# RITAM HALDER

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## PROFILE

Final-year MSc Bioinformatics student passionate about genomics, NGS data analysis, and computational biology. Proven skills in RNA-Seq, variant calling (VCF), population genetics, multi-omics integration, data science, and biological pathway analysis. Adept with Python, R, Bash, and collaborative, real-world research. Seeking to contribute to innovative genomics solutions .

## EDUCATION

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|---|---|---|
| July 2024 – June 2026 | M.Sc. Bioinformatics, Central University of South Bihar, Gaya | *Ongoing* |
| Aug 2021 – June 2024 | B.Sc.(H) Biomedical Sciences, Bhaskaracharya College of Applied Sciences, Delhi | *75%* |
| July 2021 | 12th Standard, Jawahar Navodaya Vidyalaya, Durgapur | *92.8%* |
| May 2019 | 10th Standard, Jawahar Navodaya Vidyalaya, Durgapur | *93.2%* |

## AREAS OF INTEREST

Genomics, Bioinformatics, Computational Biology, Next-Generation Sequencing (NGS), RNA-Seq Analysis, Multi-Omics Integration, Molecular Docking, Molecular Dynamics (MD) Simulation, Structural Bioinformatics, Systems Biology, Data Visualization, AI/ML, Proteomics, lncRNA and miRNA Analysis, Variant Annotation, Network Biology, Precision Medicine.

## PROJECTS

**Structure-Based Discovery of PDE12 Inhibitors for Androgenic Alopecia** *Jan–May 2025*

- Conducted molecular docking and dynamics simulation to identify plant-derived inhibitors (Ginsenoside Rb1, SDG) targeting PDE12, advancing therapeutics for hair follicle regeneration.
- Employed state-of-the-art bioinformatics tools for protein refinement, active-site prediction, ligand docking, and molecular simulations workflows.

**Heterozygosity Analysis Using 1000 Genomes Project (VCF)** *July–Dec 2025*

- Analyzed population-scale VCF data from 1000 Genomes; automated detection and interpretation of heterozygosity using VCFtools, BCFtools, and custom Python/R scripts.
- Visualized and reported findings to inform population genetics research.

**Differential Expression Analysis of Longevity Pathways** *2025*

- Performed RNA-Seq differential gene expression and enrichment analysis in mTOR, mitochondrial complex I, and ROS regulatory pathways.
- Identified novel therapeutic targets and molecular mechanisms related to aging and disease.

## SKILLS

**Bioinformatics Tools:** DESeq2, edgeR, STAR, HISAT2, GATK, FastQC, BLAST, Cytoscape
**Programming:** R, Python, Linux (Bash)
**NGS Data Analysis:** RNA-Seq, Spatial Transcriptomics, lncRNA & miRNA Prediction, Galaxy

**Molecular Modeling & Docking:** PyMOL, AutoDock, Chimera, Maestro
**Statistical Analysis:** Hypothesis Testing, PCA
**Cloud Computing/Data Management:** AWS (Cloud Practitioner Certified), GitHub
**Microsoft Office & Data Presentation:** Excel, PowerPoint
**Wet Lab Skills:** Agarose Gel Electrophoresis, Chromatography, SDS PAGE, Western Blotting, UV VIS spectroscopy, Protein quantification assays (Biuret, Lowry, Bradford), Enzyme kinetics, Blood testing, Sandwich dot ELISA, ELISA Checker board, Widal test
**Qualitative Skills:** Team Collaboration, Critical Thinking, Problem-Solving, Questionnaire Designing, Group Coordination, Leadership, Data Handling & Analysis, Food Technology (sensory evaluation)

# CERTIFICATION COURSES

- Next Generation Sequencing (Decode Life): 10GB RNA-Seq data using DESeq2 and edgeR; Advanced Linux, R Programming, spatial transcriptomics, lnc/miRNA analysis.

- AWS Cloud Practitioner Essentials (Amazon Web Services)

- Genetic Sciences Virtual Experience Program (Thermo Fisher Scientific)

- Industrial Biotechnology (University of Manchester)

- Epidemiology, Preparedness and Response for African Outbreak Contexts (WHO)

- Genes and Human Condition (University of Maryland)

- Earth Observation for Climate Action (ISRO: IIRS Dehradun)

- Molecule to Market (Pfizer)

- Oracle Cloud Infrastructure 2025 Certified AI Foundations Associate (Oracle University)

- NGS for Influenza and SARS-CoV-2 (WHO)

- Complete PHP MySQL Course (Udemy)

- Food and Agribusiness: Agronomy Virtual Experience Programme

- Financial Literacy Course for Bharat (NISM)

# AWARDS AND RECOGNITION

- 1st place in nationwide Terre Green Olympiad

- Rajya Puraskar award (Bharat Scouts): Led first aid workshops, trained 50+ participants

- Regional-level volleyball player

# EXTRACURRICULAR ACTIVITIES

- NSS Volunteer & Member of eco-club

- Certified by SEBI in Investor Awareness and Stock Market Regulations

- National IP awareness mission (Govt. of India)

- Youth expedition: Yamuna mission

- AI in Healthcare (Great Learning), AI for All: Basics to GenAI practice (NVIDIA)

- Group projects, academic presentations

- Latest research in cancer treatment (Educare Taiwan)

- Introduction to R and Hypothesis Testing (Great Learning)

- Dietary regulation monitoring (WHO)

- Workshop: Selecting the Right Journal for Publication (Clarivate Web of Science)