

Doctoral Dissertation and Research Experience

1 Neitz lab

1.1 Mentor Dr. Jay Neitz

1.2 Role Summer intern, Neitz lab, University of Washington medical school, 2011-2012

1.3 Description My first research experiences were summer internships in the Neitz lab during high school. I worked with postdoctoral fellows and graduate students in the lab to validate a mouse model for introduction of new photo-receptors in adult animals to study color vision neural circuitry function. As part of this project I worked on a color discrimination test for mice, took confocal images of mouse retinas, and measured electroretinograms of mice after pilot experiments.

1.4 Results

1.5 Connection to fellowship

Desmarais, John J. *Photopigment expression and function using targeted knock-in/knock-out mice:*

Intravitreal injections. Junior Science & Humanities Symposia, Westchester. Katonah, NY, 2012.

Desmarais, John J. *Photopigment expression and function using targeted knock-in/knock-out mice:*

Intravitreal injections. Junior Science & Humanities Symposia, Upstate New York. Albany, NY, 2012.

Desmarais, John J. *Photopigment expression and function using targeted knock-in/knock-out mice:*

Intravitreal injections. Westchester Science and Engineering Fair. Tarrytown, NY, 2012.

2 STEM innovation program

2.1 Mentor Drs. Noah Graham, Frank Swenton, Jeremy Ward

2.2 Role Researcher, STEM innovation program, Middlebury College, 2013

2.3 Description

3 Gibson lab

3.1 Mentor Drs. Matthew C. Gibson, Aissam Ikmi

3.2 Role Stowers Summer Scholar, Gibson lab, Stowers Institute for Medical Research, 2014

3.3 Description

3.4 Results

3.5 Connection to fellowship

4 Keasling lab

4.1 Mentor Drs. Jay Keasling, Victor Chubukov

4.2 Role Amgen Scholar, Keasling lab, Joint Bioenergy Institute, University of California, Berkeley, 2015

4.3 Description

4.4 Results

4.5 Connection to fellowship

Chubukov, Victor et al. "Engineering glucose metabolism of Escherichia coli under nitrogen starvation". In:

NPJ Syst Biol Appl 3 (Jan. 2017), p. 16035. ISSN: 2056-7189. DOI: 10.1038/npjjsba.2016.35.

5 Ward lab

5.1 Mentor Dr. Jeremy Ward

5.2 Role Researcher, Ward lab, Middlebury College, 2014-2016

5.3 Description

5.4 Results

5.5 Connection to fellowship

6 Savage lab - Studies of the CO₂ concentrating mechanism

6.1 Mentor Dr. David Savage

6.2 Role Graduate Student Researcher, Savage lab, University of California, Berkeley, 2016-2022

6.3 Description

6.4 Results

6.5 Connection to fellowship

7 Savage lab - Protein engineering

7.1 Mentor Dr. David Savage

7.2 Role Graduate Student Researcher, Savage lab, University of California, Berkeley, 2016-2022

7.3 Description

7.4 Results

7.5 Connection to fellowship

8 Savage lab - CRISPR tool development

8.1 Mentor Dr. David Savage

8.2 Role Graduate Student Researcher, Savage lab, University of California, Berkeley, 2016-2022

8.3 Description

8.4 Results

8.5 Connection to fellowship

9 Kinney lab

9.1 Mentor Dr. Justin Kinney

9.2 Role Computational Postdoctoral Fellow, Kinney Lab, Cold Spring Harbor Laboratory, 2023

9.3 Description

9.4 Results

9.5 Connection to fellowship

Goals for the Fellowship and Training

10 Overall training goals

11 Skills to be enhanced

12 Preparation for career plans

Activities Planned Under This Award