

# Parul Johri

School of Life Sciences

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## EDUCATION

- 2018 - Present      **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**, 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. Statistical inference in population genomics. 2022. *bioRxiv*. doi: <https://doi.org/10.1101/2021.10.27.466171>. (*In review at PLOS Biology*)
2. **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. (*Invited Review, Genome Biology and Evolution; in revision*)
3. **Parul Johri**<sup>§</sup>, Jean-Francois Gout, Thomas G. Doak, Michael Lynch. 2022. A population-genetic lens into the process of gene duplicate loss after whole-genome duplication. (*In review at Molecular Biology and Evolution*)
4. **Parul Johri**, Wolfgang Stephan, Jeffrey D. Jensen<sup>§</sup>. 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<sup>§</sup>. 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<sup>§</sup>, Jeffrey D. Jensen<sup>§</sup>. 2021. Revisiting the notion of deleterious sweeps. *Genetics*. 219(3): iyab094. (Highlighted by *Genetics*)
7. **Parul Johri**<sup>§</sup>, Kellen Riall, Hannes Becher, Laurent Excoffier, Brian Charlesworth, Jeffrey D. Jensen<sup>§</sup>. 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**<sup>§</sup>, Brian Charlesworth, Jeffrey D. Jensen<sup>§</sup>. 2020. Towards an evolutionarily appropriate null model: jointly inferring demography and purifying selection. *Genetics*. 215: 173-192. (Highlighted by *Genetics*)
9. **Parul Johri**<sup>\*§</sup>, Georgi K. Marinov<sup>\*§</sup>, 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**<sup>§</sup>, 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.
- 2019, 2017**- *Evolution Research Symposium*, Arizona State University, Tempe, Arizona.
- 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:**

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	<i>Outstanding Student</i> 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]

### *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    **Deflagellation in *Chlamydomonas reinhardtii*- the underlying signalling mechanisms.** Advisor: Prof. B. J. Rao, Tata Institute of Fundamental Research, Mumbai, India.

Junior Research Scholar    **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    **Mathematical modelling of the neuronal networks in the saccadic eye system.** Advisor: Dr. Aditya Murthy, National Brain Research Centre, Gurgaon, India.

Summer Research Fellow    **Culture of human endothelial cells in microfluidic channels.** Advisor: Dr. Kaustubh Rao, National Centre for Biological Sciences, Bangalore, India.