

Sex and plasticity: neural circuits for innate and learned behaviour

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Animals perform a wide range of behaviours which have very different characteristics and time scales: from fast sensory-motor coordination to slow, deliberative decisions and switches in preferences through learning. One of the main goals in neuroscience is to elucidate how behaviour arises from the properties of neural circuits and how each class of neuron contributes to overall circuit function. In my lab we use *C. elegans* to address this question. Surprisingly for an animal model with such well described neuroanatomy, we have recently identified two new classes of male-specific neurons which regulate distinct aspects of male reproductive behaviour. I will present our current work on the mechanisms by which these neurons regulate motor coordination during mating and the formation of appetitive memories during associative learning. Particularly, through our studies on the circuit for associative learning we are hoping to answer a long-standing and broadly relevant question: how are conflicting aversive and rewarding memories integrated and resolved into a behavioural decision.

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