

CHONDROSIA RENIFORMIS: HITHERTO UNKNOWN BACTERIA.

Memoirs of the Queensland Museum 44: 558. 1999:- Marine sponges as evolutionarily ancient Metazoa are nowadays in the focus of great interest. However, the implication of closely associated bacterial populations within the sponge tissue is completely unknown. One of the sponges investigated to clarify this relationship is the Mediterranean species *Chondrosia reniformis*. Bacteria associated with this sponge were examined by aerobic and anaerobic cultivation, culture-independent methods as whole cell *in situ* hybridization, PCR assisted rDNA sequence retrieval and comparative sequence analysis. *In situ* hybridization of bacteria within the sponge tissue with fluorescently labeled rRNA-targeted oligonucleotides for the major subclasses of Proteobacteria revealed a great part of the population to be affiliated to the alpha-, gamma- and delta-subclasses. Interestingly, no organism was found to be a member of the beta-Proteobacteria. On the other hand, there are also many microorganisms that only gave signals with the universal probe for all bacteria, whereas group- or species-specific probes did not hybridize with these bacteria. Some of them are culturable and could successfully be characterised

using the polyphasic approach. 16S rDNA-sequencing and subsequent analysis of the cultivated bacteria obtained from sponge-tissue showed that these metazoa are closely associated with a great diversity of hitherto unknown bacteria. Further studies of culturable sponge-associated bacteria are currently carried out to investigate the ecology of sponge-associated bacteria. This survey will elucidate the physiological properties and, by molecular analysis, the phylogenetical affiliation of these organisms. Occurrence and spatial distribution of even unculturable bacteria in sponge tissue will be analyzed by *in situ* hybridization with specifically designed rRNA-targeted oligonucleotides. □ *Porifera, Bacteria, in situ sequencing, phylogeny, PCR, microecology.*

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