

David Benjamin Gootenberg  
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## **EDUCATION**

2012-Present	<b>Harvard Medical School/MIT, M.D./Ph.D. (Anticipated)</b> , Harvard-MIT Health Sciences and Technology
2015-2019	<b>Harvard Medical School, Ph.D.</b> , Harvard Program in Virology/Division of Medical Sciences
2007-2011	<b>Harvard College, A.B. Summa Cum Laude</b> ; Concentration: Chemical and Physical Biology, Highest Honors in concentration, Phi Beta Kappa
2003-2007	<b>Montgomery Blair High School (MBHS)</b> Science, Mathematics, and Computer Science Magnet
Summer 2005	<b>University of Chicago</b> : Research in the Biological Sciences Program (Resident College-level credit course in molecular biology and molecular biology laboratory techniques)

## **RESEARCH EXPERIENCE**

2015-2019	<b>Graduate Student</b> : Ragon Institute of MGH, MIT and Harvard, Kwon Lab
2013-2015	<b>Predoctoral Fellow</b> : Ragon Institute of MGH, MIT and Harvard, Kwon Lab
2014-Present	<b>Microbiome Consultant</b> : Midori Health/Cadena Bio/Kaleido, Flagship VentureLabs company
2011-2012	<b>Research Assistant II</b> : Harvard University, FAS Center for Systems Biology, Turnbaugh Lab
2010-2011	<b>Undergraduate Researcher</b> : Harvard University, FAS Center for Systems Biology; Peter J. Turnbaugh, Principal Investigator; Undergraduate Thesis Project: "Identification of Xenobiotic-Inducible Genetic Elements in the Human Gut Microbiome"
Summer 2008	<b>Summer Intern</b> : National Heart, Lung, and Blood Institute, Molecular and Clinical Hematology Branch; John F. Tisdale, Principal Investigator; Project: "The Effect of cHS4 Insulator on Lentiviral Transduction"
Summer 2006	<b>Summer Intern</b> : National Institute of Mental Health, Laboratory of Cellular and Molecular Regulation, Section on Molecular Virology; Maribeth V. Eiden, Principal Investigator; Project: "Comparison of Internal Ribosomal Entry Site Gammaretrovirus Vectors Using CD4Z"

Summer 2005      **Summer Student:** University of Chicago, Research in the Biological Sciences Program; Project: “Taq-PCR-Mediated Mutagenesis of the *rpoB* gene”

## **TEACHING AND MENTORING EXPERIENCE**

Summer 2016/2017/2018      **Presenter:** Ragon Institute Summer Lecture Program, “Mucosal Immunology and the Microbiome”

May 2018      **Presenter:** Ragon Institute Bioinformatics Working Group, “Living in the tidyverse: an introduction to data management, analysis, and visualization in R using tools like ggplot2”

Fall 2015/2016/2017      **Teaching Assistant/Discussion Leader:** HST 175: Cellular and Molecular Immunology, Harvard Medical School

Fall 2015, Fall 2017      **Teaching Assistant/Workshop Faculty:** Harvard University Center for AIDS Research 2015 Workshop on Metagenomics, 2017 Workshop on Transcriptomics

Spring 2015      **Scientific Presenter:** Museum of Science Boston Health Fair: Bacteria and Viruses: The Good, the Bad, and the Ugly; March 20-21, 2015

2013-Present      **Non-Resident Tutor (Pre-Medical):** Leverett House, Harvard College

Spring 2012      **Teaching Fellow:** Life Sciences 1b, Harvard College

Fall 2011      **Teaching Fellow:** Life Sciences 1a, Harvard College

2008-2011      **Award Peer Tutor (2009-2011), On-call Peer Tutor (2008-2009):** Harvard Bureau of Study Counsel

Spring 2011      **Facilitator/Course Assistant:** Life Sciences 1b, Harvard College

Fall 2009, Fall 2010      **Facilitator/Course Assistant:** Life Sciences 1a, Harvard College

2009-2011      **Student Concentration Advisor:** Chemical and Physical Biology, Harvard College

## **PUBLICATIONS**

1. Anahtar, MN, **Gootenberg, DB**, Mitchell, CM, Kwon, DS: Cervicovaginal Microbiota and Reproductive Health: The Virtue of Simplicity. Review. *Cell Host and Microbe*. 2018 Feb 14;23(2):159-168. doi: 10.1016/j.chom.2018.01.013. PMID: 29447695
2. **Gootenberg DB**, Paer JM, Luévano JM, Kwon DS: HIV-associated changes in the enteric microbial community: potential role in loss of homeostasis and development of systemic inflammation. Review. *Current Opinion in Infectious Diseases*. 2017 Feb;30(1):31-43. doi: 10.1097/QCO.0000000000000341 PMID: 27922852
3. Monaco CL, **Gootenberg DB**, Zhao G, Handley SA, Ghebremichael MS, Lim ES, Lankowski A, Baldrige MT, Wilen CB, Flagg M, Norman JM, Keller BC, Luévano JM, Wang D, Boum Y, Martin JN, Hunt PW, Bangsberg DR, Siedner MJ, Kwon DS, Virgin HW: Altered Virome and Bacterial Microbiome in Human Immunodeficiency Virus-Associated

Acquired Immunodeficiency Syndrome. *Cell Host Microbe*. 2016 March 9;19(3):311-322. doi: 10.1016/j.chom.2016.02.011 PMID: 26962942

4. David LA, Maurice CF, Carmody RN, **Gootenberg DB**, Button JE, Wolfe BE, Ling AV, Devlin S, Fischbach M, Biddinger SB, Dutton, RJ, Turnbaugh PJ: Diet rapidly and reproducibly alters the human gut microbiome. *Nature*. 2014 Jan 23;505(7484):559-63. doi: 10.1038/nature12820 Epub 2013 Dec 11. PMID: 24336217
5. Haiser HJ, **Gootenberg DB**, Chatman K, Sirasani G, Balskus EP, Turnbaugh PJ: Predicting and manipulating cardiac drug inactivation by the human gut bacterium *Eggerthella lenta*. *Science*. 2013 Jul 19;341(6143):295-8. doi: 10.1126/science.1235872 PMID: 23869020
6. **Gootenberg DB**, Turnbaugh PJ: Humanized animal models of the microbiome. Review. *J Anim Sci*. 2011 May;89(5):1531-7. doi: 10.2527/jas.2010-3371 Epub 2010 Sep 10. PMID: 20833767

## **POSTERS AND ORAL PRESENTATIONS**

1. **Gootenberg DB**, Paer JM, Luevano JM, Hayward MR, Ghebremichael M, Bramante J, Xu J, Bloom SM, Rogers ZH, Mosepele M, Siedner MJ, Kwon DS: HIV-associated gut microbiome differences and immune activation are dependent on host context. Oral presentation given at 4th Annual MIT-Harvard Microbiome Symposium; March 8 2019; Cambridge, MA. <https://microbiome2019.wordpress.com/>
2. Lee GQ, Musinguzi N, **Gootenberg DB**, McCluskey Suzanne, Boum Y, Bwana BM, Muzoora C, Kigozi S, Hunt PW, Martin JN, Bangsberg DR, Haberer JE, Siedner MJ, Harrigan PR, Ghebremichael M: Seven-year treatment responses in subtype A1 vs D HIV-1 infections in Mbarara, Uganda. Poster presented at Conference on Retroviruses and Opportunistic Infections (CROI); March 4-7 2019; Seattle, WA.
3. Powis KM, Wilkinson JE, Abu-Ali G, Kgole SW, Masasa G, **Gootenberg DB**, Kacaneck D, Banda F, Moyo S, Mmalane MO, Makhema J, Shaprio RL, Kwon DS, Huttenhower C: HIV-exposed uninfected infant gut microbiome evolution in the first year of life. Poster presented at Conference on Retroviruses and Opportunistic Infections (CROI); March 4-7 2019; Seattle, WA.
4. **Gootenberg DB**, Paer JM, Luevano JM, Hayward MR, Ghebremichael M, Rogers ZH, Mosepele M, Siedner MJ, Kwon DS: HIV-associated gut microbiome differences and concurrent immune activation are dependent on host context. Oral presentation given at The Human Microbiota Symposium; September 16–19 2018; Heidelberg, Germany.
5. **Gootenberg DB**, Kwon DS: HIV-associated differences in the gut microbiota in geographical context. Invited seminar given at Microbial Systems Seminar @ MIT; April 4 2018; Cambridge, MA. <https://microbialsystems.wordpress.com/>
6. **Gootenberg DB**, Paer JM, Luevano JM, Rogers ZH, Mosepele M, Siedner MJ, Kwon DS: The Microbiome, Inflammation, and Cardiovascular Disease in Chronic HIV. Poster presented at 3rd International Workshop on Microbiome in HIV; October 19–20 2017; Rockville, MD.
7. **Gootenberg DB**, Monaco CL, Virgin HW, Kwon DS: Alterations in the Enteric Viral and Bacterial Microbiome among HIV-infected individuals in Sub-Saharan Africa. Oral

presentation given at 2nd International Workshop on Microbiome in HIV; November 17–18 2016; Bethesda, MD.

8. Luévano JM, **Gootenberg DB**, Paer JM, Walker BD, Kwon DS: Impact of HIV-Associated Changes in the Gut Microbiome on Disease Progression. Poster presented at Conference on Retroviruses and Opportunistic Infections; February 22–25 2016; Boston, MA.
9. Monaco C, **Gootenberg D**, Zhao G, Lim E, Ghebremichael M, Baldridge M, Wilen C, Handley S, Flagg M, Siedner M, Norman J, Keller B, Lankowski A, Wang D, Kwon D, Virgin H: Expanded Enteric Virome and Altered Bacterial Microbiome in AIDS. *Open Forum Infect. 2015 Fall*;2(S1):S219. doi: 10.1093/ofid/ofv133.471 Poster presented at ID Week 2015; October 9, 2015; San Diego, CA.
10. **Gootenberg DB**, Luevano JM, Flagg M, Moore SW, Richter JM, Garber JJ, Chan AT, Kwon DS: Optimization of extraction of microbial nucleic acid from human gut tissue. Poster presented at Keystone Symposia, Gut Microbiota Modulation of Host Physiology: The Search for Mechanism; 2015 March 1-6; Keystone, CO.
11. Haiser HJ, **Gootenberg DB**, Chatman K, Sirasani G, Balskus EP, and Turnbaugh PJ: Predicting and Manipulating Drug Inactivation by the Human Gut. Oral presentation given at Boston Bacterial Meeting; June 14-15, 2013; Cambridge, MA and Canadian Society of Microbiologists Annual Conference; June 17-20 2013; Ottawa, ON, Canada.
12. Haiser HJ, **Gootenberg DB**, and Turnbaugh PJ: Predicting and Manipulating Drug Inactivation by the Human Gut. Poster presented at Keystone Symposia, The Gut Microbiome: The Effector/Regulatory Immune Network; 2013 February 10-15; Taos, NM.
13. **Gootenberg DB**, Haiser HJ, and Turnbaugh PJ: Characterizing the Regulation of Cardiac Drug Inactivation by a Member of the Human Gut Microbiota. Poster presented at Boston Bacterial Meeting; 2012 June 7-8; Cambridge, MA.

#### **AWARDS, HONORS, AND FUNDING**

Fall 2018	Invited Poster Judge, The Human Microbiota Symposium; September 16–19 2018; Heidelberg, Germany
Spring 2017	2017 HIV Medicine Association (HIVMA) Medical Student Program Award
Spring 2017	NHLBI F30 Ruth L. Kirschstein NRSA for Individual Predoctoral MD/PhD Degree Fellows (F30 HL136257-01: The role of the enteric microbiome in chronic HIV pathogenesis and cardiovascular disease in HIV-infected individuals)
Spring 2016	NIAID T32 Institutional Training Grant, Harvard Medical School Program in Virology (5T32AI007245-33: Molecular Basis of Viral Infectivity)
Spring 2014	NIDDK T32 Medical Student Research Training (MSRT) Supplement Grant, Massachusetts General Hospital Gastroenterology (T32DK007191: Research Training in Digestive Diseases)

Spring 2012	The Joseph R. Levenson Memorial Teaching Prize, Harvard College - Nominee
Fall 2011	Harvard University Certificate of Distinction in Teaching (>4.5/5 on the Q Evaluation) – Life Sciences 1a
Spring 2011	Joseph L. Barrett Award (Awarded to a senior for peer tutoring and mentoring), Harvard Bureau of Study Counsel
Spring 2011	Velvet Buddha Award (Awarded to a senior for contributions to halftime show writing), Harvard University Band
Fall 2010	Phi Beta Kappa, Alpha Iota Chapter (Senior 48)
2010	John Harvard Scholar
Summer 2010	Harvard FAS Center for Systems Biology Undergraduate Summer Research Internship
2009	John Harvard Scholar
Fall 2009	Harvard College Research Program (HCRP) Grant
Summer 2009	Harvard Program for Research in Science and Engineering (PRISE) Fellowship
2008	Jacob Wendell Scholarship, Harvard College – Semi-Finalist
2008	Harvard College Scholar
2008	Detur Book Prize (For academic achievement as a Freshman), Harvard College
2007	National Merit Scholar

### **PROFESSIONAL AFFILIATIONS**

2018-Present	Ad hoc reviewer: Journal of Animal Science
2016-Present	Infectious Disease Society of America (IDSA): Medical Student Member (Member ID: M-0059788)
2016-Present	HIV Medicine Association (HIVMA): Associate Member (Member ID: M-0059788)
2016-Present	American Society for Microbiology (ASM): Northeast Branch, Student Member (Member ID: 54486158)
2014-Present	American College of Physicians (ACP): Medical Student Member (Member ID: 024885229)
2014-Present	American Academy of Family Physicians (AAFP): Medical Student Member (Member ID: 9140316)
2013-2017	American Medical Association (AMA): Medical Student Member (Member ID: 02401162049)

2013-Present	American Academy of Pediatrics (AAP): Section on Medical Students, Residents and Fellowship Trainees (SOMSRFT) - Section Affiliate, CH Massachusetts - Chapter Affiliate Student (Member ID: 1333655)
2013-Present	American Society of Hematology (ASH): North American Student Benefit
2013-Present	American Society of Clinical Oncology (ASCO): Student/Non-Oncology Resident Member (Member ID: 298329)
2012-Present	Massachusetts Medical Society: Medical Student Member, District: Norfolk

### **EXTRACURRICULAR ACTIVITIES**

2014-Present	<b>Student Organizer:</b> Harvard MD-PhD/Leder Grand Rounds
2014-2017	<b>Member:</b> Harvard MD-PhD Retreat Planning Committee
Spring 2015	<b>Medical Student Assistant:</b> Make-A-Wish Disease Research Project
Summer 2014	<b>Student Tour Guide:</b> Harvard Medical School Admissions Office
Fall 2013, Fall 2014	<b>Percussion Player:</b> Ig Nobel Prizes Forces of Nature Ensemble
2012-Present	<b>London Society Representative:</b> Harvard Medical School Inter-Society Multicultural Fellows Committee
2012-Present	<b>Member:</b> Harvard Medical School Race in the Curriculum Working Group
2007-2011	<b>Percussion Section Leader</b> (2008-2009), <b>Licensing Director</b> (2007-2008): Harvard University Band
Summer 2009	<b>Editor:</b> Harvard Program for Research in Science and Engineering (PRISE) Abstract Book
2007-2008	<b>Coxswain:</b> Harvard Freshman Lightweight Crew