

Symposium 28: Epigenetics, placenta and developmental programming: coordination of mother and offspring brain

Supported by The Genetics Society

Theme: Genetics and epigenetics

Wednesday 12th April, 13:20 – 15:00

Pregnancy is a time of change for both the developing offspring brain, and also the mother's brain. Of central importance to pregnancy is the placenta. The placenta is critical for transport of nutrients to the foetus. In addition, the placenta is also an important endocrine organ, signalling to both the foetal and maternal brain. Variations in the in utero environment, such as altered maternal diet or periods of maternal stress, can alter placental function and, in turn, impact upon foetal brain development.

This symposium will explore how the maternal environment can give rise to changes in placental function, often mediated by epigenetic changes at key genes. This in turn can have consequences for not only offspring, but maternal brain and behaviour also. The speakers will explore the role of stress (Drake) and diet (Willaime-Morawek) on offspring brain development in model systems. In addition, the effects of altered placental signalling for maternal brain and behaviour in rodent models (McNamara) and the human population (Janssen) will be examined.

It is well known from previous epidemiological studies that developmental programming of the offspring as a consequence of sub-optimal maternal environments can have consequence for later life neuropsychiatric illness. Therefore the research outlined in this symposium will examine some of the possible underlying causes of these problems. In addition, the new research presented here examining placental programming may also shed light onto the serious, but understudied incidence of post-natal depression and past-partum psychotic illness.

Chair: Dr Anthony Isles (Cardiff University)

Speaker 1: Dr Mandy Drake (Queen's Medical Research Institute, Edinburgh)

'Glucocorticoids and fetal programming'

Speaker 2: Dr Sandrine Willaime-Morawek (University of Southampton)

'Maternal low protein diet and its effect on brain development and neural stem cells'

Speaker 3: Dr Grainne McNamara (Cardiff University)

'Epigenetic modulation of neurobehavioural response to early life adversity'

Speaker 4: Dr Anna Janssen (Cardiff University)

'Prenatal maternal depression and aberrant placental imprinting'