

Joshua C. Sandquist

Assistant Professor of Biology
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Education & Training

- 2008 – 2012 **University of Wisconsin-Madison**, Madison, WI
Postdoctoral Research Fellow, Department of Zoology
- 2002 – 2008 **Duke University**, Durham, NC
Ph. D. in Pharmacology & Cancer Biology
Dissertation Defense: April 2008
- 1998 – 2002 **Drake University**, Des Moines, IA
B.S. in Pharmaceutical Sciences, College of Pharmacy
Graduation: May 2002, Summa Cum Laude

Teaching Experience

- 2012 – Present **Assistant Professor of Biology, Grinnell College**
Courses Taught: Bio150 – Introduction to Biological Inquiry: Symmetry Breaking;
Bio251 – Molecules, Cells and Organisms; Bio370 – Advanced Cell Biology; Bcm262
Lab – Biochemistry (lab instruction only).
- 2008 – 2011 **Guest Lecturer, University of Wisconsin-Madison**
Summary: Designed and delivered lectures and lead primary literature discussions
for undergraduate and graduate courses including: *Zoology 570 – Cell Biology*,
lectures on Receptor Tyrosine Kinase signaling and G-protein Coupled Receptor
signaling; *Anatomy 700 – Cytoskeletal Dynamics*, lecture and paper discussion on
molecular motors; *Pharmacology 875 - Molecular Principles in Pharmacology*, lecture and
paper discussion on angiogenesis therapy.
- 2009 – 2011 **Undergraduate Research Mentor**
Summary: Organized research projects for and mentored two undergraduate
students for a total of eight semesters. Trained students in molecular biology
techniques, animal husbandry, embryo microinjection and confocal fluorescence
microscopy. Also guided students in journal club and research presentations.
- 2006 – 2007 **Launch into Education About Pharmacology (LEAP) Instructor**
Summary: A science enrichment program for high school students initiated at Duke
in 2006. As a co-instructor I was solely responsible for preparing and delivering four
lectures during the summer course. Further, I instructed a group of five students in
designing and performing an original research project, which was presented by the
students at the North Carolina Student Academy of Science competition.

Prior Research Experience

- 2008 – 2012 **Postdoctoral Fellowship**
University of Wisconsin-Madison, Department of Zoology
Advisor: William M. Bement
- Project Summary: Characterization of the roles of the unconventional myosin,
myosin-10, in mitotic spindle structure and function. Results thus far implicate

myosin-10 as a regulator of the cell cycle kinase, wee1, in controlling mitotic progression, with consequences for mitotic spindle integrity.

2002 – 2008

Dissertation Research

Duke University, Department of Pharmacology & Cancer Biology

Advisor: Anthony R. Means

Committee: Keith Burridge, Daniel P. Kiehart, Daniel J. Lew, Ann Marie Pendergast

Dissertation Summary: Characterized the distinct functions and regulation of nonmuscle myosin II isoforms A and B in cell motility. Results (1) demonstrate that the two myosin II isoforms perform not only distinct but opposing functions in cell migration and (2) provide evidence for at least two isoform-specific regulatory mechanisms, namely selectivity in signaling pathways and subcellular distribution.

Professional Development Activities

- 2013 Conceptual Integration Modules to Bridge Bio251 and Chm221 – *curricular development workshop*
- 2013 Supporting Student Metacognition through Science Instruction Workshop
- 2012 Designing Effective Assignments Workshop
- 2007 Instructional Uses of Technology – *Teaching Development Course*
- 2006 Colloquium on the Academic Profession – *Teaching Development Course*
- 2005 Introduction to College Teaching – *Teaching Development Course*
- 2005 – 2006 Preparing Future Faculty Program – *A national initiative designed to better prepare graduate students and post-docs for the multiple roles performed by faculty members.*

Awards & Honors

- 2010 – 2012 Ruth L. Kirschstein National Research Service Award (NRSA) Fellowship
- 2003 – 2008 Howard Hughes Medical Institute Predoctoral Fellowship
- 2003 National Science Foundation Fellowship Honorable Mention
- 2002 – 2006 James B. Duke Fellow – *Endowed fellowship for Ph.D. candidates*
- 1998 – 2002 Drake University Presidential Scholarship
- 1998 – 2002 Drake University President's List – *GPA = 4.0, 8 semesters*
- 1998 – 2002 Dean C. and Effie Haight Latta Memorial Scholar – *achievement-based award given to selected students from Harrison County, IA*
- 1998 State of Iowa Scholar – *achievement-based award given to selected Iowa high school seniors*

Memberships & Service

- 2013 – present Co-coordinator of the Early Career Faculty group at Grinnell College (academic year)
- 2013 – present Coordinator of the Biology Department seminar series (academic year)
- 2012 – 2013 Co-coordinator of the Biology Department seminar series (academic year)
- 2011 Moderator, UW Undergraduate Research Day
- 2009 – 2012 Educational Outreach – *Each spring a former lab member, now a high school teacher in Chicago, brings a select group of students to our lab for a day of hands-on research experience, with the hope of broadening public awareness of and experience with science. I have given an introductory presentation and helped design and instruct research stations.*
- 2006 – present American Society for Cell Biology
- 2002 – 2006 Society of Duke Fellows
- 2004 – 2006 Co-Chair, Pharmacology and Cancer Biology Graduate Student Council

Publications

Sandquist, J.C., Romberg, L. and Yancey, P. Life as a professor at a small liberal arts college. *Mol Biol Cell*. Accepted August 7, 2013.

Sandquist, J.C., Kita, A.M., and Bement, W.M. And the dead shall rise: actin and Myosin return to the spindle. *Dev Cell* 21, 410-419 (2011).

Sandquist, J.C. and Bement, W.M. Hold on tightly, let go lightly: myosin functions at adherens junctions. *Nat Cell Biol* 12, 633-635 (2010).

Sandquist, J.C., and Means, A.R. The C-Terminal Tail Region of Nonmuscle Myosin II Directs Isoform-specific Distribution in Migrating Cells. *Mol Biol Cell* 19, 5156-5167 (2008).

Swenson-Fields, K.I., **Sandquist, J.C.**, Rossol-Allison, J., Blat, I.C., Wennerberg, K., Burrridge, K., and Means, A.R. MLK3 limits activated Galphaq signaling to Rho by binding to p63RhoGEF. *Mol Cell* 32, 43-56 (2008).

Sandquist, J.C., K.I. Swenson, K.A. Demali, K. Burrridge, and A.R. Means. Rho kinase differentially regulates phosphorylation of nonmuscle myosin II isoforms A and B during cell rounding and migration. *J Biol Chem.*, 281:35873-83 (2006).

Yi, P., R.C. Wu, **J. Sandquist**, J. Wong, S.Y. Tsai, M.J. Tsai, A.R. Means, and B.W. O'Malley. Peptidyl-prolyl isomerase 1 (Pin1) serves as a coactivator of steroid receptor by regulating the activity of phosphorylated steroid receptor coactivator 3 (SRC-3/AIB1). *Mol Cell Biol.*, 25:9687-99 (2005).

Seeds, A.M., **J.C. Sandquist**, E.P. Spana, and J.D. York. A molecular basis for inositol polyphosphate synthesis in *Drosophila melanogaster*. *J Biol Chem.*, 279:47222-32 (2004).

Garcia, M.A., Vitha, M.F., **Sandquist, J.**, Mulville, K., and Marina, M.L. Study of retention in micellar liquid chromatography on a C8 column by the use of linear solvation energy relationships. *J Chromatogr A* 918, 1-11 (2001).

Presentations

Duke University Biological Sciences Graduate Student Symposium, November 2007.

Sandquist, J. C., K. I. Swenson and A. R. Means. "Distinct Functions and Regulation of Nonmuscle Myosin II Isoforms A and B in Cell Motility."

ASCB 46th Annual Meeting Minisymposium: Regulation of the Actin Cytoskeleton, December 2006.

Sandquist, J. C., K. I. Swenson, K. A. DeMali and A. R. Means. Rho Kinase Differentially Regulates Phosphorylation of Nonmuscle Myosin II Isoforms A and B during Cell Rounding and Migration.

HHMI 2006 Meeting of Predoctoral and Physician Postdoctoral Fellows, September 2006.

Sandquist, J. C. Nonmuscle myosin II isoforms A and B perform distinct functions during wound healing migration: Rho kinase selectively regulates myosin IIA phosphorylation.

Posters

ASCB 51st Annual Meeting: Mitosis I, December 2011.

Sandquist, J.C., S. Woolner and W. M. Bement. Myosin-10 interacts with wee1: implications for mitotic spindle structure and function.

GRC: Motile and Contractile Systems, August 2011.

Sandquist, J.C. and W. M. Bement. Myosin-10 interacts with wee1: implications for mitotic spindle structure and function.

ASCB 50th Annual Meeting: Mitosis I, December 2010.

Sandquist, J.C. and W. M. Bement. Characterizing the role of myosin-10 in regulating mitotic spindle structure and function.

CSHL: The Cell Cycle, May 2010.

Sandquist, J.C., S. Woolner and W. M. Bement. Characterizing the role of myosin-10 in regulating mitotic spindle structure and function.

ASCB 49th Annual Meeting: Meiosis and Mitosis III, December 2009.

Sandquist, J. C., S. Woolner and W. M. Bement. Characterization of a novel interaction between myosin-10 and a mitotic kinase.

Duke University Annual Biological Sciences Graduate Student Symposium, November 2005.

Sandquist, J. C., K. I. Swenson and A. R. Means. Distinct Roles for Non-Muscle Myosin II Heavy Chain Isoforms A and B in Cell Migration. (Top Poster Award)

Keystone Symposium: Cell Migration and Adhesion, April 2005.

Sandquist, J. C., K. I. Swenson and A. R. Means. Distinct Roles for Non-Muscle Myosin II Heavy Chain Isoforms A and B in Cell Migration.

Nebraska - Iowa Joint Physiological Society Meeting, May 2002.

Ronnebaum S, **Sandquist J**, Zheng W, Tomanek RJ, Torry DS, Torry RJ. Placenta Growth Factor Regulation and Function in Isolated Rat Cardiomyocytes.