





Dr. Jin-A Lee

Personal Information

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Summary

- Postdoctoral research experience at the Hospital for Sick Children, a research hospital affiliated with the University of Toronto, and one of Canada's top research hospitals.
- Ph.D. in Molecular Cell Biology, under the direction of Prof. Kyeong Kyu Kim head of the Structural Biology Laboratory in the Samsung Biomedical Research Institute and Sungkyunkwan University School of Medicine.
- M.Sc in Molecular Biology & Genetics, under the direction of Prof. Byungchan Ahn at the University of Ulsan.
- C.elegans culture, cloning, recombinant protein purification, helicase assay, measurement of embryonic survival with Camptothecin/HU, Immunostaining and comet assay.
- Cell culture (mouse ES, human iPS, P19, mouse and human fibroblast, Human adipocyte, HaCaT, HEK293T, mouse astrocyte, keratinocyte, HT1080 and ECAF (Esopagus cancer associated fibroblast), Stable cell line, drug screening, flow cytometry, qRT-PCR, immunostaining, luciferase reporter assay, analysis of microarray, Chem-seq and ChIP-seq, cardiomyocyte differentiation, reprogramming of astrocyte into functional neurons, direct conversion of fibroblast into brown adipocyte, 3D culture of skin cell and animal experiments (brain surgery, IP injection, making a skin fibrosis model and isolation of mouse fibroblasts).

Research Experience

The Hospital for Sick Children, Toronto, Ontario Canada *Jan. 11, 2021 – Present*
Research Fellow, Developmental and Stem Cell Biology Program

- Supervisor: Prof. Amy Wong
- Research Interests: CRISPR-Cas9, hPSC, Cystic Fibrosis, Lung Organoids, scRNA-seq, IHC, and Membrane Potential Assay.
- Research towards find a novel treatment for CF patients, using CRISPR-Cas9 system to make reporter cell line in hPSCs and hiPSCs(derived by CF patients) and develop lung organoid to find a treatment and study the function.

Education

Sungkyunkwan University, Suwon, South Korea *Sep. 2, 2013 – Aug. 26, 2019*
Ph.D., Structural Biology Laboratory, School of Medicine

- Supervisor: Prof. Kyeong Kyu Kim
- Research Interests: Stem Cells, Cardiomyocytes Differentiation, Drug Discovery
- Thesis: *Cardiomyogenesis enhancement of pluripotent stem cells by chemical compounds*

University of Ulsan, Ulsan, South Korea *Mar. 2, 2009 – Feb. 18, 2011*
M.Sc., Molecular Biology Genetics Lab, Biology Science

- Supervisor: Prof. Byungchan Ahn
- Research Interests: molecular mechanism of nucleotide excision repair, DNA repair in chromatin, aging & DNA repair in C.elegans, and human premature aging/BLM
- Thesis: *Caenorhabditis elegans BLM has a 3'-5' Helicase activity and participates in DNA damage response*

University of Ulsan, Ulsan, South Korea *Mar. 2, 2005 – Feb. 20, 2009*
B.Sc., Molecular Microbiology, Biology Science

Publications

Pre-Prints

Modeling Lung Cell Development using Human Pluripotent Stem Cells
Shuk Yee Ngan, Henry Quach, Joshua Dierolf, Onofrio Laselva, Jin-A Lee, Elena Huang, Maria Mangos, Sunny Xia, Christine E. Bear, Amy P. Wong
bioRxiv, doi: 10.1101/2021.07.16.452691 *Dec. 14, 2021*

Journal Articles

Gene Therapy for Cystic Fibrosis: New Tools for Precision Medicine
Jin-A Lee, Alex Cho, Elena N. Huang, Yiming Xu, Henry Quach, Jim Hu, Amy P. Wong
Journal of Translational Medicine, Volume 19 (452) *Oct. 30, 2021*

	<p>A Developmental Role of the Cystic Fibrosis Transmembrane Conductance Regulator in Cystic Fibrosis Lung Disease Pathogenesis <i>Elena N. Huang, Henry Quach, Jin-A Lee, Joshua Dierolf, Theo J. Moraes, Amy P. Wong</i> Frontiers in Cell and Developmental Biology, Volume 9 (742891) Oct. 11, 2021</p>	
	<p>Targeted epigenetic modulation using a DNA-based histone deacetylase inhibitor enhances cardiomyogenesis in mouse embryonic stem cells <i>Jin-A Lee, Ganesh N Pandian, Junichi Taniguchi, Gengo Kashiwazaki, Nazia Parveen, Hiroshi Sugiyama, Debojyoti De and Kyeong Kyu Kim</i> Journal of Cellular Physiology, Volume 236 (5) May, 2021</p>	
	<p>New Screening System Using Twist 1 Promoter Activity Identifies Dihydrodrotinone as a Potent Drug Targeting Cancer-Associated Fibroblasts <i>Seok-Hyung Kim, Eunmyong Lee, So-young Yeo, Keun-Woo Lee, Jin-A Lee and Kyeong Kyu Kim</i> Scientific Reports, Volume 10 (7058) Apr. 27, 2020</p>	
	<p>Discovery of Natural Compounds Promoting Cardiomyocyte Differentiation <i>Jin-A Lee, Jieun An, Tong Mook Kang, Debojyoti De, and Kyeong Kyu Kim</i> Stem Cells and Development, Volume 28 (1) Jan. 2, 2019</p>	
	<p>Characterization of Caenorhabditis elegans HIM-6/BLM Helicase: Unwinding Recombination Intermediates <i>Hana Jung, Jin-A Lee, Seoyoon Choi, Hyunwoo Lee and Byungchan Ahn</i> PLOS ONE, Volume 9 (7) July 18, 2014</p>	
Patents	<p>Composition Comprising Ursinoic Acid Derivatives for Inducing the Differentiation of Stem Cell and Uses thereof <i>Kyeong Kyu Kim, Jin-A Lee, Debojyoti De</i> Korean Patent #101669368 Oct. 25, 2016</p>	
	<p>Composition Comprising Lupinine Derivatives for Inducing the Differentiation of Stem Cell and Uses thereof <i>Kyeong Kyu Kim, Jin-A Lee, Debojyoti De</i> Korean Patent #101669367 Oct. 25, 2016</p>	
Conference Presentations	<p>The 2018 KSC Life-Science Chemistry Summer Workshop Oral & Poster presentation <i>Discovery of cardiogenesis-promoting natural products capable of modulating efficiency by inducing initial phase of differentiation</i> June. 21-23, 2018 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim Gangneung, South Korea</p>	
	<p>The Biology of Regenerative Medicine Oral & Poster presentation <i>Discovery of cardiogenesis-promoting natural products capable of modulating efficiency by inducing initial phase of differentiation</i> Apr. 25-27, 2017 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim Cambridge, UK</p>	
	<p>2016 Annual Meeting of Korean Society for Stem Cell Research Poster <i>Natural compounds can induce cardiomyocyte differentiation.</i> Aug. 18-19, 2016 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim Seoul, South Korea</p>	
	<p>ISSCR 2016 Annual Meeting Poster <i>Discovery of cardiogenesis-promoting natural products capable of modulating efficiency by inducing initial phase of differentiation.</i> June. 22–25, 2016 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim San Francisco, USA</p>	
	<p>International Symposium of Federation of Korean Societies for Molecular & Biomedical Sciences 2016 Poster <i>Natural compounds can induce cardiomyocyte differentiation</i> June. 17–18, 2016 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim Seoul, South Korea</p>	
	<p>The 4th Asia Pacific Protein Association (APPA) Conference Poster <i>Activation and efficiency enhancement of cardiomyocyte-specific commitment pathways in P19 embryonic stem cells by small molecules.</i> May 17–20, 2014 Jin-A Lee, Debojyoti De, Kyeong Kyu Kim Jeju, South Korea</p>	

	<p>22nd Annual Meeting of the Korean Society for Molecular and Cellular Biology. <i>Caenorhabditis elegans BLM has a 3'-5' Helicase Activity that is Responsible for DNA Damage Sensitivity</i> Jin-A Lee, Hana Jung, Moonjung Hyun and Byungchan Ahn.</p>	<p>Poster Oct. 7-8, 2010. Seoul, South Korea.</p>
	<p>20th Asia Pacific Cancer Conference (APCC) <i>Role of Werner Syndrome Protein in Response to Cisplatin-induced DNA Damage in Hepatocellular Carcinoma Cells.</i> Sun-Young Lee, Eun-sun Kim, Sojin Park, Jin-A Lee and Byungchan Ahn</p>	<p>Poster Nov. 12-14, 2009 Tsukuba, Japan</p>
	<p>21th Annual Meeting of the Korean Society for Molecular and Cellular Biology <i>Caenorhabditis elegans him-6 protein plays a role processing double strand breaks.</i> Jin-A Lee, Hana Jung, Moonjung Hyun and Byungchan Ahn.</p>	<p>Poster Oct. 15-16, 2009. Seoul, South Korea</p>
	<p>21th Annual Meeting of the Korean Society for Molecular and Cellular Biology <i>DNA secondary structure influences interplay between WRN helicase and exonuclease.</i> Moonjung Hyun, Jin-A Lee, Vilhelm A.Bohr and Byungchan Ahn</p>	<p>Poster Oct. 15-16, 2009 Seoul, South Korea</p>
	<p>21th Annual Meeting of the Korean Society for Molecular and Cellular Biology <i>CeWRN-1 RecQ protein functions in processing DSB with CeRPA</i> Moonjung Hyun, Hana Jung, Jin-A Lee and Byungchan Ahn</p>	<p>Poster Oct. 15-16, 2009 Seoul, South Korea</p>
	<p>17th International C.elegans Meeting <i>Caenorhabditis elegans him-6 protein exhibits RecQ helicase activity</i> Jin-A Lee, Hana Jung, Moonjung Hyun and Byungchan Ahn</p>	<p>Poster Jun. 24-28, 2009 UCLA, USA</p>
	<p>20nd Annual Meeting of the Korean Society for Molecular and Cellular Biology <i>Biochemical Characterization of Caenorhabditis elegans BLM protein</i> Hana Jung, Jin-A Lee, Moonjung Hyun and Byungchan Ahn</p>	<p>Poster Oct. 7-10, 2008 Seoul, South Korea</p>
Honours and Awards	<p>Young Scientist Award in Young Scientist Session <i>The 2018 KSC Life-Science Chemistry Summer Workshop</i></p>	<p>Jun. 22, 2018 \$100</p>
	<p>Brain Korea 21 plus (BK-21+) Scholarship <i>Government scholarship based on a graduate student's publication potential</i></p>	<p>2013-2017 \$1500/month</p>
	<p>Ulsan University Scholarship, "A"-level <i>Full scholarship, granted by university on professor's recommendation</i></p>	<p>2009-2010 \$22,000 total</p>
	<p>Brain Korea 21 (BK-21) Scholarship <i>Government scholarship based on a graduate student's publication potential</i></p>	<p>2009-2010 \$1800/month</p>
Teaching Experience	<p>Sungkyunkwan University, Suwon, South Korea Primary Teaching Assistant, <i>Molecular Medicine Laboratory</i> Instructed a molecular cell biology experiment class with topics such as cell culture, qRT-PCR, differentiation of cardiomyocyte, Neuron and muscle cells by different pluripotent cells</p>	<p>2016-2018</p>
	<p>University of Ulsan, Ulsan, South Korea Primary Teaching Assistant, <i>General Biology Science Laboratory I (1st Year)</i> Lead experiments on gram staining and the differences between gram negative and gram positive. I taught theory and lead experiments on electrophoresis and PCR (Polymerase Chain Reaction). I observed the drosophila gland chromosome with the students. I set and marked the test and marked student's experimental reports</p>	<p>2010</p>
	<p>Primary Teaching Assistant, <i>Genetics Laboratory (2nd Year)</i> Instructed a genetics laboratory with experiments such as observation of the drosophila life cycle and</p>	<p>2010</p>

genetic analysis, observation of drosophila gland chromosome, observation of mitosis and meiosis, observation of mutation by UV and bacteria transformation. I taught experimental methods, set and marked the test and marked student's experimental reports

Primary Teaching Assistant, *Molecular Biology Laboratory (3rd Year)* 2009
Instructed a molecular biology laboratory with topics such as phage plaque assay, plasmid DNA preparation, preparing worm genomic DNA, replication, southern blot and transcription

Primary Teaching Assistant, *Genetics Laboratory (2nd Year)* 2009
Instructed a genetics laboratory with activities such as observing the drosophila life cycle and genetic analysis, observing the drosophila gland chromosome, observing mitosis and meiosis, observing mutation by UV and bacteria transformation

References

Please contact me for a full list of referees.