Elisa Visher

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# Education

## University of California, Berkeley Fall 2016-Present

PhD in Integrative Biology

Advisor: Mike Boots
Thesis: "*Effects of Spatio-Temporally Structured Host Genetic Diversity on Infectious Disease Evolution*" (Proposed)
Qualifying Exam Committee: Britt Koskella, Michael Shapira, Carl Boettiger, and James Holland Jones (Passed December 2017)
Dissertation Committee: Mike Boots, Britt Koskella, Erica Bree Rosenblum

## Yale University Fall 2010-Spring 2014

BS Biology (Intensive)/BA Anthropology (Honors)

GPA: 3.57/4.0

Biology Advisor: Paul Turner

Biology Thesis: "*Characterization and Experimental Evolution of Thermotolerance in the Cystoviridae Family of Bacteriophage Virus*"

Anthropology Advisor: Brenda Bradley

Anthropology Thesis: "*Evidence of Molecular Aging in the Mitochondria of Sifaka Lemurs"*

Relevant Coursework: Studies in Evolutionary Medicine; Primate Genomics; Infectious Diseases; Evolution and Medicine; Topics in Anthropological Genetics; Biology, Pathogenesis, and Natural History of HIV/AIDS

# Publications

Iritani, R., **Visher, E.,** & Boots, M. (2019). The evolution of stage‐specific virulence: Differential selection of parasites in juveniles. *Evolution Letters*, *3*(2), 162-172.

**Visher, E.\***, Whitefield, S. E.\*, McCrone, J. T., Fitzsimmons, W., & Lauring, A. S. (2016). The mutational robustness of Influenza A virus. *PLoS pathogens*, *12*(8), e1005856.

# Appointments

### NSF Graduate Research Fellow, boots Lab, uc Berkeley Fall 2017-Present

Funded on my thesis project "*Effects of Spatio-Temporally Structured Host Genetic Diversity on Infectious Disease Evolution*"

### Graduate student instructor, uc Berkeley Fall 2016-spring 2017

Graduate student instructor for IB35AC: Human Biological Variation in Fall 2016 and IB114: Infectious Disease Dynamics in Spring 2017

### Research technician, University of Michigan Fall 2014-spring 2016

Worked as a research technician in Adam Lauring’s lab in the Department of Infectious Diseases at University of Michigan on a project studying mutational robustness of Influenza A.

### Research Assistant, Yale University Fall 2011-Fall 2013

Worked as a research assistant in Brenda Bradley’s Primate Molecular Genomics Lab at Yale University on a project studying microsatellite genotyping of chimpanzees from fecal samples.

# Grants and Awards

### external

NSF Graduate Research Fellowship, Awardee Spring 2017

NSF Graduate Research Fellowship, Honorable Mention Spring 2016

### Internal

Summer Research Award, Integrative Biology Spring 2018

GRAC Conference Travel Grant, Integrative Biology Spring 2018

Graduate Division Conference Travel Grant, UC Berkeley Spring 2018

Peter and Marion Schwartz Family Foundation Prize for Most Outstanding Spring 2014

Senior Essay in Biological Anthropology

Mellon Forum Grant for Research Fall 2013

Tetelman Fellowship for International Research in the Sciences Spring 2013

Richter Fellowship for Summer Research Spring 2013

# Teaching

GSI for Field Genomics Short Course Summer 2019

Helped develop and lead a short course for UC Berkeley for rising sophomores that introduced undergraduates to research techniques in genomics from pipetting to sequencing and bioinformatics over ten days. Helped design and lead laboratory experiments and presented lectures on pipetting, dilution series, statistics, and finding research opportunities.

GSI for IB35 AC: Human Biological Variation Fall 2016

Taught sections in lab, lecture, reading discussion, and worksheet formats on topics including vertebrate cranial morphology, mitochondrial DNA ancestry methods, and discussions about bioethics. I also lead a Wikipedia editing project in my section.

GSI for IB 114 : Infectious Disease Dynamics Spring 2017

Taught sections in lecture, question and answer, and discussion formats on topics including virulence evolution, SIR models, and R0. Sections were also used to guide students through a final project of a research poster on a specific infectious disease. Also, helped develop the course and shape the course syllabus including developing project assignments and rubrics. Wrote multiple choice format quiz and exam questions designed to test core concepts of the class through analyzing graphs and applying concepts to scenarios.

Invited Lecture for IB 114: Infectious Disease Dynamics February 2017

Invited to give a short lecture on my previous research on mutational fitness effects in Influenza A and a short primer on evolutionary and epidemiological concepts in Influenza.

Invited Lecture for IB 114: Infectious Disease Dynamics February 2019

Invited to give a full lecture on my previous research on mutational fitness effects in Influenza A, a short primer on evolutionary and epidemiological concepts in Influenza, and an overview on why genome organization matters when studying infectious disease dynamics.

# Training Courses and workshops

Guarda Workshop in Evolutionary Biology June 2018

Menorca Field School in Archeology and Heritage Management Summer 2012

# Conference Posters and Presentations

2019. Evolution. Providence, RI. “Killing those you know: Host genotype specialization in an insect pathogen”. Talk.

2019. Ecology and Evolution of Infectious Disease. Princeton, NJ. “Killing those you know: Host genotype specialization in an insect pathogen”. Poster and Teaser Talk.

2019. Bay Area EEID. Stanford, CA. “The evolution of stage-specific virulence: Differential selection of parasites in juveniles”. Poster.

2018. Joint Meeting on Infectious Disease Dynamics at The Marine Mammal Center. Sausalito, CA. “When parasites are selected to kill the young”. Presentation.

2018. Evolution. Montpellier, France. “Evolution of resistance selects for longer development time, but not vice versa”. Poster.

# Undergraduate Research MEntorship

I have mentored students through the following programs: NIH Bridges to Baccalaureate (B2B), Undergraduate Research Apprentice Program (URAP), IB 99/199: Supervised Undergraduate Research, IB 191: Independent Projects, and IB 196: Honors Program Research.

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| Hannah Mahjoub | Independent Project: “Assaying Resistance on Variable Food Qualities in a Long-Term Evolution Experiment”.Presented a talk at Essig Brunch Undergrad Research Symposium 2019 | 2018-2019 |
| Nilbert Pascual | Independent Project: “Assaying Development Time on Variable Food Qualities in a Long-Term Evolution Experiment” | 2017-Pres |
| Tanya Kumar | Supervised Undergraduate Research Presented a talk at Essig Brunch Undergrad Research Symposium 2018Continued to a Honors project with another lab mentor then tech with Catherine Smith | 2017- 2018 |
| Annika Avery | Supervised Undergraduate ResearchPresented a poster at EEID 2019Continued to a research tech job with Seema Lakdawala | 2018-2019 |
| Nicole DeNamur | Supervised Undergraduate Research | 2018-Pres |
| Aren Yarcan | Supervised Undergraduate Research | 2018-Pres |
| Dina AlhassaniEdith Lai | Supervised Undergraduate ResearchSupervised Undergraduate Research | 2018-Pres2018-Pres |
| Yazmin Haro | B2B Project: "Does selection on development time also select for resistance?" Transferred to UC Davis after completing the Bridges program | 2018-2018 |
| Khadija Soufi | Honors Project: "Is resistance to infection in *plodia* dominated by epistatic, additive, or epigenetic inheritance?" Presented a poster at the Integrative Biology Honors Project Symposium 2018 | 2017-2018 |
| Vivian Hoang | URAP Project: "Plasticity of Resistance - Does Host Crowding Influence Resistance to Viral Infection in *Plodia*?"  | 2017-2018 |
| Zoha Momin | URAP Project: "Maternal versus Paternal Contributions to Trans-generational Immune Priming" Continued to research tech with Jason Kimata | 2017-2018 |
| Prempal Athwal | URAP Project: "Dispersal Rates - Do Host Genetics Influence Dispersal Distances/Rates in Plodia?" Presented a talk at Essig Brunch Undergrad Research Symposium 2019 | 2017-2018 |
| Claire Bang | Supervised Undergraduate Research | 2018-2018 |
| Aleeza Sheikh  | Supervised Undergraduate ResearchContinued to pharmacy school at USC | 2017-2018 |
| Zohal Sarwary | Supervised Undergraduate Research | 2017-2018 |

# outreach

### Skype a scientist spring 2019

Skyped with two science classrooms (one third grade, one seventh grade) about adaptation, the scientific method, microbial evolution, and various interesting science anecdotes and facts.

### panelist for integrative biology undergraduate students march 2017, 2018

Served on a panel about research and graduate school for the UC Berkeley Integrative Biology Undergraduates Students’ club

### Mentor for Bay Area Graduate Pathways to Stem Fall 2017

Mentor for Bay Area Graduate Pathways to STEM, a program that focuses on mentoring undergraduates from California universities who are interested in STEM graduate school and who can contribute to diversifying the graduate student body.

### student teacher for splash and sprout spring 2012-fall 2014, fall 2016

SPLASH is an education outreach program that organizes weekends of single lectures by college students for middle and high school students. SPROUT is an extension of SPLASH that organizes three-part lecture series on a variety of subjects for local middle and high- school students. I have lectured on human and infectious disease evolution for these programs.

### writer for yale scientific magazine march 2012-may 2013

I wrote several articles for the Yale Scientific on topics such as autoimmune disease, personal genetics, popular science books, and astronomy.

### talk for cum laude lecture series at viewpoint high school january 2014

I presented a lecture on the evolution of end-of-life diseases in humans to high school students with varied backgrounds in biology. Covered the basics of life history theory, antagonistic pleiotropy, and some evolutionary theories for the prevalence of BRCA1/2 alleles and the APOE4 allele.

### panelist for undergraduate women in science at yale october 2013

I was one of three undergraduate women chosen to serve on a panel discussing how to find undergraduate research opportunities, how to find funding for research, and how to build an undergraduate research resume.

# Professional Service

Developed and Co-Led an Integrative Biology Peer Mentoring Program Spring 2019- Present

Interview Weekend Coordinator  Fall 2018-Spring 2020

Integrative Biology Graduate Student Assembly  Fall 2018-Spring 2019

Graduate Representative on Vertebrate Paleontology Faculty Search Committee  Fall 2018

# Professional Training

Graduate Student Inclusivity Training & Certificate Program. February 2017

Integrative Biology Teaching Colloquium. Fall 2016

# Professional Affiliations

Society for the Study of Evolution