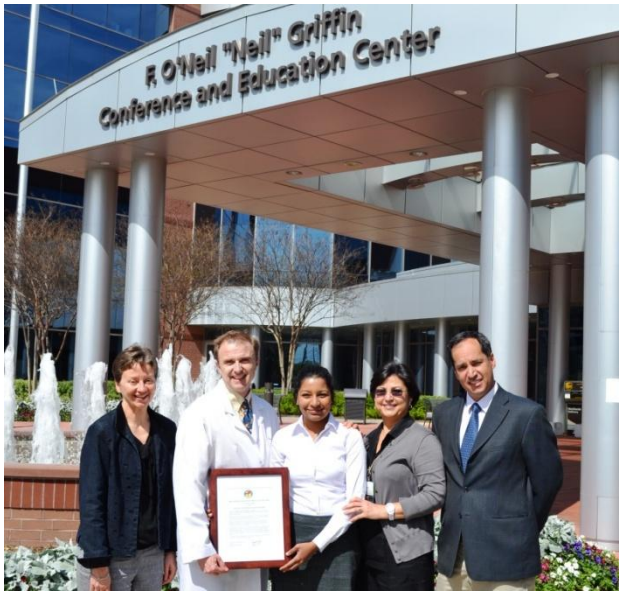
2013 JMNMF RSA Summary & Photo
Janani Krishnamurthy, University of Texas – MD Anderson Cancer Center



Pictured Left to Right: Michelle Barton, Ph.D., Co-Director, Center for Stem Cell and Developmental Biology, Professor, Department of Biochemistry and Molecular Biology; Laurence J.N. Cooper, MD, PhD, Associate Director, Center for Cancer Immunology Research, Director, Immunology Laboratory of Physician Scientists; JMNMF RSA Recipient, Janani Krishnamurthy; Helen Huls, Laboratory Coordinator; and, Michael R Blackburn, Dean, UT Graduate School of Biomedical Sciences at Houston.

Summary: Targeting an ancient retrovirus using adoptive T-cell therapy during *metastatic melanoma*

Advanced and relapsed melanoma is generally considered difficult to treat due to development of tumor resistance to conventional therapies. One investigational approach to extending patient survival will be to improve the host immune response against their tumor. To accomplish this we have developed a strategy to infuse large numbers of immune cells called T cells that have been trained in the laboratory to identify and eliminate melanoma. In order to target tumor cells and not normal cells, the T cells are genetically modified to express a receptor molecule on the cell surface, called the chimeric antigen receptor (CAR). This introduced receptor serves to latch onto specific molecule on the surface of melanoma cells and signals the T cells to destroy that tumor target. In this study, the CAR is designed to target a protein originating from a human endogenous retrovirus-K viral envelope (HERV-K) that is often found on the surface of melanoma cells. HERV-K is part of the human genome whose origin dates back millions of years when we were infected with a virus. Though this virus is no longer infectious, parts (the "envelope") of the virus are expressed in tumor cells such as melanoma cells. The T cells genetically modified to express CAR specifically killed melanoma cells bearing the HERV-K antigen and did not kill control or normal cells that did not express HERV-K. This form of T-cell therapy may benefit patients with metastatic melanoma expressing the ancient retrovirus-derived protein. Benefits of this therapy include targeting melanoma cells resistant to conventional therapies and reduced side-effects since normal tissue does not express HERV-K.