

Table S3. Histidine kinases and response regulators encoded in unfinished genomes of Archaea

Asgard group

Candidatus Lokiarchaeota

. Lokiarchaeum sp. GC14_75	65 HKs , 27 RRs
. Candidatus Lokiarchaeota archaeon CR_4	26 HKs , 14 RRs

Candidatus Heimdallarchaeota

. Candidatus Heimdallarchaeota archaeon AB_125	7 HKs , 4 RRs
. Candidatus Heimdallarchaeota archaeon LC_2	15 HKs , 23 RRs
. Candidatus Heimdallarchaeota archaeon LC_3	31 HKs , 46 RRs

Candidatus Odinararchaeota

. Candidatus Odinararchaeota archaeon LCB_4	0 hits
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Candidatus Thorarchaeota

. Candidatus Thorarchaeota archaeon AB_25	10 HKs , 6 RRs
. Candidatus Thorarchaeota archaeon SMTZ-45	4 HKs , 2 RRs
. Candidatus Thorarchaeota archaeon SMTZ1-45	8 HKs , 6 RRs
. Candidatus Thorarchaeota archaeon SMTZ1-83	14 HKs , 5 RRs

DPANN group

Candidatus Aenigmarchaeota

. Candidatus Aenigmarchaeota archaeon CG1_02_38_14	1 HK , 3 RRs
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Candidatus Micrarchaeota

. Candidatus Micrarchaeota archaeon CG1_02_55_22	1 HK , 1 RR
. Candidatus Micrarchaeota archaeon RBG_16_49_10	1 HK , 1 RR
. Candidatus Micrarchaeum acidiphilum ARMAN-1	1 HK , 1 RR
. Candidatus Micrarchaeum acidiphilum ARMAN-2	2 HKs , 1 RR
. Candidatus Micrarchaeum sp. AZ1	0 HKs , 1 RR

Candidatus Nanohaloarchaeota

. Candidatus Nanosalina sp. J07AB43	1 HK , 3 RRs
. Candidatus Nanosalinarum sp. J07AB56	0 HKs , 1 RRs

Candidatus Pacearchaeota

. Candidatus Pacearchaeota archaeon RBG_13_36_9	3 HKs , 6 RRs
. Candidatus Pacearchaeota archaeon RBG_16_35_8	0 HKs , 1 RR

Candidatus Woesearchaeota

. Candidatus Woesearchaeota archaeon CG1_02_57_44	3 HKs , 1 RR
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TACK group

Candidatus Bathyarchaeota

. Candidatus Bathyarchaeota archaeon B26-1	0 HKs , 1 RR
. Candidatus Bathyarchaeota archaeon B26-2	0 HKs , 2 RRs
. Candidatus Bathyarchaeota archaeon B63	0 HKs , 1 RR
. Candidatus Bathyarchaeota archaeon RBG_13_38_9	1 HK , 7 RRs
. Candidatus Bathyarchaeota archaeon RBG_13_46_16b	3 HKs , 5 RRs
. Candidatus Bathyarchaeota archaeon RBG_13_52_12	4 HKs , 8 RRs
. Candidatus Bathyarchaeota archaeon RBG_13_60_20	1 HKs , 6 RRs
. Candidatus Bathyarchaeota archaeon RBG_16_48_13	1 HKs , 2 RRs
. Candidatus Bathyarchaeota archaeon RBG_16_57_9	2 HKs , 6 RRs

unclassified Crenarchaeota

. Crenarchaeota archaeon 13_1_20CM_2_51_8	0 HKs , 6 RRs
. Crenarchaeota archaeon 13_1_20CM_2_53_14	1 HK , 1 RR
. miscellaneous Crenarchaeota group archaeon SMTZ-80	0 HKs , 4 RRs
. miscellaneous Crenarchaeota group archaeon SMTZ1-55	5 HKs , 3 RRs
. miscellaneous Crenarchaeota group-6 archaeon AD8-1	1 HK , 1 RR

Asgard group

Candidatus Lokiarchaeota

Lokiarchaeum sp. GC14_75

HisK, no REC

Lokiarch_00070	KKK46579	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_00460	KKK46537	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_00870	KKK46428	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_01610	KKK46402	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_01950	KKK46363	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_02340	KKK46292	histidine kinase, partial [Lokiarchaeu...	CDD	UniProt	Pfam	InterPro
Lokiarch_02370	KKK46295	histidine kinase [Lokiarchaeum sp. GC1...	CDD	UniProt	Pfam	InterPro
Lokiarch_02430	KKK46301	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_03510	KKK46181	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_03590	KKK46173	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_04650	KKK46050	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro
Lokiarch_05040	KKK46003	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_05060	KKK46005	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_05100	KKK46009	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_05410	KKK45954	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_05430	KKK45956	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_07230	KKK45741	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro
Lokiarch_07910	KKK45664	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro

Lokiarch_08320	KKK45605	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_08370	KKK45609	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_09070	KKK45532	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_09590	KKK45479	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_12330	KKK45149	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_12590	KKK45111	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_14070	KKK44935	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_14080	KKK44936	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_15000	KKK44816	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_18040	KKK44457	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_18550	KKK44408	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_18860	KKK44364	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_19330	KKK44301	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_20000	KKK44257	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_22330	KKK43953	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_23340	KKK43867	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_23480	KKK43829	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_23540	KKK43835	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_23560	KKK43837	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_25620	KKK43640	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_25750	KKK43591	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_28080	KKK43304	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_28410	KKK43246	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_28650	KKK43236	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_28900	KKK43226	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_29610	KKK43131	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_31540	KKK42889	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_32010	KKK42779	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_32380	KKK42815	Chemotaxis protein CheA [Lokiarchaeum ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_37990	KKK42045	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_39210	KKK41896	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_39440	KKK41869	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_41490	KKK41609	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_41560	KKK41616	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_42190	KKK41530	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_43180	KKK41384	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_43190	KKK41385	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_43950	KKK41336	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_45820	KKK41094	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_45830	KKK41095	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_48050	KKK40829	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_49130	KKK40714	Signal transduction histidine kinase, ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_50120	KKK40577	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_51420	KKK40441	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_51540	KKK40437	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_52410	KKK40347	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
Lokiarch_53490	KKK40193	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
REC only							
Lokiarch_00080	KKK46580	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_00470	KKK46538	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_02270	KKK46321	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_04340	KKK46073	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_05420	KKK45955	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_08380	KKK45610	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_12580	KKK45110	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_15070	KKK44823	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_20950	KKK44134	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_22830	KKK43941	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_24680	KKK43712	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_32370	KKK42814	Chemotaxis protein CheY [Lokiarchaeum ...	CDD	UniProt	Pfam	InterPro	
Lokiarch_32880	KKK42744	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_36940	KKK42174	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_37290	KKK42141	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_37560	KKK42103	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_39220	KKK41897	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_43970	KKK41338	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
*Lokiarch_42390	KKK41515	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
REC-HisK							
Lokiarch_29550	KKK43125	Signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
REC-CheB							
Lokiarch_16240	KKK44677	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Lokiarch_32440	KKK42821	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	
Other RRs							
Lokiarch_05110	KKK46010	hypothetical protein Lokiarch_05110 [L... REC)	CDD	UniProt	Pfam	InterPro (RibbonHH-HisKA-REC)	
Lokiarch_06650	KKK45814	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro (??-HisKA-REC)	
Lokiarch_07240	KKK45742	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro (RibbonHH-HisKA-REC)	

Lokiarch_13560	KKK44996	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	only in Loki,
Heimdall							
Lokiarch_20350	KKK44156	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	(RibbonHH-HisKA-REC)
Lokiarch_20360	KKK44157	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	(RibbonHH-HisKA-REC)
Lokiarch_49480	KKK40668	Signal transduction response regulator...	CDD	UniProt	Pfam	InterPro	unique

Candidatus Lokiarchaeota archaeon CR 4

HisK, no REC

RBG13Loki_0330	OLS16050	multi-sensor signal transduction histi...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0480	OLS15889	sensory box protein [Candidatus Lokiar...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0482	OLS15891	PAS domain S-box [Candidatus Lokiarcha...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0546	OLS15812	CheA signal transduction histidine kin...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0550	OLS15816	hypothetical protein RBG13Loki_0550 [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0800	OLS15572	hybrid sensory histidine kinase BarA [...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1041	OLS15336	integral membrane sensor signal transd...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1711	OLS14669	phosphate sensor histidine kinase, HAM...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1732	OLS14630	integral membrane sensor hybrid histid...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1752	OLS14650	PAS/PAC sensor signal transduction his...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1838	OLS14555	PAS domain S-box [Candidatus Lokiarcha...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_2731	OLS13665	sensory transduction histidine kinase ...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_2732	OLS13666	putative signal transduction histidine...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_3134	OLS13260	integral membrane sensor signal transd...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_3498	OLS12863	signal transduction histidine kinase [...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_3963	OLS12427	sensory box protein [Candidatus Lokiar...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_3964	OLS12428	PAS domain S-box [Candidatus Lokiarcha...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4103	OLS12280	sensory transduction histidine kinase ...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4106	OLS12283	multi-sensor signal transduction histi...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4112	OLS12289	PAS/PAC sensor signal transduction his...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4114	OLS12291	PAS/PAC sensor signal transduction his...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4117	OLS12294	two component system histidine kinase ...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4207	OLS12141	PAS/PAC sensor signal transduction his...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4368	OLS12024	PAS/PAC sensor signal transduction his...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4422	OLS11967	sensor histidine kinase protein [Candi...	CDD	UniProt	Pfam	InterPro	

Other HisK

RBG13Loki_2516	OLS13839	sensory transduction histidine kinase ...	CDD	UniProt	Pfam	InterPro	
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REC only

RBG13Loki_1918	OLS14433	response regulator receiver protein [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4056	OLS12406	response regulator receiver protein [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1919	OLS14434	response regulator receiver protein [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_2133	OLS14257	putative response regulator (CheY-like...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4057	OLS12407	response regulator receiver protein [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0147	OLS16236	two-component hybrid sensor and regula...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_0548	OLS15814	response regulator receiver protein [C...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_4290	OLS12092	component of chemotactic signal transd...	CDD	UniProt	Pfam	InterPro	
RBG13Loki_1689	OLS14688	response regulator receiver [Candidatu...	CDD	UniProt	Pfam	InterPro	

REC-HisK

RBG13Loki_1733	OLS14631	multisensor signal transduction histid...	CDD	UniProt	Pfam	InterPro	
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REC-CheB

RBG13Loki_0547	OLS15813	response regulator receiver modulated ...	CDD	UniProt	Pfam	InterPro	
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REC-PAS

RBG13Loki_4101	OLS12278	putative signaling protein [Candidatus...	CDD	UniProt	Pfam	InterPro	
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Other RRs

RBG13Loki_1688	OLS14687	putative PAS/PAC sensor protein [Candi...	CDD	UniProt	Pfam	InterPro	(REC-PAS-wHTH)
RBG13Loki_1585	OLS14826	transcriptional regulatory protein [Ca...	CDD	UniProt	Pfam	InterPro	

Candidatus Heimdallarchaeota

Candidatus Heimdallarchaeota archaeon AB 125

HisK, no REC

HeimAB125_14200	OLS31916	Alkaline phosphatase synthesis sensor...	CDD	UniProt	Pfam	InterPro	
HeimAB125_16760	OLS31219	Sensor histidine kinase TodS [Candida...	CDD	UniProt	Pfam	InterPro	
HeimAB125_20900	OLS29990	Alginate biosynthesis sensor protein ...	CDD	UniProt	Pfam	InterPro	
HeimAB125_17880	OLS30870	hypothetical protein HeimAB125_17880,...	CDD	UniProt	Pfam	InterPro	
HeimAB125_11490	OLS32185	hypothetical protein HeimAB125_11490 ...	CDD	UniProt	Pfam	InterPro	
HeimAB125_20520	OLS30112	hypothetical protein HeimAB125_20520,...	CDD	UniProt	Pfam	InterPro	

Hybrid HisK

HeimAB125_12030	OLS32128	Blue-light-activated protein [Candida...	CDD	UniProt	Pfam	InterPro	
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REC only

HeimAB125_14190	OLS31915	Chemotaxis protein CheY [Candidatus H...	CDD	UniProt	Pfam	InterPro	
HeimAB125_22250	OLS29525	Transcriptional regulatory protein Yy...	CDD	UniProt	Pfam	InterPro	

Other RRs

HeimAB125_05440	OLS32769	hypothetical protein HeimAB125_05440 ...	CDD	UniProt	Pfam	InterPro	(REC-PPDK)
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Candidatus Heimdallarchaeota archaeon LC 2

HisK, no REC

HeimC2_15810	OLS26337	Nitrogen regulation protein NR(II), part...	CDD	UniProt	Pfam	InterPro
HeimC2_01450	OLS29297	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC2_34180	OLS21200	Sensor protein kinase Walk [Candidatus H...	CDD	UniProt	Pfam	InterPro
HeimC2_19620	OLS25286	hypothetical protein HeimC2_19620, parti...	CDD	UniProt	Pfam	InterPro
HeimC2_45130	OLS17060	Chemotaxis protein CheA [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_12630	OLS27153	Chemotaxis protein CheA [Candidatus Heim...	CDD	UniProt	Pfam	InterPro

Hybrid HisK

HeimC2_01230	OLS29276	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	(PAS-PAS-HisK-REC)
HeimC2_08310	OLS28176	Sporulation kinase E [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro	
HeimC2_23060	OLS24360	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	(PAS-PAS-HisK-REC)
HeimC2_36150	OLS20714	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	(CHASE-HisK-REC)
HeimC2_45040	OLS17051	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	(PAS-PAS-HisK-REC)
HeimC2_45180	OLS17065	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	(PAS-PAS-HisK-REC)
HeimC2_45200	OLS17067	Sensor protein FixL [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro	
HeimC2_45220	OLS17069	Blue-light-activated protein [Candidatus... REC)	CDD	UniProt	Pfam	InterPro	
HeimC2_45230	OLS17070	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro	

REC only

HeimC2_27350	OLS23182	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_44360	OLS18434	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_32290	OLS21770	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_45120	OLS17059	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_44340	OLS18432	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC2_41320	OLS19452	hypothetical protein HeimC2_41320 [Candi...	CDD	UniProt	Pfam	InterPro

REC-CheB

HeimC2_12600	OLS27150	Chemotaxis response regulator protein-gl...	CDD	UniProt	Pfam	InterPro
HeimC2_45160	OLS17063	Chemotaxis response regulator protein-gl...	CDD	UniProt	Pfam	InterPro

Other RRs

HeimC2_01350	OLS29287	KDP operon transcriptional regulatory pr...	CDD	UniProt	Pfam	InterPro	
HeimC2_04740	OLS28744	hypothetical protein HeimC2_04740 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_10410	OLS27845	hypothetical protein HeimC2_10410 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_10910	OLS27643	hypothetical protein HeimC2_10910 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_11830	OLS27346	hypothetical protein HeimC2_11830 [Candi...	CDD	UniProt	Pfam	InterPro	(REC-PPDK)
HeimC2_12440	OLS27252	Chemotaxis response regulator protein-gl...	CDD	UniProt	Pfam	InterPro	
HeimC2_12450	OLS27253	Transcriptional regulatory protein SrrA ...	CDD	UniProt	Pfam	InterPro	
HeimC2_15800	OLS26336	Thioredoxin reductase [Candidatus Heimda... reductase)	CDD	UniProt	Pfam	InterPro	(REC-Thioredoxin)
HeimC2_16010	OLS26189	hypothetical protein HeimC2_16010 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_24580	OLS23943	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro	
HeimC2_25020	OLS23763	hypothetical protein HeimC2_25020 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_26340	OLS23430	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro	
HeimC2_30070	OLS22308	hypothetical protein HeimC2_30070 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_34170	OLS21199	hypothetical protein HeimC2_34170 [Candi...	CDD	UniProt	Pfam	InterPro	
HeimC2_45210	OLS17068	Hydrogenase transcriptional regulatory p...	CDD	UniProt	Pfam	InterPro	

Candidatus Heimdallarchaeota archaeon LC_3**HisK, no REC**

HeimC3_02430	OLS27666	Adaptive-response sensory-kinase SasA [C...	CDD	UniProt	Pfam	InterPro
HeimC3_04220	OLS27423	putative sensor histidine kinase TcrY [C...	CDD	UniProt	Pfam	InterPro
HeimC3_05810	OLS27114	Phytochrome-like protein cph1 [Candidatu...	CDD	UniProt	Pfam	InterPro
HeimC3_06810	OLS26789	Osmolarity sensor protein EnvZ [Candidat...	CDD	UniProt	Pfam	InterPro
HeimC3_08490	OLS26530	putative sensor histidine kinase TcrY [C...	CDD	UniProt	Pfam	InterPro
HeimC3_08940	OLS26575	Sensor protein KdpD [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_09130	OLS26363	Sensor histidine kinase TmoS [Candidatus...	CDD	UniProt	Pfam	InterPro
HeimC3_13240	OLS25745	putative sensor histidine kinase TcrY [C...	CDD	UniProt	Pfam	InterPro
HeimC3_13930	OLS25645	Sporulation kinase E [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_14280	OLS25680	Adaptive-response sensory-kinase SasA [C...	CDD	UniProt	Pfam	InterPro
HeimC3_16290	OLS25185	Sensor protein KdpD [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_16410	OLS25197	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_19410	OLS24511	Globin-coupled histidine kinase [Candida...	CDD	UniProt	Pfam	InterPro
HeimC3_19630	OLS24533	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_20510	OLS24333	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_22890	OLS23817	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_22910	OLS23819	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_24300	OLS23618	putative sensor histidine kinase TcrY [C...	CDD	UniProt	Pfam	InterPro
HeimC3_25250	OLS23361	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_34540	OLS21607	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_34830	OLS21574	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_37340	OLS21087	Alkaline phosphatase synthesis sensor pr...	CDD	UniProt	Pfam	InterPro
HeimC3_38260	OLS20915	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_39970	OLS20539	Sensor protein KdpD [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_42490	OLS20038	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_44250	OLS19662	Nitrogen fixation regulatory protein [Ca...	CDD	UniProt	Pfam	InterPro
HeimC3_49540	OLS18429	hypothetical protein HeimC3_49540, parti...	CDD	UniProt	Pfam	InterPro

HeimC3_52020	OLS16692	Cell-division control histidine kinase P...	CDD	UniProt	Pfam	InterPro
HeimC3_55280	OLS16294	Chemotaxis protein CheA, partial [Candid...	CDD	UniProt	Pfam	InterPro
HeimC3_55320	OLS16298	Chemotaxis protein CheA [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
Hybrid HisK						
HeimC3_40090	OLS20551	Blue-light-activated protein [Candidatus...	CDD	UniProt	Pfam	InterPro
REC only						
HeimC3_04930	OLS27026	hypothetical protein HeimC3_04930 [Candi...	CDD	UniProt	Pfam	InterPro
HeimC3_05030	OLS27036	Regulator of RpoS [Candidatus Heimdallar...	CDD	UniProt	Pfam	InterPro
HeimC3_07500	OLS26648	Transcriptional regulatory protein ZraR ...	CDD	UniProt	Pfam	InterPro
HeimC3_10590	OLS26086	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_16650	OLS25035	Cyclic di-GMP phosphodiesterase response...	CDD	UniProt	Pfam	InterPro
HeimC3_22080	OLS23983	Regulator of RpoS [Candidatus Heimdallar...	CDD	UniProt	Pfam	InterPro
HeimC3_24850	OLS23410	Regulator of RpoS [Candidatus Heimdallar...	CDD	UniProt	Pfam	InterPro
HeimC3_25280	OLS23364	Signal transduction histidine-protein ki...	CDD	UniProt	Pfam	InterPro
HeimC3_34560	OLS21609	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_34820	OLS21573	Response regulator MprA, partial [Candid...	CDD	UniProt	Pfam	InterPro
HeimC3_37350	OLS21088	Response regulator MprA, partial [Candid...	CDD	UniProt	Pfam	InterPro
HeimC3_47210	OLS19145	hypothetical protein HeimC3_47210 [Candi...	CDD	UniProt	Pfam	InterPro
HeimC3_47220	OLS19146	Transcriptional regulatory protein ZraR ...	CDD	UniProt	Pfam	InterPro
HeimC3_47990	OLS18861	hypothetical protein HeimC3_47990 [Candi...	CDD	UniProt	Pfam	InterPro
HeimC3_55290	OLS16295	Chemotaxis protein CheY [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
*HeimC3_10920	OLS26119	hypothetical protein HeimC3_10920 [Candi...	CDD	UniProt	Pfam	InterPro
REC-HisK						
HeimC3_05100	OLS27043	Sporulation kinase A [Candidatus Heimdal...	CDD	UniProt	Pfam	InterPro
HeimC3_06660	OLS26909	Sensor protein FixL [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_07560	OLS26654	Sporulation kinase A [Candidatus Heimdal...	CDD	UniProt	Pfam	InterPro
HeimC3_08590	OLS26540	Sporulation kinase E [Candidatus Heimdal...	CDD	UniProt	Pfam	InterPro
HeimC3_16370	OLS25193	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_24200	OLS23608	Sporulation kinase E [Candidatus Heimdal...	CDD	UniProt	Pfam	InterPro
HeimC3_36920	OLS21133	Sensor protein ZraS [Candidatus Heimdall...	CDD	UniProt	Pfam	InterPro
HeimC3_38320	OLS20921	Response regulator ArlR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
REC-PAS						
HeimC3_08160	OLS26714	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_08350	OLS26733	Sensor histidine kinase TmoS [Candidatus...	CDD	UniProt	Pfam	InterPro
HeimC3_08410	OLS26739	Stage 0 sporulation protein A [Candidatu...	CDD	UniProt	Pfam	InterPro
HeimC3_16300	OLS25186	Cyclic di-GMP phosphodiesterase response...	CDD	UniProt	Pfam	InterPro
HeimC3_19170	OLS24487	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_29710	OLS22697	Response regulator MprA [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_35910	OLS21346	Transcriptional regulatory protein TcrA ...	CDD	UniProt	Pfam	InterPro
HeimC3_36900	OLS21131	Sensor histidine kinase TmoS [Candidatus...	CDD	UniProt	Pfam	InterPro
HeimC3_39980	OLS20540	Cyclic di-GMP phosphodiesterase response...	CDD	UniProt	Pfam	InterPro
HeimC3_42540	OLS20043	Stage 0 sporulation protein A [Candidatu...	CDD	UniProt	Pfam	InterPro
HeimC3_55370	OLS16303	Nitrogen fixation regulatory protein [Ca...	CDD	UniProt	Pfam	InterPro
Other RRs						
HeimC3_34530	OLS21606	Alkaline phosphatase synthesis transcrip...	CDD	UniProt	Pfam	InterPro
HeimC3_20500	OLS24332	Alkaline phosphatase synthesis transcrip...	CDD	UniProt	Pfam	InterPro
HeimC3_16400	OLS25196	Alkaline phosphatase synthesis transcrip...	CDD	UniProt	Pfam	InterPro
HeimC3_25240	OLS23360	Alkaline phosphatase synthesis transcrip...	CDD	UniProt	Pfam	InterPro
HeimC3_46250	OLS19303	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro (wHTH-PAS-REC-PAS)
HeimC3_04650	OLS27294	Response regulator SaeR [Candidatus Heim...	CDD	UniProt	Pfam	InterPro
HeimC3_38270	OLS20916	Hydrogenase transcriptional regulatory p...	CDD	UniProt	Pfam	InterPro
HeimC3_22900	OLS23818	Hydrogenase transcriptional regulatory p...	CDD	UniProt	Pfam	InterPro
HeimC3_09140	OLS26364	Thioredoxin reductase [Candidatus Heimda...	CDD	UniProt	Pfam	InterPro (REC-Thioredoxin reductase)
HeimC3_22750	OLS23803	Transforming protein p29 precursor [Cand...	CDD	UniProt	Pfam	InterPro (REC-GTPase_XXX)
HeimC3_22760	OLS23804	DNA-binding response regulator MtrA [Can...	CDD	UniProt	Pfam	InterPro (REC-GTPase_XXX)
HeimC3_22790	OLS23807	hypothetical protein HeimC3_22790 [Candi...	CDD	UniProt	Pfam	InterPro (REC-PPDK)

Candidatus Thorarchaeota

Candidatus Thorarchaeota archaeon AB_25

HisK, no REC

ThorAB25_12070	OLS30105	hypothetical protein ThorAB25_12070, p...	CDD	UniProt	Pfam	InterPro
ThorAB25_13800	OLS29848	Sensor protein FixL [Candidatus Thorar...	CDD	UniProt	Pfam	InterPro
ThorAB25_14840	OLS29699	Histidine protein kinase SaeS [Candida...	CDD	UniProt	Pfam	InterPro
ThorAB25_18290	OLS28591	Sporulation kinase A [Candidatus Thora...	CDD	UniProt	Pfam	InterPro
ThorAB25_18300	OLS28592	Swarming motility regulation sensor pr...	CDD	UniProt	Pfam	InterPro
ThorAB25_24240	OLS23754	Sensor histidine kinase DpiB [Candidat...	CDD	UniProt	Pfam	InterPro
ThorAB25_25390	OLS22577	Autoinducer 2 sensor kinase/phosphatas...	CDD	UniProt	Pfam	InterPro
ThorAB25_26240	OLS21915	Sporulation kinase A [Candidatus Thora...	CDD	UniProt	Pfam	InterPro
ThorAB25_28470	OLS20297	hypothetical protein ThorAB25_28470, p...	CDD	UniProt	Pfam	InterPro
ThorAB25_28990	OLS19832	Signal-transduction histidine kinase s...	CDD	UniProt	Pfam	InterPro
REC only						
ThorAB25_07510	OLS30773	Response regulator protein VraR [Candi...	CDD	UniProt	Pfam	InterPro
ThorAB25_11630	OLS30166	Chemotaxis protein CheY [Candidatus Th...	CDD	UniProt	Pfam	InterPro
ThorAB25_11640	OLS30167	putative transcriptional regulatory pr...	CDD	UniProt	Pfam	InterPro
ThorAB25_11660	OLS30169	Alkaline phosphatase synthesis transcr...	CDD	UniProt	Pfam	InterPro

REC-HisK

ThorAB25_17150	OLS29206	Sporulation kinase E [Candidatus Thora...	CDD	UniProt	Pfam	InterPro
REC-PAS\GAF						
ThorAB25_18330	OLS28595	Stage 0 sporulation protein A [Candida...	CDD	UniProt	Pfam	InterPro

Candidatus Thorarchaeota**Candidatus Thorarchaeota archaeon SMTZ-45****HisK, no REC**

AM326_00720	KXH72882	hypothetical protein AM326_00720 [Candida...	CDD	UniProt	Pfam	InterPro
AM326_06830	KXH76655	hypothetical protein AM326_06830 [Candida...	CDD	UniProt	Pfam	InterPro
AM326_07950	KXH76036	hypothetical protein AM326_07950 [Candida...	CDD	UniProt	Pfam	InterPro
AM326_01840	KXH77035	hypothetical protein AM326_01840 [Candida...	CDD	UniProt	Pfam	InterPro

REC only

AM326_03580	KXH72432	hypothetical protein AM326_03580 [Candida...	CDD	UniProt	Pfam	InterPro
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Candidatus Thorarchaeota archaeon SMTZ1-45**HisK, no REC**

AM325_12800	KXH74302	hypothetical protein AM325_12800 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_13570	KXH73682	hypothetical protein AM325_13570 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_13650	KXH73644	hypothetical protein AM325_13650 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_13670	KXH73648	hypothetical protein AM325_13670 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_13725	KXH73581	hypothetical protein AM325_13725 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_13730	KXH73582	hypothetical protein AM325_13730 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_14985	KXH71395	hypothetical protein AM325_14985 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_16040	KXH75682	hypothetical protein AM325_16040 [Candida...	CDD	UniProt	Pfam	InterPro

REC only

AM325_08215	KXH73176	hypothetical protein AM325_08215 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_08210	KXH73193	hypothetical protein AM325_08210 [Candida...	CDD	UniProt	Pfam	InterPro
AM325_06800	KXH73889	hypothetical protein AM325_06800 [Candida...	CDD	UniProt	Pfam	InterPro
*AM325_08225	KXH73178	hypothetical protein AM325_08225 [Candida...	CDD	UniProt	Pfam	InterPro

REC-HisK

AM325_03235	KXH70391	hypothetical protein AM325_03235 [Candida...	CDD	UniProt	Pfam	InterPro
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REC-GAF-PAS

AM325_13850	KXH73528	hypothetical protein AM325_13850 [Candida...	CDD	UniProt	Pfam	InterPro
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Other RRs

AM325_16070	KXH75686	hypothetical protein AM325_16070 [Candida...	CDD	UniProt	Pfam	InterPro	REC-HisKA
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Candidatus Thorarchaeota archaeon SMTZ1-83**HisK, no REC**

AM324_00720	KXH72757	hypothetical protein AM324_00720 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_01610	KXH70125	hypothetical protein AM324_01610 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_01875	KXH69850	hypothetical protein AM324_01875 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_02020	KXH69727	hypothetical protein AM324_02020 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_03460	KXH77605	hypothetical protein AM324_03460, partial...	CDD	UniProt	Pfam	InterPro
AM324_07590	KXH72273	hypothetical protein AM324_07590 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10450	KXH69774	hypothetical protein AM324_10450 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10920	KXH78072	hypothetical protein AM324_10920 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10940	KXH78076	hypothetical protein AM324_10940 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10955	KXH78079	hypothetical protein AM324_10955 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10960	KXH78080	hypothetical protein AM324_10960 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_14600	KXH76103	hypothetical protein AM324_14600 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_14700	KXH76058	hypothetical protein AM324_14700 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_15385	KXH75146	hypothetical protein AM324_15385 [Candida...	CDD	UniProt	Pfam	InterPro

REC only

AM324_05925	KXH74275	hypothetical protein AM324_05925 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_05930	KXH74276	hypothetical protein AM324_05930 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10965	KXH78081	hypothetical protein AM324_10965 [Candida...	CDD	UniProt	Pfam	InterPro
AM324_10585	KXH78171	hypothetical protein AM324_10585 [Candida...	CDD	UniProt	Pfam	InterPro

NtrC family (REC-AAA-Fis)

AM324_01870	KXH69849	Fis family transcriptional regulator [Can...	CDD	UniProt	Pfam	InterPro
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DPANN group**Candidatus Aenigmarchaeota****Candidatus Aenigmarchaeota archaeon CG1_02_38_14****HisK, no REC**

AUJ50_03965	OIN86203	hypothetical protein AUJ50_03965 [Candida...	CDD	UniProt	Pfam	InterPro
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REC only

AUJ50_00645	OIN88531	hypothetical protein AUJ50_00645 [Candida...	CDD	UniProt	Pfam	InterPro
AUJ50_03955	OIN86201	hypothetical protein AUJ50_03955 [Candida...	CDD	UniProt	Pfam	InterPro
AUJ50_03960	OIN86202	hypothetical protein AUJ50_03960 [Candida...	CDD	UniProt	Pfam	InterPro

Candidatus Micrarchaeota

Candidatus Micrarchaeota archaeon CGI_02_55_22

HisK, no REC

AUJ14_02250 [OIO26197](#) hypothetical protein AUJ14_02250 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Other RRs

AUJ14_05545 [OIO24744](#) hypothetical protein AUJ14_05545 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Micrarchaeota archaeon RBG_16_49_10

REC only

A3K63_00125 [OGI15767](#) hypothetical protein A3K63_00125 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Micrarchaeum acidiphilum ARMAN-1

HisK, no REC

BK997_01990 [OJI07769](#) hypothetical protein BK997_01990 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

REC-GGDEF

BK997_02000 [OJI07771](#) hypothetical protein BK997_02000 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#) (REC-GGDEF)

Candidatus Micrarchaeum acidiphilum ARMAN-2

HisK, no REC

UNLARM2_0160 [EET90488](#) Signal transduction histidine kinase reg... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

UNLARM2_0237 [EET90383](#) PAS/PAC sensor signal transduction histi... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

REC-GGDEF

UNLARM2_0239 [EET90385](#) response regulator receiver protein [Can... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#) (wHTH-REC-GGDEF)

Candidatus Micrarchaeum sp. AZ1

REC-GGDEF

JJ59_05330 [OJT93977](#) hypothetical protein JJ59_05330 [Candidatu... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#) (REC-GGDEF)

Candidatus Nanohaloarchaeota

Candidatus Nanosalina sp. J07AB43

HisK, no REC

J07AB43_06780 [EGQ42691](#) putative histidine kinase [Candidatus N... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

REC-HisK

J07AB43_10260 [EGQ43037](#) PAS sensor histidine kinase [Candidatus... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

REC-PAS

J07AB43_06220 [EGQ43744](#) response regulator [Candidatus Nanosali... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

wHTH-REC

J07AB43_10250 [EGQ43036](#) putative transcriptional regulator [Can... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Nanosalinarum sp. J07AB56

REC only

J07AB56_11580 [EGQ40429](#) hypothetical protein J07AB56_11580 [Ca... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Pacearchaeota

Candidatus Pacearchaeota archaeon RBG_13_36_9

HisK, no REC

A3K73_04080 [OGJ15728](#) hypothetical protein A3K73_04080, partial... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_05640 [OGJ21307](#) hypothetical protein A3K73_05640 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_05595 [OGJ21298](#) hypothetical protein A3K73_05595 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

REC only

A3K73_05570 [OGJ21293](#) hypothetical protein A3K73_05570 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_05590 [OGJ21297](#) hypothetical protein A3K73_05590 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_05635 [OGJ21306](#) hypothetical protein A3K73_05635 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_05620 [OGJ21303](#) hypothetical protein A3K73_05620 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Other RRs

A3K73_00520 [OGJ16906](#) hypothetical protein A3K73_00520 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

A3K73_04085 [OGJ15729](#) hypothetical protein A3K73_04085 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Pacearchaeota archaeon RBG_16_35_8

REC only

A3K62_00590 [OGJ12735](#) hypothetical protein A3K62_00590 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

Candidatus Woesearchaeota

Candidatus Woesearchaeota archaeon CGI_02_57_44

HisK, no REC

AUJ68_00545 [OIO66483](#) hypothetical protein AUJ68_00545 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

AUJ68_00560 [OIO66486](#) hypothetical protein AUJ68_00560 [Candida... [CDD](#) [UniProt](#) [Pfam](#) [InterPro](#)

AUJ68_04715	OIO64828	hypothetical protein AUJ68_04715 [Candida...	CDD	UniProt	Pfam	InterPro
REC only						
AUJ68_00555	OIO66485	hypothetical protein AUJ68_00555 [Candida...	CDD	UniProt	Pfam	InterPro

TACK group

Candidatus Bathyarchaeota

Candidatus Bathyarchaeota archaeon B26-1

REC only						
AYL31_009600	KYH39473	response regulator receiver domain-conta...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon B26-2

REC only						
AYL32_010350	KYH40679	response regulator receiver domain-conta...	CDD	UniProt	Pfam	InterPro
AYL32_011520	KYH40474	response regulator receiver domain-conta...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon B63

REC only						
AYL33_000980	KYH42750	response regulator receiver domain-conta...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon RBG_13_38_9

HisK, no REC						
A3K80_03685	OGD53009	hypothetical protein A3K80_03685 [Candida...	CDD	UniProt	Pfam	InterPro
REC only						
A3K80_03790	OGD53025	response regulator [Candidatus Bathyarcha...	CDD	UniProt	Pfam	InterPro
A3K80_03830	OGD53028	hypothetical protein A3K80_03830 [Candida...	CDD	UniProt	Pfam	InterPro
REC-HisK						
A3K80_03775	OGD53022	hypothetical protein A3K80_03775 [Candida...	CDD	UniProt	Pfam	InterPro
Other RRs						
A3K80_03680	OGD53008	hypothetical protein A3K80_03680 [Candida...	CDD	UniProt	Pfam	InterPro
A3K80_03780	OGD53023	hypothetical protein A3K80_03780 [Candida...	CDD	UniProt	Pfam	InterPro
A3K80_03765	OGD53020	hypothetical protein A3K80_03765 [Candida...	CDD	UniProt	Pfam	InterPro
A3K80_03770	OGD53021	hypothetical protein A3K80_03770 [Candida...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon RBG_13_46_16b

HisK, no REC						
A3K79_04075	OGD45073	hypothetical protein A3K79_04075 [Candida...	CDD	UniProt	Pfam	InterPro
A3K79_05095	OGD47194	hypothetical protein A3K79_05095, partial...	CDD	UniProt	Pfam	InterPro
A3K79_06350	OGD47042	hypothetical protein A3K79_06350 [Candida...	CDD	UniProt	Pfam	InterPro
REC only						
A3K79_00270	OGD47957	hypothetical protein A3K79_00270 [Candida...	CDD	UniProt	Pfam	InterPro
A3K79_01200	OGD45118	hypothetical protein A3K79_01200 [Candida...	CDD	UniProt	Pfam	InterPro
A3K79_02080	OGD47072	hypothetical protein A3K79_02080 [Candida...	CDD	UniProt	Pfam	InterPro
REC-HisK						
A3K79_00265	OGD47956	hypothetical protein A3K79_00265 [Candida...	CDD	UniProt	Pfam	InterPro
REC-PAS						
A3K79_07615	OGD44168	hypothetical protein A3K79_07615, partial...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon RBG_13_52_12

HisK, no REC						
A3K78_02615	OGD55262	hypothetical protein A3K78_02615 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_06220	OGD56148	hypothetical protein A3K78_06220, partial...	CDD	UniProt	Pfam	InterPro
A3K78_09135	OGD60431	hypothetical protein A3K78_09135 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_10795	OGD58987	hypothetical protein A3K78_10795 [Candida...	CDD	UniProt	Pfam	InterPro
REC only						
A3K78_02610	OGD55264	hypothetical protein A3K78_02610 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_05125	OGD56561	two-component system response regulator [...	CDD	UniProt	Pfam	InterPro
A3K78_06255	OGD56153	hypothetical protein A3K78_06255 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_06265	OGD56155	hypothetical protein A3K78_06265 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_10790	OGD58986	hypothetical protein A3K78_10790 [Candida...	CDD	UniProt	Pfam	InterPro
Other RRs						
A3K78_02605	OGD55261	hypothetical protein A3K78_02605 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_05120	OGD56550	hypothetical protein A3K78_05120 [Candida...	CDD	UniProt	Pfam	InterPro
A3K78_09140	OGD60432	hypothetical protein A3K78_09140 [Candida...	CDD	UniProt	Pfam	InterPro

Candidatus Bathyarchaeota archaeon RBG_13_60_20

HisK, no REC						
A3K81_01540	OGD55865	hypothetical protein A3K81_01540 [Candida...	CDD	UniProt	Pfam	InterPro
REC only						
A3K81_04645	OGD53355	hypothetical protein A3K81_04645 [Candida...	CDD	UniProt	Pfam	InterPro
REC-HisK						
A3K81_06585	OGD54085	hypothetical protein A3K81_06585 [Candida...	CDD	UniProt	Pfam	InterPro

A3K81_00905	OGD54583	hypothetical protein	A3K81_00905	[Candida...	CDD	UniProt	Pfam	InterPro
A3K81_02575	OGD53329	hypothetical protein	A3K81_02575	[Candida...	CDD	UniProt	Pfam	InterPro
Other RRs								
A3K81_01690	OGD55697	hypothetical protein	A3K81_01690	[Candida...	CDD	UniProt	Pfam	InterPro
A3K81_03960	OGD52326	hypothetical protein	A3K81_03960	[Candida...	CDD	UniProt	Pfam	InterPro

[Candidatus Bathyarchaeota archaeon RBG 16_48_13](#)

HisK, no REC								
A3K70_04505	OGD45808	hypothetical protein	A3K70_04505	[Candida...	CDD	UniProt	Pfam	InterPro
REC only								
A3K70_00955	OGD45656	hypothetical protein	A3K70_00955	[Candida...	CDD	UniProt	Pfam	InterPro
REC-HisK								
A3K70_00960	OGD45657	hypothetical protein	A3K70_00960	[Candida...	CDD	UniProt	Pfam	InterPro

[Candidatus Bathyarchaeota archaeon RBG 16_57_9](#)

HisK, no REC								
A3K69_03215	OGD44555	hypothetical protein	A3K69_03215	[Candida...	CDD	UniProt	Pfam	InterPro
A3K69_03770	OGD45604	hypothetical protein	A3K69_03770	[Candida...	CDD	UniProt	Pfam	InterPro
REC only								
A3K69_02765	OGD45447	hypothetical protein	A3K69_02765	[Candida...	CDD	UniProt	Pfam	InterPro
A3K69_00135	OGD44459	hypothetical protein	A3K69_00135	[Candida...	CDD	UniProt	Pfam	InterPro
REC-HisK								
A3K69_01050	OGD46118	hypothetical protein	A3K69_01050	[Candida...	CDD	UniProt	Pfam	InterPro
Other RRs								
A3K69_06655	OGD44705	hypothetical protein	A3K69_06655	[Candida...	CDD	UniProt	Pfam	InterPro
A3K69_03970	OGD48311	hypothetical protein	A3K69_03970	[Candida...	CDD	UniProt	Pfam	InterPro
A3K69_05730	OGD48668	hypothetical protein	A3K69_05730	[Candida...	CDD	UniProt	Pfam	InterPro

[unclassified Crenarchaeota](#)

[Crenarchaeota archaeon 13_1_20CM_2_51_8](#)

REC only								
AUF79_04595	OLE91433	hypothetical protein	AUF79_04595	[Crenarc...	CDD	UniProt	Pfam	InterPro
AUF79_17120	OLE84948	hypothetical protein	AUF79_17120	[Crenarc...	CDD	UniProt	Pfam	InterPro
AUF79_01930	OLE91858	hypothetical protein	AUF79_01930	[Crenarc...	CDD	UniProt	Pfam	InterPro
REC-wHTH								
AUF79_12530	OLE89065	hypothetical protein	AUF79_12530	[Crenarc...	CDD	UniProt	Pfam	InterPro (REC-LuxR)
AUF79_11280	OLE89891	DNA-binding response regulator	[Crenarcha...		CDD	UniProt	Pfam	InterPro (REC-LuxR)
AUF79_11870	OLE89516	hypothetical protein	AUF79_11870	[Crenarc...	CDD	UniProt	Pfam	InterPro (REC-LuxR)

[Crenarchaeota archaeon 13_1_20CM_2_53_14](#)

HisK, no REC								
AUG17_00415	OLE59984	hypothetical protein	AUG17_00415	[Crenarc...	CDD	UniProt	Pfam	InterPro
REC only								
AUG17_00410	OLE59983	hypothetical protein	AUG17_00410	[Crenarc...	CDD	UniProt	Pfam	InterPro

[miscellaneous Crenarchaeota group archaeon SMTZ-80](#)

HisK, no REC								
AC481_01535	KON28410	hypothetical protein	AC481_01535, partial...		CDD	UniProt	Pfam	InterPro
AC481_01710	KON28442	hypothetical protein	AC481_01710 [miscell...		CDD	UniProt	Pfam	InterPro
AC481_05500	KON27185	hypothetical protein	AC481_05500 [miscell...		CDD	UniProt	Pfam	InterPro
AC481_05740	KON27109	hypothetical protein	AC481_05740 [miscell...		CDD	UniProt	Pfam	InterPro
AC481_07300	KON26384	histidine kinase, partial	[miscellaneous ...		CDD	UniProt	Pfam	InterPro
REC only								
AC481_04280	KON27604	hypothetical protein	AC481_04280 [miscell...		CDD	UniProt	Pfam	InterPro
NtrC family (REC-AAA-Fis)								
AC481_01540	KON28411	hypothetical protein	AC481_01540 [miscell...		CDD	UniProt	Pfam	InterPro (REC-AAA-Fis)
AC481_01705	KON28441	hypothetical protein	AC481_01705 [miscell...		CDD	UniProt	Pfam	InterPro (REC-AAA-Fis)
Other RRs								
AC481_01605	KON28423	response regulator	[miscellaneous Crenarc...		CDD	UniProt	Pfam	InterPro (REC-PglZ)

[miscellaneous Crenarchaeota group archaeon SMTZ1-55](#)

REC only								
*AC480_06220	KON26173	hypothetical protein	AC480_06220, partial...		CDD	UniProt	Pfam	InterPro
Frz family (REC-REC)								
AC480_06215	KON26172	hypothetical protein	AC480_06215 [miscell...		CDD	UniProt	Pfam	InterPro (REC-REC)
NtrC family (REC-AAA-Fis)								
AC480_00075	KON30915	hypothetical protein	AC480_00075 [miscell...		CDD	UniProt	Pfam	InterPro (REC-AAA-Fis)

[miscellaneous Crenarchaeota group-6 archaeon AD8-1](#)

HisK, no REC								
AC479_03670	KON33644	hypothetical protein	AC479_03670 [miscell...		CDD	UniProt	Pfam	InterPro

REC-HisK

AC479_01620 [KON34176](#) hypothetical protein AC479_01620 [miscell...

[CDD](#)

[UniProt](#)

[Pfam](#)

[InterPro](#)

Please send corrections, questions and comments to [Michael Galperin](#)