ERIC W. JONES

email: jones.eric93@gmail.com
website: https://ericwjon.es/

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 statistical physics 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 Talk Award, Frontiers in Biophysics (June 2022)
- 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: 5 / total citations: 425 [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. **How do organisms acquire their gut microbiomes?** at Frontiers in Biophysics, Vancouver, BC (6/17/22). Won the First Place Talk Award.
2. Poster presentation on the **Stochastic acquisition of the gut microbiome in *Drosophila*** at AMS Microbe, Washington, DC (6/12/22)
3. Poster presentation on the **Stochastic acquisition of the gut microbiome in *Drosophila*** at APS March Meeting, Chicago, IL [poster link] (3/16/22)
4. Invited talk on **Dimensionality reduction of a bistable ecological system** at the PIMS-SFU Computational Math Seminar (11/12/21)
5. Poster presentation on the **Simplification and control of microbial ecosystems** at Frontiers in Biophysics [poster link] (held online) (6/29/21)
6. **Stochasticity influences the efficacy of simulated bacteriotherapies** at APS March Meeting (held online) (3/17/21)
7. **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)

8. 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)
9. Invited talk on **The simplification and control of microbial ecosystems** at the Biophysics and Soft Matter Seminar at Simon Fraser University (2/13/20)
10. Theory and Modeling of Living Systems Postdoctoral Fellow Candidate Talk on **The simplification and control of microbial ecosystems** at Emory University (2/5/20)
11. 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)
12. 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)
13. 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)
14. **Steady-state reduction of generalized Lotka-Volterra systems in the microbiome** at APS March Meeting, Boston, MA (3/6/19)
15. **Simulated *C. difficile* Infection** at Dynamics Days, Denver, CO (1/4/18)
16. **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."
- ☐ 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 six manuscripts (3x 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)
  - Organized a pilot climate assessment in the SFU Physics Department, run by an external consultant. Interfaced with SFU administration to procure institutional support. Of 257 physics undergraduate and graduate students, 67 participated in a 1-hour focus group session and 124 completed the climate survey, roughly corresponding to 100 total hours of student feedback.
  - 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" was selected and publicized by SFU Research as a Scholarly Impact of the Week (July 2022) [link]
- The article "Stochastic microbiome assembly depends on context" was 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 6/12/22