

# Perinatal Research Society

## 50<sup>th</sup> Anniversary Meeting, September 27-29, 2019

### Meeting Program

Minneapolis Marriott Northwest

7025 Northland Drive North, Brooklyn Park, MN

#### Meeting Themes

1. “Bench to Bedside” – the continuum of research contributions from PRS members
2. Celebrate the success of the Society over 50 years

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- All talks including the entire Friday night reception and dinner program occur in the Minnesota Ballroom.
  - All breakfasts and lunches occur in the Fireside Room.
  - Dinner on Saturday will be at the Weisman Art Museum. Buses for the museum will leave the hotel at 5 pm.

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### Friday, September 27, 2019

#### Time

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**3:00 – 6:00 pm**    **CHECK-IN AND REGISTRATION**

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**5:30 pm**            **Welcome Reception and Dinner**

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**7:00 pm**            **Welcome by PRS President Lisa Joss-Moore, PhD**

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**7:30 pm**            **NICHD Presentation:**  
A moderated presentation celebrating the Perinatal Research Society, its first 50 years, and the future.

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## Saturday, September 28, 2019

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### Time

**6:45 – 7:45 am**      **Breakfast**

**8:00 – 8:45 am**      **University of Utah Department of OB/GYN Sponsored Speaker:  
Sandra T. Davidge, PhD, FCAHS**

**Impact of pregnancy complications on later life cardiovascular health in the offspring - what can we do about it?**

Pregnancy is a window to assess cardiovascular health and can impact later-life maternal and offspring cardiovascular health, thus impacting future generations. Dr. Davidge's research is focused on understanding mechanisms for vascular complications of pregnancy (e.g. preeclampsia, maternal aging) and developmental origins of cardiovascular disease. The impact of this research is to ultimately develop novel therapeutic strategies to improve pregnancy outcomes and minimize the impact of pregnancy complications on both maternal and offspring cardiovascular health.

Moderated by:  
Babette LaMarca

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**8:45 – 9:00 am**      Questions and Answers

**9:00 – 9:45 am**      **University of Utah Department of Pediatrics Sponsored Speaker:  
David Stevenson, MD**

**Understanding Disparities in Preterm Birth.**

New insights into the immunologic and signaling processes that determine gestational length in pregnancy have revealed important complexity in the interactions (ancestral and current) between genetic and environmental forces. A better understanding of these relationships could guide research efforts which, in turn, could lead to a reduction in disparities in preterm birth by introducing effective clinical and public health interventions.

Moderated by:  
James Wynn

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**9:45 – 10:00 am**      Questions and Answers

**10:00 – 10:15 am**      **Break**

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**10:15 – 11:00 am** **March of Dimes Speaker:**  
**Patrick Catalano, MD**  
**Maternal obesity and gestational diabetes; short and long term effects on the offspring.**

Maternal obesity and diabetes have independent effects on fetal growth. Long-term, maternal gestational diabetes is associated primarily with childhood glucose metabolism, while maternal obesity is primarily associated with childhood adiposity.

Moderated by:  
Beth Plunkett

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**11:00 – 11:15 am** Questions and Answers

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**Abbott Nutrition Early Career Speakers**

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**11:15 – 11:35 am** **PRS-PSANZ Mont Liggins Early Career Speaker:**  
**Tayla Penny**

**Repeated doses of umbilical cord blood cells modulate perinatal brain injury.**

Hypoxic ischemic (HI) insults during pregnancy and birth can result in long term neurodevelopmental disorders, such as cerebral palsy. We have previously shown that human umbilical cord blood (hUCB) cells are effective at reducing neuroinflammation and improving brain injury in the short-term. In this current study we aimed to examine the long-term behavioral outcomes and neuropathology, specifically the beneficial effect of repeated doses of hUCB and different administration routes. Using a pre-clinical rodent model of HI, we showed that treatment with repeated doses of hUCB cells is more effective than a single dose for reducing long-term tissue damage and restoring behavioral deficits following perinatal brain injury. We hope this research will lead to improved clinical trial designs for the treatment of perinatal brain injury.

Moderated by:  
Laura Goetzl

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**11:35 – 11:45 am** Questions and Answers

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**11:45 – 12:05 pm** **PRS Early Career Speaker:**  
**Amelie Collins, MD, PhD**

**Neonatal neutropenia is due to inadequate emergency myelopoiesis at the level of fetal hematopoietic stem and progenitor cells.**

Neonates are uniquely susceptible to infection, with neonatal sepsis accounting for 1.4 million deaths annually worldwide. Unlike adults, in whom infection mobilizes a large pool of neutrophils from the bone marrow that are rapidly replenished by upstream progenitors, neonates often become neutropenic upon infection, resulting in significant morbidity and mortality. This presentation will focus on the mechanisms underpinning this divergence in activation of emergency myelopoiesis pathways at the level of hematopoietic stem cells, which is fundamental for understanding the differences in mortality and morbidity resulting from inflammation and infection at these developmentally disparate times of life.

Moderated by:  
Cassidy Delaney

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**12:05 – 12:15 pm** Questions and Answers

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**12:15 – 1:30 pm** **Lunch Break**

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**1:30 – 2:30 pm** **Business Meeting**

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**Mead Johnson Nutrition Early Career Speakers**

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**2:30 – 2:50 pm** **PRS Early Career Speaker:**  
**Swati Shree, MD**

**Maternal-fetal communication: understanding and leveraging a unique biology.**

This talk will focus on Dr. Shree's work in maternal-fetal communication and placental derivatives, such as cellular microchimerism and placental derived cell-free DNA, and how we can leverage this biology to better understand complicated pregnancies and potentially predict the risk for pregnancy complications. She will also present current and future grant proposals related to this as well as long-term cardiovascular risk associated with preeclampsia.

Moderated by:  
Andrea Edlow

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**2:50 – 3:00 pm** Questions and Answers

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3:00 – 3:20 pm

**PRS Early Career Speaker:  
Elizabeth Enninga, PhD**

**Mechanisms of tissue rejection in non-infectious placental villitis.**

Between 15-30% of placentae are diagnosed with villitis of unknown etiology, which is characterized by the infiltration of CD8+ maternal immune cells and can lead to growth restriction and fetal demise. Studies are under way to better define the function of these T cells and understand the mechanisms at the fetal-maternal interface that lead to this rejection type response.

Moderated by:  
Stella Goulopoulou

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3:20 – 3:30 pm

Questions and Answers

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3:30 – 4:15 pm

**Liley Award Winner:  
Candice Fike, MD**

**Towards effective therapies for neonatal pulmonary hypertension:  
A bench to bedside Journey.**

Treatments for infants with pulmonary hypertension associated with chronic cardiopulmonary disorders remain inadequate. The presentation will chronicle Dr. Fike's "bench to bedside" journey to develop safe, practical, and effective therapies for these infants.

Moderated by:  
Lisa Joss-Moore

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4:15 – 4:30 pm

Questions and Answers

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5:00 pm

**Bus leaves for Weisman Art Museum Dinner 5:00 pm.  
Meet in the Main Lobby**

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9:00 pm

**Bus leaves Weisman Art Museum for hotel at 9:00 pm.**

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## Sunday, September 29, 2019

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6:45 – 7:45 am Breakfast

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8:00 – 8:45 am Mead Johnson Nutrition Speaker:  
Irina Burd, MD, PhD

**Immunoperinatology: Placental determinants of neonatal health and disease.**

Maternal immune tolerance to the developing fetus is a consequence of well-orchestrated maternal immune changes, compared to a non-pregnant state, which in turn affects normal placental development and leads to a healthy pregnancy and neonate. In contrast, maternal immune dysregulation and alterations in the composition of infiltrating placental immune cells can lead to a loss of normal pregnancy tolerance, result in pathologic placental and fetal hemodynamics, and adverse neonatal sequelae.

Moderated by:  
Babette LaMarca

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8:45 – 9:00 am Questions and Answers

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9:00 – 9:45 am Abbott Nutrition Speaker:  
Irina Buhimschi, MD

**Bridges and Bottlenecks over the Valley of Death in Perinatal Research.**

The “Valley of Death” metaphorically describes the gap between basic research discoveries and their applications in clinical practice. Over the past ten years, funding agencies have tried making the Valley of Death more navigable for academic researchers so that innovations can be more rapidly transitioned into useful interventions. This talk will examine three important problems in perinatal research: preeclampsia, preterm birth, and optimization of perinatal outcomes. Despite the overwhelming need to address these issues, diagnostic and therapeutic innovation has lagged behind other fields such as cancer, HIV, or cardiovascular research. Drawing from personal experiences, the presentation will review critical elements of successful translational science that are seldom discussed, including intellectual property, technology transfer, and partnerships for scale and sustainability.

Moderated by:  
Stephanie Wesolowski

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9:45 – 10:00 am Questions and Answers

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**10:00 – 10:15 am Break**

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**10:15 – 11:00 am Ferring Sponsored PRS Member Speaker:  
Trent E. Tipple, MD**

**Lost in Translation: Bridging the Gap in Perinatal Redox Biology Research.**

Given the established role of oxidative stress in the pathobiology of perinatal diseases, the potential efficacy of redox-based therapeutic has been supported by numerous preclinical studies. Unfortunately, these approaches have failed to translate into meaningful clinical therapies. Using examples from his ongoing research, Dr. Tipple will demonstrate how sufficient appreciation of the complexities of redox biology, when coupled with realistic modeling of clinical scenarios, can bridge the bench to bedside gap in perinatal redox biology.

Moderated by:  
Steven McElroy

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**11:00 – 11:15am Questions and Answers**

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**11:15 – 12:00 pm Ferring Sponsored PRS Member Speaker:  
Emily J. Su MD**

**Mediators of impaired fetoplacental angiogenesis in severe fetal growth restriction.**

Abnormal umbilical artery Doppler velocimetry in growth-restricted fetuses is an ominous finding that substantially increases risk for adverse perinatal and long-term outcomes. Impaired placental angiogenesis resulting in abnormally thin, unbranched villous vessels is a common pathologic finding in the pregnancies and is a structural cause of aberrantly elevated fetoplacental vascular resistance. In a model of human fetoplacental endothelial cells, we have found various mechanisms that underlie deficient angiogenesis in severe fetal growth restriction.

Moderated by:  
Paul Rozance

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**12:00 – 12:15 pm Questions and Answers**

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**12:30 pm Closing remarks, Adjournment, Lunch (on your own)**