

CAITLIN H. KOWALSKI PHD

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[NCBI Bibliography](#)
[Lab Website](#)

APPOINTMENTS

Assistant Professor, Dartmouth Geisel School of Medicine, Lebanon, NH Department of Dermatology (<i>Primary</i>)	09/2025 — Present
Assistant Professor, Dartmouth Geisel School of Medicine, Lebanon, NH Department of Microbiology and Immunology (<i>Secondary</i>)	09/2025 — Present
Senior Scientist, Dartmouth Health, Lebanon, NH Department of Dermatology	09/2025 — Present
Postdoctoral Fellow, Helen Hay Whitney Foundation	04/2022 — 03/2025
Postdoctoral Scholar, University of Oregon, Eugene, OR Institute of Ecology and Evolution	09/2020 — 08/2025

EDUCATION

PhD	Dartmouth College, Guarini School of Graduate and Advanced Studies , Hanover, NH Ph.D. in Microbiology and Immunology, conferred 06/2020 Thesis title: <i>Oxygen at the Interface of Filamentous Fungal Biofilm Morphology and Physiology</i> Advisor: Dr. Robert Cramer
BS	Stonehill College , North Easton, MA B.S. in Biology, Honors, <i>magna cum laude</i> , 05/2014 Honors Thesis title: <i>Polyphasic Taxonomy of a Novel Species of Methylobacterium Isolated in Association with a White-Rot Fungus</i> Advisor: Dr. Rachel Hirst

FELLOWSHIPS, GRANTS, HONORS & AWARDS

Fellowships

L'Oréal USA, For Women in Science Fellow (\$60,000/1 yr., research funds)	2023
Helen Hay Whitney Postdoctoral Fellow (\$207,500/3 yr., salary)	2022
Ruth L. Kirschstein Pre-Doctoral Individual National Research Service Award (\$198,906/2 yr., salary)	2018
National Institute of Health, Dartmouth Molecular and Cellular Biology Training Grant appointee	2016

Grants

ASM Career Development Grant (\$800)	2024
Grant for Spotlight Seminar, University of Oregon (\$3,000)	2024
Grant for Spotlight Seminar, University of Oregon (\$2,200)	2023
Grant for Spotlight Seminar, University of Oregon (\$1,910)	2022

NK and Irene Cheung Family Scholar travel grant for attendance at Keystone Symposium (\$1,200)	2022
Ron Taylor Memorial Scholarship for attendance at the Molecular Mycology Course	2017
Bernard Davis Endowed Scholarship for attendance at the Molecular Mycology Course	2017

Honors & Awards

Leading Edge Postdoctoral Fellow	2023
Ruth L. Kirschstein Post-Doctoral Individual National Research Service Award (NIAID score 12, withdrawn for Helen Hay Whitney)	2022
Finalist for Life Sciences Research Foundation Fellowship (withdrawn for Helen Hay Whitney)	2022
John W. Strohbehn Award for Excellence in Biomedical Research at Dartmouth	2020
Celebration of Biomedical Research at Dartmouth Student Mentor Award	2019

PUBLICATIONS

(M mentee)

*Starting with most recent

— Published —

1. Campbell K, **Kowalski CH**, Kohler KM, Kebret MR, Barber MF. 2025. Evolution of polyamine resistance in *Staphylococcus aureus* through modulation of potassium transport. *mSphere* 0: e00613-24. doi: 10.1128/msphere.00613-24
2. **Kowalski CH**^ψ, Nguyen UT, Lawhorn S^M, Smith TJ, Corrigan RM, Suh WS, Kalan L, Barber MF^ψ. Skin mycobiota-mediated antagonism against *Staphylococcus aureus* through a modified fatty acid. **Current Biology**. 2025. 35 (1): 2266-2281.e8. Press: [Current Biology Dispatch](#), [Oregon News](#)
3. Kirkland ME, Stannard M, **Kowalski CH**, Mould D, et al. Host Lung Environment Limits *Aspergillus fumigatus* Germination through an SskA-Dependent Signaling Response. **mSphere**. 2021 Dec 22;6 (6):e0092221. Press: [mSphere Commentary](#)
4. Jones JT, Liu KW, Wang X, **Kowalski CH**, et al. *Aspergillus fumigatus* Strain-Specific Conidia Lung Persistence Causes an Allergic Broncho-Pulmonary Aspergillosis-Like Disease Phenotype. **mSphere**. 2021 Feb 17;6(1):e01250-20. doi: 10.1128/mSphere.01250-20.
5. **Kowalski CH**, Morelli KA^M, Stajich JE, Nadell CD, Cramer RA. A Heterogeneously Expressed Gene Family Modulates the Biofilm Architecture and Hypoxic Growth of *Aspergillus fumigatus*. **mBio**. 2021 Feb 16;12(1):e03579-20.
6. Cramer RA, **Kowalski CH**. Is It Time To Kill the Survival Curve? A Case for Disease Progression Factors in Microbial Pathogenesis and Host Defense Research. **mBio**. 2021 Feb 9;12(1):e03483-20.
7. Smith TJ, **Kowalski CH**, Guillemin K. Hiding in Plain Sight. **Cell Host Microbe**. 2021 Jan 13;29(1):5-7.
8. Grahl N, **Kowalski CH**, Cramer RA. Detection of Low Oxygen Microenvironments in a Murine Model of Invasive Pulmonary Aspergillosis Using Pimonidazole. **Methods Mol Biol**. 2021;2260:197-205.
9. **Kowalski CH**, Morelli KA^M, Schultz D, Nadell CD, Cramer RA. Fungal biofilm architecture produces hypoxic microenvironments that drive antifungal resistance. **PNAS**. 2020. 117 (36) 22473-22483 Press: [Nat. Rev. Microbiology Research Highlight](#)
10. **Kowalski CH**, Cramer RA. If looks could kill: macroscopic morphology and fungal virulence. **PLoS Pathogens Pearls**. 2020. 16(6): e1008612.
11. Clay ME, Hammond JH, Zhong F, Chen X, **Kowalski CH**, et al. *Pseudomonas aeruginosa lasR* mutant fitness in microoxia is supported by an Anr-regulated oxygen-binding hemerythrin. **PNAS**. 2020. 117 (6) 3167-3173.
12. Furukawa T, van Rhijn N, Fraczek M, Gsaller F, Davies E, Carr P, Gago S, Fortune-Grant R, Rahman S, Glisener JM, Houlder E, **Kowalski CH**, et al. The Negative Cofactor 2 complex is a master regulator of drug resistance in *Aspergillus fumigatus*. **Nat Communications**. 2020. 11 (427).
13. **Kowalski CH**, Kerkaert JD, Liu KW, Bond MC, Hartmann R, Nadell CD, Stajich JE, Cramer RA. Fungal biofilm

morphology impacts hypoxia fitness and disease progression. **Nat Microbiol.** 2019. 4, 2430–244.

Press: [Nature Microbiology Behind the Paper](#)

14. Mead ME, Knowles SL, Raja HA, Beattie SR, **Kowalski CH**, Steenwyk JL, et al. Characterizing the Pathogenic, Genomic, and Chemical Traits of *Aspergillus fischeri*, a Close Relative of the Major Human Fungal Pathogen *Aspergillus fumigatus*. **mSphere**. 2019. 4:10.1128/msphere.00018-19.
15. Caffrey-Carr AK, Hilmer KM, **Kowalski CH**, Shepardson KM, Temple RM, Cramer RA, et al. Host-Derived Leukotriene B4 Is Critical for Resistance against Invasive Pulmonary Aspergillosis. **Front Immunol.** 2017;8:1984.
16. Caffrey-Carr AK, **Kowalski CH**, Beattie SR, Blaseg NA, Upshaw CR, Thammahong A, et al. IL-1alpha is Critical for Resistance Against Highly Virulent *Aspergillus fumigatus* Isolates. **Infect Immun.** 2017. 85:10.1128/iai.00661-17.
17. Bultman KM*, **Kowalski CH***, Cramer RA. *Aspergillus fumigatus* virulence through the lens of transcription factors. **Med Mycol.** 2017;55(1):24-38
18. **Kowalski CH***, Beattie SR*, Fuller KK, McGurk EA^M, Tang YW, Hohl TM, et al. Heterogeneity among Isolates Reveals that Fitness in Low Oxygen Correlates with *Aspergillus fumigatus* Virulence. **MBio.** 2016;7(5).
Press: [mBio Editorial](#)
19. Dhingra S, **Kowalski CH**, Thammahong A, Beattie SR, Bultman KM, Cramer RA. RbdB, a Rhomboid Protease Critical for SREBP Activation and Virulence in *Aspergillus fumigatus*. **mSphere**. 2016;1(2).
20. Collins C*, **Kowalski C***, Zebrowski J, Tulchinskaya Y, Tai AK, James-Pederson M, et al. Draft Genome Sequence of *Methylobacterium* sp. Strain ARG-1 Isolated from the White-Rot Fungus *Armillaria gallica*. **Genome Announc.** 2016;4(3).

— In Review or In Prep —

1. **Kowalski CH**^ψ, Khalil SB^{*M}, James DA^{*M}, Smith TJ, Barber MF^ψ. *In prep.* Truncated Rel fails to induce the stringent response but enhances SarA-mediated defense against fatty acids in *Staphylococcus aureus*. Anticipated submission Summer 2025.
2. Barrett B, Smith TJ, **Kowalski CH**, Guillemin KG. *In prep.* Mucoid conversion restructures polymicrobial communities. Anticipated submission Summer 2025.

*: authors contributed equally ^ψ: co-corresponding authors

PATENTS

Malassezia factor with antibiotic activity, Patent US11820799B2, University of Oregon, Inventors: Matthew Barber and Caitlin Kowalski, publication date 11/2023, Active. Anticipated expiration: 05/2042

Compositions and methods related to fungal hypoxia responsive morphology factor (hrmA) and biofilm architecture factor (baf) proteins, Patent US12116579B2, Dartmouth College, Inventors: Robert Cramer Jr. and Caitlin Kowalski, publication dates US 10/2024, Active. Anticipated expiration: 09/2040

PRESENTATIONS & MEETINGS

*Titles provided only for recent presentations

Invited Speaker & Abstract Selected Talks

American Society for Microbiology (ASM) Microbe, track talk	2025
<i>Title: Ecology and evolution of skin microbiomes</i>	
Lane County Community College, short talk	2025
<i>Title: Your yeast likely ally: skin resident fungi in pathogen defense</i>	
Dartmouth Health, Department of Dermatology, Dermatology Research Night, speaker	2025
<i>Title: Resident fungi as gatekeepers of skin health</i>	
Dartmouth College, Department of Microbiology and Immunology, research seminar	2025

Caitlin Kowalski / CV

Clemson University, Department of Biological Sciences, research seminar	2025
University of Nevada Reno School of Medicine, research seminar	2024
The Helen Hay Whitney Foundation 67 th Annual Meeting of Research Fellows, short talk	2024
9 th Beneficial Microbes Conference, selected flash talk	2024
MIT Biology Catalyst Symposium, short talk	2024
National Academy of Sciences, For Women in Science symposium, short talk	2023
Gordon Research Conference: Staphylococcal Diseases, selected short talk	2023
HHMI Janelia, Leading Edge Research Symposium, short talk	2023
Roslin Institute, The University of Edinburgh, joint microbiology meeting, short talk	2023
Keystone Symposium: Human Microbiome: Ecology and Evolution, selected short talk	2022
Stonehill College, Biology Seminar, invited virtual seminar	2020
University of Oregon, Institute of Ecology and Evolution, invited seminar	2020
University of Utah, Department of Pathology, invited seminar	2019
30 th Fungal Genetics Conference, selected short talk	2019
Cellular and Molecular Fungal Biology Gordon Research Seminar, selected short talk	2018

Poster

Cold Spring Harbor Meeting: Microbiome	2024
9 th Conference on Beneficial Microbes	2024
Gordon Research Conference: Staphylococcal Diseases	2023
Gordon Research Seminar: Staphylococcal Diseases	2023
Keystone Symposium: Human Microbiome: Ecology and Evolution	2022
8 th FEBS Advanced Lecture Course on Human Fungal Pathogens	2019
30 th Fungal Genetics Conference	2019
Gordon Research Conference: Cellular and Molecular Fungal Biology	2018
Gordon Research Seminar: Cellular and Molecular Fungal Biology	2018
Molecular Mycology course, Marine Biological Laboratory	2017
29 th Fungal Genetics Conference	2017
7 th Advances Against Aspergillosis	2016

Attendee

The Helen Hay Whitney Foundation 66 th Annual Meeting of Research Fellows	2023
The Helen Hay Whitney Foundation 65 th Annual Meeting of Research Fellows	2022

TEACHING & MENTORING EXPERIENCE

Research Mentor, University of Oregon

Dante' James, undergraduate researcher	2022 - 2025
<ul style="list-style-type: none"> NSF GRFP Honorable Mention 2025 Honors Thesis: <i>Exploring the Relationships Between Staphylococcus aureus and Skin Lipids</i> Received Robert D. Clark Thesis award Current position: incoming graduate student at University of Wisconsin, Madison 	
Sylvia Khalil, undergraduate/post bacc researcher	2022 - 2024
<ul style="list-style-type: none"> Undergraduate Runner-up Poster Award at ASM NW regional meeting, 2023 Awarded UO Mini Grant (\$1000) Current position: Kowalski Lab, Lab Research Coordinator 	
Susannah Lawhorn, graduate rotation student, <i>co-author from time mentored</i>	2023
Filadelfia Tadjibaeva, undergraduate/post bacc. researcher	2021-2022

Research Mentor, Dartmouth

Kaesi Morelli, graduate rotation student, <i>co-author from time mentored</i>	2019
Alexsandra Terrio, undergraduate researcher, <i>Honors Thesis</i>	2017-2020
<ul style="list-style-type: none"> Honors Thesis: <i>Exploring SREBPs and Hypoxia Adaptation in Scedosporium apiospermum</i> 	

<ul style="list-style-type: none"> Current position: MD-PhD student at Tufts University 	
Elizabeth McGurk, INBRE undergraduate summer program, <i>co-author from time mentored</i>	2016
Guest Lecturer , University of Oregon	
<i>Bacterial-Host Interactions BI433/533</i> : Discuss selected literature with students and present a 20-min. lecture on antimicrobial discovery in the microbiome	2024
Graduate Ethics Course Facilitator , Dartmouth	2018
Design lesson plans and train graduate students in the ethical considerations of professionalism, mentorship, authorship, and data management.	
Genetics Teaching Assistant , Dartmouth, Department of Biology	2016
Deliver laboratory lectures, proctor laboratory activities, grade assignments/exams	
Graduate Biochemistry Tutor , Dartmouth, Department of Biochemistry	2015
Design problem set, one-on-one meetings with graduate students, review exams	

ADDITIONAL EXPERIENCE & TRAININGS

Human Research for Biomedical Researchers (online, Collaborative Institutional Training Initiative)	2023
Responsible Conduct of Research Training (online, Collaborative Institutional Training Initiative)	2020
Molecular Mycology course, Marine Biological Laboratory, Woods Hole, MA	2017

SERVICE & ENGAGEMENT

Peer Reviewer

mBio, Microbiology Spectrum, PLoS Pathogens, Genetics, STAR Protocols, Frontiers in Microbiology

Societies and Groups

American Society for Microbiology, member	Current
Society for Investigative Dermatology, member	Current
Dartmouth Principal Investigators in Training Student Organization, senior chair	2017-2020

Service – Internal

University of Oregon, Biology Spotlight Seminar, founder/organizer	2022-2025
University of Oregon, Alliance for Diversity in Science and Engineering, speaker	2025
University of Oregon, Women in Graduate Science, grant reviewer	2024, 2025
University of Oregon, Undergraduate Research Symposium, session moderator	2024
University of Oregon, Summer Program for Undergraduate Research, mentor/panelist	2023, 2024
University of Oregon, Department of Biology, Graduate Student Recruitment, speaker	2021, 2023, 2024
University of Oregon, EAGER Workshop on Publishing in Graduate School, speaker	2021
Dartmouth College, MCB Program, Graduate Student Recruitment, speaker	2017, 2018

Service – External

Genetics Society of America, reviewer for undergraduate travel awards	2023, 2024
Smithsonian National Museum of Natural History, STEM youth outreach event, panelist	2023
Gordon Research Seminar on Staphylococcal Diseases, discussion leader	2023
Oregon Episcopal School, Science fair project consultant	2022
Clackamas High School, Introduction to Research Careers panelist	2020
Cystic Fibrosis Foundation, Great Strides volunteer	2017-2019