Sihyun Park

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Research Interests

AI for Science, Computational Biology, Drug Discovery, Drug Repurposing

Education

Korea Advanced Institute of Science and Technology (KAIST) Feb. 2018 – Feb. 2025 (Expected)
Undergraduate Student Daejeon, Korea

- Bachelor of Science in Chemistry, Minor in Computer Science, Advanced Major in Chemistry
- Total GPA of 4.01 / 4.30 (3.88 / 4.00)
- Military Service: Jan. 2020 – Jul. 2021

Georgia Institute of Technology Aug. 2022 – May. 2023
Exchange Student Atlanta, GA

Korea Science Academy (KSA) of KAIST Mar. 2015 – Feb. 2018
A special high school for science-gifted students Busan, Korea

Research Experience

Intelligent Chemistry Lab, KAIST Dec. 2023 – Present
Undergraduate Research Program (Advisor: Woo Youn Kim) Daejeon, Korea

- Developed a transformer-based deep learning model to predict the affinity and distance map between proteins and ligands (Undergraduate Thesis Title: A Non-Structure-Based Protein-Ligand Interaction Prediction Model by Pharmacophore Modeling for Virtual Screening)
- Developed a docking surrogate model enhanced through active learning for structure-based drug discovery (Manuscript in Preparation)

NSF/NASA Center for Chemical Evolution, Georgia Tech Aug. 2022 – Jan. 2023
Undergraduate Research (Adviser: Nicholas V. Hud) Atlanta, GA

- Studied prebiotic chemistry based on Solid-Phase Peptide Synthesis (SPPS), by using various analytical tools, including Mass Spectrometry and HPLC
- Synthesized proto-nucleobase-tagged tetrapeptides to propose a candidate prototype of RNA
- Gave a poster presentation at Georgia Tech (Title: The Origin of Life and the History of RNA)

Analytical Biochemistry Laboratory, KAIST Aug. 2021 – Dec. 2021
Undergraduate Research (Adviser: Yongwon Jung) Daejeon, Korea

- Studied concepts of multivalent protein interactions and conducted various biochemical experiments including PCR, SDS-PAGE, and Affinity Chromatography

Center for Cell-Encapsulation Research, KAIST Jun. 2019 – Dec. 2019
Undergraduate Research (Adviser: Insung S. Choi) Daejeon, Korea

- Understood the theory of deep learning and developed a graph convolutional network (GCN) model, based on three-dimensional molecular data

Selected Presentations

1. **Sihyun Park**, Suneesh Karunakaran, Nicholas V. Hud, *The Origin of Life and the History of RNA*, Undergraduate Poster Session, Georgia Institute of Technology, Atlanta, GA, 2022

Honors and Awards

The Best Book Club of KAIST, 1st Place (KAIST Presidential Award) 2024

- Advised by Dr. Myung-Hyun Rhee (1,000,000 KRW)

Leadership Mileage Certificate (Diamond Level), KAIST 2024

- Top-level recognition for leadership activities, including volunteering and campus involvement, since admission

The National Scholarship for Science and Engineering Spring 2022, Fall 2022, Spring 2023

- Granted by Korea Student Aid Foundation (500,000 KRW / semester)

Department Honors Scholarship, KAIST Fall 2021
- Selected as one of the top 4 students in the Department of Chemistry (800,000 KRW)

Dean's List, KAIST Fall 2019
- Selected as one of the top 2 sophomore students in the Department of Chemistry

Chemical Frontier Festival (Silver Award) 2017
- Selected as one of the top 11 research teams among all high school teams nationwide

Extracurricular Activities

KAIST Buddy Program Spring 2019, Spring 2024
Korean Buddy Daejeon, Korea
- Helped the new international students of KAIST adjust to Korean culture and campus life
- Organized and participated in social events such as welcoming parties, monthly field trips, and movie nights

Dept. of Chemistry Student Council 2019
Planning and Implementation Team Daejeon, Korea
- Organized and managed student council events, including welcome receptions for incoming students and festival booths

Skills

Programming Languages	**Python**, Java, C, Scala
Frameworks / Libraries	**PyTorch**, PyTorch Geometric, PyTorch Lightning, Keras, NumPy, Pandas
Tools / Software	Linux, PyMOL, RDKit, OpenBabel, Git, Adobe Photoshop, LaTeX
Chemical Analysis Equipment	HPLC, Mass spectrometry, UV-VIS, NMR, PCR, SDS-PAGE
Language Proficiency	Fluent in English and Native in Korean iBT TOEFL: 100 (Reading: 27, Listening: 24, Speaking: 23, Writing: 26)

Reference

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Nicholas V. Hud
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