

P003 On the interaction of *Nanoarchaeum equitans* with *Ignicoccus hospitalis*: proteins in the gap between two cells
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Ignicoccus hospitalis, a hyperthermophilic, chemolithoautotrophic Crenarchaeon, is the host of *Nanoarchaeum equitans*. Together, they form an intimate association, the first among Archaea. Membranes are of fundamental importance for the interaction of *I. hospitalis* and *N. equitans*, as they harbour the proteins necessary for the transport of macromolecules like lipids, amino acids and nucleotides between these organisms. We investigated the ultrastructure of the contact site and its protein inventory. Serial sections, analyzed by electron microscopy and 3D reconstructions, helped to visualize the complexity of both cells, incl. cell division. *N. equitans* divides in a classical way by constriction in the mid-plane. In *I. hospitalis*, this process is more complex: irregular invaginations of the cytoplasmic membrane are followed by separation of the two cytoplasms inside the outer membrane. Two kinds of contact sites are observed: in one case, the *I. hospitalis* cytoplasm is involved, while in the other, the unique periplasmic vesicles of this organism. In addition, we have isolated and identified proteins from the cell envelope and membranes of both organisms. Besides the major outer membrane protein of *I. hospitalis* and the S-layer of *N. equitans*, we have identified components of several energy transducing complexes in *I. hospitalis*, the major protein of the extracellular appendages, and two binding proteins, which are parts of ABC transporters. Future studies aim to elucidate their subcellular localization and role in the intercellular contact.