ERIC W. JONES

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EDUCATION

UC Santa Barbara, 2015 - 2020
Ph.D. Physics, June 2020
Thesis Title: "Simplification and control of microbial ecosystems in theory and experiment" [link]
Thesis Advisor: Dr. Jean Carlson
M.A. Physics, March 2018
Certificate in College and University Teaching, April 2020

Colorado School of Mines, 2011 - 2015
B.S. Engineering Physics, Summa Cum Laude
B.S. Computational and Applied Mathematics, Summa Cum Laude

POSTDOCTORAL EMPLOYMENT

Banting and PIMS Postdoctoral Fellow with the Sivak Group, September 2020 - Present
Simon Fraser University, Department of Physics
Application of non-equilibrium statistical mechanics techniques to ecological systems. Experimental collaborations with Will Ludington.

Postdoctoral Researcher with the Ludington Lab, June 2020 - August 2020
Carnegie Institute for Science, Department of Embryology
Ecological modeling of microbiome community assembly in the gut of Drosophila melanogaster, *with a focus on priority effects of colonization, the spatial distribution of colonization in the gut, and higher-order interactions within microbial systems.*

SELECTED AWARDS & ACHIEVEMENTS

- ☐ Banting Postdoctoral Fellowship awarded by NSERC (C$140,000) (September 2020 - August 2022)
- ☐ PIMS Postdoctoral Fellowship (C$30,000) (for September 2022 - August 2023)
- ☐ NSF Graduate Research Fellowship ($132,000) (September 2016 - September 2019)

- ☐ First Place, SFU Postdoc Research Day *Writing for the Public Contest* [link] (March 2021)
- ☐ Outstanding TA Award, UCSB Physics Department (May 2020)
- ☐ GSNP Student Speaker Award Finalist at APS March Meeting (March 2020)
- ☐ Broida-Hirschfelder Fellowship, UCSB Shoreliners ($8,000) (Winter 2020)
- ☐ Graduate Division Dissertation Fellowship, UCSB Graduate Division ($13,600) (Fall 2019)
- ☐ Goodchild Graduate Mentoring Award, UCSB Graduate Division ($1,000) (June 2019)
- ☐ Chair's Appreciation Award, UCSB Physics Department (May 2019)
- ☐ Department Service Award, UCSB Physics Department (May 2019)
- ☐ q-bio Summer School Tuition Waiver (June 2017)
- ☐ Janet L. Andersen Award for Undergraduate Research in Mathematical or Computational Biology (August 2015)
- ☐ Waltman Award, Colorado School of Mines ($5,000) (May 2015)
  Presented to the campus-wide outstanding graduating senior

PUBLICATIONS

peer reviewed: 9 / first author: 6 / h-index: 4 / total citations: 364 [Google Scholar]

1. 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 (submitted). "A gut commensal niche regulates stable association of a multispecies microbiota." [bioRxiv link]
2. **E. Jones**, J. Carlson, D. Sivak, and W. Ludington (2022). "Stochastic microbiome assembly depends on context." *Proceedings of the National Academy of Sciences* 119(7):e2115877119 [link]
3. **E. Jones***, J. Sheng*, S. Wang, and J. Carlson (2021). "Aging-induced fragility of the immune system." *Journal of Theoretical Biology* 510:110473 [link]
4. **E. Jones**, P. Shankin-Clarke†, and J. Carlson (2020). "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. Edited by Jakob Kotas; published by the American Institute of Mathematical Sciences. [link]
5. Z. Wang†, **E. Jones**, J. Mueller, and J. Carlson (2020). "Control of ecological outcomes through deliberate parameter changes in a model of the gut microbiome." *Physical Review E* 101(5):052402 [link]
6. **E. Jones** and J. Carlson (2019). "Steady-state reduction of generalized Lotka-Volterra systems in the microbiome." *Physical Review E* 99(3):032403 [link]
7. A. Gould, V. Zhang, L. Lamberti, **E. Jones**, B. Obadia, N. Korasidis, A. Gavryushkin, J. Carlson, N. Beerenwinkel, and W. Ludington (2018). "Microbiome interactions shape host fitness." *Proceedings of the National Academy of Sciences* 115(51):E11951 [link]
8. **E. Jones** and J. Carlson (2018). "In silico analysis of antibiotic-induced Clostridium difficile infection." *PLoS Computational Biology* 14(2):e1006001 [link]
9. P. Diaz, P. Constantine, K. Kalmbach, **E. Jones**, and S. Pankavich (2018). "A modified SEIR model for the spread of Ebola in Western Africa and metrics for resource allocation." *Applied Mathematics and Computation* 324:141 [link]
10. **E. Jones**, P. Roemer, M. Raghupathi, and S. Pankavich (2013). "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

1. Invited talk on **Dimensionality reduction of a bistable ecological system** at the PIMS-SFU Computational Math Seminar (11/12/21)
2. Poster presentation on the **Simplification and control of microbial ecosystems** at Frontiers in Biophysics [poster link] (held online) (6/29/21)
3. **Stochasticity influences the efficacy of simulated bacteriotherapies** at APS March Meeting (held online) (3/17/21)
4. **Ecological mechanisms of bacteriotherapy in generalized Lotka-Volterra systems** at the web-based Evolutionary and Ecological Systems Biology seminar series (held online) (6/23/20)
5. GSNP Graduate Student Award Finalist Talk on **Ecological mechanisms of direct and indirect bacteriotherapies in generalized Lotka-Volterra systems** at APS March Meeting, Denver, CO (held online) (3/4/20)
6. Invited talk on **The simplification and control of microbial ecosystems** at the Biophysics and Soft Matter Seminar at Simon Fraser University (2/13/20)
7. Theory and Modeling of Living Systems Postdoctoral Fellow Candidate Talk on **The simplification and control of microbial ecosystems** at Emory University (2/5/20)

8. Invited talk on **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 (1/14/20)
9. Invited talk on **Stochastic colonization of bacteria in the fly gut** at the Department of Mathematics at the University of Hawai'i at Mānoa (5/16/19)
10. Invited talk on **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 (4/30/19)
11. **Steady-state reduction of generalized Lotka-Volterra systems in the microbiome** at APS March Meeting, Boston, MA (3/6/19)
12. **Simulated *C. difficile* Infection** at Dynamics Days, Denver, CO (1/4/18)
13. **Predictive Measures of HIV Clearance** at MAA Mathfest, Washington, D.C. (8/7/15)

TEACHING EXPERIENCE

- ☐ Completion of the Certificate in College and Univeristy Teaching, a program "designed for doctoral students who wish to demonstrate superior competence and experience in preparation for teaching at the university or college level." [link]
- ☐ Teaching Associate (instructor of record) for upper-division Lagrangian and Hamiltonian mechanics course (PHYS 104), for a class of 20 students in Summer 2019. Course notes available [link].
- ☐ Conceived, designed, and led the Programming Help Sessions (PHS) (Spring 2018, Fall 2018, and Spring 2019). These five 90-minute session sessions teach programming skills (including *nix commands, vim, LaTeX, and Python) to undergraduate physics majors. Curriculum freely available at `github.com/erijones/phs`.
- ☐ Teaching assistant for courses in complex analysis (PHYS 101, Winter 2016 and Winter 2020) and lower-division calculus-based kinematics (PHYS 20, Fall 2015)

MENTORSHIP EXPERIENCE

- ☐ Research mentor to undergraduate Parker Shankin-Clarke (April 2018 - June 2020), and formal graduate advisor for his participation in the UC LEADS (May 2018 - June 2020) and MRL RISE (three times) programs. Parker presented our joint research three times, and it has been published in the AIMS Special Issue on Biological Systems Modeling.
- ☐ Research mentor to undergraduate Zipeng Wang (May 2018 - June 2020). Zipeng presented our joint research twice, and it has been published in Phys Rev E. He is currently a physics graduate student at Johns Hopkins University.
- ☐ Graduate Mentor of the Undergraduate Diversity and Inclusion in Physics (UDIP) club at UCSB (May 2018 - August 2020)
- ☐ Graduate Mentor for the Summer Institute for Mathematics and Science (SIMS) program (August 2016)

SERVICE

- ☐ Peer-reviewed five manuscripts (2x Physical Review E, 1x Microbiome, 1x mBio, 1x AIMS Applied Mathematics Book Series)
- ☐ Member of SFU IDEA (Inclusion, Diversity and Equity Alliance) (Sept. 2020 - Present)
  - Invited speaker at the APS-IDEA New Member Orientation to discuss how the SFU IDEA team implements shared leadership (9/14/21)
  - Procured institutional support for a pilot climate assessment in the SFU Physics Department, set to occur in early March 2022. Interfaced with SFU administration including President Joy

Johnson; Vice-President, Research and International Dugan O'Neil; and Associate Dean, EDI Mary Catherine Kropinski.
    - Trained as a facilitator by the Sexual Violence Support & Prevention Office at SFU
    - Mediated three discussions of the film *Picture a Scientist*: for a university-wide screening (5/20/21); with physics graduate students in PHYS 802 (10/13/21); and with physics undergraduates in PHYS 201 (11/18/21)
- ☐ Vice President, Finance of the SFU Postdoctoral Association (August 2021 - Present)
- ☐ Cowrote a successful application with faculty in the UCSB Physics Department to become an APS Bridge Membership Institution, a designation that would increase the diversity of the applicant pool of the graduate physics program (June - August 2020)
- ☐ Volunteered for the Conference for Undergraduate Women in Physics (CUWiP), hosted by the Women in Physics (WiP) group at UCSB (January 2019)
- ☐ Assisted with prospective physics graduate visit day (February 2016, 2017, 2018, and 2019)
- ☐ Graduate Student Association (GSA) Representative from the Physics department, acting as treasurer (September 2016 - June 2017)

MEDIA COVERAGE

- ☐ The article "Stochastic microbiome assembly depends on context" has been covered in a *Carnegie Institution for Science* press release (written by Natasha Metzler, 2022) [link]
- ☐ The guiding principles of the SFU IDEA team were examined in the article "Advocating for data, diversity and departmental change: meet the SFU Physics Inclusion, Diversity and Equity Alliance Team" (written by Natalie Lim, 2021) [link]
- ☐ The article "Control of ecological outcomes through deliberate parameter changes in a model of the gut microbiome" has been covered in the press by *The UCSB Current* (written by Sonia Fernandez, 2020) [link]
- ☐ The article "Microbiome interactions shape host fitness" has been adapted for publication in the non-profit journal *Science Journal for Kids* (December 2019) [link]
- ☐ The article "Microbiome interactions shape host fitness" has been covered in the press by *The UCSB Current* (written by Sonia Fernandez, 2018), *Science Daily*, *Scienmag*, *Phys.org*, *Futurity*, *EurekAlert*, and others [link]

This document was updated 2/18/22