Armun Liaghat

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Education

University of Chicago — Chicago, IL
Ph.D., Ecology & Evolution — December 2025
Thesis: "The Coevolution of Complex Microbial Phenotypes"

University of Chicago — Chicago, IL
M.S., Ecology & Evolution — June 2020

Universitat de Barcelona — Barcelona, Spain
M.S., Particle Physics & Gravitation — September 2016

University of California, Santa Barbara — Santa Barbara, CA
B.S., Physics; B.A., Mathematics — June 2015

Academic Appointments

University of Michigan – Ann Arbor — Ann Arbor, MI
Department of Ecology & Evolutionary Biology — October 2025 – Present
Laboratories of Drs. Melissa Duhaime and Luis Zaman
Postdoctoral Researcher

New York University — New York, NY
Center for Genomics and Systems Biology — September 2023 – December 2025
Laboratory of Dr. Mercedes Pascual
Academic Affiliate

University of Chicago — Chicago, IL
Department of Ecology & Evolution — September 2019 – December 2025
Laboratory of Dr. Mercedes Pascual
Graduate Student Researcher

Universitat de Barcelona — Barcelona, Spain
Facultat de Física, Departament d'Estructura i Constituents de la Matèria — September 2015 – September 2016
Laboratory of Dr. Jorge Russo
Graduate Student Researcher

Publications

Wang, Y.-J., Schaal, K.A., Nauta, J., Liaghat, A., De Domenico, M., Hall, J.P.J., Pilosof, S., 2026. The interplay between ecological networks drives host–plasmid community dynamics. *PLOS Computational Biology*, 22(5), p.e1014339.

Ferretti, P., Martignoni, M.M., McManus, L., Sakal, T., Liaghat, A., Stevens, B., Dahlin, K.J.M., Souza, L.S., Cardon, Z.G., Silveira, C.B., Bordenstein, S.R., Roughgarden, J., 2025. Theory of host-microbe symbioses: challenges and opportunities. *Cell Host & Microbe*, 33(7), pp.1052–1056.

Liaghat, A., Guillemet, M., Whitaker, R., Gandon, S., and Pascual, M., 2025. Host competitive asymmetries accelerate viral evolution in a microbe-virus coevolutionary system. *Ecology Letters*, 28(6), p.e70153.

Liaghat, A., Yang, J., Whitaker, R. and Pascual, M., 2024. Punctuated virus-driven succession generates dynamical alternations in CRISPR-mediated microbe-virus coevolution. *Journal of the Royal Society Interface*, 21(217), p.20240195.

Manuscripts Under Revision

Lechón-Alonso, P., Miller, Z.R., Liaghat, A., Breiding, P., Pascual, M., Allesina, S., 2026. Tipping points are typical in ecosystems with higher-order interactions. Under revision at *Nature*. Preprint: `https://doi.org/10.64898/2026.04.24.720639`

Manuscripts in Preparation

Liaghat, A., Yang, J., Whitaker, R. and Pascual, M. Microbial Immune Histories Reflect a Virus-Host Coevolutionary Continuum.

Liaghat, A., Grilli, J., and Pascual, M. The Evolution of Niche Dimensionality Due to Negative Frequency-Dependent Competition.

Liaghat, A., Pascual, M. Perspective on Combinatoric Traits and the Eco-evolutionary Processes Leading to its Hyperdiversity.

Liaghat, A., Silveira, C., Pascual, M., Zaman, L., Duhaime, M. The Effect of Viral Predation on Microbial Coexistence at Large N.

Liaghat, A., Zaman, L., Duhaime, M. Viral Trait Diversity Across an Iron Gradient.

Teaching

New York University
Teaching Assistant — January 2025 – April 2025
Course: Ecology of Infectious Diseases

University of Chicago
Graduate Student Teaching Assistant — January 2023 – March 2023
Course: Mathematics of Evolution

Graduate Student Teaching Assistant — March 2022 – June 2022, March 2023 – June 2023
Course: Networks in Ecology & Evolution

Graduate Student Teaching Assistant — January 2021 – March 2021
Course: Fundamentals of Ecology & Evolution

Self-Employed, Los Angeles, CA — October 2016 – September 2019
Mathematics and Physics Instructor

Mathnasium, Encino, CA — October 2016 – September 2017
Mathematics Instructor

The Ladder Method, Los Angeles, CA — October 2016 – September 2017
Mathematics and Physics Instructor

Mentorship

Scientific Advising
Aelita Klausmeier — 2024 – 2025
Lab Technician, New York University

Keystone Mentorship
Departmental program pairing senior graduate students with junior students seeking a mentor; counsel on navigating graduate study alongside research guidance on developing ideas, choosing methods and discussing results.

Pablo Lechón-Alonso — 2020 – 2022

Graduate Student, University of Chicago

Sofia Sheikh 2021 – 2023
Graduate Student, University of Chicago

FELLOWSHIPS

GAANN Training Grant in Quantitative Ecology December 2021 – June 2023

AWARDS

The Microbiome Center Travel Award ($1000) June 2022
The Brien O'Brien and Mary Hasten Scholarship Fund ($2501) June 2022

INVITED TALKS & SEMINARS

Theory Tea, Princeton University, Princeton, New Jersey April 2025
"The Role of Host Competition in CRISPR-mediated Coevolution"

CONTRIBUTED PRESENTATIONS AT CONFERENCES

Function of Evolving Systems Gordon Research Conference, Waterville Valley, New Hampshire, U.S.A. 2026
Liaghat, A., J. Grilli, M. Pascual. The Evolution of Niche Dimensionality Due to Frequency-Dependent Competition. (Talk selected from submitted posters)

Ecological Society of America Annual Meeting, Salt Lake City, Utah, U.S.A. 2026
Liaghat, A., J. Grilli, M. Pascual. The Evolution of Niche Dimensionality Due to Frequency-Dependent Competition. (Contributed Talk)

12th Aquatic Viruses Workshop, Banyuls-sur-Mer, France 2025
Liaghat, A., M. Guillemet, R. Whitaker, S. Gandon, M. Pascual. Host competitive asymmetries accelerate viral evolution in a microbe-virus coevolutionary system. (Contributed Talk)

Simons Foundation, New York, New York, U.S.A. 2024
Workshop on Probing the Eco-evolutionary Dynamics of Highly Diverse Systems
Liaghat, A., J. Grilli, M. Pascual. The Emergence of High-dimensional Trait Diversity Through Negative Frequency-dependent Interactions. (Contributed Poster)

Ecological Society of America Annual Meeting, Portland, Oregon, U.S.A. 2023
Liaghat, A., M. Guillemet, R. Whitaker, S. Gandon, M. Pascual. Viral escape & host frequency-dependent competition in microbe-lytic virus co-evolution. (Contributed Talk)

Microbiome Research Symposium, Microbiome Center, University of Chicago 2023
Liaghat, A., M. Guillemet, R. Whitaker, S. Gandon, M. Pascual. Viral escape & host frequency-dependent competition in microbe-lytic virus co-evolution. (Contributed Talk)

Ecological Society of America Annual Meeting, Montréal, Quebec, Canada 2022
Joint meeting with Canadian Society of Ecology & Evolution
Liaghat, A., R. Whitaker, M. Pascual. Network escape structure in CRISPR-mediated microbe-lytic virus systems. (Contributed Talk)

SERVICE, LEADERSHIP & OUTREACH

Scientific Reviewer
Nature Communications, Current Biology, PLOS Computational Biology, npj Complexity, FEMS Microbiology

Ecological Society of America
Student Liaison for Disease Ecology section for annual meeting 2022 – 2024

DEI Committee, Department of Ecology & Evolution, University of Chicago
Faculty Liaison, Outreach Organizer 2020 – 2022

AmeriCorps
Volunteer at Interval House, Long Beach, CA 2010 – 2011, 2012 – 2013

SCHOOLS & WORKSHOPS

The 7th International Viromics Workshop October 2024
The Ohio State University, Columbus, OH

Workshop on Probing the Eco-evolutionary Dynamics of Highly Diverse Systems October 2024
Simons Foundation, New York, NY

Workshop on Theoretical Microbial Symbiosis February 2024
Hawai'i Institute of Marine Biology, Kaneohe, HI

Microbial Diversity Course July 2022
Marine Biological Laboratory, Woods Hole, MA

Workshop on Limits to Diversity Assembly January 2021
International Centre for Theoretical Physics, Trieste, Italy (Virtual)

Winter School on Quantitative Systems Biology: Quantitative Approaches in Ecosystem Ecology November 2020
International Centre for Theoretical Physics, Trieste, Italy (Virtual)

32nd Winter School in Theoretical Physics: 100 Years of General Relativity from Theory to Experiment and Back December 2014
Hebrew Institute of Advanced Studies, Jerusalem, Israel

Programming Languages: Julia, Python, SQLite, Bash, MatLab, R, Mathematica, C++

Natural Languages: Fluency in English and Persian, working proficiency in Spanish, conversational proficiency in French, elementary Italian