



Northeastern

**James Monaghan, Ph.D.**

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360 Huntington Ave.  
404 Mugar Hall  
Boston, MA 02115

## Curriculum Vitae

### EDUCATION AND RESEARCH EXPERIENCE

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**University of Kentucky**, Lexington, KY 2003-2009  
Ph.D., Biology  
Advisor: S. Randal Voss  
Thesis: Physiological genomics of spinal cord and limb regeneration in a salamander

**DePauw University**, Greencastle, IN 1997-2001  
B.A., Biology

### PROFESSIONAL APPOINTMENTS

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**Northeastern University**, Boston, MA 2022-Present  
Director, Institute for Chemical Imaging of Living Systems

**Northeastern University**, Boston, MA 2022-Present  
Professor of Biology

**Northeastern University**, Boston, MA 2018-2022  
Associate Professor of Biology

**Northeastern University**, Boston, MA 2012-2018  
Assistant Professor of Biology

**University of Florida**, Gainesville, FL 2009-2012  
Postdoctoral Fellow  
Advisor: Malcolm Maden

**Indiana University Medical School**, Indianapolis, IN 2001-2003  
Laboratory Technician

### PEER-REVIEWED RESEARCH ARTICLES

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\*NEU Graduate student. \*\*NEU Undergraduate student. #NEU Postdoc. ##Highschool student

1) Yang H#, Micovic N\*, **Monaghan JR**, Clark HA. *A click chemistry enabled conjugation strategy for producing dibenzodiazepinone-type fluorescent probes to target M2 acetylcholine*

Monaghan JR, 04/2023

receptors. *Bioconjugate Chemistry*. 2022; 33(11):2223-2233. doi: 10.1021/acs.bioconjchem.2c00446. [PMID: 36327428](#).

2) Kleinberg G\*\*, Wang S\*\*, Comellas E, **Monaghan JR**, Shefelbine SJ. *Stardist vs. Cellpose: Deep learning pipelines for 3D object segmentation*. *Cells Dev*. 2022;172:203806. Epub 20220825. doi: 10.1016/j.cdev.2022.203806. [PMID: 36029974](#).

3) Comellas E#, Farkas JE#, Kleinberg G\*\*, Loyd K, Mueller T, Duerr TJ\*, Muñoz JJ, **Monaghan JR**, Shefelbine SJ. *Local mechanical stimuli shape tissue growth in vertebrate joint morphogenesis*. *Proc Biol Sci*. 2022;289(1975):20220621. Epub 20220518. doi: 10.1098/rspb.2022.0621. [PMID: 35582804](#).

4) Lovely AM\*, Duerr TJ\*, Qiu Q, Galvan S##, Voss SR, **Monaghan JR**. *Wnt Signaling Coordinates the Expression of Limb Patterning Genes During Axolotl Forelimb Development and Regeneration*. *Front Cell Dev Biol*. 2022;10:814250. doi: 10.3389/fcell.2022.814250. [PMID: 35531102](#).

5) Duerr TJ\*, Jeon EK\*\*, Wells KM, Villanueva A\*, Seifert AW, McCusker CD, **Monaghan JR**. *A constitutively expressed fluorescent ubiquitination-based cell-cycle indicator (FUCCI) in axolotls for studying tissue regeneration*. *Development*. 2022;149(6). doi: 10.1242/dev.199637. [PMID: 35266986](#).

6) Voss SR, Smith JJ, Cecil RF, Kabangu M, Duerr TJ\*, **Monaghan JR**, Timoshevskaya N, Ponomareva LV, Thorson JS, Veliz-Cuba A, Murrugarra D. *HDAC Inhibitor Titration of Transcription and Axolotl Tail Regeneration*. *Front Cell Dev Biol*. 2021;9:767377. Epub 20211231. doi: 10.3389/fcell.2021.767377. [PMID: 35036404](#).

7) Xia J#, Yang H#, Mu M, Micovic N, Poskanzer KE, **Monaghan JR**, Clark HA. *Imaging in vivo acetylcholine release in the peripheral nervous system with a fluorescent nanosensor*. *Proc Natl Acad Sci U S A*. 2021 Apr 6;118(14):e2023807118. doi: 10.1073/pnas.2023807118. [PMID: 33795516](#).

8) Jensen TB\*\*, Giunta P\*\*, Schultz NG\*\*, Griffiths JM\*\*, Duerr TJ\*, Kyeremateng Y\*\*, Wong H\*\*, Adesina A\*\*, **Monaghan JR**. *Lung injury in axolotl salamanders induces an organ-wide proliferation response*. *Dev Dyn*. 2021 Feb 15. doi: 10.1002/dvdy.315. [PMID: 33587313](#).

9) Wong W\*, Kim A, **Monaghan JR**, Seifert AW, Maden M, Crane JD. 2020. *Spiny mice (Acomys) exhibit attenuated hallmarks of aging and rapid cell turnover after UV exposure in the skin epidermis*. *PLoS One*. Oct 30;15(10):e0241617. doi: 10.1371/journal.pone.0241617. [PMID: 33125436](#).

10) Duerr TJ\*, Comellas E#, Jeon EK\*\*, Farkas JE\*, Joetzjer M, Garnier J, Shefelbine SJ, **Monaghan JR**. 2020. *3D visualization of macromolecule synthesis*. *Elife*. 9:e60354. doi: 10.7554/eLife.60354. [PMID: 33051003](#).

11) May-Zhang AA, Tycksen E, Southard-Smith AN, Deal KK, Benthall JT, Buehler DP, Adam M, Simmons AJ, **Monaghan JR**, Matlock BK, Flaherty DK, Potter SS, Lau KS, Southard-Smith EM. 2021. *Combinatorial Transcriptional Profiling of Mouse and Human Enteric Neurons*

*Identifies Shared and Disparate Subtypes In Situ*. Gastroenterology. 160(3):755-770.e26. [PMID: 33010250](#).

12) Kim SY, Kundu J, Williams A, Yandulskaya AS\*, **Monaghan JR**, Carrier RL, Linhardt RJ. 2019. *Glycosaminoglycans compositional analysis of Urodele axolotl (Ambystoma mexicanum) and Porcine Retina*. Glycoconjugate Journal. 36(2):165-174. [PMID:30963354](#).

13) Freitas PD\*, Lovely AM\*, **Monaghan JR**. 2019. *Investigating Nrg1 signaling in the regenerating axolotl spinal cord using multiplexed FISH*. Developmental Neurobiology. 79(5), 453-467. [PMID: 30793850](#).

14) Marquez-Florez KM, **Monaghan JR**, Shefelbine SJ, Ramirez-Martinez A, Garzon-Alvarado DA. 2018. *A computational model for the joint onset and development*. Journal of Theoretical Biology. 454:345-56. [PMID: 29653160](#).

15) Rajan SG, Gallik KL, **Monaghan JR**, Uribe RA, Bronner ME, Saxena A. 2018. *Tracking neural crest cell cycle progression in vivo*. Genesis. 56(6-7):e23214. [PMID: 29956448](#).

16) Voss SR, Murrugarra D, Jensen TB\*\*, **Monaghan JR**. 2018. *Transcriptional correlates of proximal-distal identity and regeneration timing in axolotl limbs*. Comparative Biochemistry and Physiology. Part B: Biochemistry and Molecular Biology. S1532-0456(17)30194-1. [PMID: 29107037](#)

17) Bryant DM, Sousounis D, Farkas JE\*, Rakhimova AS, Thao N, Guzikowski AR, **Monaghan JR**, Levin M, and Whited JL. 2017. *Repeated removal of developing limb buds permanently reduces appendage size in the highly-regenerative axolotl*. Developmental Biology. 424(1):1-9. [PMID: 28235582](#)

18) Nguyen M\*\*, Singhal P\*\*, Maden M, Piet JW\*, Shefelbine SJ, Voss SR, and **Monaghan JR**. 2017. *Retinoic acid receptor regulation of epimorphic and homeostatic regeneration in the axolotl*. Development. 144(4):601-611. [PMID: 28087637](#)

19) Erler P\*, Sweeney A, and **Monaghan JR**. 2017. *Regulation of injury-induced ovarian regeneration by activation of oogonial stem cells*. Stem Cells. 35(1):236-247. [PMID:28028909](#)

20) Farkas JE\*, Freitas PD\*, Bryant DM, Whited JL, and **Monaghan JR**. 2016. *Neuregulin-1 signaling is essential for nerve-dependent axolotl limb regeneration*. Development. 143:2724-2731. [PMID: 27317805](#)

21) Flowers GP, Timberlake AT, Mclean KC, **Monaghan JR**, Crews CM. 2014. *Highly efficient targeted mutagenesis in axolotl using Cas9 RNA-guided nuclease*. Development. 141(10):2165-2171. [PMID: 24802774](#)

22) Athipopozhy A, Lehrberg J, **Monaghan JR**, Gardiner DM, Voss SR. 2014. *Characterization of in vitro transcriptional responses of dorsal root ganglia cultured in the presence and absence of blastema cells from regenerating salamander limbs*. Regeneration. 1(2):1-10. [PMID: 25750744](#)

23) Lopez D, Lin L, **Monaghan JR**, Cogle CR, Bova FJ, Maden M, Scott EW. 2014. *Mapping*

*hematopoiesis in a fully regenerative vertebrate: the axolotl*. Blood. 124(8):1232-1241. [PMID: 24802774](#)

24) **Monaghan JR**, Stier A, Michonneau F, Pasch B, Smith M, Maden M, Seifert AW. 2014. *Experimentally induced metamorphosis in axolotls reduces regenerative rate and fidelity*. Regeneration. 1(1):2-14. [PMID: 27499857](#)

25) Hui SP, **Monaghan JR**, Voss SR, Ghosh S. 2013. *Expression pattern of Nogo-A, MAG, and NgR in regenerating urodele spinal cord*. Developmental Dynamics. 242(7):847-860. [PMID: 23592243](#)

26) **Monaghan JR**, Athipozhy A, Seifert AW, Putta S, Stromberg A, Maden M, Gardiner DM, and Voss SR. 2012. *Gene expression patterns specific to the regenerating limb of the Mexican axolotl*. Biology Open. 1(10):937-948. [PMID: 23213371](#)

27) Zhu W, Pao GM, Satoh A, Cummings G, **Monaghan JR**, Harkins TT, Bryant SV, Randal Voss S, Gardiner DM, Hunter T. 2012. *Activation of germline-specific genes is required for limb regeneration in the Mexican axolotl*. Developmental Biology. Oct 1;370(1):42-51. [PMID: 22841627](#)

28) **Monaghan JR** and Maden M. 2012. *Visualization of retinoic acid signaling in transgenic axolotls during limb development and regeneration*. Developmental Biology. Aug. 368(1):63-75. [PMID: 22627291](#)

29) Seifert AW, **Monaghan JR**, Voss SR, Maden M. 2012. *Skin regeneration in adult axolotls: a blueprint for scar-free healing in vertebrates*. PLoS ONE 7(4): e32875. [PMID: 22485136](#)

30) **Monaghan JR**, Epp L, Putta S, Page RB, Walker JA, Beachy CK, Zhu W, Pao GM, Verma IM, Hunter T, Bryant SV, Gardiner DM, Harkins TT, Voss SR. 2009. *Microarray and cDNA sequence analysis of transcription during nerve-dependent limb regeneration*. BMC Biology. [PMID: 19144100](#)

31) Page RB, **Monaghan JR**, Walker JA, Voss SR. 2009. *A model of transcriptional and morphological changes during thyroid hormone-induced metamorphosis of the axolotl*. General and Comparative Endocrinology. 162(2):219-232. [PMID: 19275901](#)

32) Theodosiou M, **Monaghan JR**, Spencer ML, Voss SR, Noonan DJ. 2007. *Isolation and characterization of Axolotl NPDC-1 and its effects on retinoic acid receptor signaling*. Comparative Biochemistry and Physiology. Part B: Biochemistry and Molecular Biology. 147(2):260-270. [PMID: 17331771](#)

33) **Monaghan JR**, Walker JA, Beachy CK, and Voss SR. 2007. *Early gene expression during natural spinal cord regeneration in the salamander *Ambystoma mexicanum**. Journal of Neurochemistry. 101(1):27-40. [PMID: 17241119](#)

34) Page RB, **Monaghan JR**, Samuels AK, Smith JJ, Beachy CK, Voss SR. 2007. *Microarray analysis identifies keratin loci as sensitive biomarkers for thyroid hormone disruption in the salamander *Ambystoma mexicanum**. Comparative Biochemistry and Physiology. Part C: Toxicology and Pharmacology. 145(1):15-27. [PMID: 16926121](#)

35) Smith JJ, Putta S, Walker JA, Kump DK, Samuels AK, **Monaghan JR**, Weisrock DW, Staben C, Voss SR. 2005. *Sal-Site: integrating new and existing ambystomatid salamander research and informational resources*. BMC Genomics. 16, 6:181. [PMID: 16359543](#)

36) Putta S, Smith JJ, Walker JA, Rondet M, Weisrock DW, **Monaghan JR**, Samuels AK, Kump K, King DC, Maness NJ, Habermann B, Tanaka E, Bryant SV, Gardiner DM, Parichy DM, Voss SR. 2004. *From biomedicine to natural history research: EST resources for ambystomatid salamanders*. BMC Genomics. 13(5):54. [PMID: 15310388](#)

## BOOK CHAPTERS

37) Lovely AM\*, Duerr TJ\*, Stein DF\*\*, Mun ET\*\*, **Monaghan JR**. 2023. *Hybridization chain reaction fluorescence in situ hybridization in Ambystoma mexicanum tissue*. in “Methods in Salamander Research” from the book series “Methods in Molecular Biology”, [PMID: 36272070](#)

38) Yandulskaya AS\* and **Monaghan JR**. 2023. *Establishing a new research axolotl laboratory*. in “Methods in Salamander Research” from the book series “Methods in Molecular Biology”, [PMID: 36272066](#)

39) Maden M, Chambers D, and **Monaghan JR**. 2017. *Retinoic acid and the genetics of positional information*. in Regenerative Engineering and Developmental Biology: Principles and Applications, David Gardiner ed., CRC Press, Florida, [Link](#)

40) Farkas JE\* and **Monaghan JR**. 2015. *Housing and maintenance of Ambystoma mexicanum, The Mexican axolotl*. Methods in Molecular Biology. In Salamanders in Regeneration Research. Vol 1290: 27-46. [PMID: 25740475](#)

41) Farkas JE\*, Piril E\*, Freitas PD\*, Sweeney A, and **Monaghan JR**. 2016. *Organ and appendage regeneration in the axolotl*. Book chapter in Regenerative Medicine – from Protocol to Patient, 3<sup>rd</sup> Edition. Springer Publishers. 223-247. [Link](#)

42) **Monaghan JR** and Maden M. 2013. *Cellular plasticity during vertebrate appendage regeneration*. Current Topics in Microbiology and Immunology. Vol. 367:53-74. [PMID: 23239234](#)

## REVIEW ARTICLES

43) McCusker CD, **Monaghan JR**, Whited JL. Dev Dyn. 2022. *Editorial: Salamander Models for Elucidating Mechanisms of Developmental Biology, Evolution, and Regeneration: Part Two*. 250(6):750-752. [PMID: 34060711](#).

44) Duerr TJ\*, **Monaghan JR**. *Editorial: A matter of nerves*. eLife. 2021;10. Epub 20211223. doi: 10.7554/eLife.75629. [PMID: 34939564](#).

- 45) McCusker CD, **Monaghan JR**, Whited JL. Dev Dyn. 2021. *Editorial: Salamander Models for Elucidating Mechanisms of Developmental Biology, Evolution, and Regeneration: Part One*. 250(6):750-752. [PMID: 34060711](#).
- 46) Zupanc GKH, **Monaghan JR**, Stocum DL. 2019. *Adult neural stem cells in development, regeneration, and aging*. Dev Neurobiology 79(5):391-395. [PMID: 31219240](#).
- 47) Freitas PD\*, Yandulskaya AS\*, **Monaghan JR**. 2019. *Spinal cord regeneration in amphibians: a historical perspective*. Dev Neurobiology. 79(5):437-452. [PMID: 30725532](#).
- 48) Farkas JE \*and **Monaghan JR**. 2017. *A brief history of the study of nerve dependent regeneration*. Neurogenesis, Apr 10;4(1):e1302216. [PMID: 28459075](#).
- 49) Erler P\* and **Monaghan JR**. 2015. *The link between injury-induced stress and regenerative phenomena: A cellular and genetic synopsis*. BBA – Gene Regulatory Mechanisms. Apr;1849(4):454-461. [PMID: 25088176](#).
- 50) Seifert AW, **Monaghan JR**, Smith DM, Pasch B, Stier AC, Michonneau F, Maden M. 2012. *The influence of fundamental traits on mechanisms controlling limb regeneration*. Biological Reviews. 87(2):330-345. [PMID: 21929739](#).

## Ph.D. THESIS

**Monaghan JR**. 2009. *Physiological genomics of spinal cord and limb regeneration in a salamander, The Mexican axolotl*. University of Kentucky, Lexington, KY. May 2009.

## MANUSCRIPTS UNDER REVIEW

Yandulskaya AS\*, Miller MN\*, Ansari-pour R, Carrier RL, **Monaghan JR**. *Regenerating axolotl retinas regrow diverse cell types with modulation by Notch signaling and reconnect to the brain*. Growth, Development, and Differentiation.

Kondiboyina V\*, Duerr TJ\*, **Monaghan JR**, Shefelbine SJ, *Material Properties in Regenerating Axolotl Limbs Using Inverse Finite Element Analysis*. Developmental Dynamics

## INVITED PRESENTATIONS

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**2023** **USC Stem Cell 2022–2023 Distinguished Speaker Seminar Series**. Los Angeles, CA.

**2022 Salamander Meeting 2022**. Istanbul, Turkey (presented virtually). *Lung regeneration in the axolotl*.

**16th International Conference on Limb Development and Regeneration**. Harvard, Boston, MA. *Retinoic acid signaling in amphibian limb regeneration*.

- Vis and AI.** Roux Institute Northeastern, Portland, Maine (presented virtually). *The Bioimage bottleneck.*
- Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*
- 2021** Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*
- Experimental Biology.** Virtual Event. *The Cellular and Molecular Basis of CNS Regeneration in the Axolotl Salamander.*
- International Salamander League Monthly Seminar.** Virtual Event. *Development of accessible imaging tools for studying cell dynamics of regeneration.*
- NIH, NICHD Workshop "Opportunities for Rapid Advancement of Limb Regeneration: From Animal Models to Humans".** Virtual Event. *Panelist.*
- 2020** Meetings with invited talks cancelled
- 2019** Speaker and Lab Instructor, **Immersion in Comparative Aging and Regenerative Biology (iCARB)**. MDIBL, Mount Desert Island, ME. *Animal regeneration lecture and multi-day lab design/instruction.*
- American Society for Reproductive Medicine Annual Meeting.** Philadelphia, PA. *Insights from vertebrate model reproductive organ regeneration.*
- Schepens Eye Research Institute,** Harvard University. Boston, MA. *Factors contributing to adult retinal regeneration in the axolotl salamander.*
- Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*
- University of Chicago.** Chicago, IL. *Spatially resolved transcriptional analysis of salamander limb regeneration.*
- University of Kentucky Medical School.** Lexington, KY. *Transcriptional heterogeneity of neural stem cells during spinal cord regeneration.*
- Boston University Medical School.** Boston, MA. *Spatially resolved transcriptional analysis of salamander limb regeneration.*
- Mass General Hospital.** Boston, MA. *Cellular and molecular basis of complex tissue regeneration.*
- 2018 Aquatic Models of Human Disease Conference.** MBL, Woods Hole, MA. *Hypertranscription as a hallmark of tissue regeneration.*

**EMBO Meeting on the Cellular and Molecular Basis of Tissue Repair and Regeneration**, Velletra, Malta. *Hypertranscription as a hallmark of tissue regeneration.*

Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*

**Tufts Center for Developmental and Regenerative Biology**. Medford, MA. *Cellular and molecular basis of complex tissue regeneration.*

**2017 8<sup>th</sup> Aquatic Models of Human Disease Conference**, Birmingham AL. *Comparative study of appendage and organ regeneration in the axolotl salamander to discover conserved regulatory programs.*

**Northeast Regional Meeting of the Society of Developmental Biology**. *Retinoic acid receptor regulation of epimorphic and homeostatic limb regeneration.*

**Frontiers in Aging and Regeneration Research Course (FrARR)**. Morehouse School of Medicine. Atlanta, GA. *Comparative study of appendage and organ regeneration in the axolotl salamander.*

Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*

**University of Minnesota, Department of Genetics, Cell Biology, and Development Seminar Series**. Minneapolis, MN. *Comparative study of appendage and organ regeneration in the axolotl salamander: There's more than one way to regenerate an organ.*

**Brock University. Department of Biology Seminar Series**. Ontario, Canada. *Functional analysis of salamander limb regeneration.*

**2016 Northeast Regional Meeting of the Society of Developmental Biology**. *Retinoic acid receptor regulation of epimorphic and homeostatic limb regeneration.*

Speaker and Lab Instructor, **Frontiers in Stem Cells and Regeneration Course (SCARE)**. MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*

**SDB 75<sup>th</sup> Annual Meeting Satellite Symposium: Evolution of regenerative abilities: Recapitulation of development or novel mechanisms?** *Neural control of limb regeneration.*

**UMass Amherst. MCB Seminar Series**. Amherst, MA. *Molecular regulation of proliferation and patterning of a regenerating salamander limb.*

**Schepens Eye and Research Institute**. Department of Ophthalmology Seminar Series. Boston, MA. *Functional analysis of regeneration in the Mexican axolotl salamander.*

- UMass Lowell, Department of Biological Sciences Seminar Series.** Lowell, MA.  
*Comparative study of appendage and organ regeneration in the axolotl salamander: There's more than one way to regenerate an organ.*
- 2015** Speaker and Lab Instructor, **Frontiers in Aging and Regeneration Research Course (FrARR).** MBL, Woods Hole, MA. *Limb regeneration lecture and lab design/instruction.*
- Frontiers in Stem Cells and Regeneration Course (SCARE), MBL.** Woods Hole, MA.  
*Retinoic acid signaling during complex tissue regeneration.*
- DePauw University. Department of Biology Seminar Series.** Greencastle, IN. 2015.  
*Gene regulation of limb regeneration: Insights from the axolotl.*
- 2014** **Frontiers in Stem Cells and Regeneration Course (SCARE).** Woods Hole, MA.  
*Retinoic acid signaling during complex tissue regeneration.*
- UC Irvine,** *The role of Neuregulin-1 signaling during nerve-dependent axolotl limb regeneration.*
- Worcester Polytechnic Institute. Department of Biology Seminar Series.**  
Worcester, MA. *Deciphering the molecular code of positional information in a regenerating limb.*
- 2013** **Stem Cells and Cell Signaling.** Boston, MA. "*The Axolotl; A rising model of complex tissue regeneration*
- Accelerating Translation Research for Drug Discovery.** Boston, MA. *The Axolotl; A rising model of complex tissue regeneration.*
- Frontiers in Stem Cells and Regeneration Course (SCARE).** MBL, Woods Hole, MA.  
*Retinoic acid signaling during complex tissue regeneration.*
- 2010** **Society for Developmental Biology Postdoc Travel Award.** 69<sup>th</sup> Annual Meeting.  
Albuquerque, NM
- EMBO Postdoc Travel Award.** Conference Series: Molecular and Cellular Basis of Regeneration and Tissue Repair. Sesimbra, Portugal
- Southeast Society for Developmental Biology Meeting,** Gainesville, FL. *Retinoic acid signaling is necessary for development, regeneration, and maintenance of the axolotl fore- and hindlimb.*

## TEACHING

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## AWARDS

Northeastern University Excellence in Teaching Award	2018
College of Science Teaching Award	2018

### **NORTHEASTERN UNIVERSITY TEACHING**

BIOL 5543 Stem Cells and Regeneration 40 students per class	2013-Present
BIOL 3605 Developmental Neurobiology 40 students per class	2015-Present
BIOL5100 Biology Department Colloquium	2014-2017

### **DOCTORAL STUDENTS**

Melissa Miller	2021-Present
NSF GRFP Honorable Mention, 2022	
EMBO Regeneration Conference Travel Award, 2023	
Anatomy Connected Conference Travel Award and oral presentation, 2023	
Jackson Griffiths	2020-Present
NSF Graduate Research Fellowship Program, 2021	
EMBO Regeneration Conference Travel Award	
Anatomy Connected Conference Travel Award and oral presentation, 2023	
Timothy Duerr	2017-2021
Northeastern University Graduate Dissertation Research Grant, 2020	
College of Science Excellence in Research Award, 2020	
Aquatic Models of Human Disease Meeting Selected Speaker, 2019	
Anatomy Connected Conference Travel Award and oral presentation, 2023	
Anastasia Yandulskaya	2016-2022
Alex Lovely	2016-2021
Aquatic Models of Human Disease Meeting Travel Award, 2019	
Polina Freitas	2013-2018
Northeastern University Graduate Dissertation Research Grant, 2017	
Piril Erler	2013-2016
Postdoctoral researcher at Albert Einstein College of Medicine, 2016-2021	
Northeastern University Graduate Dissertation Research Grant, 2016	
Johanna Farkas	2012-2017
Teaching Professor, Northeastern University, 2018-Present	
Postdoctoral researcher in Shefelbine/Monaghan Lab NEU, 2017	
Northeastern University Dissertation Completion Fellowship, 2017	
EMBO Regeneration Conference Travel Award, 2016	
Coll. of Science Dean's Grad. Award for Teaching, 2016	
Northeastern University Graduate Dissertation Research Grant, 2015	
RIKEN CDB Symposium Regeneration Travel Award, 2014	

### **PROFESSIONAL DOCTORAL STUDENT MENTOR**

Jacqueline Panigel	2022-Present
Shane O'Brien	2019-Present

## POST-DOCTORAL TRAINEES

Timothy Duerr	2022-Present
Ester Comellas (Co-mentored with Sandra Shefelbine) Assistant Professor, Polytechnic University of Catalonia, 2021-Present	2018-2021
Hongrong Yang (Co-mentored with Heather Clark)	2018-Present
Peter Berenstein (Co-mentored with Heather Clark)	2019-2020
Junfei Xai (Co-mentored with Heather Clark)	2017-2019
Johanna Farkas (Co-mentored with collaborator Shefelbine) Assistant Teaching Professor, Northeastern University	2017-2018

## MASTERS STUDENTS

Arianna Lechsinska	2020-2021 (graduated)
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## UNDERGRADUATE THESES (75 undergraduates have performed research in the lab)

- Eun Kyung Jeon - *Effects of nerve supply on cell cycle changes and cell proliferation in regenerating limb of axolotl salamanders.* 2021
- David Stein - *High-throughput Generation and Screening of V3HCR Oligonucleotide Probes for RNA-FISH.* 2020
- Andy Martinez - *Characterization of NRG1 proliferation pathway and isoforms.* 2019
- Tyler Jensen - *Neuregulin-1 exerts molecular control over Axolotl lung regeneration through ErbB Family Receptor.* 2017
- Matthew Nguyen – *Retinoic acid receptor regulation of homeostatic and epimorphic regeneration in the axolotl.* 2016

## UNDERGRADUATE AWARDS

- Ari Zlota (Northeastern Undergraduate)  
Goldwater Fellowship
- Sage Kumar (Northeastern Undergraduate)  
NU Rise Research Award
- Danielle Douglas (Northeastern Undergraduate)  
NU Huntington 100
- Eun Kyung Jeon (Postbac NSF Fellow in Monaghan Lab)  
NSF REPS Postbac Fellowship awardee  
RISE Best Poster Award  
Matz co-op award in the Monaghan Laboratory  
Provost Research Award 3x  
Aquatic Models of Human Disease 2019 Meeting Travel Award  
Experimental Biology 2019 Meeting Travel Award
- David Stein (PhD trainee at Sloan Kettering)  
Provost Research Award
- Evan Mun (PhD trainee at CalTech)  
Provost Research Award  
NSF GRFP
- Brian Shim

Provost Research Award  
Andy Martinez (Employee at ApicBio)  
Provost Research Award  
Pankhuri Singhal (PhD trainee at UPenn)  
Selected Speaker at Northeastern Undergraduate Commencement  
Jarvis Award  
Provost Research Award 2x  
Matthew Nguyen (Employee at Frequency Therapeutics)  
Behavioral Neuroscience Major Stravinsky Award  
Provost Research Award 2x  
Tyler Jensen (MD/PhD trainee at Yale)  
Huntington 100  
2017 NU Talk Selected Speaker  
Schaffer Co-op Award  
Hilary Wong (Dental student at UPenn)  
Provost Research Award  
Ori Feldman (MD trainee at Rutgers)  
Honors Research Award  
Grace N. Schulz (PhD trainee at U. Chicago)  
Huntington 100  
NSF GRFP

#### **NIH R25 FRONTIERS IN AGING AND REGENERATION RESEARCH TRAINEES (2)**

Carlos Diaz, Maikel Mansour

#### **MASTERS EXCHANGE STUDENTS (5)**

Sammi Golla, Lucie Schroder, David Gorg, Linnea Tscheuschner (University of Hanover),  
Marylou Joetzjer (University of Technology of Compiègne)

#### **RESEARCH CO-OP STUDENTS (8)**

Tyler Jensen, Eun Kyung Jeon (2X), Panagiotis Katsaros, Eric Rabinowitz, Jason Langshaw,  
Ori Feldman, Kelsey Christopher

#### **UNDERGRADUATE DIRECTED STUDIES (32)**

Owen Spencer, Paula Espinoza, Evan Mun, Natalie Schulz, Hilary Wong, Aditya Gautham,  
David Stein, Andy Martinez, Danielle Douglas, Eun Kyung Jeon, Melissa Miller, Ken Mochizuki,  
Brenda Yeung, Ari Zlota, Shashank Madarapu, Christine Panza (2X), Oliver Mithoefer, Matthew  
Nguyen, Pankhuri Singhal, Jerusha Thedsanamoorthy, Erica Silk, Lauren Keogh, Ori Feldman,  
Dan Humphrey, Alexander Miller, Jen Obrigewitch, Tyler Jensen, Kyra McDonough, Kelsey  
Christopher, Peter Guinta, Adeleso Adesina, Yaa Kyermateng, Rahgi Abaza, Donna Perruzza

#### **NSF SUMMER RESEARCH EXPERIENCE FOR UNDERGRADUATES (REU) (14)**

Kofi Acheampong, Breanna Chandler, Mya Johnson, Juliana Benitez, Antonio Villanueva, Paula  
Espinoza, Jorge Murillo, Briana Lino, Jordan Bernard, Kelsha Sanchez, Ke'Yona Barton,

Andrew Scharf, Georgia Marquez-Grap, Chris Joanis

### **UNDERGRADUATE VOLUNTEERS (19)**

Not including Directed Study Students that started as volunteers: Pablo Flores Munoz, Jessica Saporita, Kately Stone, Faiza Anas, Anna Markert, Ben Simpson, Brian Shim, Colter Brainard, Connor Malloy, Yaa Kyeremateng, Ben Simpson, Sage Kumar, Katarnut Tobunluepop, Caroline Davis, Liam Kerrick, Samantha Johnson, Ian O'Shea, Evangeline Fachon, Lauren Byrnes, Sarah Neshat, Ben Weaver, Andres Breton, Nicole Ochandarena, Charles Fox, Tommy Chen, Grace Severance

### **PHD COMMITTEE MEMBER (15)**

Joann Buchanan (PhD 2021), Perla Castaneda (PhD 2021), Jodie Schiffer (PhD 2021), Wesley Wong (PhD 2020), Jeffrey Bouffard (PhD 2019), Alisha Bothun (2019), Solomon Mensah (PhD 2019), Julie MacDonald (PhD 2019), Alison Wirsching (PhD 2018), Antonio Vitalo (PhD 2018), Tommy Tashjian (PhD 2018), Alyssa Cacchetelli (PhD 2017), Stephen Moore (PhD 2017), Lara Lewis (PhD 2015), Alex Stankiewicz (BU PhD 2017)

### **MASTERS COMMITTEE MEMBER (3)**

Antia Tojiero, Nick Korsantia, Krystal Trull, Ji Hyun Lim

## **SERVICE**

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### **COLLEGE AND DEPARTMENTAL SERVICE**

- College of Science Faculty Mentoring Group	2023
- Healthy Aging Faculty Search Committee Chair	2022
- Immunology Faculty Search Committee	2022
- TriBeta Induction Ceremony Invited Speaker	2022
- College of Science CONNECTs talk	2021
- Teaching Faculty Search Committee	2021
- Teaching Faculty Search Committee	2020
- Open Rank Professor Search Committee	2019
- Department of Biology Executive Committee	2020-Present
- Department of Biology Merit Review Committee	2020-Present
- New Faculty Mentor	2020-Present
- Manager of Biology Confocal Microscope	2019-Present
- Biology Undergraduate Major Curriculum Committee	2018-Present
- Movement Neuroscience Faculty Search Committee	2017
- Behavioral Neuroscience Undergraduate Major Steering Committee	2014-Present
- Biology Club visiting faculty	2016
- Futures in Science Panelist	2015
- Biochemistry Club visiting faculty	2015
- Cell and Developmental Biology Faculty Search Committee	2015
- BIOL2309 "Project Lab" Course Design Committee	2015
- Graduate Symposium Series Organizer	2014

- Chair of Biology Department Weekly Colloquium 2014-2017
- Graduate Affairs Committee 2013-2014
- Maximizing Student Development Recruitment at UMass Boston 2013

## UNIVERSITY SERVICE

- Director, Institute for Chemical Imaging of Living Systems 2022-Present
- Chair, Northeastern IACUC Committee 2021-Present
- Associate Chair, Northeastern IACUC Committee 2021-August 2021
- BioE/CILS Faculty Search Committee 2021
- University Strategic Plan "Beyond 2025" Curricular and Learning Products Group 2021
- Associate Director, Institute for Chemical Imaging of Living Systems 2020-Present
- CV Reviewer for New England Future Faculties Workshop (ADVANCE) 2020-Present
- Marshal Scholarship Mock Interview Trainee 2020
- Dean Review Committee 2019
- Goldwater Fellowship Review Committee 2019-Present
- IACUC Committee Member 2013-Present
- STEM Diversity Bridge Biology Preview 2015-2019
- Institutional Biosafety Committee 2017-2020
- Faculty Senator 2017-2018
- Cartilage Collaborators Group visiting faculty 2016
- Nu Rho Psi Meet the faculty lunch 2016
- Graduation Marshal 2016, 2018
- Graduation Faculty Procession 2017, 2019
- Students to Seniors Club visiting faculty 2017

## GREATER SCIENTIFIC COMMUNITY

- NIH F03 Panel Member 2022 and 2023
- Charles A King Trust Postdoctoral Fellowship Review Panelist 2022
- Reviewer German Granting Agency DFG 2022
- India Wellcome Postdoctoral Fellowship Ad hoc Reviewer 2022
- Special Issue Guest Editor, *Developmental Dynamics* 2021
- Ambystoma Genetic Stock Center Advisory Board Member 2020-Present
- Reviewer German Granting Agency DFG 2021
- NSF Neural Systems Grant Panel Member 2020
- Author of White Paper to NIH on salamander and limb regeneration 2020
- NIH Aquatic Models Workshop Panelist 2020
- Reviewer Italian FRRB Foundation 2020
- Disseminated Web App for in situ hybridization probe design 2019
- Special Issue Guest Editor, *Developmental Neurobiology* 2019
- Meeting Organizer, Salamander Models in Cross-Disciplinary Biological Research 2019
- Reviewer German Granting Agency DFG 2019
- Reviewer French Granting Agency ANR 2019
- Board member of UNESCO associated International Cell Research Organization (ICRO) 2019
- Session Mediator, International Salamander PI Meeting 2018
- British Translational Medical Research Council Reviewer 2017
- NSF Neural Systems Grant Panel I Member 2017

- NSF Developmental Systems Grant Panel II Member 2017
- UW-Milwaukee Research Growth Initiative Grant Reviewer 2017
- NSF post-hoc reviewer (4x) 2016, 2017, 2019, 2022
- Tufts CTSI Pilot Review Panel 2016
- Lab Instructor for New Faculty Boot Camp, Society for Developmental Biology 75<sup>th</sup> Annual Meeting: *Introduction to the axolotl animal model* 2016
- Poster Reviewer at Soc. for Developmental Biology 75th Annual Meeting 2016
- Manuscript Reviewer (Sample of journals): iScience, OBM Neurobiology, Journal of Anatomy, BMC Genomics, PLOS One (3x), Regeneration (4x), Journal of Experimental Zoology, Comp Biochem Physiol C Toxicol Pharmacol, Journal of Developmental Biology, Cellular and Molecular Life Sciences, BMC Developmental Biology, Tissue and Cell, PeerJ (4x), Journal of Morphology, Scientific Reports (3x), PLOS Biology, Developmental Biology, Development (11x), Nature Protocols (2x), ELife (3x), Development Genes and Evolution, FASEB Journal, Seminars in Cell and Developmental Biology, Journal of Neurotrauma, Journal of Human Reproduction, Developmental Dynamics (5x), Nature Communications (3x), Developmental Cell, Cell Reports (2x), .

## COMMUNITY OUTREACH

- Organizer of BioBus Teaching Curriculum 2022-Present
- Contributed to CNN News Article on regeneration 2022
- SFN Brainfacts interview for Article 2022
- Mentored Peddie High School student for virtual summer research, Santiago Galvan 2021
- Provided scientific material for Netflix movie, Project Power 2020
- Assisted in new Boston Museum of Science permanent axolotl exhibit 2020
- News article contribution to Knowable Magazine 2020
- Six Northeastern News articles written about our work 2018-2021
- Hosted 6-8 grade class from Marie Philip School for the Deaf 2019
- Classroom 2<sup>nd</sup> grade “Skype a Scientist” Cherokee County School District 2018-2020
- Healthy Kids Day Parkway YMCA Presentation on axolotls and regeneration 2019
- TEDx Northeastern, Nature’s Secret Superhero 2018
- Guest Speaker and animal Presenter, YMCA Summer Camp, Needham, MA. 2017-2019
- Educator, “Show Me the Science” STEM Outreach Program, NEU 2017
- Educator and Guest Speaker, Boston Patrick Lyndon School 3rd Grade Science Class 2017
- Commentaries or provided content to news and science programs –River Monsters TV program, American Natural History Museum, Daily Planet on Discovery Channel, Schrodingers Cat TV program