Kathie Y. Sun

PhD Candidate · Statistical genetics
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Education

University of North Carolina, Chapel Hill — *Chapel Hill, NC*

Ph.D. candidate in Bioinformatics and Computational Biology — *05/2016 - Expected 05/2021*

- Awards: Caroline H. & Thomas S. Royster Fellowship, National Institute of General Medical Sciences T32 graduate trainee
- Building statistical models and applying RNA-seq/computational tools to estimate genetic and environmental effects on behavioral phenotypes and gene expression in heterogeneous, inbred mice
- Developing Bayesian and MCMC methods to estimate heritability and genetic correlation of metabolism and running traits

University of North Carolina, Chapel Hill — *Chapel Hill, NC*

M.S.P.H. in Environmental Health Sciences — *08/2014 - 05/2016*

- Awards: National Institute for Occupational Safety & Health T32 graduate trainee, American Industrial Hygiene Foundation & UNC-CH David Allison Fraser scholarships
- Thesis: *Influence of genetic variation on an occupational exposure assessment model of 1,6-hexamethylene diisocyanate*
- Developed linear mixed model containing whole-genome markers along with exposure predictors to determine the contribution of individual genetic variants and their interactions to observed biomarker levels among exposed workers

Duke University — *Durham, NC*

B.S. in Environmental Sciences and Biology — *08/2008 - 05/2012*

- GPA: 3.75/4.0 *Cum laude* & graduation with High Distinction in Biology
- Awards: Atlantic Coast Conference academic honor roll & Becton Dickinson Biosciences academic scholarship
- Thesis: *Subcellular localization of GFP-tagged subunit variants of DNA polymerase γ associated with mitochondrial disease*

Skills

Statistics	Probability & statistical inference, Bayesian methods, linear models, data analysis & visualization
Programming & software	R, SAS, Python, Unix/command line, Git, LaTeX, Vim, Adobe Creative Suite, Microsoft Office

Work experience

Cardno ChemRisk — *Aliso Viejo, CA*

Summer Intern — *05-08/2015*

- Performed meta-analysis of human epidemiologic data to evaluate the profile of common or therapy-targetable mutations in lung cancers of never and ever smokers
- Designed study methodology, conducted statistical analysis & drafted work for publication

National Human Genome Research Institute (NHGRI) — *Rockville, MD*

Scientific Program Analyst — *05/2012 - 05/2014*

- Supported grant management by facilitating communication between NHGRI Program Directors and external researchers
- Conducted literature reviews resulting in manuscripts & consolidated information generated from meetings and grant applications

Teaching

UNC-CH How to Learn to Code — *Chapel Hill, NC*

Teacher — *05-08/2018*

- Designed course materials and taught during a summer course about R programming for biological researchers

ENVR 600 & BCB 720 — *Chapel Hill, NC*

Teaching Assistant — *08-12/2014, 08-12/2016*

- Graded tests and homework for graduate-level core courses in environmental health and statistical inference
- Led weekly discussion forums & provided help with home problem sets

Varsity Tutors and ColPrep, Inc. — *Chapel Hill, NC*

Tutor — *2015 - present*

- Private tutoring for all levels of mathematics up through college-level calculus, including SAT/ACT prep and test-taking strategies

Publications

Journal Articles

Lung cancer mutation profile of EGFR, ALK, and KRAS: Meta-analysis and comparison of never and ever smokers
Aaron M Chapman, **Sun, Kathie Y**, Peter Ruestow, Dallas M Cowan, Amy K Madl
Lung Cancer 102 (2016) pp. 122–134, 2016

POLG2 disease variants: analyses reveal a dominant negative heterodimer, altered mitochondrial localization and impaired respiratory capacity
Matthew J Young, Margaret M Humble, Karen L DeBalsi, **Sun, Kathie Y**, William C Copeland
Human Molecular Genetics 24.18 (2015) pp. 5184–5197, 2015

The ethical, legal, and social implications program of the National Human Genome Research Institute: reflections on an ongoing experiment
Jean E McEwen, Joy T Boyer, **Sun, Kathie Y**, Karen H Rothenberg, Nicole C Lockhart, Mark S Guyer
Annual Review of Genomics and Human Genetics 15 (2014) pp. 481–505, 2014

Evolving approaches to the ethical management of genomic data
Jean E McEwen, Joy T Boyer, **Sun, Kathie Y**
Trends in Genetics 29.6 (2013) pp. 375–382, 2013

Conference Proceedings

Poster: Reciprocal, sparse diallels of Collaborative Cross mice for identifying effects of allelic imbalance
Gordon Research Conference on Quantitative Genetics and Genomics, Feb.2019, Lucca, Italy

Presentation: Modeling gene-by-environment effects and allelic imbalance in a reciprocal, sparse diallel of Collaborative Cross mice
Complex Trait Consortium Meeting, June2019, San Diego, CA

Conference participant: Civil Society and the Role of the University
Summer 2018 Royster Global Conference at King's College London, July2018, London, UK

Poster: A unique murine genetic model and framework for identifying effects of parent-of-origin effects
Population, Evolutionary and Quantitative Genetics Conference, May2018, Madison, WI

Presentation: Estimating heritability and genetic correlation of exercise-related traits in Diversity Outbred mice
Complex Trait Consortium Meeting, June2017, Memphis, TN

Poster: Influence of genetic markers on exposure assessment models
Society of Toxicology Annual Meeting, Mar.2016, New Orleans, LA

Extracurricular

2008 - 2019	**Coxswain**, Duke Varsity Women's Rowing and Carolina Masters Club Crew	*Durham, NC*
08/2015 - 05/2016	**Vice-president**, Environmental Sciences and Engineering Student Organization	*Chapel Hill, NC*
04/2019	**Scientist ambassador**, *DNA Day* teaching genetics in high school classrooms	*Wilkesboro, NC*
08/2019 - present	**Senator**, UNC Graduate and Professional Students Federation	*Chapel Hill, NC*
08/2019 - present	**Student member**, BCB Students' Invited Speaker Seminar Series Committee	*Chapel Hill, NC*