Fluorescent probes and markers to identify and localize bacterial populations and activities in soil microhabitats. (S03-hartmann100251-Oral)

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Abstract:

Fluorescently labeled phylogenetic probes targeting the ribosomal RNA allow an in situ identification of bacteria using the fluorescence in situ hybridization (FISH) technique, irrespective of their culturability. Confocal laser scanning microscopy including several image analysis tools are successfully used for the localization of fluorescently labeled bacteria in their habitats. The analysis of in situ functions of the soil microflora is important for studies of geochemical cycles and for pollution or management related effects. The information of the genetic diversity of key functional genes is starting to reveal the underlying soil microbial diversity. In addition, microbial reporter constructs, which monitor the in situ conditions from the organismic perspective in contact bioavailabilty assays provide a new dimension of in situ functional analyses. In this way e.g. available nitrogen, carbon, oxygen or iron, but also toxicological effects on the microbiota can be monitored.

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