

ERIC W. JONES

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POSTDOCTORAL EMPLOYMENT

PIMS Postdoctoral Fellow, Simon Fraser University, Department of Physics 2022-23

Banting Postdoctoral Fellow, Simon Fraser University, Department of Physics 2020-22

Application of theoretical statistical physics techniques to ecological systems with [David Sivak](#).

Experimental collaborations with [Will Ludington](#), [Megan Frederickson](#), and [Jane Fowler](#).

Postdoctoral Researcher, Carnegie Institute for Science, Department of Embryology 2020

Characterization of fruit fly microbiome assembly with [Will Ludington](#). Ecological modeling of stochastic microbiome assembly, the spatial structure of the gut microbiome, and higher-order interactions within microbial systems.

EDUCATION

UC Santa Barbara

Ph.D. Physics 2020

Thesis: “Simplification and control of microbial ecosystems in theory and experiment”

Advisor: [Jean Carlson](#)

Certificate in College and University Teaching 2020

M.A. Physics 2018

Colorado School of Mines

B.S. Engineering Physics, Summa Cum Laude 2015

B.S. Computational and Applied Mathematics, Summa Cum Laude 2015

SELECTED AWARDS & ACHIEVEMENTS

Major Fellowships (~\$280,000 USD total)

- [PIMS Postdoctoral Fellowship](#) C\$30,000 2022-23
- [Banting Postdoctoral Fellowship](#) C\$140,000 2020-22
- Broida-Hirschfelder Fellowship, UCSB Shoreliners \$8,000 2020
- Graduate Division Dissertation Fellowship, UCSB Graduate Division \$13,600 2019
- NSF Graduate Research Fellowship \$132,000 2016-19

Presentation/Writing Awards

- First Place Talk Award, Frontiers in Biophysics 2022
- [SFU Scholarly Impact of the Week](#) 2022
- [First Place, SFU Postdoc Research Day Writing for the Public Contest](#) 2021
- GSNP Student Speaker Award Finalist at APS March Meeting 2020
- Janet L. Andersen Award for Undergraduate Research in Mathematical or Computational Biology 2015

Teaching/Mentoring/Service Awards

- Outstanding TA Award, UCSB Physics Department 2020
- Goodchild Graduate Mentoring Award, UCSB Graduate Division 2019
- Chair’s Appreciation Award, UCSB Physics Department 2019
- Department Service Award, UCSB Physics Department 2019
- Waltman Award, Colorado School of Mines 2015

Presented to the campus-wide outstanding graduating senior

PUBLICATIONS

peer reviewed: 11 / first author: 7 / h-index: 8 / total citations: 639 [[Google Scholar](#)]

- 2023 **E. Jones**, J. Derrick, R. Nisbet, W. Ludington, D. Sivak. “First-passage-time statistics of growing microbial populations carry an imprint of initial conditions.” *Scientific Reports* 13(1):21340 [[link](#)]
- 2023 R. Dodge, **E. Jones**, H. Zhu, B. Obadia, D. Martinez, C. Wang, A. Aranda-Diaz, K. Aumiller, Z. Liu, M. Voltolini, E. Brodie, K. Huang, J. Carlson, D. Sivak, A. Spradling, and W. Ludington. “A gut commensal niche regulates stable association of a multispecies microbiota.” *Nature Communications* 14(1):1557 [[link](#)]
- 2022 **E. Jones**, J. Carlson, D. Sivak, and W. Ludington. “Stochastic microbiome assembly depends on context.” *Proceedings of the National Academy of Sciences* 119(7):e2115877119 [[link](#)]
- 2021 **E. Jones***, J. Sheng*, S. Wang, and J. Carlson. “Aging-induced fragility of the immune system.” *Journal of Theoretical Biology* 510:110473 [[link](#)]
- 2020 **E. Jones**, P. Shankin-Clarke[†], and J. Carlson. “Navigation and control of outcomes in a generalized Lotka-Volterra model of the microbiome.” In *Advances in Nonlinear Biological Systems: Modeling and Optimal Control*, pg 97-120. Published by the American Institute of Mathematical Sciences. [[link](#)]
- 2020 Z. Wang[†], **E. Jones**, J. Mueller, and J. Carlson. “Control of ecological outcomes through deliberate parameter changes in a model of the gut microbiome.” *Physical Review E* 101(5):052402 [[link](#)]
- 2019 **E. Jones** and J. Carlson. “Steady-state reduction of generalized Lotka-Volterra systems in the microbiome.” *Physical Review E* 99(3):032403 [[link](#)]
- 2018 A. Gould, V. Zhang, L. Lamberti, **E. Jones**, B. Obadia, N. Korasidis, A. Gavryushkin, J. Carlson, N. Beerenwinkel, and W. Ludington. “Microbiome interactions shape host fitness.” *Proceedings of the National Academy of Sciences* 115(51):E11951 [[link](#)]
- 2018 **E. Jones** and J. Carlson. “In silico analysis of antibiotic-induced *Clostridium difficile* infection.” *PLoS Computational Biology* 14(2):e1006001 [[link](#)]
- 2018 P. Diaz, P. Constantine, K. Kalmbach, **E. Jones**, and S. Pankavich. “A modified SEIR model for the spread of Ebola in Western Africa and metrics for resource allocation.” *Applied Mathematics and Computation* 324:141 [[link](#)]
- 2013 **E. Jones**, P. Roemer, M. Raghupathi, and S. Pankavich. “Analysis and simulation of the three-component model of HIV dynamics,” *SIAM Undergraduate Research Online* 7:89 [[link](#)]

*equal contribution; [†]undergraduate research advisee

SELECTED PRESENTATIONS

Invited Talks (11 total)

- 2023 **The signal in the noise: Variability in microbiome acquisition** at APS March Meeting, Las Vegas, NV
- 2023 **How do organisms acquire their gut microbiomes?** at the UBC Department of Physics & Astronomy
- 2023 **How do organisms acquire their gut microbiomes?** at the SFU Physics Department Colloquium
- 2023 **Whence your microbiome?** at SFU Les Ecologistes
- 2021 **Dimensionality reduction of a bistable ecological system** at the PIMS-SFU Computational Math Seminar
- 2020 **Ecological mechanisms of direct and indirect bacteriotherapies in generalized Lotka-Volterra systems** at APS March Meeting, Denver, CO (held online). GSNP Graduate Student Award Finalist Talk.

- 2020 **The simplification and control of microbial ecosystems** at the SFU Biophysics and Soft Matter Seminar
- 2020 **The simplification and control of microbial ecosystems** at Emory University. Theory and Modeling of Living Systems Postdoctoral Fellow Candidate Talk.
- 2020 **Immunosenescence in a coupled model of the innate and adaptive immune responses** at the Santa Fe Institute working group on Aging & Adaptation in Infectious Diseases
- 2019 **Stochastic colonization of bacteria in the fly gut** at the Department of Mathematics at the University of Hawai'i at Mānoa
- 2019 **The onset of immunosenescence in a mathematical model of the immune system** at the Santa Fe Institute working group on Aging & Adaptation in Infectious Diseases

Conference Talks and Posters

- 2022 **How do organisms acquire their gut microbiomes?** at Frontiers in Biophysics, Vancouver, BC. Won the First Place Talk Award.
- 2022 **Stochastic acquisition of the gut microbiome in *Drosophila*** (poster) at AMS Microbe, Washington, DC
- 2022 **Stochastic acquisition of the gut microbiome in *Drosophila*** (poster) at APS March Meeting, Chicago, IL [[poster link](#)]
- 2021 **Simplification and control of microbial ecosystems** (poster) at Frontiers in Biophysics [[poster link](#)] (held online)
- 2021 **Stochasticity influences the efficacy of simulated bacteriotherapies** at APS March Meeting (held online)
- 2020 **Ecological mechanisms of bacteriotherapy in generalized Lotka-Volterra systems** at the web-based Evolutionary and Ecological Systems Biology seminar series (held online)
- 2019 **Steady-state reduction of generalized Lotka-Volterra systems in the microbiome** at APS March Meeting, Boston, MA
- 2018 **Simulated *C. difficile* Infection** at Dynamics Days, Denver, CO

MENTORSHIP EXPERIENCE

- 2023 Research mentor to graduate student Chris Carlson (University of Toronto)
- 2023 Research mentor to graduate student Ramis Rafay (Simon Fraser University)
- 2021-23 Research mentor to graduate student Joshua Derrick (Carnegie Institution for Science). Our research has been accepted at *Scientific Reports* [[arXiv link](#)].
- 2018-20 Research mentor to undergraduate Parker Shankin-Clarke. Graduate advisor for his participation in the [UC LEADS](#) and [MRL RISE](#) (3x) programs. Our research is published in the *AIMS Special Issue on Biological Systems Modeling*.
- 2018-20 Research mentor to undergraduate Zipeng Wang. Our research is published in *Physical Review E*. Zipeng is now a physics graduate student at Johns Hopkins University.
- 2018-20 Graduate Mentor of the Undergraduate Diversity and Inclusion in Physics (UDIP) club at UCSB
- 2016 Graduate Mentor for the Summer Institute for Mathematics and Science (SIMS) program

TEACHING EXPERIENCE

- 2020 Received the [Certificate in College and University Teaching](#)
- 2019 Teaching Associate (instructor of record) for upper-division Lagrangian and Hamiltonian mechanics course. [Course notes available](#).
- 2019-20 Ringleader and lead organizer of [UCSB Physics Circus](#), a physics outreach program that performs physics demonstrations at nearby elementary schools (~12 events)
- 2018-19 Designed and led (3x) the Programming Help Sessions (PHS), which taught programming skills to physics undergraduates. [Curriculum freely available](#).
 - Teaching assistant for courses in complex analysis (2x) and lower-division calculus-based kinematics

SERVICE

- 2023 Organized the Invited Symposium and Focus Session on “Variability in Biological and Living Systems” at APS March Meeting 2023
- 2022-23 President of the [SFU Postdoctoral Association](#)
 - 2022 Member of the “Workshop to Advance Theory in Ecology” (Pennsylvania State University)
- 2021-22 Vice President, Finance of the SFU Postdoctoral Association
- 2020-22 Member of [SFU IDEA](#) (Inclusion, Diversity, and Equity Alliance)
 - Invited speaker at the APS-IDEA New Member Orientation to discuss shared leadership
 - Organized a climate assessment in the SFU Physics Department and led a town hall discussing the results
 - Trained as a facilitator by the Sexual Violence Support & Prevention Office at SFU
 - Mediated five discussions of the film *Picture a Scientist*
- 2020 Cowrote a successful application with UCSB Physics Department faculty to become an [APS Bridge Partnership Institution](#)
- 2019-20 Member of the “Aging and Adaption in Infectious Diseases” working group (Santa Fe Institute)
 - Peer reviewed for *Nature Communications*, *Physical Review E*, *Journal of the Royal Society Interface*, *Microbiome*, *mBio*, *mSystems*, and *AIMS Applied Mathematics Book Series*

MEDIA COVERAGE

- 2022 “Stochastic microbiome assembly depends on context” was selected and publicized by SFU Research as the Scholarly Impact of the Week [\[link\]](#)
- 2022 “Stochastic microbiome assembly depends on context” was covered in a *Carnegie Institution for Science* press release (by Natasha Metzler) [\[link\]](#)
- 2021 The SFU IDEA team was featured in the article “Advocating for data, diversity and departmental change: meet the SFU Physics Inclusion, Diversity and Equity Alliance Team” (by Natalie Lim) [\[link\]](#)
- 2020 “Control of ecological outcomes through deliberate parameter changes in a model of the gut microbiome” was covered in the press by *The UCSB Current* (by Sonia Fernandez) [\[link\]](#)
- 2019 “Microbiome interactions shape host fitness” was adapted for publication in the non-profit journal *Science Journal for Kids* [\[link\]](#)
- 2018 “Microbiome interactions shape host fitness” was covered in *The UCSB Current* (by Sonia Fernandez), *Science Daily*, *Scienmag*, *Phys.org*, *Futurity*, *EurekAlert*, and others [\[link\]](#)

This document was updated 11/25/23