Division of Transfusion Medicine

Paul M. Ness, M.D.

Director, Division of Transfusion Medicine
Primary Appointment in Pathology; Secondary Appointments in Medicine, Oncology

In recent years our laboratory has emphasized development of assays for detecting red cell antibodies and small populations of heterogeneous red cells using a quantitative enzyme-linked antiglobulin test. This assay has proved useful in the study of fetal-maternal hemorrhage, red cell survival studies, and autoimmune hemolytic anemia. We have also studied the pathophysiology of delayed hemolytic transfusion reactions using a rabbit model and are undertaking studies of red cell alloimmunization in mice. Ongoing clinical studies in transfusion medicine include the use of hemodilution in elective surgery, assessment of the risk of viral and bacterial infections in blood recipients, research on the recurrence of cancer as related to the immuno suppressive effects of blood transfusions, the development and use of hemoglobin-based oxygen carriers as blood substitutes, and several projects on international blood safety in China and Thailand.

Publications


Sally Campbell-Lee, M.D.

Primary Appointment in Pathology

My research focuses on immune mechanisms of red blood cell alloimmunization. I am seeking to identify processes that can be interfered with in order to treat or prevent alloimmunization in patients at risk, such as chronically transfused sickle cell disease patients. My current work is with a murine model of red cell alloimmunization using transgenic mice that express human red cell antigens. This model is being used to examine whether interventions such as leukodepletion or blockade of the CD28-B7 co stimulatory pathway with CTLA4Ig impact red cell alloantibody formation.

Publications


Deborah K. Douglas, M.D.

Primary Appointment in Pathology

My primary research focuses on adverse transfusion reactions, including allergic transfusion reactions. This avenue of investigation includes not only the underlying etiology of allergic reactions to blood products, but also the indications for appropriate treatment and prevention. In addition, I am investigating transfusion guidelines and reactions in the unique subpopulation of burn patients. Additional avenues of investigation include the infectious complications of transfusion, and safety measures to prevent transfusion reactions, including the regulatory and risk management aspects of adverse transfusion-related patient events. Research efforts are thus directed at enhancing patient safety in Transfusion Medicine.


Susan H. Eshleman, M.D., Ph.D.

Primary Appointment in Pathology
Member, Graduate Program in Cellular and Molecular Medicine; Member, Graduate Program in Pathobiology

The HIV-1 viruses in an infected individual are genetically diverse and evolve at a rapid rate in response to selective pressures. My laboratory studies HIV-1 diversity and its impact on HIV-1 infection and viral fitness. Major areas of interest of the laboratory include HIV-1 mother-to-child transmission and HIV-1 drug resistance. We are also involved in both national and international clinical trials of HIV-1 treatment and prevention.

Publications


J. Brooks Jackson, M.D., M.B.A.

Baxley Professor and Director of Pathology
Member, Graduate Program in Pathobiology

My research is focused on the clinical application of several qualitative and quantitative HIV-1 detection assays for the purpose of 1) studying perinatal, sexual, and transfusion-associated HIV transmission and 2) monitoring HIV infection pre and post antiretroviral therapy. Laboratory assays for the detection and quantitation of HIV include Western blot analysis, HIV culture, p24 antigen levels, and quantitation of HIV DNA and RNA by PCR. Drug susceptibility and neutralizing antibody assays are also employed. These methods are extremely helpful in evaluating new antiviral drugs, understanding modes and frequency of HIV transmission, and understanding the pathogenesis of HIV-1 infection. Trials using HIV immune globulin, AZT, and nevirapine to prevent HIV vertical transmission in Uganda are also underway.

Publications


Karen E. King, M.D.

Primary Appointment in Pathology; Secondary Appointment in Oncology

My research is focused in two areas: 1) the problem of alloimmunization due to either multiple transfusions or fetal maternal incompatibility and 2) novel indications for apheresis. My interests involve the clinical complications related to red cell alloimmunization, specifically delayed hemolytic transfusion reactions and the phenomenon of bystander hemolysis. I am particularly interested in the transfusion related issues which complicate the course of patients with sickle cell disease, especially those issues due to alloimmunization and multiple transfusions. In the Hemapheresis and Transfusion Support (HATS) service, our resources include apheresis technology and staff skilled in performing therapeutic and donor apheresis. We also provide outpatient donor and transfusion services. Our platelet coordinators manage platelet transfusion therapy for multitransfused, refractory patients. The translational aspects of this service facilitate close interactions with research and clinical investigators in many fields. Currently, one very successful collaboration involves the development of clinical protocols for kidney transplantation across HLA and ABO barriers. We are also involved in clinical trials of novel apheresis technologies and we are participating in the Transfusion Medicine/Hemostasis Clinical Trial Network sponsored by NHLBI.

Publications


The risk of transfusion transmitted infections (TTI, including HIV, HBV and HCV) has decreased significantly in recent years in developed countries. Unfortunately, many developing countries still have TTI risk levels that are significantly higher than developed countries. My recent works have been focused on developing collaborative research programs with international blood centers with the purpose of identifying ways to improve international blood safety.

Donor follow-up case controlled studies have been carried out in blood centers in Beijing and Urumqi, China to identify risk factors associated with donor HIV and HCV infections. The reported common risk factors among donors in the United States include a history of injection drug abuse (IDU) and a history of blood transfusion before 1990. Our preliminary findings from Chinese blood centers revealed the history of blood (whole blood or plasma) donation prior to 1995 as a leading risk factor for both HIV and HCV infections. The current donor deferral criteria used at Chinese blood centers does not defer donors with donation history prior to 1995. Based on our findings, we are proposing changes to the existing donor deferral criteria to more effectively prevent high-risk donors from entering the donor pool.

We are conducting a multi-blood center study using the nucleic acid based donor test (NAT) to evaluate the prevalence, incidence, and the residual risk level of HIV and HCV in China. We also recently completed a knowledge, attitude and practice (KAP) survey in Urumqi, China to gain better understanding of potential donors in order to develop more effective donor recruitment methods. We are also currently conducting a study in Beijing searching for inexpensive HCV confirmatory methods (instead of the RIBA test, as used in developed countries) that can be used in resource-poor countries.

Publications


