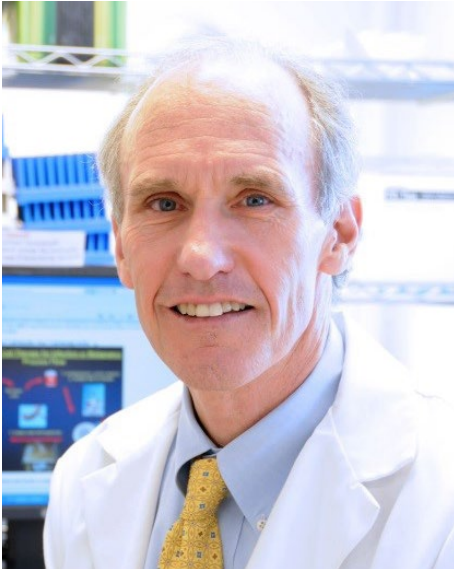


Car T cells for cancer and beyond



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Abstract

Chimeric antigen receptor (CAR) T cell therapy has emerged as a revolutionary treatment for hematological malignancies, but its adaptation to solid tumors is impeded by multiple challenges, particularly T cell dysfunction and exhaustion. The heterogeneity and inhospitableness of the solid tumor microenvironment (TME) contribute to diminished CAR T cell efficacy exhibited by reduced cytotoxicity, proliferation, cytokine secretion, and the upregulation of inhibitory receptors, similar to the phenotype of tumor-infiltrating lymphocytes (TILs). In this presentation, we discuss recent advances in T cell therapy for solid tumors, particularly brain cancer. Innovative strategies, including locoregional delivery and ‘armoring’ CAR T cells with cytokines such as interleukin (IL)-18, are under investigation to improve efficacy and safety. We also highlight emerging issues with toxicity management of CAR T cell adverse events. We also discuss the obstacles associated with CAR T cell therapy in the context of solid tumors and outlines current and future strategies to overcome these challenges.

Biography

Carl June is the Richard W. Vague Professor in Immunotherapy in the Department of Pathology and Laboratory Medicine. He is currently Director of the Center for Cellular Immunotherapies at the Perelman School of Medicine and Director of the Parker Institute at the University of Pennsylvania. He maintains a research laboratory that studies various mechanisms of lymphocyte activation that relate to immune tolerance and adoptive immunotherapy for cancer and chronic infection.

The CAR T cells invented in the June laboratory were awarded “Breakthrough Therapy” status by the FDA for acute leukemia in children and adults in 2014 and have now been FDA approved for 6 different indications. He has published more than 500 manuscripts and is the recipient of numerous prizes and honors, including election to the Institute of Medicine, the National Academy of Sciences, and the American Academy of Arts and Sciences.