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## Sequence of a single-celled vulture

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*Thermoplasma acidophilum* is an archaeon that lives off the carcasses of organisms that perish in its hot, acidic home. In the 28 September *Nature*, Ruepp *et al.* find that the microbe has scavenged genes from its neighbors in order to survive (*Nature* 2000, **407**:508-513). *T. acidophilum* was originally suspected to be an ancestor of the eukaryotes, as it has complexes involved in protein folding, degradation and turnover that look like simplified versions of the corresponding eukaryotic complexes. But the 1.56 Mbp genome sequence clearly identifies *T. acidophilum* as an archaeon. Although the microbe's housekeeping genes reflect this phylogenetic origin, many of the genes related to its specialized lifestyle have come from other organisms by lateral transfer. This includes a full 17% of identified open reading frames that have their closest relatives in *Sulfolobus solfataricus*, a bacterium that is unrelated genetically but lives in the same extreme environments. Gene transfer may have come more easily to *T. acidophilum* as it lacks the barriers of either a cell wall or a restriction/modification system.

## References

1. A thermophilic, acidophilic mycoplasma isolated from a coal refuse pile.
2. Phylogenetic structure of the prokaryotic domain: the primary kingdoms.
3. *Nature*, [<http://www.nature.com/nature/>]