

Neuron morphology and variation

This special issue is for articles on neuron morphology and variation. Any formal type of article is acceptable, including a review, original research, or a report on a new method with software. Manuscripts may approach neuron morphology from a perspective of classification of the neuron types, or an association between neuron structure and biological function. These areas may include use of genetic data in addition to measurements of neuron morphology. Of particular interest is the problem of neuron morphological variation and employing data on neuron variability to robustly determine the neuron morphological types.

The manuscript is not restricted by clade of animal with a neural system, so the study may range from the nematode worm to a mammal. The work may be based on original data or that obtained from a neuron database, such as at neuromorpho.org. Studies are of interest that employ data from a database and introduce a novel method for determining classification of neurons by morphology. For reference, there are a number of prior research studies in this area. Of particular interest are studies focused on statistical methods, including use of machine learning tools, which are instructive for the larger scientific community.

It is arguable that the relationship between neuron morphology and biological function has the widest appeal. So, if feasible, this is an important area to investigate. The function of interest may be an observation at the molecular level, or at a higher level in the neural system. For instance, this approach is applicable to studies of neural modules or even higher brain function in vertebrates. I have published in these areas where the data was available to address an hypothesis about neuron morphology, morphological variation, or the causes of these phenomena.

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