

Symposium 20: Imaging the emotional brain: fMRI studies in rodents and man

In association with The Physiological Society

Theme: The neurobiology of stress

Tuesday 11th April, 13:20 – 15:00

Stress is a major risk factor for mood disorders which are accompanied by altered emotional functioning. Until the establishment of functional magnetic resonance imaging (fMRI), first in humans and more recently in rodents, it was extremely difficult to determine the nature of the altered processing within brain networks that underpin dysfunctional emotional behaviour. This symposium will describe the neural correlates of emotion and the consequences of stress upon the emotional circuitry. The advancement of animal imaging techniques described in this symposium allows assessment of 'biomarkers of network functionality' using directly translatable paradigms hence facilitating translation of potential novel therapies from preclinical rodent studies to man.

The opening presentation outlines recent studies delineating the relationship between emotional processing in people suffering from depression, those at risk of depression and controls. This theme is then enlarged to consider the effects of stress on emotional behaviour and activity of brain emotional networks in both humans and rats models. The third speaker, Craig Ferris, is the pioneer of awake rat fMRI who will be discussing the effects of stress hormones and neuropeptides on emotional states and the consequent changes in activity of emotional neurocircuitry. Awake fMRI allows use of directly translatable tasks, paralleling those used in the human studies. Hence, the final speaker will highlight the role of early-life stress and the neuropeptide BDNF, on emotional processing using learned emotional tasks that parallel those of the human studies.

Chair: Professor Megan Holmes (University of Edinburgh)

Co-Chair: Dr Anjanette Harris (University of Edinburgh)

Speaker 1: Dr Stella Chan (University of Edinburgh)

'Vulnerability to depression and emotional processing'

Speaker 2: Dr Marloes Henckens (Radboud University, The Netherlands)

'Consequences of stress on emotional processing in humans and rodents'

Speaker 3: Dr Craig Ferris (Northeastern University, USA)

'Stress, oxytocin and vasopressin regulation of emotion: insights from fMRI'

Speaker 4: Dr Anjanette Harris (Edinburgh)

'Effects of early-life stress and BDNF on emotional processing'