Kwak Yejin

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Github: https://github.com/Kwakyejin

Education

2020.03 – 2023.08	B.S., Biomedical Convergence Engineering, Data Science Major Pusan National University, Yangsan **(GPA: 3.95 / 4.5)** *(Magna cum laude, Dean's list)*
2023.09 – Present	M.Sc., Information Convergence Engineering Integrated Bachelor & Master Degree Program Pusan National University, Yangsan **(GPA: 4.5 / 4.5)** *Master's thesis **defense (ENG)** in **October 2024**, degree expected by **February 2025**.*

Research Experience

2022.06 – 2023.08	**Undergraduate Research Assistant** Computational Omics Laboratory (Advisor: Prof. Dr. Jeongbin Park) - Developed HCA:Organoid (Human Cell Atlas Organoid) Data Portal - Developed READRetro website visualizing retrosynthesis of plant resources - Analyzed MERSCOPE Alzheimer's Disease mouse models data with SSAM - Translated "A Byte of Python" by Swaroop C H. into Korean
2023.10 – 2023.12	**Visiting Intern Researcher** Statistical genomics and systems genetics (Advisor: Prof. Dr. Oliver Stegle) - Upgraded SSAM to operate with SpatialData to produce SpatialData output - Upgraded visualization part of HCA:Ogranoid Data Portal
2023.01 – Present	**Master Researcher** Computational Omics Laboratory (Advisor: Prof. Dr. Jeongbin Park) - Analyzed MERFISH DMD tissues in human and mouse data, suggests EZH2 as a critical factor in DMD satellite cells - Developing SSAM2, compatible with Visium HD
2023.07 – Present	**Visiting Intern Researcher** IBS Center for Genome Engineering (Advisor: Dr. Heetak Lee) - Developing SCON DB Portal - Analyzing Organoid Data & Developing Organoid Zoo Portal

Publication

- *Seul Lee, Taein Kim, **Yejin Kwak**, Min-Soo Choi, Jeongbin Park, Sung Ju Hwang, Sang-Gyu Kim,* **"READRetro: Natural Product Biosynthesis Planning with Retrieval-Augmented Dual-View Retrosynthesis"**, New Phytologist, March 21, 2023,
- *Eun Young Jeon, **Yejin Kwak**, Hyeji Kang, Se Young Jin, Soojin Park, Ryeo Kim, Dayoung Ko, Jae-Kyung Won, Anna Cho, Inkyung Jung, Chul-Hwan Lee, Jeongbin Park, Hyun-Young Kim, Jong-Hee Chae, Murim Choi,* **"Inhibiting EZH2 complements steroid effects in Duchenne muscular dystrophy",** Science Advances, July 03, 2024 *(review in progress)*

Poster Presentation

2023.01	(Poster Presentation) KSBMB, "HCA|Organoid portal: An easy-to-use web portal provides comprehensive organoid data", Hongcheon-gun, Gangwon-do, Korea
2023.05	(Poster Presentation) KSBMB, "HCA:Organoid data portal - a comprehensive web database for organoids", Busan, Korea
2024.01	(Poster Presentation) SCSOK, "Standardizing data format for cell segmentation-free in situ spatial transcriptomics data analysis framework (SSAM)", Yangsan, Gyeongsangnam-do, Korea
2024.09	(Poster Presentation) scverse, "Standardizing data format for cell segmentation-free in situ spatial transcriptomics data analysis framework (SSAM)", Munich, Germany

Skills

Programming Language	Python, R, MATLAB, ECMAScript(JavaScript), C/C++, HTML, Java, C#, Kotlin
Deep learning / ML	Pytorch, Numpy, Pandas, Scikit-learn, Matplotlib
Bioinformatics	scverse (Scanpy, SpatialData, Squidpy, etc.), Seurat, Octopus, SSAM
Language	Korean(1st language), English(B2), German(currently learning), Japanese(A2)
Others	Linux, Git, Bash

Awards

2022.01	**AI Hackathon – 3rd place** https://github.com/Kwakyejin/gongbang_app Plant predict application, EfficientV2 model is used as an algorithm for recognizing and judging native plants of Jeju Island
2023.08	**Busan ICT Convergence Hackathon - 3rd place** https://github.com/Kwakyejin/daw_app Create an AI-powered app that recommends travel routes
2023.02	**Bio-Health Medical Entrepreneurship Contest – 2nd place** https://github.com/Kwakyejin/memorygame Dementia training web Controlling the speed of cognitive decline in dementia by memory training web
2022.12	**Sports data analysis/utilization contest – 3rd place** https://github.com/Kwakyejin/Sports-data-analysis-contest/tree/main AI model that receives an appropriate exercise prescription Only normal people data have appropriate exercise prescriptions so match normal and disabled using propensity score matching and leverage normal appropriate exercise prescription.
2021.12	**Mini Kaggle Contest - Kong counting night – 2nd place** https://github.com/Kwakyejin/Team_countingkong

Beans prediction contest (Utilize Open CV)
Data is provided from five different angles of the pictures where "beans" are piled up.
A contest to estimate the number of stacked beans as accurately as possible from this data.

Scholarships

2020 – 2023   School Scholarships, Pusan National University

2020   School leader Scholarships, Pusan National University

2021 – 2022   Mentoring Scholarships, Samsung Welfare Foundation

2022   Student Scholarships, PNU Medical AI Human Resource Training Project