

Nucleotide sequence of the 5S ribosomal RNA of the archaeobacterium *Pyrococcus woesei*Rupert De Wachter, Peter Willekens and Wolfram Zillig¹

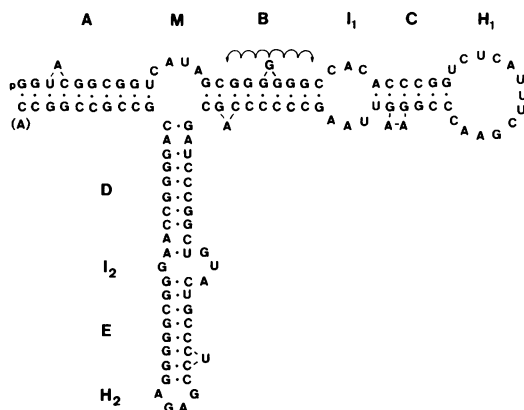
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Pyrococcus woesei DSM 3773 is an ultra-thermophilic sulfur-reducing marine archaeobacterium, the isolation and culture conditions of which have been described in (1). Ribosomal RNA was isolated from homogenized cells by phenol extraction and 5S rRNA purified by polyacrylamide gel electrophoresis (2). The nucleotide sequence, determined by standard methods (3), fits into the following secondary structure model:



The position and shape of the loops is characteristic for the methanohalophile group of archaeobacteria (2). The curved arrow on top of helix B points to a possible migration of the bulge over several positions. The 3'-terminal A is present in submolar amounts.

An evolutionary tree was constructed as described in (4), from an alignment of 41 archaeobacterial 5S rRNA sequences, with red algal 5S rRNA sequences as a eukaryotic outgroup. The two representatives of the order Thermococcales (1), *Pyrococcus woesei* and *Thermococcus celer*, were found to have the Methanococcales as closest relatives. The topology of the tree was otherwise similar to that of a previously published version (2) based on a more limited set of sequences.

References:

- 1) Zillig, W., Holz, I., Klenk, H., Trent, J., Wunderl, S., Janekovic, D., Insel, E., Haas, B. (1987) *System. Appl. Microbiol.* 9, 62-70.
- 2) Willekens, P., Huysmans, E., Vandenberghe, A., De Wachter, R. (1986) *System. Appl. Microbiol.* 7, 151-159.
- 3) Peattie, D. A. (1979) *Proc. Natl. Acad. Sci. USA* 76, 1760-1764.
- 4) Dams, E., Yamada, T., De Baere, R., Huysmans, E., Vandenberghe, A., De Wachter, R. (1987) *J. Mol. Evol.* 25, 255-260.