Amy Ralston, Ph.D.

Curriculum Vitae Michigan State University Department of Biochemistry and Molecular Biology East Lansing, MI 48824

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Google Scholar Profile: https://scholar.google.com/citations?user=xZAWlosAAAAJ&hl=en

Positions

2014- 2009-2014	Assistant Professor Assistant Professor	Michigan State University, East Lansing, MI Dept. of Biochemistry and Molecular Biology University of California Santa Cruz, Santa Cruz CA Dept. of Molecular, Cell & Developmental Biology
Education & 1	Fraining	
2004-2009	Postdoctoral Fellow	Hospital for Sick Children, Toronto, ON
2004	Ph.D., Zoology	University of Wisconsin, Madison, WI
1995	B.A., Biochemistry	Oberlin College, Oberlin, OH

1. Personal Statement

My research is focused on discovering how genes regulate stem cell behavior in the context of the mammalian embryo. My long-term goals are to apply lessons from the mouse embryo to devise innovative stem cell therapies and improve pregnancy outcomes.

My training in developmental genetics and mouse stem cell biology includes postdoctoral studies with Janet Rossant and graduate studies with Seth S. Blair. In 2009, I established my independent research program as an assistant professor at the University of California Santa Cruz (UCSC). At UCSC, I published manuscripts as corresponding author, I secured funding from NIH as well as private funding agencies, and I established a track record as an effective leader and mentor.

In 2014, I was recruited to Michigan State University (MSU), where I have access to exceptional research facilities and colleagues. Also in 2014, I was selected to serve as co-Instructor of the Cold Spring Harbor Lab Course in Mouse Development, Stem Cells, and Cancer, which will continue to benefit my research program through interaction with world-class leaders in 2015-2018. In 2016, I was selected to receive a Presidential Early Career Award for Scientists and Engineers from Barack Obama. I am thrilled to integrate my research, teaching, mentoring, and service efforts to invest myself in scholarship and biological discovery.

2. Research

Peer-Reviewed Research Publications from the Ralston Lab

- Parenti A, Halbisen M, Wang K, Latham K, and **Ralston A**.* (2016). OSKM induce extraembryonic endoderm stem cells in parallel to iPS cells. *Stem Cell Reports* 6, 447-55. *Corresponding author.
- Blij S, Parenti A, Tabatabai-Yazdi N*, and **Ralston A****. (2015). *Cdx2* efficiently induces trophoblast stem-like cells in naïve, but not primed, pluripotent cell lines. *Stem Cells Dev* 24, 1352-65. **Undergraduate*, ***Corresponding author. JOURNAL COVER.*

Peer-Reviewed Research Publications from the Ralston Lab, cont.

- Wicklow E, Blij S, Frum T, Hirate Y, Sasaki H, Lang RA, and **Ralston A***. (2014). Hipporegulated Sox2 is restricted to ICM where it promotes non-pluripotent cell fates. *PLoS Genetics*, 10, e1004618. **Corresponding author.*
- Frum T, Halbisen M, Wang C, Robson P, and **Ralston A***. (2013). Oct4 cell-autonomously promotes development of primitive endoderm in the mouse blastocyst. *Developmental Cell* 25, 610-622. *PREVIEWED FEATURE.* *Corresponding author.
- Blij S, Frum T, Akyol A, Fearon E, and **Ralston A***. (2012). Maternal *Cdx2* is dispensable for mouse development. *Development* 139, 3969-3972. **Corresponding author.*

Invited Reviews and Chapters from the Ralston Lab

- Lokken A and Ralston A*. (2016). The Genetic Regulation of Cell Fate During Preimplantation Mouse Development. Ed. Melvin DePamphilis. Mammalian Preimplantation Development. New York: Elsevier. (Invited submission for *Current Topics in Developmental Biology, 2016*). *Corresponding author.
- Parenti T and **Ralston A***. (2015). Three-two-one...tropho-BLAST-OFF! *Cell Stem Cell* 17, 499-500. *Corresponding author.
- Frum T and **Ralston A***. (2015). Mechanisms of cell fate assignment during the first days of mammalian development. *Trends in Genetics* 31, 402-10. *Corresponding author.
- Halbisen MA and **Ralston A** *. (2014). Shaking up the salt and pepper: origins of cellular heterogeneity in the inner cell mass of the blastocyst. *Embo J*, 33, 280-1. **Corresponding author.*
- Yamanaka Y and **Ralston A**.* (2010). Early Embryonic Cell Fate Decisions in the Mouse. Eds. Eran Meshorer and Kathrin Plath. The Cell Biology of Stem Cells, pp. 1-13. New York: Landes Biosciences. *Advances in Experimental Medicine and Biology*, 695. *Corresponding *author*.

Peer-Reviewed Research Publications Prior to Independence

- **Ralston A**, Cox B, Nishioka N, Sasaki H, Chea E*, Rugg-Gunn P, Guo G, Robson P, Draper JS, and Rossant J. (2010). Gata3 regulates trophoblast fate downstream of *Tead4* and in parallel to Cdx2. *Development* 137, 395-403. *Undergrad. *JOURNAL COVER AND PREVIEWED FEATURE.*
- Rugg-Gunn PJ, Cox BJ, **Ralston A**, and Rossant J. (2010). Unique lineage-specific epigenetic gene regulatory mechanisms in stem cells and tissue lineages from the early mouse embryo. *Proceedings of the National Academy of Sciences* 107, 10783-10790.
- Nishioka N, Inoue K, Adachi K, Kyonari H, Ota M, Ralston A, Yabuta N, Hirahara S, Stephenson RO, Ogonuki N, Makita R, Kurihara H, Morin-Kensicki EM, Nojima H, Rossant J, Nakao K, Niwa H, Sasaki H. (2009). The Hippo signaling pathway components Lats and Yap pattern Tead4 to distinguish mouse trophectoderm from inner cell mass. *Developmental Cell* 16, 398-410.
- Serpe M, Umulis D, **Ralston A**, Chen J, Olson DJ, Avanesov A, Othermer H, O'Connor MB, and Blair SS. (2008). The BMP-binding protein Crossveinless 2 is a short-range concentration-dependent, biphasic modulator of BMP signaling in Drosophila. *Developmental Cell* 14, 940-953.
- **Raiston A** and Rossant J. (2008). Cdx2 acts downstream of cell polarization to cellautonomously promote trophectoderm fate. *Developmental Biology* 313, 614-629.

- Strumpf D, Mao CA, Yamanaka Y, **Ralston A**, Chawengsaksophak K, Beck F, and Rossant J. (2005). *Cdx2* is required for correct cell fate specification and trophectoderm differentiation in the mouse blastocyst. *Development* 132, 2093-2102.
- Serpe M, **Ralston A**, Blair SS, and O'Connor MB. (2005). Matching catalytic activity to developmental function: Tolloid-related processes Sog in order to help specify the posterior cross vein in the *Drosophila* wing. *Development* 132, 2645-2656.
- Shimmi O,* **Ralston A**,* Blair SS, and O'Connor MB. (2005). The crossveinless gene encodes a new member of the Twisted gastrulation family of BMP binding proteins which, with Short gastrulation, promotes BMP signaling in the cross veins of the *Drosophila* wing. *Developmental Biology* 282, 70-83. **Co-first authors*.
- **Ralston A** and Blair SS. (2005). Long-range Dpp signaling is regulated to restrict BMP signaling to a cross vein competent zone. *Developmental Biology* 280, 187-200.
- Conley CA, Silburn R, Singer MA, Ralston A, Rohwer-Nutter D, Olson DJ, Gelbart W, and Blair SS. (2000). Crossveinless 2 contains cysteine-rich domains and is required for high levels of BMP-like signaling during the formation of the cross veins in *Drosophila*. *Development* 127, 3947-3959.
- Blair SS and **Ralston A**. (1997). Smoothened-mediated Hedgehog signaling is required for the maintenance of the anterior-posterior lineage restriction in the developing wing of *Drosophila*. *Development* 124, 4053-4063.

Reviews and Chapters Prior to Independence

- **Ralston A** and Rossant J. (2010). The genetics of induced pluripotency. *Reproduction* 139, 35-44.
- Yamanaka Y, **Ralston A**, Stephenson RO, and Rossant J. (2006). Cell and molecular regulation of the mouse blastocyst. *Developmental Dynamics* 235, 2301-14.
- **Ralston A** and Rossant J. (2006). How signaling promotes stem cell survival: trophoblast stem cells and Shp2. *Developmental Cell* 10, 275-6.
- **Ralston A** and Rossant J. (2005). The genetic regulation of stem cell origins in the blastocyst. *Clinical Genetics* 68, 106-12.

Awards & Honors

Presidential Early Career Award for Scientists and Engineers, White House Office of
Science and Technology Policy
James K. Billman, Jr., M.D. Endowed Professorship
Early Career Grant Reviewer, NIH Center for Scientific Review (DEV2 Study Section)
Favorite Faculty Member, Stevenson College, UCSC
NIH-NICHD Contraception & Infertility Research Loan Repayment Program, Renewal
Top-cited Article 2008-2010, Developmental Biology
Commencement Speaker, Biograd Commencement Ceremony, UCSC
Universal Design in Instruction Award, Disability Resources Center, UCSC
NIH-NICHD Contraception and Infertility Research Loan Repayment Program Award
Postdoctoral Travel Award, Society for Developmental Biology, Bethesda, MD
RTC Travel Award, Toronto, ON
JD Travel Award, University of Wisconsin, Madison, WI
Vilas Travel Award, University of Wisconsin, Madison, WI
Vilas Travel Award, University of Wisconsin, Madison, WI
Carl A. Bunde Research Award, University of Wisconsin, Madison, WI

Other Positions & Affiliations

2015-18	Co-Instructor	Cold Spring Harbor Lab Course in <i>Mouse</i> <i>Development, Stem Cells, and Cancer</i> , Cold Spring Harbor, NY
2009	Article Contributor	Scitable, Nature Education (13 articles)
2005-09	Manuscript Editor	Write Science Right, Las Vegas, NV
1996	Teaching Assistant	University of Wisconsin, Madison, WI Introductory Biology 151
1995-96	Research Technician	University of Wisconsin, Madison WI Laboratory of Dr. Robert Auerbach
1994-95	Undergraduate Researcher	Oberlin College, Oberlin, OH Laboratory of Dr. Catherine A. McCormick
1992-94	Undergraduate Researcher (NSF-REU)	University of Kansas, Lawrence, KS Laboratory of Dr. Kathy A. Suprenant

Professional Societies

International Society for Stem Cell Research Society for Developmental Biology Genetics Society of America American Society for Cell Biology Society for Reproductive Investigation

Invited Talks & Seminars (excluding job talks)

- 2016 C.S. Mott Center for Human Growth and Development, Department of Obstetrics and Gynecology, Wayne State University, Detroit, MI (Seminar)
- 2016 Society for Developmental Biology Meeting, Boston, MA (Platform)
- 2015 Stowers Institute for Medical Research (Seminar)
- 2015 Greenwald Symposium on Reproductive and Regenerative Medicine, University of Kansas Medical Center, Kansas City, MO (Plenary)
- 2015 Society for Developmental Biology Midwest Meeting, Ann Arbor, MI (Platform)
- 2015 Cold Spring Harbor Course in Mouse Development, Stem Cells, and Cancer, Cold Spring Harbor, NY (Lecture)
- 2015 Department of Biology, Indiana University-Purdue University, Indianapolis, IN (Seminar)
- 2014 Department of Stem Cell and Developmental Biology, Hospital for Sick Children, Toronto, ON (Seminar)
- 2014 Cold Spring Harbor Course in Mouse Development, Stem Cells, and Cancer, Cold Spring Harbor, NY
- 2014 Department of Developmental Biology, Washington University in St. Louis, St. Louis, MO (Seminar)
- 2013 Reproductive and Stem Cell Biology Retreat, Stanford University, Palo Alto, CA
- 2013 CA/Harvard Stem Cell PI Meeting, UCLA, Los Angeles, CA (Platform)
- 2013 Department of Cell Biology, Skirball/NYU Med Center, New York, NY (Seminar)
- 2012 Santa Cruz Developmental Biology Meeting, Santa Cruz, CA (Plenary)
- 2010 Santa Cruz Developmental Biology Meeting, Santa Cruz, CA (Plenary)
- 2010 Centre for Trophoblast Research Annual Meeting, Cambridge, UK
- 2010 CA/Harvard 1st Generation Stem Cell PI Meeting, UCSF, San Francisco, CA

Oral Presen	tations (selected from submitted a	abstrac	:t)		
2013 2013 2013 2012 2012	 Midwest Regional Society for Developmental Biology Meeting, St. Louis, MO Northeast Regional Society for Developmental Biology Meeting, Woods Hole, MA Stem Cells & Aging Symposium, Santa Cruz, CA Mouse Molecular Genetics Meeting, Pacific Grove, CA 				
Funding					
ACTIVE FUND	DING				
	K. Billman, Jr., M.D., Endowed Pr ment of Biochemistry & Molecular Bi I			04/14/2016-04/12/2021 /ersity	
Nationa	1 Administrative Supplement al Institutes of Health quipment supplement for parent R07 I	,	on, PI)	4/01/2015-7/31/2016	
Nationa Title: M Role: P	1 GM104009 (Ralston, PI) al Institutes of Health olecular regulation of cell fate in ste I overall Impact score 20 and 6 th perce			-	
	D FUNDING				
Nationa	R13 HD081860 01 (Laird, PI) al Institutes of Health he 2014 Santa Cruz Developmental co-PI	Biology	v Meeting	7/15/2014-6/30/15	
Ellison	cholar in Aging Award, AG-NS-07 Medical Foundation xamining the impact of aging on cell		(Ralston, PI) programming	8/01/2010-7/31/2014	
Univers	y Research Grant (Ralston) sity of California Santa Cruz Commit valuating the role of the placenta as I			7/1/2013-6/30/2014 closure in the fetus	
UCSC	I Research Grant (Ralston) Committee on Research xamining the impact of aging on cell I	lular rep	programming	5/14/10-5/13/11	
UCSC	/ Research Grant (Ralston) Committee on Research esolving multiple pluripotent states i I	n stem	cell lines from the r	9/9/09-9/8/10 nouse	

3. Teaching & Mentoring

Course Co-Organizer and Co-Instructor (MSU)

2016 BS161 Cells	s and Molecules
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2015 BS161 Cells and Molecules

Course Organizer and Primary Lecturer (UCSC)

2014	BIOL 120 Developmental Biology	

- 2013 BIOL 120 Developmental Biology
- 2011 BIOL 120 Developmental Biology

Additional Lectures (UCSC)

- 2014 BIOL 200D Developmental Biology (4 lectures)
- 2013 BIOL 200D Developmental Biology (4 lectures)
- 2012 BIOL 200D Developmental Biology (4 lectures)
- 2012 BIOL 289 Practice of Science (1 lecture)
- 2011 BIOL 200D Developmental Biology (4 lectures)
- 2010 BIOL 200D Developmental Biology (4 lectures)
- 2010 BIOL 289 Practice of Science (1 lecture)
- 2010 BIOL 178 Stem Cell Biology (1 lecture)
- 2010 BIOL 120 Development (1 lecture)

Undergraduate Research Students Supervised

- 2014- William Garcia (Human Biology, Honor's College), MSU
- 2014- Jamie L. Maurice (Clinical Laboratory Science), MSU (BMB Undergraduate Research Award)
- 2015- Vixey Silva (Lyman Briggs), MSU
- 2015- Patty Glover (Biochemistry), MSU
- 2015- Blake Geraltowski (Human Biology), MSU
- 2013-2014 Heidi Molga (Honor's Thesis), UCSC
- 2013-2014 Amit Weiss (Admitted to Ph.D. program, UC Berkeley), UCSC
- 2013-2014 Roberto Lopez Cervera (Undergraduate Research Award), UCSC
- 2012-2013 Margaret Donovan (Dean's Award 2012; Ph.D. program, UCSD), UCSC
- 2012-2013 Atesh Worthington (Admitted to Ph.D. program, Duke University), UCSC
- 2011-2012 Eryn Wicklow (1st author manuscript published), UCSC
- 2012-2013 Nicholas Kasho, UCSC
- 2010-13 Neeloufar Tabatabai-Yazdi (Coauthor on Ralston Lab publication), UCSC

Undergraduate Research Students Supervised, cont.

- 2012 Andrea Quinones-Rivera, UCSC
- 2011 Sophia Petraki (Abstract selected for SACNAS Conference talk), UCSC
- 2010 Lane Sharon, UCSC
- 2010 Andrew Forster, UCSC

Graduate Students Supervised

- 2011- Anthony Parenti
 - CIRM Training Grant 2012-2014
 - Advanced to candidacy at MSU, 2014
 - Poster Prize, Midwest Society for Dev Bio Meeting 2015

2010-11 Anthony Parenti

- Master's in Biotechnology, San Jose State University
- CIRM Bridges to Stem Cell Research Internship Program, UCSC

2009-14 Stephanie Blij

- Ph.D. 2014, UCSC
- NIH Training Grant 2010-2012
- Company of Biologists, UK Travel Award 2012
- Current Position: student, UC Hastings Law School, San Francisco, CA

2009-14 Tristan Frum

- Ph.D. 2014, UCSC
- NIH Training Grant 2010-2012
- CIRM Training Grant 2013-2014
- Poster Prize, West Coast Society for Dev Bio Meeting 2011
- ASCB Travel Award, 2013
- Current Position: postdoctoral fellow, Ralston Lab
- Poster Prize, Midwest Society for Dev Bio Meeting 2015

Graduate Rotation Students

- 2016 Vanessa Benham, MSU
- 2015 Sean Nguyen, MSU
- 2014 Matthew Lewis, MSU
- 2013 Akshi Jasani, UCSC
- 2012 Jessica Perez, UCSC
- 2011 Hossein Amiri, UCSC (Coauthor on Ralston Lab publication)
- 2011 Zach Neeb, UCSC
- 2010 Tristan Frum, UCSC
- 2010 Stephanie Blij, UCSC

Graduate Exam Committees

- 2015 Katelyn Gagne, Laboratory of Dr. Kurt Hankenson, MSU
- 2015 Ashley Severance, Laboratory of Dr. Keith Latham, MSU (*Committee Chair*)
- 2014 Jessica Perez, Laboratory of Dr. Camilla Forsberg, UCSC
- 2013 Ricardo Letiao, Laboratory of Dr. Doug Kellogg, UCSC
- 2013 Miten Jain, Laboratory of Dr. Mark Akeson, UCSC
- 2013 Robert Sommer, Laboratory of Dr. Doug Kellogg, UCSC
- 2013 Prestina Smith, Laboratory of Dr. Lindsay Hinck, UCSC

Graduate Exam Committees, cont.

- 2012 Jesse Clark, Laboratory of Dr. Doug Kellogg, UCSC
- 2012 Tisha Bohr, Laboratory of Dr. Needhi Bhalla, UCSC
- 2012 Mimmi Ballard, Laboratory of Dr. Lindsay Hinck, UCSC
- 2010 Scott Boyer, Laboratory of Dr. Camilla Forsberg, UCSC
- 2009 Muriel Kmet, Laboratory of Dr. Bin Chen, UCSC

Postdoctoral Fellows Supervised

- 2014- Tristan Frum, Ph.D.
 - MSU Postdoctoral Fellow
 - BMB Awards Committee, 2014-2015, MSU

- 2014- Alyson Lokken, Ph.D.
 - MSU Postdoctoral Fellow
 - Poster Award, Michigan Alliance for Reproductive Technologies and Science Conference, 2015
- 2010-14 Michael A. Halbisen, Ph.D.
 - CIRM Training Grant Recipient 2010-2013, UCSC
 - Current Position: Bioinformatics Specialist, MSU

4. Service & Outreach

Campus Service

- 2015-2017 Elected member, Faculty Advisory Committee, BMB, MSU Organizer, Reproductive & Developmental Sciences 1st Annual Retreat, MSU 2015-2016 2015-2016 Search Committee for Department Chair, BMB, MSU Speaker, BMS Graduate Orientation, MSU 2015 2015 Keynote Speaker, BMS Graduate Retreat, MSU 2015 Speaker, Classes without Quizzes, MSU 2015 Co-Founder, Pre-tenure Resource Organization for Promotion & Success, BMB, MSU 2015-2015 Graduate Exam Committee, BMB, MSU 2014 Speaker, Reproductive & Developmental Sciences Program, PI Meeting, MSU 2014 Speaker, Cancer Research In Progress Group, MSU Speaker, Genetics Graduate Program, MSU 2014 2014 Speaker, BMS Graduate Orientation, MSU 2014 Career-Life Balance Talk, Women in Physics, Dept. of Physics, UCSC 2014 Proposal Review, CIRM Training Grant, UCSC 2013-2014 Founder & Director, STEM Career-Life Balance Resource Center, UCSC 2013-2014 Graduate Advising Committee, MCDB, UCSC Executive Committee, Institute for the Biology of Stem Cells 2012-14 2013 Career Development Talk, STEM Diversity Programs, UCSC Career Development Talk, Undergrad Research Student Association, UCSC 2013 Faculty Search Committee, MCDB (outcome: recruited Dr. Zhu Wang), UCSC 2012-2013 2012-13 Technical Supervisor, Transgenics Core Facility, UCSC 2011-13 Space and planning committee, MCDB, UCSC 2011 Minority Access to Research Careers Summer Institute (5 lectures + lab), UCSC 2011 Organizer, UCSC Interdivisional Research Retreat, Monte Toyon, CA
- 2009-11 Organizer, Young Principle Investigator Forum, UCSC
- 2009-11 Fundraising (\$4400.00 raised from donors for department activities), UCSC

Service Beyond Campus

- 2015-2018 Co-organizer, Cold Spring Laboratory Course in Mouse Development, Stem Cells, and Cancer, Cold Spring Harbor, New York
- 2015 Session Chair, Midwest Society for Dev Bio Meeting, Ann Arbor, MI
- 2014 Presenter, Science Night, Marble Elementary School, East Lansing, MI
- 2014 Co-organizer, 2014 Santa Cruz Dev Biol Meeting
- 2013 Poster Judge, Midwest Society for Developmental Biology Meeting, St. Louis, MO
- 2013 Session Chair, Northeast Society for Developmental Biology Meeting, Woods

Hole, MA

- 2013 Science Demonstration, Happy Days Day Care (Ages 2-5), Santa Cruz, CA
- 2012 Organizer & Speaker, Career Workshop, Santa Cruz Dev Biol Meeting
- 2012 Science Demonstration, Happy Days Day Care (Ages 2-5), Santa Cruz, CA
- 2010 Speaker, Career Workshop, Santa Cruz Dev Biol Meeting

Manuscript Review

- 2016- Cell, Nature Communications
- 2015- Stem Cells, EMBO Journal, Cell Stem Cell,
- Genes & Development, eLife, Cell Reports, Placenta, Nat Cell Biol
- 2014- Stem Cell Reports
- 2013- Trends in Cell Biology, Exp Cell Res
- 2012- PLoS One, Elsevier (book proposal)
- 2011- Biology Open
- 2010- Reproduction, Developmental Cell
- 2009- Development, Stem Cells, Cell Research
- 2008- PLoS Biology, Developmental Biology
- 2006- Differentiation, Mol Reprod and Dev

Grant Review (ad hoc)

- 2015 National Science Foundation
- 2015 The Wellcome Trust UK
- 2015 National Institutes of Health (NIH) Center for Scientific Review (CSR), Special Emphasis Panel [ZRG1 CB-F(55)]
- 2015 National Institutes of Health (NIH) Center for Scientific Review (CSR), Integrative Nutrition and Metabolic Processes (INMP) Study Section
- 2015 National Institutes of Health (NIH) Center for Scientific Review (CSR), Developmental Biology 2 (DEV2) Study Section
- 2015 Germany-Israel Science Foundation (GIS)
- 2014 Human Frontiers in Science Program (HFSP)
- 2014 ZonMW International Stem Cell Research Breakthrough Projects, Netherlands
- 2012 Swiss National Science Foundation
- 2012 The Wellcome Trust and Royal Society UK
- 2010 National Sciences and Engineering Research Council (NSERC) of Canada

Editorships

2014- Frontiers in Cell and Developmental Biology (Reviews Editor)