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2022- Present	Senior researcher, Korea Institute of Science and Technology (KIST), Korea
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2019-2022	Research Fellow, Institute for Basic Science (IBS), Korea
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Research Interests:

Genome Engineering, CRISPR technology, Mitochondrial DNA Editing

Selected Publications:

1. Cho SI*, **Lim K***, Hong S*, Lee J, Kim A, Lim CJ, Ryou S, Lee JM, Mok YG, Chung E, Kim S, Han S, Cho SM, Kim J, Kim EK, Nam KH, Oh Y, Choi M, An TH, Oh KJ, Lee S[#], Lee H[#], Kim JS[#] (2024) Engineering TALE-linked deaminases to facilitate precision adenine base editing in mitochondrial DNA. ***Cell*** **187**, 95-109.

2. Lee J*, **Lim K***, Kim A, Mok YG, Chung E, Cho SI, Lee JM & Kim JS[#] (2023) Prime editing with genuine Cas9 nickases minimizes unwanted indels. ***Nature Communications*** **14**:1786, 1-11.

3. **Lim K***, Cho SI* & Kim JS[#] (2022) Nuclear and mitochondrial DNA editing in human cells with zinc finger deaminases. ***Nature Communications*** **13**:366, 1-10.

4. Whisenant D*, **Lim K***, Revêchon G, Yao H, Bergo MO, Machtel P, Kim JS & Eriksson M[#] (2022) Transient expression of an adenine base editor corrects the Hutchinson-Gilford progeria syndrome mutation and improves the skin phenotype in mice. ***Nature Communications*** **13**:3088, 1-13.

5. Kim D*[#], **Lim K*,** Kim D & Kim JS[#] (2020) Genome-wide specificity of dCpf1 cytidine base editors. ***Nature Communications*** **11**:4072, 1-8.

Enhancing Specificity and Versatility in Genome Engineering Technologies

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Abstract

Advances in genome engineering tools have opened up the possibility of directly targeting and modifying genomic sequences in almost all organisms. Base editing, a breakthrough genome engineering technology, can efficiently induce point mutations at target sites without generating double-strand DNA breaks (DSBs). Base editing enables C-to-T or A-to-G conversions in cell lines, animals, and plants, allowing researchers to study the functional effects of single-nucleotide polymorphisms (SNPs) and offering great hope for correcting the pathogenic mutation in gene therapy. In particular, the recently developed mitochondrial base editing strategy has broad implications for studying and treating mitochondrial diseases. Here, I will present novel methods for precise base editing in nuclear and mitochondrial DNA, using recombinant fusion proteins of programmable DNA-binding proteins and deaminases. In order to address the critical issues for therapeutic use, base editing has the potential to advance its specificity and versatility.

1. Cho SI*, **Lim K***, Hong S*, Lee J, Kim A, Lim CJ, Ryou S, Lee JM, Mok YG, Chung E, Kim S, Han S, Cho SM, Kim J, Kim EK, Nam KH, Oh Y, Choi M, An TH, Oh KJ, Lee S[#], Lee H[#], Kim JS[#] (2024) Engineering TALE-linked deaminases to facilitate precision adenine base editing in mitochondrial DNA. ***Cell*** **187**, 95-109.

2. **Lim K***, Cho SI* & Kim JS[#] (2022) Nuclear and mitochondrial DNA editing in human cells with zinc finger deaminases. ***Nature Communications*** **13**:366, 1-10.