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LES SÉMINAIRES DE L'INMG

Syntax in C. elegans locomotion

Par

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http://csc.mrc.ac.uk/research-group/behavioural-genomics/

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Abstract

Behaviour is a striking phenotype and often one of the first things we notice about an animal. Broadly speaking, we are interested in understanding how genes affect behaviour, but despite rapid advances in technology for sequencing and engineering genomes, it is still a challenge to associate particular genes with heritable behavioural differences because behaviour is time consuming to measure and difficult to quantify. We are using automated imaging to record the behaviour of freely moving nematode worms and developing new analysis methods to extract relevant features. I will discuss unsupervised methods to quantify behavioural repertoires, and how making connections to language processing and data compression can give insight into the structure of behaviour. Finally I will show how these new representations can advance the study of behavioural genetics and phenotypic drug screening.

Recent Publications

Gomez-Marin, et al. (2016) Hierarchical compression of C. elegans locomotion reveals phenotypic differences in the organisation of behaviour. J Royal Soc Interface 13:20160466

Schwarz, et al. (2015) Changes in postural syntax characterize sensory modulation and natural variation of C. elegans locomotion. PLOS Computational Biology 11:e1004322

Brown, et al. (2013) A dictionary of behavioral motifs reveals clusters of genes affecting Caenorhabditis elegans locomotion. Proc. Nat. Acad. Sci. USA 110:791-796