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Division of Nutritional Sciences
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OBJECTIVE

My research goal is to understand the interactions between host genetics, dietary intake and oral and gut microbiomes and in turn, their impact on human health. My research is interdisciplinary; it combines knowledge and tools from genetics, nutrition, physiology, microbiology, and computational biology.

EDUCATION

California Institute of Technology

Bachelor of Science, Engineering and Applied Science, 1999

University of Washington

Doctor of Philosophy, Genome Sciences, 2010

Research Advisor: Leo J. Pallanck, Ph.D.

Cornell University

Post-Doctoral Research, Molecular Biology and Genetics and Microbiology,
2011 – 2017

Research Advisor: Ruth E. Ley, Ph.D.

PROFESSIONAL POSITIONS

Assistant Professor, Division of Nutritional Sciences, Cornell University, July 1, 2017 – present.

Post-Doctoral Research Associate, Departments of Molecular Biology and Microbiology, Cornell University, 2011 – 2017.

Pre-Doctoral Research Assistant, Department of Genome Sciences, University of Washington at Seattle, 2004 – 2010.

Research Associate, Department of Taste Genetics, Pennington Biomedical Research Center, Louisiana State University at Baton Rouge, 2000 – 2004.

Long-term Substitute Teacher, Reading, Algebra, and Biology, Alhambra High School, Alhambra, California, 1999 – 2000.

AWARDS AND HONORS

- U.S. Department of Agriculture, National Institute of Food and Agriculture, Hatch Funding (Accession #7005865). (\$60,000) October 1, 2023 – September 30, 2025. Title: *A feasibility trial for optimizing dietary fiber eating patterns to prevent obesity.*
- NIH NHLBI PRIDE (Programs to Increase Diversity Among Individuals Engaged in Health-Related Research) Small Research Project Grant. (\$18,479) October 2022. Title: *Gut microbiome features mediate the effects of resistant starch on cholesterol metabolism.*
- Schwartz Research Fund Award for Women and other Underrepresented Faculty in the Life Sciences (\$25,000) February 2020. Title: *The tooth of the matter: investigating mechanisms underlying pathogenic biofilm formation.*
- Affinito-Stewart Grant from The President's Council of Cornell Women (\$10,000) May 2019. Title: *The impact of gene-diet-microbe interactions on host health.*
- Finalist in American Diabetes Association Pathway to Stop Diabetes Award Program, November 2018.
- Keystone Symposia Scholarship, 2015.
- Cornell Center for Comparative and Population Genomics Fellowship, 2013.
- Keystone Symposia Underrepresented Minority Scholarship, 2012.
- NIH, Aging and Disease Training Grant Fellowship Award, 2006 – 2010.
- University of Washington GenOM (Genomics Outreach for Minorities) Fellowship Award, 2004.

PUBLICATIONS

Superdock DK, Zhang W, **Poole AC**. Processing and Storage Methods Affect Oral and Gut Microbiome Composition. *Frontiers in Microbiology - Microorganisms in Vertebrate Digestive Systems*. Accepted 2023 Sept 8. doi: 10.3389/fmicb.2023.1253570.

Superdock DK, Zhang W, **Poole AC**. Processing and Storage Methods Affect Oral and Gut Microbiome Composition. *bioRxiv* preprint. doi: 10.1101/2023.06.13.544865. 2023 June 14.

Devarakonda SLS*, Superdock DK*, Ren J, Johnson LM; Loinard-González AP; **Poole AC**. Gut microbial features and dietary fiber intake predict gut microbiota response to resistant starch supplementation. *medRxiv* preprint. doi: 10.1101/2023.03.24.23287665. 2023 March 29.

Poole AC. In the grand scheme of things: identifying reproducible microbial signatures in dietary intervention studies. *Cell Host & Microbe* Preview. 2019 August 14; 26(2). PMID: 31415747.

Poole AC, Goodrich JK, Youngblut ND, Ruaud A, Luque GG, Sutter JL, Waters JL, Shi Q, Mohamed E-H, Johnson LM, Bar HY, Huson DH, Booth JG, Ley RE. Human salivary

amylase gene copy number impacts oral and gut microbiomes. *Cell Host & Microbe*. 2019 April 10; 25(4). PMID: 30974084.

Poole AC*, Pischel L*, Ley C, Suh G, Goodrich JK, Haggerty TD, Ley RE, Parsonnet J. Crossover Control Study of the Effect of Personal Care Products Containing Triclosan on the Microbiome. *mSphere, American Society for Microbiology*. 2016 May 18; 1(3). PMID: 27303746.

Jackson MA, Goodrich JK, Maxan M-E, Freedberg DE, Abrams JA, **Poole AC**, Sutter JL, Welter D, Ley RE, Bell JT, Spector TD, Steves CJ. Proton pump inhibitors alter the composition of the gut microbiota. *Gut*. 2016 May; 65(5): 749-56. PMID: 26719299.

Friedman ES, McPhillips LE, Werner JJ, **Poole AC**, Ley RE, Walter MT, Angenent L. Methane emission in a specific riparian-zone sediment decreased with bioelectrochemical manipulation and corresponded to the microbial community dynamics. *Front. Microbiol*. 2016 Jan 11; 6: 1523. PMID: 26793170.

Sun S, Lourie R, Cohen SB, Ji Y, Goodrich JK, **Poole AC**, Ley RE, Denkers EY, McGuckin MA, Long Q, Duhamel GE, Simpson KW, Qi L. Epithelial Sel1L is required for the maintenance of intestinal homeostasis. *Molecular Biology of the Cell*. 2015 Dec 2; PMID: 26631554.

Chassaing B, Koren O, Goodrich JK, **Poole AC**, Srinivasan S, Ley RE, Gewirtz AT. Dietary emulsifiers impact the mouse gut microbiota promoting colitis and metabolic syndrome. *Nature*. 2015 Mar 5; 519(7541): 92-6. PMID: 25731162.

Panke-Buisse K, **Poole AC**, Goodrich JK, Ley RE, Kao-Kniffin J. Selection on soil microbiomes reveals reproducible impacts on plant function. *ISME Journal*. 2015 Mar 17; 9(4): 980-89. PMID: 25350154.

Goodrich JK, Waters JL, **Poole AC**, Sutter JL, Koren O, Blekhman R, Beaumont M, Van Treuren W, Knight R, Bell JT, Spector TD, Clark AG, Ley RE. Human genetics shape the gut microbiome. *Cell*. 2014 Nov 6; 159(4): 789-99. PMID: 25417156.

Goodrich JK, Di Rienzi SC, **Poole AC**, Koren O, Walters WA, Caporaso JG, Knight R, Ley RE. Conducting a microbiome study. *Cell*. 2014 Jul 17; 158(2): 250-62. PMID: 25036628.

Poole AC*, Thomas RE*, Yu S, Vincow ES, Pallanck LJ. The mitochondrial fusion-promoting factor Mitofusin is a substrate of the PINK1/Parkin pathway. *PLoS One*. 2010 Apr 7. PMID: 20383334.

Poole AC*, Thomas RE*, Andrews LA, McBride HM, Whitworth AJ, Pallanck LJ. The PINK1/Parkin pathway regulates mitochondrial morphology. *Proc Natl Acad Sci U S A*. 2008 Feb 5; 105(5): 1638-43. PMID: 18230723.

Kumar KG, **Poole AC**, York B, Volaufova J, Zuberi A, Richards BK. Quantitative trait loci for carbohydrate and total energy intake on mouse chromosome 17: congenic strain

confirmation and candidate gene analyses (Glo1, Glp1r). *Am J Physiol Regul Integr Comp Physiol*. 2006 Jan; 292(1): R207-16. PMID: 16946080.

Smith Richards BK, Belton BN, **Poole AC**, Mancuso JJ, Churchill GA, Li R, Volaufova J, Zuberi A, York B. QTL analysis of self-selected macronutrient diet intake: fat, carbohydrate, and total kilocalories. *Physiol Genomics*. 2002 Dec 3;11(3):205-17. PMID: 12388789.

* co-first author

TEACHING EXPERIENCE

Co-creator and Co-instructor of NS XXXX: Precision Nutrition and Health, Division of Nutritional Sciences, Cornell University, 2024 –.

Creator and Instructor of NS 4200: Diet and the Microbiome, Division of Nutritional Sciences, Cornell University, 2019 – present.

Guest Lecturer for NS 6320: Regulation of Macronutrient Metabolism, Division of Nutritional Sciences, Cornell University, 2018 – 2020.

Guest Lecturer for NS 2750: Human Biology and Evolution, Division of Nutritional Sciences, Cornell University, 2013 – 2015.

Guest Lecturer for BME 6130: Engineering the Microbiome, Department of Biomedical Engineering, Cornell University, 2016.

Guest Lecturer for BIOMI 3210: The Normal Microbes of the Human Body in Health and Disease, Department of Microbiology, Cornell University, 2016.

Teaching Assistant for Genome 107: CSI Seattle, Department of Genome Sciences, University of Washington, 2008.

Teaching Assistant for Genome 371: Introductory Genetics, Department of Genome Sciences, University of Washington, 2007.

ACADEMIC TRAINEES

PhD committee chair for graduate student Sri Devarakonda, Division of Nutritional Sciences, Cornell University (January 2018 – August 2023).

PhD committee chair for graduate student Dorothy (Kim) Superdock and Sri Devarakonda, Division of Nutritional Sciences, Cornell University (January 2018 – June 2023).

PhD field-appointed committee member for graduate student Shariwa Oke, Division of Nutritional Sciences, Cornell University (2022 – present).

PhD minor committee member for graduate student Jingzhang Feng, Department of Food Sciences, Cornell University (2021 – present).

PhD minor committee member for graduate student Andrea Darby, Department of Entomology, Cornell University (July 2020 – present).

Research Advisor to Ezra Mutai, Ph.D., Postdoctoral Teaching and Research Fellow, Division of Nutritional Sciences, November 2019 – July 2021.

Honors Thesis Advisor to Jiayuan Liu, Cornell University August 2020 – June 2021.

Honors Thesis Advisor to Alizeh Khan, Cornell University August 2021 – June 2022.

Research Advisor to Shuai Man, Cornell University, August 2022 – June 2023.

Research Advisor to Belle Lin, Cornell University, January 2021 – December 2021.

Research Advisor to Jaden Ombre, Cornell University, August 2020 – May 2021.

Research Advisor to 9 undergraduate students, Cornell University, August 2019 – May 2020.

Supervision of one undergraduate in the laboratory of Dr. R. E. Ley, Department of Molecular Biology and Genetics, Cornell University (2013 – 2014).

Supervision of one undergraduate in the laboratory of Dr. L. J. Pallanck, Department of Genome Sciences, University of Washington (2008 – 2010).

SEMINARS AND PRESENTATIONS

Invited Seminar: “Progress toward personalizing dietary intake to improve metabolic health.” Southern Tier Academy of Nutrition and Dietetics (STAND) and Central New York Academy of Nutrition and Dietetics. Cornell University. Ithaca, NY, October 2023.

Invited Speaker: “Prior dietary intake and gut microbial features predict gut microbiota response to resistant starch supplementation.” ASM Microbe (American Society for Microbiology). Houston, Texas, June 2023.

Invited Seminar: “Assessment of candidate predictors of gut microbiota response to starches: A precision nutrition study.” Center for Metagenomics and Microbiome Research at the Baylor College of Medicine, November 2022.

Invited Seminar: “Exploring the causes and consequences of gut microbiome variation to choose the best dietary fiber for *you*.” University of Wisconsin-Madison, Department of Bacteriology. Madison, Wisconsin, March 2022.

Invited Seminar: "A host gene-microbe interaction potentially relevant to personalized nutrition." First International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, an Aegean conference in Chania, Crete, Greece. September 2018.

Invited Seminar: "Salivary amylase gene copy number affects microbiomes with implications for host health." Max Planck Institute for Developmental Biology. Tübingen, Germany, September 2018.

Invited Seminar: "The effects of diet-related host genes on oral and gut microbiomes." University of Texas at Austin. Austin, Texas, October 2017.

Poster: "Amylase gene copy number impacts the structure and function of human oral and gut microbiomes." 16th International Symposium on Microbial Ecology. Montreal, Canada, August 2016.

Talk: "Human salivary amylase gene copy number impacts the gut microbiome and its function." 11th Annual University of Michigan Early Career Scientists Symposium: Ecosystems Within Organisms: Ecology and Evolution of the Microbiome. Ann Arbor, Michigan, March 2015.

Electronic Poster: "Human salivary amylase gene copy number impacts the gut microbiome and its function." Keystone conference: Gut Microbiota Modulation of Host Physiology: The Search for Mechanism. Keystone, Colorado, March 2015.

Poster: "The affect of salivary amylase gene copy number on gut microbiota composition and function." 15th International Symposium on Microbial Ecology. Seoul, South Korea, August 2014.

Invited Speaker: "Exploring the Co-evolution of Gut Microbes, Humans, and Their Diets." American Society for Microbiology: General Meeting. Boston, Massachusetts. March 2014.

Poster: "Correlation of Salivary Amylase Levels with Gut Microbiome Composition." Keystone conference: The Microbiome. Keystone, Colorado, March 2012.

Workshop: "Microbiota and Your Research: A How-to Guide to Designing and Executing Studies of the Microbiota in Your Favorite Niche." Keystone conference: The Microbiome. Keystone, Colorado, March 2012.

PROFESSIONAL ACTIVITIES

Service

- Cornell University Service - CALS Committee (confidential), 2023 – present.
- Cornell Division of Nutritional Sciences Seminar Committee, 2022 – present.
- Cornell Graduate Field of Nutrition Academic Affairs Committee, 2019 – present.
- Cornell Division of Nutritional Sciences Pre-Health Bridge Program/PostBacc Committee, 2018.

Professional Appointments and Memberships

- NIH Early Career Reviewer Program, study section: Nutrition and Metabolism in Health and Disease, June 21-22, 2022
- USDA NIFA grant review panel, study section on Food and Human Health, November 2019
- Associate Editor on the Editorial Board of Microbiome in Health and Disease, a specialty section within *Frontiers in Cellular and Infection Microbiology*
- Member, Cornell University Center for Vertebrate Genomics
- Faculty Fellow, Cornell University Atkinson Center for a Sustainable Future
- Cornell Institute of Host-Microbe Interactions and Disease

Ad hoc Reviewer

- *Cell Host & Microbe* (Impact factor 21.0)
- *Cell Reports Medicine* (Impact factor 16.99)
- *Genome Biology* (Impact factor 10.8)
- *The ISME Journal* (Impact factor 10.3)
- *npj Biofilms and Microbiomes* (Impact factor 7.1)
- *mSystems* (Impact factor 5.9)

Professional Development

- Cornell Office of Faculty Development & Diversity's Making Time to Write, Spring and Summer 2021.
- Cornell Program for Achieving Career Excellence (PACE) Grant Writing Workshop Groups, June 2019 – January 2021.
- Leadership Alliance National Symposium Grant Writing Coaching Group, July – November 2019.
- Faculty Success Program, National Center for Faculty Development & Diversity, May 17– August 7, 2020.
- Cornell New Faculty Institute, January 18, 2019.
- Cornell Faculty Leadership Development Program, January 8 – 12, 2018.
- Cornell Course Design Institute by the Center for Teaching Innovation, May 10-11, 2018.

Cornell University Graduate Field Memberships

- Nutritional Sciences
- Microbiology