

Dr. Korngold, Ph.D.



Dr. Korngold has over 40 years of experience in the field of immunology with specialized expertise in the biology of graft-versus-host disease (GVHD) and graft-versus-tumor (GVT) responses. GVHD is a life threatening complication that may occur after a patient has received an allogeneic hematopoietic stem cell transplant; it develops when mature T cells in the donated marrow or peripheral blood cell graft view antigens in the recipient's body as foreign and begin to attack major target organ. Dr. Korngold's group's work has contributed significantly to the current literature on this topic. For example, they developed mouse models that demonstrated the underlying mechanisms of the disease. GVT responses are also mediated by donor T cells against tumor antigens and are important to preserve and enhance after transplantation to avoid relapse of the malignant disease.

Dr. Korngold's present research is focused on strategies for improving the outcomes of patients who have received hematopoietic stem cell transplants, especially those who were transplanted for a hematological disease, such as myeloma or lymphoma. His goals are to reduce complications and avoid relapse of the disease for which the person was transplanted. One of his group's specific projects involves understanding changes in the immune systems of patients who were transplanted and receiving immunotherapies, especially certain "checkpoint inhibitors"; these are drugs that are usually made with antibodies that block activated T cells and allow them to continue to fight cancer cells. Through analysis of patient's blood samples over the course of treatment, the researchers are trying to follow what is happening in the immune compartment of patients who received autologous transplants (transplants using their own hematopoietic stem cells) versus those who received allogeneic transplants. The purpose of the trials are to pinpoint how relapse can best be combatted.

The group is also looking at the impact of the reconstitution of T cells (an important component of the immune system) in patients that have received allogeneic hematopoietic stem cell transplantation, and its relationship to outcomes. Conditioning of patients with varying drug regimens before transplantation obliterates the immune system including T cells; they must redevelop slowly from the allogeneic donor's transplant. The greater the repertoire, the more likely it will be that there are specific T cells that can respond to infections and the residual tumor cells to avoid relapse of disease. The researchers are looking at the breadth and diversity of the reconstituted T cells at various time points and relating them to outcomes in patients. The purpose of this is to ultimately use this information to create trials to assess whether there is a threshold that could be used as a diagnostic tool at a particular time point. Whether or not the patient meets the threshold would indicate whether patients should be given more donor cells to boost their T cell repertoires more quickly.

Lastly, Dr. Korngold's group is collaborating with Dr. Zhao ([link](#)) to determine if his patented immunomodulating technology involving a particular stem cell found in umbilical cord blood could be adapted to treat GVHD. The approach is now in a trial at Hackensack University Medical Center for the treatment of Type 1 diabetes and holds tremendous promise.