Yashwant Nama

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Research Profile

Molecular Biologist and Computational Researcher with a strong focus on neural mechanisms underlying metabolic adaptation and neurodegeneration. Experienced in hypothesis-driven research, multi-omics integration, and systems-level analysis to study neuro-metabolic pathways, gene regulation, and disease-associated metabolic dysregulation using computational and experimental approaches.

Research Experience

- **Independent Research Project** December 2025 - Present
  Independent Researcher (Computational Biology)
  • Self-initiated, ongoing research project focused on developing a hypothesis-driven, disease-centric computational framework to investigate neural and metabolic mechanisms underlying neurodegenerative disorders, with emphasis on pathway enrichment, network-level interpretation, and biological validation.
  • Integrating multi-omics gene sets (OMIM, KEGG, literature) to perform pathway enrichment and regulatory network analysis relevant to neuronal metabolism, cellular energy homeostasis, and metabolic adaptation.
  • Applying the framework to Huntington's disease to study neuro-metabolic dysfunction, altered cellular metabolism, and disease-associated pathway remodeling, supporting mechanistic hypothesis generation.
  • Emphasizing biological interpretability and hypothesis generation over black-box prediction.
  • Developing an interactive prototype using Python and Streamlit for data input, scoring, and visualization.

- **Rapture Biotech, Jaipur** April 2025 - June 2025
  Research Trainee
  • Performed core molecular biology experiments (DNA/RNA isolation, PCR, agarose gel electrophoresis) supporting experimental validation of biological hypotheses related to gene expression and cellular function.
  • Conducted controlled laboratory experiments, maintained experimental reproducibility, and followed standard operating procedures (SOPs) and biosafety guidelines in a research laboratory environment.
  • Assisted in experimental workflows related to recombinant DNA technology and protein analysis.
  • Used bioinformatics tools for sequence alignment and basic phylogenetic analysis.
  • Maintained laboratory records and followed standard biosafety protocols.

Teaching & Leadership Experience

- **Subject Matter Expert (CSIR-NET & GATE Life Sciences) | 2022 – Present**
  • Mentored and taught postgraduate students preparing for national-level competitive exams in India.
  • Simplified complex concepts in Molecular Biology, Genetics, and Zoology to improve student success rates.
- **Academic Presenter | Stani Memorial P.G. College | 2019 – 2021**
  • Delivered technical seminars on diverse biological topics including Eukaryotic Translation, Nutritional Uptake, and Animal Communication.
  • Presented research on Microorganisms in Energy Recovery and Biomass Production, focusing on sustainable fuel solutions.
  • Developed skills in visual communication and public speaking for scientific audiences.

Education

- **Stani Memorial P.G. College (Rajasthan University)** 2021
  M.Sc Zoology
  72.68%

- **Maharaja College (Rajasthan University)** 2019
  B.Sc (Hons) Zoology
  71.09%

Skills

- **Wet Lab & Experimental:**
  • Molecular Biology: DNA/RNA Isolation, PCR (Polymerase Chain Reaction), Agarose Gel Electrophoresis.
  • Microbiology: Microbial Culture Handling, Staining Techniques, Antimicrobial Assays.
  • Biochemistry: Enzyme Assays, Protein Handling, Electrophoresis.
  • Immunology: Basic Immunological Techniques and Signaling Analysis.
- **Dry Lab & Computational:**
  • Computational & Systems Biology: Sequence alignment (BLAST), pathway enrichment analysis, network-based analysis, basic transcriptomics concepts, molecular docking (introductory), data modeling, and scientific programming (Python).
  • Software & Coding: Python (Pandas/NumPy for data analysis), MS Office, PubMed, NCBI Databases.
  • Specialized Logic: CRISPR/Cas9 gRNA Design (Theoretical/Award-winning).

Achievements & Awards

- GATE (Life Sciences – XL), 2025 — Qualified the Graduate Aptitude Test in Engineering with a score of 419, placing within the top percentile of candidates nationwide and demonstrating a high level of technical proficiency in core biological sciences.
- A+ Grade, Research Training Program — Rapture Biotech (2025)
- Second Prize, CRISPR Innovation Competition — St. Wilfred College, Jaipur (2021) Recognized for designing a theoretical CRISPR/Cas9-based gene-editing strategy to modulate splicing modifiers in neurodegenerative pathways. The project focused on optimizing gRNA specificity to reduce off-target effects in complex genomic regions.

Languages

- English (fluent), Hindi (native), German: A1 (Beginner/Learning)

Manuscripts In Preparation

- PTC518 (Votoplam) in Huntington's Disease: Review article on oral splicing modifiers targeting mutant huntingtin expression.
- CD40 Immunosomes: Review of immunosome-based approaches in immunotherapy.

References

- **Dr. Rakhi Sharma - Stani Memorial P.G. College, Jaipur (University of Rajasthan)**
  Associate Professor, Department of Zoology
  drrakhisharmazoology@gmail.com
- **Dr. Preeti Sharma - Nirwan University, Jaipur**
  Associate Professor, Department of Zoology
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- **Mr. Mayank Solanki - Rapture Biotech, Jaipur**
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