New anti-HIV gene therapy makes T-cells resistant to HIV infection

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An innovative genetic strategy for rendering T-cells resistant to HIV infection without affecting their normal growth and activity is described in a paper published in *Human Gene Therapy*, a peer-reviewed journal published by Mary Ann Liebert, Inc.

A team of researchers from Japan, Korea, and the U.S. developed an anti-HIV gene therapy method in which a bacterial gene called mazF is transferred into CD4+ T-cells. The MazF protein is an enzyme (an mRNA interferase) that destroys gene transcripts, preventing protein synthesis. The design of this mazF gene therapy vector ensures that synthesis of the MazF protein is triggered by HIV infection. When HIV infects treated T lymphocytes, MazF is induced, blocking HIV replication and, essentially, making the T-cells HIV resistant.

This elegant gene therapy tool was developed by Hideto Chono and colleagues from Takara Bio Inc. (Otsu, Shiga, Japan), Seoul National University and ViroMed Co. (Seoul, Korea), National Institute of Biomedical Innovation (Tsukuba, Ibaraki, Japan), and Robert Wood Johnson Medical School (Piscataway, NJ). The authors describe the theory and science behind this strategy in the paper entitled, "Acquisition of HIV-1 Resistance in T Lymphocytes Using an ACA-Specific E. coli mRNA Interferase."

"The potential of using vectors to express genes within a cell to block viral infection was first considered by David Baltimore in a strategy called 'intracellular immunization.' This study illustrates a unique way in

which intracellular immunization can be achieved," says James M. Wilson, MD, PhD, Editor-in-Chief, and Director of the Gene Therapy Program, Department of Pathology and Laboratory Medicine, University of Pennsylvania School of Medicine, Philadelphia.

More information: The paper is available free online at www.liebertpub.com/hum

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