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**MICROBIOLOGY & MOLECULAR GENETICS**

**Departmental Journal Club**

**MICR 6120**

**Monday**

**September12, 2016**

11:30am-12:20pm

RM 122 Classroom Bldg.

Presented by

Jonny Riggs

PHD Student

Title:    Suppression of HIV Replication by CD8+ Regulatory T-Cells in Elite Controllers.

Authors:  *Wei Lu1,2\* , Song Chen2 , Chunhui Lai2 , Mingyue Lai3 , Hua Fang3 , Hong Dao3 , Jun Kang3 , Jianhua Fan3 ,+*

 *Weizhong Guo2 , Linchun Fu2 and Jean-Marie Andrieu1\**

We previously demonstrated in the Chinese macaque model that an oral vaccine made of inactivated SIV and *Lactobacillus plantarum* induced CD8+ regulatory T-cells, which suppressed the activation of SIV+CD4+ T-cells, prevented SIV replication, and protected macaques from SIV challenges. Here, we sought whether a similar population of CD8+ T-regs would induce the suppression of HIV replication in elite controllers (ECs), a small population (3‰) of HIV-infected patients with undetectable HIV replication. For that pur-pose, we investigated the *in vitro* antiviral activity of fresh CD8+ T-cells on HIV-infected CD4+ T-cells taken from 10 ECs. The 10 ECs had a classical genomic profile: all of them carried the KIR3DL1 gene and 9 carried at least 1 allele of HLA-B:Bw4-80Ile (i.e., with an isoleucine residue at position 80). In the nine HLA-B:Bw4-80Ile-positive patients, we demonstrated a strong viral suppression by KIR3DL1-expressing CD8+ T-cells that required cell-to-cell contact to switch off the activation signals in infected CD4+ T-cells. KIR3DL1-expressing CD8+ T-cells withdrawal and KIR3DL1 neutralization by a specific anti-killer cell immunoglobulin-like receptor (KIR) antibody inhibited the suppression of viral replication. Our findings provide the first evidence for an instrumental role of KIR-expressing CD8+ regulatory T-cells in the natural control of HIV-1 infection.