

DEIRDRE C. LYONS, Curriculum Vitae

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EDUCATION

Ph.D., **University of California, Berkeley**, CA, Molecular and Cell Biology 2008
B.A., **Mount Holyoke College**, MA, Biology *Cum Laude* 2002

TRAINING

Marine Biological Laboratory, MA, Embryology Course 2009
Friday Harbor Laboratories, WA, Invertebrate Zoology 2001
Friday Harbor Laboratories, WA, Evolutionary Developmental Biology 2001

RESEARCH EXPERIENCE

Postdoctoral Research Fellow with **Dr. David McClay, Duke University** 2009-present
Gene regulatory networks that drive morphogenesis in echinoderms

Collaboration with **Dr. Jonathan Henry, University of Illinois, Urbana-Champaign** 2009-present
Germ-layer specification and morphogenesis in the snail, *Crepidula*

Collaboration with **Drs Elaine Seaver and Mark Martindale, University of Florida** 2009
Fate map of the parchment worm, *Chaetopterus*

Collaboration with **Dr. Cristina Grande, CBM Severo Ochoa, Madrid, Spain** 2009
Cytoskeletal control of chirality in dextral and sinistral gastropods

Doctoral thesis with **Dr. David Weisblat, U.C. Berkeley** 2002-2008
Mechanisms controlling asymmetric cell division in the early embryo of the annelid, *Helobdella*
Doctoral Committee: Dr. Nipam Patel, Dr. Richard Harland, Dr. David Lindberg

Undergraduate honors thesis with **Dr. Stan Rachootin, Mount Holyoke College** 2002
The origin of segmented body-plans: shared developmental processes and intermediate forms vs. molecular phylogeny in annelids and arthropods.
Thesis Committee: Dr. Rachel Fink and Dr. Samuel Mitchell

Undergraduate Research Assistant with **Dr. David Jacobs, U.C. Los Angeles** 2000-2002
The role of POU-domain genes in the nervous system of ctenophores, cnidarians and sponges

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PUBLICATIONS

- Lyons, DC**, Perry, J, Henry, JQ. (2015). Spiralian Gastrulation: germ layer formation, morphogenesis, and fate of the blastopore in the slipper snail *Crepidula fornicata* *EvoDevo*, **6**:24
doi:10.1186/s13227-015-0019-1
- Perry, KJ*, **Lyons, DC*** Fischer, AHL, Helfrich, LW, Johansson, KB, Diamond, JC, Henry, JQ.
Deployment of regulatory genes during gastrulation and germ layer specification in a model spiralian mollusc *Crepidula*. *Developmental Dynamics*, *in press*
*=co-first authors
- Lyons, DC**, Srivastava, M, Matus, DQ. (2015). Evolution of developmental mechanisms controlling cell fate. *Encyclopedia of Evolutionary Biology*, *in press*
- Moczek, AP, Sears, KE, Stollewerk, A, Wittkopp, PJ, Diggle, P, Dworkin, I, Ledon-Rettig, C, Matus, DQ, Roth, S, Abouheif, E, Brown, FD, Chiu, CH, Cohen, S, De Tomaso, AW, Gilbert, SF, Hall, B, Love, A, **Lyons, DC**, Sanger, T, Smith, J, Specht, C, Vallejo-Marin, M, Extavour, CG. (2015). The significance and scope of evolutionary developmental biology: a vision for the 21st century. *Evolution and Development*. 17:198-219
- Lyons DC**, Martik, ML, Saunders, LR, McClay, DR. (2014). Specification to Biomineralization: Following a Single Cell Type as It Constructs a Skeleton. *Integrative and Comparative Biology*. 54:723-733
- Lyons, DC**, Martindale, MQ, Srivastava, M. (2014). The Cell's View of Animal Body-Plan Evolution. *Integrative and Comparative Biology*. 54:658-666
- Lyons, DC** and Henry, JQ. (2014). Ins and Outs of Spiralian Gastrulation. *International Journal of Developmental Biology*. 58:413-428
- Cheng X, **Lyons, DC**, Socolar, JES, McClay, DR. (2014). The commencement of new cell fates during cellular reprogramming. *Developmental Biology*. 391:147-57
- McIntyre, DC, **Lyons, DC**, Martik, ML, McClay, DR. (2014). Branching out: origins of the sea urchin larval skeleton in development and evolution. *Genesis*. 52:173
- Warner, JF, **Lyons, DC**, McClay, DR. (2014). Left-Right Asymmetry in the Sea Urchin Embryo: BMP and the Asymmetrical Origins of the Adult. *PLoS Biol*. 10(10): e1001404
- Lyons, DC**, Perry, KJ, Lesoway, MP, Henry, JQ. (2012). Cleavage pattern and fate map of the mesentoblast, 4d, in the gastropod *Crepidula*: A hallmark of spiralian development *EvoDevo*. 3:21
- Lyons, DC**, Kaltenbach, SL, McClay, DR. (2011). Sea Urchin Morphogenesis: linking cellular events to gene regulatory networks. *WIREs Dev. Biol*. 1:231–252. doi:10.1002/wdev.18
- Lyons, DC** and Weisblat, DA. (2009). D quadrant specification in the leech *Helobdella*: actomyosin contractility controls the unequal cleavage of the CD blastomere. *Developmental Biology*. 334:46-58
- Agee SJ, **Lyons, DC**, Weisblat, DA. (2006). Maternal expression of a Nanos homolog is required for early development of the leech *Helobdella robusta*. *Developmental Biology*. 298:1-11

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PUBLICATIONS *in prep*

Lyons, DC, Miranda, E, Dougherty, M, McClay, DR. Matrix-metalloproteinases are necessary for invasive behavior of sea urchin primary mesenchyme cells. In prep for submission to *Development*

Lyons, DC, Martik, ML, Kimura, JO, McClay, DR. Evolution of ectoderm-mesoderm communication during skeletal patterning in echinoid larvae. In prep for submission to *Developmental Biology*

Lyons, DC, and McClay, DR. A gene regulatory network for cell fusion in the primary mesenchyme cells of the sea urchin. In prep for submission to *Development*

Lyons, DC, Perry, KJ, Henry, JQ. The role of BMP signaling in neural development of the mollusc, *Crepidula fornicata*. In prep for submission to *Developmental Biology*

RESEARCH PRESENTATIONS:

Invited Seminars

Marine Biological Laboratory Embryology Course, chalk talk, Woods Hole, MA	2015
George Washington University, Department of Biosciences, Washington, DC	2015
Whitney Laboratory for Marine Bioscience, St. Augustine, FL	2015
University of North Carolina Chapel Hill, Developmental Biology Series, Chapel Hill, NC	2015
Duke University, DCMB seminar series, Durham, NC	2014
Stony Brook University Department of Biochemistry and Cell Biology, Stony Brook, NY	2014
University of Hawaii, Kewalo Marine Lab, HI	2011
Villefranche-sur-Mer Marine Station, France	2010
CBM Severo Ochoa, Madrid, Spain	2009
University of Chicago, Chicago, IL	2008
University of Oregon, Eugene, OR	2008
University of Nottingham, England	2008

Conference seminars selected from abstracts

Inaugural meeting, Pan-Am Society for Evolutionary Developmental Biology, Berkeley, CA	2015
Society for Developmental Biology Annual Meeting, Seattle, WA	2014
Developmental Biology of the Sea Urchin Annual Meeting, Woods Hole, MA	2014
Society for Integrative and Comparative Biology Annual Meeting, Austin, TX	2014
Developmental Biology of the Sea Urchin Annual Meeting, Woods Hole, MA	2012
Society for Developmental Biology Annual Meeting, Philadelphia, PA	2008

Posters

Southeast Regional Society for Developmental Biology Meeting, Nashville, TN	2013
Society for Developmental Biology Annual Meeting, Cancun Mexico	2013
Society for Integrative and Comparative Biology Annual Meeting, Charleston, NC	2012
Developmental Biology of the Sea Urchin Annual Meeting, Woods Hole, MA	2011
Society for Integrative and Comparative Biology Annual Meeting, Seattle, WA	2010
IGERT Meeting, University of Oregon, Eugene, OR	2008
Integrating Evolution, Development and Genomics Meeting, U.C. Berkeley, CA	2008
Society for Neuroscience Annual Meeting, San Diego, CA	2007
West Coast Regional Society for Developmental Biology Meeting, Monterey, CA	2007

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FELLOWSHIPS and AWARDS

Travel Award Society for Developmental Biology	2014
Best Poster Award Regional Society for Developmental Biology Meeting, Nashville, TN	2013
Travel Award Society for Developmental Biology	2013
Dr. Mary P. Dole Medical Fellowship Mt. Holyoke College Alumnae Association	2009
Student Travel Award Society for Developmental Biology	2008
Honorable Mention NSF pre-doctoral Fellowship National Science Foundation	2003
Turner Award for four years of excellence in Biology Mt. Holyoke College, MA	2002
Mary Lyons Scholar, High Honors Senior Thesis Mt. Holyoke College, MA	2002
Bernice Maclean Award for excellence in Biology Mt. Holyoke College, MA	2002, 2001
Elaine Marieb Summer Research Fellow Mt. Holyoke College, MA	2001
Howard Hughes Medical Institute Research and Training Fellowship	1999
First-Year Honors program, History Department Mt. Holyoke College, MA	1998

TEACHING and MENTORING EXPERIENCE

Instructor: <i>Developmental Biology</i> U.C. Berkeley Extension, CA	2008
Co-Instructor: <i>Introductory Biology</i> (Ecology Module) U.C. Berkeley Extension, CA	2008
Teaching Assistant: Annelid section, <i>Embryology Course</i> MBL, Woods Hole, MA	2015
Teaching Assistant: Mollusc section, <i>Embryology Course</i> MBL, Woods Hole, MA	2010, 2012-2015
Lab Instructor: <i>Cell Biology Lab</i> U.C. Berkeley, CA	2003, 2008
Teaching Assistant: <i>Cell and Developmental Biology</i> U.C. Berkeley, CA	2004
Lab Instructor: <i>Form and Function: Biodiversity</i> Mt. Holyoke College, MA	2001
Lab Instructor: <i>Ecology and Evolution</i> Mt. Holyoke College, MA	2001
Head Writing Assistant: <i>Genetics and Molecular Biology</i> Mt Holyoke College, MA	2000
Undergraduate Mentor, McClay Lab, Duke University, NC	2009-present
Undergraduate Mentor, Weisblat Lab, U.C. Berkeley, CA	2007-2008

SCIENTIFIC COMMUNITY SERVICE and LEADERSHIP

Co-chair, Hilde Mangold Symposium, Society for Developmental Biology Mtg, Seattle, WA	2014
Co-organizer, The Cell's View of Body Plan Evolution Symposium SICB Mtg, Austin, TX	2014
Co-organizer, Evo-Devo Genomics Seminar Series, Duke University, NC	2010-present
Co-organizer, Integrating Evolution, Development and Genomics Mtg, UC Berkeley, CA	2006
Co-coordinator, Marian E. Koshland Memorial Lecture Series, U.C. Berkeley, CA	2004, 2005
Asst. Coordinator, Speaking/Writing Training Program Mt Holyoke College, MA	2000

PEER REVIEW

Recent Referee for: *Development, Developmental Biology, EvoDevo, Evolution and Development, International Journal of Developmental Biology, Development, Genes, and Evolution.*

SOCIETY MEMBERSHIP

Pan-American Society for Evolutionary Developmental Biology	2015-present
American Society for Cell Biology	2009-present
Society for Developmental Biology	2003-present
Society for Integrative and Comparative Biology	2001-present

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REFERENCES

David R. McClay

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Duke University
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David A. Weisblat

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