Jaebeom Kim

PH.D. STUDENT · BIOINFORMATICS

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Education

Seoul National University — *Seoul, South Korea*

PH.D. IN BIOINFORMATICS — *2024 - present*

- Advisor: Dr. Martin Steinegger

Seoul National University — *Seoul, South Korea*

MS IN BIOINFORMATICS — *2022 - 2024*

- Advisor: Dr. Martin Steinegger

POSTECH — *Pohang, South Korea*

BS IN LIFE SCIENCES — *2016 - 2022*

- Advisor: Dr. Kyuha Choi

Research Experience

Seoul National University - Lab. of Machine Learning and Bioinformatics — *Seoul, South Korea*

SUPERVISOR: DR. MARTIN STEINEGGER

PhD (2024 -)

- Integrating taxonomic and functional profiling of metagenome.
- Metabuli App-an easy and interactive desktop application for taxonomic profiling.
- Improving taxonomic classification via query read grouping.
- Ancient metagenomics

Master (2022 - 2024)

- Thesis: “Sensitive and specific metagenomic classification by joint analysis of DNA and amino acid sequences”
- Metabuli-sensitive and specific metagenomic classification via joint analysis of amino acid and DNA

Intern (2020 - 2022)

- Designing a novel taxonomic classifier that utilizes both DNA and amino acid sequences at the same time.

POSTECH - Lab. of Plant Genomic Recombination — *Pohang, South Korea*

SUPERVISOR: DR. KYUHA CHOI

Intern (2018, 2021)

- Bachelor thesis: “High-throughput genetic screening and mapping of high crossover rate mutants using DeepTetrad and SHOREmap”
- Prototype implementation of COmapper, software to calculate crossover rates using long-read data from pollen.
- Automating CellProfiler pipeline to measure crossover frequency using seed images from FTL/++ hemizygous plants.
- Implementing NGS whole genome shotgun sequencing library preparation protocol for genotyping-by-sequencing.

Korea Brain Research Institute - Neuroinformatics Lab. — *Daegu, South Korea*

SUPERVISOR: DR. MOOKYUNG CHEON

Intern (2017)

- Simulation of *Drosophila* neural cell development using MATLAB TREES toolbox.

Publications

PUBLISHED

SunJae Lee, **Jaebeom Kim**, Milot Mirdita, and Martin Steinegger (2025), Easy and interactive taxonomic profiling with Metabuli App, bioRxiv, **co-first author**

Jaebeom Kim and Martin Steinegger (2024), Metabuli: sensitive and specific metagenomic classification via joint analysis of amino acid and DNA, Nature Methods

Presentations

Talks

April 2025. *Metabuli: sensitive and specific metagenomic classification via joint analysis of amino acid and DNA.* RECOMB–Microbiome 2025 *Highlights*. Seoul, South Korea.

Oct. 2024. *Metabuli—Sensitive and specific metagenomic classification via joint analysis of amino acid and DNA.* Cold Spring Harbor Laboratory Microbiome meeting. Cold Spring Harbor, USA.

July 2024. *Improved metagenomic pathogen detection via Metabuli.* Biological Research Information Center webinar. South Korea.

Dec. 2023. *Joint analysis of amino-acid and DNA sequences for sensitive and specific metagenomic classification.* 2023 SNU-Bio Symposium. Seoul, South Korea.

July 2023. *Metabuli: sensitive and specific metagenomic classification via joint analysis of amino-acid and DNA.* The 31st Annual Intelligent Systems For Molecular Biology and the 22nd Annual European Conference on Computational Biology (ISMB/ECCB 2023). Lyon, France.

May 2022. *Metabuli: a metagenomic classifier that combines protein- and DNA-level classification to achieve both high sensitivity and specificity*. The 12th RECOMB Satellite Workshop on Massively Parallel Sequencing (RECOMB-SEQ 2022). La Jolla, USA.

Posters

Feb. 2025. *Sensitive and Specific Classification of Metagenomic Sequences Using Joint DNA and Amino Acid Analysis*. The 20th KOGO Winter Symposium. South Korea.

July 2023. *Metabuli: sensitive and specific metagenomic classification via joint analysis of amino-acid and DNA*. The 31st Annual Intelligent Systems For Molecular Biology and the 22nd Annual European Conference on Computational Biology (ISMB/ECCB 2023). Lyon, France.

May 2022. *Metabuli: a metagenomic classifier that combines protein- and DNA-level classification to achieve both high sensitivity and specificity*. The 26th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2022). La Jolla, USA.

May 2022. *Metabuli: a metagenomic classifier that combines protein- and DNA-level classification to achieve both high sensitivity and specificity*. The 12th RECOMB Satellite Workshop on Massively Parallel Sequencing (RECOMB-SEQ 2022). La Jolla, USA.

Awards, Fellowships, & Grants

2025	**BK21 Future Innovation Talent**, Seoul National University BK21	*KRW 2M*
2024	**Samsung DS Outstanding Paper Award, 3rd prize**, Samsung	*KRW 2M*
2024	**Presidential Science Scholarship**, Korea Student Aid Foundation	*KRW 24M/year*
2022	**KwanJeong Scholarship**, KwanJeong Educational Foundation	*KRW 22M*
2021	**Genexine Research Award**, Department of Life Sciences, POSTECH	*KRW 2M*
2021	**Genexine Research Award**, Department of Life Sciences, POSTECH	*KRW 1M*
2018	**Sung & Kim Scholarship**, Department of Life Sciences, POSTECH	*KRW 1M*

Teaching Experience

Spring 2022	**Introduction to Bioinformatics**, Teaching assistant	*SNU*
Fall 2021	**General biology**, Student Mentor	*POSTECH*
Fall 2021	**CSE101**, Student Mentor	*POSTECH*
Spring 2021	**General biology**, Student Mentor	*POSTECH*
Spring 2021	**CSE101**, Student Mentor	*POSTECH*
Fall 2018	**Molecular biology**, Student Mentor	*POSTECH*

Service and Outreach

2018	**Student Council of Life Science department**, Student Council President	*POSTECH*
2025	**International Society for Computational Biology's Regional Student Group**, Secretary	*South Korea*