

**New Jersey State Commission on Cancer Research
LAY ABSTRACT OF RESEARCH PROJECT**

NAME OF PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR: **Rick Cohen**

Project Title: **Purifying of Normal Stem Cells from Leukemic Patients**

Description: **Development of a new purification paradigm of normal stem cells from their cancerous counterparts as a clinical method to provide cancer patients, unable to find a bone marrow donor, with a transplantable curative treatment from their own bodies.**

Leukemia, a form of cancer, is a devastating disease of the bone marrow and blood. During Chronic Myelogenous Leukemia (CML), there is an unrestrained and abnormal amassing of white blood cells, which if left untreated, will eventually become fatal. Among an estimated 30,800 new cases of leukemia in the United States each year, CML will account for about 4,400. This year, leukemia will cause 21,700 deaths, with CML accounting for approximately 4,500 of those patients. Currently, treatment of patients afflicted with CML, depends heavily on the disease progression and their age. One of the treatment options is chemotherapy, which employs drugs to “more selectively” kill rapidly dividing malignant versus normal cells. The previous generation of these chemicals had devastating side effects, while the newer generation of drugs leads to *remission* of the symptoms in almost all patients with much fewer side effects. However, absolute destruction of all CML affected cells as determined using a sensitive molecular detection method, called reverse transcription polymerase chain reaction, astoundingly only occurs in less than 10 percent of people. The only treatment for CML that can unmistakably eradicate the disease is a stem cell transplant following high-dose chemotherapy. Unfortunately, this procedure can only be offered to a limited number of patients, less than 20%, who find “matched donors.” In addition, because this procedure is usually carried-out at the later stages of the disease, there is a risk of serious complications and death. Since the current treatments for CML have inherent drawbacks, it is the rationale of this study to determine if normal blood-forming (hematopoietic) and supportive (mesenchymal) stem cells can be purified and expanded from their cancerous CML counterparts from one individual, and be used for self-transplant at an earlier stage of the disease. This would eliminate the problem of finding a bone marrow donor, and favor the recovery of the still apparently healthy CML patient.