

Eui Ho Kim, Ph.D.

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EXPERIENCED IMMUNOLOGIST

Expertise in the assessment of innate and adaptive immune responses in various mouse models including viral and bacterial infections, vaccinations, tumors and inflammatory diseases. Immunologist with 16 years of experience. 3 years of experience in cancer biology. 2 years of molecular cloning, recombinant protein expression and purification. Experience in *in vivo* test of antiviral drugs. 17 publications with more than 760 citations in peer-reviewed journals including *eLife*, *Journal of Immunology*, *Cell Reports*, *Frontiers in Immunology*, *PLoS Pathogens*, *Vaccine*, *Cell Death and Differentiation*, and *Virology*. Extensive knowledge in immune cells such as T cell, B cell (antibody), and dendritic cell/macrophage, immunological memory, vaccine adjuvant and cancer immunotherapy. Many years of experience in managing projects and mentoring research teams and students.

Research Interests

- T cell immunology
 - Immunological memory
 - Immuno-pathogenesis
 - B cell/antibody response
 - Vaccine & adjuvant
 - Tumor immunology
 - Dendritic cell / macrophage
 - Viral immunology
 - Anti-viral drug screening
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Professional Experience

Institut Pasteur Korea, Gyeonggi-do, South Korea

Mar, 2020 – Present

Team Head in Viral Immunology Laboratory

- Basic immunological studies for vaccine- and infection-induced immunity
- Analysis of immune responses after viral infections including COVID-19
- High throughput screening of immune-regulatory molecules

NA Vaccine Institute, Seoul, South Korea

Jan, 2019 – Jan, 2020

Director of R&D center and CTO

- Adjuvant and vaccine development for infectious diseases
- Adjuvant and vaccine development for cancer
- Development of peptide-based vaccines and adoptive cell therapy

National Institute of Environmental Health Sciences (NIEHS/NIH), NC

Feb, 2018 – Jan, 2019

Research Fellow at **Dr. Jennifer Martinez Lab**

- Role of cell death and efferocytosis during infection, vaccination, and tumor challenge
- Metabolic control of inflammation during efferocytosis

EMORY UNIVERSITY, ATLANTA, GA

May, 2017 – Jan, 2018

Postdoctoral Fellow at **Dr. Joshy Jacob's Lab**

- Antimicrobial peptide screening against Influenza, Zika and Dengue virus.
- Overcoming maternal antibody-mediated immuno-suppression upon influenza vaccination to neonates.
- Examined the effect of antimicrobial peptide in mice upon Influenza and Zika virus challenges.

EMORY UNIVERSITY, ATLANTA, GA

Jul, 2014 – Apr, 2017

Postdoctoral Fellow at **Dr. Bali Pulendran's Lab**

- Immunological mechanism governing immunogenicity of various vaccine adjuvants.
- Role of stress response in a vaccination and a chronic allergy models.
- Utilized various mouse models including inactivated and live-attenuated/inactivated Influenza vaccines, Yellow Fever vaccine, Herpes Zoster vaccine, tumor challenge (melanoma and lymphoma) and house dust mite-mediated allergy. Experimental approaches such as flow cytometry, intracellular cytokine staining, antibody ELISA, Western blotting, immunofluorescence, electron microscopy, *in vitro* differentiation of myeloid cells from hematopoietic stem cells and antigen cross-presentation were used.

UNIVERSITY OF WISCONSIN-MADISON, MADISON, WI

Apr, 2008 – Jun, 2014

Research Assistant (Ph.D. Student) at **Dr. M. Suresh's Lab**

- Molecular mechanism of memory T cell differentiation during acute and chronic viral infections.
- Transcriptional regulation of Foxp3⁺ regulatory T cell differentiation.
- Immunotherapeutic effects of IL-7 during a chronic viral infection.
- Utilized various mouse infection models: acute and chronic LCMV, Vaccinia virus, Listeria Monocytogene. Experimental approaches including flow cytometry, intracellular cytokine staining, RT-PCR, plaque assay, focus-forming assay, adoptive cell transfer, retroviral transduction of primary cells, *in vitro* culture of primary T cells, microarray, histology and ChIP assay were used.

POSTECH, POHANG, SOUTH KOREA

Mar, 2006 – Mar, 2008

Research Specialist at **Dr. Kwan Yong Choi's Lab**

- Role of HMGB2 in human papillomavirus-positive HeLa cells.
- IL-12 effect on the differentiation of CD8 T cells.
- Worked with culture of primary human cancer cells and T cells, Western blotting, flow cytometry and siRNA.

UNIVERSITY OF ALABAMA AT BIRMINGHAM, BIRMINGHAM, AL

Sep, 2004 – Feb, 2005

Research Intern at **Dr. Kohtaro Fujihashi's Lab**

- Differentiation of CD4 T cell memory at mucosal tissues (gut and nasal tissues).
- Mucosal adjuvant effect of Korean Mistletoe Lectin upon Influenza vaccination.
- Oral and nasal immunization of mice, immune cell isolation from mucosal tissues, flow cytometry, antibody titration from mucosa, ELISA and ELISpot.

HANDONG UNIVERSITY, POHANG, SOUTH KOREA

Mar, 2004 – Feb, 2006

Research Assistant (Master student) at **Dr. Seong Kyu Song's Lab**

- Expression and characterization of recombinant Korean Mistletoe Lectin as a mucosal vaccine adjuvant.
- Used molecular cloning, recombinant protein expression in bacteria, insect cells and mammalian cells, protein purification, SDS-PAGE, Western blotting and RT-PCR.

Education & Training

Doctorate in Immunology (Ph.D.) | University of Wisconsin-Madison | Madison, WI | 2014

Master of Science (MS) in Life Science | Handong University | Pohang, South Korea | 2006

Bachelor of Science (BS) in Life Science | Handong University | Pohang, South Korea | 2004

Training for Usage of Laboratory Animals (Korean Association for Laboratory Animals, 2019) | Scientists Teaching Science (STEM Education Solutions, 2017) | Lab Management Course (Emory University, 2016) | Mentored technical staffs for assay development | Managing research projects and collaborations | Military service (South Korea, 1998 – 2000)

Publications

Kim D, Kang J, **Kim EH** and Seo Y “**KIF11 inhibition decreases cytopathogenesis and replication of influenza A virus**” *Molecular & Cellular Toxicology* 2021; 1-12

Lee SH, **Kim EH**, Bowen JR, Dale G, Holthausen DJ, O'neal JT, Quicke KM, Gopal S, George S, Pillai MR, Suthar MS and Jacob J “**The amphibian host defense peptide Yodha is virucidal for Zika and Dengue viruses**” *Scientific Reports* 2021; 11:1-12

Kim EH, Woodruff MC, Grigoryan L, Maier B, Lee SH, Mandal P, Cortese M, Natrajan M, Ravindran R, Ma H, Merad M, Gitlin AD, Mocarski ES, Jacob J and Pulendran B “**Squalene emulsion-based vaccine adjuvants stimulate CD8 T cell, but not antibody responses, through a RIPK3-dependent pathway**” *eLife* 2020; 9:e52687

Wong SW, Huang BW, Hu X, **Kim EH**, Kolb JP, Padilla RJ, Xue P, Wang L, Oguin TH, Miguez PA, Tseng HC, Ko C and Martinez J “**Global deletion of Optineurin results in altered type I IFN signaling and abnormal bone remodeling in a model of Paget's disease**” *Cell Death & Differentiation*. 2020; 27:71-84

Kim EH, Wong SW and Martinez J “**Programmed necrosis and disease: We interrupt your regular programming to bring you necroinflammation**” *Cell Death & Differentiation*. 2018; 26(1):25-40

Woodruff MC, **Kim EH**, Wei L and Pulendran B “**B cell competition for restricted T cell help suppresses rare-epitope response**” *Cell Reports*. 2018; 25:321-327

Kim EH “**Development trends for vaccine adjuvants (백신 면역증강제의 개발 동향)**” BRIC View. 2018; 2018-T03. Available from <https://www.ibric.org/myboard/read.php?Board=report&id=2896> (Jan 30, 2018)

Kim EH, Neldner B, Gui J, Craig RW and Suresh M “**Mcl-1 regulates effector and memory CD8 T-cell differentiation during acute viral infection**” *Virology*. 2016; 490:75-82

Kim EH, Gasper DJ, Lee SH, Plisch EH, Svaren JP and Suresh M “**Bach2 regulates homeostasis of foxp3⁺ regulatory T cells and protects against fatal lung disease in mice**” *J. Immunol.* 2014; 192:985-995

Tejera MM, **Kim EH**, Sullivan JA, Plisch EH and Suresh M “**FoxO1 controls effector-to-memory transition and maintenance of functional CD8 T cell memory**” *J. Immunol.* 2013; 191:187-99

Kim EH and Suresh M “**Role of PI3K/Akt signaling in memory CD8 T cell differentiation**” *Front. Immunol.* 2013; 4:20. doi: 10.3389/fimmu.2013.00020

Kim EH, Sullivan JA, Plisch EH, Tejera MM, Jatzek A, Choi KY and Suresh M “**Signal integration by Akt regulates CD8 T-cell effector and memory differentiation in mice**” *J. Immunol.* 2012; 188:4305-14

Sullivan JA, **Kim EH**, Plisch EH and Suresh M “**FOXO3 regulates the CD8 T cell response to a chronic viral infection**” *J. Virol.* 2012; 86:9025-34

Sullivan JA, **Kim EH**, Plisch EH and Suresh M “**FOXO3 regulates CD8 T cell memory by T cell-intrinsic mechanisms in mice**” *PLoS Pathogen* 2012; 8(2):e1002533

Nanjappa SG, **Kim EH** and Suresh M “**Immunotherapeutic effects of IL-7 during a chronic viral infection in mice**” *Blood* 2011; 117:5123-32

Lee D, Kwon JH, **Kim EH**, Kim ES and Choi KY “**HMGB2 stabilizes p53 by interfering with E6/E6AP-mediated p53 degradation in human Papillomavirus-positive HeLa cells**” *Cancer. Lett.* 2010; 292:125-32

Nakayama Y, Kim SI, **Kim EH**, Lambris JD, Sandor M and Suresh M “**C3 promotes expansion of CD8⁺ and CD4⁺ T cells in a Listeria monocytogenes infection**” *J. Immunol.* 2009; 183:2921-31

Song SK, Moldoveanu Z, Nguyen HH, **Kim EH**, Choi KY, Kim JB and Mestecky J “**Intranasal immunization with influenza virus and Korean mistletoe lectin C (KML-C) induces heterosubtypic immunity in Mice**” *Vaccine* 2007; 25:6359-66

Patents

2019-0079470: Kim DH, **Kim EH**, and Kang MS “VACCINE AND PHARMACEUTICAL COMPOSITION BASED ON NOVEL NUCLEIC ACID” (Pending)

2019-0079501: Kim DH, **Kim EH**, and Kang MS “UNIVERSAL VACCINE PLATFORM BASED ON NANO COMPOSITE COMPRISING NOVEL NUCLEIC ACID AND EPITOPE” (Pending)

Honors and Awards

Best Presentation Award (Oral Presentation at KAI International Meeting 2019, 2019) | Membership of KAI (The Korean Association of Immunologists, 2019) | Membership of AAI (The American Association of Immunologists, 2018) | SVM-Phi Zeta Award for Research Excellence by a Graduate Student (2013, University of Wisconsin-Madison) | Vilas Conference Presentation Funds (2013, University of Wisconsin-Madison) | Marsh Travel Award from CBMS graduate program (2012, University of Wisconsin-Madison) | Internship Researcher at UAB (Sep, 2004 – Feb, 2005) (Full Scholarship was supported by Korea Science and Engineering Foundation, KOSEF) | Undergraduate Student on a scholarship (1997 – 1998)