

Supplemental Table 1. Strain information and LOS typing results

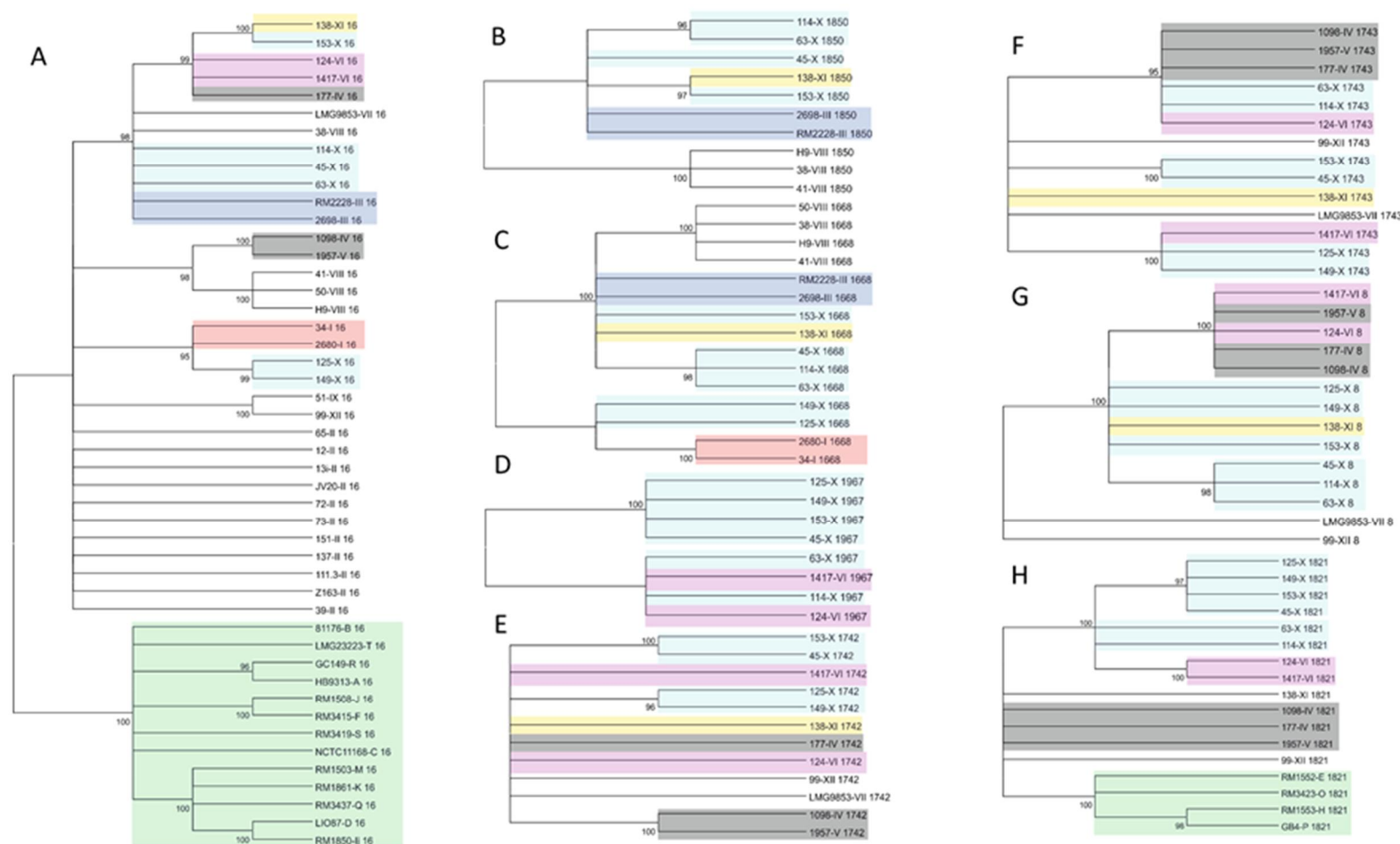
Isolate ID	Alias	Source	Year	Country	MLST		PCR												LOS locus class	RAST accession number for whole genome sequence in "guest" account	EMBL accession number
					ST	CC	1	2	3	4	5	6	7	8	9	10	11	12			
1	FB457	Human	1997	Finland			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
2	FB3428	Human	1997	Finland			18	-	-	+	-	+	-	-	-	+	-	-	untypable		
3	FB3508	Human	1997	Finland			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
4	FB3429	Human	1997	Finland	825	828	18	-	-	-	-	-	-	-	-	+	-	-	VIII	195.117	
5	FB4856	Human	1997	Finland				-	-	+	-	+	+	+	+	-	-	-	untypable		
6	FB5755	Human	1997	Finland	1563	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.118	
7	FB6937	Human					8	-	-	+	+	-	-	-	-	-	-	-	untypable		
12	FB8983	Human	1997	Finland	1628	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.91	
13	FB8984	Human	1997	Finland	1628	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.113	
14	FB9468	Human	1997	Finland			13	-	-	+	-	+	-	-	+	-	-	-	IV		
16	FB10883	Human					7	-	-	-	+	-	-	-	-	-	-	-	III		
29	CNET019	Poultry		Netherlands			6	-	-	+	-	+	-	-	-	-	-	-	untypable		
30	CNET020	Poultry		Netherlands			6	-	-	-	-	-	-	-	-	-	-	-	untypable		
31	CNET021	Poultry		Netherlands	901	828	7	-	-	-	-	-	-	-	-	-	-	-	untypable	195.116	
32	CNET051	Human		France	838	828	13	-	-	+	-	+	+	-	+	-	-	-	IV		
33	CNET061	Poultry		Netherlands			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
34	CNET062	Poultry		Netherlands	2183	828	7	+	-	-	-	-	-	-	-	-	-	-	I	195.107	
36	CNET067	Pig		Netherlands	1016	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.119	
37	CNET069	Pig		UK	1240	UA	13	-	-	+	-	+	+	-	+	-	-	-	IV		
38	CNET071	Pig		Denmark	1826	828	18	-	-	-	-	-	-	-	-	+	-	-	VIII	195.112	
39	CNET072	Pig		Denmark	1153	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.102	
41	CNET082	Poultry		UK	825	828	18	-	-	-	-	-	-	-	-	+	-	-	VIII	195.103	
44	FB713	Human	1996	Finland	1156	828	15	-	-	+	-	+	+	+	-	-	-	-	VII		
45	FB6470	Human	1996	Finland	1946	828	11	-	-	-	-	-	-	-	-	-	-	+	X	195.106	
47	T-72385	Human	2002	Finland	1957	828	7	-	-	-	+	-	-	-	-	-	-	-	III		
49	76315	Human	2006	India			7	+	-	-	-	-	-	-	-	-	-	-	I		
50	76326	Human	2006	Romania	825	828	18	-	-	-	-	-	-	-	-	+	-	-	VIII	195.110	
51	76339	Human	2006	Finland	5088	UA	7	-	-	-	-	-	-	-	-	-	+	-	IX		HG326877
53	76347	Human	2006	Turkey			7	-	-	-	-	-	-	-	-	-	-	-	untypable		
54	76348	Human	2006	Spain			7	+	-	-	-	-	-	-	-	-	-	-	I		
55	76361	Human	2006	Spain	854	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.115	
56	76363	Human	2006	France			12	+	-	+	-	+	+	-	+	-	-	-	untypable		
58	76385	Human	2006	Finland	1614	828	7	-	-	-	+	-	-	-	-	-	-	-	III		
59	76398	Human	2006	Bulgaria			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
60	76412	Human	2006	Bulgaria	6321	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.101	
61	76466	Human	2006	Finland	854	828	13	-	-	+	-	+	+	-	+	-	-	-	IV		
62	76656	Human	2006	Finland	1965	828	11	-	-	-	-	-	-	-	-	-	-	+	X		
63	T-73692	Human	2003	Finland	2725	828	11	-	-	-	-	-	-	-	-	-	-	+	X	195.105	
64	T-73805	Human	2003	Finland	1968	UA	7	-	-	-	+	-	-	-	-	-	-	-	III		
65	T-73864	Human	2003	Finland	1585	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.97	
66	8045	Human		Finland			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
67	03VV415	Human		Finland	5672	828	10	-	+	+	-	-	-	-	-	-	-	-	II		
68	03VV2801	Human		Finland			18	-	-	-	-	-	-	-	-	+	-	-	VIII		
70	HKY6592	Poultry	2003	Finland	854	828	13	-	-	+	-	+	-	-	+	-	-	-	IV		
71	HKY6645	Poultry	2004	Finland			13	-	-	+	-	+	-	-	+	-	-	-	IV		
72	HKY6507	Poultry	2005	Finland	1413	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.96	
73	2946	Poultry	1999	Finland	1579	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.98	
74	187_2615	Poultry	2006	Finland	1096	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.99	
75	188_2618	Poultry	2006	Finland	854	828	10	-	+	+	-	-	-	-	-	-	-	-	II	195.100	
76	87_1773	Poultry	2006	Finland	3455	828	12	-	-	+	-	+	+	-	+	-	-	-	untypable		
77	85_1771	Poultry	2006	Finland			13	-	-	+	-	+	-	-	-	-	-	-	VI		

83	E1 3140	Poultry	2003	Finland			11	-	-	-	-	-	-	-	-	-	-	-	+	X			
84	E1 3488	Poultry	2003	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
85	E1 3490	Poultry	2003	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
86	E1 5556	Poultry	2003	Finland			12	-	-	+	-	+	+	-	-	-	-	-	-	-	untypable		
87	6871	Human	1997	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
94	S149R	Pig	1997	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
95	S157R	Pig	1997	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
96	S190R	Pig	1997	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
97	S161Rb	Pig	1997	Finland			11	-	+	+	-	+	+	-	+	-	-	-	-	+	untypable		
99	bss/cg/11	goose	2011	Finland	6354	UA	11	-	-	-	-	+	+	-	-	-	-	-	-	-	XII		195.104
100	V34/12	goose	2012	Finland	1243	UA	7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		195.114
101	L80.1	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
102	L96.2	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
103	L58.2	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
104	L18.2	Pig		Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
105	L43.2	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
106	H99.1	Pig		Finland			12	-	-	+	-	+	-	-	-	-	-	-	-	-	untypable		
107	H36.2	Pig		Finland			14	-	-	+	-	+	+	+	+	-	-	-	-	-	untypable		
108	H119.1	Pig		Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		
109	L62.2	Pig		Finland			12	-	-	+	-	+	+	+	+	-	-	-	-	+	untypable		
110	H15.2	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
111	L61.1	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
112	L114.2	Pig		Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
113	H101.2	Pig		Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		
114	L44.2	Pig		Finland	2725	828	11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		195.124
115	L51.1	Pig		Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
116	E14.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
117	E23.3	Pig	2009	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	untypable		
118	E29.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
119	E30.3	Pig	2009	Finland			12	-	-	+	-	+	+	-	-	-	-	-	-	-	untypable		
120	E33.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
121	E34.3	Pig	2009	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
122	E7.3	Pig	2009	Finland			13	-	-	-	-	-	-	-	-	-	-	-	-	+	untypable		
123	E37.3	Pig	2009	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
124	E42.1	Pig	2009	Finland	6575	828	13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		195.134
125	E47.4	Pig	2009	Finland	1058	828	11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		195.128
127	E52.1	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
129	E58.3	Pig	2009	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
130	E61.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
131	E67.3	Pig	2009	Finland	6575	828	13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		195.133
132	E69.3	Pig	2009	Finland			12	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
133	E71.3	Pig	2009	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		
134	E75.1	Pig	2009	Finland			12	-	-	+	-	+	+	-	+	-	-	-	-	-	untypable		
135	E82.3	Pig	2009	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		
136	E89.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	untypable		
137	E90.1	Pig	2009	Finland	2172	828	10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		195.125
138	E107.3	Pig	2009	Finland	1145	828	11	-	-	-	-	-	+	-	-	-	-	-	-	+	XI		195.111
140	E97.3	Pig	2009	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
141	E116.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	VI		
142	E125.3	Pig	2009	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	III		
143	E128.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		
144	E141.3	Pig	2009	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	II		
145	E144.3	Pig	2009	Finland			15	-	-	+	-	+	-	+	+	-	-	-	-	-	VII		
147	E149.3	Pig	2009	Finland			14	-	-	+	-	+	-	+	+	-	-	-	-	-	untypable		
148	E150.1	Pig	2009	Finland	7799	828	13	-	-	+	-	+	-	-	-	-	-	-	-	-	IV		195.129

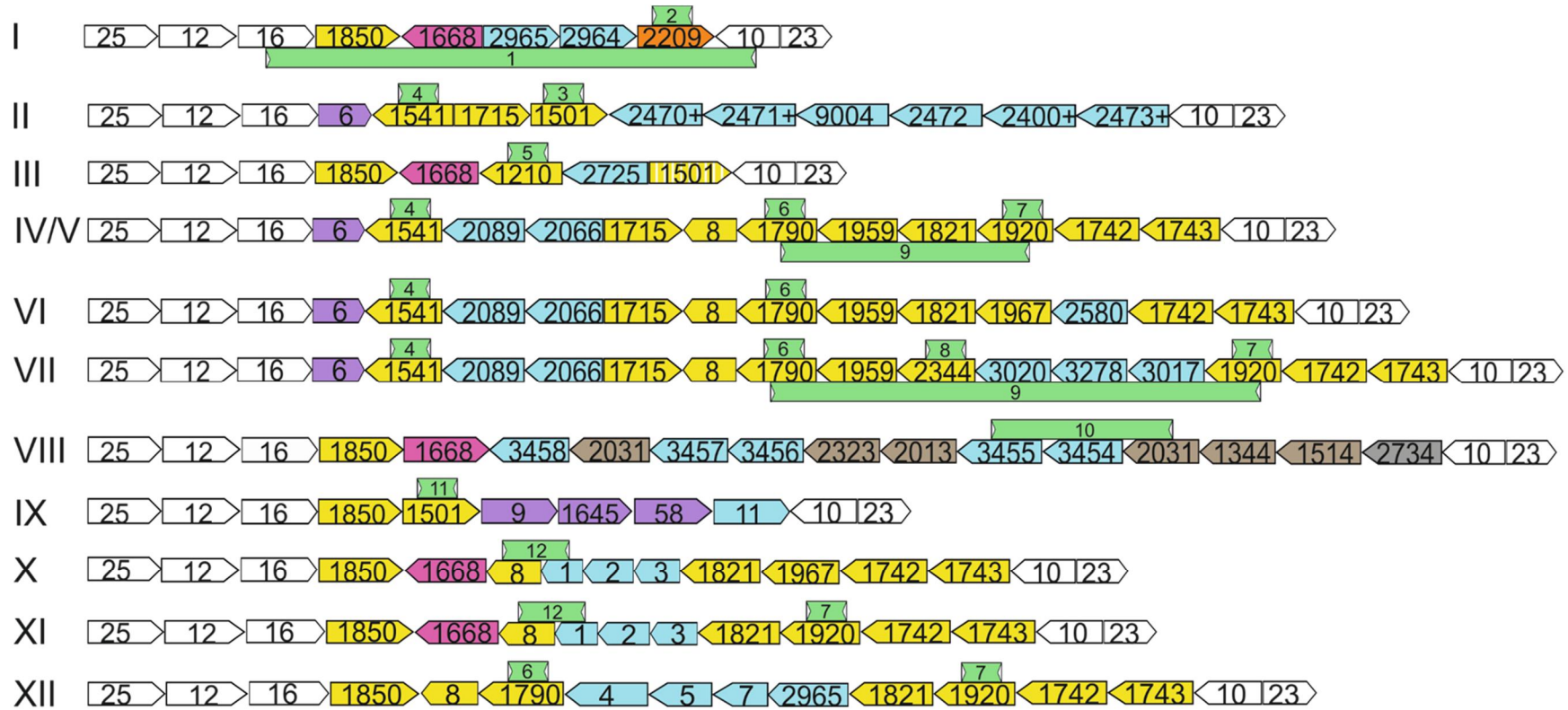
149	E154.3	Pig	2009	Finland	1058	828	11	-	-	-	-	-	-	-	-	-	-	-	-	+	X	195.130	
150	E160.3	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	+	-	-	-	-	-	IV	
151	E163.2	Pig	2009	Finland	1096	828	10	-	+	+	-	-	-	-	-	-	-	-	-	-	-	II	195.126
152	E175.9	Pig	2009	Finland			13	-	-	+	-	+	-	-	-	+	-	-	-	-	-	IV	
153	A28	Pig	2007	Finland			12	-	-	-	-	-	-	-	-	-	-	-	-	+	X	6666666.94320	
154	A30	Pig	2007	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
155	A31	Pig	2007	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
156	A32	Pig	2007	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
157	A40.1	Pig	2007	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
158	A46	Pig	2007	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
159	A50	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
160	A53	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
161	A56	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	untypable		
162	A57	Pig	2007	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	
163	A62	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
164	A66	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
165	A68	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
167	A70.1	Pig	2007	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	-	II	
168	A71.1	Pig	2007	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	
169	A74.1	Pig	2007	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	
170	A78.1	Pig	2007	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	-	II	
174	A26.1	Pig	2007	Finland	6956		13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	195.109
175	A30.1	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
176	A32.1	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
177	A35.1	Pig	2007	Finland	1143		13	-	-	+	-	+	+	-	+	-	-	-	-	-	-	IV	195.108
178	A37.1	Pig	2007	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
179	C1.1	Pig	2008	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
183	C23.1	Pig	2008	Finland			13	-	-	+	-	+	-	-	-	+	-	-	-	-	-	IV	
184	C25.1	Pig	2008	Finland			10	-	+	+	-	-	-	-	-	-	-	-	-	-	-	II	
185	C28.3	Pig	2008	Finland			7	-	-	+	+	-	-	-	-	-	-	-	-	+	untypable		
186	C29.1	Pig	2008	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
188	C34.2	Pig	2008	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	
189	C35.1	Pig	2008	Finland			11	-	-	-	-	-	-	-	-	-	-	-	-	+	X		
190	C37.1	Pig	2008	Finland			13	-	-	+	-	+	-	-	-	+	-	-	-	-	-	IV	
191	C39.1	Pig	2008	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
193	C40.3	Pig	2008	Finland			13	-	-	+	-	+	-	-	-	-	-	-	-	-	-	VI	
195	C46.1	Pig	2008	Finland			7	-	-	-	+	-	-	-	-	-	-	-	-	-	-	III	
196	C48.1	Pig	2008	Finland			13	-	-	+	-	+	-	-	-	+	-	-	-	-	-	IV	

Supplemental Table 2. Novel LOS class description

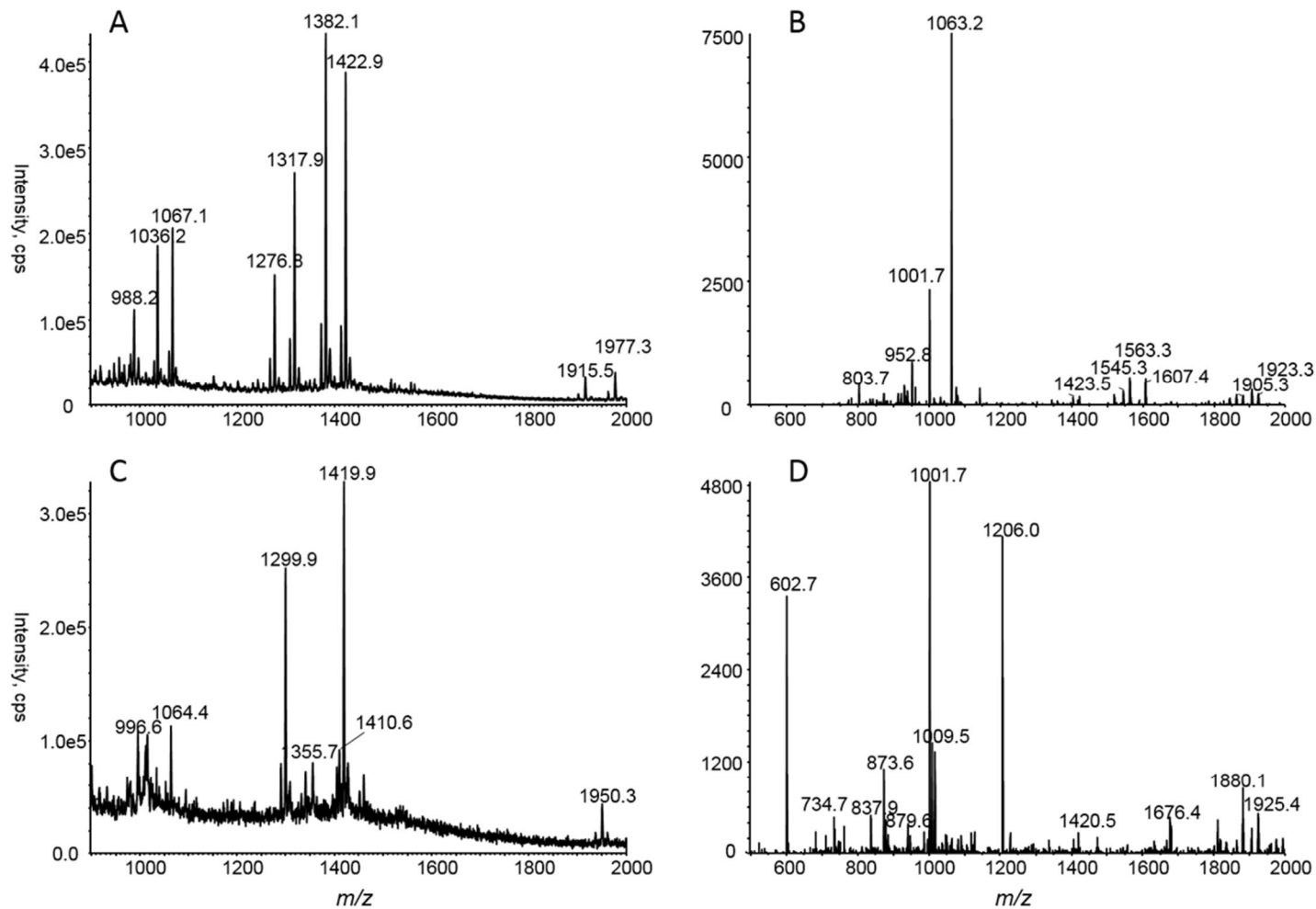
orthologue	RAST ID	product	seq length (AA)
<i>C. coli</i> (153) Class X			
25	fig 6666666.94320	lipopolysaccharide heptosyltransferase I	342
12	fig 6666666.94320	lipid A biosynthesis lauroyl acyltransferase	295
16	fig 6666666.94320	lipooligosaccharide biosynthesis glycosyltransferase	516
1850	fig 6666666.94320	putative glycosyltransferase	350
1668	fig 6666666.94320	putative lipopolysaccharide 1,3-galactosyltransferase	399
8	fig 6666666.94320	hypothetical protein	364
1	fig 6666666.94320	hypothetical protein	406
2	fig 6666666.94320	hypothetical protein	319
3	fig 6666666.94320	UDP-N-acetylglucosamine 2-epimerase	373
1821	fig 6666666.94320	hypothetical protein	147
1967	fig 6666666.94320	hypothetical protein	138
1742	fig 6666666.94320	hypothetical protein	340
1743	fig 6666666.94320	hypothetical protein	292
10	fig 6666666.94320	putative glucosyltransferase	278
23	fig 6666666.94320	ADP-heptose--LPS heptosyltransferase II	321
<i>C. coli</i> (138) Class XI			
25	fig 195.111.peg.26	lipopolysaccharide heptosyltransferase I	342
12	fig 195.111.peg.26	lipid A biosynthesis lauroyl acyltransferase	295
16	fig 195.111.peg.26	lipooligosaccharide biosynthesis glycosyltransferase	516
1850	fig 195.111.peg.26	putative glycosyltransferase	350
1668	fig 195.111.peg.26	putative lipopolysaccharide 1,3-galactosyltransferase	399
8	fig 195.111.peg.25	hypothetical protein	364
1	fig 195.111.peg.25	hypothetical protein	406
2	fig 195.111.peg.25	hypothetical protein	319
3	fig 195.111.peg.25	hypothetical protein	373
1821	fig 195.111.peg.25	hypothetical protein	147
1920	fig 195.111.peg.25	hypothetical protein	131
1742	fig 195.111.peg.25	hypothetical protein	340
1743	fig 195.111.peg.25	hypothetical protein	292
10	fig 195.111.peg.25	putative glucosyltransferase	278
23	fig 195.111.peg.25	ADP-heptose--LPS heptosyltransferase II	321
<i>C. coli</i> (99) class XII			
25	fig 195.104.peg.15	lipopolysaccharide heptosyltransferase I	342
12	fig 195.104.peg.15	lipid A biosynthesis lauroyl acyltransferase	295
16	fig 195.104.peg.15	lipooligosaccharide biosynthesis glycosyltransferase	516
1850	fig 195.104.peg.15	putative glycosyltransferase	350
8	fig 195.104.peg.15	hypothetical protein	364
1790	fig 195.104.peg.15	hypothetical protein	355
4	fig 195.104.peg.15	methyltransferase type 12	216
5	fig 195.104.peg.15	hypothetical protein	211
7	fig 195.104.peg.15	phosphoserine phosphatase	199
2965	fig 195.104.peg.15	hypothetical protein	333
1821	fig 195.104.peg.15	hypothetical protein	147
1920	fig 195.104.peg.15	hypothetical protein	131
1742	fig 195.104.peg.15	hypothetical protein	340
1743	fig 195.104.peg.15	hypothetical protein	292
10	fig 195.104.peg.15	putative glucosyltransferase	278
23	fig 195.104.peg.15	ADP-heptose--LPS heptosyltransferase II	321



Supplemental Figure 1. Consensus cladogram representing the evolutionary relationship among orthologues belonging to GO A: 16, B: 1850, C: 1668, D: 1967, E: 1742, F: 1743 (nomenclature from Richard *et al.* 23). *C. jejuni* strains are highlighted in green. *C. coli* LOS locus class X strains are highlighted in cyan, class XI in yellow, class I in red, class III in blue, class IV/V in grey, and class VI in pink. The 95% bootstrap consensus tree was built from 100 replicates. Strains LOS locus class is indicated after the strain's ID.



Supplemental Figure 2. Yellow arrows: orthologues present in the LOS of *C. jejuni* and *C. coli*. Purple arrows: orthologues present in *C. coli* LOS, *C. coli* CPS, *C. jejuni* subsp. *jejuni* LOS, and *C. jejuni* subsp. *jejuni* CPS. Pink arrows: orthologues present in *C. coli* LOS, *C. jejuni* LOS, and *C. jejuni* CPS. Brown arrows: orthologues present in *C. coli* LOS and CPS and the CPS of *C. jejuni*. Blue arrows: orthologues only present in *C. coli* LOS. Grey arrows: orthologues present in *C. coli* LOS and CPS. Orange arrows: orthologues present in the LOS of *C. coli* and the CPS of *C. jejuni* subsp. *jejuni*. Stripped orthologues were fragmented. Orthologues marked with a plus sign were identified as truncated pseudogenes (discussed in text). For reference, orthologue 25 corresponds to *waaC* and orthologue 23 is *waaF*. PCR products are shown in green. For simplification, PCR 1 is only shown on LOS class I.



Supplemental Figure 3. Example of the electrophoresis-assisted open-tubular liquid chromatography electrospray mass spectrometry (EA-OTLC-MS) analysis of the intact LOS from *C. coli*. (A) extracted mass spectrum from strain #137; (B) extracted MS/MS spectrum from precursor ion at m/z 1422.9; © extracted mass spectrum from strain #65; (D) extracted MS/MS spectrum for precursor ion at m/z 1299.9.