Progress in the Whole Cell Project of a Model Organism, *Thermus thermophilus* HB8

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One of the long-term goals of structural and functional genomics is the interpretation of all fundamental biological phenomena at atomic resolution. An extremely thermophilic bacterium, *Thermus thermophilus* HB8, is a promising model organism for structural and functional studies, because of the small genome size, the availability of genetic tools for functional analysis, and the thermostability of its proteins. Toward this aim, the "Whole Cell Project" of this bacterium is currently in progress (http://www.thermus.org/). The complete genome sequence identifies approximately 2,200 ORFs, and about 2,000 expression plasmids have been constructed. The target proteins were overproduced in *E. coli*, purified, crystallized, and characterized by X-ray crystallography, through which about 200 protein structures have been solved. As part of functional studies, we have constructed the gene disruption plasmids using the thermostable selective marker (kanamycin resistance) and analyzed mRNA by the DNA microarray system.

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