



## The contribution of dopamine to the model-based world

**Melissa Sharpe, PhD**

Princeton Neuroscience Institute

When something unexpected occurs, dopamine neurons in the midbrain exhibit a prediction error. Current theory restricts this to a "model-free" value signal, driving simple increases or decreases in scalar value attributed to predictive cues. This means it cannot contribute to "model-based learning" which would incorporate a cognitive model of relationships between events. In this talk, I will present data using optogenetics in rodents to show that the dopamine prediction error does in fact facilitate model-based learning. I will then show how this signal interacts with GABAergic neurons in the lateral hypothalamus to contribute to a model-based representation of our world