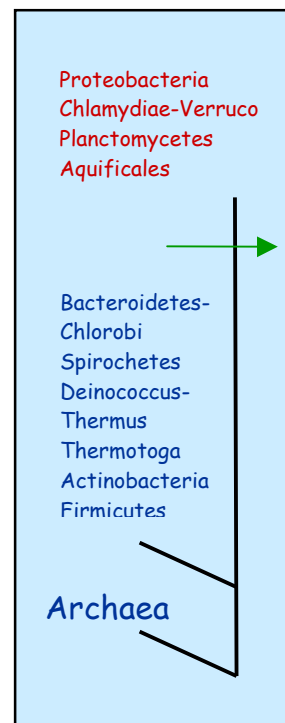


Main Line Signature in DNA Gyrase B

Griffiths and Gupta (2007) Microbiology

			529	(210aa)	751	
Proteobacteria	<i>E. coli</i>	AAN83054	YIAQPPLYKV	QRYKGLGEMNPEQL		
	<i>V. cholerae</i>	NP_062599	-----	-----D--		
	<i>Pas. multocida</i>	NP_246415	-----	-----		
	<i>Pse. aeruginosa</i>	NP_064724	-----	-----		
	<i>Ral. solanacearum</i>	AAZ59385	-----I	-----S--		
	<i>Nei. meningitidis</i>	A49794	-----A	-----		
	<i>Ca. crescentus</i>	NP_418979	-----A	-----D--		
	<i>A. tumefaciens</i>	AAL41043	-----	-----A--		
	<i>Bde. bacteriovorus</i>	NP_967034	-----RA	-----		
	<i>Desulf. vulgaris</i>	ABB36804	-----RA	-----		
Aquificales	<i>Geo. sulfurreducens</i>	YP_382979	-----	-----		
	<i>Camp. jejuni</i>	AAC62775	-L-----LY	-----		
	<i>Hel. pylori</i>	AAD06031	---A---Y	-----ND-		
	<i>Aqu. aeolicus</i>	AAC07098	---E---R-	-----		
	<i>Per. marina</i>	TIGR	-----L	-----		
	<i>Hyd. marinus</i>	DQ680040	-----RL	-----		
	Chlamydiales and Verrucomicrobium	<i>Proto. amoebophila</i>	CAF23799	-----R-	-----AD--	
		<i>Wad. chondrophila</i>	DQ680041	-----L-	-----AD--	
		<i>Sim. negevensis</i>	TIGR	-----	-----AD--	
		<i>Chl. trachomatis</i>	AAX50450	-----R-	-----AD--	
<i>Chl. muridarum</i>		AAF39313	-----R-	-----AD--		
<i>Chlam. pneumoniae</i>		AAF98215	-----	-----AD--		
<i>Chlam. caviae</i>		AAF05250	-----	-----AD--		
<i>Chlam. felis</i>		YP_515419	-----	-----AD--		
<i>Chlam. abortus</i>		YP_219906	-----	-----AD--		
<i>Ver. spinosum</i>		TIGR	-----L-	R-F-----AKE-		
Planctomycetes	<i>Bla. marina</i>	EAQ80721	-V-----FR-	T-F-----A-E-		
	<i>Gem. obscuriglobus</i>	TIGR	FV-R-----	T-F-----D--E-		
	<i>Rho. baltica</i>	NP_868712	-V-----FR-	T-F-----A-E-		
	Bacteroidetes-Chlorobi Group	<i>Cb. tepidum</i>	AAM73478	F-----L-	-----	
		<i>Por. gingivalis</i>	BAB33157	F--T----LC	-----E--	
		<i>Bact. fragilis</i>	YP_209983	---T----LC	-----AQ-	
	Spirochetes	<i>Bor. burgdorferi</i>	AAC66802	---M-----I	-----T--	
		<i>Tre. pallidum</i>	AAC65954	-L-M----RI	-----DGT--	
	Cyanobacteria	<i>Nostoc sp. PCC 7120</i>	BAB76964	---C-----	--F-----M---	
		<i>Gloe. violaceus</i>	BAC90447	-----I	--F-----QAD--	
Deino-Thermus		<i>D. radiodurans</i>	AAF10481	-----I	-----A--	
	<i>The. thermophilus</i>	AAF89615	-----RL	--F-----		
Actinobacteria	<i>T. maritima</i>	AAD35915	---L----RI	-----		
	<i>Cor. glutamicum</i>	BAB97399	-L-----L	-----ASE-		
	<i>Str. coelicolor</i>	AAA65215	-LSR----I	--F-----A-E-		
	<i>Bif. longum</i>	NP_695821	-V-M----RL	-----SYQE-		
	<i>Myc. tuberculosis</i>	BAA89757	FL-----L	-----DAKE-		
Firmicutes	<i>Sta. aureus</i>	YP_300095	-----L	A-----AD--		
	<i>Clo. acetobutylicum</i>	BAB79712	F-----	-----		
	<i>Bac. subtilis</i>	CAA26221	-----	-----AT--		
	<i>Strep. pneumoniae</i>	NP_721651	-----I-GI	-----DDH--		
Archaea	<i>Met. acetivorans</i>	NP_616517	-----RI	-----		
	<i>Arc. fulgidus</i>	NP_069366	-----QI	-----Q--		
	<i>Pic. torridus</i>	AAT43999	-F-E----RI	--F-----		

No exceptions to the indicated pattern observed in sequences for >600 species.



A large insert (~150-180 aa) within a conserved region of Gyrase B (boxed) that is commonly shared by various Proteobacteria, *Chlamydiales*, *Planctomycetes*, *V. spinosum* and *Aquificales* species. The 25-35 amino acids immediately flanking this insert do not show high degree of conservation. Hence, to portray the large insert and its conserved flanking regions, a smaller insert corresponding to the non-conserved regions is indicated in various sequences. The absence of this large insert in species from various other bacterial phyla as well as archaea indicates that the groups lacking this insert are ancestral and that the genetic change (RGC) responsible for this occurred at the evolutionary stage shown in interpretive diagram (on the right). Dashes in the alignment show identity with the amino acid on the top line. Sequence information for only representative species from different phyla is presented. However, all other available sequences from these groups behaved in the indicated manner. Sequences for a few of the species (marked TIGR) were obtained by Blast searches at The Institute for Genomic Research website at <http://www.tigr.org>.