Peter Joseph Flynn

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EDUCATION

Doctor of Philosophy , Committee on Evolutionary Biology
The University of Chicago, Chicago, IL, expected February 2022
Advisor: Dr. Corrie Moreau
Committee Members: Drs. Maureen Coleman, Cathy Pfister, and Michaela Gack
Cumulative GPA: 4.00

Bachelor of Science, Ecology and Evolutionary Biology
Yale University, New Haven, CT, Graduated: May 2014
Cumulative GPA: 3.63

Study Abroad Semester, Organization for Tropical Studies
Duke University, South Africa, January-July 2013

RESEARCH EXPERIENCES

Dr. Corrie Moreau Laboratory   September 2016-present
Field Museum of Natural History, Chicago, IL
- Investigating the role of viral and bacterial microbes in ants using an integrative approach to explore the factors that structure microbial communities through comparative genomics, NGS techniques, and evolutionary analyses.
- Learned several computer languages including Python, R, Unix, and Bash to aid in my analyses.

Dr. Ofer Levy Laboratory   June 2014-June 2016
Boston Children's Hospital, Boston MA
- Researched innate and adaptive immune mechanisms of newborns and adults using a microphysiological in vitro model system. We discovered that this in vitro model system mimics human newborn mimics human newborn responses to immunization with HBV and BCG vaccines.
- Achieved fluency in laboratory techniques including ELISA, cell culture, phlebotomy, and flow cytometry.

Dr. Maria Diuk-Wasser Laboratory   September 2013-May 2014
Yale University, New Haven CT
- Examined eco-epidemiological factors of tick-borne diseases and the phylogeography of *Ixodes scapularis* in the Northeastern US. We found high levels of genetic diversity at a regional scale with evidence of a recent geographic expansion throughout the Northeast.
- Mastered molecular biology techniques including qPCR and RT-PCR and software including Geneious, MEGA, MacClade and GIS.

International Research Experience for Students   May 2013-August 2013
Skukuza, South Africa
- Investigated community ecology and wildlife management in Kruger National Park for the summer.

- Performed independent research project on bat species diversity and vegetation structure within Kruger National Park. I discovered that there is a relationship between bat guild composition and large-scale vegetation structure.

Dr. Thomas Near Laboratory   January 2011-January 2013
Yale University, New Haven CT

- Researched the phylogeography of *Lepomis megalotis* throughout the US. We found no phylogenetic differences among the geographic variants of L. megalotis.
- Learned molecular genetic techniques including DNA extraction, DNA sequencing, PCR, and software skills including PAUP*, JMP, and MrBayes.

PUBLICATIONS

7. **Flynn, P. J.** and Moreau, C.S. (2019), Assessing the diversity of endogenous viruses throughout ant genomes. Frontiers in Microbiology, doi:10.3389/fmicb.2019.01139

6. Dennis, P.W.*, **Flynn, P. J.***, de Souza, W.M., Singer, J.B., Moreau, C.S., Wilson, S.J. and Gifford, R.J. (2018), Insights into circovirus host range from the genomic fossil record. Journal of Virology, doi: 10.1128/JVI.00145-18 *authors contributed equally

5. Queenan A.M., Dowling D.J., Cheng, W.K., Fae, K., Fernandez J., **Flynn, P.J.**, Joshi S., Brightman, S.E., Ramirez J., Serroyen, J., Wiertsema S., Fortanier, A.,van den Dobbelsteen, G., Levy, O. , and Poolman, J. (2018). Increasing FIM2/3 antigen-content improves efficacy of Bordetella pertussis vaccines in mice in vivo without altering vaccine-induced human reactogenicity biomarkers in vitro. Vaccine, doi: 10.1016/j.vaccine.2018.11.028

4. Sanchez-Schmitz, G., Stevens, C.R., Bettencourt, I.A., **Flynn, P.J.**, Schmitz-Abe, K., Metser G., Hamm D., Jensen, K.J., Benn, C., and Levy, O.(2018). Microphysiologic human tissue constructs reproduce autologous age-specific BCG and HBV primary immunization in vitro. Frontiers in Immunology, doi:10.3389/fimmu.2018.02634

3. **Flynn, P. J.** (2017), Digest: Using transcriptomics to map parental care behavior in burying beetles. Evolution, 71: 21322133. doi:10.1111/evo.13301

2. Pearcy, A, Gibson, M, Balmagia, J, Berkey, J, **Flynn, P**, and Viljoen, S. (2013). Disturbance effects on a South African river and the impact on the Mutale River Crocodylus niloticus population. Proceedings of the 22nd Working Meeting of the IUCN-SSC Crocodile Specialist Group. IUCN: Gland, Switzerland.

1. **Flynn, P. J.** (2012). "Zaglossus bartoni" (On-line), Animal Diversity Web.

PRESENTATIONS AND POSTERS

9. **Flynn, P.J.**, D'Amelio, C., Russell, J.A., and Moreau, C.S. 'Localization of bacterial communities in gut compartments across Cephalotes ants'. Society of Systematic Biologists Standalone Meeting 2019; Gainesville, Florida. January 4, 2020. Poster.

8. **Flynn, P.J.**, D'Amelio, C., Russell, J.A., and Moreau, C.S. 'Localization of bacterial communities in gut compartments across Cephalotes ants'. Evolution Meeting 2019; Providence, Rhode Island. June 22, 2019. Presentation.

7. **Flynn, P.J.**. 'Lightning Talk: Understanding the Viromes in Ants'. 4th Annual Viromics Workshop 2019; Columbus, Ohio. May 7, 2019. Presentation.

6. **Flynn, P.J.**, D'Amelio, C., Russell, J.A., and Moreau, C.S. 'Localization of bacterial communities in gut compartments across Cephalotes ants'. Committee on Evolutionary Biology Annual Retreat; Chicago, Illinois. April 28, 2019. Presentation.

5. **Flynn, P.J.** 'Comparative assessment of endogenous viruses throughout ant genomes'. Entomological Society of America Meeting 2018; Vancouver, BC Canada. November 10, 2018. Presentation.

4. **Flynn, P.J.** 'Comparative assessment of endogenous viruses throughout ant genomes'. Presentation at Pasteur Institute of French Guiana Seminar Series; Cayenne, French Guiana. April 1, 2018. Presentation.

3. Angelidou A, Sanchez-Schmitz G, Benn C, Aaby P, Shann F, **Flynn, P**, Van Haren S, and Levy O. 'Bacille Calmette Gurin (BCG) vaccine-induced in vitro TNF production varies by strain and age of human study subject'. Annual New England Perinatal Society Meeting; Newport, RI. March 4-6, 2016. Poster

2. Sanchez-Schmitz, G., and **Flynn, P. J.** (2016). 'In Vitro Vaccination Of A Microphysiologic Human Tissue-Construct'. Judah Folkman Research Day, Boston, MA. Poster and Presentation.

1. **Flynn, P. J.**(2014). 'The Phylogeographic patterns of Ixodes scapularis populations throughout the Northeastern United States'. Senior Symposium, New Haven, CT. Presentation.

OUTREACH ACTIVITIES

Darwinian Cluster UChicago Graduate Student Seminar Series, *Coordinator*
Evolutionary Morphology Seminar Series *Student Coordinator*
Meet-A-Scientist at the Field Museum, *Volunteer*
Outfielders at the Field Museum, *Working Group*
LGBT OStem at the University of Chicago, *Member*
Journal of Emerging Investigators, *Mentor*

AWARDS AND HONORS

NSF Graduate Research Fellowship, 2016-2020
OSU Travel Award: Viromics Workshop, 2019
University of Chicago Henry Hinds Fund Award, 2018
Pritzker Lab at the Field Museum Research Award, 2017, 2019
Boston Children's Hospital On-the-Spot Recognition Award, 2016
NSF International Research Experience for Students Research Fellowship, 2013

WORKSHOPS

OSU 4th Annual Viromics Workshop, May 2019
Ant Course: French Guiana, 2018
Viral Bioinformatics & Genomics Training Course at the University of Glasgow, 2017
Computational Biology at the Field Museum Workshop, 2017
Marine Biological Laboratories Quantitative Biology Bootcamp, 2016

MEMBERSHIPS

International Union for the Study of Social Insects, North American Section
Society of Systematic Biologists
Field Museum Women in Science
Society for the Study of Evolution
Entomological Society of America

REVIEWED JOURNALS

Frontiers in Microbiology, Journal of Evolutionary Biology, The Science of Nature (Naturwissenschaften)

SKILLS *Languages & Software:* Unix, R, Bash, Python, FigTree, BEAST, MrBayes, Mesquite, PhyloSeq, ggplot2, Vegan, Geneious, MEGA, QIIME2, RAxML