

Table S14. Allocation of large indels to lineages by virtual outgroup analysis

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event	O55 and O157 Details			Event Lineage ^b	Inferred ancestral ^c	Support level ^d	Outgroup Strain Details ^e												Note ^f									
	CB9615 block ^a	Sakai block ^a	EDL933 block ^a				D1 Sdt197	K-12	HS	ATCC 8739	UMN026	IA139	SMS 3-5	E2348/69	536	ED1a	CFT073	S88	APEC O1	UT189	E24377A	IA1	SE11	F5 8401	F2a 2457T	F2a 301	SS Ss046	B4 Sb227
1	-	+	+	del CB9615	+	+++	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	+	-	-	ins CB9615	-	+++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	-	+	+	del CB9615	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	+	-	-	ins CB9615	-	++	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	-	+	-	ins Sakai	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	-	+	+	ins O157	-	+++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	+	-	-	del O157	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	+	-	-	del O157	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	+	-	-	del O157	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15	-	+	-	ins Sakai	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	+	-	-	del O157	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
18	-	-	+	ins EDL933	-	+++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	-	-	-	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21	-	+	+	del CB9615	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22	+	-	-	ins CB9615	-	++	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
23	+	-	-	del O157	+	++	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
24	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	-	+	+	del CB9615	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	+	-	-	del O157	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	-	+	-	ins Sakai	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
32	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
33	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
34	-	+	-	ins Sakai	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	-	+	+	ins O157	-	+++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
37	-	+	-	ins Sakai	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
38	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
39	-	+	-	ins Sakai	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
41	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	+	-	-	del O157	+	++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
44	-	+	+	del CB9615	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
45	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
47	-	+	+	ins O157	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
48	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
49	-	+	-	ins Sakai	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
50	-	-	+	ins EDL933	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
51	-	+	+	ins O157	?	+/-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	part of phage
52	-	+	-	ins Sakai	-	+++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	+	ins EDL933	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
54	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
55	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
56	+	-	-	ins CB9615	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
57	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
58	-	+	-	ins Sakai	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
59	-	-	+	ins EDL933	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
60	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
61	-	+	-	ins Sakai	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
62	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
63	+	-	-	ins CB9615	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
64	-	+	+	ins O157	-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
65	+	-	-	del O157	+	++	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
66	-	+	+	ins O157																								

Table S14. Allocation of large indels to lineages by virtual outgroup analysis^a

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Page 3

event	O55 and O157 Details			Event Lineage ^b	Inferred ancestral ^c	Support level ^d	Outgroup Strain Details ^e																	Note ^f						
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179	-	+	+	del CB9615	O157	+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
180	-	+	+	ins O157		-	+++	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
181	+	-	-	ins CB9615		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
182	-	-	+	ins EDL933		-	++	-	+	+	+																			
183	+	-	+	del Sakai	O157	+	+++	+	+	+																				
184	-	+	+	ins O157		-	+																							
185	+	-	-	del O157		+	+																							
186	+	-	-	indel O55/O157	?	+/-																								
187	-	+	+	del CB9615	O157	+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
188	+	-	-	del CB9615		+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
189	-	+	-	ins Sakai		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
190	-	+	+	del CB9615		+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
191	+	-	-	ins CB9615		-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
192	+	-	-	ins CB9615		-	++	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
193	-	+	-	ins Sakai		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
194	-	+	+	ins O157		-	++++	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
195	-	+	+	del CB9615		+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
196	+	-	-	ins CB9615		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
197	-	+	+	ins O157		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
198	-	+	+	ins O157		-	+																							
199	+	-	-	ins CB9615		-	+																							
200	-	+	+	del CB9615		+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
201	+	-	-	del O157		+	++++	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
202	+	-	-	ins CB9615		-	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

^a "+" indicates the block present, "-" indicates the block absent^b O157: allocated to the lineage to the ancestor of EDL933 and Sakai; Sakai/EDL933: allocated to the divergence between Sakai and EDL933 (strain not specified); O55/O157: allocated to the divergence between O55 and O157 lineages (lineage not specified).^c presence or absence of indel block in O55/O157 ancestor as inferred from outgroup analysis.^d Level of support for allocation of indel blocks as given in previous column

++++ agreement is high - 8 or more outgroup strains with expected type and at most 1 with the opposite, and D1 Sd197 agrees or site not present

+++ agreement good - 4 or more outgroup strains with expected type and at most 1 with the opposite, and D1 Sd197 agrees or site not present

++ agreement in D1 Sd197 regardless of situation with other outgroup strains

+ no conflict but very limited support as either the block and nearby sequence absent in D1 Sd197, and/or outgroup support less than given above

+/- no conflict but no support (the block and its nearby sequence not present in any outgroup OR both alternative lineages supported equally).

- not independent indel as in O-antigen related recombination event

^e +/- indicates presence or absence of the block. Blank means site not present.^f Special reasons affecting allocation: "O antigen" means within major O-antigen related recombination; "part of phage" means within a phage that is inserted