METHOD AND COMPOSITIONS FOR CELLULAR IMMUNOTHERAPY

This application is being filed on 20 August 2013, as a PCT International Patent application and claims priority to U.S. Patent Application Serial No. 61/691,117 filed on 20 August 2012, the disclosure of which is incorporated herein by reference in its entirety.

Field of the Invention

The present invention relates to the field of biomedicine and specifically methods useful for cancer therapy. In particular, embodiments of the invention relate to methods and compositions for carrying out cellular immunotherapy comprising T cells modified with tumor targeting receptors.

Statement Regarding Federally Sponsored Research

~~This invention was made with government support in the form of grants from the United States Department of Health and Human Services and from the Leukemia and Lymphoma Society~~This invention was made with government support under grants CA136551 and CA114536 awarded by the National Institutes of Health. The United States government has certain rights in the invention.

Background of the Invention

The adoptive transfer of human T lymphocytes that are engineered by gene transfer to express chimeric antigen receptors (chimeric receptors) specific for surface molecules expressed on tumor cells has the potential to effectively treat advanced malignancies. Chimeric receptors are synthetic receptors that include an extracellular ligand binding domain, most commonly a single chain variable fragment of a monoclonal antibody (scFv) linked to intracellular signaling components, most commonly CD3ζ alone or combined with one or more costimulatory domains. Much of the research in the design of chimeric receptors has focused on defining scFvs and other ligand binding elements that target malignant cells without causing serious toxicity to essential normal tissues, and on defining the optimal composition of intracellular signaling modules to activate T cell effector functions. However, it is uncertain whether the variations in chimeric receptor design that mediate superior in vitro function will translate reproducibly into