

Exploring advanced Raman microscopy as a tool to localize and quantify metabolites in neural tissue

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The complex interplay of neurons and glia is vital for the functioning of the nervous system. In the brain, energy metabolism plays a major role in this relationship and in the recent years, metabolic supply of axons has emerged as a major function of glial cells. Currently it is unclear whether the Schwann cells of the peripheral nervous system play a similar role, which is of special importance in view of metabolic alterations in hereditary diseases. Thus, a versatile method is needed to identify small molecules like sugars in nerve tissue with sub-cellular resolution, but up to now there is no such technique available. Microscopic measurement of Raman scattering allows for label-free identification and quantification of a variety of molecules. Here, with the help of experts in Raman scattering, life scientists change their course towards establishing surface-enhanced Raman spectroscopy as a powerful method for sub-cellular analysis of small molecules in nervous tissue.

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