Dear Friends,

This has been an exciting year for Children’s of Alabama and the UAB Department of Pediatrics. Our research report details our accomplishments by division.

In the Department of Pediatrics, we seek to discover new knowledge to improve the health of the children of Alabama, the region and the world. The clinical advances and research discoveries we describe here have a direct impact on children’s lives. That impact will be our legacy. We present in this report evidence of this impact as measured by major research accomplishments, grants, publications, and awards. In FY 2016, the Department of Pediatrics faculty had more than 230 publications, research funding from the NIH totaling $17.5 million (placing us 12th among all departments of pediatrics in the United States) and total research funding totaling $29.8 million. This represents the third straight year of rising in the research rankings of Departments of Pediatrics.

In addition to these accomplishments, our focus on safety and quality is always paramount. This year, we reduced the number of serious safety events at Children’s of Alabama by 78%. For the eighth consecutive year, U.S. News & World Report ranked Children’s pediatric specialty services among the top 50 in the nation. Eight specialties were ranked: Cardiology/Heart Surgery, Diabetes/Endocrinology, Gastroenterology/GI Surgery, Neonatology, Nephrology, Neurology/Neurosurgery, Pulmonology and Urology. Expanding our reach in Developmental Pediatrics, the Civitan-Sparks Clinics joined the department with clinics including Child Development, Behavioral Assessment, Psychoeducational, Medical Autism, and Sparks Pediatrics. The Pediatric Intensive Care Unit (PICU) and Orthopedics at Children’s worked together to standardize care for adolescent spinal fusion patients, resulting in shorter hospital stays and cost savings of more than $800,000. This won a Pediatric Quality Award from the Children’s Hospital Association (CHA).

We aim to build on these successes, expand the size and, importantly, the impact of this research in the coming years. We anticipate growth not only in our core areas of significant accomplishment – virology, therapeutic drug development, cancer, and rheumatology outcomes – but also in newer areas where the recruitment of talented young researchers will ensure continued and expanded success. Toward this end, the UAB Department of Pediatrics established the Pediatric Research Office (PRO), which became fully functional this year. The PRO, led by David Kimberlin, MD, seeks to dramatically assist pediatric investigators in the design, conduct and analysis of research. This in turn allows our physician scientists to focus on the science of the research while relying on the highly skilled PRO staff to assist with the regulatory, biostatistical and data management, and other components key to the successful conduct of pediatric investigation. In the last year, the PRO has assisted with more than 248 projects. This year, we will open a new Children’s Hospital Research Unit (CHRU) at Children’s of Alabama to serve as space to see subjects involved in clinical and translational research. And we will invest in people and programs to fuel new discoveries; we are supporting the careers of pediatric investigators who will discover new knowledge and help us change the outcome for the children of Alabama.

Children’s is the only medical center in Alabama dedicated solely to the care and treatment of children. It is a private, not-for-profit medical center that serves as the primary site of the University of Alabama at Birmingham pediatric medicine, surgery, psychiatry, clinical, research and residency programs. Together Children’s of Alabama and the UAB Department of Pediatrics will continue to build the world-class programs that will improve the future for the children of Alabama, the Southeast and the world.

Sincerely,

Mitchell B. Cohen, MD
Katharine Reynolds Ireland Professor
Chair, Department of Pediatrics
University of Alabama at Birmingham
Physician in Chief, Children’s of Alabama
The UAB Department of Pediatrics at Children’s of Alabama is comprised of 18 Subspecialty Divisions, each with a research, educational and clinical focus. To find research initiatives, areas of clinical excellence, educational efforts and to learn more about the faculty, click on the division of interest below.

**PEDIATRIC DIVISIONS:**

1. Pediatric Allergy & Immunology
2. Pediatric Cardiology
3. Child Abuse
4. Pediatric Critical Care
5. Developmental and Behavioral Pediatrics
6. Pediatric Emergency Medicine
7. Pediatric Endocrinology
8. Pediatric Gastroenterology, Hepatology & Nutrition
9. General Pediatrics and Adolescent Medicine
10. Pediatric Hematology and Oncology
11. Pediatric Hospital Medicine
12. Pediatric Infectious Diseases
13. Neonatology
14. Pediatric Nephrology
15. Pediatric Neurology
16. Pediatric Pulmonology and Sleep Medicine
17. Pediatric Rehab Medicine
18. Pediatric Rheumatology

**CONTENT PER DIVISION INCLUDES:**

- Pediatric Faculty
- Featured Research
- Significant Publications
- Division Awards & Recognition
PEDIATRIC ALLERGY & IMMUNOLOGY

Pediatric Faculty

Dr. Prescott Atkinson  Professor & Director
Dr. Coralie S. Hains  Associate Professor
Dr. Suthida Kankirawatana  Assistant Professor

Featured Research

The Division of Pediatric, Allergy and Immunology engages in a broad range of research in disease-specific pathogens, primary immune deficiencies and autoimmunity. This year’s research in the division:

- Continued to define the role and pathophysiology of *M. pneumoniae*, an increasingly recognized cause of upper and lower respiratory illness
- Defined the role of *Ureaplasma spp.*, an organism related to *M. pneumoniae*, as a novel cause of premature delivery
- Investigated the genetic causes of immunodeficiency and autoimmunity

Significant Publications


Participation in National Research, Quality Improvement and Learning Networks

Prescott Atkinson, MD, PhD, serves as the 2016 Chair of the American Board of Allergy & Immunology (ABAI). In addition, he is a member of the following ABAI Committees: Continuing Certification Committee, Maintenance of Certification Committee, Conflict of Interest Committee Presidential Selection Committee. Dr. Atkinson serves as chair of the Allergy & Immunology Fellowship Program Director’s Assembly Executive Committee. He is a member of the FDA Pulmonary-Allergy Drugs Advisory Committee.
Pediatric Faculty

CARDIOLOGY

Dr. Yung R. Lau  Professor & Director
Dr. Wally F. Carlo  Associate Professor
Dr. Edward V. Colvin  Professor
Dr. Walter H. Johnson  Professor
Dr. Mark Law  Associate Professor
Dr. William S. McMahon  Professor
Dr. F. Bennett Pearce  Professor
Dr. Robb L. Romp  Associate Professor

CARDIAC CRITICAL CARE

Dr. Jeffery Alten  Professor & Chief
Dr. Santiago Borasino  Associate Professor
Dr. Yuvraj Kalra  Assistant Professor
Dr. Leslie Rhodes  Assistant Professor
Dr. Hayden Zaccangi  Assistant Professor

Featured Research

In 2016, the division created the Neonatal Cardiac Surgery Induced Acute Kidney Injury (CS-AKI) Consortium. UAB will lead this 23-center collaborative. UAB also became the lead center investigating acute kidney injury after in-hospital pediatric cardiac arrest. UAB also leads the steering committee of five centers analyzing data from 41 pediatric ICUs across the U.S., Canada, and the UK. In 2016, UAB joined with Cincinnati Children's Hospital Medical Center and Children's National Medical Center to lead the creation of a multicenter quality improvement collaborative aimed at reducing cardiac arrest in the CICU. We have created a cardiac arrest prevention and will begin to implement this bundle at 20 centers in 2017. This is the first multicenter quality improvement collaborative to be performed exclusively in pediatric CICUs.

Important innovations/novel findings from our research in 2016:

• Largest controlled study calling into question the utility of high-frequency oscillatory ventilation in acute pediatric respiratory failure
• Developed and reported novel vascular access procedure for neonates with cardiac disease
• Developed and reported novel pericardiocentesis technique
• First ever description of the identification and deleterious clinical impact of adrenal insufficiency in the operating room after neonatal cardiac surgery
• Identification of new risk factors for morbidity after Fontan procedure (and targets for improving
• First to report Furosemide Stress Test as early predictor of AKI after neonatal cardiac surgery (won abstract award; manuscript in preparation)
• Reported success of our quality improvement project to eliminate ubiquitous use of high-risk potassium chloride boluses in the CICU

We feature one of the nation's only comprehensive pediatric cardiac intensive care unit repositories for biological samples from patients. With the approval of the UAB Institutional Review Board, blood, urine, chest tube samples, and peritoneal and other samples are stored from every consenting cardiac surgery patient and annotated with clinical details. Pilot data from this valuable resource will lay the foundation for translational research grant proposals and multi-center research collaborations in the years to come.

Our division had 10 oral and poster research presentations at scientific conferences in 2016, and division members won three abstract awards at Cardiology 2016, The Pediatric Cardiac Intensive Care Society (PCICS) 2016 and International Symposium on AKI in Children.

**Significant Publications**


Division Awards & Recognition

**Santiago Borasino, MD**, Pediatric Cardiac Critical Care, has been elected to the Society of Pediatric Research. The goal of the Society for Pediatric Research is to create a network of multidisciplinary researchers to improve child health.

**Participation in National Research, Quality Improvement and Learning Networks**

**Jeffrey Alten, MD**, Pediatric Cardiac Critical Care, serves on the Executive Committee, Scientific Review Committee and Database Committee for the Pediatric Cardiac Critical Care Consortium of 32 major cardiac ICU centers in North America. **Hayden Zaccagni, MD**, Pediatric Cardiac Critical Care, serves on the Audit Committee.
CHILD ABUSE

Featured Research

The Division of Child Abuse Pediatrics leads the West Alabama Child Medical Evaluation Program, which is a clinic for medico-legal evaluation of potentially abused children. Michael Taylor, MD, is the principal investigator. John C. Higginbotham, PhD, MPH, from the University of Alabama is co-principal investigator.

Significant Publications


Participation in National Research, Quality Improvement and Learning Networks

The division of Child Abuse Pediatrics hosts Child Abuse Web-Based Quarterly Review Network, which is a quarterly quality improvement and CME Program. Participants include medical providers across Alabama and Mississippi who are performing medical exams on potentially maltreated children in these states.
Major research interests within Pediatric Critical Care Medicine include approaches and decisions for acute pediatric traumatic brain injuries, transfusion medicine and host response to (and immunomodulation of) influenza and RSV infections. This year, pioneering research in the division included:

- Standardization of care for traumatic brain injury (TBI) through the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) network
- Evaluation of the interplay between genetically influenced biologic processes and environment on TBI through the Genetic and Environmental Influences on Recovery after Severe Pediatric Brain Injury Project of PALISI
- Identification of early- and late-imaging markers of neurocognitive outcome after TBI through the MRI Markers of Functional Outcome After Severe Pediatric TBI Project of PALISI
- Studies to identify risk factors and the role of innate immunity in fatal or near fatal outcomes from influenza through the Genetic Epidemiology and Immune Response of Life-Threatening Influenza Infection in Children and Young Adults Project of PALISI
- The Age of Blood (used for transfusion) in Children (ABC) in Pediatric Intensive Care Units (PICU) study, an NIH-funded double-blind, randomized controlled trial at multiple international centers, comparing the clinical consequences of red blood cell (RBC) storage duration for critically ill children to determine whether the transfusion of RBCs of reduced storage duration improves outcomes.
- An award to Michele Kong, MD, from NHLBI entitled "Matrix Metalloproteinase Driven Lung Inflammation in RSV Disease" in which she seeks to understand proteinase dysregulation in RSV infection and test the hypothesis that Matrix Metalloproteinase (MMP)-9 stands at the crossroads of airway infection and inflammation during RSV infection
- A prospective clinical trial of azithromycin treatment in RSV-Induced Respiratory Failure in Children, led by Dr. Kong
- A pharmacokinetic study of antibiotic dosing of children on continuous renal replacement therapy

Pediatric Critical Care Medicine continues to have strong quality improvement efforts. A recent project to reduce hospital length of stay for adolescent idiopathic scoliosis patients undergoing spinal fusion surgery led
by Leslie Hayes, MD, received the Children’s Hospital Association National Pediatric Quality Award for Waste Reduction and Improved Efficiency. Dr. Hayes and William Sasser, MD, are investigators for a Kaul Pediatric Research Institute (KPRI) Safety, Quality and Education grant to reduce laboratory blood draws in PICU patients.

Finally, faculty and fellows in Critical Care Medicine lead the efforts of the Pediatric Simulation Center. A significant recent focus is on improving cardiopulmonary resuscitation. This is both within the international simulation network, INSPIRE, as well as through individual projects at our center. Chrystal Rutledge, MD, has been awarded a Faculty Development Grant to assist in the development of a community outreach simulation program (COACHES – Children’s of Alabama Community Healthcare Education Simulation Program). In addition, Dr. Rutledge has received a $300,000 gift from the Joseph S. Bruno Charitable Foundation to help fund the COACHES program.

**Significant Publications**


**Division Awards & Recognition**

The UAB Department of Pediatrics Division of Pediatric Critical Care has been accepted as a participant in the Society of Critical Care Medicine’s PCOR-ICU Collaborative: Improving Care for Critically Ill Patients and Families Through Research Dissemination and Implementation, which is funded by a Eugene Washington Engagement Award from the Patient-Centered Outcomes Research Institute. William Sasser, MD, Pediatric Critical Care, is leading this initiative with Steve Nye, MD, a second-year pediatric critical care fellow.
Mark Buckmaster, MD, leads our busy sedation service and is an active participant in the Pediatric Sedation Research Consortium (>35 institution pediatric sedation database). We were the lead center in developing a pediatric sedation risk assessment tool and this tool, was awarded the Society of Critical Care Medicine Snapshot Award at the 2016 annual meeting.

Leslie Hayes, MD, Pediatric Critical Care, is the Associate Quality Education Officer for UAB Health System.

Michele Kong, MD, Pediatric Critical Care, has received several awards this year, including:
- Distinguished Citizen Award, 26th Community Leadership Award, Birmingham, AL
- 2016 Smart Honoree, The Women’s Fund of Greater Birmingham, Birmingham, AL
- Society of Critical Care Medicine Gold Snapshot Award

Dr. Kong is the co-founder, with husband Julian Maha, MD, of a national nonprofit, KultureCity, which is an impact driven nonprofit with the mission to create a world where all individuals with autism and their families can be accepted and treated equally. They have won numerous accolades, including the 2016 Top Ten Non-Profit by Microsoft, and best nonprofit by Toms of Maine. They have been featured in Forbes, USA today and many more for their work that provides direct benefit and help to these children and families.

Priya Prabhakaran, MD, Pediatric Critical Care, serves as an American Board of Pediatric critical care sub-board content development expert.

William Sasser, MD, Pediatric Critical Care, participated in the Harvard Macy Program for Educators in Health Professions in January 2017. He received funding for this through the Research and Innovations in Medical Education (RIME) Faculty Development UASOM Award.
DEVELOPMENTAL-BEHAVIORAL PEDIATRICS

Pediatric Faculty

Dr. Snehal Khatri   Associate Professor
Dr. Myriam Peralta-Carcelen   Professor
Dr. Justin Schwartz   Assistant Professor

Featured Research

The UAB Division of Developmental-Behavioral Pediatrics is an active participant in the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Neonatal Research Network. Myriam Peralta, MD, worked with Waldemar A. Carlo, MD, Neonatology, and other investigators to assess the long-term pulmonary outcomes among infants who participated in the National Institute of Child Health and Human Development's Surfactant Positive Airway Pressure and Pulse Oximetry Randomized Trial (SUPPORT). Early CPAP rather than intubation/surfactant is associated with less respiratory morbidity by 18–22 months' chronologic age.

Significant Publications


Division Awards & Recognition

Justin Schwartz, MD, received funding through the Kaul Pediatric Research Institute of Children's of Alabama to implement Project ECHO: Autism. ECHO (Extension of Community Healthcare Outcomes) is a "tele-mentoring" platform that aims to democratize expert knowledge of autism in order to empower better community care of children with autism throughout Alabama. The ECHO team consists of members from developmental-behavioral pediatrics, psychology, psychiatry, nutrition, and social work, as well as a parent expert and advocate.
Researchers in the division found that rural children who are hospitalized at pediatric hospitals are more frequently hospitalized at a higher cost than non-rural children and are more likely to be readmitted to the hospital. Rural children are more likely to experience worse health outcomes than non-rural children and are five times more likely to live in areas that lack adequate local medical services. The Division of Pediatric Emergency Medicine has additional important research focus areas including:

- Improved care through simulation
- Driving safety
- Pain management in the Emergency Department
Significant Publications


Division Awards & Recognition

**Annalise Sorrentino, MD,** Pediatric Emergency Medicine, has been selected to serve on the American College of Emergency Physicians (ACEP) Council Steering Committee for 2017.

**Participation in National Research, Quality Improvement and Learning Networks**

**Christopher Pruitt, MD,** participates in Pediatric Emergency Medicine Collaborative Research Committee (PEMCR), Pediatric Septic Shock Collaborative and Febrile Young Infant Research Collaborative.

**Marjorie Lee White, MD,** participates in the following: American Academy of Pediatrics (AAP) PREP Emergency Medicine editorial board member, International Network for Simulation-Based Pediatric Innovation, Research and Education (INSPIRE), serves as bylaws chair for the International Pediatric Simulation Society (IPSS) and serves as an executive committee member for International Simulation Data Registry (ISDR).
In 2016, the Division of Pediatric Endocrinology research encompassed cystic fibrosis, type 1 diabetes (T1DM), lipoprotein metabolism, congenital hypothyroidism, and both endoplasmic reticulum redox and polyunsaturated omega-3 and omega-6 fatty acids effects on steroid metabolism. Highlights included:

- Research in cystic fibrosis (CF) assessed the frequency of endocrine co morbidities in CF patients.
- Preliminary studies indicate that correction of the fundamental CF defect improves growth in CF children.
- Pioneering work in the the first clinical trial of oral GABA in children with T1DM to test the hypothesis that gamma aminobutyric acid (GABA) will preserve or restore endogenous insulin secretion, reduce prandial glucagon secretion, improve metabolic/glycemic control and alter the autoimmune milieu involved in the pathogenesis of this disease.
- Novel findings relating to lipoprotein metabolism: Poor glycemic control and high body mass index (BMI) contribute to abnormal lipoprotein profiles. ApoB 100 concentrations in subjects with T1DM were determined by modifiable risk factors, BMI, HbA1C and blood pressure, indicating the importance of adequate weight, glycemic and blood pressure control for better diabetes care and likely lower cardiovascular disease risk.
- A novel pathway through which cortisol promotes glucose production was described.
**Significant Publications**


**Division Awards & Recognition**

**Hussein Abdul-Latif, MD**, Pediatric Endocrinology, received the Sam Eichold Camp Seale Award in recognition for his years of service at one of the oldest diabetes camps in the country. Camp Seale Harris is the primary program of Southeastern Diabetes Education Services.

**Ambika Ashraf, MD**, Pediatric Endocrinology, has been elected to the Society of Pediatric Research. One goal of the Society for Pediatric Research is to create a network of multidisciplinary researchers to improve child health.

**Participation in National Research, Quality Improvement and Learning Networks**

**Ambika Ashraf, MD**, has been selected to serve as co-chair for 2017 AAP National Conference and Exhibition, Section on Endocrinology. She also serves as co-chair of the Patient Education Council for the Pediatric Endocrine Society (PES). She serves as a committee member of the PeDAL Writing Group of National Lipid Association, NLA Pediatric Dyslipidemia Group. Dr. Ashraf serves as the Medical Advisory Group of Sitosterolemia Foundation.

**Alexandra Martin, MD, Principal Investigator, and Ken McCormick, MD, Co-Investigator**

*Juvenile Diabetes Research Foundation (three-year award): “The Effect of GABA or combination GABA/GAD on the progression of type 1 diabetes mellitus in children”*

This is an investigator-initiated study; the hypothesis therein is treatment with oral GABA (γ-aminobutyric acid) will ameliorate the hyperglycemia consequent to diabetes. Buttressed by compelling GABA reports in diabetic animal models, this interventional, one-year, double-blinded study will enroll children with new-onset type I diabetes in hopes to: 1) forfend against the ongoing autoimmune destructive process, 2) suppress dysregulated α-cell glucagon secretion, 3) preserve or restore extant insulin-producing β-cells and 4) tamp down the β-cell autoimmune cascade and inflammatory process.
The Division of Gastroenterology, Hepatology & Nutrition focuses on research that mirrors our growth in developing specialty programs. Specific highlights include:

- Our Inflammatory Bowel Disease (IBD) Program is a part of the multi-institutional collaborative ImproveCareNow.
- Margaux Barnes, PhD, is investigating the role of nutrition in IBD patients.
- The eosinophilic disease program continues to partner with Cincinnati Children’s Hospital Medical Center to study novel gene mutations in our patients with eosinophilic esophagitis (EoE).
- The Intestinal Rehabilitation is part of an international network developing a database of patients with intestinal failure. As part of that effort, we are studying quality of life in our patients and developing a novel quality instrument.
- We are testing vaccines for diarrheal disease and have secured successful licensing of the first cholera vaccine in the U.S.

We are expanding our portfolio of clinical care, education and research in 2017 with the recruitment of new faculty and the creation of a new Pediatric Liver Care Center.
Significant Publications


Division Awards & Recognition

The Drucker Institute at Claremont Graduate University announced that the ImproveCareNow Network is the winner of the 2016 Drucker Prize. The division of Pediatric Gastroenterology, Hepatology & Nutrition in the UAB Department of Pediatrics has an ImproveCareNow team. Traci Jester, MD, RD, is the physician leader with her partner Jeanine Maclin, MD. Their focus is on quality care and improvement efforts for our pediatric inflammatory bowel disease patients and to participate in research through ImproveCareNow.

David Galloway, MD, Pediatric Gastroenterology, Hepatology & Nutrition, has been appointed to the Clinical Care and Quality Committee of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN).
GENERAL PEDIATRICS & ADOLESCENT MEDICINE

Pediatric Faculty

GENERAL PEDIATRICS

Dr. Carolyn S. Ashworth
Dr. Jennie Andresen
Dr. Allury Arora
Dr. Cason Benton
Dr. Allison Cavender
Dr. Jennifer Chambers
Dr. Candice Dye
Dr. Crayton A. Fargason
Dr. DeeAnne S. Jackson
Dr. Snehal Khatri
Dr. Carin Richard Kiser
Dr. Morissa Ladinsky
Dr. Jaime McKinney
Dr. Myriam Peralta-Carcelen
Dr. Terry C. Wall

Professor & Director

Assistant Professor
Associate Professor
Assistant Professor
Assistant Professor
Assistant Professor
Associate Professor
Assistant Professor
Professor
Associate Professor
Associate Professor
Associate Professor
Assistant Professor
Professor

ADOLESCENT MEDICINE

Dr. Heather McGinnis
Dr. Nefertiti Durant
Dr. Tina Simpson
Dr. Stephenie Wallace
Dr. Krista Casazza

Assistant Professor
Associate Professor
Associate Professor
Associate Professor
Associate Professor
**Featured Research**

The UAB Division of General Pediatrics and Adolescent Medicine performs an array of investigations that include outcomes research, as well as assessments of physiologic changes during growth and development. Specific highlights include:

- Krista Casazza, PhD, has assessed the correlation between bone mineralization and energy expenditure prior to adolescence. She has identified race-specific effects that influence body fat content.
- Myriam Peralta, MD, worked with Waldemar A. Carlo, MD, Neonatology, and other investigators to assess the long-term pulmonary outcomes among infants who participated in the National Institute of Child Health and Human Development’s Surfactant Positive Airway Pressure and Pulse Oximetry Randomized Trial (SUPPORT). Early CPAP rather than intubation/surfactant is associated with less respiratory morbidity by 18–22 months’ chronologic age.
- Elizabeth Cason Benton, MD, director of the Alabama Child Health Improvement Alliance (ACHIA), leads this quality improvement through partnerships with practitioners, payers, families and organizations that deliver care to improve health outcomes of children in the state.
- Nefertiti Durant, MD, MPH, has developed a culturally relevant web-enhanced physical activity program (FIT HARRT) to promote physical activity in overweight and obese adolescents and young adult women. This program was expanded to develop text messages to promote physical activity in adolescent and young adult women.

**Significant Publications**


Division Awards & Recognition

Cason Benton, MD, FAAP, General Pediatrics & Adolescent Medicine, has been selected to serve on the American Academy of Pediatrics (AAP) Maintenance of Certification (MOC) Portfolio Review Panel.

The American Academy of Pediatrics (AAP) appointed Stephenie B. Wallace, MD, FAAP, General Pediatrics & Adolescent Medicine, to the AAP Committee on Adolescence.

The Association of the Teachers of Maternal and Child Health (ATMCH) announced Krista Casazza, PhD, RD, LD, General Pediatrics & Adolescent Medicine, as the winner of the 2016 Loretta P. Lacey Academic Leadership Award.

Nefertiti Durant, MD MPH, General Pediatrics & Adolescent Medicine, was appointed to the Obesity Committee of the Council on Lifestyle and Cardiometabolic Health for the American Heart Association.
Pediatric Faculty

Dr. Kim Whelan
Dr. Elizabeth Alva
Dr. Christy Bemrich-Stolz
Dr. Smita Bhatia
Dr. Joseph Chewning
Dr. Gregory Friedman
Dr. Frederick Goldman
Dr. Hilary Haines
Dr. Lee M. Hilliard
Dr. Matthew Kutny
Dr. Wendy Landier
Dr. Jeffrey Lebensburger
Dr. Zachary LeBlanc
Dr. Brandi McClain Pernell
Dr. Alyssa Reddy
Dr. Purnima Singh
Dr. Avi Madan-Swain
Dr. Julie Wolfson
Dr. Ana Xavier

Associate Professor & Acting Division Director

Assistant Professor
Assistant Professor
Professor
Associate Professor
Associate Professor
Professor
Assistant Professor
Professor
Assistant Professor
Associate Professor
Associate Professor
Instructor
Assistant Professor
Professor
Assistant Professor
Assistant Professor
Assistant Professor

Featured Research

The Division of Pediatric Hematology and Oncology is committed to advancing research, taking findings from the bench to the bedside and then to the community. The division works in close collaboration with members of the UAB Comprehensive Cancer Center, the Institute for Cancer Outcomes and Survivorship, the UAB Center for Clinical and Translational Science, UAB Center for Outcomes and Effectiveness Research and Education, Children’s Center for Supportive and Palliative Care and UAB School of Public Health. These multidisciplinary collaborations serve as a rich resource to accelerate the pace of discovery across the entire trajectory of disease from diagnosis to survivorship and end of life.

An example of discoveries taken from bench to bedside include the research led by Dr. Gregory Friedman in the field of neuro-oncology. Dr. Friedman has demonstrated that the most deadly subgroup of medulloblastoma is highly sensitive to a genetically modified herpes simplex virus (HSV). His innovative phase 1 study using modified HSV to attack difficult-to-treat brain tumors has begun recruiting patients from across U.S. This bench-to-bedside translation of engineered herpes simplex virotherapy is FDA-approved and supported by the National Institutes of Health (NIH). To further advance this therapy in the lab, Dr. Friedman received funding from the Department of Defense to develop a novel route of delivering the virus to target
metastatic pediatric brain tumors. Another example of bench-to-bedside research is in the field of BMT, where Dr. Goldman is attempting to understand the pathogenetic mechanisms of bone marrow failure syndromes, congenital immune deficiencies and translating this information to the promotion of novel agents and stem therapies for these disorders. His translational research laboratory is addressing unmet needs in hematopoietic disorders using innovative gene correction technology, coupled with BMT, to develop safer cures.

An example of taking research from bedside to the bench is the research program in acute promyelocytic leukemia led by Dr. Matthew Kutny. A member of the Children’s Oncology Group acute myeloid leukemia steering committee, he leads the efforts in developing the next generation of treatment trials. In addition, his observations of the toxicities experienced by the patients have led him to understand the pathogenesis of these toxicities, such that treatments can be refined.

The Pediatric Hematology and Oncology division has a strong team dedicated to cutting-edge research in the field of sickle cell disease. Dr. Jeffrey Lebembsberger has received funding from the NIH and the American Society of Hematology to better understand the causes of kidney failure in patients with sickle cell disease and to evaluate the impact of hydroxyurea in children with sickle cell disease. Dr. Goldman is using a murine model of sickle cell disease to optimize reduced intensity conditioning in blood or marrow transplantation (BMT) to balance toxicity with efficacy. Dr. Goldman is working closely with the Dr. Townes (UAB Dept. of Biochemistry and Molecular Genetics) to use gene editing with modified CRISPR technology and create “transplantable” gene-corrected autologous hematopoietic stem cells. A pre-IND FDA application has been filed with the ultimate goal of opening a Phase 1 clinical trial within the next 1–2 years to treat sickle cell infants with their own CRISPR-gene-corrected cord blood stem cells.

Smita Bhatia, MD, MPH, is the founding director of the Institute for Cancer Outcomes and Survivorship; several members of the division collaborate with and are members of the institute. The mission of the institute is to reduce the burden of cancer and its sequelae across all segments of population through interdisciplinary research, health promotion and education. Julie Wolfson, MD, MSHS, has received funding from the St. Baldrick’s Foundation and the Kaul Pediatric Research Institute (KPRI) to develop a comprehensive approach to understanding the underlying causes of poor outcomes experienced by adolescents and young adults with cancer. Wendy Landier, PhD, RN, has received funding from the NIH to understand the facilitators and barriers to HPV vaccination in childhood cancer survivors, as well as testing the immunogenicity and safety of using this vaccine in childhood cancer survivors. She recently received funding from the Alex’s Lemonade Stand to develop a patient-family education intervention for children with newly diagnosed cancer. Dr. Bhatia has received funding from the Leukemia Lymphoma Society (LLS) to construct a cohort of 10,000 BMT survivors and understand the burden of morbidity borne by the survivors. Funded by NIH, she has a multi-institutional study at >100 institutions to understand the molecular pathogenesis of treatment-related complications. She is also developing FDA-approved and NIH-funded strategies to reduce the risk of radiation-related breast cancer in survivors of Hodgkin’s lymphoma. Finally, she and Dr. Landier serve as co-PIs on a national trial funded by the NIH to improve adherence to oral chemotherapy in children with acute lymphoblastic leukemia treated at 85 institutions.

**Significant Publications**


**Division Awards & Recognition**

Smita Bhatia, MD, MPH, Pediatric Hematology and Oncology, has been elected to the American Association of Pediatrics.

The National Cancer Institute (NCI) and the Blue Ribbon Panel (BRP) has invited Smita Bhatia, MD, MPH, Pediatric Hematology and Oncology, to participate in the BRP Working Group on Pediatric Cancer. Through participation, Dr. Bhatia will be filling an essential role in advising the institute and the National Cancer Moonshot.

The American Academy of Nursing selected Wendy Landier, PhD, RN, Pediatric Hematology & Oncology, among 164 highly distinguished nurse leaders in the 2016 class of Academy fellows. New fellows will be eligible to use the FAAN credential (Fellow of the American Academy of Nursing).

Jeffrey Lebensburger, DO, Pediatric Hematology & Oncology, has been asked by the American Society of Hematology (ASH) to serve on the committee to develop new clinical practice guidelines on sickle cell disease-related cardiopulmonary and kidney disease.

Jeffrey Lebensburger, DO, Pediatric Hematology & Oncology, and Julie Wolfson, MD, Pediatric Hematology & Oncology, have been elected to the Society of Pediatric Research. The goal of the Society for Pediatric Research is to create a network of multidisciplinary researchers to improve child health.

Julie Wolfson, MD, and Smita Bhatia, MD, Pediatric Hematology & Oncology, was invited to testify at a Congressional Roundtable Briefing in May of 2016 regarding adolescent and young adult cancer research.

Julie Wolfson, MD, Pediatric Hematology & Oncology, was asked to be a member of the National Comprehensive Cancer Network Value Working Group.

Matthew Kutny, MD, Pediatric Hematology & Oncology, was appointed to the NIH National Cancer Institute PDQ Pediatric Treatment Editorial Advisory Board. The National Cancer Institute (NCI) provides evidence-based cancer information summaries for health professionals and the public.
Participation in National Research, Quality Improvement and Learning Networks

Wendy Landier, PhD, RN: Chair of the nursing discipline in Children’s Oncology Group and member of the Executive Committee. Other COG involvement includes:
- Co-Chair, Long-Term Follow-Up Guidelines Core Committee
- Co-Chair, Ototoxicity Guideline Harmonization Expert panel, International Guideline Harmonization Group
- Member, Outcomes and Survivorship Steering Committee
- Member, Scientific Chairs Committee
- Vice Chair, ACCL1033, a comprehensive approach to improve medication adherence in pediatric leukemia

Smita Bhatia, MD, MPH:
- Member, Executive Committee, Children’s Oncology Group (COG)
- Chair, COG ALTE03N1
- Chair, COG ALTE05N1
- Chair, COG AALL03N1
- Chair, COG ACCL1033
- Vice Chair, COG ALTE1621
  Childhood Cancer Survivor Study – Chair, Genetics Working Group
  Childhood Cancer Survivor Study – Member, Executive Committee
  Scientific Advisory Board (University of Minnesota Comprehensive Cancer Center)
  Scientific Advisory Board (St. Baldrick Foundation)
  Scientific Advisory Board (UCSF T32 Training Grant in Pediatric Oncology)
  Section Editor – Cancer

Ana Xavier, MD:
- Scientific Committee – Children’s Oncology Group Clinical Trial AAML1531 Risk Stratified Therapy for Acute Myeloid Leukemia in Down Syndrome.

Julie Wolfson, MD:
- Faculty, Curriculum Design, American Society of Clinical Oncology (ASCO) – Disparities in Cancer Care
- Chair of Children’s Oncology Group study ACCL16N1CD

Alyssa Reddy, MD:
- Serves as UAB institutional principal investigator for Children’s Oncology Group and the Children’s Oncology Group Phase 1 and Pilot Consortium
- Serves as member on COG CNS and Neuroscience Committees
- Study chair of COG ACNS0333
- Neurofibromatosis Consortium member site- Dr. Reddy serves as deputy director of the UAB Clinical Coordinating Center and as chairman of the Quality Assurance Committee

Fred Goldman, MD:
- Member of Pediatric Immune Deficiency Transplant Consortium
- Pediatric Bone Marrow Transplant Consortium
- Clinical Care Consortium of Telomere-Associated Ailments,

Jeffrey Lebensburger, DO:
- Baby HG publication committee
- HU Prevent: Executive Committee
- American Society of Hematology – Clinical Research Training Institute study section and faculty member

Kimberly Whelan, MD:
- Member: Children’s Oncology Group- ocular late effects task force
- Member: National Comprehensive Cancer Center Adolescent and Young Adult Oncology panel
The Division of Hospital Medicine seeks to improve the system of care and care delivery to inpatients. Hospital medicine faculty are prominently involved in training and education of medical students, resident physicians and pediatric hospital medicine fellows and are attempting to apply research methods to problems in medical education. The division currently has active research projects focused on:

- Evidence-based inpatient care of bronchiolitis and asthma
- Adherence to evidence-based guidelines for management of pneumonia
- Medical decision-making that leads to diagnostic error
- Understanding variability in faculty assessment of medical student clinical performance
- Impact of physician cohort turnover on patient safety
- Characteristics of nonfatal submersion victims that predict safe discharge from the emergency room
- Variability in the management of children admitted with complex febrile seizures
- Occurrence of hypotension in in children with moderate to severe asthma treated with intravenous magnesium

Lauren Nassetta, MD, led a project examining the feasibility of using the simulation laboratory to study the role of diagnostic error in physician decision-making. Specifically, they evaluated the impact of premature diagnostic closure, the acceptance of a diagnosis before its full verification and on the medical decision-making process. Residents given a symptom rather than a tentative (incorrect) diagnosis were more likely to consider the correct diagnosis and institute appropriate therapy. This study also shows the importance of a simulated patient environment as a research tool to evaluate cognitive error in physicians and for teaching strategies to avoid them.

Susan Walley, MD, is a member of the leadership team for a multi-institution collaborative project sponsored by the Quality Improvement Innovation Networks of the American Academy of Pediatrics (AAP). This project
was aimed at disseminating information on the use of best practices for management of bronchiolitis and reducing the use of unnecessary care in children hospitalized with bronchiolitis in community settings. The use of bronchodilator therapy was reduced by 29%; use of steroids by 68% and chest radiography declined by 44%. In addition, a statistically significant increase in the use of tobacco screening was achieved. Dr. Walley served as the group’s expert on screening for secondhand smoke exposure and providing smoking cessation counseling. She developed a smoking cessation change package and served as a quality improvement coach on issues related to identifying and decreasing secondhand smoke exposure.

**Significant Publications**


The Division of Pediatric Infectious Diseases is world-renowned in virology. For decades, its programs have defined the basic science, natural history, diagnosis and treatment of viral infections in infants and children. Ongoing programs include the following:

**Congenital Cytomegalovirus Program**

Multiple projects, including completion of patient follow-up and data analyses of the NIDCD-funded CHIMES study, are providing new insight into the natural history of congenital cytomegalovirus (CMV) infection. This study enrolled more than 100,000 infants from six hospitals in the U.S. and was organized and administered by Suresh Boppana, MD, and Karen Fowler, PhD. Important new findings include the development of a highly sensitive and specific PCR-based assay for testing newborn saliva samples to identify babies infected with CMV, failure of testing of blood spots collected from newborns for routine screening for detecting CMV-infected babies, a significantly higher prevalence of congenital CMV infection in African-American women and teens, and the failure of newborn hearing screening to identify a significant proportion (~40%) of infants with CMV-associated hearing loss at birth. Most recently, the CHIMES data were utilized to establish the cost savings that would be achieved by a universal screening program for congenital CMV infections. The landmark findings from this pivotal study are being used in the development of new guidelines on caring for infants and children here in Alabama, nationally and internationally. Utilizing next-generation sequencing technologies and informatics, Shannon Ross, MD, is investigating the contribution of genetic heterogeneity in the distribution of viruses in different compartments (mouth, blood, urine, etc.) of viral shedding in infected infants, with the aim of identifying a biomarker for the development of hearing loss. Internationally, Bill Britt, MD, and Drs. Boppana and Fowler have ongoing projects in Brazil and South Africa (supported by the NIH). In Brazil more than 20,000 women and their newborn infants are being enrolled in studies to define the natural history
of congenital CMV infection in a population of women with universal immunity to CMV, a critical question in
the design of prophylactic vaccines for this infection.

Mary Ballestas, PhD, Veronica Sanchez, PhD, and Drs. Boppana, Britt, and Ross all lead robust laboratory
research as well, with studies in basic molecular virology and of virus-host interactions. A significant effort
has been focused on understanding the role of virus-induced inflammation and brain development in a small
animal model of CMV infection of the developing central nervous system. This system has pointed to the role
of inflammation in altered cell positioning in the developing brain, a finding that recapitulates aspects of the
pathology of brain disease in infants with congenital CMV infection. A second major focus of this project is
defining mechanisms of hearing loss in infants with congenital CMV infections. This small animal model closely
recapitulates the findings of hearing loss in infants with congenital CMV infection, and findings generated from
studies in this system have identified mechanisms of hearing loss, which include virus-induced inflammation.
Additional studies aim to improve understanding of fundamental aspects of virus replication and virus-host
interactions, including several projects directed at dissecting the role of the functional components of the
infected cell in the efficient production of infectious virus from an infected cell – a project that can be translated
into the identification of novel targets for antiviral agents. In addition, these studies have developed a new and
previously unknown function of novel modes of regulation of cellular function, viral micro RNA molecules.

Antiviral Therapies Program
Major clinical trials of the treatment of life-threatening viral infections also have been undertaken by David
Kimberlin, MD, and Richard Whitley, MD. Building upon their previous body of work that had established early
initiation of intravenous ganciclovir or oral valganciclovir as the standard of care for the management of babies
with symptomatic congenital CMV disease, Drs. Kimberlin and Whitley now are assessing whether starting
antiviral therapy later in childhood provides the same benefit. They also are determining the appropriate dose
of these medications to use in babies born extremely premature. A study of the treatment of babies with
asymptomatic congenital CMV infection has been funded by the NIH and began in 2017. Additionally, studies
assessing new diagnostic tests in neonatal herpes simplex virus (HSV) infections seek to establish biomarkers
that will be of value in determining degrees of risk from this life-threatening disease. All of these studies
are conducted through their multicenter, NIH-funded network known as the Collaborative Antiviral Study
Group (CASG), and both CMV and HSV trials are being conducted both nationally and internationally in South
America and Europe.

Antiviral Drug Development and Discovery Program
The antiviral drug development programs of Mark Prichard, PhD., Debra Quenelle, PhD, and Scott James,
MD, assess novel antiviral agents that have activity against herpesviruses. These studies not only advance
knowledge of drugs that can treat viral infections, but by inhibiting viral replication also yield insights into
the natural history of CMV infections. Mechanisms of resistance of these novel agents are the focus of much
of Drs. Prichard’s and James’ work, including drugs that are licensed or have completed Phase III trials (e.g.,
maribavir and ganciclovir for CMV) as well as those in earlier phases of development (e.g., serpin antithrombin
III and methylenecyclopropane analogs, helicase-primase inhibitors for HSV and small molecule entry
inhibitors for influenza). Their laboratory is a national center for the evaluation of new antiviral drugs for the
DNA viruses, as well as antiviral resistance assessment.

Maaike Everts, PhD, and Dr. Whitley lead the UAB Drug Discovery Program. Awarded in March 2014, this
U19 grant funds a multi-institutional program under the Centers for Excellence in Translational Research
program. UAB is the operational center for the five-year, $34.3 million dollar award that is focused on antiviral
drug discovery and development. Already a lead has identified molecules directed against MERS and SARS,
Preclinical toxicology and pharmacokinetic assessments in normal human volunteers have been completed,
and the molecule is positioned for studies against MERS in Saudi Arabia, leading to the submission of an IND
for clinical trials directed against coronaviruses. Patents have been submitted for lead molecules directed
against chikungunya.

Emerging Infections Program
Richard Whitley, MD, and Drs. Britt and Boppana have been very active in the national response to the Zika
outbreak in the Western Hemisphere over the past year. This includes involvement in the development of
research priorities for Zika at the level of the NIH (Britt and Boppana), as well as programmatic guidance on
the response of the U.S. and its physicians at the level of the Centers for Disease Control and Prevention
(CDC) (Whitley). The decades of research experience in congenital CMV infections, as well as the international expertise of the UAB division of Pediatric Infectious Diseases, positioned us well to be able to contribute to the newly recognized threat of congenital Zika infection. The NIH indicated that there was no group in the nation better positioned to understand the immediate and long-term outcomes of in utero acquisition of the Zika virus, given our expertise in congenital viral diseases. Dr. Britt summarized the impact on neurological development that follow well described congenital infections that were relevant to the unfolding natural history of congenital Zika virus infection at meetings sponsored by the National Academy of Science, the WHO/Gates Foundation/Pasteur Institute and by the NIH. He is a site investigator for the Zika Virus Infection in Pregnancy (ZIP), a 15-center study sponsored by the NIH that will enroll 10,000 pregnant women and their offspring to define the natural history of this perinatal infection.

**Significant Publications**


MMWR Morb Mortal Wkly Rep. 2016 Aug 26;65(33):870-878. doi: 10.15585/mmwr.mm6533e2. Update: Interim Guidance for the Evaluation and Management of Infants with Possible Congenital Zika Virus Infection – United States, August 2016. Russell K, Oliver SE, Lewis L, Barfield WD, Cragan J, Meaney-Delman D, Staples JE, Fischer M, Peacock G, Oduyebo T, Petersen EE, Zaki S, Moore CA, Rasmussen SA; Contributors; Boston Children's Hospital; RTI International; University of Utah; Administration for Children and Families; Augusta University; Family Voices, Inc.; Seattle Children's Hospital; Center for Medicaid and CHIP Services; Centers for Medicare and Medicaid Services; CDC; Tift Regional Health System; Texas Department of State Health Services; Duke University; University of Pittsburgh; Cincinnati Children's Hospital Medical Center; University of Rochester Medical Center; Office of the Assistant Secretary for Health; National Institute of Child Health and Human Development; Nemours Children's Health System; Sidney Kimmel Medical College of Thomas Jefferson University; Maternal and Child Health Bureau; Health Resources and Services Administration; Stanford University; March of Dimes; University of Chicago; Florida State University College of Medicine; University of Chicago Medicine–Comer Children's Hospital; Elizabeth Glaser Pediatric AIDS Foundation; Parent to Parent of Georgia; Healthcare Network of Southwest Florida; University of Arizona; University of Florida; Emory University; University of California, San Diego; Nationwide Children's Hospital; University of Mississippi Medical Center; University of Texas Southwestern Medical Center; University of Wisconsin, Madison; American Academy of Pediatrics (AAP); Vanderbilt University School of Medicine; Altino Ventura Foundation; Children's of Alabama; University of Alabama at Birmingham (Whitley, R); Cincinnati Children's Hospital Medical Center; Puerto Rico Chapter, AAP.
Clinical predictors of sensorineural hearing loss and cognitive outcome in infants with symptomatic congenital cytomegalovirus infection. Pinninti SG, Rodgers MD, Novak Z, Britt WB, Fowler KB, Boppana SB, Ross SA.


Microbial Cryptotopes are Prominent Targets of B-cell Immunity. Rieder FJ, Biebl J, Kastner MT, Schneider M, Jungbauer C, Redlberger-Fritz M, Britt WJ, Kundi M, Steininger C.

Division Awards & Recognition

William J. Britt, M.D, Pediatric Infectious Disease, has been elected to the American Association of Physicians.

William J. Britt, MD, Pediatric Infectious Disease, received a Visiting Fellowship from the Chinese Academy of Science.

The Ronald McDonald House Charities (RMHC) Board of Trustees has selected David Kimberlin, MD, Pediatric Infectious Disease, to receive the RMHC 2016 Medical Award of Excellence for his work in the treatment, control and eradication of infectious diseases affecting children.

David Kimberlin, MD, Pediatric Infectious Disease, delivered the Floyd Denny Professor Lectureship at the University of North Carolina, Chapel Hill, North Carolina, on February 4, 2016.

Richard Whitley, MD, Pediatric Infectious Disease, has been named Chair of the Recombinant DNA Advisory Committee. The committee is a federal advisory committee that provides recommendations to the NIH Director related to basic and clinical research involving recombinant or synthetic nucleic acid molecules.

Participation in National Research, Quality Improvement and Learning Networks

- Suresh Boppana, MD, and Karen Fowler, PhD, are the principal investigators of the NIDCD CHIMES Network.
- Bill Britt, MD, is the principal investigator of numerous NIH-funded international studies in Brazil, Croatia. He is site investigator for the ZIP study.
- David Kimberlin, MD, and Richard Whitley, MD, are the principal investigators of the international NIAID Collaborative Antiviral Study Group.
- Richard Whitley, MD, and Maaike Everts, PhD, are the principal investigators of the U19 Centers for Excellence in Translational Research program that established the Alabama Drug Discovery Alliance.
- Scott James, MD, is on the U.S. Pediatric Infectious Diseases Society (PIDS) Research Affairs Committee and develops the program for the PIDS-St. Jude’s basic science research meeting each year.
The UAB Division of Neonatology is a founding member of the NIH Eunice Kennedy Shriver NICHD Neonatal Research Network (NRN). Over its 30 years of existence, the NRN has defined the standards of multi-institutional collaborative research that has directly resulted in the increased survival and decreased morbidity rates of extremely low birth weight infants and other critically ill infants in the United States. The UAB Division of Neonatology is consistently one of the top centers in developing, leading, enrolling and analyzing the important randomized controlled trials and clinical studies conducted by the NRN. For example, Neonatology division members have led three major innovative NRN studies: the SAVE Factorial Trial, the Cytokine Study, and the SUPPORT Factorial Trial. The UAB NRN grant was again renewed for the 2016–2021 cycle.

The UAB Division of Neonatology is also funded by the Eunice Kennedy Shriver NICHD Global Network for Women's and Children's Health Research. Division researchers led seminal investigations of resuscitation and essential newborn care in 100 communities in six countries, which included almost 200,000 infants. These trials established the effectiveness of these interventions in reducing stillbirths and neonatal mortality and led to worldwide implementation of training, including the globally-implemented Helping Babies Breathe Program.
and the Essential Care for Every Baby Program introduced in 2014. The Division of Neonatology at UAB is the only one in the country funded to lead sites for both NICHD neonatal networks.

The Neonatology Division also conducts groundbreaking basic research in the LungMAP project (www.lungmap.net). Namasivayam Ambalavanan, MD, is the principal investigator of the UAB Research Center, which comprises one of the four research centers in NIH NHLBI LungMAP consortium. LungMAP seeks to improve lung health by providing the research community with a web-based resource to support investigations into the processes that regulate lung development. The use of cutting-edge technologies for analysis of the developing mouse and human lung will generate a novel map of where and when the lung cells differentiate and the alveoli form. LungMAP is making this knowledge accessible and freely available to the public through novel imaging and web-based tools (www.lungmap.net). Dr. Ambalavanan is also principal investigator of the UAB Research Center in the NHLBI PreVENT Consortium comprising five research centers, which studies control of breathing in preterm infants.

There are many ongoing extramurally funded projects with a research focus on bronchopulmonary dysplasia (BPD). Dr. Ambalavanan is funded by the NHLBI for "STOP BPD" (Signature of Top Omic Profiles in BPD) to prospectively define and validate clinical and "omic" signatures associated with resilience against or risk for development of BPD. Trent Tipple, MD, is funded by the NHLBI to determine mechanisms of oxygen-induced lung injury and evaluate novel strategies, such as thioredoxin reductase-1 inhibition to attenuate BPD in animal models. Vivek Lal, MD, has been recently funded by an American Heart Association Scientist Development Grant to evaluate the role of the neonatal airway microbiome in the development of BPD.

**Significant Publications**


Division Awards & Recognition

Namasivayam Ambalavanan, MD, Neonatology, has been selected to serve on the American Academy of Pediatrics (AAP) NeoPREP Panning Committee Team.

Wally Carlo, MD, Neonatology, was honored with the 2016 Southern Society for Pediatric Research Founders Award.

Charitharth Vivek Lal, MD, Neonatology, received the 2016 Southern Society of Pediatric Research Young Investigator Award Finalist and the 2017 Southern Society of Pediatric Research Young Faculty Award. Dr. Lal also received the American Heart Association Scientist Development Grant.

Charitharth Vivek Lal, MD, Neonatology, was selected by the American Academy of Pediatrics (AAP) to participate in the AAP Young Physicians’ Leadership Alliance (YPLA) through the Section on Early Career Physicians (SOECP).

Ariel Salas, MD, Neonatology, has been selected as a 2016 Society for Pediatric Research (SPR) Young Investigator Coaching Program recipient.

Trent Tipple, MD, Neonatology, has been selected by the Section on Neonatal Perinatal Medicine (SONPM) as a SONPM District X Representative for the Mid-Career Neonatology group (MIDCaN).

Aaron Yee, MD, Neonatology, received the American Academy of Pediatrics 2016 Marshall-Klaus Perinatal Research Award.
The Division of Pediatric Nephrology leads research efforts in drug discovery and pharmacokinetics, as well as the assessment, progression and treatment of chronic kidney disease in children.

The Pediatric and Infant Center for Acute Care Nephrology (PICAN) is directed by David Askenazi, MD. The program seeks to develop novel management options for pediatric patients with renal impairment, and includes translation from bedside to bench and back again. As an example, PICAN studied a new dialysis device called Aquadex. We adapted the Aquadex to treat neonates and premature infants with kidney failure who were too small for hemodialysis. As a result of this work, children as small as 1 kg can now receive this lifesaving therapy. With the publication of these results, this technology now is being used at other major children’s hospitals across the country, including Cincinnati Children’s Hospital Medical Center, Boston Children’s Hospital and Seattle Children’s.

The Pediatric Renal Transplant Program is another area of expertise for the division. Michael Seifert, MD, investigates ways to improve long-term kidney function in children who receive kidney transplants. In a study that will alter how children with kidney transplants are evaluated, he has demonstrated that early immunologic activation, seen on surveillance renal transplant biopsies, predicts long-term complications even before changes in laboratory values. His current NIH-funded studies are aimed identification of biomarkers of chronic transplant dysfunction and new therapeutic targets to mitigate chronic allograft nephropathy.

Dr. Daniel Feig’s Childhood Hypertension Program has identified critical mechanisms involved in the development of adolescent onset essential hypertension, as well as the risk factors associated with hypertensive target organ damage. Previous clinical trials have demonstrated that elevated serum uric acid causes vascular damage and activation of the renin angiotensin system, resulting in high blood pressure that can be mitigated by uric acid-lowering therapy. The SURPHER (Uric acid Reduction to Prevent HypERTension) trial is an ongoing study to assess the effectiveness of uric acid reduction in lowering blood pressure in young adults. This study found that even mild hyperuricemia results in increased risk for hypertension and chronic kidney disease in patients with type 2 diabetes through vascular injury associated mechanisms.

**Significant Publications**


Division Awards & Recognition

Daniel I. Feig, MD, Pediatric Nephrology, is the first holder of the Margaret M. Porter Endowed Chair in Pediatric Nephrology.

Participation in National Research, Quality Improvement and Learning Networks

Sahar Fathallah, MD, is the site principal investigator of the Chronic Kidney Disease in Children (CKiD) Study.

Michael Seifert, MD, is the site principal investigator for Improving Renal Outcomes in Children (IROC.) Dr. Seifert is on the national steering committee, research committee and outcome committee.

Dan Feig, MD, is the site principal investigator for North American Pediatric Renal Transplant Cooperative Survey (NAPRTCS).

Sahar Fathallah, MD, is the site principal investigator for Standardizing Care to improve Outcomes in Pediatric Esrd (SCOPE).

David Askenazi, MD, is the national director of the Neonatal Kidney Cooperative (NKC).
The UAB Division of Pediatric Neurology is leading the assessment of studies examining the natural history, safety and tolerability of oral cannabidiol in childhood epilepsy that is not controlled by existing treatments. Cannabidiol is a light, oily liquid derived from the cannabis plant, and research conducted by Monisha Goyal, MD, Pongkiat Kankirawatana, MD, and Rani Singh, MD, has received support from the State of Alabama to improve the lives of its youngest citizens with intractable seizure disorders. This degree of expertise also is being applied to multicenter studies of the treatment of Lennox-Gastaut Syndrome and Dravet Syndrome.

The NIH-sponsored Natural History Study on Rett Syndrome (RS) and related disorders led by Alan Percy, MD, part of the Rare Disease Clinical Research Consortium, is now in its 14th year. At the present time, effective treatment for RS is lacking. However, recent advances in our understanding of RS suggest that the potential for effective therapies is a realistic future consideration. In order to be prepared for the implementation of clinical treatment trials, it is important to develop accurate information on the longitudinal (natural history) pattern of progression among individuals with RS. As such, the purpose of this study is to gather detailed historical and physical examination data, as well as survival and quality of life data on a large cohort with RS. These data will be essential for the proper conduct of future clinical trials.
Significant Publications


Significant Publications

Alan Percy, MD, Pediatric Neurology, presented the inaugural Bengt Hagberg Memorial Lecture at the annual Swedish Neuropediatric Society meeting in Stockholm, Sweden, at the Swedish Society of Medicine, Svenska Läkarsällskapet.
The Pediatric Pulmonary Division maintains a broad research portfolio that complements the clinical programs, with focus areas in cystic fibrosis (CF), sleep, asthma, primary ciliary dyskinesia and muscular dystrophy.

The CF program was selected as one of eight pediatric CF centers to be part of The CF Care Model of the Future, sponsored by the Cystic Fibrosis Foundation (CFF). It builds upon the strong foundation of the peer review accreditation system, the patient registry, clinical practice guidelines and clinical research, as well as the quality improvement (QI) expertise. This Learning Network will provide an opportunity to collaborate in applying QI methods to achieve outstanding outcomes over time. As one of the first teams to join the CF Learning Network, this selected group of programs from Boston, Denver, Los Angeles, Chicago, Seattle, Cincinnati, Portland (OR) and Birmingham will help to test and refine the Learning Network infrastructure.

The UAB/Children’s of Alabama CF Clinical Research Center has been a Therapeutic Development Network (TDN) Center since 2002 and has a strong leadership role in the Cystic Fibrosis network. This is evidenced by
our position as the TDN CFTR Detection National Resource Center, one of seven National Resource Centers in the TDN, and our role as a trailblazer in CFFT-led research of national importance. The UAB/Children’s of Alabama TDN center was also a leader in the clinical trials leading to the development and FDA approval of two groundbreaking drugs for CF aimed at correcting the basic defect in this life-limiting disease. The UAB TDN center is led by Steven Rowe, MD, (Adult Director) and Isabel Lowell, MD, (Pediatric Director). The UAB/Children’s of Alabama CF clinical research center is currently conducting 20 industry-sponsored CF trials and 11 investigator-initiated CF trials.

In 2015–2016, UAB and Children’s of Alabama personnel served as national principal investigators or co-PIs in the PROSPECT study, GOAL Extension and Expansion studies, and multiple other clinical trials investigating CFTR modulation or other ion transport pathways to address the basic CF defect. We are the lead site for Phase III VX-809-Ivacaftor co-therapy studies and for potentiator studies led by Novartis Pharmaceuticals. Dr. Rowe is also the national principal investigator for a novel anti-inflammatory agent, specifically, a LTA4 inhibitor (Celtaxsys).

Our unique expertise places UAB and Children’s of Alabama as the only center in the country trained to perform and measure all of the following: Nasal Potential Difference (NPD), Sweat Rate (evaporimetry), Sweat Chloride, Intestinal Current Measurements (ICM), and Mucociliary Clearance (MCC) imaging, providing a unique resource to partners requiring one or more of these clinical trial endpoints for the evaluation of agents that address the basic CF defect. Cystic fibrosis research in the division also involves development of minimally invasive, personalized models for predicting the effectiveness of CFTR modulators in CF patients and those with acquired CFTR dysfunction. Jennifer Guimbellot, MD, and colleagues have developed a rapid cell culture-based model of epithelial cells from the nose as a screening method to assess the efficacy of small molecule therapies from individual patients ex vivo, which will provide a unique and innovative tool to predict corrector activity in any candidate for CFTR modulators. This tool involves the culture of respiratory “organoids,” three-dimensional cultures of nasal epithelial cells that may be evaluated for modulator-induced responses using functional measurements, microscopy and biochemical analysis. Pulmonary faculty are collaborating in developing new clinical research tools, including micro-optical coherence tomography (microOCT) for in human subjects to determine the functional epithelial microanatomy responsible for ciliary movement.

Dr. Lowell is working in collaboration with Drs. Shelly Mercer, Michael Stalvey, Kenneth McCormick and Daniel Hsia to determine whether unmethylated insulin DNA levels in CF patients can be used to detect significant pancreatic beta cell death prior to detection of high blood sugars. This could help predict those CF patients who will soon develop diabetes and allow for earlier initiation of treatment.

The UAB and Children’s of Alabama Pulmonary Programs recently joined the American Lung Association’s Airways Clinical Research Center (ACRC) Network, a collaborative of 17 different clinical research centers throughout the U.S., that forms the nation’s largest not-for-profit network of clinical research centers dedicated to asthma and chronic obstructive pulmonary disease (COPD) treatment research. The ACRC Network conducts large clinical trials that will directly impact patient care for COPD and asthma. The Children’s of Alabama Pediatric Pulmonary physicians involved as principal investigators are Terri Magruder, MD, and Dr. Lowell. The ACRC has been responsible for many groundbreaking pediatric and adult asthma clinical trials and is currently in the planning stages for several new pediatric asthma trials looking at different anti-inflammatories, the effect of e-cigarettes, and the role of obesity in asthma and its management.

The Children’s of Alabama Asthma Program is also involved in several quality improvement projects aimed at optimizing care and outcomes in the pediatric asthma population. Recently, Drs. Magruder and Lowell have spearheaded a project aimed at improving the use of the asthma control test (ACT) and asthma action plan (AAP) in pulmonary clinics. The rates of ACT and AAP utilization have risen significantly since the project’s inception in June (from <50% to >90% and from 80% to >90%, respectively). Drs. Magruder and Lowell also work with basic scientists in the UAB Lung Health Center interested in learning more about the pathophysiology of asthma and potential therapeutic interventions. They are currently working with Dr. Chad Steele to determine the role of exposure to fungi in asthma.

The Primary Ciliary Dyskinesia (PCD) program at UAB/Children’s of Alabama recently completed an onsite evaluation by the PCD Foundation. We are one of four centers to have received full accreditation as a joint adult and pediatric center. UAB Adult PCD Center activities are led by Steven Rowe, MD, and Marty Solomon, MD. Research endeavors include conducting and collaborating with other centers in basic science research projects utilizing animal models to study factors that affect coordination of ciliary function leading to effective mucociliary transport, which is believed to be diminished or absent in human PCD. Additionally, in collaboration with Dr. Cecilia Lo at Pittsburgh, we are exploring genotype/phenotype relationships with laboratory evaluation of the cilia in mouse models of PCD, including common mutations such as DNAH5.
Brad Troxler, MD, serves as the primary investigator for the first clinical trial in Duchenne muscular dystrophy at UAB or Children’s of Alabama. The SIDEROS trial is a multinational, multisite Stage III clinical trial to assess the efficacy of idebenone on the lung function of patients with Duchenne muscular dystrophy who are taking steroids. The NeuroMuscular Disease (NMD) Program is a multispecialty, multidisciplinary program that provides comprehensive care to the patient population of children, adolescents and young adults with various neuromuscular diseases. The use of polysaccharide pneumococcal immunization in the neuromuscular patient population went from <10% in 2012 to >90% in 2016. Similar improvements occurred with influenza vaccination rates, currently at 92%.

Several clinical programs have developed robust quality improvement initiatives. The BPD Program seeks to identify characteristics of chronically ill infants that predict clinical success by utilizing an IRB approved clinical database. The database includes ~500 individual patients and more than 1,300 individual clinical encounters. Current quality improvement initiatives include:
• Enhancement of family understanding of disease process and appropriate usage of respiratory equipment
• Decrease rate of nutritional failure in all patients and increase PO feeding success in patients with gastrostomy tube
• Decrease frequency of systemic steroid bursts
• Decrease pulmonary-related admissions to an ED or inpatient setting
• Increase percent of patients who receive full course of full course of palivizumab.

**Significant Publications**


**Division Awards & Recognition**

The UAB Pediatric Pulmonary Asthma Program, in collaboration with UAB Lung Health Center, has been selected as an Airways Clinical Research Center (ACRC) by the American Lung Association.
The UAB Division of Pediatric Rehabilitation Medicine at Children’s of Alabama seeks to generate new knowledge related to disabling conditions of childhood. Through close collaboration with the UAB Lakeshore Research Collaborative, we are working to develop telehealth interventions for children with obesity and physical impairment, a major problem in the state of Alabama. Drew Davis, MD, and Erin Swanson, MD, are members of the Children’s of Alabama Concussion Work Group, collaborating with other UAB researchers to identify biomarkers and risk factors for prolonged concussion recovery in children and adolescents, as well as to assess potential nutritional interventions to minimize post-concussive symptoms through reduction of inflammation. The division also collaborates with the UAB Translational Research for Injury Prevention Laboratory (TRIP Lab) to understand the impact of concussion on driving ability in adolescents. This work is at the forefront of efforts nationally to learn more about the serious consequences of traumatic brain injury. The division also continues close collaboration with leaders in the UAB Constraint Induced (CI) Therapy Research Group to develop new applications for CI therapy in the pediatric population.

**Significant Publications**

Members of the Division of Pediatric Rheumatology excel in research into macrophage activation syndrome (MAS) in the pediatric population. This includes the novel recognition that a group of patients with fatal H1N1 flu died after their viral infections triggered this serious hyperinflammatory disorder. Randy Cron, MD, PhD, led a group of investigators from across the country to determine that the reason for this increased mortality was related to gene mutations in susceptible individuals. His data suggest that people with other types of infections and identical gene mutations also may be prone to the disorder, known as reactive HLH (rHLH), or hemophagocytic lymphohistiocytosis. Perhaps more importantly, these findings raise the question of whether to screen for HLH gene mutations (potentially up to 10% of the population) at birth to identify those carrying risk alleles for developing severe H1N1 or other infections.

Dr. Cron’s work in this area also includes a retrospective re-analysis of the results from a large clinical trial of IL-1 blockade using Anakinra for the treatment for sepsis. When sepsis patients were divided based on the presence of macrophage activation syndrome (MAS), it was found that Anakinra doubled survival of those sepsis patients with features of MAS. Anakinra had no effect on survival of sepsis patients without MAS. In recognition of his leadership in this area, Dr. Cron led a group of experts who developed and published classification criteria for macrophage activation syndrome (MAS) complicating systemic juvenile idiopathic arthritis (sJIA).

Tim Beukelman, MD, serves as the scientific director of the Childhood Arthritis and Rheumatology Research Alliance (CARRA) Registry. The CARRA Registry, a multicenter prospective observational registry for children with arthritis became operational in 2015 and currently has more than 40 clinical sites enrolling patients. The primary aim of the registry is to evaluate the safety of therapeutic agents used to treat pediatric rheumatic diseases, and the secondary aim is to evaluate clinical outcomes and their determinants, including treatment. Dr. Beukelman has worked closely with other members of the registry executive committee to bring the registry to fruition and encourage the performance of Phase IV safety surveillance studies that satisfy FDA requirements. Current work is focused on expanding the capabilities of the registry to allow investigator-initiated observational and interventional substudies to be layered on the existing registry infrastructure.

Dr. Beukelman also has NIH funding for the development of a research plan to assess the treatment of children newly diagnosed with juvenile idiopathic arthritis (JIA) that involves fewer than five joints and does not affect the eyes. Patients with this JIA phenotype are currently treated with NSAIDs and steroid joint injections as the standard of care. However, more than 50% of these children will develop arthritis in five or more joints (polyarthritis) or inflammation of the eyes (uveitis). When this occurs, children are typically treated with methotrexate, but they often have suboptimal clinical outcomes. The aim of his current efforts is to determine whether the use of methotrexate earlier in the disease course can prevent the occurrence of polyarthritis and uveitis and improve clinical outcome overall.

Dr. Beukelman is the principal investigator of a pharmacoepidemiology project as part of the AHRQ-funded UAB Center for Education and Research on Therapeutics (CERTs). This project aims to use administrative claims data, such as Medicaid billing data, to further evaluate the safety of medications used to treat JIA with emphasis on serious infection and malignancy risk. These studies build upon this team’s prior successful publications and will allow for longer-term follow-up of patients, as well as the examination of newer biologic agents.
Matthew Stoll, MD, PHD, has NIH funding to explore the role of the microbiota in children and adults with spondyloarthritis. He has identified various bacterial species in patients with spondyloarthritis that are protective for disease and others which contribute to the pathology. Recently, Dr. Stoll has evaluated the metabolic diversity and functions in the gut microbiomes and shown diminished function in arthritis patients versus controls, as well as alterations in tryptophan metabolism that may alter immune function to allow for autoimmunity.

**Significant Publications**


*Curr Opin Rheumatol.* 2016 May 8. The microbiota in pediatric rheumatic disease: epiphenomenon or therapeutic target? Stoll ML, Cron RQ.


Randy Q. Cron, MD, PhD, Pediatric Rheumatology, has been asked to serve a second term as a Journal of Immunology (JI) Section Editor.

Randy Q. Cron, MD, PhD, Pediatric Rheumatology, has been nominated to serve on the Content Development Team (CDT) that will write items for the Pediatric Rheumatology in-training, certification and MOC exams.

Randy Cron, MD, PhD, Pediatric Rheumatology, has been selected by the Rheumatology Research Foundation to serve on their 2017 Scientific Advisory Board.

Matthew Stoll, MD, PhD, MSCS, Pediatric Rheumatology, has been selected as a member of GRAPPA (Group for Research and Assessment of Psoriasis and Psoriatic Arthritis).

Timothy Beukelman, MD, MSCE, Pediatric Rheumatology, has been chosen to serve on the American College of Rheumatology Research Foundation Scientific Review Committee for Innovative Research awards (2016–2018).

Timothy Beukelman, MD, MSCE, Pediatric Rheumatology, had an abstract selected and presented orally in a plenary session of the American College of Rheumatology Annual Scientific Meeting, Washington, D.C., November 2016.

Participation in National Research, Quality Improvement and Learning Networks

Melissa Mannion, MD, has been selected to serve on the Pediatric Rheumatology Care and Outcomes Improvement Network (PR-COIN).

Tim Beukelman, MD, MSCE, serves in several leadership capacities in Childhood Arthritis & Rheumatology Research Alliance (CARRA) including:
• Childhood Arthritis & Rheumatology Research Alliance member (CARRA), 2005 – present
• CARRAnet Data/Sample Share Committee, 2012 – 2016
  Juvenile Idiopathic Arthritis Research Committee Member, 2005 – present
• Chair, JIA Research Committee, 2013 – 2016
• Scientific Director, CARRA Registry, 2014 – present

Randy Cron, MD, PhD, Matthew Stoll, MD, PhD, MSCS, and Tim Beukelman, MD, MSCE, are all members of the Pediatric Rheumatology Collaborative Study Group (PRCSG).
The 2016 Pediatrics Residency Program Graduating Class had a 100 percent American Board of Pediatrics pass rate for the fifth consecutive year.

For the 2016-2017 year, our program will have 86 residents, including Pediatrics, Medicine/Pediatrics, Pediatric Neurology and Pediatrics/Genetics from 20 states plus Washington, D.C., Iraq and Peru.

We will expand our categorical intern class to 24 residents per year.

New initiatives this year included: a Mentoring Match program, a Pediatric Intern Procedure Boot Camp, Residency Resilience Program, increased residency involvement in the community schools and UAB School of Medicine Diversity Day for residency recruitment.

Continuing programs included: Global Health Interest Group, Pediatric Residency Research Program, Career Development Workshops, Quality Improvement Program, including a resident-led MOC-approved Quality Improvement Project, Founder’s Funds for residents and Coat of Arms Community Outreach/Advocacy opportunities.

The first Annual Pediatric Science Day was held March 2016.

Our Pediatric Cardiology Fellowship Program, a newly accredited program, began training its first fellow in July 2016.

Argus (Teaching) Award nominations included (2016): Hussein Abdullatif, M., Pediatric Endocrinology, Chang Wu, MD, Pediatric Hospital Medicine; Lauren Nassetta, MD, Pediatric Hospital Medicine, Kimberly Whelan, MD, Pediatric Hematology & Oncology; and the Department of Pediatrics was honored as a nominee for the Best Clinical Department in Birmingham.

Dean’s Excellence Award Recipient (Teaching): Lauren Nassetta, MD, Pediatric Hospital Medicine.

Approximately 50% of our residency graduates go into primary care; approximately 50% of our residency graduates continue in fellowship programs either here or across the country.

ACGME-APPROVED PEDIATRIC FELLOWSHIP PROGRAMS

- Adolescent Medicine
- Cardiology
- Critical Care
- Endocrinology
- Hematology-Oncology
- Infectious Disease
- Nephrology
- Rheumatology
- Allergy-Immunology
- Child Neurology
- Emergency Medicine
- Gastroenterology
- Hospice-Palliative Care
- Neonatology
- Pulmonology
- Sleep Medicine

NON-ACGME PEDIATRIC FELLOWSHIP PROGRAMS:

- Cardiac Critical Care
- Hospital Medicine

Approximately 80% of our Pediatric fellowship graduates go into academics or seek additional training, while 20% go into private practice or other areas of interest (i.e., CDC, International Missions, etc.)