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### Towards an understanding of bacterial speciation

Within the Green Sulfur Bacteria, certain phylogenetic lineages have established the most highly developed interspecific association with another bacterial species. These so-called consortia consist of green sulfur bacterial epibionts, which surround a central, motile, chemotrophic bacterium. Suppression subtractive hybridization, *in silico* genome comparisons, proteomics and phylogenetic approaches were used to identify accessory genes that potentially mediate the bacterial interactions and to reveal the origin of these genes. Besides specific cell-cell adhesion structures and an intracellular sorting of organelles, we could identify several symbiosis-specific genes. Comparative phylogenetic studies of natural populations of phototrophic consortia revealed multiple origins during the evolution and a pronounced biogeography of these associations. The hemagglutinin-like putative gene products of ORFs Cag0614 and Cag0616 are unusually large and contain repetitive regions and RGD tripeptides. Cag0616 harbors two  $\beta\gamma$ -crystallin Greek key motifs. Cag1920 codes for a putative hemolysin whereas the gene product of Cag1919 is a putative RTX-like protein. The RTX-type C-terminus coded by Cag1919 exhibited a significant similarity to RTX modules of various proteobacterial proteins, suggesting that this putative symbiosis gene has been acquired via horizontal gene transfer from a proteobacterium.

### CV

1980-1983 Studies of biology, University of Bochum  
1983-1987 Studies of biology, University of Freiburg  
(Limnology (major), Microbiology, Biochemistry, Soil Sciences)  
1987 Diploma thesis (Limnological Institute, Konstanz, Advisor: Prof.Dr.M.Tilzer)  
1988-1991 Ph. D. thesis, University of Konstanz (Advisor: Prof. Dr. N. Pfennig)  
1992 Award (Promotionspreis) of the Vereinigung für  
Allgemeine und Angewandte Mikrobiologie (VAAM)  
1992-1994 Postdoc stipend of the Deutsche Forschungsgemeinschaft (DFG)  
University of British Columbia, laboratory of Prof. Dr. J. T. Beatty  
1995-2000 Hochschulassistent (C1), Institute for the Chemistry and Biology of the  
Marine Environment (ICBM), Oldenburg  
1999 Habilitation thesis, *Venia legendi* for Microbiology  
since 1.10.2000 Professor of Microbiology (C3), Department Biology I  
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