



Epibiotic gamma- and epsilonproteobacteria on the hydrothermal vent shrimp *Rimicaris exoculata* from the Mid-Atlantic Ridge.

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The hydrothermal vent shrimp *Rimicaris exoculata* from sites on the Mid-Atlantic Ridge (MAR) harbours bacterial ectosymbionts on specialised mouthparts in the gill chamber. The bacteria are associated with iron oxide minerals at the MAR Rainbow vent site where iron concentration in the vent fluids is high. The minerals have likely been precipitated through a biological, and not a chemical process, as indicated by the structure and composition of the minerals (1). This has led to speculations that the bacteria could be oxidising the reduced iron supplied with vent fluids. Previous investigations of the shrimp epibiotic bacteria from the MAR Snake Pit vent site revealed that these bacteria belong to a single phylotype despite their pleomorphy (2). To investigate epibiotic bacterial diversity, we analysed *R. exoculata* from 4 sites along the Mid-Atlantic Ridge, each site displaying different chemical and physical characteristics such as the concentration of various electron donors, temperature of end-member fluids, and depth. Results from 16S rRNA analysis revealed an epibiotic community dominated by 2 phylotypes, which belong to the epsilon- and gammaproteobacteria. They are both found on *R. exoculata* from all 4 sites investigated, despite striking differences in the chemistry at the different sites. No known iron-oxidising bacteria were identified. Fluorescence microscopy revealed the presence of 2 morphotypes of filamentous epibiotic bacteria. In addition, our results indicate a significant phylogeographic grouping of 16S sequences from the ectosymbionts. A statistical approach

investigating the biogeography of the 2 different symbiont groups will help us to understand ecological aspects of the symbiosis such as dispersal and distribution.

1. Gloter et al., 2004
2. Polz and Cavanaugh, 1995