

Education

- **University of North Carolina** Chapel Hill, NC
Ph.D. Biostatistics 2015 - 2020
 - Concentration in computational genomics, statistical genetics, and genetic epidemiology 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

- **UCLA Institute for Quantitative and Computational Biosciences** Los Angeles, CA
Fellow July 2021 - present
 - Teaching workshops in quantitative methods to biology researchers
 - Collaborating and consulting with experimental labs at UCLA for quantitative analyses
- **Department of Pathology and Laboratory Medicine** Los Angeles, CA
Postdoctoral Fellow August 2020 - present
 - Developing methods for integration of genetic association studies and functional genomics
 - Studying the genetic and genomic contributions to neuropsychiatric disease and cancer etiology, progression, and disparities
 - With Prof. Bogdan Pasaniuc and Prof. Michael Gandal
- **Carolina Breast Cancer Study** Chapel Hill, NC
Research Assistant August 2017 - August 2020
 - 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
 - With Prof. Michael Love and Prof. Melissa Troester
- **ELGAN-ECHO Research Study** Chapel Hill, NC
Research Assistant July 2017 - August 2020
 - 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 and Prof. Rebecca Fry
- **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
- **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 Dr. Francesca Milletti and Dr. Jurriaan Brouwer-Visser

• **CBKEN @ UNC**
 Research Assistant

Chapel Hill, NC
 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
- With Prof. Timothy Carney

Awards, Grants & Honors

O'Malley Alumni Award for Publication Excellence in Population Sciences (\$3,000)	2021
UCLA Bruins in Genomics Outstanding Mentorship Award	2021
International Society of Psychiatric Genetics Early Career Investigator Program Award	2021-present
Fellow, UCLA Institute of Quantitative and Computational Biosciences	2021-present
SER Conference Scholarship	2021
Center of Environmental Health and Susceptibility Training Grant	2019-2020
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

13. G. Jones, K.A. Hoadley, H. Benfield, L. Olsson, A. Hamilton, **A. Bhattacharya**, E. Kirk, H. Tipaldos, J. Fleming, K. Williams, M. Love, H. Nichols, A. Olshan, M. Troester. *Racial differences in breast cancer outcomes by hepatocyte growth factor pathway expression*. *Breast Cancer Research and Treatment*, 2021. <https://link.springer.com/article/10.1007%2Fs10549-021-06497-w>.
12. **A. Bhattacharya**, A. Freedman, V. Avula, R. Harris, W. Liu, Y. Li, R. Joseph, L. Smeester, H. Hartwell, K. Kuban, T. O'Shea, C. Marsit, R. Fry, and H. Santos. *Genetic control of fetal placental genomics contributes to development of health and disease*. Forthcoming, *Nature Communications*, 2021. <https://www.medrxiv.org/content/10.1101/2021.04.12.21255170v1>.
11. A. Patel, M. García-Closas, A. Olshan, C. Perou, M. Troester, M. Love, **A. Bhattacharya**. *Gene-level germline contributions to clinical risk of recurrence scores in Black and White breast cancer patients*. Forthcoming, *Cancer Research*, 2021. <https://cancerres.aacrjournals.org/content/early/2021/10/27/0008-5472.CAN-21-1207?sf154130555=1>.
10. K. Hou, **A. Bhattacharya**, R. Mester, K.S. Burch, B. Pasaniuc. *Powerful GWAS in admixed populations when allelic effects are similar across ancestries*. Forthcoming, *Nature Genetics*, 2021.
9. G. Jones, K. Hoadley, L. Olsson, A. Hamilton, **A. Bhattacharya**, E. Kirk, H. Tipaldos, J. Fleming, M. Love, H. Nichols, A. Olshan, M. Troester. *Hepatocyte Growth Factor pathway expression in breast cancer by race and subtype*. *Breast Cancer Research*, 2021. <https://breast-cancer-research.biomedcentral.com/articles/10.1186/s13058-021-01460-5>.
8. **A. Bhattacharya***, Y. Li, M. Love. *MOSTWAS: Multi-Omic Strategies for Transcriptome-Wide Association Studies*. *PLOS Genetics*, 2021. <https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1009398>

7. **A. Bhattacharya***, Alina M. Hamilton, Melissa A. Troester, and Michael I. Love. *DeCompress: tissue compartment deconvolution of targeted mRNA expression panels using compressed sensing*. *Nucleic Acids Research*, 2021.
<https://academic.oup.com/nar/advance-article/doi/10.1093/nar/gkab031/6125666?>
6. H. Santos, H. Adynski, R. Harris, **A. Bhattacharya**, A. Incollingo-Rodriguez, R. Cali, A. Torres Yabar, B. Nephew, C. Murgatroyd. *Biopsychosocial Correlates of Psychological Distress in Latina Mothers*. *Journal of Affective Disorders*, 2020.
<https://www.sciencedirect.com/science/article/abs/pii/S0165032720332833>.
5. H. Santos*, **A. Bhattacharya***, R. Joseph, L. Smeester, K. Kuban, C. Marsit, T. O'Shea, and R. Fry. *Evidence for the Placenta-Brain Axis: Multi-Omic Kernel Aggregation Predicts Intellectual and Social Impairment in Children Born Extremely Preterm*. *Molecular Autism*, 2020.
<https://molecularautism.biomedcentral.com/articles/10.1186/s13229-020-00402-w>.
Co-first author.
4. **A. Bhattacharya***, A. Hamilton*, M. Troester, K. Hoadley, M. Love. *An approach for normalization and quality control for NanoString RNA expression data*. *Briefings in Bioinformatics*, 2020. <https://academic.oup.com/bib/advance-article-abstract/doi/10.1093/bib/bbaa163/5891144>.
Co-first author.
3. **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>. Winner of 2021 O'Malley Alumni Award for Publication Excellence in Population Sciences.
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>.
1. H. Santos, B. Nephew, **A. Bhattacharya**, E. Martin, R. Fry, K. Perrera, 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>.

Pre-prints and submitted papers

10. **A. Bhattacharya***, J. Hirbo*, D. Zhou, W. Zhou, J. Zheng, M. Kanai, the Global Biobank Meta-analysis Initiative, B. Pasaniuc, E. Gamazon, N. Cox. *Best practices of multi-ancestry, meta-analytic transcriptome-wide association studies: lessons from the Global Biobank Meta-analysis Initiative*. Co-first author. Preprint, *medRxiv*.
<https://www.medrxiv.org/content/10.1101/2021.11.24.21266825v3>.
9. W. Zhou, ..., **A. Bhattacharya**, ..., C. Willer, M. Daly, B. Neale for the Global Biobank Meta-analysis Initiative. *Global Biobank Meta-analysis Initiative: powering genetic discovery across human diseases*. Preprint, *medRxiv*. Lead TWAS analyst for GBMI.
<https://www.medrxiv.org/content/10.1101/2021.11.19.21266436v1>.
8. N. Cole, P. Lee, T. Schwarz, P. Zhang, M. Gandal, B. Pasaniuc, **A. Bhattacharya**. *Breast and prostate distal-eQTLs mediated by non-coding RNAs overlap with genetic signals for overall and subtype-specific cancer risk*. Draft ready for submission.
7. R. Johnson, Y. Ding, **A. Bhattacharya**, A. Chiu, C. Lajonchere, D. Geschwind, B. Pasaniuc. *The UCLA ATLAS Community Health Initiative resource with EHR-linked phenotyping and genomic data*. Draft ready for submission.

6. H. Zhao, H. Rasheed, T. Nost, Y. Cho, Y. Liu, L. Bhatta, **A. Bhattacharya**, Global Biobank Meta-analysis Initiative, G. Hemani, G. Davey Smith, B. Brumpton*, W. Zhou*, B. Neale*, T. Gaunt*, J. Zheng*. *Proteome-wide Mendelian randomization in global biobank meta-analysis reveals trans-ancestry drug targets for common diseases. Draft ready for submission.*
5. V. Lo Faro, **A. Bhattacharya**, W. Zhou, D. Zhou, Y. Wang, K. Läll, M. Kanai, E. Lopera-Maya, P. Straub, P. Pawar, R. Tao, X. Zhong, S. Namba, the Global Biobank Meta-analysis Initiative, S. Sanna, I.M. Nolte, Y. Okada, N. Ingold, S. MacGregor, H. Sneider, I. Surakka, C. Willer, A.R. Martin, M.A. Brantley Jr, E.R. Gamazon, N.M. Jansonius, K. Joos, N.J. Cox, J. Hirbo. *Genome-wide association meta-analysis identifies novel ancestry-specific primary open-angle glaucoma loci and shared biology with vascular mechanisms and cell proliferation.* Preprint, medRxiv.
<https://www.medrxiv.org/content/10.1101/2021.12.16.21267891v1.full.pdf>
4. R. Johnson, Y. Ding, V. Venkateswaran, **A. Bhattacharya**, 15 co-authors of UCLA Precision Health Data Discovery Repository Working Group and UCLA Precision Health ATLAS Working Group, C. Lajonchere, D. Geschwind, B. Pasaniuc. *Leveraging genomic diversity for discovery in an EHR-linked biobank: the UCLA ATLAS Community Health Initiative.* Preprint, medRxiv.
<https://www.medrxiv.org/content/10.1101/2021.09.22.21263987v1.full.pdf>
3. W. Liu, L. Huang, Q. Sun, **A. Bhattacharya**, X. Tan, K. Kuban, R. Joseph, T. O'Shea, R. Fry, Y. Li, H. Santos. *Innovative computational approaches shed light on genetic mechanisms underlying cognitive impairment among children born extremely preterm.* In revision, *Journal of Neurodevelopmental Disorders*.
2. H. Santos, J. Bangma, **A. Bhattacharya**, V. Zhabotynsky, K. Roell, C. Marsit, J. Rager, L. Smeester, T.M. O'Shea, B. Zou, F. Zou, R. Fry for the ELGAN Investigators. *Sexual Dimorphism in Placental DNA Methylation Predicts Positive Child Health Outcome at Age 10 Years.* In revision, *Epigenetics*, 2021.
1. H. Santos, **A. Bhattacharya**, B. Nephew, C. Murgatroyd, X. Tan. *Oxytocin function and emotional regulation in Latina mothers.* Submitted, 2021.

Works in preparation

3. **A. Bhattacharya**, B. Neale, S. Lindström, P. Kraft, B. Pasaniuc. *Pan-cancer multi-tissue distal-eQTL-enriched transcriptome-wide association study reveals common pathways for risk of 17 cancers.* In preparation.
2. **A. Bhattacharya***, M. Kim*, C. Wen, B. Pasaniuc, M. Gandl. *Isoform-level transcriptome-wide associations of the fetal brain with neurodevelopment.* In preparation.
1. Y. Ding, **A. Bhattacharya***, K. Hou, B. Pasaniuc. *A powerful and flexible procedure to fine-map causal genetic variants in admixed populations.* In preparation.

Presentations

- **A. Bhattacharya**, A. Freedman, V. Avula, R. Harris, W. Liu, Y. Li, R. Joseph, L. Smeester, H. Hartwell, K. Kuban, T. O'Shea, C. Marsit, R. Fry, and H. Santos. *Distal mediator-enriched, placental transcriptome-wide analyses of 40 traits suggest genetic mechanisms supporting the Developmental Origins of Health and Disease hypothesis.*
 - Society for Epidemiologic Research, June 2021. Selected for oral presentation in So Much More Than GWAS: How Genetics Can Strengthen Causal Inference session.
 - UCLA QCBio Research Seminar Series, April 2021. Invited talk.

- *Singapore Institute for Clinical Sciences Lecture Series, August 2021*. Invited talk.
- *World Congress of Psychiatric Genetics, October 2021*. Selected for oral presentation in Genome-wide Approach session.
- *American Society for Human Genetics Annual Meeting, October 2021*. Platform talk in Mechanisms of Fetal CNS Development session.
- *US Developmental Origins of Health and Disease Society Annual Meeting, November 2021*. Junior investigator keynote in the Gene, Epigenetics, and Fetal Programming session.
- **A. Bhattacharya, A.M. Hamilton, M.A. Troester, M.I. Love.** *DeCompress: tissue compartment deconvolution for targeted RNA panels using compressed sensing*.
 - *International Conference on Computational Advances in Bio- and medical Sciences, December 2020*. Invited talk at Computational Advances for Next Generation Sequencing Workshop.
- **A. Bhattacharya, M.I. Love.** *Multi-Omic strategies for transcriptome-wide association studies and applications to the DOHaD hypothesis*.
 - *American Society for Human Genetics Annual Meeting, October 2020*. Selected for platform talk in Rare Variants and Complex Disease session.
- **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*

Service

- Referee and Reviewer Experience
 - Referee for *npj Breast Cancer*, *Communications Biology*, *American Journal of Human Genetics*, *Genetics*, *Frontiers in Genetics*, *G3*, *Human Genomics*
 - Abstract reviewer for the Society of Epidemiologic Research Annual Meetings
- Formal Mentorship
 - Mentor - Bruins-In-Genomics (B.I.G.) Summer Undergraduate Research Program 2021

Teaching Experience

BIOS 735, <i>Introduction to Data Science</i>	Spring 2019
BIOS 550, <i>Basic Elements of Probability and Statistical Inference</i>	Spring 2018
BIOS 673, <i>Probability and Statistics</i>	Spring 2017

Computing Skills

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