

## Nontechnical Abstract

Acute leukemia is most successfully treated by bone marrow transplantation. For some patients who do not have a suitable donor, autologous bone marrow transplantation (AuBMT) may offer the only hope of cure. In AuBMT the patients own bone marrow is used for transplantation. While some patients appear to be cured by this procedure, leukemia recurs in many patients. Leukemia relapse may result from undetected leukemic cells in the transplanted marrow, insufficient transplant conditioning (i.e. leukemic cells in the patients body are not killed by the chemotherapy drugs or radiation used during the transplant), or both. Identifying the factors leading to disease recurrence after AuBMT will help direct future treatment strategies.

The purpose of this protocol is to determine if leukemia cells in the transplanted marrow are responsible, at least in part, for disease recurrence in relapsed patients. Patients with acute leukemia who are to undergo AuBMT may participate. A portion of their marrow will be exposed to a retroviral vector, called LNL6, which contains the neomycin resistance gene. Since mammalian cells do not contain the neomycin resistance gene it serves as a unique marker gene. After the marrow is exposed to the LNL6 vector, marked and untreated marrow will be stored until the time of transplant, then infused using standard transplantation procedures. If patients relapse after transplantation, and their leukemia cells have the marker gene we will know that leukemia cells were contained in the transplanted marrow and contributed to disease recurrence.