

Keynote lecture: **Dr. Marcus Stephenson-Jones**

"Involvement of ventral pallidal neurons in reward seeking and punishment avoidance"

The ventral pallidum (VP) is critical for invigorating reward seeking and is also involved in punishment avoidance, but how it contributes to such opposing behavioural actions remains unclear. Here we show that GABAergic and glutamatergic VP neurons selectively control behaviour in opposing motivational contexts. *In vivo* recording combined with optogenetics in mice revealed that these two populations oppositely encode positive and negative motivational value, are differentially modulated by animal's internal state and determine the behavioural response during motivational conflict. Furthermore, GABAergic VP neurons are essential for movements towards reward in a positive motivational context, but suppress movements in an aversive context. In contrast, glutamatergic VP neurons are essential for movements to avoid a threat but suppress movements in an appetitive context. Our results indicate that GABAergic and glutamatergic VP neurons encode the drive for approach and avoidance, respectively, with the balance between their activities determining the type of motivational behaviour.