Gyu (Gyuhyeon) Kim

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Education

Ph.D. Candidate in Biochemistry — Sep. 2021 — Present
Stanford University, Stanford, CA, USA

Ph.D. Minor. Candidate in Computer Science — Sep. 2023 — Present
Stanford University, Stanford, CA, USA

B.S. Chemistry, Minor in Biological Science — Mar. 2013 — Feb. 2019
Seoul National University, Seoul, South Korea

Recent Research Experience

Graduate Research — March 2022 — Present
Stanford University, Stanford, CA, USA
• Building and interpreting machine learning models of predicting transcription activity from transcription factor binding data over tissue differentiation
• Characterizing nonconsensus binding of human transcription factors using ENCODE dataset analysis and machine learning
• Identified and validated long noncoding RNAs impacting skin cancer in a global scale via scRNA-seq and CRISPRi screen (Kim et al., 2025)
Advisor: Dr. Paul Khavari
Committee: Dr. Anshul Kundaje, Dr. Mark Krasnow, Dr. Aaron Straight

Research Technician — June 2019 — June 2021
Harvard Medical School and **Dana-Farber Cancer Institute**, Boston, MA, USA
• Assessing the association between cell nuclear envelope rupture and DNA damage
Advisor: Dr. David Pellman

Publications

Gyuhyeon Kim, Vivekanandan Ramalingam, Paul A. Khavari. Comprehensive characterization of nonconsensus binding of human transcription factor. **Manuscript in preparation**.

Douglas F. Porter, ..., **Gyuhyeon Kim**, ..., Paul A. Khavari. Disease-Linked Regulatory DNA Variants and Homeostatic Transcription Factors in Epidermis. *Revision in Nature Comm.* 2025

Gyuhyeon Kim, Zurab Siprashvili, ..., Paul A. Khavari, Luca Ducoli. In vivo CRISPRi screen reveals lncRNA portfolio crucial for cutaneous squamous cell carcinoma tumor growth. *Journal of Investigative Dermatology.* 2025

Leadership & Community Activity

Vice President for Stanford Biosciences Student Association, Stanford University — 2024 - 2025
- *Supporting the incoming leadership, organizing the student program proposals and community meetings*
- *Working as a student representative in the bioscience faculty meeting*

President for Stanford Biosciences Student Association, Stanford University — 2023 - 2024
- *Managed the overall the Bioscience program community activities, finances, and communications between student officers*

Social Chair for Stanford Biosciences Student Association, Stanford University — 2022 - 2023
- *Planned and organized variety of social events for bioscience programs*

Teaching & Outreach Experience

Mentor for Undergraduate Research Program, Stanford University — 2023 - 2025
Tutor for YES for CURE Program, Dana-Farber/Harvard Cancer Center — 2020
- *Gave virtual lab sessions for an underrepresented minority summer student*

Tutor for Basic Chemistry, Seoul National University — 2014, 2015, 2018
Organizer for Weekly Public Science Lecture, Seoul National University — 2018
Tutor for Math in SAMSUNG Dream Class, SAMSUNG Welfare Foundation — 2014, 2015
- *Mentored middle school students from socioeconomic minority backgrounds*

Awards, Honors, Scholarships

Doctoral Study Abroad Grant, Korea Foundation for Advanced Studies	2021-2025
Blavatnik Fellowship, Blavatinik Family Foundation	2023-2024
MAC3 Graduate Fellowship, MAC3 Impact Philanthropies	2022-2024
Presidential Award of Korean Chemical Society, Korean Chemical Society	2019
Honored Graduate of Academic Excellence, Seoul National University	2019
Kwanjeong Undergraduate Scholarship, Kwanjeong Educational Foundation	2015, 2018
Dean's List, Seoul National University	2013, 2014, 2015
Academic Excellence Award, Seoul National University	2015
Best Tutor for Basic Chemistry, Seoul National University	2015
1st Place, Science Essay Contest for the Nobel Prize, Korea Ministry of Education	2015
1st Place, HANCOM Office Software Development Contest, HANCOM Incorporate	2015
National Undergraduate Scholarship, Korea Student Aid Foundation	2013, 2014

Relevant Skills

Programming

Language: Python (Proficient), R, Bash (Intermediate), C++, Haskell, Agda (Beginner)
Python: ML training with different architectures and model interpretation (Linear model, Deep Neural Network, various tree models, Transformer, LSTM). ML relevant packages (PyTorch, Scikit-learn, SHAP, and other ML tools for tree models). Fine-tuning DNA-LLM. Data analysis with pandas, matplotlib, seaborn. Building pipeline with Snakemake. **R**: Data analysis and visualization with ggplot **Bioinfo**: Human genetic sequencing data processing (ChIP, CRISPR screen), Seurat
Advanced Coursework Completed: Artificial Intelligence (CS221), Machine Learning (CS229), Continuous Mathematical Methods with an Emphasis on Machine Learning (CS205L), Graph Machine Learning (CS224W), Mining Massive Dataset (CS246), Natural Language Processing with Deep Learning (CS224N), Probabilistic Graph Model (CS228), Introduction to Regression Models and Analysis of Variance (STATS 203)

Experiment

CRISPR-based genetic screen, Immunofluorescence, CRISPR & Lentivirus-mediated cell line generation, Bacterial & mammalian (adherent and suspension) cell culture, RNAi, Transwell migration assay, Colony assay, Biochemistry work on DNA, RNA, and Proteins