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Area of Expertise

My research focuses on two main topics.

The first is HIV-1-mediated aggravation of liver disease in HCV virus co-infected. Due to the shared routes of infection, HIV-1/HCV co-infection is common, with 15~30% of all HIV-1-infected persons estimated to be co-infected with HCV. In the co-infected patients, HIV-1 is known to accelerate every stage of HCV-mediated liver disease progression. However, the molecular details regarding how co-infection of HIV-1 and HCV brings about a more severe deterioration of the liver than a single infection of HCV are unknown at present.

Second, HIV-1 viral proteins are generated in a stage-specific manner; that is, regulatory proteins, such as Tat, Rev, and Nef, are expressed at the early stage, while structural proteins, such as Gag, Pol, and Env, are produced at the late stage of virus infection. Molecular regulation of viral gene expression in protein production has been studied comprehensively, whereas the elimination processes using the ubiquitin proteasome system for the synthesized proteins after completion of their duties in the infected cells are generally unknown, representing a current gap in understanding the smooth stage-specific transitioning through the HIV-1 life cycle that is crucial to viral pathogenicity.

Qualifications

BS in Pharmacy, Kyung Hee University
PhD in Biochemistry, Louisiana State University
MS in Pharmacy, Seoul National University

Recent Publications

Post-translational modifications inducing proteasomal degradation to counter HIV-1 infection

Proulx, J., Borgmann, K. & Park, I. W., Nov 2020, In: *Virus Research*. 289, 198142.

The Perfect Storm: COVID-19 Health Disparities in US Blacks

Phillips, N., Park, I. W., Robinson, J. R. & Jones, H. P., 2020, (Accepted/In press) In: *Journal of racial and ethnic health disparities*.

HIV-1 impairment via UBE3A and HIV-1 nef interactions utilizing the ubiquitin proteasome system

Pyeon, D., Rojas, V. K., Price, L., Kim, S., Singh, M. & Park, I. W., 27 Nov 2019, In: *Viruses*. 11, 12, v11121098.

Role of the ubiquitin proteasome system (Ups) in the hiv-1 life cycle

Rojas, V. K. & Park, I. W., 2 Jun 2019, In: *International journal of molecular sciences*. 20, 12, 2984.

Signature molecules expressed differentially in a liver disease stage-specific manner by HIV-1 and hcv co-infection

Whitmill, A., Kim, S., Rojas, V., Gulraiz, F., Afreen, K., Jain, M., Singh, M. & Park, I. W., Aug 2018, In: *PLoS ONE*. 13, 8, e0202524.

Function of ubiquitin (Ub) specific protease 15 (USP15) in HIV-1 replication and viral protein degradation

Pyeon, D., Timani, K. A., Gulraiz, F., He, J. J. & Park, I. W., 2 Sep 2016, In: *Virus Research*. 223, p. 161-169 9 p.

Comparative molecular genetic analysis of simian and human HIV-1 integrase interactor INI1/SMARCB1/SNF5

Pyeon, D., Price, L. & Park, I. W., 8 Sep 2015, In: *Archives of Virology*. 160, 12, p. 3085-3091 7 p.

Exosomes are unlikely involved in intercellular Nef transfer

Luo, X., Fan, Y., Park, I. W. & He, J. J., 28 Apr 2015, In: *PLoS ONE*. 10, 4, e0124436.

Interaction between Nef and INI1/SMARCB1 augments replicability of HIV-1 in resting human peripheral blood mononuclear cells

Pyeon, D. & Park, I. W., Mar 2015, In: Archives of Virology. 160, 3, p. 727-737 11 p.

HIV-1 Nef is transferred from expressing T cells to hepatocytic cells through conduits and enhances HCV replication

Park, I. W., Fan, Y., Luo, X., Ryou, M. G., Liu, J., Green, L. & He, J. J., 9 Jun 2014, In: PLoS ONE. 9, 6, e99545.

Sponsored Projects

Role of HIV-1 Nef in Acceleration of HCV-Mediated Liver Disease

Park, I.

NIDDK: Diabetes & Digestive & Kidney

5/02/14 → 31/12/18

Role of HIV-1 Nef in Acceleration of HCV-Mediated Liver Disease

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National Institute of Diabetes and Digestive and Kidney Diseases

5/02/14 → 31/12/19