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*CAR-modified Virus-specific T-cells for the Treatment of  
Malignancies: Taking Advantage of the TCR*

Dr. Rooney is a Professor in the Departments of Pediatrics, Molecular Virology and Microbiology, and Pathology and Director of Translational Research Laboratories of the Center for Cell and Gene Therapy at Baylor College of Medicine. Her training in virology and immunology led to the demonstration that adoptively-transferred virus-specific T cells (VSTs) could prevent and cure viral-associated malignancies in humans following hematopoietic stem cell transplantation (HSCT). She extended this successful strategy to develop and clinically test a range of post-transplant viral infections and diseases as well as virus-associated malignancies, such as EBV+ lymphoma and HPV-associated malignancies, that occur outside of the HSCT setting. She has a particular interest in strategies that render T cells genetically resistant to inhibition by the tumor microenvironment, such as a dominant-negative TGF-beta receptor and a constitutively active IL-7 receptor. To add a safety switch for genetically enhanced T-cells, she developed an inducible caspase 9-based suicide gene that is inducible by dimerization and has proved successful in clinical trials. To overcome the lack of in vivo proliferation of T-cells expressing chimeric antigen receptors (CARs) for tumor antigens, she evaluated the use of virus-specific T cells (VSTs) as hosts, so that CAR-VST activation and expansion can be induced by endogenous viruses, viral vaccines or oncolytic viruses.