

CAITLIN H. KOWALSKI PHD

Borwell Research Building, Office 642E
 1 Medical Center Drive
 Lebanon, NH 03766
 Phone: (603) 491-3931

Caitlin.H.Kowalski@hitchcock.org
Caitlin.H.Kowalski@dartmouth.edu
[NCBI Bibliography](#)
[Lab Website](#)

APPOINTMENTS

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| 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

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| 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

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| 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

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| 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 |

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| 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

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| 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**^M, Nguyen UT, Lawhorn S^M, Smith TJ, Corrigan RM, Suh WS, Kalan L, Barber MF^M. 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, Glisenan 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^v**, Khalil SB^{*M}, James DA^{*M}, Smith TJ, Barber MF^v. *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 ^v: 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

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| American Society for Microbiology (ASM) Microbe, track talk | 2025 |
| Title: <i>Ecology and evolution of skin microbiomes</i> | |
| Lane County Community College, short talk | 2025 |
| Title: <i>Your yeast likely ally: skin resident fungi in pathogen defense</i> | |
| Dartmouth Health, Department of Dermatology, Dermatology Research Night, speaker | 2025 |
| Title: <i>Resident fungi as gatekeepers of skin health</i> | |
| Dartmouth College, Department of Microbiology and Immunology, research seminar | 2025 |
| <i>Caitlin Kowalski / CV</i> | 3 |

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| 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

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| 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

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| 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

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

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| 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"> • <i>Honors Thesis: Exploring SREBPs and Hypoxia Adaptation in <i>Scedosporium apiospermum</i></i> | |

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| • 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 Design lesson plans and train graduate students in the ethical considerations of professionalism, mentorship, authorship, and data management. | 2018 |
| Genetics Teaching Assistant , Dartmouth, Department of Biology Deliver laboratory lectures, proctor laboratory activities, grade assignments/exams | 2016 |
| Graduate Biochemistry Tutor , Dartmouth, Department of Biochemistry Design problem set, one-on-one meetings with graduate students, review exams | 2015 |

ADDITIONAL EXPERIENCE & TRAININGS

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| 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

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| 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

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| 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

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| 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 |