Teaching Assistant, Tufts University, Medford, MA

- Experiments in Molecular Biology, Bridge to Liberal Arts Success at Tufts (BLAST) Program, also Science Writing Tutor, Summer 2014
- Cell Biology, also Invited Guest Lecturer, Spring 2014
- General Genetics, also Recitation Lecturer, Fall 2013
- Experiments in Physiology, Fall 2008, Fall 2009
- Experiments in Molecular Biology, Spring 2008, Spring 2009
- Organisms and Populations (Intro Bio), Laboratory Instructor, Spring 2006, Spring 2007
- Cells and Organisms (Intro Bio), Laboratory Instructor, Fall 2005, Fall 2006, Fall 2007

Part-Time Teaching Assistant, Tufts University, Medford, MA

- Plants and Humanity, Spring 2014
- Endocrinology, Fall 2013
- Biology and the American Social Contract, Spring 2011

FELLOWSHIPS, HONORS AND, AWARDS

Teaching Recognition

- Graduating Seniors' "Significant Impact," Selected Faculty/Staff, Tufts University, 2014 & 2009
- Outstanding Graduate Student Contribution to Undergraduate Studies Award, Tufts University, Special Mention, 2014
- Outstanding Graduate Student Contribution to Undergraduate Studies Award, Tufts University, Awardee, 2012

Research Recognition

- Published Figure used as *Developmental Dynamics* Online Journal Cover Art, 2014
- CGS/ProQuest Distinguished Dissertation Award in the field of Biological and Life Sciences, Selected Representative for Tufts University (in national competition), 2013

- Graduate Student Photo Contest, 2nd Place, Tufts University, 2013
- Finalist for *Developmental Dynamics* Journal Cover Photo Art Competition, 2013 (<http://onlinelibrary.wiley.com/doi/10.1002/dvdy.23941/full>)
- Student Travel Award, Society for Developmental Biology, Annual Recipient, 2009-2012
- Graduate Student Travel Award, Tufts University, Annual Recipient, 2009-2012
- Graduate Student Research Award, Tufts University, 2008

Academic Recognition

- Provost Fellowship, Tufts University, 2005-2007
- The College Key, Bates College, Elected Member, 2005
- Dean's List Recipient, Bates College, 2003 & 2004

PUBLICATIONS, PUBLISHED ABSTRACTS, AND PRESENTATIONS

1. **Droz, S.T.** and McLaughlin, K.A. (In press). Use of *Xenopus* frogs to study renal development/repair. In Kloc M. and Kubiak J.Z., editors. *Results and Problems in Cell Differentiation: Kidney Development and Disease*. **Invited book chapter.**
2. **Caine, S.T.** and McLaughlin, K.A. 2013. Regeneration of functional pronephric proximal tubules after partial nephrectomy in *Xenopus laevis*. *Developmental Dynamics* 242(3): 219-229.
3. **Caine, S.T.** and McLaughlin, K.A. 2012. Elucidating the mechanism of proximal tubule regeneration in the pronephros of *Xenopus laevis* tadpoles. *Developmental Biology*. 368(1): 140. Society for Developmental Biology Annual Conference, Montreal, Canada.
4. **Caine, S.T.** and McLaughlin, K.A. 2011. Characterizing the cellular process of renal repair in the *Xenopus laevis* pronephric kidney. *Developmental Biology*. 356(1): 220. Society for Developmental Biology Annual Conference, Chicago, IL.
5. **Caine, S.T.** and McLaughlin, K.A. 2010. The role of matrix metalloproteinases in the repair of the *Xenopus laevis* pronephric kidney. *Developmental Biology*. 344(1): 520. Society for Developmental Biology Annual Conference, Albuquerque, NM.
6. **Caine, S.T.** and McLaughlin, K.A. 2009. Restoration of the pronephric kidney in *Xenopus laevis* tadpoles. *Developmental Biology*. 331(2): 488. Society for Developmental Biology Annual Conference, San Francisco, CA. **Poster award.**
7. **Caine, S.T.** and McLaughlin, K.A. 2008. Pronephric kidney repair and regeneration in the amphibian *Xenopus laevis*. Society for Developmental Biology Northeast Regional Meeting, Woods Hole, MA. **Invited talk.**
8. **Caine, S.T.** 2006. Regeneration of the pronephric kidney in *Xenopus laevis*. Graduate Student Research Symposium, Tufts University, Medford, MA. Talk. **Second place speaker award.**

9. **Caine, S.T.** and Dzen, G. 2005. The effect of arsenic on the expression of the *Danio rerio* PEPCK gene. Experimental Toxicogenomics Undergraduate Symposium, Mount Desert Island Biological Laboratories, Bar Harbor, ME. Talk.
10. **Caine, S.T.** and Pelliccia, J. 2005. Investigating albinism in the freshwater snail, *Helisoma trivolvis*. Mount David Summit, Bates College, Lewiston, ME. Poster.

PROFESSIONAL AFFILIATIONS, SCIENCE COMMUNICATION, AND SERVICE

- Discovery Museums Science Communication Fellow, Portal to the Public, 2015-present
- The Best Bees Company, Boston, MA, Consultant and Non-Profit Board Member, 2014-present
- Science Fair Judge, Massachusetts State Science & Engineering Fair, Cambridge, MA, 2014
- Science Fair Judge, UP Academy Leonard Middle School, Lawrence, MA, 2014
- Science Fair Judge, Cambridge Friends School, Cambridge, MA, 2012
- Society for Developmental Biology, Member, 2008-2013
- Tufts Molecular, Cellular & Physiology Journal Club, Co-founder and Member, 2006-2008
- Tufts University Biology Union of Graduate Students (BUGS), Member, 2005-2013; Secretary, 2011-2012; Co-founder & Co-chair of Alumni Relations Committee, 2007-2009; Co-chair of Graduate Student Invited Speakers Committee, 2007-2008
- American Association for the Advancement of Science, 2005-2006
- Science Educator and Summer Camp Counselor, Elmwood Park Zoo, Norristown, PA, 2003
- Science Fair Judge, Lewiston High School, Lewiston, ME, 2003
- President and Editor-in-chief, Student Environment Network, Kingston, Jamaica, 1999-2001