

CHARLES J. WOLOCK

Research interests: Nonparametric and semiparametric statistics, survival analysis, decision theory, statistical genetics

CONTACT

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| Student webpage | biostat.washington.edu/people/charles-wolock |

EDUCATION

University of Washington, Seattle, WA *September 2018 - present*
 Ph.D., Biostatistics
 Advisors: Noah Simon, Ph.D. and Marco Carone, Ph.D.

Harvard University *September 2011 - May 2015*
 B.A., Organismic and Evolutionary Biology
 Language citation, Spanish
Summa cum laude, Highest Honors
 Thesis: Exploring the functional diversity of microbial communities within carnivorous pitcher plants
 Advisors: Anne Pringle, Ph.D. and Naomi Pierce, Ph.D.

RESEARCH EXPERIENCE

Research Assistant
 University of Washington, Department of Biostatistics
 Supervisor: Bruce S. Weir, Ph.D. *September 2018 - September 2020*

Research Staff Associate
 Columbia University, Institute for Genomic Medicine
 Supervisors: Andrew S. Allen, Ph.D. and David B. Goldstein, Ph.D. *November 2016 - July 2018*

Undergraduate Researcher
 Harvard University, Department of Organismic and Evolutionary Biology
 Supervisors: Anne Pringle, Ph.D. and Naomi Pierce, Ph.D. *September 2012 - May 2015*

Harvard University, Department of Earth and Planetary Sciences
 Supervisor: Erik Sperling, Ph.D. *September 2012 - December 2013*

Summer Scholar
 Stowers Institute for Medical Research
 Supervisor: Matthew Gibson, Ph.D. *June 2013 - August 2013*

TEACHING EXPERIENCE

Instructor of Record
University of Washington
 BIOS311: Regression Methods in the Health Sciences *March 2022 - June 2022*

Teaching Assistant
University of Washington

BIOST 511: Medical Biometry I (Lead TA) *September 2020 - December 2020*

BIOST 310: Biostatistics for the Health Sciences (Lead TA) *September 2021 - December 2021*

Undergraduate Student Mentor

Fred Hutchinson Cancer Research Center

Pathways Undergraduate Research Program *June 2021 - August 2021*

Student Facilitator

Harvard University

Life Sciences 1a: An Integrated Introduction to the Life Sciences *September 2014 - December 2014*

Tutor

University of Washington

BIOST 523: Statistical Inference for Biometry II *February 2021 - March 2021*

AWARDS, HONORS, FELLOWSHIPS

NSF Graduate Research Fellowship *September 2020 - present*

University of Washington

Donovan J. Thompson Award *October 2020*

Best combined performance on the PhD Applied and Theory qualifying exams

NIH T32 Statistical Genetics Training Grant *September 2018 - September 2020*

Harvard University

Phi Beta Kappa *May 2015*

Herchel Smith Research Fellowship *June 2014 - August 2014*

Microbial Sciences Initiative Research Fellowship *June 2014 - August 2014*

John Harvard Scholar *May 2013*

National Merit Scholarship *September 2011*

PROFESSIONAL SERVICE

Manuscript Reviewer

Bayesian Analysis

UNIVERSITY SERVICE

University of Washington, Department of Biostatistics

Student Seminar Coordinator *September 2020 - present*

Admissions Committee *September 2021 - present*

Equity, Diversity, and Inclusion Committee *September 2019 - present*

Peer mentor *June 2019 - present*

Education Policy and Teaching Evaluation Committee *September 2020 - September 2021*

Student-Faculty-Staff Relations Committee *September 2019 - September 2020*

REFEREED JOURNAL PUBLICATIONS

1. Sperling E.A., **Wolock C.J.**, Morgan A.S., Gill B.C., Kunzmann M., Halverson G.P., Macdonald F.A., Knoll A.H., Johnston D.T. Statistical analysis of iron geochemical data suggests limited late Proterozoic oxygenation. *Nature* 523: 451–454, 2015.
2. Raghavan N.S., Brickman A.M., Andrew H., Manly J.J., Schupf N., Lantigua R., The Alzheimer's Disease Sequencing Project, **Wolock C.J.**, Kamalakaran S., Petrovski S., Tosto G., Vardarajan

- B.N., Goldstein D.B., Mayeux R. Whole exome sequencing in 20,197 individuals identifies ultra-rare SORL1 loss-of-function variants in late-onset Alzheimer’s disease. *Annals of Clinical and Translational Neurology* 5(7): 832-842, 2018.
3. Bittleston L.S., **Wolock C.J.**, Bakhtiar E.Y., Chan X.Y., Chan K.G., Pierce N.E., Pringle A. Convergence between the microcosms of Southeast Asian and North American pitcher plants. *eLife* 7, 2018.
 4. Hayeck T.J., Stong N., **Wolock C.J.**, Copeland B., Kamalakaran S., Goldstein D.B., Allen A.S. Improved Pathogenic Variant Localization using a Hierarchical Model of Sub-regional Intolerance. *American Journal of Human Genetics* 104(2): 299-309, 2019.
 5. **Wolock C.J.**, Stong N., Ma F., Nagasaki T., Lee W., Tsang S.H., Kamalakaran S., Goldstein D.B., Allikmets R. A case-control collapsing analysis identifies retinal dystrophy genes associated with ophthalmic disease in patients with no pathogenic *ABCA4* mutations. *Genetics in Medicine* 21: 2336-2344, 2019.
 6. Gelfman S., Dugger S.A., Moreno C.A.M., Ren Z., **Wolock C.J.**, Shneider N.A., Phatnani H., Cirulli E.T., Lasseigne B.N., Harris T., Maniatis T., Rouleau G.A., Brown R.H., Gitler A.D., Myers R.M., Petrovski S., Allen A.S., Harms M.B., Goldstein D.B. A new approach for rare variation collapsing on functional protein domains implicates specific genic regions in ALS. *Genome Research* 29(5): 809-818, 2019.
 7. Cameron-Christie S., **Wolock C.J.**, Groopman E., Petrovski S., Kamalakaran S., Povysil G., Zhang M., Fleckner J., March R.E., Gelfman S., Marasa M., Li Y., Sanna-Cherchi S., Kiryluk K., Allen A.S., Fellström B., Haefliger C., Platt A., Goldstein D.B., Gharavi A. Exome-based rare-variant analyses in chronic kidney disease. *Journal of the American Society of Nephrology* 30(6): 1109-1122, 2019.
 8. Ma C.J., **Wolock C.J.**, Stong N., Nagasaki T., Lee W., Goldstein D.B., Allikmets R. Case-control collapsing analysis identifies genes mimicking Stargardt/*ABCA4* disease. *Investigative Ophthalmology & Visual Science* 60(9): 2935-2935, 2019.
 9. Eade K, Gantner M.L., Hostyk J.A., Nagasaki T., Giles S., Harkins-Perry S., Fallon R., Baldini M., Scheppke L., Dorrell M.I., Cai C., Baugh E.H., **Wolock, C.J.**, Wallace M., Berlow R.B., Goldstein D.B., Metallo C.M., Friedlander M., Allikmets R. Serine biosynthesis defect due to haploinsufficiency of phosphoglycerate dehydrogenase (PHDGH) causes retinal disease. *Nature Metabolism* 3(3): 366-377, 2021.
 10. Bansal A., Heagerty P.J., Inoue L.Y.T., Veenstra D.L., **Wolock C.J.**, Basu A. A Value of Information Framework for Personalizing the Timing of Surveillance Testing. *Medical Decision Making*, 2021.
 11. Wasser S.K., **Wolock C.J.**, Brown J.E., Morris C., Horowitz R., Wong A., Otiende M.Y., Weir B.S. Familial matching of tusks delineates the size and connectivity of transnational criminal organization. To appear in *Nature Human Behaviour*.

SUBMITTED MANUSCRIPTS

1. Kohn M., **Wolock C.J.**, Poulson I., Fernando N. A meta-analysis of outcomes of patients with chronic hepatitis C vs. patients without chronic hepatitis C undergoing total hip or total knee arthroplasty.
2. Heil J., **Wolock C.J.**, Pierce N.E., Pringle A., Bittleston L.S. Pitcher plant-associated microbial communities differ primarily by host species across a longitudinal gradient.

SOFTWARE

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|------------------------|---|
| <code>survML</code> | Conditional survival function estimation using machine learning |
| <code>SimEngine</code> | Framework for reproducible statistical simulations in R |
| <code>rigr</code> | Regression, inference, and general data analysis tools for R |

PRESENTATIONS

Intramural

1. **Statistical Learning Applied to Biostatistics (SLAB) Lab.** Flexible estimation of the conditional survival function via observable regression models. University of Washington. March 2022.
2. **Biostatistics Student Seminar Series.** Concordance-based variable importance for right-censored data. University of Washington, Department of Biostatistics. November 2021.

POSTERS

1. **Wolock C.J.**, Bittleston L.S., Pierce N.E., Pringle A. Nitrogenase genes in carnivorous plant microbial communities. Microbial Sciences Initiative Research Symposium. Cambridge, MA. September 2014.
2. **Wolock C.J.**, Bittleston L.S., Pierce N.E., Pringle A. Carnivorous pitchers of *Nepenthes* with less acidic fluid house nitrogen-fixing bacteria. Harvard University Organismic and Evolutionary Biology Thesis Symposium. Cambridge, MA. May 2015.
3. **Wolock C.J.**, Kamalakaran S., Goldstein D.B., Allen A.S. A test for balanced coverage across cases and controls as a qualifying criterion in collapsing analysis. Human Genetics in NYC Conference. New York, NY. September 2017.

PROFESSIONAL AFFILIATIONS

American Statistical Association

SKILLS

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| Programming | Python, R, Bash, SQL |
| Other applications | L ^A T _E X, Git |
| Languages | English (native), Spanish (proficient) |