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Cellular factor cyclic GMPdependent protein kinase(PKG) is a potential drug target of HIV-1

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Human Immunodeficiency Virus 1 (HIV-1) does not have effective vaccines to prevent disease from spreading. Current antiviral therapy is mainly focusing on blocking the function of viral proteins, such as Reverse Transcriptase, Protease, or Integrase, to treat AIDS patients. Although the intended purpose of antiviral drugs to extend patient's life span may have been achieved in treating HIV-1 infected individuals, it is still insufficient to "cure" AIDS patients by restoring a viral free body conditions as drug-resistant HIV-1 strains emerge under selection pressure. In addition, it is far less effective to eliminate or kill the long-life reservoir cells in HIV-1 infected patients. Thus, alternative anti-HIV strategies by targeting to cellular factors may provide a better approach to control AIDS disease progression in combination of current anti-HIV drug therapy. In attempt to identify potential cellular factor(s) in regulation of latent HIV-1 infection, our research group discovered that cyclic GMP-dependent protein kinase (PKG) activated HIV-1 replication through the NFkB-mediated signal transduction pathway. We also utilized pharmacological approaches to further verify the role of cGMP/ PKG in HIV-1 replication. Our results showed that two cGMP agonists, 8-pCPT-cGMP and Sp-8-pCPT-cGMP, were able to activate HIV-1 strain AD8 replication in monocyte derived macrophages, indicating that cellular factor PKG could be a potential drug target to suppress latent HIV-1 infection.

Biography

Jia-Hai Lee completed his Ph.D. at Pennsylvania State University and postdoctoral studies at National Institutes of Health. He also received his MBA degree at Johns Hopkins University Carey business School. He is a quality assurance scientist at BioReliance Corporation, responsible for assay data validation with respect to Accuracy, Precision, Specificity, Detection limit, Quantitation limit, Linearity, Robustness, and System suitability in compliance of GLP/GMP regulations to assist client's IND filing. He is also a registered patent agent serving as a technical advisor at an IP law firm where he prosecutes biopharmaceutical patent application and performs FTO market research for clients.