

# **SUPPLEMENTAL MATERIAL**

**FOR**

**Discovery note**

## **Identification of a crenarchaeal orthologue of Elf1: implications for chromatin and transcription in Archaea**

Jan-Peter Daniels<sup>1</sup>, Steven Kelly<sup>1,2,3</sup>, Bill Wickstead<sup>1</sup> and Keith Gull<sup>1,\*</sup>

1) Sir William Dunn School of Pathology  
University of Oxford  
South Parks Road  
OX1 3RE Oxford, UK

2) Centre for Mathematical Biology  
University of Oxford  
24-29 St Giles'  
OX1 3LB Oxford, UK

3) Oxford Centre for Interactive Systems Biology  
Department of Biochemistry  
University of Oxford  
South Parks Road  
OX1 3QU Oxford, UK

\*) corresponding author  
email: keith.gull@path.ox.ac.uk  
phone: 0044 (0) 1865 285455  
fax: 0044 (0) 1865 275501

**Suppl. Figure 1:** Comparison of the Pfam profile-hidden Markov model (HMM) for Elf1 (PF05129.5; x-axis) and the Elf1 HMM used in this study (y-axis). Elf1 homologues identified in this study (red) and non-Elf1 sequences (black) are indicated. The histograms show the distribution of E-values of the sequences for both searches.

**Suppl. Figure 2:** Alignment of archaeal histones. The N- and C-termini of the alignment were trimmed. NCBI/Genbank accession numbers are displayed on the left. *Thermofilum pendens*, *Caldivirga maquilingsensis* and Candidatus *Korarchaeum cryptofilum* sequences are marked with a yellow bar. Residues that are identical or similar to the consensus are shown with a blue or cyan background, respectively.

**Suppl. Table 1:** Sources of archaean predicted proteomes used in this study.

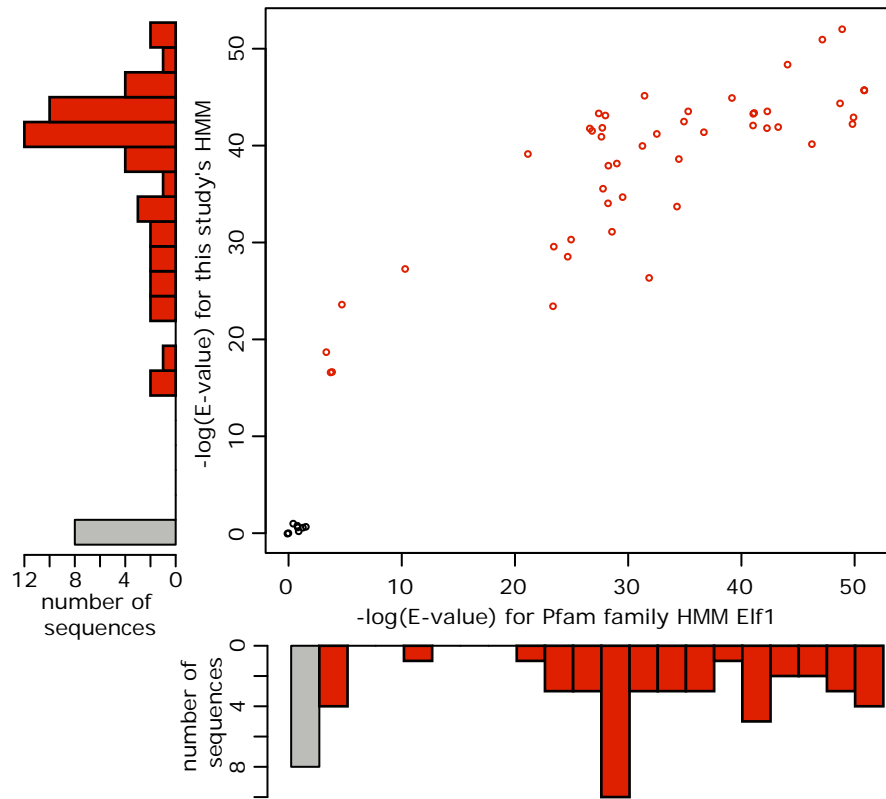
**Suppl. Table 2:** Sources of eukaryotic predicted proteomes used in this study.

**Suppl. Table 3:** Accession numbers of archaean Elf1 orthologues.

**Suppl. Table 4:** Accession numbers and predicted proteome IDs of eukaryotic Elf1 orthologues.

**Suppl. Table 5:** Sources of genomes (DNA sequence) used in this study.

# Suppl. Figure 1





**Suppl. Table 1:** Sources of archaean predicted proteomes used in this study.

Organism	Source <sup>1</sup>	Version	Web reference
<i>Aeropyrum pernix</i>	Biotechnology Center	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Archaeoglobus fulgidus</i>	TIGR & UIUC	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Caldivirga maquilingensis</i>	US DOE JGI	v1.0	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
Candidatus <i>Korarchaeum cryptofilum</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
Candidatus <i>Methanoregula boonei</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Cenarchaeum symbiosum</i>	MBARI	-	<a href="http://www.ebi.ac.uk/">http://www.ebi.ac.uk/</a>
<i>Ferroplasma acidarmanus</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Haloarcula marismortui</i>	UMBI/COMB	v16.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Halobacterium sp.</i>	University of Massachusetts-Amherst, University of Washington and Institute for Systems Biology	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Haloquadratum walsbyi</i>	Max Planck Institute	v21.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Halorubrum lacusprofundi</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Ignicoccus hospitalis</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Metallosphaera sedula</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanothermobacter thermautotrophicus</i>	Genome Therapeutics/Ohio State University	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Methanococcoides burtonii</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanococcus aeolicus</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanocaldococcus jannaschii</i>	TIGR & UIUC	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Methanococcus maripaludis</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanococcus voltae</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanocorpusculum labreanum</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanoculleus marisnigri</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanopyrus kandleri</i>	Fidelity Systems, Inc.	v8.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Methanosaeta thermophila</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanosarcina acetivorans</i>	Broad institute	-	<a href="http://www.broad.mit.edu/">http://www.broad.mit.edu/</a>
<i>Methanosarcina barkeri</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Methanosarcina mazei</i>	Goettingen Genomics Laboratory /Integrated Genomics Inc.	v8.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Methanosphaera stadtmanae</i>	Goettingen Genomics Laboratory Max-Planck-Institute, Marburg	v20.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Methanospirillum hungatei</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Nanoarchaeum equitans</i>	Diversa	v15.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Natronomonas pharaonis</i>	Max-Planck-Institute	v18.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Nitrosopumilus maritimus</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Picrophilus torridus</i>	University of Goettingen/TU Hamburg-Harburg/Georg-August-Univ Goettingen	v16.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Pyrobaculum aerophilum</i>	Caltech/UCLA	v7.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Pyrobaculum arsenaticum</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Pyrobaculum calidifontis</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Pyrobaculum islandicum</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Pyrococcus abyssi</i>	Genoscope	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Pyrococcus furiosus</i>	Univ of Utah/Univ of Maryland	v7.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Pyrococcus horikoshii</i>	MITI & Univ of Tokyo	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Staphylothermus marinus</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Sulfolobus acidocaldarius</i>	Epidauros Biotechnologie AG Univ of Copenhagen	v20.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Sulfolobus solfataricus</i>	European Union/Canadian Bioinformatics Resource	v3.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Sulfolobus tokodaii</i>	Biotechnology Center	v7.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Thermococcus kodakaraensis</i>	Kyoto University/Kwansei Gakuin University	v17.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Thermofilum pendens</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Thermoplasma acidophilum</i>	Max Planck Institute for Biochemistry	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Thermoplasma volcanium</i>	AIST	v1.0	<a href="http://www.tigr.org/">http://www.tigr.org/</a>
<i>Thermoproteus neutrophilus</i>	US DOE JGI	-	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>

<sup>1</sup>) Source of data does not necessarily correlate with sequencing centre(s). See individual projects for full acknowledgements of participants.

**Suppl. Table 2:** Sources of eukaryotic predicted proteomes used in this study.

<b>Organism</b>	<b>Source<sup>1</sup></b>	<b>Version</b>	<b>Web reference</b>
<i>Arabidopsis thaliana</i>	TAIR	TAIR7	<a href="http://www.arabidopsis.org/">www.arabidopsis.org/</a>
<i>Caenorhabditis elegans</i>	WormBase	WS179	<a href="http://www.sanger.ac.uk/Projects/C_elegans/WORMBASE/">www.sanger.ac.uk/Projects/C_elegans/WORMBASE/</a>
<i>Chlamydomonas reinhardtii</i>	US DOE JGI	v3.0	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Cryptosporidium parvum</i>	CryptoDB	v3.4	<a href="http://www.cryptodb.org/">www.cryptodb.org/</a>
<i>Cyanidioschyzon merolae</i>	C.merolae genome project	-	<a href="http://merolae.biol.s.u-tokyo.ac.jp/">merolae.biol.s.u-tokyo.ac.jp/</a>
<i>Dictyostelium discoideum</i>	dictyBase	05-20-2007	<a href="http://dictybase.org/">dictybase.org/</a>
<i>Drosophila melanogaster</i>	ENSEMBL	BDGP4.3, 46.43b	<a href="http://www.ensembl.org/info/data/">www.ensembl.org/info/data/</a>
<i>Entamoeba histolytica</i>	geneDB	17102005	<a href="http://www.genedb.org/">www.genedb.org/</a>
<i>Giardia lamblia</i>	GiardiaDB	April 17, 2007	<a href="http://www.mbl.edu/Giardia">www.mbl.edu/Giardia</a>
<i>Homo sapiens</i>	VEGA	Jun2006	<a href="http://vega.sanger.ac.uk/">vega.sanger.ac.uk/</a>
<i>Leishmania major</i>	geneDB	v5.2	<a href="http://www.genedb.org/">www.genedb.org/</a>
<i>Monosiga brevicollis</i>	JGI	v1.0	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Naegleria gruberi</i>	JGI	v1.0	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Paramecium tetraurelia</i>	ParameciumDB	v1.11	<a href="http://paramecium.cgm.cnrs-gif.fr/">paramecium.cgm.cnrs-gif.fr/</a>
<i>Phaeodactylum tricornutum</i>	JGI	v2.0	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Physcomitrella patens</i>	US DOE JGI	v1.1	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Phytophthora sojae</i>	US DOE JGI	v1.1	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Phytophthora ramorum</i>	US DOE JGI	v1.1	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Plasmodium falciparum</i>	PlasmoDB	v5.3	<a href="http://www.plasmodb.org/">www.plasmodb.org/</a>
<i>Saccharomyces cerevisiae</i>	ENSEMBL	SGD1.01.46	<a href="http://www.ensembl.org/info/data/">www.ensembl.org/info/data/</a>
<i>Schizosaccharomyces pombe</i>	Sanger	-	<a href="http://www.sanger.ac.uk/Projects/S_pombe">www.sanger.ac.uk/Projects/S_pombe</a>
<i>Takifugu rubripes</i>	ENSEMBL	Assembly4, 46	<a href="http://www.ensembl.org/info/data/">www.ensembl.org/info/data/</a>
<i>Tetrahymena thermophila</i>	TIGR	10/24/2006	<a href="http://www.tigr.org/tdb/e2k1/tta1/">www.tigr.org/tdb/e2k1/tta1/</a>
<i>Thalassiosira pseudonana</i>	US DOE JGI	v3.0	<a href="http://www.jgi.doe.gov/">www.jgi.doe.gov/</a>
<i>Theileria annulata</i>	GeneDB	v4	<a href="http://www.genedb.org/">www.genedb.org/</a>
<i>Toxoplasma gondii</i>	ToxoDB	v4.1	<a href="http://www.toxodb.org/">www.toxodb.org/</a>
<i>Trichomonas vaginalis</i>	TIGR	20050331	<a href="http://www.tigr.org/tdb/e2k1/tvg/">www.tigr.org/tdb/e2k1/tvg/</a>
<i>Trypanosoma brucei</i>	geneDB	v4	<a href="http://www.genedb.org/">www.genedb.org/</a>

<sup>1</sup>) Source of data does not necessarily correlate with sequencing centre(s). See individual projects for full acknowledgements of participants.

**Suppl. Table 3:** Accession numbers of archaean Elf1 orthologues.

<b>Organism</b>	<b>NCBI/Genbank reference</b>
<i>Aeropyrum pernix</i>	BAA79593.2
<i>Caldivirga maquilingensis</i>	ABW01761.1
<i>Candidatus Korarchaeum cryptofilum</i>	ACB08272.1
<i>Ignicoccus hospitalis</i>	ABU81609.1
<i>Metallosphaera sedula</i>	ABP96427.1
<i>Pyrobaculum aerophilum</i>	AAL64635.1
<i>Pyrobaculum arsenaticum</i>	ABP51345.1
<i>Pyrobaculum calidifontis</i>	ABO08409.1
<i>Pyrobaculum islandicum</i>	ABL87622.1
<i>Staphylothermus marinus</i>	ABN70090.1
<i>Sulfolobus acidocaldarius</i>	YP_255398.1
<i>Sulfolobus solfataricus</i>	AAK40600.1
<i>Sulfolobus tokodaii</i>	BAB65278.1
<i>Thermofilum pendens</i>	NA
<i>Thermoproteus neutrophilus</i>	ACB40598.1

**Suppl. Table 4:** Accession numbers and predicted proteome IDs of eukaryotic Elf1 orthologues.

<b>Organism</b>	<b>NCBI/Genbank reference</b>
<i>Arabidopsis thaliana</i>	NP_568654.1
<i>Caenorhabditis elegans</i>	NP_496983.1
<i>Chlamydomonas reinhardtii</i>	XP_001691592.1
<i>Cryptosporidium parvum</i>	XP_626150.1
<i>Cyanidioschyzon merolae</i>	CMO247C
<i>Dictyostelium discoideum</i>	XP_637365.1
<i>Drosophila melanogaster</i>	NP_001104426.1; NP_996099.1
<i>Giardia lamblia</i>	XP_001709420.1
<i>Homo sapiens</i>	EAW84230.1; OTTHUMP00000077650
<i>Leishmania major</i>	XP_001682840.1; XP_001682841.1
<i>Naegleria gruberi</i>	5729
<i>Paramecium tetraurelia</i>	XP_001346933.1; XP_001458266.1; XP_001450964.1
<i>Phaeodactylum tricornutum</i>	XP_002183971.1
<i>Physcomitrella patens</i>	XP_001765330.1; XP_001763568.1
<i>Phytophthora sojae</i>	158411
<i>Phytophthora ramorum</i>	93621
<i>Plasmodium falciparum</i>	XP_001352018.1
<i>Saccharomyces cerevisiae</i>	NP_012762.1
<i>Schizosaccharomyces pombe</i>	NP_594786.1
<i>Takifugu rubripes</i>	SINFRUP000000161665
<i>Tetrahymena thermophila</i>	XP_001030656.1
<i>Thalassiosira pseudonana</i>	XP_002292763.1
<i>Theileria annulata</i>	XP_955243.1
<i>Trichomonas vaginalis</i>	XP_001305861.1
<i>Trypanosoma brucei</i>	XP_001218865.1; XP_001218870.1



**Suppl. Table 5 (part 1 of 3): Sources of genomes (DNA sequence) used in this study.**

<b>genome/plasmid</b>	<b>NCBI</b>	<b>Source</b>	<b>Web reference</b>
<i>Aeropyrum pernix</i>	NC_000854.2	NITE	<a href="http://www.bio.nite.go.jp/dogam/MicroTop?GENOME_ID=ape_G1">http://www.bio.nite.go.jp/dogam/MicroTop?GENOME_ID=ape_G1</a>
<i>Archaeoglobus fulgidus</i>	NC_000917.1	TIGR	<a href="http://www.tigr.org/tigr-scripts/CMR2/GenomePages3.spl?database=gaf">http://www.tigr.org/tigr-scripts/CMR2/GenomePages3.spl?database=gaf</a>
<i>Caldivirga maquilingsensis</i>	NC_009954.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/calma/calma.home.html">http://genome.jgi-psf.org/draft_microbes/calma/calma.home.html</a>
<i>Candidatus Korarchaeum cryptofilum</i>	NC_010482.1	US DOE Joint Genome Institute	<a href="http://www.jgi.doe.gov/">http://www.jgi.doe.gov/</a>
<i>Candidatus Methanoregula boonei</i>	NC_009712.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/metbo/metbo.info.html">http://genome.jgi-psf.org/metbo/metbo.info.html</a>
<i>Cenarchaeum symbiosum A</i>	NS_000189.1	US DOE Joint Genome Institute	<a href="http://www.mbari.org/">http://www.mbari.org/</a>
<i>Cenarchaeum symbiosum B</i>	NS_000190.1	US DOE Joint Genome Institute	<a href="http://www.mbari.org/">http://www.mbari.org/</a>
<i>Ferroplasma acidimanus</i>	JGI	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/ferac/ferac.info.html">http://genome.jgi-psf.org/ferac/ferac.info.html</a>
<i>Haloarcula marismortui</i> chr I	NC_006396.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> chr II	NC_006397.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG100	NC_006389.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG200	NC_006390.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG300	NC_006391.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG400	NC_006392.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG500	NC_006393.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG600	NC_006394.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Haloarcula marismortui</i> pNG700	NC_006395.1	Center of Marine Biotechnology	<a href="http://zdna2.umbi.umd.edu/">http://zdna2.umbi.umd.edu/</a>
<i>Halobacterium</i> sp.	NC_002607.1	University of Massachusetts-Amherst, University of Washington	<a href="http://zdna2.umbi.umd.edu/~haloweb/">http://zdna2.umbi.umd.edu/~haloweb/</a>
<i>Halobacterium</i> sp. pNRC100	NC_001869.1	University of Massachusetts-Amherst, University of Washington	<a href="http://zdna2.umbi.umd.edu/~haloweb/">http://zdna2.umbi.umd.edu/~haloweb/</a>
<i>Halobacterium</i> sp. pNRC200	NC_002608.1	University of Massachusetts-Amherst, University of Washington	<a href="http://zdna2.umbi.umd.edu/~haloweb/">http://zdna2.umbi.umd.edu/~haloweb/</a>
<i>Haloquadratum walsbyi</i>	NC_008212.1	Max Planck Institute	
<i>Haloquadratum walsbyi</i> PL47	NC_008213.1	Max Planck Institute	
<i>Halorubrum lacusprofundi</i> chr 1	NC_012029.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html">http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html</a>
<i>Halorubrum lacusprofundi</i> chr 2	NC_012028.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html">http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html</a>
<i>Halorubrum lacusprofundi</i> pHLAC01	NC_012030.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html">http://genome.jgi-psf.org/draft_microbes/halla/halla.info.html</a>
<i>Ignicoccus hospitalis</i>	NC_009776.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/ign_k/ign_k.home.html">http://genome.jgi-psf.org/draft_microbes/ign_k/ign_k.home.html</a>
<i>Metallosphaera sedula</i>	NC_009440.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metsc/metsc.info.html">http://genome.jgi-psf.org/draft_microbes/metsc/metsc.info.html</a>
<i>Methanothermobacter thermautotrophicus</i>	NC_000916.1	Genome Therapeutics Corporation	<a href="http://www.genomecorp.com/">http://www.genomecorp.com/</a>
<i>Methanothermobacter thermautotrophicus</i> pFV1	NC_001336.1	Agriculture Univ of Wageningen	

**Suppl. Table 5 (part2 of 3): Sources of genomes (DNA sequence) used in this study.**

<b>genome/plasmid</b>	<b>NCBI</b>	<b>Source</b>	<b>Web reference</b>
<i>Methanothermobacter thermautotrophicus</i> pFZ1	NC_0011337.1	Agriculture Univ of Wageningen	
<i>Methanothermobacter thermautotrophicus</i> pME2001	NC_002125.1	Molekulargenetik FB Biologie Philipps-Universitaet, Marburg	
<i>Methanothermobacter thermautotrophicus</i> pME2200	NC_000905.1	Swiss Federal Institute of Technology, ETH, Institute of Microbiology	
<i>Methanococcus burtonii</i>	NC_007955.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metbu/metbu.home.html">http://genome.jgi-psf.org/draft_microbes/metbu/metbu.home.html</a>
<i>Methanococcus aeolicus</i>	NC_009635.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/metae/metae.info.html">http://genome.jgi-psf.org/finished_microbes/metae/metae.info.html</a>
<i>Methanocaldococcus jannaschii</i>	NC_000909.1	TIGR	<a href="http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg">http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg</a>
<i>Methanocaldococcus jannaschii</i> extra-chr 1	NC_001732.1	TIGR	<a href="http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg">http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg</a>
<i>Methanocaldococcus jannaschii</i> extra-chr 2	NC_001733.1	TIGR	<a href="http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg">http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg</a>
<i>Methanococcus maripaludis</i> C5	NC_009135.1	TIGR	<a href="http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg">http://www.tigr.org/tigr-scripts/CMR2/GenomePage3.spl?database=arg</a>
<i>Methanococcus maripaludis</i> C6	NC_009975.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metmc/metmc.info.html">http://genome.jgi-psf.org/draft_microbes/metmc/metmc.info.html</a>
<i>Methanococcus maripaludis</i> C7	NC_009637.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metm6/metm6.home.html">http://genome.jgi-psf.org/draft_microbes/metm6/metm6.home.html</a>
<i>Methanococcus maripaludis</i> pMMC501	NC_009136.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metm7/metm7.info.html">http://genome.jgi-psf.org/draft_microbes/metm7/metm7.info.html</a>
<i>Methanococcus maripaludis</i> pURB500	NC_001811.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metmc/metmc.info.html">http://genome.jgi-psf.org/draft_microbes/metmc/metmc.info.html</a>
<i>Methanococcus voltae</i>	JGI	University of Georgia	<a href="http://www.uga.edu/">http://www.uga.edu/</a>
<i>Methanocorpusculum labreanum</i>	NC_008942.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/metvo/metvo.info.html">http://genome.jgi-psf.org/metvo/metvo.info.html</a>
<i>Methanoculleus marisnigri</i>	NC_009051.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/metla/metla.home.html">http://genome.jgi-psf.org/finished_microbes/metla/metla.home.html</a>
<i>Methanopyrus kandleri</i>	NC_003551.1	Fidelity Systems	<a href="http://genome.jgi-psf.org/draft_microbes/metma/metma.info.html">http://genome.jgi-psf.org/draft_microbes/metma/metma.info.html</a>
<i>Methanoseta thermophila</i>	NC_008553.1	US DOE Joint Genome Institute	<a href="http://www.fidelitysystems.com/">http://www.fidelitysystems.com/</a>
<i>Methanosarcina acetivorans</i>	NC_003552.1	Broad Institute	<a href="http://genome.jgi-psf.org/finished_microbes/metth/metth.home.html">http://genome.jgi-psf.org/finished_microbes/metth/metth.home.html</a>
<i>Methanosarcina acetivorans</i> pC2A	NC_002097.1	University of Illinois, Microbiology	<a href="http://www.broad.mit.edu/annotation/microbes/methanosarcina/">http://www.broad.mit.edu/annotation/microbes/methanosarcina/</a>
<i>Methanosarcina barkeri</i> chr 1	NC_007355.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metba/metba.home.html">http://genome.jgi-psf.org/draft_microbes/metba/metba.home.html</a>
<i>Methanosarcina barkeri</i> plasmid 1	NC_007349.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/metba/metba.home.html">http://genome.jgi-psf.org/draft_microbes/metba/metba.home.html</a>
<i>Methanosarcina mazei</i>	NC_003901.1	Gottingen Genomics Laboratory	<a href="http://www.g2l.bio.uni-goettingen.de/projects/f_projects.html">http://www.g2l.bio.uni-goettingen.de/projects/f_projects.html</a>
<i>Methanosphaera stadtmanae</i>	NC_007681.1	University of Goettingen	<a href="http://www.g2l.bio.uni-goettingen.de/">http://www.g2l.bio.uni-goettingen.de/</a>
<i>Methanospirillum hungatei</i>	NC_007796.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/methu/methu.info.html">http://genome.jgi-psf.org/finished_microbes/methu/methu.info.html</a>
<i>Nanoarchaeum equitans</i>	NC_005213.1	DIVERSA	<a href="http://www.diversa.com/">http://www.diversa.com/</a>
<i>Natronomonas pharaonis</i>	NC_007426.1	Max Planck Institute	<a href="http://www.biochem.mpg.de/oesterhelte/genomics/intro_Napha.html">http://www.biochem.mpg.de/oesterhelte/genomics/intro_Napha.html</a>

**Suppl. Table 5 (part 3 of 3): Sources of genomes (DNA sequence) used in this study.**

<b>genome/plasmid</b>	<b>NCBI</b>	<b>Source<sup>1</sup></b>	<b>Web reference</b>
<i>Natronomonas pharaonis</i> PL23	NC_007428.1	Max Planck Institute	<a href="http://www.biochem.mpg.de/oesterhelt/genomics/intro_Napha.html">http://www.biochem.mpg.de/oesterhelt/genomics/intro_Napha.html</a>
<i>Natronomonas pharaonis</i> PL131	NC_007427.1	Max Planck Institute	<a href="http://www.biochem.mpg.de/oesterhelt/genomics/intro_Napha.html">http://www.biochem.mpg.de/oesterhelt/genomics/intro_Napha.html</a>
<i>Nitrosopumilus maritimus</i>	NC_010085.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/nitma/nitma.info.html">http://genome.jgi-psf.org/draft_microbes/nitma/nitma.info.html</a>
<i>Picrophilus torridus</i>	NC_005877.1	University of Goettingen	<a href="http://www.g2l.bio.uni-goettingen.de/projects/c_proj_pt.html">http://www.g2l.bio.uni-goettingen.de/projects/c_proj_pt.html</a>
<i>Pyrobaculum aerophilum</i>	NC_003364.1	UCLA/CalTech	<a href="http://informa.bio.caltech.edu/proj_summ_pyro.html">http://informa.bio.caltech.edu/proj_summ_pyro.html</a>
<i>Pyrobaculum arsenaticum</i>	NC_009376.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/pyrar/pyrar.info.html">http://genome.jgi-psf.org/finished_microbes/pyrar/pyrar.info.html</a>
<i>Pyrobaculum caldifontis</i>	NC_009073.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/pyrca/pyrca.home.html">http://genome.jgi-psf.org/finished_microbes/pyrca/pyrca.home.html</a>
<i>Pyrobaculum islandicum</i>	NC_008701.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/pyris/pyris.info.html">http://genome.jgi-psf.org/draft_microbes/pyris/pyris.info.html</a>
<i>Pyrococcus abyssi</i>	NC_000868.1	Genoscope	<a href="http://www.genoscope.cns.fr/Pab/">http://www.genoscope.cns.fr/Pab/</a>
<i>Pyrococcus abyssi</i> pGT5	NC_001773.1	Genoscope	<a href="http://www.genoscope.cns.fr/Pab/">http://www.genoscope.cns.fr/Pab/</a>
<i>Pyrococcus furiosus</i>	NC_003413.1	Utah Genome Center	<a href="http://www.genome.utah.edu/">http://www.genome.utah.edu/</a>
<i>Pyrococcus horikoshii</i>	NC_000961.1	NITE	<a href="http://www.bio.nite.go.jp/dogan/MicroTop?GENOME_ID=ot3">http://www.bio.nite.go.jp/dogan/MicroTop?GENOME_ID=ot3</a>
<i>Staphylothermus marinus</i>	NC_009033.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/finished_microbes/stama/stama.info.html">http://genome.jgi-psf.org/finished_microbes/stama/stama.info.html</a>
<i>Sulfolobus acidocaldarius</i>	NC_007181.1	Danish Archaea Centre	<a href="http://dac.molbio.ku.dk/">http://dac.molbio.ku.dk/</a>
<i>Sulfolobus solfataricus</i>	NC_002754.1	European/Canadian Consortium	<a href="http://www.w-archbac.u-psud.fr/projects/sulfolobus/">http://www.w-archbac.u-psud.fr/projects/sulfolobus/</a>
<i>Sulfolobus tokodaii</i>	NC_005907.1	University of Naples Federico II, Dipartimento di Chimica Biologica	
<i>Sulfolobus solfataricus</i> pIT3	NC_003106.2	NITE	<a href="http://www.bio.nite.go.jp/dogan/MicroTop?GENOME_ID=st_G1">http://www.bio.nite.go.jp/dogan/MicroTop?GENOME_ID=st_G1</a>
<i>Sulfolobus tokodaii</i>	NC_006624.1	Dragon Genomics	<a href="http://www.schem.kyoto-u.ac.jp/imanaka-lab/genome/index.html">http://www.schem.kyoto-u.ac.jp/imanaka-lab/genome/index.html</a>
<i>Thermococcus kodakaraensis</i>	NC_008698.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html">http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html</a>
<i>Thermoflum pendens</i>	NC_008696.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html">http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html</a>
<i>Thermoflum pendens</i> pTPEN01	NC_002578.1	Max-Planck-Institute	<a href="http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html">http://genome.jgi-psf.org/draft_microbes/thepe/thepe.info.html</a>
<i>Thermoplasma acidophilum</i>		Tokyo University of Pharmacy and Life Science, Department of Molecular Biology	
<i>Thermoplasma acidophilum</i> pTA1	NC_008318.1	National Institute of Advanced Industrial Science and Technology, Japan	
<i>Thermoplasma volcanium</i>	NC_002689.2		<a href="http://www.aist.go.jp/RIODB/archaic/">http://www.aist.go.jp/RIODB/archaic/</a>
<i>Thermoproteus neutrophilus</i>	NC_010525.1	US DOE Joint Genome Institute	<a href="http://genome.jgi-psf.org/draft_microbes/thene/thene.info.html">http://genome.jgi-psf.org/draft_microbes/thene/thene.info.html</a>

<sup>1</sup>) Source of data does not necessarily correlate with sequencing centre(s). See individual projects for full acknowledgements of participants.