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Characterization by Raman microspectrometry of the extracellular bacterial interactions in marine nematodes (Desmodoridae, Stilbonematidae) from *Thalassia testudinum* environment in Guadeloupe (F.W.I.)

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The marine free-living nematodes belonging to the family of Stilbonematinae (Desmodoridae) are usually found in sulphidic sediments (Ott *et al*., 1991). The low sulphidic shallow-water tropical environment investigated in this study, the seagrass bed of *Thalassia testudinum*, is colonized by sulphur-oxidizing symbiotic organisms such as the lucinid bivalves. For Stilbonematid nematodes collected in this area, SEM and TEM observations associated with *in situ* oligonucleotidic hybridization (Card-FISH) analyses demonstrate the existence of extracellular bacteria located on the cuticle of some species. At least five morphotypes of nematodes were identified harbouring such specific bacterial coats. These extracellular bacteria are γ-Proteobacteria containing spherical cytoplasmic inclusions which look like sulphur inclusions of chemoautotrophic endosymbionts described in various marine invertebrates like bivalves and oligochaetes. Raman microspectrometry applied to analyses of Stilbonematid nematodes allowed us to show that these inclusions are elemental sulphur S_8 and confirmed the location of this sulphur clusters in the bacterial coat surrounding these nematodes. This technique permits therefore (1) to detect quickly and easily

(in few seconds and on entire living animals) the presence of sulphur compounds in symbiotic nematodes and (2) to assume that nematodes are associated with sulphur-oxidizing bacteria prior to the obtainment of phylogeny.

References:

Ott, J.A., Novak, R., Schiemer, F., Hentschel, U., Nebelsick, M. and Polz, M. (1991) Tackling the sulfide gradient: A novel strategy involving marine nematodes and chemoautotrophic ectosymbionts. Mar. Ecol. **12**(3), 261-279.