BIOGRAPHICAL SKETCH

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NAME: Gangpyo Ryu

eRA COMMONS USER NAME (credential, e.g., agency login): ryu.gangpyo

POSITION TITLE: Postdoctoral researcher

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Yonsei University	BS	03/2013	08/2020	Applied Bioscience
Seoul National University	PHD	09/2020	08/2025	Cancer Biology
Seoul National University	Postdoctoral Fellow	09/2025	12/2025	Cancer Immunology
Stanford University	Postdoctoral Fellow	01/2026	-	Bioinformatics/ Immunology

A. Personal Statement

My research has focused on understanding clonal hematopoiesis (CH), particularly the clinical significance of specific subtypes that have not been fully explored. Given that CH is frequently driven by mutations in epigenetic modifier genes, I've leveraged large-scale genomic cohorts to investigate the unique epigenetic phenomenon of the DNMT3A gene and its association with clinically significant diseases. By incorporating computational optimization and reanalysis of existing datasets, I've developed a scalable research pipeline to study this phenomenon. This work is critical as the prevalence of CH increases with age, highlighting the need for a deeper understanding of its biology and clinical impact. My research on DNMT3A mutations, which represent a large proportion of CH cases, has not only advanced our understanding of the underlying biology but has also underscored the need for more refined diagnostic approaches.

As a postdoctoral fellow, my primary research interest is to investigate the association between specific CH driver genes and the progression and incidence of various diseases. Since CH is a premalignant condition affecting hematopoietic stem cells that impacts human body through immune system, its study is crucial for advancing both immunology and medical science. My ultimate goal is to provide evidence that can directly inform clinical decision-making, translating basic research into tangible patient benefits.

B. Positions, Scientific Appointments, and Honors

Positions and Employment

Sep.2025 – Dec.2025 Postdoctoral researcher, Division of Hematology, Seoul National University Hospital, Korea
Jan.2026 – TBD Postdoctoral researcher, Division of Pathology, Stanford University, Stanford, CA

Honors

C. Contributions to Science

1. My research focuses on the intersection of hematology and various diseases, specifically investigating how Clonal Hematopoiesis of Indeterminate Potential (CHIP) serves as a non-traditional risk factor for systemic diseases. I have led and contributed to large-scale cohort studies, particularly in UK Biobank data, to identify gene-level associations between somatic mutation s in hematopoietic stem cells and various disease pathophysiology. My work has demonstrated that CHIP significantly impacts the risk of atrial fibrillation and atherosclerotic cardiovascular disease (ASCVD), even when accounting for traditional risk factors like LDL cholesterol levels. Currently, I am expanding this research to investigate the role of clonal hematopoiesis in a broader spectrum of conditions, including cardiotoxicity following chemotherapy in breast cancer patients, chronic kidney disease, and ophthalmologic conditions like wet age-related macular degeneration (wet AMD).

    a. *Park CS**, ***Ryu G,** Koh Y, Park JB, et al**.** Clonal hematopoiesis and risk of trastuzumab-related cardiotoxicity. *JAMA Oncology*. 2026; Accepted
    b. Ahn HJ, An HY, **Ryu G**, Lim J, Sun C, Song H, Choi SY, Lee H, Maurer T, et al. Clonal haematopoiesis of indeterminate potential and atrial fibrillation: an east Asian cohort study. *European Heart Journal*. 2024; 45(10): 778-790.
    c. Lee H, Song H, **Ryu G**, Park HE, Yoon JW, Kim MJ, Chung S, Bae JH, et al. Impact of clonal haematopoiesis on atherosclerotic cardiovascular disease according to low-density lipoprotein cholesterol levels in general population. *European Journal of Preventive Cardiology*. 2024; zwae055.
    d. **Ryu G**, Koh Y, Jaiswal S, Yoon S. Clonal hematopoiesis: elements associated with clonal expansion and diseases. *Blood Research*. 2025; 60(1): 1-10.

2. Beyond previous outcomes, I am dedicated to uncovering the biological mechanisms of DMNT3A mutation subgroups that drive unique phenomenon. By utilizing advanced computational methods and large sample multi-omics analysis, I have contributed to understanding of DNMT3A biology acknowledging functional characteristics. My ongoing work includes investigating the subgroup of DNMT3A somatic mutation and various diseases, mainly various types of cancer.

    a. **Ryu G**, Koh Y, Jaiswal S, Yoon SS, Perspective on DNMT3A instability-inducing mutations in clonal hematopoiesis. *Submission pending*

* denotes equal contribution

Complete List of Published Work in MyBibliography:
https://www.ncbi.nlm.nih.gov/myncbi/gangpyo.ryu.1/bibliography/public/