

# ARJUN BIDDANDA

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## RESEARCH INTERESTS

Statistical Genetics, Population Genomics, Ancient DNA, Reproductive Genetics

## PROFESSIONAL EXPERIENCE

Feb. 2023 - Postdoctoral Fellow · Department of Biology · Johns Hopkins University  
Advisor: Rajiv C. McCoy  
Nov. 2021 - Feb. 2023 Computational Scientist · Genomics & Data Science · 54gene  
Jan. 2021 - Nov. 2021 Postdoctoral Research Associate · Department of Statistics · University of Oxford  
Advisor: Pier Francesco Palamara

## EDUCATION

2015 - 2020 PhD · Human Genetics · University of Chicago  
Dissertation Title: *Investigating the spatio-temporal structure of human genetic diversity*  
Advisor: John Novembre  
2011 - 2015 BS.Eng · Computer Science (*Cum Laude*) · Cornell University  
Advisor: Alon Keinan

## PREPRINTS

\* - indicates equal contribution

**Arjun Biddanda\***, Esha Bandyopadhyay\*, Constanza de la Fuente Castro\*, David Witonsky, ..., Chinnappa Dilip Kodira, Anjaparavanda P. Naren, Mithun Sikdar, Niraj Rai, and Maanasa Raghavan. Integrating genetic and oral histories of Southwest Indian populations. *bioRxiv*, 2022.

## PEER-REVIEWED PUBLICATIONS

Esha Joshi, **Arjun Biddanda**, Jumi Popoola, Aminu Yakubu, Oluyemisi Osakewe, Delali Attipoe, 54gene Team, NCD-GHS Consortium, Estelle Dogbo, Babatunde Salako, Oyekanmi Nash, Omolola Salako, Olubukunola Oyedele, Golibe Eze-Echesi, Segun Fatumo, Abasi Ene-Obong, and Colm O'Dushlaine. Whole-genome sequencing across 449 samples spanning 47 ethnolinguistic groups provides insights into genetic diversity in Nigeria. *Cell Genomics*, 2023.

Brian C Zhang, **Arjun Biddanda**, Árni Freyr Gunnarson, Fergus Cooper, and Pier Francesco Palamara. Biobank-scale inference of ancestral recombination graphs enables genealogy-based mixed model association of complex traits. *Nature Genetics*, 2023.

Charles Washington III, Matthew Dapas, **Arjun Biddanda**, Kevin M Magnaye, ..., Christopher G McKennan, and Carole Ober. African-specific alleles modify risk for asthma at the 17q12-q21 locus in African Americans. *Genome Medicine*, 2022.

**Arjun Biddanda**, Matthias Steinrücken, and John Novembre. Properties of Two-Locus Genealogies and Linkage Disequilibrium in Temporal Samples. *Genetics*, 2022.

**Arjun Biddanda**, Daniel P. Rice, and John Novembre. Geographic patterns of human allele frequency variation: a variant-centric perspective. *eLife*, 2020.

Charleston W K Chiang, Joseph H Marcus, Carlo Sidore, **Arjun Biddanda**, Hussein Al-Asadi, Magdalena Zoledziewska, Maristella Pitzalis, Fabio Busonero, Andrea Maschio,

Giorgio Pistis, Maristella Steri, Andrea Angius, Kirk E Lohmueller, Goncalo R Abecasis, David Schlessinger, Francesco Cucca, and John Novembre. Genomic history of the Sardinian population. *Nature Genetics*, 2018.

Peter de Barros Damgaard, Rui Martiniano, Jack Kamm, J Víctor Moreno-Mayar, ..., **Arjun Biddanda**, ..., Martin Sikora, Alan K Outram, Richard Durbin, and Eske Willerslev. The first horse herders and the impact of early Bronze Age steppe expansions into Asia. *Science*, 2018.

Yedael Y Waldman\*, **Arjun Biddanda**\*, Natalie R Davidson, Paul Billing-Ross, Maya Dubrovsky, Christopher L Campbell, Carole Oddoux, Eitan Friedman, Gil Atzmon, Eran Halperin, Harry Ostrer, and Alon Keinan. The genetics of Bene Israel from India reveals both substantial Jewish and Indian ancestry. *PLoS One*, 11(3):e0152056, 2016.

Yedael Y Waldman, **Arjun Biddanda**, Maya Dubrovsky, Christopher L Campbell, Carole Oddoux, Eitan Friedman, Gil Atzmon, Eran Halperin, Harry Ostrer, and Alon Keinan. The genetic history of Cochin Jews from India. *Human Genetics*, pages 1–17, 2016.

Feng Gao\*, Diana Chang\*, **Arjun Biddanda**\*, Li Ma, Yingjie Guo, Zilu Zhou, and Alon Keinan. XWAS: a software toolset for genetic data analysis and association studies of the X chromosome. *Journal of Heredity*, 106(5):666–671, 2015.

## PRESENTATIONS

**Arjun Biddanda**, Yulin Zhang, Priya Moorjani, and Colm O’Dushlaine. *Recovering signatures of ghost admixture using ancestral recombination graphs*. American Society of Human Genetics (Poster), 2022.

**Arjun Biddanda**, Matthias Steinrücken, and John Novembre. *Properties of two-locus genealogies and linkage disequilibrium in temporally stratified samples*. Probabilistic Models in Genomics (Poster), 2021.

**Arjun Biddanda**, Daniel P Rice, and John Novembre. *Geographic patterns of human allele frequency variation: a variant-centric perspective*. UC Berkeley Population Genomics Reading Group (Invited Talk), 2021.

**Arjun Biddanda**, Matthias Steinrücken, and John Novembre. *Linkage Disequilibrium in Ancient DNA: Theory and Applications*. American Society of Human Genetics (Poster), 2019.

**Arjun Biddanda**, Matthias Steinrücken, and John Novembre. *Linkage Disequilibrium in Ancient DNA: Theory and Applications*. Midwest PopGen (Talk), 2019.

**Arjun Biddanda** and John Novembre. *Inference and visualization of the geographic distribution for variant sets*. American Society of Human Genetics (Poster), 2018.

## HONORS / AWARDS

2020	Presidential Membership <i>Genetics Society of America</i>
2019	Reviewer’s Choice Abstract <i>American Society of Human Genetics</i>
2017	Honorable Mention <i>NSF Graduate Research Fellowship</i>
2015-2018	NIH Genetics and Regulation Training Grant <i>University of Chicago</i>

## TEACHING EXPERIENCE

Winter 2019	Guest Lecturer, <i>University of Chicago</i> Computing Skills for Biologists
Winter 2018	Teaching Assistant, <i>University of Chicago</i> HG 486: Fundamentals of Computational Biology
Summer 2017	Course Assistant, <i>University of Chicago</i> Marine Biological Laboratory - Quantitative Approaches to Biology Bootcamp
Spring 2017	Teaching Assistant, <i>University of Chicago</i> HG 469: Human Variation and Disease

2016 - 2018	Tutor, <i>University of Chicago</i> Introduction to Statistics for Geneticists
2016 - present	Instructor, <i>Software Carpentry</i>
2013 - 2015	Teaching Assistant, <i>Cornell University</i> CS 3110 : Functional Programming and Data Structures

## ACADEMIC SERVICE

2022	ASHG Session Chair / Organizer <i>Demographic history, natural selection, and disease risk in diverse global biobanks</i>
2021 -	Genetics Peer-Review Training Program
Summer 2020	Co-Organizer <i>Genetics and Society Reading Group (Departmental Group)</i>
2019-2020	Novembre - He - Stephens (NHS) Meeting Coordinator <i>University of Chicago</i>
2019 -	<i>Ad Hoc</i> Peer Review <i>Genetics, eLife, Molecular Biology and Evolution, Genes, Scientific Reports, Frontiers in Genetics</i>

## MENTORSHIP

Summer 2023	Emma M. Smith ( <i>NSF REU Trainee</i> ) <i>Project: Genomic basis of dosage imbalance in human embryonic aneuploidy</i>
2022 -	Axel Zagal-Norman ( <i>UNAM Undergraduate Internship</i> ) <i>Project: Visualization of Linkage Disequilibrium across multiple populations</i>
2020 - 2021	Achyutha Menon ( <i>U. Chicago Undergraduate</i> ) <i>Project: Storage and visualization of multi-population Linkage Disequilibrium</i> Sponsored by a College Summer Research Fellowship

## COMPUTATIONAL SKILLS

Python, Bash, R, C++ , Java, OCaml  
 Git, L<sup>A</sup>T<sub>E</sub>X, Microsoft Office  
 \*nix, AWS, plink, bcftools, snakemake

## SOCIETY MEMBERSHIPS

2018 -	American Society of Human Genetics (ASHG)
2021 -	Genetics Society of America (GSA)
2021 -	Society for Molecular Biology and Evolution (SMBE)