

## ELYSE A. BOLTERSTEIN

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### EDUCATION AND TRAINING

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Tufts University Postdoctoral Associate TEACRS (Training in Education and Critical Research Skills) fellow	Medford, MA 2010 - 2014
University of Wisconsin – Madison Ph.D. Molecular and Environmental Toxicology	Madison, WI 2004 - 2010
University of Michigan, School of Natural Resources and Environment B.S. Resource Ecology and Management	Ann Arbor, MI 1998 – 2002
School for International Training Semester Abroad: Rainforest, Reef and Cultural Ecology, Cairns, Australia	Brattleboro, VT Spring 2001

### TEACHING EXPERIENCE

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Assistant Professor Northeastern Illinois University <ul style="list-style-type: none"><li>• Taught undergraduate courses in General Biology and Essential Skills for Biologists.</li><li>• Designed and taught “Current Topics in Genetics,” a seminar-style graduate course.</li></ul>	2014 – present
Instructor Tufts University, Boston, MA Public Health Biology (MPH 200) <ul style="list-style-type: none"><li>• Co-designed and taught a seminar-style course for Masters of Public Health students without an undergraduate biology background</li><li>• Presented interactive, chalk-talk style lectures</li><li>• Implemented case studies to present biological concepts in context of public health issues</li></ul>	Fall 2012, 2013
Adjunct Professor of Biology Bunker Hill Community College, Boston, MA Cell Biology (BIO 207) <ul style="list-style-type: none"><li>• Taught bi-weekly course in cell biology for mostly sophomore-level students</li><li>• Prepared lectures, designed and graded weekly quizzes, writing assignments and exams</li><li>• Experimented with methods for teaching interpretation of scientific figures</li><li>• Designed and implemented two new laboratory exercises</li><li>• Developed a poster session for students to present cell biology topics of their choosing</li></ul>	Spring 2012
Trainee in the Graduate Institute for Teaching Tufts University, Medford, MA	Summer 2011

- Received training in the following topics: course development, integration of technology in teaching, syllabus writing, designing writing assignments, assessment, discussion management in a five-week training course
- Prepared, presented, and received feedback for an interactive lecture on photophosphorylation

Certificate in Teaching and Learning 2009 - 2010

University of Wisconsin, Madison, WI  
Delta Program in Teaching and Learning

- Completed coursework and participated in learning communities to further skills and knowledge of instruction in higher education
- Designed, obtained IRB approval, conducted and defended an independent teaching research project involving integrating primary research into a lecture-based course. A report on this study and how it influenced my teaching approach is included in my teaching portfolio.

Guest Lecturer Spring 2010

University of Wisconsin, Madison, WI  
Toxicology II (METC 626)

- Introduction to stem cell biology, including recent developments in stem cell toxicology

Teaching Assistant Spring 2006

University of Wisconsin, Madison, WI  
Toxicology II (METC 626)

- Prepared and facilitated weekly discussion sessions and answered student questions

## **STUDENTS MENTORED**

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Molly Ahern, Tufts University undergraduate Spring 2014

- The role of WRNexo in DNA repair

Rachel Rivero<sup>1,2</sup>, Tufts University undergraduate 2012 – 2013

- Interactions between the RecQ helicases, WRNexo and Blm
- First place in the La Unidad Latina Medical Guild poster session

Melissa Marquez<sup>1</sup>, Mount St. Mary's College undergraduate Summer 2013

- Interactions between WRNexo and site specific endonucleases

Rachel Cox<sup>1,2</sup> Tufts University undergraduate 2011 - 2012

- Role of SNM1 in DNA repair
- Current first year nursing student at Columbia University

<sup>1</sup> Participant in the NSF-sponsored, summer program in Research Experiences for Undergraduates

<sup>2</sup> Participated in research for course credit at Tufts University

## **RESEARCH EXPERIENCE**

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Postdoctoral research, Tufts University, Medford, MA 2010 - present

*Research advisor: Mitch McVey*

Mutations in the progeroid proteins, Werner and Bloom, cause premature aging in humans. I am investigating the consequences of these mutations in DNA replication, development, and tumorigenesis in *Drosophila*.

- Doctoral research, University of Wisconsin, Madison, WI 2007 - 2010  
*Research advisor: B. Lynn Allen-Hoffmann*  
Dissertation title: “*Effects of TCDD on differentiation and epithelial to mesenchymal transition in human embryonic stem cells*”  
2, 3, 7, 8-tetrachlorodibenzodioxin (TCDD) is a carcinogenic byproduct of industrial processes and is a ubiquitous environmental toxin. I used molecular biology and immunohistochemistry techniques to investigate the effects of TCDD on human embryonic stem cell differentiation. We found that TCDD inhibited cell differentiation, and the process of epithelial to mesenchymal transition, only when cells were the process of spontaneously differentiating as detected by changes in cellular morphology and expression of key differentiation markers.
- Doctoral research, University of Wisconsin, Madison, WI 2004 - 2007  
*Research advisor: Nancy Keller*  
Investigated RNAi mechanism in *Aspergillus nidulans* using various molecular biological techniques.
- Research Assistant, University of Michigan, Ann Arbor, MI 2003 - 2004  
Maintained colony of 600 mice. Collected biological samples and conducted experiments using FACS and ELISA to analyze immunological processes associated with aging.
- Undergraduate research internship, Cooperative Institute for Limnology and Ecosystems Research/Great Lakes Environmental Research Laboratory, Ann Arbor, MI 2001 - 2002  
Collected and categorized benthic invertebrates as part of a large-scale initiative to monitor Great Lakes health.
- Independent study project, Cairns, Australia Spring 2001  
*Research advisor: Barbara Paulus*  
Investigated the abundance and diversity of microfungi on the tree fern, *Cyathea wooliana*, in an upland rainforest in Queensland, Australia and found a difference in species diversity between the fronds and tree base.

## MANUSCRIPTS

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Undergraduate mentees are underlined

**Bolterstein, E.A.** and Allen-Hoffmann, B.L. “TCDD inhibits spontaneous differentiation in human embryonic stem cells” accepted to *Trends in Developmental Biology*, November, 2014.

**Bolterstein, E.**, Rivero, R., Marquez, M. and McVey, M. (2014) The *Drosophila* Werner exonuclease participates in an exonuclease-independent response to replication stress. *Genetics*. 197(2): 643-52.

De Abrew, K.N., Thomas-Virnig, C.L., Rasmussen, C.A., **Bolterstein, E.A.**, Schlosser, S.J., and Allen-Hoffmann, B.L. (2013) TCDD induces dermal accumulation of keratinocyte-derived matrix metalloproteinase-10 in an organotypic model of human skin. *Toxicology and Applied Pharmacology*. 1; 276(3): 171-8.

## CONFERENCE POSTER PRESENTATIONS

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Bolterstein, E., Rivero, R., Salomon, R., Marquez, M. and McVey, M., “The *Drosophila* Werner Exonuclease Participates in an Exonuclease-independent Response to Replication Stress” Gordon Research Conferences: DNA Repair, Mutation and Cancer. Ventura Beach, CA (March, 2014)

Bolterstein, E., Rivero, R., Salomon, R., Marquez, M. and McVey, M., “Werner syndrome protein mediates fork restart in response to replication stress in *Drosophila*” Gordon Research Conferences: Cellular & Molecular Mechanisms of Toxicity in Andover, NH (August, 2013)

Bolterstein, E., Rivero, R., Salomon, R. and McVey, M., “The role of WRNexo and Blm in DNA repair in *Drosophila*” Keystone Symposium: DNA Repair and Genomic Instability in Banff, Alberta, Canada (March, 2013) and at the IRACDA National Conference, Emory University, Atlanta, GA (June, 2013)

Bolterstein, E. and McVey, M., “The role of Werner syndrome exonuclease in DNA repair in *Drosophila*” Gordon Research Conference: Mutagenesis in Newport, RI (August, 2012)

Bolterstein, E., “A picture’s worth a thousand words: A method of teaching figure interpretation at Bunker Hill Community College in Boston, MA” IRACDA National Conference at the University of Pennsylvania, Philadelphia, PA (June, 2012)

Bolterstein, E. and McVey, M., “The role of DNA repair mechanisms in *Drosophila* cuticle development” IRACDA National Conference at Baylor College of Medicine, Houston, TX (June, 2011)

Bolterstein, E. and Allen-Hoffmann, B.L., “Effects of TCDD on differentiation of human embryonic stem cells” Keystone Symposium: Stem Cell Differentiation and Dedifferentiation in Keystone, CO (February, 2010)

Bolterstein, E. and Allen-Hoffmann, B.L., “Epithelial to mesenchymal transition in differentiating human embryonic stem cells is inhibited by the environmental contaminant, TCDD” Keystone Symposium: Stem Cell Niche Interactions in Whistler, BC, Canada (April, 2009)

Bolterstein, E. and Allen-Hoffmann, B.L. “AhR pathway genes are expressed in human embryonic stem cells” Society of Toxicology Annual Meeting in Seattle, WA (March, 2008) and at the World Stem Cell Summit in Madison, WI (August, 2008)

## SEMINARS

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Bolterstein, E., Rivero, R., Marquez, M. and McVey, M. “Werner exonuclease exhibits an exonuclease-independent role in response to replication stress in *Drosophila*” DNA Repair And Mutagenesis (DRAM). Massachusetts Institute of Technology, Cambridge, MA (November, 2013)

Bolterstein, E., Rivero, R., Salomon, R. and McVey, M. “The role of *Drosophila* Werner syndrome protein in DNA repair” Boston Aging Data Series. Harvard Medical School, Boston, MA (January, 2013)

Bolterstein, E. and McVey, M. “The role of DNA repair mechanisms in *Drosophila* cuticle development” Tufts University Biology Departmental Seminar Series. Medford, MA (February, 2012)

## FELLOWSHIPS AND AWARDS

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- 2012 - 2013 Chairperson, TEACRS program, Tufts University, Boston, MA
- Coordinated with program directors, trainees and administrative assistants to organize and facilitate business meetings and professional development meetings for the upcoming year
- 2013 Organizer, Manuscript Writing Workshop, Tufts University, Medford, MA
- Coordinated with workshop leader, Beth Schechter, and TEACRS and Tufts Postdoctoral Association administrators to provide a two-day course in manuscript writing for Tufts postdocs
- 2011, 2012 Organizer, Panelist, STEM Career Panel, Bunker Hill Community College, Boston, MA
- Contacted professionals in various STEM disciplines to participate in a Q&A career session with STEM students
- 2008 - 2010 Cofounder and Organizer, Wisconsin Stem Cell Roundtable (WiSCR), Madison, WI
- Coordinated and presented at monthly discussions where graduate students and postdocs presented their data in stem cell research
- 2008 - 2009 President, Student Liaison Committee, Molecular and Environmental Toxicology Center, University of Wisconsin, Madison, WI
- Oversaw student committees for the toxicology graduate program. Prepared and facilitated monthly meetings
  - Coordinated with program directors to implement positive changes to the program structure and recruitment
  - Created the first toxicology program-sponsored outreach program for elementary school students and members of the Madison community
- 2006 - 2008 Student Curriculum Representative, Student Liaison Committee, Molecular and Environmental Toxicology Center, University of Wisconsin, Madison, WI
- Participated in curriculum development meetings. Presented the student point of view to directors and faculty
- 2005 - 2006 New Student Representative, Student Liaison Committee, Molecular and Environmental Toxicology Center, University of Wisconsin, Madison, WI
- Helped plan and organize activities for the recruitment of potential graduate students

## **OUTREACH**

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- 2013 Science Fair Judge, Boston Collegiate Charter School, Boston, MA
- 2008 - 2009 Outreach Organizer, Molecular and Environmental Toxicology Center, Madison, WI
- Created interactive project and poster to teach elementary school students about uptake of environmental contaminants by wildlife.
  - Coordinated volunteers and participated in outreach events at University of Wisconsin and schools in the greater-Madison area.
- 2008 - 2009 Troop Leader, Girl Scouts of America, Madison, WI
- 2008, 2009 Science Fair Judge, Netherwood Knoll Elementary School, Oregon, WI

2007 - 2008 Volunteer, Girl Scouts of America, Madison, WI

## REFERENCES

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**Dr. Mitch McVey**, Associate Professor,  
Tufts University  
(Postdoctoral Research Advisor)  
(617) 627-4196  
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**Dr. Kenneth Chui**, Assistant Professor,  
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(Public Health Biology Co-Instructor)  
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**Dr. Claire Moore**, Professor, Tufts  
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(Director of Training in Education And  
Critical Research Skills (TEACRS))  
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**Dr. Chris Bradfield**, Professor, University  
of Wisconsin-Madison  
(Director of the Molecular and  
Environmental Toxicology Center, Graduate  
Research Committee Member)  
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**Dr. B. Lynn Allen-Hoffmann**, Professor,  
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