Society of Toxicologic Pathology – India

Saturday, February 22, 2025

8:00 PM – 9:30 PM Mumbai, India (IST)
10:30 PM – 12:00 AM Beijing, China (CST)
2:30 PM – 3:30 PM London, UK (BST)

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STP-I Continuing Education Webinar:
Title: The Human Placenta in Disease & Toxicology Testing

The human placenta is phylogenetically unique and central to fetal growth and development. Its structure, hemorheology and physiology hold important keys to the developmental origins of health and disease of the fetus, the neonate and in later life. Current webinar talk will briefly introduce the concepts of placental development, and how fetal and maternal placental blood flow align with placental architecture during gestational maturation, potentiating the transfer of gases and substance, as predicted by mathematical modelling. It will also consider transfer processes with a special focus on a new emergent human paracellular pathway, through syncytiotrophoblast pores. Key placental pathologies associated with dysregulated placental structure and their potential impacts on blood flow and placental barrier transfer processes will be described. This poses important hypotheses in placental toxicology, where dysregulation involving placental oxidative stress, inflammation, thrombolytic events, and angiogenesis guiding villous maturation, might impact fetal growth and development. The talk will feature several human placental models, including ex vivo dual perfusion, villous explants, and emerging chip technologies, applied to pharmacokinetics and endocrinology.

Dr. Paul Brownbill

Dr. Paul Brownbill, PhD
Senior Lecturer, University of Manchester, United Kingdom

Dr Paul Brownbill is a Senior Lecturer in Maternal & Fetal Health at the University of Manchester. In his 30 years of work as a placental physiologist, he has specialized in the regulation of placental blood flow, transplacental barrier transfer and cell signaling associated with normal and diseased pregnancy. His integrative work with obstetricians, mathematicians and biophysicists is leading to a greater understanding of resistance to placental blood flow, metabolism and transfer kinetics.

He is a leading global mentor in placental perfusion technology, has forged numerous international collaborations, and is the lead researcher on a European consortium of placental physiologists, driving a program to deliver the ex vivo perfusion to regulatory standards for toxicology testing.

The Brownbill laboratory group: He has nurtured seven post-doctoral research assistants, numerous MD, PhD and Masters students, and Clinical and non-Clinical Fellows. He has a successful history of research funding, from industry, the Research Councils, Wellcome-LEAP, the British Heart Foundation, and NC3Rs. Forging strong collaboration with obstetric research clinics has been key to his translational research endeavors to understand placental disease, including fetal growth restriction, preeclampsia and hypertension in pregnancy.

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For technical questions, please contact STP-I at drprafulvetpath@gmail.com OR stpi.india@gmail.com