Isabel D'Alessandro

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EDUCATION

Harvard University, Cambridge MA (2021-Present)
Ph.D. Program in Neuroscience

Wellesley College-Wellesley, MA (2014-2018)
Bachelor of Arts, *summa cum laude*
Major in Neuroscience, Minor in Computer Science

RESEARCH EXPERIENCE

Harvard Medical School 2018- 2020
Research Assistant, Lab of Dr. Rachel Wilson
Specialize in computational neuroanatomy. Collaborated on two projects studying the integration of sensory cues in the *Drosophila* heading compass. Assist on various other projects in the lab.

Wellesley College 2016-2018
Undergraduate Research Assistant, Lab of Dr. Sara Wasserman
Investigated the integration of visual and thermal stimuli by *Drosophila* in flight, and the effects of hydration state on behavioral responses to water and visual stimuli.

Stanford University 2017
Amgen Scholar, Stanford Summer Research Program, Lab of Dr. Miriam Goodman
Performed two-electrode voltage clamp recordings in *Xenopus* oocytes to functionally and pharmacologically characterize the pore-forming subunits of mechanosensitive ion channels expressed in *C.elegans* touch receptor neurons

Harvard Medical School/Brigham and Women's Hospital 2016
Summer Research Fellow, Lab of Dr. Francisco Quintana
Funding through the Multiple Sclerosis Society- Buegeleisen Family MS Undergraduate Research Fellowship.
Investigated the role of the immunoglobulin protein Basigin as an astrocyte regulator in a mouse model of multiple sclerosis

Wellesley College 2015 –2016
Undergraduate Research Assistant, Lab of Dr. Michael Wiest
Performed microelectrode array recordings in rats to study the role of medio-dorsal frontal and posterior parietal neurons in auditory detection tasks.

Princeton Neuroscience Institute 2015
Summer Research Fellow, Lab of Dr. Mala Murthy
Summer Undergraduate Research Program in Molecular and Quantitative & Computational Biology
Conducted behavioral experiments to investigate locomotor tuning to auditory features of *Drosophila* courtship song. (Deutch et al, 2018)

AWARDS

2020 National Science Foundation Graduate Research Fellowship (NSF GRFP)
2018 The Klein Prize in Neuroscience in Memory of Louise Edwards
2018 Durant Scholar, *summa cum laude* , Wellesley College
2018 Sigma Xi Scientific Research Society Nomination
2018 Camellia Student Leadership Awards- Community Partnership Leadership Award (for S.L.A.M)
2017 Cosyne (Computational & Systems Neuroscience Conference) Undergraduate Travel Grant
2016 Buegeleisen Family MS Undergraduate Research Fellowship
2015 Wellesley College First Year Chemistry Award

PUBLICATIONS

Fisher, Y.E., Marquis, M., **D'Alessandro, I.**, Wilson, R.I., (2022) Dopamine promotes head direction plasticity during orienting movements. *Nature*. doi: 10.1038/s41586-022-05485-4

Fechner, S., **D'Alessandro, I**., Wang, L., Tower, C., Tao, Li, Goodman. MB. (2021) DEG/ENaC/ASIC channels vary in their sensitivity to anti-hypertensive and non-steroidal anti-inflammatory drugs. *J Gen Physiol.* doi:10.1085/jgp.202012655

Rayshubskiy A, Holtz SL, **D'Alessandro I**, Li AA, Vanderbeck QX, Haber IS, Gibb PW, Wilson RI (2020) Neural control of steering in walking *Drosophila.* bioRxiv: 2020.04.04.024703

Okubo. T.S., Patella, P., **D'Alessandro, I**., Wilson, R.I. (2020) A neural network for wind-guided compass navigation. *Neuron* doi: 10.1016/j.neuron.2020.06.022

Fisher, Y.E., Lu, J., **D'Alessandro, I.**, Wilson, R.I. (2019) Sensorimotor experience remaps visual input to a heading-direction network. *Nature* doi:10.1038/s41586-019-1772-4

POSTERS AND PRESENTATIONS

Presentation: **D'Alessandro, I.**, Fisher, Y.E., Marquis, M. Dopaminergic modulation of plasticity in the *Drosophila* compass network. Presentation to NIH Program Officers and External Advisory Board members for the FlyLoops U19 Team Project Grant, 2021

Poster: **D'Alessandro, I.**, Park, E.J., Wasserman, S.M. Visuomotor reflexes differ across *Drosophila* species. Poster presentation at The Society for Neuroscience Meeting 2018

Presentation: Integration of visual and thermal stimuli by *Drosophila* in flight. Oral presentation at the Tanner Conference at Wellesley College; 2018 Apr; Wellesley, MA.

Poster: Fechner S, Loizeau F, Nekimken AL, **D'Alessandro** I, Pruitt BL, Goodman MB (2018) Characterization of DEGT-1: A DEG/ENaC/ASIC Ion Channel Subunit Involved in Touch Sensation. Biophys J 114:157

Poster: **D'Alessandro, I.,** Fechner, S., Goodman, M.B. Characterization of the drug response properties of mechanosensitive ion channel subunits. Poster presented at: Stanford Summer Research Program Poster Session; 2017 Aug; Stanford, CA.

Presentation: Characterization of the subunit composition and drug response properties of mechanosensitive ion channels. Oral presentation at Stanford Summer Research Program Symposium; 2017 Aug; Stanford, CA.

Poster: Clemens, J., Deutch,D., **D'Alessandro, I.,** Murthy, M. Behavioral and neural tuning for acoustic communication signals in *Drosophila*.[abstract]. In: Computational and Systems Neuroscience Conference; 2016 February 25-28; Salt Lake City, UT: Abstract nr II-85.

Poster: **D'Alessandro,** A., Clemens, J., Murthy, M. The Role of Acoustic Signal Recognition in the Control of *Drosophila* Female Behavior. Poster presented at: Princeton Summer Undergraduate Research Program in Molecular and Quantitative & Computational Biology Poster Session; 2015 Aug; Princeton, NJ.

ACADEMIC LEADERSHIP

Wellesley College Neuroscience Club, *President* Aug 2015- June 2018
Organized meetings, lectures, journal clubs, and other events for students interested in Neuroscience at Wellesley College; provided mentorship to students in the Neuroscience program

Wellesley College Neuroscience Department Jan 2018 - June 2018
Computational Neuroscience Grader
Graded weekly problem sets for the Computational Neuroscience (NEUR 335) course

Wellesley Quantitative Analysis Institute Intern Sept 2017 – December 2017
Python/MATLAB Tutor for the Sciences
Held weekly office hours for students in science courses that rely upon computation (upper level physics, chemistry), and worked on developing MATLAB and Python tutorials for these classes.

Brains Minds and Machines: The Science of Intelligence Course Sept 2016- May 2017
Teaching Assistant, Curriculum Developer
Developed lab activities (MATLAB GUIs) for a new course offered Spring 2017 at Wellesley College through the Neuroscience and Computer Science departments (NEUR/CS 125) on the subject of human and machine intelligence. Assisted in the teaching of the lab during the semester.

Pforzheimer Learning and Teaching Center Aug 2015- June 2017
Academic Peer Tutor
Served as a general peer academic advisor for a group of 153 Wellesley College students and provided particular academic mentorship for first-year students; planned and delivered workshops throughout the year

OUTREACH

Harvard Health Professions Recruitment and Exposure Program (HPREP) September 2021 - Present
Lecturer, Discussion Leader
HPREP is a high school science enrichment program aimed at recruiting local high school students, particularly those from underrepresented backgrounds, into science and medicine. As part of this program, I developed and led lecture sessions focused on biology and neuroscience, and served as a discussion leader to facilitate interactive discussion about the course content amongst students.

Science Learning and Mentoring (S.L.A.M) June 2017- June 2018
Co-Founder, Co-President
Co-founded and directed this organization offering low-cost, interactive, experimental after-school science curricula. SLAM partners with local elementary and middle schools to offer engaging after-school

programming featuring curricula written, designed, and taught by a mentoring team of college science students. This program has served over 75 students to date.

SeedKit (now STEMKit) Sept 2016-2019
Curriculum Developer, Executive Board Member
Develop curricula, and design experiments as part of SeedKit (Science Education Equity Development Kit), a startup which aims to create 'labs in a box', practical experimental laboratory resources that are low-cost, reusable, sustainable, and self-contained for secondary school students in low-resource classrooms

Science Club for Girls Sept 2014-June 2017
Mentor Scientist, Curriculum Developer
Lead weekly lessons for a class of 12 2nd-4th grade girls about a variety of topics in STEM and directed interactive experiments. Wrote and piloted curricula in biochemistry and neuroengineering

Wellesley Partners in Health Engage Aug 2014- May2017
Education and Community Building Lead
Organized lectures, meetings, and other events to educate and engage the community at Wellesley College surrounding issues of global health inequity; directed advocacy and outreach efforts for the campus chapter of Partners in Health Engage, an organization focused on supporting the work of the global health-focused nonprofit Partners in Health at a grassroots level