

Jacob D. Palmer

Science 3
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Curriculum Vitae
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SCIENTIFIC EXPERIENCE

2024 – Present **Assistant Professor**

Department of Biological Sciences, Binghamton University (SUNY), USA

2019 – 2023 **Postdoctoral Researcher**

Department of Biology; Department of Biochemistry, University of Oxford, UK

Advisor: Prof. Kevin Foster

2014 – 2019 **Research Assistant**

Bioengineering Department, University of Massachusetts Dartmouth, USA

Advisor: Prof. Vanni Bucci

Thesis title: “Characterization of Class IIb Microcins and Application Against Antibiotic Resistant Enteric Bacteria”

2015 – 2017 **Research Assistant**

Bioengineering Department, University of Massachusetts Dartmouth, USA

Advisor: Prof. Christopher Brigham

Research topic: Utilization of seafood processing waste as carbon and nitrogen feedstock for biodiesel production through the development of engineered *Rhodococcus opacus* PD630.

2014 – 2015 **Teaching Assistant**

Bioengineering Department, University of Massachusetts Dartmouth, USA

2012 – 2014 **Microbiologist**

Tate and Lyle, PLC, West Lafayette, IN, USA

TRAINING

University of Oxford, Oxford, United Kingdom

Postdoc Department of Biology; Department of Biochemistry

University of Massachusetts Dartmouth, North Dartmouth, MA, USA

Ph.D. Biomedical Engineering and Biotechnology, 2019

Purdue University, West Lafayette, IN, USA

B.S. Biological Sciences, 2012

PEER-REVIEWED PUBLICATIONS

- 1) 2025 [Horizontal gene transfer can reshape bacterial warfare](#). Granato ET, **Palmer JD**, Kirk C, Sharp C, Shillcock G, Foster KR. doi: <https://doi.org/10.1101/2024.08.28.610076>. **Accepted PLOS Biology**

Start of faculty position – January 2024

- 8) **Palmer JD**⁺ and Foster KF⁺. [The evolution of spectrum in antibiotics and bacteriocins](#). *Proceedings of the National Academy of Science*. **2022**; 119 (38) e2205407119.
- 7) **Palmer JD** and Foster KF. [Bacterial species rarely work together](#). *Science*. **2022**; 376(6593): 581-582.
- 6) Mortzfeld BM, **Palmer JD**, et al. [Microcin MccI47 selectively inhibits enteric bacteria and reduces carbapenem-resistant *Klebsiella pneumoniae* colonization in vivo when administered via an engineered live biotherapeutic](#). *Gut Microbes*. **2022**; 14(1):2127633.
- 5) Cunrath, O.* and **Palmer JD***. [An overview of *Salmonella enterica* metal homeostasis pathways during infection](#). *microLife*. 2, **2021**.
- 4) **Palmer JD**, Mortzfeld BM, Piattelli E, Silby MW, McCormick BA, Bucci V. [Microcin H47: A Class IIb Microcin with Potent Activity Against Multi-Drug Resistant *Enterobacteriaceae*](#). *ACS Infect Dis*. **2020**; 6(4): 672-679.
- 3) Chakravarty J, Yang C, **Palmer JD**, Brigham CJ. [Chitin Extraction from Lobster Shell Waste using Microbial Culture-based Methods](#). *Appl Food Biotechnol*. **2018**; 5(3): 141-154.

- 2) **Palmer JD**, Piattelli E, McCormick BA, Silby MW, Brigham CJ, Bucci V. [Engineered Probiotic for the Inhibition of *Salmonella* via Tetrathionate-Induced Production of Microcin H47](#). *ACS Infect Dis*. **2018**; 4(1): 39-45.
- 1) **Palmer JD**, Brigham CJ. [Feasibility of triacylglycerol production for biodiesel, utilizing *Rhodococcus opacus* as a biocatalyst and fishery waste as feedstock](#). *Renew Sust Energ Rev*. **2016**; 56: 922-928.

* Co-first author

⁺ Co-corresponding author

PRE-PRINTS, BOOK CHAPTERS, AND PATENTS

Prior to start of faculty position – January 2024

- 2023 [Genetically engineered microorganisms that overexpress microcin-mge and methods of purification and use](#). US Patent Application: 17/801,671. Bucci V, Mortzfeld BM, **Palmer JD**.
- 2022 [Genetically engineered microorganisms and methods of use](#). US Patent Application: 17/308,053. Bucci V, Mortzfeld BM, **Palmer JD**.
- 2020 [Genetically engineered microorganisms and methods of use](#). US Patent Application: 16/647,269. Bucci V, **Palmer JD**, Brigham CJ, Silby MW. Approved: October 12, 2022. Patent 11,560,543.
- 2016 Brigham CJ, Kehail AA, **Palmer JD**. [Ralstonia Eutropha and the Production of Value Added Products: Metabolic Background of the Wild-Type Strain and its Role as a Diverse, Genetically-Engineered Biocatalyst Organism](#). In: Koller M, editor. *Recent Advances in Biotechnology*: Bentham Books; 2016; 265-347.

TEACHING

- 2025 **BIOL 329** – Pre-health Microbiology Lab (Spring – 4 credits)
Enrollment: 208 undergraduates
- 2024 **BIOL 480B/580B** – Microbial Community Ecology (Spring – 2 credits)
Enrollment: 7 undergraduate; 1 graduate
- BIOL 421** – Microbiology Laboratory (Fall – 4 credits) - Enrollment: 22 undergraduate

Start of faculty position – January 2024

- 2021 Year 2 – Master in Biology Tutorials
- *Salmonella* pathogenesis and nutritional immunity
- 2020 Year 2 – Master in Biology Tutorials
- Posttranslational modification of bacterial weapons
- Interbacterial toxins: strategy and diversity
- Modeling microbial conflict with differential equations
- 2015 Current Topics in Bioengineering: Designing a Healthier Planet and its People – Instructor of Record
- 2014 Bioprocess Engineering Laboratory – Laboratory Instructor

MENTORING

- 2025 – Present Molly Mattaei – Undergraduate Student, BUPNUR program, Binghamton University
- 2025 – Present Anvi Parkar – Undergraduate Student, BUPNUR program, Binghamton University
- 2024 – Present Briana Barros – PhD Student. Department of Biology, Binghamton University
- 2024 – Present Lindsey Moon – PhD Student. Department of Biology, Binghamton University
- 2024 – Present Mariah Donohue – Prodig+ Postdoctoral Fellow
- 2024 – Present John Ferrara – Undergraduate Student, Binghamton University
- 2024 – Present Alexa Mastrangelo – Undergraduate Student, Binghamton University
- 2024 – Present Lauren Steiner – Undergraduate Student, Binghamton University
- 2024 – Present Isabella Vento – Undergraduate Student, Binghamton University
- 2024 (Fall) Ramisa Sharif – High School Student (Queens, NY); AGGY Project Scholar
- 2024 (Summer) Nimzay Guiets Jimenez – Undergraduate. **NSURP Fellowship**. University of Puerto Rico - Mayaguez – Project awarded Honorable Mention at 2024 NSURP Closing Ceremony

Start of faculty position – January 2024

- 2022 – 2023 Louise Collinson – Masters Student. Department of Biochemistry, University of Oxford.
- 2022 – 2023 Anna Schwarzenbach – Masters Student. Department of Biology, University of Oxford.
- 2018 – 2019 Charlemya Erasme – Undergraduate. Department of Biology.

2016 – 2019	Aunnesha Bhowmick – High school student.
2015 – 2017	Matthew Phou – Undergraduate. M.S. in Biomedical Engineering.

AWARDS, HONORS, AND RECOGNITION

Prior to start of faculty position – January 2024

2023	Gilbert S. Omenn Prize (\$5,000)
2015 – 2019	Distinguished Doctoral Fellowship – University of Massachusetts (\$96,000 / 4 years)
2018	National Institute of General Medical Sciences Scholarship (\$2,000)
2016	UMass Dartmouth 3-minute Thesis Competition Winner (\$1,000)
2016	American Society of Microbiology Student Travel Award (\$500)
2012	Interns for Indiana Scholarship (\$500)
2010 – 2012	Ben Korschot Perseverance Award (Full Tuition Scholarship - \$8,000 / yr)
2010 – 2011	Academic All Big Ten (Men’s Track and Field)
2009 – 2011	Purdue University Men’s Track and Field Captain
2010	Purdue University Sportsman of the Year

GRANTS (Since January 2024)

Funded (I = Internal, E = External)

2025	I - BUPNR (\$1,250 x 2). Internal Award for undergraduate research experience (2 students)
2024	I - Binghamton Undergraduate Research Award (\$650 - John Ferrara)
2024	E – National Summer Undergraduate Research Project. (\$7,500 – Nimzay Guiets Jimenez)

Total Internal \$3,150.00
 Total External \$7,500.00

Upcoming

Submitted – pending decision

2024	E - Searle Scholars Program (\$300,000 / 3 years). Internal submission – <u>Nominated for full proposal</u> Full proposal: Submitted 09/30/2024
2024	E - NIH NIAID New Innovator’s Award (DP2) – PAR-23-198 (~\$1.5million / 5 years). Submitted 10/11/2024: Tracking # GRANT14277982
2024	E - NSF PRFP – Supporting Scientist/Lead Mentor (Applicant: Dr. Mariah Donohue)
2024	E - NSF MRI – Collaborator on submission for NextSeq2000 for the Binghamton University Analytical and Diagnostic Laboratory (ADL) Health Science Core Facility (HCSF)

Submitted – not funded

CONFERENCE PARTICIPATION – PRESENTING AUTHOR

Invited Talks

2025	UMass Chan Medical School – Department of Microbiology Seminar Series (Scheduled for May 27)
2025	Cornell University – Department of Microbiology Seminar Series (Scheduled for Apr. 10)
2024	Dartmouth College – Microbiology & Immunology Seminar Series (Nov. 18) – Ecology, Evolution and Application of Bacterial Warfare.

Prior to start of faculty position – January 2024

2023	International Society for Evolution, Medicine, & Public Health – The Evolution of Spectrum in Antibiotics and Bacteriocins. Gilbert S. Omenn Prize Lecture .
2023	Bacteriocin International Conference (BIC) – The Evolution of Spectrum in Antibiotics and Bacteriocins.

Oral Presentations

Prior to start of faculty position – January 2024

- 2022 **European Society for Evolutionary Biology (ESEB)** – The Evolution of Spectrum in Antibiotics and Bacteriocins. Symposium on Comparative Genomics.
- 2018 **Boston Bacterial Meeting** - Engineered Probiotic for the Inhibition of *Salmonella* via Tetrathionate-Induced Production of Microcin H47

Posters

Prior to start of faculty position – January 2024

- 2018 **International Conference on Microbiome Engineering** - Application of Catechol Microcins As Antimicrobial Peptides for the Prevention of Enteric Disease
- 2018 **Synthetic Biology: Evolution, Engineering and Design (SEED)** - Engineered Probiotic for the Inhibition of *Salmonella* via Tetrathionate-Induced Production of Microcin H47
- 2016 **Boston Bacterial Meeting** - *N*-acetyl-D-glucosamine as an Advanced Feedstock for Biocatalytic Conversion to Triacylglycerol by *Rhodococcus opacus* PD630, Towards Sustainable Biodiesel Production
- 2016 **American Society of Microbiology** - *N*-acetyl-D-glucosamine as an Advanced Feedstock for Biocatalytic Conversion to Triacylglycerol by *Rhodococcus opacus* PD630, Towards Sustainable Biodiesel Production
- 2016 **University of Massachusetts Dartmouth chapter of Sigma Xi** - *N*-acetyl-D-glucosamine as an Advanced Feedstock for Biocatalytic Conversion to Triacylglycerol by *Rhodococcus opacus* PD630, Towards Sustainable Biodiesel Production

Internal

- 2024 (June 21) – Biofilms group meeting – Introduction of the Palmer Lab (ITC)
- 2024 (April 12)– Medical Research Interest Club (BU Student Organization) Rm CW325– Title: Ecology, evolution, and application of bacterial competition

SCIENTIFIC COMMUNITY PARTICIPATION

Prior to start of faculty position – January 2024

- 2023 **Bacteriocin International Conference (BIC)** – Scientific organizing committee member
- 2022 **European Society for Evolutionary Biology (ESEB)** – Symposium Co-organizer: The art of microscopic war: interference competition in microbes.
- 2018 **Cold Spring Harbor Laboratory Synthetic Biology** - Synthetic Biology course graduate and NIH GMS scholarship
- 2018 **Jackson Laboratory** - Comprehensive Workshop on Mouse Biomethods course graduate
- 2016 **International Genetically Engineered Machines (iGEM)** - Competition Judge

UNIVERSITY/DEPARTMENTAL SERVICE AND OUTREACH

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|----------------|---|
| 2025 | Hiring Committee Member – Lecturer in Microbiology |
| 2024 – Present | Diversity, Equity, and Inclusion Committee |
| 2024 – Present | Graduate Committee |
| 2024 | Hiring Committee Member – Prodig+ Postdoctoral Fellowship |

Prior to start of faculty position – January 2024

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| 2021 – 2023 | Skype a scientist |
| 2021 – 2023 | New starters representative |
| 2021 – 2023 | Research staff forum representative |
| 2019 – 2021 | Biochemistry first year research shadowing volunteer |
| 2019 | Biochemistry department open day volunteer |
| 2015 – 2019 | Synthetic biology club – Founder and member |
| 2015 – 2016 | International Genetically Engineered Machines – Head instructor/advisor |
| 2015 – 2016 | Freshman Summer Institute - Lead instructor and curriculum developer |