

TABLE S1 Overview of the gene content in the detected genomic islands of *C. diphtheriae*

ID	Ref. strain	Prominent function of island genes	Begin CDS	End CDS	Begin position	End position
GEI01	NCTC13129	diphtheria toxin encoding corynephage	DIP0179	DIP0222	152426	190661
GEI02	NCTC13129	adhesive pilus SpaDEF	DIP0223	DIP0247	190816	210235
GEI03	NCTC13129	iron transport system	DIP0282	DIP0290	249276	256671
GEI04	NCTC13129	secreted proteins, including polysaccharide degradation enzyme	DIP0334	DIP0359	305695	326445
GEI05	NCTC13129	metal transport system and secreted proteins	DIP0438	DIP0445	400793	409559
GEI06	NCTC13129	lantibiotic biosynthesis proteins	DIP0750	DIP0766	726536	742674
GEI07	NCTC13129	phage-related proteins	DIP0794	DIP0823	776261	796859
GEI08	NCTC13129	secreted proteins, including extracellular matrix-binding protein	DIP1645	DIP1664	1680222	1700446
GEI09	NCTC13129	phage-related proteins	DIP1817	DIP1843	1866720	1883310
GEI10	NCTC13129	adhesive pilus SpaABC	DIP2010	DIP2015	2059672	2070753
GEI11	NCTC13129	fimbrial-associated protein and surface-anchored protein	DIP2064	DIP2093	2114764	2144615
GEI12	NCTC13129	siderophore biosynthesis and transport proteins	DIP2143	DIP2170	2210329	2244077
GEI13	NCTC13129	CRISPR locus	DIP2208	DIP2234	2297805	2322967
GEI14	NCTC13129	CRISPR locus	DIP_0028	DIP_0051	27025	43284
GEI15	NCTC13129	iron transport system	DIP_0071	DIP_0115	63353	94809
GEI16	NCTC13129	antibiotic resistance protein	DIP_0267	DIP_0275	230464	239860
GEI17	NCTC13129	transport system with unknown function	DIP_0320	DIP_0326	285652	291817
GEI18	NCTC13129	two-component system and transport system with unknown function	DIP_0448	DIP_0466	418336	436609
GEI19	NCTC13129	siderophore biosynthesis and transport proteins	DIP_0582	DIP_0607	550390	573656
GEI20	NCTC13129	transport system with unknown function	DIP_1891	DIP_1901	1941600	1956347
GEI21	NCTC13129	secreted proteins	DIP_2021	DIP_2049	2076036	2096446
GEI22	NCTC13129	transport system with unknown function	DIP_2123	DIP_2135	2176625	2198998
GEI23	NCTC13129	two-component system and transport system with unknown function	DIP_2302	DIP_2345	2398584	2451928
GEI24	C7B	phage-related proteins	CDC7B_1067	CDC7B_1150	1089037	1159359
GEI25	C7B	lantibiotic biosynthesis proteins	CDC7B_1930	CDC7B_1952	2024186	2051307
GEI26	C7B	siderophore biosynthesis and transport proteins	CDC7B_2014	CDC7B_2065	2107819	2166562
GEI27	C7B	surface-anchored protein	CDC7B_2160	CDC7B_2165	2279123	2284410
GEI28	C7B	restriction modification system	CDC7B_2179	CDC7B_2206	2304445	2332330
GEI29	PW8	CRISPR locus	CDPW8_91	CDPW8_109	21058	39313
GEI30	PW8	adhesive pilus SpaDEF	CDPW8_293	CDPW8_337	213939	252446

GEI31	PW8	transport system with unknown function	CDPW8_576	CDPW8_592	498739	509951
GEI32	PW8	cadmium resistance transporter	CDPW8_1087	CDPW8_1095	1016410	1022192
GEI33	PW8	restriction modification system	CDPW8_1739	CDPW8_1758	1716010	1739950
GEI34	PW8	iron transport system	CDPW8_2284	CDPW8_2316	2323322	2352900
GEI35	PW8	phage related proteins	CDPW8_2386	CDPW8_2451	2426181	2492501
GEI36	CDC-E8392	iron transport system	CDCE8392_1780	CDCE8392_1803	1867205	1885631
GEI37	CDC-E8392	siderophore biosynthesis and transport proteins	CDCE8392_1959	CDCE8392_2005	2043540	2098643
GEI38	31A	heavy metal resistance	CD31A_0060	CD31A_0122	62250	115198
GEI39	31A	phage related proteins	CD31A_0181	CD31A_0221	172652	212984
GEI40	31A	phage related proteins	CD31A_1825	CD31A_1849	1886509	1902588
GEI41	31A	PTS system components	CD31A_2235	CD31A_2267	2343563	2369797
GEI42	241	iron transport system	CD241_0050	CD241_0112	52109	98200
GEI43	241	phage related proteins	CD241_1056	CD241_1076	1077551	1101484
GEI44	VA01	phage related proteins	CDVA01_0690	CDVA01_0709	716595	737522
GEI45	HC02	phage related proteins	CDHC02_1627	CDHC02_1680	1750716	1803508
GEI46	HC02	exinuclease ABC subunit and restriction modification system	CDHC02_1907	CDHC02_1948	2053624	2100249
GEI47	HC03	adhesive pilus SpaDEF	CDHC03_0157	CDHC03_0183	147156	172869
GEI48	HC03	aromatic compound degradation pathway	CDHC03_1952	CDHC03_1993	2092490	2136335
GEI49	HC03	adhesive pilus SpaGHI	CDHC03_2104	CDHC03_2124	2286643	2303806
GEI50	HC03	phage related proteins	CDHC03_2189	CDHC03_2243	2381066	2441651
GEI51	INCA 402	secreted protein	CDB402_0096	CDB402_0116	98619	117765
GEI52	INCA 402	adhesive pilus SpaGHI	CDB402_0196	CDB402_0212	209290	228289
GEI53	INCA 402	restriction modification system	CDB402_0644	CDB402_0648	673508	682784
GEI54	BH8	antibiotic resistance protein	CDBH8_0909	CDBH8_0937	903839	933423
GEI55	BH8	restriction modification system	CDBH8_0994	CDBH8_1000	985642	995208
GEI56	BH8	restriction modification system and iron transport system	CDBH8_1865	CDBH8_1886	1932568	1958462
GEI57	BH8	transport system with unknown function	CDBH8_2097	CDBH8_2124	2170434	2203375