GRAHAM NORTHRUP

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EDUCATION

- **PhD** (in progress), Computational Biology, University of California, Berkeley 2018 – Present
- **BS,** Computational and Applied Mathematics, University of Chicago 2018

PUBLICATIONS

Submitted

- Brook CE, **Northrup GR,** Ehernberg AJ, The IGI Testing Consortium, Doudna JA, Boots M. Optimizing COVID-19 control with asymptomatic surveillance testing in a university environment. Preprint on *medRxiv* 2020. doi:10.1101/2020.11.12.20230870
- Head JR, Andrejko K, Cheng Q, Collender PA, Phillips S, Boser A, Heaney AK, Hoover CM, Wu SL, **Northrup GR,** Click K, Harrison R, Lewnard JA, Remais JV. The effect of school closures and reopening strategies on COVID-19 infection dynamics in the San Francisco Bay Area: a cross-sectional survey and modeling analysis. Preprint on *medRxiv* 2020. doi:10/1101/2020.08.06.20169797

Accepted

- **Northrup GR**, Qian L, Bruxvoort K, Marx FM, Whittles LK, Lewnard JA. Inference of naturally-acquired immunity using a self-matched negative control design. Preprint on *medRxiv* 2020. doi:10.1101/2020.03.01.20029850

Published

- Lewnard JA, Liu VX, Jackson ML, Schmidt MA, Jewell BL, Flores JP, Jentz C, **Northrup GR**, Mahmud A, Reingold AR, Petersen M, Jewell NP, Young S, Bellows J. Incidence, clinical outcomes, and transmission dynamics of severe coronavirus disease 2019 in California and Washington: prospective cohort study. *BMJ* 2020. doi:10.1136/bmj.m1923

TEACHING

Graduate Student Instructor: University of California, Berkeley

- Infectious Disease Dynamics Spring 2020

Teaching Assistant: University of Chicago

- Introduction to Quantitative Modeling in Biology Spring 2018
- Introduction to Quantitative Modeling in Biology (advanced) Spring 2017
- Mathematical Methods for Biological Sciences I & II Fall 2017 & Winter 2018

PRESENTATIONS

- Quantitative Biology Summer Fellows Program, Chicago, IL. 2020. *Oral presentation (delivered remotely)*
- Ecology and Evolution of Infectious Diseases Research Seminar, Berkeley, CA. 2020. *Oral presentation*

- Center for Computational Biology Annual Retreat, Berkeley, CA. 2019. *Oral presentation*
- Infectious Diseases and Immunology Research Seminar, Berkeley, CA. 2019. *Oral presentation*
- Center for Computational Biology Fall Research Symposium, Berkeley, CA. 2019. *Oral presentation*

RESEARCH EXPERIENCE

Graduate Student: University of California, Berkeley.

- Department of Integrative Biology: Advisor, Dr. Mike Boots 2019 – Present
    - Developed mathematical model of hyperparasite eco-evolutionary dynamics for applications in phage therapy
    - Collaborated with Dr. Cara Brook and Dr. Jess Manning to analyze epidemiological and genetic data from 2018 dengue fever outbreak in Cambodia

  This work is being prepared as manuscripts for submission by the end of 2020, in addition to beginning preliminary analysis for thesis work
- Department of Epidemiology: Advisor, Dr. Joseph Lewnard 2018 – Present
    - Led analysis of novel study design for estimating naturally acquired immunity
    - Parameterized models for covid 19 transmission for use in academic and policy settings, including Canada and Finland

  This work has produced multiple accepted manuscripts with possibility for more as the covid 19 pandemic continues

Undergraduate Research Assistant: University of Chicago. 2017

- Department of Ecology and Evolution: Advisor, Dr. Sarah Cobey
    - Developed model of B-cell competition during influenza A infection
    - Created pipeline to fit the model to experimental data using Hamiltonian Monte Carlo methods

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AWARDS

- National Human Genome Research Institute T32 Trainee
- SMACNA College of Fellows
- University of Chicago Scholar Award
- National Merit Scholar

UNIVERSITY SERVICE

- Center for Computational Biology, UC Berkeley Retreat Planning Committee (2019)
- Center for Computational Biology Representative, UC Berkeley Graduate Assembly (2018 – present)

TECHNICAL SKILLS

- Proficient with Python 2.7 & 3.0, MATLAB, R, LaTeX; Working knowledge of Microsoft Excel, Julia, and Stan; Basic knowledge of HTML, SQL, C, and C++