

Benjamin R. Wucher

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Education and training

Memorial Sloan Kettering Cancer Center, New York NY 2022-present

Post-Doctoral Research Associate

Advisor: Joao B Xavier

Dartmouth College, Hanover NH 2022

PhD – Biological Sciences

Advisor: Carey D Nadell

Committee: George O’Toole, Olga Zhaxybayeva, Daniel Schultz, Clay Fuqua

Dissertation: Consequences of biofilm architecture on *Vibrio cholerae* ecology and life history

University of Rochester, Rochester NY 2017

BS with honors in research - Microbiology and Immunology

Advisor: Paul M. Dunman

Honors thesis: A synergistic treatment of rifampicin and polymyxin B for bacterial keratitis

Fellowships and Awards

Life Science Research Foundation Fellowship Finalist 2024

Dartmouth College Department of Biological Sciences Gilman Fellowship 2019-2022

Albert J. Ryan Fellowship 2020

US Dept. of Education GAANN Fellowship 2018-2019

MCB Fellowship Award 2017

Publications

Benjamin R. Wucher, Mennat Elsayed, Daniel E. Kadouri, Carey D. Nadell “Breakdown of clonal cooperative architecture in multispecies biofilms and the spatial ecology of predation” Proceedings of the National Academy of Sciences USA (2023)

Benjamin R. Wucher, Mennat Elsayed, James S. Adelman, Daniel E. Kadouri, Carey D. Nadell “Bacterial predation transforms the landscape and community assembly of biofilms” Current Biology (2021) 31: 1-9

Benjamin R. Wucher, Thomas M. Bartlett, Mona Hoyos, Kai Papenfort, Alexandre Persat, Carey D. Nadell “***Vibrio cholerae* filamentation promotes chitin surface attachment at the expense of competition in biofilms**” Proceedings of the National Academy of Sciences USA (2019) 116(28) 14216-14221

William P J smith, Benjamin R Wucher, Carey D Nadell, Kevin R Foster “**Ancient defences: how competition, phages and predators made bacteria hard to kill**” Nature Reviews Microbiology (2023)

James Winans, **Benjamin R Wucher**, Carey D Nadell “**Multispecies biofilm architecture determines bacterial exposure to phages**” PLoS Biology (2022)

Michaela Huber, Anne Lippegas, Sahar Melamed, Malte Siemers, **Benjamin R. Wucher**, Mona Hoyos, Carey Nadell, Gisela Storz, and Kai Papenfort, “**An RNA sponge controlling quorum sensing dynamics and biofilm formation in *Vibrio cholerae***” Nature Communications (2022)

Giordan Kitts, Krista M. Giglio, David Zamorano-Sánchez, Jin Hwan Park, Loni Townsley, Richard B. Cooley, **Benjamin R. Wucher**, Karl E. Klose, Carey D. Nadell, Fitnat H. Yildiz, Holger Sondermann, “**A Conserved Regulatory Circuit Controls Large Adhesins in *Vibrio cholerae***” mBio (2019) 10(6)

Joshua D. Kerkaert, François Le Mauff, **Benjamin R. Wucher**, Sarah R. Beattie, Elisa M. Vesely, Donald C Sheppard, Carey D. Nadell, and Robert A. Cramer “**An Alanine Aminotransferase is Required for Polysaccharide Regulation and Resistance of *Aspergillus fumigatus* Biofilms to Echinocandin Treatment**” mBio (2022)

Michaëlle Chojnacki, Alesa Philbrick, **Benjamin Wucher**, Jordan N. Reed, Andrew Tomaras, Paul M. Dunman, and Rachel A. F. Wozniak “**Development of a Broad-Spectrum Antimicrobial Combination for the Treatment of *Staphylococcus aureus* and *Pseudomonas aeruginosa* Corneal Infections**” Antimicrobial Agents and Chemotherapy (2018) Vol 63 No 1

Catlyn Blanchard, Lauren Brooks, Katherine Ebsworth Mojica, Louis Didione, **Benjamin Wucher**, Stephen Dewhurst, Damian Krysan, Paul M. Dunman, and Rachel A. F. Wozniak “**Zinc Pyrithione Improves the Antibacterial Activity of Silver Sulfadiazine Ointment**” mSphere (2017) Vol 1 No 5

In Preparation/Review

Benjamin R. Wucher, Sneha Sharma, Deigo Kaune, Carlos de la Hoz, Pranali Bendale, Joao B. Xavier “**Gut commensal metabolisms shape pathogen colonization and alter antibiotic sensitivity**” In preparation

Posters and Talks

New York Bacillus Interest Group Meeting 2025

Invited Talk “Gut commensal metabolisms shape pathogen colonization and alter antibiotic sensitivity”

Microbial Population Biology GRC 2023

Invited Poster “Enteric environmental effects on *Pseudomonas aeruginosa* physiology and ecology”

Marine Microbes GRC 2022

Invited Poster “Bacterial predation on a multi-species biofilm community reveals that biofilm spatial architecture is an exploitable resource”

Boston Bacterial Meeting 2021

20 minute selected talk "Bacterial predation transforms the landscape and community assembly of biofilms"

ASM Microbe (cancelled) 2020

5 minute abstract talk "*Bdellovibrio Bacteriovorus* Predation of *Vibrio Cholerae* Biofilms Reveals Alternative Landscapes Governed by Density Dependent Cell Packing"

M2P2 local meeting 2020

Poster "*Vibrio Cholerae* biofilms exhibit density dependent predation protection from *Bdellovibrio bacteriovorus*"

M2P2 local meeting 2019

20 minute talk "*Vibrio cholerae* filamentation promotes chitin surface attachment at the expense of competition in biofilms"

ASM Biofilm 2018

Poster "*Vibrio cholerae* filamentation promotes chitin surface attachment at the expense of competition in biofilms"

ARVO 2016

Poster highlight interview "How resistant biofilms affect keratitis"

ARVO 2016

Poster "A synergistic treatment of rifampicin and polymyxin B for corneal infections"

Committees and Service

MCB Graduate Program Committee 2020-2021

Student Representative

ASM Biofilm 2021

Junior Scientist symposium organizing committee

Guarini Ambassador 2020-2021

MCB representative

Dartmouth Graduate Student Council 2018-2021

Department of biological sciences representative

GSC Academic sub-committee

Teaching/Advising Experience

Memorial Sloan Kettering Cancer Center

Classes

Rockefeller University: Teaching and mentoring undergraduate scientists

Advised students

Param – graduate student, advised rotation project 2025

Diego – Research technician, advised experimental design and execution 2024-2025

Joana – Undergraduate Summer student, advised summer research project 2023

Dartmouth College

Classes

Bio 12: Cell biology – Graduate TA 2019

Advised students

Olivia Hunter – undergraduate student , advised in experimental design 2017-2018

Katie Miller – undergraduate student , advised in experimental design 2018- 2022

Lia Michaels – graduate student, advised rotation project 2021

James Winans – graduate student, advised rotation project 2021

University of Rochester

Bio 112: Honors Intro to Molecular Biology – Undergraduate TA 2014

Bio 113: Honors Intro to Evolution and Ecology – Undergraduate TA 2015

References

Carey Nadell

Carey.D.Nadell@dartmouth.edu 603-646-1525

Joao Xavier

xavierj@mskcc.org (646)-888-3195

Paul Dunman

Paul_Dunman@urmc.rochester.edu 585-273-3621

Dartmouth College: Thesis advisor

MSKCC: Post-Doctoral Advisor

University of Rochester: Undergraduate advisor

