

NANOARCHAEOTE PHYLOTYPES DOMINATE IN CHINESE HYDROTHERMAL BIOTOPES

² Ncebakazi Galada, ¹Gillian Baker, ³ Bill Grant, ³Shaun Heaphy, ⁶Antonio Ventosa, ⁵Yanfen Xue, ⁵Ma Yanhe, ⁴Brian Jones and ²Don Cowan

¹Department of Biodiversity and Conservation Biology and ²Department of Biotechnology, University of the Western Cape, Bellville, 7535, South Africa; ⁴Department of Department of Infection, Immunity and Inflammation, University of Leicester, LE1 7RH, UK3; Genencor International, Leiden, The Netherlands; ⁵Institute of Microbiology, Chinese Academy of Sciences, 100080, Beijing, China; ⁶Department of Microbiology and Parasitology, University of Seville, 41012, Seville, Spain

The Nanoarchaeota were proposed as the fourth Archaeal sub-division in 2002, and the only fully characterised Nanoarchaeon was found to exist in a symbiotic association with the Crenarchaeote, *Ignioccus*. This Nanoarchaeote, named *N. Equitans*, could not be detected with Universal archaeal 16S PCR primers and could only be amplified using specifically designed primers. In order to identify and access a wide diversity of archaeal phylotypes we designed a new set of universal archaeal primers, that amplify the 16S genes of all four archaeal sub-divisions. Using these primers we have amplified community DNA from a Chinese hydrothermal system and discovered that the dominant phylotypes are Nanoarchaeal. Our sequences cluster into 5 closely related clades which may represent separate species. All clades are separated to species or genus level from the cultured *N. Equitans* and recently published nanoarchaeal phylotypic sequences.

Baker, GC, Smith, JJ and Cowan, DA (2003). Review and re-analysis of domain-specific 16S primers. *Journal of Microbial Methods* 55 (3): 541-555.

Huber, H, Hohn, MJ, Rachel, R, Fuchs, T, Wimmer, VC and Stetter, KO (2002). A new phylum of Archaea represented by a nanosized hyperthermophilic symbiont *Nature* 417: 63-67.

Hohn, MJ, Hedlund, BP, and Huber, H (2002). Detection of 16S rDNA Sequences Representing the Novel Phylum "Nanoarchaeota": Indication for a Wide Distribution in High Temperature Biotopes. *Systematic and Applied Microbiology* 25: 551-554.