Subodh Niroula

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Education

Bachelor of Arts, Soka University of America, Aliso Viejo, CA — Anticipated 05/2026
Life Sciences Concentration, Focus on Biology and Mathematics — GPA: 3.902/4.0

Study Abroad, Universitat de Barcelona, Barcelona, Spain — 01/2025 – 05/2025
Spanish Language Study

Relevant Courses: Genomics and Bioinformatics, Biostatistics, Project-Based Lab: Cell Biology, Genetics, Biochemistry, Organic Chemistry I and II, Genetic Engineering, Integrated Biology and Chemistry, Foundation of Chemistry and Lab, Intro to Computer Science, Intro to Data Science, Discrete Mathematics, Linear Algebra, Calculus-II, Physics: Space, Time and Reality, Intro to GIS

Research Experiences

Comparative Transcriptomic Analysis of UHRF1 Loss in Small Cell Lung Cancer and Osteosarcoma
Undergraduate Capstone Project, Soka University of America — 06/2025 – Present
Supervisor: Dr. Marie Nydam, Dr. Claudia Andrea Benavente

- Developed a RNA-seq analysis pipeline including quality control (FastQC), trimming (Cutadapt), quantification (Salmon), and differential expression analysis (DESeq2)
- Conducted a literature review on the structure and function of UHRF1, its role in cancer epigenetics and metastasis, and bioinformatics methodologies for downstream transcriptomic analysis

UHRF1-GATA2-ST6GALNAC5 Axis in Small Cell Lung Cancer Metastasis — 06/2025 – 08/2025
Chao Family Comprehensive Cancer Center, UCI Health, Irvine, CA
Supervisor: Dr. Claudia Andrea Benavente

- Generated and cultured ST6GALNAC5 knockouts clones in H446 and H526 small cell lung cancer cell lines
- Validated reduced ST6GALNAC5 protein levels in UHRF1-deficient cells by western blot, identifying ST6GALNAC5 as a downstream effector of UHRF1 in metastatic regulation
- Generated volcano plots and heatmaps in R (ggplot2, pheatmap) to visualize differentially expressed genes in UHRF1 knockout cells

Characterization of Amino Acid Similarity across Allorecognition Proteins in Marine Invertebrate Species
Soka University of America, Aliso Viejo, CA — 09/2024 – 05/2025
Supervisor: Dr. Marie Nydam

- Analyzed raw DNA data and applied statistical models for sequence alignment and phylogenetic tree construction using MEGA11 and CodonCode Aligner
- Identified amino acid specificity and created publication-ready graphs and visualizations using R and Python

Eco-Friendly Imine Synthesis Using Water as a Solvent — 01/2024 – 05/2024
Soka University of America, Aliso Viejo, CA
Supervisor: Dr. Duminda Liyanage

- Synthesized over 50 bioactive imines from diverse aldehydes and ketones using sonication and water as a solvent
- Characterized synthesized structures with NMR and IR spectroscopy

Remediation of Soil Contaminated With Silver Nanoparticles Using Biochar — 01/2023 – 06/2023
Soka University of America, Aliso Viejo, CA
Supervisor: Dr. Zahra Afrasiabi

- Evaluated arylamidase enzyme activity *in vitro* in soils contaminated with silver ions and nanoparticles following treatment with biochar and thiol-modified biochar
- Analyzed the effectiveness of sulfur functionalization on biochar through three different thiolation procedures to enhance silver nanoparticle remediation
- Co-authored a manuscript currently in preparation

Work Experiences

Engineering Intern, Equilibr.io, Inc. 09/2023 – 08/2024
Aliso Viejo, CA
Supervisor: Dr. Disha Sheth

- Assisted in investigating the performance of electrochemical sensors, conducting experiments such as open circuit potential and chronopotentiometry to evaluate reference electrode health
- Analyzed Gamry data using statistical tools including JMP, Gamry Echem Analyst, and Python

Organic Chemistry Content and Laboratory Tutor 01/2024 – 05/2024
Soka University of America, Aliso Viejo, CA
Supervisor: Dr. Duminda Liyanage

- Provided personalized instruction in organic chemistry concepts, mechanisms, reactions, and interpreting NMR and IR data
- Developed study strategies and practice problems to enhance problem-solving skills and prepare students for exam

Computational and Independent Projects

Cardiovascular Risk Factor Analysis 2024
UC Irvine Machine Learning Repository, Biostatistics

- Analyzed cardiovascular risk factors by examining correlations between cholesterol levels and resting blood pressure across gender groups
- Performed ANOVA tests and linear regression analysis to evaluate statistical significance and model relationships among health variables

Chemical Reaction Pathfinder 2024
Python, Graph Theory, Dijkstra's Algorithm

- Designed a program to model chemical reactions as weighted graphs, where nodes represent compounds and edges represent reaction pathways with associated costs (e.g., energy or yield)
- Implemented Dijkstra's algorithm to compute the most efficient reaction route between compounds, optimizing chemical synthesis pathways

Molecular Structure Drawing Tool 2023
Python, Streamlit, RDKit, py3Dmol

- Developed a Streamlit-based web app using RDKit and py3Dmol for real-time conversion and visualization of SMILES strings into 2D and 3D molecular structures
- Designed the tool to teach basic chemistry concepts by visualizing molecular geometry and structure interactively

Presentations

University of California Undergraduate Summer Research Symposium 10/2024
UHRF1-GATA2-ST6GALNAC5 Axis in Small Cell Lung Cancer Metastasis Irvine, CA

Soka University Undergraduate Summer Laboratory Research Symposium 10/2024
Eco-Friendly Imine Synthesis Using Water as a Solvent Aliso Viejo, CA

Honors and Awards

Dean's List, Soka University of America 2022 – 2025
Awarded to students achieving high scholarships with a G.P.A above 3.7 at the end of each session

Pacific Basin Research Center Junior Scholar, Soka University of America 2022 – 2025
Award for students investigating topics leading to humanistic welfare of the Pacific Basin region and beyond

Soka Merit Award and Opportunity Grant, Soka University of America 2022 – 2025
Received a full-tuition scholarship for four years of undergraduate study

Opportunity Fund Grantee, EducationUSA Advising Center (USEF-Nepal) 2022
Selected for the highly competitive U.S. Department of State Opportunity Funds Program, which covers upfront costs of applying to U.S. colleges for students from disadvantaged backgrounds

Leadership and Community Service

Treasurer, Code Soka, Soka University of America 2022 – Present

Organizer, Soka Google Developer Club, Soka University of America 2024

Skills

- **Computational and Programming:** Python (NumPy, Pandas, Matplotlib), R (ggplot2, dplyr, DESeq2, clusterProfiler), Linux command line, Shell scripting, HPC3 cluster usages, RNA-seq analysis (QC, alignment, differential expression), Gene Ontology and pathway enrichment, Microsoft Office, JMP, MEGA11, CodonCode Aligner, Adobe Illustrator, ChemDraw, ArcGIS

- **Statistical Methods:** Regression Analysis, ANOVA, t-test, Hypothesis Testing, Data Visualization, Experimental Design, Correlation analysis, Linear modeling

- **Lab:** IR, UV-Vis, NMR, In-vitro cell culture, Gel electrophoresis, SDS-PAGE, Western Blotting, PCR, Immunofluorescence, CRISPR Knockout generation

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