

Parul Johri

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PROFESSIONAL EXPERIENCE

- 2023 - present **Assistant Professor**, Department of Biology, Department of Genetics
University of North Carolina, Chapel Hill, NC
- 2018 - 2022 **Postdoctoral Researcher**, Arizona State University, Tempe, AZ
Advisor: Jeffrey D. Jensen

EDUCATION

- 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, Evolutionary genomics.

PUBLICATIONS

PEER REVIEWED

1. **Parul Johri**[§], Susanne P. Pfeifer, Jeffrey D. Jensen[§]. Developing an evolutionary baseline model for humans: jointly inferring purifying selection with population history. 2023. *Molecular Biology and Evolution*. (In press)
2. Abigail A. Howell, John Terbot, Vivak Soni, **Parul Johri**, Jeffrey D. Jensen, Susanne P. Pfeifer. 2023. Developing an appropriate evolutionary baseline model for the study of human cytomegalovirus. *Genome Biology and Evolution* 15(4): evad059.
3. John Terbot, **Parul Johri**, Schuyler Liphardt, Vivak Soni, Susanne P. Pfeifer, Brandon S. Cooper, Jeffrey M. Good, and Jeffrey D. Jensen. 2023. Developing an appropriate evolutionary baseline model for the study of SARS-CoV-2 patient samples. *PLOS Pathogens* 19(4): e1011265.
4. **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*. 14(7): evac088.

5. **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. Recommendations to improve statistical inference in population genomics. *PLoS Biology*. 20(5): e3001669.
6. **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*. 39(6): msac118.
7. **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.
8. Ana Yansi Morales-Arce*, **Parul Johri***, Jeffrey D. Jensen[§]. 2022. Inferring the distribution of fitness effects in influenza A virus and human cytomegalovirus. *Heredity*. 128, 79–87.
9. **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)
10. **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.
11. **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)
12. **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.
13. **Parul Johri**[§], Sascha Krenek, 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.
14. 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.
15. 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.

PREPRINTS/ SUBMITTED

16. Vivak Soni, **Parul Johri**, Jeffrey D. Jensen. Evaluating power to detect recurrent selective sweeps under increasingly realistic evolutionary null models. (In review)

17. Jean-Francois Gout, Yue Hao, **Parul Johri**, Olivier Arnaiz, Thomas G. Doak, Simran Bhullar, Arnaud Couloux, Frédéric Guérin, Sophie Malinsky, Alexey Potekhin, Natalia Sawka, Linda Sperling, Karine Labadie, Eric Meyer, Sandra Duharcourt, Michael Lynch. 2019. Dynamics of gene loss following ancient whole-genome duplication in the cryptic *Paramecium* complex. *bioRxiv*. doi: <https://doi.org/10.1101/573576>. (In revision at *Molecular Biology and Evolution*)
18. Hongan Long, **Parul Johri**, Jean-Francois Gout, Jiahao Ni, Yue Hao, Timothy Licknack, Yaohai Wang, Jiao Pan, Berenice Jiménez-Marín, Michael Lynch. *Paramecium* Genetics, Genomics, and Evolution. *Annual Review of Genetics*. (submitted)

*These authors contributed equally.

§ Corresponding authors.

PRESENTATIONS

INVITED TALKS

- 2023** – Biological evolution across scales: mathematical modelling and statistical inference, Bernoulli Center, EPFL.
- 2023** – PopSim satellite meeting, Cold Spring Harbor Laboratory, NY
- 2023** – Departmental seminar, Institute of Ecology and Evolution, University of Oregon, OR
- 2022** – Goldberg lab, Department of Evolutionary Anthropology, Duke University, NC
- 2022** – Department of Genetics and Biochemistry, Clemson University, SC
- 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 TALKS

- 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:

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 | *Genome Biology and Evolution* | *Molecular Biology and Evolution* | *Molecular Ecology* | *Evolution* | *G3: Genes, Genomes, Genetics* | *eLife* | *Journal of Theoretical Biology* | *PLOS Biology* | *Nature Ecology & Evolution* | *PLOS Genetics* | *Bioinformatics* | *Ecology and Evolution* | *Journal of Molecular Evolution* | *BMC Genomics* | *Scientific reports* | *Methods in Ecology and Evolution* |

GUEST EDITOR FOR
PLOS Genetics

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

POSTDOCTORAL RESEARCHERS

May 2023 - present Jacob I. Marsh [Current position: PhD student at the University of Western Australia, Perth]

July 2023 - present Sachin Kaushik [Current position: Postdoc at Cornell University, Ithaca]

GRADUATE STUDENTS

Apr 2023 - present Austin Daigle

ROTATION STUDENTS

Jan 30 – Apr 7, 2023 Austin Daigle

UNDERGRADUATES SUPERVISED

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

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

UNDERGRADUATE THESIS COMMITTEE MEMBER

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

MENTORSHIP TRAINING

Apr-May, 2023 Mentoring Workshop for Biomedical Researchers, Office of Graduate Education, UNC

CLASSROOM TEACHING

- Fall 2023 **Evolutionary genetics** (BIOL 454-002), Department of Biology, University of North Carolina, Chapel Hill.
- 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.
2010-2012
- 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.
2009 - 2010
- Summer Research Fellow **Mathematical modelling of the neuronal networks in the saccadic eye system.** Advisor: Dr. Aditya Murthy, National Brain Research Centre, Gurgaon, India.
May-July, 2008
- Summer Research Fellow **Culture of human endothelial cells in microfluidic channels.** Advisor: Dr. Kaustubh Rao, National Centre for Biological Sciences, Bangalore, India.
May-July, 2007