

**Supplementary table 1: Characteristics of 70 isolates and 25 references**

Data source	Strain	Toxin genotype	Year collection	Source	Site collection*	Sequence type	Accession no.		<i>tcdA</i> type	<i>tcdB</i> type
							<i>tcdA</i>	<i>tcdB</i>		
This study	US1	A-B+	unknown	unknown	US	37	KC292088	KC292128	A15	B13
	UK1	A+B+	unknown	unknown	UK	1	KC292117	KC292158	A13	B12
	VPI10463	A+B+	unknown	unknown	Japan	46	KC292122	KC292162	A01	B01
	ATCC9689	A+B+	unknown	unknown	France	3	KC292070	KC292135	A07	B06
	BJ08	A-B+	2010	outpatient	BJ	37	KC292068	KC292149	A15	B13
	GZ1	A+B+	1980's	inpatient	GD	35	KC292061	KC292189	A03	B04
	GZ2	A-B+	1980's	inpatient	GD	37	KC292109	KC292156	A15	B13
	GZ3	A-B+	1980's	inpatient	GD	37	KC292078	KC292175	A15	B13
	GZ5	A+B+	1980's	inpatient	GD	2	KC292058	KC292145	A09	B06
	GZ6	A-B+	1980's	inpatient	GD	37	KC292124	KC292191	A15	B13
	GZ7	A+B+	1980's	inpatient	GD	2	KC292066	KC292137	A09	B06
	GZ8	A-B+	1980's	inpatient	GD	37	KC292121	KC292163	A15	B13
	GZ9	A-B+	1980's	inpatient	GD	37	KC292064	KC292165	A15	B13
	GZ11	A-B+	1980's	inpatient	GD	37	KC292118	KC292139	A15	B13
	GZ12	A-B+	1980's	inpatient	GD	37	KC292123	KC292164	A15	B13
	GZ13	A-B+	1980's	inpatient	GD	37	KC292077	KC292166	A15	B13
	GZ14	A-B+	1980's	inpatient	GD	37	KC292056	KC292188	A15	B13
	SH1	A+B+	2007	inpatient	SH	35	KC292098	KC292173	A03	B04
	SH2	A+B+	2007	inpatient	SH	35	KC292110	KC292141	A03	B04
	SH3	A+B+	2007	inpatient	SH	2	KC292111	KC292140	A06	B07
	SH4	A+B+	2008	inpatient	SH	2	KC292114	KC292131	A06	B07
SH5	A+B+	2008	inpatient	SH	2	KC292069	KC292168	A06	B07	
SH6	A+B+	2008	inpatient	SH	2	KC292090	KC292136	A06	B07	
SH7	A+B+	2008	inpatient	SH	2	KC292095	KC292127	A06	B07	
SH8	A+B+	2008	inpatient	SH	2	KC292057	KC292150	A06	B07	
SH9	A+B+	2008	inpatient	SH	2	KC292094	KC292185	A06	B07	
SH10	A+B+	2008	inpatient	SH	35	KC292086	KC292167	A03	B04	
SH11	A+B+	2009	inpatient	SH	35	KC292105	KC292143	A03	B04	

SH12	A+B+	2009	inpatient	SH	35	KC292065	KC292171	A03	B04
SH13	A+B+	2009	inpatient	SH	2	KC292119	KC292178	A06	B07
SH14	A+B+	2009	inpatient	SH	2	KC292075	KC292174	A06	B07
SH182	A-B+	2011	unknown	SH	37	KC292083	KC292146	A15	B13
JN012	A+B+	2012	inpatient	SD	3	KC292106	KC292134	A07	B06
JN031	A+B+	2012	inpatient	SD	3	KC292071	KC292177	A07	B06
JN033	A+B+	2012	inpatient	SD	3	KC292081	KC292154	A07	B06
JN037	A+B+	2012	inpatient	SD	3	KC292093	KC292151	A07	B06
JN043	A+B+	2012	inpatient	SD	3	KC292100	KC292161	A07	B06
JN071	A+B+	2012	inpatient	SD	3	KC292115	KC292183	A07	B06
JN090	A+B+	2012	outpatient	SD	3	KC292096	KC292133	A07	B06
JN128	A+B+	2012	inpatient	SD	3	KC292101	KC292126	A07	B06
JN159	A+B+	2012	outpatient	SD	3	KC292087	KC292176	A07	B06
SD1	A-B+	2011	outpatient	SD	37	KC292085	KC292142	A15	B13
SD2	A+B+	2011	outpatient	SD	35	KC292113	KC292186	A03	B04
HN581	A+B+	2010	outpatient	HN	35	KC292107	KC292129	A03	B04
HN582	A-B+	2010	outpatient	HN	37	KC292108	KC292170	A15	B13
HN583	A+B+	2010	outpatient	HN	35	KC292091	KC292179	A03	B04
HN587	A+B+	2010	outpatient	HN	35	KC292082	KC292192	A03	B04
HN588	A-B+	2010	outpatient	HN	37	KC292074	KC292180	A15	B13
HN603	A+B+	2010	outpatient	HN	35	KC292097	KC292172	A03	B04
HN608	A+B+	2010	outpatient	HN	3	KC292103	KC292147	A07	B06
ZR2	A+B+	2010	outpatient	BJ	102	KC292112	KC292153	A04	B08
ZR5	A+B+	2010	outpatient	BJ	55	KC292080	KC292184	A05	B06
ZR8	A-B+	2010	outpatient	BJ	37	KC292079	KC292182	A15	B13
ZR9	A-B+	2010	outpatient	BJ	37	KC292063	KC292152	A15	B13
ZR17	A+B+	2010	inpatient	BJ	5	KC292104	KC292157	A12	B09
ZR20	A+B+	2010	inpatient	BJ	54	KC292102	KC292155	A10	B02
ZR27	A+B+	2010	outpatient	BJ	99	KC292073	KC292187	A03	B04
ZR30	A+B+	2010	outpatient	BJ	54	KC292084	KC292194	A10	B02
ZR4	A+B+	2010	outpatient	BJ	54	KC292089	KC292138	A10	B02
ZR41	A+B+	2010	inpatient	BJ	92	KC292120	KC292169	A05	B06

	ZR47	A-B+	2010	outpatient	BJ	37	KC292060	KC292160	A15	B13
	ZR48	A+B+	2010	outpatient	BJ	55	KC292059	KC292144	A05	B06
	ZR50	A+B+	2010	inpatient	BJ	53	KC292116	KC292148	A11	B04
	ZR74	A+B+	2010	inpatient	BJ	54	KC292072	KC292159	A10	B02
	ZR75	A+B+	2010	inpatient	BJ	8	KC292099	KC292195	A04	B06
	ZR77	A+B+	2010	inpatient	BJ	129	KC292125	KC292193	A08	B06
	ZR80	A+B+	2010	inpatient	BJ	35	KC292092	KC292190	A02	B05
	ZR81	A+B+	2010	outpatient	BJ	8	KC292062	KC292181	A04	B06
	ZR83	A+B+	2010	inpatient	BJ	35	KC292067	KC292130	A03	B04
	ZR84	A+B+	2010	outpatient	BJ	3	KC292076	KC292132	A07	B06
Published	630	A+B+	1982	Human	Switzerland	54	NC_009089		A10	B02
	M68	A-B+	2006	Human	Ireland	37	FN668375		A15	B13
	CF5	A-B+	1995	Human	Belgium	37	FN665652		A15	B13
	R20291	A+B+	2006	Human	UK	1	NC_013316		A13	B12
	M120	A+B+	2007	Human	UK	11	NC_017174		A14	B10
	8864	A-B+	<1985	Human	UK	unknown	AJ011301		A16	B16
	CD196	A+B+	1985	Human	France	1	NC_013315		A13	B12
	CIP_107932	unknown	unknown	unknown	France	1	ABKK00000000	unknown		B12
	QCD_37x79	A+B+	2005	unknown	Canada	1	ABHG00000000		A13	B12
	QCD_66c26	A+B+	unknown	unknown	Canada	1	ABFD00000000		A13	B12
	QCD_76w55	A+B+	1988	unknown	Canada	1	ABHE00000000		A13	B12
	QCD_97b34	A+B+	2004	unknown	Canada	1	ABHF00000000		A13	B12
	QCD_32g58	A-B+	unknown	unknown	Canada	1	AAML00000000	unknown		B12
	QCD_23m63	unknown	unknown	unknown	Canada	unknown	ABKL00000000	unknown		B11
	QCD_63q42	unknown	unknown	unknown	Canada	unknown	ABHD00000000	unknown		B06
	2007855	A+B+	2007	Bovine	US	1	NC_017178		A13	B12
	BI1	A+B+	1988	Human	US	1	NC_017177		A13	B12
	BI9	A+B+	2001	Human	US	3	FN668944	unknown		B06
	002_P50_2011	A-B+	unknown	unknown	US	37	AGAA00000000		A15	B13
	050_P50_2011	A-B+	unknown	unknown	US	37	AGAB00000000		A15	B13
	NAP07	unknown	unknown	unknown	US	11	ADVM00000000	unknown		B10
	NAP08	unknown	unknown	unknown	US	11	ADNX00000000	unknown		B10

6534	unknown	unknown	unknown	US	unknown	ADEJ00000000	unknown	B03
1470	A-B+	unknown	unknown	US	unknown	Z23277	unknown	B15
5340	unknown	unknown	unknown	US	unknown	AF217292	unknown	B14

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**Supplementary table 2: Primers for *tcdA* and *tcdB***

<b>Gene</b>	<b>Primer ID</b>	<b>Sequence (5'to3')</b>
<i>tcdA</i>	A1F	AGATGGTGCATGGTCAGTTG
	A1R	CATTTCCCAACGGTCTAGTC
	A2F	AATAGAGATGAACTTTATT
	A2R	CATCTCCTTGTAAGTGTATG
	A3F	AACAAAAATAGCACCATACT
	A3R	TAACACTTGCATCAAGTAAT
	A4F	AAGCAACATGCAATTTATTT
	A4R	CCACTGAAGTTGCCTTATCA
	A5F	TAAATGTACTACCTACAATAACAGAGGG
	A5R	CTTGTATATAAATCAGGTGCTATCAATA
	A6F	CTTGGATATGTAGAATTTAT
	A6R	AATCCTAAATGATCTCTATC
	A7F	TATTGATAGCACCTGATTTATATAAAG
	A7R	AGTTGAGGCTATGAAAGTGT
	A8F	GACCTAATGGATTTGAGTAT
	A8R	AATTTATTTTGGTAAAGTAT
	A9F	CACTTTCATAGCCTCAACTG
	A9R	GATGGTGATGAGGTGCAAAT
<i>tcdB</i>	B1F	GGATATTCTGATAGAGAAAT
	B1R	TCACTATTTACATCTTTC
	B2F	GAAGAATATCATAATATGTC
	B2R	TTAATCTTAGGTCTATCAGA
	B3F	TTACAAGGAGATAAAATTAG
	B3R	TACTAACTTACCATTTACAG
	B4F	GAATTTAAACTAATAGAATC
	B4R	TCTTCTTTTTGTAAGTCCAA
	B5F	TACTTTTAGTTCCTTTAGCA
	B5R	TCAGATACAAATAAACCTTC
	B6F	GTTGATTTATTATCTAAATC
	B6R	GTAATAAATACACCTGTTTG
	B7F	TAATAACTTTGGAATGATGG
	B7R	TCACTTTCATTTTCCATATC
	B8F	GGAAATGAAGAAGGTGAAG
B8R	ACTTTGTAAGAATGTCAACT	

**Supplementary table 3: *tcdA* types and distributions**

Type	Representative Strain	Toxin genotype	Locations, STs and number of strains*
A01	VPI10463	A+B+	[Japan, ST46, 1]
A02	ZR80	A+B+	[BJ, ST35, 1]
A03	GZ1	A+B+	[GD, ST35, 1] [HN, ST35, 4] [SD, ST35, 1] [SH, ST35, 5] [BJ, ST35, 1] [BJ, ST99, 1]
A04	ZR2	A+B+	[BJ, ST102, 1] [BJ, ST8, 2]
A05	ZR41	A+B+	[BJ, ST92, 1] [BJ, ST55, 2]
A06	SH13	A+B+	[SH, ST2, 9]
A07	ATCC9689	A+B+	[France, ST3, 1] [HN, ST3, 1] [SD, ST3, 9] [BJ, ST3, 1]
A08	ZR77	A+B+	[BJ, ST129, 1]

A09	GZ5	A+B+	[GD, ST2, 2]
A10	630	A+B+	[Switzerland, ST54, 1] [BJ, ST54, 4]
A11	ZR50	A+B+	[BJ, ST53, 1]
A12	ZR17	A+B+	[BJ, ST5, 1]
A13	R20291	A+B+	[USA, ST1, 2] [Canada, ST1, 4] [UK, ST1, 2] [France, ST1, 1]
A14	M120	A+B+	[UK, ST11, 1]
A15	M68	A-B+	[USA, ST37, 3] [GD, ST37, 9] [BJ, ST37, 4] [HN, ST37, 2] [Belgium, ST37, 1] [Ireland, ST37, 1] [SD, ST37, 1] [SH, ST37, 1]
A16	8864	A-B+	[USA, unknown, 1]

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**\*BJ: Beijing; SH: Shanghai; GD: Guangdong; SD: Shandong; HN: Henan.**

**Supplementary table 4: *tcdB* types and distributions**

<b>Type</b>	<b>Representative Strain</b>	<b>Toxin genotype</b>	<b>Locations, STs and number of strains*</b>
B01	VPI10463	A+B+	[Japan, ST46, 1]
B02	630	A+B+	[Switzerland, ST54, 1] [BJ, ST54, 4]
B03	6534	A+B+	[USA, unknown, 1]
B04	GZ1	A+B+	[GD, ST35, 1] [HN, ST35, 4] [SD, ST35, 1] [SH, ST35, 5] [BJ, ST35, 1] [BJ, ST99, 1] [BJ, ST53, 1]
B05	ZR80	A+B+	[BJ, ST35, 1]
B06	ATCC9689	A+B+	[France, ST3, 1] [Canada, unknown, 1] [USA, ST3, 1] [HN, ST3, 1] [SD, ST3, 9] [BJ, ST3, 1] [GD, ST2, 2] [BJ, ST92,1] [BJ, ST55, 2] [BJ, ST8, 2] [BJ, ST129, 1]
B07	SH13	A+B+	[SH, ST2, 9]

B08	ZR2	A+B+	[BJ, ST102, 1]
B09	ZR17	A+B+	[BJ, ST5, 1]
B10	M120	A+B+	[UK, ST11, 1] [USA, ST11, 2]
B11	Qcd_23m63	A+B+	[Canada, unknown, 1]
B12	R20291	A+B+	[UK, ST1, 2] [USA, ST1, 2] [Canada, ST1, 5] [France, ST1, 2]
B13	M68	A-B+	[USA, ST37, 3] [GD, ST37, 9] [BJ, ST37, 4] [HN, ST37, 2] [Belgium, ST37, 1] [Ireland, ST37, 1] [SD, ST37, 1] [SH, ST37, 1]
B14	5340	A-B+	[USA, unknown, 1]
B15	1470	A-B+	[USA, unknown, 1]
B16	8864	A-B+	[USA, unknown, 1]

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\*BJ: Beijing; SH: Shanghai; GD: Guangdong; SD: Shandong; HN: Henan.