Adam R. Filipowicz

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Education

Ph.D. in Neuroscience **2017-present**
Oregon Health & Science University

Dissertation: Neuronal and molecular mechanisms of pathogen avoidance in *Caenorhabditis elegans* (June 2022)

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

Specialization in Neuroscience

Publications

Filipowicz AR, Lalsiamthara J, Aballay A. Identification of a neural circuit that regulates reflexive aversion to odors and pathogenic bacteria in *C. elegans* using whole-brain simulation (In preparation).

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

Filipowicz AR, Lalsiamthara J, Aballay A. TRPM channels mediate learned pathogen avoidance following intestinal distention. *eLife*. 10:e65935 (2021).

- Highlighted by Ronan E, Xiao R, and Xu S. TRP channels: intestinal bloating TRiPs up pathogen avoidance. *Cell Calcium*. 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* **16,** 86 (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*. 15;32(8), 965-974 (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*. 6, 32900 (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*. 119, 1190-1203 (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*. 31(7), 696-706 (2015).

Research Experience

Oregon Health & Science University
Graduate Student, Neuroscience Graduate Program, Department of Molecular Microbiology & Immunology
2018-Present

- 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

Research Interests

My broad interest is in interactions between genes, organisms, and the environment. Specifically, during my PhD work I am examining the neuronal regulation of behavioral immunity, using the simple model organism *C. elegans* to interrogate molecular components of pathogen avoidance. Going forward I am interested in expanding my research past neuroimmune interactions by combining techniques from neurobiology, quantitation of behavior, and genomics/epigenomics, examining the impact of environmental exposures at molecular, cellular, and organismal levels. The general aim is to gain a systems-level understanding of the complex reciprocal relationships between what Richard Lewontin called the “Triple Helix: Gene, Organism, and Environment”.

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

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 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 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