Table S1 Details of *Treponema* strains included in the multilocus genetic analysis

Strain	Isolation site or oral condition, depositor or source of the strain used in this study	Geographical location of host subject	Reference
'T. vincentii' **(n=11)**			
ATCC 35580, OMZ 293, LA-1	Subgingival plaque from periodontitis diseased site (from ATCC and via C. Wyss, University of Zurich)	USA	Mangan 1982 (1)
ATCC 700013 (OMZ 779, N9, F0403)	Subgingival plaque, R. Smibert (C. Wyss, University of Zurich)	USA	Paster 1998 (2)
ATCC 700765 (OMZ 800, DSM 16788)	Patient with periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
ATCC 700774 (OMZ 860)	Human ANUG lesion, C. Wyss, University of Zurich	China	Correia 2003 (4)
OMZ 801	Patient with periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
OMZ 802	Patient with periodontitis, by Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
OMZ 858	Human ANUG lesion, C. Wyss (via G. Belibasakis, University of Zurich)	China	Correia 2003 (4)
OMZ 859	Human ANUG lesion, C. Wyss, University of Zurich	China	-
OMZ 861	Human ANUG lesion, C. Wyss (via G. Belibasakis, University of Zurich)	China	Correia 2003 (4)
OMZ 862	Human ANUG lesion, C. Wyss (via G. Belibasakis, University of Zurich)	China	Correia 2003 (4)
OMZ 863	Human ANUG lesion, C. Wyss, University of Zurich	China	-
T. medium **(n=1)**			
ATCC 700293^{T} (ex G7021, OMZ 824)	Subgingival plaque of patient with adult periodontitis, T. Umemoto (via C. Wyss, University of Zurich)	Japan	Umemoto 1997 (5)
'T. sinensis' **(*T.* sp. IA) (n=4)**			
ATCC 700772 (OMZ 838, DSM 16789)	Necrotizing ulcerative gingivitis lesion, C. Wyss, University of Zurich	China	Chan 2014 (6)
OMZ 855	Chinese gingivitis patient, C. Wyss, University of Zurich	China	-
OMZ 856	Chinese gingivitis patient, C. Wyss, University of Zurich	China	-
OMZ 857	Necrotizing ulcerative gingivitis lesion, C. Wyss, University of Zurich	China	-
T. **sp. IB (n=3)**			
OMZ 305 ('*T. vincentii'* Ritz A)	Human oral, B. Laughon, via C. Wyss, University of Zurich	USA	Reijntjens 1986 (7)
OMZ 805	Patient with periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
ATCC 700767 (OMZ 806, DSM 16787)	Patient with periodontitis, ATCC, and C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
T. **sp. IC (n=4)**			

ATCC 700766 (OMZ 804, MH1F1)	Patient with periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
OMZ 803	Patient with periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 1998 (3)
OMZ 899	Not reported, C. Wyss (via G. Belibasakis, University of Zurich)	Switzerland	-
OMZ 906	Not reported, C. Wyss, (via G. Belibasakis, University of Zurich)	Switzerland	-
T. denticola **(n=41)**			
ATCC 35405^{T} (strain a, OMZ 661, DSM 14222)	Subgingival plaque of patients, SL Cheng (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	Canada	Cheng 1985 (8)
ATCC 35404 (strain c, TD-4, OMZ 663)	Subgingival plaque of patients, SL Cheng (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	Canada	Cheng 1985 (8)
ATCC 33521 (strain 11, OMZ 662)	Subgingival plaque from patients with chronic periodontitis, E. Jacob (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	USA	Jacob 1979 (9)
ATCC 33520 (strain W)	Subgingival plaque from patients with chronic periodontitis, E. Jacob (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	USA	Jacob 1979 (9)
ATCC 700771 (OMZ 834)	Human ANUG lesion, C.Wyss, University of Zurich	China	Wyss 2004 (10)
ATCC 700768 (OMZ 830)	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss. 2004 (10)
CD-1 (OMZ 294)	Human subgingival plaque (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	USA	Boehringer 1984 (11)
S2	Clinical isolate from human oral cavity, T. Eguchi (via. B. McBride, University of Vancouver)	Japan	Miyamoto 1991 (12)
OTK	Deep periodontal pocket from human oral cavity, R Johnson (via. B. McBride, University of Vancouver, and C. Wyss, University of Zurich)	USA	Fenno 1997 (13)
OKA3	Clinical isolate from human oral cavity, T. Eguchi (via. B. McBride, University of Vancouver)	Japan	Miyamoto 1991 (12)
OT2B	Periodontal pockets from human oral, by R Johnson (via. B. McBride, University of Vancouver)	USA	Mo 2013 (14)
MS25	Human periodontal pocket, by M. Sela (E.P. Greenberg, University of Washington)	USA	Weinberg 1990 (15)
GM-1	Human periodontal pocket, by M. Sela (E.P. Greenberg, University of Washington)	USA	Weinberg 1990 (15)
ST10 (OMZ 829)	Human gingival crevice area, by S. S. Socransky (E.P. Greenberg, University of Washington, and C. Wyss, University of Zurich)	USA	Hespell 1971 (16)
NY 531	Gingival biopsy of human periodontitis, FH Mikx (via. B. McBride, University of Vancouver)	Netherlands	Mikx 1991 (17)
NY 535	Gingival biopsy of human periodontitis, FH Mikx (via. B. McBride, University of Vancouver)	Netherlands	Mikx 1991 (17)
NY 545	Gingival biopsy of human periodontitis, FH Mikx (via. B. McBride, University of Vancouver)	Netherlands	Mikx 1991 (17)
NY 553	Gingival biopsy of human periodontitis, FH Mikx (via. B. McBride, University of Vancouver)	Netherlands	Mikx 1991 (17)
F0402	Human subgingival dental plaque (strain not in our possession, data from HOMD and NCBI)	USA	-
OMZ 823	Not reported, C. Wyss, University of Zurich	Switzerland	-
OMZ 845	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 849	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)

OMZ 850	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 852	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 853	Chinese gingivitis patient, C. Wyss, University of Zurich	China	Mo 2013 (14)
OMZ 854	Human ANUG lesion, C. Wyss, University of Zurich	China	-
OMZ 898	Not reported, C. Wyss, University of Zurich	Switzerland	-
OMZ 905	Swiss periodontitis patient, C Wyss, University of Zurich	Switzerland	Wyss 2004 (10)
OMZ 908	Not reported, C. Wyss, University of Zurich	Switzerland	-
OMZ 910	Swiss periodontitis patient, C Wyss, University of Zurich	Switzerland	-
H1-T (HMS-570)	Deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	-
SP37 (HMS-569)	Subgingival plaque from human deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	Salvador 1987 (18)
SP44	Not reported (strain not in our possession, data from HOMD and NCBI)	USA	-
SP33	Human subgingival plaque (strain not in our possession, data from HOMD and NCBI)	USA	Salvador 1987 (18)
SP32	Not reported (strain not in our possession, data from HOMD and NCBI)	USA	-
SP23	Not reported (strain not in our possession, data from HOMD and NCBI)	USA	-
AL-2 (HMS-575)	Deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	-
ASLM (HMS-574)	Subgingival plaque from human deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	Ohta 1986 (19)
US-Trep (HMS-573)	Subgingival plaque from human deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	Salvador 1987 (18)
MYR-T (HMS-572)	Not reported (strain not in our possession, data from HOMD and NCBI)	USA	-
H-22 (HMS-571)	Deep periodontal pocket (strain not in our possession, data from HOMD and NCBI)	USA	-
***T. putidum* (n=7)**			
ATCC 700334 (OMZ 758)	Subgingival plaque of periodontal lesion, C. Wyss, University of Zurich	Switzerland	Wyss 2004 (10)
OMZ 730	Swiss periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 2004 (10)
OMZ 835	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 844	Swiss periodontitis, C. Wyss, University of Zurich	Switzerland	Wyss 2004 (10)
OMZ 846	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 847	Human ANUG lesion, C. Wyss, University of Zurich	China	Wyss 2004 (10)
OMZ 848	Human subgingival plaque, C. Wyss, University of Zurich	China	Wyss 2004 (10)

Table S2 Accession numbers/genomic locus tags for *flaA*, *recA*, *pyrH* and 16S rRNA genes included in this study

Sequences generated in this study were in bold font-type; x indicates gene sequences not included in the analysis.

Species	**Strain**	**16S rRNA**	***flaA***	***recA***	***pyrH***
'T. vincentii'	ATCC 35580, OMZ 293, LA-1	TREVI0001_RS05400	TREVI0001_RS03195	TREVI0001_RS08670	TREVI0001_RS08100
'T. vincentii'	ATCC 700013 (OMZ 779, N9, F0403)	NZ_KE332514	ATFC01000002	ATFC01000001	ATFC01000001
'T. vincentii'	ATCC 700765 (OMZ 800)	**KT192150**	**KU877111**	**KU877133**	**KU877151**
'T. vincentii'	ATCC 700774 (OMZ 860)	AY369251	**KP144319**	**KP144320**	**KP144321**
'T. vincentii'	OMZ 801	**KT192151**	**KU877112**	**KU877134**	**KU877152**
'T. vincentii'	OMZ 802	**KT192152**	**KU877113**	**KU877135**	**KU877153**
'T. vincentii'	OMZ 858	**KT192153**	**KU877114**	**KU877136**	**KU877154**
'T. vincentii'	OMZ 859	**KT192154**	**KU877115**	**KU877137**	**KU877155**
'T. vincentii'	OMZ 861	**KT192155**	**KU877116**	**KU877138**	**KU877156**
'T. vincentii'	OMZ 862	**KT192156**	**KU877117**	**KU877139**	**KU877157**
'T. vincentii'	OMZ 863	**KT192157**	**KU877118**	**KU877140**	**KU877158**
T. medium	ATCC 700293^{T} (ex G7021, OMZ 824)	HMPREF9195_RS07345	HMPREF9195_RS10500	HMPREF9195_RS10255	HMPREF9195_RS07420
'T. sinensis' (*T.* sp. IA)	ATCC 700772 (OMZ 838, DSM 16789)	**KP101523**	**KP101534**	**KP101551**	**KP101568**
'T. sinensis' (*T.* sp. IA)	OMZ 855	**KP101524**	**KP101535**	**KP101552**	**KP101569**
'T. sinensis' (*T.* sp. IA)	OMZ 856	**KP101525**	**KP101536**	**KP101553**	**KP101570**
'T. sinensis' (*T.* sp. IA)	OMZ 857	**KP101526**	**KP101537**	**KP101554**	**KP101571**
T. sp. IB	OMZ 305 (*'T. vincentii'* Ritz A)	**KP101521**	**KU877119**	**KP101549**	**KP101566**
T. sp. IB	OMZ 805	**KT192148**	**KU877120**	**KU877131**	**KU877149**
T. sp. IB	ATCC 700767 (OMZ 806)	**KP101522**	**KU877121**	**KP101550**	**KP101567**
T. sp. IC	ATCC 700766 (OMZ 804, MH1F1)	**KP101520**	**KP101533**	**KP101548**	**KP101565**
T. sp. IC	OMZ 803	**KT192149**	**KU877122**	**KU877132**	**KU877150**
T. sp. IC	OMZ 899	**KT192158**	**KU877123**	**KU877141**	**KU877159**
T. sp. IC	OMZ 906	**KT192159**	**KU877124**	**KU877142**	**KU877160**
T. denticola	ATCC 35405^{T} (strain a, OMZ 661)	NR_074582	AE017226	AE017226	AE017226
T. denticola	ATCC 35404 (strain c, TD-4, OMZ 663)	AGDU01000028	JF700269	JF700284	JF700299

T. denticola	ATCC 33521 (strain 11, OMZ 662)	NZ_AGDT01000020	JF700270	JF700285	JF700300
T. denticola	ATCC 33520 (strain W)	AGDS01000001	JF700271	JF700286	JF700301
T. denticola	ATCC 700771 (OMZ 834)	JF700257	JF700272	JF700287	JF700302
T. denticola	ATCC 700768 (OMZ 830)	JF700258	JF700273	JF700288	JF700303
T. denticola	CD-1 (OMZ 294)	JF700259	JF700274	JF700289	JF700304
T. denticola	S2	JF700266	JF700281	JF700296	JF700311
T. denticola	OTK	JF700263	JF700278	JF700293	JF700308
T. denticola	OKA3	JF700267	JF700282	JF700297	JF700312
T. denticola	OT2B	JF700264	JF700279	JF700294	JF700309
T. denticola	MS25	JF700260	JF700275	JF700290	JF700305
T. denticola	GM-1	JF700268	JF700283	JF700298	JF700313
T. denticola	ST10 (OMZ 829)	JF700265	JF700280	JF700295	JF700310
T. denticola	NY531	KC415232	KC415220	KC415208	KC415216
T. denticola	NY535	JF700261	JF700276	JF700291	JF700306
T. denticola	NY545	JF700262	JF700277	JF700292	JF700307
T. denticola	NY553	KC415233	KC415221	KC415209	KC415217
T. denticola	F0402	GU470911	ADEC01000021	ADEC01000021	ADEC01000013
T. denticola	OMZ 823	**KT192142**	**KU877125**	**KU877143**	**KU877161**
T. denticola	OMZ 845	**KT192143**	**KU877126**	**KU877144**	**KU877162**
T. denticola	OMZ 849	**KT192144**	**KU877127**	**KU877145**	**KU877163**
T. denticola	OMZ 850	**KT192145**	**KU877128**	**KU877146**	**KU877164**
T. denticola	OMZ 852	KC415234	KC415222	KC415210	KC415218
T. denticola	OMZ 853	KC415235	KC415223	KC415211	KC415219
T. denticola	OMZ 854	**KP101527**	**KP101538**	**KP101555**	**KP101572**
T. denticola	OMZ 898	**KT192146**	**KU877129**	**KU877147**	**KU877165**
T. denticola	OMZ 905	**KP101528**	**KP101539**	**KP101556**	**KP101573**
T. denticola	OMZ 908	**KT192147**	**KU877130**	**KU877148**	**KU877166**
T. denticola	OMZ 910	**KP101529**	**KP101540**	**KP101557**	**KP101574**
T. denticola	H1-T (HMS-570)	AGDW01000001	NZ_CM001794	NZ_CM001794	NZ_CM001794
T. denticola	SP37 (HMS-569)	NZ_AGEA01000015	NZ_AGEA01000019	NZ_AGEA01000014	NZ_AGEA01000019
T. denticola	SP44	HMPREF9734_02040	HMPREF9734_02547	HMPREF9734_00235	HMPREF9734_01748
T. denticola	SP33	NZ_AGDZ01000027	NZ_AGDZ01000028	NZ_AGDZ01000019	NZ_AGDZ01000028

T. denticola	SP32	HMPREF9732_02527	HMPREF9732_02014	HMPREF9732_00695	HMPREF9732_00346
T. denticola	SP23	HMPREF9731_02148	HMPREF9731_00562	HMPREF9731_02422	HMPREF9731_00908
T. denticola	AL-2 (HMS-575)	AGDQ01000003	NZ_CM001798	NZ_CM001798	NZ_CM001798
T. denticola	ASLM (HMS-574)	AGDR01000029	NZ_KB445544	NZ_KB445544	NZ_KB445544
T. denticola	US-Trep (HMS-573)	AGEB01000003	NZ_KB454450	NZ_KB454450	NZ_KB454450
T. denticola	MYR-T (HMS-572)	NZ_AGDX01000020	NZ_AGDX01000008	NZ_AGDX01000016	NZ_AGDX01000008
T. denticola	H-22 (HMS-571)	AGDV01000020	NZ_CM001795	NZ_CM001795	NZ_CM001795
T. putidum	ATCC 700334 (OMZ 758)	**KP101531**	**KP101542**	**KP101559**	**KP101576**
T. putidum	OMZ 730	**KP101530**	**KP101541**	**KP101558**	**KP101575**
T. putidum	OMZ 835	**KP101532**	**KP101543**	**KP101560**	**KP101577**
T. putidum	OMZ 844	**JN244657**	**KP101544**	**KP101561**	**KP101578**
T. putidum	OMZ 846	**JN244658**	**KP101545**	**KP101562**	**KP101579**
T. putidum	OMZ 847	**JN244659**	**KP101546**	**KP101563**	**KP101580**
T. putidum	OMZ 848	**JN244660**	**KP101547**	**KP101564**	**KP101581**
T. lecithinolyticum	ATCC 700332^{T}	NR_026247	ERJ92394	ERJ92362	ERJ93324
T. phagedenis	F0421	NZ_AEFH01000000	x	x	x
T. pallidum	Nichols	NR_074357	x	x	x

Table S3 Summary of polymorphic sites, nucleotide diversity per site, global rate ratios, and positively/negatively selected codon sites at the phylogroup level

	Gene	No. of nt	No. of codon	No. of polymorphic sites (%)	Nucleotide diversity (π)	Mean dN/dS (global ω; 95% CI)	No. of negatively selected sites (%)	No. of positively selected sites
Phylogroup1 (n=23)	*flaA*	1071	355	217 (20.26)	0.079±0.0078	0.088 (0.070, 0.109)	25 (7.04)	0
	recA	1368	455	313 (22.88)	0.095±0.0067	0.300 (0.276, 0.326)	54 (11.9)	0
	pyrH	687	228	172 (25.04)	0.098±0.0065	0.070 (0.053, 0.091)	31 (13.6)	0
	16S	1502	n/a	38 (2.52)	0.009±0.0007	n/a	n/a	n/a
Phylogroup2 (n=48)	*flaA*	1050	349	266 (24.43)	0.054±0.0086	0.115 (0.093, 0.139)	24 (6.88)	0
	recA	1245	414	236 (18.96)	0.042±0.0031	0.103 (0.087, 0.121)	74 (17.9)	1
	pyrH	696	231	170 (24.43)	0.064±0.0102	0.082 (0.063, 0.105)	30 (13.0)	0
	16S	1498	n/a	41 (2.74)	0.006±0.0009	n/a	n/a	n/a
Overall (n=71)	*flaA*	1074	355	467 (43.48)	0.162±0.0112	0.115 (0.102, 0.130)	74 (20.8)	0
	recA	1377	455	537 (39.00)	0.172±0.0130	0.211(0.197, 0.225)	104 (22.9)	1
	pyrH	696	231	321 (46.12)	0.188±0.0130	0.119 (0.106, 0.134)	57 (24.7)	0
	16S	1503	n/a	161 (10.71)	0.042±0.0033	n/a	n/a	n/a

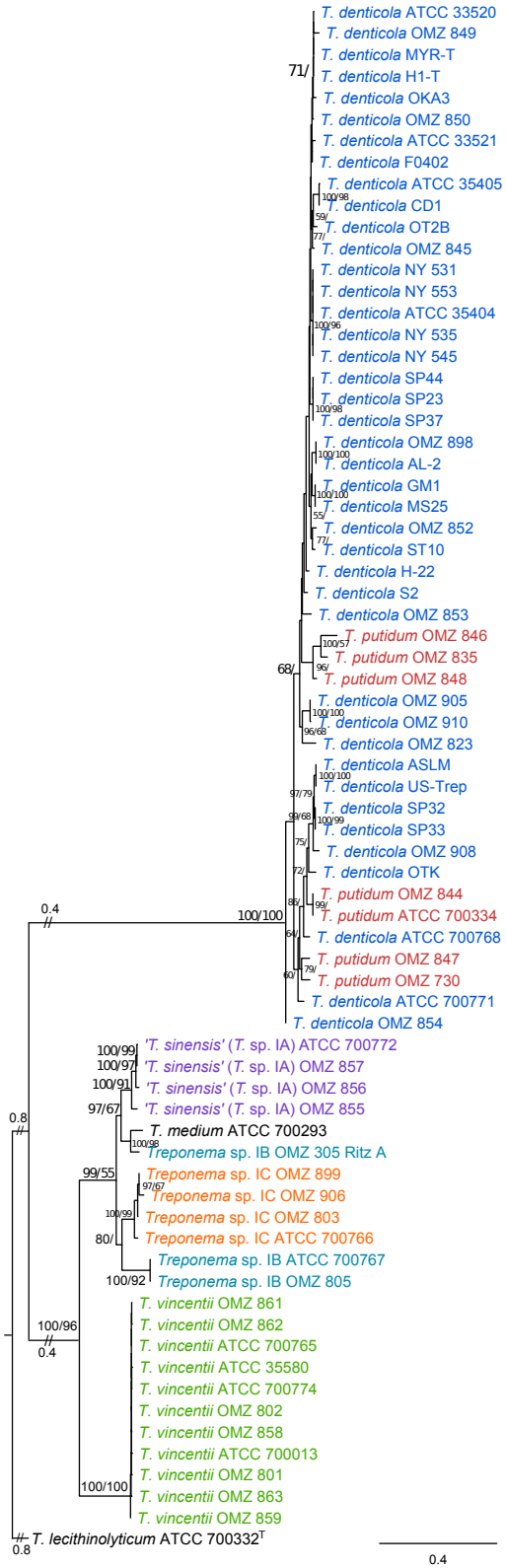
Table S4 Intra- and interspecific sequence similarities for treponeme 16S rRNA, *flaA*, *pyrH* and *recA* genes analyzed

Taxa	intraspecific sequence similarities in % interspecific sequence similairites in %			
	16S rRNA	***flaA***	***recA***	***pyrH***
T. denticola	99.7 (98.9 - 100)	96.9 (83.4 - 100)	96.3 (93.1 - 100)	96.6 (82.9 - 100)
(n = 41)	92.7 (90.5 - 99.3)	75.0 (69.2 - 87.7)	70.2 (60.3 - 96.7)	69.6 (64.1 - 89.6)
T. putidum	99.4 (98.7 - 99.9)	99.9 (99.8 - 100)	94.0 (91.9 - 100)	99.8 (99.6 - 100)
(n = 7)	95.8 (90.5 - 99.3)	81.0 (69.0 - 87.7)	82.9 (60.4 - 96.7)	76.7 (64.0 - 89.6)
'T. vincentii'	99.9 (99.8 - 100)	99.3 (98.7 - 100)	99.5 (99.2 - 99.9)	96.8 (85.1 - 100)
(n = 11)	91.0 (90.5 - 99.0)	74.7 (70.4 - 91.1)	66.3 (62.5 - 81.5)	69.4 (64.5 - 87.9)
'T. sinensis' **(*T.* sp. IA)**	100 (-)	99.7 (99.5 - 99.9)	98.0 (96.5 - 99.8)	98.1 (97 - 99)
(n = 4)	93.1 (90.6 - 99.5)	76.7 (70.7 - 91.2)	68.5 (61.6 - 91.2)	71.1 (64.0 - 91.9)
***T.* sp. IB**	99.6 (99.5 - 99.6)	99.7 (99.6 - 99.8)	93.3 (89.9 - 99.8)	100 (-)
(n = 3)	93.2 (90.6 - 99.1)	76.0 (70.2 - 88.6)	67.9 (60.3 - 90.5)	71.4 (64.6 - 88.4)
***T.* sp. IC**	99.8 (99.7 - 99.9)	99.8 (99.7 - 99.8)	98.2 (97.2 - 99.5)	99.0 (98.4 - 99.5)
(n = 4)	93.0 (90.5 - 99.5)	75.3 (69.0 - 91.2)	67.8 (61.1 - 91.2)	70.9 (64.1 - 91.9)
Overall	99.6 (98.7 - 100)	97.2 (83.4 - 100)	96.5 (89.9 - 100)	96.7 (82.9 - 100)
(n = 71)	93.2 (90.5 - 99.5)	76.1 (69.0 - 91.2)	70.7 (60.3 - 96.7)	71.0 (64.0 - 91.9)

Fig. S1 ML phylogenetic trees of individual (A) *recA* and (B) *pyrH* genes

Refer to Fig. 1 legend for explanatory details.

(A)



(B)

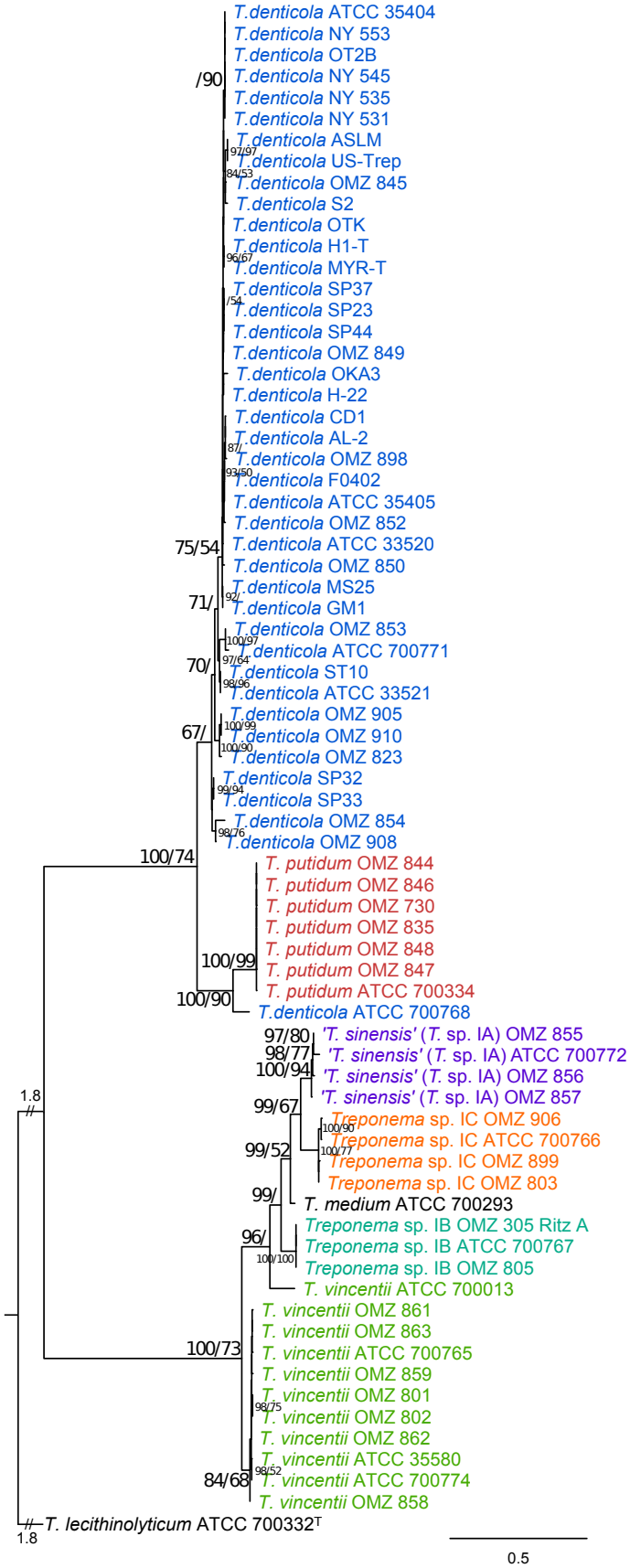
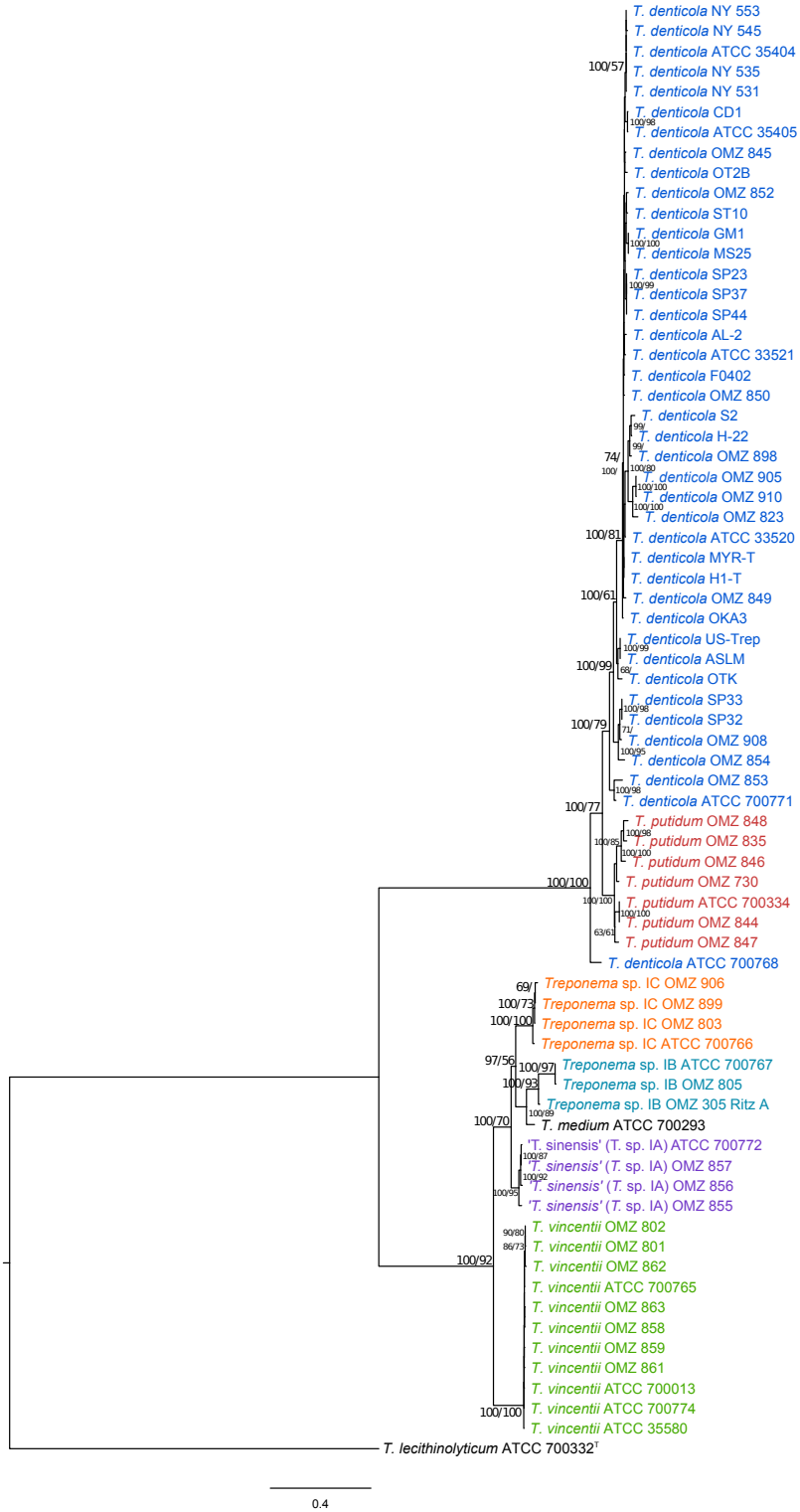

T.denticola ATCC 35404
T.denticola NY 553
T.denticola OT2B
/90
T.denticola NY 545
T.denticola NY 535
T.denticola NY 531
T.denticola ASLM
97/97
T.denticola US-Trep
84/53
T.denticola OMZ 845
T.denticola S2
T.denticola OTK
T.denticola H1-T
96/67
T.denticola MYR-T
T.denticola SP37
/54
T.denticola SP23
T.denticola SP44
T.denticola OMZ 849
T.denticola OKA3
T.denticola H-22
T.denticola CD1
T.denticola AL-2
87/
T.denticola OMZ 898
93/50
T.denticola F0402
T.denticola ATCC 35405
T.denticola OMZ 852
75/54
T.denticola ATCC 33520
T.denticola OMZ 850
T.denticola MS25
71/
92/
T.denticola GM1
T.denticola OMZ 853
100/97
T.denticola ATCC 700771
97/64
70/
T.denticola ST10
98/96
T.denticola ATCC 33521
T.denticola OMZ 905
100/99
67/
T.denticola OMZ 910
100/90
T.denticola OMZ 823
T.denticola SP32
99/94
T.denticola SP33
T.denticola OMZ 854
98/76
T.denticola OMZ 908
100/74
T. putidum OMZ 844
T. putidum OMZ 846
T. putidum OMZ 730
T. putidum OMZ 835
100/99
T. putidum OMZ 848
T. putidum OMZ 847
100/90
T. putidum ATCC 700334
T.denticola ATCC 700768
97/80
'T. sinensis' (T. sp. IA) OMZ 855
98/77
'T. sinensis' (T. sp. IA) ATCC 700772
100/94
'T. sinensis' (T. sp. IA) OMZ 856
'T. sinensis' (T. sp. IA) OMZ 857
99/67
Treponema sp. IC OMZ 906
100/90
Treponema sp. IC ATCC 700766
99/52
100/77
Treponema sp. IC OMZ 899
Treponema sp. IC OMZ 803
99/
T. medium ATCC 700293
Treponema sp. IB OMZ 305 Ritz A
96/
Treponema sp. IB ATCC 700767
100/100
Treponema sp. IB OMZ 805
T. vincentii ATCC 700013
T. vincentii OMZ 861
T. vincentii OMZ 863
100/73
T. vincentii ATCC 700765
T. vincentii OMZ 859
T. vincentii OMZ 801
98/75
T. vincentii OMZ 802
T. vincentii OMZ 862
T. vincentii ATCC 35580
98/52
84/68
T. vincentii ATCC 700774
T. vincentii OMZ 858
1.8
//
1.8
//
T. lecithinolyticum ATCC 700332T
0.5

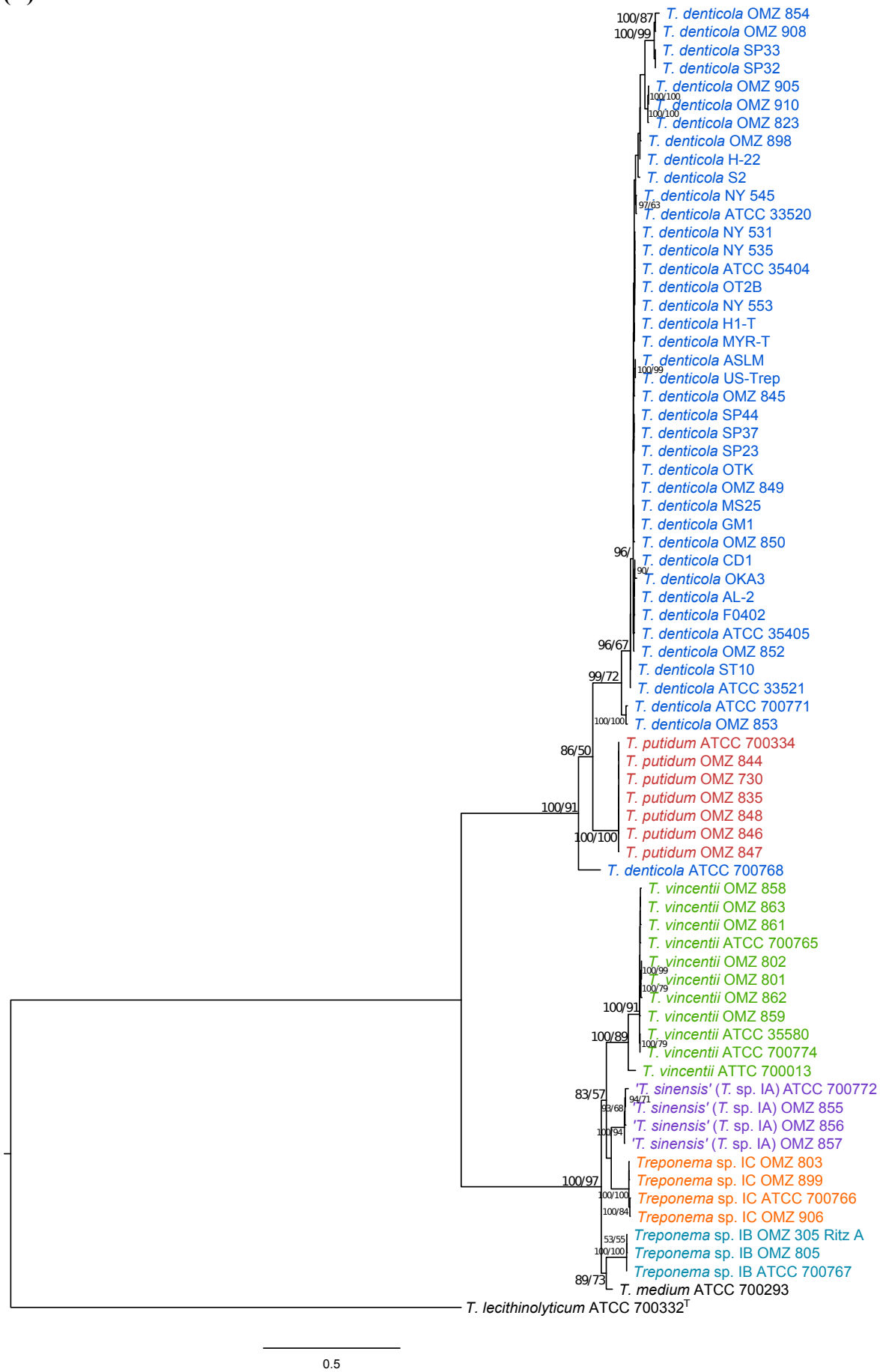
Fig. S2 ML phylogenetic trees constructed from concatenated (A) *flaA-recA* (B) *flaA-pyrH* and (C) *pyrH-recA* genes

Refer to Fig. 1 legend for explanatory details.

(A)



(B)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100/99
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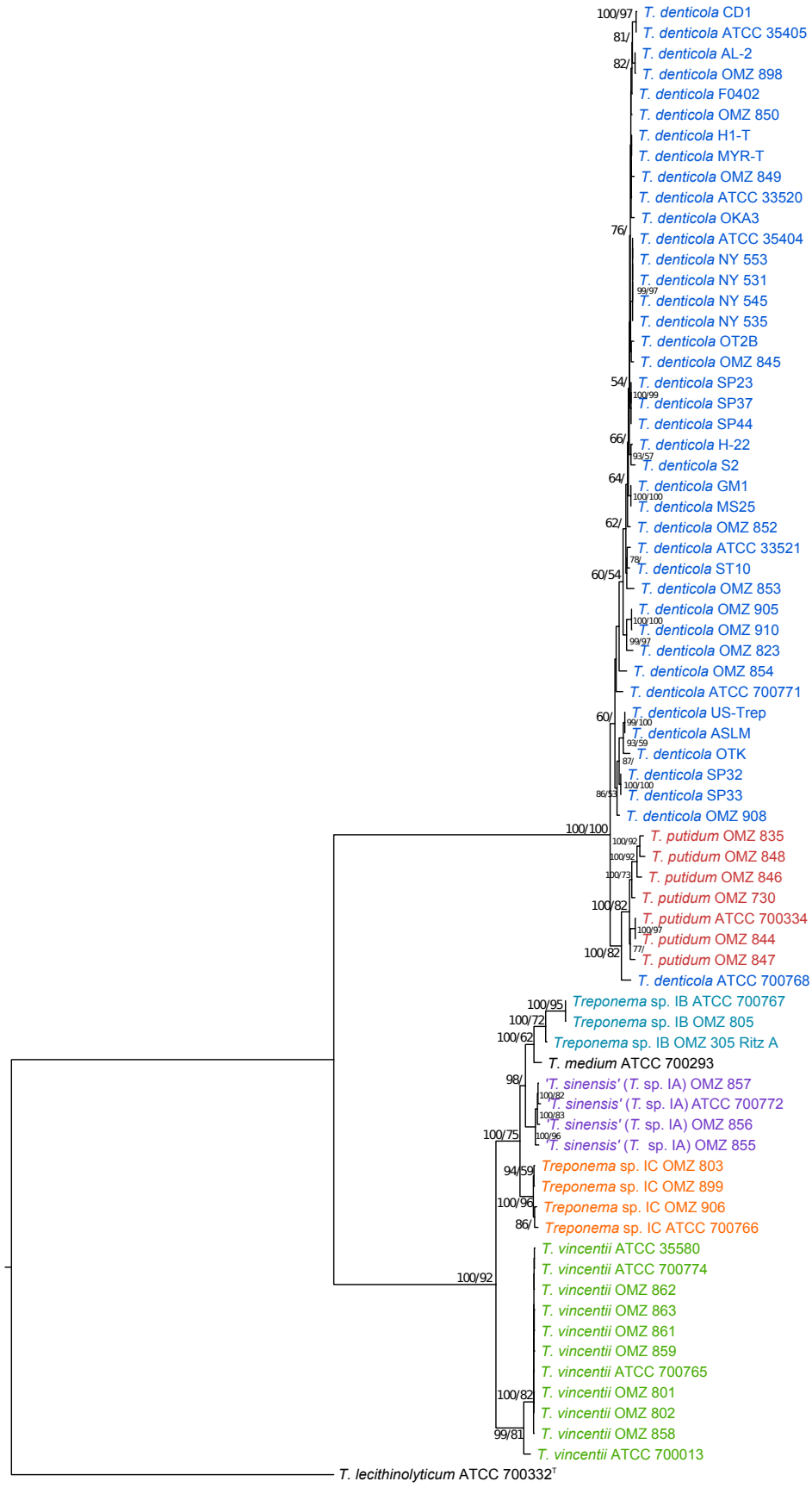
100/100
T. denticola OMZ 910
100/100
T. denticola OMZ 823
T. denticola OMZ 898
T. denticola H-22
T. denticola S2
T. denticola NY 545
97/63
T. denticola ATCC 33520
T. denticola NY 531
T. denticola NY 535
T. denticola ATCC 35404
T. denticola OT2B
T. denticola NY 553
T. denticola H1-T
T. denticola MYR-T
T. denticola ASLM
100/99
T. denticola US-Trep
T. denticola OMZ 845
T. denticola SP44
T. denticola SP37
T. denticola SP23
T. denticola OTK
T. denticola OMZ 849
T. denticola MS25
T. denticola GM1
T. denticola OMZ 850
96/
T. denticola CD1
90/
T. denticola OKA3
T. denticola AL-2
T. denticola F0402
T. denticola ATCC 35405
96/67
T. denticola OMZ 852
T. denticola ST10
99/72
T. denticola ATCC 33521
T. denticola ATCC 700771
100/100
T. denticola OMZ 853
86/50
T. putidum ATCC 700334
T. putidum OMZ 844
T. putidum OMZ 730
T. putidum OMZ 835
100/91
T. putidum OMZ 848
100/100
T. putidum OMZ 846
T. putidum OMZ 847
T. denticola ATCC 700768
T. vincentii OMZ 858
T. vincentii OMZ 863
T. vincentii OMZ 861
T. vincentii ATCC 700765
T. vincentii OMZ 802
100/99
T. vincentii OMZ 801
100/79
T. vincentii OMZ 862
100/91
T. vincentii OMZ 859
100/89
T. vincentii ATCC 35580
100/79
T. vincentii ATCC 700774
T. vincentii ATTC 700013
83/57
'T. sinensis' (T. sp. IA) ATCC 700772
94/71
93/68
'T. sinensis' (T. sp. IA) OMZ 855
100/94
'T. sinensis' (T. sp. IA) OMZ 856
'T. sinensis' (T. sp. IA) OMZ 857
Treponema sp. IC OMZ 803
100/97
Treponema sp. IC OMZ 899
100/100
Treponema sp. IC ATCC 700766
100/84
Treponema sp. IC OMZ 906
Treponema sp. IB OMZ 305 Ritz A
53/55
100/100
Treponema sp. IB OMZ 805
Treponema sp. IB ATCC 700767
89/73
T. medium ATCC 700293
T. lecithinolyticum ATCC 700332T
0.5

(C)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82/ T. denticola AL-2
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T. denticola F0402
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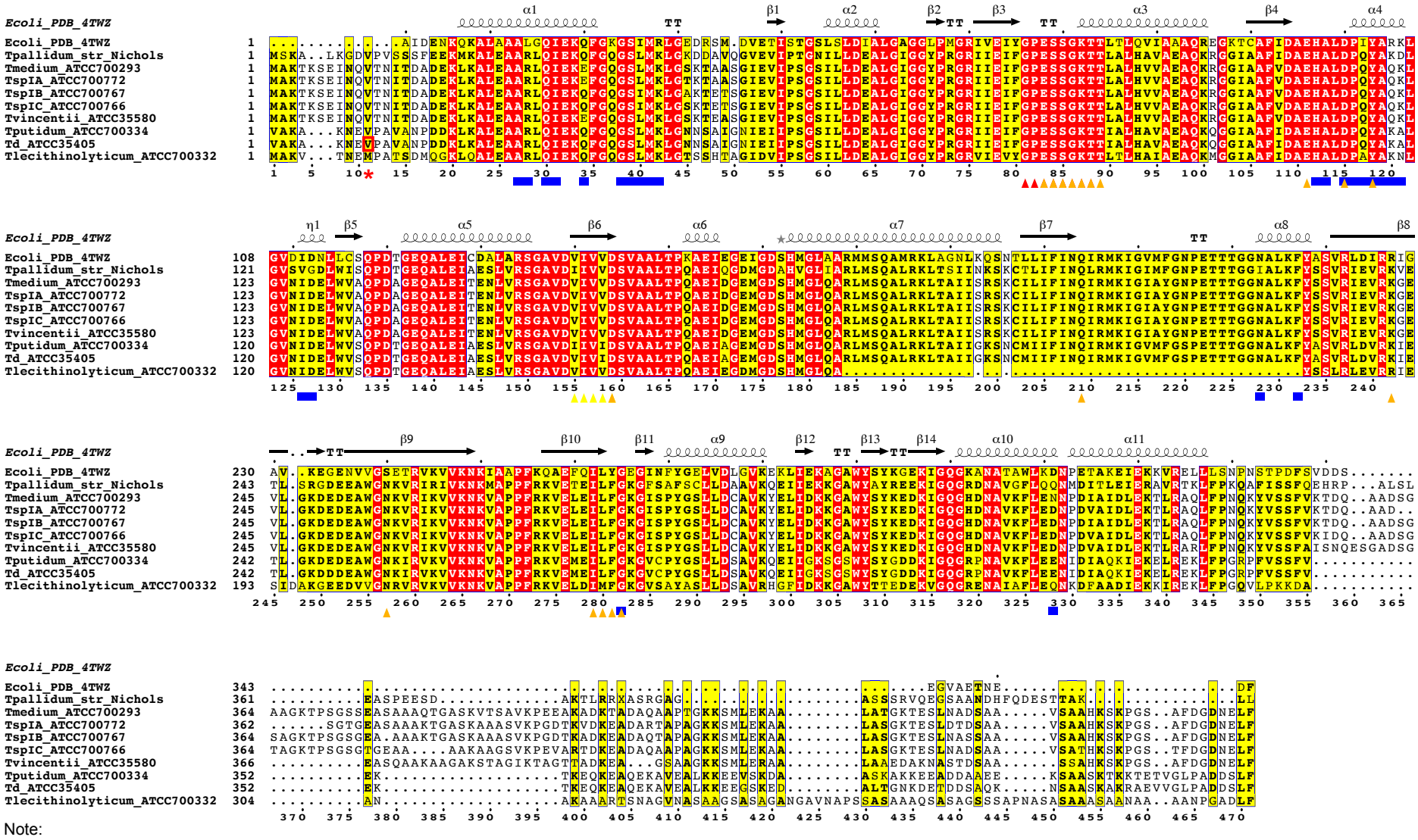
T. denticola H1-T
T. denticola MYR-T
T. denticola OMZ 849
T. denticola ATCC 33520
T. denticola OKA3
76/ T. denticola ATCC 35404
T. denticola NY 553
T. denticola NY 531
99/97 T. denticola NY 545
T. denticola NY 535
T. denticola OT2B
T. denticola OMZ 845
54/ T. denticola SP23
100/99 T. denticola SP37
T. denticola SP44
66/ T. denticola H-22
93/57 T. denticola S2
64/ T. denticola GM1
100/100 T. denticola MS25
62/ T. denticola OMZ 852
T. denticola ATCC 33521
78/ T. denticola ST10
60/54 T. denticola OMZ 853
T. denticola OMZ 905
100/100 T. denticola OMZ 910
99/97 T. denticola OMZ 823
T. denticola OMZ 854
T. denticola ATCC 700771
60/ T. denticola US-Trep
99/100 T. denticola ASLM
93/59 T. denticola OTK
87/ T. denticola SP32
100/100 T. denticola SP33
86/53 T. denticola OMZ 908
100/100 T. putidum OMZ 835
100/92 T. putidum OMZ 848
100/92 T. putidum OMZ 846
100/73 T. putidum OMZ 730
100/82 T. putidum ATCC 700334
100/97 T. putidum OMZ 844
77/ T. putidum OMZ 847
100/82 T. denticola ATCC 700768
100/95 Treponema sp. IB ATCC 700767
100/72 Treponema sp. IB OMZ 805
100/62 Treponema sp. IB OMZ 305 Ritz A
T. medium ATCC 700293
98/ 'T. sinensis' (T. sp. IA) OMZ 857
100/82 'T. sinensis' (T. sp. IA) ATCC 700772
100/83 'T. sinensis' (T. sp. IA) OMZ 856
100/75 100/96 'T. sinensis' (T. sp. IA) OMZ 855
94/59 Treponema sp. IC OMZ 803
Treponema sp. IC OMZ 899
100/96 Treponema sp. IC OMZ 906
86/ Treponema sp. IC ATCC 700766
T. vincentii ATCC 35580
100/92 T. vincentii ATCC 700774
T. vincentii OMZ 862
T. vincentii OMZ 863
T. vincentii OMZ 861
T. vincentii OMZ 859
T. vincentii ATCC 700765
100/82 T. vincentii OMZ 801
T. vincentii OMZ 802
99/81 T. vincentii OMZ 858
T. vincentii ATCC 700013
T. lecithinolyticum ATCC 700332T
0.4

Fig. S3 Annotated multiple sequence alignment of RecA protein sequences from representative treponeme strains



Note:

▲ATP binding (chemical binding site) contains walker A ▲and B ▲motifs

■Hexamer interface (polypeptide binding site)

*Positively selected site: Val-8 in *T. denticola*

Fig. S4 Average intraspecific sequence similarity (%) for 16S rRNA, *flaA*, *recA* and *pyrH* genes

The average intraspecific sequence similarities (in %) are presented on the y-axis in this bar-chart, with values in reverse order. Each species/phylotype is represented using the same colour scheme used in Fig. 1 - 4.

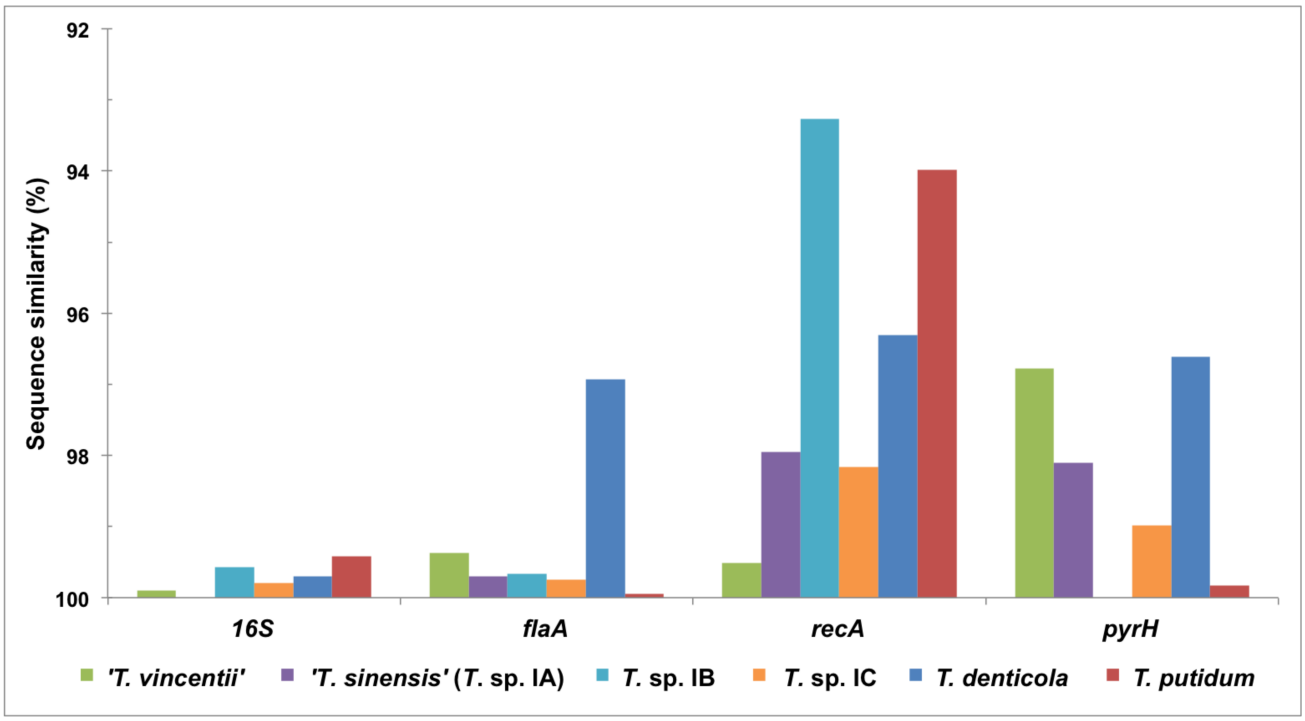


Fig. S5 Intra- and interspecific sequence similarity (%) across all treponemes (Panels A to D: 16S rRNA, *flaA*, *recA*, *pyrH* gene)

Refer to Fig. 5 legend for explanatory details.

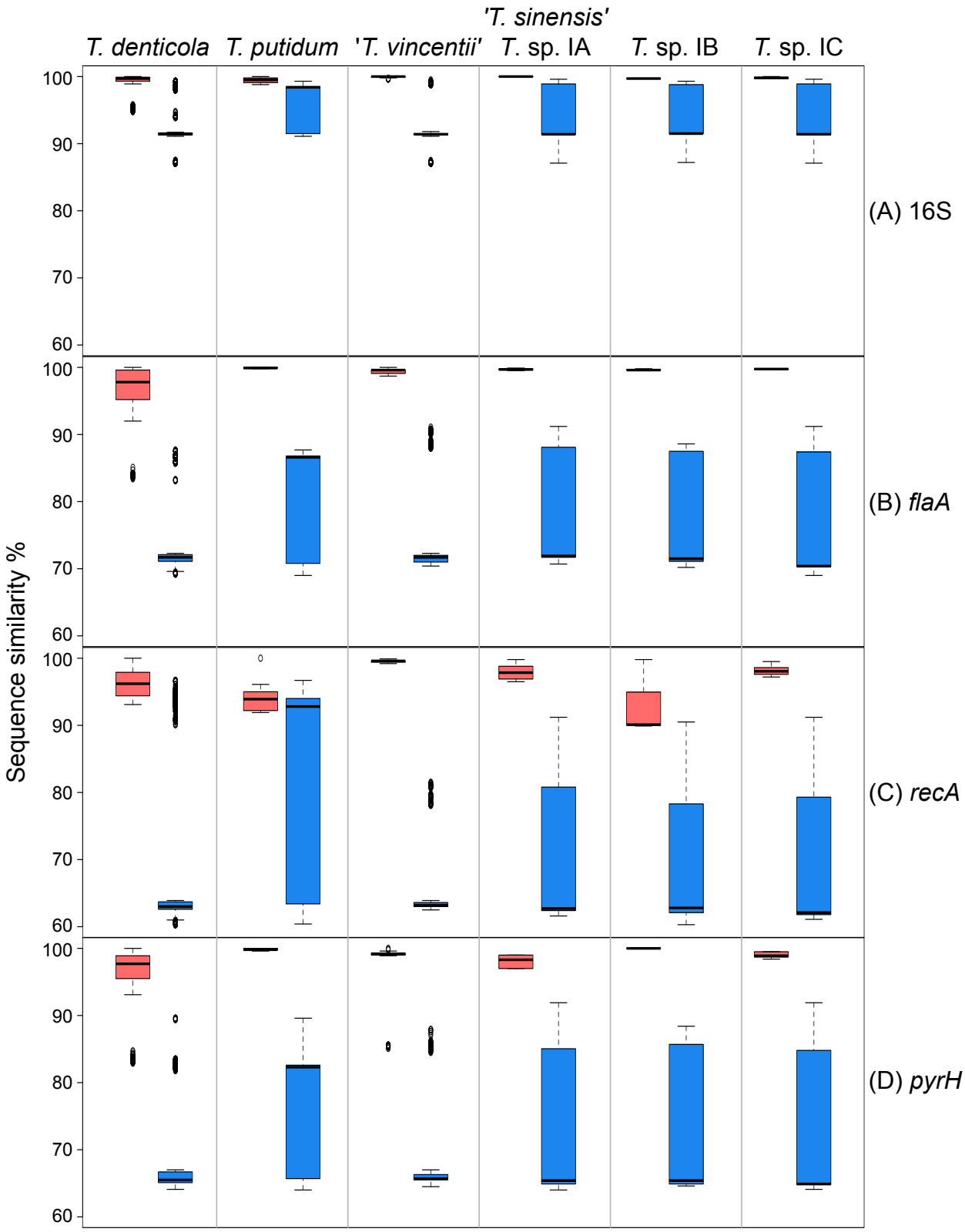
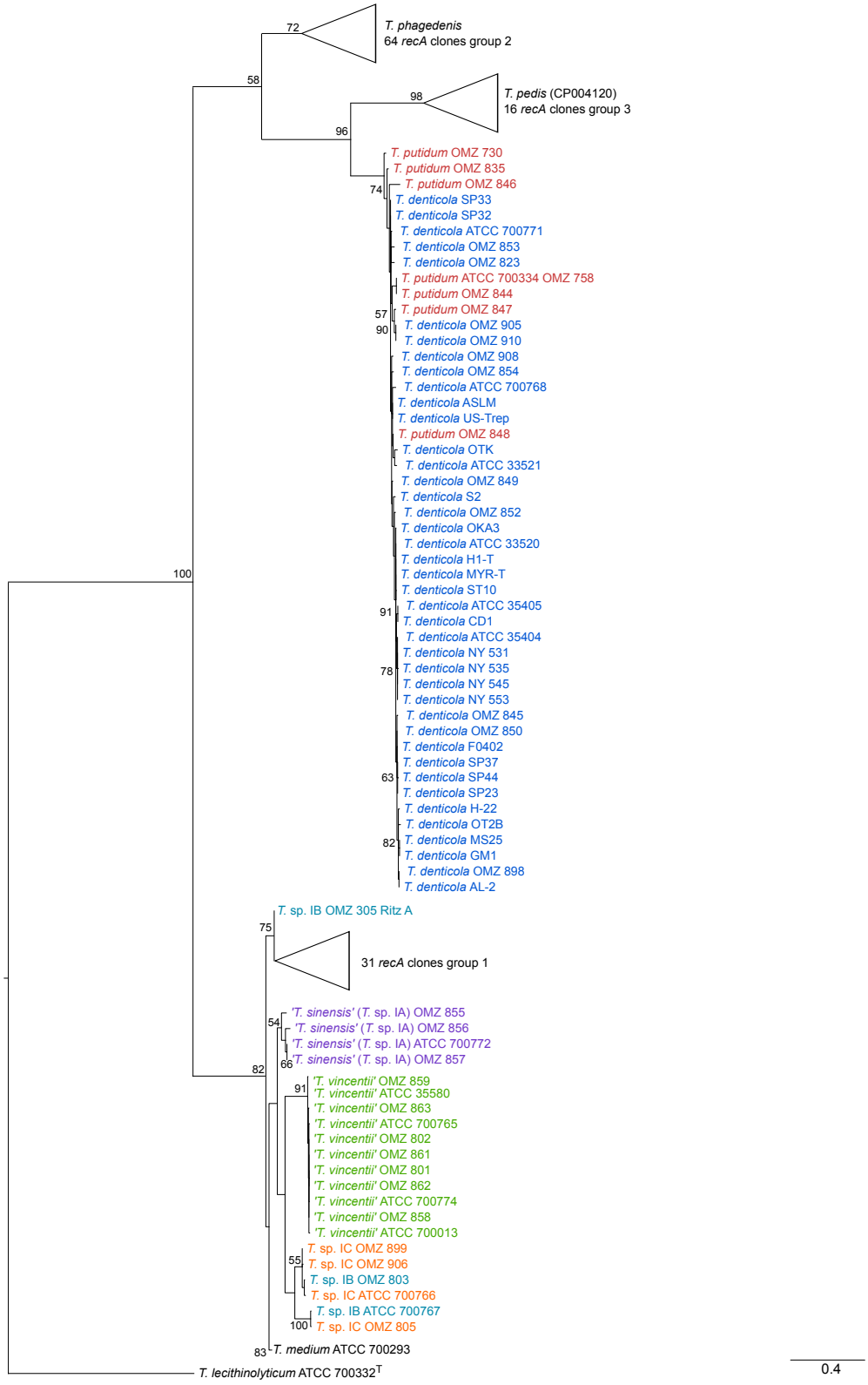


Fig. S6 ML phylogenetic tree of *recA* genes from human oral treponemes and from animal (digital dermatitis lesion) treponemes

Refer to Fig. 1 legend for explanatory details. The monophyletic branches representing the animal treponemes were collapsed.



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