

Parul Johri

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(Last updated: March 16, 2026)

PROFESSIONAL EXPERIENCE

- January 2023 - present **Assistant Professor, Tenure-Track**, Department of Biology, Department of Genetics, Integrative Program for Biological and Genome Sciences, 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, University of Delhi, New Delhi, India
Awarded *Outstanding Student* in Mathematics

RESEARCH INTERESTS

Population genetics, Statistical inference, Evolutionary genomics.

PUBLICATIONS

PEER REVIEWED

1. [Jacob I Marsh](#)[§], [Sachin Kaushik](#), and [Parul Johri](#)[§]. 2026. Effects of rescaling forward-in-time population genetic simulations. *Genetics* 232(2):iyaf263.
2. [Parul Johri](#)[§] and [Brian Charlesworth](#)[§]. 2025. A gene-based model of fitness and its implications for genetic variation: Genetic and inbreeding loads. *Genetics* 231(3):iyaf169.
3. [Parul Johri](#)[§] and [Brian Charlesworth](#)[§]. 2025. A gene-based model of fitness and its implications for genetic variation: Linkage disequilibrium. *Genetics* 231(3):iyaf168.
4. [Sachin Kaushik](#)^{*,§}, [Kavita Jain](#)^{*}, and [Parul Johri](#)[§]. 2025. Neutral genetic diversity during selective sweeps in non-recombining populations. *Genetics* 231(3):iyaf142.
5. [Austin T. Daigle](#) and [Parul Johri](#)[§]. 2024. Limitations of the inference of the distribution of fitness

effects of new mutations in partially selfing populations with linkage. *Evolution* 79(3):342-363.

6. **Jacob I. Marsh**[§] and **Parul Johri**[§]. 2024. Biases in ARG-based inference of historical population size in populations experiencing selection. *Molecular Biology and Evolution* 41(7):msae118.
7. Hongan Long, **Parul Johri**, Jean-Francois Gout, Jiahao Ni, Yue Hao, Timothy Licknack, Yaohai Wang, Jiao Pan, Berenice Jiménez-Marín, Michael Lynch. 2023. *Paramecium* Genetics, Genomics, and Evolution. *Annual Review of Genetics* 57:391-410.
8. **Parul Johri**[§], Susanne P. Pfeifer, Jeffrey D. Jensen[§]. 2023. Developing an evolutionary baseline model for humans: jointly inferring purifying selection with population history. *Molecular Biology and Evolution* 40(5): msad100.
9. Vivak Soni, **Parul Johri**, Jeffrey D. Jensen. 2023. Evaluating power to detect recurrent selective sweeps under increasingly realistic evolutionary null models. *Evolution* qpad120. (Editor's Choice at *Evolution*)
10. 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. 2023. Dynamics of gene loss following ancient whole-genome duplication in the cryptic *Paramecium* complex. *Molecular Biology and Evolution* 40(5): msad107.
11. 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.
12. 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.
13. **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.
14. **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.
15. **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.
16. **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.
17. 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.
18. **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*)

19. **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.
20. **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*)
21. **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.
22. **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.
23. 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.
24. 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

1. **Parul Johri**[§], Fanny Pouyet, and Brian Charlesworth. 2026. The rights and wrongs of rescaling in population genetics simulations. [arXiv:2601.05367](https://arxiv.org/abs/2601.05367) [qbio.PE]. <https://doi.org/10.48550/arXiv.2601.05367> (in revision)
2. Cobi M Henry, Jacob I Marsh, Austin Daigle, James Cresenczi, Jessica T Lin, Jeffrey A Bailey, and **Parul Johri**[§]. 2025. Towards an evolutionary baseline model of *Plasmodium falciparum* for population genomic inference. *bioRxiv* doi: <https://doi.org/10.64898/2025.12.20.695730> (in revision)
3. Isabela Gerdes Gyuricza, Abebe A Fola, Alfred Simkin, Kyaw L Thwai, Jonathan J Juliano, Jeffrey A Bailey, **Parul Johri**, Cobi M Henry, Luis Cabrera-Sosa, Gerardo Porras-Laymito, Qin Cheng, Oliver John Watson, Dionicia Gamboa, Hugo O Valdivia, and Jonathan B Parr. 2026. Malaria control and the unexpected spread of diagnostic-resistant *Plasmodium falciparum* in Peru. *bioRxiv*. doi: <https://doi.org/10.64898/2026.02.25.707493> (submitted)
4. Austin T. Daigle[§], Jacob I. Marsh, Andrew Kay, and **Parul Johri**[§]. 2026. The distribution of fitness effects of new mutations in regulatory regions of the *D. melanogaster* genome. *bioRxiv*. doi: <https://doi.org/10.64898/2026.03.01.708907> (submitted)
5. Jacob I. Marsh, Austin T. Daigle, and **Parul Johri**[§]. 2026. The B-value calculator: expected diversity under background selection. *bioRxiv*. doi: <https://doi.org/10.64898/2026.03.04.709642> (submitted)

*These authors contributed equally.

§ Corresponding authors.

Members of the lab are underlined.

FUNDING

CURRENT

		Direct Costs
2024-2029	NIH NIGMS R35 154969 (PI) <i>Jointly modeling the effects of evolutionary processes on genomic variation</i>	\$1.25M
2025-2026	CAS Seed Funding, UNC, Chapel Hill (PI) <i>Developing an evolutionary baseline model of genetic variation in malaria parasites</i>	\$20K
2026-2027	Junior Faculty Development Award, UNC, Chapel Hill (PI)	\$10K

PRESENTATIONS

INVITED TALKS

- 2026 – Biodiversity Research Seminar, University of British Columbia, Vancouver, Canada
- 2026 – Computational Biology and Bioinformatics Seminar Series, Duke University, NC
- 2025 – Ecology, Evolution, and Behavior Seminar Series, Department of Biological Sciences, Virginia Tech, VA
- 2025 – Larry Mays Seminar, Bioinformatics and Genomics Department, UNC Charlotte, NC
- 2024 – Genetics and Genomics Seminar Series, North Carolina State University, NC
- 2024 – Center for Computational Biology and Bioinformatics, The Pennsylvania State University, PA
- 2024 – Ecology and Evolution Seminar, Division of Biological Sciences, University of Montana, MT
- 2023 – Department of Biology, Tata Institute of Fundamental Research, Mumbai, India
- 2023 – Biological evolution across scales: mathematical modelling and statistical inference, Bernoulli Center, EPFL, Lausanne, Switzerland
- 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

- 2025- *Probabilistic Modeling in Genomics*, Cold Spring Harbor Laboratory, New York, United States.
- 2023- *Annual meeting of the Society for Molecular Biology and Evolution (SMBE)*, Ferrara, Italy.
- 2021- *Population Genetics Group*, Liverpool, England.
- 2020- *Arizona Population Genetics Conference*, Tempe, Arizona, United States.

- 2019- *Arizona Population Genetics Conference*, Tempe, Arizona, United States.
 2019 - *Annual meeting of the Society for the Study of Evolution (SSE)*, Providence, Rhode Island, United States.
 2019 - *Annual Meeting of the Society for Molecular Biology and Evolution (SMBE)*, Manchester, UK.
 2018- *Arizona Population Genetics Conference*, Tucson, Arizona, United States.
 2017- *Annual meeting of the Society for the Study of Evolution (SSE)*, Portland, Oregon, United States.
 2016- *The Allied Genetics Conference (TAGC)*, Orlando, Florida, United States.
 2016- *Annual Meeting of the Society for Molecular Biology and Evolution (SMBE)*, Queensland, Australia.
 2015- *Midwest Protozoology Meeting*, Peoria, Illinois, United States.

ACADEMIC AWARDS/SCHOLARSHIPS:

- 2024 Early Career Excellence Award, Society for Molecular Biology and Evolution.
 2023 UNC-Chapel Hill Nominee for the Searle Scholars Program
 2018-2020 Early Career Reviewer at *Genetics*, 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.
 2009-2012 Annual Departmental Fellowship, Tata Institute of Fundamental Research, India.
Thesis: Deflagellation in Chlamydomonas reinhardtii- the underlying signalling mechanisms.
Advisor: Prof. B. J. Rao, Tata Institute of Fundamental Research, Mumbai, 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.]
Project: Mathematical modelling of the neuronal networks in the saccadic eye system.
Advisor: Dr. Aditya Murthy, National Brain Research Centre, Gurgaon, India.
- 2007 Summer Research Fellowship, National Centre for Biological Sciences, Bangalore, India.
Project: Culture of human endothelial cells in microfluidic channels.
Advisor: Dr. Kaustubh Rao

PROFESSIONAL SERVICE

ORGANIZATION

2023-Present – Co-organizer and co-creator (with Maria Servidio) of the monthly seminar series entitled “The Theoretical Ecology and Evolution Group” at the University of North Carolina, Chapel Hill.

2023 – Co-organizer (with Kavita Jain) of the symposium entitled “Genomic diversity in nonequilibrium populations” at the 3rd *AsiaEvo Conference*, Singapore.

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 SCIENTIFIC JOURNALS

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

EDITORIAL WORK

2025-2028 - Associate Editor, *Evolution*

2024-2025 - Invited Guest Editor, *PLOS Genetics*

REVIEWER FOR FUNDING AGENCIES

National Science Foundation (CAREER), *Ad hoc reviewer*

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

DEPARTMENTAL SERVICE

2025 Talk, Biology Journal Club, UNC, Chapel Hill

2024-2025 Member of the Biological and Biomedical Sciences Program (BBSP) Admissions Committee, UNC, Chapel Hill

2024-2027 Member of the Chair's Advisory Committee (Department of Biology, UNC, Chapel Hill)

2024 Committee to interview the Business Manager, Department of Biology

Panelist for De-Mystifying Biology Research, Office of Undergraduate Research, Department of Biology

Interviewed prospective graduate students (4) to the Department of Biology

Interviewed prospective graduate students (5) for the Biological and Biomedical Sciences Program (BBSP)

2023 Recruitment dinner (2), Biological and Biomedical Sciences Program (BBSP)

MENTORING

POSTDOCTORAL RESEARCHERS

Feb 2026 - present Kendra Zwonitzer, SPIRE Postdoctoral Fellow, UNC

Nov 2024 - present Solomon Sloat

May 2023 – Nov 2025 Jacob I. Marsh (Current position: Senior Research Officer in the Global Disease Modelling Team at The Kids Research Institute Australia, Perth, Australia)

July 2023 – Sep 2024 Sachin Kaushik (Current position: Senior Data Scientist at Broadridge Financial Solutions, Bangalore, India)

GRADUATE STUDENTS

Apr 2023 - present Austin Daigle (co-advised by Daniel Schrider)

Awarded T32 training grant fellowship 2023-2024, Bioinformatics and Computational Biology Curriculum, UNC

July 2024 - present Ronald Futila Kyong-shin (co-advised by Jonathan Parr)

ROTATION STUDENTS

Feb – Apr, 2024 Gabriela Almeida

Jan – Apr, 2023 Austin Daigle

POSTBACCALAUREATES

Parul Johri | CV

Nov 2024 – present James Crescenzi [Major: Mathematics and Political Science, UNC, Chapel Hill]
Nov 2023 – present Cobi Henry [Major: Quantitative Biology, UNC, Chapel Hill; *Thesis title: Forward-in-time simulations of within-host P. falciparum populations*]

UNDERGRADUATES SUPERVISED

Spring 2026 Aditya Raghava Lakamsani [Major: Computer Science, UNC, Chapel Hill]
Fall 2025 Jannah Said [Major: Quantitative Biology, UNC, Chapel Hill]
Jan 2024 – May 2024 Andrew Kay [Major: Biology, UNC, Chapel Hill; *Thesis title: Distribution of fitness effects of new mutations in regulatory regions of D. melanogaster*]
Aug 2019 – June 2021 Kellen Riall, Arizona State University [Current position: PhD student at the University of Chicago]
Spring 2019 – Summer 2020 Emma Howell, Arizona State University [Current position: PhD student at the University of Wisconsin-Madison]

PHD COMMITTEES

2026 - present Erick Figueroa (Paul Magwene's Lab, Duke University)
2025 - present Gabriela Almeida (Dan Schrider's Lab, UNC)
2024 - 2025 Isabel Madeleine Ott (Daniel Matute's Lab, UNC)
2023 - present Isabela Gerdes Gyuricza (Jonathan Parr's Lab, UNC)
2023 - present Anuraag Mukherjee (Maria Servidio's Lab, UNC)

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

Spring 2024 Team Advance Faculty Mentor Training, Center for Faculty and Excellence, UNC
Nov 2023 Workshop on Cultivating Mentors (*session: Lab Culture and Expectations*)
Apr-May, 2023 Mentoring Workshop for Biomedical Researchers, Office of Graduate Education, UNC

TEACHING

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Fall 2025 Instructor, Evolutionary Genetics (BIOL 454-001), Department of Biology, University of North Carolina, Chapel Hill. (30 students enrolled)
Fall 2024 Instructor, Evolutionary Genetics (BIOL 454-001), Department of Biology, University of North Carolina, Chapel Hill. (37 students enrolled)
Fall 2023 Instructor, Evolutionary Genetics (BIOL 454-002), Department of Biology, University of North Carolina, Chapel Hill. (34 students enrolled)

PREVIOUS EXPERIENCE

Spring 2015 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.