

## **Sex-dependent role of dopamine D3 receptors in the individual vulnerability to develop compulsive heroin seeking and taking behaviour: preclinical investigations using a novel highly selective antagonist**

**Project Reference:** ICS-PSY-DB

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**Industrial Partner:** Shionogi

**BBSRC DTP main strategic theme:** Bioscience for an integrated understanding of health

**BBSRC DTP secondary strategic theme:** Understanding the rules of life

### **Project outline:**

The opioid epidemic that has been claiming the lives of over half a million people in the US in the past decade is reaching the UK. There are still no effective treatments for opiate use disorder, thereby limiting our ability to help those who suffer from this debilitating psychiatric disorder, in part due to our lack of understanding of the cellular mechanisms mediating the transition from controlled to compulsive opiate seeking and taking behaviour, the hallmark of opioid use disorder. Among candidate mechanisms those downstream the dopamine D3 receptor, whose expression is profoundly exacerbated by exposure to addictive drugs, has long stood out. However, the role of this receptor in compulsive drug seeking behaviour has never determined, due to the lack of appropriate procedures in non-human species. Capitalising on a novel animal model of compulsive heroin seeking habits developed by the Belin lab, a new multi-million-pound partnership with Shionogi has just been launched to test, among others, the therapeutic potential, and the associated neural signature, of a new highly selective dopamine D3 receptor on heroin seeking habits, compulsive heroin seeking and escalation of heroin self-administration in male and female rats. This programme of research at the interface of Behavioural neuroscience, neuropharmacology and molecular biology will provide a unique opportunity to a PhD student to acquire a deep knowledge of the psychological and neural basis of substance use disorders while also acquiring a wide range of experimental skills in a very supportive environment.