

Sarah D Ackerman, Ph.D.

Doe Lab, HHMI/Institute of Neuroscience
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EDUCATION

- 2011-2016 **Doctorate of Philosophy (Ph.D.)**, Molecular Genetics and Genomics, May 2016
Washington University School of Medicine, Saint Louis, MO. *Summa Cum Laude*.
- 2007-2011 **Bachelor of Science (B.S.)**, Double major in Biology and Spanish, Honors Program
The College of New Jersey, Ewing, NJ. *Magna Cum Laude*.

RESEARCH EXPERIENCE

- 2016-Present **Postdoctoral Fellow**
Institute of Neuroscience, University of Oregon, Eugene, OR
Research Focus: Astrocyte regulation of neural circuit plasticity
Mentor: Dr. Chris Q Doe, HHMI
- 2015 **Visiting scientist**
University of Edinburgh Centre for Neuroregeneration. Edinburgh, Scotland, UK
Research Focus: Live imaging of glial cell development and dysfunction in zebrafish
Mentor: Dr. David Lyons
- 2011-2016 **Doctoral Student**
Department of Developmental Biology, Washington University School of Medicine, Saint Louis, MO
Research Focus: Molecular and cellular mechanisms of myelination
Mentor: Dr. Kelly R Monk*
*Current Position: Co-Director, Vollum Institute, OHSU, Portland, OR
- 2007-2011 **Undergraduate Research Assistant**
Department of Biology, The College of New Jersey, Ewing, NJ
Research Focus: Molecular mechanisms underlying *C. elegans* germline development
Mentor: Dr. Sudhir Nayak

SELECT PUBLICATIONS

- Ackerman, S.D.***, Perez-Catalan, N., Freeman, M.R., and Doe, C.Q* (2021). Astrocytes close a motor circuit critical period. *Nature*. 592: 414–420. *Co-corresponding author.
- do Lago e Baldaia, I., Fernandes, V.M.*, **Ackerman, S.D.*** (2020). More than mortar: glia as architects of nervous system development and disease. *Front. Cell Dev. Biol.* 8:611269. *Co-corresponding author.

- Perez-Catalan, N., Doe, C.Q., and **Ackerman, S.D.*** (2020). Astrocytes in circuit plasticity and function. *Neural Dev.* 16(1):1. *Corresponding author.
- Harty, B.L., Coelho, F., Pease-Raissi, S.E., Mogha, A, **Ackerman, S.D.**, Herbert, A.L., Gereau, R.W., Golden, J.P., Lyons, D.A., Chan, J.R., Monk, K.R. (2019). Myelinating Schwann cells ensheath multiple axons in the absence of E3 ligase component Fbxw7. *Nat Commun.* 10:2976.
- Giera, S., Luo, R., Ying, Y., **Ackerman, S.D.**, Jeong, S., Stoveken, H.M., Folts, C.J., Welsh, C.A., Tall, G.G., Stevens, B., Monk, K.R., Piao, X. (2018). Microglial transglutaminase-2 drives myelination and myelin repair via GPR56/ADGRG1 in oligodendrocyte precursor cells. *eLife.* 7: e33385.
- Ackerman S.D.**, Luo, R., Poitelon, Y., Mogha, A., Harty, B.L., D'Rozario, M., Sanchez, N.E., Lakkaraju, A.K.K., Gamble, P., Li, J., Qu, J., MacEwan, M.R., Ray, W.Z., Aguzzi, A., Feltri, M.L., Piao, X., Monk, K.R. (2018). GPR56/ADGRG1 regulates development and maintenance of peripheral myelin. *J Exp Med.* 215:941-961
- Herbert, A.L., Fu, M., Drerup, C.M., Gray, R.S., Harty, B.L., **Ackerman, S.D.**, O'Reilly-Pol, T., Johnson, S.L., Nechiporuk, A., Barres, B.A., Monk, K.R. (2017). Dynein/Dynactin regulate trafficking of Mbp mRNA in oligodendrocytes to promote myelination in the central nervous system. *Proc Natl Acad Sci U S A.* 114: E9153-E9162.
- Sanchez, N.E., Harty, B.L., O'Reilly-Pol, T., **Ackerman, S.D.**, Herbert, A.L., Holmgren, M., Johnson, S.L., Gray, R.S., Monk, K.R. (2017). Whole Genome Sequencing-Based Mapping and Candidate Identification of Mutations from Fixed Zebrafish Tissue. *G3* 7: 3415-3425.
- Salzman, G.S., **Ackerman, S.D.**, Ding, C., Koide, A., Leon, K., Luo, R., Stoveken, H.M., Tall, G., Piao, X., Monk, K.R., Koide, S., Araç, D. (2016). Structural basis for regulation of GPR56/ADGRG1 by its alternatively spliced extracellular domains. *Neuron* 91: 1292-1304.
- Ackerman, S.D.** and Monk, K.R. (2016). The scales and tales of myelination: using zebrafish and mouse to study myelinating glia. *Brain Res.* 1641: 79-91. *This article is part of a Special Issue entitled SI: Myelin Evolution.
- Ackerman, S.D.**, Garcia, C., Piao, X., Gutmann, D.H., and Monk, K.R. (2015). The adhesion GPCR Gpr56 regulates oligodendrocyte development via interactions with Gα12/13 and RhoA. *Nat Comm.* 6: 6122.
- Giera, S., Deng, Y., Luo, R., **Ackerman, S.D.**, Mogha, A., Monk, K.R., Ying, Y. Jeong, S., Makinodan, M., Bialas, A., Chang, B., Stevens, B., Corfas, G. and Piao, X. (2015). The adhesion G protein-coupled receptor GPR56 is a novel cell autonomous regulator of oligodendrocyte development. *Nat Comm.* 6: 6121.

FELLOWSHIPS*/AWARDS

- 2021-2026* NIH/NINDS BRAIN Initiative K99/R00
- 2021-2023* Warren Alpert Distinguished Scholar Fellowship (Respectfully Declined)
- 2020 Leading Edge Fellow (<https://www.leadingedgesymposium.org/>)
- 2018-2020* Milton Safenowitz Postdoctoral Fellowship, ALS Association
- 2017-2018* Oregon Developmental Biology Program (ODBP) Collaborative Project Funding Grant
- 2016-2018* NIH/NINDS Ruth L. Kirschstein National Research Service Award (1F32 NS098690)
- 2016 Spencer T. and Ann W. Olin Medical Science Fellow, Washington University
- 2016 O'Leary Prize for Excellence in Neuroscience Research, Washington University
- 2016 Dr. Philip Needleman Pharmacology Prize, Washington University
- 2014-2016* NIH/NINDS Ruth L. Kirschstein National Research Service Award (1F31 NS087801)
- 2013 Rita Levi-Montalcini Award for Best Student Poster Presentation, Washington University
- 2011 Outstanding Student in Biology-Research Award, The College of New Jersey
- 2010 Outstanding Student Leadership Award, The College of New Jersey

INVITED TALKS

- 2020 2020 Cell Bio Virtual Meeting (ASCB). *Astrocyte signaling restricts motor dendrite dynamicity to a developmental critical period.*
- 2020 Northwest Society for Developmental Biology. Virtual. *Astrocyte signaling restricts motor dendrite dynamicity to a developmental critical period.*
- 2020 CSHL: Glia in Health and Disease. Virtual. *Astrocytes close a critical period of motor circuit plasticity. Keynote Lecture.*
- 2019 Gordon Research Seminar: Glial Biology: Functional Interactions Among Glia & Neurons (GRS). Ventura, CA. *Astrocytes close a critical period of motor circuit plasticity.*
- 2017 Axon2017: Molecular and Cellular Mechanisms of Neural Circuit Assembly. IST: Austria, Klosterneuburg, Austria. *Astrocyte regulation of dendritic arbor complexity and synapse number.*
- 2016 38th Annual James L O'Leary Prizes for Research in Neuroscience Competition. Washington University School of Medicine, St. Louis, MO. *Mechanisms of myelination: it's all about the matrix.*
- 2015 Gordon Research Seminar: Glial Biology: Functional Interactions Among Glia & Neurons (GRS). Ventura, CA. *The adhesion-GPCR Gpr56 is an essential regulator of central and peripheral nervous system myelination.*
- 2014 52nd Annual Midwest Society for Developmental Biology Meeting. Washington University School of Medicine, St. Louis, MO. *The adhesion-GPCR Gpr56 is essential for central and peripheral nervous system myelination.*
- 2014 4th Annual Hope Center for Neurological Disorders Retreat. Washington University School of Medicine, St. Louis, MO. *The adhesion-GPCR Gpr56 regulates glial cell development and myelination.*
- 2013 11th Biennial ASN-ISN Myelin satellite meeting. Cancun, Mexico. *Disruption of Gpr56 causes myelin defects in mouse and zebrafish.*

MENTORING EXPERIENCE**TRAINING**

- 2019 Postdoc Mentorship Training Seminar
University of Oregon
Course Title: Stage-specific strategies for successful mentoring.
Instructors: Dr. Andy Karduna and Dr. Elliot Berkman
- 2017 Summer **CIMER** (<https://cimerproject.org/>)
University of Wisconsin-Madison, Online Training.
Course Title: What Matters in Mentoring.
Instructor: Dr. Christine Pfund

EXPERIENCE

- 2020-Current **Sonja Zolnoski**
Undergraduate thesis student at the University of Oregon
Project title: Astrocyte mitochondria support motor neuron health and function in a *Drosophila* model of ALS
- 2019 - 2020 **Paul Dawson**
Undergraduate thesis student at the University of Oregon
Project title: Defining the role of astrocytes in synapse formation and maintenance

- Current position: Research technician, Rachel Wilson lab, Harvard Medical School
- 2017 - 2020 **Nelson Perez Catalan**
Undergraduate thesis student at the University of Oregon
Project title: Jack-of-all-trades, The Role of Astrocytes in Circuit Formation and Plasticity
Current position: Postgrad Associate, Jaime Grutzendler lab, Yale School of Medicine
- 2017 Fall **Sarah Beyeler**
Rotating Ph.D. student at the University of Oregon
Project title: An RNAi screen investigating the non-autonomous effects of astrocytes on synapse number in *Drosophila*
Current position: PhD student, Adrienne Huxtable lab, University of Oregon
- 2017 Summer **Serena Sweet**
Summer intern from the University of Miami, Summer Program for Undergraduate Research, the University of Oregon
Project title: Quantification of synapse number for identification of astrocyte-derived molecules influencing cholinergic synapse formation in *Drosophila*
Current position: PhD student, Richard Simerly lab, Vanderbilt University
- 2016 Winter **Allison Sung, PhD**
Rotating Ph.D. student at Washington University School of Medicine
Project title: ADAMTS9 is a novel regulator of oligodendrocyte survival and myelination
Current position: Principle Scientific Researcher, Genentech
- 2013-2016 **Chris Raciti, MD**
Undergraduate research assistant at Washington University School of Medicine
Project title: A forward genetic screen in zebrafish uncovers new regulators of myelinating glial cell development
Current position: Physician, Emergency Medicine, Miami Beach FL
- 2012-2014 **Jeff Ni, MD**
Undergraduate research assistant at Washington University School of Medicine
Project title: Elucidating the genetic basis and molecular mechanisms underlying myelination through a forward genetic screen in zebrafish
Current position: Pediatric Resident, The University of Chicago

PROFESSIONAL ACTIVITIES, SERVICE, AND OUTREACH

- 2021 **Co-editor.** Special edition of *Frontiers in Neuroscience* entitled “Accessory Cells of Sensory Systems.”
- 2021 **Author of article for general audience.** “Astrocyte cells in the fruit fly brain are an on-off switch that control when neurons can change and grow” by S.D. Ackerman. *The Conversation.*
- 2020 **UO Institute of Neuroscience.** Member of the Diversity Equity and Inclusion Committee (Teaching Subcommittee). Building curricula for equitable teaching strategies.
- 2019 **Women in Neuroscience.** Served on a “Self-Advocacy” panel for women graduate students within the Institute of Neuroscience at UO.
- 2017 **Co-chair.** Gordon Research Seminar (GRS) on Glial Biology: Functional Interactions Among Glia & Neurons. Aided in grant writing and program organization for the associated GRC on Glial Biology.

2013-2014 **Young Scientist Program (WUSM)**. Performed science demonstrations and guided activities with local middle school students from underrepresented backgrounds in Saint Louis.

Ad hoc Reviewer *Nature Neuroscience, EMBO, Neural Development, Scientific Reports, eLife*
Memberships Genetics Society of America, Society for Developmental Biology, American Society for Cell Biology

TEACHING EXPERIENCE

2021 **Co-instructor**
Biology 607: Journal Club Researching Inclusivity in STEM Education. University of Oregon. Eugene, OR.
Teaching Responsibilities: Co-conception, organization, and moderation of the journal club series and corresponding seminars.

2012 **Teaching assistant.**
Biology 3371: Eukaryotic genomes. Washington University in St. Louis. St. Louis, MO.
Teaching Responsibilities: Attending lectures, leading weekly discussion sections, crafting writing assignments for discussion section, grading assignments and exams.
Course Instructor: Dr. Douglas Chalker

Additional Washington University Teaching Center Workshops Attended:

- *Teaching Students How to Read and Critically Evaluate Scientific Literature*
- *Increasing Diversity and Improving Learning in STEM*
- *Teaching a Laboratory Subsection*
- *Teaching a Discussion Subsection*
- *Designing Writing Assignments*
- *Teaching with Lectures*
- *Who's in Charge Here? Managing a Classroom and Responding to Common Problems*

LANGUAGES

Fluent in English
Intermediate in Spanish

LETTERS OF REFERENCE

Chris Q. Doe, Ph.D. (Postdoctoral Advisor)

Professor and HHMI Investigator
Institute of Neuroscience
University of Oregon
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Kelly R. Monk, Ph.D. (Graduate Advisor)

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Marc R. Freeman, Ph.D.

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Shai Shaham, Ph.D.

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