Lawrence A. David

Contact Information

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Education

Massachusetts Institute of Technology   2005-2010
  Ph.D., Computational & Systems Biology

Columbia University   2001-2005
  B.S., Biomedical Engineering, *summa cum laude*

Professional Experience

Assistant Professor, Duke University   2013-
Junior Fellow, Harvard Society of Fellows   2010-2013
Ph.D. student, Massachusetts Institute of Technology - *PI*: Eric Alm   2005-2010
Undergraduate research assistant, Columbia University - *PI*: 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. Host lifestyle affects human microbiota on daily timescales. *In revision.*

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*, **505**(7484):559-563, Jan 2014.

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

- Young Investigator Grant, Global Probiotics Council "A high-throughput pipeline to find probiotics that inhibit select gut microbes" ($50K) PI: Lawrence David; 07/2014-06/2015.
- Research Fellowship, Alfred P. Sloan Foundation ($50K) PI: Lawrence David; 02/2014-02/2016.
- Pilot Grant, Duke Center for the Genomics of Microbial Systems "Measurement and manipulation of environmental oxygen and the human gut microbiome" ($20K) PIs: Lawrence David & Marc Deshusses; 10/2013-10/2014.
- Feasibility Grant, Harvard Center for AIDS Research. "The gut microbiota and microbial translocation in early HIV-1 infection." ($78K) PIs: Lawrence David & Douglas Kwon; 07/2011-07/2012.
- Milton Fund, Harvard University. "The human gut microbiota and *Vibrio cholerae* infection." ($39K) PI: Lawrence David; 01/2011-12/2012.

FELLOWSHIPS & AWARDS

2014 - Alfred P. Sloan Research Fellow
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

- Instructor (1 of 4): ideSHi Genomics Workshop, International Centre for Diarrhoeal Disease Research, Bangladesh, March 3-5, 2014
- Committee member: Duke CBB Graduate Admissions 2013-2014.
- Co-organizer: Duke GeMS Symposium, 2014.
- Co-organizer: Duke GeMS Microbiome Service, 2013-.
- Advisor: Boston Museum of Science, 2013.
- Founding member: ASM General Meeting Junior Advisory Group, 2011-2013.
- Referee: *Biology Letters*, *BMC Bioinformatics*, *Genome Research*, *InnoCentive*, *mBio*, *PLoS One*, *PLoS Pathogens*, *PNAS*.

TEACHING & MENTORSHIP

- (Duke) Aspen Reese, University Program in Ecology, PhD student, 2013-
- (Duke) Eric Mastrolonardo, undergrad research, 2013-
- (Duke) Sai Nimmagadda, undergrad research, 2013-
- (Duke) Calvin Lau, undergrad research, 2013-
- (Duke) Olivia Lin, undergrad research, 2013-
- (Harvard) Noah Apthorpe, undergrad research, under supervision of Peter Turnbaugh, 2012.
- (MIT) Shirley Galbiati, undergrad research, under supervision of Eric Alm, 2010.
- (MIT) Albert Wang, undergrad research, under supervision of Eric Alm, 2008-2010.
- (MIT) Alexandra Konings, undergrad research, under supervision of Eric Alm, 2008.
- (MIT) Graduate Resident Tutor, 2008-2010.
- (Cambridge Rindge & Latin) Science Olympiad and Biology tutor, 2007-2008.
- (MIT) Teaching assistant "Computation for Biological Engineers," 2006.

MEDIA

Print and online media coverage of research includes: the BBC, Bloomberg, Boston Globe, the Daily Mail, GenomeWeb, HealthDay, LiveScience, MSNBC, National Geographic: Phenomena, the New Scientist, NPR, Prevention Magazine, Radio In Vivo (WCOM), Science Daily, Science News, The Scientist, Scientific American, StoryCollider, USA Today, and Wired.

PRESENTATIONS

28. "Manipulating the human microbiome." Bollum Symposium, University of Minnesota, Minneapolis, MN, May 2014 (Invited talk)

27. "Manipulating the human microbiome." DCEG Fellows Training Symposium, NIH/NCI, Bethesda, MD, Mar 2014 (Invited talk)

26. "Perturbing the human microbiome." LadHyX Seminar, Ecole Polytechnique, Palaiseau, France, Feb 2014 (Talk)

25. "Perturbing the human microbiome." Pasteur Fellowship Visiting Scholar, Institut Pasteur, Paris, France, Feb 2014 (Invited talk)

24. "Daily changes to human-associated microbial communities." Duke University Program in Ecology Seminar, Durham, NC, Nov 2013 (Talk)

23. "Daily changes to human-associated microbial communities." Duke Marine Lab Fall Seminar, Beaufort, NC, Sep 2013 (Talk)

22. "Daily changes to human-associated microbial communities." Duke Computational Biology & Bioinformatics Seminar, Durham, NC, Sep 2013 (Talk)

21. "Daily changes to human-associated microbial communities." Duke Genomic and Personalized Medicine Forum, Durham, NC, Sep 2013 (Talk)

20. "Daily changes to human-associated microbial communities." Duke University Program in Genetics & Genomics Seminar, Durham, NC, Sep 2013 (Talk)

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, Apr 2013 (Invited 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, Mar 2013 (Talk)

17. "Dynamics and stability of human-associated microbial communities," National Institute of Health, Manila, Philippines, Feb 2013 (Talk)

16. "Resistance and response of the human gut microbiome to perturbation," Civil & Environmental Engineering Seminar, Duke University, Durham, NC, Dec 2012 (Invited talk)

15. "Succession dynamics of the human gut microbiota following Vibrio cholerae infection," icddr,b Seminar, Dhaka, Bangladesh, Aug 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, Apr 2012 (Talk)

12. "Daily tracking of human health, behavior, and gut microbiota over one year," Northeastern University, Boston, MA, Mar 2012 (Talk)

11. "Daily tracking of human health, behavior, and gut microbiota over one year," Memorial Sloan-Kettering Cancer Center, New York, NY, Feb 2012 (Talk)

10. "Daily tracking of human health, behavior, and gut microbiota over one year," Duke University, Durham, NC, Feb 2012 (Talk)

9. "Daily tracking of human health, behavior, and gut microbiota over one year," University of North Carolina, Chapel Hill, NC, Feb 2012 (Talk)

8. "Stability of the human gut microbiota," Microbiome Research in the Boston Area Seminar, Boston, MA, Oct 2011 (Talk)

7. "Stability of the human gut microbiota," Microbiome Seminar, New York University, New York, NY, Oct 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 (Invited talk)

5. "Of microbes and men: A year-long study of daily changes to the human microbiome," Quantitative Biology Workshop, MIT, Jan 2011 (Talk)

4. "Learning influential host factors and dynamical properties in human-associated microbial ecosystems," Human Microbiome Research Conference, St. Louis, MO, Aug 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, Apr 2010 (Poster; winner best poster)

1. "Extracting insight from increasingly large microbial genomic datasets," Ginkgo BioWorks, Boston, MA, Mar 2010 (Talk)