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2022- Present	Assistant Professor, KAIST, Daejeon, South Korea
2020-2022	Investigator, GlaxoSmithKline, PA, USA
2016-2019	Postdoctoral Researcher, University of Pennsylvania, PA, USA
2014-2016	Postdoctoral Associate, Jackson Laboratory for Genomic Medicine, CT, USA
2014 Ph.D.	University of Melbourne, Melbourne, Australia
2008 Bachelor of Science with Honours	University of Melbourne, Melbourne, Australia
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Research Interests:

3D genome folding, chromatin conformation, transcription, epigenetics, bioengineering

Selected Publications:

1. **Ji Hun Kim**, Mayuri Rege, Jacqueline Valeri, Margaret C. Dunagin, Aryeh Metzger, Katelyn R. Titus, Thomas G. Gilgenast, Wanfeng Gong, Jonathan A. Beagan, Arjun Raj, Jennifer E. Phillips-Cremins, LADL: light-activated dynamic looping for endogenous gene expression control, **Nature Methods**, doi : 10.1038/s41592-019-0436-5, 2019

2. **Ji Hun Kim**, Katelyn R. Titus, Wanfeng Gong, Jonathan A. Beagan, Zhendong Cao, Jennifer E. Phillips-Cremins, 5C-ID: Increased resolution Chromosome-Conformation-Capture-Carbon-Copy with in situ 3C and double alternating primer design, **Methods**, 142, 39-46, doi: 10.1016/j.ymeth.2018.05.005, 2018

3. **Ji Hun Kim**, Tao Zhang, Nicholas C. Wong, Nadia Davidson, Jovana Maksimovic, Alicia Oshlack, William C. Earnshaw, Paul Kalitsis, Damien F. Hudson. Condensin I associates with structural and gene regulatory regions in vertebrate chromosomes. **Nature Communications**, 4, 2537, doi:10.1038/ncomms3537, 2013

Expanding 3D Genome Engineering from Loops to Domains

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Abstract

Mammalian genomes are folded into tens of thousands of long-range looping interactions. The cause-and-effect relationship between genome structures and their functions is poorly understood. We introduce light-activated-dynamic-looping (LADL), a new class of synthetic architectural protein system for directed rearrangement of the three-dimensional genome using blue light. LADL can induce the spatial colocalization of two genomic targets via light-induced heterodimerization of cryptochrome 2 and a dCas9-CIBN fusion protein. We apply LADL to redirect a stretch enhancer (SE) away from its endogenous Klf4 target gene and to the Zfp462 promoter to form a loop in 3D nuclear space. Using single-molecule RNA–FISH, we demonstrate that de novo formation of the Zfp462-SE loop correlates with a modest increase in Zfp462 expression. We continue developing technologies to extend our capabilities of 3D genome engineering from loops to domains. The newly developed technology will unveil the mysterious yet crucial mechanisms of the domain formations and their functions on gene transcription in live cells without perturbation.