ELYSE A. BOLTERSTEIN, PhD

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PROFILE

I'm a geneticist, educator, and mentor passionate about making science accessible and inclusive. As an Associate Professor at Northeastern Illinois University, I lead research on DNA repair and aging using *Drosophila*, while also designing engaging, research-based learning experiences for undergraduates. I've mentored over 30 students—many from historically underrepresented backgrounds—through projects that have led to national presentations and co-authored publications. I care deeply about fostering curiosity, community, and equity in STEM.

EDUCATION AND TRAINING

Tufts University — Medford, MA
Postdoctoral Associate — 2010 - 2014
TEACRS (Training in Education and Critical Research Skills) fellow
Research mentor: Mitch McVey

University of Wisconsin – Madison — Madison, WI
Ph.D. Molecular and Environmental Toxicology — 2004 - 2010
Research advisor: B. Lynn Allen-Hoffmann
Dissertation title: *"Effects of TCDD on differentiation and epithelial to mesenchymal transition in human embryonic stem cells"*

University of Michigan, School of Natural Resources and Environment — Ann Arbor, MI
B.S. Resource Ecology and Management — 1998 – 2002

TEACHING EXPERIENCE

Associate Professor — 2020 – present
Northeastern Illinois University

Assistant Professor — 2014 – 2020
Northeastern Illinois University
- Taught undergraduate and graduate courses cell/molecular biology, genetics, and scientific writing
- Designed and implemented Course-based Research Experiences for undergraduate students

Instructor — Fall 2012, 2013
Tufts University**,** Boston, MA
Public Health Biology (MPH 200)
- Co-designed and taught a seminar-style course for Masters of Public Health students without an undergraduate biology background
- Presented interactive, chalk-talk style lectures and implemented case studies to present biological concepts in context of public health issues

Adjunct Professor of Biology — Spring 2012
Bunker Hill Community College, Boston, MA
Cell Biology (BIO 207)
- Designed and implemented two new laboratory exercises
- Developed a poster session for students to present cell biology topics of their choosing

STUDENTS MENTORED

Student	Level	Project	Dates
Adamari Peña	NEIU Biology M.S.	The effects of light at night on *Drosophila* reproduction (co-PI: Aaron Schirmer, NEIU)	2023 - present
Hannah Michael-Schwartz[2, 3]	NEIU undergraduate	Characterization of *Drosophila* mutant in *Dna2*	Summer 2024
Christian Villegas[2 3,4,7]	NEIU undergraduate	Characterization of *Drosophila* mutant in *Dna2*	2023 - 2024
Ivan Rivera[2, 4,7]	NEIU undergraduate	Characterization of *Drosophila* mutant in *Dna2*	2023 - 2024
Sabbah Shammari[2,3,4,5,7]	NEIU undergraduate	Characterization of *Drosophila* mutant in *Dna2*	2022 - 2023
Hamiya Sohail[2,3,4,5,7]	NEIU undergraduate	Characterization of *Drosophila* mutant in *Dna2*	2022 - 2023
Shahida Qazi[2,5,6]	NEIU undergraduate	Monitoring Circadian Behavior in DNA repair-deficient *Drosophila*	2020 – 2021
Gina Ishu[2,4,5]	NEIU Biology M.S.	Characterization of Circadian Rhythms in *Drosophila* Deficient in TDP1 Proteins	2020 – 2021
Rut Ortiz[4,5,6]	NEIU undergraduate	Measuring the response of *WRNexo*-deficient *Drosophila* to metabolic stress	2019 – 2022
Isaiah Thomas[2,4,5,6]	NEIU undergraduate	The effects of photopollution on *Drosophila* behavior (co-PI: Aaron Schirmer, NEIU)	2019 – 2023
Vada Becker[2,3,4,5,6,7]	NEIU undergraduate	Role of TDP1 in oxidative stress response	2018 – 2021
Derek Epiney[3,4,5,6,7]	NEIU undergraduate	Role of WRNexo in oxidative stress response	2018 – 2019
Rolan Milutinovic[2,3,4,5,7]	NEIU undergraduate	Measuring responses of SOD mutant alleles to oxidative stress	2017 – 2019
Chris Corso	NEIU undergraduate	Role of TDP1 in oxidative stress response	2017 – 2018
Deborah Onofrei[2,4,5]	NEIU undergraduate	Role of TDP1 in oxidative stress response	2017 – 2018
Charlotte Salameh[2,3,4,5,6,7]	NEIU undergraduate	Responses of RecQ mutants to oxidative stress	2016 – 2019
Deirdre Cassidy[2,4,7]	NEIU undergraduate	Aging and oxidative stress in WRNexo and BLM mutants	2016 – 2017
Joshua Kruithof[2,3,4,7]	NEIU undergraduate	Physical interactions between WNRexo and BLM	2016 – 2017
Winnie Jiang	NEIU Chemistry M.S.	Physical interactions between WNRexo and BLM	2016 – 2017
Terry Blaszczak[4,5,6]	NEIU undergraduate	Effects of acetaminophen on development (co-PI: Mary Kimble, NEIU)	2015 – 2018
Tracy Zhou[7]	NEIU graduate student	Aging and oxidative stress in WRNexo mutants	2016
Raluca Ciupuliga[4,5]	NEIU undergraduate	Effects of acetaminophen on development (co-PI: Mary Kimble, NEIU)	2015 – 2016
Fareha Nazneen[5]	NEIU undergraduate	Effects of acetaminophen on development (co-PI: Mary Kimble, NEIU)	2015 – 2016
Stephanie Fonceca	NEIU undergraduate	Effects of acetaminophen on development (co-PI: Mary Kimble, NEIU)	2015 – 2016
Imad Rebiai[2,3,4,5]	NEIU undergraduate	Physical interactions between WNRexo and BLM	2015 – 2016
Jacqueline Alvarez	NEIU Biology M.S.	Tumor development in BLM mutants	2015 – 2016
Janet Garcia[3,4]	NEIU undergraduate	Antioxidant activity in Drosophila RecQ mutants	2015 – 2016

Barbara Rokita[4]	NEIU undergraduate	Antioxidant activity in Drosophila RecQ mutants	2015 – 2016
Molly Ahern	Tufts University undergraduate	The role of WRNexo in DNA repair	Spring 2014
Rachel Rivero[1,2,4,7]	Tufts University undergraduate	Interactions between the RecQ helicases, WRNexo and Blm	2012 – 2013
Melissa Marquez[1,4,7]	Mount St. Mary's College undergraduate	Interactions between WRNexo and site specific endonucleases	Summer 2013
Rachel Cox[1,2]	Tufts University undergraduate	Role of SNM1 in DNA repair	2011 - 2012

[1] Participant in the NSF-sponsored, summer program in Research Experiences for Undergraduates
[2] Participated in research for course credit
[3] Participant in SCSE Undergraduate Summer Research and Professional Training Program
[4] Presented work at a local or regional meeting
[5] Presented work at a national meeting
[6] Participant in NEIU Honors, McNair Scholars, or Maximizing Access to Research Careers (MARC)
[7] Coauthor on a publication

MANUSCRIPTS

Undergraduate mentees are underlined

Rivera, I., Shammari, S., Sohail, H., Villegas, C., Wasim, Z., Ip, S. H., Becker, V., Kohl, K. P., Stoffregen, E. P., Swanson, C. I., & **Bolterstein, E.** (2025). Dna2 Responds to Endogenous and Exogenous Replication Stress in *Drosophila melanogaster*. *Genes*, *16*(10), 1133.

Howard, M., **Bolterstein, E.**, Kohl, K. P., Stoffregen, E. P., and Swanson, C. I. (2025) An interdisciplinary, collaborative CURE to investigate mutagen-sensitive alleles in *Drosophila melanogaster*. Journal of Microbiology and Biology Education. e0006825

Bolterstein, E., Mungre, S., Nuss, K., and Stoffregen, E. P. (2025) *WRNexo* is not required to maintain normal sex ratios in Drosophila: A CURE-Based Investigation. *microPublication Biology*. 10.17912/micropub.biology.001620

Krieger, K.L., Mann, E.K., Lee, K.G, **Bolterstein, E.**, Jebakumar, D., Ittmann, M.M., Dal Zotto, V.L., Shaban, M., Sreekumar, A., Gassman, N.R. (2023) Spatial mapping of the DNA adducts in cancer. *DNA Repair*. 128:103529.

Mitchell, C., Becker, V., DeLoach, J., Nestore, E., **Bolterstein, E.**, & Kohl, K. P. (2022). The *Drosophila* Mutagen-Sensitivity Gene *mus109* Encodes *DmDNA2*. *Genes*, 13(2), 312.

Epiney, D. G., Salameh, C., Cassidy, D., Zhou, L. T., Kruithof, J., Milutinović, R., Andreani, T. S., Schirmer, A. E., & **Bolterstein, E.** (2021). Characterization of Stress Responses in a Drosophila Model of Werner Syndrome. *Biomolecules*, 11(12), 1868.

Cassidy, D., Epiney D.G., Salameh, C., Zhou, L.T., Salomon, R.N., Schirmer, A.E., McVey, M., and **Bolterstein, E.** (2019) Evidence for premature aging in a Drosophila model of Werner syndrome. *Experimental Gerontology.* **127**, 110733.

Bolterstein, E.A. and Allen-Hoffmann, B.L. (2014) TCDD inhibits spontaneous differentiation in human embryonic stem cells. *Trends in Developmental Biology,* Vol. 8.

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.

SELECT CONFERENCE PRESENTATIONS

Undergraduate mentees are underlined

Bolterstein, E., Brown-Xu, S., Gomes, I., Hasso, J., Mayle, S., and Patel, S. "A cohort-based research program for early-career undergraduates." Poster presented at The Allied Genetics Conference. Metro Washington DC. March 6-10, 2024.

Bolterstein, E., Shammari, S., and Sohail, H. "Characterization of DNA Repair Function in Drosophila Mutant in Dna2." Selected talk and poster presentation at the Environmental Mutagenesis and Genomics Society Annual Meeting. Chicago, IL September 9-13, 2023.

Bolterstein, E,. Alfaqih, S., Alguzi, F., Lou, D., Ruiz-Whalen, D., and O'Reilly, A. "Integrating culture and community in diabetes research, an intro bio collaboration." Invited talk with undergraduate presenters at the 64th Annual Drosophila Research Conference. Chicago, IL March 1-5, 2023.

Bolterstein E., Kohl, K., Stoffregen, E., and Swanson, C. "Characterizing Drosophila mutagen sensitive alleles through a collaborative Course-based Undergraduate Research Experience (CURE)." Selected talk at the 62nd Annual Drosophila Research Conference. Virtual platform. March 23-April 1, 2021

Bolterstein E., Becker V, Cassidy D, Epiney D, Milutinovic R, Onofrei D, Salameh C, Zhou L, Salomon RN, Schirmer A, and McVey M, "Modeling aging and degenerative disease in DNA repair-deficient *Drosophila".* Selected talk at the Environmental Mutagenesis and Genomics Society 50th Annual Meeting in Washington D.C. September 19-23, 2019.

Bolterstein E., Salomon R, Schirmer A, McVey M, Cassidy D, Salameh, C, and Zhou L. "Modeling Werner syndrome in Drosophila", presented talk at the Midwest Drosophila Research Conference, Monticello, IL. November 4, 2018.

Bolterstein, E., Salomon, R., McVey, M., Cassidy, D., Onofrei, D., and Zhou, T. "Werner protein protects against aging and oxidative stress in *Drosophila*" presented talk at the Environmental Mutagenesis and Genomics Society 48th Annual Meeting in Raleigh, NC (September 9-13, 2017).

Bolterstein, E., Nuss, K, and Robalino, J. "The Biology of Skin Color: Using HHMI's free teaching materials to engage students in evidence-based reasoning" presented workshop at the Association of College and Undergraduate Biology Educators (ACUBE) 60th Annual Meeting in Milwaukee, WI (October 21-22, 2016).

Bolterstein, E., Salomon, R., McVey, M., Garcia, J., Rokita, B., Cassidy, D., and Zhou, T. "BLM and WRNexo protect against aging and tumorigenesis in Drosophila" presented poster at the 57th Annual Drosophila Research Conference in Orlando, FL (July 13-17, 2016) and at the Environmental Mutagenesis and Genomics Society 47th Annual Meeting in Kansas City, MO (September 24-28, 2016).

Bolterstein, E., Ahern, M., Salomon, R., and McVey, M., "The role of RecQ proteins, BLM and WRNexo, in DNA repair, aging, and tumorigenesis" presented poster at the 56th Annual Drosophila Research Conference in Chicago, IL (March 4-8, 2015) and the 17th Annual Midwest DNA Repair Symposium in Bloomington, IN (June 6-7, 2015).

Bolterstein, E., Rivero, R., Salomon, R., Marquez, M. and McVey, M., "The Drosophila Werner Exonuclease Participates in an Exonuclease-independent Response to Replication Stress" presented poster at the 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*" presented poster at the 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*" presented poster at the 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 Allen-Hoffmann, B.L., "Effects of TCDD on differentiation of human embryonic stem cells" presented poster at the Keystone Symposium: Stem Cell Differentiation and Dedifferentiation in Keystone, CO (February, 2010)

INVITED SEMINARS

Undergraduate mentees are underlined

Bolterstein, E., Shammari, S., Sohail, H., Kohl, K., Swanson, C., Stoffregen, E. "Characterizing fly *mus* genes through a collaborative Classroom-based Undergraduate Research Experience", Winthrop University, Rock Hill, SC. (October, 2023)

Bolterstein, E., Salomon R, McVey M, Becker V, Epiney D, Onofrei D, Salameh C, and Zhou L. "Time Flies: Investigating DNA Repair and Aging in Drosophila", Loyola University, Chicago, IL. (April, 2019)

Bolterstein, E., Salomon R, McVey M, Becker V, Epiney D, Onofrei D, Salameh C, and Zhou L. "The Role of DNA End Processing Proteins in Drosophila Aging", presented invited talk at the Department of Biopharmaceutical Sciences Seminar Series. University of Illinois – Chicago, Chicago, IL. (February, 2019)

Bolterstein, E. "Methods for genotoxicity using *Drosophila melanogaster*" Environmental Mutagenesis and Genomics Society 48th Annual Meeting in Raleigh, NC (September 9-13, 2017).

Bolterstein, E., Salomon, R., McVey, M., Cassidy, D., Onofrei, D., and Zhou, T. "Using genetic disease mutants to investigate the link between oxidative stress and aging in *Drosophila melanogaster*" Purdue Northwest Seminar Series, Hammond, IN (March, 2017)

Bolterstein, E., Salomon, R., McVey, M., Garcia, J., Rokita, B., and Rebiai, I. "The role of RecQ proteins in preventing DNA damage, aging, and tumorigenesis in Drosophila" UIC College of Pharmacy Seminar Series, Rockford, IL (February, 2016)

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

2021-2022	NEIU Research Excellence Award
2019	Julius N. Frankel Foundation Research Grant
2018-2019	NEIU Service Excellence Award
2016, 2018, 2019	NEIU Research and Creative Activities Travel Fund Award
2016-2017 2014-2015	NEIU Teaching Excellence Award
2015-2016	NEIU Research Communities Award, Mary Kimble Co-PI
2015, 2018, 2021, 2024	NEIU Summer Research Project Stipend Award
2015-2020,	Student Center for Science Engagement, Summer Research Award

2022-2024

PROFESSIONAL MEMBERSHIPS

Environmental Mutagenesis and Genomics Society	2016 - present
Association of College and University Biology Educators	2015 – present
Genetics Society of America	2010 – present

PROFESSIONAL DEVELOPMENT

NEIU Center for Teaching and Learning: Equitable Grading Workshop	Spring 2024
Disability Bias in the Classroom, NEIU University Diversity Council Workshop	Spring 2024
DEI Credential, Magna Publications	2023 - 2024
NEIU Center for Teaching and Learning: Accessibility Academy	Spring 2023
NEIU Center for Teaching and Learning: Liquid Syllabus Workshop	Spring 2023
Bridging Research and Education with Model Org anisms Annual Meeting	2021, 2022
Critical Thinking in STEM Conference	Summer 2021
Quality Matters: Designing Your Online Course	Spring 2021
Ciliate Genomics Consortium workshop	Summer 2018
Association of College and University Biology Educators Annual Meeting	2015, 2016

LEADERSHIP AND ACADEMIC SERVICE

2023 - present	Faculty Fellow for Student Activities, NEIU Advancing Research and Career Opportunities in STEM DOE grant, Chicago IL
2023 - present	Panel member, Illinois Articulation Initiative Biology Majors Panel
2018 – present	Faculty Council on Student Affairs, NEIU, Chicago, IL Chair (2022 - present)
2018 – present	Education, Student, and New Investigators Affairs committee for the Environmental Mutagenesis and Genomics Society Co-chair (2018 - 2023) Chair (2023 - present)
2016, 2022-23	Organizer, Spotlight of Undergraduate Research Workshop, Drosophila Research Conference
2015 - 2018	Faculty Council on Institutional Advancement, NEIU, Chicago, IL
2014 - present	Biology Department Undergraduate Curriculum Committee, NEIU, Chicago, IL

OUTREACH AND VOLUNTEERING

2023 - present Member, Hollywood Park Advisory Council, Chicago, IL

2023 - present Parent Volunteer, Chicago Public Schools, Chicago, IL

2021 - present Coach, American Youth Soccer Organization, Chicago, IL

2020 - 2022 Organizer, NEIU Child Care Center Parent Advisory Committee, Chicago, IL

2015 Science Fair Judge, Lincoln Park High School, Chicago, IL

2015, 2016 Science Fair Judge, NEIU Regional Science Fair, Chicago, IL