

Table 3: Regions and genes (or domains of functional genes) specific to IP32953, in comparisons with CO92 and KIM10+

Regions	Gene	Location	Product	Possible IS-mediated deletions in <i>Y. pestis</i>	Putative regions of lateral transfer
1	YPTB0149	181028..181282	putative colicin immunity protein		phage
	YPTB0150	181435..181854	putative pyocin S2		
	YPTB0151	181856..182110	pyocin S2 immunity protein		
	YPTB0152	182263..182691	putative pyocin S2		
	YPTB0153	182688..182951	putative colicin immunity protein		
	YPTB0154	183509..183880	probable phage antitermination protein Q		
YPTB0155	184491..184826	hypothetical			
2	YPTB0187	complement(227114..228151)	possible Pentapeptide repeats protein		
3	YPTB0244	287857..288525	hypothetical		
	YPTB0245	288538..289740	conserved hypothetical protein		
4	YPTB0535	complement(628794..632042)	putative type I restriction enzyme, R subunit		other
	YPTB0536	complement(632052..633335)	putative type I restriction enzyme, S subunit		
	YPTB0537	complement(633337..635928)	putative type I restriction-modification system, methyltransferase subunit (N-6 DNA Methyla		
5	YPTB0557	658664..659932	possible conserved cysteine desulfurase		
	YPTB0558	659979..661157	possible acyl-CoA dehydrogenase		
	YPTB0559	661159..661434	hypothetical protein		
	YPTB0560	661436..662272	hypothetical protein		
	YPTB0561	662305..663531	putative protein involved in molybdopterin biosynthesis		
	YPTB0562	complement(663713..663949)	putative transposase		
6	YPTB0664	794132..795634	hypothetical protein		other
	YPTB0665	complement(795879..796010)	conserved hypothetical protein		
	YPTB0666	complement(796037..796414)	putative IS1400 transposase E		
7	YPTB0872	complement(1047598..1048368)	putative amidase-type enzyme		
	YPTB0873	complement(1048356..1049516)	putative aspartate aminotransferase		
	YPTB0874	1049656..1050324	probable sugar aldolase		
	YPTB0875	1050321..1051010	enolase-phosphatase E-1		
	YPTB0876	1051109..1051651	methionine salvage pathway enzyme E-2/E-2'		
	YPTB0877	complement(1051684..1052724)	putative translation initiation factor EIF-2B, GDP-GTP exchange factor (alpha subunit)		
	YPTB0878	1052920..1054143	5-methylthioribose kinase		
8	YPTB1058	1262526..1266098	conserved hypothetical protein	IS285	
9	YPTB1202	1432494..1433750	xanthosine permease		IS1541
	YPTB1203	complement(1433838..1434311)	conserved hypothetical protein		
	YPTB1204	1434661..1436475	possible 2-component Histidine kinase-sensor		
	YPTB1205	1436462..1437826	transcriptional regulatory protein hydG		
	YPTB1206	1438174..1439283	morphinone reductase		
	YPTB1207	complement(1439284..1440195)	putative transcriptional regulator		
	YPTB1208	1440765..1441091	conserved hypothetical protein		
	YPTB1209	complement(1441130..1442236)	conserved hypothetical protein		
	YPTB1210	complement(1442249..1443424)	conserved hypothetical protein		
	YPTB1211	complement(1443249..1445171)	putative ATP-binding component of a transport system		
	YPTB1212	complement(1445185..1446171)	putative membrane protein		
10	YPTB1213	complement(1446223..1446933)	putative transcriptional regulator		phage
	YPTB1214	1447324..1448679	putative ATP-dependent RNA helicase rhlE		
	YPTB1287	1535793..1536419	bacteriophage tail fiber protein		
YPTB1288	1536421..1536840	putative tail fiber assembly protein p3			
11	YPTB1292	complement(1540821..1541105)	putative colicin immunity protein		other
	YPTB1293	complement(1541134..1541391)	conserved hypothetical protein		
	YPTB1491	1787812..1789083	hypothetical		
12	YPTB1492	1789090..1789482	putative lipoprotein		
	YPTB1493	1789798..1792500	conserved hypothetical protein		
	YPTB1494	1792503..1792919	hypothetical		
	YPTB1495	1792928..1794676	possible LysM domain		
	YPTB1496	1794681..1795193	hypothetical		
13	YPTB1564	complement(1882973..1883629)	hypothetical		
14	YPTB1690	complement(2046009..2046608)	hypothetical		
	YPTB1738	complement(2097207..2097422)	prophage p2 ogr protein		
	YPTB1739	complement(2097514..2098680)	similar to D protein bacteriophage 186 and P2		
	YPTB1740	complement(2098677..2099162)	putative phage tail protein		
	YPTB1741	complement(2099162..2101588)	putative bacteriophage P2 tail protein gpT		
	YPTB1742	complement(2101581..2101703)	gpE+E' [Enterobacteria phage P2] gb/AAD03292.1] (AF063097) g...		
	YPTB1743	complement(2101736..2102047)	putative tail protein gpE P2 bacteriophage		
	YPTB1744	complement(2102098..2102613)	putative tail tube protein FII (bacteriophage P2)		
	YPTB1745	complement(2102627..2103796)	putative tail sheath protein (P2 and 186 bacteriophage)		
	YPTB1746	complement(2103924..2104406)	conserved hypothetical phage tail fiber protein		
	YPTB1747	complement(2104418..2105857)	hypothetical phage tail fiber protein		
	YPTB1748	complement(2105854..2106462)	putative bacteriophage protein		
	YPTB1749	complement(2106455..2107363)	probable bacteriophage protein		
	YPTB1750	complement(2107368..2107718)	possible phage-related protein		
	YPTB1751	complement(2107715..2108356)	putative phage-related baseplate assembly protein		
	YPTB1752	complement(2108430..2108879)	O protein [Enterobacteria phage 186] gb/AAC34159.1] (U32222)...		
	YPTB1753	complement(2108876..2109331)	gpR [Enterobacteria phage P2] sp/P36933/VPR_BPP2 TAIL COMPLE...		
	YPTB1754	complement(2109427..2109843)	putative Orf27, P2 LysB homolog; control of lysis [Ente...		
	YPTB1755	complement(2109845..2110351)	putative phage lysozyme		
	YPTB1756	complement(2110335..2110569)	likely phage related protein		
	YPTB1757	complement(2110547..2110750)	putative phage-related tail protein		
	YPTB1758	complement(2110750..2111223)	gpL [Enterobacteria phage P2] sp/P25475/VPL_BPP2 HEAD COMPLE...		
	YPTB1759	complement(2111323..2111982)	R protein [Enterobacteria phage 186] gb/AAC34151.1] (U32222)...		
	YPTB1760	complement(2111986..2113224)	(AJ298563) major capsid protein [Bacteriophage PhiD266]		
	YPTB1761	complement(2113301..2114155)	similar to V protein bacteriophage 186		
	YPTB1762	2114304..2116076	terminase subunit [Enterobacteria phage 186] gb/AAC3414...		
	YPTB1763	2116073..2116837	putative W protein [Enterobacteria phage 186] gb/AAC34147.1]...		
	YPTB1764	2116834..2117871	capsid portal protein [Enterobacteria phage 186] gb/AAC...		
	YPTB1765	complement(2118623..2118982)	putative gp46 [Bacteriophage N15] pif/T13133 protein gp46 ...		
	YPTB1766	complement(2119005..2121287)	putative phage P2 replication protein		
	YPTB1767	complement(2121274..2121546)	hypothetical protein 79 phage 186		
	YPTB1768	complement(2121612..2121923)	similar to gpB bacteriophage P2		
	YPTB1769	complement(2122130..2122639)	regulatory protein CII bacteriophage 186		
	YPTB1770	complement(2122694..2122891)	putative regulator for prophage CP-933T (E. coli O157:H7)		
	YPTB1771	2122962..2123573	CI repressor of phage 186 and others		
	YPTB1772	2123601..2124872	hypothetical protein		
	YPTB1773	2124872..2125750	hypothetical		
	YPTB1774	2125870..2126925	putative integrase		
	YPTB1775	2126922..2127968	hypothetical		
	YPTB1776	complement(2128303..2129325)	putative integrase		
	YPTB1777	complement(2129645..2130148)	hypothetical		
	YPTB1778	complement(2130242..2130580)	hypothetical		
	YPTB1779	complement(2130712..2131575)	hypothetical		
	YPTB1780	complement(2131934..2132170)	hypothetical		
YPTB1781	complement(2132407..2132835)	hypothetical			
YPTB1782	complement(2132832..2133971)	hypothetical			
YPTB1783	complement(2134016..2135620)	conserved hypothetical protein			
YPTB1784	complement(2135607..2136449)	conserved hypothetical protein			
YPTB1785	complement(2136750..2137088)	hypothetical protein			
YPTB1786	complement(2137092..2137598)	hypothetical protein			
YPTB1787	complement(2138463..2138732)	hypothetical protein			
YPTB1788	complement(2138817..2139062)	hypothetical protein			
YPTB1789	complement(2139340..2139957)	hypothetical protein			

15	YPTB1790	complement(2139968..2140654)	putative prophage repressor protein			
	YPTB1791	2140734..2141024	hypothetical protein			
	YPTB1792	2141042..2141404	hypothetical protein			
	YPTB1793	2141589..2142434	putative phage protein			
	YPTB1794	2142438..2143214	hypothetical protein			
	YPTB1795	2143218..2144354	possible recombination associated protein RdcC			
	YPTB1796	2144354..2144701	hypothetical protein			
	YPTB1797	2144698..2145624	putative DNA methyltransferase			
	YPTB1798	2145621..2146496	conserved hypothetical protein			
	YPTB1799	2146493..2148238	putative modification methylase			
	YPTB1800	2148235..2148882	conserved putative phage protein			
	YPTB1801	2149276..2150211	hypothetical protein			
	YPTB1802	2150208..2150666	hypothetical protein			
	YPTB1803	2150978..2151787	hypothetical protein			
	YPTB1804	2151960..2152172	putative holin protein			
	YPTB1805	2152172..2152660	probable endolysin (lysis protein) (lysozyme)			
	YPTB1806	2152792..2153310	hypothetical protein		phage	
	YPTB1807	2153528..2153968	putative UNKNOWN PROTEIN [Lactococcus lactis subsp. lac...			
	YPTB1808	2154075..2155097	putative transposase IS100			
	YPTB1809	2155097..2155876	putative IS100 transposase			
	YPTB1810	2155994..2156851	putative small subunit bacteriophage terminase			
	YPTB1811	2156848..2158554	putative bacteriophage terminase large subunit			
	YPTB1812	2158554..2160674	putative phage portal protein			
	YPTB1813	2160944..2161993	putative phage I protein			
	YPTB1814	2162053..2163276	putative phage protein			
	YPTB1815	2163354..2163737	putative phage protein			
	YPTB1816	2163803..2164255	putative phage protein			
	YPTB1817	2164258..2164854	conserved hypothetical protein			
	YPTB1818	2164854..2165507	putative phage protein			
	YPTB1819	2165504..2167639	hypothetical phage protein			
	YPTB1820	2167650..2168114	putative phage tail fiber assembly protein			
	YPTB1821	complement(2168127..2168453)	putative acyl carrier protein			
	YPTB1822	complement(2168447..2168911)	putative membrane protein			
	YPTB1823	2169143..2170771	phage hypothetical protein			
	YPTB1824	2170768..2171874	bacteriophage hypothetical protein			
	YPTB1825	2171941..2172972	conserved hypothetical protein			
	YPTB1826	2172947..2173321	bacteriophage hypothetical protein			
	YPTB1827	2173329..2173934	bacteriophage hypothetical protein			
	YPTB1828	2173950..2174333	bacteriophage hypothetical protein			
	YPTB1829	2174333..2174572	bacteriophage hypothetical protein			
	YPTB1830	2174583..2175974	bacteriophage hypothetical protein			
	YPTB1831	2176308..2182709	bacteriophage hypothetical protein			
	YPTB1832	2182663..2184330	hypothetical protein			
	YPTB1833	complement(2184581..2184985)	hypothetical			
	YPTB1834	complement(2185864..2186037)	prophage p2 ogr protein			
	YPTB1835	complement(2186112..2187206)	bacteriophage P2 gpD protein			
	YPTB1836	complement(2187203..2187667)	putative bacteriophage P2 tail protein			
	YPTB1837	complement(2187679..2190594)	putative tail fiber component T of bacteriophage P2			
	YPTB1838	complement(2190587..2190709)	gpE+E [Enterobacteria phage P2] gb/AAD03292.1] (AF063097) g...			
	YPTB1839	complement(2190721..2191068)	possible (AF153829) unknown [Salmonella typhi]			
	YPTB1840	complement(2191122..2191637)	putative P2 tail tube protein			
	YPTB1841	complement(2191649..2192824)	putative bacteriophage P2 tail sheath protein			
	YPTB1842	complement(2192958..2193437)	conserved hypothetical protein			
	YPTB1843	complement(2193449..2194888)	bacteriophage hypothetical protein			
	YPTB1844	complement(2194885..2195493)	putative bacteriophage P2 protein			
	YPTB1845	complement(2195486..2196394)	putative bacteriophage P2 related protein			
	YPTB1846	complement(2196397..2196750)	putative phage-related protein			
	YPTB1847	complement(2196747..2197382)	Orf32; P2 V homolog; baseplate protein [Enterobacteria ...			
	YPTB1848	complement(2197713..2198429)	hypothetical protein			
	YPTB1849	complement(2198746..2199192)	putative O protein [bacterio phage 186] gb/AAC34159.1]...			
	YPTB1850	complement(2199189..2199656)	gpR [Enterobacteria phage P2] sp/P36933/VPR_BFP2 TAIL COMPLE...			
	YPTB1851	complement(2199755..2200180)	putative (AB008550) orf12, similar to LysB gene of P21...			
	YPTB1852	complement(2200185..2200580)	bacteriophage P7 related protein			
	YPTB1853	complement(2200567..2200953)	conserved hypothetical protein			
	YPTB1854	complement(2200983..2201186)	putative WPhage-related tail protein			
	YPTB1855	complement(2201186..2201677)	putative orf4 of phage P2 (gene L)			
	YPTB1856	complement(2201911..2202564)	putative R protein bacteriophage 186 gb/AAC34151.1]			
	YPTB1857	complement(2202571..2203626)	putative major capsid protein [Bacteriophage PhiD5]			
	YPTB1858	complement(2203663..2204478)	similar to V protein phage 186			
	YPTB1859	2204649..2206412	similar to gpP phage P2 TERMINASE			
	YPTB1860	2206460..2207452	similar to capsid portal protein bacteriophage 186 gb/AAC...			
	YPTB1861	complement(2208134..2208478)	putative Bacteriophage protein gp46			
	YPTB1862	complement(2208686..2211241)	putative phage replication protein			
	YPTB1863	complement(2211330..2212148)	putative DNA adenine methylase			
	YPTB1864	complement(2212145..2212798)	similar to Orf1 bacteriophage 186			
	YPTB1865	complement(2212855..2213622)	hypothetical protein			
	YPTB1866	complement(2213705..2214013)	hypothetical protein			
	YPTB1867	complement(2214041..2214301)	hypothetical protein			
	YPTB1868	complement(2214443..2214757)	hypothetical protein			
	YPTB1869	complement(2214972..2215175)	putative DNA-binding protein			
	YPTB1870	2215440..2215808	putative prophage transcriptional regulator			
	YPTB1871	2215829..2217526	similar to hypothetical bacteriophage P27 protein			
	YPTB1872	2217547..2217966	putative bacteriophage integrase			
	YPTB1873	2218035..2218415	hypothetical protein			
	YPTB1874	2218415..2218747	putative bacteriophage integrase			
	YPTB1875	2219041..2219418	putative phage integrase			
	16	YPTB1884	2225288..2226646	possible multidrug-efflux transporter		other
		YPTB1885	2226643..2228376	possible ThiF family		
		YPTB1886	2228366..2229091	conserved hypothetical protein		
		YPTB1887	2229079..2229933	hypothetical protein		
		YPTB1888	2229918..2230730	conserved hypothetical protein		
	YPTB1889	2230727..2231893	possible diaminopimelate decarboxylase			
	YPTB1890	2231868..2232425	putative similar to ribosomal-protein-alanine N-acetyltransfe...			
	YPTB1891	complement(2232455..2232757)	weak similarity to Vibrio transposas			
	17	YPTB2180	complement(2565873..2566877)	adenosine deaminase		
		YPTB2181	2567266..2568522	hypothetical		
		YPTB2182	complement(2568695..2569624)	conserved hypothetical protein		
		YPTB2183	2569923..2570747	putative transcriptional regulator		
	18	YPTB2193	complement(2583135..2583380)	conserved hypothetical protein		
		YPTB2194	complement(2583594..2583968)	conserved hypothetical protein		
		YPTB2195	complement(2584195..2584944)	probable oxidoreductase in dep-nohA intergenic region		
		YPTB2196	complement(2585058..2586860)	putative transcriptional regulator		
		YPTB2197	2587156..2588876	probable aldehyde dehydrogenase		
		YPTB2198	complement(2588957..2590555)	(AF335466) unknown [Yersinia pseudotuberculosis]		
	YPTB2199	2591079..2592002	putative membrane protein			
	19	YPTB2200	complement(2592808..2593986)	putative aminotransferase		
		YPTB2201	complement(2593973..2594542)	conserved hypothetical protein		
	20	YPTB2205	complement(2597263..2598324)	ribose ABC transporter, permease protein		
		YPTB2206	complement(2598351..2599889)	putative ribose ABC transporter, ATP-binding protein		
		YPTB2207	complement(2599886..2600539)	conserved hypothetical protein		
	YPTB2455	2900644..2900910	putative phage replication protein gene fragment			
	YPTB2456	2901382..2901567	hypothetical			

21	YPTB2457 YPTB2458 YPTB2459 YPTB2460 YPTB2461 YPTB2462	complement(2901687..2902217) complement(2902330..2903445) complement(2903918..2905096) complement(2905610..2906083) 2906112..2906390 2906975..2907220	hypothetical hypothetical hypothetical putative capsid portal protein [Enterobacteria phage 18...] hypothetical conserved hypothetical protein	IS1541	phage
22	YPTB2490 YPTB2491 YPTB2492 YPTB2493 YPTB2494 YPTB2495 YPTB2496 YPTB2497	2936394..2937314 2938011..2939549 complement(2939796..2940128) complement(2940161..2942770) complement(2942763..2944349) 2944676..2945572 2945778..2946023 2946367..2948094	lipid A biosynthesis lauroyl acyltransferase putative di-tripeptide transport system permease protein conserved hypothetical protein hypothetical membrane glycosyltransferase periplasmic glucans biosynthesis protein glucans biosynthesis protein (partial) hypothetical conserved hypothetical protein		
23	YPTB2539	complement(3006939..3007601)	conserved hypothetical protein		
24	YPTB2749 YPTB2750 YPTB2751 YPTB2752 YPTB2752 YPTB2752	complement(3249394..3250119) complement(3250122..3250829) complement(3250826..3251497) 3251579..3251869 3251854..3251988 3252037..3252162	hypothetical hypothetical hypothetical part of IS630 part of IS630 orfA - pseudogene part of IS630 orfA - pseudogene		other
25	YPTB2793	complement(3295818..3297104)	uracil transport	IS1541	
26	YPTB3129 YPTB3130 YPTB3131 YPTB3132 YPTB3133 YPTB3134 YPTB3135 YPTB3136 YPTB3137 YPTB3138 YPTB3139 YPTB3140 YPTB3141 YPTB3142 YPTB3143 YPTB3144 YPTB3145 YPTB3146 YPTB3147 YPTB3148 YPTB3149 YPTB3150 YPTB3151 YPTB3152 YPTB3153 YPTB3154 YPTB3155 YPTB3156 YPTB3157 YPTB3352 YPTB3159 YPTB3160 YPTB3161	complement(3688397..3689380) complement(3689447..3689794) 3689860..3690132 3690338..3690622 3691181..3691450 3691680..3692030 3692337..3693002 3693012..3693713 3694060..3696615 complement(3696877..3697203) complement(3697200..3698267) complement(3698264..3700069) 3700242..3701330 3701365..3702393 3702396..3703100 3703209..3703682 3703679..3704173 3704170..3704829 3704853..3706019 3706022..3706477 3706487..3706789 3706786..3707127 3707127..3707501 3707616..3707891 3708117..3710093 3710090..3710419 3710416..3711600 3711593..3712216 3712226..3713821 3983362..3983775 3714336..3715046 3715039..3715593 3715590..3717311	Possible phage integrase/recombinase Putative [Enterobacteria phage P2] gpC-like protein. Probable bacteriophage Cox protein hypothetical protein Hypothetical Conserved hypothetical protein putative conserved bacteriophage protein putative conserved bacteriophage protein Putative phage protein. Possible (AB008550) orf34 [bacteriophage phi CTX] Hypothetical, similar to orf34 (AB008550) [phage phi CTX]. Possible [Haemophilus phage HPI1] orf16-like phage protein. hypothetical phage protein probable phage protein Conserved hypothetical phage protein Conserved hypothetical phage protein Conserved hypothetical phage protein Conserved hypothetical phage protein Conserved hypothetical phage protein possible phage P2 holin-like protein Hypothetical hypothetical hypothetical protein similar to protein 26 - phage HPI Putative bacteriophage tail protein. hypothetical protein similar to protein 28 - phage HPI Putative bacteriophage protein. Putative bacteriophage protein. Hypothetical protein Flagellar switch protein Possible bacteriophage protein. Hypothetical protein similar to protein 34 (AY27935) - Phage HP2 Hypothetical bacteriophage protein		phage
27	YPTB3274 YPTB3275 YPTB3276	complement(3859378..3859902) complement(3860127..3860465) complement(3860595..3861122)	hypothetical hypothetical hypothetical		
28	YPTB3279 YPTB3280 YPTB3281	complement(3864435..3865094) complement(3865483..3865908) complement(3866252..3866743)	Hypothetical Hypothetical Hypothetical		
29	YPTB3364 YPTB3365 YPTB3366 YPTB3367 YPTB3368 YPTB3369	complement(3997470..3998000) 3999120..4000535 4000604..4002013 4002384..4002578 4003499..4004086 4004309..4004506	fimbriae Putative Serratia marcescens-like C1 chitinase. chitin-binding protein Possible transposase fragment. Possible Yersinia enterocolitica-like Orf1 (AF005744) Hypothetical	IS1541	other
30	YPTB3451 YPTB3452 YPTB3453	complement(4098135..4098386) complement(4098388..4098705) complement(4098990..4099343)	Hypothetical conserved hypothetical protein hypothetical		
31	YPTB3455	complement(4101394..4101894)	conserved hypothetical protein		
32	YPTB3458 YPTB3459	complement(4108387..4108776) complement(4108782..4109594)	hypothetical hypothetical protein		
33	YPTB3620	complement(4306508..4307125)	hypothetical protein		
34	YPTB3613 YPTB3614	complement(4297082..4297327) complement(4297516..4297797)	rhs accessory hypothetical		
35	YPTB3795	complement(4526143..4527395)	conserved hypothetical protein		
36	YPTB3862 YPTB3863 YPTB3865 YPTB3866 YPTB3867 YPTB3868 YPTB3869 YPTB3870 YPTB3871 YPTB3872 YPTB3873 YPTB3874 YPTB3877 YPTB3878 YPTB3879 YPTB3880 YPTB3881 YPTB3882 YPTB3883 YPTB3884 YPTB3885	complement(4615019..4615396) complement(4615368..4615775) complement(4616645..4617502) complement(4617726..4618190) complement(4618147..4618482) complement(4618494..4618973) complement(4619156..4619776) complement(4619804..4620358) complement(4620606..4621238) complement(4621286..4621615) 4622244..4622864 complement(4623046..4623696) complement(4625594..4625920) complement(4626056..4626793) complement(4626797..4630075) complement(4630072..4631118) complement(4631115..4632344) complement(4632334..4633857) complement(4633864..4634442) 4634660..4635574 complement(4635877..4636101)	putative DNA-binding protein conserved hypothetical protein conserved hypothetical protein conserved hypothetical protein conserved hypothetical protein conserved hypothetical protein hypothetical hypothetical conserved hypothetical protein putative IS100 transposase conserved hypothetical protein mrr restriction system protein mrr restriction system protein putative predicted metal-dependent hydrolase possible type I restriction enzyme (restriction subunit) conserved hypothetical protein possible restriction modification enzyme putative type I site-specific deoxyribonuclease I.IIdf chain h... hypothetical conserved hypothetical protein putative (AJ250469) putative SinR-like protein [Clostri.		other