



Maternal-Fetal Crosstalk: Harmony vs. Conflict

October 4–8, 2017 | Westin Washington, DC City Center | Washington, DC | USA

Scientific Organizers:

Jeff Murray, Bill & Melinda Gates Foundation

Louis J. Muglia, Cincinnati Children's Hospital Medical Center, USA

Yoel Sadovsky, Magee-Womens Research Institute, USA

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

The interactions between the mother and the fetus during the progression of normal pregnancy involve trade-offs, or even conflicts, between factors that improve maternal health and those that support fetal development and growth. These may lead to selective evolutionary pressures that differ among species, and result in intriguing differences in reproductive strategies that enhance maternal-fetal biological harmony, and mitigate conflict. Intriguing strategies to balance these pressures include imprinting, coincident with placentation. Adverse pregnancy outcomes, such as miscarriage, preterm birth, preeclampsia and intrauterine growth restriction, are heterogeneous, and gaps remain in understanding how imbalances between maternal and fetal adaptations contribute to these disorders. The goal of this conference is to bring together investigators from diverse disciplines who investigate maternal and fetal factors that shape pregnancy outcomes by exploring how these systems work together or are at odds. The conference will aim to develop these concepts, illuminating developmental, genomic/epigenomic, immune, microbial and metabolic factors, as well as consider how acute exposures during pregnancy, such as infection, shape maternal-fetal outcomes. Understanding the biology underpinning these considerations will contribute to better diagnosis, treatment and disease prevention during pregnancy. The presentations will address critical gaps in our knowledge of maternal/fetal harmony and conflict, and target paths to improve understanding of issues related to social, economic and geographic inequality that predispose some groups to enhanced risk during pregnancy. A better understanding of the biology, and development of new collaborative possibilities and paths to improved clinical outcomes are primary goals of the conference.

Session Topics:


- The Placenta – Cells to Tissues
- The Rapidly Evolving Placenta
- The Establishment of Pregnancy – Tolerance and Rejection
- Crosstalk between the Maternal and Fetal Microbial Communities
- Epigenetics and Imprinting in Feto-Placental Harmony and Conflict
- Genomic Communication during Pregnancy
- From Uterine Quiescence to Parturition
- Epidemiology of Pregnancy Health and Outcomes

Global Health Travel Award Application Deadline: May 9, 2017

Scholarship Application & Discounted Abstract Deadline: June 6, 2017

Abstract Deadline: July 11, 2017

Discounted Registration Deadline: August 10, 2017



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Meeting Hashtag: #KSserotonin

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KEYSTONE SYMPOSIA

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WEDNESDAY, OCTOBER 4

Arrival and Registration

Looking Ahead – Partnering for the World We Want (Joint Session with Grand Challenges and Keystone Symposia)

Registration Continues

THURSDAY, OCTOBER 5

Welcome and Keynote Address

***Jeffrey C. Murray**, Bill & Melinda Gates Foundation, USA

David Haig, Harvard University, USA

Maternal-Fetal Crosstalk: Why all the Noise?

The Placenta – Cells to Tissues

***Yoel Sadovsky**, Magee-Womens Research Institute, USA

Guillaume Cornelis, Stanford University, USA

When the Placenta Goes Viral: Role of Transposons during Placentation

Margherita Yayoi Turco, University of Cambridge, UK

Modelling the Maternal-Fetal Interface in vitro

Susan J. Fisher, University of California, San Francisco, USA

Genome-Scale Fluctuations in the Cytotrophoblast Epigenome over Gestation and in Placental Pathologies

Matthew Brook, University of Edinburgh, UK

Short Talk: PABP4 Is Critical for Mammalian Pregnancy: A Unique Mouse Model for the Maternal Origins of IUGR and Stillbirth

Workshop 1: Immunology of Maternal-Fetal Harmony vs. Conflict

***Susan J. Fisher**, University of California, San Francisco, USA

Rabia Anwar, Max Delbrück Centre, Germany

Trophoblast-Specific Gene Expression Driven by Endogenous Retrovirus LTRs in Normal vs. Pre-Eclamptic (PE) Pregnancy

Marilen Benner, Radboud University Medical Center, Netherlands

Human Uterine Lymphocytes Acquire a More Experienced and Tolerogenic Phenotype during Pregnancy

Ana Claudia Zenclussen, Experimental Obstetrics and Gynaecology, Germany

Safeguarding of Fetal Growth by Uterine Mast Cells and Uterine Natural Killer Cells

Thomas Vauvert Hviid, Zealand University Hospital and University of Copenhagen, Denmark

Immune Markers in the Mid-Luteal Endometrium Are Associated with Normal Fertility and Pregnancy after in vitro Fertilization

Michela Frascoli, University of California, San Francisco, USA

Alloreactive Fetal T Cells Promote Uterine Contractility in Preterm Labor via IFN- γ and TNF- α

Wentong Jia, Institute of Zoology, Chinese Academy of Sciences, China

Association of Maternal KIR and Fetal HLA-C Genotypes with the Risk of Preeclampsia in Chinese Han Pregnant Population

Jeremy Michael Kinder, Cincinnati Children's Hospital, USA

Mother's 'Genetic' Little Helpers: Microchimeric Maternal Cells Promote Reproductive Fitness and Survival of Non-Inherited Traits

Eun Lee, Virginia Commonwealth University, USA

ERAP2 Modulates Trophoblast Cell Death by Natural Killer Cells

The Rapidly Evolving Placenta

***Louis J. Muglia**, Cincinnati Children's Hospital Medical Center, USA

Derek Wildman, University of Illinois at Urbana-Champaign, USA

The Placenta Is at the Crossroads of Maternal-Fetal Conflict and Cooperation

Bernard J. Crespi, Simon Fraser University, Canada

Placental Invasiveness and Maternal-Fetal Conflicts in Evolution, Health and Disease

R. Michael Roberts, University of Missouri, USA

Studying Early-Onset Preeclampsia (EOPE) in a Model for Early-Stage Human Placental Trophoblast

Xu Wang, Auburn University, USA

Short Talk: The Origin and Evolution of Genomic Imprinting in the Placenta from Comparative Genomic Analysis Across Marsupials and Eutherian Mammals

Poster Session 1

FRIDAY, OCTOBER 6

The Establishment of Pregnancy – Tolerance and Rejection

***Carole R. Mendelson**, University of Texas Southwestern Medical Center, USA

Sing Sing Way, Cincinnati Children's Hospital, USA

Maternal-Fetal Immunology during Pregnancy and after Parturition

Sarah A. Robertson, University of Adelaide, Australia

The Immune Response and Female Reproductive Quality Control

Joanna Halkias, University of California, San Francisco, USA

Short Talk: CD161 Promotes Prenatal Immune Suppression of Pro-Inflammatory PLZF+ T Cells

Moriya Gamliel, Hebrew University, Israel

Human Natural Killer Cells Remember Pregnancy and Enhance Placental Bed Development

Ashley Moffett, University of Cambridge, UK

Maternal Allo-Recognition of the Fetus: For Better, For Worse?

Gabriela Dveksler, Uniformed Services University of the Health Sciences, USA

Short Talk: Pregnancy-Specific Glycoproteins Play a Role in Several Processes Required for Successful Human Pregnancy

Crosstalk between the Maternal and Fetal Microbial Communities

***Laura I. Romero**, University of Miami, USA

Daniel DiGiulio, Stanford University, USA

The Vaginal Microbiome Signature of At-Risk Pregnancy

Idit Kosti, University of California, San Francisco, USA

Short Talk: Meta-Analysis of Vaginal Microbiome Data Provides New Insights on Preterm Births

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Lenore P. Pereira, University of California, San Francisco, USA
Persistent Cytomegalovirus and Zika Virus Infection in Human Placentas Modulated by Host Antiviral Responses

Carolyn B. Coyne, University of Pittsburgh, USA
Antimicrobial Signaling at the Maternal-Fetal Interface

Poster Session 2

SATURDAY, OCTOBER 7

Epigenetics and Imprinting in Feto-Placental Harmony and Conflict

***Bernard J. Crespi**, Simon Fraser University, Canada

Marika Charalambous, Queen Mary University of London, UK
Communication between Mother and Fetus Mediated by Imprinted Genes

Jon F. Wilkins, Ronin Institute, USA
Canalization, Phenotype Variation and Imprinting in Complex Disease

Marisa S. Bartolomei, University of Pennsylvania Perelman School of Medicine, USA
The Effects of Assisted Reproductive Technologies on Placental Development and Epigenetic Regulation in a Mouse Model

Madhumita Basu, Nationwide Children's Hospital, USA
Short Talk: Epigenetic Mechanism for Gene-Environment Interaction in Maternal Hyperglycemia-Mediated Congenital Heart Defects

Richard Saffery, University of Melbourne, Australia
Epigenetic Regulation of Human Placental Function and Pregnancy Outcome

Jyotdeep Kaur, PGIMER, India
Short Talk: Epigenetic Mechanisms Regulate Placental Tumor Suppressor- and Onco-Genes in Normal and Pathological Pregnancies: Search for Novel Fetal DNA Epigenetic Marker

Genomic Communication during Pregnancy

***Louis J. Muglia**, Cincinnati Children's Hospital Medical Center, USA

Thuy Ngo, Oregon Health and Science University, USA
Cell-Free Circulating RNA as a Window to Feto-Placental Biology

Yoel Sadovsky, Magee-Womens Research Institute, USA
The Biology of Placental Exosomes and their miRNA Cargo

Nathan D. Price, Institute for Systems Biology, USA
Systems Biology Analysis of Pregnancy Conditions

Terry K. Morgan, Oregon Health & Sciences University, USA
Short Talk: High-Resolution Flow Cytometry Reveals Placental-Specific Exosomes in Postpartum Blood: Maternal-Placental Crosstalk Six Months after Delivery

Poster Session 3

SUNDAY, OCTOBER 8

From Uterine Quiescence to Parturition

***Yoel Sadovsky**, Magee-Womens Research Institute, USA

Roger Smith, University of Newcastle, Australia
Understanding the Terminal Events in Pregnancy

Sam A. Mesiano, Case Western Reserve University, USA
Progesterone Signaling in Human Parturition: Role of Progesterone Receptor Modifications

Laura Sillers, Children's Hospital of Philadelphia, USA
Short Talk: Altered Acylcarnitine Metabolism in the Placenta in Spontaneous Preterm Birth

Carole R. Mendelson, University of Texas Southwestern Medical Center, USA
Fetal Signals that Control the Timing of Parturition

Caitlin Dunn-Fletcher, Cincinnati Children's Hospital Medical Center, USA
Short Talk: Deletion of Retroviral Element THE1B Abolishes Placental Corticotropin-Releasing Hormone Expression and Restores Normal Birth Timing

Roberto Romero, National Institutes of Health / Wayne State University, USA
Infection, Inflammation and the Transition to Labor

Panel: How to Harness Basic and Translational Biology Research to Improve Pregnancy Outcome in Low- and Middle-Income Countries

***Jeffrey C. Murray**, Bill & Melinda Gates Foundation, USA

***Yoel Sadovsky**, Magee-Womens Research Institute, USA

***Louis J. Muglia**, Cincinnati Children's Hospital Medical Center, USA

Joe Leigh Simpson, March of Dimes, USA

Jane Norman, University of Edinburgh, UK

Sarah A. Robertson, University of Adelaide, Australia

Janna Patterson, Bill & Melinda Gates Foundation, USA

Epidemiology of Pregnancy Health and Outcomes

***Jeffrey C. Murray**, Bill & Melinda Gates Foundation, USA

Louis J. Muglia, Cincinnati Children's Hospital Medical Center, USA
Populations as Laboratories for Biological and Social Discovery in Pregnancy Outcomes

Jane Norman, University of Edinburgh, UK
Pregnancy Stressors and Influences on Parturition

Rachel Freathy, University of Exeter, UK
Genetic and Environmental Determinants of Birth Weight and Links with Later Life Disease

Meeting Wrap-Up: Outcomes and Future Directions

***Jeffrey C. Murray**, Bill & Melinda Gates Foundation, USA

***Louis J. Muglia**, Cincinnati Children's Hospital Medical Center, USA

***Yoel Sadovsky**, Magee-Womens Research Institute, USA

MONDAY, OCTOBER 9

Departure