

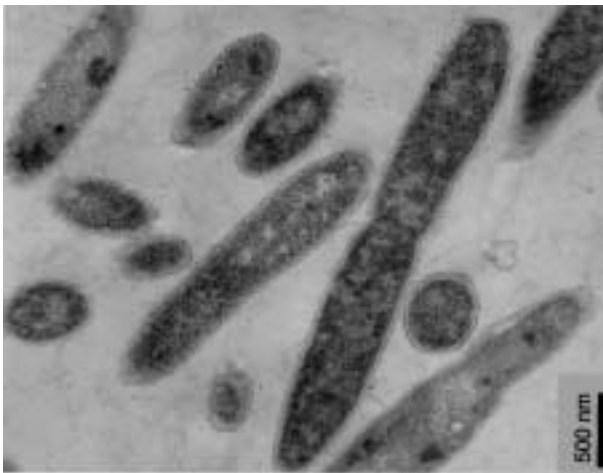


# Structural-Biological Whole Cell Project

“Structural-Biological Whole Cell Project” aims to understand all biological phenomena in the cell of an extremely thermophilic bacterium, *Thermus thermophilus* HB8 based on structural information of biomolecule. Owing to the advantage for structural analysis, the coming functional genomics, and moreover collaboration with groups of bioinformatics and detailed functional analysis, *T. thermophilus* HB8 is expected to be an excellent model organism for atomic biology, which will be a new research field in 21st century.

## [ The extremely thermophilic bacterium ]

· *T. thermophilus* HB8 : It can grow to 85 °C .



- It can grow at the highest temperature in all organisms with the gene manipulating system.
- Protein from this bacterium is highly stable and easy to crystallize.

Gene is the blueprint of protein, which functions by taking a highly ordered structure.



human genes	about <b>22,000</b>
<i>T. thermophilus</i> HB8 genes	about <b>2,200</b>



About **1,000** fundamental genes are required for a life as a minimal.



They exist in common in all living things, also including a man.

They also exist in *T. thermophilus* HB8 !!

Let the thermophilic bacterium, *T. thermophilus* HB8, be a model organism. We aim to elucidate all highly ordered structures of proteins encoded in this genome and analyze functions through their structures.



It is hoped that the biological phenomena of one organism whole is understood on the level of physical science based on the 3D structure of molecule.