

Jinmu Kim

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Education

- **2020 – 2024** Ph.D. Division of Biotechnology Korea University **Advisor: Hyun Park**
Ranked 1st among Ph.D. graduates and selected as the Ph.D. commencement representative
- **2014 – 2020** B.S. Biochemistry Gyeongsang National University

Professional Experience

- **2024.06 – Present**
Postdoctoral Associate Univ. of Illinois Urbana-Champaign **Advisor: Chris Cheng**
- **2024.03 – 2024.05**
Postdoctoral Associate Korea Univ. **Advisor: Hyun Park**

Research Experience

Bioinformatic analysis

- Shotgun metagenomics and metabarcoding analysis
- Genome survey and Microsatellite marker detections
- Chromosomal-level genome assembly, structural, functional annotation
- Complete mitochondrial genome analysis
- Whole transcriptome analysis
- **Coding skills • Linux, BASH, R**

Experimental technique

- **2020-2024 Lab chemical safety and Waste Management, Korea Univ.**
- High-quality DNA, RNA, and environmental DNA isolation
- Anti-inflammatory experiments using RawCell 264.7 (Mouse macrophage cell line)
- Skin barrier experiments using HaCaT cells (Human keratinocyte cell line)
- MTT assay using Neuro-2a cell (Mouse neuroblastoma cell line)
- Essential oil extraction using essential oil determination apparatus
- Quantitative and qualitative analysis of essential oil using GC/MS
- Quantitative analysis of microbiomes using qRT-PCR from soil
- Screening microbiomes from different environments
- Species identification using universal ITS primers in lichen samples
- Antibacterial and sterilization experiments using *E. coli*, *S. aureus*, and *C. albicans*

Teaching and Mentoring Experience

- 2025 Undergraduate Research Mentor - Wan, Yunji (Alex)**
Comparative analysis of antifreeze gene families in two Antarctic eelpouts, Univ. of Illinois Urbana-Champaign (UIUC)
Student later transferred to Univ. of Chicago in Fall 2025
- 2025 Teaching Lecture - Integrative Biology 271**
Organismal Biology: Phylogenetic Methods, Spring 2025, UIUC
- 2024 Laboratory Teaching Assistant**
Lecture - Flavor biotechnology, Spring 2024, Korea Univ.
- 2024 Teaching Assistant (Supervised 2 graduate students from Sangji Univ.)**
Transcriptome analysis of *Sargassum horneri* using Trinity, Spring 2024, Korea Univ.
- 2023 Head Lab TA and Lab Coordinator**
Lecture - Fundamentals of Biotechnology and Laboratory, Fall 2023, Korea Univ.
- 2023 Undergraduate Research Mentor (Supervised 4 undergraduate students)**
Genome assembly and annotation of microorganisms, Winter 2023, Korea Univ.
- 2022 Undergraduate Research Mentor (Supervised 4 undergraduate students)**
Novel microbial screening and *E. coli* transformation, Winter 2022, Korea Univ.
- 2022 Undergraduate Research Mentor (Supervised 2 undergraduate students)**
Antarctic fish species identification and genome assembly & annotation of lichen, Summer 2022, Korea Univ.
- 2021–2022 Laboratory Teaching Assistant**
Lecture - Flavor biotechnology, Each fall 2021-2022, Korea Univ.
- 2021 Undergraduate Research Mentor (Supervised 3 undergraduate student)**
Lichen field sampling (Suncheon, S. Korea) and DNA isolation, Summer 2021, Korea Univ.
- 2020 Undergraduate Research Mentor (Supervised 1 undergraduate student)**
Microbial screening from environmental samples, Winter 2020, Korea Univ.

Conference Presentation

- 2025 Poster Presentation**
Seeing beneath Antarctic Sea ice - Assessing faunal diversity of the persistently ice-covered McMurdo Sound by metagenomic sequencing of eDNA
6th (Korean American Scientists and Engineers Association - Midwest Regional Conference) KSEA MRC, UIUC
- 2025 Oral Presentation**
Seeing beneath Antarctic Sea ice - Assessing faunal diversity of the persistently ice-covered McMurdo Sound, Antarctica by metagenomic sequencing of eDNA
Evolution, Ecology and Behavior (EEB) Colloquium, UIUC
- 2023 Poster Presentation**

Genome-wide identification of *Tegillarca granosa* ATP-binding cassette (ABC) transporter family related to arsenic toxicity, Korean Society of Marine Life Science (KMALIS)

•**2023 Poster Presentation**

Chromosomal assembly of *Muraenolepis orangiensis* Genome using Hi-C Technology and immune deficiency of major histocompatibility complex (MHC) II, KMALIS

•**2023 Poster Presentation**

Chromosome-level genome assembly of Patagonian Moray Cod (*Muraenolepis orangiensis*) and immune deficiency of MHC II, 19th Korea Genome Organization (KOGO) winter symposium

•**2021 Oral Presentation**

Reconstruction of the full-length transcriptome analysis using PacBio Iso-Seq provides transcript variants in the immune system of blood clam, *Tegillarca granosa*, KMALIS

Professional Development and Awards

•**2025 Training and Workshop**

Microbial profiling workshop using DADA2
HPCBio in Roy J. Carver Biotechnology Center, UIUC

•**2025 Training and Workshop**

High Performance Computing (HPC) on Biocluster
CNRG in Carl R. Woese Institute for Genomic Biology, UIUC

•**2024 Best paper award at Korea University**

Chromosome-level genome assembly of Patagonian moray cod (*Muraenolepis orangiensis*) and immune deficiency of MHC class II

•**2024 Selected for Journal Cover**

Cell Stress and Chaperones, Vol. 29, Issue 1 <https://doi.org/10.1016/j.cstres.2024.01.004>

•**2022 Certification**

Environmental organic substances analysis process in biological samples using GC/MS
Korean Society for Environmental Analysis (KSFEA)

•**2022 Certification**

NGS data variant analysis basic course, Korea Bioinformation Center

•**2021 Best Oral Presentation Award**

Reconstruction of the full-length transcriptome analysis using PacBio Iso-Seq provides transcript variants in the immune system of blood clam, *Tegillarca granosa*, KMALIS

•**2021 Certification**

Specialist in Genome Informatics Basic Course II, Seoul National Univ. Hospital (SNUH)

Professional Service

Editorial and Peer-review

- 2026 Wellcome Open Research
- 2024 Wellcome Open Research, *Journal of Marine Life Science*

Judge and Evaluation

- 2025 Undergraduate Research Symposium
Poster session: Cells and Molecules, UIUC
- 2025 GEEB (Graduate Students in Ecology and Evolutionary Biology)
27th Annual Graduate Student Symposium, Poster and talk session, UIUC

Publication

* Authors contributed equally

1. Jinmu Kim & Hyun Park. 2025. Transcriptome analysis of lead-induced endoplasmic reticulum stress responses in *Tegillarca granosa*. **In preparation**.
2. York, J. M., Bhat, S., **Kim, J.**, Cárdenas, L., and Cheng, C. H. C. (2026) Chromosomal genome assemblies of Antarctic *Notothenia coriiceps* and temperate relative *Paranotothenia angustata*. *Under Review*
3. Kim, J. *, **Kim, J.** *, Cho, M., Choi, S. and Park, H. (2025) In silico structural analysis and biochemical characterization of a novel PETase from Antarctic *Streptomyces* sp. *Computational and Structural Biotechnology Journal*, 27, pp. 4963-4975.
<https://doi.org/10.1016/j.csbj.2025.11.017>
4. **Kim, J.** *, Kim, J. *, Choi, S., Cho, M., Choi, E., Lee, S.J., Kim, J.H. and Park, H. (2025) Genome survey and microsatellite marker development in the Antarctic Eaton's skate, *Bathyraja eatonii* (Rajiformes, Arhynchobatidae). *Regional Studies in Marine Science*, p.104432.
<https://doi.org/10.1016/j.rsma.2025.104432>
5. **Kim, J.** *, Kim, H.J. *, Choi, E., Park, J.J., Cho, M., Choi, S., Kim, H., Lee, J.S. and Park, H. (2025) Genome-wide identification of *Tegillarca granosa* ATP-binding cassette (ABC) transporter family related to arsenic toxicity. *Genomics*, p.111024.
<https://doi.org/10.1016/j.ygeno.2025.111024>
6. Lee, S.J., Cho, M., **Kim, J.**, Choi, E., Choi, S., Chung, S., Lee, J., Kim, J.H. and Park, H. (2024) Chromosome-level genome assembly and annotation of the Patagonian toothfish *Dissostichus eleginoides*. *Scientific Data*, 11(1), p.1240. <https://doi.org/10.1038/s41597-024-04119-w>
7. Jo, E., Cho, M., Choi, S., Lee, S.J., Choi, E., **Kim, J.**, Kim, J.Y., Kwon, S., Lee, J.H. and Park, H. (2024) High-quality chromosome-level genome assembly of female *Artemia franciscana* reveals sex chromosome and Hox gene organization. *Heliyon*.10(19): e38687.
<https://doi.org/10.1016/j.heliyon.2024.e38687>
8. **Kim, J.** *, Kim, H.J. *, Choi, E., Cho, M., Choi, S., Jeon, M.A., Lee, J.S. and Park, H. (2024) Expansion of the HSP70 gene family in *Tegillarca granosa* and expression profiles in

response to zinc toxicity. *Cell Stress and Chaperones*, 29(1), pp.97–112.

<https://doi.org/10.1016/j.cstres.2024.01.004>

9. Cho, M., Lee, S.J., Choi, E., **Kim, J.**, Choi, S., Lee, J.H. and Park, H. (2024) An Antarctic lichen isolate (*Cladonia borealis*) genome reveals potential adaptation to extreme environments. *Scientific Reports*, 14(1), p.1342.v. <https://doi.org/10.1038/s41598-024-51895-x>
10. Jo, E., Choi, S., Lee, S.J., **Kim, J.**, Choi, E.K., Cho, M., Kim, J., Chung, S., Lee, J., Kim, J.H. and Park, H. (2023) Chromosome-level genome assembly and annotation of the Antarctica whitefin plunderfish *Pogonophryne albipinna*. *Scientific data*, 10(1), p.891. <https://doi.org/10.1038/s41597-023-02811-x>
11. Choi, S., Lee, S.J., Choi, E., Jo, E., **Kim, J.**, Cho, M., Kim, J., Kwon, S. and Park, H. (2023) Application of Environmental DNA (eDNA) for Marine Biodiversity Analysis. *Journal of Marine Life Science*, 8(2), pp.93–103. <https://doi.org/10.23005/ksmls.2023.8.2.93>
12. **Kim, J.**⁺, Lee, S.J.⁺, Jo, E., Choi, E., Cho, M., Choi, S., Kim, J.H. and Park, H. (2023) Chromosome-level genome assembly of Patagonian moray cod (*Muraenolepis orangiensis*) and immune deficiency of major histocompatibility complex (MHC) class II. *Frontiers in Marine Science*, 10, p.1215125. <https://doi.org/10.3389/fmars.2023.1215125>
13. Lee, S.J., **Kim, J.**, Choi, E.K., Jo, E., Cho, M., Kim, J.H. and Park, H. (2023) A chromosome-level reference genome of the Antarctic blackfin icefish *Chaenocephalus aceratus*. *Scientific Data*, 10(1), p.657. <https://doi.org/10.1038/s41597-023-02561-w>
14. Choi, S., Lee, S.J., Cho, M., Choi, E., **Kim, J.**, Kim, J.H., Kim, H.W. and Park, H. (2023) Metagenomic Analysis of Antarctic Penguins Gut Microbial Dynamics by using Fecal DNA of Adélie (*Pygoscelis adeliae*) and Emperor (*Aptenodytes forsteri*) Penguins in Ross Sea, Antarctica. *Journal of Marine Life Science*, 8(1), pp.43–49. <https://doi.org/10.23005/ksmls.2023.8.1.43>
15. **Kim, J.**, Lee, S.J., Jo, E., Choi, E., Cho, M., Choi, S., Kim, J.H. and Park, H. (2022) Whole-Genome Survey and Microsatellite Marker Detection of Antarctic Crocodile Icefish, *Chionobathyscus dewitti*. *Animals*, 12(19), p.2598. <https://doi.org/10.3390/ani12192598>
16. Choi, E., Lee, S.J., Jo, E., **Kim, J.**, Parker, S.J., Kim, J.H. and Park, H. (2022) Genomic Survey and Microsatellite Marker Investigation of Patagonian Moray Cod (*Muraenolepis orangiensis*). *Animals*, 12(13), p.1608. <https://doi.org/10.3390/ani12131608>
17. Jo, E., Lee, S.J., Kim, J.H., Parker, S.J., Choi, E., **Kim, J.**, Han, S.R., Oh, T.J. and Park, H. (2021) Chromosomal-level assembly of Antarctic scaly rockcod, *Trematomus loennbergii* genome using long-read sequencing and chromosome conformation capture (Hi-C) technologies. *Diversity*, 13(12), p.668. <https://doi.org/10.3390/d13120668>
18. **Kim, J.**, Lee, S.J., Jo, E., Choi, E., Cho, M., Shin, S.R., Lee, J.S. and Park, H. (2021) Chromosomal assembly of *Tegillarca granosa* genome using third-generation DNA sequencing and Hi-C technology. *Journal of Marine Life Science*, 6(2), pp.97–105. <https://doi.org/10.23005/ksmls.2021.6.2.97>
19. Lee, S.J., **Kim, J.**, Choi, E., Jo, E., Cho, M. and Park, H. (2021) The Application of Genome Research to Development of Aquaculture. *Journal of Marine Life Science*, 6(2), pp.47–57. <https://doi.org/10.23005/ksmls.2021.6.2.47>

20. Choi, E., Kim, S.H., Lee, S.J., Jo, E., **Kim, J.**, Kim, J.H., Parker, S.J., Chi, Y.M. and Park, H. (2021) A first genome survey and genomic SSR marker analysis of *Trematomus loennbergii* Regan, 1913. *Animals*, 11(11), p.3186. <https://doi.org/10.3390/ani11113186>
21. Jo, E., Lee, S.J., Choi, E., **Kim, J.**, Lee, J.H. and Park, H. (2021) Sex-biased gene expression and isoform profile of Brine Shrimp *Artemia franciscana* by transcriptome analysis. *Animals*, 11(9), p.2630. <https://doi.org/10.3390/ani11092630>
22. Jo, E., Cho, Y.H., Lee, S.J., Choi, E., **Kim, J.**, Kim, J.H., Chi, Y.M. and Park, H. (2021) Genome survey and microsatellite motif identification of *Pogonophryne albigipinna*. *Bioscience Reports*, 41(7), p.BSR20210824. <https://doi.org/10.1042/BSR20210824>
23. **Kim, J.**, Lee, S.J., Jo, E., Choi, E., Kim, H.J., Lee, J.S. and Park, H. (2021) Genome Survey and Microsatellite Marker Selection of *Tegillarca granosa*. *Journal of Marine Life Science*, 6(1), pp.38-46. <https://doi.org/10.23005/KSMLS.2021.6.1.38>
24. Choi, E., Im, T.E., Lee, S.J., Jo, E., **Kim, J.**, Kim, S.H., Chi, Y.M., Kim, J.H. and Park, H. (2021) The complete mitochondrial genome of *Trematomus loennbergii* (Perciformes, Nototheniidae). *Mitochondrial DNA Part B*, 6(3), pp.1032-1033. <https://doi.org/10.1080/23802359.2021.1899070>
25. Jo, E., Lee, S.J., Choi, E., **Kim, J.**, Lee, S.G., Lee, J.H., Kim, J.H. and Park, H. (2021) Whole genome survey and microsatellite motif identification of *Artemia franciscana*. *Bioscience Reports*, 41(3), p.BSR20203868. <https://doi.org/10.1042/BSR20203868>
26. **Kim, J.**, Jang, S.M., Choi, E., Jo, E., Lee, S.J., Kim, S.H., Chi, Y.M., Kim, J.H. and Park, H. (2021) The complete mitochondrial genome of Eaton's skate, *Bathyraja eatonii* (Rajiformes, Arhynchobatidae). *Mitochondrial DNA Part B*, 6(1), pp.91-92. <https://doi.org/10.1080/23802359.2020.1847608>
27. Lee, S.J., Kim, J.H., Jo, E., Choi, E., **Kim, J.**, Choi, S.G., Chung, S., Kim, H.W. and Park, H. (2021) Chromosomal assembly of the Antarctic toothfish (*Dissostichus mawsoni*) genome using third-generation DNA sequencing and Hi-C technology. *Zoological research*, 42(1), p.124. <https://doi.org/10.24272/j.issn.2095-8137.2020.264>
28. Choi, E., Park, S.H., Lee, S.J., Jo, E., **Kim, J.**, Kim, J.H., Kim, J.H., Lim, J.S. and Park, H. (2020) The complete mitochondrial genome of Patagonian moray cod, *Muraenolepis orangiensis* Vaillant, 1888 (Gadiformes, Muraenolepididae). *Mitochondrial DNA Part B*, 5(3), pp.2707-2708. <https://doi.org/10.1080/23802359.2020.1787275>