PERSONAL STATEMENT (FOR THE 2025-2028 COUNCIL OF IUIS)
Eui-Cheol Shin

I have been a Professor at Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea (South Korea) since 2007. My lab investigates T cell responses in human viral disease and cancer with a focus on $CD8^+$ T cells. In particular, my lab studies cytokine-mediated, TCR-independent activation of $CD8^+$ T cells that contribute to host cell injury. A series of our studies has revived the research of bystander T cell activation in microbial infections as a cause of immunopathologic host injury (*Nat Immunol* 2022, 23:13; and https://en.wikipedia.org/wiki/Eui-Cheol_Shin).

During the COVID-19 pandemic, my lab has also contributed to our understanding of human immune responses to SARS-CoV-2 infection and vaccination. Particularly, my lab revealed the successful generation of stem cell-like memory T cells after SARS-CoV-2 natural infection or vaccination, the preserved functionality of vaccine-induced memory T cells against SARS-CoV-2 variants, and the evolution of human T cell responses following breakthrough infections with new variants. Through these studies, my lab proposed immunological strategies for the control of the pandemic (*Nat Rev Immunol* 2020, 20:585; and *Nat Rev Immunol* 2021, 21:687).

I received M.D. (1996) and Ph.D. (2001) from Yonsei University College of Medicine, Seoul, Republic of Korea, and was trained as a postdoctoral fellow at NIDDK, National Institutes of Health, Bethesda, Maryland, USA (2002 - 2007). Then I joined Graduate School of Medical Science and Engineering, KAIST in 2007, where I am currently a Professor. During the COVID-19 pandemic, I served as the director of the Center for Viral Immunology, Korea Virus Research Institute, Institute for Basic Science (IBS), Daejeon, Republic of Korea (2021 - 2024). I was elected the Fellow of the Korea Academy of Science and Technology (2019) and the Fellow of the National Academy of Medicine of Korea (2024).

During my career, I have participated in many activities to promote international cooperation and communication, by organizing several conferences and workshop meetings. Currently, I am serving as the Chair of the International Cooperation Committee of the Korean Association of Immunologists (KAI). I believe that the advancement of immunology can be achieved through strong international solidarity. I also believe that young immunologists can be trained more effectively through strong international cooperation. If I am elected as a council member, I would like to demonstrate my belief in the importance of international cooperation for the next generation immunology.

CURRICULUM VITAE

NAME: Eui-Cheol Shin
NATIONALITY: Republic of Korea (South Korea)
E-MAILS: ecshin@kaist.ac.kr and ecshin0@gmail.com

CURRENT POSITION:

Professor, Graduate School of Medical Science and Engineering,
Korea Advanced Institute of Science and Technology (KAIST),
Daejeon, Republic of Korea

EDUCATION:

1990-1996:	M.D., Yonsei University College of Medicine, Seoul, Korea
1996-2001:	Ph.D. (in Microbiology and Immunology), Yonsei University College of Medicine, Seoul, Korea

CAREER:

2002-2007:	Postdoctoral Fellow, Immunology Section, Liver Diseases Branch, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Bethesda, MD, USA
2007-present:	Assistant Professor, Associate Professor, and Professor, Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea
2018-present:	Adjunct Professor, Yonsei University College of Medicine, Seoul, Korea
2019-present:	Fellow, The Korea Academy of Science and Technology
2021-2024:	Director, Center for Viral Immunology, Korea Virus Research Institute, Institute for Basic Science, Daejeon, Korea
2024-present:	Fellow, National Academy of Medicine of Korea

ACADEMIC ACTIVITIES (SELECTED):

2014-2017:	Chair, Academic Committee, The Korean Vaccine Society, Korea
2018-2019:	Chair, Academic Committee, The Korean Society of Virology, Korea
2018-2024:	Member, HCV Conference International Organizing Committee
2019:	Co-organizer, The 26th International Symposium on Hepatitis C Virus and Related Viruses, Seoul, Korea
2020:	Chair, Academic Committee, The Korean Association of Immunologists, Korea
2020-2021:	Chair, Academic Committee, The 8th Congress of the FIMSA (Federation of Immunological Societies of Asia Oceania)
2022-2025:	Member, Moderna Fellowship Steering Committee, Moderna, USA
2023-present:	Co-organizer, IBS-KAI Conference on Infection and Immunity, Daejeon, Korea (introduced in *Nat Immunol* 24:1794-1796, 2023)
2024-present:	Chair, International Cooperation Committee, The Korean Association of Immunologists, Korea
2013-present:	Deputy Editor, *Immune Network*
2023-present:	Editorial Board, *Cellular & Molecular Immunology*
2025-present:	Advisory Board, *Science Immunology*
2025-present:	Consulting Editor, *Journal of Clinical Investigation*

RESEARCH INTERESTS: Viral Immunology, Viral Hepatitis, COVID-19, Tumor Immunology, Immune Aging, and Human Immunology

SELECTED PUBLICATIONS (SINCE 2016)

1. **Shin EC**, Sung PS, Park SH. Immune responses and immunopathology in acute and chronic viral hepatitis. *Nat Rev Immunol* 16:509-523, 2016
2. Kim J, Chang DY, Lee HW, Lee H, Kim JH, Sung PS, Kim KH, Hong SH, Kang W, Lee J, Shin SY, Yu HT, You S, Choi YS, Oh I, Lee DH, Lee DH, Jung MK, Suh KS, Hwang S, Kim W, Park SH, Kim HJ, **Shin EC**. Innate-like cytotoxic function of bystander activated $CD8^+$ T cells is associated with liver injury in acute hepatitis A. *Immunity* 48:161-173, 2018
3. Kim CG, Jang M, Kim Y, Leem G, Kim KH, Lee H, Kim TS, Choi SJ, Kim HD, Han JW, Kwon M, Kim JH, Lee AJ, Nam SK, Bae SJ, Lee SB, Shin SJ, Park SH, Ahn JB, Jung I, Lee KY, Park SH, Kim H, Min BS, **Shin EC**. VEGF-A drives TOX-dependent T-cell exhaustion in anti-PD-1-resistant microsatellite stable colorectal cancers. *Sci Immunol* 4:eaay0555, 2019
4. Kim JH, Han JW, Choi YJ, Rha MS, Koh JY, Kim KH, Kim CG, Lee YJ, Kim AR, Park J, Kim HK, Min BS, Seo SI, Kang M, Park HJ, Han DH, Kim SI, Kim MS, Lee JG, Lee DH, Kim W, Park JY, Park SH, Joo DJ, **Shin EC**. Functions of human liver $CD69^+CD103^-CD8^+$ T cells depend on HIF-2α activity in healthy and pathologic livers. *J Hepatol* 72:1170-1181, 2020
5. Rha MS, Han JW, Kim JH, Koh JY, Park HJ, Kim SI, Kim MS, Lee JG, Lee HW, Lee DH, Kim W, Park JY, Joo DJ, Park SH, **Shin EC**. Human liver $CD8^+$ MAIT cells exert TCR/MR1-independent innate-like cytotoxicity in response to IL-15. *J Hepatol* 73:640-650, 2020
6. Lee JS, Park S, Jeong HW, Ahn JY, Choi SJ, Lee H, Choi B, Nam SK, Sa M, Kwon JS, Jeong SJ, Lee HK, Park SH, Park SH, Choi JY, Kim SH, Jung I, **Shin EC**. Immunophenotyping of COVID-19 and influenza highlights the role of type I interferons in development of severe COVID-19. *Sci Immunol* 5:eabd1554, 2020
7. Lee JS, **Shin EC**. The type I interferon response in COVID-19: implications for treatment. *Nat Rev Immunol* 20:585-586, 2020
8. Rha MS, Jeong HW, Ko JH, Choi SJ, Seo IH, Lee JS, Sa M, Kim AR, Joo EJ, Ahn JY, Kim JH, Song KH, Kim ES, Oh DH, Ahn MY, Choi HK, Jeon JH, Choi JP, Kim HB, Kim YK, Park SH, Choi WS, Choi JY, Peck KR, **Shin EC**. PD-1-expressing SARS-CoV-2-specific $CD8^+$ T cells are not exhausted, but functional in patients with COVID-19. *Immunity* 54:44-52, 2021
9. Jung JH, Rha MS, Sa M, Choi HK, Jeon JH, Seok H, Park DW, Park SH, Jeong HW, Choi WS, **Shin EC**. SARS-CoV-2-specific T cell memory is sustained in COVID-19 convalescent patients for 10 months with successful development of stem cell-like memory T cells. *Nat Commun* 12:4043, 2021
10. Leem G, Cheon S, Lee H, Choi SJ, Jeong S, Kim ES, Jeong HW, Jeong H, Park SH, Kim YS, **Shin EC**. Abnormality in the NK cell population is prolonged in severe COVID-19 patients. *J Allergy Clin Immunol* 148:996-1006, 2021
11. Rha MS, **Shin EC**. Activation or exhaustion of $CD8^+$ T cells in patients with COVID-19. *Cell Mol Immunol* 18:2325-2333, 2021
12. Noh JY, Jeong HW, Kim JH, **Shin EC**. T cell-oriented strategies for controlling the COVID-19 pandemic. *Nat Rev Immunol* 21:687-688, 2021
13. Lee H, Jeong S, **Shin EC**. Significance of bystander T cell activation in microbial infection. *Nat Immunol* 23:13-22, 2022
14. Choi SJ, Kim DU, Noh JY, Kim S, Park SH, Jeong HW, **Shin EC**. T cell epitopes in SARS-CoV-2 proteins are substantially conserved in the Omicron variant. *Cell Mol Immunol* 19:447-448, 2022
15. Jung MK, Jeong SD, Noh JY, Kim DU, Jung S, Song JY, Jeong HW, Park SH, **Shin EC**. BNT162b2-induced memory T cells respond to the Omicron variant with preserved polyfunctionality. *Nat Microbiol* 7:909-917, 2022
16. Koh JY, Rha MS, Choi SJ, Lee HS, Han JW, Nam H, Kim DU, Lee JG, Kim MS, Park JY, Park SH, Joo DJ, **Shin EC**. Identification of a distinct NK-like hepatic T-cell population activated by NKG2C in a TCR-independent manner. *J Hepatol* 77:1059-1070, 2022
17. Lee YJ, Kim JY, Jeon SH, Nam H, Jung JH, Jeon M, Kim ES, Bae SJ, Ahn J, Yoo TK, Sun WY, Ahn SG, Jeong J, Park SH, Park WC, Kim SI, **Shin EC**. $CD39^+$ tissue-resident memory $CD8^+$ T cells with a

clonal overlap across compartments mediate anti-tumor immunity in breast cancer. *Sci Immunol* 7:eabn8390, 2022

18. Seok J, Cho SD, Lee J, Choi Y, Kim SY, Lee SM, Kim SH, Jeong S, Jeon M, Lee H, Kim AR, Choi B, Ha SJ, Jung I, Yoon KJ, Park JE, Kim JH, Kim BJ, **Shin EC**, Park SH. A virtual memory $CD8^+$ T cell-originated subset causes alopecia areata through innate-like cytotoxicity. *Nat Immunol* 24:1308-1317, 2023
19. Lee H, Jung MK, Noh JY, Park SH, Chung Y, Ha SJ, **Shin EC**. Better understanding $CD8^+$ T cells in cancer and viral infections. *Nat Immunol* 24:1794-1796, 2023
20. Kim SH, Kim J, Jung S, Noh JY, Kim J, Park H, Song YG, Peck KR, Park SH, Park MS, Ko JH, Song JY, Choi JY, Jung MK, **Shin EC**. Omicron BA.2 breakthrough infection elicits $CD8^+$ T cell responses recognizing the spike of later Omicron subvariants. *Sci Immunol* 9:eade6132, 2024
21. Rha MS, Kim G, Lee S, Kim J, Jeong Y, Jung CM, Noh HE, Noh JY, Kim YM, Cho HJ, Kim CH, **Shin EC**. SARS-CoV-2 spike-specific nasal-resident $CD49a^+CD8^+$ memory T cells exert immediate effector functions with enhanced IFN-γ production. *Nat Commun* 15:8355, 2024
22. Kim SY, Koh JY, Lee DH, Kim HD, Choi SJ, Ko YY, Lee HS, Lee JS, Choi IA, Lee EY, Jeong HW, Jung MK, Park SH, Park JY, Kim W, Shin EC. Epigenetic scars in regulatory T cells are retained after successful treatment of chronic hepatitis C with direct-acting antivirals. *J Hepatol* 81:806-818, 2024