Faculty Listing and Clinical/Research Interests

Neonatal Faculty

Dr. Jamie Archambault, MD's primary research interest is in pulmonary vascular biology. Currently, her work aims to understand the relationship between platelet activation and the development/progression of pulmonary hypertension in a preclinical animal model as well as in infants with bronchopulmonary dysplasia. The overall goal of her clinical-translational research is to develop novel, more individualized therapies for infants with refractory pulmonary hypertension. Her clinical interests include severe pulmonary hypertension and bronchopulmonary dysplasia in growth-restricted preterm infants. *Assistant Professor*

- Mentorship availability: unavailable

Dr. Natarajan Balasubramaniyan, PhD's work is focused on understanding how epigenetic factors regulate the expression of FXR (Nuclear Receptors) target genes as part of normal hepatobiliary physiology and as a response/adaptation to experimental cholestasis. His studies provided novel insight into relatively unexplored areas of hepatic biology and pathobiology and aid in the design of new therapeutic strategies that will augment adaptive responses in the liver and retard or reverse the progression of cholestatic liver disease. *Associate Professor*

- Mentorship availability: available

Dr. Lauren Beard, MD's research interests include unit-based quality improvement and patient safety, with the goal to translate such endeavors into improved neonatal outcomes and positive NICU experiences for families. Additionally, she serves as the Medical Director for the UC Health Highlands Ranch Hospital NICU. *Assistant Professor*

- Mentorship availability: available to mentor graduate medical education trainees

Dr. Stephanie Bourque, MD, MSCS's research specialization is in the evaluation of risk appropriate neonatal care through regionalization of care, back-transport of infants and subsequent follow-up care, with a specific interest in health care disparities, especially rural/urban disparities within the Rocky Mountain region. Additionally, she serves as the Co-Medical Director for the Children's Colorado NICU. *Assistant Professo*r

- Mentorship availability: available to mentor graduate medical education trainees

Dr. Laura Brown, MD's research goals are to improve the muscle growth of the fetus during a pregnancy affected by intrauterine growth restriction (IUGR). The main question she hopes to answer is why muscle fails to grow properly even into adulthood

after exposure to IUGR. By exploring the cellular mechanisms that control fetal muscle growth and development in IUGR, we will better understand why there are persistent abnormalities in muscle growth during childhood and adulthood. Furthermore, these findings will guide the development of nutritional strategies during pregnancy and early childhood to improve muscle growth and prevent the development of lifelong diseases. *Professor*

- Mentorship availability: available

Dr. Eileen Chang, PhD, MCR's research focuses on cardiomyocyte growth, maturation, and metabolism, specifically in growth-restricted fetuses with the goal of determining therapeutic avenues to improve heart growth and cardiac function before and after birth. Her current projects include identifying mechanisms that drive cardiomyocyte proliferation and maturation in the growth-restricted fetus; and determining the effect of fetal growth restriction on mitochondrial metabolism in the heart. *Instructor*

- Mentorship availability: available

Dr. Jill Chang, MD's research focuses on understanding how fetal growth restriction (FGR) impacts white matter in the developing brain. FGR affects approximately 8% of pregnancies and results from placental insufficiency, leading to limited nutrient and oxygen delivery to the fetus and slower fetal growth. Infants born in the setting of FGR have been shown to be at risk for worse neurodevelopmental outcomes across domains (cognitive, motor, language, and behavior). White matter injury (WMI) is a common consequence of brain injury during the perinatal period. WMI results from damage to the developing oligodendrocytes (OLs), the cells responsible for making myelin, which are particularly vulnerable to injury during the perinatal period. The Chang lab uses a mouse model along with molecular and cellular techniques to investigate the impact of FGR on developing OLs. *Assistant Professor*

- Mentorship availability: available

Dr. Stephanie Chassen, MD's research interest is in the transport of fatty acids across the placenta during pregnancy, particularly in pregnancies affected by intrauterine growth restriction (IUGR). Fatty acids are crucial for brain development, and by exploring the cellular mechanisms in the placenta that are responsible for fatty acid transfer to the fetus we hope to better understand how this transfer is altered in IUGR. This information could help tailor perinatal nutritional strategies to improve long-term outcomes in these infants. *Assistant Professor*

- Mentorship availability: available

Dr. Michael Cookson, MD, MHS's research aims to understand how alterations in the intrauterine environment during chorioamnionitis and preeclampsia impact pulmonary vascular development in models of bronchopulmonary dysplasia and pulmonary

hypertension. Working within the Pediatric Heart and Lung Center, his active project strives to understand the signaling mechanisms underlying abnormal lung development in a model of preeclampsia induced bronchopulmonary dysplasia and how these alterations affect endothelial cell biology. His lab interest in cardiopulmonary physiology is paralleled by his clinical focus on infants with congenital diaphragmatic hernia. *Assistant Professor*

- Mentorship availability: unavailable

Dr. Tristan Dear, MD's research focuses on understanding differences in skeletal muscle development in fetal growth restriction (FGR). FGR infants are at higher risk of developing type 2 diabetes, obesity, and metabolic syndrome in adulthood. Through a better understanding of differences in vascular development and myofiber differentiation in utero, both in normally grown and growth-restricted fetuses, we can identify risks that predispose individuals to complications in adulthood and ultimately help guide future therapeutic interventions. *Instructor*

- Mentorship availability: available to mentor undergraduate students and undergraduate medical education trainees

Dr. Robert Dietz, MD, PhD studies the effects of ischemia on the developing brain thorough improved understanding of sub-acute and long-term outcomes of neuronal physiology. His basic translational research approach uses electrophysiology, behavior, biochemistry, molecular biology, and immunohistochemistry to elucidate mechanisms of neuronal injury after global and focal ischemia to identify potential therapeutic targets for neuronal protection and novel repair strategies. *Associate Professor*

- Mentorship availability: available

Dr. Cassidy Delaney, MD's research specialization is in pulmonary vascular biology. Her work is focused on elucidating the mechanisms by which platelets contribute to the initiation and progression of vascular inflammation in pulmonary hypertension. The overall goal of her work is to gain an understanding of the immune mechanisms that mediate platelet function, to target immune-mediated platelet activation with novel immune-modulating anti-platelet therapies to ultimately improve the outcome of newborns with pulmonary hypertension. *Associate Professo*r

- Mentorship availability: available

Dr. Nicolle Fernández Dyess, MD, MEd's scholarly specialization is in medical education, specifically curriculum development/instruction and the career development of medical trainees. She studies professional identity formation, specifically academic identity formation and educator identity formation. She has expertise in survey development/implementation and qualitative analysis. Additionally, she is the co-director of the School of Medicine's Future Leaders in Medical Education Trail, the director of the Residents and Fellows as Educators Elective through the Academy of Medical

Educators, and the Associate Program Director of the Neonatal-Perinatal Medicine training program. *Assistant Professor*

- Mentorship availability: available

Dr. Evgenia Dobrinskikh, PhD, MS's research goals are to improve development of the lungs affected by pulmonary hypoplasia. The main question she is trying to answer is what cell-cell communications are distorted in hypoplastic lungs. Her current projects are using exploration of metabolic (global and spatial) changes, how they are affecting morphometric landscape changes, what cellular and extracellular signaling are involved in these changes in normal lung development and disease conditions (congenital diaphragmatic hernia, intrauterine growth restriction, preterm birth). *Assistant Professor*

- Mentorship availability: unavailable

Dr. Christina (Tina) Fisher, MD, MSCS's research interests involve exploring and reducing communication disparities in the NICU and supporting local and regional quality improvement efforts to increase caregiver engagement. She is currently studying how to best integrate interpreters into intensive care workflow. *Assistant Professor*

- Mentorship availability: available

Dr. Hannah Fuson, MD's primary interest is clinical neonatology, with a focus on advancing family-centered care. She is particularly interested in improving communication, shared decision-making, and the care experience for infants and their families. *Assistant Professor of Clinical Practice*

- Mentorship availability: unavailable

Dr. Theresa Grover, MD, MSc's previous research involved the regulation of fetal and neonatal pulmonary blood flow, mechanisms of pulmonary vascular and alveolar growth, persistent pulmonary hypertension of the newborn, bronchopulmonary dysplasia, and the role of vascular endothelial growth factor in lung development. She now focuses on clinical research related to disease-based outcomes such as congenital diaphragmatic hernia within the Children's Hospitals Neonatal Consortium Database. *Professor*

- Mentorship availability: unavailable

Dr. Kathleen Hannan, MD, MSCS is a health services researcher with a particular interest in health disparities in the population of neonates with medical complexity and technology dependence. She follows infants discharged from our NICUs in the Special Care Clinic and is currently involved in population-level analyses and local and regional prospective studies investigating healthcare utilization and the experience of families of complex neonates. *Assistant Professor*

- Mentorship availability: available

Dr. Satya (Sadie) Houin, MD's clinical interest is the management and prevention of bronchopulmonary dysplasia (BPD), and she is medical director of the SPROUT team which manages babies with the most severe BPD. Her interest extends to those babies that require tracheostomy and chronic ventilation, and she is the NICU medical director of the Ventilator Care program. Her scholarly interests mirror her clinical ones and center around exploring current BPD management practices and assessing how standardization impacts outcomes, both for the baby and the family. *Assistant Professor*

- Mentorship availability: available to mentor medical students and residents

Dr. Sunah (Susan) Hwang, MD, PhD, MPH/MSPH's research interests include the transition of care of high-risk infants from hospital to home, infant care practices of preterm infants after hospital discharge, and the effect of family engagement in the NICU on short and long term outcomes. She collaborates with public health and government agencies to assess trends in maternal and infant health, particularly focused on racial/ethnic disparities in receipt of care and in health outcomes. *Associate Professor*

- Mentorship availability: available

Dr. John Kinsella, MD's research interest include Inhaled Nitric Oxide, High Frequency Ventilation, ECMO, Pulmonary Hypertension, Acute Respiratory Failure. *Professor*

- Mentorship availability: unavailable

Dr. Karena Lawrence, MD's scholarly focus is on medical education, communication, and point-of-care ultrasound. She has specific interests in curriculum development and assessment methods. In addition, she has extensive experience in simulation-based education including previous development of a hands-on curriculum using for NICU point-of care ultrasound, a progressive neonatal ECMO wet lab series, a patient actor based communication curriculum on difficult conversations, and recurring interdepartmental sessions on newborn resuscitation. Currently, she is developing the infrastructure for our neonatal point-of care ultrasound program and is re-designing our neonatal ECMO education series. *Associate Professor*

- Mentorship availability: available

Dr. Krithika Lingappan, MBBS, PhD, MS's research looks into the molecular mechanisms behind the sex-specific differences in neonatal lung injury and repair. *Professor.*

- Mentorship availability: unavailable

Dr. Erica Mandell, DO's research specialization is in pulmonary vascular biology with a specific focus on vitamin D treatment in a chorioamnionitis model of chronic lung disease. Her main goals are to determine vitamin D's protective role in lung development after exposure to chorioamnionitis. She is currently developing a maternal vitamin D deficient model and an endothelial cell specific vitamin D receptor knock mouse model to study the pulmonary vascular effects of vitamin D. *Associate Professor*

- Mentorship availability: unavailable

Dr. Laura Marrs, MD's research focuses on simulation and neonatal resuscitation. *Assistant Professor*

- Mentorship availability: available

Dr. Osvaldo Mercado, MD, MBMI's clinical interests bring together neonatology and clinical informatics, with a focus on quality improvement and health equity. His biomedical informatics training supports his work leveraging data and clinical decision support tools to drive equitable, evidence based care for all patients. *Assistant Professor*

- Mentorship availability: unavailable

Dr. Susan Niermeyer, MD, MPH focuses on global newborn health, neonatal resuscitation, and high-altitude physiology including cardiopulmonary adaptation in infants at high altitude, acute mountain sickness in children, and fetal and neonatal origins of chronic mountain sickness. *Professor Emerita*

- Mentorship availability: unavailable

Dr. Thomas (Tom) Parker, MD's scholarly focus has transitioned from investigating the hormonal modulation of the developing fetal pulmonary circulation, the role of endogenous nitric oxide in the developing lung circulation, the myogenic response in the fetal and newborn pulmonary circulation, the role of rho kinase in the modulation of pulmonary vascular tone, and the use of inhaled nitric oxide in treatment of persistent pulmonary hypertension of the newborn to more clinical aspects of medical education. His current work centers on the development and use of neonatal specific Entrustable Professional Activities (EPAs) as a source of more formative feedback He is also the Associate Program Director of the Neonatal-Perinatal Medicine training program and the Vice Chair of Education for the Department of Pediatrics. *Professor*

- Mentorship availability: unavailable

Dr. Theresa Powell, PhD is internationally recognized for her work in determining the molecular mechanisms regulating ion and macronutrient transport in the human placenta and characterizing changes in placental function in association to important pregnancy complications. Currently, the primary focus of Dr. Powell's research is to

better understand how the abnormal metabolic environment of obesity or gestational diabetes in pregnant women affects placental function and the long-term health of her baby. Specifically, Dr. Powell is interested in identifying endocrine signals linking maternal adipose tissue to placental function and fetal growth and developing novel intervention paradigms for improving the maternal metabolic environment and pregnancy outcomes in obese women. Dr. Powell along with faculty in Obstetrics, Neonatology and Engineering is currently developing a model to study prematurity in an animal model. She will be testing the role of placental proteins, known to be secreted into the fetal circulation to improve outcomes in prematurely delivered guinea pig pups. This work includes functional changes in lung, brain, heart and liver as well as other organ systems exposed to placental proteins with developmental roles that have been identified in the human preterm neonate. *Professor*

- Mentorship availability: available

Dr. Regina Reynolds, MD's research interests are mainly in the field of fetal medicine. As the Director of Neonatology for the Colorado Fetal Care Center, she is involved in prenatal counseling, delivery planning, and postnatal care planning. She is the local PI for several multicenter studies and participates in several local studies. With the robust patient population there are many research opportunities. *Associate Professor*

- Mentorship availability: available to mentor graduate medical education trainees

Dr. Paul Rozance, MD's laboratory uses animal models (sheep and mice) to focus on the regulation of fetal growth, fetal endocrinology, pancreatic beta-cell biology, fetal nutrient and oxygen metabolism, and placental biology. Projects include defining a novel role for fetal glucagon signaling in the placenta to coordinate fetal metabolism with placental function and the role of placental lactogen in this process. These studies derive from our current foal of understanding the role of "fetal-derived" signals in regulating placental function, placental lactogen secretion, and maternal metabolism during complications of pregnancy, thus challenging the current dogma of the fetus as a passive participant in the regulation of its own growth. Other projects aim to develop a better understanding of how the fetus translates nutrient and hormonal signals from the placental into anabolic signals for fetal growth with particular attention to the fetal anabolic growth factor, insulin. His focus is on placental insufficiency, fetal growth restriction, and the response of the pancreatic islet and beta-cell to antenatal injury. His translational studies revolve around the broad area of perinatal insulin-nutrient metabolism and led to his clinical research interests in glucose metabolism and neonatal hypoglycemia during the transition from intrauterine to extrauterine life. *Professor*

- Mentorship availability: available

Dr. Rebecca Shay, MD, MAS is a clinical researcher specializing in quality improvement, systems of care delivery, and patient safety. Her scholarship focuses on the procedural components of neonatal intubation, surfactant administration practices,

predictors of extubation success, and the reduction of unplanned extubations, while assessing their impact on both short- and long-term patient outcomes. Dr. Shay is an active member of local and multi-center resuscitation interest groups and serves on the executive committee for the National Emergency Airway Registry for Neonates. *Assistant Professor*

- Mentorship availability: available to mentor graduate medical education trainees

Dr. Danielle Smith, MD's scholarly interests focus on Quality Improvement and Patient Safety. As Medical Director of the Children's Hospital Colorado NICU, she leads several multidisciplinary quality improvement projects and participates in national collaboratives to reduce hospital acquired conditions. *Associate Professor*

- Mentorship availability: available to mentor graduate medical education trainees

Dr. Jane Stremming, MD's research interests are fetal and neonatal metabolism, growth, and nutrition. She is currently studying the hormonal regulation of growth and placental nutrient transport in the normally growing fetus and the fetus with growth restriction. She is also interested in optimizing growth in the NICU using targeted human milk fortification. *Assistant Professor*

- Mentorship availability: available

Dr. Aniekanabasi (Aniekan) Udoko, MD, MS's research interests include the examination of racial/ethnic and socioeconomic drivers of disparity in neonatal-perinatal outcomes utilizing qualitative and quantitative methodologies with a goal of improving health care delivery via quality improvement initiatives, community engagement, and advocacy. *Instructor*

- Mentorship availability: unavailable

Dr. Pavika Varma, MD is a clinical researcher with specific interests in pulmonary hypoplasia and complex congenital heart disease. She is currently developing a clinical guideline for the comprehensive management of infants with pulmonary hypoplasia secondary to obstructive uropathies. Clinically, she is a core member of the ECMO & CDH team in the CHCO NICU and also works extensively with the Colorado Fetal Care Center to assist in the prenatal management of infants with complex cardiopulmonary disease. *Assistant Professor*

- Mentorship availability: available

Dr. Stephanie Wesolowski, PhD, MS's lab studies how altered nutrient supply programs fetal metabolism and how these changes may persist after birth and increase susceptibility to adult metabolic disease. Primary research is aimed at understanding the effects of intrauterine growth restriction (IUGR) on liver metabolism and function using integrative approaches in physiology and metabolism combined with novel

molecular techniques in cell biology, epigenetics, and metabolomics. Current studies are focused on understanding the mechanisms for the early activation of fetal hepatic glucose production and development of hepatic insulin resistance, specifically the role of reduced glucose versus oxygen supply to the fetus, both key features of placental insufficiency and resulting IUGR. This is important in understanding why IUGR offspring have increased susceptibility to diabetes across their lifespan. Additional projects are investigating the effects of maternal high fat diet and obesity on offspring metabolism, specifically the early development of non-alcoholic fatty liver disease (NAFLD) and immune cell reprogramming. *Associate Professor*

- Mentorship availability: available

Dr. Alicia White, MD's research evaluates the impact of nutrients and hormones on fetal pancreas development and how this is affected by fetal growth restriction (FGR). Using fetal sheep and mouse models, and in collaboration with Drs. Paul Rozance and Clyde Wright, she is currently investigating fetal pancreatic nutrient-stimulated β-cell NFκB signaling as a novel pathway linking early metabolic dysfunction in FGR to type 2 diabetes later in life. *Assistant Professor*

- Mentorship availability: available

Dr. Randall (Randy) Wilkening, MD's research activities have included placental transfer and function; fetal metabolic responses to placental dysfunction; and fetal organ blood flow and metabolism. *Professor and Section Head, Neonatology*

- Mentorship availability: available

Dr. Clyde Wright, MD's research interest include further defining the unique characteristics of the NFkB inhibitory proteins (IκBs) and their role in modulating hyperoxia-induced NF-κB activation. He hopes to identify interventions that protect preterm infants from bronchopulmonary dysplasia. *Professor*

- Mentorship availability: available

Dr. Erica Wymore, MD, MPH's clinical research interests include cardiopulmonary physiology, hemodynamics and the effect of mesenteric perfusion, as well as early lung injury in prematurity. She has earned an MPH, utilizing epidemiological methods to analyze multicenter data for clinical research. Her main focus is investigating markers of inflammation and cytokine production in early lung injury and the progression to bronchopulmonary dysplasia among the heterogenous population of extremely low birth weight infants and also interested in the effects of maternal cannaboid use on neonatal outcomes. *Associate Professor*

- Mentorship availability: available

Dr. Jeanne Zenge, MD's main focus is in clinical Neonatology, with a particular interest in neonatal telemedicine. She is a member of the SPROUT (Supporting Preemie Respiratory Outcomes) team, Standardized Pediatric Research on Outcomes and Utilization of Telehealth, and currently is evaluating the use of tele-signout for NICU discharges and the effectiveness of teleconsultation. She is also the Program Director for the Neonatal-Perinatal Medicine Training Program. *Associate Professor of Clinical Practice*

- Mentorship availability: available to mentor graduate medical education trainees