

Manoshi Sen Datta

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Research interests

Ecology and evolution of microbial pathogens on the human body, antibiotic resistance, environmental microbiology, population dynamics, emergent properties of complex systems

Education and employment

- 2017–present **HFSP Postdoctoral Fellow, Faculty of Biology, Technion–Israel Institute of Technology**, with Prof. Roy Kishony.
- 2016–2017 **Postdoctoral associate, Department of Civil & Environmental Engineering, Massachusetts Institute of Technology**, with Prof. Otto X. Cordero.
- 2010–2016 **Ph.D, Computational & Systems Biology, Massachusetts Institute of Technology**.
Thesis: "Microbial community dynamics on patchy landscapes"
Advisors: Prof. Jeff Gore, Prof. Otto X. Cordero, and Prof. Martin F. Polz
- 2006–2010 **B.S. Bioengineering, University of California, Berkeley**.
- 2006–2010 **B.S. Chemical Biology, University of California, Berkeley**.

Awards

- 2018 Human Frontier Science Program Postdoctoral Fellowship
- 2018 Fulbright Postdoctoral Fellowship (declined)
- 2018 Zuckerman STEM Leadership Program Postdoctoral Fellowship (declined)
- 2012, 2014 Best poster prize at MIT Biophysics Retreat
- 2013 #1 student presentation, Gordon Research Seminar (GRS) in Microbial Population Biology (Andover, NH)
- 2012–2015 National Defense Science and Engineering Graduate (NDSEG) Fellowship
- 2006 Robert C. Byrd Scholarship (U.S. Department of Education)

Publications

* denotes equal contributions by authors

- 2019 **Modular assembly of polysaccharide-degrading microbial communities in the ocean**, *Current Biology*, <https://doi.org/10.1016/j.cub.2019.03.047>.
Tim N. Enke*, **Manoshi S. Datta***, Julia Schwartzman, Nathan Cermak, Desiree Schmitz, Julien Barrere, and Otto X. Cordero
- 2018 **Rapid, inexpensive measurement of synthetic bacterial community composition by Sanger sequencing**, *bioRxiv*, <http://doi.org/10.1101/313932>, 2018.
Nathan Cermak*, **Manoshi S. Datta***, Arolyn Conwill
- Inter-individual variability in copepod microbiomes reveals bacterial networks linked to host physiology**, *The ISME Journal*, <http://doi.org/10.1038/s41396-018-0182-1>.
Manoshi S. Datta*, Amalia A. Almada*, Mark Baumgartner, Tracy J. Mincer, Ann M. Tarrant, and Martin F. Polz
- A spotlight on bacterial mutations for 75 years**, *Nature*, 24 (1).
Manoshi S. Datta and Roy Kishony

- 2017 **Natural resource landscapes of a marine bacterium reveal distinct fitness-determining genes across the genome**, *Environmental Microbiology*, 19 (6).
Alison F. Takemura, Christopher H. Corzett, Fatima Hussain, Philip Arevalo, **Manoshi S. Datta**, Xiaolian Yu, Frederique Le Roux, Martin F. Polz
- 2016 **Microbial interactions lead to rapid micro-scale successions on model marine particles**, *Nature Communications*, 7 (11965).
Manoshi S. Datta, Elzbieta Sliwerska, Jeff Gore, Martin F. Polz, and Otto X. Cordero
- Microbial interaction networks and community assembly at micro-scales**, *Current Opinion in Microbiology*, 31 (227–234).
Otto X. Cordero and **Manoshi S. Datta**
- Adaptive radiation by waves of gene transfer leads to fine-scale resource partitioning in marine microbes**, *Nature Communications*, 7.
Jan-Hendrik Hehemann*, Philip Arevalo*, **Manoshi S. Datta***, Annie Yu, Christopher Corzett, Andreas Henschel, Sarah P. Preheim, Sonia Timberlake, Eric J. Alm, and Martin F. Polz
- 2014 **Cross-kingdom chemical communication drives a heritable, mutually beneficial prion-based transformation of metabolism**, *Cell*, 158 (5)1083–1093.
Daniel F. Jarosz, Jessica C.S. Brown, Gordon A. Walker, **Manoshi S. Datta**, W. Lloyd Ung, Alex K. Lancaster, Assaf Rotem, Amelia Chang, Gregory A. Newby, David A. Weitz, Linda F. Bisson, Susan Lindquist
- 2013 **Range expansion promotes cooperation in an experimental microbial metapopulation**, *Proceedings of the National Academy of Sciences*, 110 (18) 7354–7359, 2013.
Manoshi S. Datta, Kirill S. Korolev, Ivana Cvijovic, Carmel Dudley, and Jeff Gore
- Bacterial cheating drives the population dynamics of cooperative antibiotic resistance plasmids**, *Molecular Systems Biology*, 9:683.
Eugene Yurtsev*, Hui Xiao Chao*, **Manoshi S. Datta**, Tanya Artemova, and Jeff Gore

Selected invited talks

- 2018 **EMBO Workshop**, *Bacterial Persistence and Antimicrobial Therapy*, Zurich, Switzerland.
- 2017 **116th International Titisee Conference**, *From Pathogen Evolution to Microbiome Dynamics*, Titisee, Germany.
- 2014 **Invited seminar in Department of Environmental Systems Science**, ETH Zürich, Zürich, Switzerland.
- 2013 **Gordon Research Conference**, *Microbial Population Biology*, Proctor Academy, Andover, New Hampshire.
Talk was voted #1 among those by graduate students and postdocs
- 2012 **Microbial Evolution seminar series**, Harvard University, Cambridge, Massachusetts.

Teaching experience

- Spring 2017 **Education Technology Certificate Program**, MIT.
- Spring 2016 **Kaufman Teaching Certificate Program**, MIT.
- Spring 2016 **Teaching assistant, Environmental Microbiology**, MIT.
Graded problem sets.

- Spring 2016 **MITx Biology Graduate Assistant, 7.00x, MITx.**
Worked on a team to design a comprehensive mastery exam for introductory biology students taking a massive open online course (MOOC). Assessed the 7.00x curriculum, wrote interdisciplinary questions for exam, and evaluated existing assessments. Published exam on the edX online platform.
- Spring 2015 **Teaching assistant, Quantitative Biology Workshop (7.QBWx), MITx.**
Helped with massive open online course (MOOC) on applying quantitative techniques to biological problems. Assisted in developing course materials (including exercises in Python, Matlab, R, and PyMol) and monitored the discussion forums in real-time to address student concerns.
- Spring 2012 **Teaching assistant, Physical Chemistry of Biomolecular Systems, MIT.**
Responsible for problem sets, exams, discussion section, and office hours for course on physical chemistry for chemistry and bioengineering students. Rating 6.4/7.0.
- 2007-2010 **Student Learning Center, University of California, Berkeley.**
Taught a supplementary study group in general chemistry for first-year undergraduates majoring in biology, physics, and engineering. Regularly led course-wide exam review sessions and practice midterms. Led seminar to review course material and teaching strategies for newly hired general chemistry tutors.

References

Prof. Roy Kishony

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Computer Science
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Prof. Jeff Gore

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Prof. Martin F. Polz

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Prof. Otto X. Cordero

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