Arjun Bhattacharya

Doctoral candidate in biostatistics

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Education

- **University of North Carolina** — Chapel Hill, NC
  Ph.D. Biostatistics — *2015 - present*
  - Concentration in computational biology, genomics, and statistical genetics with an emphasis in health disparities
- **University of North Carolina** — Chapel Hill, NC
  B.S. Mathematical Decision Sciences, B.S. Biology — *2011 - 2015*
  - Mackenzie Family Foundation Innovation Scholarship (full scholarship, 4 years)

Research and Work Experience

- **Carolina Breast Cancer Study** — Chapel Hill, NC
  Research Assistant — *August 2017 - present*
  - Elucidating the relationship between germline genetic variation and breast cancer tumor biology to study racial disparities in breast cancer outcomes
  - Developing methods for the deconvolution of bulk tumor RNA
  - Advisors: Prof. Michael Love and Prof. Melissa Troester
- **ELGAN-ECHO Research Study** — Chapel Hill, NC
  Research Assistant — *July 2017 - present*
  - Analyzing the genetic and epigenetic effects in autism, post-partum depression, and non-communicable developmental disorders in underserved and underrepresented populations
  - Collaboration with Prof. Hudson Santos
- **NC TraCS Institute** — Chapel Hill, NC
  Research Assistant — *August 2017 - July 2018*
  - Reviewed incoming grants for biostatistical support and provided statistical consultation for approved projects
  - Under the supervision of Prof. Michael Love
- **Roche Innovation Center** — New York, NY
  Graduate Research Intern — *May 2016 - August 2016*
  - Identified immunogenetic signatures from omic profiles from clinical trials to estimate immune infiltration in breast cancer tumors in response to cancer drugs
  - Internship in the Data Science group of Translational Genomics at Roche, under the supervision of Drs. Francesca Milletti and Jurriaan Brouwer-Visser
- **CBKEN @ UNC** — Chapel Hill, NC
  Research Assistant — *October 2015 - December 2016*
  - Modeled knowledge exchange networks in community-based health centers to assess best methods in knowledge dissemination and health practices in underinsured and low-income areas
  - Presented findings to the North Carolina Department of Health and Human Services, October 2016
  - Under the supervision of Prof. Timothy Carney
- **Malaria Host-Pathogen Interaction Center (MaHPIC)** — Athens, GA
  Research Assistant — *May 2014 - March 2015*

- Linked malaria-related 'omic data in a multifaceted computation pipeline to identify genetic pathways in the immunological response after exposure to malaria pathogen and subsequent treatment in primates
- Part of a National Science Foundation-funded Research Experience for Undergraduates in collaboration with MaHPIC, under the supervision of Prof. Juan Gutierrez

Awards, Grants & Honors

Center of Environmental Health and Susceptability Training Grant 2019-present
Susan G. Komen Graduate Training Fellowship in Breast Cancer Disparities 2018-2019
UNC-CH Department of Biostatistics Tuition Award 2017-2018
Mackenzie Family Foundation Innovation Scholarship 2011-2015
NSF Research Experience for Undergraduates, UGA 2014
UNC-CH OUR Summer Undergraduate Research Fellowship ($5,000) 2013

Publications

Accepted manuscripts

1. **A. Bhattacharya**, M. García-Closas, A. Olshan, C. Perou, M. Troester, M. Love. *A framework for transcriptome-wide association studies in breast cancer*. *Genome Biology*, 2020. `https://genomebiology.biomedcentral.com/articles/10.1186/s13059-020-1942-6`.

2. H. Santos, **A. Bhattacharya**, E. Martin, K. Addo, M. Psioda, L. Smeester, R. Joseph, S. Hooper, J. Frazier, K. Kuban, T. O'Shea, R. Fry for the ELGAN Investigators. *Epigenome-Wide DNA Methylation in Placentas from Preterm Infants: Association with Maternal Socioeconomic Status*. *Epigenetics*, 2019. `https://www.ncbi.nlm.nih.gov/pubmed/31062658`.

3. H. Santos, B. Nephew, **A. Bhattacharya**, E. Martin, R. Fry, K. Perrerira, L. Smith, C. Murgatroyd, R. Alyamani, X. Tan. *Discrimination Exposure and DNA Methylation of Stress-Related Genes in Latina Mothers*. *Psychoneuroendocrinology*, 2018. `https://www.ncbi.nlm.nih.gov/pubmed/30144780`.

Submitted papers

1. **A. Bhattacharya**, M. Love. *MOSTWAS: Multi-Omic Strategies for Transcriptome-Wide Association Studies*. *Submitted*, 2020. Preprint on *bioRxiv*: `https://www.biorxiv.org/content/10.1101/2020.04.17.047225v1`.

2. **A. Bhattacharya***, H. Santos*, R. Joseph, C. Plazas, L. Smeester, K. Kuban, T. O'Shea, and R. Fry for the ELGAN Investigators, et al. *Evidence for the Placenta-Brain Axis: Multi-Omic Kernel Aggregation Predicts Intellectual and Social Impairment in Children Born Extremely Preterm.* Submitted, 2020. Co-first authorship with H. Santos.

3. **A. Bhattacharya**, A. Hamilton, M. Troester, K. Hoadley, M. Love. *An approach for normalization and quality control for NanoString RNA expression data*. *Submitted*, 2020. Preprint on *bioRxiv*: `https://www.biorxiv.org/content/10.1101/2020.04.08.032490v2`.

4. H. Santos, J. Bangma, **A. Bhattacharya**, J. Rager, S. Kepper, E. Kwiatkowski, M. Psioda, S. Hooper, R. Joseph, L. Douglass, J. Frazier, K. Kuban, T O'Shea, R. Fry for the ELGAN Investigators. *Sex Differences in Placental DNA Methylation Associated with Positive Child Health*. *Submitted*, 2019.

5. H. Santos, **A. Bhattacharya**, B. Nephew, C. Murgatroyd, X. Tan. *Oxytocin function and emotional regulation in Latina mothers*. *Submitted*, 2019.

Working papers

1. **A. Bhattacharya***, Melissa A. Troester, and Michael I. Love *DeCompress: cell-type deconvolution using RNA expression data on bulk tissue from targeted panels.* In preparation, 2020.
2. **A. Bhattacharya***, R. Joseph, C. Plazas, L. Smeester, K. Kuban, T. O'Shea, H. Santos, and R. Fry for the ELGAN Investigators, et al. *Placental transcriptome-wide analyses of many traits show common genetic mechanisms that support the Developmental Origins of Health and Disease hypothesis.* In preparation, 2020.

Presentations

- **A. Bhattacharya**, M.I. Love. *MOSTWAS: Multi-Omic Strategies for Transcriptome-Wide Association Studies*.
  - *Society for Epidemiologic Research, December 2020*. Selected for oral presentation in Genetics in Epidemiology session.
  - *International Conference on Intelligent Systems for Molecular Biology, July 2020*. Selected for virtual oral presentation (VarI-COSI).
  - *International Genetic Epidemiology Society Meeting, July 2020*. Selected for virtual poster presentation (due to COVID).
  - *RNA 2020, May 2020*. Selected for virtual poster presentation (due to COVID).
- **A. Bhattacharya**, M. García-Closas, A. Olshan, C. Perou, M. Troester, M. Love. *A framework for transcriptome-wide association studies in breast cancer*.
  - *NCPF Workshop on Applying Big Data to Address the Social Determinants of Health in Oncology, October 2019*. Poster presentation at the National Academies of Science.
  - *American Society of Human Genetics Meeting, October 2019*. Poster presentation.
  - *International Genetic Epidemiology Society Meeting, October 2019*. Talk and highlighted poster presentation. One of 3 best poster awards.
  - *AACR Conference on The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved, September 2019*. Talk and poster presentation.
- **A. Bhattacharya**, H. Santos (presenting). *Placental Multi-Omics Prediction of Autism Spectrum Disorder at Age 10. Annual Meeting of the U.S. Developmental Origins of Health and Disease Society, September 2019*. Oral Presentation.
- **A. Bhattacharya**, M. Troester, M. Love. *Examining racial disparities in recurrence in the Carolina Breast Cancer Study: a transcriptome-wide association approach*. Plenary talk for Susan G. Komen. *American Association of Cancer Research, November 2018*

Teaching Experience

BIOS 735, *Introduction to Data Science* . . . . . Spring 2019
BIOS 550, *Basic Elements of Probability and Statistical Inference* . . . . . Spring 2018
BIOS 673, *Probability and Statistics* . . . . . Spring 2017

Computing Skills

- **Advanced:** R (preferred), SAS, LaTeX
- **Intermediate:** Python, C++, Matlab