

Stanford



Griffin Chure

Postdoctoral Scholar, Biology

 Curriculum Vitae available Online

Bio

BIO

The short version is that I'm an anti-disciplinary scientist. The slightly longer version is that I'm a postdoctoral fellow at Stanford sitting in the lab of Jonas Cremer where I use principles of bacterial physiology to make predictive models of evolution. I firmly believe that the future of biology relies on an intuition for the physics that governs it, especially in evolutionary biology.

Being the progeny of two paleontologists, I grew up in rural Utah where I was raised in a concoction of contradictions. While my weekends were spent with my parents helping dig up dinosaur bones and grappling with geology of my surroundings, my weekdays were spent in the rural public education system where I was taught evolution was a lie, humans can't impact the Earth, and that dinosaur bones were buried by either the devil or the government (or maybe both). Contending with these diametrically opposed views of science and experiencing its influence on public discourse has strongly influenced the way I want to understand the world; through the cold, unforgiving, and objective lens of math.

After studying biology and chemistry at the University of Utah, I earned a PhD in Biochemistry and Molecular Biophysics under the tutelage of Rob Phillips at the California Institute of Technology. Through studying how bacterial cells control the action of their own genes, I learned how to approach biological problems from a physical and probabilistic perspective. I have carried this manner of scientific study with me where I bring it to bear on the complex phenomena that emerge at the intersection of bacterial physiology, ecology, and evolution.

Beyond quantitative science, I am an amateur web developer and help build and maintain a number of scientific resources, such as the Human Impacts Database. Beyond science, I love taking photographs, making programmatically generated art, vector based illustration (like those on my research page), and exploring the wild lands of California. I also watch my fair share of films and television about which I have hard-headed opinions, such as an affinity for Alejandro Jodorowsky and Julia Ducournau and a disdain for Star Wars and Marvel.

HONORS AND AWARDS

- Postdoctoral Research Fellowship in Biology, National Science Foundation (2021-2022)

PROFESSIONAL EDUCATION

- Bachelor of Science, University of Utah (2013)
- Doctor of Philosophy, California Institute of Technology (2020)
- Ph.D., California Institute of Technology , Biochemistry & Molecular Biophysics (2020)
- B.Sc., University of Utah , Biology (2013)

- B.Sc., University of Utah , Chemistry (2013)

STANFORD ADVISORS

- Jonas Cremer, Postdoctoral Faculty Sponsor

LINKS

- Personal website: <https://gchure.github.io>
- Google scholar profile: https://scholar.google.com/citations?user=hnr_VNMAAAAJ&hl=en

Publications

PUBLICATIONS

- **An optimal regulation of fluxes dictates microbial growth in and out of steady-state.** *eLife*
Chure, G., Cremer, J.
2023; 12
- **Anthroponumbers.org: A quantitative database of human impacts on Planet Earth.** *Patterns (New York, N.Y.)*
Chure, G., Banks, R. A., Flamholz, A. I., Sarai, N. S., Kamb, M., Lopez-Gomez, I., Bar-On, Y., Milo, R., Phillips, R.
2022; 3 (9): 100552
- **Fundamental limits on the rate of bacterial growth and their influence on proteomic composition.** *Cell systems*
Belliveau, N. M., Chure, G., Hueschen, C. L., Garcia, H. G., Kondev, J., Fisher, D. S., Theriot, J. A., Phillips, R.
2021
- **First-principles prediction of the information processing capacity of a simple genetic circuit.** *Physical review. E*
Razo-Mejia, M., Marzen, S., Chure, G., Taubman, R., Morrison, M., Phillips, R.
2020; 102 (2-1): 022404
- **Sequence-dependent dynamics of synthetic and endogenous RSSs in V(D)J recombination.** *Nucleic acids research*
Hirokawa, S., Chure, G., Belliveau, N. M., Lovely, G. A., Anaya, M., Schatz, D. G., Baltimore, D., Phillips, R.
2020; 48 (12): 6726-6739
- **Theoretical investigation of a genetic switch for metabolic adaptation.** *PloS one*
Laxhuber, K. S., Morrison, M. J., Chure, G., Belliveau, N. M., Strandkvist, C., Naughton, K. L., Phillips, R.
2020; 15 (5): e0226453
- **Predictive shifts in free energy couple mutations to their phenotypic consequences.** *Proceedings of the National Academy of Sciences of the United States of America*
Chure, G., Razo-Mejia, M., Belliveau, N. M., Einav, T., Kaczmarek, Z. A., Barnes, S. L., Lewis, M., Phillips, R.
2019; 116 (37): 18275-18284
- **Figure 1 Theory Meets Figure 2 Experiments in the Study of Gene Expression.** *Annual review of biophysics*
Phillips, R., Belliveau, N. M., Chure, G., Garcia, H. G., Razo-Mejia, M., Scholes, C.
2019; 48: 121-163
- **Connecting the Dots between Mechanosensitive Channel Abundance, Osmotic Shock, and Survival at Single-Cell Resolution.** *Journal of bacteriology*
Chure, G., Lee, H. J., Rasmussen, A., Phillips, R.
2018; 200 (23)
- **Tuning Transcriptional Regulation through Signaling: A Predictive Theory of Allosteric Induction.** *Cell systems*
Razo-Mejia, M., Barnes, S. L., Belliveau, N. M., Chure, G., Einav, T., Lewis, M., Phillips, R.
2018; 6 (4): 456-469.e10