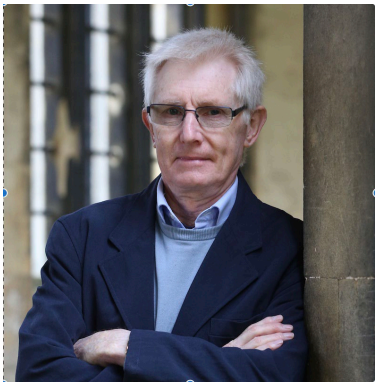
Speaker Biographies

2023 Global Pregnancy Collaboration Workshop Agenda
Pre- and Peri- conceptional physiology and pathophysiology: Targets for innovative therapy
Speaker Biographical Sketches

Ira M. Bernstein, M.D - *Pre-pregnancy physiology and pregnancy outcomes*

Ira M. Bernstein M.D. is Professor and John Van Sicklen Maeck Chair and chair of the department of Obstetrics, Gynecology and Reproductive Sciences at UVM as well as director of Women's services at the University of Vermont Health Network. He graduated magna cum laude from Union College in NY with a degree in Psychobiology (1978) and is an Alpha Omega Alpha medical honor society graduate from the University of Vermont College of Medicine (1983). He has served as director of maternal fetal medicine (MFM) and MFM fellowship training as well as Senior Associate Dean for Research at the UVM College of Medicine. Dr. Bernstein's primary research interest is the investigation of human integrative physiology and its pathophysiologic variations during the course of pregnancy. He has been funded from NIH for a series of projects examining pre-pregnancy determinants of preeclampsia, mechanisms to facilitate smoking cessation during pregnancy and their effects as well as sources of pregnancy associated thrombosis. Dr. Bernstein has served on, or chaired, several study sections at NIH and the Gates Foundation including 2 years as the chair of the NIH Pregnancy and Neonatology standing study section. He is past president of the New England Perinatal Research Society and the International Perinatal Research Society. He was a member of the American College of Obstetrics and Gynecology Task Force on Hypertension and has served as a member of multiple NIH workshops examining perinatal complications. Dr Bernstein was recognized with the Distinguished Academic Achievement Award from the UVM College of Medicine in 2002 and as a University Scholar in 2016. He has received research awards from the New England Perinatal Society, the Society for Maternal Fetal Medicine and the Society for Reproductive Investigation. He currently serves on the medical advisory board for the Preeclampsia Foundation and is a member of the Executive Board of the Vermont Oxford Neonatal Network.

Graham J Burton, MD, DSc, FRS - *Overview of Periconceptional physiology and pathophysiology*



Graham Burton held the Mary Marshall and Arthur Walton Professorship of the Physiology of Reproduction at the University of Cambridge until his retirement in 2020. He has a long-standing interest in early development and function of the human placenta, and in particular how this is influenced by the prevailing oxygen concentration. He showed the importance of the uterine secretions in supporting development of the human embryo during the first three months of pregnancy before the maternal circulation to the placenta is fully established. Most recently, he has been involved in the derivation of both endometrial and trophoblast organoids, allowing maternal-fetal interactions during early pregnancy to be investigated in a systematic fashion. This work has led him to propose that the human placenta stimulates its own formation through an endocrine dialogue among the trophoblast, decidua and endometrial glands, and highlights the importance of endometrial wellbeing prior to conception.

He was the Founding Director of the Centre for Trophoblast Research, a centre-of-excellence in placental biology, at the University of Cambridge in 2007, and the founder and inaugural Chair of a cross-disciplinary Strategic Research Initiative on Reproduction at the University that brings together the biological, clinical and social sciences with the arts and humanities.

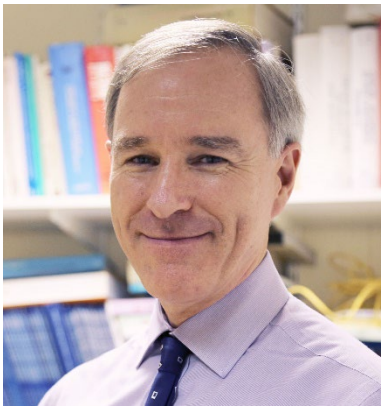
David Cantonwine, PhD, MPH - *The role common environmental toxicants play in enhancing preeclampsia*

Dr. David Cantonwine is a reproductive environmental epidemiologist within the Maternal Fetal Medicine Division of Brigham and Women's Hospital in Boston, Massachusetts. His research focuses upon how exposure to endocrine disrupting chemicals (EDCs) are associated to preeclampsia, preterm birth, and fetal growth and whether these associations are mediated through alterations to hormonal pathways and/or placental development. For the past 10 years, he has worked closely with Dr. Thomas McElrath MD, PhD, to run the LIFECODES biorepository, a +N=7500 longitudinal on-going pregnancy cohort based in Boston, MA. Their work has led to +75 joint publications covering an array of environmental and obstetrical topics. They were the first to show adverse associations with phthalates, ubiquitous EDCs used in a vast array of consumer and industrial products, and preeclampsia. This work has been further expanded to other common environmental chemicals and highlights the differential associations with these chemicals when treating preeclampsia as a heterogenous syndrome.

Kirk P Conrad, MD - *Potential Contribution of Dysregulated (Pre)Decidualization to the Development of Preeclampsia & Maternal circulatory adaptations and pathologic pregnancy outcomes including preeclampsia in women conceiving by (programmed) IVF cycles: Is there a role for the corpus luteum and decidua?*

Kirk P. Conrad MD is recently retired as the J. Robert and Mary Cade (of Gatorade fame!) Professor in the Department of Physiology at the University of Florida College of Medicine where he also occupied a secondary appointment in Obstetrics and Gynecology. He is currently Professor Emeritus. Conrad's research interests include: (1) elucidation of the mechanisms underlying vasodilation and increased arterial compliance during normal pregnancy with emphasis on the hormone relaxin, the relaxin receptor RXFP1, and target tissues including the endothelium and vascular smooth muscle; (2) investigation of maternal circulatory adaptations and pathologic pregnancy outcomes including preeclampsia in women who conceived by assisted reproductive technologies (ART) with focus on the potential role of the corpus luteum; and (3) the potential contribution of dysregulated decidualization before and during early pregnancy to the genesis of preeclampsia.

Keith Godfrey, MBE, BM PhD FRCP MAE FMedSci, - *Preconception nutrition to improve pregnancy and offspring outcomes*



Professor Keith Godfrey MBE, BM PhD FRCP MAE FMedSci leads the NIHR Southampton Biomedical Research Centre Lifecourse Nutrition, Lifestyle and Health Theme, is an NIHR Senior Investigator and Professor of Epidemiology and Human Development at the MRC Lifecourse Epidemiology Centre at the University of Southampton. Other appointments include Associate Dean for Enterprise, Faculty of Medicine at the University of Southampton; Honorary Consultant, University Hospital Southampton NHS FT; Visiting Professor at the National University of Singapore; and Co-Chair of the UK Preconception Partnership.

My NIHR Southampton BRC and MRC Lifecourse Epidemiology Centre nutrition research is providing the next generation with the best start to life, reducing transmission of health inequalities across generations, and supporting later life health and resilience. My publications have informed UK (DHSC/NICE) and global (WHO) health policy and guidelines, addressing NHS priorities in maternal/child health; primary prevention of child obesity; reduction in lifecourse health disparities; and healthy ageing.

As Chief Investigator of the NiPPeR (Nutritional intervention Preconception and during Pregnancy to maintain healthy glucose levels and offspRing health) UK, Singapore and New Zealand randomised controlled trial, I have shown that, compared with a standard micronutrient supplement, a myo-inositol, probiotics and multiple micronutrient nutritional formulation taken preconception and throughout pregnancy reduces the incidences of preterm delivery, major post-partum haemorrhage and offspring obesity age 2 years. Informing NHS guidelines, my MAVIDOS trial research has shown that gestational cholecalciferol supplementation reduces infantile eczema, promotes ‘natural’ delivery and has lasting benefits for child bone health.

I originated LifeLab, a unique national curriculum integrated 4-component educational programme (hands-on activities in 9 lessons; teacher CPD; peer-peer support; “developing talent” work experience). Developed with educationalists to engage teenage students with the science behind the health messages to improve health literacy, diet and lifestyle, LifeLab received a Royal Society of Public Health Centre of Excellence Hygeia Award. >13,000 students have benefited from its “Me, My Health and My Children’s Health” programme, now online nationally; cluster randomised trial evaluation showed improved health literacy and a more

critical judgement of health behaviour in adolescents 12-months post-intervention. Its “summer school” widens access to healthcare careers among students from disadvantaged backgrounds.

Stefan R Hansson, MD, PhD - *Environmental Exposures Air pollution*

I have been interested in preeclampsia and have worked in the field for 24 years. I have continuously and passionately honed my expertise in my role as professor and senior consultant in obstetrics and gynecology working with high-risk pregnancies at Skåne University Hospital. I have for ten years been the chairman for the national expert group that has published the Swedish national guidelines for preeclampsia (2014 and 2019). I have also published information on websites for patients, such as Internetmedicin and a public health guideline 1177 as well as textbooks for medical students and midwives. I hosted the International Society for Studies of Hypertension in Pregnancy (ISSHP) annual meeting I Lund 2019. I'm invited steering committee member in the International CoLaboratory group that focus on preeclampsia research. I have been invited as speaker at international conferences and as keynote speaker at ISSHP (2016 and 2022).

Dominik Heider, PhD - *Use of innovative analytical strategies to address the topic*

Dr. Dominik Heider is full professor at the Department of Mathematics and Computer Science at the University of Marburg and head of the Data Science in biomedicine group since 2016.
He studied Computer Science at the University of Muenster from 2002 – 2006 and subsequently started his PhD studies at the Department of Experimental Tumorbiology and the Institute for Computer Science at the University of Muenster. After receiving his PhD in 2008, he worked as a Postdoc at the Department of Bioinformatics at the University of Duisburg-Essen. From 2013 – 2014 he was an associate director in industry and from 2014 – 2016 he was appointed as a Professor at the TUM Campus Straubing. In 2023, he was appointed as a visiting professor at the T.H. Chan School of Public Health, Harvard University, Boston, MA, USA.
His research focuses on the development of computational solutions from the field of Data Science for solving biomedical problems, in particular machine learning and artificial intelligence. This includes, e.g., diagnostic and prognostic models, modeling of diseases, such as cancer, and biomarker discovery. His group also develops new methods and algorithms for analyzing (meta-)genomic and (meta-)transcriptomic data of microorganisms, as well as genome assembly and functional annotation.
Professor Heider is an Associate Editor for the international journals BMC Bioinformatics and BioData Mining and member of the editorial board of Machine Learning and Knowledge Extraction. He is a member of the German Society for Computer Science, the Data Science Society, German Bioinformatics Society, and the German Society for Medical Informatics, Biometry, and Epidemiology.

McKenzie Jancsura, PhD, RN - *Overview of The Exposome: the concept of interactive risks at entry to pregnancy*

Dr. McKenzie Jancsura is an Assistant Professor at the Ohio State University, College of Nursing, Martha S. Pitzer Center for Women, Children, and Youth. Her research investigates the interaction of behavioral and social factors on immunological pathways in pregnancy. She specifically explores how factors like obesity, diet, physical activity and stress impact the immune milieu in pregnancy, through mechanisms such as DNA methylation or alterations in cytokine production, and in turn impact the risk for developing pregnancy complications.

Barbara Luke, ScD, MPH - *Infertility and Assisted Reproduction: Influences on Pregnancy Outcomes*

Dr. Barbara Luke is Professor of Obstetrics, Gynecology, and Reproductive Biology at Michigan State University. She is a reproductive epidemiologist, with degrees from Columbia University in nursing and population studies, New York University in nutrition, and her doctorate is from Johns Hopkins University in epidemiology and maternal-child health. Her research has included national and international collaborative studies on employment during pregnancy, perinatal nutrition, multiple pregnancies, and infertility. In 2009, the Institute of Medicine of the National Academy of Sciences selected her research team's body mass index-specific weight gain guidelines as the first national recommendations for women pregnant with twins (Body mass index-specific weight gains associated with optimal birth weights in twin pregnancies, J Reproductive Med 2003; 48:217-224).

Since 2006, she has worked with the Society for Assisted Reproductive Technology (SART) in a series of NIH-funded projects to evaluate the health of men, women, and their children after infertility treatment, and when IVF has been used for fertility preservation after a cancer diagnosis. In July, 2023, a new NIH-funded grant based on a US-UK collaboration was launched, Dr. Luke partnering with research teams lead by Dr. Philip Lupo at Baylor College of Medicine in Houston, Texas, and Dr. Alastair Sutcliffe at University College London. This grant will evaluate the health of more than 4.75 million children, including more than 458,000 IVF-conceived children born 1991-2018, 88,000 naturally-conceived IVF siblings, and 4.2 million naturally-conceived control children, with 80 million person-years of early life follow-up, averaging 14.4 years (from birth to age 22) in the US and 18.3 years in the UK (from birth to age 36). This study will evaluate the role of IVF conception on the risks of birth defects, cancer, and their co-occurrence through large-scale registry linkages and evaluation of the neonatal methylome. The study will also determine if the risk of childhood morbidity and mortality of IVF-conceived children differs compared to their siblings and control children, and if the difference is associated with IVF treatment parameters.

Analyses from her group have been selected by the American Board of Obstetrics and Gynecology as required reading for Maintenance of Certification in reproductive endocrinology and infertility in 2011, 2012, and 2023, respectively: Maternal Obesity Adversely Affects

Assisted Reproductive Technology (ART) Pregnancy Rates and Obstetric Outcomes, Human Reproduction, 2011; 26:245-252; Racial and Ethnic Disparities in Assisted Reproductive Technology Outcomes in the United States, Fertility & Sterility, 2010; 93:382-90; and The Risk of Birth Defects With Conception by Assisted Reproductive Technology, Human Reproduction 2021; 36:116-129.

Mellissa RW Mann, PhD - *Potential mechanisms by which ART leads to adverse pregnancy outcomes*

Dr. Mellissa Mann received her doctorate in Dr. Susannah Varmuza's laboratory at The University of Toronto, and was a postdoctoral scholar with Dr. Marisa Bartolomei at The University of Pennsylvania. Dr. Mann is an Associate Professor at the Magee-Womens Research Institute and the Department of Obstetrics, Gynecology and Reproductive Sciences at the University of Pittsburgh Medical School, premier institutes in women's health and reproduction. Research in Dr. Mann's laboratory focuses on the molecular mechanisms that regulate gene expression during embryo development, with particular emphasis on genomic imprinting. Research projects include the effects of assisted reproductive technologies on genomic imprinting during gametogenesis and early embryo development, as well as imprinted domain regulation, and the role of long noncoding RNAs in stem cells and early embryos.

Ashley Moffett MD, MRCP, MRCpath, FRCOG, FMed.Sci - *Immunology of Implantation*

Ashley Moffett qualified in medicine from the University of Cambridge and worked as a physician before training as a reproductive pathologist in The Rosie Maternity Hospital in Cambridge. For the last 30 years she has worked on the interactions between maternal uterine cells and placental trophoblast cells that determine placentation and reproductive outcome in humans. She is Emeritus Professor of Reproductive Immunology in the Dept. of Pathology in Cambridge and holds a Wellcome Trust Joint Investigator Award.

Leslie Myatt, PhD, FRCOG – *Interventions: Moderator*

Dr. Leslie Myatt is Professor of Obstetrics and Gynecology, Director of Perinatal Research, Deputy Director and Endowed Professor in the Bob and Charlee Moore Institute of Nutrition and Wellness at the Oregon Health & Science University, Portland. He was previously a faculty member at the University of Cincinnati, where he was Director of the NIH-funded Physician Scientist Training Program (MD/PhD) and the Women's Reproductive Health Research Scholars Program, and at the University of Texas Health Science Center San Antonio. Dr. Myatt has served as North American Editor of the journal Placenta, President of the Perinatal Research Society, President of the International Federation of Placenta Associations and President of the Society for Gynecologic Investigation. He is currently the Principal Investigator of the Global Pregnancy Collaboration (CoLab), a consortium of over 40 international investigators and groups addressing adverse pregnancy outcomes in underserved populations mainly by facilitating sharing of clinical data and bio-specimens. His primary research interests are 1. The effects of maternal obesity, gestational diabetes and sexual dimorphism on mitochondrial respiration in the placenta and their relationship to epigenetic regulation of placental function and fetal programming and 2. Autocrine/paracrine mechanisms in fetal membranes involved in parturition. He has published over 300 papers and 375 abstracts and has served on many review panels and study sections for the National Institutes of Health, Canadian Institutes of Health Research and other international grant giving bodies. He was presented with the Naftolin Award for Mentorship in 2014 and the Distinguished Scientist Award in 2017 by the Society for Reproductive Investigation.

Shane Norris - *Preconception health care challenges in low resource health systems in South Africa, and strategies to overcome these*

Shane Norris is a Professor of Global Health at the University of Southampton and at the University of the Witwatersrand, Johannesburg, South Africa where he leads a team part of the South African Medical Research Council's Developmental Pathways for Health Research Unit. Shane's research focuses on lifecourse epidemiology with a specific interest in the development of intergenerational-risk for non-communicable disease. His expertise includes nutrition and body composition across the lifecourse and longitudinal-cohort and trial study methodologies. Shane is working with several scientists across Africa to both better understand and develop interventions that improve maternal and child health outcomes.

James M Roberts, MD – *Pre-and peri-conceptional physiology and pathophysiology Targets for innovative therapy Peri-conceptional physiology and pathophysiology: Moderator*

Dr. Jim Roberts has had extensive experience in the study of adverse pregnancy outcomes and specifically the study of preeclampsia at several levels: mechanistic, clinical, epidemiological and behavioral. His current research efforts include fundamental, clinical and health services approaches to the understanding and management of this disorder in this country and abroad. He served as Chair of the NICHD Maternal Fetal Medicine Network for clinical trials for 9 years. After stepping down as Chair, he accepted the position of Protocol Subcommittee Chair for the CAPPS antioxidant trial to prevent preeclampsia that randomized 10,000 women to the use of Vitamins C and E or placebo. He has previously chaired the NHLBI Working Group on Research in Hypertension in Pregnancy as well as the NHLBI/ NICHD Workshop on Preeclampsia Research. He also chaired the ACOG Task Force for Hypertension in Pregnancy.
Dr. Roberts is currently co-investigator of the Global Pregnancy Collaboration (CoLab), a program to bring together international cohorts with patient data and biological samples to pool resources to study preeclampsia and other adverse pregnancy outcomes. CoLab currently has more than 40 groups from around the world with data and biosamples from over 300,000 pregnancies (about 4,000 preeclamptics). He continues with clinical/translational research on preeclampsia. Other current activities include efforts to facilitate collaboration and data sharing worldwide through CoLab and emphasizing and supporting preeclampsia as more than one disorder. He is member of the National Academy of Medicine, is an ad eundem member of the Royal College of Obstetrics and Gynecology (UK). He has been honored by lifetime achievement awards by the American Journal of Obstetrics and Gynecology, The Society for Reproduction Investigation and the Preeclampsia Foundation. His passion is mentoring and has headed three training grants and personally trained more than 60 pre and postdoctoral trainees.

Regina Steegers - Theunissen, MD, PhD, MSc - *Digital lifestyle care for the early life course: a roadmap toward the transformation of health care*

Professor Régine Steegers-Theunissen is the chair of Periconception Epidemiology at the department of Obstetrics and Gynaecology of the Erasmus University Medical Center in Rotterdam, the Netherlands.
She is an (inter)national pioneer in periconception translational health research and development of digital and blended lifestyle care solutions. Her research interests relates to the Developmental Origins of Health and Disease paradigm targeting the periconception period as earliest window of the life course.
The research focus in the past 35 years has been on the role of the periconception parental 1C metabolism, nutrition, vascular pathway and epigenetics in the complex pathophysiology of birth defects, subfertility, and placenta related adverse outcomes originating in the periconception period. From 2009 onwards she is PI of the Rotterdam Periconception cohort (Predict study) embedded in routine patient care and enabling the prospective periconception investigation of parental determinants of health and interventions. To valorize the results of her translational research, she initiated and implemented with her research group successful preconception outpatient clinics for tailored lifestyle counselling (>2007) and blended lifestyle care (>2018). From 2010 onwards she released, (inter)nationally tested and implemented in health care several personalized eHealth lifestyle coaching programs on the mobile phone for couples during the early life course of 100 + first 1000 days of life, such as www.smarterpregnancy.co.uk (www.slimmer.zwanger.nl), www.slimmeretenmetjekind.nl, and tailored for couples at risk for cardiovascular diseases, diabetes, and with increased vulnerability. The (cost)effectiveness of these programs has been shown for long-term lifestyle behavioral changes, pregnancy chance, pre- and postimplantation embryonic growth and development, maternal blood pressure and ongoing pregnancy rate. In 2021 her research group released the digital Erasmus MC life course care platform to provide integrated patient journeys of lifestyle-, medical-, social care and research. As Erasmus MC lead of the Convergence flagship ‘My Digital Twin’ and as part of the strategic public-private partnership ‘Solid Start’, the digital

lifestyle care solutions will be further developed and used for the creation of a digital twin to improve health and care during the early life course.
Currently she is PI of the prestigious NWO KIC program Our Smart family Buddy (2022-2028) and partner in several EU projects, i.e., PHEMS and LIFECYCLE (Horizon2020), DohArt-net (ITN), and JPI Precise (ERA). For research more than Euro 20 million of grants has been received, 42 PhD theses have been completed, > 490 international publications have been coauthored, H-index 62 (WoS).

Judith Stephenson - *How can we assess international progress in periconceptual health?*

Judith Stephenson holds the Margaret Pyke Chair of Sexual & Reproductive Health at UCL, and Honorary posts as Consultant in Sexual & Reproductive Health at Central North West London NSH Foundation Trust, and Consultant in Women's Health at UCLH.

After training in clinical medicine at the University of Oxford and UCL Medical School, and junior hospital doctor posts in London, she studied epidemiology at the London School of Hygiene & Tropical Medicine. For the past 30 years she has held academic posts at UCL, first in HIV and Sexually Transmitted Disease Epidemiology, and currently in Women's Reproductive Health.

Judith's research has changed policy and practice nationally and internationally, e.g. in relation to chlamydia screening and preconception health. Her current research spans prevention of pregnancy https://www.contraceptionchoices.org, planning and preparation for pregnancy https://www.ukpreconceptionpartnership.co.uk/ and how the preconception period influences mother and child health across the life course.
She received the UCL prize for Leadership in Public Engagement in 2012, an NIHR Senior Investigator Awards in 2014, renewed in 2019 and the Women of Achievement in Healthcare Award from Women in the City, 2015.