

Matthew Frederick Barber

Curriculum Vitae (Feb. 2026)

321 Pacific Hall, 5289 University of Oregon ♦ Eugene, OR 97403
mfbarber@uoregon.edu ♦ barberlab.org

Academic Appointments

- 2022 - present Associate Professor
University of Oregon, Department of Biology
Eugene, Oregon, USA
- 2022 - 2023 Visiting Scholar
University of Edinburgh, Roslin Institute
Midlothian, Scotland, UK
- 2016 - present Member
University of Oregon, Institute of Ecology and Evolution
Eugene, Oregon, USA
- 2016 - 2022 Assistant Professor
University of Oregon, Department of Biology
Eugene, Oregon, USA

Education and Training

- 2012 - 2016 Postdoctoral Fellow
University of Utah, Department of Human Genetics
Salt Lake City, Utah, USA
Mentor: Dr. Nels Elde
- 2006 - 2012 Ph.D. in Biological Sciences
Stanford University, Department of Biology
Stanford, California, USA
Mentors: Dr. Or Gozani and Dr. Katrin Chua
- 2002 - 2006 B.A. in Molecular Biology
Colgate University, Department of Biology
Hamilton, New York, USA
Mentor: Dr. Ken Belanger
- 2004 Undergraduate Researcher
National Institute of Allergy and Infectious Disease
Rockville, Maryland, USA
Mentor: Dr. Sanjay Desai

Selected Honors and Awards

2025	Golden Egg Innovator Award University of Oregon
2023 – 2025	Incubating Interdisciplinary Initiatives (I3) Award University of Oregon
2017 - 2018	Faculty Scholar Award Donald E. and Delia B. Baxter Foundation
2015 - 2020	NIH K99/R00 Pathway to Independence Award National Institutes of Health
2015	Omenn Prize The Evolution, Medicine, & Public Health Foundation
2013 - 2015	NIH Ruth L. Kirschstein Postdoctoral NRSA National Institutes of Health
2011	Mason Case Graduate Fellow Stanford University
2009 - 2010	ARCS Scholar ARCS Foundation Northern California Chapter
2006 - 2009	NIH Ruth L. Kirschstein Predoctoral NRSA Stanford University
2006	Christopher Oberheim Memorial Research Award Colgate University

Publications and Preprints

*these authors contributed equally to this work. ^co-corresponding authors.

- Sil T, Kowalski CH, Scamfer S, **Barber MF** (2026) *De novo* origin and evolution of an antimicrobial protein function. *bioRxiv (preprint)*. DOI: 10.64898/2026.02.05.703623.
- Kowalski CH[^], Khalil SB, James DA, Smith TJ, Campbell KD, Corrigan RM, **Barber MF**[^] (2026) Non-canonical stringent response signaling mediates antimicrobial fatty acid sensitivity in *Staphylococcus aureus*. *bioRxiv (preprint)*. DOI: 10.64898/2026.02.01.703180.
- Campbell K, Kowalski CH, Kohler KM, Kebret M, **Barber MF** (2025) Evolution of polyamine resistance in *Staphylococcus aureus* through modulation of potassium transport. *mSphere*. DOI: 10.1128/msphere.00613-24.

- Kowalski CH, Nguyen UT, Lawhorn S, Smith TJ, Corrigan RM, Suh WS, Kalan L, **Barber MF** (2025) Skin mycobiota-mediated antagonism against *Staphylococcus aureus* through a modified fatty acid. *Current Biology*. DOI: 10.1016/j.cub.2025.03.055.
- Barber MF, Fitzgerald JR (2024) Mechanisms of host adaptation by bacterial pathogens. *FEMS Microbiology Reviews*. DOI: 10.1093/femsre/fuae019.
- Paterson NM, Al-Zubieri H, Kohler KM, Toredó J, Geisbrecht B, **Barber MF** (2023) Dynamic evolution of bacterial recognition by mammalian formyl peptide receptors. *Genome Biology and Evolution*. DOI: 10.1093/gbe/evad175.
- Belanger KD, Yewdell WD, **Barber MF**, Russo AN, Pettit MA, Damuth EK, Hussain N, Geier SJ, Belanger KG (2022) Exportin Crm1 is important for Swi6 nucleocytoplasmic shuttling and MBF transcription activation in *Saccharomyces cerevisiae*. *BMC Molecular and Cell Biology*. DOI: 10.1101/2020.06.17.155598.
- Baker EP, Sayegh R, Kohler KM, Borman W, Brush E, Goodfellow C, **Barber MF** (2022) Evolution of host-microbe cell adherence by receptor domain shuffling. *eLife*. DOI: 10.7554/eLife.73330.
- Paterson NM, Al-Zubieri H, **Barber MF** (2021) Diversification of CD1 molecules shapes lipid antigen selectivity. *Molecular Biology and Evolution*. DOI: 10.1093/molbev/msab022.
- Baker EP, **Barber MF** (2020) Unearthing the ancient origins of antiviral immunity. *Cell Host & Microbe* 28(5): 629-631. DOI: 10.1016/j.chom.2020.10.008.
- Aleru O, **Barber MF** (2020) Battlefronts of evolutionary conflict between bacteria and animal hosts. *PLOS Pathogens* 16(9): e1008797. DOI: 10.1371/journal.ppat.1008797.
- Kohler KM*, Kutsch M*, Piro AS*, Wallace G, Coers J[^], **Barber MF**[^] (2020) A rapidly evolving polybasic motif modulates bacterial detection by guanylate binding proteins. *mBio*. DOI: 10.1101/689554.
- Choby JE, Buechi HB, Farrand AJ, Skaar EP[^], **Barber MF**[^] (2018) Molecular basis for the evolution of species-specific hemoglobin capture by *Staphylococcus aureus*. *mBio*. 9(6). DOI: 10.1128/mbio.01524-18.
- **Barber MF**, Lee EM, Griffin H, Elde NC (2017) Rapid evolution of primate type 2 immune response factors linked to asthma susceptibility. *Genome Biology and Evolution*. 9(6):1757–65. DOI: 10.1093/gbe/evx120.
- Pilla-Moffett D, **Barber MF**, Taylor GA, Coers J (2016) Interferon-Inducible GTPases in host resistance, inflammation and disease. *Journal of Molecular Biology*. 428(17):3495–513. DOI: 10.1016/j.jmb.2016.04.032.
- **Barber MF**, Kronenberg Z, Yandell M, Elde NC (2016) Antimicrobial functions of lactoferrin promote genetic conflicts in ancient primates and modern humans. *PLOS Genetics*. 12(5):e1006063. DOI: 10.1371/journal.pgen.1006063.
- **Barber MF**, Elde NC (2015) Buried treasure: Evolutionary perspectives on microbial iron piracy. *Trends in Genetics*. 31(11):627–36. DOI: 10.1016/j.tig.2015.09.001.
- **Barber MF**, Elde NC (2014) Escape from bacterial iron piracy through rapid evolution of transferrin. *Science*. 346(6215):1362–6. DOI: 10.1126/science.1259329.
 - Perspective: *Science*. 346(6215):1299-1300.
 - Research Highlight: *Nature*. 516: 290-291.
 - Recommended by Faculty of 1000.
- **Barber MF**, Elde NC (2013) Evolutionary biology: Mimicry all the way down. *Nature*. 501(7465):38–9. DOI: 10.1038/501038a.

- **Barber MF***, Michishita-Kioi E*, Xi Y*, Tasselli L, Kioi M, Moqtaderi Z, Tennen RI, Paredes S, Young N, Chen K, Struhl K, Garcia BA, Gozani O, Li W, Chua KF (2012) SIRT7 links H3K18 deacetylation to maintenance of oncogenic transformation. *Nature*. DOI: 10.1038/nature11043.
 - Preview: *Cancer Cell*. 21(6):719-721.
 - Research Highlight: *Cell Res*. 23(1):10-12.
- Michishita E, McCord RA, Boxer LD, **Barber MF**, Hong T, Gozani O, Chua KF (2009) Cell cycle-dependent deacetylation of telomeric histone H3 lysine K56 by human SIRT6. *Cell Cycle*. 8(16):2664–6. DOI: 10.4161/cc.8.16.9367.

Funding - Active

National Institutes of Health R35 GM158176
Mechanisms of evolution at the host-pathogen interface

Primary Investigator: Matthew Barber

Funding period: 08/01/2025 - 07/31/2030

Total costs: \$2,208,216

Description: research grant to support work in the Barber lab on the evolution of host-pathogen interactions.

National Institutes of Health R25 GM152322

UO PREP Program

Primary Investigators: Matthew Barber, Rori Rohlf

Funding period: 09/18/2023 – 06/30/2028

Total costs: \$1,975,505

Description: postbaccalaureate training program to broaden participation in the biomedical sciences.

Funding - Completed

National Institutes of Health R21 AI173839

Host range determinants of bacterial exfoliative toxins

Primary Investigator: Matthew Barber

Funding period: 08/16/2023 – 07/31/2025

Total costs: \$405,625

Description: research grant investigating interactions between staphylococcal toxins and host target proteins.

University of Oregon I3 Award

Origin and evolution of immune protein functions

Investigators: Matthew Barber, Michael Harms, Melanie Spero

Funding period: 07/01/2023 – 06/30/2025

Total costs: \$50,000

Description: pilot award supporting research on antimicrobial protein evolution.

National Institutes of Health R35 GM133652

Molecular mechanisms of evolution at the host-microbe interface

Primary Investigator: Matthew Barber

Funding period: 09/02/2019 - 07/31/2025

Total costs: \$1,828,325

Description: research grant to support work in the Barber lab on host-microbe interactions.

National Institutes of Health R00 GM115822

Adaptive evolution of bacteria in the battle for iron

Primary Investigator: Matthew F. Barber

Funding period: 09/16/2016 - 08/31/2019

Total costs: \$749,000

Total direct costs: \$555,725

Donald E. and Delia B. Baxter Foundation Faculty Scholar Award

Primary Investigator: Matthew F. Barber

Funding period: 12/1/2017 - 12/31/2018

Total costs: \$100,000

Total direct costs: \$95,000

National Institutes of Health U54 DK110858

Center for Iron & Heme Disorders Pilot Award

Host-pathogen conflicts shaping bloodstream hemeprotein evolution

Sub-award Primary Investigator: Matthew F. Barber

Funding period: 08/01/2016 - 07/31/2018

Total costs: \$55,000

Total direct costs: \$30,000

National Institutes of Health K99 GM115822

Adaptive evolution of bacteria in the battle for iron

Primary Investigator: Matthew F. Barber

Funding period: 09/16/2016 - 08/31/2019

Total costs: \$104,999

National Institutes of Health F32 GM108288

Evolutionary arms races in the battle for iron

Primary Investigator: Matthew F. Barber

Funding period: 08/01/2013 - 07/31/2015

Total costs: \$102,496

Sponsored Funding - Active

None

Sponsored Funding - Completed

L'Oreal Women For Science USA fellowship

Primary Investigator: Caitlin Kowalski (postdoctoral fellow)

Funding period: 2024-2025

Total costs: \$60,000

Description: funding and professional development support for postdoctoral fellow Dr. Caitlin Kowalski.

Helen Hay Whitney Foundation postdoctoral fellowship

Antimicrobial activity of skin-associated fungi alters pathogen adaptation

Primary Investigator: Caitlin Kowalski (postdoctoral fellow)

Funding period: 04/01/2022 - 03/31/2025

Total costs: ~\$230,000

Description: postdoctoral fellowship to support research by Dr. Caitlin Kowalski.

National Institutes of Health F32 AI147565

Rapid evolution and bacterial evasion by a primate cell adhesion protein

Primary Investigator: EmilyClare Baker (postdoctoral fellow)

Funding period: 08/01/2020 - 07/31/2023

Total costs: ~\$200,000

Description: postdoctoral fellowship to support research by Dr. EmilyClare Baker.

Patents

2023 Title: *Malassezia* factor with antibiotic activity
 Patent No: US-11820799-B2
 Inventors: Matthew Barber, Caitlin Kowalski

Teaching Experience

2019 - present BI326: Immunology & Infectious Disease
 Terms taught: Winter 2019, Fall 2019, Fall 2020, Winter 2022, Winter 2024, Fall 2024, Fall 2025

2019 - 2022 BI610: Phylogenetics
 Terms taught: Spring 2019, Spring 2020, Spring 2021, Spring 2022

2018 - present BI610: Professional Development in the Life Sciences
 Terms taught: Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2024, Fall 2025

2018 - present BI484/584: Molecular Evolution
 Terms taught: Winter 2018, Fall 2019, Fall 2020, Winter 2024, Winter 2025

Mentoring - Current

Undergraduates and Research Assistants

Name	Position	Period
Amalie Odgaard	Undergraduate student	01/2026 – present
Barrett Greenwalt	Lab aide	01/2026 – present

Grace Schulte Undergraduate student 07/2025 - present

Graduate Students

Name	Position	Period
Kendal Tinney	Ph.D. student, Biology	06/2023 - present
Titas Sil	Ph.D. student, Biology	03/2023 - present

Postdoctoral Fellows and Research Associates

Name	Position	Period
Katy Bunn	Postdoctoral fellow	02/2026 - present

Mentoring - Past**Undergraduates and Research Assistants**

Name	Position	Period	Current Position
Dante' James	Undergraduate	09/2022 – 07/2025	Ph.D. Student, UW-Madison
Sylvia Khalil	Undergraduate	06/2022 – 09/2024	Research Assistant, PDX Pharm
Filadelphia Tadjibaeva	Undergraduate	08/2022 - 11/2022	Research Technician, New York City
Emma Thompson	Undergraduate	08/2021 - 09/2022	N/A
Wyatt Borman	Undergraduate	06/2019 - 06/2021	Medical Scribe, Roseburg, Oregon
Clara Rehmann	Research Assistant	03/2020 - 08/2021	Ph.D. Student, U. of Oregon
Ryan Sayegh	Research Assistant	08/2019 – 08/2021	Ph.D. Student, CU Boulder
Jasmine Garcia	Undergraduate	03/2020 - 10/2020	Ph.D. Student, UCSF
Hussein Al-Zubieri	Undergraduate	09/2019 – 10/2020	Dental Student, UCSF
Dimitra Fellman	Undergraduate	05/2017 - 06/2020	Research Associate, PHI Cancer Registry of Greater California
Eden Brush	Undergraduate	01/2017 – 06/2019	Genetic Counselor, New York, NY
Jacob Laser	Research Assistant	09/2017 – 06/2018	Medical Student, U. of New England
Madeleine Griffin	Undergraduate	01/2017 – 06/2018	Bastyr University
Hannah Buechi	Research Assistant	10/2016 – 07/2017	Manager, Measure to Improve LLC
Elliot Lee	Undergraduate	2013 – 2016	Ph.D. Student, U. of Washington

Graduate Students

Name	Position	Period	Current Position
Killian Campbell	Ph.D. student, Biology	03/2020 – 12/2025	Postdoc, U. of Minnesota
Omoshola Aleru	M.S. student, Biology	09/2025 - 12/2025	N/A
Nicole Paterson	Ph.D. student, Chemistry	06/2019 - 06/2021	Bioinformatician, CDC

Postdoctoral Fellows and Research Associates

Name	Position	Period	Current Position
Caitlin Kowalski	Postdoctoral Fellow	09/2020 – 09/2025	Assistant Professor, Dartmouth Health
Kristin Kohler	Senior Research Associate	04/2017 – 05/2025	Scientist, Amby Genetics
EmilyClare Baker	Postdoctoral Fellow	08/2018 – 04/2024	Research Associate, University of Michigan

Mary Darby Jackson Postdoctoral Fellow 07/2020 - 11/2022 Assistant Professor, Mississippi College

Service - University of Oregon

Department of Biology

2024 - present Member, Personnel Committee
 2021 - 2025 Member, Diversity Equity and Inclusion Committee
 2017 - 2021 Member, Graduate Admissions Committee

Institute of Ecology and Evolution

2023 – present Chair, Seminar Committee
 2017 Retreat organizer

Faculty Search Committees

2019-2020	Human Microbiome search	Dept. of Biology
2017-2018	Human Microbiome search	Dept. of Biology
2016-2017	Microbial Ecology search	Dept. of Biology, Institute of Ecology and Evolution

Other University Service

2024 – present Co-Director, PREP BIO Program
 2023 – 2024 Member, PREP BIO Program Executive Committee
 2021 Member, Environmental Health and Safety officer search committee
 2017 – 2021 SAIL program faculty presenter (2017, 2021)
 • Outreach program for underrepresented and first generation high school students considering college enrollment.
 2019 Reviewer for Women in Graduate Science Scholarships
 2018 Member, Summer Institute working group on Diversity, Equity, & Inclusion
 2017 - present Member, Provost's Teaching Academy
 • Promoting engaged, inclusive, and research-led teaching.

Doctoral Thesis Committees - Current

Name	Department	Role	Advisor	Period
Sarah Alladin	Biology	Chair	Patrick Phillips	2025 - present
Kate Kelly	Biology	Chair	Kate Kelly	2025 - present
Sierra Scampfer	Biology	Chair	Melanie Spero	2025 - present
Brooke Frohock	Biology	Member	Karen Guillemin	2025 - present
Corey Worledge	Biology	Chair	Karen Guillemin	2025 - present
Francia Lopez	Biology	Chair	Melanie Spero	2023 - present
Susannah Lawhorn	Biology	Member	Melanie Spero	2023 - present
Brennan Fitzgerald	Chem & Biochem	Member	Michael Harms	2023 - present
Shannon Snyder	Biology	Chair	Bill Cresko	2021 - present
Masha Korchagina	Biology	Member	Stilianos Louca	2021 - present
Ethan Kimmitt	Chem & Biochem	Member	Vickie DeRose	2021 - present
Emily Dennis	Chem & Biochem	Member	David Garcia	2021 - present

Doctoral Thesis Committees - Completed

Name	Department	Role	Advisor	Period
LyAndra Lujan	Biology	Member	Nadia Singh	2021 - 2025
Rose Al-Saadi	Biology	Member	Patrick Phillips	2021 - 2025
Natanya Villegas	Knight Campus	Member	Calin Plesa	2020 - 2025
Sophia Phillips	Chem & Biochem	Member	Michael Harms	2020 - 2025
Hope Healey	Biology	Member	Bill Cresko	2020 - 2024
Lauren Chisholm	Chem & Biochem	Member	Michael Harms	2020 - 2024
Victoria Caudill	Biology	Member	Peter Ralph	2020 - 2024
Julia Ngo	Biology	Member	Karen Guillemin	2019 - 2023
Michael Shavlik	Biology	Chair	Michael Harms	2019 - 2023
Orion Banks	Biology	Member	Jeff McKnight	2018 - 2022
Thomas Bailey	Chem & Biochem	Member	Jeff McKnight	2020 - 2022
Amber Rolland	Chem & Biochem	Member	Jim Prell	2017 - 2022
Nick Frantz	Chem & Biochem	Member	Michael Harms	2018 - 2020
Michael DeSantis	Biology	Member	Karen Guillemin	2018 - 2019
Drake Donovan	Biology	Member	Jeff McKnight	2018 - 2021
Carolyn Levinn	Chem & Biochem	Member	Michael Pluth	2017 - 2020

Service - External

2026	Reviewer, National Institutes of Health Special Emphasis Panel 2026/05 MRAF: Maximizing Investigators Research Award (MIRA)
2025	Session Convener, ASM Microbe, Los Angeles, USA
2025	Reviewer, NIH Panel 2025/05 ZRG1 F07B-C(21) L
2025	Reviewer, Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant
2024	Reviewer, National Institutes of Health Special Emphasis Panel 2024/05 ZRG1 F07A-B (20) L: Fellowship: Infectious Disease and Immunology A
2023	Poster mentor judge, National Diversity in STEM Conference, SACNAS
2023	Grant reviewer, UK Research and Innovation BBSRC RM1
2023	Reviewer, National Institutes of Health Special Emphasis Panel 2023/05 ZRG1 MGG-J (55) R: Maximizing Investigators Research Award (MIRA)
2022	Grant reviewer, National Institutes of Health Special Emphasis Panel ZRG1 MOSS-L (02) M: Skin Sciences Member Conflict
2022	Reviewer, National Institutes of Health Special Emphasis Panel ZRG1 GGG-X (55) R: Maximizing Investigators Research Award (MIRA)
2021	Session Convener, World Microbe Forum Session title: "Evolution of host-pathogen interactions: from proteins to populations"
2020	Member, Undergraduate Immunology Task Force
2015	Guest Editor, <i>PLOS Pathogens</i>
2015	Invited Presenter, National Institutes of Health Intramural Workshop "Ecology's Role in Evolution and Population Genetics", Bethesda, Maryland
2015	Grant Reviewer, Polish National Science Centre, Narodowe Centrum Nauki
2013 - present	Journal Peer Reviewer

Biochemistry & Cell Biology, BioMed Research International, Evolution, BMC Ecology and Evolution, Cell Host & Microbe, eLife, FEBS Journal, Genome Biology & Evolution, Journal of Bacteriology, Journal of Molecular Evolution, Journal of Proteome Research, mBio, mSphere, Molecular Biology & Evolution, Nature Ecology & Evolution, PLOS Pathogens, PLOS ONE, Trends in Microbiology, Trends in Parasitology

Selected Invited Seminars

2025, June	Molecular Mechanisms in Evolution GRC, Massachusetts, USA
2024, Nov.	Oregon State University, Department of Microbiology, Oregon, USA
2023, Nov.	Biochemistry and Microbiology seminar, University of Victoria, Victoria, Canada
2023, April	Microbiology Society meeting, Birmingham, UK
2023, March	University of Strathclyde, Glasgow, UK
2022, Nov.	Edinburgh Microbiology Forum, University of Edinburgh, Edinburgh, UK
2022, Oct.	Society for Molecular Biology and Evolution online Global Symposium: Evolutionary Genomics of Host-Pathogen Interactions and Antimicrobial Drug Resistance (online)
2022, April	Cal Poly Humboldt, California, USA
2021, Nov.	University of Montana, Montana, USA
2021, June	Society for Molecular Biology and Evolution annual meeting (online)
2019, Sept.	Microbial Pathogenesis & Host Response Meeting, New York, USA
2018, Nov.	Heme & Iron Symposium, University of Utah, Utah, USA
2018, Oct.	ASM Northwest Branch meeting, Oregon, USA
2018, Jan.	University of Idaho, Idaho, USA
2017, Dec.	Center for Iron and Heme Disorders, University of Utah, Utah, USA
2017, Aug.	Ecological Society of America meeting, Oregon, USA
2017, June	ASM Microbe meeting, Louisiana, USA
	<i>*Plenary Speaker</i>
2017, April	Oregon Health Sciences University, Oregon, USA
2017, April	Oregon State University, Oregon, USA
2017, March	Kansas State University, Kansas, USA
2016, Dec.	Washington State University, Washington, USA
2016, Aug.	META Center Symposium, Oregon, USA
2015 - 2016	Faculty candidate seminar speaker (12 institutions)
2015, March	ISEMPH meeting, Arizona, USA
	<i>*Plenary Speaker</i>
2014, July	Gordon Research Seminar: Microbial Toxins & Pathogenicity, New Hampshire, USA
2014, June	Society for Molecular Biology and Evolution Annual Meeting, Puerto Rico
2013, June	Evolution meeting, Snowbird, Utah, USA
2013, March	Ecology & Evolution of Infectious Disease Meeting, Georgia, USA
2011, May	Bay Area Aging Meeting, California, USA

Active Society Memberships

American Society for Microbiology (ASM)

Society for Molecular Biology and Evolution (SMBE)

Media & Outreach

- 2025 Research featured by Oregon Public Broadcasting (OPB)
[Oregon scientists pit fungus against bacteria in the battle against antibiotic resistance](#),
by Jes Burns
- 2025 Research featured by University of Oregon News
[Fungi dwelling on human skin may provide new antibiotics](#), by Leila Okahata
- 2019 Interviewed for *The Scientist*
[Bacteria Use Plants' Trick to Take Their Iron](#), by Ashley Yeager
- 2015 Research featured on This Week in Microbiology (TWiM)
[Episode 103: The battle for iron](#), by Vincent Racaniello
- 2014 Research featured by the American Society for Cell Biology
[The Iron Double Cross](#), by John Fleischman
- 2014 Interviewed for University of Utah Health Sciences Radio
- 2014 Research featured by The New York Times
[An evolutionary battle against bacteria](#), by Carl Zimmer
- 2014 Research featured by National Geographic
[The Long War Against The Iron Pirates](#), by Ed Yong