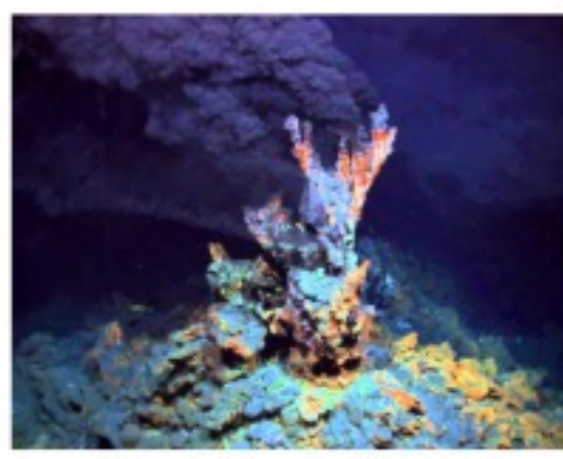


Hyperthermophiles and Biotechnological Applications of Their Enzymes

Vincent Belde, Olivia S. Matthiesen & Guro Ødegårdstuen



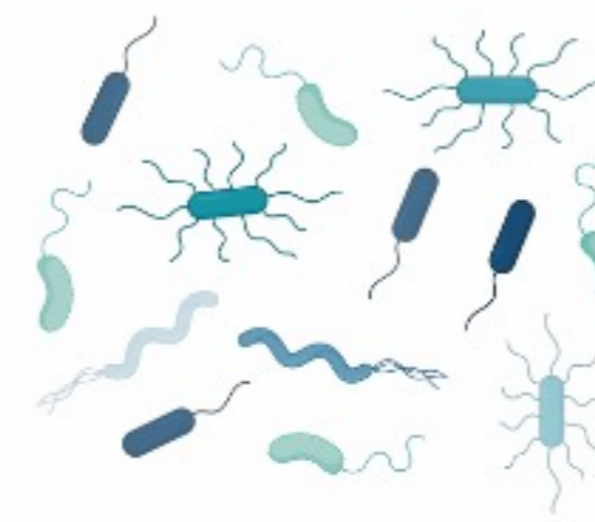
Discover the power of hyperthermophiles: organisms thriving in extreme heat environments, whose enzymes unlock biotechnological applications



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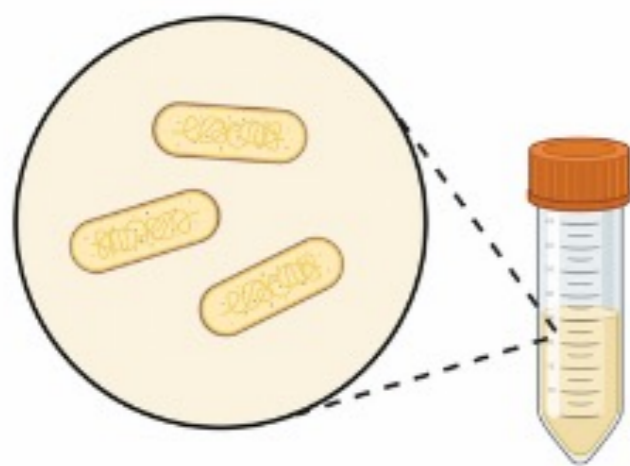
HYDROTHERMAL VENTS

Fissures with extremely hot (>100°C) water, rich in minerals, which is discharged into the marine ecosystem.



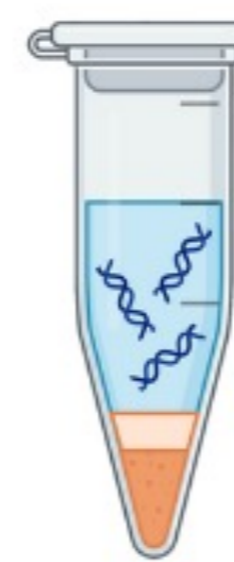
HYPERTHERMOPHILES

To survive at such high temperatures, hyperthermophilic *Bacteria* and *Archaea* living there are adapted to thrive at high temperatures.



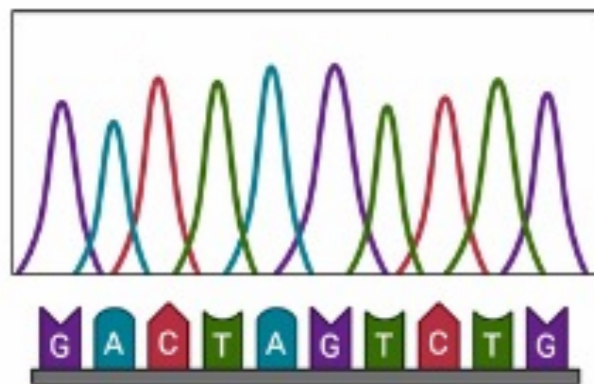
SAMPLING & EXTRACTION OF METAGENOME

All microbial DNA present in a sample can be extracted and original genomes reconstructed.



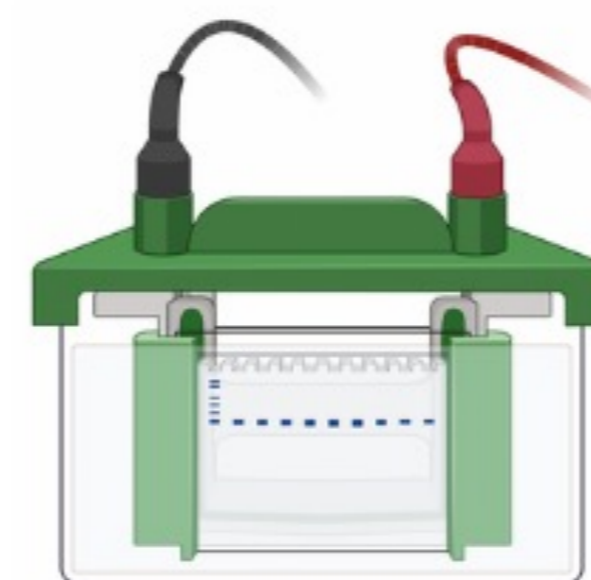
EXTREMOZYMES

One adaptation includes extremozyme production, valuable for biotechnology due to their functionality in extreme environments.



SEQUENCING & BIOINFORMATICS

The assembled genomes are analyzed for genes encoding extremozymes with possible applications.



EXPRESSION, PURIFICATION & ACTIVATION

Physical parameters of the enzyme are determined, and the enzyme gets expressed, purified, up concentrated and measured for activity.

