

Neonatology, Perinatal and Pulmonary Biology



First Row: M. Koneru, B. Haberman, K. Wedig, K. Melton, Y. Xu, L. Nommsen-Rivers, V. Dave', A. Perl, A. Nathan, H. Kaplan, S. Kallapur;
Second Row: T. Weaver, W. Rice, J. Steichen, L. Graf, K. Schibler, N. Hillman, T. Cahill, J. Shannon, M. Ikegami, C. Bachurski, T. Le Cras, L. Ward, J. Greenberg, A. Kenny, V. Narendran, J. Whitsett, B. Trapnell;
Third Row: V. Kalinichenko, T. Bartman, E. Hall, A. South, S. Wexelblatt, P. Kingma, H. Falciglia, S. Glasser, S. Hoath, H. Akinbi, J. Reuter, T. Korfhagen, A. Jobe.

Division Data Summary

Research and Training Details

Number of Faculty	45
Number of Research Fellows	11
Number of Research Students	9
Number of Support Personnel	125
Peer Reviewed Publications	67

Clinical Activities and Training

Number of Clinical Staff	19
Number of Clinical Fellows	12
Inpatient Encounters	84,495
Outpatient Encounters	6,172

Faculty Members

Jeffrey A. Whitsett, MD, Professor ; *Chief, Section of Neonatology, Perinatal and Pulmonary Biology*

Research Interests: Lung Development; Surfactant

Ann Akeson, PhD, Research Associate Professor

Research Interests: Pulmonary Vascular and Lymphatic Development

Henry Akinbi, MD, Associate Professor Clinical

Cindy Bachurski, PhD, Research Associate Professor ; *Director, Research in Pulmonary Biology and Neonatology Elective, University of Cincinnati College of Medicine; Director, Summer Internship Program for High School Students, CCHMC*

Research Interests: Gene Regulation in the Lung

Thomas Bartman, MD, Assistant Professor

Research Interests: Cardiovascular Development

Tanya E. Cahill, MD, Assistant Professor Clinical

Michael Crossman, MD, PhD, Assistant Professor Clinical

Research Interests: Intestinal Function and Host-Microbial Interactions; Bioethics

Vrushank G. Dave', PhD, Research Assistant Professor

Research Interests: Transcription, Lung Development and Cancer

Horacio Falciglia, MD, Professor Clinical ; *Medical Director, Bethesda North Hospital Normal Newborn Nursery*

Research Interests: Seleniun Status and Neonatal Sepsis; Timing of Cord Clamping and Outcome; Vermont Oxford Data Base

Derek Fletcher, MD, Assistant Professor Clinical

Stephan W. Glasser, PhD, Associate Professor

Research Interests: Gene Regulation in the Lung

Lloyd Graf, Jr., PhD, Research Assistant Professor

Research Interests: Dysregulated Gene Expression in Inflammatory Lung Diseases

James Greenberg, MD, Associate Professor ; *Director, Division of Neonatology; Medical Director, Regional Newborn Services*

Research Interests: Pulmonary Vascular Development

Beth Haberman, MD, Assistant Professor Clinical ; *Medical Director, RCNIC & Mercy Anderson Hospital Nurseries; Director, High Risk Infant Follow-Up Clinic*

Research Interests: Infant Follow-up

Eric Hall, PhD, Research Instructor

Research Interests: Biostatistics

Noah Hillman, MD, Research Instructor

Steven B. Hoath, MD, Professor ; *Director, Skin Sciences Institute*

Research Interests: Skin Development

Machiko Ikegami, MD, Professor ; *Director, Surfactant and Metabolic Function Core*

Research Interests: Surfactant Metabolism

Alan Jobe, MD, PhD, Professor ; *Director, Division of Perinatal Biology*

Research Interests: Surfactant Physiology

Tanya Kalin, MD, PhD, Research Assistant Professor

Vladimir Kalinichenko, MD, PhD, Associate Professor

Research Interests: Fox Proteins in Lung Development

Suhas Kallapur, MD, Associate Professor Clinical ; *Director, Neonatology CME*

Research Interests: Lung Development: BPD

Heather Kaplan, MD, Research Assistant Professor

Research Interests: Epidemiology and Biostatistics

Alan Kenny, MD, Research Instructor

Research Interests: Molecular Development of the Foregut Organs

Paul S. Kingma, MD, PhD, Research Assistant Professor

Research Interests: Lung Defense; Surfactant

Madhavi Koneru, MD, Assistant Professor Clinical

Thomas R. Korfhagen, MD, PhD, Professor

Research Interests: Lung Defense

Timothy Le Cras, PhD, Associate Professor ; *Director of Graduate Student Recruiting, Molecular & Developmental Biology Graduate Program*

Research Interests: Chronic Lung Disease; Lung Development

Ron Levin, MD, Associate Professor Clinical

Kristin Melton, MD, Associate Professor Clinical

Research Interests: Developmental Biology

Vivek Narendran, MD, Associate Professor Clinical ; *Director, Univ. Hosp. NICU & Newborn Nursery; Medical Director, The Christ Hospital Nursery*

Research Interests: C-PAP

Amy Nathan, MD, Research Assistant Professor

Research Interests: Immunobiology

Anne-Karina Perl, PhD, Research Assistant Professor

Research Interests: FGF/PDGF Signaling in Alveolar Regeneration and EGFR Signaling in Bronchiolar Injury and Repair

John H. Reuter, MD, Associate Professor Clinical

Ward R. Rice, MD, PhD, Professor ; *Director, Neonatal Fellowship Training Program; Director, Newborn Services, St. Elizabeth Medical Center*

Research Interests: Lung Development

Kurt Schibler, MD, Associate Professor ; *Medical Director, Good Samaritan Hospital NICU; Director, Clinical Research Program*

Research Interests: Neonatal Hematopoiesis

John Shannon, PhD, Professor

Research Interests: Lung Development

Jean J. Steichen, MD, Professor

Research Interests: Infant Follow-up

Bruce Trapnell, MD, Professor ; *Director, Rare Lung Diseases Clinical Research Consortium; Scientific Director, PAP Foundation; Director, Translational Pulmonary Research; Co-Director, Cystic Fibrosis TDN Center*

Research Interests: Pulmonary Gene Delivery

Timothy E. Weaver, PhD, Professor ; *Co-Director, Division of Pulmonary Biology*

Research Interests: Protein Processing in the Lung

Laura Ward, MD, Adjunct Assistant Professor

Research Interests: Use of Human Milk in the NICU

Kathryn Wedig, MD, Associate Professor Clinical ; *Director, High Risk Clinic @ GSH; Medical Director, Mercy Hospital Fairfield*

Research Interests: Infant Follow-up

Susan E. Wert, PhD, Research Associate Professor ; *Director, Molecular Morphology Core, Division of Pulmonary Biology*

Research Interests: Lung Morphology

Scott Wexelblatt, MD, Assistant Professor Clinical

Yan Xu, PhD, Research Associate Professor ; *Director, Microarray-Bioinformatics Core, Division of Pulmonary Biology*

Research Interests: Bioinformatics, Systems Biology, Transcriptional Network

Clinical Staff Members

- Shana Alexander, MD
- Stephen Bird, MD
- Thomas Catalanotto, MD
- Diane Donley, MD
- Michelle French, MD
- Lisa Green, MD
- Jennifer Hardie, MD
- Evelyn Jones, MD
- Jillian Klein, MD
- Carrie Kluger, MD
- Katie Loudermilk, MD
- Alisa McGill, MD
- Kenton Pate, MD
- Ajay Ponkshe, MD
- John Robinson, MD
- Deborah Rufner, MD
- Kathy Sorger, MD
- Kara Tencza, MD
- Kira Zimmerly, MD

Trainees

- Valerie Besnard, PhD, Universite Rene Descartes - Paris V
- Stephanie Binder, MD, PL6, John H. Stroger Hospital Cook County, Chicago, IL

- **Jim Bridges, PhD**, University of Cincinnati
- **Brenna Carey, PhD**, University of Cincinnati
- **Gang Chen, MS**, Yangzhou University, China
- **Fusheng Chou, MD**, National Taiwan University
- **Nikki Glenn, BS**, Miami University
- **David Hahn, BS**, Northern Kentucky University
- **Prakruti Jambula, MD, PL4**, Univ. of Oklahoma HSC, Oklahoma City, OK
- **Amer Jameel, BS**, Ohio State University
- **Brooke King, MD, PL5**, Cincinnati Children's Hospital Medical Center - UCMC, Cincinnati, OH
- **Elizabeth Kramer, BA, BS**, Miami University
- **Rishikesh Kulkarni, BPharmSc**, University of Mumbai, India
- **Venkata Kuppala, MD, PL5**, The Cleveland Clinic, Cleveland, OH
- **Tara Lang, MD, PL5**, Mayo School GME, Rochester, MN
- **Alexander Lange, PhD**, University of Cincinnati
- **Yutaka Maeda, PhD**, University of California
- **Karunyakanth Mandapaka, MS**, University of Cincinnati
- **Rafael Mena, MD, PL4**, Cincinnati Children's Hospital Medical Center - UCMC, Cincinnati, OH
- **Stephanie Merhar, MD, PL4**, Cincinnati Children's Hospital Medical Center - UCMC, Cincinnati, OH
- **Bhuvana Murali, BTech**, Vellore Institute of Technology, India
- **Elizabeth Mushaben, BS**, College of Mount St. Joseph
- **Ross Ridsdale, PhD**, University of Toronto
- **Chika Saegusa, PhD**, RIKEN, Japan
- **Takuro Sakagami, MD, PhD**, Niigata University, Japan
- **Christine Sarlone, MD, PL4**, Univ. of Tennessee HSC, Memphis, TN
- **Tushar Shah, MD, MPH, PL5**, Case Western Reserve Univ., Cleveland, OH
- **Jonathan Slaughter, MD, MSc., PL5**, Medical Univ. of South Carolina, Charleston, SC
- **Gareth Stewart, MB BCH BAO, MRCP, PhD**, Royal Infirmary of Edinburgh
- **Takuji Suzuki, MD, PhD**, Tohoku University, Japan
- **Holly Strike, MD, PL6**, Indiana Univ. SOM, Indianapolis, IN
- **David Tompkins, MS**, University of Texas
- **Huajing Wan, PhD**, University of Cincinnati
- **Elizabeth Wetzel, MD, PL4**, Indiana Univ. SOM, Indianapolis, IN

Significant Accomplishments in FY08

We wish to highlight the considerable progress we have made related to rare lung diseases and the effects of perinatal infection on prematurity.

The Rare Lung Disease Consortium, based at Cincinnati Children's and funded by the NIH, links the basic science underlying the pathogenesis of several rare pulmonary diseases: pulmonary alveolar proteinosis (PAP), interstitial lung diseases (ILD) in children, lymphangioleiomyomatosis (LAM) and alpha-1 antitrypsin. Bringing together investigators and patients affected by rare lung diseases from the US, Japan and Europe, the group has made major advances in diagnosis and treatment.

Recently, researchers demonstrated that adult patients with PAP have high levels of autoimmune antibodies that cause the disease by blocking the protein GM-CSF and, therefore, macrophage function in the lung. Because early trials with GM-CSF inhalation have been effective, larger trials are under study.

Perinatal Infection and Prematurity

In an NIH-funded collaborative with Australian colleagues, our researchers have shown that prenatal exposure of the fetus to bacterial endotoxin or ureaplasma, both commonly associated with preterm labor and perinatal infection, creates a fetal inflammatory syndrome. In the setting of perinatal infection and lung injury, the gentler methods of resuscitation and ventilation in the premature newborn are effective and cause less injury to the lungs. Their research studies are leading to improvements in the use of prenatal steroids, timing of delivery, resuscitation, ventilation methods and the use

of pulmonary surfactant, all of which contribute to better care for preterm infants.

Significant Publications in FY08

Kallapur SG, Jobe AH, Ball MK, Nitsos I, Moss TJ, Hillman NH, Newnham JP, Kramer BW. Pulmonary and systemic endotoxin tolerance in preterm fetal sheep exposed to chorioamnionitis. *J Immunol.* 2007; 179: 8491-8499

Intrauterine infection contributes to prematurity and to the many complications related to preterm birth. In this publication, a model of intrauterine infection was developed to determine how the fetus is able to survive and adapt to bacterial infection prior to birth. The work demonstrates remarkable differences in fetal as compared to adult immune responses that, in turn, have important consequences related to the postnatal problems associated with prematurity.

Bell SM, Schreiner CM, Wert SE, Mucenski ML, Scott WJ, Whitsett JA. R-spondin 2 is required for normal laryngeal-tracheal, lung and limb morphogenesis. *Development.* 2008;135: 1049-1058

Congenital malformations account for nearly half of neonatal death. This paper demonstrates a new mechanism that causes malformations of the trachea, lung, and limbs, and identifies a critical role of a secreted molecule (R-spondin 2) in the process of lung formation. R-Spondin was found to regulate the Wnt pathway to influence organogenesis, being required for normal formation of the larynx, trachea, and lung.

Mason-Richie NA, Mistry MJ, Gettler CA, Elayyadi A, Wikenheiser-Brokamp KA. Retinoblastoma function is essential for establishing lung epithelial quiescence after injury. *Cancer Res.* 2008; 68: 4068-4076

Since the lung is repeatedly exposed to infectious agents and toxicants, the cells lining the airways have a robust ability to repair, a process that must be terminated to avoid alterations in lung structure or cancer. This work demonstrates a previously unknown role for Rb (Retinoblastoma associated factor) in termination of the repair process in cells lining the respiratory tract that is relevant to lung repair and cancer prevention.

Dong M, Bridges JP, Apsley K, Xu Y, Weaver TE. ERdj4 and ERdj5 are required for endoplasmic reticulum-associated protein degradation of misfolded surfactant protein C. *Mol Biol Cell.* 2008; 19: 2620-2630

Misfolded proteins accumulate in cells causing injury or cellular dysfunction, a process related to a number of disorders, including Alzheimer's disease, cystic fibrosis, and lung fibrosis, to name a few. This work identifies the novel role of ERdj4 and ERdj5 in chaperoning the surfactant protein C precursor through the cell. Mutations in surfactant protein C cause severe respiratory disease in infants and children. Understanding the processes that help the protein fold and move normally through the cell will help guide new therapies for this lethal lung disease in children.

Lin S, Ikegami M, Xu Y, Bosserhoff AK, Malkinson AM, Shannon JM. Misexpression of MIA disrupts lung morphogenesis and causes neonatal death. *Dev Biol.* 2008; 316: 441-455

This work demonstrates a novel role for MIA (Melanocyte Inhibitory Factor) in the regulation of lung maturation critical for survival after birth. MIA inhibits the processes that determine function of the lung, regulating genes that are required for breathing at birth. MIA suppresses lung maturation and its normal loss, prior to birth, is critical for the ability of the newborn to adapt to postnatal life.

Division Publications

1. Walker VP, Akinbi HT, Meinen-Derr J, Narendran V, Visscher M, Hoath SB. [Host defense proteins on the surface of neonatal skin: implications for innate immunity](#). *J Pediatr.* 2008; 152: 777-81.
2. Maeda Y, Suzuki T, Pan X, Chen G, Pan S, Bartman T, Whitsett JA. [CUL2 is required for the activity of hypoxia-inducible factor and vasculogenesis](#). *J Biol Chem.* 2008; 283: 16084-92.
3. Crossman MW. [For whom the bell tolls](#). *J Pediatr.* 2007; 151: 4-5.
4. Dave V, Wert SE, Tanner T, Thitoff AR, Loudy DE, Whitsett JA. [Conditional deletion of Pten causes bronchiolar hyperplasia](#). *Am J Respir Cell Mol Biol.* 2008; 38: 337-45.
5. Hillman NH, Moss TJ, Kallapur SG, Bachurski C, Pillow JJ, Polglase GR, Nitsos I, Kramer BW, Jobe AH. [Brief, large tidal volume ventilation initiates lung injury and a systemic response in fetal sheep](#). *Am J Respir Crit Care Med.* 2007; 176: 575-81.
6. Hillman NH, Moss TJ, Nitsos I, Kramer BW, Bachurski CJ, Ikegami M, Jobe AH, Kallapur SG. [Toll-like receptors and agonist responses in the developing fetal sheep lung](#). *Pediatr Res.* 2008; 63: 388-93.

7. Pillow JJ, Hillman N, Moss TJ, Polglase G, Bold G, Beaumont C, Ikegami M, Jobe AH. [Bubble continuous positive airway pressure enhances lung volume and gas exchange in preterm lambs](#) . *Am J Respir Crit Care Med*. 2007; 176: 63-9.
8. Gibbins S, Hoath SB, Coughlin M, Gibbins A, Franck L. [The universe of developmental care: a new conceptual model for application in the neonatal intensive care unit](#) . *Adv Neonatal Care*. 2008; 8: 141-7.
9. Spitzmiller RE, Phillips T, Meinen-Derr J, Hoath SB. [Amplitude-integrated EEG is useful in predicting neurodevelopmental outcome in full-term infants with hypoxic-ischemic encephalopathy: a meta-analysis](#) . *J Child Neurol*. 2007; 22: 1069-78.
10. Tansirikongkol A, Hoath SB, Pickens WL, Visscher MO, Wickett RR. [Equilibrium water content in native vernix and its cellular component](#) . *J Pharm Sci*. 2008; 97: 985-94.
11. Tansirikongkol A, Wickett RR, Visscher MO, Hoath SB. [Effect of vernix caseosa on the penetration of chymotryptic enzyme: potential role in epidermal barrier development](#) . *Pediatr Res*. 2007; 62: 49-53.
12. Hardie WD, Davidson C, Ikegami M, Leikauf GD, Le Cras TD, Prestridge A, Whitsett JA, Korfhagen TR. [EGF receptor tyrosine kinase inhibitors diminish transforming growth factor-alpha-induced pulmonary fibrosis](#) . *Am J Physiol Lung Cell Mol Physiol*. 2008; 294: L1217-25.
13. Ikegami M, Falcone A, Whitsett JA. [STAT-3 regulates surfactant phospholipid homeostasis in normal lung and during endotoxin-mediated lung injury](#) . *J Appl Physiol*. 2008; 104: 1753-60.
14. Ikegami M, Scoville EA, Grant S, Korfhagen T, Brondyk W, Scheule RK, Whitsett JA. [Surfactant protein-D and surfactant inhibit endotoxin-induced pulmonary inflammation](#) . *Chest*. 2007; 132: 1447-54.
15. Kramer EL, Deutsch GH, Sartor MA, Hardie WD, Ikegami M, Korfhagen TR, Le Cras TD. [Perinatal increases in TGF- \$\alpha\$ disrupt the saccular phase of lung morphogenesis and cause remodeling: microarray analysis](#) . *Am J Physiol Lung Cell Mol Physiol*. 2007; 293: L314-27.
16. Lin S, Ikegami M, Xu Y, Bosserhoff AK, Malkinson AM, Shannon JM. [Misexpression of MIA disrupts lung morphogenesis and causes neonatal death](#) . *Dev Biol*. 2008; 316: 441-55.
17. McCurnin D, Seidner S, Chang LY, Waleh N, Ikegami M, Petershack J, Yoder B, Giavedoni L, Albertine KH, Dahl MJ, Wang ZM, Clyman RI. [Ibuprofen-induced patent ductus arteriosus closure: physiologic, histologic, and biochemical effects on the premature lung](#) . *Pediatrics*. 2008; 121: 945-56.
18. Cheah FC, Jobe AH, Moss TJ, Newnham JP, Kallapur SG. [Oxidative stress in fetal lambs exposed to intra-amniotic endotoxin in a chorioamnionitis model](#) . *Pediatr Res*. 2008; 63: 274-9.
19. Jobe AH. [TPN as a source of oxidants](#) . *J Pediatr*. 2007; 151: A3.
20. Jobe AH. [Neonatal dehydration and neurodevelopment](#) . *J Pediatr*. 2007; 151: A1.
21. Jobe AH. [A "jaundiced" eye toward clinical assessments of bilirubin](#) . *J Pediatr*. 2008; 152: A3.
22. Jobe AH. [What is ALTE?](#) . *J Pediatr*. 2008; 152: A2.
23. Jobe AH. **"Surfactant: the basis for clinical treatment strategies.."** In: E Bancalari, ed. *The newborn lung: neonatology questions and controversies* . Philadelphia: Saunders/Elsevier; 2008: 73-98.
24. Jobe AH, Kallapur SG, Moss TJM. **"Inflammation/infection: effects on the fetal/newborn lung."** In: E Bancalari, RA Polin, eds. *The newborn lung: neonatology questions and controversy*. Philadelphia: Saunders/Elsevier; 2008: 119-140.
25. Jobe AH, Moss TJ, Nitsos I, Ikegami M, Kallapur SG, Newnham JP. [Betamethasone for lung maturation: testing dose and formulation in fetal sheep](#) . *Am J Obstet Gynecol*. 2007; 197: 523 e1-6.
26. Kramer BW, Joshi SN, Moss TJ, Newnham JP, Sindelar R, Jobe AH, Kallapur SG. [Endotoxin-induced maturation of monocytes in preterm fetal sheep lung](#) . *Am J Physiol Lung Cell Mol Physiol*. 2007; 293: L345-53.
27. Pillow JJ, Jobe AH. **"Respiratory disorders of neonates and infants: respiratory disorders of the newborn."** In: LM Taussig, LI Landau, eds. *Pediatric respiratory medicine*. Philadelphia: Mosby/Elsevier; 2008: 365-386.
28. Polglase GR, Nitsos I, Jobe AH, Newnham JP, Moss TJ. [Maternal and intra-amniotic corticosteroid effects on lung morphometry in preterm lambs](#) . *Pediatr Res*. 2007; 62: 32-6.
29. Kallapur SG, Jobe AH, Ball MK, Nitsos I, Moss TJ, Hillman NH, Newnham JP, Kramer BW. [Pulmonary and systemic endotoxin tolerance in preterm fetal sheep exposed to chorioamnionitis](#) . *J Immunol*. 2007; 179: 8491-9.
30. Moss TJ, Knox CL, Kallapur SG, Nitsos I, Theodoropoulos C, Newnham JP, Ikegami M, Jobe AH. [Experimental amniotic fluid infection in sheep: effects of Ureaplasma parvum serovars 3 and 6 on preterm or term fetal sheep](#) . *Am J Obstet Gynecol*. 2008; 198: 122 e1-8.
31. Sweet DG, Huggett MT, Warner JA, Moss TJ, Kloosterboer N, Halliday HL, Newnham JP, Kallapur SG, Jobe AH, Kramer BW. [Maternal Betamethasone and Chorioamnionitis Induce Different Collagenases during Lung Maturation in Fetal Sheep](#) . *Neonatology*. 2008; 94: 79-86.
32. Deshmukh HS, Shaver C, Case LM, Dietsch M, Wesselkamper SC, Hardie WD, Korfhagen TR, Corradi M, Nadel JA, Borchers MT, Leikauf GD. [Acrolein-activated matrix metalloproteinase 9 contributes to persistent mucin](#)

- [production](#). *Am J Respir Cell Mol Biol*. 2008; 38: 446-54.
33. Hardie WD, Korfhagen TR, Sartor MA, Prestidge A, Medvedovic M, Le Cras TD, Ikegami M, Wesselkamper SC, Davidson C, Dietsch M, Nichols W, Whitsett JA, Leikauf GD. [Genomic profile of matrix and vasculature remodeling in TGF-alpha induced pulmonary fibrosis](#). *Am J Respir Cell Mol Biol*. 2007; 37: 309-21.
 34. Krakovsky G, Huth MM, Lin L, Levin RS. [Functional changes in children, adolescents, and young adults with cerebral palsy](#). *Res Dev Disabil*. 2007; 28: 331-40.
 35. Kida H, Mucenski ML, Thitoff AR, Le Cras TD, Park KS, Ikegami M, Muller W, Whitsett JA. [GP130-STAT3 regulates epithelial cell migration and is required for repair of the bronchiolar epithelium](#). *Am J Pathol*. 2008; 172: 1542-54.
 36. Jaggi F, Cabrita MA, Perl AK, Christofori G. [Modulation of endocrine pancreas development but not beta-cell carcinogenesis by Sprouty4](#). *Mol Cancer Res*. 2008; 6: 468-82.
 37. Hintz SR, Van Meurs KP, Perritt R, Poole WK, Das A, Stevenson DK, Ehrenkranz RA, Lemons JA, Vohr BR, Heyne R, Childers DO, Peralta-Carcelen M, Dusick A, Johnson YR, Morris B, Dillard R, Vaucher Y, Steichen J, Adams-Chapman I, Konduri G, Myers GJ, de Ungria M, Tyson JE, Higgins RD. [Neurodevelopmental outcomes of premature infants with severe respiratory failure enrolled in a randomized controlled trial of inhaled nitric oxide](#). *J Pediatr*. 2007; 151: 16-22, 22 e1-3.
 38. Ludwig S, Steichen J, Khoury J, Krieg P. **Quality improvement analysis of developmental care in infants less than 1500 grams at birth**. *Newborn Infant Nurs Rev*. 2008; 8: 94-100.
 39. Deutsch GH, Young LR, Deterding RR, Fan LL, Dell SD, Bean JA, Brody AS, Nogee LM, Trapnell BC, Langston C, Albright EA, Askin FB, Baker P, Chou PM, Cool CM, Coventry SC, Cutz E, Davis MM, Dishop MK, Galambos C, Patterson K, Travis WD, Wert SE, White FV. [Diffuse lung disease in young children: application of a novel classification scheme](#). *Am J Respir Crit Care Med*. 2007; 176: 1120-8.
 40. Inoue Y, Trapnell BC, Tazawa R, Arai T, Takada T, Hizawa N, Kasahara Y, Tatsumi K, Hojo M, Ichiwata T, Tanaka N, Yamaguchi E, Eda R, Oishi K, Tsuchihashi Y, Kaneko C, Nukiwa T, Sakatani M, Krischer JP, Nakata K. [Characteristics of a large cohort of patients with autoimmune pulmonary alveolar proteinosis in Japan](#). *Am J Respir Crit Care Med*. 2008; 177: 752-62.
 41. Kleff V, Sorg UR, Bury C, Suzuki T, Rattmann I, Jerabek-Willemsen M, Poremba C, Flasshove M, Opalka B, Trapnell B, Dirksen U, Moritz T. [Gene therapy of beta\(c\)-deficient pulmonary alveolar proteinosis \(beta\(c\)-PAP\): studies in a murine in vivo model](#). *Mol Ther*. 2008; 16: 757-64.
 42. Ueno T, Elmberger G, Weaver TE, Toi M, Linder S. [The aspartic protease napsin A suppresses tumor growth independent of its catalytic activity](#). *Lab Invest*. 2008; 88: 256-63.
 43. Wedig KE, Whitsett JA. [Down the primrose path: petechiae in a neonate exposed to herbal remedy for parturition](#). *J Pediatr*. 2008; 152: 140, 140 e1.
 44. Bell SM, Schreiner CM, Wert SE, Mucenski ML, Scott WJ, Whitsett JA. [R-spondin 2 is required for normal laryngeal-tracheal, lung and limb morphogenesis](#). *Development*. 2008; 135: 1049-58.
 45. Nogee LM, Wert SE. **"Genetic abnormalities of surfactant metabolism.."** In: DS Zander, HH Popper, J Jagirdaret al, eds. *Molecular pathology of lung diseases*. New York: Springer; 2008: 590-606.
 46. Wert SE. [Does adiponectin play a role in pulmonary emphysema?](#). *Am J Physiol Lung Cell Mol Physiol*. 2008; 294: L1032-4.
 47. Besnard V, Xu Y, Whitsett JA. [Sterol response element binding protein and thyroid transcription factor-1 \(Nkx2.1\) regulate Abca3 gene expression](#). *Am J Physiol Lung Cell Mol Physiol*. 2007; 293: L1395-405.
 48. Brandt EB, Mingler MK, Stevenson MD, Wang N, Khurana Hershey GK, Whitsett JA, Rothenberg ME. [Surfactant protein D alters allergic lung responses in mice and human subjects](#). *J Allergy Clin Immunol*. 2008; 121: 1140-1147 e2.
 49. Ferri AL, Lin W, Mavromatakis YE, Wang JC, Sasaki H, Whitsett JA, Ang SL. [Foxa1 and Foxa2 regulate multiple phases of midbrain dopaminergic neuron development in a dosage-dependent manner](#). *Development*. 2007; 134: 2761-9.
 50. Quinton LJ, Jones MR, Robson BE, Simms BT, Whitsett JA, Mizgerd JP. [Alveolar epithelial STAT3, IL-6 family cytokines, and host defense during Escherichia coli pneumonia](#). *Am J Respir Cell Mol Biol*. 2008; 38: 699-706.
 51. Raj JU, Aliferis C, Caprioli RM, Cowley AW, Jr., Davies PF, Duncan MW, Erle DJ, Erzurum SC, Finn PW, Ischiropoulos H, Kaminski N, Kleeberger SR, Leikauf GD, Loyd JE, Martin TR, Matalon S, Moore JH, Quackenbush J, Sabo-Attwood T, Shapiro SD, Schnitzer JE, Schwartz DA, Schwiebert LM, Sheppard D, Ware LB, Weiss ST, Whitsett JA, Wurfel MM, Matthay MA. [Genomics and proteomics of lung disease: conference summary](#). *Am J Physiol Lung Cell Mol Physiol*. 2007; 293: L45-51.
 52. Sun J, Chen H, Chen C, Whitsett JA, Mishina Y, Bringas P, Jr., Ma JC, Warburton D, Shi W. [Prenatal lung epithelial cell-specific abrogation of Alk3-bone morphogenetic protein signaling causes neonatal respiratory distress by](#)

- [disrupting distal airway formation](#) . *Am J Pathol*. 2008; 172: 571-82.
53. Tichelaar JW, Wesselkamper SC, Chowdhury S, Yin H, Berclaz PY, Sartor MA, Leikauf GD, Whitsett JA. [Duration-dependent cytoprotective versus inflammatory effects of lung epithelial fibroblast growth factor-7 expression](#) . *Exp Lung Res*. 2007; 33: 385-417.
 54. Tran PT, Fan AC, Bendapudi PK, Koh S, Komatsubara K, Chen J, Horng G, Bellovin DI, Giuriato S, Wang CS, Whitsett JA, Felsher DW. [Combined Inactivation of MYC and K-Ras oncogenes reverses tumorigenesis in lung adenocarcinomas and lymphomas](#) . *PLoS ONE*. 2008; 3: e2125.
 55. Whitsett JA. [Hereditary disorders of surfactant homeostasis cause acute and chronic lung disease in infancy](#) . *Thorax*. 2008; 63: 295-6.
 56. Whitsett JA, Weaver TE. "Hereditary disorders of alveolar homeostasis in the newborn." In: E Bancalari, ed. *The newborn lung: neonatology questions and controversy*. Philadelphia: Saunders/Elsevier; 2008: 42-49.
 57. Yamamoto H, Jun Yun E, Gerber HP, Ferrara N, Whitsett JA, Vu TH. [Epithelial-vascular cross talk mediated by VEGF-A and HGF signaling directs primary septae formation during distal lung morphogenesis](#) . *Dev Biol*. 2007; 308: 44-53.
 58. Yanagi S, Kishimoto H, Kawahara K, Sasaki T, Sasaki M, Nishio M, Yajima N, Hamada K, Horie Y, Kubo H, Whitsett JA, Mak TW, Nakano T, Nakazato M, Suzuki A. [Pten controls lung morphogenesis, bronchioalveolar stem cells, and onset of lung adenocarcinomas in mice](#) . *J Clin Invest*. 2007; 117: 2929-40.
 59. Duran A, Linares JF, Galvez AS, Wikenheiser K, Flores JM, Diaz-Meco MT, Moscat J. [The signaling adaptor p62 is an important NF-kappaB mediator in tumorigenesis](#) . *Cancer Cell*. 2008; 13: 343-54.
 60. Castro DE, Wikenheiser-Brokamp KA, Sinha P. **A 56-year-old Honduran man with fever, weight loss and pleuritic chest pain.** *Infect Dis Clin Prac*. 2008; 16: 36-40.
 61. Crimmins JT, Willmott WC, Wikenheiser-Brokamp KA, Shipley RT, Reed MC. **Middle-aged West African man referred from tuberculosis clinic with abnormal chest radiograph.** *Infect Dis Clin Prac*. 2007; 15: 257-260.
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 67. Xu Y, Ikegami M, Wang Y, Matsuzaki Y, Whitsett JA. [Gene expression and biological processes influenced by deletion of Stat3 in pulmonary type II epithelial cells](#) . *BMC Genomics*. 2007; 8: 455.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct / Project Period Direct

Akeson, A

Pulmonary Lymphatic Development and Neonatal Lung Disease

March of Dimes - National

6-FY07-317

06/01/07 - 05/31/10

\$73,695 / \$221,209

Bartman, T

Role of Chondronitin and Dermatan Sulfatation in Endocardial Cushion Morphogenesis

March of Dimes - National

06/01/06 - 05/31/09

\$74,545 / \$218,181

Analysis of NFATc1 as the Mechanism by Which Early Heart Function Regulates Endocardial Cushion and Valve Morphogenesis

American Heart Association - Ohio

01/01/06 - 12/31/09

\$59,091 / \$236,364

Bridges, J

Characterization of LPCAT, a Lung LysoPC Acyltransferase: Identification of Catalytic Domains and

Transcriptional Regulators

Parker B Francis Fellowship Program

07/01/07 - 06/30/10

\$46,000 / \$144,000

Dave, V**Calcineurin Effectors in Pulmonary Homeostasis**

American Heart Association - National

083010N

01/01/08 - 12/31/11

\$70,000 / \$280,000

Hill, K**ODH Division Of Family Services Regional Outreach Education Program**

Ohio Department of Health

31-3-001-1-BM-07

07/01/07 - 06/30/08

\$90,000 / \$90,000

Jobe, A**Postnatal Consequences of Fetal Inflammation**

National Institutes of Health

R21 AI 069716

08/01/06 - 07/31/08

\$153,651 / \$290,360

New Mediators Of Clinical Lung Maturation

National Institutes of Health

R01 HL 065397

09/01/04 - 08/31/09

\$281,401 / \$1,457,632

Neonatal Resuscitation and Preterm Lung Injury

National Institutes of Health

R01 HD 012714

05/01/06 - 03/31/11

\$232,541 / \$954,405

Kalinichenko, T**Role of Foxm1 Protein in Macrophages During Lung Tumor**

University of Cincinnati

01/15/08 - 12/30/08

\$20,000 / \$20,000

Kalinichenko, V**Fox Transcription Factors in Development of Pulmonary Capillaries**

March of Dimes - National

FY051266

07/01/07 - 05/31/08

\$83,607 / \$83,607

Foxm1 Transcription Factor in Development of Non-Small Lung Cancer

American Cancer Society - National

RSG-06-187-01-MGO

07/01/07 - 06/30/10

\$157,352 / \$496,650

Fox Transcription Factors in Development of Pulmonary Capillaries

National Institutes of Health

R01 HL 084151

05/01/08 - 04/30/11

\$242,750 / \$728,250

Korfhagen, T**Role Of Surfactant Protein-A In Lung Defense**

National Institutes of Health

R01 HL 058795

02/13/04 - 01/31/09

\$237,045 / \$1,250,000

Lecras, T**Pathogenesis of Neonatal Lung Disease**

American Heart Association - National

0740069N

01/01/07 - 12/31/11

\$90,909 / \$454,545

Melton, K**Craniofacial Development: The Role of the Endothelium**

National Institutes of Health

K08 DE 016355

11/01/07 - 08/31/08

\$134,291 / \$134,291

Perl, A**Role of FGF Signaling on PDGFR α Expression During Alveolar Myofibroblast Differentiation**

American Heart Association - Ohio

075563B	07/01/07 - 06/30/09	\$55,000 / \$110,000
Schibler, K		
NICHD Cooperative Multi-Center Neonatal Research Network		
National Institutes of Health		
U10 HD 027853	04/01/06 - 03/31/11	\$255,237 / \$619,326
Shannon, J		
Lung Epithelium in Development and Disease		
March of Dimes - National		
FY07622	06/01/08 - 11/30/08	\$5,000 / \$5,000
Alveolar Type II Cells: Effects Of KGF		
National Institutes of Health (National Jewish Medical and Research Center)		
R01 HL 029891	04/01/06 - 03/31/10	\$6,993 / \$69,870
Role of HIF-1 in Fetal Lung Epithelial Differentiation		
National Institutes of Health		
R01 HL 084376	02/01/07 - 01/31/12	\$349,155 / \$1,832,879
Trapnell, B		
Scientific Director Of Alpha1 Foundation		
Alpha One Foundation		
	07/01/06 - 06/30/08	\$50,000 / \$100,000
Rare Disease Clinical Research Network		
National Institutes of Health		
U54 RR 019498	09/30/03 - 07/31/08	\$0,000 / \$4,498,194
Role of Anti-GM-CSF Antibodies in Myeloid Cell Function & Innate Immunity		
National Institutes of Health		
R01 HL 085453	04/01/07 - 03/31/11	\$250,000 / \$1,000,000
Weaver, T		
Regulation Of Respiratory Epithelial Cell Homeostasis		
National Institutes of Health		
P01 HL 061646	08/10/04 - 06/30/09	\$1,320,624 / \$6,892,425
Weaver, T	Project 1	283,764
Prows, D	Project 2	169,307
Ikegami, M	Project 3	291,647
Whitsett, J	Project 4	298,425
Weaver, T	Core A	10,938
Xu, Y	Core B	131,122
Wert, S	Core C	135,608
Structure/Function Analyses Of SP-B In Transgenic Mice		
National Institutes of Health		
R37 HL 056285	05/01/06 - 04/30/11	\$358,472 / \$1,885,203
Whitsett, J		
Genetic Control of Gestation and Lung Maturation in the Mouse		
March of Dimes - National		
21-FY08-502	03/01/08 - 02/28/09	\$25,100 / \$25,100
Pulmonary And Cardiovascular Development Training Grant		
National Institutes of Health		
T32 HL 007752	07/01/04 - 06/30/09	\$231,415 / \$1,142,435
ABCA3 and Alveolar Homeostasis		
National Institutes of Health		

R01 HL 085610	07/10/06 - 06/30/11	\$296,731 / \$1,567,158
Transcriptional Control of Respiratory Epithelial Progenitor Cells		
National Institutes of Health		
R01 HL 090156	09/28/07 - 06/30/11	\$329,638 / \$1,372,968
Joiner grant Transgenic Core		
	-	\$50,000 / \$

Service Collaborations

Hoath, S		
KAO Corporation		\$ 326,705
Steichen, J		
GC OB/GYN Inc.		\$ 12,025
Visscher, M		
Procter and Gamble		\$ 185,462