Stephen Blaskowski

Computational biologist exploring the intersection of genomics, microbiology, and statistics.

Seattle, WA ◇ stephen.blaskowski@gmail.com ◇ github.com/blasks

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Experience

Postdoctoral Researcher (Seattle, Washington) **2025 – present**

University of Washington Department of Oceanography | PI: Ginger Armbrust

- Leading reasearch on global expression of the *Prochlorococcus* pangenome and the role of horizontally-transferred flexible genes in anti-viral defense.
- Designing reproducible computational pipelines for analyzing genomic and metatranscriptomic data.

Graduate Research Associate (Seattle, Washington) **2018 – 2024**

University of Washington Department of Oceanography | PI: Ginger Armbrust

- Developed sparse tensor decomposition algorithm and Python package for analyzing microbiome data.
- Collected in situ data and specimins as member of a 5-week open ocean expedition to the eastern Equatorial Pacific abord the RV Thomas G. Thompson.
- Mentored undergraduate researchers with computational and wet lab projects, including some who presented at the UW Undergraduate Research Symposium.

Research Associate III (Emeryville, California) **2016 – 2018**

Zymergen Inc. | Supervisor: Shawn Szyjka

- Developed novel gene and strain engineering technologies alongside R&D team colleagues.
- Authored three patents and one publication in coordination with colleagues across departments.
- Promoted twice in two years from Research Associate I to Research Associate III.

Research Associate (Silver Spring, Maryland) **2014 – 2016**

U.S. Military HIV Research Program | PI: Victoria Polonis

- Adapted manual antibody-response assay to high-throughput automated liquid handling platform.
- Sustained core laboratory operations, including maintaining cell lines and safeguarding samples.

Undergraduate Researcher (Boulder, Colorado) **2013 – 2014**

University of Colorado Department of Molecular, Cellular, and Developmental Biology | PI: Shelley Copley

- Cloned library of *E. coli* mutant strains used to investigate directed evlolution of a key metabolic pathway.
- Assisted in the development of a genome engineering procedure that resulted in publication.

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Education

University of Washington (Seattle, Washington) **2018 – 2024**

- Ph.D. in Molecular Engineering and Sciences | Certificate in Data Science
- Dissertation: "Inference of In Situ Microbial Physiologies via Sparse Tensor Decomposition of Metatranscriptomes"
- Committee: E. Virginia Armbrust (Oceanography), Zaid Harchaoui (Statistics), Vaughn Iverson (Oceanography), William Noble (Genome Sciences), Mari Winkler (Civil and Environmental Engineering)

University of Colorado (Boulder, Colorado) **2010 – 2014**

- B.A. in Molecular, Cellular, and Developmental Biology | B.A. in Neuroscience | Certificate in Middle Eastern and Islamic Studies
- Studied abroad at the American University in Cairo, Egypt (2012)

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Publications

Peer-Reviewed

- **S. Blaskowski**, M. Roald, P. M. Berube, R. Braakman, E. V. Armbrust. "Simultaneous acclimation to nitrogen and iron scarcity in open ocean cyanobacteria revealed by sparse tensor decomposition of metatranscriptomes." *Science Advances* (2025) 10.1126/sciadv.adr4310
- R. D. Groussman, **S. Blaskowski**, S. N. Coesel, E. V. Armbrust. "MarFERReT, an open-source, version-controlled reference library of marine microbial eukaryote functional genes." *Scientific Data* (2023). 10.1038/s41597-023-02842-4
- S. G. van Creveld, S. N. Coesel, **S. Blaskowski**, R. D. Groussman, M. J. Schatz, E. V. Armbrust. "Divergent functions of two clades of flavodoxin in diatoms mitigate oxidative stress and iron limitation." Elife (2023). 10.7554/eLife.84392
- C. R. Coates, **S. Blaskowski**, S. Szyjka, H. M. van Rossum, J. Vallandingham, K. Patel, Z. Serber, J. Dean. "Systematic investigation of CRISPR–Cas9 configurations for flexible and efficient genome editing in Corynebacterium glutamicum NRRL-B11474." *Journal of Industrial Microbiology and Biotechnology* (2019). 10.1007/s10295-018-2112-7
- J. Kim, A. M. Webb, J. P. Kershner, **S. Blaskowski**, S. D. Copley. "A versatile and highly efficient method for scarless genome editing in Escherichia coli and Salmonella enterica." *BMC Biotechnology* (2014). 10.1186/1472-6750-14-84

Patents

- **S. Blaskowski**, S. D. Cleto, C. Coates, A. Miller, S. Nademanee, M. Netwal, K. Patel, S. Szyjka, P. Weyman, S. H. Stonebloom, C. S. Maxwell. "Pooled genome editing in microbes." U.S. Patent 11,053,515, issued July 6, 2021.
- **S. Blaskowski**, S. D. Cleto, C. Coates, A. Miller, S. Nademanee, M. Netwal, K. Patel, S. Szyjka, P. Weyman, S. H. Stonebloom, C. S. Maxwell. "Iterative genome editing in microbes." U.S. Patent 11,053,506, issued July 6, 2021.
- **S. Blaskowski**, C. Coates, K. Patel, H. M. van Rossum, S. Szyjka. "Genome editing using crispr in corynebacterium." U.S. Patent Application 16/943,761, filed November 19, 2020.

Software

- Barnacle: A Python package for sparse tensor decomposition.
- barnacle-boilerplate: A quick-start guide to using Barnacle with Jupyter notebooks.
- ProPanEx: Pipelines and scripts for analyzing global expression of the *Prochlorococcus* pangenome.

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Mentorship

Undergraduate Researchers (University of Washington, Seattle)

- Jonah Valenti (Oceanography, Biology) 2022 – 2024
- Meena Shanmugam (Microbiology) 2022 – 2023
- Dhruvi Joshi (Applied Mathematics, Bioengineering) 2023 – 2024

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Achievements

Conferences

- 33rd Conference on Intelligent Systems for Molecular Biology (ISMB) | Poster | Liverpool | 2025
- 19th International Symposium on Microbial Ecology (ISME) | Talk | Cape Town | 2024
- 31st Conference on Intelligent Systems for Molecular Biology (ISMB) | Poster | Lyon | 2023
- 21st Conference on Scientific Computing with Python (SciPy) | Poster | Austin | 2023

Certificates & Awards

- Trusty Shellback | Solemn Mysteries of the Ancient Order of the Deep | 2021
- Certificate in Python for Data Science | General Assembly | 2016
- Center for the American West Thompson Writing Award | University of Colorado | 2013
- Undergraduate Research Opportunity Grant | University of Colorado | 2013
- Boren Scholarship | National Security Education Program | 2011