



## David A. Relman

Thomas C. and Joan M. Merigan Professor and Professor of Microbiology and Immunology

Medicine - Infectious Diseases

### Bio

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#### BIO

David A. Relman, MD is the Thomas C. and Joan M. Merigan Professor in Medicine, and Professor of Microbiology & Immunology, and Senior Fellow at the Freeman Spogli Institute for International Studies at Stanford University. He is also Chief of Infectious Diseases at the Veterans Affairs Palo Alto Health Care System in Palo Alto, California. Dr. Relman's research focus is the human indigenous microbiota and on diversity, assembly, stability, and resilience of the human microbial ecosystem, as well as the identification of previously-unrecognized microbial agents of disease. He has advised the U.S. Government on emerging infectious diseases, human-microbe interactions, and future biological threats. He is a member of the Board of Scientific Counselors at the National Center for Biotechnology Information (NCBI), NIH, a member of the Intelligence Community Studies Board at the National Academies of Science, Engineering and Medicine, and Past President of the Infectious Diseases Society of America. He is a Fellow of the American Academy of Microbiology, and a Member of the National Academy of Medicine.

#### ACADEMIC APPOINTMENTS

- Professor, Medicine - Infectious Diseases
- Professor, Microbiology & Immunology
- Member, Bio-X
- Senior Fellow, Center for International Security and Cooperation
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Faculty Fellow, Stanford ChEM-H

#### ADMINISTRATIVE APPOINTMENTS

- Member, Center for Computational, Evolutionary and Human Genomics, (2018- present)
- Faculty Fellow, Center for Innovation in Global Health, Stanford University, (2015- present)
- Senior Fellow, Freeman Spogli Institute for International Studies, Stanford University, (2013- present)
- Chief, Infectious Diseases Section, VA Palo Alto Health Care System, (2002- present)
- Chair, Administrative Panel on Biosafety, Stanford University, (2001-2018)
- Co-Director, Center for International Security and Cooperation (CISAC), Stanford University, (2013-2017)

#### HONORS AND AWARDS

- NIH Transformative Research Award, NIH (2013)
- Member, Institute of Medicine, National Academies of Science (2011-)
- Fellow, American Association for the Advancement of Science (2010)

- Thomas C. and Joan M. Merigan Professor, Stanford University (2009-)
- Distinguished Clinical Scientist Award, Doris Duke Charitable Foundation (2006)
- NIH Director's Pioneer Award, NIH (2006)
- Kinyoun Lecturer, NIAID/NIH (2005)
- Fellow, American Academy of Microbiology (2003)
- Senior Scholar Award in Global Infectious Diseases, Ellison Medical Foundation (2002)
- Squibb Award, Infectious Diseases Society of America (2001)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Member, Intelligence Community Studies Board, National Academies of Science, Engineering, and Medicine (2016 - present)
- Member (Chair, 2018-2019), Board of Scientific Counselors, National Center for Biotechnology Information, NIH (2015 - present)
- Member, Working Group on Biodefense President's Council of Advisors on Science and Technology, The White House (2015 - 2016)
- Member, Working Group on Antimicrobial Resistance, President's Council of Advisors on Science and Technology (2014 - 2014)
- Member, Committee on Science, Technology and Law, National Academy of Science (2012 - 2017)
- President, Infectious Diseases Society of America (2012 - 2013)
- Chair, Forum on Microbial Threats, Institute of Medicine (National Academies of Science) (2007 - 2017)
- Member, Science, Technology, and Engineering Advisory Panel, Lawrence Livermore National Laboratory (2007 - 2017)
- Member, National Science Advisory Board for Biosecurity (2005 - 2014)

## **PROFESSIONAL EDUCATION**

- S.B., M.I.T. , Biology (1977)
- M.D., Harvard Medical School , Medicine (1982)

## **COMMUNITY AND INTERNATIONAL WORK**

- Chief Medical Officer, Rock Medicine, Haight-Ashbury Medical Clinics

## **LINKS**

- <http://relman.stanford.edu>: <https://sites.google.com/site/davidrelmanlab/Home>

## **Research & Scholarship**

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### **CURRENT RESEARCH AND SCHOLARLY INTERESTS**

My primary research focus is the human indigenous microbiota (microbiome), and in particular, the nature and mechanisms of variation in patterns of microbial diversity within the human body as a function of time (microbial succession), space (biogeography within the host landscape), and in response to perturbation, e.g., antibiotics (community robustness and resilience). One of the goals of this work is to define the role of the human microbiome in health and disease. We are particularly interested in measuring and understanding resilience in the human microbial ecosystem. Our work includes the human oral cavity, gut, and female reproductive tract, as well as an analysis of microbial diversity in marine mammals. This research integrates theory and methods from ecology, population biology, environmental microbiology, genomics and clinical medicine.

During the past few decades, my research directions have also included pathogen discovery and the development of new strategies for identifying previously- unrecognized microbial agents of disease. This work has included the use of host gene expression response patterns to recognize and understand early stages of systemic infection. Currently, we are examining genomic patterns of host response in dengue fever and in cases of undiagnosed febrile illness, for diagnostic and prognostic purposes, as well as to understand better disease mechanism.

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Adam Burns, Arianna Celis Luna, Natalie Fischer

#### Doctoral Dissertation Advisor (AC)

Daniel Sprockett

#### Orals Evaluator

Daniel Sprockett

#### Postdoctoral Research Mentor

Arianna Celis Luna, Henry Cheng, Natalie Fischer

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Medicine (Masters Program)
- Microbiology and Immunology (Phd Program)

## Publications

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### PUBLICATIONS

- **Multomics modeling of the immunome, transcriptome, microbiome, proteome and metabolome adaptations during human pregnancy.** *Bioinformatics (Oxford, England)*  
Ghaemi, M. S., DiGiulio, D. B., Contrepolis, K., Callahan, B., Ngo, T. T., Lee-McMullen, B., Lehallier, B., Robaczewska, A., Mcilwain, D., Rosenberg-Hasson, Y., Wong, R. J., Quaintance, C., Culos, et al  
2019; 35 (1): 95–103
- **Understanding health disparities.** *Journal of perinatology : official journal of the California Perinatal Association*  
Stevenson, D. K., Wong, R. J., Aghaeepour, N., Angst, M. S., Darmstadt, G. L., DiGiulio, D. B., Druzin, M. L., Gaudilliere, B., Gibbs, R. S., B Gould, J., Katz, M., Li, J., Moufarrej, et al  
2018
- **Simple statistical identification and removal of contaminant sequences in marker-gene and metagenomics data.** *Microbiome*  
Davis, N. M., Proctor, D. M., Holmes, S. P., Relman, D. A., Callahan, B. J.  
2018; 6 (1): 226
- **Metagenomic analysis with strain-level resolution reveals fine-scale variation in the human pregnancy microbiome.** *Genome research*  
Goltsman, D. S., Sun, C. L., Proctor, D. M., DiGiulio, D. B., Robaczewska, A., Thomas, B. C., Shaw, G. M., Stevenson, D. K., Holmes, S. P., Banfield, J. F., Relman, D. A.  
2018
- **Poverty and Community-Acquired Antimicrobial Resistance with Extended-Spectrum ss-Lactamase-Producing Organisms, Hyderabad, India** *EMERGING INFECTIOUS DISEASES*  
Alsan, M., Kammili, N., Lakshmi, J., Xing, A., Khan, A., Rani, M., Kolli, P., Relman, D. A., Owens, D. K.  
2018; 24 (8): 1490–96
- **The human microbiome**  
Relman, D.  
ELSEVIER SCI LTD.2018: 70
- **Early transcriptional responses after dengue vaccination mirror the response to natural infection and predict neutralizing antibody titers.** *The Journal of infectious diseases*  
Popper, S. J., Strouts, F. R., Lindow, J. C., Cheng, H. K., Montoya, M., Balmaseda, A., Durbin, A. P., Whitehead, S. S., Harris, E., Kirkpatrick, B. D., Relman, D. A.

2018

- **A spatial gradient of bacterial diversity in the human oral cavity shaped by salivary flow.** *Nature communications*  
Proctor, D. M., Fukuyama, J. A., Loomer, P. M., Armitage, G. C., Lee, S. A., Davis, N. M., Ryder, M. I., Holmes, S. P., Relman, D. A.  
2018; 9 (1): 681
- **Clostridium difficile, Aging, and the Gut: Can Microbiome Rejuvenation Keep Us Young and Healthy?** *The Journal of infectious diseases*  
Fischer, N., Relman, D. A.  
2018; 217 (2): 174–76
- **Enterotypes in the landscape of gut microbial community composition.** *Nature microbiology*  
Costea, P. I., Hildebrand, F., Arumugam, M., Bäckhed, F., Blaser, M. J., Bushman, F. D., de Vos, W. M., Ehrlich, S. D., Fraser, C. M., Hattori, M., Huttenhower, C., Jeffery, I. B., Knights, et al  
2018; 3 (1): 8–16
- **Role of priority effects in the early-life assembly of the gut microbiota.** *Nature reviews. Gastroenterology & hepatology*  
Sprockett, D., Fukami, T., Relman, D. A.  
2018; 15 (4): 197–205
- **Rethinking biosecurity** *ISSUES IN SCIENCE AND TECHNOLOGY*  
Relman, D. A.  
2017; 33 (2): 13–14
- **The Landscape Ecology and Microbiota of the Human Nose, Mouth, and Throat** *CELL HOST & MICROBE*  
Proctor, D. M., Relman, D. A.  
2017; 21 (4): 421-432
- **A geographically-diverse collection of 418 human gut microbiome pathway genome databases** *SCIENTIFIC DATA*  
Hahn, A. S., Altman, T., Konwar, K. M., Hanson, N. W., Kim, D., Relman, D. A., Dill, D. L., Hallam, S. J.  
2017; 4
- **Candidatus Mycoplasma girerdii replicates, diversifies, and co-occurs with Trichomonas vaginalis in the oral cavity of a premature infant.** *Scientific reports*  
Costello, E. K., Sun, C. L., Carlisle, E. M., Morowitz, M. J., Banfield, J. F., Relman, D. A.  
2017; 7 (1): 3764
- **The Human Virome - Implications for Clinical Practice in Transplantation Medicine.** *Journal of clinical microbiology*  
Tan, S. K., Relman, D. A., Pinsky, B. A.  
2017
- **On Defining Global Catastrophic Biological Risks.** *Health security*  
Palmer, M. J., Tiu, B. C., Weissenbach, A. S., Relman, D. A.  
2017; 15 (4): 347–48
- **Multidomain analyses of a longitudinal human microbiome intestinal cleanout perturbation experiment.** *PLoS computational biology*  
Fukuyama, J., Rumker, L., Sankaran, K., Jeganathan, P., Dethlefsen, L., Relman, D. A., Holmes, S. P.  
2017; 13 (8): e1005706
- **Long-term taxonomic and functional divergence from donor bacterial strains following fecal microbiota transplantation in immunocompromised patients.** *PloS one*  
Moss, E. L., Falconer, S. B., Tkachenko, E., Wang, M., Systrom, H., Mahabamunuge, J., Relman, D. A., Hohmann, E. L., Bhatt, A. S.  
2017; 12 (8): e0182585
- **Replication and refinement of a vaginal microbial signature of preterm birth in two racially distinct cohorts of US women.** *Proceedings of the National Academy of Sciences of the United States of America*  
Callahan, B. J., DiGiulio, D. B., Goltsman, D. S., Sun, C. L., Costello, E. K., Jeganathan, P., Biggio, J. R., Wong, R. J., Druzin, M. L., Shaw, G. M., Stevenson, D. K., Holmes, S. P., Relman, et al  
2017
- **Childhood tuberculosis is associated with decreased abundance of T cell gene transcripts and impaired T cell function.** *PloS one*

- Hemingway, C., Berk, M., Anderson, S. T., Wright, V. J., Hamilton, S., Eleftherohorinou, H., Kaforou, M., Goldgof, G. M., Hickman, K., Kampmann, B., Schoeman, J., Eley, B., Beatty, et al  
2017; 12 (11): e0185973
- **Microbiota: A high-pressure situation for bacteria.** *Nature*  
Relman, D. A.  
2017; 551 (7682): 571–72
  - **Novel Microbial Diversity and Functional Potential in the Marine Mammal Oral Microbiome.** *Current biology : CB*  
Dudek, N. K., Sun, C. L., Burstein, D., Kantor, R. S., Aliaga Goltsman, D. S., Bik, E. M., Thomas, B. C., Banfield, J. F., Relman, D. A.  
2017; 27 (24): 3752–62.e6
  - **Risky Business: Meeting the Structural Needs of Transdisciplinary Science.** *The Journal of pediatrics*  
Wise, P. H., Shaw, G. M., Druzin, M. L., Darmstadt, G. L., Quaintance, C., Mäkinen, E., Relman, D. A., Quake, S. R., Butte, A. J., Angst, M. S., Muglia, L. J., Macones, G., Driscoll, et al  
2017; 191: 255–58
  - **Multidomain analyses of a longitudinal human microbiome intestinal cleanout perturbation experiment** *PLOS Computational Biology*  
Fukuyama, J., Rumker, L., Sankaran, K., Jeganathan, P., Relman, D. A., Holmes, S. P.  
2017; 13 (8): e1005706
  - **Cathelicidin Insufficiency in Patients with Fatal Leptospirosis.** *PLoS pathogens*  
Lindow, J. C., Wunder, E. A., Popper, S. J., Min, J., Mannam, P., Srivastava, A., Yao, Y., Hacker, K. P., Raddassi, K., Lee, P. J., Montgomery, R. R., Shaw, A. C., Hagan, et al  
2016; 12 (11)
  - **Cathelicidin insufficiency in patients with fatal leptospirosis**  
Lindow, J., Wunder, E., Popper, S., Min, J., Mannam, P., Srivastava, A., Yao, Y., Hacker, K., Raddassi, K., Lee, P., Montgomery, R., Shaw, A., Hagan, et al  
WILEY-BLACKWELL.2016: 765–66
  - **A microbial perspective of human developmental biology** *NATURE*  
Charbonneau, M. R., Blanton, L. V., DiGiulio, D. B., Relman, D. A., Lebrilla, C. B., Mills, D. A., Gordon, J. I.  
2016; 535 (7610): 48-55
  - **How to build healthy growth-promoting gut communities** *NATURE REVIEWS GASTROENTEROLOGY & HEPATOLOGY*  
Relman, D. A.  
2016; 13 (7): 379–80
  - **Early Transcriptional Signatures of the Immune Response to a Live Attenuated Tetravalent Dengue Vaccine Candidate in Non-human Primates** *PLOS NEGLECTED TROPICAL DISEASES*  
Strouts, F. R., Popper, S. J., Partidos, C. D., Stinchcomb, D. T., Osorio, J. E., Relman, D. A.  
2016; 10 (5)
  - **Infectious Diseases Society of America and Gain-of-Function Experiments With Pathogens Having Pandemic Potential** *JOURNAL OF INFECTIOUS DISEASES*  
Frank, G. M., Adalja, A., Barbour, A., Casadevall, A., Dormitzer, P. R., Duchin, J., Hayden, F. G., Hirsch, M. S., Hynes, N. A., Lipsitch, M., Pavia, A. T., Relman, D. A.  
2016; 213 (9): 1359–61
  - **How likely is it that biological agents will be used deliberately to cause widespread harm? Policymakers and scientists need to take seriously the possibility that potential pandemic pathogens will be misused** *EMBO REPORTS*  
Inglesby, T. V., Relman, D. A.  
2016; 17 (2): 127–30
  - **Marine mammals harbor unique microbiotas shaped by and yet distinct from the sea.** *Nature communications*  
Bik, E. M., Costello, E. K., Switzer, A. D., Callahan, B. J., Holmes, S. P., Wells, R. S., Carlin, K. P., Jensen, E. D., Venn-Watson, S., Relman, D. A.  
2016; 7: 10516-?
  - **A new view of the tree of life.** *Nature microbiology*  
Hug, L. A., Baker, B. J., Anantharaman, K., Brown, C. T., Probst, A. J., Castelle, C. J., Butterfield, C. N., HERNSDORF, A. W., Amano, Y., Ise, K., Suzuki, Y., Dudek, N., Relman, et al

2016; 1: 16048-?

- **REPRODUCIBLE RESEARCH WORKFLOW IN R FOR THE ANALYSIS OF PERSONALIZED HUMAN MICROBIOME DATA.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*  
Callahan, B., Proctor, D., Relman, D., Fukuyama, J., Holmes, S.  
2016; 21: 183-194
- **SCIENCE GOVERNANCE. A more systematic approach to biological risk.** *Science*  
Palmer, M. J., Fukuyama, F., Relman, D. A.  
2015; 350 (6267): 1471-1473
- **Reply to Keelan and Payne: Microbiota-related pathways for preterm birth** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
DiGiulio, D. B., Stevenson, D. K., Shaw, G., Lyell, D. J., Relman, D. A.  
2015; 112 (47): E6415
- **Variation in Taxonomic Composition of the Fecal Microbiota in an Inbred Mouse Strain across Individuals and Time** *PLOS ONE*  
Hoy, Y. E., Bik, E. M., Lawley, T. D., Holmes, S. P., Monack, D. M., Theriot, J. A., Relman, D. A.  
2015; 10 (11)
- **PATHOGEN-SPECIFIC FEATURES OF THE HUMAN PERIPHERAL BLOOD TRANSCRIPTIONAL PROFILE IN PATIENTS WITH SCRUB TYPHUS AND MURINE TYPHUS**  
Popper, S. J., Davong, V., Castonguay-Vanier, J., Chanthongthip, A., Phommasone, K., Vongsouvat, M., Dull, P. M., Basnyat, B., Murdoch, D. M., Woods, C. W., Moore, C. M., Newton, P. N., Relman, et al  
AMER SOC TROP MED & HYGIENE.2015: 128
- **The Human Microbiome and the Future Practice of Medicine** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*  
Relman, D. A.  
2015; 314 (11): 1127-28
- **Temporal and spatial variation of the human microbiota during pregnancy** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
DiGiulio, D. B., Callahan, B. J., McMurdie, P. J., Costello, E. K., Lyell, D. J., Robaczewska, A., Sun, C. L., Goltsman, D. S., Wong, R. J., Shaw, G., Stevenson, D. K., Holmes, S. P., Relman, et al  
2015; 112 (35): 11060-11065
- **Gain-of-function experiments: time for a real debate.** *Nature reviews. Microbiology*  
Duprex, W. P., Fouchier, R. A., Imperiale, M. J., Lipsitch, M., Relman, D. A.  
2015; 13 (1): 58-64
- **Actionable Sequence Data on Infectious Diseases in the Clinical Workplace** *CLINICAL CHEMISTRY*  
Relman, D. A.  
2015; 61 (1): 38-40
- **Variation in Taxonomic Composition of the Fecal Microbiota in an Inbred Mouse Strain across Individuals and Time.** *PloS one*  
Hoy, Y. E., Bik, E. M., Lawley, T. D., Holmes, S. P., Monack, D. M., Theriot, J. A., Relman, D. A.  
2015; 10 (11)
- **Editorial Overview: Insights into Molecular Mechanisms of Microbiota** *JOURNAL OF MOLECULAR BIOLOGY*  
Martens, E. C., Sonnenburg, J. L., Reiman, D. A.  
2014; 426 (23): 3827-29
- **Biological Engineering, Risk, and Uncertainty** *HASTINGS CENTER REPORT*  
Relman, D. A.  
2014; 44: S36-S37
- **Antibiotics and the gut microbiota** *JOURNAL OF CLINICAL INVESTIGATION*  
Modi, S. R., Collins, J. J., Relman, D. A.  
2014; 124 (10): 4212-4218
- **Antibiotics and the gut microbiota.** *journal of clinical investigation*

- Modi, S. R., Collins, J. J., Relman, D. A.  
2014; 124 (10): 4212-4218
- **Human microbiome science: vision for the future, Bethesda, MD, July 24 to 26, 2013** *MICROBIOME*  
Ravel, J., Blaser, M. J., Braun, J., Brown, E., Bushman, F. D., Chang, E. B., Davies, J., Dewey, K. G., Dinan, T., Dominguez-Bello, M., Erdman, S. E., Finlay, B. B., Garrett, et al  
2014; 2
  - **Population health: immaturity in the gut microbial community.** *Nature*  
Costello, E. K., Relman, D. A.  
2014; 510 (7505): 344-345
  - **"Inconvenient Truths" in the Pursuit of Scientific Knowledge and Public Health** *JOURNAL OF INFECTIOUS DISEASES*  
Relman, D. A.  
2014; 209 (2): 170-72
  - **Unrest at home: diarrheal disease and microbiota disturbance.** *Genome biology*  
Bik, E. M., Relman, D. A.  
2014; 15 (6): 120-?
  - **Nasal Microenvironments and Interspecific Interactions Influence Nasal Microbiota Complexity and S. aureus Carriage.** *Cell host & microbe*  
Yan, M., Pamp, S. J., Fukuyama, J., Hwang, P. H., Cho, D., Holmes, S., Relman, D. A.  
2013; 14 (6): 631-640
  - **Genetically dictated change in host mucus carbohydrate landscape exerts a diet-dependent effect on the gut microbiota** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kashyap, P. C., Marcobal, A., Ursell, L. K., Smits, S. A., Sonnenburg, E. D., Costello, E. K., Higginbottom, S. K., Domino, S. E., Holmes, S. P., Relman, D. A., Knight, R., Gordon, J. I., Sonnenburg, et al  
2013; 110 (42): 17059-17064
  - **Identification of Lactobacillus strains with probiotic features from the bottlenose dolphin (Tursiops truncatus)** *JOURNAL OF APPLIED MICROBIOLOGY*  
Diaz, M. A., Bik, E. M., Carlin, K. P., Venn-Watson, S. K., Jensen, E. D., Jones, S. E., Gaston, E. P., Relman, D. A., Versalovic, J.  
2013; 115 (4): 1037-1051
  - **Metagenomics, Infectious Disease Diagnostics, and Outbreak Investigations Sequence First, Ask Questions Later?** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*  
Relman, D. A.  
2013; 309 (14): 1531-1532
  - **Transdisciplinary translational science and the case of preterm birth** *JOURNAL OF PERINATOLOGY*  
Stevenson, D. K., Shaw, G. M., Wise, P. H., Norton, M. E., Druzin, M. L., Valantine, H. A., McFarland, D. A.  
2013; 33 (4): 251-258
  - **Type I Interferon Suppresses Type II Interferon-Triggered Human Anti-Mycobacterial Responses** *SCIENCE*  
Teles, R. M., Graeber, T. G., Krutzik, S. R., Montoya, D., Schenk, M., Lee, D. J., Komisopoulou, E., Kelly-Scumpia, K., Chun, R., Iyer, S. S., Sarno, E. N., Rea, T. H., Hewison, et al  
2013; 339 (6126): 1448-1453
  - **The Increasingly Compelling Moral Responsibilities of Life Scientists** *HASTINGS CENTER REPORT*  
Relman, D. A.  
2013; 43 (2): 34-35
  - **Undernutrition-Looking Within for Answers** *SCIENCE*  
Relman, D. A.  
2013; 339 (6119): 530-532
  - **Distinct Distal Gut Microbiome Diversity and Composition in Healthy Children from Bangladesh and the United States** *PLOS ONE*  
Lin, A., Bik, E. M., Costello, E. K., Dethlefsen, L., Haque, R., Relman, D. A., Singh, U.  
2013; 8 (1)
  - **Distinct distal gut microbiome diversity and composition in healthy children from Bangladesh and the United States.** *PloS one*

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- Lin, A., Bik, E. M., Costello, E. K., Dethlefsen, L., Haque, R., Relman, D. A., Singh, U.  
2013; 8 (1)
- **Microbiota's 'little helpers': bacteriophages and antibiotic-associated responses in the gut microbiome** *GENOME BIOLOGY*  
Sun, C. L., Relman, D. A.  
2013; 14 (7): 127
  - **Probiotics, prebiotics, and the host microbiome: the science of translation** *ANNALS REPORTS*  
Petschow, B., Dore, J., Hibberd, P., Dinan, T., Reid, G., Blaser, M., Cani, P. D., Degnan, F. H., Foster, J., Gibson, G., Hutton, J., Klaenhammer, T. R., Ley, et al  
2013; 1306: 1-17
  - **Microbiome assembly across multiple body sites in low-birthweight infants.** *mBio*  
Costello, E. K., Carlisle, E. M., Bik, E. M., Morowitz, M. J., Relman, D. A.  
2013; 4 (6): e00782-13
  - **Microbiome Assembly across Multiple Body Sites in Low-Birthweight Infants.** *mBio*  
Costello, E. K., Carlisle, E. M., Bik, E. M., Morowitz, M. J., Relman, D. A.  
2013; 4 (6)
  - **Time series community genomics analysis reveals rapid shifts in bacterial species, strains, and phage during infant gut colonization** *GENOME RESEARCH*  
Sharon, I., Morowitz, M. J., Thomas, B. C., Costello, E. K., Relman, D. A., Banfield, J. F.  
2013; 23 (1): 111-120
  - **Restoration of the gut microbial habitat as a disease therapy** *NATURE BIOTECHNOLOGY*  
Relman, D. A.  
2013; 31 (1): 35-37
  - **Temporal Dynamics of the Transcriptional Response to Dengue Virus Infection in Nicaraguan Children** *PLOS NEGLECTED TROPICAL DISEASES*  
Popper, S. J., Gordon, A., Liu, M., Balmaseda, A., Harris, E., Relman, D. A.  
2012; 6 (12)
  - **Comparisons of clustered regularly interspaced short palindromic repeats and viromes in human saliva reveal bacterial adaptations to salivary viruses** *ENVIRONMENTAL MICROBIOLOGY*  
Pride, D. T., Salzman, J., Relman, D. A.  
2012; 14 (9): 2564-2576
  - **The human microbiome: ecosystem resilience and health** *NUTRITION REVIEWS*  
Relman, D. A.  
2012; 70: S2-S9
  - **Gut Immune Maturation Depends on Colonization with a Host-Specific Microbiota** *CELL*  
Chung, H., Pamp, S. J., Hill, J. A., Surana, N. K., Edelman, S. M., Troy, E. B., Reading, N. C., Villablanca, E. J., Wang, S., Mora, J. R., Umesaki, Y., Mathis, D., Benoist, et al  
2012; 149 (7): 1578-1593
  - **MICROBIOLOGY Learning about who we are** *NATURE*  
Relman, D. A.  
2012; 486 (7402): 194-195
  - **The Application of Ecological Theory Toward an Understanding of the Human Microbiome** *SCIENCE*  
Costello, E. K., Stagaman, K., Dethlefsen, L., Bohannan, B. J., Relman, D. A.  
2012; 336 (6086): 1255-1262
  - **Microbiota-Targeted Therapies: An Ecological Perspective** *SCIENCE TRANSLATIONAL MEDICINE*  
Lemon, K. P., Armitage, G. C., Relman, D. A., Fischbach, M. A.  
2012; 4 (137)
  - **Single-cell sequencing provides clues about the host interactions of segmented filamentous bacteria (SFB)** *GENOME RESEARCH*  
Pamp, S. J., Harrington, E. D., Quake, S. R., Relman, D. A., Blainey, P. C.  
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