UCDAVIS HEALTH | SCHOOL OF MEDICINE

Medical Microbiology & Immunology
MMI 291 Seminar Series
Emerging Challenges in Microbiology and Immunology

MMI 291 Seminar Series

Current Theme: Interdisciplinary Research
Fall Quarter 2021 – CRN 41611

Friday Seminar – 12:10-1 PM

"Adaptive memory-like Natural Killer cells in HIV-infected individuals"

Research / Bio

A distinctive subset of human NK cells, characterized by defective CD56 expression, is often found in individuals undergoing active viral infection and known as dysfunctional NK cells. We show that CD56neg NK cells, which were abundantly present in HIV-infected individuals produced greater amounts of inflammatory cytokines upon crosslinking of the IgG Fc receptor, CD16, compared to CD56pos conventional NK cells, while displaying impaired responsiveness to K562 tumor cells. Intriguingly, the majority of these unconventional CD56neg NK cells were deficient in the expression of FcRg, a signaling adaptor molecule associated with CD16. Moreover, CD56neg NK cells resembled recently discovered FcRg-deficient adaptive NK cells associated with HCMV infection in terms of expression of effector molecules and transcription factors. Finally, we show that these FcRg-deficient NK cells in CD56neg NK cell population from HIV patients show enhanced response against HIV-infected target cell in the presence of HIV seropositive plasma. These result reveal specialized functions of these CD56neg NK cells in HIV patients and suggest that these cells represent adaptive NK cells induced by HCMV infection and subsequently expanded by HIV infection.

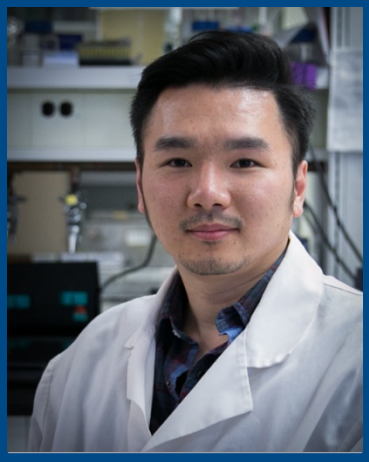
Publications

Zhang T, Scott JM, Hwang I, Kim S. Cutting edge: antibody-dependent memory-like NK cells distinguished by FcRγ deficiency. J Immunol. 2013 Feb 15;190(4):1402-6. doi: 10.4049/jimmunol.1203034. Epub 2013 Jan 23. PMID: 23345329; PMCID: PMC3623944.

Lee J, Zhang T, Hwang I, Kim A, Nitschke L, Kim M, Scott JM, Kamimura Y, Lanier LL, Kim S. Epigenetic modification and antibody-dependent expansion of memory-like NK cells in human cytomegalovirus-infected individuals. Immunity. 2015 Mar 17;42(3):431-42. doi: 10.1016/j.immuni.2015.02.013. PMID: 25786175; PMCID: PMC4537797.

Hwang I, Zhang T, Scott JM, Kim AR, Lee T, Kakarla T, Kim A, Sunwoo JB, Kim S. Identification of human NK cells that are deficient for signaling adaptor FcRγ and specialized for antibody-dependent immune functions. Int Immunol. 2012 Dec;24(12):793-802. doi: 10.1093/intimm/dxs080. Epub 2012 Sep 7. PMID: 22962434; PMCID: PMC3621379.

Jan
14



Jaewon Lee
PhD Candidate
Immunology Graduate Group
Sungjin Kim Lab
Center for Immunology & Infectious Diseases
University of California
Davis, CA

January 14, 2022
12:10 – 1 PM
ZOOM Meeting

Medical Microbiology
& Immunology
School of Medicine

Seminar Contact:
Autumn Vega
530-752-9401
advega@ucdavis.edu

We hope to see you there!