

***Francisella tularensis* subsp. *tularensis*, Strain SCHU S4, Gateway® Clone Set, Recombinant in *Escherichia coli*, Plate 1**

Catalog No. NR-19458

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Contributor:

Pathogen Functional Genomics Resource Center at the J. Craig Venter Institute

Manufacturer:

BEI Resources

Product Description:

The *Francisella tularensis* (*F. tularensis*) subsp. *tularensis*, strain SCHU S4, Gateway® clone set consists of 19 plates which contain 1693 sequence validated clones from *F. tularensis* subsp. *tularensis*, strain SCHU S4 cloned in *Escherichia coli* (*E. coli*) DH10B-T1 cells. Each open reading frame was constructed in vector pDONR™221 (Invitrogen™) with a native start codon and no stop codon. The sequence was validated by full length sequencing of each clone with greater than 1X coverage and a mutation rate of less than 0.2%. Detailed information about each clone is shown in Table 1.

Information related to the use of Gateway® Clones can be obtained from [Invitrogen™](#). Recombination was facilitated through an *attB* substrate (*attB*-PCR product or a linearized *attB* expression clone) with an *attP* substrate (pDONR™221) to create an *attL*-containing entry clone. The entry clone contains recombinational cloning sites, *attL1* and *attL2* to facilitate gene transfer into a destination vector, M13 forward and reverse priming sites for sequencing and a kanamycin resistance gene for selection. Please refer to the [Invitrogen™ Gateway® Technology Manual](#) for additional details.

Material Provided:

Each inoculated well of the 96-well plate contains approximately 60 µL of *E. coli* culture (strain DH10B-T1) in Luria Bertani (LB) Broth containing 50 µg/mL kanamycin supplemented with 15% glycerol.

Note: Production in the 96-well format has increased risk of cross-contamination between adjacent wells. Individual clones should be purified (e.g. single colony isolation and purification using good microbiological practices) and sequence-verified prior to use. BEI Resources cannot confirm or validate any clone not identified on the plate information table.

Packaging/Storage:

NR-19458 was packaged aseptically in a 96-well plate. The

product is provided frozen and should be stored at -80°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Media:

LB Broth or Agar containing 50 µg/mL kanamycin.

Incubation:

Temperature: *E. coli*, strain DH10B-T1 clones should be grown at 37°C.

Atmosphere: Aerobic

Propagation:

1. Scrape top of frozen well with a pipette tip and streak onto agar plate.
2. Incubate the plates at 37°C for 18 to 24 hours.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Francisella tularensis* subsp. *tularensis*, Strain SCHU S4, Gateway® Clone Set, Recombinant in *Escherichia coli*, Plate 1, NR-19458."

Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. [Biosafety in Microbiological and Biomedical Laboratories](#), 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmb15/index.htm.

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References:

1. Larsson, P., et. al. "The Complete Genome Sequence of *Francisella tularensis*, the Causative Agent of Tularemia." *Nat. Genet.* 37 (2005): 153-159. PubMed: 15640799.
2. Pandya, G. A., et. al. "Whole Genome Single Nucleotide Polymorphism Based Phylogeny of *Francisella tularensis* and its Application to the Development of a Strain Typing Assay." *BMC Microbiology* 9 (2009): 213. PubMed: 19811647.

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Table 1: *Francisella tularensis* subsp. *tularensis*, Strain SCHU S4, Gateway® Clone Set, Plate 1 (ZFTKK)

Clone	Well Position	Locus ID	Description (Gene name)	ORF Length	Accession Number	Average Depth of Coverage
5426	A01	NT06FT0656	hypothetical protein	130	N/A	2
5432	A02	NT06FT1981	-	130	N/A	-
5436	A03	NT06FT0308	hypothetical protein	133	CAG44910.1	2
5442	A04	NT06FT1025	hypothetical protein	133	N/A	-
5444	A05	NT06FT1288	hypothetical protein	133	N/A	2
5446	A06	NT06FT1620	hypothetical protein	133	N/A	2
5448	A07	NT06FT1743	lipoprotein, putative	133	N/A	2
5450	A08	NT06FT0017	hypothetical protein	136	N/A	-
5452	A09	NT06FT0834	hypothetical protein	136	N/A	2
5453	A10	NT06FT1682	hypothetical protein	136	N/A	-
5457	A11	NT06FT0422	lipoprotein, putative	139	CAG45015.1	-
5460	A12	NT06FT0440	hypothetical protein	142	N/A	-
5462	B01	NT06FT0715	2-isopropylmalate synthase	145	CAG45272.1	-
5464	B02	NT06FT0835	hypothetical protein	145	N/A	-
5465	B03	NT06FT1166	hypothetical protein	145	N/A	1.848276
5467	B04	NT06FT0555	hypothetical protein	148	N/A	-
5470	B05	NT06FT0677	hypothetical protein	148	N/A	-
5472	B06	NT06FT0721	-	148	N/A	2.614865
5474	B07	NT06FT1605	hypothetical protein	148	N/A	-
5475	B08	NTL06FT0346	50S ribosomal protein L36	148	N/A	-
5478	B09	NT06FT0550	proton/peptide symporter family protein, putative	151	N/A	-
5480	B10	NT06FT1176	hypothetical protein	151	N/A	-
5481	B11	NT06FT1658	hypothetical protein	151	CAG46076.1	-
5484	B12	NT06FT1664	Second ORF in transposon ISC1395	151	N/A	-
5486	C01	NT06FT0548	hypothetical protein	154	N/A	-
5487	C02	NT06FT0675	hypothetical protein	154	CAG45234.1	-
5489	C03	NT06FT0843	hypothetical protein	154	N/A	-
5492	C04	NT06FT1220	hypothetical protein	154	N/A	2.649351
5494	C05	NT06FT1221	hypothetical protein	154	N/A	-
5496	C06	NT06FT1615	hypothetical protein	154	N/A	-
5498	C07	NT06FT1294	general stress protein gsiB	157	N/A	-
5501	C08	NT06FT0113	hypothetical protein	163	N/A	-
5503	C09	NT06FT0830	hypothetical protein	163	CAG45370.1	-
5505	C10	NT06FT1619	hypothetical protein	163	N/A	-

Clone	Well Position	Locus ID	Description (Gene name)	ORF Length	Accession Number	Average Depth of Coverage
5510	C11	NT06FT0846	hypothetical protein	166	N/A	-
5513	D01	NT06FT1482	hypothetical protein	166	CAG45933.1	-
5515	D02	NT06FT1871	hypothetical protein	166	N/A	1.86747
5517	D03	NTL06FT0870	hypothetical protein	166	N/A	-
5520	D04	NT06FT0263	ribosomal protein L34	169	CAG44869.1	-
5525	D05	NT06FT1215	hypothetical protein	169	N/A	-
5527	D06	NT06FT1700	IS1016 family transposase, degenerate	169	N/A	-
5529	D07	NT06FT0290	lipoprotein, putative	172	CAG44895.1	2
5531	D08	NT06FT0961	conserved hypothetical protein	172	CAG45481.1	-
5533	D09	NT06FT1188	hypothetical protein	172	N/A	1.674419
5535	D10	NT06FT1684	-	172	N/A	-
5538	D11	NT06FT0458	Glucose-1-phosphate adenylyltransferase	175	N/A	-
5539	D12	NT06FT0471	ABL080Wp	175	N/A	1.577143
5541	E01	NT06FT1005	hypothetical protein	175	N/A	1.36
5544	E02	NT06FT1335	type I restriction-modification system specificity subunit	175	N/A	-
5545	E03	NT06FT1837	hypothetical protein	175	N/A	1.874286
5549	E04	NT06FT1113	hypothetical protein	178	CAG45615.1	2.876404
5551	E05	NT06FT1114	hypothetical protein	178	CAG45616.1	2.679775
5555	E06	NT06FT0626	hypothetical protein	181	N/A	1.762431
5557	E07	NT06FT1653	hypothetical protein	181	N/A	1.878453
5559	E08	NT06FT2081	conserved hypothetical protein	181	N/A	-
5561	E09	NT06FT0850	hypothetical protein	184	N/A	3.391304
5563	E10	NT06FT1107	hypothetical protein	184	N/A	1.880435
5566	E11	NT06FT1936	conserved hypothetical protein	184	N/A	2.695652
5573	E12	NT06FT0112	-	190	N/A	2
5575	F01	NT06FT1434	-	190	N/A	1.984211
5577	F02	NT06FT1831	hypothetical protein	190	CAG46228.1	2
5579	F03	NT06FT1843	ribosomal protein L33	190	CAG46237.1	2
5581	F04	NT06FT0097	hypothetical protein	193	N/A	2
5584	F05	NT06FT0137	oligopeptide ABC transporter, permease protein VC1093	193	N/A	2
5585	F06	NT06FT1988	cytosine specific DNA methyltransferase	193	N/A	2.875648
5587	F07	NT06FT1629	hypothetical protein	196	N/A	2.69898
5595	F08	NT06FT1140	hypothetical protein	199	CAG45641.1	1.673367
5601	F09	NT06FT1941	hypothetical protein	199	N/A	2
5604	F10	NTL06FT1051	hypothetical protein	199	N/A	2
5607	F11	NT06FT0668	Rubredoxin	205	CAG45228.1	1.843902
5609	F12	NT06FT0234	hypothetical protein	208	N/A	2.701923
5611	G01	NT06FT0292	conserved hypothetical protein	208	CAG44897.1	-
5614	G02	NT06FT1144	hypothetical protein	208	N/A	-
5615	G03	NT06FT1859	drug resistance transporter, Bcr/CflA family, putative	208	N/A	1.980769
5619	G04	NT06FT0580	type I restriction-modification system	211	N/A	2
5621	G05	NT06FT0643	hypothetical protein	211	N/A	2
5623	G06	NT06FT1714	transposase	211	N/A	1.824645
5626	G07	NT06FT0466	hypothetical protein	214	CAG45056.1	2.672897
5627	G08	NT06FT0678	hypothetical protein	214	CAG45236.1	2

Clone	Well Position	Locus ID	Description (Gene name)	ORF Length	Accession Number	Average Depth of Coverage
5629	G09	NT06FT0831	hypothetical protein	214	N/A	2.691589
5633	G10	NT06FT0956	predicted CsgA, Rossmann fold oxidoreductase	214	N/A	1.682243
5635	G11	NTL06FT1480	hypothetical protein	214	N/A	-
5641	G12	NT06FT1052	beta-hydroxybutyrate dehydrogenase	217	N/A	2.700461
5645	H01	NT06FT0074	hypothetical protein	220	CAG44702.1	2
5649	H02	NT06FT0230	small basic protein sbpA	223	N/A	2
5651	H03	NT06FT0479	hypothetical protein	223	CAG45066.1	2
5655	H04	NT06FT1118	unnamed protein product; similar to CA0541 IPF14574 <i>Candida albicans</i> IPF14574 unknown function, start by similarity	223	CAG45621.1	1.825112
5657	H05	NT06FT1143	hypothetical protein	223	CAG45644.1	2.64574
5665	H06	NT06FT2007	DNA-binding response regulator KdpE	226	N/A	2
5670	H08	NT06FT0255	hypothetical protein	229	CAG44860.1	2.310044
5671	H09	NT06FT0657	conserved hypothetical protein	229	N/A	2
5674	H10	NT06FT0870	DNA-3-methyladenine glycosylase I	229	N/A	2.358079
5675	H11	NT06FT0980	conserved hypothetical protein	229	N/A	2
5677	H12	NTL06FT1284	hypothetical protein	229	N/A	2.676856