

Jeff Gore
MIT Physics of Living Systems
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EDUCATION

University of California, Berkeley, CA
Ph.D. in Physics **2005**
Dissertation: "Single-molecule studies of DNA twist mechanics and gyrase
mechanochemistry", Advisor: Carlos Bustamante

Massachusetts Institute of Technology, Cambridge, MA
B.S. Physics, Mathematics, Economics, & Electrical Engineering **1999**
Minor: Chemistry
Thesis: "Electronic control of a new apparatus for studying Bose-Einstein
condensation", Advisor: Wolfgang Ketterle

AWARDS

- Buechner Teaching Award, MIT Physics Department **2013**
- Allen Distinguished Investigator Award **2013**
- Recipient of R01 from NIGMS to study antibiotic resistance **2013**
- NIH New Innovator Award **2012**
- Pew Scholar in the Biomedical Sciences **2011**
- NSF CAREER Award **2011**
- UROP Faculty Mentor of the Year (Undergraduate research) **2011**
- Sloan Research Fellow **2011**
- NIH K99/R00 Pathways to Independence Award Recipient **2008**
- Pappalardo Fellow, Department of Physics, MIT **2007 – 2009**
- Fannie and John Hertz Fellow **1999 – 2004**
- Orloff Award Winner (Scholarship)—MIT Physics Dept **1999**
- Phi Beta Kappa **1998**
- National Merit Scholar **1995**

TEACHING EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA
Instructor – Electricity & Magnetism (8.02 TEAL) **2011 – 2015**
Instructor – Systems Biology (8.591J) **2010 – 2014**

National Academy of Sciences, Washington, DC
Mirzayan Science Policy Fellow – Board on Science Education **Spring 2006**

PROFESSIONAL/RESEARCH EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA
Associate Professor of Physics **2015 – present**
Assistant Professor of Physics **2010 – 2015**
My laboratory uses experimental microbial populations to study
theoretical ecology and evolutionary systems biology.

Massachusetts Institute of Technology, Cambridge, MA
**Pappalardo Postdoctoral Fellow, van Oudenaarden
Laboratory** **2006 – 2009**
Used yeast to study the evolution of cooperative behaviors.

PUBLICATIONS

2015

- Range expansions transition from pulled to pushed waves as growth becomes more cooperative in an experimental microbial population
Saurabh Gandhi, Kirill Korolev, and Jeff Gore
in review at PNAS
- Biofilms: How structure emerges from conflict [Dispatch]
Vega, N.M., and Gore, J.
Current Biology, in press (2015)
- Relation between stability and resilience determines the performance of early warning indicators
Dai, L., Korolev, K.S., and Gore, J.
PNAS (2015)
- Phenotypic States Become Increasingly Sensitive to Perturbations Near a Bifurcation in a Synthetic Gene Network
Healey, D., Axelrod, K., and Gore, J.
Molecular Systems Biology, in revision (2015)
- Cellular memory loses resilience to perturbations near a phenotypic switch
Axelrod, K., Sanchez, A., and Gore, J.
eLife (2015)
- Isolated cell behavior drives the evolution of antibiotic resistance
Artemova, T., Gerardin, Y., Dudley, C., Vega, N.M., and Gore, J.
Molecular Systems Biology (2015)

2014

- Community based antibiotic resistance: Mechanisms and implications [Review]
Vega, N.M., and Gore, J.
Current Opinion in Microbiology (2014)
- Clustering in community structure across replicate ecosystems following a long-term bacterial evolution experiment
Celiker, H., and Gore, J.
Nature Communication (2014)
- Turning ecology and evolution against cancer [Perspective]
Korolev, K.S., Xavier, J., and Gore, J.
Nature Reviews Cancer (2014)
- Early warning of collapse in an experimental producer-freeloader ecosystem
Chen, A.*, Sanchez, A.*, Dai, L., and Gore, J.
Nature Communications (2014)
- Snowing in the enemy [Dispatch]
Datta, M.S., and Gore, J.
Current Biology (2014)

2013

- Social dilemmas of diffusible public goods
Allen, B., Gore, J., and Nowak, M.,
eLife (2013)
- The strength of genetic interactions scales weakly with mutational effect
Velenich, A. and Gore, J.
Genome Biology (2013)
- Bacterial cheating drives the population dynamics of cooperative antibiotic resistance plasmids
Yurtsev, E.A., Chao, H.X., Datta, M.S., Artemova, T., and Gore, J.
Molecular Systems Biology **9:683** (2013)
- Slower recovery in space before collapse of connected populations
Dai, L., Korolev, K.S., and Gore, J.
Nature **496**, 355 – 358 (2013)
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PUBLICATIONS (CONTINUED)

- Range expansion promotes cooperation in an experimental microbial metapopulation
Datta, M.S., Korolev, K.S.*, Cvijovic, I., Dudley, C., and Gore, J.*
Proc. Natl. Acad. Sci. (2013)
- Feedback between evolutionary and population dynamics determines the fate of social microbial populations
Sanchez, A., and Gore, J.
PLOS Biology **11** (2013)

2012

- Cellular cooperation: Insights from microbes
Hasan, C. and Gore, J.
Trends in Cell Biology, **23**, 9 – 15 (2012)
- Competition between species can stabilize public-goods cooperation within a species
Hasan, C. and Gore, J.
Molecular Systems Biology, **8:621** (2012)
- Synthetic approaches to understanding biological constraints
Velenich, A. and Gore, J.
Current Opinion in Chemical Biology **16**, 323 – 328 (2012)
- Generic indicators for loss of resilience near a tipping point leading to population collapse
Dai, L., Vorselen, D., Korolev, K.S., and Gore, J.
Science **336**, 1175 – 1177 (2012)
- Slowly changing environments increases the reversibility of evolution for small populations
Tan, L. and Gore, J.
Evolution **66**, 3144 – 3154 (2012)
- Understanding cooperation in microbes
Damore, J. and Gore, J.
Journal of Theoretical Biology **299**, 31 – 41, (2012)

2011

- A slowly evolving host moves first in symbiotic interactions
Damore, J. and Gore, J.
Evolution **65**, 2391 – 2398 (2011)
- Hidden randomness between fitness landscapes limits reverse evolution
Tan, L., Serene, S., Chao, H.X., and Gore, J.
Physical Review Letters **106**, 198102 (2011)

2009

- Snowdrift game dynamics and facultative cheating in yeast
Gore, J., Youk, H., and van Oudenaarden, A.
Nature **459**, 253 – 256 (2009)
- The yin and yang of nature (News & Views)
Gore, J. and van Oudenaarden, A.
Nature **457**, 271 – 272 (2009)

2007

- Dual modes of gyrase activity revealed by force and torque
Nollmann, M., Stone, M.D., Bryant, Z., Gore, J., Crisona, N., Bustamante, C., and Cozzarelli, N.R.
Nature Structural and Molecular Biology **14**, 264 – 271 (April, 2007)

PUBLICATIONS (CONTINUED)

2006

- DNA overwinds when stretched
Gore, J., Bryant, Z., Nollmann, M., Le, M.U., Cozzarelli, N.R., and Bustamante, C.
Nature **442**, 836 – 839 (2006)
- Mechanochemical analysis of DNA gyrase using rotor bead tracking
Gore, J., Bryant, Z., Stone, M.D., Nollmann, M., Cozzarelli, N.R., and Bustamante, C.
Nature **439**, 100 – 104 (2006)
- Identification of oligonucleotide sequences that direct the movement of the *Escherichia coli* FtsK translocase
Levy, O., Ptacin, J.L., Pease, P.J., Gore, J., Eisen, M.B., Bustamante, C., and Cozzarelli, N.R.
Proceedings of the National Academy of Sciences **102**, 17618 – 17623 (2005)
- Sequence-Directed Translocation by Purified FtsK
Pease, P.J., Levy, O., Cost, G.J., Gore, J., Ptacin, J.L., Sherratt, D., Bustamante, C., and Cozzarelli, N.R.
Science **307**, 586 – 590 (2005)

2003

- Bias and error in estimates of equilibrium free-energy differences from nonequilibrium measurements
Gore, J., Ritort, F., and Bustamante, C.
Proceedings of the National Academy of Sciences **100**, 12564 – 12569 (2003)
- Structural transitions and elasticity from torque measurements on DNA
Bryant, Z., Stone, M.D., Gore, J., Smith, S., Cozzarelli, N.R., and Bustamante, C.
Nature **424**, 338 – 341 (2003)

2002 and before

- High Performance Electrolyte Gated Carbon Nanotube Transistors
Rosenblatt, S., Yaish, Y., Park, J., Gore, J., Sazonova, V., and McEuen, P.
Nanoletters **2**, 869 – 872 (2002)
- Construction and implementation of quantum logic gates from two spin systems
Price, M.D., Somaroo, S.S., Tseng, C.H., Gore, J.C., Fahmy, A.F., Havel, T.R., and Cory, D.G.
Journal of Magnetic Resonance **140**, 371 – 378 (1999)