

# Lawrence A. David

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## CONTACT INFORMATION

CIEMAS, Room 2171  
101 Science Drive, Box 3382  
Durham, NC 27708

*E-mail:* l.d@duke.edu  
*Phone:* 919.668.5388  
*Web:* <http://www.ladlab.org>

## EDUCATION

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| Massachusetts Institute of Technology  | 2005-2010 |
| Ph.D., Computational and Systems Biology   |           |
| <i>Thesis:</i> "Novel phylogenetic approaches to problems in microbial genomics" |           |
| Columbia University  | 2001-2005 |
| B.S., Biomedical Engineering, <i>summa cum laude</i>                             |           |

## PROFESSIONAL EXPERIENCE

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| Assistant Professor, Duke University   | 2013-     |
| Junior Fellow, Harvard Society of Fellows  | 2010-2013 |
| Ph.D. student, Massachusetts Institute of Technology - <i>PI:</i> Eric Alm       | 2005-2010 |
| Undergraduate research assistant, Columbia University - <i>PI:</i> Chris Wiggins | 2002-2005 |

## PUBLICATIONS

[\* DENOTES EQUAL CONTRIBUTION]

11. **LA David**, AC Materna, J Friedman, I Baptista, MC Blackburn, A Perrotta, SE Erdman, EJ Alm. Rare events can trigger switching between alternative stable states of the human microbiome. *Submitted*.
10. **LA David**, CF Maurice, RN Carmody, DB Gootenberg, JE Button, BE Wolfe, AV Ling, AS Devlin, Y Varma, MA Fischbach, SB Biddinger, RJ Dutton, PJ Turnbaugh. Diet rapidly and reproducibly alters the gut microbiome. *Nature*, accepted 2013.
9. G Szabo, SP Preheim, KM Kauffman, **LA David**, J Shapiro, EJ Alm, MF Polz. Reproducibility of *Vibrionaceae* Population Structure in Coastal Bacterioplankton. *ISME J*, **7**: 509-519, Mar 2013.
8. CS Smillie\*, MB Smith\*, J Friedman, OX Cordero, **LA David**, EJ Alm. Ecology drives a global network of gene exchange connecting the human microbiome. *Nature*, **480**(7376):241-244, Dec 2011.
7. **LA David**, EJ Alm. Rapid evolutionary innovation during an Archean Genetic Expansion. *Nature*, **469**(7328):93-96, Jan 2011.
6. SP Preheim, Y Boucher, H Wildschutte, **LA David**, D Veneziano, EJ Alm and MF Polz. Metapopulation structure of *Vibrionaceae* among coastal marine invertebrates. *Environ Microbiol*, **13**:265-275, Jan 2011.
5. BJ Shapiro, **LA David**, J Friedman, EJ Alm. Looking for Darwin's footprints in the microbial world. *Trends Microbiol* **17**(5):196-204, May 2009.

4. BJ Dubin-Thaler, JM Hofman, Y Cai, H Xenias, I Spielman, AV Shneidman, **LA David**, HG Dobereiner, CH Wiggins, MP Sheetz. Quantification of Cell Edge Velocities and Traction Forces Reveals Distinct Motility Modules during Cell Spreading. *PLoS ONE*, **3**(11), Nov 2008.
3. DE Hunt\*, **LA David\***, D Gevers, SP Preheim, EJ Alm, MF Polz. Resource Partitioning and Sympatric Differentiation Among Closely Related Bacterioplankton. *Science*, **320**(5879):1081-85, May 2008.
2. **LA David**, CH Wiggins. Benchmarking of dynamic Bayesian Networks from stochastic time-series data. *Ann NY Acad Sci.*, **1115** 90-101, Dec 2007.
1. CF Glenn, DK Chow, **L David**, C Cooke, M Gami, W Iser, K Hanselman, I Goldberg and CA Wolkow. Behavioral deficits during early states of aging in *Caenorhabditis elegans* result from locomotory deficits possibly linked to muscle frailty. *J Gerontol A Biol Sci Med Sci.*, **59**(12):1251-60, Dec 2004.

#### GRANTS AWARDED

- Milton Fund, Harvard University. “The human gut microbiota and *Vibrio cholerae* infection.” (\$39K) PI: Lawrence David; Awarded 01/2011-12/2012.
- Feasibility Grant, Harvard Center for AIDS Research. “The gut microbiota and microbial translocation in early HIV-1 infection.” (\$78K) PIs: Lawrence David & Douglas Kwon; Awarded 07/2011-07/2012.

#### FELLOWSHIPS & AWARDS

2013 - Whitehead Scholar, Duke University  
 2010 - Elected Junior Fellow, Harvard Society of Fellows  
 2009 - MIT Whitaker Health Sciences Fund Fellowship  
 2005 - National Defense Science and Engineering Graduate Fellowship  
 2005 - Dept. of Energy Computational Science Graduate Fellowship [declined]  
 2005 - Ford Foundation Diversity Predoctoral Fellowship [declined]  
 2005 - Columbia Thomas “Pop” Harrington Award  
 2005 - Columbia Robert E. and Claire S. Reiss Graduate Prize  
 2004 - Barry M. Goldwater Scholarship  
 2002 - Westchester Filipino-American Scholarship  
 2001 - Columbia C.P. Davis Scholar

#### TEACHING & MENTORSHIP

- Graduate resident tutor: Live-in mentor for MIT’s MacGregor undergraduate dormitory, 2008-2010.
- Biology tutor and Science Olympiad mentor (High School): Cambridge Rindge and Latin, 2007-2008.
- Teaching assistant (Undergraduate): “Computation for Biological Engineers,” taught by Profs. Eric Alm & Drew Endy, MIT, Fall 2006. Average overall rating of 6.5/7.0.

### *Research project supervision*

- Albert Wang, “Construction of an archaeal supertree.” Undergraduate researcher, Alm Lab, MIT: 2008-present.
- Shirley Galbiati, “Inferring the origins of photosynthesis.” Undergraduate researcher, Alm Lab, MIT: 2010.
- Alexandra Konings, “Reconstructing ancient biological networks.” Undergraduate researcher, Alm Lab, MIT: 2008.

### SERVICE

- Advisor: Boston Museum of Science, 2013-present.
- Founding member: ASM General Meeting Junior Advisory Group, 2011-2013.
- Referee: *Biology Letters*, *BMC Bioinformatics*, *Genome Research*, *PLoS Pathogens*, *PNAS*.

### MEDIA

Print and online media coverage of research includes: the BBC, Boston Globe, the Daily Mail, GenomeWeb, LiveScience, MSNBC, the New Scientist, Science Daily, The Scientist, StoryCollider, USA Today, and Wired.

### PRESENTATIONS

19. “There’s an app for that: Tracking the lives of humans and the microbes living inside of them.” Genomics Standards Consortium 15, Bethesda, MD, April 2013 (Talk)
18. “There’s an app for that: Tracking the lives of humans and the microbes living inside of them.” Museum of Science, Boston, MA, March 2013 (Talk)
17. “Dynamics and stability of human-associated microbial communities,” National Institute of Health, Manila, Philippines, February 2013 (Talk)
16. “Resistance and response of the human gut microbiome to perturbation,” Civil & Environmental Engineering Seminar, Duke University, Durham, NC, December 2012 (Talk)
15. “Succession dynamics of the human gut microbiota following *Vibrio cholerae* infection,” icddr,b Seminar, Dhaka, Bangladesh, August 2012 (Talk)
14. “Reproducible succession dynamics of the human gut microbiota following *Vibrio cholerae* infection,” International Research in Infectious Diseases Annual Meeting, Bethesda, MD, May 2012 (Talk)
13. “Daily tracking of human health, behavior, and gut microbiota over one year,” MIT Synthetic Biology Lunch, Cambridge, MA, April 2012 (Talk)
12. “Daily tracking of human health, behavior, and gut microbiota over one year,” Northeastern University, Boston, MA, March 2012 (Talk)
11. “Daily tracking of human health, behavior, and gut microbiota over one year,” Memorial Sloan-Kettering Cancer Center, New York, NY, February 2012 (Talk)

10. "Daily tracking of human health, behavior, and gut microbiota over one year," Duke University, Durham, NC, February 2012 (Talk)
9. "Daily tracking of human health, behavior, and gut microbiota over one year," University of North Carolina, Chapel Hill, NC, February 2012 (Talk)
8. "Stability of the human gut microbiota," Microbiome Research in the Boston Area Seminar, Boston, MA, October 2011 (Talk)
7. "Stability of the human gut microbiota," Microbiome Seminar, New York University, New York, NY, October 2011 (Talk)
6. "Building models of Precambrian evolution from modern-day microbial gene families," Paleobiology in the Genomics Era Conference, JCVI, San Diego, CA, May 2011 (Talk)
5. "Of microbes and men: A year-long study of daily changes to the human microbiome," Quantitative Biology Workshop, MIT, January 2011 (Talk)
4. "Learning influential host factors and dynamical properties in human-associated microbial ecosystems," Human Microbiome Research Conference, St. Louis, MO, August 2010 (Poster; travel grant recipient)
3. "Rapid evolutionary innovation during an Archean Genetic Expansion," Biology of Genomes Conference, Cold Spring, NY, May 2010 (Poster; travel grant recipient)
2. "The HuGE project: Daily Variation In Human Microbiome Composition Over the Course of One Year," Merck-MIT Symposium, Boston, MA, April 2010 (Poster; winner best poster)
1. "Extracting insight from increasingly large microbial genomic datasets," Ginkgo BioWorks, Boston, MA, March 2010 (Talk)