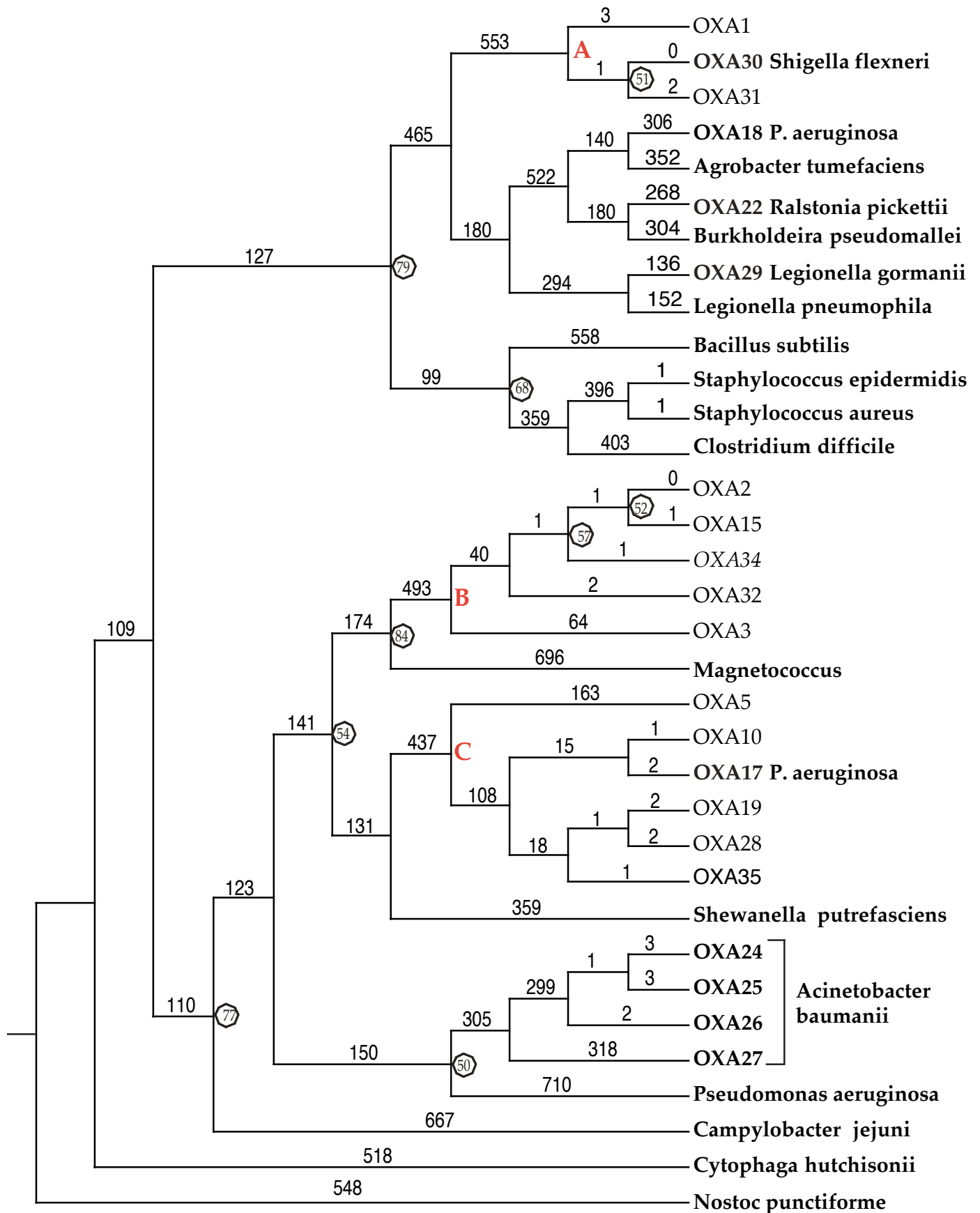


Class D Phylogeny



Sequences descended from nodes A, B and C are plasmid-borne; i.e. those nodes are when Class D OXA genes were mobilized from chromosomes onto plasmids. The mobilization at Node B occurred about 42 million years ago, and tht at Node C about 116 million years ago

Barlow, M. and B.G. Hall. 2002 Phylogenetic analysis shows that the OXA β -lactamase genes have been on plasmids for millions of years. J. Mol. Evol. 55: 314-321.

NAME	genbank	plas/chr	organism	Reference
OXA1	AJ238349	plasmid		Microb Drug Resist 1999 Winter;5(4):279-87
OXA2	M25261	plasmid	Salmonella typhimurium	J. Gen. Microbiol. 135 (Pt 4), 761-765 (1989)
OXA3	L07945	plasmid		Antimicrob. Agents Chemother. 39 (4), 887-893 (1995)
OXA5	X58272	plasmid	Pseudomonas aeruginosa	Mol. Microbiol. 6 (12), 1693-1705 (1992)
OXA10	U37105	plasmid	Pseudomonas aeruginosa	
OXA15	U63835	plasmid	Pseudomonas aeruginosa	Antimicrob. Agents Chemother. 41 (4), 785-790 (1997)
OXA17	AF060206	chrom	Pseudomonas aeruginosa	Antimicrob. Agents Chemother. 43 (6), 1362-1366 (1999)
OXA18	U85514	chrom	Pseudomonas aeruginosa	Antimicrob. Agents Chemother. 41 (10), 2188-2195 (1997)
OXA19	AF043381	plasmid	Pseudomonas aeruginosa	Antimicrob. Agents Chemother. 42 (12), 3113-3116 (1998)
OXA22	AF064820	chrom	Ralstonia pickettii	Antimicrob. Agents Chemother. 44 (8), 2201-2204 (2000)
OXA24		chrom	Acinetobacter baumannii	Antimicrob. Agents Chemother. 44 (6), 1556-1561 (2000)
OXA25	AF201826	chrom	Acinetobacter baumannii	Antimicrob. Agents Chemother. 45 (2), 583-588 (2001)
OXA26	AF201827	chrom	Acinetobacter baumannii	Antimicrob. Agents Chemother. 45 (2), 583-588 (2001)
OXA27	AF201828	chrom	Acinetobacter baumannii	Antimicrob. Agents Chemother. 45 (2), 583-588 (2001)
OXA28	AF231133	plasmid	Pseudomonas aeruginosa	Antimicrob. Agents Chemother. 45 (2), 447-453 (2001)
OXA29	AJ400619	chrom	Legionella gormanii	Antimicrob Agents Chemother. 2001 Dec;45(12):3509-3516.
OXA30	AF255921	chrom	Shigella	Antimicrob. Agents

			flexneri	Chemother. 44 (8), 2034-2038 (2000)
OXA31	AF294653	plasmid	<i>Pseudomonas aeruginosa</i>	Antimicrob. Agents Chemother. 45 (6), 1615-1620 (2001)
OXA32	AF315351	plasmid	<i>Pseudomonas aeruginosa</i>	unpublished
OXA34	AF350424		<i>Pseudomonas aeruginosa</i>	unpublished
OXA35	AF315786	plasmid	<i>Pseudomonas aeruginosa</i>	J Antimicrob Chemother. 2001 Nov;48(5):717-21
	SANGER 28450	chrom	<i>Burkholderia pseudomallei</i>	
ybdS similar to beta-lactamase"	Z99105	chrom	<i>Bacillus subtilis</i>	Nature 390 (6657), 249-256 (1997)
	TIGR 1282	chrom	<i>Staphylococcus epidermidis</i>	
mecR1(methicillin resistance gene)	AP003358	chrom	<i>Staphylococcus aureus</i> Mu50	Lancet 357 (9264), 1225-1240 (2001)
	SANGER 1496	chrom	<i>Clostridium difficile</i>	
	DOE 985	chrom	<i>Cytophaga hutchisonii</i>	
	TIGR 24	chrom	<i>Shewanella putrefasciens</i>	
	DOE 63737	chrom	<i>Nostoc punctiforme</i>	
	DOE 156889	chrom	<i>Magnetococcus MC-1</i>	
putative periplasmic beta-lactamase	CJ11168X1	chrom	<i>Campylobacter jejuni</i>	Nature 403 (6770), 665-668 (2000)
probable beta-lactamase	AE004964	chrom	<i>Pseudomonas aeruginosa</i>	Nature 406 (6799), 959-964 (2000)
class D beta-lactamase	AE008024	chrom	<i>Agrobacter tumefaciens</i>	DIRECT SUBMISSION
	CUCGC 446	chrom	<i>Legionella pneumophila</i>	

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