Hematology Research funded by NIDDK

This multi-faceted hematology research program focuses on understanding basic cellular and molecular mechanisms that underlie the production and function of blood cells in health and disease. Major areas of interest (not in any particular order) include:

(1) Basic mechanisms involved in regulating the production and terminal development of blood cells (hematopoiesis) and in regulating the expression of genes relevant to normal blood cell maturation and function

(2) Regulatory molecules, cytokines, and hematopoietic growth factors that influence blood cell production from hematopoietic stem cells and progenitors

(3) Blood cell membrane structure and function relevant to the maintenance of blood cell integrity, the tissue localization of hematopoietic progenitor cells, and the circulation and survival of mature blood cells

(4) Acquired and congenital disorders of red blood cell production and survival (erythropoiesis), including anemias resulting from disturbances in the production or function of hemoglobin (e.g. thalassemias, sickle cell disease)

(5) The molecular biology of heme and hemoglobin synthesis and turnover

(6) The metabolism, storage, and transport of iron and disorders resulting from disturbances in these processes, such as hemochromatosis and iron restricted anemias

(7) The metabolism, structure and function of leukocytes (white blood cells) and myeloid progenitors

(8) Translational applications of new insights and knowledge gained from basic research in these areas towards the development of novel or improved approaches for the diagnosis, stratification, and treatment of hematologic diseases, with a particular emphasis on the development of disease biomarkers, gene targeted therapies, hematopoietic stem cell transplantation in heritable blood diseases, and the measurement and chelation of tissue iron in iron overload disorders.