

Supplementary Information

Candidatus *Gortzia yakutica*, a new symbiotic bacterium from the macronucleus of *Paramecium putrinum*

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Supplementary Table S1. All sequences used in the phylogenetic and sequence similarity analysis.

Accession	Name	Group
MT421875.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 1	Holosporaceae
MT421876.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 2	Holosporaceae
MT421877.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 3	Holosporaceae
MT421878.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 4	Holosporaceae
MT421879.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 5	Holosporaceae
MT421880.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 6	Holosporaceae
MT421881.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 7	Holosporaceae
MT421882.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 8	Holosporaceae
MT421883.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 9	Holosporaceae
MT421884.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 10	Holosporaceae
MT421885.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 11	Holosporaceae
MT421886.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 12	Holosporaceae
MT421887.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 13	Holosporaceae
MT421888.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 14	Holosporaceae
MT421889.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 15	Holosporaceae
MT421890.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 16	Holosporaceae
MT421891.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 17	Holosporaceae
MT421892.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 18	Holosporaceae
MT421893.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 19	Holosporaceae
MT421894.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 20	Holosporaceae
MT421895.1	<i>Gortzia yakutica</i> str. YA111-52 cl. 21	Holosporaceae
HE797905.1	<i>Holospira obtusa</i>	Holosporaceae
HE797906.1	<i>Holospira undulata</i> str. StB	Holosporaceae
HE797907.1	Candidatus <i>Gortzia infectiva</i> isl. TS-j	Holosporaceae
HE797908.1	Candidatus <i>Gortzia infectiva</i> isl. TS-a cl. 20	Holosporaceae
HE797910.1	Candidatus <i>Gortzia infectiva</i> isl. TS-a cl. 50	Holosporaceae
X58198.1	<i>Holospira obtusa</i>	Holosporaceae
LT549001.1	<i>Holospira obtusa</i> str. SH2	Holosporaceae
LT549002.1	Candidatus <i>Gortzia shahrazadis</i> str. TP2	Holosporaceae
JF713683.1	<i>Holospira curviuscula</i> str. 02AZ16	Holosporaceae
JF713682.1	<i>Holospira obtusa</i> cl. 88Ti	Holosporaceae
KC164378.1	<i>Holospira curviuscula</i> str. MC-3	Holosporaceae
KC164379.1	<i>Holospira acuminata</i> str. AC61-10	Holosporaceae
KX669635.1	Candidatus <i>Holospira parva</i> str. HpHSG1-11	Holosporaceae
LT616954.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. Hc+	Holosporaceae
LT616955.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. SH42	Holosporaceae

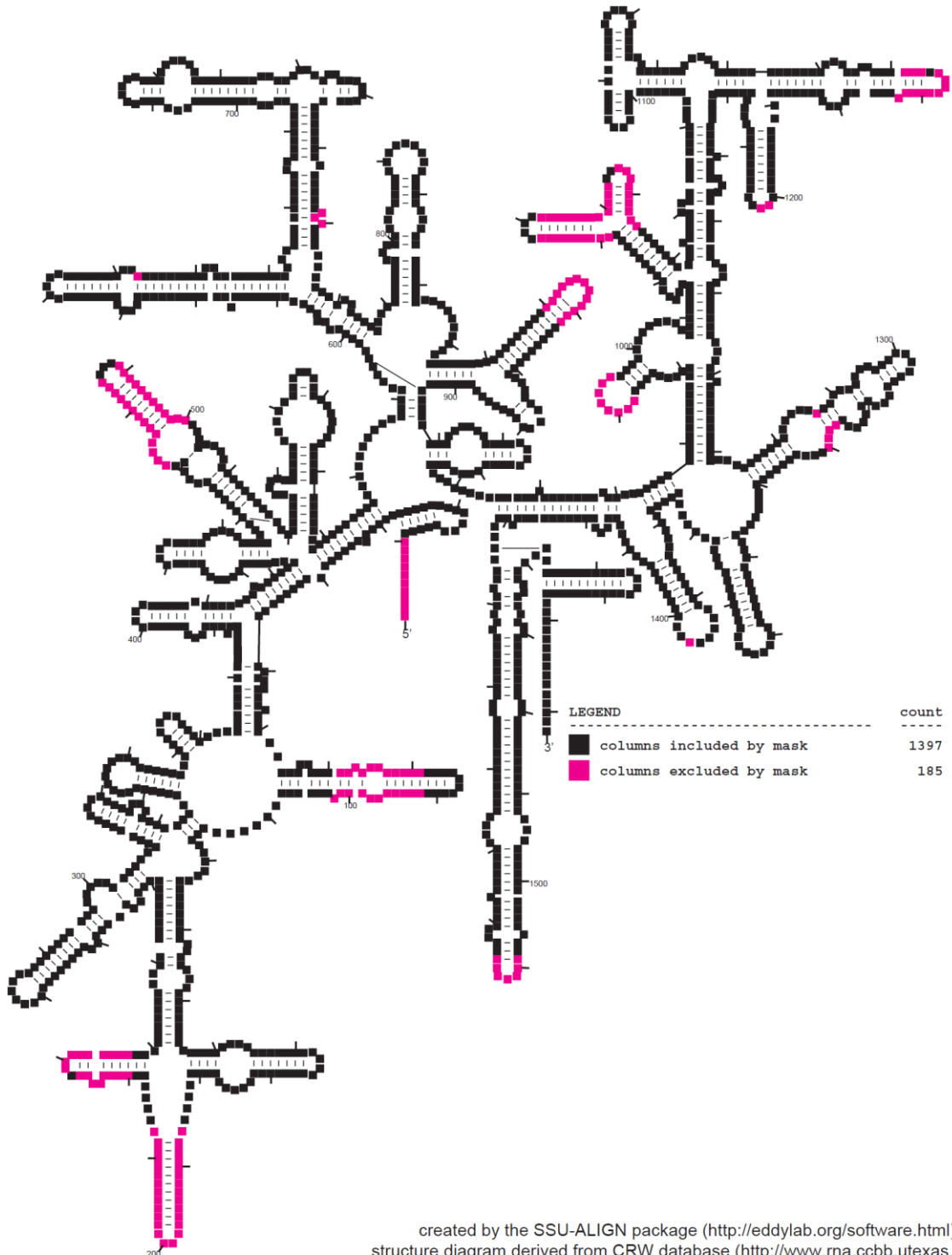
LT616950.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. 94AB1-5	Holosporaceae
LT616952.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. 562alpha	Holosporaceae
LT616949.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. Cs1	Holosporaceae
LT616951.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. FGC3	Holosporaceae
LT616953.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. GFg	Holosporaceae
LT616956.1	<i>Preeria caryophila</i> (<i>Holospira caryophila</i>) isl. UV	Holosporaceae
MH319377.1	Candidatus <i>Hafkinia simulans</i>	Holosporaceae
KU736845.1	Candidatus <i>Bealeia paramacronuclearis</i> isl. US_BU 1511	Holosporaceae
KU736844.1	Candidatus <i>Bealeia paramacronuclearis</i> isl. US_BI 11III1 B	Holosporaceae
LC466995.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell2_clone3	Holosporaceae
LC466992.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell1_clone2	Holosporaceae
LC466993.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell1_clone1	Holosporaceae
LC466998.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell2_clone1	Holosporaceae
LC466997.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell2_clone5	Holosporaceae
LC466994.1	Candidatus <i>Hydrogenosomobacter endosymbioticus</i> cell2_clone2	Holosporaceae
EU652696.1	Candidatus <i>Paraholospira nucleivisitans</i>	Holosporaceae
AF132139.1	Endosymbiont of <i>Acanthamoeba</i> sp. UWET39	Holosporaceae
LR585344.1	Candidatus <i>Fujishimia apicalis</i>	Holosporaceae
GCF_008189285.1	Candidatus <i>Cytomitobacter indipagum</i>	Holosporaceae
GCF_008189405.1	Candidatus <i>Cytomitobacter primus</i>	Holosporaceae
GCF_008189525.1	Candidatus <i>Nesciobacter abundans</i>	Holosporaceae
GCF_000469665.2	<i>Holospira obtusa</i>	Holosporaceae
GCF_002930195.1	<i>Holospira curviuscula</i>	Holosporaceae
GCF_000388175.3	<i>Holospira undulata</i> HU1	Holosporaceae
GCF_000648275.1	<i>Holospira elegans</i> E1	Holosporaceae
AF533506.1	Candidatus <i>Captivus acidiprotistae</i> cl. ASL45	Candidatus Paracaedibacteraceae
AF132137.1	Candidatus <i>Paracaedibacter acanthamoebae</i>	Candidatus Paracaedibacteraceae
AF069496.1	Candidatus <i>Odyssella thessalonicensis</i> L13	Candidatus Paracaedibacteraceae
AM236091.1	<i>Caedimonas varicaedens</i>	Caedimonadaceae
X71837.1	<i>Caedimonas varicaedens</i>	Caedimonadaceae
AY549548.1	Endosymbiont of <i>Acanthamoeba</i> sp. AC305	Other
EF019091.1	Uncultured bacterium cl. Amb 16S 1698	Other
EU137546.1	Uncultured bacterium cl. Oh 3126F9D	Other
EU137604.1	Uncultured bacterium cl. Oh 3127A7D	Other
U03775.1	<i>Ehrlichia bovis</i>	Anaplasmataceae
M73221.1	<i>Ehrlichia canis</i>	Anaplasmataceae
X61768.1	<i>Wolbachia pipientis</i>	Anaplasmataceae
FN552695.1	Candidatus <i>Anadelfobacter veles</i>	Candidatus Midichloria
AJ566640.2	Candidatus <i>Midichloria mitochondrii</i>	Candidatus Midichloria
FN552697.1	Candidatus <i>Cyrtobacter comes</i> cl. 8m	Candidatus Midichloria
D38623.1	<i>Rickettsia tsutsugamushi</i> str. Karp	Rickettsiaceae
L36103.1	<i>Rickettsia bellii</i>	Rickettsiaceae
L36217.1	<i>Rickettsia rickettsii</i> str. R	Rickettsiaceae

Supplementary Figure S1. Alignment of GYAK567 probe, specific for “Candidatus Gortzia yakutica” with Holospora-like bacteria. Mismatches are highlighted in colour.

GYAK567	A	G	G	T	A	G	C	C	A	C	C	T	A	C	A	C	A
<i>Candidatus_Gortzia_yakutica_isolate_YA111-52_clone_1</i>	A	G	G	T	A	G	C	C	A	C	C	T	A	C	A	C	A
<i>HE797908.1_Candidatus_Gortzia_infectiva_isolate_TS-a_clone_20</i>	A	A	A	T	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>LT549002.1_Candidatus_Gortzia_shahrazadis_str_TP2</i>	A	A	A	T	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>LT549001.1_Holospora_obtusa_strain_SH2</i>	A	A	A	A	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>KC164378.1_Holospora_curviuscula_culture-collection_CCCS_MC-3</i>	A	A	A	A	A	A	C	A	A	C	C	T	A	C	G	T	A
<i>KC164379.1_Holospora_acuminata_culture-collection_CCCS_AC61-10</i>	A	A	A	A	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>BAUP01000039.1_Holospora_elegans_E1_contig039</i>	A	A	A	A	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>HE797906.1_Holospora_undulata_strain_StB</i>	A	A	A	A	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>KX669635.1_Candidatus_Holospora_parva_strain_HpHSG1-11</i>	A	A	A	A	A	A	C	C	A	C	C	T	A	C	G	C	A
<i>LT616950.1_Preeria_caryophila_isl_94AB1-5</i>	A	A	A	T	A	G	C	C	G	C	C	T	A	C	G	C	A
<i>MH319377.1_Candidatus_Hafkinia_simulans</i>	A	A	G	C	A	A	C	C	A	C	C	T	A	C	A	C	A

Supplementary Figure S2. Scheme of small RNA subunit with regions of multiple alignment retained (black) and omitted (pink) by SSU-MASK. The resulting masked alignment was then trimmed and used in phylogenetic analysis.

model	#pos	#bps	description
bacteria	1582	480	mask file: yakut_v6g.ssualign.bacteria.a.mask



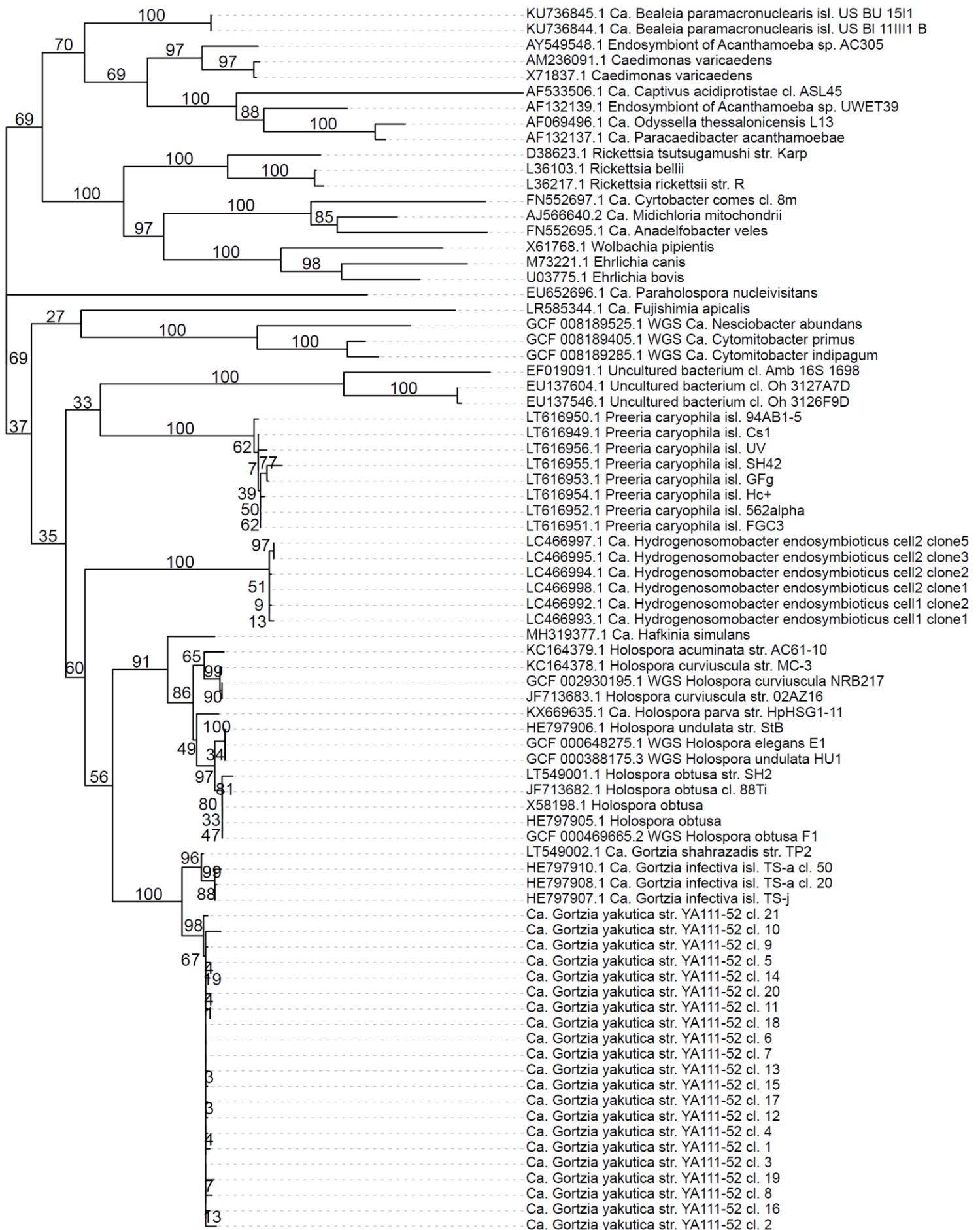
created by the SSU-ALIGN package (<http://eddylab.org/software.html>)
 structure diagram derived from CRW database (<http://www.rna.cccb.utexas.edu/>)

alignment file: /pub37/alex/share/ssu-align-0.1.1/bacteria-Op1.stk; mask file: yakut_v6g.ssualign/yakut_v6g.ssualign.bacteria.a.mask;

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Supplementary Figure S3. Full phylogenetic tree obtained by RAxML. This is the same tree as one presented in Figure 6, but without any collapsed nodes.

Tree scale: 0.01



Supplementary Figure S4. Dendroscope “tanglegram” comparison of phylogenetic trees obtained using RAXML (left) and MrBayes (right). The trees have identical topology.

