

Sheila M. Gaynor

BIostatISTICS POSTDOCTORAL FELLOW

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Education

Harvard University

Cambridge, MA

PH.D. IN BIostatISTICS, A.M. IN BIostatISTICS

2013 - 2018

- Dissertation titled “Statistical Methods for Integratively Characterizing Genetic and Genomic Data”
- Co-advised by Dr. Xihong Lin and Dr. John Quackenbush

University of North Carolina

Chapel Hill, NC

B.S.P.H. IN BIostatISTICS, B.A. IN MATHEMATICS

2009 - 2013

- With highest honors and highest distinction

Experience

Harvard University

Cambridge, MA

POSTDOCTORAL FELLOW

2018 - Present

- Develop methods for whole genome sequencing and multi-omics data
- Analyze massive whole genome sequencing data from the TOPMed study

Duke University

Durham, NC

STATISTICAL CONSULTANT FOR THE CENTER FOR TRANSLATIONAL PAIN MEDICINE

2017 - Present

- Conduct clustering analyses on individuals from multiple cohorts with pain phenotyping
- Perform descriptive analyses on cohort studies across different pain conditions

Boston University

Boston, MA

VISITING RESEARCHER IN BEHAVIORAL SCIENCE RESEARCH

2015 - 2017

- Led statistical analysis of identifying latent classes of smokers unmotivated to quit from a cohort study
- Executed analysis plan in R and identified three distinct subtypes of unmotivated smokers

McLean Hospital

Belmont, MA

VISITING RESEARCHER IN NEUROBIOLOGY OF FEAR LABORATORY

2015 - 2017

- Performed network and mediation analyses on PTSD studies
- Contributed to book chapter on gene-environment interaction

Harvard University

Boston, MA

ROTATION STUDENT IN THE DEPARTMENT OF BIOMEDICAL INFORMATICS PARK LAB

2014

- Implemented open source bioinformatics tools across programming languages to call copy number variants
- Compared copy number calls between array and sequencing data from The Cancer Genome Atlas (TCGA)

University of North Carolina

Chapel Hill, NC

HONORS UNDERGRADUATE RESEARCHER IN THE DEPARTMENT OF BIostatISTICS

2011-2013

- Developed statistical methods for complementary and supervised clustering
- Analyzed subtypes of temporomandibular disorder

University of North Carolina

Chapel Hill, NC

SUMMER UNDERGRADUATE RESEARCH FELLOW IN THE DEPARTMENT OF BIostatISTICS

2012

- Evaluated the association between hormonal contraceptive use and pain conditions

Washington University in St. Louis

St. Louis, MO

STATISTICAL CONSULTANT & INTERN FOR THE OUTCOMES RESEARCH OFFICE

2010-2011

- Performed prognostic modeling of cancer survival in hospital databanks
- Evaluated comorbidity scoring methods across institutions for individuals with cancer

Awards

Fellowships

- 2017 **F31 Kirschstein Predoctoral Individual National Research Service Award**, NHLBI
- 2013 **National Science Foundation Graduate Research Fellowship**, NSF
- 2013 **T32 NIH HIV/AIDS Training Grant Fellowship**, NIAID
- 2012 **Summer Undergraduate Research Fellowship**, UNC

Honors

- 2017 **Program in Quantitative Genomics Travel Award**, Harvard University Department of Biostatistics
- 2016 **XSEDE Computation Allocation**, NSF
- 2016 **Certificate of Distinction in Teaching**, Harvard University Department of Biostatistics
- 2013 **Delta Omega Undergraduate Award**, Delta Omega Public Health Honors Society
- 2013 **Carolina Research Scholar**, UNC Office of Undergraduate Research
- 2013 **Buckley Public Service Scholar**, UNC Carolina Center for Public Service
- 2012 **Phi Beta Kappa**, University of North Carolina

Publications

Gaynor, S. M., Schwartz, J., & Lin, X. (2018). Mediation analysis for common binary outcomes. *Statistics in Medicine*.

Borrelli, B., **Gaynor, S.**, Tooley, E., Armitage, C. J., Wearden, A., & Bartlett, Y. K. (2018). Identification of three different types of smokers who are not motivated to quit: Results from a latent class analysis. *Health Psychology*, 37(2), 179.

Gaynor, S., & Bair, E. (2017). Identification of relevant subtypes via preweighted sparse clustering. *Computational Statistics & Data Analysis*, 116, 139-154.

Bair, E., **Gaynor, S.**, Slade, G. D., Ohrbach, R., Fillingim, R. B., Greenspan, J. D., ... & Maixner, W. (2016). Identification of clusters of individuals relevant to temporomandibular disorders and other chronic pain conditions: the OPPERA study. *Pain*, 157(6), 1266.

Kalogjeri, D., **Gaynor, S. M.**, Piccirillo, M. L., Jean, R. A., Spitznagel, E. L., & Piccirillo, J. F. (2014). Comparison of comorbidity collection methods. *Journal of the American College of Surgeons*, 219(2), 245-255.

Submitted

Gaynor, S. M.*, Sun, R.*, Lin, X., & Quackenbush, J. Identification of differentially expressed gene sets using the Generalized Berk-Jones statistic.

Gaynor, S.M., Fillingim, RB., Zolnoun, DA., Slade, GD., Ohrbach, R., Greenspan, JD., Maixner, W., Bair, E. Association between craniofacial pain and hormonal contraceptive use: The OPPERA study.

Sun, R*, Xu, M*, Li, X., **Gaynor, S.M.**, Zhou, H., Bosse, Y., Lam, S., Tsao, MS., Tardon, A., Chen, C., Doherty, J., Goodman, G., Bojesen, SE., Landi, MT., Johansson, M., Field, JK., Bickelboller, H., Wichmann, HE., Risch, A., Rennert, G., Arnold, S., Wu, X., Melander, O., Brunnstrom, H., Marchand, LL., Liu, G., Andrew, A., Duell, E., Kiemeny, LA., Shen, H., Haugen, A., Johansson, M., Grankvist, K., Caporaso, N., Woll, P., Teare, MD., Scelo, G., H, YC., Y, JM., Lazarus, P., Schabath, MB., Aldrich, MC., Albanes, D., Mak, R., Barbie, D., Brennan, P., Hung, RJ., Amos, CI., Christiani, DC., Lin, X. Identification of Inflammation and Immune-Related Risk Variants Associated with Squamous Cell Lung Cancer.

Professional Involvement

- 2012-2019 **Member**, ENAR Section of the International Biometrics Society
- 2018 **Co-mentor & Master's Thesis Committee Member**, Harvard University Department of Biostatistics
- 2017-2018 **Member**, Harvard Biostatistics Colloquium Committee
- 2017 **Graduate Mentor**, Harvard Summer Program in Biostatistics & Computational Biology
- 2016-2018 **Co-organizer**, Harvard Biostatistics-Biomedical Informatics Big Data Seminar
- 2015-2017 **Member**, Harvard Biostatistics Student Advising Committee
- 2015-2016 **Organizer & Coordinator**, Harvard Big Data Seminar
- 2015 **Chair**, ENAR Session on Graphical Modeling
- 2014 **Judge**, Harvard School of Public Health Poster Day

Presentations

ORAL PRESENTATIONS

- *Joint Statistical Meetings, 2018*. Degree centrality of SNPs in eQTL networks.
- *ENAR Spring Meeting, 2017*. Error quantification in biologically relevant eQTL network metrics.
- *Massachusetts General Hospital Trauma Genomics Group, 2017*. Mediation analysis of pathways to PTSD diagnosis.
- *Broad Institute Statistical Genetics Seminar, 2017*. Causal mediation analysis for genomic data.
- *Biostatistics Student Seminar, 2016*. Graduate Research Fellowships.
- *Joint Statistical Meetings, 2016*. Genomic analysis with common binary outcomes via mediation.
- *ENAR Spring Meeting, 2016*. Mediation methods for case-control settings with applications to genomics.
- *Harvard Medical School Epigenetics Symposium, 2015*. Integrating epigenetic and genomic analyses via mediation analysis.
- *Joint Statistical Meetings, 2015*. Mediation-based integrative genomic analysis.
- *Biostatistics Student Seminar, 2015*. A mediation-based integrative genomic analysis of lung cancer.
- *ENAR Spring Meeting, 2015*. Mediation-based integrative genomic analysis.
- *International Association for Dental Research Epi-Forum, 2015*. Prewighted sparse clustering with applications to temporomandibular disorder.
- *ENAR Spring Meeting, 2014*. Identification of biologically relevant subtypes via preweighted sparse clustering.

POSTER PRESENTATIONS

- *ENAR Spring Meeting, 2018*. Assessing the Effective Degree of SNPs in eQTL Networks. Oral poster.
- *American Society for Human Genetics Annual Meeting, 2016*. Mediation methods applied to post-traumatic stress disorder to identify genomic effects.
- *Harvard Graduate Women in Science and Engineering Symposium, 2015*. A mediation-based integrative genomic analysis of lung cancer.
- *UNC Celebration of Undergraduate Research, 2013*. The association between oral contraceptive use and painful conditions.
- *International Pelvic Pain Society Conference, 2012*. OPFERA Study Identifies an Association Between the Use of Hormonal Contraceptives and Orofacial Pain and Headaches. Prepared poster, First place in poster competition.
- *ENAR Spring Meeting, 2012*. Identification of clinically relevant disease subtypes using supervised sparse clustering.

Teaching

Harvard University Department of Biostatistics

Boston, MA

TEACHING ASSISTANT, ID 201: PRINCIPLES OF BIOSTATISTICS AND EPIDEMIOLOGY

2017

- Led weekly lab sessions and graded homework

Harvard University Department of Biostatistics

Boston, MA

HEAD TEACHING ASSISTANT, ID 201: PRINCIPLES OF BIOSTATISTICS AND EPIDEMIOLOGY

2015

- Developed new lab sessions and homework assignments for new course
- Managed teaching staff of six biostatistics teaching assistants
- Led weekly lab sessions and graded homework

Harvard University Department of Biostatistics

Boston, MA

INDEPENDENT STUDY IN BIOSTATISTICS DIRECTOR

2016

- Met weekly to teach and review topics in introductory biostatistics
- Conducted assessments and evaluated student progress

Harvard University Commonwealth Fund Fellowship in Minority Health Policy

Boston, MA

BIOSTATISTICS AND EPIDEMIOLOGY PROGRAM TUTOR

2015-2016

- Reviewed and instructed on course materials
- Guided problem sessions and assisted in assignment and test preparation

Harvard University Department of Biostatistics

Boston, MA

TEACHING ASSISTANT, BIO 200: PRINCIPLES OF BIOSTATISTICS

2014

- Led weekly lab sessions and graded homework