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Mark cancer cells for CTL attack through coating with viral antigenic peptides CTLs kill tumor with viral peptides

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Selectively coating tumor cells with foreign antigenic peptide may render coated tumor susceptible to immune recognition and elimination, thereby bypassing immune tolerance. Here we create a therapeutic chimeric protein comprised of a tumor-homing module fused to a functional cargo domain containing foreign antigenic peptide. The tumor-homing module is comprised of mesothelin-specific single chain variable fragment that specifically binds to mesothelin, commonly overexpressed in ovarian tumors. The functional cargo domain is comprised of Fc (IgG2a) protein and MHC class I-restricted foreign CD8+ T cell epitope flanked by furin cleavage sites, which can be recognized by furin highly expressed in the tumor microenvironment. We show that our therapeutic protein specifically loaded antigenic epitope onto MHC class I of bound tumor cells, rendering them susceptible to antigen-specific CD8+ T cell-mediated killing for potent antitumor effects *in vitro* and *in vivo*. Our findings have important implications for bypassing immune tolerance to enhance cancer immunotherapy.

Biography

Chien-Fu Hung received the PhD from University of Illinoisat Urbana-Champaign in 1996. He completed hispostdoctoral trainingin the Department of Pharmacology at the University of Pennsylvania. He is an Associate Professor in the Department of Pathology at Johns Hopkins University School of Medicine. His research is mainly focused on the development of therapeutic vaccines for cervical and ovarian cancer. He has published more than 150 papers and reviews, primarily in the field of immunotherapy. He has several patents and inventions related to cancer vaccines. He has also served as a member of several study sections at the National Institutes of Health.

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