

Jennifer Hampton Hill, PhD

Assistant Professor, University of Colorado Boulder, BioFrontiers Institute
Molecular, Cellular & Developmental Biology Department
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Education

University of Oregon, Eugene, OR (2011-2017)

PhD in Biology

Areas of Specialization: Cellular & Molecular Biology, Microbiology, Development

Dissertation title: *Bacterial Regulation of Host Pancreatic Beta Cell Development*

Cal Poly Humboldt, Arcata, CA (2006-2010)

BS in Cellular & Molecular Biology

Minor in Chemistry

Research Experience

Assistant Professor (June 2024-)

Marvin H Caruthers Endowed Chair for Early-Career Faculty, University of Colorado, Boulder, BioFrontiers Institute, Department of Molecular, Cellular & Developmental Biology.

Member of the Barbara Davis Diabetes Research Center, Anschutz Medical Campus

- The Hill Lab's focus is on understanding the lifelong relationship between the host and its resident microbes, using the pancreas as a model organ. We established the first germ-free mouse facility at CU Boulder to investigate our questions of interest.

Postdoc (2018-2024)

University of Utah, Department of Pathology, Division of Microbiology and Immunology

Under joint mentorship of June L. Round, PhD and L. Charles Murtaugh, PhD

- Characterization of the role of resident microbes in mammalian pancreatic development and disease.
 - Identification of a macrophage-dependent, resident fungal-driven mechanism of mammalian postnatal beta-cell development. In Press at *Science*.
 - Mechanistic and translational characterization of the bacterial protein, BefA, which stimulates beta-cell proliferation via membrane permeabilization. Published in *Cell Metabolism*.
 - Characterization of the role of the human microbiota in the onset of pancreatic ductal adenocarcinoma.

Doctoral Research (2012-2017)

University of Oregon, Institute of Molecular Biology, Microbial Ecology and Theory of Animals (META) Center for Systems Biology

Under mentorship of Karen Guillemin, PhD

- Host-microbe interactions in the zebrafish.
 - Discovery of a novel bacterial protein, BefA, that induces pancreatic beta-cell mass expansion during zebrafish development. Published in *eLife*.
 - Colonization and competition dynamics of bacteria in the gut.

Post-Baccalaureate Fellowship (2010-2011)

University of California San Francisco, California Institute for Regenerative Medicine (CIRM) Bridges Fellowship
Under joint mentorship of Olov Andersson, PhD and Didier Stainier, PhD

- Characterizing the effect of histamine signaling on zebrafish beta-cell regeneration and progenitor differentiation.

Undergraduate Research (2009-2010)

National Science Foundation REU & Humboldt State University Undergraduate Thesis
Under mentorship of Patricia Siering, PhD

- Investigation of the primary production of extreme environments by isolation and enrichment of iron-oxidizing bacteria from acidic hot springs.

Undergraduate Research (2008)

Directed Study in Bioinformatics, Humboldt County, CA
Under mentorship of Joseph Carroll, MD

- Predicting individual patient responses to treatment for hepatitis C in Humboldt County.

Fellowships & Grants

- NIH Pathway to Independence Award (K99/R00), Impact score: 10 (2023-2027)
- Junior Diabetes Research Foundation (JDRF) Postdoctoral Fellowship Award (2019-2022)
- University of Utah Developmental Biology T32 Training Grant Recipient (2018 - 2019)
- University of Oregon Genetics T32 Training Grant Recipient (2012 - 2015)
- California Institute for Regenerative Medicine (CIRM) Bridges Fellowship (2010 – 2011)

Publications (in chronological order)

Allison Weis, Kaylyn Bauer, William Tang, Rickesha Bell, Emmanuel Victor-Stephen, Garrett Brown, Atakan Ekiz, Eric Swanson, Kendra Klag, **Jennifer H. Hill**, Kyla Ost, Logan Barrios, Morgan Harwood, Neli Ulrich, Ryan O'Connell, W. Zac Stephens, and June L Round. *A capsular polysaccharide from a member of the human microbiota activates a Lag-3-NK cell axis to restrain colon cancer and augment immunotherapy*. In review.

Jennifer Hampton Hill, Rickesha Bell, Logan Barrios, Halli Baird, Kyla Ost, Casey Meili, Erin Tracy, Josh Monts, Tyson R. Chiaro, Morgan Greenwood, Allison M. Weis, Karen Guillemin, Anna Beaudin, L. Charles Murtaugh, W. Zac Stephens, and June L. Round. Neonatal fungi promote lifelong metabolic health through macrophage dependent beta-cell development. In press. *Science*.

Tyson R. Chiaro, Morgan Greenwood, Kaylyn M. Bauer, Kyla S. Ost, Emmanuel Stephen-Victor, Michaela Murphy, Allison M. Weis, Morgan C. Nelson, **Jennifer H. Hill**, Rickesha Bell, Warren Voth, Taylor Jackson, Kendra A. Klag, Ryan M. O'Connell, W. Zac Stephens, June L. Round. Clec12a controls colitis by tempering inflammation and restricting expansion of specific commensals. *Cell Host & Microbe*, Volume 33, Issue 1, 2025, 89-103.e7, ISSN 1931-3128, <https://doi.org/10.1016/j.chom.2024.12.009>.

Jennifer H. Hill and June L. Round. Resident fungi in host health and disease. Invited Review *Cell Host and Microbe*, Volume 32, Issue 10, 1668 - 1680.

Jennifer Hampton Hill, Michelle Sconce Massaquoi, Emily Goers Sweeney, Elena Wall, Philip Jahl, Rickesha Bell, Daniel Derrick, Karen Kallio, L. Charles Murtaugh, Raghuvver Parthasarathy, S. James Remington, June L. Round and Karen Guillemin. *Befa*, a microbiota-secreted membrane disrupter, disseminates to the pancreas and increases beta cell mass. *Cell Metabolism*, 2022; doi: <https://doi.org/10.1016/j.cmet.2022.09.001>

Kaylyn M. Bauer, Morgan C. Nelson, William W. Tang, Tyson R. Chiaro, D. Garrett Brown, Aryveik Ghazaryan, Soh-Hyun Lee, Allison M. Weis, **Jennifer H. Hill**, Kendra A. Klag, Van B. Tran, Jacob W. Thompson, Andrew G. Ramstead, J. K. Monts, James E Marvin, Margaret Alexander, Warren P. Voth, W. Zac Stephens, Diane M. Ward, Aaron C Petrey, June L. Round, and Ryan M. O'Connell. CD11c+ myeloid cell exosomes reduce intestinal inflammation during colitis. *JCI Insight*. 2022;7(19):e159469. PMID: 36214220

Jennifer Hampton Hill. From bugs to beta-cells: Do ancient microbial irritants offer early life protection against diabetes? *Science*. 2022 Jul8;377(6602):163-165. PMID: 35857569

Jennifer H. Hill and June L. Round. Snapshot: Microbiota effects on host physiology. *Cell*. 2021 May 13;184(10):2796.e1. PMID: 33989551

Jennifer Hampton Hill, Eric Franzosa, Curtis Huttenhower and Karen Guillemin. A conserved bacterial protein induces pancreatic beta cell expansion during development in zebrafish. *eLife*. 2016 Dec 13;5:e20145. PMID: 27960075

- Highlighted in several review articles including *Nature Reviews Endocrinology* and *Nature Reviews Microbiology*

Matthew Jemielita, Michael J Taormina, Adam R Burns, **Jennifer S. Hampton**, Annah S Rolig, Karen Guillemin, and Raghuvver Parthasarathy. Spatial and temporal features of the growth of a bacterial species colonizing the zebrafish gut. *mBio*. 2014 Dec 16;5(6):e01751-14. PMID: 25516613

Francine A Arroyo, Patricia L Siering, **Jennifer S. Hampton**, Angela McCartney, Matthew P Hurst, Gordon V Wolfe, and Mark S Wilson. Isolation and characterization of novel iron-oxidizing autotrophic and mixotrophic bacteria from boiling springs lake, an oligotrophic, acidic geothermal habitat. 2014. *Geomicrobiology* vol. 32 no. 2. 140-157.

Patents

Proteins increasing pancreatic beta-cell number and methods of use. **Jennifer Hampton Hill**, Karen Guillemin, and the University of Oregon. United States Patent Numbers: 10563174, issued February 18, 2020, and 10968432, issued April 6, 2021, *pending* Europe Provisional Application Number: 62/167,061.

Compositions and methods for promoting beta cell development and treating and preventing metabolic disease. **Jennifer H. Hill**, June L. Round, and the University of Utah. United States Provisional Patent Number:63/724,563. Filed November 25, 2024.

Select Honors and Awards

- Marvin H. Caruthers Endowed Chair for Early-Career Faculty: University of Colorado Boulder, BioFrontiers Institute
 - NOSTER & *Science* Microbiome Grand Prize Winner: for innovative research by young microbiota investigators with potential to contribute to understanding of human health (2022)
 - Featured on the Microbiome Research X (MRX) Podcast
 - NIH Loan Repayment Program Award Recipient (2020-2022) & (2023-2025)
 - Paul Shurtleff Hatch and Heidi Hatch Ford Scholar Award for Type 1 Diabetes Research (2019)
 - Pete von Hippel Graduate Scholar Award: awarded for outstanding thesis research and concern for fellow students and colleagues (2015)
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Presentations

- **Invited Speaker** – American Diabetes Association Scientific Sessions, Chicago, IL (June 2025)
- **Invited Speaker** – Midwest Regional Developmental Biology Meeting, Albuquerque, NM (May 2025)
- **Invited Speaker** – Xplorer Symposia on Multidisciplinary Intersection of Microbiome, Chemistry, Plants, and Medicine. Hong Kong SAR (February 2025)
- **Invited Speaker** – University of Tennessee Microbiology Department Seminar Series (November 2024)
- **Selected Talk** – Western Regional Islet Study Group, Asilomar, CA (October 2024)
- **Invited Speaker** – University of Colorado Anschutz Microbial Pathogenesis and Infectious Disease Symposium (September 26, 2024)
- **Invited Speaker** – University of Colorado Perinatal-Neonatal Research Conference (June 1, 2023)
- **Invited Speaker** – University of Utah, Stem Cell Affinity Group Seminar (October 14, 2022)
- **Invited Speaker** – Cal Poly Humboldt, Department of Biological Sciences Seminar

Series (September 23, 2022)

- **Invited Speaker** – Science AAAS Webinar: Tiny Influencers with outsized impacts: Unraveling how microbiomes modulate our health (August 16, 2022)
 - **Selected Talk** – Conference on Beneficial Microbes, Madison, WI (July 2022)
 - **Selected Talk** – Gordon Research Conference, IGF and Insulin System in Physiology and Disease, Ventura, CA (March 2017)
 - **Selected Talk** – META Center Symposium: Synthesis and Selection of Host-Microbe Systems, Eugene, OR (August 2015)
 - **Selected Talk** – Keystone Symposium on Gut Microbiota Modulation of Host Physiology: The Search for a Mechanism, Keystone, CO (March 2015)
 - **Selected Talk** – Aquatic Animal Models of Human Disease Conference, Austin, TX (December 2014)
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Teaching Experience

University of Oregon Graduate Teaching Fellow for the following courses:

- Animal Physiology - taught lab sections (Fall 2011)
 - Investigations in Medical Physiology - led discussion sections (Winter 2012)
 - Introduction to Genetics - led discussion sections (Spring 2012)
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Professional Memberships

- University of Oregon Women in Graduate Science (2012-2017)
 - American Diabetes Association (2019-present)
 - American Society for Microbiology (2019-present)
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Manuscript Review

- Reviewer for *Science*
 - Co-reviewer for *Cell Reports*
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Courses and Programs

- University of Utah Introduction to Bioinformatics Tools Workshop (Summer 2020)
 - Cold Spring Harbor Workshop on Pancreatic Cancer (Spring 2020)
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