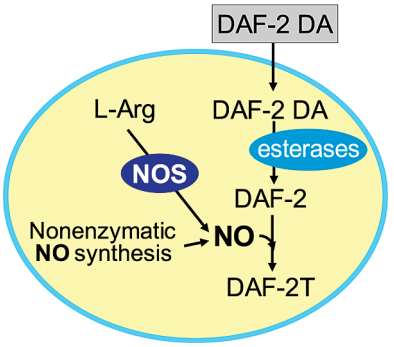
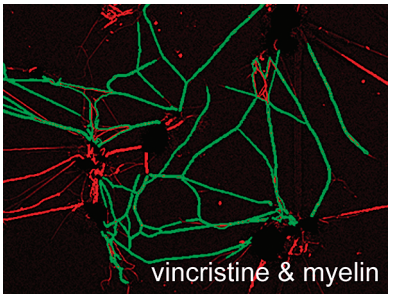
Nitric Oxide as a Neurotransmitter

Nitric oxide is a neurotransmitter and modulator with the ability to diffuse across cell membranes. There is currently a need for techniques that can be used to probe spatial and temporal dynamics of nitric oxide signaling. Ye et al. (DOI: 10.1021/cn900016z) describe a combination of approaches to characterize nitric oxide in the well-defined *Aplysia californica* neuronal model and show that different neurons have unique cellular localization and pharmacology. The authors confirm these results using a combination of bioanaytical methods. The results indicate that nitric oxide signaling is surprisingly complex even in simpler neuronal networks.



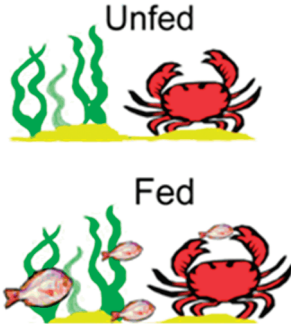
Protecting Myelin

Electrical signals between neurons are conducted between fiber-like extensions known as axons. Many axons are wrapped in myelin, an insulating membrane that is essential for long-distance electrical conductance. Besides facilitating rapid nerve conductance, myelin also protects axons against injury, and demyelination is associated with many neurodegenerative diseases. Now, Mehta et al. (DOI: 10.1021/cn900029p) show that myelin-associated glycoprotein, a myelin protein well-known for its neurite outgrowth inhibitory function, protects neurons from the toxic activity of vincristine, a widely used anticancer chemical agent. Understanding the processes by which natural macromolecules protect axons may ultimately lead to the discovery of new treatments for neurodegenerative diseases.



Understanding Feeding Behavior

The growing incidence of eating disorders and the health costs associated with these disorders have led to rigorous research efforts aimed at understanding the mechanisms and signaling pathways that control and regulate food intake. Feeding behavior, a process central to energy homeostasis, is essential for animal survival and involves a number of neuropeptides. Here, using a multipronged mass spectrometry-based strategy, Chen et al. (DOI: 10.1021/cn900028s) obtain a global view of coordinated neuropeptide changes in response to feeding in the Jonah crab (*Cancer borealis*) model system. By combining isotopic labeling for quantitative analysis and tissue imaging technology, the authors were able to identify potential feeding centers in the crab brain that control food intake. The identification of key signaling peptides in the process will enable more in-depth studies within this model animal.



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