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CHARLES J. WOLOCK

Research interests: Nonparametric statistics, survival analysis, machine learning

CONTACT

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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
BIOST311: 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* 42(4): 474-486, 2021.

11. Wasser S.K., **Wolock C.J.**, Kuhner M.K., Brown J.E., Morris C., Horowitz R., Wong A., Fernandez C.J., Otiende M.Y., Hoareau Y., Kaliszewska Z.A., Jeon E., Han K.L., Weir B.S. Elephant genotypes reveal the size and connectivity of transnational ivory traffickers. *Nature Human Behaviour* 6 (3): 371-382, 2022.

12. 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. To appear in *Environmental Microbiology.*

13. Alfieri J., Coble M.D., Conroy C., Dahl A., Hares D., Weir B.S., **Wolock C.J.**, Zhao E., Kingston H., Zolandz T. A new implementation of a semi-continuous method for DNA mixture interpretation. *Forensic Science International: Reports* 6, 2022.

SUBMITTED MANUSCRIPTS

1. **Wolock C.J.**, Gilbert P.B., Simon N., Carone M. A framework for leveraging machine learning tools to estimate personalized survival curves. arXiv.2211.03031.

2. 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.

SOFTWARE

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

PRESENTATIONS

Extramural

1. **JSM.** Flexible estimation of the conditional survival function via observable regression models. Washington, D.C. August 2022.

2. **WNAR.** Flexible estimation of the conditional survival function via observable regression models. Virtual. June 2022.

Intramural

1. **Biostatistics Student Seminar Series**. Flexible estimation of the conditional survival function via observable regression models. University of Washington, Department of Biostatistics. April 2022.

2. **Statistical Learning Applied to Biostatistics (SLAB) Lab.** Flexible estimation of the conditional survival function via observable regression models. University of Washington. March 2022.

3. **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
International Biometric Society (WNAR)

SKILLS

Programming	Python, R, Bash, SQL
Other applications	LaTeX, Git
Languages	English (native), Spanish (proficient)