

Research Interests	Evolution of morphology, development and physiology, with an emphasis on the morphogenesis of ecologically relevant traits. Comparative approaches to the study of organogenesis.	
Education	Harvard University	2009 - 2016
	PhD. Supervisor: James Hanken Department of Organismic and Evolutionary Biology and Department of Herpetology, Museum of Comparative Zoology Dissertation: "Causes and consequences of lung loss in salamanders."	
	Reed College	2002 - 2006
	Bachelor of Arts in Biology	
Professional Appointments	Postdoctoral Associate, Brown University	2016 -
	Mentors: Casey Dunn and Erika Edwards	
	Postdoctoral Associate, Harvard University	2016 - 2016
	Mentor: James Hanken	
Publications	<p>Lewis ZR, Hanken J. 2016. Convergent evolutionary reduction of atrial septation in lungless salamanders. <i>Journal of Anatomy</i>. doi:10.1111/joa.12535.</p> <p>McCarroll MN, Lewis ZR, Culbertson MD, Martin BL, Kimelman, D, Nechiporuk AV. 2012. Graded levels of Pax2a and Pax8 regulate cell differentiation during sensory placode formation. <i>Development</i> 139: 2740-2750.</p> <p>Culbertson MD, Lewis ZR, Nechiporuk AV. 2011. Chondrogenic and Gliogenic Subpopulations of Neural Crest Play Distinct Roles During the Assembly of Epibranchial Ganglia. <i>PLoS ONE</i> 6(9): e24443. doi:10.1371/journal.pone.0024443</p> <p>Lewis ZR, McClellan MC, Postlethwait JH, Cresko WA, Kaplan RH. 2008. Female-Specific Increase in Primordial Germ Cells Marks Sex Differentiation in Threespine Stickleback (<i>Gasterosteus aculeatus</i>). <i>Journal of Morphology</i> 269(8): 909-921. [Cover Article]</p>	
Grants and Awards	NSF Graduate Research Fellowship	Sep. 2011 - Jun. 2015
	Title: "A developmental understanding of lung loss in salamanders."	
	Honorable Mention, Brian K. Hall Award	May. 2015
	From the Canadian Society of Zoologists. Runner up for best student talk.	
	Harvard University Certificate of Distinction in Teaching	Sep. 2014
	For Herpetology, Spring 2014.	
	E.E. Williams Award, Society for the Study of Amphibians and Reptiles	Apr. 2014
	For plethodontid transcriptome sequencing.	
	Barbour Award, Museum of Comparative Zoology	Apr. 2014
	Support for plethodontid fieldwork and collection.	
	Robert G. Goelet Award, Museum of Comparative Zoology	Apr. 2013
	For summer fieldwork and plethodontid embryo collection.	
	First prize, Harvard Integrated Life Sciences Gallery Night	Mar. 2013
	Photo submission to display of science artwork by Harvard graduate students.	
	Sigma Xi Grant-in-Aid of Research	Jan. 2013
	Support for Next Generation Sequencing.	
	Kenneth Miyata Award, Museum of Comparative Zoology	Apr. 2012
	Support for fieldwork.	

The William F. Milton Fund Award, Harvard Medical School 2011 - 2012
\$39,940 awarded to ZRL and James Hanken for reagents and equipment for the project "Lung Development in Lungless Salamanders."

Elected to Phi Beta Kappa May 2007

Class of '21 Award May 2007
Awarded by Reed College upon graduation, in recognition of "creative work of notable character, involving an unusual degree of initiative and spontaneity."

Betty C. Liu Memorial Biology Research Fellowship Feb. - Jul. 2007
For the investigation of primordial germ cell proliferation in threespine stickleback.

**Selected
Oral
Presentations**

Lewis ZR, Dorantes JA, Hanken J. "Neofunctionalization of a lung gene paralog may facilitate respiration in lungless salamanders." Society for Integrative and Comparative Biology annual meeting, Portland, OR, Jan. 2016.

Lewis ZR, Hanken J. "A transcriptional and morphological investigation of lung loss in salamanders." Invited talk. Canadian Society of Zoologists annual meeting, Calgary, AB. May 2015.

Lewis ZR, Hanken J. "Take Another Little Piece of my Heart: Convergent heart evolution in independent lineages of lungless salamanders." 6th Conference on the Biology of Plethodontid Salamanders, Tulsa, OK. May 2014.

Lewis ZR, Kerney RK, Dorantes JA, Hanken J. "Lung loss: Molecular and morphological Consequences." International Congress of Vertebrate Morphology, Barcelona, Spain. July 2013.

Lewis ZR, Kerney RK, Dorantes JA, Hanken J. "Genetic and morphological vestiges of lost lungs in plethodontid salamanders." Society for Integrative and Comparative Biology annual meeting, San Francisco, CA. Jan. 2013.

Lewis ZR, Kerney RK, Dorantes JA, Hanken J. "Pulmonary surfactant proteins are expressed in lungless salamanders." Society for Integrative and Comparative Biology annual meeting, Charleston, SC. Jan. 2012.

**Selected
Poster
Presentations**

Lewis ZR, Hanken J. "A salamander model for atrial septal defects and cardiopulmonary evolution." American Association of Anatomists annual meeting, Boston, MA. Mar. 2015.

Lewis ZR, Hanken J. "Co-evolution of heart and lung development in lungless salamanders." Society for Integrative and Comparative Biology annual meeting, Austin, TX. Jan. 2014.

Lewis ZR, Kerney RK, Dorantes JA, Hanken J. "Extrapulmonary expression of surfactant proteins in lungless salamanders" Keystone Symposium: Lung Development, Cancer and Disease, Taos, NM. Feb. 2013.

Lewis ZR, Kerney RK, Hanken J. "Lung development in lungless salamanders!" Society for Developmental Biology annual meeting, Chicago, IL. Jul. 2011.

Lewis ZR, Kerney RK, Hanken J. "Lung Development in Lungless Salamanders!" Keystone Symposium: Lung Development and Repair, Santa Fe, NM. Feb. 2011.

Lewis ZR, Nechiporuk AV. "Origins of the epibranchial placodes and ganglia in zebrafish." RIKEN CDB Symposium 2010 "Frontiers in Organogenesis," Kobe, Japan. Mar. 2010.

Teaching

Teaching Fellow for "Foundations of Biodiversity" (OEB 10), Harvard University. Professors Elena Kramer, Brian Farrell, Andrew Richardson. Fall 2015.

Teaching Fellow for "Herpetology" (OEB 167), Harvard University. Professors James Hanken and Jonathan Losos. Two sections. Spring 2014.

Teaching Fellow for "Life Sciences 1b: Genetics, Genomics, and Evolution," Harvard University. Spring 2013.

Teaching Fellow for "From Egg to Embryo to Organ" (MCB 118/SCRB 118), Harvard University. Professor Andrew McMahon. Fall 2010.

Professional Service	Peer Review: PNAS, Transactions of the Royal Society of South Africa	
	Curator and content contributor for the Encyclopedia of Life	2010 - present
Outreach	Oral presentation, Shore Collaborative Henry Owens School, Chelsea, MA	2015
	Oral presentation, Science at the Seashore, Cape Cod National Seashore	2013
	Oral presentation, Pioneer Charter School of Science, Everett, MA	2013
	Active member of Harvard Life Sciences Outreach and Gradwagon	2010 - present
Selected Work Experience	Oregon Health and Science University	Research Assistant II
	Portland, OR	Feb. 2008 - Aug. 2009
	Investigated the morphogenesis of the peripheral nervous system in zebrafish by single cell labeling and fate-mapping, working with Dr. Alex Nechiporuk.	
	Reed College	Post-Baccalaureate Research Fellow
Society Membership	Portland, OR	Feb. - Jul. 2007
	Researched gonadal sex differentiation in threespine stickleback under the guidance of Dr. Robert Kaplan and Dr. Maryanne McClellan.	
	The Society for Integrative and Comparative Biology	2010 -
	Society for Developmental Biology	2011 -
	American Association of Anatomists	2013 -
	The Herpetologists' League	2013 -
	Society for the Study of Amphibians and Reptiles	2013 -
	Canadian Society of Zoologists	2015 -