

Symposium 6: Epigenetics: causes and consequences in neurological disorders

Sponsored by the Biochemical Society

Theme: Genetics and epigenetics

Monday 10th April, 16:20 – 18:00

Epigenetic processes regulate the plasticity of neurons in response to internal or external stimuli by modulation of gene activity and genome architecture. These processes include modifications of DNA and histones as well as remodelling of chromatin. The importance of epigenetics in neurological disorders became apparent through genetic studies of Fragile-X syndrome and Rett syndrome, respectively. In both cases, single gene mutations cause complex neurological phenotypes through aberrant establishment and interpretation of epigenetic information. This line of research yielded molecular insights into the dynamic mechanisms of epigenetic gene regulation and facilitated the integration of diverse areas of neuroscience. Since common DNA sequence variants inadequately explain the aetiology of multifactorial, complex degenerative disorders such as Alzheimer's disease and major psychoses, including schizophrenia, the scientific community has placed considerable expectations on epigenetics in search of biomarkers associated with neurological diseases.

While technological advances enable epigenome-wide studies, challenges remain in identifying, measuring and studying causes and consequences of an altered epigenetic landscape in the brain. This symposium will allow the discussion of the current limitations, possibilities and emerging themes related to epigenetic processes in key neurological disorders.

Chair: Professor Reinhard Stöger (Nottingham)

Speaker 1: Professor Adrian Bird (Edinburgh)

'Genetics, Epigenetics and Rett syndrome'

Speaker 2: Dr Katie Lunnon (Exeter)

'5-mC and 5-hmC in normal and Alzheimer's diseased brain'

Speaker 3: Dr Reinhard Stöger (Nottingham)

'Stability of DNA modifications in Fragile X syndrome and Parkinson's Disease'

Speaker 4: Professor Rebecca Oakey (King's College, London)

'The role of genomic imprinting in neurological disorders'