Saswat Kumar Mohanty, M.S.

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Education

The Pennsylvania State University, USA
Ph.D. (Doctor of Philosophy) candidate — August 2022 – current
Minor: Bioinformatics and Genomics — CGPA: 3.95/4.0

Indian Institute of Science Education and Research (IISER), Kolkata
BS-MS Dual degree in Biological sciences — July 2017 – May 2022
Pre-majors: Physics & Chemistry — CGPA: 3.86/4.0
Thesis: Investigating Drug-mediated Conformational Changes in *KRAS*

Research interest

Comparative and evolutionary genomics of non-canonical DNA structures—with a focus on G-quadruplexes (G4s), across great apes and the human pangenome—leveraging bioinformatics and statistical methodologies for genome-wide analysis and interpretation.

First-author publications

1. **Mohanty, S. K.**, Chiaromonte F., & Makova, K. D.* (2025). Evolutionary dynamics of predicted G-quadruplexes in human and other great apes.
   Genome Biology, Vol. 26(161), DOI: 10.1186/s13059-025-03635-1 **2024 IF: 9.4**

Co-author publications

2. Zhang, X., **Mohanty, S. K.**, Chiaromonte F., & Makova, K. D.* (2025). Substitution spectrum and selection at G-quadruplexes in great ape telomere-to-telomere genomes.
   bioRχiv, DOI: 10.1101/2025.08.24.671323
3. Yoo, D., Rhie, A., Hebbar, P., Antonacci, F., Logsdon, G., Solar, S. J., ... **Mohanty, S. K.**, ... & Eichler, E. E.* (2025). Complete sequencing of ape genomes.
   Nature, Vol. 641 (8062), DOI: 10.1038/s41586-025-08816-3
4. Mohanty, A., Nam, A., Srivastava, S., Jones, J., Lomenick, B., Singhal, S., ... **Mohanty, S. K.**, ... & Salgia, R.* (2023). Acquired resistance to KRAS G12C small-molecule inhibitors via genetic/nongenetic mechanisms in lung cancer.
   Science Advances, Vol. 9(41), DOI: 10.1126/sciadv.ade3816
5. Sangeet, S., Sarkar, R., **Mohanty, S. K.**, & Roy, S.* (2022). Quantifying Mutational Response to Track the Evolution of SARS-CoV-2 Spike Variants: Introducing a Statistical-Mechanics-Guided Machine Learning Method.
   The Journal of Physical Chemistry B, Vol. 126(40), DOI: 10.1021/acs.jpcb.2c04574

Consortia publications

6. Mastoras, M. *et al.* (2025). Highly accurate assembly polishing with DeepPolisher.
   Genome Research, Vol. 35(7), DOI: 10.1101/gr.280149.124

Awards and achievements

2025
- Awarded the **J. Ben and Helen D. Hill Memorial Fund Award** by the Department of Biology
- Awarded the **Spring 2025 Penn State Graduate Student International Travel Grant**
- Awarded the **EXPLORE#7 international mobility support**, I-SITE Excellence Program (P.E.I) of the University of Montpellier, France

2022
- Received the **Braddock Scholarship Award**, Penn State University
- Ranked under Category–I in Biotechnology Eligibility Test (**DBT-BET**)

2021
- Ranked–29 nationally in Graduate Aptitude Test in Engineering (**GATE**), **Life Sciences**
- Ranked–254 globally in **Bioinformatics Contest** (**Stepik**) organised by Bioinformatics Institute, ITMO University, and Rosalind

2019
- Received the **Summer Research Fellowship***, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India

*Awarded annually to 30 undergraduate & graduate students in Biology, nationwide.

Conferences and workshops

2025
- Attended the **HPRC Annual Meeting** at the University of Tennessee, US
- Presented poster at the **Journées Ouvertes en Biologie, Informatique et Mathématique (JOBIM)** conference at the ENSEIRB-MATMECA, Bordeaux, France
- Attended the **Congrès National sur les Elements Transposables (CNET)** at the University of Bordeaux, France
- Presented poster at the **G4thering** conference at Minneapolis, Minnesota, US
- Selected to the **MemPanG25** workshop-cum-conference at the University of Tennessee, US

2024
- Attended the **Telomere-to-Telomere Face-to-Face (T2T-F2F)** conference at the University of California Santa Cruz (UCSC), California, US
- Presented poster at the **Annual Meeting for the Society for Molecular Biology and Evolution (SMBE)** conference at Puerto Vallarta, Mexico

2023
- Completed the **Tartu Winter school on Evolution, Genomics and Medicine** organized by cGEM group at the Institute of Genomics, University of Tartu, Estonia
- Attended the **Fundamentals of Deep Learning** workshop hosted by NVIDIA, at Penn State University

Other research experience

Conducted research as an EXPLORE#7 fellow in **Prof. Anna-Sophie Fiston-Lavier**'s laboratory at the University of Montpellier, France, investigating the population dynamics of G-quadruplexes (G4s) within transposable elements across the human pangenome.

Relevant courses

Genomics, Applied Bioinformatics, Molecular Evolution, Population Genetics, Statistical Genomics, Data-Driven Life Sciences, Data Mining, Applied Statistics, Bioinformatics, Evolutionary Biology, Mathematical Biology, Biostatistics

Technical skills

Programming Languages: Python, Bash, R; **Workflow manager**: Snakemake; **Version Control**: Git/GitHub; **Computing Environments**: MATLAB, OriginPro; **Molecular Visualization Tools**: PyMol, VMD, UCSF Chimera

Teaching & outreach experiences

2025
- Designed and taught a **Genomics and Bioinformatics** course as part of the Short Summer Courses organized by the IISER Kolkata Alumni Association
- Science Outreach Ambassador, taught a Forensics module on **DNA Day 2025** at John Harris High School, Harrisburg
- Graduate Teaching Assistant, **Biology: Molecules and Cells (BIOL230W)**, Department of Biology, Penn State (Spring)

2022
- Undergraduate Teaching Assistant, **Introduction to Computation (CS2201)**, Department of Computational and Data Sciences, IISER Kolkata (Spring)

2021
- Undergraduate Teaching Assistant, **Biology Laboratory III (LS2102)**, Department of Biological Sciences, IISER Kolkata (Fall)

Leadership positions

CURRENT

- **Committee Member (Workshop Organization)**, HGSAC, Penn State
  Organizing professional development workshops for graduate students affiliated with Huck Life Sciences and serving as part of the annual planning team for the 2026 HGSAC Life Sciences Symposium.
- **President**, Society of Indian Music and Arts (SIMA), Penn State
  Coordinating Indian musical productions and events featuring eminent musicians, including Ramana Balachandhran, T.M. Krishna, and Karaikudi S. Subramanian among others. Previously served as Vice-President and Treasurer.

PAST

- **Treasurer**, Short Summer Courses, IISER Kolkata Alumni Association
  Developed and managed the online student registration platform and coordinated the planning of the courses.

References

Prof. Kateryna Makova
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Prof. Francesca Chiaromonte
Department of Statistics
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