

# Stanford


---




## Daniel Fisher

David Starr Jordan Professor

Applied Physics

 NIH Biosketch available Online

 Curriculum Vitae available Online

---

### Bio

#### ACADEMIC APPOINTMENTS

- Professor, Applied Physics
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Fellow, American Academy of Arts and Sciences (1999)
- Onsager Prize, American Physical Society (2013)
- Member, National Academy of Sciences (2015)

#### PROFESSIONAL EDUCATION

- PhD, Harvard University , Physics (1979)
- BA, Cornell University , Math and Physics (1975)

#### LINKS

- Applied Physics Dept. Site: <http://www.stanford.edu/dept/app-physics/cgi-bin/person/fisher-daniel-s/>

---

### Research & Scholarship

#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Evolutionary & ecological dynamics & diversity, microbial, expt'l, & cancer

---

### Teaching

#### COURSES

##### 2019-20

- Cellular Biophysics: APPPHYS 294, BIO 294, BIOPHYS 294 (Aut)

##### 2018-19

- Evolution by the numbers: APPPHYS 237, BIO 251 (Aut)
- Stochastic and Nonlinear Dynamics: APPPHYS 223, BIO 223, BIOE 213 (Spr)

##### 2017-18

- Cellular Biophysics: APPPHYS 294, BIO 294, BIOPHYS 294 (Spr)

- Introduction to Quantitative Reasoning in Biology: BIOS 265 (Spr)

#### 2016-17

- Stochastic and Nonlinear Dynamics: APPPHYS 223, BIO 223 (Spr)
- Understanding Biology with Numbers: APPPHYS 85N (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Esha Atolia, Elton Ho, Kevin Raines

#### Postdoctoral Faculty Sponsor

Gabriel Birzu, Hidenori Tanaka

#### Doctoral Dissertation Advisor (AC)

Michael Pearce

#### Doctoral Dissertation Co-Advisor (AC)

Tingting Gong

#### Doctoral (Program)

Ben Bartlett, Jacob Hines, Minjeong Kim, Joshua Straquadine, Haiwen Wang, Zhaoyou Wang

#### Postdoctoral Research Mentor

Gabriel Birzu, Hidenori Tanaka

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (Phd Program)
- Biology (School of Humanities and Sciences) (Phd Program)
- Biophysics (Phd Program)

## Publications

---

### PUBLICATIONS

- **Hidden Complexity of Yeast Adaptation under Simple Evolutionary Conditions** *CURRENT BIOLOGY*  
Li, Y., Venkataram, S., Agarwala, A., Dunn, B., Petrov, D. A., Sherlock, G., Fisher, D. S.  
2018; 28 (4): 515-+
- **Probing the ecological and evolutionary history of a thermophilic cyanobacterial population via statistical properties of its microdiversity.** *PloS one*  
Rosen, M. J., Davison, M., Fisher, D. S., Bhaya, D.  
2018; 13 (11): e0205396
- **Rapid adaptation in large populations with very rare sex: Scalings and spontaneous oscillations.** *Theoretical population biology*  
Pearce, M. T., Fisher, D. S.  
2017
- **Development of a Comprehensive Genotype-to-Fitness Map of Adaptation-Driving Mutations in Yeast.** *Cell*  
Venkataram, S., Dunn, B., Li, Y., Agarwala, A., Chang, J., Ebel, E. R., Geiler-Samerotte, K., Hérisant, L., Blundell, J. R., Levy, S. F., Fisher, D. S., Sherlock, G., Petrov, et al  
2016; 166 (6): 1585-1596 e22
- **Fine-scale diversity and extensive recombination in a quasisexual bacterial population occupying a broad niche** *SCIENCE*  
Rosen, M. J., Davison, M., Bhaya, D., Fisher, D. S.  
2015; 348 (6238): 1019-1023

- **Quantitative evolutionary dynamics using high-resolution lineage tracking.** *Nature*  
Levy, S. F., Blundell, J. R., Venkataram, S., Petrov, D. A., Fisher, D. S., Sherlock, G.  
2015; 519 (7542): 181-186
- **Acceleration of evolutionary spread by long-range dispersal** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Hallatschek, O., Fisher, D. S.  
2014; 111 (46): E4911-E4919
- **Rapid evolution of adaptive niche construction in experimental microbial populations** *EVOLUTION*  
Callahan, B. J., Fukami, T., Fisher, D. S.  
2014; 68 (11): 3307-3316
- **Lineage structure of the human antibody repertoire in response to influenza vaccination.** *Science translational medicine*  
Jiang, N., He, J., Weinstein, J. A., Penland, L., Sasaki, S., He, X., Dekker, C. L., Zheng, N., Huang, M., Sullivan, M., Wilson, P. C., Greenberg, H. B., Davis, et al  
2013; 5 (171): 171ra19-?
- **Lineage Structure of the Human Antibody Repertoire in Response to Influenza Vaccination** *SCIENCE TRANSLATIONAL MEDICINE*  
Jiang, N., He, J., Weinstein, J. A., Penland, L., Sasaki, S., He, X., Dekker, C. L., Zheng, N., Huang, M., Sullivan, M., Wilson, P. C., Greenberg, H. B., Davis, et al  
2013; 5 (171)
- **Genetic Diversity and the Structure of Genealogies in Rapidly Adapting Populations** *GENETICS*  
Desai, M. M., Walczak, A. M., Fisher, D. S.  
2013; 193 (2): 565-585
- **Evolutionary dynamics and statistical physics** *JOURNAL OF STATISTICAL MECHANICS-THEORY AND EXPERIMENT*  
Fisher, D., Laessig, M., Shraiman, B.  
2013
- **Asexual evolution waves: fluctuations and universality** *JOURNAL OF STATISTICAL MECHANICS-THEORY AND EXPERIMENT*  
Fisher, D. S.  
2013
- **Denoising PCR-amplified metagenome data** *BMC BIOINFORMATICS*  
Rosen, M. J., Callahan, B. J., Fisher, D. S., Holmes, S. P.  
2012; 13
- **The Balance Between Mutators and Nonmutators in Asexual Populations** *GENETICS*  
Desai, M. M., Fisher, D. S.  
2011; 188 (4): 997-1014
- **Determinism and stochasticity during maturation of the zebrafish antibody repertoire** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Jiang, N., Weinstein, J. A., Penland, L., White, R. A., Fisher, D. S., Quake, S. R.  
2011; 108 (13): 5348-5353
- **Leading the dog of selection by its mutational nose** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Fisher, D. S.  
2011; 108 (7): 2633-2634
- **The Rate of Fitness-Valley Crossing in Sexual Populations** *GENETICS*  
Weissman, D. B., Feldman, M. W., Fisher, D. S.  
2010; 186 (4): 1389-1410
- **Rate of Adaptation in Large Sexual Populations** *GENETICS*  
Neher, R. A., Shraiman, B. I., Fisher, D. S.  
2010; 184 (2): 467-481
- **The rate at which asexual populations cross fitness valleys** *THEORETICAL POPULATION BIOLOGY*  
Weissman, D. B., Desai, M. M., Fisher, D. S., Feldman, M. W.

2009; 75 (4): 286-300

● **High-Throughput Sequencing of the Zebrafish Antibody Repertoire** *SCIENCE*

Weinstein, J. A., Jiang, N., White, R. A., Fisher, D. S., Quake, S. R.

2009; 324 (5928): 807-810

● **Ordered phosphorylation governs oscillation of a three-protein circadian clock** *SCIENCE*

Rust, M. J., Markson, J. S., Lane, W. S., Fisher, D. S., O'Shea, E. K.

2007; 318 (5851): 809-812