

# Daniel Pollak

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He, him, his

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## Education

SEPTEMBER 2020

**Ph.D., Neurobiology / California Institute of Technology**

Advisor: Dr. Markus Meister

MAY 2019

**B.S., Neuroscience; minor, Computer Science / University of Massachusetts, Amherst**

Thesis: "Lateral Inhibition in Zebra Finch Auditory Processing Using a Novel Apparatus for Electrophysiology"

Advisor: Dr. Luke Ramage-Healey

GPA: 3.87, *summa cum laude*, *Phi Beta Kappa*

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## Publications

Pollak, D. J., Feller, K. D., Serbe, É., Mircic, S., & Gage, G. J. (2019). An electrophysiological investigation of power-amplification in the ballistic Mantis Shrimp punch. *J Undergrad Neurosci Educ.* 17(1), T11-T18.

Pollak, D. J. (2019). Lateral Inhibition in Zebra Finch Auditory Processing Using a Novel Apparatus for Electrophysiology. Undergraduate thesis manuscript.

Gervais, N. J., Ramage-Healey, L., Starrett, J. R., Pollak, D. J., Mong, J. A., & Lacreuse, A. (2018). Adverse effects of aromatase inhibition on the brain and behavior in a non-human primate. *The Journal of Neuroscience*, 39(12), 1–11. <https://doi.org/10.1523/JNEUROSCI.0353-18.2018>

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## Research Experience

1 JUNE 19 – ONGOING

**Senior Research Fellow/ Backyard Brains, Munich, Germany and Belgrade, Serbia**

Advisor: Dr. Étienne Serbe

Applied to NSF's Graduate Student Research Program (GRFP) grant for this project. Designed low-cost, DIY setup for acquiring electroretinograms in various insects at the Max Planck Institute in Munich, Germany, and at the Center for the Promotion of Science in Belgrade, Serbia. Ongoing project to develop a citizen science initiative for bringing non-scientists to the cutting edge of insect neuroscience and ecology. Presented findings at FENS Regional Meeting in Belgrade, Serbia.

20 MAY 18 – 1 AUGUST 18

**Summer Research Fellow/ Backyard Brains, Ann Arbor**

Advisor: Dr. Gregory Gage and Dr. Étienne Serbe

Developed a low-cost, DIY technique for recording electromyograms in mantis shrimp and other arthropods. Published a technical paper on a laboratory exercise using this technique in mantis shrimp, crickets, and cockroaches. Presented findings at FRM 2019, the Munich Science Slam, Petnica Science Summer School, and at the Max Planck Institute for Neurobiology. More information is available [online](#).

2015 – ONGOING

### **Research Assistant / University of Massachusetts, Amherst**

Advisor: Dr. Luke Remage-Healey

#### **Zebra finch microdrive (2017-2020)**

Designed and implanted lightweight and low-cost drivable electrode array (microdrive) for zebra finches (*Taeniopygia guttata*) and small animals, including printed circuit boards and 3D printed components. See [thesis manuscript](#). Work is ongoing to study differences between passive listening and self-listening during vocalization in NCM. Future iterations will integrate microdialysis and optogenetics. Code for [song playback](#) and [analysis](#).

#### **Marmoset as a model for aromatase inhibition in humans (2015-2016)**

Letrozole inhibits estrogen synthesis and can be used to treat breast cancer, but women often report cognitive side effects. Female marmosets can model changes in estrogen synthesis in women. Using IgorPRO and MATLAB, we found that letrozole has a sex-specific impact on the current-firing rate (IR) and current-voltage (IV) curves in marmoset CA1 neurons. <https://github.com/zeebie15/Igor>

2013 – 2015

### **Research Assistant / Albert Einstein College of Medicine**

Advisor: Dr. Kamran Khodakhah

A circuit spanning cerebellum, VTA, and PFC may be involved in autism and/or schizophrenia. To validate this circuit in mice, I administered viral vectors and optogenetically evoked neural activity in mice.

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## **Grants**

2020-2021

### **Chen Graduate Innovator Grant**

Provided initial funding ERGo! initiative, putting electroretinograms in the hands of young citizen scientists.

2020-2021

### **Predoctoral Training in Quantitative Neuroscience (PQTN) training grant fellow**

NIH-funded grant to expose trainees to quantitative neuroscience (NIH/NRSA training grant, T32 NS105595).

2017, 2018

### **Commonwealth Honors College Research Grant**

Funded custom-printed circuit boards for microdrive and miscellaneous expenses for electrophysiology.

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## **Presentations**

Hit me mantis shrimp one more time. (2019). Presented for the Fourth Munich Science Slam, at Petnica Science Summer School, and at the Max Planck Institute for Neurobiology.

Lateral Inhibition in Zebra Finch Auditory Processing with Novel Microdrive. (2019). Presented for 2019 NEURON Conference at Quinnipiac University.

An Optogenetic Investigation of Cerebellum-VTA Pathway Inputs to the Prefrontal Cortex and Nucleus Accumbens. (2015). Presented for Intel Science Talent Search and the Siemens Competition.

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## Activities

Hacking: I came to computer science by way of personal tinkering projects. One of my favorite projects connects an Arduino-based smartwatch to a smartphone via Bluetooth (BLE). <https://github.com/hamdanspam/Beantalker>

Volunteering: I made community breakfast on Wednesday mornings at the Amherst Unitarian Universalist Meetinghouse from 2018 to 2020.

Ballroom dance: I studied Ballroom, Latin, and social dance styles and had the opportunity to lead several introductory group lessons aimed at laypeople, as well as mentoring beginners.

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## Awards

2021

### Chen Institute Diversity & Inclusion Award

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## Outreach

2021

### ERGo!

Designed and implemented citizen science initiative for students holding underrepresented identities in neuroscience to perform electroretinograms using Backyard Brains equipment.

2021

### Backyard Brains Blitz 2021

Designed and implemented a six-week summer initiative for introducing students holding underrepresented identities in science to opportunities for pursuing novel neuroscience research. Collaborators: the Upward Bound program for high schoolers at Pasadena City College, Backyard Brains, and the Caltech Center for Teaching, Learning, and Outreach.

2020

### Visiting Scientists

Designed and implemented short science lessons for three third-grade classes at Madison elementary in Pasadena

2019-2021

### Letters to a Pre-scientist

Corresponded with a young pen pal in public school about being a scientist.