Adam R. Filipowicz

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Education

Ph.D. in Neuroscience **2017-2022**
Oregon Health & Science University
Dissertation: Neural and molecular mechanisms of pathogen avoidance in *Caenorhabditis elegans*

B.A. in Biological Sciences
University of Chicago **2010-2014**
Specialization in Neuroscience

Publications

Filipowicz AR, Lalsiamthara J, Aballay A. Dissection of a sensorimotor circuit underlying pathogen aversion in *C. elegans*. *BMC Biology*. 10.1186/s12915-022-01424-x. (2022).

Filipowicz AR, Aballay A, Singh V. Cellular and Organismal Responses to Infections in *Caenorhabditis elegans*. *Encyclopedia of Cell Biology, Second Edition* (2022).

Filipowicz AR, Lalsiamthara J, Aballay A. TRPM channels mediate learned pathogen avoidance following intestinal distention. *eLife*. 10.7554/eLife.65935. (2021).

- Highlighted by Ronan E, Xiao R, and Xu S. TRP channels: intestinal bloating TRiPs up pathogen avoidance. *Cell Calcium*. 10.1016/j.ceca.2021.102446. (2021).

Bohannon DG, Ko A, **Filipowicz AR**, Kuroda MJ, Kim WK. Dysregulation of sonic hedgehog pathway and pericytes in the brain after lentiviral infection. *J Neuroinflammation*. 10.1186/s12974-019-1463-y. (2019).

Lindgren AA, **Filipowicz AR,** Hattler JB, Sim SO, Chung HK, Kuroda MJ, Johnson EM, Kim WK. Lentiviral infection of proliferating brain macrophages in HIV and simian immunodeficiency virus encephalitis despite alpha motif and histidine-aspartate domain-containing protein 1 expression. *AIDS*. 10.1097/qad.0000000000001793. (2018).

Filipowicz AR, McGary CM, Holder GE, Lindgren AA, Johnson EM, Sugimoto C, Kuroda MJ, Kim WK. Proliferation of Perivascular Macrophages Contributes to the Development of Encephalitic Lesions in HIV-Infected Humans and in SIV-Infected Macaques. *Sci Rep*. 10.1038/srep32900. (2016).

Butcher MJ, **Filipowicz AR,** Waseem TC, McGary CM, Crow KJ, Magilnick N, Boldin M, Lundberg PS, Galkina E. Atherosclerosis-Driven Treg Plasticity Results in Formation of a Dysfunctional Subset of Plastic IFNgamma+ Th1/Tregs. *Circ Res*. 10.1161/circresaha.116.309764. (2016).

Kim WK, McGary CM, Holder GE, **Filipowicz AR,** Kim MM, Beydoun HA, Cai Y, Liu X, Sugimoto C, Kuroda MJ. Increased Expression of CD169 on Blood Monocytes and Its Regulation by Virus and CD8 T Cells in Macaque Models of HIV Infection and AIDS. *AIDS Res Hum Retroviruses*. 10.1089/aid.2015.0003. (2015).

Research Experience

Oregon Health & Science University
Graduate Student, Neuroscience Graduate Program, Department of Molecular Microbiology & Immunology
2017-2022

- Under the supervision of Dr. Alejandro Aballay, conducted research on neuronal and intestinal sensory pathways regulating pathogen avoidance in *C. elegans*

Eastern Virginia Medical School
Research Assistant, Department of Microbiology and Molecular Cell Biology
2014-2017

- Under the supervision of Dr. Woong-Ki Kim, conducted research on the role of brain macrophages in AIDS neuropathogenesis using the rhesus macaque SIV model of infection

University of Chicago
Undergraduate Research Assistant, The College
2012-2013

- Under the supervision of Dr. Sarah London, conducted research on the social behavior of zebra finches with a focus on developmental neurobiology and neurogenomics

Conference Presentations

Filipowicz AR, Lalsiamthara J, Aballay A. TRPM channels mediate learned pathogen avoidance following intestinal distention. *23rd International C. elegans Conference*. **Poster** (Virtual, 2021).

Filipowicz AR, Aballay A. Regulation of early avoidance behavior in response to Gram-positive pathogens by *tax-2* and *npr-1* expressing neurons in *C. elegans*. *22nd International C. elegans Conference*. **Poster** (Los Angeles, 2019).

Filipowicz AR. *et al.* Differences between Pediatric and Adult Rhesus Macaques in CNS Myeloid Cell Populations During SIV Infection. *34th Annual Symposium on Nonhuman Primate Models for AIDS*. **Poster** (New Orleans, 2016).

Filipowicz AR. *et al.* Increased Expression of CD169 on Blood Monocytes and its Correlation with Disease Status in Macaque Models of HIV Infection and AIDS. *6th Annual Virginia Regional Herpesvirus Symposium*. **Poster** (Norfolk, 2015).

Filipowicz AR. *et al.* Proliferation of perivascular macrophages in normal and encephalitic brains of adult macaques: a mechanism of HIV/SIV persistence. *6th Semi-Annual VUARC Meeting*. **Oral** (Virginia Beach, 2015).

Teaching Experience

Oregon Health & Science University

Lecturer
Summer Intern Program (Summer 2022)

- Lectured on Genetics for the 21st Century: Beyond Mendel
- Used culturally relevant pedagogy to emphasize the culturally laden nature of our past and present genetics knowledge

Graduate Teaching Assistant
Cellular and Molecular Neurobiology (Fall 2018)

- Assisted first year graduate students in core neurobiology course
- Attended all lectures, held office hours, and led study sessions

Lecturer
Summer Neuroscience Course (Summer 2018)

- Lectured on model organisms in a course for diverse undergraduate students
- Developed quiz questions to grow students knowledge of how model organisms are used in neurobiological research

University of Chicago

Undergraduate Teaching Assistant
Principles of Physiology (Fall 2013)

- Assisted biology majors in a weekly computer lab using the MATLAB environment
- Attended all lectures and graded weekly assignments; held regular one-on-one office hours

Undergraduate Teaching Assistant
Introduction to Quantitative Modeling for Biology (Spring 2013)

- Assisted first-year biology majors in weekly computer labs using the R programming language
- Graded weekly assignments; held regular one-on-one office hours

Awards & Honors

Oregon Health & Science University

Sears Award for Outstanding Presentation, 2021
Promising Scholar Award, 2017

University of Chicago

Dean's List, 2010-2014; General Honors, 2014

University Service

Oregon Health & Science University

Graduate Admissions Working Group, Racial Equity and Inclusion Center
Graduate Student Representative, 2022

Graduate Researchers United, AFSCME Local 402
Vice President of Organizing, 2020-2021

Graduate Student Organization
Vice President, 2019-2020

All-Hill Council
Graduate Student Representative, 2018-2020

Research Interests

My broad interest is in interactions between genes, organisms, and the environment. Specifically, during my PhD work I examined the neuronal regulation of behavioral immunity, using the simple model organism *C. elegans* to interrogate molecular components of pathogen avoidance. In my postdoctoral work, I will be expanding my research past neuroimmune interactions by combining techniques from neurobiology, environmental toxicology, and genomics/epigenomics. In one project, I will examine how pesticide exposure in *C. elegans* affects neuronal degeneration and subsequent behavioral abnormalities. In a separate project, I will examine whether alcohol exposure and metabolism in *C. elegans* affects histone acetylation in the nervous system and a transgenerational increase in alcohol preference. My general aim is to contribute to a systems-level understanding of the complex reciprocal relationships between what Richard Lewontin called the "Triple Helix: Gene, Organism, and Environment".

Research Skills

C. elegans maintenance and genetics; Molecular cloning; PCR/qPCR; RNAi; Behavioral assays; Immunohistochemistry; Fluorescent microscopy; Confocal microscopy; Flow cytometry; Laser capture microdissection; Multiplex immunoassay; Python; R; MATLAB; SQL; Excel; ImageJ; FlowJo; FCSExpress; JWatcher; GraphPad Prism

Professional References

- Postdoctoral Research Mentor: Patrick Allard, Associate Professor and Vice Chair of Undergraduate Education, Institute for Society and Genetics, UCLA; pallard@ucla.edu; (310) 825-5257
- Doctoral Research Mentor: Alejandro Aballay, William A. Whitsell Professor and Chair, Molecular Microbiology and Immunology Department, Oregon Health & Science University; aballay@ohsu.edu; (503) 494-2433
- Dissertation Advisory Committee Chair: Kelly Monk, Co-Director and Senior Scientist, Vollum Institute, Oregon Health & Science University; monk@ohsu.edu; (503) 494-2976