

Name: Xiaolong Wang, M.D.

Email: xiaolong.wang0002@temple.edu

Methamphetamine Enhances HIV Infection in Human iPSC-Derived Microglia

Methamphetamine (METH) is a potent psychostimulant which is commonly used by people infected with HIV. Clinically, METH use is implicated in HIV infection and neuroinflammation. In this study, we examine whether METH has direct effect on HIV infection of human microglia, the major target and reservoir cells for the virus in the brain. We observed that METH treatment of human iPSC-derived microglia (iMg) significantly enhanced HIV replication, as indicated by increased HIV gag expression, p24 protein levels, and reverse transcriptase activity. Mechanistically, METH suppressed the expression of interferons (IFNs), IFN stimulated gene (Viperin) and the CC chemokine (RANTES). In addition, METH upregulated the expression of the HIV entry coreceptors (CCR5 and CXCR4) in iMg. These findings suggest that METH use is a promoting factor for HIV infection of microglia. Because many individuals infected with HIV use METH, it is important to further investigate the interactions between METH use and HIV in target cells to better understand the mechanisms underlying HIV persistence in the brain and to develop effective strategies for viral eradication.

Authors:

Submitter: XIAOLONG WANG, Staff Scientist, Temple University, Philadelphia
Wenzhe Ho, M.D. and MPH, 1Department of Pathology and Laboratory Medicine, Lewis Katz School of Medicine, Temple University
Yuan Rong, M.D., Temple University
Xu Wang, Ph.D., 1Department of Pathology and Laboratory Medicine, Lewis Katz School of Medicine, Temple University