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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

- 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 – 2013**  
**Instructor** – Systems Biology (8.591J) **2010 – 2012**

*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*  
**Assistant Professor of Physics** **2010 – present**  
My laboratory uses microbes to experimentally probe fundamental questions in theoretical ecology, evolutionary dynamics, and systems biology.

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

*University of California, Berkeley, CA*  
**Graduate Student Researcher, Bustamante Laboratory** **2001 – 2005**  
Studied twist and torque in single molecules of DNA induced by thermal fluctuations, tension, or the motor DNA gyrase.

## PUBLICATIONS

### To be published

- The strength of genetic interactions scales weakly with mutational effect  
Velenich, A. and Gore, J.  
*in review*
- 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.  
*in revision at Molecular Systems Biology*
- Isolated cell behavior drives the evolution of antibiotic resistance  
Artemova, T., Gerardin, Y., Dudley, C., and Gore, J.  
*in submission*
- Early warning of collapse in an experimental producer-consumer ecosystem  
Chen, A., Sanchez, A., Dai, L., and Gore, J.  
*in preparation*

### 2013

- Slower recovery in space before collapse of connected populations  
Dai, L., Korolev, K.S., and Gore, J.  
*Nature, in press (2013)*
- 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., in press (2013)*
- Feedback between evolutionary and population dynamics determines the fate of social microbial populations  
Sanchez, A., and Gore, J.  
*PLOS Biology, in press (2013)*
- Cellular cooperation: Insights from microbes  
Hasan, C. and Gore, J.  
*Trends in Cell Biology, 23, 9 – 15 (2012)*

### 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)*
-

## PUBLICATIONS (CONTINUED)

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)

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)

2005

- 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)