Elizabeth M. Haynes

ehaynes2@wisc.edu emhaynes.com

Education

University of North Carolina at Chapel Hill — **Chapel Hill, NC**
Ph.D. in Cell and Developmental Biology — August, 2015

University of Central Florida — **Orlando, FL**
Bachelor of Science in Molecular and Microbiology — May, 2010
cum laude

Lake-Sumter Community College — **Leesburg, FL**
Associate of Arts degree — May, 2005

Awards & Fellowships
- 2021 Morgridge Post-Doctoral Fellow (Eliceiri and Ulland labs)
- 2020 Leading Edge Fellow
- 2018 Nikon Small World in Motion 1st Place
- NIH F32 NRSA Individual Post-Doctoral Fellowship, 2017-2020
- Integrative Biology Dept. Post-Doctoral Fellowship, 2016
- American Heart Association Pre-Doctoral Fellowship, 2013-2015
- Department of Defense NCMR Research Scholarship, 2010
- American Cancer Society Research Fellowship, 2009
- Research and Mentoring Program Fellowship, 2008-2009
- Honors in the Major

Research

Dr. Kevin Eliceiri and Dr. Tyler Ulland — **Madison, WI**
Post-Doctoral Fellow — Sept 2021

I will use a combination of advanced imaging techniques including 2-photon and light sheet microscopy to do longitudinal studies of microglia *in vivo* in adult zebrafish Alzheimer's Disease models. I will look at behavior and metabolism of microglia and how it changes over disease progression.

Methods: FLIM, 2-photon microscopy, single-objective LSFM, optics, imaging in adult zebrafish

Dr. Mary Halloran Lab — **Madison, WI**
Post-Doctoral Fellow — Oct 2015–Present

I use a variety of microscopy and gene editing techniques to investigate the role of KLCs in neuronal development, cargo transport and microtubule polarization *in vivo* in zebrafish.

Methods: SPIM, swept-field confocal, CRISPR-Cas9 gene editing, microinjection, in-situ *hybridization, genotyping, zebrafish husbandry, image analysis & automation, behavior*

Dr. James Bear Lab — **Chapel Hill, NC**
PhD Student — May 2011–Sept 2015

I used live cell imaging in combination with microfluidics and automated image analysis to determine the role of the actin debranching protein GMF in fibroblast directional migration.

Methods: cell culture, cloning, PCR, live cell microscopy (confocal, TIRF, DIC, phase), microfluidics, immunostaining, image analysis, RNA-seq, qPCR, expansion microscopy

Dr. Kenneth Teter Lab **Orlando, FL**
Student Researcher May 2007– July 2010
Worked independently under supervision of Dr. Ken Teter

I investigated the mechanism of the ribosomal inhibiting toxin saporin.

Methods: cell culture, measurement of protein synthesis and cell metabolism, circular dichroism, surface plasmon resonance, FRET

Select Publications

Haynes, EM, Ulland, TK, KW. 2022. A model of discovery: the role of imaging established and emerging non-mammalian models in neuroscience. Invited Review. Front. Molec. Neurosci. *In review.*

Haynes, EM, He, J, Jean-Pierre, M, Huisken, J, Eliceiri, KW, Halloran, MC. 2021. KLC4 shapes axon arbors during development and mediates adult behavior. *Preprint.* https://doi.org/10.1101/2021.09.26.461872

Lee TJ, Lee JW, **Haynes EM**, Eliceiri KW, Halloran MC. 2017. The Kinesin Adaptor Calsyntenin- 1 Organizes Microtubule Polarity and Regulates Dynamics during Sensory Axon Arbor Development. Front. Cell Neurosci. v11:107.

King SJ, Asokan SB, **Haynes EM**, Zimmerman SP, Rotty JD, Alb JG. Jr., Blake D, Tagliatela A, Lebedeva IP, Marston D, Johnson HE, Parsons M, Sharpless NE, Kuhlman B, Haugh JM, Bear JE. 2016. A Rac1/WAVE/Arp2/3 pathway directs haptotaxis via differential lamellipodia dynamics. Journal of Cell Science. v129, 2329-42.

Brayford S, Bryce NS, Schevzov G, **Haynes EM**, Hardeman EC, Bear JE, Gunning PW. 2016. Tropomyosin Promotes Lamellipodial Persistence by Collaborating with Arp2/3 at the Leading Edge. Current Biology v26,1312-8.

Haynes EM, Asokan SB, King SJ, Johnson HE, Haugh JM, Bear JE. 2015. GMFβ controls branched actin content and lamellipodial retraction in fibroblasts. Journal of Cell Biology. v209, 803-812.

Rotty JD, Wu C, **Haynes EM**, Suarez C, Winkelman JD, Johnson HE, Haugh JM, Kovar DR, Bear JE. 2015 Profilin-1 Serves as a Gatekeeper for Actin Assembly by Arp2/3-Dependent and Independent Pathways. Developmental Cell. v32, 54-67.

Wu C, **Haynes EM**, Asokan SB, Simon JM, Sharpless NE, Baldwin AS, Davis IJ, Johnson GL, Bear JE. 2013 Loss of Arp2/3 induces an NF-κB-dependent, nonautonomous effect on chemotactic signaling. Journal of Cell Biology. v203, 907-916.

Wu C, Asokan SB, Berginski ME, **Haynes EM**, Sharpless NE, Griffith JD, Gomez SM, and Bear JE. 2012. Arp2/3 Is Critical for Lamellipodia and Response to Extracellular Matrix Cues but Is Dispensable for Chemotaxis. Cell. v148, 973–987.

Select Presentations

International Zebrafish Conference, June 2021. Virtual.
Poster entitled "KLC4 shapes axon arbors during development and mediates adult behavior."

Leading Edge Symposium, August 2020. Virtual.
Talk entitled *"Imaging neural development across whole embryo and single-cell scales"*

Society for Developmental Biology Conference, July 2020. Virtual.
Invited talk entitled *"Branching out: kinesin light chains in the development of neuronal morphology and function"*

EMBL/EMBO Seeing is Believing Conference, October 2019. Heidelberg, Germany
Flash talk and poster entitled *"Long term light-sheet imaging and axon arborization pattern profiling reveal mechanisms of neuronal morphogenesis"*

International Zebrafish Conference, June 2018. Madison, WI
Poster entitled *"Dissecting the specialized roles of Kinesin Light Chains in vivo"*

Cold Spring Harbor Axon Guidance Meeting, Septemeber 2016. Cold Spring Harbor, NY
Poster entitled *"Imaging microtubule dynamics during axon growth and branching* in vivo*"*

UNC Chapel Hill Perl Memorial Lecture, January 2015. Chapel Hill, NC
Talk entitled *"GMFβ controls branched actin content and lamellipodial retraction in fibroblasts"*

American Society for Cell Biology Conference, December 2014. Philidelphia, PA
Talk entitled *"GMFβ controls branched actin content and lamellipodial retraction in fibroblasts"*

Teaching & Mentorship

Halloran Lab Undergraduate Student Mentees
- Daniel Laws (Hilldale Fellowship)
- Jiaxi "Jessica" Shen (FGSS mentee)
- Marcel Jean-Pierre
- Elizabeth Read
- Colin Guest (Hilldale Fellowship and Undergraduate Research Award)
- Yihong Li
- Yimeng Gu (LOCI)
- Conlin Bass (Hilldale Fellowship Award)

Graduate & Rotation Student Mentees
- Shalini Chakraborty (UW-Madison, Neuroscience Training Program)
- Korri Burnett (UW-Madison, Neuroscience Training Program)
- Ed Suarez-Zayas (UW-Madison, M.Sc. Neuroscience Training Program)
- Zach Swider (UW-Madison, Cell & Molecular Biology)
- Ani Michaud (UW-Madison, Cell & Molecular Biology)
- Alicia Tagliatela (UNC-Chapel Hill, Cell Biology & Physiology)
- Hailey Brighton (UNC-Chapel Hill, Cell Biology & Physiology)
- Chris Uyehara (UNC-Chapel Hill, Genetics & Molecular Biology)

Microscopy of Life, Light Sheet Microscopy Lecture, Fall 2019, 2020, 2021
- prepared and delivered a 50 minute lecture on light sheet microscopy

Scientific Leadership Postdoctoral Training Course, 2017
- participated in a 6 month course designed to train post-docs in the sciences management and leadership techniques and strategies.

TIBBS Summer Teaching Series Certificate, 2013
- attended a workshop series dedicated to current techniques in teaching (including active learning) and how to use them for science education.

UCF Honors Mentor 2010, 2011
- provide one-on-one mentorship via e-mail to UCF Honors students about research opportunities, scholarships, applying to graduate school, job opportunities, etc.

UCF Summer Research Academy Mentor 2009
- Taught freshman and sophomores about research at UCF and how to become an undergraduate researcher. Lectured on how to read primary literature, how to find a position in a lab, and good lab/research practices.

UCF Junior Achievement of Central Florida 2006
- Participated in a service-learning program targeting underserved elementary schools in Central Florida.

Service

Campus

2022 Zebrafish Interest Group Seminar Series Organizer
2022 Science to Street Art Mural Committee

Departmental

2020-21 Integrative Biology Climate & Diversity Committee
2018 Integrative Biology Neuro Faculty Search Committee

Outreach

First Gen Student Success, 2019, 2020
STEM Immersion Outreach Program, 2018, 2019
"Nerd Nite Madison" selected speaker, 2019
Wisconsin Science Festival, 2018
Amundsen High School Outreach Field Day, 2017, 2018
Emerson East Elementary Science Club, 2016
L.I.F.E. @ UCF invited speaker, 2010