

# 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

- **Minor:** Biostatistics
- **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  $\gamma$  associated with mitochondrial disease*

## Skills

**Statistics** Probability & statistical inference, Bayesian methods, linear models, data analysis & visualization

**Programming & software** R, Stan/JAGS, SAS, Python, Unix/command line, Git,  $\text{\LaTeX}$ , 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

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## JOURNAL ARTICLES

- Skewed X inactivation in genetically diverse mice is associated with recurrent copy number changes at the Xce locus  
**Kathie Y Sun**, Daniel Oreper, Sarah A Schoenrock, Rachel McMullan, Paola Giusti-Rodríguez, Vasyly Zhabotynsky, Darla R Miller, Lisa M Tarantino, Fernando Pardo-Manuel Villena, William Valdar  
*bioRxiv* (2020). DOI: 10.1101/2020.11.13.380535
- Lung cancer mutation profile of EGFR, ALK, and KRAS: Meta-analysis and comparison of never and ever smokers  
Aaron M Chapman, **Kathie Y Sun**, Peter Ruestow, Dallas M Cowan, Amy K Madl  
*Lung Cancer* 102 (2016) pp. 122–134
- 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, **Kathie Y Sun**, William C Copeland  
*Human Molecular Genetics* 24.18 (2015) pp. 5184–5197
- 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, **Kathie Y Sun**, Karen H Rothenberg, Nicole C Lockhart, Mark S Guyer  
*Annual Review of Genomics and Human Genetics* 15 (2014) pp. 481–505
- Evolving approaches to the ethical management of genomic data  
Jean E McEwen, Joy T Boyer, **Kathie Y Sun**  
*Trends in Genetics* 29.6 (2013) pp. 375–382

## CONFERENCE PROCEEDINGS

- Poster*: Identifying effects of parent-of-origin, diet, and their interaction in a reciprocal, sparse diallel of Collaborative Cross  
*The Allied Genetics Conference*, Apr.2020, Washington, D.C. (virtual)
- 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

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2008 - 2019	<b>Coxswain</b> , Duke Varsity Women's Rowing and Carolina Masters Club Crew	<i>Durham, NC</i>
08/2015 - 05/2016	<b>Vice-president</b> , Environmental Sciences and Engineering Student Organization	<i>Chapel Hill, NC</i>
04/2019	<b>Scientist ambassador</b> , DNA Day teaching genetics in high school classrooms	<i>Wilkesboro, NC</i>
08/2019 - present	<b>Senator</b> , UNC Graduate and Professional Students Federation	<i>Chapel Hill, NC</i>
08/2019 - present	<b>Student member</b> , BCB Students' Invited Speaker Seminar Series Committee	<i>Chapel Hill, NC</i>
08/2020 - present	<b>Member</b> , Royster Distinguished Professor for Graduate Education Search Committee	<i>Chapel Hill, NC</i>