

## **Shana Silverstein**

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### **Winner of the BAP President's Poster Prize**

I am in the final year of a PhD programme shared between the National Institutes of Health (USA) and UCL where I have the privilege of working with Dr Andrew Holmes (NIH) and Profs Essi Viding and Jon Roiser (UCL). My transatlantic project, which I presented at BAP, has focused on a behaviourally translational approach to observational fear learning (OFL) in both mice and humans. The majority of what we know about trauma related disorders comes from studying the direct experience of fear learning through classical Pavlovian conditioning. However, much less studied is our ability to learn about threat vicariously, which has been demonstrated across species. Specifically, I have been modelling the transmission of fear learning through observation of another in distress and dissecting the underlying neural circuitry using a combination of anatomical, optogenetic, and calcium imaging techniques in mice and fMRI and computational modelling in humans.



My poster at BAP focused on circuit level dissection of OFL in mice using optogenetics. I first established the OFL paradigm by modifying classical Pavlovian fear conditioning where an 'observer' obtains a fear memory by watching a conspecific exposed to a repeated aversive stimulus. I then delved into the neural mechanisms of OFL identifying a critical role of the dorsomedial prefrontal cortex (dmPFC) in acquiring an OFL, which seems to be gated by neuromodulatory parvalbumin interneurons. I then expanded my circuit investigation to identify a significant inhibitory role of ventral hippocampal inputs to the dmPFC for the acquisition of OFL. Lastly, I introduced our current research into translating the novel circuits identified in a mouse model in human participants.

With the end of my PhD in sight, I'm looking forward to continuing my investigation into the neural mechanisms of social learning and finding ways to collaborate across species to strengthen the translatability of our research.