

David Donley, M.S.E. Ph.D.

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Education

- July 2018 Ph.D. – Neuroscience
Neuroscience Program, University of Wyoming
- July 2012 M.S.E. – Education
Department of Education, Harding University
- May 2010 B.S. – Biochemistry and Molecular Biology
Departments of Biology and Chemistry, Harding University

Professional Appointments

- Aug 2018 – Present Assistant Professor of Biology, Harding University, Searcy AR
Courses: Cellular and Molecular Neuroscience, Neuroscience Research, Introduction to Cell Biology and Genetics, General Biology for non-majors, Principles of Biology for majors, Principles of Biology laboratory, Biology seminar
- Aug 2011 - June 2013 Chemistry Technician/Instructor, Harding University, Searcy AR
Courses: General Chemistry Lab for non-majors, General Chemistry Lab for majors, Introduction to Organic and Biochemistry Techniques
- Aug 2011 - May 2013 High School Science Teacher, Crosspointe Preparatory Academy, Searcy AR
Courses: Chemistry, Forensic Science, Neuroscience
- Aug 2010 – May 2011 Biology Teacher, Christian Academy of Greater St. Louis, St. Louis MO
Courses: 7th grade Life Science, High School Biology, Botany & Zoology, Forensic Science

Certifications, Assistantships, and Experience

- In progress* ACUE Certificate of Effective College Instruction, co-endorsed by ACUE and ACE
(Expected May 2021)
- July 2013 – July 2018 Graduate Research Assistant, University of Wyoming, Laramie WY
- Aug 2016 – May 2017 Life Science Teaching Assistant, University of Wyoming, Laramie WY
Courses: Life Science for Elementary Education Majors
- Jan 2015 – May 2015 Science Tutor, Laramie County Community College, Laramie WY
- Oct 2013 – April 2014 Biology Content Author, Sapling Learning, Austin TX
- Jan 2008 – April 2010 Undergraduate Teaching Assistant, Harding University, Searcy AR
Courses: General Chemistry, Anatomy and Physiology, General Biology

Honors/Awards

- 2019 Mizzou Computational Neuroscience Workshop Travel Award (supported by NSF)
- 2017 Huntington's Study Group, New Member Scholar Award
- 2017 Wyoming INBRE Graduate Fellowship (supported by NIH NIGMS P20GM103432)
- 2017 IDeA Network Discovery Phase Proteomics Workshop Travel Award
- 2017 2nd Place Graduate Student Talk – American Society for Microbiology, Rocky Mountain Branch

Funding

- May 2020 – Dec 2022 Arkansas INBRE Research Development Grant “*Evaluating how free radical signals shape microglia during neurological disease*” Role: Primary Investigator; Amount: \$265,000
- Sept 2020 – Dec 2020 Arkansas INBRE Proteomic Voucher Grant “*Proteomic analysis of NMES1 knockdown in microglia*” Role: Primary Investigator; Amount: \$2,504
- Aug 2020 – Dec 2020 Cell Biology Consortium Cell Block Grant “*The role of NMES1 on Microglial Oxidative Stress*” Role: Primary Investigator/Student Mentor; Amount: \$3,000
- Sept 2019 – April 2020 Arkansas INBRE Proteomic Voucher Grant “*Analyzing the microglial proteome in response to misfolded proteins*” Role: Primary Investigator; Amount: \$7,500
- May 2019 – Aug 2019 Arkansas INBRE Summer Research Grant “*Iron alters microglial responses: evaluating disease-relevant mechanisms*” Role: Primary Investigator; Amount: \$25,468
- April 2019 – Mar 2020 Arkansas Academy of Science Undergraduate Research Grant “*Evaluating the impact of extracellular TDP-43 on microglial function*” Role: Primary Investigator/Student Mentor; Amount: \$1,000
- May 2019 – Aug 2019 Margaret V Plummer Research Fund “*Evaluating the impact of TDP-43 on microglial polarization*” Role: Student Mentor; Amount: \$2,500
- May 2019 – May 2020 Arkansas Audubon Society Trust “*Quantifying Seasonal Fluctuations in Blood Profile Relative to Singing Ability in Avian Species*” Role: Co-Primary Investigator; Amount: \$350

Publications

1. Donley DW, Chen Z, Bergin D, Shultz DJ, Nair SS. Multi-platform simulations facilitate neuroscience in the undergraduate classroom. *IEEE Neural Engineering* (submitted Dec 2020)
2. Donley DW, Olson AR*, Raisbeck MF, Fox JH, Gigley JP (2016) “Huntingtons Disease Mice Infected with *Toxoplasma gondii* Demonstrate Early Kynurenine Pathway Activation, Altered CD8+ T-Cell Responses, and Premature Mortality.” PLoS ONE 11(9): e0162404. doi:10.1371/journal.pone.0162404
3. Donley DW, Realing M*, Gigley JP, Fox JH. Iron activates microglia and directly stimulates indoleamine-2,3-dioxygenase activity in the N171-82Q mouse model of Huntington's disease. *BioRxiv 550905*; doi: 10.1101/550905. (preprint)
4. Donley DW, Jenkins TJ, Deiter C*, Campbell R*, Realing M*, Chopra V, Hersch S, Gigley JP, Fox JH. Latent *Toxoplasma gondii* infection modified kynurenine pathway activity and increases soluble mutant huntingtin, promoting striatal degeneration in the YAC128 mouse model of Huntington's disease. *BioRxiv 550624*; doi: 10.1101/550624. (preprint)

5. Donley DW, Nelson R*, Gigley JP, Fox JH. Mutant huntingtin expression alters the response of cultured microglial cells to lipopolysaccharide and interleukin-6. *BioRxiv 550913*; doi: 10.1101/550913. (preprint)

*denotes undergraduate student

Invited Talks

Oct 2020 Integrating Bioinformatics Education Seminar Series; University of Arkansas – Little Rock

Title: Application of proteomics to engage students and reduce barriers to entry for undergraduate research

June 2020 Harding University Summer Student Journal Club; Searcy, AR

Title: Proteomics as a method to improve our understanding of microglial function

Jan 2020 Unity Health Medical Resident Continuing Education Seminar; Searcy, AR

Title: Dynamic functions of microglia in response to neurological disease

Conference Abstracts

Genry, L*; Wilcox, A*; Donley, DW. (2019) Free radical signaling promotes a pro-inflammatory phenotype in microglial cells. *Arkansas INBRE conference, Oct 2019, Fayetteville, AR.; Council for Undergraduate Research Conference, Mar 2020, Bozeman, MT.*

Wilcox, A*; Genry, L*; Donley, DW. (2019) Extracellular TDP-43 alters microglial responses to polarization. *Arkansas INBRE conference, Oct 2019, Fayetteville, AR.; Arkansas Posters at the Capitol, Feb 2020, Little Rock, AR; Council for Undergraduate Research Conference, Mar 2020, Bozeman, MT.*

Keisling, C*; Harmsworth, A*; Donley, DW. (2020) Time-dependent recovery of microglial phagocytosis after ethanol exposure. *Arkansas Posters at the Capitol, Feb 2020, Little Rock, AR; Council for Undergraduate Research Conference, Mar 2020, Bozeman, MT.*

Bracking, N*; Donley, DW. (2020) Aggregate-prone tau impairs microglial function. *Council for Undergraduate Research Conference, Mar 2020, Bozeman, MT.*

* denotes undergraduate student

11 first authored conference abstracts presented regional and national conference including: Society for Neuroscience (Washington D.C.), Huntington's Study Group Annual Meeting (Denver, CO), Front Range Neuroscience (Fort Collins, CO), Meeting of the Western Region IDeA Network (Jackson, WY), Rocky Mountain American Society of Microbiology (Denver, CO), National IDeA Symposium for Biomedical Research Excellence (Washington D.C.), Keystone Symposium on Central Mechanisms of Neurodegeneration (Keystone, CO), and Keystone Symposium on Neuroinflammation (Taos, NM)

Undergraduate Students Supervised

Harding University

Alicen Wilcox (Jan 2019 – present)

Major: Molecular and Cellular Biology; Project: Microglial responses to extracellular TDP-43

Awards: 1st place oral presentation, Arkansas INBRE conference (Nov 2020); 2nd place invited oral presentation, Arkansas INBRE conference (Nov 2019); Undergraduate research award, Arkansas Academy of Sciences (March 2019)

Bre Bishop (Nov 2020 – present)

Major: Cognitive Neuroscience; Project: Microglial recovery after ethanol exposure

Savannah Ewing (May 2020 – present)

Major: Cognitive Neuroscience; Project: Microglial oxidative stress in response to disease

Jason Hendrix (Aug 2020 – Dec 2020)

Major: Math; Project: The role of NMES1 in microglia

Awards: Arkansas INBRE Proteomic Voucher Award (Sept 2020)

Landon Genry (Jan 2019 – Aug 2019) [enrolled in Neuroscience PhD program]

Major: Molecular and Cellular Biology; Project: Microglial response to beta-amyloid

Awards: 3rd place poster presentation, Arkansas INBRE conference (Nov 2019); Department of Biology 'MVP' award for best senior student presentation (Spring 2020)

Claire Keisling (Jan 2019 – July 2019) [enrolled in Medical School]

Major: Molecular and Cellular Biology; Project: Microglial recovery after ethanol exposure

Awards: Department of Biology 'MVP' award for best senior student presentation (Fall 2019)

Allison Harmsworth (Jan 2019 – July 2019) [enrolled in Medical School]

Major: Molecular and Cellular Biology; Project: Microglial recovery after ethanol exposure

Nathan Brackins (June 2019 – Dec 2019)

Major: Molecular and Cellular Biology; Project: Impact of tau aggregates on microglial function

Amie Brint (Jan 2019 – March 2019)

Major: Biology; Project: Studying environmental influence on neurological disease using *C. elegans*

Jonathan Jordan (Sept 2018 – Jan 2019)

Major: Biology; Project: Characterizing the effects of LPS and Poly I:C on microglial activation

*All Harding University students listed are independent research students. A total of 31 students across five semesters supervised as a part of a research-based course (Neuroscience Research)

University of Wyoming

Reed Campbell (Aug 2017 – July 2018, undergraduate WY-INBRE fellow)

Major: Kinesiology; Project: Characterizing the effect of *Toxoplasma gondii* on hippocampal volume

Marley Realing (Sept 2016 – July 2018, undergraduate WY-INBRE fellow)

Major: Microbiology; Project: Characterizing the effect of iron on microglial cell activation

Ryan Nelson (Jan 2016 – Feb 2017, undergraduate WY-INBRE fellow)

Major: Physiology; Project: Studying the impact of mutant huntingtin on microglial responses to LPS

Carly Stewart (Jan 2015 – May 2015)

Major: Microbiology; Project: Developing an overexpression system for indoleamine-2,3-dioxygenase

David Rach (Jan 2015 – May 2015)

Major: Microbiology; Project: Developing a method for bone marrow chimerism using busulfan

Andy Olson (Jan 2014 – Dec 2014)

Major: Psychology; Project: Validating a functional indoleamine-2,3-dioxygenase enzymatic assay

Volunteer and Service

Director of the Harding University Research Certificate Program (2020 – present)

Arkansas INBRE grant panel reviewer (2020)

Arkansas INBRE poster reviewer (2018 - present)

Journal of Emerging Investigators Reviewer (2017 – present)

Council for Undergraduate Research Poster Abstract/Conference Proceedings Reviewer (2016 – present)

Brain Awareness Night Community Outreach, University of Wyoming (2016 & 2017)

Wyoming State Science Fair Judge (2014, 2015 & 2017)

Neuroscience Program Webmaster, University of Wyoming (2013 – 2017)

Memberships

Council for
Undergraduate Research



Faculty for
Undergraduate
Neuroscience



Society for
Neuroscience



Inclusive Environment and
Metrics in Biology
Education and Research

