Division Details

**Division Data Summary**

**Research and Training Details**

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**Clinical Activities and Training**

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**Division Details**

**Significant Accomplishments**

**The Center for Prevention of Preterm Birth**

This endeavor is unique among children’s hospitals in developing a platform to circumvent the leading cause of infant mortality, preterm birth. To accomplish this goal, Cincinnati Children’s has dedicated substantial institutional resources to maintaining the current areas of accomplishment in lung development and complications of prematurity. Additionally, this year we recruited Louis Muglia, MD.

**Number One Neonatology Program**

Our work in helping prevent prematurity and improving outcomes for infants born prematurely has made us a leader in the field. Our efforts were recognized this year by US News and World Report, who named us the number one neonatology program in the nation in their 2012 issue of “Best Children’s Hospitals.”

**First MRI in a neonatal intensive care unit.**

We were first in the world to establish an MRI scanner in a newborn intensive care unit, which we did this year. Previously, infants most in need of this imaging modality were prevented from study because of the risks of transporting them out of the NICU. The novel, safe implementation of this imaging system within the Cincinnati Children’s NICU will be transformative in newborn care.

**Expansion of Cincinnati Children’s newborn care services to Dayton**

In October of 2012, the Perinatal Institute will offer clinical services for newborns in the Kettering Health...
Network hospitals in Dayton, Ohio. This will add 5,000 deliveries per year to our service area and enhance opportunities for patient-focused research and quality improvement.

**Leading pulmonary research**

Jeffrey Whitsett, MD, and colleagues received a National Institutes of Health award to study “Airway Progenitor Cell Proliferation and Differentiation During Lung Repair” as part of a consortium for the study of lung repair and regeneration. This effort focuses on transcriptional mechanisms controlling proliferation and differentiation of airway epithelial cell progenitors. The investigative team plans to generate new antibodies, gene expression data and transgenic models with broad application to the field of pulmonary biology and medicine.

**Division Highlights**

**Airway Progenitor Cell Proliferation and Differentiation during Lung Repair**

Dr. Jeffrey Whitsett and colleagues were awarded a NIH U01 entitled “Airway Progenitor Cell Proliferation and Differentiation during Lung Repair” as part of a consortium for the study of "Lung Repair and Regeneration." The goal of this effort focuses on transcriptional mechanisms controlling proliferation and differentiation of Airway Epithelial Cell progenitors. The investigative team plans to also generate and provide new antibodies, gene expression data and transgenic models of broad application to the field of Pulmonary Biology and Medicine.

**Preterm Respiratory Outcomes Program (PROP)**

We initiated patient enrollment in the Preterm Respiratory Outcomes Program (PROP) this year. This NHLBI-sponsored program supports a novel multicenter initiative to enhance understanding and predict one year respiratory outcomes in extremely preterm infants; those born 12 or more weeks before term. The PROP includes multicenter and CCHMC-specific projects. Dr. Alan Jobe is the Principal Investigator for the PROP, with Dr. Jim Greenberg serving as Co-Investigator. When enrollment is completed in 2014, the PROP cohort will include high-resolution data from over 750 subjects and promises to offer new insight and strategies for the treatment of neonatal chronic lung disease.

**Chorioamnionitis in late preterm infants study**

Drs. Alan Jobe, Suhas Kallapur are completing enrollment for their study of chorioamnionitis in late preterm infants. Many births between 32-36 weeks gestation occur in association with maternal chorioamnionitis. Often this infection is mild or asymptomatic, and the infants seem to do well after delivery. However, there are important questions about how this complication affects longer-term outcomes during infancy and beyond. This study will add important new information regarding the relationship between infection, inflammation and respiratory outcomes in this patient population.

**Eunice Kennedy Shriver NICHD Neonatal Research Network**

Dr. Kurt Schibler serves as Cincinnati Children’s Principal Investigator for the *Eunice Kennedy Shriver NICHD* Neonatal Research Network. The 18 centers comprising the network are charged with conducting multicenter clinical trials to inform clinical practice and improve the outcome of newborn infants. Two recent high profile manuscripts, listed below, have prompted a change in practice among Maternal Fetal Medicine specialists regarding administration of antenatal steroid to mothers at high risk for delivery at the limits of viability and have confirmed long-term benefit, at school age, of hypothermia for treatment of neonatal hypoxic ischemic
encephalopathy. Ongoing Network trials focus on optimizing neuroprotection strategies and improving survival of premature infants and reducing complications associated with prematurity. Postdoctoral fellows in the Perinatal Institute have used the Cincinnati-specific NICHD Neonatal Research Network Database for outcomes research.

**Nation-leading program in prevention of prematurity**

The Perinatal Institute has developed a nation-leading program in prevention of prematurity. This endeavor has resulted in the genesis of a unique transdisciplinary research endeavor that encompasses faculty for Cincinnati Children’s, UC College of Medicine, the McMicken College of Arts and Sciences and partner institutions around the state of Ohio and Midwest. This unique collaborative environment brings together basic biological, social and medical sciences to improve health outcomes for mothers and infants in the region and nation.

**A new approach to investigation newborn brain insults**

The greatest morbidity of children born prematurely stems from complications in brain development. To better understand and treat complications from neurological injury form being born early, the Perinatal Institute has implemented a new approach to investigation newborn brain insults – building a novel, prematurity compatible brain MRI imaging system in our NICU. This advance has already led to better care of preterm infants and holds the promise for new discoveries to prevent the greatest complications of early birth.

**Expansion of newborn care in the Dayton region**

Cincinnati Children’s neonatologists have long been recognized as the leaders in newborn care in the greater Cincinnati/Northern Kentucky region. To expand our sphere of influence in improving pregnancy outcomes, Cincinnati Children’s faculty will now deliver exceptional newborn care in the nurseries in the Dayton region. This expansion not only enhances infant outcomes, but provides an unparalleled opportunity for population-based research to further improve outcomes for preterm birth.

**Significant Publications**


This important study found that fetal lung maturation is determined by both fetal and maternal genomic information in mice. Further, experiments demonstrated that maternal genotype determines the timing of birth and can influence fetal lung growth and maturation to ensure perinatal survival.


Chorioamnionitis associated with preterm delivery is often polymicrobial with ureaplasma being the most common isolate. In this paper, Kallapur et al. find that ureaplasma reprogram innate immune responses in a manner that depends upon the duration of exposure during pregnancy.


Kamath-Rayne et al. evaluate whether antenatal corticosteroids given after fetal lung immaturity in pregnancies at 34 weeks of gestation or more would improve neonatal outcomes and, in particular, respiratory outcomes. They found that administration of antenatal corticosteroids after immature fetal lung indices did not reduce
respiratory morbidity in neonates born at 34 weeks of gestation or more, a result that will influence significantly influence future therapy.


This study targeted intervention strategies for reducing preterm birth through use of geographic analysis of Hamilton County vital records. It demonstrated that the heterogeneous distribution of preterm birth proportion within an urban county is complex and requires location specific analysis to develop appropriate interventions.


This study found that prolonged administration of empirical antibiotics to premature infants with sterile cultures in the first week of life was associated with subsequent severe outcomes. These results suggest that judicious restriction of antibiotic use should be investigated as a strategy to reduce severe outcomes for premature infants.

**Division Publications**


92. Srofenyoh E, Ivester T, Engmann C, Olufolabi A, Bookman L, Owen M. Advancing obstetric and neonatal


Faculty, Staff, and Trainees

Faculty Members

Jeffrey A. Whitsett, MD, Professor
  
  **Leadership** Co-Director, Perinatal Institute; Chief, Section of Neonatology, Perinatal and Pulmonary Biology
  
  **Research Interests** Lung Development; Surfactant

Henry T. Akinbi, MD, Associate Professor
  
  **Research Interests** Neonatal Infections and Blood Transfusions

Sandip Bhattacharyya, MSc, PhD, Assistant Professor
  
  **Research Interests** Inflammation Immunology, Signal Transduction

Laurel Bookman, MD, Assistant Professor
  
  **Research Interests** Implementation Science, International Health

James Bridges, PhD, Instructor
  
  **Research Interests** Hypoxia Inducible Factors and Downstream Target Genes in Chronic Lung Disease

Tanya E. Cahill, MD, Assistant Professor
  
  **Leadership** Director, High Risk Infant Follow-Up Program
  
  **Research Interests** Neonatal Abstinence Syndrome and High Risk Infant Follow-Up

Michael W. Crossman, MD, PhD, Assistant Professor
  
  **Research Interests** Bioethics

Jay Dritz, MD, Assistant Professor
  
  **Research Interests** Neonatal resuscitation, quality improvement

Stephan W. Glasser, PhD, Associate Professor
  
  **Research Interests** Gene Regulation in the Lung

Neera Goyal, MD, MSHP, Assistant Professor

James M. Greenberg, MD, Professor
  
  **Leadership** Co-Director, Perinatal Institute; Director, Division of Neonatology
  
  **Research Interests** Preterm Birth, Community Health, Pulmonary Vascular Development

Beth E. Haberman, MD, Assistant Professor
  
  **Leadership** Medical Director, Cincinnati Children's NICU & Co-Medical Director, Mercy Anderson Hospital Nurseries
  
  **Research Interests** Infant Follow-up

Eric Hall, PhD, Assistant Professor
  
  **Research Interests** Biomedical Informatics

Noah H. Hillman, MD, Assistant Professor
  
  **Research Interests** Pulmonary Physiology, Neonatal Resuscitation, Lung Injury/Repair

Steven B. Hoath, MD, Professor
Leadership Medical Director, Skin Sciences Program

Research Interests Skin Development & Environmental Interactions

Machiko Ikegami, MD, PhD, Professor
  Leadership Director, Surfactant and Metabolic Function Core
  Research Interests Surfactant Metabolism; Lung Injury

Alan H. Jobe, MD, PhD, Professor
  Leadership Director, Division of Perinatal Biology
  Research Interests Injury and Repair of the Preterm Lung

Beth Ann Johnson, MD, Assistant Professor

Tanya V. Kalin, MD, PhD, Assistant Professor
  Research Interests Transcriptional Regulation of Carcinogenesis and Radiation-Induced Lung Fibrosis

Vladimir V. Kalinichenko, MD, PhD, Associate Professor
  Research Interests Fox Proteins in Lung Development

Suhas G. Kallapur, MD, Associate Professor
  Leadership Director, Neonatology CME
  Research Interests Fetal Inflammation/Physiology, Lung Development/Inflammation, BPD, Developmental Immunology

Beena Kamath, MD, MPH, Assistant Professor
  Research Interests Neonatal Outcomes and Public Health; Fetal Lung Maturity; Global Health

Heather Kaplan, MD, MSCE, Assistant Professor
  Research Interests Health Services Research; Improvement Science

Alan P. Kenny, MD, PhD, Instructor
  Research Interests Molecular Development of the Foregut Organs

Paul S. Kingma, MD, PhD, Assistant Professor
  Research Interests Innate Immune Systems; Cystic Fibrosis; Neonatal Infection

Thomas R. Korfhagen, MD, PhD, Professor
  Research Interests Lung Defense

Timothy Le Cras, PhD, Associate Professor
  Leadership Director of Admissions, Molecular & Developmental Biology Graduate Program
  Research Interests Chronic Lung Diseases; Lung Development, Pulmonary Hypertension

Kristin R. Melton, MD, Associate Professor
  Leadership Associate Director, Neonatal Fellowship Training Program
  Research Interests Developmental Biology, Neural Crest Biology

Stephanie Merhar, MD, MS, Assistant Professor
  Research Interests Neonatal neuroimaging, infant follow up

Ardythe L. Morrow, PhD, Professor
  Leadership Director, Center for Interdisciplinary Research in Human Milk and Lactation
  Research Interests Molecular Epidemiology of Human Milk, Epidemiologic Methods, Prevention of Infectious Disease, Predictive Biomarkers of Neonatal Outcomes
Leadership

Louis Muglia, MD, PhD, Professor
- Co-Director, Perinatal Institute; Chief, Section of Neonatology, Perinatal and Pulmonary Biology
- Research Interests: Genetics of Birth Timing; Neurobiology of the Stress Response

Vivek Narendran, MD, MBA, Associate Professor
- Medical Director, Univ. Hosp. NICU & Newborn Nursery; Medical Director, The Christ Hospital Nursery; Chair, Department of Pediatrics, the University Hospital
- Research Interests: C-PAP; Business Case for Quality Improvements; Preterm Infant Skin

Amy T. Nathan, MD, Assistant Professor
- Medical Director, TriHealth Nurseries
- Research Interests: Immunobiology

Laurie A. Nommsen-Rivers, PhD, RD, IBCLC, Assistant Professor
- Co-Chair, Seminar Series in Human Milk and Lactation
- Research Interests: Human Lactation and Breastfeeding

Anne-Karina Perl, PhD, Assistant Professor
- Research Interests: Alveolar Regeneration and Bronchiolar Injury/Repair

John H. Reuter, MD, PhD, Associate Professor
- Co-Medical Director, Bethesda North Hospital Nurseries

Ward R. Rice, MD, PhD, Professor
- Director, Neonatal Fellowship Training Program; Director, Newborn Services, St. Elizabeth Medical Center
- Research Interests: Lung Development, Surfactant Biology

Jerod Rone, MD, Associate Professor

Kurt R. Schibler, MD, Associate Professor
- Principal Investigator, NICHD Neonatal Research Network
- Research Interests: Neonatal Immunology, Necrotizing Enterocolitis

John M. Shannon, PhD, Professor
- Director of Graduate Studies, Program in Molecular and Developmental Biology
- Research Interests: Lung Development, Foregut Embryology

Debora I. Sinner, PhD, Instructor
- Research Interests: Wnt Signaling and Sox Transcription Factors in Lung Development and Disease

Andrew P. South, MD, MPH, Assistant Professor
- Outcomes and Etiology of Gastroschisis, Epidemiology of Late-Preterm Birth

Jean J. Steichen, MD, Professor Emeritus
- Research Interests: Infant Follow-up

Takuji Suzuki, MD, PhD, Instructor
- Research Interests: Lung Immunology

Bruce C. Trapnell, MD, MS, Professor
- Director, Rare Lung Diseases Network; Scientific Director, PAP Foundation; Co-Director, Cystic Fibrosis TDN Center
**Research Interests** Rare Lung Diseases; GM-CSF, Gene Therapy

Christina Valentine, MD, Assistant Professor

**Research Interests** Maternal and Infant Nutrition to improve perinatal health

Laura Ward, MD, Assistant Professor

**Leadership** Co-Medical Director, Mercy Anderson Hospital Nurseries

**Research Interests** Use of Human Milk in the NICU

Timothy E. Weaver, MS, PhD, Professor

**Leadership** Associate Director, Division of Pulmonary Biology; Co-Director, Molecular and Developmental Biology Program

**Research Interests** Pathogenesis of Interstitial Lung Diseases

Kathryn E. Wedig, MD, Associate Professor

**Leadership** Director, High Risk Clinic @ GSH; Medical Director, Mercy Hospital Fairfield

**Research Interests** Infant Follow-up, Neonatal Abstinence Syndrome

Susan E. Wert, PhD, Associate Professor

**Leadership** Director, Molecular Morphology Core, Division of Pulmonary Biology

**Research Interests** Lung Development, Molecular Morphology of the Lung, Ultrastructural Analysis of the Lung, Genetic Surfactant Disorders

Scott Wexelblatt, MD, Assistant Professor

**Leadership** Medical Director Regional Newborn Services; Co-Medical Director Bethesda North Hospital Nurseries

**Research Interests** Late Preterm Infant, Quality Improvement

Yan Xu, PhD, Associate Professor

**Leadership** Director, Microarray-Bioinformatics Core, Division of Pulmonary Biology

**Research Interests** Bioinformatics, Systems Biology, Transcriptional Network

**Joint Appointment Faculty Members**

Kathryn Wikenheiser-Brokamp, MD/PhD, Associate Professor (Pathology)

**Research Interests** Pulmonary Pathology, Pediatric and Adult Lung Diseases

**Clinical Staff Members**

- Stephen Bird, MD
- Mary Burwinkel, MD
- Thomas Catalanotto, MD
- Christine Chappell, MD
- Diane Donley, MD
- Dena Elkeeb, MD
- Horacio Falciglia, MD
- Michelle French, MD
- Angelique Gloster, MD
- Pamela Holmes, MD
- Clinton Joiner, MD
- Jill Klein, MD
- Katie Loudermilk, MD
Trainees

- **Thomas Acciani, BS**, University of Illinois Urbana
- **Ceyda Acun, MD, PL7**, George Washington University Hospital, Washington, DC
- **Melinda Arnett, PhD**, University of Kansas Medical Center, Kansas City, Kansas
- **Aria Attia, MS**, Georgetown University, Washington, DC
- **David Balli, BA**, DePauw University, Greencastle, IN
- **Craig Bolte, PhD**, University of Cincinnati, Cincinnati, OH
- **Katherine Brown**, University of the West of England, Bristol, England
- **Yuqi Cai, PhD**, Zhejiang University School of Medicine, Hangzhou, China
- **Gang Chen, MS, PhD**, Yangzhou University, China
- **Rebecca Currier, BS**, Louisiana Tech University, Ruston, LA
- **David Dewar, MD**, PL5, Michigan State University, East Lansing, MI
- **Jill Fritz, BS**, Miami University, Oxford, OH
- **Chen Gao, BS**, Beijing Normal University, Beijing, China
- **Tate Gisslen, MD, PL5**, University of Minnesota Medical School, Minneapolis, MN
- **Jennifer Goetz, MD**, PL5, University of Louisville School of Medicine, Louisville, KY
- **Corryn Greenwood, MD, PL6**, Mayo Clinic School of Graduate Medical Education, Rochester, NY
- **David Hahn, BS**, Northern Kentucky University
- **Hans Michael Haitchi, MD, PhD**, University of Southampton, UK
- **Jamie Havrilak, BS**, Susquehanna University, Selinsgrove, PA
- **Sandra Hernandez**, University of Cincinnati
- **Audrone LaForgia, MD, PL6**, EVMS/Children's Hospital of the King's Daughters, Norfolk, VA
- **Melissa Landis, MD, PL4**, Columbia University School of Medicine, New York, New York
- **Gloria Laryea, BS**, University of Maryland Eastern Shore, Princess Anne, Maryland
- **Anne Minter, BA**, Miami University, Oxford, OH
- **Nagendra Monangi, MD, PL6**, Osmania Medical College, Hyderabad, India; University of South Alabama, Mobile, AL
- **Elizabeth Mushaben, BS**, College of Mount St. Joseph
- **Gaston Ofman, MD**, Favaloro University School of Medicine, Buenos Aires, Argentina
- **Kriti Puri, MBBS**, All India Institute of Medical Sciences, New Delhi, India
- **Malia Ray, MD**, University of Louisville, Kentucky
- **Melissa Rice, MD, PL4**, Indiana University School of Medicine, Indianapolis, Indiana
- **Tony Sallese, BS**, University of St. Francis, Joliet, IL
- **Atsuyasu Sato, MD, PhD**, Kyoto University, Japan
- **Heather Smith, MD**, PL4, Miller School of Medicine, Miami, Florida
- **Kevin Stutey, MD**, PL5, Eastern Virginia Medical School, Norfolk, VA
Division Collaboration

Reproductive Sciences; Developmental Biology; Pulmonary Medicine; Biomedical Informatics; Safety - The James A. Anderson Center; Infectious Disease; Human Genetics; Biostatistics and Epidemiology

SK Dey, Takiko Daikoku, Christopher Wylie, James Wells, Noah Schroyer, Aaron Zorn, Richard Lang, William Hardie, Imre Solti, Steven Muething, Margaret Hostetter, Ge Zhang, and Maurizio Macaluso

Division’s faculty have close collaborations with faculty in multiple divisions within Cincinnati Children’s, the University of Cincinnati, and with investigators across the United States and throughout the world.

The Perinatal Institute at Cincinnati Children’s provided a new home for efforts to both improve outcomes for infants born prematurely and prevent prematurity to synergistically reduce infant mortality in our region. To accomplish these daunting goals, we have assembled faculty from across Cincinnati Children’s, the college of medicine, the arts and sciences and institutions around Ohio in an integrative, transdisciplinary endeavor unique in pediatrics and women’s health. Perinatal Institute investigators maintain collaborative relationships with colleagues in Japan, Germany, Mexico, Argentina, Finland, and Australia.

Grants, Contracts, and Industry Agreements

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HILLMAN, N
Lung Injury with Resuscitation in the Preterm
National Institutes of Health
K08 HL 097085 08/01/09-07/31/14 $121,750

IKEGAMI, M
Role of C/EBPalpha in Cytoprotection and Recovery from Lung Injury
National Institutes of Health
R01 HL 095464 04/01/09-03/31/13 $247,500

JOBE, A / CHougnet C
Biomarkers of Immunologic Function and Preterm Respiratory Outcomes
National Institutes of Health
U01 HL 101800 05/01/10-04/30/15 $381,253

JOBE, A / KALLAPUR, S
Late Preterm Birth, Ureaplasma Species and Childhood Lung Disease
National Institutes of Health
R01 HL 097064 09/24/09-07/31/13 $348,802

KALIN, T
Role of Foxm1 in Lung Cancer Microenvironment
National Institutes of Health
R01 CA 142724 07/01/10-06/30/15 $201,275

KALINICHENKO, V
Foxf1 Transcription Factor in Development of Pulmonary Capillaries
National Institutes of Health
R01 HL 084151 05/01/11-04/30/15 $250,000

KALLAPUR, S
Mechanisms of Fetal Inflammatory Response Syndrome Induced by Chorioamnionitis
National Institutes of Health
R01 HD 057869 02/03/09-01/31/14 $242,830

KAMATH-RAYNE, B
Novel Amniotic Fluid Biomarkers to Predict Fetal Lung Maturity
National Institutes of Health (University of Cincinnati)
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**Current Year Direct Receipts** | **$659,536**

**Total** | **$10,088,309**