

## Bankhead-Coley Cancer Research Program

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*Blood and Marrow Transplantation  
H. Lee Moffitt Cancer Center & Research Institute*

*2011 Program  
New Investigator Research  
(3-year project)*

**Project Title:** Regulatory T Cells for Prevention of Acute Graft-Versus-Host Disease

**Project Summary:** While bone marrow transplant can cure patients with blood cancers, it is often complicated by a syndrome called acute graft-versus-host disease (aGVHD). This complication occurs as a result of the donor immune cells attacking the transplant recipient, and constitutes the major source of illness, impaired quality of life, and death after transplant. Importantly, current strategies to prevent this complication are not adequate, with greater than 50% of transplant recipients developing this complication despite these preventive efforts. Those who develop aGVHD commonly do not respond completely to its treatment, and suffer adverse effects from this therapy, serious infectious complications, and death. Thus, there is a critical need to develop more effective strategies for the prevention of aGVHD. Insights from basic research have demonstrated that regulatory T cells, a type of naturally occurring immune cell, can protect against this complication. As well, the drug sirolimus may suppress aGVHD, while allowing regulatory T cells to survive and function. In this investigation, our research will identify whether sirolimus-based immune suppression can more effectively prevent aGVHD, study the recovery of regulatory T cells after transplant, and develop a new strategy for aGVHD prevention using sirolimus and regulatory T cells. Through this work, we will improve the overall success of transplant as a powerful cancer treatment.