



•Field	Virology	•Office	College of Medicine, 3512
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## Educational Background

- 2007-2013 Icahn School of Medicine at Mount Sinai (Ph.D.-Microbiology)
- 1997-2005 Sungkyunkwan University (BS-Genetic Engineering)

## Major Careers

- 2018-Present Assistant Professor, Department of Microbiology, College of Medicine, Hallym University
- 2013-2018 Research Instructor, Department of Microbiology, College of Medicine, Korea University
- 2013-2013 Postdoctoral Fellow, Department of Pathobiology, Veterinary School of Medicine, University of Pennsylvania
- 2010-2013 Visiting Scholar, Department of Pathobiology, Veterinary School of Medicine, University of Pennsylvania
- 2007 Research Assistant, Division of Hematology, School of Medicine, University of Utah
- 2006-2007 Research Assistant, Vaccine Research Institute of San Diego

## Research and Book

- 1) Kyungmin Park, Seung-Ho Lee, Jongwoo Kim, Jinyeong Lee, Geum-Young Lee, Seungchan Cho, Seung Ho Lee, Jeewan Choi, Juwon Park, Dong-Hyun Song, Se Hun Gu, Hyeongseok Yun, Jeong Eun Kim, Daesang Lee, Gyeong Haeng Hur, Seong Tae Jeong, **Won-Keun Kim**, and Jin-Won Song, A portable diagnostic assay, genetic diversity, and isolation of Seoul virus from *Rattus norvegicus* collected in Gangwon Province, Republic of Korea, *Pathogens*, 11(9), 1047; <https://doi.org/10.3390/pathogens11091047>(2022)
- 2) Jinyeong Lee, Kyungmin Park, Jongwoo Kim, Seung-Ho Lee, Geum-Young Lee, Seungchan Cho, Heung-Chul Kim, Terry A. Klein, Seung Ho Lee, Jeong-Ah Kim, Jeewan Choi, Juwan Park, Dong-Hyun Song, Se Hun Gu, Hyeongseok Yun, Jeong Eun Kim, Daesang Lee, Gyeong Haeng Hur, Seong Tae Jeong, Il-Ung Hwang, **Won-Keun Kim** and Jin-Won Song, Whole-genome sequencing and genetic diversity of severe fever with thrombocytopenia syndrome virus using multiplex PCR-based nanopore sequencing, Republic of Korea, *PLoS Neglected Tropical Diseases*, 16(9): e0010763. <https://doi.org/10.1371/journal.pntd.0010763> (2022)
- 3) Yongjun Lee, Dongjun Kim, Taehyun Kim, Yeonsu Oh, **Won-Keun Kim**, and Sukchan Lee, A therapeutically active minibody exhibits an antiviral activity in Oseltamivir-resistant influenza-infected mice via direct hydrolysis of viral RNAs, *Viruses*, 14(5):1105, <https://doi.org/10.3390/v14051105> (2022)
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- 5) Geum-Young Lee\*, **Won-Keun Kim**\*, Seungchan Cho, Kyungmin Park, Jongwoo Kim, Seung-Ho Lee, Jinyeong Lee, Young-Sun Lee, Ji Hoon Kim, Kwan Soo Byun, and Jin-Won Song, Genotyping and Molecular Diagnosis of Hepatitis A Virus in Patients Using Multiplex PCR-Based Next-Generation Sequencing, *Microorganisms*, 10(1), 100; <https://doi.org/10.3390/microorganisms10010100> (2022) **\*Equal contribution**
- 6) Yong Jin Yi, Minsun Kang, **Won-Keun Kim**, Kyungmin Huh, Jonas Klingström, Jin-Won Song, Jaehun Jung, Association between hemorrhagic fever with renal syndrome and cancers, *International Journal of Infectious Diseases*, <https://doi.org/10.1016/j.ijid.2021.10.014> (2021)
- 7) Seung-Ho Lee, Sung-Tae Chong, Heung-Chul Kim, Terry A. Klein, Kyungmin Park, Jinyeong Lee, Jeong-Ah Kim, **Won-Keun Kim**, and Jin-Won Song, Surveillance and Molecular Identification of *Borrelia* species in Ticks collected at U.S. Army Garrison Humphreys, Republic of Korea, 2018-2019, *Journal of Medical Entomology*, tjab170, <https://doi.org/10.1093/jme/tjab170> (2021)
- 8) Seung-Ho Lee, Kijin Kim, Jong Woo Kim, Jin Sun No, Kyungmin Park, Shailesh Budhathoki, Seung Ho Lee, Jinyeong Lee, Seung Hye Cho, Geum-Young Lee, Jusun Hwang, Heung-Chul Kim, Terry A. Klein, Chang-

Sub Uhm, **Won-Keun Kim**\*, Jin-Won Song\*, Discovery and Genetic Characterization of Novel Paramyxoviruses Belonging to The Genus Henipavirus in Crocidura species in The Republic of Korea, *Viruses*, 13(10), 2020; <https://doi.org/10.3390/v13102020> (2021) **\*Co-correspondence**

- 9) Seungchan Cho\*, **Won-Keun Kim**\*, Jin Sun No\*, Jaehun Jung, Yongjin Yi, Hyane Cho Park, Seung-Ho Lee, Geum-Young Lee, Kyungmin Park, Jeong-Ah Kim, Jongwoo Kim, Jingyeong Lee, Daesang Lee, Dong Hyun Song, Se Hun Gu, Seong Tae Jeong, Jin-Won Song, Urinary Genome Detection and Tracking of Hantaan Virus from Hemorrhagic Fever with Renal Syndrome Patients Using Multiplex PCR-based Next-generation Sequencing, *PLoS Neglected Tropical Diseases*, 15(9):e0009707 (2021) **\*Equal contribution**
- 10) Seung-Ho Lee, Jin Sun No, Kijin Kim, Shailesh Budhathoki, Kyungmin Park, Geum Young Lee, Seungchan Cho, Hyeok Sun Choi, Bong-Hyun Kim, Seunghee Cho, Jong Woo Kim, Jin Gyeong Lee, Seung Hye Cho, Heung-Chul Kim, Terry A. Klein, Chang-Sub Uhm, **Won-Keun Kim**\*, Jin-Won Song\*, Novel Paju Apodemus Paramyxovirus 1 and 2, Harbored by *Apodemus agrarius* in The Republic of Korea, *Virology*, 562: 40-49 (2021) **\*Co-correspondence**
- 11) Kyungmin Park\*, **Won-Keun Kim**\*, Seung-Ho Lee, Jongwoo Kim, Jingyeong Lee, Seungchan Cho, Geum-Young Lee, Jin Sun No, Keun Hwa Lee, and Jin-Won Song, A novel genotype of Hantaan Orthohantavirus harbored by *Apodemus agrarius chejuensis* as a potential etiologic agent of Hemorrhagic Fever with Renal Syndrome in Republic of Korea, *PLoS Neglected Tropical Diseases*, 15(5):e0009400 (2021) **\*Equal contribution**
- 12) Kyungmin Park, Seung-Ho Lee, Jongwoo Kim, Jingyeong Lee, Geum-Young Lee, Seungchan Cho, Seung Ho Lee, Kkothanahreum Park, Jin Sun No, Shailesh Budhathoki, Yu-Jin Kim, Young-Su Kim, Heung-Chul Kim, Terry A. Klein, **Won-Keun Kim**, and Jin-Won Song, Multiplex PCR-based Nanopore Sequencing and Epidemiological Surveillance of Hantaan orthohantavirus in *Apodemus agrarius*, Republic of Korea, *Viruses*, 13(5), 847 (2021)
- 13) Gunsup Lee, Shailesh Budhathoki, Geum-Young Lee, Kwang-ji Oh, Yeon Kyoung Ham, Young Jun Kim, Ye Rin Lim, Phuong Thi Hoang, Yongjun Lee, Seok-Won Lim, Jun-Mo Kim, Seungchan Cho, Tai-Hyun Kim, Jin-Won Song, Sukchan Lee\* and **Won-Keun Kim**\*, Broad-spectrum antiviral activity of 3D8, a nucleic acid-hydrolyzing single chain variable fragment (scFv), targeting SARS-CoV-2 and multiple coronaviruses *in vitro*, *Viruses*, 13(4), 650 (2021) **\*Co-correspondence**
- 14) Seungchan Cho, Jon C. Allison, Kkothanahreum Park, Jin Sun No, Seung-Ho Lee, Kyungmin Park, Jongwoo Kim, Terry A. Klein, Heung-Chul Kim, **Won-Keun Kim**, Jin-Won Song, A Clinical Case of Scrub typhus in The United States Forces Korea Patient with Eschar and Genetic Identification of *Orientia tsutsugamushi* using Multiplex PCR-based Next-generation Sequencing, *Pathogens*, 10(4), 424, <https://doi.org/10.3390/pathogens10040424> (2021)

- 15) Byoung Kwon Park, Jinsoo Kim, Sangkyu Park, Dongbum Kim, Minyoung Kim, Kyeongbin Baek, Joon-Yong Bae, Man-Seong Park, **Won-Keun Kim**, Younghee Lee, Hyung-Joo Kwon, MERS-CoV and SARS-CoV-2 replication can be inhibited by targeting the interaction between the viral spike protein and the nucleocapsid protein, *Theranostics*, 11(8):3853-3867 (2021)
- 16) **Won-Keun Kim**, Seungchan Cho, Seung-Ho Lee, Jin Sun No, Geum-Young Lee, Kyungmin Park, Daesang Lee, Seong Tae Jeong and Jin-Won Song, Genomic Epidemiology and Active Surveillance to Investigate Outbreaks of Hantaviruses, *Frontiers in Cellular and Infection Microbiology*, doi: 10.3389/fcimb.2020.532388, (2021) **Review**
- 17) Geum-Young Lee\*, **Won-Keun Kim**\*, Kyungmin Park\*, Seung-Ho Lee, Jusun Hwang, Jin Sun No, Seungchan Cho, Daesang Lee, Dong-Hyun Song, Se Hun Gu, Man-Seong Park, Seung Tae Jung, Young-Su Kim, and Jin-Won Song, Phylogeographic Diversity and Hybrid Zone of Hantaan orthohantavirus Collected in Gangwon Province, Republic of Korea, *PLoS Neglected Tropical Diseases*, 14(10): e0008714 (2020) **\*Equal contribution**
- 18) **Won-Keun Kim**, Coronavirus disease (COVID)-19 사태에 대한 현황과 고찰, 방재 저널 (*Journal of Disaster Prevention*, ISSN 1976-4294, 22 (2), 20-31 (2020)  
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- 19) Seung-Ho Lee\*, Jin Sun No\*, **Won-Keun Kim**\*, Ewa Gajda, Agnieszka Percec-Matysiak, Jeong-Ah Kim, Joanna Hildebrand, Richard Yanagihara, and Jin-Won Song, Molecular epidemiology and genetic diversity of orthohantaviruses in small mammals in western Poland, *American Journal of Tropical Medicine and Hygiene*, 103(1): 193-199 (2020) **\*Equal contribution**
- 20) Seung-Ho Lee\*, **Won-Keun Kim**\*, Kyungmin Park, Jin Sun No, Geum Young Lee, Heung-Chul Kim, Terry A. Klein, Mi-Sook Min, Seo-Jin Lee, Jusun Hwang, Man-Seong Park, and Jin-Won Song, Genetic Diversity and Phylogeography of Jeju Orthohantavirus (Hantaviridae) in the Republic of Korea, *Virology*, 543:13-19 (2020) **\*Equal contribution**
- 21) **Won-Keun Kim**, Jin Sun No, Daesang Lee, Jaehun Jung, Hayne Park, Yongjin Yi, Jeong-Ah Kim, Seung-Ho Lee, Yujin Kim, Sunhye Park, Seungchan Cho, Geum-Young Lee, Dong Hyun Song, Se Hun Gu, Kkothanahreum Park, Heung-Chul Kim, Michael R. Wiley, Patrick S. G. Chain, Seong Tae Jeong, Terry A. Klein, Gustavo Palacios, and Jin-Won Song, Active Targeted Surveillance to Identify Sites of Emergence of Hantavirus, *Clinical Infectious Diseases*, Mar. 20<sup>th</sup>, 70(3) 464-473 (2020)
- 22) Jin Sun No\*, **Won-Keun Kim**\*, Seungchan Cho\*, Seung-Ho Lee, Jeong-Ah Kim, Daesang Lee, Dong Hyun Song, Se Hun Gu, Seong Tae Jeong, Michael R. Wiley, Gustavo Palacios, and Jin-Won Song, "Comparison of targeted next-generation sequencing for whole-genome sequencing of Hantaan

orthohantavirus in *Apodemus agrarius* lung tissues, *Scientific Reports*, 9: 16631 (2019) **\*Equal contribution**

23) Heung-Chul Kim\*, **Won-Keun Kim\***, Jin Sun No, Seung-Ho Lee, Se Hun Gu, Sung-Tae Chong, Terry A. Klein, and Jin-Won Song, Urban Rodent Surveillance, Climatic Association and Genomic Analysis of Seoul Virus Collected at U.S. Army Garrison, Seoul, Republic of Korea, 2006-2010, *American Journal of Tropical Medicine and Hygiene*, 99(2): 470-476 (2018) **\*Equal contribution**

24) **Won-Keun Kim\***, Jin Sun No\*, Seung-Ho Lee, Dong Hyun Song, Daesang Lee, Jeong-Ah Kim, Se Hun Gu, Sunhye Park, Seong Tae Jeong, Heung-Chul Kim, Terry A. Klein, Michael R. Wiley, Gustavo Palacios, Jin-Won Song, Multiplex PCR-based next-generation sequencing and global diversity of Seoul virus in humans and rats, *Emerging Infectious Diseases*, 24(2): 249-257 (2018) **\*Equal contribution**  
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25) Heung-Chul Kim\*, **Won-Keun Kim\***, Terry A. Klein, Sung-Tae Chong, Peter V. Nunn, Jeong-Ah Kim, Seung-Ho Lee, Jin Sun No and Jin-Won Song, Hantavirus Surveillance and Genetic Diversity Targeting Small Mammals at Camp Humphreys, a US Military Installation and new expansion site, Republic of Korea, *PLoS One*, 12(4): e0176514 (2017) **\*Equal contribution**

26) Seung-Ho Lee\*, **Won-Keun Kim\***, Jin Sun No, Jeong-Ah Kim, Jin Il Kim, Se Hun Gu, Heung-Chul Kim, Terry A. Klein, Manseong Park and Jin-Won Song Dynamic Circulation and Genetic Exchange of a Shrew-borne Hantavirus, Imjin virus, in the Republic of Korea, *Scientific Reports*, 7: srep44369 (2017) **\*Equal contribution [KU BK21 Best research award, Korea University Brain Korea 21]**  
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27) Dong Hyun Song\*, **Won-Keun Kim\***, Se Hun Gu, Daesang Lee, Jeong-Ah Kim, Jin Sun No, Seung-Ho Lee, Michael R. Wiley, Gustavo Palacios, Jin-Won Song, Seong Tae Jeong Sequence-Independent, Single-Primer Amplification Next-Generation Sequencing of Hantaan virus cell culture-based isolates, *American Journal of Tropical Medicine and Hygiene*, 96: 389-394 (2017) **\*Equal contribution**

28) Jeong-Ah Kim, **Won-keun Kim**, Jin Sun No, Seung-Ho Lee, Sook-YoungLee, Ji Hye Kim, Jeong Hoon Kho, Daesang Lee, Dong Hyun Song, Se Hun Gu, Seong Tae Jeong, Man-Seong Park, Heung Chul Kim, Terry A. Klein, and Jin-Won Song, Genetic Diversity and Reassortment of Hantaan Virus Tripartite RNA Genomes in Nature, the Republic of Korea, *PLoS Neglected Tropical diseases*, 10(6): e0004650 (2016)

29) Sook-Young Lee, Jeong-Hoon Kim, Tae-Kun Seo, Jin Sun No, Hankyeom Kim, **Won-keun Kim**, Han-Gu Choi, Sung-Ho Kang, Jin-Won Song, Genetic and Molecular Epidemiological Characterization of a Novel Adenovirus in Antarctic Penguins Collected between 2008 and 2013, *PLoS One*, 11(6): e0157032 (2016)

- 30) **Won-Keun Kim**, Jeong-Ah Kim, Dong Hyun Song, Daesang Lee, Yong Chul Kim, Sook-Young Lee, Seung-Ho Lee, Jin Sun No, Ji Hye Kim, Jeong Hoon Kho, Se Hun Gu, Seong Tae Jeong, Michael Wiley, Heung-Chul Kim, Terry A. Klein, Gustavo Palacios, and Jin-Won Song, Phylogeographic analysis of Hemorrhagic Fever with Renal Syndrome (HFRS) Patients and Natural Hosts using Multiplex PCR-based Next Generation Sequencing, *Scientific Reports*, 6: srep26017 (2016)  
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- 31) Jin Sun No\*, **Won-keun Kim**\*, Jeong-Ah Kim, Seung-Ho Lee, Sook-Young Lee, Ji Hye Kim, Jeong Hoon Kho, Daesang Lee, Dong Hyun Song, Se Hun Gu, Seong Tae Jeong, Heung-Chul Kim, Terry A. Klein, and Jin-Won Song, Detection of Hantaan virus RNA from anti-Hantaan virus IgG seronegative rodents in a highly endemic area, the Republic of Korea, *Microbiology and Immunology*, 60(4): 268-271 (2016) **\*Equal contribution**
- 32) Jie Xu, Xiomara Mercado-López, Jennifer T. Grier, **Won-keun Kim**, Lauren F. Chun, Edward B. Irvine, Yoandris Del Toro Duany, Alison Kell, Sun Hur, Michael Galr Jr., Arjun Raj, Carolina B. López, Identification of a Natural Viral RNA Motif That Optimizes Sensing of Viral RNA by RIG-I, *mBio*, 6 (5): e01265-15 (2015)
- 33) Terry A. Klein, Heung-Chul Kim, Sung-Tae Chong, Jeong-Ah Kim, Sook-Young Lee, **Won-Keun Kim**, Peter V. Nunn, Jin-Won Song, Hantaan Virus Surveillance Targeting Small Mammals at Nightmare Range, a High Elevation Military Training Area, Gyeonggi Province, Republic of Korea, *PLoS One*, 10(4): e0118483 (2015)
- 34) **Won-keun Kim**, Deepika Jain, Melissa D. Sánchez, Cynthia J. Koziol-White, Krystal Matthews, Moyar Q. Ge, Angela Haczku, Reynold A. Panettieri Jr., Matthew B. Frieman, and Carolina B. López, Deficiency of MDA5 Results in Exacerbated Chronic Post-Viral Lung Inflammation, *American Journal of Respiratory and Critical Care Medicine*, 189 (4): 437-448 (2014)  
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- 35) Xiomara Mercado-López, Christopher R. Cotter, **Won-keun Kim**, Yan Sun, Luis Muñoz, Karla Tapia, and Carolina B. López, Highly Immunostimulatory RNA Derived from a Sendai Virus Defective Interfering Viral Genome, *Vaccine*, 31(48): 5713-5721 (2013)
- 36) Karla Tapia\*, **Won-keun Kim**\*, Yan Sun, Xiomara Mercado-López, Emily Dunay, Megan Wise, Michael Adu, and Carolina B. López, Defective viral genomes arising *in vivo* provide critical danger signals for the triggering of lung anti-viral immunity, *PLoS Pathogens*, 9(10): e1003703 (2013) **\*Equal contribution**

## [Featured Research]

- 37) Byung O. Lee, Joyce E. Jones, Cory J. Peters, David Whitacre, Lars Frelin, Janice Hughes, **Won-keun Kim**, and David R. Milich, Identification of a unique double-negative regulatory T-cell population, *Immunology*, 134(4): 434-447 (2011)
- 38) Christopher R. Cotter, **Won-keun Kim**, Marie L. Nguyen, Jacob S. Yount, Carolina B. López, John A. Blaho, and Thomas M. Moran, The virion host shutoff protein of Herpes Simplex Virus 1 blocks the replication-independent activation of NF- $\kappa$ B in dendritic cells in the absence of type I interferon signaling, *Journal of Virology*, 85(23): 12662-12672 (2011)

## Miscellaneous

### Research Interests

- 1) Development of antivirals
- 2) Next-generation sequencing: Comparative genomics
- 3) Virus-host interaction: Virology, Immunology, Epidemiology
- 4) Metagenomic analysis of virome

### Patents

- 1) Composition for detecting Hepatitis A virus comprising multiplex primer set, kit for diagnosing Hepatitis A and method for obtaining Hepatitis A virus whole genome sequence (Patent number: 10-2207348)
- 2) Hantavirus Whole Genome Sequence Identification Methods Using a Multiplex PCR-based Next-Generation Sequencing and Uses Thereof (Patent number: 10-1815105)

### Community activities

- 1) Won-Keun Kim, 오미클론, 혼란스러운 체계 대전환, 서울시립대신문, Mar., 15th, 2022  
<http://press.uos.ac.kr/news/articleView.html?idxno=13052>
- 2) Won-Keun Kim, 보이지 않는 바이러스 전쟁, 그 최전방에 자리한 백신 'mRNA 백신, 인류에게 생명의 메신저가 되다' , 성대신문, Mar., 15th, 2021
- 3) Won-Keun Kim, 모더나·화이자가 '픽'한 'mRNA'...아이진·에스티팜 '주목', 한국 경제 TV, Aug., 24th, 2020

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- 4) Won-Keun Kim, 바이러스 VS 인간 2부 '백신 X', SBS 스페셜, May 3rd, 2020
- 5) Won-Keun Kim, 인수공통병의 발생 동향과 향후 전망, BRIC View 동향리포트, BRIC View 2019-R11, Nov. 5th, 2019
- 6) Won-Keun Kim, mRNA 백신- 백신학의 새로운 시대, BRIC View 리뷰논문요약, BRIC View 2019-R11, May 23rd, 2019