



PEDIATRIC INFECTIOUS DISEASES



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PEDIATRIC INFECTIOUS DISEASES

Our Research

The Pediatric Infectious Diseases Division at the University of Alabama at Birmingham (UAB) is internationally known for its studies of congenital and perinatal viral infections. For 50 years, the Division has defined the natural history,

pathogenesis, diagnosis, treatment and prevention of congenital cytomegalovirus (CMV) infections and neonatal herpes simplex virus (HSV) disease.

These research programs were begun by Dr. Charles Alford in the 1960s following his return to UAB from training in the laboratory of Nobel prize winner Dr. Thomas Weller. Applying a critical scientific approach to the emerging field of virology, Dr. Alford established UAB as the national leader in congenital and perinatal viral infections.

Work by the late Dr. Charles Alford, and Drs. Sergio Stagno and Robert Pass initially established the extent of disease and sequelae caused by congenital CMV infections. Drs. Britt, Boppana, Fowler and Ross have continued to study the disease and sequelae caused by congenital CMV infections. Dr. Bill Britt has explored CMV at a basic level by meticulously examining the role of different viral proteins in the assembly of infectious particles. Drs. Suresh Boppana and Karen Fowler have established a scalable molecular diagnostic assay that one day could be used for universal screening for CMV; they also have expanded the understanding of the audiologic consequences of congenital infection. Dr. Shannon Ross is investigating the role that viral subpopulations play in congenital CMV disease and its sequelae. Drs. Britt, Boppana and Ross together have applied their individual interests to the question of infection with differing strains of CMV, the consequences of which could impact the feasibility of developing a CMV vaccine in the future. Dr. Fowler is evaluating CMV educational and behavioral based messages for pregnant women to promote the prevention of congenital CMV infection.

Drs. Rich Whitley and Charles Alford established the Collaborative Antiviral Study Group (CASG) in 1972 to study antiviral drugs in these populations. Drs. David Kimberlin and Rich Whitley have continued these trials over the past two decades. Their work has defined the treatment of neonatal HSV and congenital CMV, including longer-term suppressive therapy with oral acyclovir following neonatal HSV disease and, most recently, longer-term oral valganciclovir therapy in infants with symptomatic congenital CMV disease. In addition, Dr. Kimberlin led a national CASG study of oseltamivir/Tamiflu treatment for influenza that established the safe dose level of the drug for children younger than age 2.

Promising new antiviral drugs are being evaluated by Drs. Mark Prichard and Deb Quenelle in animal models. Drs. Mark Prichard, Scott James and Shannon Ross are utilizing Next Generation Sequencing to identify viral subpopulations including those with diminished susceptibility to antiviral drugs commonly used to treat these life-threatening diseases.

The Alabama Drug Discovery Alliance (ADDA) is a collaboration between the University of Alabama at Birmingham (UAB) School of Medicine (SOM) and Southern Research Institute (SRI). ADDA's objective is to facilitate drug discovery and development utilizing the resources that exist at the two institutions. These resources include molecular target identification, high through-put screening, three dimensional structure of targets, iterative medicinal chemistry advanced with in silico screening, preclinical toxicology and absorption, distribution, metabolism and excretion (ADME) analysis. Successful compounds for which proof of principle data exist may be advanced into Phase I clinical trials. The ADDA funds pilot projects that are at different stages of the drug discovery and development process, and provides an umbrella of services tailored to the needs of each faculty member and each project.



David W. Kimberlin, MD, Professor and Co-Director, Division of Pediatric Infectious Diseases, during a news conference last fall to address the spread of Enterovirus 68 in Alabama. Dr. Kimberlin serves as editor of the American Academy of Pediatrics' Red Book: Report of the Committee on Infectious Diseases, and is president of the Pediatric Infectious Diseases Society.

Currently, Pediatric Infectious Diseases consists of eight physician scientists and six PhDs. Collectively, these investigators are responsible for \$11.4M in NIH grant and contract support in FY 2013, representing 55% of all research funding for the UAB Department of Pediatrics. Division faculty currently hold 10 R awards, eight HHS contracts, four U awards, two P awards, one K award, and one SPOR award, and generate over 40 major original publications each year. The overwhelming majority of these efforts relate to Division research in the human herpes viruses, but important work in HIV and Streptococcus pneumoniae is conducted within the Division as well. This is in addition to a thriving clinical service and molecular diagnostic laboratory based at the third largest children's hospital in the nation.