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## **Education**

Ph.D. in Biochemistry (2004) Iowa State University  
B.S. in Biochemistry (1997) Yonsei University, Seoul, Korea

## **Professional Experience**

Head (2017 ~ Present) Zoonotic Virus Laboratory, Institut Pasteur Korea  
Head (2017 ~ 2018) Strategic Planning Team, Institut Pasteur Korea  
Instructor (2017 ~ 2018) Department of Biochemistry, Yonsei University  
Research Assistant Professor (2012 ~ 2017) Yonsei University College of Medicine  
Postdoctoral Research Associate (2007 ~ 2012) UTMB / University of North Carolina at Chapel Hill  
(PI: Stanley M. Lemon)  
Research Associate (2004 ~ 2006) HHMI / University of Wisconsin-Madison (PI: Paul Ahlquist)

## **Advisory Councils & Working Groups**

Member of the Pan-Government Working Group for COVID-19 Drug & Vaccine Development (2020 ~ Present)  
Member of the WHO Working Groups on COVID-19 Animal Models and Serology (2020 ~ Present)  
Volunteer of the OITF (Outbreak Investigation Task Force) of Institut Pasteur International Network (2020 ~ Present)  
Member of the MSIT Advisory Council in response to COVID-19 (2020 ~ Present)  
Member of the MSIT Advisory Council for International R&D Collaboration (2020 ~ Present)  
Member of the MSIT Advisory Council in response to African Swine Fever (2019 ~ Present)

## **Research Interests**

Host cell entry and infectious particle assembly of hepatitis B & C viruses  
Virus evolution, antiviral resistance and fitness change  
Prevention and control of emerging viral infections

## **Awards**

Best Presentation Awards, The Liver Week, Korea, 2018, 2017, 2015  
Best Teaching Award, Yonsei University, 2018  
James W. McLaughlin Travel Award, University of Texas Medical Branch, 2009  
PACE (Premium for Academic Excellence) Award, Iowa State University, 1998  
University Scholarship for Excellence in College Entrance Examinations, Yonsei University, 1991

## Publications

- Ko M, Jeon S, Ryu WS, Kim S. (2020) Comparative analysis of antiviral efficacy of FDA-approved drugs against SARS-CoV-2 in human lung cells (in revision)
- Jeon S, Ko M, Lee J, Choi I, Byun SY, Park S, Shum D, Kim S. (2020) Identification of antiviral drug candidates against SARS-CoV-2 from FDA-approved drugs. *Antimicrob Agents Chemother*. 64:e00819-20 (Selected as *Editor's Pick*)
- Shin EC, Han JW, Kang W, Kato T, Kim SJ, Zhong J, Kim S, Park SH, Sung PS, Watashi K, Park JY, Windisch MP, Oh JW, Wakita T, Han KH, Jang SK. (2020) The beginning of ending hepatitis C virus: A summary of the 26th International Symposium on Hepatitis C Virus and Related Viruses. *Viruses*. 12:302
- Kim DE, Min JS, Jang MS, Lee JY, Shin YS, Park CM, Song JH, Kim HR, Kim S, Jin YH, Kwon S. (2019) Natural bis-benzylisoquinoline alkaloids - tetrandrine, fangchinoline, and cepharanthine, inhibit human coronavirus OC43 infection of MRC-5 human lung cells. *Biomolecules*. 9:696
- Yoon JH, Lee JY, Lee J, Shin YS, Jeon S, Kim DE, Min JS, Song JH, Kim S, Kwon S, Jin YH, Jang MS, Kim HR, Park CM. (2019) Synthesis and biological evaluation of 3-acyl-2-phenylamino-1,4-dihydroquinolin-4(1*H*)-one derivatives as potential MERS-CoV inhibitors. *Bioorg Med Chem Lett*. 29:126727
- Kim SI, Kim S, Kim J, Chang SY, Shim JM, Jin J, Lim C, Baek S, Min JY, Park WB, Oh MD, Kim S\*, Chung J\*. (2019) Generation of a nebulizable CDR-modified MERS-CoV neutralizing human antibody. *Int J Mol Sci*. 20:5073 (\*corresponding authors)
- Yoon JH, Lee J, Lee JY, Shin YS, Kim DE, Min JS, Park CM, Song JH, Kim S, Kwon S, Jang MS, Kim HR. (2019) Study on the 2-phenylchroman-4-one derivatives and their anti-MERS-CoV activities. *Bull Korean Chem Soc*. 40:906-909
- Kim KH, Kim J, Ko M, Chun JY, Kim H, Kim S, Min JY, Park WB, Oh MD, Chung J. (2019) An anti-Gn glycoprotein antibody from a convalescent patient potently inhibits the infection of severe fever with thrombocytopenia syndrome virus. *PLoS Pathog*. 15:e1007375
- Jeong Y, Jin B, Lee HW, Park HJ, Park JY, Kim DY, Han KH, Ahn SH, Kim S. (2018) Evolution and persistence of the resistance-associated substitutions of hepatitis C virus after direct-acting antiviral treatment failures. *J Viral Hepat*. 25:1251-1259
- Lee HW, Oh SR, Kim DY, Jeong Y, Kim S, Kim BK, Kim SU, Kim DY, Ahn SH, Han KH, Park JY. (2018) Daclatasvir plus asunaprevir for the treatment of patients with hepatitis C virus genotype 1b infection: real-world efficacy, changes in liver stiffness and fibrosis markers, and safety. *Gut Liver*. 12:324-330
- Lee HW, Park HJ, Jin B, Dezhbord M, Kim DY, Han KH, Ryu WS, Kim S\*, Ahn SH\*. (2017) Effect of S267F variant of NTCP on the patients with chronic hepatitis B. *Sci Rep*. 7:17634 (\*corresponding authors)
- Min S, Lim YS, Shin D, Park C, Park JB, Kim S, Windisch MP, Hwang SB. (2017) Abl tyrosine kinase regulates hepatitis C virus entry. *Front Microbiol*. 8:1129
- Chung A, Jin B, Han KH, Ahn SH, Kim S. (2017) Cell culture-adaptive mutations of NS5A affect replication of hepatitis C virus differentially depending on the viral genotypes. *J Med Virol*. 89:146-152

Kim S\*, Han KH, Ahn SH\*. (2016) Hepatitis C virus and antiviral drug resistance. *Gut Liver*. 10:890-895 (\*corresponding authors)

Than TT, Tran GV, Son K, Park EM, Kim S, Lim YS, Hwang SB. (2016) Ankyrin repeat domain 1 is up-regulated during hepatitis C virus infection and regulates hepatitis C virus entry. *Sci Rep*. 6:20819

Ko C, Park WJ, Park S, Kim S, Windisch MP, Ryu WS. (2015) The FDA-approved drug irbesartan inhibits HBV-infection in HepG2 cells stably expressing sodium taurocholate co-transporting polypeptide. *Antivir Ther*. 20:835-842

Chon YE, Jin B, Ahn SH\*, Kim S\*, Kim ND, Park JH, Nam CM, Kim KH, Hong SP, Choi SH, Kim DY, Park JY, Han KH. (2015) Clonal evolution of multidrug resistant hepatitis B virus during entecavir rescue therapy. *Liver Int*. 35:2370-2383 (\*corresponding authors)

Kim S\*, Jin B, Choi SH, Han KH, Ahn SH. (2014) Casein kinase II inhibitor enhances production of infectious genotype 1a hepatitis C virus (H77S). *PLoS One*. 9:e113938 (\*corresponding author)

Yamane D, McGivern DR, Wauthier E, Yi M, Madden VJ, Welsch C, Antes I, Wen Y, Chugh PE, McGee CE, Widman DG, Misumi I, Bandyopadhyay S, Kim S, Shimakami T, Oikawa T, Whitmire JK, Heise MT, Dittmer DP, Kao CC, Pitson SM, Merrill AH Jr, Reid LM, Lemon SM. (2014) Regulation of the hepatitis C virus RNA replicase by endogenous lipid peroxidation. *Nat Med*. 20:927-935

Choi SH, Chung AR, Kang W, Park JY, Lee MS, Hwang SW, Kim DY, Kim SU, Ahn SH, Kim S, Han KH. (2014) Silencing of hypoxia-inducible factor-1 $\beta$  induces anti-tumor effects in hepatoma cell lines under tumor hypoxia. *PLoS One*. 9:e103304

Kang W, Sung PS, Park SH, Yoon S, Chang DY, Kim S, Han KH, Kim JK, Rehmann B, Chwae YJ, Shin EC. (2014) Hepatitis C virus attenuates interferon-induced major histocompatibility complex class I expression and decreases CD8<sup>+</sup> T cell effector functions. *Gastroenterology*. 146:1351-1360

Kim BK, Choi SH, Ahn SH, Chung AR, Park YK, Han KH, Kim S, Kim HS, Park JH, Kim KS, Lee HS, Cho YS, Kim KH, Ahn SH. (2014) Pre-S mutations of hepatitis B virus affect genome replication and expression of surface antigens. *J Gastroenterol Hepatol*. 29:843-850

Choi SH, Kwon OJ, Park JY, Kim DY, Ahn SH, Kim SU, Ro SW, Kim KS, Park JH, Kim S, Yun CO, Han KH. (2014) Inhibition of tumor angiogenesis and growth by small hairpin HIF-1 $\alpha$  and IL-8 in hepatocellular carcinoma. *Liver Int*. 34:632-642

Ko C, Shin YC, Park WJ, Kim S, Kim J, Ryu WS. (2014) Residues Arg703, Asp777, and Arg781 of the RNase H domain of hepatitis B virus polymerase are critical for viral DNA synthesis. *J Virol*. 88:154-163

Honegger JR, Kim S, Price AA, Kohout JA, McKnight KL, Prasad MR, Lemon SM, Grakoui A, Walker CM. (2013) Loss of immune escape mutations during persistent HCV infection in pregnancy enhances replication of vertically transmitted viruses. *Nat Med*. 19:1529-1533

Kim S, Ishida H, Yamane D, Yi M, Swinney DC, Fong S, Lemon SM. (2013) Contrasting roles of mitogen-activated protein kinases in cellular entry and replication of hepatitis C virus: MKNK1 facilitates cell entry. *J Virol*. 87:4214-4224

Welsch C, Schweizer S, Shimakami T, Domingues FS, Kim S, Lemon SM, Antes I. (2012) Ketoamide resistance and hepatitis C virus fitness in Val55 variants of the NS3 serine protease. *Antimicrob Agents Chemother*. 56:1907-1915

- Kim S, Welsch C, Yi M, Lemon SM. (2011) Regulation of the production of infectious genotype 1a hepatitis C virus by NS5A domain III. *J Virol.* 85:6645-6656
- Shetty S, Kim S, Shimakami T, Lemon SM, Mihailescu MR. (2010) Hepatitis C virus genomic RNA dimerization is mediated via a kissing complex intermediate. *RNA.* 16:913-925
- Hennen-Bierwagen TA\*, Liu F\*, Marsh RS\*, Kim S\*, Gan Q, Tetlow IJ, Emes MJ, James MG, Myers AM. (2008) Starch biosynthetic enzymes from developing maize endosperm associate in multisubunit complexes. *Plant Physiol.* 146:1892-1908 (\*equal contribution)
- Munakata T, Liang Y, Kim S, McGivern DR, Huibregtse J, Nomoto A, Lemon SM. (2007) Hepatitis C virus induces E6AP-dependent degradation of the retinoblastoma protein. *PLoS Pathog.* 3:1335-1347
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- Chung JP, Han KH, Kim KS, Yeh BI, Kim ST, Lee KS, Chon CY, Moon YM, Kang JK, Park IS. (1999) A novel primer-extension assay for the detection of a G to A mutation in the distal precore region of hepatitis B virus DNA. *J Viral Hepat.* 6:305-313
- Park YN, Han KH, Kim KS, Chung JP, Kim S, Park C. (1999) Cytoplasmic expression of hepatitis B core antigen in chronic hepatitis B virus infection: role of precore stop mutants. *Liver.* 19:199-205