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# Hot DNA

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William Wells
**Email**: wells@biotext.com

In the December 19 Proceedings of the National Academy of Sciences, Kawashima *et al*. compare their sequence of *Thermoplasma volcanium* with existing genomic sequences of seven other archaeons, and find that thermophiles adapt to increasing heat by clustering purines and pyrimidines, and by making more basic proteins (*Proc Natl Acad Sci USA* 2000, **97:**14257-14262). The frequency of purine or pyrimidine dinucleotides in the genomic sequences rises with increasing optimum growth temperature (OGT), as mixtures of the two nucleotide types are usually associated with flexible DNA. The increase in basic proteins with increasing OGT may help the bacteria resist protein aggregation, as the cytoplasmic pH of the bacteria is somewhat acidic, so acidic proteins will have little charge and be more prone to interaction and aggregation. A higher OGT also correlates with changes in the repertoire of chaperones and DNA packaging proteins, and the loss of certain metabolic pathways that have labile intermediates.

# References

1. *Proceedings of the National Academy of Sciences*, [http://www.pnas.org/]