

Parul Johri

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PROFESSIONAL EXPERIENCE

2023 onwards Assistant Professor, Department of Biology, Department of Genetics
University of North Carolina, Chapel Hill, NC

EDUCATION

2018 - 2022 **Postdoctoral Researcher**, Arizona State University, Tempe, AZ
Advisor: Jeffrey D. Jensen

2012 – 2018 **PhD**, Evolution, Ecology and Behavior Program
Major: Evolution; Minor: Bioinformatics
Indiana University, Bloomington, IN
Advisor: Michael Lynch

2009 – 2012 **Master's** in Biology (By research)
Tata Institute of Fundamental Research, Mumbai, India

2006 - 2009 **B.Sc. (Honours)** Mathematics
St. Stephen's College, Delhi University, Delhi, India

RESEARCH INTERESTS

Population genetics, Statistical inference, Molecular evolution.

PUBLICATIONS

1. **Parul Johri**[§], Ryan N. Gutenkunst, Kirk E. Lohmueller, Adam Eyre-Walker, Jeffrey D. Jensen[§]. 2022. On the prospect of achieving accurate joint estimation of selective effects together with population history. *Genome Biology and Evolution*. (Accepted pending minor revision)
2. **Parul Johri**, Charles F. Aquadro, Mark Beaumont, Brian Charlesworth, Laurent Excoffier, Adam Eyre-Walker, Peter D. Keightley, Michael Lynch, Gil McVean, Bret A. Payseur, Susanne P. Pfeifer, Wolfgang Stephan, Jeffrey D. Jensen[§]. 2022. Statistical inference in population genomics. *PLoS Biology*. (In press)
3. **Parul Johri**[§], Jean-Francois Gout, Thomas G. Doak, Michael Lynch. 2022. A population-genetic lens into the process of gene duplicate loss after whole-genome duplication. *Molecular Biology and Evolution*. (In press)
4. **Parul Johri**, Wolfgang Stephan, Jeffrey D. Jensen[§]. 2022. Soft selective sweeps: addressing new definitions, evaluating competing models, and interpreting empirical outliers. *PLOS Genetics*. 18(2): e1010022.

5. Ana Yansi Morales-Arce*, **Parul Johri***, Jeffrey D. Jensen[§]. 2022. Inferring the distribution of fitness effects in influenza A virus and human cytomegalovirus. *Heredity*. <https://doi.org/10.1038/s41437-021-00493-y>.
6. **Parul Johri***, Brian Charlesworth*, Emma K. Howell, Michael Lynch[§], Jeffrey D. Jensen[§]. 2021. Revisiting the notion of deleterious sweeps. *Genetics*. 219(3): iyab094. (Highlighted by *Genetics*)
7. **Parul Johri**[§], Kellen Riall, Hannes Becher, Laurent Excoffier, Brian Charlesworth, Jeffrey D. Jensen[§]. 2021. The impact of purifying and background selection on the inference of population history: problems and prospects. *Molecular Biology and Evolution*. 38(7): 2986-3003.
8. **Parul Johri**[§], Brian Charlesworth, Jeffrey D. Jensen[§]. 2020. Towards an evolutionarily appropriate null model: jointly inferring demography and purifying selection. *Genetics*. 215: 173-192. (Highlighted by *Genetics*)
9. **Parul Johri**^{*§}, Georgi K. Marinov^{*§}, Thomas G. Doak, Michael Lynch. 2019. Population genetics of *Paramecium* mitochondrial genomes: recombination, mutation spectrum, and efficacy of selection. *Genome Biology and Evolution*. 11(5): 1398–1416.
10. **Parul Johri**[§], Sascha Krennek, Georgi K. Marinov, Thomas, G. Doak, Thomas U. Berendonk, Michael Lynch. 2017. Population genomics of *Paramecium* species. *Molecular Biology and Evolution*. 34(5): 1194-1216.
11. Matthew S. Ackerman, **Parul Johri**, Ken Spitze, Sen Xu, Thomas G. Doak, Kimberly Young, Michael Lynch. 2017. Estimating seven coefficients of pairwise relatedness using population-genomic data. *Genetics*. 206:105-118.
12. Casey L. McGrath, Jean-Francois Gout, **Parul Johri**, Thomas G. Doak, Michael Lynch. 2014. Differential retention and divergent resolution of duplicate genes following whole-genome duplication. *Genome Research*. 24(10): 1665-75.

IN PREPARATION

13. Jean-Francois Gout, **Parul Johri**, Olivier Arnaiz, Thomas G. Doak, Simran Bhullar, Arnaud Couloux, Frédéric Guérin, Sophie Malinsky, Linda Sperling, Karine Labadie, Eric Meyer, Sandra Duharcourt, Michael Lynch. 2019. Universal trends of post-duplication evolution revealed by the genomes of 13 *Paramecium* species sharing an ancestral whole-genome duplication. *bioRxiv*. doi: <https://doi.org/10.1101/573576>.

*These authors contributed equally.

§ Corresponding authors.

PRESENTATIONS

INVITED

- 2022** – Aquatic seminar, Institute of Ecology and Evolution, University of Bern & Swiss Federal Aquatic Institute
- 2022** – Open Science Grid All-Hands Meeting, Wisconsin (Virtual)
- 2021** – EvoLunch seminar, Institute of Science and Technology, Vienna, Austria
- 2021** – Department of Biology, Carleton University, Ottawa, Ontario, Canada
- 2021** – EVOLTREE conference: Genomics and Adaptation in Forest Ecosystems (Keynote speaker), Birmensdorf, Switzerland
- 2021** – Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
- 2021** – International Laboratory for Human Genome Research, National Autonomous University of Mexico, Mexico
- 2020** – Department of Biology, University of North Carolina, Chapel Hill, NC
- 2020** – Center for Evolution and Medicine, Arizona State University, Tempe, AZ

CONTRIBUTED (SELECTED)

- 2021**- *Population Genetics Group*, Liverpool, England. Joint inference of demography and purifying selection.
- 2020**- *Arizona Population Genetics Conference*, Tempe, Arizona. Effects of fixation and segregation of deleterious mutations.
- 2019**- *Arizona Population Genetics Conference*, Tempe, Arizona. Joint estimation of demography and purifying selection.
- 2019** - *Annual meeting of the Society for the Study of Evolution (SSE)*, Providence, Rhode Island. Joint estimation of demography and purifying selection.
- 2019** - *Annual Meeting of the Society for Molecular Biology and Evolution (SMBE)*, Manchester, UK. Mechanistic basis of loss and preservation of whole-genome duplicates.
- 2018**- *Arizona Population Genetics Conference*, Tucson, Arizona. *Paramecium* population genomics: constraints on non-coding regions and whole-genome duplicates.
- 2017**- *Annual meeting of the Society for the Study of Evolution (SSE)*, Portland, Oregon. Evolution and population-genetics of mitochondrial genomes in *Paramecium* species.
- 2016**- *The Allied Genetics Conference (TAGC)*, Orlando, Florida. Population genomics of *Paramecium* species.
- 2016**- *Annual Meeting of the Society for Molecular Biology and Evolution (SMBE)*, Queensland, Australia. Population genomics of *Paramecium* species.
- 2015**- *Midwest Protozoology Meeting*, Peoria, Illinois. Genetic variation in *Paramecium*.

ACADEMIC AWARDS/SCHOLARSHIPS:

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| 2018-2020 | Early Career Reviewer at <i>Genetics</i> , Genetics Society of America |
| 2018, 2016 | Young Investigator Travel Award, Society for Molecular Biology and Evolution. |
| 2017 | College of Arts and Sciences Travel Award, Indiana University. |
| 2014 | Departmental Fellowship, Indiana University. |

- 2009-2012 Annual Departmental Fellowship, Tata Institute of Fundamental Research, India.
- 2008-2009 *Outstanding Student* in Mathematics, Department of Mathematics, St. Stephen's College, Delhi University, India.
- 2009 Summer Research Fellowship, Indian Academy of Sciences, Bangalore, India. [Awarded annually nationwide to 100 students (undergraduate and graduate) in Biology.]
- 2008 Summer Research Fellowship, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India. [Awarded annually nationwide to 30 students (undergraduate and graduate) in Biology.]

PROFESSIONAL SERVICE

ORGANIZATION

2021- Co-organizer (with Jeffrey D. Jensen) of the symposium entitled "The effects of selection at linked sites and population history on levels and patterns of genomic variation" in the annual meeting of the *Society of Molecular Biology and Evolution*.

REVIEWER FOR

Genetics | *PLOS Biology* | *Nature Ecology & Evolution* | *G3: Genes, Genomes, Genetics* | *Genome Biology and Evolution* | *Bioinformatics* | *Molecular Ecology* | *Evolution* | *Ecology and Evolution* | *Journal of Molecular Evolution* | *BMC Genomics* |

MEMBERSHIP IN SCIENTIFIC SOCIETIES

Society for Molecular Biology and Evolution (SMBE), 2012 – Present

Genetics Society of America (GSA), 2014 – Present

Society for the Study of Evolution (SSE), 2016 – Present

TEACHING AND MENTORING

UNDERGRADUATES SUPERVISED

Kellen Riall, August 2019 – June 2021 [Current position: PhD student at the University of Chicago]

Emma Howell, Spring 2019 – Summer 2020 [Current position: PhD student at the University of Wisconsin-Madison]

UNDERGRADUATE THESIS COMMITTEE MEMBER

Ravneet K Johal, April 2021 – March 2022, Susanne Pfeifer's Lab [Thesis: Comparing current and historical estimates of recombination rates in Gorillas]

CLASSROOM TEACHING

- Spring 2015 Head teaching assistant, **Evolution** (L318), Department of Biology, Indiana University.
- Spring 2013 Head teaching assistant, **Biology Laboratory** (L113), Department of Biology, Indiana University.
- Fall 2012 Associate teaching assistant, **Biology Laboratory** (L113), Department of Biology, Indiana University.

OTHER RESEARCH EXPERIENCES

- Junior Research Scholar
2010-2012 **Deflagellation in *Chlamydomonas reinhardtii*- the underlying signalling mechanisms.** Advisor: Prof. B. J. Rao, Tata Institute of Fundamental Research, Mumbai, India.
- Junior Research Scholar
2009 - 2010 **Predicting multiple origins of replication in bird mitochondrial genomes using Monte Carlo Markov models.** Advisor: Prof. B. J. Rao, Tata Institute of Fundamental Research, Mumbai; Co-advisor: Dr. Neeraja Krishnan, Indian Institute of Science, Bangalore, India.
- Summer Research Fellow
May-July, 2008 **Mathematical modelling of the neuronal networks in the saccadic eye system.** Advisor: Dr. Aditya Murthy, National Brain Research Centre, Gurgaon, India.
- Summer Research Fellow
May-July, 2007 **Culture of human endothelial cells in microfluidic channels.** Advisor: Dr. Kaustubh Rao, National Centre for Biological Sciences, Bangalore, India.