

Todd A. Schoborg

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CURRENT POSITION

2019- Assistant Professor, Department of Molecular Biology, University of Wyoming

EDUCATION

2019 **Postdoctoral Fellow, National Institutes of Health**

Cellular & Developmental Biology
Mentor: Dr. Nasser Rusan

2013 **Ph.D., University of Tennessee**

Biochemistry, Cellular and Molecular Biology
Mentor: Dr. Mariano Labrador

2008 **B.S., Murray State University**
Biology; Summa Cum Laude

RESEARCH EXPERIENCE

2013-2019 **National Institutes of Health**

- Molecular mechanisms of brain growth and development
- Establishment of micro computed tomography (μ -CT) as a tool for human disease modeling in the fly
- Role of *Abnormal Spindle* in mitotic spindle architecture and cell division
- Transcriptional regulation of the centrosome

2008-2013 **University of Tennessee**

- Cell biology of chromatin insulators and their influence on nuclear architecture during stress
- Mechanisms of chromatin insulator function in gene expression and inter-chromosomal interactions to facilitate transvection
- Molecular evolution of chromatin insulators and their influence on genome architecture across species

2006-2008 **Murray State University**

- Molecular and evolutionary ecology, population genetics of *Ambystoma* salamanders based on microsatellite genotyping.

GRANTS

- 2020-2023 NHLBI/NIH Career Transition Award-Extramural PI Phase (1K22HL137902) – \$691,665 Direct Costs
- 2020-2022 NIH INBRE Thematic Award (WY) -- \$150,000
- 2020-2021 Microsoft AI For Earth Azure Compute Award – \$15,000
- 2016-2019 NHLBI/NIH Career Transition Award-Postdoctoral Phase (1K22HL137902)

FELLOWSHIPS

- 2013-2019 National Heart, Lung and Blood Intramural Research Training Fellow
- 2010-2013 National Science Foundation Graduate Research Program (NSF GRFP)
- 2006-2008 National Science Foundation Biomathematics Undergraduate Research Fellow

PUBLICATIONS

- 2020 **Schoborg TA**. Whole animal phenotyping of *Drosophila melanogaster* using microcomputed tomography. Journal of Visualized Experiments. doi: 10.3791/61515.
- 2019 **Schoborg TA**, Smith SL, Smith LN, Morris HD and Rusan NM. Micro-computed tomography as a platform for exploring *Drosophila* development. Development. 146: dev176685. doi:10.1242/dev.176685.
- *Cover Selection, Company of Biologists Featured Movie. Also selected as a Research Highlight by LabAnimal – Neff, E.P. Micro-CT to see the whole fly. Lab Anim. (2020). doi. 10.1038/s41684-020-0491-7.*
- 2018 O’Neill R, **Schoborg TA** and Rusan NM. The same but different—pleiotropy and overlapping functions in centrosome microcephaly disorders. Molecular Biology of the Cell. 29:241-246.
- 2016 **Schoborg TA** and Rusan NM. Taking centrioles to the elimination round. Developmental Cell. 38(1): 10-12.
- 2016 Galletta B, Fagerstrom C, **Schoborg TA**, McLamarrah T, Ryniawec J, Buster D, Slep K, Rogers G and Rusan NM. A centrosome interactome provides insight into organelle assembly and reveals a non-duplication role for Plk4. Nature Communications. 7: 12476 doi: 10.1038/ncomms12476.
- 2016 Whiteman HH, Doyle JM, Earl J, Aubee C, Brown R, Thomason S and **Schoborg TA**. A PIT tagging technique for *Ambystomatid* salamanders. Herpetological Review. 47(1): 32-34.
- 2015 **Schoborg TA**, Zajac AL, Fagerstrom C, Guillen RX and Rusan NM. An Asp-CaM complex is required for centrosome-pole cohesion and centrosome inheritance in neural stem cells. The Journal of Cell Biology. 211: 987-998. *‘In Focus’ highlight, “How the spindle keeps its focus”*. The Journal of Cell Biology, 211:937.
- 2015 Smyth JT, **Schoborg TA**, Bergman ZJ, Riggs B and Rusan NM. Proper symmetric and asymmetric endoplasmic reticulum partitioning requires astral microtubules.

- Open Biology. 5: 150067.
- 2014 **Schoborg TA** and Labrador M. Expanding the roles of chromatin insulators in nuclear architecture, chromatin organization and genome function. Cellular and Molecular Life Sciences. 71: 4089-4113.
- 2013 **Schoborg TA**, Kuruganti S, Rickels R and Labrador M. The *Drosophila gypsy* insulator supports transvection in the presence of the *vestigial* enhancer. PLoS One. 8(11): e81331.
- 2013 **Schoborg TA**, Rickels R, Barrios J and **Labrador M**. Chromatin insulator bodies are nuclear structures that form in response to osmostress and cell death. The Journal of Cell Biology. 202: 261-276. *Featured in 'biobytes' Podcast, July 22nd, 2013.*
- 2010 **Schoborg TA** and Labrador M. The phylogenetic distribution of non-CTCF insulator proteins is limited to insects and reveals that BEAF-32 is *Drosophila* lineage specific. Journal of Molecular Evolution. 70: 74-84 (2010).

HONORS AND AWARDS

- 2020 *Drosophila* Image Award WINNER – *Video Category*
- 2020 *Drosophila* Image Award HONORABLE MENTION – *Video Category*
- 2020 *Reflections* Faculty Research Article Award, AES – *Best faculty research article*
- 2020 NHLBI Orloff Science Award – *For scientific achievements from the μ -CT project*
- 2018 NHLBI Orloff Science Award – *Top NHLBI Postdoc Research Award*
- 2017 NIH Fellows Award for Research Excellence (FARE) – *Top 25% of NIH Fellows*
- 2017 NHLBI Outstanding Fellow Award – *Postdoc Award for Research, Collegiality and Mentorship*
- 2017 Travel Award for ASCB/EMBO Meeting
- 2016 Summer Research Mentor Award – *Mentor to Lauren Smith, NIH HiSTEP fellow*
- 2013 Intramural Research Training Award (IRTA)
- 2013 Science Alliance Award for Graduate Student Excellence – *Top graduate student*
- 2008 Sigma Xi Student Research Award
- 2008 Sigma Xi Poster Competition Award
- 2008 Outstanding Senior Student in Biology
- 2006 Outstanding 2nd year Student in Biology

TEACHING

Course Design & Implementation

- 2016 Hampden-Sydney College, Genomics and Bioethics Modules – Two lectures, one discussion & 2-week lab instruction (Mentor: Dr. Michael Wolyniak)
- 2010 University of Tennessee, Introductory Cell Biology (Inquiry-based)

Teaching Assistant

2009 Advanced Biochemistry
2009 Introductory Cell Biology
2008 Biology 101
2007-2008 Genetics
2006 Zoology

Guest Lectures

2020 Cell & Developmental Genetics (MOLB 4450)

MENTORING

2019-Curr. High School Student: Malea Christensen, UW Mol. Bio. Major (2020)
 Trevor Wobschall, UW Microbiology Major
 Ashley Ott, UW Physiology Major
 Nataly Beacham, UW Molecular Biology Major

2013-2019 High School Student/Summer Intern: Lauren Smith (NIH HiSTEP fellow)
 Undergraduate/Summer Intern: Lauren Smith (NIH HiSTEP fellow)
 Undergraduate/Summer Intern: Dina Alaeddin
 Post-baccalaureates: Samantha Smith & Rachel Ng
 Graduate Student: Karen Plevock

2009-2013 High School Student/Summer Intern: Mark Remec (Oak Ridge HS)
 Undergraduates: Ryan Rickels (UT), Josh Barrios (LSU, Summer REU)
 Graduate Student: Ran An

SERVICE

University of Wyoming

2020 Wyoming State Science Fair Judge
2019 MOLB Curriculum Committee, 5-year Teaching Plan
2019 Hiring Committee for MOLB Accountant Position
2019 Hiring Committee for Microbiology AP Lecturer Position (Ad Hoc Member)
2019 Purchase of new microscope for the Department
2019 Brainstorming Session for UW's Grand Challenges Initiative
2019 Magazine Article for *Reflections*
2019 Seminar speaker host

- *Ken Prehoda, Fall 2019*
- *Mark Peifer, Spring 2020*

Scientific Community

2016 Co-organizer – NIH Developmental Biology Special Interest Group Workshop
2016 Co-chair, 'Intracellular Dynamics' – 57th Annual Drosophila Research Conference

2017-Curr. FlyBase Community Advisory Group

Peer Reviewer/Referee

- Development (*Direct Request*)
- Genome Biology and Evolution (*Direct Request*)
- Frontiers in Cell and Developmental Biology (*Direct Request*)
- BMC Genomics (*Direct Request*)
- Journal of Cell Biology
- Journal of Cell Science

Other Academic Community

2014-2017 Graduate Student/Postdoc Seminar Series Committee

2007-2008 College of Science, Engineering and Technology Dean Search Committee

Outreach

2016-2019 Mentor, Takoma Park Middle School Science Students – *Ashley Thommana, Kanayo Duru, Kyle Johnston, Anuprova Bhowmik, Khanh Nguyen*

2016-2017 Poster Judge

- NIH Postbaccalaureate Poster Day
- 57th Annual Drosophila Research Conference
- American Society of Cell Biology Conference (ASCB)

2010-2011 Science Fair Judge, Webb Preparatory School of Knoxville

2010 Campus Host, Junior Science and Humanities Symposium

2009 Academic Judge, Science Olympiad

TECHNICAL TRAINING & CONTINUING EDUCATION

2019 Management Bootcamp. *Instructor: Drs. Sharon Milgram & Lori Conlin, NIH OITE*

2017 Workplace Dynamics Series I-V. *Instructor: Dr. Lori Conlan, NIH OITE*

2016 Responsible Conduct of Research (RCR)—Research Ethics Training. *Instructor: Dr. Sharon Milgram, NIH OITE Director*

2016 Research Mentor Training. *Instructor: Dr. Sharon Milgram, NIH OITE Director*

2014 Analytical & Quantitative Light Microscopy Course (AQLM), Marine Biological Laboratory at Woods Hole, MA

Teaching Courses & Workshops

**Topics covered: Learning styles, learning objectives, classroom instruction methods, lecture prep, exams, syllabus, online courses, curriculum design.*

2016 Scientists Teaching Science 9-Week Course. *Instructor: Barbara Houtz, M.Ed.*

2014 Scientists Teaching Science Workshop. *Instructor: Dr. Barbara Houtz, M.Ed.*

2010 “Effective College Teaching” Workshop. *Instructors: Drs. Rebecca Brent & Richard Felder*

PROFESSIONAL SOCIETIES

2014-Curr. The American Society for Cell Biology (ASCB)

2013-Curr. The Genetics Society of America (GSA)

2019-Curr. Society for Developmental Biology (SDB)

INVITED TALKS

- 2020 Northwest Developmental Biology Meeting. *Virtually held (COVID)*.
- 2020 Front Range Cytoskeleton Meeting. *Virtually held (COVID)*.
- 2020 Wyoming INBRE Video Conference Seminar. *Laramie, WY*.
- 2019 Department of Molecular Biology – Molecular Monday Seminar Series. *Laramie, WY*.
- 2019 NHLBI Cell & Developmental Biology Center – Post-Doc Seminar Series. *Bethesda, MD*.
- 2018 The Norwegian Radium Hospital – Department of Molecular Cell Biology, Centre for Cancer Biomedicine. Host: Tor Erik Rusten, PhD. *Oslo, NO*.
- 2018 59th Annual Drosophila Research Conference – Models of Human Disease: Developmental and Physiological Disorders. *Philadelphia, PA*.
- 2018 NIH Mouse Imaging Facility Seminar Series. Host: Brenda Klaunberg, DVM. *Bethesda, MD*.
- 2018 NHLBI Orloff Science Awards Ceremony. *Bethesda, MD*.
- 2017 58th Annual Drosophila Research Conference – Models of Human Disease: Developmental and Physiological Disorders. *San Diego, CA*.
- 2017 NIH Research Festival – Developmental Biology Symposium. *Bethesda, MD*.
- 2017 Uniformed Services University of the Health Sciences – Molecular & Cellular Biology Department Seminar. Hosts: Martin Doughty, PhD. and Jeremy Smyth, PhD. *Bethesda, MD*.
- 2017 NIH Centrosome Gathering. *Frederick, MD*.
- 2017 NHLBI Research Festival. *Bethesda, MD*.
- 2017 University of Tennessee – Science Summit on Genome Editing. Host: Xiaofei Bai. *Knoxville, TN*.
- 2017 NHLBI Cell Biology & Physiology Center – Post-Doc Seminar Series. *Bethesda, MD*.
- 2016 The Allied Genetics Conference/57th Annual Drosophila Research Conference – Intracellular Dynamics. *Orlando, FL*.
- 2016 Hampden-Sydney College – Biology Dept. Colloquium. Host: Michael Wolyniak, PhD. *Hampden Sydney, VA*.
- 2016 NHLBI Research Festival. *Bethesda, MD*.
- 2016 Dickinson College – Biology Department Seminar. Host: John Henson, PhD. *Carlisle, PA*.
- 2016 NHLBI Cell Biology & Physiology Center – Post-Doc Seminar Series. *Bethesda, MD*.
- 2015 NHLBI Cell Biology & Physiology Center – Post-Doc Seminar Series. *Bethesda, MD*.
- 2014 NHLBI Cell Biology & Physiology Center – Post-Doc Seminar Series. *Bethesda, MD*.

- 2013 University of Tennessee – BCMB Colloquium. *Knoxville, TN.*
- 2010 University of Tennessee – BCMB External Advisory Board. *Knoxville, TN.*
- 2008 Ohio State University – NSF UBM Conference. *Columbus, OH.*
- 2008 Murray State University – Scholar’s Week. *Murray, KY.*
- 2007 Murray State University – BioMaPS Colloquium. *Murray, KY.*
- 2007 Murray State University – Scholar’s Week. *Murray, KY.*

PRESENTATIONS

- 2018 58th Annual American Society for Cell Biology (ASCB)/European Molecular Biology Organization (EMBO) Meeting – Neuronal Morphogenesis. *San Diego, CA.*
- 2018 58th Annual American Society for Cell Biology (ASCB)/European Molecular Biology Organization (EMBO) Meeting – Endoderm, Muscle and Neural Development. *San Diego, CA.*
- 2017 57th Annual American Society for Cell Biology (ASCB)/European Molecular Biology Organization (EMBO) Meeting – Morphogenesis and Multicellular Interactions. *Philadelphia, PA.*
- 2017 Keystone Symposium – Neurogenesis During Development and in the Adult Brain. *Olympic Valley, CA.*
- 2017 NIH Research Festival. *Bethesda, MD.*
- 2017 NHLBI Research Festival. *Bethesda, MD.*
- 2016 56th Annual American Society for Cell Biology (ASCB) Meeting – Cell Division: Mitosis & Meiosis. *San Francisco, CA.*
- 2016 NHLBI Research Festival. *Bethesda, MD.*
- 2015 55th Annual American Society for Cell Biology (ASCB) Meeting – Cell Division: Mitosis & Meiosis. *San Diego, CA.*
- 2015 FASEB Conference – Mitosis: Spindle Assembly and Function. *Big Sky, MT.*
- 2015 NHLBI Research Festival. *Bethesda, MD.*
- 2015 NIH Centrosome Gathering. *Frederick, MD.*
- 2014 54th annual American Society for Cell Biology (ASCB) Meeting – Cell Division: Mitosis & Meiosis. *Philadelphia, PA.*
- 2014 NHLBI Research Festival. *Bethesda, MD.*
- 2014 NIH Centrosome Gathering. *Frederick, MD.*
- 2013 54th Annual Drosophila Research Conference. *Washington, DC.*
- 2008 Ohio State University – NSF UBM Conference. *Columbus, OH.*
- 2008 Murray State University – Sigma Xi Poster Competition. *Murray, KY.*
- 2007 University of Central Florida – Southeastern Ecology and Evolution Conference. *Orlando, FL.*

2007

Murray State University – Scholar’s Week. *Murray, KY.*