

# 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. Under Review.

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 2<sup>nd</sup>-4<sup>th</sup> 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- May 2017

***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