Connectome to behaviour: modelling *Caenorhabditis elegans* at cellular resolution

A discussion meeting issue organised and edited by Stephen D Larson, Padraig Gleeson and André EX Brown

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About this issue

An outstanding mystery in science is how cells of a brain come together to compute. Studying how this works is challenging, especially in large brains like that of humans. The worm *Caenorhabditis elegans* is one of the most exhaustively characterised animals in biology. A huge amount of experimental data has been produced by researchers on the worm's genetics and behaviour, in addition to a complete wiring diagram of its nervous system, known as a connectome. A number of groups are attempting to consolidate this knowledge into models which can simulate its behaviour on a computer, leading to the possibility of a deeper understanding of how a complete nervous system processes information and reacts to its environment. This special issue gathers contributions from experimentalists, computational neuroscientists and engineers with a shared interest in understanding the "mind of the worm", who are approaching this challenge from many different angles.

This issue is based on a Royal Society discussion meeting held in January 2018.

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For more information, contact:

Front image Multiple levels at which experimental data is acquired and modelling takes place for the nematode *Caenorhabditis elegans*. Generated using the OpenWorm Browser (http://browser.openworm.org). Credit: Padraig Gleeson, UCL. Original data set from Christian Grove, Wormbase at Caltech.

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