
CURRICULUM VITAE

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Academic background

- (1977 ~ 1981) Seoul National University (BS, Pharmaceutics)
- (1981 ~ 1983) KAIST (MS, Biological Science)
- (1986 ~ 1991) Brown University (Ph.D., Biology and Medicine)

Professional Experiences

- (1983 ~ 1986) KAIST, Genetic Engineering Center (Researcher)
- (1991 ~ 1994) MIT, USA (Post-Doc)
- (1994 ~ 2001) Sung Kyun Kwan University (Associate Professor)
- (2001 ~ 2020) Seoul National University, College of Pharmacy and Graduate Program in Bioinformatics, Genetic Engineering (Professor)
- (2020 ~ present) Yonsei University, College of Pharmacy and School of Medicine (Professor)
- (1998 ~ 2007) National Creative Research Initiatives, Center for ARS Network (Director)
- (2007 ~ 2010) Seoul University, Center for Medicinal Protein Network and Systems Biology, Seoul National University (Director)
- (2008 ~ 2010) Information Center of Bio-pharmacological Network (Director)
- (2008 ~ 2020) Advanced Institutes of Convergence Technology, Integrated Bioscience and Biotechnology Institute (Chief of Bio-Convergence Research Institute)
- (2010 ~ present) Ministry of Science and ICT, Medicinal Bioconvergence Research Center (Director)
- (2020 ~ present) Yonsei University, Institute for Artificial Intelligence and Biomedicine (AIBI) (Director)
- (2021 ~ present) Zymedi Inc. (CEO)
- (1998 ~ present) The National Center for Drug Screening, China (Consultant)
- (2010 ~ present) Institute for Integrated Cell-Material Sciences, Kyoto University, Japan (Visiting Professor)

- (2007 ~ 2009) Scripps Institute, USA (Visiting Professor)
- (2020 ~ 2021) Ca' Foscari University, Italy (Visiting Scholar)
- (2008 ~ present) BMC Systems Biology, Amino Acids (Editorial Board Member)
- (2012 ~ present) Biochemical Journal (Editorial Board Member)
- (2017 ~ present) Journal of Molecular Cell Biology (Editorial Board Member)

Awards

- (1991) Barry Rosen Premier (Brown University, USA)
- (1997) International Fellowship Award (Matsumae International Foundation, Japan)
- (1999) Seoul City Award – Life Science (Seoul Metropolitan, Republic of Korea)
- (2000) Dong Hun Award (Korean Society of Biochemistry and Molecular Biology)
- (2002) The Best researcher in Biomedical Science (Korean Medical Association)
- (2003) The Scientist of the Month (Korean Society of Biochemistry and Molecular Biology)
- (2003) National Presidential Award (Ministry of Science and Technology, Republic of Korea)
- (2004, 2006) Research Excellency Award (Biopharmaceutical Society, Republic of Korea)
- (2012) The Leading Creative Researcher Award (Seoul National University, Republic of Korea)
- (2012) The Best Scientist Award (The National Academy of Sciences, Republic of Korea)
- (2014) The Distinguished Alumni Award (Advanced Institute of Science and Technology, Republic of Korea)
- (2015) Ho-Am Prize – Medicine (Ho-Am Foundation, Republic of Korea)
- (2015) Tech Biz Star Award (Ministry of Industry, Republic of Korea)
- (2018) Achievement Award (Ministry of Health and Welfare, Republic of Korea)
- (2020) Meritorious Honor Award (Ministry of Science and ICT, Republic of Korea)

Publication

1. Synthesis and discovery of the first potent proteolysis targeting chimera (PROTAC) degrader of AIMP2-DX2 as a lung cancer drug. Lee BR, Kim DG, Lee A, Kim YM, Cui LJ, **Kim S**, Choi IH, *J Enzyme Inhib Med Chem.*, 38:51, 2023
2. Anti-apoptotic Splicing Variant of AIMP2 Recover Mutant SOD1-Induced Neuronal Cell Death. Kook MG, Byun MR, Lee SM, Lee MH, Lee DH, Lee HB, Lee EJ, Baek KH, **Kim S**, Kang KS, Choi JW, *Mol Neurobiol.*, 60:145, 2023
3. Regulation of BRCA1 stability through the tandem UBX domains of isoleucyl-tRNA synthetase. Chung S, Kang MS, Alimbetov DS, Mun GI, Yunn NO, Kim YJ, Kim BG, Wie MW, Lee EA, Ra JS, Oh JM, Lee DH, Lee KD, Kim JH, Han SH, Kim KT, Chung WK, Nam KH, Park JH, Lee BH, **Kim S**, Zhao W, Ryu SH, Lee YS, Myung KJ, and Cho YJ, *Nat Commun.*, 13:6732, 2022

4. Tryptophan-dependent and -independent secretions of tryptophanyl- tRNA synthetase mediate innate inflammatory responses. Tram T. T. Nguyen, Choi YH, Lee WK, Ji YJ, Chun EH, Kim YH, Lee JE, Jung HS, **Kim S**, Jin M, *Cell Rep.*, 42 : 111905, 2022
5. Glutamyl-prolyl-tRNA synthetase 1 coordinates early endosomal anti-inflammatory AKT signaling. Lee EY, Kim SM, Hwang JH, Jang SY, Park S, Choi S, Lee GS, Hwang J, Moon JH, Fox P, **Kim S**, Lee CH, Kim MH, *Nat Commun.*, 13: 6455, 2022
6. Ultra-Thin membrane filter with a uniformly arrayed nanopore structure for nanoscale separation of extracellular vesicles without cake formation. Kim DS, Lee JH, Kim BY, Shin YJ, Park JH, Lee MB, Kim SB, **Kim S**, *Nanoscale Adv.*, in press, 2022
7. Discovery of benzodioxane analogues as lead candidates of AIMP2-DX2 inhibitors. Lee BR, Kim DG, Kim YM, **Kim S**, Choi IH, *Bioorg Med Chem Lett.*, 13: 128889, 2022
8. O-GlcNAc modification of leucyl-tRNA synthetase 1 integrates leucine and glucose availability to regulate mTORC1 and the metabolic fate of leucine. Kim KB, Yoo HC, Kim BG, Kim SH, Sung YS, Yoon I, Yu YC, Park SJ, Kim JH, Myung K, Hwang KY, **Kim S**, Han JM, *Nat Commun.*, 13: 2904, 2022
9. Two distinct receptor-binding domains of human glycyl-tRNA synthetase 1 displayed on extracellular vesicles activate M1 polarization and phagocytic bridging of macrophages to cancer cells. Park MC, Goughnour PC, Jun Sm, Cho SM, Song EJ, Kim SB, Kim HY, Hyun JK, Kim PH, Jung HS, **Kim S**, *Cancer Lett.*, 539: 215698, 2022
10. AIMP2-DX2 provides therapeutic interface to control KRAS-driven tumorigenesis. Kim D, Choi Y, Lee Y, Lim S, Kong J, Song JH, Roh Y, Harmalkar D, Lee K, Goo JI, Cho HY, Mushtaq AU, Lee J, Park SH, Kim D, Min BS, Lee KY, Jeon YH, Lee S, Lee K, **Kim S**, *Nat Commun.*, 13: 2572, 2022
11. Functional and pathologic association of aminoacyl-tRNA synthetases with cancer. Sung Y, Yoon I, Han JM, **Kim S**, *Exp Mol Med.*, 54: 553, 2022
12. Diffusion-based separation of extracellular vesicles by nanoporous membrane chip. Kim GJ, Park MC, Jang S, Han DY, Kim HJ, Kim WJ, Chun HG, **Kim S**. *Biosensors*, 11: 347, 2021
13. Protocol for improving diffraction quality of leucyl-tRNA synthetase 1 with methylation and post-crystallization soaking and cooling in cryoprotectants. Kim SH, Yoon I, **Kim S**, Hwang KY, *STAR Protoc.*, 2: 100642, 2021
14. Structural basis for the dynamics of human methionyl-tRNA synthetase in multi-tRNA synthetase complexes. Kim DK, Lee HJ, Kong JW, Cho HY, **Kim S**, Kang BS, *Nucleic Acids Res.*, 49: 6549, 2021
15. Clinical utility of methionyl-tRNA synthetase 1 immunostaining in cytologic brushings of indeterminate biliary strictures: A multicenter prospective study, Jang SI, Nahm JH, Kwon NH, Jeong S, Lee TH, Cho JH, Kwon CI, Kin DU, Kim JM, Cho HD, Lee HS, **Kim S**, Lee DK, *Gastrointest Endosc.*, 94: 733, 2021
16. Role of tRNAs in breast cancer regulation. Kwon NH, Lee JY, **Kim S**, *Adv Exp Med Biol.*, 1187: 121, 2021

17. Structure-based modification of pyrazolone derivatives to inhibit mTORC1 by targeting the leucyl-tRNA synthetase-RagD interaction. Kim JH, Jung KS, Lee CH, Song D, Kim KB, Yoo HC, Park SJ, Kang JS, Lee KR, **Kim S**, Ham JM, Han GH, *Bioorg Chem.*, 112: 104907, 2021
18. Discovery of novel potent migrastatic thiazolo[5,4-b] pyridines targeting Lysyl-tRNA synthetase (KRS) for treatment of cancer metastasis. Lee SB, Kwon NH, Seo BK, Lee JY, Cho HY, Kim KJ, Kim HS, Jung K, Jeon YH, **Kim S**, Suh YG, *Eur J Med Chem.*, 218: 113405, 2021
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20. Aminoacyl-tRNA synthetases and amino acid signaling. Yu AC, Han JM, **Kim S**. *Biochim Biophys Acta Mol Cell Res.*, 1868: 118889, 2021
21. Amyloid-like oligomerization of AIMP2 contributes to α -synuclein interaction and Lewy-like inclusion. Ham S, Yun SP, Kim H, Kim DH, Seo BA, Kim HJ, Shin JY, Dar MA, Lee GH, Yun IL, Kim D, **Kim S**, Kweon HS, Shin JH, Ko Han Seok, Lee Yj. *Sci Transl Med.*, 12: eaax0091, 2020
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24. Cell-based analysis of pairwise interactions between the components of the multi-tRNA synthetase complex. Kong JW, **Kim S**. *FASEB J.*, 34: 10476, 2020
25. Anticancer activity of pyrimethamine via ubiquitin mediated degradation of AIMP2-DX2. Kim DG, Park CM, Huddar S, Lim S, **Kim S**, Kim SK. *Molecules*, 25: 2763, 2020
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37. Symmetric assembly of a decameric subcomplex in human multi-tRNA synthetase complex via interactions between glutathione transferase-homology domains and aspartyl-tRNA synthetase. Cho HY, Lee HJ, Choi YS, Kim DK, Jin KS, **Kim S**, Kang BS. *J Mol Biol.*, 19: 30522, 2019
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39. Aminoacyl-tRNA synthetases as therapeutic targets. Kwon NH, Fox PL, **Kim S**. *Nat Rev Drug Discov.*, 18: 629, 2019
40. Nontranslational function of leucyl-tRNA synthetase regulates myogenic differentiation and skeletal muscle regeneration. Son K, You JS, Yoon MS, Dai C, Kim JH, Khanna N, Banerjee A, Martinis SA, Han G, Han JM, **Kim S**, Chen J. *J Clin Invest.*, 129: 2088, 2019
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43. Evolution of the multi-tRNA synthetase complex and its role in cancer. Hyeon DY, Kim JH, Ahn TJ, Cho Y, Hwang D, **Kim S**. *J Biol Chem*, 294: 5340, 2019
44. Structure-activity relationship of leucyladenylate sulfamate analogues as leucyl-tRNA synthetase (LRS)-targeting inhibitors of Mammalian target of rapamycin complex 1 (mTORC1). Yoon S, Kim SE, Kim JH, Yoon I, Tran PT, Ann J, Kim C, Byun WS, Lee S, **Kim S**, Lee J, Lee J. *Bioorg Med Chem*, 27: 1099, 2019
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46. Released tryptophanyl-tRNA synthetase stimulates innate immune responses against viral infection. Lee HC, Lee ES, Uddin MB, Kim TH, Kim JH, Chathuranga K, Chathuranga WAG, Jin M, **Kim S**, Kim CJ, Lee JS. *J Virol*, 93: e01291, 2019
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48. Tumor suppressor miRNA-204-5p regulates growth, metastasis, and immune micro environment remodeling in breast cancer. Hong BS, Ryu HS, Kim N, Kim J, Lee E, Moon H, Kim KH, Jin MS, Kwon NH, **Kim S**, Kim D, Chung DH, Jeong K, Kim K, Kim KY, Lee HB, Han W, Yun J, Kim JI, Noh DY, Moon HG. *Cancer Res*, 79: 1520, 2019
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54. Exosomal secretion of truncated cytosolic lysyl-tRNA synthetase induces inflammation during cell starvation. Kim SB, Cho S, **Kim S**. *Cell Stress*, 2: 119, 2018

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56. Discovery of novel leucyladenylate sulfamate surrogates as leucyl-tRNA synthetase (LRS)-targeted mammalian target of rapamycin complex 1 (mTORC1) inhibitors. Yoon S, Zuo D, Kim JH, Yoon I, Ann J, Kim SE, Cho D, Kim WK, Lee S, Lee J, **Kim S**, Lee J. *Bioorg Med Chem.*, 26: 4073, 2018
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58. Aminoacyl-tRNA synthetases, therapeutic targets for infectious diseases. Lee EY, **Kim S**, Kim MH. *Biochem Pharmacol*, 154: 424, 2018.
59. Coordination of leucine-sensing Rag GTPase cycle by leucyl-tRNA synthetase for the mTORC1 signaling pathway. Lee M, Kim JH, Yoon I, Lee C, Sichani MF, Kang JS, Kang J, Guo M, Lee KY, Han G, **Kim S**, Han JM. *Proc Natl Acad Sci U S A*, 115: E5279, 2018
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