

Table S3. Bee gut isolate genomes analyzed in this study.

Assembly accession	Strain	Species	Host species	Location
GCF_002964965.1	wkB180	<i>Apibacter adventoris</i>	<i>Apis dorsata</i>	Southeast Asia
GCF_002964975.1	wkB301	<i>Apibacter adventoris</i>	<i>Apis dorsata</i>	Southeast Asia
GCF_001418685.1	R-53146	<i>Apibacter mensalis</i>	<i>Bombus lapidarius</i>	Europe
GCF_009827835.1	B2912	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009828155.1	B3239	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827885.1	B3546	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827845.1	B3813	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827855.1	B3883	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009828165.1	B3887	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827795.1	B3889	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827805.1	B3912	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827735.1	B3913	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827755.1	B3918	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827745.1	B3924	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_009827705.1	B3935	<i>Apibacter</i> sp.	<i>Apis cerana</i>	China
GCF_002964915.1	wkB309	<i>Apibacter</i> sp.	<i>Apis cerana</i>	Southeast Asia
GCF_002007565.1	BBC0122	<i>Bartonella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002007485.1	BBC0178	<i>Bartonella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002007505.1	BBC0244	<i>Bartonella apis</i>	<i>Apis mellifera</i>	Europe
GCF_001952075.1	PEB0122	<i>Bartonella apis</i>	<i>Apis mellifera</i>	North America
GCF_001952065.1	PEB0149	<i>Bartonella apis</i>	<i>Apis mellifera</i>	North America
GCF_001952045.1	PEB0150	<i>Bartonella apis</i>	<i>Apis mellifera</i>	North America
GCF_000471645.3	Bimp	<i>Candidatus Schmidhempelia bombi</i>	<i>Bombus impatiens</i>	North America
GCF_003202705.1	ESL0167	<i>Frischella perrara</i>	<i>Apis mellifera</i>	Europe
GCF_000807275.1	PEB0191	<i>Frischella perrara</i>	<i>Apis mellifera</i>	North America
GCF_002141515.1	A-1-24	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141675.1	A-12-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141565.1	A-2-24	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141655.1	A-7-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141665.1	A-7-24	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141715.1	A-8-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141745.1	A-9-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141555.1	A8	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141735.1	A9	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141905.1	AM4	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141575.1	AM6	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141595.1	Aw-17	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141815.1	AW11	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141755.1	AW13	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_003202815.1	ESL0178	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088825.1	N-12-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088905.1	N-15-12	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002142285.1	N-22	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002142345.1	N-28	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088895.1	N-9-4	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002142265.1	N-G5	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002141785.1	N10	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002141855.1	N2	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002141635.1	N4	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002141885.1	N6	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088845.1	NO10	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088855.1	NO5	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088795.1	NO6	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_002088815.1	NO8	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	Europe
GCF_001690735.1	PEB0154	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_007559145.1	W8127	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	China
GCF_007559165.1	W8131	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	China
GCF_000599985.1	wkB1	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_001693435.1	wkB7	<i>Gilliamella apicola</i>	<i>Apis mellifera</i>	North America
GCF_002141865.1	A-4-12	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002142035.1	A-TSA1	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002142055.1	A-TSA2	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002142065.1	A-TSA3	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002142135.1	A-TSA4	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002141825.1	AM1	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America

Table S3, continued

Assembly accession	Strain	Species	Host species	Location
GCF_003202875.1	ESL0169	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_001690775.1	M1-2G	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_002142185.1	N-G1	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142225.1	N-G3	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142255.1	N-G4	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002141945.1	NO1	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142085.1	NO12	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002141975.1	NO13	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142115.1	NO14	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002141935.1	NO15	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002141985.1	NO16	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142155.1	NO3	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_002142165.1	NO4	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	Europe
GCF_001690755.1	PEB0162	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_001690175.1	PEB0183	<i>Gilliamella apis</i>	<i>Apis mellifera</i>	North America
GCF_900103255.1	G. bombi	<i>Gilliamella bombi</i>	<i>Bombus</i> sp.	Europe
GCF_900094945.1	R-53248	<i>Gilliamella bombicola</i>	<i>Bombus</i> sp.	Europe
GCF_900094935.1	R-53144	<i>Gilliamella intestini</i>	<i>Bombus</i> sp.	Europe
GCF_900103085.1	G. mensalis	<i>Gilliamella mensalis</i>	<i>Bombus</i> sp.	Europe
GCF_002142015.1	A7	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	North America
GCF_001690255.1	App2-1	<i>Gilliamella</i> sp.	<i>Bombus appositus</i>	North America
GCF_001690495.1	App4-10	<i>Gilliamella</i> sp.	<i>Bombus appositus</i>	North America
GCF_001690525.1	App6-5	<i>Gilliamella</i> sp.	<i>Bombus appositus</i>	North America
GCF_001690535.1	Bif1-4	<i>Gilliamella</i> sp.	<i>Bombus bifarius</i>	North America
GCF_001690835.1	Bim1-2	<i>Gilliamella</i> sp.	<i>Bombus bimaculatus</i>	North America
GCF_001690575.1	Bim3-2	<i>Gilliamella</i> sp.	<i>Bombus bimaculatus</i>	North America
GCF_001690585.1	Choc3-5	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_001690355.1	Choc4-2	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_001690595.1	Choc5-1	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_001690385.1	Choc6-1	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_003202775.1	ESL0172	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	Europe
GCF_003202915.1	ESL0177	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	Europe
GCF_003202655.1	ESL0182	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	Europe
GCF_001690825.1	Fer1-1	<i>Gilliamella</i> sp.	<i>Bombus fervidus</i>	North America
GCF_001690305.1	Fer2-1	<i>Gilliamella</i> sp.	<i>Bombus fervidus</i>	North America
GCF_001690515.1	Fer4-1	<i>Gilliamella</i> sp.	<i>Bombus fervidus</i>	North America
GCF_001690815.1	GillExp13	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_001690335.1	Gris1-4	<i>Gilliamella</i> sp.	<i>Bombus griseocollis</i>	North America
GCF_001690345.1	Gris3-2	<i>Gilliamella</i> sp.	<i>Bombus griseocollis</i>	North America
GCF_001690265.1	HK2	<i>Gilliamella</i> sp.	<i>Bombus pennsylvanicus</i>	North America
GCF_001690795.1	HK7	<i>Gilliamella</i> sp.	<i>Bombus pennsylvanicus</i>	North America
GCF_001690415.1	Imp1-1	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_001690425.1	Imp1-6	<i>Gilliamella</i> sp.	<i>Bombus impatiens</i>	North America
GCF_009795895.1	Lep-s21	<i>Gilliamella</i> sp.	<i>Bombus lepidus</i>	China
GCF_009795845.1	Lep-s35	<i>Gilliamella</i> sp.	<i>Bombus lepidus</i>	China
GCF_009795905.1	Lep-s5	<i>Gilliamella</i> sp.	<i>Bombus lepidus</i>	China
GCF_002142215.1	N-G2	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	Europe
GCF_002142275.1	N-W3	<i>Gilliamella</i> sp.	<i>Apis mellifera</i>	Europe
GCF_001690435.1	Nev3-1	<i>Gilliamella</i> sp.	<i>Bombus nevadensis</i>	North America
GCF_001690895.1	Nev5-1	<i>Gilliamella</i> sp.	<i>Bombus nevadensis</i>	North America
GCF_001690605.1	Nev6-6	<i>Gilliamella</i> sp.	<i>Bombus nevadensis</i>	North America
GCF_001690655.1	Occ3-1	<i>Gilliamella</i> sp.	<i>Bombus occidentalis</i>	North America
GCF_001690675.1	Occ4-3	<i>Gilliamella</i> sp.	<i>Bombus occidentalis</i>	North America
GCF_009795885.1	Pas-s25	<i>Gilliamella</i> sp.	<i>Bombus pascuorum</i>	China
GCF_009795865.1	Pas-s27	<i>Gilliamella</i> sp.	<i>Bombus pascuorum</i>	China
GCF_009795795.1	Pas-s95	<i>Gilliamella</i> sp.	<i>Bombus pascuorum</i>	China
GCF_009795805.1	Pra-s52	<i>Gilliamella</i> sp.	<i>Bombus pratorum</i>	China
GCF_009795785.1	Pra-s54	<i>Gilliamella</i> sp.	<i>Bombus pratorum</i>	China
GCF_009795755.1	Pra-s60	<i>Gilliamella</i> sp.	<i>Bombus pratorum</i>	China
GCF_009795745.1	Pra-s65	<i>Gilliamella</i> sp.	<i>Bombus pratorum</i>	China
GCF_001690275.1	WF3-4	<i>Gilliamella</i> sp.	<i>Bombus pennsylvanicus</i>	North America
GCF_001690195.1	wkB108	<i>Gilliamella</i> sp.	<i>Apis dorsata</i>	Southeast Asia
GCF_000733115.1	wkB11	<i>Gilliamella</i> sp.	<i>Bombus bimaculatus</i>	North America
GCF_001690685.1	wkB112	<i>Gilliamella</i> sp.	<i>Apis dorsata</i>	Southeast Asia
GCF_001693755.1	wkB171	<i>Gilliamella</i> sp.	<i>Apis adeniformis</i>	Southeast Asia
GCF_001690705.1	wkB178	<i>Gilliamella</i> sp.	<i>Apis dorsata</i>	Southeast Asia
GCF_001690875.1	wkB18	<i>Gilliamella</i> sp.	<i>Bombus vagans</i>	North America
GCF_001690445.1	wkB195	<i>Gilliamella</i> sp.	<i>Apis cerana</i>	Southeast Asia

Table S3, continued

Assembly accession	Strain	Species	Host species	Location
GCF_001690235.1	wkB292	<i>Gilliamella</i> sp.	<i>Apis cerana</i>	Southeast Asia
GCF_000695585.1	wkB30	<i>Gilliamella</i> sp.	<i>Bombus vagans</i>	North America
GCF_001690185.1	wkB308	<i>Gilliamella</i> sp.	<i>Apis cerana</i>	Southeast Asia
GCF_001693745.1	wkB72	<i>Gilliamella</i> sp.	<i>Apis cerana</i>	Southeast Asia
GCF_002917995.1	A29	<i>Parasaccharibacter apium</i>	<i>Apis mellifera</i> (larvae)	North America
GCF_002592045.1	AS1	<i>Parasaccharibacter apium</i>	<i>Apis mellifera</i> (larvae)	North America
GCF_002917945.1	B8	<i>Parasaccharibacter apium</i>	<i>Apis mellifera</i> (larvae)	North America
GCF_002917985.1	C6	<i>Parasaccharibacter apium</i>	<i>Apis mellifera</i> (larvae)	North America
GCF_002079945.1	G7_7_3c	<i>Parasaccharibacter apium</i>	<i>Apis mellifera</i> (larvae)	North America
GCF_002088735.1	A-1-12	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088405.1	A-10-12	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088695.1	A-11-12	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088585.1	A-2-12	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088465.1	A-5-24	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088515.1	A-9-24	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002089015.1	A11	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088675.1	A12	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088395.1	A2	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088455.1	A3	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088475.1	A5	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002777315.1	App2-2	<i>Snodgrassella alvi</i>	<i>Bombus appositus</i>	North America
GCF_002777425.1	App4-8	<i>Snodgrassella alvi</i>	<i>Bombus appositus</i>	North America
GCF_002777465.1	App6-4	<i>Snodgrassella alvi</i>	<i>Bombus appositus</i>	North America
GCF_002088415.1	Aw-18	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002019415.1	Aw-20	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002406645.1	E1	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_003202885.1	ESL0196	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002777415.1	Fer1-2	<i>Snodgrassella alvi</i>	<i>Bombus fervidus</i>	North America
GCF_002777485.1	Fer2-2	<i>Snodgrassella alvi</i>	<i>Bombus fervidus</i>	North America
GCF_002777495.1	Fer4-2	<i>Snodgrassella alvi</i>	<i>Bombus fervidus</i>	North America
GCF_002777525.1	Gris1-3	<i>Snodgrassella alvi</i>	<i>Bombus griseocollis</i>	North America
GCF_002777615.1	Gris1-6	<i>Snodgrassella alvi</i>	<i>Bombus griseocollis</i>	North America
GCF_002777335.1	Gris2-3-4	<i>Snodgrassella alvi</i>	<i>Bombus griseocollis</i>	North America
GCF_002777595.1	Gris3-4	<i>Snodgrassella alvi</i>	<i>Bombus griseocollis</i>	North America
GCF_002777705.1	HK3	<i>Snodgrassella alvi</i>	<i>Bombus pennsylvanicus</i>	North America
GCF_002777795.1	HK9x	<i>Snodgrassella alvi</i>	<i>Bombus pennsylvanicus</i>	North America
GCF_002777925.1	MS1-3	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002088655.1	N-23	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088755.1	N-S1	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088595.1	N-S2	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088635.1	N-S3	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088665.1	N-S4	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088765.1	N-S5	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088525.1	N-W4	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088555.1	N-W7	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002088575.1	N9	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Europe
GCF_002777575.1	Nev3CBA3	<i>Snodgrassella alvi</i>	<i>Bombus nevadensis</i>	North America
GCF_002777825.1	Nev4-2	<i>Snodgrassella alvi</i>	<i>Bombus nevadensis</i>	North America
GCF_002777635.1	Occ4-2	<i>Snodgrassella alvi</i>	<i>Bombus occidentalis</i>	North America
GCF_002777865.1	PEB0171	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002777875.1	PEB0178	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002777325.1	Pens2-2-5	<i>Snodgrassella alvi</i>	<i>Bombus pennsylvanicus</i>	North America
GCF_900094895.1	R-53583	<i>Snodgrassella alvi</i>	<i>Bombus</i> sp.	Europe
GCF_002777675.1	Ruf1-X	<i>Snodgrassella alvi</i>	<i>Bombus rufocinctus</i>	North America
GCF_002777345.1	Snod2-1-5	<i>Snodgrassella alvi</i>	<i>Bombus impatiens</i>	North America
GCF_002777745.1	WF3-3	<i>Snodgrassella alvi</i>	<i>Bombus pennsylvanicus</i>	North America
GCF_000695565.1	wkB12	<i>Snodgrassella alvi</i>	<i>Bombus bimaculatus</i>	North America
GCF_000600005.1	wkB2	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America
GCF_002777775.1	wkB237	<i>Snodgrassella alvi</i>	<i>Apis andreniformis</i>	Southeast Asia
GCF_002777655.1	wkB273	<i>Snodgrassella alvi</i>	<i>Apis florea</i>	Southeast Asia
GCF_000695545.1	wkB29	<i>Snodgrassella alvi</i>	<i>Bombus vagans</i>	North America
GCF_002777855.1	wkB298	<i>Snodgrassella alvi</i>	<i>Apis cerana</i>	Southeast Asia
GCF_002777695.1	wkB332	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Southeast Asia
GCF_002777815.1	wkB339	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	Southeast Asia
GCF_002777735.1	wkB9	<i>Snodgrassella alvi</i>	<i>Apis mellifera</i>	North America