

ELISABETH M BIK

PROFILE

- Senior scientist (PhD) with extensive academic and industry experience in the fields of host-associated microbiomes, clinical microbiology, microbial genetics, and scientific integrity
- Experienced writer and editor of scientific papers with extensive knowledge of scientific publishing
- Author of 40+ scientific publications, 7 selected by the Faculty of 1000, Publons.com leaderboard for Stanford, uBiome.
- Experienced keynote / invited speaker at international conferences and science outreach events
- Experienced in collaborating with product development, R&D, marketing, and medical affairs
- Set up several molecular labs, trained and mentored dozens of students, MD fellows, and research assistants
- Experienced user of molecular sequence data analysis and visualization software, including QIIME, R, and MySQL
- Strong experimental skills in a variety of molecular detection of infectious diseases pathogens and microbial communities
- Leading authority in microbiome research with strong science outreach and social media presence, at www.MicrobiomeDigest.com, www.ScienceIntegrityDigest.com, and [@MicrobiomDigest](https://twitter.com/MicrobiomDigest) (Twitter, 27K followers)
- Science integrity and misconduct expert, featured in New York Times, Le Monde, Nature, STAT News, The Scientist, etc.

RESEARCH and WORK EXPERIENCE

March 2019 – present ● **Consultant**, Harbers Bik LLC. Consultancy for microbiome and scientific integrity research.

December 2018 – February 2019 ● **Director of Science**, Astarte Medical Partners, Foster City, CA. Manager: Tracy Warren.

- Coordinated 5 different collaborator sites for neonatal stool sample collection, shipping, and microbial analysis
- Managed laboratory technician, visited future lab incubator spaces, did literature searches.

October 2016 – December 2018 ● **Scientific Editorial Director**, uBiome, San Francisco, CA. Managers: Audrey Goddard PhD, Daniel Almonacid PhD. Achievements include:

- Led teams of scientists to write 6 scientific papers (3 published, 3 in preprint stage) and 2 provisional patents
- Provided scientific and writing support for R&D, medical affairs, marketing, network physicians, and customers
- Worked on team that developed SmartJane™, a vaginal health microbiome product including STI and HPV detection
- Assisted scientists and laboratory staff in validation experiments and data analysis in CLIA/CAP laboratory
- Set up a new production laboratory in San Francisco, ordered supplies, installed equipment
- I left the company 6 months before the FBI raid of April 2019 because of my leadership integrity concerns

June 2004 – October 2016 ● **Research Scientist**, Stanford School of Medicine, Departments of Microbiology & Immunology, and Medicine – Infectious Diseases. Advisor: David Relman MD. Achievements include:

- Analysis of human distal gut microbiota (published in *Science*), stomach (in *PNAS*), and mouth (in *ISME Journal*)
- Development of a microarray to study complex microbial communities (in *NAR*), of newborns (in *PLOS Biology*)
- First study to isolate and sequence a single-cell, uncultivated TM7 bacterium (in *PNAS*)
- First large study on dolphin-associated microbiotas (in *Nature Communications*)

2002 – 2004 ● **Post-doc position**, Stanford School of Medicine, Department of Microbiology and Immunology. Advisor: David Relman MD. Collaborations with Charles Bernstein (Manitoba), Martin Blaser (NYU), Steve Gill (TIGR), Pat Brown (Stanford).

1997 – 2001 ● **Molecular Microbiologist**, St. Antonius Hospital in Nieuwegein, The Netherlands, Department of Medical Microbiology and Immunology. Manager: Bartelt de Jongh MD.

- Set up a molecular infectious diseases detection unit in the Medical Microbiology and Immunology laboratory
- Trained and supervised research assistants performing microbial detection and typing
- Advised infection control specialists in the study of nosocomial spread of bacterial strains

ACADEMIC EDUCATION, AWARDS, and GRANTS

- **Commendation for the John Maddox Prize 2019** by Sense About Science
- **Microbiome Hero Award 2018** by World Microbiome Day / APC Microbiome Ireland
- **Stanford Microbiome Pioneer Award 2016** for MicrobiomeDigest.com blog
- **Science is Elementary**, “Valuable Volunteer” award
- **Associate Editor**, BMC Microbiome (2016-2018); **Editorial Board member**, Frontiers in Microbiology, the ISME Journal
- **Office of Naval Research**, grant. Principal investigator: Prof. David Relman
- **Register of Medical Microbiological Researchers, The Netherlands**, inclusion
- **Yamanouchi Award**, Dutch Society of Medical Microbiology for best PhD thesis
- **PhD Microbiology**, University of Utrecht, National Institute of Health, The Netherlands. Advisor: Prof. Frits Mooi.
- **BSc Biology**, University of Utrecht, The Netherlands. Majors: Chemical Biology, Microbiology

VOLUNTEER WORK and SCIENCE OUTREACH

- **@MicrobiomDigest**, verified Twitter account with over 60,000 followers.
- **ScienceIntegrityDigest.com**, founder 2019, blog posts about science integrity and research misconduct.
- **MicrobiomeDigest.com**, founder 2014, daily blog posts with recent literature, 400 page views per day.
- **Women in Microbiome Research**. Compiled/maintained public list with expert women in microbiology.
- **PubPeer**, 2014-now. Posted more than 2000 posts with concerns about scientific papers.
- **MicroBEnet**, 2014-2017, weekly posts with recent literature on microbes of the built environment
- **Science Outreach**, 2017-2019. Gave talks for California Academy of Sciences, Taste of Science San Francisco
- **Middle school science project mentoring**, 2010-2011. Student won 2nd prize in her group at Synopsis Science Fair 2011.
- **High school student tutor**, 2010. Prepped sophomore student for biology exams
- **High school science project mentoring**, 2009-2010. Student became semi-finalist in the Intel Science Award 2010
- **Science is Elementary**, 2009-2017. Volunteer, elementary schools in low-income communities in the SF Bay Area.
- **Yahoo Answers Top Contributor Biology**, 2009-2013. Helped students with homework. Rated: 88% best answer.
- **Job Shadowing Events**, 2009-2016. Hosted juniors/seniors of Lynbrook High School in San Jose
- **Association for Women in Science Palo Alto**, 2007-2009. Mentored graduate students

PROFESSIONAL SOCIETIES and SCIENCE EDITORIAL WORK

- Associate Editor, **Microbiome** (BMC Journal), December 2016 – March 2018
- Editorial Board, **Frontiers in Microbiology**, Symbiosis Section, January 2014 – April 2018
- Editorial Board, **ISME Journal**, February 2013 - present
- Member, **American Society for Microbiology**, 2001 – present
- Board Member, **Dutch Working Group Epidemiological Typing**, 1997 – 2001
- Member, **Dutch Working Group Molecular Diagnostics**, 1997 – 2001
- Member, **Dutch Society of Medical Microbiology** (NVMM), 1996 – 2013
- Member, **Dutch Society of Microbiology** (NVvM), 1996 – 2013
- Member, **European Society of Clinical Microbiology and Infectious Diseases** (ESCMID), 1996 – 2013
- Member, **Dutch Biology Institute** (NIBI), 1995 – 2013

SELECTED INVITED ORAL PRESENTATIONS

University of Chicago (2020), Florida International University (2020), University of Dundee (2019), FotoFocus Cincinnati (2019), Future of Microbiome Research Sydney (2018), Gordon Research Seminar Mount Snow (2019), SkeptiCal (2019), Kisaco Microbiome Conference London (2018), Sociedad de Microbiología de Chile (2017), CalTech Pomona (2017), DARPA MediFor Challenge (2016), Southern California Institute of Food Technologists Section (2015), Mid-Pacific Conference on Birth and Primal Health Research (2012), Office of Naval Research (2010), VII Nestle Nutrition Conference (2008), Japanese Helicobacter Society (2007), Boerhaave Postgraduate course (2007).

SCIENTIFIC PUBLICATIONS and PREPRINTS

- Burgener EB, Secorr PRR, Tracy MC, Sweere JM, Bik EM, Milla CE, Bollyky PL.** 2020. *Methods for Extraction and Detection of Bacteriophage DNA from the Sputum of Patients with Cystic Fibrosis.* Preprint, bioRxiv 986638.
- Roth TL, Switzer A, Watanabe-Chailland M, Bik EM, Relman DA, Romick-Rosendale LE, Ollberding NJ.** 2019. Reduced Gut Microbiome Diversity and Metabolome Differences in Rhinoceros Species at Risk for Iron Overload Disorder. *Front Microbiol.* 2019 Oct 4;10:2291.
- Bik EM, Bird SW, Bustamante JP, Leon LE, Nieto PA, Addae K, Alegria-Mera V et al.** 2019. A novel sequencing-based vaginal health assay combining self-sampling, HPV detection and genotyping, STI detection, and vaginal microbiome analysis. *PLoS One* 14(5):e0215945.
- Hitschfeld M, Tovar E, Gupta S, Bik EM, Palmer C, Hoaglin MC, Almonacid DE, Richman J, Apte ZS.** 2019. The role of a sequencing-based clinical intestinal screening test in patients at high-risk for *Clostridium difficile* and other pathogens: A case report. *J Med Case Rep.* 13(1):9.
- Vera-Wolf P, Cardenas JP, Morton AM, Norambuena T, Torres R, Leon LE, Bik EM, Ugalde JA, Almonacid DE, Richman J, Apte ZS.** 2018. *Measures of reproducibility in sampling and laboratory processing methods in high-throughput microbiome analysis.* Preprint, bioRxiv 322677.
- Gupta S, Palmer C, Bik EM, Cardenas JP, Nuñez H, Kraal L, Bird S, Bowers J, Smith A, Walton NA, Goddard AD, Almonacid DE, Richman J, Apte ZS.** 2018. Self-Sampling for HPV Testing: Increased Cervical Cancer Screening Participation and Incorporation in International Screening Programs. *Front Public Health* 6:77.
- Fanelli D, Costas R, Fang FC, Casadevall A, Bik EM.** 2018. Testing Hypotheses on Risk Factors for Scientific Misconduct via Matched-Control Analysis of Papers Containing Problematic Image Duplications. *Sci Eng Ethics.* s11948-018-0023-7.
- Bik EM, Fang FC, Kullas AL, Davis RJ, Casadevall A.** 2018. Analysis and Correction of Inappropriate Image Duplication: the Molecular and Cellular Biology Experience. *Mol Cell Biol.* 38(20). pii: e00309-18.
- Dudek NK, Sun CL, Burstein D, Kantor RS, Aliaga Goltsman DS, Bik EM, Thomas BC, Banfield JF, Relman DA.** 2017. Novel Microbial Diversity and Functional Potential in the Marine Mammal Oral Microbiome. *Curr Biol.* 27(24):3752-3762.e6.
- Bik EM, Ugalde JA, Cousins J, Goddard AD, Richman J, Apte ZS.** 2017. Microbial biotransformations in the human distal gut. *Br J Pharmacol.* 175(24):4404-4414.
- Almonacid DE, Kraal L, Ossandon FJ, Budovskaya YV, Cardenas JP, Bik EM, Goddard AD, Richman J, Apte ZS.** 2017. 16S rRNA gene sequencing and healthy reference ranges for 28 clinically relevant microbial taxa from the human gut microbiome. *PLOS One* 12(5): e0176555.
- Bik EM.** 2016. [Friends for life: The human microbiota], *in Dutch.* *Dutch J Med Microbiol.* 24(4):159-163.
- Bik EM.** 2016. The hoops, hopes, and hypes of human microbiome research. *Yale J Biology Med.* Sep 30;89(3):363-373.
- Bik EM, Casadevall A, Fang FC.** 2016. The prevalence of inappropriate image duplication in biomedical research publications. *MBio* e00809-16. *
- Bik EM, Costello EK, Switzer AD, Callahan BJ, Holmes SP, Wells RS, Carlin KP, Jensen ED, Venn-Watson S, Relman DA.** 2016. Marine mammals harbor unique microbiotas shaped by and yet distinct from the sea. *Nat Commun* 7:10516.
- Hoy YE, Bik EM, Lawley TD, Holmes SP, Monack DM, Theriot JA, Relman DA.** Variation in taxonomic composition of the fecal microbiota in an inbred mouse strain across individuals and time. *PLoS One* 10(11):e0142825.
- Bik EM.** 2015. You Lose Some, You Win Some: Weight Loss Induces Microbiota and Metabolite Shifts. *EBioMedicine* 2(8):804-805.
- Bik EM, Relman DA.** 2014. Unrest at home: diarrheal disease and microbiota disturbance. *Genome Biol.* 15(6):120.
- Costello EK, Carlisle EM, Bik EM, Morowitz MJ, Relman DA.** 2013. Microbiome assembly across multiple body sites in low-birthweight infants. *MBio.* 2013 Oct 29;4(6):e00782-13.
- Diaz MA, Bik EM, Carlin KP, Venn-Watson SK, Jensen ED, Jones SE, Gaston EP, Relman DA, Versalovic J.** 2013. Identification of *Lactobacillus* strains with probiotic features from the bottlenose dolphin (*Tursiops truncatus*). *J Appl Microbiol.* 2013 Oct;115(4):1037-51
- Staubach F, Baines JF, Kuenzel S, Bik EM, Petrov DA.** 2013. Host species and environmental effects on bacterial communities associated with *Drosophila* in the laboratory and in the natural environment. *PLoS One.* 8:e70749.
- Lin A, Bik EM, Costello EK, Dethlefsen L, Haque R, Relman DA, Singh U.** 2013. Distinct distal gut microbiome diversity and composition in healthy children from Bangladesh and the United States. *PLoS One* 8:e53838.
- Bengtsson J, Hartmann M, Unterseher M, Vaishampayan P, Abarenkov K, Durso L, Bik EM, Garey JR, Eriksson KM, Nilsson RH.** 2012. Megraft: a software package to graft ribosomal small subunit (16S/18S) fragments onto full-length sequences

for accurate species richness and sequencing depth analysis in pyrosequencing-length metagenomes and similar environmental datasets. *Res Microbiol* 163:407-4012.

- Bik EM, Long CD, Armitage GC, Loomer P, Emerson J, Mongodin EF, Nelson KE, Gill SR, Fraser-Liggett CM, Relman DA.** 2010. Bacterial diversity in the oral cavity of 10 healthy individuals. *ISME J* 4:962-974. *
- DiGiulio DB, Romero R, Kusanovic JP, Gomez R, Kim CJ, Seok K, Gotsch F, Mazaki-Tovi S, Vaisbuch E, Sanders K, Bik EM, Chaiworapongsa T, Oyarzun E, Relman DA.** 2010. Prevalence and diversity of microbes in the amniotic fluid, the fetal inflammatory response, and pregnancy outcome in women with preterm pre-labor rupture of membranes. *Am J Reprod Immunol* 64:38-57.
- Bik EM.** 2009. Composition and function of the human-associated microbiota. *Nutrition Reviews* 67 (Suppl 2):S164-171.
- DiGiulio DB, Romero R, Amogan HP, Kusanovic JP, Bik EM, Gotsch F, Kim CJ, Erez O, Edwin S, Relman DA.** 2008. Microbial prevalence, diversity and abundance in amniotic fluid during preterm labor: A molecular and culture-based investigation. *PLoS ONE* 3:e3056.
- Bik EM.** 2008. The microbiota of the human body (in Dutch). *Ned Tijdschr Geneesk (Dutch Journal of Medicine)* 152:668-673.
- Marcy Y, Ouverney CO, Bik EM, Lösekann T, Ivanova N, Martin HG, Szeto E, Platt D, Hugenholtz P, Relman DA, Quake SR.** 2007. Dissecting biological “dark matter” with single cell genetic analysis of rare and uncultivated TM7 microbes from the human mouth. *Proc Natl Acad Sci USA* 104:11889-94. *
- Palmer C, Bik EM, DiGiulio DB, Relman DA, Brown PO.** 2007. Development of the human infant intestinal microbiota. *PLOS Biol* 5:e177. *
- Dethlefsen L, Eckburg PB†, Bik EM†, Relman DA.** 2006. Assembly of the human intestinal microbiota. *Trends Ecol Evol* 21, 517-523. (†, equal authorship)
- Palmer C, Bik EM, Eisen MB, Eckburg PB, Sana TR, Wolber PK, Relman DA, Brown PO.** 2006. Rapid quantitative profiling of complex microbial populations. *Nucleic Acids Res.* 10;34(1):e5. *
- Bik EM, Eckburg PB, Gill SR, Nelson KE, Purdom EA, Francois F, Perez-Perez G, Blaser MJ, Relman DA.** 2006. Molecular analysis of the bacterial microbiota in the human stomach. *Proc Natl Acad Sci U S A.* 103:732-737. *
- Eckburg PB, Bik EM, Bernstein CN, Purdom E, Dethlefsen L, Sargent M, Gill SR, Nelson KE, Relman DA.** 2005. Diversity of the human intestinal microbial flora. *Science*, 308:1635-8. *
- v Dijk Y, Bik EM, Hochstenbach-Vernooij S, v d Vlist GJ, Savelkoul PH, Kaan JA, Diepersloot RJ.** 2002. Management of an outbreak of *Enterobacter cloacae* in a neonatal unit using simple preventive measures. *J Hosp Infect.* 51:21-6.
- van Leeuwen WB, Snoeijs S, van der Werken-Libregts C, Tuip A, van der Zee A, Egberink D, de Proost M, Bik E, Lunter B, Kluytmans J, et al.** 2002. Intercenter reproducibility of binary typing for *Staphylococcus aureus*. *J Microbiol Methods.* 51:19-28.
- Visser IJR, Vellema P, Weitenberg AM, Bik EM.** 1997. [Severe watery diarrhoea caused by *Vibrio cholerae* in lambs], in Dutch. *Tijdschr Diergeneeskd* 122:600-603.
- Mooi FR and Bik EM.** 1997. The evolution of epidemic *Vibrio cholerae* strains. *Trends Microbiol* 5:161-165.
- Bik EM, Bunschoten AE, Willems RJL, Chang ACY, Mooi FR.** 1996. Genetic organization and functional analysis of the *otn* DNA essential for cell-wall polysaccharide synthesis in *Vibrio cholerae* O139. *Mol Microbiol* 20:799-811.
- Bik EM, Gouw RD, Mooi FR.** 1996. DNA fingerprinting of *Vibrio cholerae* strains with a novel insertion sequence element: a tool to identify epidemic strains. *J Clin Microbiol* 34:1453-1461.
- Bik EM, Bunschoten AE, Gouw RD, Mooi FR.** 1995. Genesis of the novel epidemic *Vibrio cholerae* O139 strain: evidence for horizontal transfer of genes involved in polysaccharide synthesis. *EMBO J* 14:209-216.
- Rijkema SGT, Bik EM, Jansen WH, Gielen H, Versluis LF, Stouthamer AH, Guinée PAM, Mooi FR.** 1992. Construction and analysis of a *Vibrio cholerae* d-aminolevulinic acid auxotroph which confers protective immunity in a rabbit model. *Infect Immun* 60:2188-2193.
- Hermans PWM, van Soolingen D, Bik EM, de Haas PEW, Dale JW, van Embden JDA.** 1991. Insertion element IS987 from *Mycobacterium bovis* BCG is located in a hot-spot integration region for insertion elements in *Mycobacterium tuberculosis* complex strains. *Infect Immun* 59:2695-2705.
- Hermans PWM, Schuitema ARJ, van Soolingen D, Verstijnen CPHJ, Bik EM, Thole JER, Kolk AHJ, van Embden JDA.** 1990. Specific detection of *Mycobacterium tuberculosis* complex strains by polymerase chain reaction. *J Clin Microbiol* 28:1204-1213.

*, papers selected by the Faculty of 1000 Biology