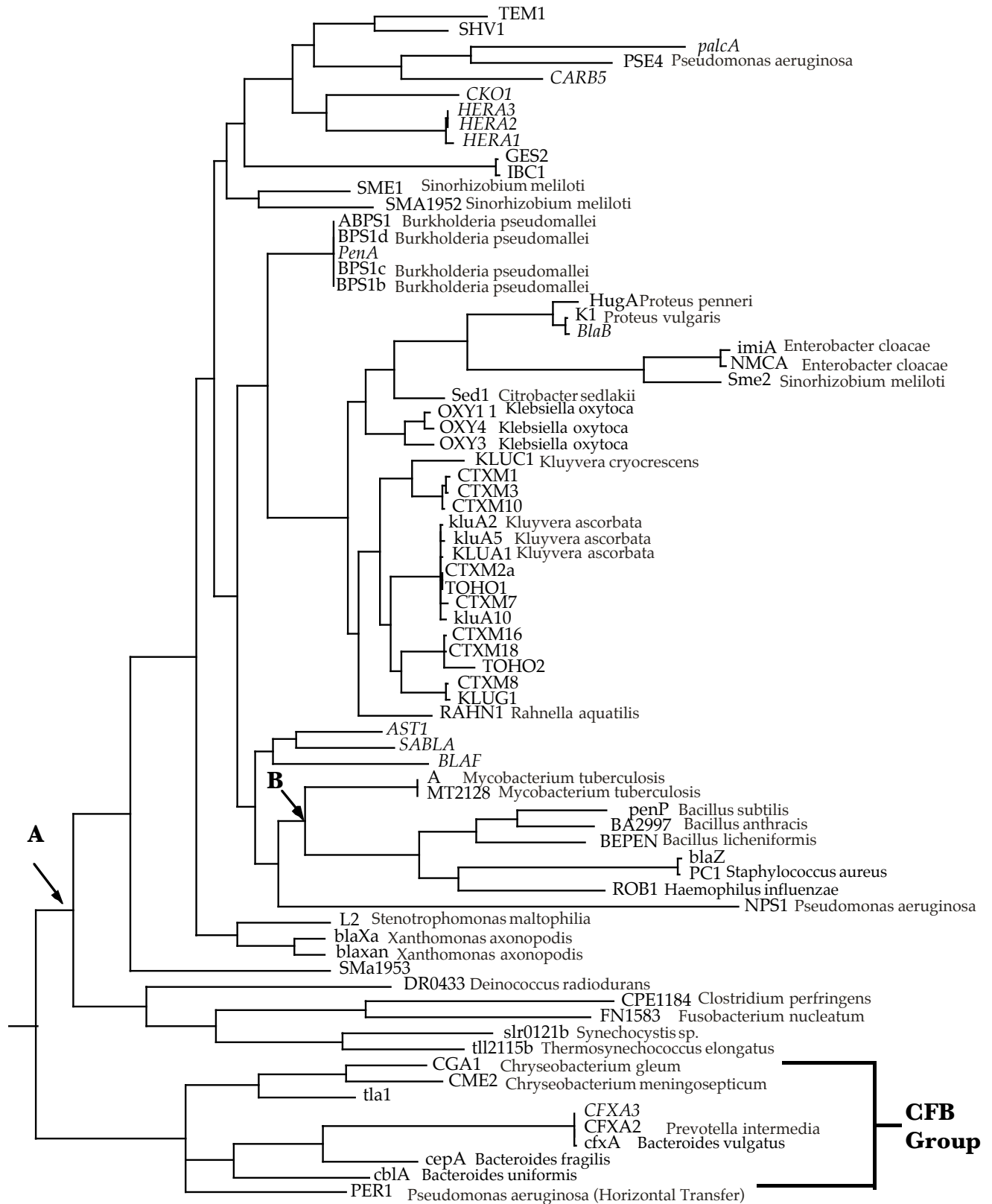


Class A Serine β -lactamases



— 144 nucleotide changes
 Node A: divergence of Gram+ and Gram- bacteria, Node B: horizontal transfer from the Gram- Proteobacteria into Gram+ bacteria.

Hall, B.G. and M. Barlow 2004. Evolution of the serine β -lactamases: Past, Present and Future. Drug Resistance Updates 7: 111-123.

Taxon Name	Organism	Gene Location	Accession Number
A	Mycobacterium tuberculosis	Chromosome	U67924
ABPS1	Burkholderia pseudomallei	Chromosome	AF326770
AST1	Nocardia asteroides	Chromosome	AF279904
BA2997	Bacillus anthracis str. A2012	Chromosome	NC_003995
BEPEN	Bacillus licheniformis	Chromosome	V00093
BlaB	Proteus vulgaris	Chromosome	D37831
BLAF	Mycobacterium fortuitum	Unknown	L25634
blaXa	Xanthomonas axonopodis pv. citri str. 306	Chromosome	NC_003919
blaxan	Xanthomonas campestris pv. campestris str. ATCC 33913	Chromosome	NC_003902
blaZ	Staphylococcus aureus subsp. aureus N315	Plasmid	NC_003140
BPS1b	Burkholderia pseudomallei	Chromosome	AF441237
BPS1c	Burkholderia pseudomallei	Chromosome	AF441238
BPS1d	Burkholderia pseudomallei	Chromosome	AF441239
CARB5	Acinetobacter calcoaceticus subsp. anitratus	Chromosome	AF135373
cbIA	Bacteroides uniformis	Chromosome	L08472
cepA	Bacteroides fragilis	Chromosome	U05888
cfxA	Bacteroides vulgatus		U38243
CFXA2	Prevotella intermedia	Chromosome	AF118110
CFXA3	Capnocytophaga ochracea	Unknown	AF472622
CGA1	Chryseobacterium gleum	Chromosome	AF339733
CKO1	Citrobacter koseri	Unknown	AF477396
CME2	Chryseobacterium meningosepticum	Chromosome	AF033200
CPE1184	Clostridium perfringens	Chromosome	NC_003366
CTXM1	Escherichia coli	Plasmid	AJ416340
CTXM10	Escherichia coli	Plasmid	AF255298
CTXM16	Klebsiella pneumoniae	Plasmid	AY033516
CTXM18	Klebsiella pneumoniae	Plasmid	AF325133
CTXM2a	Proteus mirabilis	Plasmid	AJ416343

CTXM3	<i>Citrobacter freundii</i>	Unknown	Y10278
CTXM7	<i>Salmonella typhimurium</i>	Plasmid	AJ005045
CTXM8	<i>Citrobacter amalonaticus</i>	Plasmid	AF189721
DR0433	<i>Deinococcus radiodurans</i>	Chromosome	NC_001263
FN1583	<i>Fusobacterium nucleatum</i> subsp. <i>nucleatum</i> ATCC 25586	Chromosome	NC_003454
GES2	<i>Pseudomonas aeruginosa</i>	Plasmid	AF326355
HERA1	<i>Escherichia hermannii</i>	Unknown	AF311385
HERA2	<i>Escherichia hermannii</i>	Unknown	AF398334
HERA3	<i>Escherichia hermannii</i>	Chromosome	AF398335
HugA	<i>Proteus penneri</i>	Chromosome	AF324468
IBC1	<i>Enterobacter cloacae</i>	Plasmid	AF208529
imiA	<i>Enterobacter cloacae</i>	Chromosome	U50278
K1	<i>Proteus vulgaris</i>	Chromosome	D29982
KLUA1	<i>Kluyvera ascorbata</i>	Chromosome	AJ272538
kluA10	<i>Kluyvera ascorbata</i>	Chromosome	AJ427467
kluA2	<i>Kluyvera ascorbata</i>	Unknown	AJ251722
kluA5	<i>Kluyvera ascorbata</i>	Chromosome	AJ427463
KLUC1	<i>Kluyvera cryocrescens</i>	Chromosome	AY026417
KLUG1	<i>Kluyvera georgiana</i>	Chromosome	AF501233
L2	<i>Stenotrophomonas maltophilia</i>	Chromosome	AF299368
MT2128	<i>Mycobacterium tuberculosis</i> CDC1551	Chromosome	NC_002755
NMCA	<i>Enterobacter cloacae</i>	Chromosome	Z21956
NPS1	<i>Pseudomonas aeruginosa</i>	Chromosome	AY027589
OXY1_1	<i>Klebsiella oxytoca</i>	Chromosome	Z30177
OXY3	<i>Klebsiella oxytoca</i>	Chromosome	AF491278
OXY4	<i>Klebsiella oxytoca</i>	Chromosome	AY077481
palcA	<i>Providencia alcalifaciens</i>	Unknown	AJ438771
PC1	<i>Staphylococcus aureus</i>	Chromosome	M25252
PenA	<i>Burkholderia mallei</i>	Chromosome	AY032868
penP	<i>Bacillus subtilis</i>	Chromosome	NC_000964
PER1	<i>Pseudomonas aeruginosa</i>	Chromosome	Z21957
PSE4	<i>Pseudomonas aeruginosa</i>	Chromosome	J05162
RAHN1	<i>Rahnella aquatilis</i>	Chromosome	AF338038
ROB1	<i>Haemophilus influenzae</i>	Chromosome	AF022114
SABLA	<i>Streptomyces albus</i>	Chromosome	M28303
Sed1	<i>Citrobacter sedlakii</i>	Chromosome	AF321608
SHV1	<i>Klebsiella pneumoniae</i>	Plasmid	X98098
slr0121b	<i>Synechocystis</i> sp. PCC 6803	Chromosome	NC_000911

SMA1952	Sinorhizobium meliloti	Plasmid	NC_003037
SMA1953	Sinorhizobium meliloti	Plasmid	NC_003037
SME1	Sinorhizobium meliloti	Chromosome	NC_003047
Sme2	Serratia marcescens	Chromosome	AF275256
TEM1		Plasmid	AF309824
tla1	Escherichia coli	Plasmid	AF148067
tll2115b	Thermosynechococcus elongatus BP-1	Chromosome	NC_004113
TOHO1	E. coli	Plasmid	D37830
TOHO2	Escherichia coli	Plasmid	D89862