

Analysis of the cytochrome distribution via linear and nonlinear Raman spectroscopy.

Walter A, Erdmann S, Bocklitz T, Jung EM, Vogler N, Akimov D, Dietzek B, Rösch P, Kothe E, Popp J (2010) Analysis of the cytochrome distribution via linear and nonlinear Raman spectroscopy. *Analyst* 135(5), 908-917. [PubMed](#)

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Projects

Expression and localization of G-protein coupled pheromone receptor Bar2 in the basidiomycete *Schizophyllum commune*
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Abstract

The cytochrome distribution in hyphal tip cells of *Schizophyllum commune* was visualized using resonance Raman mapping and CARS microscopy. For comparison, resonance Raman mapping and CARS imaging of cytochrome was also performed during branch formation and in completely developed central hyphae. Cytochrome, as an essential component of the electron transport chain in mitochondria, plays an important role in providing energy to actively growing mycelia. It could be shown that mitochondria at the growing hyphal tips and at branching regions are more active, i.e. contain more cytochrome, as compared to those in older parts of the hyphae. This finding is compatible with the idea of high energy consumption for biosynthesis and intracellular transport at the growing tip, while older hyphae have lower needs for ATP generated via the respiratory chain in mitochondria. To the best of our knowledge this is the first study reporting about the localization and distribution of cytochrome, as an indirect mitochondria localization within *S. commune* or other basidiomycetous fungi, by means of resonance Raman microspectroscopy and CARS microscopy. These Raman methods bear the potential of label-free in vivo mitochondria localization and investigation.

Identifier

doi: 10.1039/b921101b PMID: 20419238