# World Wide NeuRise

## Talks by rising stars of neuroscience

### A role for dopamine in value-free learning
### Luke Coddington - Dudman lab
(HHMI Janelia)

Recent success in training artificial agents and robots derives from a combination of direct learning of behavioral policies and indirect learning via value functions. Policy learning and value learning employ distinct algorithms that depend upon evaluation of errors in performance and reward prediction errors, respectively. In mammals, behavioral learning and the role of mesolimbic dopamine signaling have been extensively evaluated with respect to reward prediction errors; but there has been little consideration of how direct policy learning might inform our understanding. I'll discuss our recent work on classical conditioning in naïve mice (https://www.biorxiv.org/content/10.1101/2021.05.31.446464v1) that provides multiple lines of evidence that phasic dopamine signaling regulates policy learning from performance errors in addition to its well-known roles in value learning. This work points towards new opportunities for unraveling the mechanisms of basal ganglia control over behavior under both adaptive and maladaptive learning conditions.

Event link:
https://www.crowdcast.io/e/wwneurise/