

# ANUP PARAJULI

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## EDUCATION

<b>Soka University of America</b> ◇ Aliso Viejo, CA, USA Bachelor of Arts in Liberal Arts   Life Sciences Concentration <u>Relevant Courses:</u> Genetics, Genetic Engineering, Biochemistry, Bioinformatics, Biostatistics, Cell Biology Project-Based Lab, Microbiology, Organic Chemistry I & II, Differential Calculus, Discrete Mathematics, Introduction to Computer Science, GIS, Physics   <i>Spring 2026:</i> Linear Algebra, Biochemistry Project-Based Lab, 3D Printing in Ceramics	Expected Graduation: 05/2026 GPA: 3.84/4.00
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<b>University of Barcelona</b> ◇ Barcelona, Spain Study Abroad Program   Spanish Language Courses	01/2025 – 05/2025
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## RESEARCH EXPERIENCE

<b>In Silico Structural Analysis of Cancer-Associated Nit1 Mutations</b> <u>Mentor:</u> Dr. Susan Walsh ◇ Undergraduate Capstone Project ◇ Aliso Viejo, CA	09/2025 – Present
<ul style="list-style-type: none"><li>Assessment of <i>NIT1</i> mutations using in silico functional impact scoring tools (CHASMplus, Mutation Assessor, PhastCons, PROVEAN) to predict pathogenicity</li><li>Development of a computational workflow to predict structural effects of Nit1 mutations linked to tumor suppression, integrating COSMIC mutation data with ChimeraX-based structural modeling</li></ul>	

<b>Tandem Repeat Reflectin Protein Synthesis &amp; Characterization</b> <u>Supervisor:</u> Dr. Robert Levenson ◇ Aliso Viejo, CA	06/2024 – Present
<ul style="list-style-type: none"><li>Synthesized tandem repeat reflectin constructs using a novel optimized method</li><li>Purified reflectin proteins using FPLC and HPLC, and employed DLS to map the conditions that determine the driving forces for tunable reflectin assembly</li></ul>	

## COURSE-BASED UNDERGRADUATE RESEARCH EXPERIENCE (CURE)

<b>Sox21a Nuclear Localization Study</b> <u>Supervisor:</u> Dr. Susan Walsh ◇ Aliso Viejo, CA	09/2024 – 12/2024
<ul style="list-style-type: none"><li>Investigated nuclear import mechanisms of zebrafish Sox21a WT, NLS-only, and Δ NLS constructs using HeLa cell transfections</li><li>Characterized nuclear import of zebrafish Sox21a variants by nuclear fractionation and western blot analysis, discovering NLS-independent pathways that contrast with canonical Sox2 import mechanisms</li></ul>	

  

<b>Biostatistical Analysis of Cross-Sectional Area in Pulmonary Conditions</b> <u>Supervisor:</u> Dr. Marie Nydam ◇ Aliso Viejo, CA	09/2024 – 12/2024
<ul style="list-style-type: none"><li>Performed statistical evaluation of airway geometry in asthma and cystic fibrosis using CSA datasets</li><li>Applied ANOVA and regression to evaluate airway CSA as a predictor of disease severity in asthma and cystic fibrosis, and created visualizations in R (dplyr, ggplot2) including histograms, Q-Q plots, box plots, and scatter plots to assess assumptions and group differences</li></ul>	

<b>Novel Gene Discovery: SLF1 Ortholog in <i>Paguma larvata</i></b> <u>Supervisor:</u> Dr. Marie Nydam ◇ Aliso Viejo, CA	02/2024 – 05/2024
<ul style="list-style-type: none"><li>Discovered and characterized a novel SLF1 gene ortholog using BLAST-based comparative genomics</li><li>Performed multiple sequence alignments (MAFFT, MUSCLE, CLUSTALW) and constructed phylogenetic trees in MEGA11 to assess evolutionary conservation</li></ul>	

<b>Venom Characterization &amp; Antimicrobial Assays</b> <u>Supervisor:</u> Dr. Patrick Spencer, Dr. Guilherme Coelho, Dr. Susan Walsh ◇ Instituto Butantan, Brazil	01/2024 (3 weeks)
<ul style="list-style-type: none"><li>Characterized venoms of <i>Bitis nasicornis</i> and <i>Pseudechis colletti</i> using MALDI-TOF, Zymography, Gel Filtration, and HPLC</li></ul>	

- Performed antimicrobial assays showing inhibition of *Staphylococcus aureus* (MIC <100 µg/mL), *Candida albicans* (MIC 400–800 µg/mL), and *E. coli* (MIC >1000 µg/mL)

## TEACHING & LABORATORY EMPLOYMENT

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### Chemistry Laboratory Teaching Assistant

09/2023 – 05/2024

Supervisor: Dr. Robert Levenson ◇ Aliso Viejo, CA

- Helped students operate analytical instruments including IR spectroscopy, UV/Vis spectroscopy, Microplate Reader, and Melting Point Analyzer
- Guided students through laboratory protocols, experimental design, chemical analysis, and safety procedures

## PRESENTATIONS & CONFERENCES

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<b>American Society for Cell Biology (ASCB) National Conference</b> ◇ San Diego, CA	2024
Poster: Production of Total Amino Acid Replacement Reflectin Mutants	
<b>Soka Learning Cluster Fair 2024</b> ◇ Aliso Viejo, CA	2024
Poster: Antimicrobial activity of <i>Bitis nasicornis</i> and <i>Pseudechis colletti</i> (Group)	
<b>Soka Summer Student Research Poster Session</b> ◇ Aliso Viejo, CA	2025
Poster: Understanding the molecular basis of tunable reflectin assembly (Group)	

## MANUSCRIPT IN PREPARATION

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Aslam, M. H., **Parajuli, A.**, Chiriatev, I., and Levenson, R. H., Sequence Determinants of Dynamic and Reversible Reflectin Assembly. *In preparation.*

## SKILLS

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**Molecular Genetics:** Western Blot, PCR, Cloning, Bacterial Culture, Tissue Culture, Gel Electrophoresis, Mini-prep, Nuclear Fractionation, Emulsiflex, Lyophilizer, CRISPR

**Protein Purification and Characterization:** FPLC, HPLC, DLS

**Microscopy:** Confocal Microscopy, Immunofluorescence Microscopy

**Statistical:** Regression Analysis, Hypothesis Testing, Data Cleaning, Normality Assessment, Data Transformation, and Visualization

**Chemistry Laboratory:** NMR, IR spectroscopy, UV/Vis spectroscopy, Thin Layer Chromatography

**Computational:** ChimeraX, Python (Pandas, Matplotlib, NumPy, Tkinter, NetworkX), R (dplyr, ggplot2), Jupyter Notebook, Linux Command Shell, Image Lab, MEGA 11, Benchling, Galaxy, ImageJ, ChemDraw, Microsoft Excel, LATEX, Photoshop, Illustrator

**Additional Skills:** Creative Writing, Front-end Web Development, Video Editing, Guitar, Cooking

**Languages:** Nepali (Native), English (Fluent), Spanish (Intermediate), Hindi (Fluent)

## HONORS AND AWARDS

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**John Stauffer Charitable Trust Summer Research Fellowship** | Soka University of America 2024

- Competitively awarded a summer research fellowship including a stipend and travel support to a national conference

**Dean's List** | Soka University of America Fall 2022 | Fall 2023 – Present

- Awarded to academically outstanding students who achieve a GPA greater than 3.75/4.00 each semester

**Soka Opportunity Grant** | Soka University of America 2022 – Present

- Awarded a full tuition undergraduate scholarship

**Soka Merit Award** | Soka University of America 2022 – Present

- Awarded in addition to full tuition scholarship for other academic needs

## EXTRACURRICULAR ENGAGEMENT

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**Co-President, First Gen** ◇ Aliso Viejo, CA

09/2024 – Present

- Revitalized the First Gen Affinity Group and advocated for the academic and social support needs of first-generation college students
- Partnered with the Office of Financial Aid to guide peers through FAFSA and financial aid applications
- Created a responsive website using HTML, CSS, JavaScript, and CampusGroup API <[view website](#)>

**Secretary, Code Soka** ◇ Aliso Viejo, CA

09/2022 – Present

- Organized weekly workshops on algorithms and coding in Python for game development and website building
- Facilitated coding projects and peer learning by debugging code, troubleshooting IT issues, and guiding software environment setup
- Created a game in Python (graphics.py) and website to reinforce biology vocabulary <[play game](#)>

**Organizer, Google Developer Groups - Soka University** ◇ Aliso Viejo, CA

09/2024 – 12/2024

- Co-organized the DevFest 2024 - Greater LA Area event (more than 350 participants)