

# SUDARSHAN ARYAL

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**PROFILE** Biosciences student interested in evolutionary genomics and microbial evolution. Works at the interface of wet-lab biology and bioinformatics, applying genome assembly and comparative genomics to explore microbial diversity and evolutionary relationships.

**EDUCATION** **Sri Sathya Sai Institute of Higher Learning, India** 2023–2027  
B.S. (Hons.) with Research – Biosciences & Biotechnology (CGPA: 8.7)  
**St. Xavier's College, Kathmandu, Nepal** 2020–2022  
Senior Secondary Examination (GPA: 3.62 / 4.0)

**PROJECTS** **Hybrid Genome Assembly of *Brucella anthropi* (Miniproject)** | GitHub  
*Tools: fastp, Filtlong, Tricycler, Autocycler, Polypolish, Bakta, Prokka, BUSCO*  
• Performed hybrid assembly using Oxford Nanopore and Illumina reads.  
• Produced a polished consensus genome via read filtering, polishing, and automated annotation.

**Comparative Genomics of *Brucella* (Miniproject)** | GitHub  
*Tools: Snippy, Gubbins, RAxML, FastTree, IQ-TREE*  
• Conducted SNP calling and recombination-aware phylogenetic analysis for evolutionary mapping.  
• Evaluated tree-building tools based on topology and statistical support.

**Protein–Ligand Docking Study**  
*Tools: AutoDock Tools, UCSF Chimera, PyMOL*  
• Simulated protein-ligand interactions to visualize binding poses and functional implications.

**RELEVANT COURSE-WORK** Genetics and Evolution, Molecular Biology, Microbiology, Cell Biology, Genetic Engineering, Gene Expression and Regulation, Biostatistics, Bioinformatics.

**SKILLS** **Technical:** Python (scientific scripting), R (plotting), Linux/Unix, Snakemake, Nextflow, BLAST, Genome Assembly, Variant Calling.  
**Lab:** PCR, DNA Extraction, Agarose Gel Electrophoresis, SDS-PAGE.  
**Languages:** English, Nepali, Hindi.

**INSTRUMENTS** Centrifuge, Spectrophotometer, Laminar Air Flow Cabinet, Ultrasonicator.

**TRAINING AND WORKSHOPS** • **BioAsia 2026, Hyderabad:** Attended as a delegate focusing on biotech innovation and global genomics trends.  
• **FABA Biotechnology Training:** 10-day workshop on cell culture workflows and industry-oriented biotechnology (Organized by FABA in association with Thermo Fisher Scientific).  
• **NCC Training:** Focused on discipline, leadership, and teamwork through National Cadet Corps.  
• **Personality Development:** 7-day residential program on leadership and holistic growth.

**SCIENCE COMMUNICATION** • **Substack Author:** Writes reflective essays on nature and evolution and everyday observations. (sudarshanaryal.substack.com).  
• Uses writing as a framework to understand and communicate complex natural processes.

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