

## **Yi Won “Stefan” Kim**

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## **EDUCATION**

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### **Columbia University**

Columbia College, New York, NY

May 2024

- Bachelor of Arts in Physics, Concentration in Biology
- Cumulative GPA: 4.0

*Relevant Coursework:* Physics (Accelerated Physics, Mechanics, Electricity & Magnetism, Electromagnetic Waves, Quantum Mechanics, Quantum Field Theory, Intermediate Laboratory), Cellular and Molecular Immunology, Project Laboratory in Molecular Genetics, Antimicrobial Resistance, Introductory Biology, Organic Chemistry, Organic Chemistry Laboratory, Biochemistry, Multivariable Calculus, Calculus-Based Introduction to Statistics

## **RESEARCH EXPERIENCE**

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### **Kumar Laboratory, Icahn School of Medicine at Mount Sinai**

*Research Assistant*

June 2024 — Present

Advisor: Dr. Varun Kumar

- Investigating effects of UV exposure on cell death in corneal endothelium
- Studying apoptosis and mitophagy pathways and the role of specific proteins using Western blotting, lipidomics, and cell viability assay techniques
- Determining the potential therapeutic effects of specific compounds, protecting against or recovering from mitochondrial stress

### **Greene Laboratory, Columbia University Irving Medical Center**

*Research Assistant*

June 2022 — May 2024

Advisor: Dr. Eric Greene

- Investigated mechanisms of homologous DNA repair, associated protein structure and function
- Analyzed effects of cancer-associated human Rad51 mutations on filament formation
- Utilized specific point mutations to capture snapshots of Rad51 and Srs2 interactions with cryo-electron microscopy
- Determined the role of lineage-specific amino acid interactions at the protomer-protomer interfaces of Rad51 and Dmc1 proteins

- Planned and organized mutagenesis, cloning, and purification experiments for various proteins and mutations
- Prepared and vitrified protein reactions for cryo-electron microscopy
- Learned cryo-electron microscopy screening and data analysis methods

### **Columbia Astrophysics Laboratory, Columbia University**

*Research Assistant*

May — September 2021

Advisor: Dr. Statia Luszcz-Cook

- Processed raw OSIRIS (near-IR) telescope data from Uranus and Neptune observations
- Wrote python scripts to analyze and compare spectra across latitude bins and over time
- Implemented particle scattering models to determine initial guesses of physical atmospheric properties
- Used Markov chain Monte Carlo algorithms to find best fit atmospheric parameters
- Learned data analysis techniques from mathematical and statistical review of data

### **LEADERSHIP, SERVICE, OTHER EXPERIENCES**

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Mt. Sinai Hospital, Cardiology Inpatient Unit

*Volunteer*

June 2023 — Present

- Communicate with patients and staff to ensure patient comfort and safety
- Assist staff with fall prevention for patients and providing patient comfort
- Relay medical information to staff to timely response and treatment

Biophysical Society, Columbia University Student Chapter

*President, Co-Founder*

April 2022 — May 2024

- Official student chapter of the Biophysical Society
- Work together with board members to troubleshoot logistical and practical difficulties, both in event planning and club organization
- Plan and organize student-led academic and social events, such as research panels and dinners
- Advise academically and promote biophysics

Surgicare of Manhattan

*Shadowing Student, Under Dr. Steven Touliopoulos*

July — August 2023

- Shadowed Dr. Touliopoulos during several of his knee, ankle, hip, and shoulder surgeries
- Learned about relevant orthopaedic principles and techniques
- Observed arthroscopy and learned about the benefits and limitations of minimally invasive surgical procedures

Matriculate

*Advising Fellow*

December 2021 — March 2023

- Volunteered to advise three low-income high school students through college application process

- Focused on communication skills to discuss strengths and weaknesses in college application while providing constructive feedback
- Employed planning and organizational skills in constructing overview of application timeline and setting small deadlines
- Met weekly to discuss and provide guidance on academics, extracurriculars, and encouraging healthy mindset and habits

Columbia University Society for Baseball Research

*Team Member*

November 2022 — May 2024

- Student-led group focusing on the quantitative research of baseball-related statistics
- Practiced teamwork in planning research projects and discussions
- Utilized data analysis skills to identify trends in data and make guided predictions
- Wrote an article predicting player performance based on data analysis conclusions

Columbia University Engineers Without Borders

*Community Development Team Member*

September 2021 — December 2021

- Helped design and implement a solar microgrid for Otubet, a small town in Uganda, in order to support local health centers and schools
- Discussed with team engineers and local officials to organize logistical and technical details
- Planned roadmap ahead for the multi-year project

**MEMBERSHIP**

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Phi Beta Kappa Columbia University Chapter (2024–present)

Biophysical Society (2021–present)

American Astronomical Society (2019–present)