

Jonathan Friedman

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Academic Positions

Senior Lecturer, Hebrew University of Jerusalem <i>Dept. of Plant Pathology and Microbiology</i>	2017-present
Postdoctoral Associate, Center for Physics of Living Systems, MIT, USA <i>advisor: Jeff Gore</i>	2013-2017

Education

Ph.D., Computational and Systems Biology, MIT, USA <i>advisors: Eric Alm & Daniel Rothman</i>	2013
B.Sc., Physics and Biology, Tel Aviv University, Israel	2007

Fellowships & Awards

2019	The Birk Prize in Agriculture, The Hebrew University, Israel.
2016	Ilanit (FISEB) travel award.
2010-2012	The Merck-MIT Graduate Fellowship (covering full tuition and scholarship).
2007	Dean's list in Physics and Biology, Tel-Aviv University.
2006	Weizmann Institute Amos de-Shalit Ulpana for Physics Fellowship.

Commissions of Trust

Thesis committee membership:

- Dept. of Physics, Hebrew University of Jerusalem, Israel.
- Dept. of Biological Engineering, MIT, USA.
- Dept. of Life Sciences, Ben Gurion University, Israel.
- Dept. of Life Sciences, Tel Aviv University, Israel.

Ad hoc grant reviewer:

- National Science Foundation (NSF), USA.
- French Science Foundation (ANR), France.
- Israeli Science Foundation (ISF), Israel.
- Ministry of Agriculture, Israel.

Ad hoc journal reviewer:

Science, PNAS, Science Advances, Nature Communications, Nature Ecology and Evolution, Nature Microbiology, eLife, PRL, PLOS Biology, PLOS Computation Biology, Bioinformatics, Microbiome, Communications Biology, Biophysical Journal, PRE, PeerJ, Frontier in Microbiology, Scientific Reports, and PLOS One.

Invited Presentations

Mar 2019	<i>Dept. of Plant Sciences, Agricultural Research Organization (Volcani Center), Israel</i>
Mar 2019	<i>Israeli Society for Microbiology (ISM) annual meeting, Israel, Israel</i>
Dec 2018	<i>Computational Biology Club, Hebrew University, Israel, Israel</i>
Nov 2018	<i>Dept. of Plant Protection, Agricultural Research Organization (Volcani Center), Israel</i>
Nov 2018	<i>Dept. of Ecology Evolution and Behavior, Hebrew University, Israel</i>
Sep 2018	<i>The Good the Bad and the Agri workshop, Hebrew University, Israel</i>
Apr 2018	<i>Stochastic Modeling in Ecology and Evolutionary Biology workshop, Venice, Italy.</i>
Dec 2017	<i>Plant Sciences Institute seminar, Hebrew University, Israel</i>
Oct 2017	<i>116th International Titisee Conference, Titisee, Germany</i>
Dec 2016	<i>Channing Division of Network Medicine, Harvard Medical School, USA</i>
Mar 2016	<i>Microbiome Club, MIT, USA</i>
Feb 2016	<i>Non-Equilibrium Statistical Mechanics Group, MIT, USA</i>
Apr 2014	<i>Channing Division of Network Medicine, Harvard Medical School, USA</i>
Apr 2013	<i>Biophysics student seminar, MIT, USA</i>
Mar 2013	<i>Kyoto University, Japan</i>

Contributed Presentations

May 2019	Contributed talk, <i>BAGECO conference, Portugal</i>
Feb 2017	Contributed talk, <i>Ilanit (FISEB) conference, Israel</i>
Mar 2016	Contributed talk, <i>American Physical Society meeting, USA</i>
Aug 2015	Contributed talk, <i>Ecological Society of America meeting, USA</i>
Aug 2015	Contributed poster, <i>GRS: Microbial population biology, USA</i>
Jun 2015	Contributed poster, <i>Boston Bacterial Meeting, USA</i>
Jul 2013	Contributed poster, <i>ENIGMA annual meeting, USA</i>
Jul 2012	Contributed poster, <i>qBio Conference, USA</i>
Jul 2012	Contributed talk, <i>qBio Summer School: Stochastic Gene Regulation, USA</i>

<https://www.overleaf.com/project/60ffc9ec15f98946df550730>

Publications [* denotes equal contribution]

22. F. Kokou, G. Sasson, J. Friedman, S. Eyal, O. Ovadia, S. Harpaz, A. Cnaani, and I. Mizrahi. Core gut microbial communities are maintained by beneficial interactions and strain variability in fish. **Nature Microbiology** (2019).

21. J. Kehe, A. Kulesa, A. Ortiz, C. Ackerman, S. Thakku, D. Sellers, S. Kuehn, J. Gore, J. Friedman, and P. Blainey. Massively parallel screening of synthetic microbial communities. **PNAS**, 2019.
20. C. Abreu, J. Friedman, B. Woltz, and J. Gore. Mortality causes universal changes in microbial community composition. **Nature Communications**, 2019.
19. C.S. Smillie, J. Sauk, D. Gevers, J. Friedman, · · ·, R.J. Xavier, and E.J. Alm. Strain Tracking Reveals the Determinants of Bacterial Engraftment in the Human Gut Following Fecal Microbiota Transplantation. **Cell host & microbe**, 2018.
18. Y. Xiao, M. T. Angulo, J. Friedman, M. K. Waldor, S. T. Weiss, and Y. Y. Liu. Mapping the ecological networks of microbial communities. **Nature Communications**, 2017.
17. J. Friedman, L. Higgins, and J. Gore. Community structure follows simple assembly rules in microbial microcosms. **Nature Ecology & Evolution**, 2017.
16. J. Friedman and J. Gore. Ecological Systems Biology: The Dynamics of Interacting Populations. **Current Opinion in Systems Biology**, 2017. (Invited review)
15. A. Pérez-Escudero*, J. Friedman*, and J. Gore. Preferential interactions promote blind cooperation and informed defection. **PNAS**, 2016.
14. S. P. Preheim*, S. W. Olesen*, A. Materna, C. Varadharajan, M. Blackburn, J. Friedman, J. Rodriguez, H. Hemond, E. J. Alm. Surveys, simulations, and single-cell assays relate function and phylogeny in a lake ecosystem. **Nature Microbiology**, 2016.
13. A. Bashan, T. E. Gibbons, J. Friedman, S. T. Weiss, E. L. Hohmann and Y. Y. Liu. Universality of human microbial dynamics. **Nature**, 2016.
12. S. Weiss, W. Van Treuren, C. Lozupone, K. Faust, J. Friedman, Y. Deng, L. C. Xia, Z. Z. Xu, L. Ursell, E. J. Alm, A. Birmingham, J. A. Cram, J. A. Fuhrman, J. Raes, F. Sun, J. Zhou, and R. Knight. Correlation detection strategies in microbial datasets vary widely in sensitivity and precision. **ISME J**, 2016.
11. L. A. David, A. C. Materna, J. Friedman, M. I. Campos-Baptista, M. C. Blackburn, A. Perrotta, S. E. Erdman, and E. J. Alm. Host lifestyle affects human microbiota on daily timescales. **Genome Biol**, 2014.
10. J. Friedman, E. J. Alm, and B. J. Shapiro. Sympatric speciation: when is it possible in bacteria? **PLoS One**, 2013.
9. S. P. Preheim, A. R. Perrotta, J. Friedman, C. Smillie, I. Brito, M. B. Smith, and E. J. Alm. Computational methods for high-throughput comparative analyses of natural microbial communities. **Methods Enzymol**, 2013.
8. J. Friedman, E. J. Alm. Inferring correlation networks from genomic survey data. **PLoS Comp Bio**, 2012.
7. A. C. Materna*, J. Friedman*, C. Bauer, C. David, S. Chen, I. B. Huang, A. Gillens, S. A. Clarke, M. F. Polz, and E. J. Alm. Shape and evolution of the fundamental niche in marine *Vibrio*. **ISME J**, 2012.
6. The Human Microbiome Project Consortium. Structure, function and diversity of the healthy human microbiome. **Nature**, 2012.
5. The Human Microbiome Project Consortium. A framework for human microbiome research. **Nature**, 2012.
4. B. J. Shapiro, J. Friedman, O. X. Cordero, S. P. Preheim, S. C. Timberlake, G. Szabó, M. F. Polz, and E. J. Alm. Population genomics of early events in the ecological differentiation of bacteria. **Science**, 2012.
3. C. S. Smillie*, M. B. Smith*, J. Friedman, O. X. Cordero, L. A. David, and E. J. Alm. Ecology drives a global network of gene exchange connecting the human microbiome. **Nature**, 2011.
2. B. J. Shapiro, L. A. David, J. Friedman, and E. J. Alm. Looking for darwin's footprints in the microbial world. **Trends in Microbiology**, 2009.
1. A. Madi*, Y. Friedman*, D. Roth, T. Regev, S. Bransburg-Zabary, and E. Ben-Jacob. Genome holography: Deciphering Function-Form motifs from gene expression data. **PLoS One**, 2008.

Teaching Experience

- Lecturer: “General Microbiology”, Hebrew University, 2018-present.
- Teaching assistant: “Modeling Environmental Complexity”, taught by Daniel Rothman, MIT, 2009. Average overall rating of 6.0/7.0.
- Teaching assistant: “Foundations of Computational & Systems Biology”, taught by Christopher Burge and Amy Keating, MIT, 2009. Average overall rating of 6.0/7.0.
- Course Instructor: “Introductory Physics for Biologists” offered by the student council, Tel Aviv University, 2006-2007. Average overall rating of 6.5/7.0.