ALEXA WEINGARDEN

508 Piazza Drive #B • Mountain View, CA 94043 • Phone (650) 282-5945
Cell Phone (612) 701-4903 • aweingar@stanford.edu

EDUCATION

Stanford University Stanford, CA 2017-Present
Internal Medicine Residency, completed June 2019, and Gastroenterology Fellowship, anticipated completion June 2023, via the Translational Investigator Pathway.

University of Minnesota Minneapolis, MN 2009-2017
PhD in Microbiology, Immunology, and Cancer Biology, August 2015. MD, May 2017.
Doctoral thesis research on mechanisms of fecal microbiota transplantation and development of novel therapies for *Clostridium difficile* infection. GPA 4.0 in graduate courses. 274 on USMLE Step 1 Exam, 274 on USMLE Step 2 CK Exam. Medical school honors, Years 1 and 2.

Harvard College Cambridge, MA 2004-2008
AB in Earth and Planetary Sciences and Biology, June 2008.
Thesis on characterizing microbial eukaryotes at a hydrothermal vent. GPA 3.85, Biology GPA 4.0.

PUBLICATIONS AND PRESENTATIONS

Publications

Weingarden AR, Treiger O, Ulsh L, Limketkai B, Goldenberg D, Okafor P, Sonu I, Stollman N, Neshatian L. Delivery of fecal material to terminal ileum is associated with long-term success of fecal microbiota transplantation. *Manuscript in preparation.*

Weingarden AR, Gubatan J, Balabanis T, Patel A, Singh S, Habtezion A. Immune checkpoint inhibitor-mediated colitis is associated with cancer overall survival. *Manuscript in preparation.*

Weingarden AR, Rubin SJS, Gubatan J. Immune checkpoint inhibitor-mediated colitis and diarrhea in gastrointestinal malignancies and inflammatory bowel disease. 2021. World J Gastrointest Oncol **13:**772-798.

Weingarden AR, Villescas V, Clarke J, Triadafilopoulos G. Occam's razor: an unusual shoulder mass in a patient with achalasia. Dig Dis Sci, Aug 24, 2020. Doi: 10.1007/s10620-020-06558-y.

Farber ON, **Weingarden A**, Lee C, Braxton DR, Bingham D, Scott G, Fernandez-Becker N, Goff D, Shelton A, Kin C. Not in the same vein: inflammatory bowel disease, malignancy, and enterocolic lymphocytic phlebitis. Dig Dis Sci, Jun 27, 2020. Doi: 10.1007/s10620-020-06425-w.

Weingarden AR, Smith P, Streett S, Triadafilopoulos G. 2020. A failure to communicate: disentangling the causes of perianal fistulae in Crohn's disease and anal squamous cell cancer. Dig Dis Sci **65**:2806-2809.

Huggins MA, Sjaastad FV, Pierson M, Kucaba TA, Swanson W, Staley C, **Weingarden AR**, Jensen IJ, Danahy DB, Badovinac VP, Jameson SC, Vezys V, Masopust D, Khoruts A, Griffith TS, Hamilton SE. 2019. Microbial exposure enhances immunity to pathogens recognized by TLR2 but increases susceptibility to cytokine storm through TLR4 sensitization. Cell Rep **28**:1729-1743.

Staley C, Kaiser T, Beura LK, Hamilton MJ, **Weingarden AR**, Bobr A, Kang J, Masopust D, Sadowsky MJ, Khoruts A. 2017. Stable engraftment of human microbiota into mice with a single oral gavage following antibiotic conditioning. Microbiome **5**:87.

Stoltz K, Erickson R, Staley C, **Weingarden A**, Romens E, Steer C, Khoruts A, Sadowsky M, Dosa P. 2017. Synthesis and biological evaluation of bile acid analogs inhibitory to *Clostridium difficile* spore germination. J Med Chem **60**:3451-3471.

Weingarden AR, Vaughn BP. 2017. Intestinal microbiota, fecal microbiota transplantation, and inflammatory bowel disease. Gut Microbes **8**:238-252.

Staley C, **Weingarden AR**, Khoruts A, Sadowsky MJ. 2017. Interaction of gut microbiota with bile acid metabolism and its influence on disease states. Appl Microbiol Biotechnol **101**(1):47-64.

Weingarden AR, Chen C, Zhang N, Graiziger CT, Dosa PI, Steer CJ, Shaughnessy MK, Johnson JR, Sadowsky MJ, Khoruts A. 2016. Ursodeoxycholic acid inhibits *Clostridium difficile* spore germination and vegetative growth, and prevents the recurrence of ileal pouchitis associated with the infection. J Clin Gastroenterol **50**(8):624-630.

Weingarden AR, Dosa PI, DeWinter E, Steer CJ, Shaughnessy MK, Johnson JR, Khoruts A, Sadowsky MJ. 2016. Changes in colonic bile acid composition following fecal microbiota transplantation are sufficient to control *Clostridium difficile* germination and growth. PLoS One **11**:e0147210.

Weingarden A*, Gonzalez A, Vazquez-Baeza Y*, Weiss S, Humphry G, Berg-Lyons D, Knights D, Unno T, Bobr A, Kang JT, Khoruts A, Knight R, Sadowsky MJ. 2015. Dynamic changes in short- and long-term bacterial composition following fecal microbiota transplantation for recurrent *Clostridium difficile* infection. Microbiome **3**:10, doi: 10.1186/s40168-015-0070-0.
*co-first authors

Khoruts A, **Weingarden AR**. 2014. Emergence of fecal microbiota transplantation as an approach to repair disrupted microbial gut ecology. Immunol Lett **162**:77-81.

Weingarden AR*, Chen C*, Bobr A, Yao D, Lu Y, Nelson VM, Sadowsky MJ, Khoruts A. 2013. Microbiota transplantation restores normal fecal bile acid composition in recurrent *Clostridium difficile* infection. Am J Physiol Gastrointest Liver Physiol **306**:G310-319.

*co-first authors

Weingarden AR, Hamilton MJ, Sadowsky MJ, Khoruts A. 2013. Resolution of severe *Clostridium difficile* infection following sequential fecal microbiota transplantation. J Clin Gastroenterol **47**:735-737.

Hamilton MJ, **Weingarden AR**, Unno T, Khoruts A, Sadowsky MJ. 2013. High-throughput DNA sequence analysis reveals stable engraftment of gut microbiota following transplantation of previously frozen fecal bacteria. Gut Microbes **4**:125-135.

Velez G, **Weingarden AR,** Lei H, Kazlauskas A, Gao G. 2013. SU9518 inhibits proliferative vitreoretinopathy in fibroblast and genetically modified Muller cell-induced rabbit models. Invest Ophthalmol Vis Sci **54**:1392-1397.

Hamilton MJ, **Weingarden AR**, Sadowsky MJ, Khoruts A. 2012. Standardized frozen preparation for transplantation of fecal microbiota for recurrent *Clostridium difficile* infection. Am J Gastroenterol **107**(5):761-767.

Velez G, **Weingarden AR**, Tucker BA, Lei H, Kazlauskas A, Young M. 2012. Retinal pigment epithelium and Müller progenitor cell interaction increases Müller progenitor cell expression of PDGFRα and ability to induce proliferative vitreoretinopathy in a rabbit model. Stem Cells Int 2012:106486.

Patents

Sadowsky MJ, Khoruts A, **Weingarden AR**, Hamilton MJ. 2014. Compositions and methods for transplantation of colon microbiota. US Patent 2014/0147417 A1, filed March 9 2012, accepted May 29 2014.

Oral Presentations

Weingarden AR, Bousbaine D, Chen YE, Fischbach MA. Generation of antigen-specific regulatory T cells by *Lactobacillus* species. Digestive Diseases Week, San Diego, CA. 2022.

Weingarden AR, Singh S, Keyashian K. An 83-year-old man with mouth sores, hypotension, fever, and unusual colonic lesions. IBD West Regional Case Conference. 2021.

Weingarden AR. Using fecal transplants to enhance anti-tumor immune responses. Digestive Disease Clinical Conference, Stanford Division of Gastroenterology & Hepatology, Stanford, CA. 2021.

Weingarden AR. The role of the gut microbiome in alcoholic liver disease. Liver Learning Series, Stanford Division of Gastroenterology & Hepatology, Stanford, CA. 2021.

Weingarden AR, Singh S. Immune checkpoint inhibitor colitis case. Stanford Immune-Related Adverse Events Working Group, Stanford University, Stanford, CA. 2020.

Weingarden AR, Habtezion A. Hepatitis B vaccination in Inflammatory Bowel Disease. Stanford Inflammatory Bowel Disease Weekly Conference, Stanford University, Stanford, CA. 2020.

Weingarden AR, Villescas V, Clarke J. Hickam's dictum vs Occam's razor: a shoulder mass in a patient with achalasia. Digestive Diseases Clinical Conference, Stanford University, Stanford, CA. 2020.

Weingarden AR, Smith P, Streett S. Anal squamous cell carcinoma in Crohn's disease. Digestive Diseases Clinical Conference, Stanford University, Stanford, CA. 2019.

Weingarden AR, Chen C, Khoruts A, Sadowsky MJ. What Your Bacteria Have Done For You Lately: Finding a Mechanism for Fecal Transplants. Charles Schachtele Memorial Symposium in Oral Biology, University of Minnesota, Minneapolis, MN. 2015.

Weingarden AR, Chen C, Bobr A, Yao D, Lu Y, Nelson VM, Sadowsky MJ, Khoruts A. Microbiota transplantation restores normal fecal bile acid composition in recurrent *Clostridium difficile*

infection. Translational Science Annual Meeting, Washington, DC. 2014.

Poster Presentations

Weingarden AR, Bousbaine D, Chen YE, Fischbach MA. Generation of antigen-specific regulatory T cells by *Lactobacillus* species. Crohn's & Colitis Congress 2022.

Weingarden AR, Ulsh L, Limketkai B, Sonu I, Okafor PN, Neshatian L. Stool delivery to the terminal ileum may affect risk of recurrence of *Clostridioides difficile* infection following intestinal microbiota transplantation. Digestive Diseases Week 2021.

Weingarden AR, Chen C, Khoruts A, Sadowksy MJ. Manipulation of Fecal Bile Acid Composition Prevents *Clostridium difficile* Infection. American Society for Microbiology General Meeting, New Orleans, LA. 2015.

***Featured in the ASM General Meeting 2015 Press Room**

Weingarden AR, Chen C, Sadowsky MJ, Khoruts A. Fecal bile acid composition can be manipulated to prevent *Clostridium difficile* infection. Translational Science Annual Meeting, Washington, DC. 2015.

Weingarden AR, Chen C, Sadowsky MJ, Khoruts A. A shift in fecal bile acid composition is a mechanism of fecal microbiota transplantation and can be manipulated to prevent *Clostridium difficile* infection. Keystone Symposium on Gut Microbiota Modulation of Host Physiology, Keystone, CO. 2015.

Weingarden AR, Chen C, Bobr A, Yao D, Lu Y, Nelson VM, Sadowsky MJ, Khoruts A. Microbiota transplantation restores normal fecal bile acid composition in recurrent *Clostridium difficile* infection. Translational Science Annual Meeting, Washington, DC. 2014.

Weingarden AR, Bobr A, Lu Y, Nelson V, Hamilton MJ, Chen C, Sadowsky MJ, Khoruts A. Bile acid metabolism changes following fecal microbiota transplantation for *Clostridium difficile* infection. Human Microbiome Science: Vision for the Future, Bethesda, MD. 2013.

Weingarden AR, Hamilton MJ, Sadowsky MJ, Khoruts A. Changes in bacterial composition following fecal microbiota transplantation for severe *Clostridium difficile infection*. Digestive Diseases Week, Orlando, FL. 2013.

Weingarden AR, Bobr A, Lu Y, Nelson V, Hamilton MJ, Chen C, Khoruts A, Sadowsky MJ. Increase in secondary bile acids may be a mechanism of fecal microbiota transplantation for *Clostridium difficile* infection. Doctoral Research Showcase, University of Minnesota, Minneapolis, MN. 2013.

Weingarden AR, Hamilton MJ, Unno T, Khoruts A, Sadowsky MJ. Fecal microbiome of three patients following fecal microbiota transplantation for *Clostridium difficile* infection. Keystone Meeting on the Microbiome, Keystone, CO. 2012.

Weingarden AR, Tucker BA, Lei H, Young MJ, Velez G. Up-regulation of platelet-derived growth factor receptor-α (PDGFR-α) in RPE and Muller cell co-cultures. Association for Research in Vision and Ophthalmology Annual Meeting, Ft. Lauderdale, FL. 2009.

AD HOC PEER REVIEW

Digestive Diseases Week, 2022
Scientific Reports, 2021
Frontiers in Cellular and Infection Microbiology, 2021
Anaerobe, 2015

RESEARCH EXPERIENCE

Fischbach Laboratory Stanford, CA 2021-Present

- Post-doctoral research on the gut microbiome and metabolome and mucosal immunology of inflammatory bowel disease and immune checkpoint inhibitor-mediated colitis
- Mouse models, bacterial cloning and heterologous protein expression, flow cytometry, patient study recruitment, aerobic and anaerobic culture techniques, polymerase chain amplification

Habtezion Laboratory Stanford, CA 2020-2021

- Post-doctoral research on the gut microbiome and metabolome and mucosal immunology of inflammatory bowel disease and immune checkpoint inhibitor-mediated colitis
- Organization of patient registries, coordination with healthcare providers for patient enrollment and

sample collection, mass cytometry panel design

Sadowsky and Khoruts Laboratories St. Paul, MN 2011-2015
- Doctoral thesis research on functional changes to the gut microbiota following fecal microbiota transplantation for recurrent *Clostridium difficile* infection
- DNA extraction from fecal samples, polymerase chain reaction amplification, Illumina high-throughput sequencing, sequence data and mass spectrometry data analysis, quantitative PCR, aerobic and anaerobic culture techniques, and work with mouse models

Dunny Laboratory Minneapolis, MN 2009-2010
- Graduate school rotation with research on *Enterococcus faecalis* biofilms
- Assessment of biofilm growth in three culture systems and extracellular DNA quantification using constant-flow bioreactors

Schlievert Laboratory Minneapolis, MN Summer 2009
- Graduate school rotation with research on characterizing *Staphylococcus aureus* enterotoxin SEC gene diversity
- Microbial culture techniques, double immunodiffusion, DNA extraction, polymerase chain reaction, and Sanger sequencing

Young Laboratory Boston, MA 2008-2009
- Research assistant at the Schepens Eye Research Institute examining platelet-derived growth factor receptors in Mueller glial cells of the retina
- Cell culture, Western blotting, immunohistochemistry, and work with a rabbit model

Girguis Laboratory Cambridge, MA 2007-2008
- Undergraduate thesis research on microbial eukaryotes at hydrothermal vents
- Polymerase chain reaction primer research and design, PCR amplification of difficult environmental samples, molecular cloning, sequencing, and gel electrophoresis

Pearson Laboratory Cambridge, MA 2007-2008
- Undergraduate thesis research on lipid extraction and analysis of hydrothermal vent sulfides
- Experience running ASE lipid extraction machine, separation of lipid fractions on silica gel column, and analysis of lipids using gas chromatography and mass spectrometry

Harvard University Paleoanthropology Laboratory 2005-2008
- Studies of Miocene mammals as an undergraduate research assistant
- Measured astragali dimensions of bovids, photographed specimens for online records, and performed microwear analysis of ungulates

AWARDS AND HONORS

Stanford University
- Life Sciences Research Foundation Postdoctoral Fellowship, 2022-2025
- Digestive Diseases Week Basic Science Travel Award, 2022
- Division of Gastroenterology & Hepatology T32 Training Grant recipient, 2021-2022

University of Minnesota
- Graduating Medical Student Research Award 2017
- Medical School Student Achievement Award 2017
- Jan Lunden Award in Molecular Hepatology 2017
- Alpha Omega Alpha Honor Society, Junior Year, 2016
- Arnold P. Gold Humanism Honor Society 2016
- J. Jacob Kaplan Award in Gastroenterology 2016
- Microbiology, Immunology, and Cancer Biology Travel Grant 2015

- Poster Award, University of Minnesota Robert Hebbel Department of Medicine Research Day 2015
- Bacaner Research Award in Microbiology, Immunology, and Cancer Biology 2015
- Chen Outstanding Microbiology, Immunology, and Cancer Biology Graduate Student Award 2014
- Honorable Mention, 3 Minute Thesis Competition 2014
- Doctoral Dissertation Fellowship 2014-2015
    - Selected to present at Doctoral Dissertation Fellowship seminar series
    - Profile featured on Doctoral Dissertation Fellowship website
- Burroughs-Wellcome Trainee Travel Award to attend Translational Science Annual Meeting, Washington, DC, 2014
- Selected to attend American Gastrointestinal Association Workshop for MD/PhD Students, San Diego, CA, 2014
- Dennis W. Watson Fellowship in Microbiology 2013-2014
- Clinical and Translational Science Institute F&T Pilot Grant 2013-2015
- BioTechnology Institute Travel Grant 2013
- Interdisciplinary Doctoral Fellowship 2012-2013
- Microbial and Plant Genomics Institute Travel Grant 2011
- Honors in Year 1 Pathology, Medical Neuroscience, Human Physiology, Medical Genetics, Medical Microbiology, and Human Gross Anatomy

Harvard College

- Phi Beta Kappa 2008
- Harvard-Radcliffe Foundation for Women's Athletics Prize 2008
- Program for Research in Science and Engineering (PRISE) Fellow 2007
- Microbial Sciences Initiative Undergraduate Fellow 2007
- William H. and Mary Lee Bossert Prize 2007
- Harvard College Scholar 2006-2007
- John Harvard Scholar 2005-2006