ANUP PARAJULI

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EDUCATION

Soka University of America ♢ Aliso Viejo, CA, USA — Expected Graduation: 05/2026
Bachelor of Arts in Liberal Arts | Life Sciences Concentration — GPA: 3.84/4.00
Relevant Courses: Genetics, Genetic Engineering, Cell Biology Project-Based Lab, Biochemistry, Bioinformatics, Biostatistics, Microbiology, Organic Chemistry I & II, Differential Calculus, Discrete Mathematics, Introduction to Computer Science, GIS, Physics | *Spring 2026*: Biochemistry Project-Based Lab, 3D Printing in Ceramics

University of Barcelona ♢ Barcelona, Spain — 01/2025 – 05/2025
Study Abroad Program | Spanish Language Courses

RESEARCH EXPERIENCE

***In Silico* Structural Analysis of Cancer-Associated Nit1 Mutations** — 09/2025 – Present
Mentor: Dr. Susan Walsh ♢ Undergraduate Capstone Project ♢ Aliso Viejo, CA

- Assessment of *NIT1* mutations using in silico functional impact scoring tools (CHASMplus, Mutation Assessor, PhastCons, PROVEAN) to predict pathogenicity
- 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

Tandem Repeat Reflectin Protein Synthesis & Characterization — 06/2024 – Present
Supervisor: Dr. Robert Levenson ♢ Aliso Viejo, CA

- Synthesized tandem repeat reflectin constructs using a novel optimized method
- Purified reflectin proteins using FPLC and HPLC, and employed DLS to map the conditions that determine the driving forces for tunable reflectin assembly

COURSE-BASED UNDERGRADUATE RESEARCH EXPERIENCE (CURE)

Sox21a Nuclear Localization Study — 09/2024 – 12/2024
Supervisor: Dr. Susan Walsh ♢ Aliso Viejo, CA

- Investigated nuclear import mechanisms of zebrafish Sox21a WT, NLS-only, and Δ NLS constructs using HeLa cell transfections
- 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

Biostatistical Analysis of Cross-Sectional Area in Pulmonary Conditions — 09/2024 – 12/2024
Supervisor: Dr. Marie Nydam ♢ Aliso Viejo, CA

- Performed statistical evaluation of airway geometry in asthma and cystic fibrosis using CSA datasets
- 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

Novel Gene Discovery: SLF1 Ortholog in *Paguma larvata* — 02/2024 – 05/2024
Supervisor: Dr. Marie Nydam ♢ Aliso Viejo, CA

- Discovered and characterized a novel SLF1 gene ortholog using BLAST-based comparative genomics
- Performed multiple sequence alignments (MAFFT, MUSCLE, CLUSTALW) and constructed phylogenetic trees in MEGA11 to assess evolutionary conservation

Venom Characterization & Antimicrobial Assays — 01/2024 (3 weeks)
Supervisor: Dr. Patrick Spencer, Dr. Guilherme Coelho, Dr. Susan Walsh ♢ Instituto Butantan, Brazil

- Characterized venoms of *Bitis nasicornis* and *Pseudechis colletti* using MALDI-TOF, Zymography, Gel Filtration, and HPLC

- 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

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

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

MANUSCRIPT IN PREPARATION

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

SKILLS

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

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

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)