

Hannah Kim Frank, Ph.D.

hkfrank@stanford.edu

www.hkfrank.com

626-221-8292

EDUCATION

- Stanford University**, Stanford, CA (2017 - present)
Postdoctoral Researcher, Dept. of Pathology; Advisor: Scott Boyd
- Stanford University**, Stanford, CA (2011 – 2017)
Ph.D. in Biology (Ecology, Evolution and Population Biology track); Advisor: Elizabeth Hadly;
Dissertation title: Ecology, Evolution and Disease Risks of Bats in a Changing World
- University of Southern California**, Los Angeles, CA (2011)
Post-baccalaureate Premedical Program; coursework in microbiology and biochemistry
- Harvard College**, Cambridge, MA (2005 - 2009)
A.B. *summa cum laude* in Organismic & Evolutionary Biology with highest honors in field;
secondary field in Chemistry; awarded June 2009; Cumulative GPA: 3.94
- Council on International Educational Exchange**, Monteverde, Costa Rica (2007)
Coursework in tropical biology and agroecology; conducted independent research on predator
avoidance in foraging, nectar feeding bats

PUBLICATIONS

* Publication authored by an undergraduate mentee

- Frank HK**, Boyd SD, Hadly EA. 2018. Global fingerprint of humans on the distribution of *Bartonella* bacteria in mammals. *PLoS Neglected Tropical Diseases*. 12(11): e0006865.
- Zepeda Mendoza ML, Xiong Z, Escalera-Zamudio M, Runge AK, Thézé J, Streicker D, **Frank HK**, Loza-Rubio E, Liu S, Ryder OA, Samaniego Castruita JA, Katzourakis A, Taboad B, Löber U, Pybus OG, Li Y, Rojas-Anaya E, Bohmann K, Baez AC, Arias CF, Liu S, Greenwood AD, Bertelsen MF, White NE, Bunce M, Zhang G, Sicheritz-Pontén, T, Gilbert MTP. 2018. Hologenomic adaptations underlying the evolution of sanguivory in the common vampire bat. *Nature Ecology and Evolution*. 2(4): 659.
- *Perkins ML, **Frank HK**, Pauly JM, Hadly EA. 2017. Frequency shifting reduces but does not eliminate acoustic interference between echolocating bats: A theoretical analysis. *Journal of the Acoustical Society of America*. 142 (4): 2133.
- Frank HK**, Frishkoff LO, Mendenhall CD, Daily GC, Hadly EA. 2017. Phylogeny, traits and biodiversity of a Neotropical bat assemblage: Responses to deforestation are not conserved among close relatives. *American Naturalist*. 190 (2): 200-212.
- Solari KA, **Frank HK**, Frishkoff LO, Hsu JL, Kemp ME, Mychajliw AM, Hadly EA. 2016. Opportunity for some, extinction for others: the fate of species in the Anthropocene. *Evolutionary Ecology Research*. 17: 787-813.
- Frank HK**, Mendenhall CD, Judson SD, Daily GC, Hadly EA. 2016. Anthropogenic impacts on Costa Rican bat parasitism are sex-specific. *Ecology and Evolution*. 6 (14): 4898–4909.
- Frank HK**, Flanders JR. 2016. *Anolis aquaticus* (*Norops aquaticus*) sleep site fidelity. *Herpetological Review*. 47 (1): 131-132.
- *Judson S, **Frank HK**, Hadly EA. (2015). *Bartonella* are prevalent and diverse in Costa Rican bats and bat flies. *Zoonoses and Public Health*, 62(8): 609-17, doi: 10.1111/zph.12188
- Muñoz MM, Crandell KE, Campbell-Staton SC, Fenstermacher K, **Frank HK**, Van Middlesworth P, Sasa M, Losos J, Herrel A. (2015). Multiple paths to aquatic specialisation in four species of Central American *Anolis* lizards. *Journal of Natural History*, 49: 1717-1730, DOI: 10.1080/00222933.2015.1005714

RESEARCH GRANTS

Environmental Venture Program, Stanford Woods Institute for the Environment (2014); “Tracing zoonotic disease risks and immunological adaptations in bats, humans and human commensals across the Central American countryside”; co-wrote grant with advisor (\$200,000)

Doctoral Dissertation Improvement Grant, National Science Foundation (2014); “The impact of ecological traits on the immunogenetic evolution of bats” (\$22,000)

Bat Conservation International Student Research Scholarship (2014); “Investigating the effect of habitat change on disease risk in bats” (\$3,500)

Harvard College Research Program (2008); *Anolis* lizard field work in Costa Rica (\$1,850)

Museum of Comparative Zoology Grant-in-Aid of Undergraduate Research (2008); *Anolis* lizard field work in Costa Rica (\$2,500)

FELLOWSHIPS

Life Sciences Research Foundation Fellowship (2019 -); Three years of postdoctoral stipend and research allowance

Stanford School of Medicine Dean’s Postdoctoral Fellowship (2019); stipend for one year of postdoctoral research on bat immunoglobulins (\$30,000)

Stanford Immunology T32 Training Grant Postdoctoral Fellowship, National Institutes of Health (2018); stipend for one year of postdoctoral research on bat immunoglobulins (\$48,804)

Center for Computational, Evolutionary and Human Genomics Postdoctoral Fellowship (2017); stipend for one year of postdoctoral research on bat immunoglobulins (~\$60,000)

Bing-Mooney Fellowship in Environmental Science and Conservation (2012); graduate tuition and stipend support for 4 years of PhD study at Stanford (~\$300,000)

Prof. Gilda H. Loew Fellowship (2011); graduate tuition and stipend support at Stanford (~\$10,000)

Fulbright Fellowship (2010); awarded to conduct research on tuatara in New Zealand (~\$25,000)

AWARDS AND HONORS

Poster Awards (2014-2018)

- **Stanford Pathology Department Retreat** (2018); “Are bats special? Immunological insights from an important disease reservoir”, postdoctoral category
- **Stanford OneHealth Symposium** (2016); “Pathogenic bacterium prevalence and diversity in bats varies across an agricultural landscape in southern Costa Rica”
- **North American Symposium on Bat Research** (2014); “Bats, bat flies and *Bartonella*: Complex parasitism relationships across a Neotropical agricultural landscape”, Speleobooks Award

Honorable Mention, Student Paper Award (2018), Organization for Tropical Studies; Awarded for “Phylogeny, traits and biodiversity of a Neotropical bat assemblage: Responses to deforestation are not conserved among close relatives”

Frances Lou Kallman Award (2017), Stanford University; Awarded to one female PhD graduate in the biology department in recognition of special excellence in research, teaching and/or coursework

Excellence in Teaching Award (2013), Stanford University Department of Biology

Travel Award (2011), Macroevolutionary Methods in R Workshop, Santa Barbara, CA; Awarded stipend for travel and lodging to attend workshop on phylogenetic comparative methods

Donald and Cathleen Pfister Prize (2009), Harvard University; Awarded to senior with highest achievement in natural sciences in Kirkland House, one of twelve upper class residences

Phi Beta Kappa (2008), Harvard University; Early induction (senior fall)

RESEARCH EXPERIENCE

Stanford University, Stanford, CA (2017 – present)

Postdoctoral fellow with Scott Boyd, research on host-pathogen genomics, immunogenetics and immunology of bats and other non-model organisms

Stanford University, Stanford, CA (2011- 2017)

Graduate student with Elizabeth Hadly, research on disease and parasite exposure and immunogenetic evolution in Neotropical bats, PhD awarded 2017

Fulbright Fellowship, Wellington, New Zealand (2010 – 2011)

Full- time research on immunity in inbred North Brother Island tuatara (*Sphenodon punctatus*) with Dr. Nicola Nelson (senior lecturer; conservation biology program manager) and Dr. Anne LaFlamme (senior lecturer) at Victoria University of Wellington

Professor Jonathan Losos, Harvard University, Cambridge, MA (2007 - 2009)

Research in organismic and evolutionary biology lab on levels of evolutionary convergence in *Anolis* toepad morphology; research resulted in honors thesis

Field Assistant, Harvard University, Costa Rica and Panama (2008 and 2009)

Assisted with lizard behavioral, morphological and ecological research conducted through Losos lab (Harvard University; Costa Rica, 2008; Panama, 2009)

Harvard Program for Research in Science and Engineering (PRISE), Cambridge, MA (2006)

Full-time summer research on population genetics in house finches in molecular ecology lab under the direction of Professor Scott Edwards; awarded room, board and stipend

TEACHING EXPERIENCE

Stanford Postdoctoral Teaching Certificate Candidate (2018 – Present)

Participation in certificate program requiring ~100 hours of training, practice and reflection; 36 hours of training completed in pedagogy and application of scientific insights to teaching practice

Research Mentor, Stanford University; (2012 – Present)

Project or research mentor to nine undergraduate mentees and two graduate mentees including seven women, two under-represented minorities and three first-generation students.

Undergraduate Honors Thesis Research Mentor, Stanford University; (2013 – 2016)

Mentored two undergraduate students on their honors theses and subsequent first author publications (Mindy Perkins, 2014-2016 and Seth Judson, 2013-2015)

Teaching Assistant, Stanford University; (2012-2014)

- *Biology 1: Human Evolution and the Environment* (2014); Head TA; wrote and graded exams, held office hours
- *Biology 101: Ecology* (2013); Delivered guest lecture, taught weekly section, wrote and graded exams and homework
- *Biology 43: Plant Biology, Evolution and Ecology* (2012); Taught weekly section, wrote and graded exams

Outreach Course Creator and Instructor (2012-2014)

- *Stanford Science*, Stanford University (2014), designed and taught one day outreach course on ecology and microbiology for low income middle school students
- *Stanford Splash*, Stanford University (2013-2014), designed and taught one day outreach courses for middle and high school students on microbiology and alternative metabolism using hands on demonstrations
- *Stanford Splash*, Stanford University (2012), designed and taught one day outreach course for middle and high school students on herpetology
- *Stanford Biocore Explorations*, Stanford University (2012), designed and taught one day laboratory outreach course for undergraduates in introductory biology on pathogen discovery

Mentor in Teaching Fellow, Stanford University, (2012-2013)

Attended training and workshops on mentoring teaching assistants as a TA mentor in the biology department; Mentor to TAs in Biology 43 in 2013

INVITED PRESENTATIONS

Invited Seminar (Maasai Mara University, Narok, Kenya, 2019); Challenges and opportunities for protecting global bat populations

Integrative Biology Department Seminar (University of Texas at Austin, 2018); Bat-infection interactions: Signals of evolution, ecology, immunity and deforestation

Center for Population Biology Seminar (University of California at Davis, 2018); Bat-infection interactions: Signals of evolution, ecology, immunity and deforestation

OneHealth Symposium: Climate Change and its Impact on Human and Animal Health (Stanford University, 2018); Global fingerprint of humans on *Bartonella* infection: Insights from the field and phylogenies

CONTRIBUTED PRESENTATIONS

American Society of Naturalists Annual Meeting (Asilomar, CA; 2018); Frank HK, Enard D, Armstrong E, Petrov D, Boyd S & Hadly EA. "Signatures of ecology and biogeography on pathogen-interacting genes in bats" (Talk)

Infectious Diseases of Bats (Fort Collins, CO; 2017); Frank HK, Enard D, Mendenhall C, Lee J, Armstrong E, Prost S, Judson S, O'Marr J, Daily G, Petrov D, Boyd S & Hadly EA. "Bat-infection interactions: Signals of evolution, ecology, immunity and deforestation" (Poster)

Ecology and Evolution of Emerging Infectious Diseases (Santa Barbara, CA; 2017); Frank HK. "Bat-infection interactions: Signals of evolution, ecology, immunity and deforestation" (Lightning talk)

Ecology and Evolution of Emerging Infectious Diseases (Ithaca, NY; 2016); Frank HK, Enard D, Boyd S & Hadly EA. "Contrasting evolutionary and ecological signals in bat-viral interactions" (Poster)

Stanford OneHealth Symposium (Stanford, CA; 2016); Frank HK, O'Marr J, Judson S, Boyd S & Hadly EA. "Pathogenic bacterium prevalence and diversity in bats varies across an agricultural landscape in southern Costa Rica" (Poster; Poster award winner)

American Society of Naturalists Annual Meeting (Asilomar, CA; 2016); Frank HK, Enard D, Petrov D & Hadly EA. "Ecological Correlates of Positive Selection in Bat Viral Interaction Genes" (Poster)

North American Symposium on Bat Research (Monterey, CA; 2015); Frank HK, Enard D, Petrov D & Hadly EA. "Genomic Comparison of Bat Viral Interaction Genes: Signatures of Ecology" (Poster)

North American Symposium on Bat Research (Albany, NY; 2014); Frank HK, Judson S, Mendenhall CD, Daily GC & Hadly EA. "Bats, bat flies and *Bartonella*: Complex parasitism relationships across a Neotropical agricultural landscape" (Poster; Speleobooks award winner)

Species Interaction Workshop (Stanford University; 2013); Frank HK and Judson S. "Bats, bat flies and *Bartonella*: Parasite and disease risk in southern Costa Rica." (Oral)

International Bat Research Conference (San Jose, Costa Rica; 2013); Frank HK, Mendenhall C, Daily GC & Hadly EH. "Land use alters bat ectoparasitism in southern Costa Rica" (Oral)

North American Symposium on Bat Research Symposium (San Juan, Puerto Rico; 2012); Frank HK, Mendenhall C, Hadly EH & Daily GC. "Effect of Land Use and Host Ecology on Ectoparasitism in a Costa Rican Bat Community" (Poster)

Anolis Symposium (Cambridge, MA; 2009); on convergence in *Anolis* toepads (Oral)

Society of Integrative and Comparative Biology National Meeting (Boston, MA; 2009) on convergence in *Anolis* toepads (Oral)

OUTREACH AND SERVICE

Peer reviewer (2016 – present)

- *Journals*: Biodiversity and Conservation, Diversity, Herpetological Review, Philosophical Transactions of the Royal Society B, Studies on Neotropical Fauna and the Environment, Tropical Medicine and Infectious Disease
- *Grants*: Bat Conservation International student scholarships (2017 - present)

University service (2012 – present)

- *Stanford Inclusive Mentoring* (2018-present), postdoctoral mentor in group focused on supporting and mentoring graduate students with a focus on diversity issues
- *Stanford Biosciences Graduate Student Mentor* (2012-2015), mentor to first year PhD students, helping them navigate the transition to graduate school, advisor relationships, etc.
- *Department of Biology Undergraduate Studies Committee*, Stanford University (2012-2014); helped review and revise undergraduate programs, requirements, courses and policies

Public seminars and STEM outreach (2010 – present)

- *Skype-a-Scientist* (2018-present), video chatting with K-12 classrooms about my research and careers in STEM
- *Kibera School for Girls*, Kibera, Nairobi, Kenya (2019), biology lesson and DNA extractions with 5th and 6th grade students at the Kibera School for Girls located in Africa's largest slum
- *Stanford HyPE* (2018, 2019), led lab tours, led DNA extractions and taught high school students from under-represented groups at Stanford for annual event
- *Monta Vista High School* (2018), visited local high school to present my research and answer questions on pursuing a career in STEM
- *California Academy of Sciences Nightlife* (2017, 2018), presented publicly on research for Women in Science night and on bats for Migration night
- *Mosquito and Vector Control Association of California, Coastal California Region* (2017), gave talk on bat ecology, vector potential and role in insect control for local vector control workshop
- *AVID campus visit* (2017), helped organize and lead outreach event at Stanford for local high school students aspiring to be first-generation college students, including materials preparation and research presentation
- *Center to Support Excellence in Teaching* (2017), presented on research for high school biology teachers in training course
- *Center for Computational, Evolutionary and Human Genomics Outreach Committee*, Stanford University (2016-2017), helped organize and lead outreach events for first local generation high school students
- *Outreach Course Creator and Instructor* (2012-2014); see "Teaching Experience"
- *Awhina Day* (2010), organized and taught activities at an outreach day for underrepresented Pacific Island students at Victoria University of Wellington in New Zealand

East Palo Alto Tennis and Tutoring, Stanford University (2014); tutored middle school student after school twice a week

Las Cruces Biological Station, Costa Rica (2013); Wrote articles in field station newsletter about research findings;

Frank, HK. 2013. The great false vampire bat (*Vampyrum spectrum*) near Las Cruces! Amigos Newsletter, 80: 11.

Frank, HK. 2013. Bat ectoparasitism and disease dynamics in an agricultural landscape. Amigos Newsletter, 79: 8-9.

Group on Earth Observations, Biodiversity Observation Network meeting, Pacific Grove, CA (2012) Assisted with registration and meeting logistics for international meeting of conservation biologists; attended discussions on including genetic diversity in conservation planning

PROFESSIONAL MEMBERSHIPS

American Society of Naturalists (2017-)

American Association for the Advancement of Science (2015-2016)