



# Analabha Basu

Professor (NIBMG)

+91-9051044711  
+91-33-2589-2151  
✉ ab1@nibmg.ac.in  
📅 11<sup>th</sup> May 1974

## Research Interest

Population Genetics, Genetic Epidemiology, Admixture Mapping

## Summary

My research has two distinct components: theoretical method development and inferences from empirical evidence. My major focus has been population diversity and evolution with special emphasis on South and South-East Asia. My research interests include understanding complex genetic traits; ranging from skin pigmentation, possession of absolute pitch to cardiovascular diseases. My recent interests include evidence of archaic admixture in contemporary populations, application of Machine-learning in high-throughput sequencing data analysis and finding evidence of adaptation and selection in human populations.

## Current Appointments

### Professor

#### National Institute of Biomedical Genomics (NIBMG)

P.O.: Netaji Subhas Sanatorium  
Kalyani, West Bengal, India  
Pin: 741251

## Education

### Ph.D. in Statistics

1998 – 2003

### Indian Statistical Institute

Thesis: *Some Statistical Contributions to the Analysis of Human Genome Diversity and Evolution*

### Master of Statistics

1996 - 1998

### Indian Statistical Institute

*Applied Statistics and Data Analysis*

## Past Appointments

### Associate Professor

Apr, 2016 to Aug, 2023

National Institute of Biomedical Genomics (NIBMG), India

### Assistant Professor

Nov, 2012 to Apr, 2016

National Institute of Biomedical Genomics (NIBMG), India

### DBT-NIBMG Fellow

Sep, 2009 to Nov, 2012

National Institute of Biomedical Genomics (NIBMG), India

### Postdoctoral Employee

Jan, 2005 to Jul, 2009

University of California San Francisco (UCSF), California, USA

### Postdoctoral Scholar

Jun, 2004 to Jan, 2005

Stanford University, California, USA

## Awards & Honors

Fellow of the Indian Academy of Sciences, January 2023

Fellow of the West Bengal Association of Science and Technology, December 2016

Young Investigator Award at the 12<sup>th</sup> International Congress of Human Genetics/ 61<sup>st</sup> American Society of Human Genetics Meeting, Montreal 2011

## Fellowships & Memberships of Professional Societies

American Society of Human Genetics (ASHG)

Indian Society of Human Genetics (ISHG)

Calcutta Consortium of Human Genetics (CCHuGe)

## Academic service

Guest Editor for the Special Issue "*Biomedical Insights of Human Genetic Diversity in Complex Diseases*" of BioMed Research International, 2015

Assistant Editor Journal of Genetics, January 2012-2018

Associate Editor Journal of Genetics, January 2018- Present

Reviewer for Science, Nature Genetics, American Journal of Human Genetics, Genome Research, Circulation Cardiovascular Genetics, Human Molecular Genetics, Human Genetics, Journal of Theoretical Biology, Journal of Genetics

## Orations & Special Lectures (*Selected Few*)

April 2023: Genomic Analysis and Technology Conference (GATC-2023), Bengaluru, India

Title: "*Why do we need an Indian Genome Project?*" (*Invited lecture*)

**February 2023: 14<sup>th</sup> International Congress of Human Genetics (ICHG-2023), Cape Town, South Africa**

**Title: "*Connecting Population Genetics to Human Diseases: Special Reference to. Asia and the Indian Subcontinent*" (*invited keynote speaker*)**

January 2020: the Indo-US Workshop on Human Diversity and Health Diversity, CCMB, Hyderabad

Title: "*Connecting Population Genetics to Human Diseases: Our Experience with GenomeAsia 100K*" (*invited lecture*)

September 2019: 2019 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference, Mumbai, India

Title: "*Population diversity of Austroasiatic speakers: Complex substructure and intricate layered network of dispersal*" (*invited lecture*)

**April 2019: EMBO | EMBL Symposium: Reconstructing the Human Past - Using Ancient and Modern Genomics at EMBL Heidelberg, Germany**

**Title: "*Population diversity of Austroasiatic speakers: Complex substructure and intricate layered network of dispersal*" (*invited flash-talk*)**

October 2018: 2018 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference, Jaipur, India

Title: "*Reconstructing the ancestral footfall in South and Southeast Asia*" (*invited lecture*)

September 2018: Discussion Meeting "Human Diversity and Ancestry in India", JNCASR, Bangalore

Title: "*Reconstruction of ancestral footfalls in South and South East Asia using genomic data.*" (*Invited lecture, Discussion Leader – 'Genetics Modern DNA'*)

November 2017: Symposium in honour of Prasanta Chandra Mahalanobis's 125<sup>th</sup> anniversary", Indian Statistical Institute, Kolkata

Title: "*Mahalanobis  $D^2$  and Later Developments in Understanding Population Relationships & Structure*" (*invited lecture*)

September 2017: The Sydney Brenner Institute for Molecular Bioscience, University of Witwatersrand, Johannesburg, South Africa

Title: *"The Eastward Ho and other stories: How Africa and India are connected closer than you think"* (invited lecture)

June 2017: "Student Outreach Program-Excitement in Science", IISER-Mohali

Title: *"Genomic Reconstruction of our ancestral Footprints"* (invited lecture)

**March 2017: "GAL Workshop Human evolution in Eurasia elucidated through Genetics, Archeology, and Linguistics."**  
National Institute of Genetics, Mishima, Japan

Title: *"Genomic reconstruction of the history of extant populations of India reveals multiple ancestral components and a complex structure in South East Asia"* (invited lecture)

March 2017: 42<sup>nd</sup> Annual Meeting of Indian Society of Human Genetics (ISHG), Indian Institute of Science (IISc), Bangalore

Title: *"Should India have a Genome Project of its own?"* (Invited lecture)

February 2017: Genomic Analysis and Technology Conference (GATC), Mumbai, India

Title: *"Why do we need an Indian Genome Project?"* (Invited lecture)

February 2017: Fourth Foundation of Biology Meeting at Orange County, Coorg

Title: *"Genomic Reconstruction of our ancestral Footprints"* (invited lecture)

October 2016: 2016 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference, Cochin, India

Title: *"Necessity is the mother of sequencing: Looking beyond the 1000 Genomes in South-East Asia"* (invited lecture)

June 2016: Department of Statistics, Viswa-Vharati, Shantiniketan; Lecture Series "Recent Developments in Statistics", Shantiniketan, West Bengal

Title: *"Statistical Genetics: A Brief History in Time and Space"* (invited lecture)

October 2015: A History of Science Symposium on THE INDIAN HERITAGE: A GENOMIC VIEW, Hyderabad, India

Title: *"Peopling and Genomic Structure of Ethnic India."* (Invited lecture)

October 2015: 2015 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference, Hyderabad, India

Title: *"Extant ethnic populations of India: Genetic history of their ancestry, admixture and endogamy."* (Invited lecture)

December 2014: Indian Academy of Science Discussion Meeting, Orange Country, Coorg, India

Title: *"Infectious Diseases are NOT immune to GWAS"* (invited lecture)

November 2014: 2014 NextGen Genomics & Bioinformatics Technologies (NGBT) Conference, Bengaluru, India

Title: *"Population diversity and history of the Indian subcontinent"* (invited lecture)

**March 2014: Departament de Ciències Experimentals i de la Salut, Pompeu Fabra University, Barcelona.**

Title: *"Population diversity and history of the Indian subcontinent"* (invited lecture)

December 2012: GenoMeet 2012: A Decade of Genomics. IGIB-Delhi, India

Title: *"Recent admixture in an Indian population of African ancestry."* (Invited lecture)

**October 2011: 12<sup>th</sup> International Congress of Human Genetics/ 61<sup>st</sup> American Society of Human Genetics Meeting. Montreal, Canada.**

Title: *"Identification of an Indo-African population and its potential in admixture mapping."*

July 2011: International Conference on Mathematical Biology. Bangalore, India.

Title: *"Time to admixture and a tale of two ethnicities"* (invited lecture)

**May 2011: European Society of Human Genetics Meeting. Amsterdam, Netherlands.**

Title: *"Identification of an African-Indian population: prospects in disease gene mapping."*

December 2009: 14<sup>th</sup> All India Congress of Cytology and Genetics and Fogarty International Workshop. Kolkata, India.  
Title: “A tale of two ethnicities” (invited lecture)

February 2009: 1<sup>st</sup> Young Investigator’s Meeting. Estuary Island, Kerala, India.  
Title: “Population Genetics and Admixture Mapping in new world admixed populations”

## Current Projects

**Research Support:**  
**5190 Lakh INR in 3 Years**

GenomeIndia: Cataloguing the genetic Variation in Indians  
(Department of BioTechnology, Government of India)

**Research Support:**  
**190 Lakh INR in 3 Years**

Development of a fast, flexible, high performance computing framework to accelerate NGS omics-data analysis  
(National Supercomputing Mission (NSM) Platform for Genomics and Drug Discovery, Government of India)

**Research Support:**  
**121 Lakh INR in 3 Years**

Unbiased Profiling of Loci Relevant for Pharmacogenomics, Pharmacovigilance and Predisposition to Some Common Disorders in a Peri-Urban Population of West Bengal  
(Department of BioTechnology, Government of West Bengal)

## Past Major Projects

**ADVANCE** (Atherosclerotic Disease, VAscular function, and genetIc Epidemiology) is a multicenter (Stanford University, Kaiser Permanente, UCSF) Study aimed at providing better care for patients with atherosclerotic coronary heart disease through the application of modern genetic approaches. (<http://med.stanford.edu/advance/>)

**Family Blood Pressure Program** (FBPP) is a large multi-center genetic study of high blood pressure and related conditions in multiple ethnic groups. The program in turn consists of four multi-center Networks: GenNet, GENOA, HyperGEN and SAPPHIRE. (<http://www.biostat.wustl.edu/fbpb/FBPP.shtml>)

## Peer reviewed publication Summary

Editorial	<b>1</b>
Book Chapters	<b>6</b>
Research Papers, Reports (Peer Reviewed + Archived)	<b>65+2</b>
Cumulative Impact Factor	<b>400+</b>
Number of Citations	<b>3000+</b>
h-index	<b>28</b>
i-10 index	<b>42</b>

## List of Publications (Selected few)

\* Corresponding Author

Das S, Biswas N, **BASU A\*** (2023) Mapinsights: deep exploration of quality issues and error profiles in high-throughput sequence data. *Nucleic Acid Research* 51:14 e75 (**IF:19.16**)

Bhattacharyya C, Barman D, Tripathi D, Dutta S, Bhattacharya C, Alam M, Choudhury P, Devi U, Mahanta J, Rasaily R, **BASU A\***, Paine SK (2023) The influence of maternal Breast milk and Vaginal microbiome on Neonatal gut microbiome: A longitudinal study over the first year of birth. *Microbiology Spectrum* 11(3): e0496722 (**IF: 9.04**)

Tagore D, Majumder PP, Chatterjee A, **BASU A\*** (2022) Multiple migrations from East Asia led to linguistic transformation in Northeast India and mainland Southeast Asia. *Frontiers in genetics* (<https://doi.org/10.3389/fgene.2022.1023870>) (**IF: 4.772**)

- Paine SK, Rout U, Bhattacharyya C, Parai D, Alam M, Nanda R, Tripathi D, Choudhury P, Kundu C, Pati S, Bhattacharya D, **BASU A\*** (2022) Temporal Dynamics of Oropharyngeal Microbiome among SARS-CoV-2 patients reveals continued dysbiosis even after Viral Clearance. *NPJ Biofilms and Microbiomes* 67 (8) (IF: 7.55)
- Tagore D, Aghakhanian F, Naidu R, Phipps ME, **BASU A\*** (2021) Insights into the demographic history of Asia from common ancestry and admixture in the genomic landscape of present-day Austroasiatic speakers. *BMC Biology* 19(1):61 (IF: 7.37)
- Bhattacharyya C, Das C, Ghosh A, Singh AK, Mukherjee S, Majumder PP, **BASU A**, Biswas NK (2021) SARS-CoV-2 mutation 614G creates an elastase cleavage site enhancing its spread in high AAT-deficient regions. *Infection, Genetics and Evolution* 90, 104760 (IF: 4.39)
- Wall JD, Ratan A, Stawiski E, Kim HL, Kim C, Gupta R, Suryamohan K, GenomeAsia 100K Consortium (2020) Identification of African-Specific Admixture between Modern and Archaic Humans. *The American Journal of Human Genetics* 105 (6), 1254-1261 (IF: 12.6)
- GenomeAsia 100K Consortium (2020) The GenomeAsia 100K Project enables genetic discoveries across Asia. *Nature* 576, 106–111 (IF:69.5)
- Chakraborty S, Prasad G, Marwaha RK, **BASU A**, Tandon N, Bharadwaj D (2020) An Assessment of plasma adipocytokines and C-reactive protein levels in healthy school-going adolescents from private and government-funded schools of Delhi, India. *Indian Journal of Medical Research* 151 (1), 47-58 (IF:5.27)
- Prasad G, Bandesh K, Giri AK, Kauser Y, Chanda P, Parekatt V, Mathur S, Madhu SV, Venkatesh P, Bhansali A, Marwaha RK, **BASU A**, Tandon N, Bharadwaj D and INDICO (2019) Genome-Wide Association Study of Metabolic Syndrome Reveals Primary Genetic Variants at CETP Locus in Indians. *Biomolecules*, 9(8), 321; (This article belongs to the Special Issue: *Atherosclerosis and Related Diseases: Particular Focus on Molecular Biology*) (IF:6.064)
- Sengupta D, Choudhury A, **BASU A\***, Ramsay M (2016) Population stratification and underrepresentation of Indian subcontinent genetic diversity in the 1000 Genomes Project dataset. *Genome Biol Evol.* 8 (11): 3460-3470. (IF:4.065)
- BASU A\***, Sarkar-Roy N, Majumder PP (2016) Genomic reconstruction of the history of extant populations of India reveals five distinct ancestral components and a complex structure. *Proc Natl Acad Sci U S A.* Feb 9;113(6):1594-9. (IF:12.779)
- Esteban ME, **BASU A**, Calo CM, Moral P (2015) Biomedical Insights of Human Genetic Diversity in Complex Diseases. *BioMed Research International* Volume 2015 (2015) <http://dx.doi.org/10.1155/2015/974809>, Editorial (IF:3.246)
- Majumder PP, **BASU A** (2014) A Genomic view of peopling and population structure of India *Cold Spring Harb Perspect Biol.* pii: a008540. (IF:9.708)
- Giri AK, Khan NM, **BASU A**, Tandon N, Scaria V, Bharadwaj D.(2014) Pharmacogenetic landscape of clopidogrel in north Indians suggest distinct interpopulation differences in allele frequencies. *Pharmacogenomics* 15(5):643-53 (IF:3.245)
- India Project Team of the International Cancer Genome Consortium (2013) Mutational landscape of gingivo-buccal oral squamous cell carcinoma reveals new recurrently-mutated genes and molecular subgroups. *Nature Communications* 4:2873. doi: 10.1038/ncomms3873. (IF:17.694)
- Tabassum R, Chauhan G, Dwivedi OP, Mahajan A, Jaiswal A, Kaur I, Bandesh K, Chidambaram M, Sharma A, Chavali S, Sengupta S, Ramakrishnan L, Venkatesh P, Aggarwal SK, Ghosh S, Prabhakaran D, Srinath RK Saxena M, Banerjee M, Mathur S, Bhansali A, Shah VN, Madhu SV, Marwaha RK, **BASU A**, Scaria V, McCarthy MI, DIAGRAM, INDICO, Venkatesan R, Mohan V, Tandon N, Bharadwaj D (2013) Genome wide association study for type 2 diabetes in Indians identifies a new susceptibility locus at 2q21. *Diabetes* 62(3):977-86 (IF:7.72)
- Narang A, Jha P, Rawat V, Mukhopadhyay A, Dash D, **BASU A\***, Mukerji M (2011) Recent Admixture in an Indian Population of African Ancestry. *American Journal of Human Genetics* 89(1): 111 – 120. (IF:12.6)

Zakharia F, **BASU A**, Absher D, Assimes T, Fortmann S, Go A, Hlatky M, Iribarren C, Knowles J, Li J, Narasimhan B, Olshen R, Sidney S, Southwick A, Myers R, Quertermous T, Risch N, Tang H (2009) Characterizing the Admixed African Ancestry of African Americans. *Genome Biology* 10(12):R141. Epub 2009 Dec 22. **(IF:18.01)**

Risch N, Choudhry S, Via M, **BASU A**, Sebro R, Eng C, Beckman K, Thyne S, Chapela R, Rodriguez-Santana JR, Rodriguez-Cintron W, Avila PC, Ziv E, Gonzalez Burchard E (2009) Ancestry-related assortative mating in Latino populations. *Genome Biology* 10(11): R132. Epub 2009 Nov 20. **(IF:18.01)**

Theusch E, **BASU A**, Gitschier J (2009) Genome-wide study of families with absolute pitch reveals linkage to 8q24.21 and locus heterogeneity. *American Journal of Human Genetics* 85(1):112-19. **(IF:12.6)**

**BASU A\***, Tang H, Lewis CE, North K, Curb DJ, Quertermous T, Mosley TH, Boerwinkle E, Zhu X, Risch N (2009) Admixture Mapping of Quantitative Trait Loci for Blood Lipids in African Americans. *Human Molecular Genetics* 18(11):2091-98. **(IF:5.121)**

**BASU A**, Tang H, Arnett D, Gu CC, Mosley TH, Kardia S, Luke A, Tayo B, Cooper R, Zhu X, Risch N (2009) Admixture Mapping of Quantitative Trait Loci for BMI in African Americans: Evidence for Loci on Chromosomes 3q, 5q and 15q. *Obesity* 17(6): 1226-31. **(IF:9.298)**

**BASU A\***, Tang H, Zhu X, Gu CC, Hanis C, Boerwinkle E, Risch N (2008) Genome-wide distribution of ancestry in Mexican Americans. *Human Genetics* 124(3):207-214. **(IF:5.881)**

Assimes TL, Knowles JW, Priest JR, **BASU A**, Volcik KA, Southwick A, Tabor HK, Hartiala J, Allayee H, Grove ML, Tabibiazar R, Sidney S, Fortmann SP, Go A, Hlatky M, Iribarren C, Boerwinkle E, Myers R, Risch N, Quertermous T (2008) Common polymorphisms of ALOX5 and ALOX5AP and risk of coronary artery disease. *Human Genetics* 123(4):399-408. **(IF:5.881)**

Assimes TL, Knowles JW, Priest JR, **BASU A**, Borchert A, Volcik KA, Grove ML, Tabor HK, Southwick A, Tabibiazar R, Sidney S, Boerwinkle E, Go AS, Iribarren C, Hlatky MA, Fortmann SP, Myers RM, Kuhn H, Risch N, Quertermous T (2008) A near null variant of 12/15-LOX encoded by a novel SNP in ALOX15 and the risk of coronary artery disease. *Atherosclerosis* 198(1):136-44. **(IF:6.851)**

**BASU A**, Chaudhuri P, Majumder PP. (2005) Identification of polymorphic motifs using probabilistic search algorithms. *Genome Research* 15(1):67-77 **(IF:9.438)**

**BASU A**, Mukherjee N, Roy S, Sengupta S, Banerjee S, Chakraborty M, Dey B, Roy M, Roy B, Bhattacharyya NP, Roychoudhury S, Majumder PP (2003) Ethnic India: a genomic view, with special reference to peopling and structure. *Genome Research* 13(10):2277-90 **(IF:9.438)**

## Book Chapters

**BASU A**, Majumder PP (2021) Peopling and Population Structure of West and South Asia  
*Evolutionary Studies: Evolution of the Human Genome II*, 153-64, (Chapter 7)  
Editors: Naruya Saitou

**BASU A** (2015) Admixture in Human Populations.  
*Encyclopedia of Biostatistics(print) AND Wiley StatsRef-Statistics Reference Online*  
Editors: N. Balakrishnan, P. Brandimarte, T. Colton, B. Everitt, G. Molenberghs, W. Piegorsch, F. Ruggeri and J. Teugels

**BASU A** (2015) Admixture Mapping  
*Encyclopedia of Biostatistics(print) AND Wiley StatsRef-Statistics Reference Online*  
Editors: N. Balakrishnan, P. Brandimarte, T. Colton, B. Everitt, G. Molenberghs, W. Piegorsch, F. Ruggeri and J. Teugels

Majumder PP, **BASU A** (2014) A Genomic view of peopling and population structure of India  
*Cold Spring Harb Perspect Biol.*  
Editor: Aravinda Chakravarti



**BASU A, Majumder PP (2012) Genomic Diversity of Ethnic Populations of India.**  
*Biological Diversity: Origin, Evolution and Conservation, page 299-313*  
Editors: AK Sharma, D Ray, SN Ghosh

**BASU A, Majumder PP (2012) Population Genetics.**  
*Textbook of Biochemistry, Biotechnology, Allied & Molecular Medicine*  
Editors: G. P. Talwar, Seyed E. Hasnain, Shiv K. Sarin  
Prentice Hall of India

## References

### Neil Risch, PhD

Lamond Family Foundation  
Distinguished Professor in Human Genetics  
Professor of Epidemiology & Biostatistics  
Founder Director, Institute for Human Genetics  
University of California at San Francisco  
513 Parnassus Avenue, Suite S965  
San Francisco, CA 94143-0794

**Telephone:** +1-415-476-1127

**Email:** [rischn@humgen.ucsf.edu](mailto:rischn@humgen.ucsf.edu)

### Partha Pratim Majumder, PhD

National Science Chair (Scientific Excellence), Science & Engineering Board, Government of India  
Distinguished Professor, John C. Martin Centre for Liver Research & Innovations  
Emeritus Professor, Indian Statistical Institute, Kolkata  
Honorary Professor, Indian Institute of Science Education & Research, Mohali & Kolkata  
Adjunct Professor  
Translational Health Science and Technology Institute, and Regional Centre for Biotechnology

**E-mail:** [parmaj2023@gmail.com](mailto:parmaj2023@gmail.com)

### Vidyanand Nanjundiah, PhD

Retired Professor  
Indian Institute of Science, Bengaluru  
Honorary Professor  
Center for Human Genetics, Bengaluru

**Email:** [vidyan@alumni.iisc.ac.in](mailto:vidyan@alumni.iisc.ac.in)