

## Abstract:

Studies of the hippocampal place system have previously mostly taken place in controlled laboratory environments in which animals were confined to single enclosures having simple geometry. However, the natural world is much more complex: it has multiple compartments or no compartments at all; it has complex surface topography such as hills, valleys, crevices, cliffs etc; it can be very small (a burrow) or very large (the ocean), and many animals, including our marine ancestors, can move freely in all three dimensions. This talk will explore the computational challenges faced by encoding complex space, and describe some of the studies that have begun to explore how mammalian brains deal with this complexity.