Sensory Worlds: The Neural Basis of Animal Behaviour

Dr. Katie Lucas

How is an owl able to catch a mouse in darkness? How does a fish use electricity to sense its environment? How does a toad recognize a predator versus prey? What better way to learn about ourselves, and gain inspiration and understanding for the natural world, then to look to nature’s sensory experts. This course will explore the neural mechanisms underlying natural animal behaviour. We will focus on classic model systems in the field of neuroethology (i.e. the neural basis of animal behaviour), and look to past and present research to learn about behaviour is controlled by nerve cells.

Lecture Outline:
Lecture 1 – Introduction to the field of neuroethology, with a primer is nerve cells and animal behaviour (aimed at a general audience)
Lecture 2 – The incredible directional hearing capacity of Barn Owls
Lecture 3 – Toad visual control
Lecture 4 – How weakly electric fish sense their environment
Lecture 5 – Learning and memory in Rats and Bees
Lecture 6 – Behavioural control by parasites

Dr. Katie Lucas – Biography

Dr. Katie Lucas is a sensory neurobiologist, with a broad range of research experiences in neuropysiology, computational neuroscience, and biomechanics. She holds a B.Sc. Honours in Biology from Queen’s University, and a Master’s of Science from Carleton University, for which she was awarded the University Medal for Outstanding Graduate Work. Her Ph.D. research on active hearing in mosquitoes was completed at the University of Bristol in the United Kingdom, which led to a postdoctoral fellowship working with weakly electric fish at the University of Ottawa. Currently, Katie teaches in departments of Biology and Integrated Science, teaching neurobiology, human physiology, and science communication.