

APPENDIX

Table 1: List of unique drug targets for CA-MRSA

Sr. No.	Gene ID	Gene Name	TARGET	Pathways	E/NE
1.	MW2435	fbp	Fructose-bisphosphatase [EC:3.1.3.11]	Glycolysis / Gluconeogenesis	NE
				Pentose phosphate pathway	
				Fructose and mannose metabolism	
2.	MW2049	fbaA	Fructose-bisphosphatealdolase (EC:4.1.2.13)	Glycolysis / Gluconeogenesis	E
				Pentose phosphate pathway	
				Fructose and mannose metabolism	
				Methane metabolism	
3.	MW0737	pgm	Phosphoglyceromutase (EC:5.4.2.1)	Glycolysis / Gluconeogenesis	E
				Glycine, serine and threonine metabolism	
				Methane metabolism	
4.	MW1729	pckA	Phosphoenol-pyruvate carboxykinase (EC:4.1.1.49)	Glycolysis / Gluconeogenesis	NE
				TCA cycle	
				Pyruvate metabolism	
5.	MW1312	N/A	PTS system glucose-specific enzyme II A component	Glycolysis / Gluconeogenesis	NE
6.	MW2244	glvC	PTS system arbutin-like IIBC component	Glycolysis / Gluconeogenesis	E
7.	MW1173	N/A	2-oxoglutarate ferredoxin-oxidoreductase subunit beta	TCA cycle	NE
8.	MW1030	sdhC	Succinate dehydrogenase cytochrome b-558	TCA cycle	E
				Oxidative phosphorylation	
				Butanoate metabolism	
9.	MW0844	pgi	Glucose-6-phosphate isomerase (EC:5.3.1.9)	Pentose phosphate pathway	E
				Amino sugar and nucleotide sugar metabolism	
10.	MW1721	N/A	Putative transaldolase (EC:2.2.1.2)	Pentose phosphate pathway	NE

11.	MW0113	drm	Phosphopentomutase (EC:5.4.2.7)	Pentose phosphate pathway	E
				Purine metabolism	
12.	MW2419	gtaB	UTP-glucose-1-phosphate uridylyltransferase	Pentose and glucuronate- interconversions	NE
				Galactose metabolism	
				Starch and sucrose metabolism	
				Amino sugar and nucleotide sugar metabolism	
13.	MW2085	mtlD	Mannitol-1-phosphate 5- dehydrogenase	Fructose and mannose metabolism	E
14.	MW0662	fruA	Fructose specific permease	Fructose and mannose metabolism	E
15.	MW2082	mtlF	PTS system mannitol specific IIBC component	Fructose and mannose metabolism	NE
16.	MW0223	gatC	PTS galactitol-specific enzyme IIC component	Galactose metabolism	E
17.	MW2119	lacC	Tagatose-6-phosphate kinase	Galactose metabolism	NE
18.	MW2118	lacD	Tagatose 1,6-diphosphate aldolase	Galactose metabolism	NE
19.	MW2116	lacE	PTS system lactose-specific IIBC component	Galactose metabolism	NE
20.	MW1965	scrB	Sucrose-6-phosphate hydrolase	Galactose metabolism	NE
				Starch and sucrose metabolism	
21.	MW0306	ulaA, sgaT	PTS system ascorbate-specific transporter subunit IIC	Ascorbate and aldarate metabolism	NE
22.	MW0865	fabH	3-oxoacyl-(acyl carrier protein) synthase III (EC:2.3.1.41)	Fatty acid biosynthesis	E
23.	MW0927	menD	Menaquinone biosynthesis protein	Ubiquinone and other terpenoid-quinone biosynthesis	NE
24.	MW1734	menC, OSB	O-succinylbenzoic acid synthetase	Ubiquinone and other terpenoid-quinone biosynthesis	NE
25.	MW2033	atpB	F0F1 ATP synthase subunit A	Oxidative phosphorylation	NE
26.	MW1860	N/A	Putative manganese-dependent inorganic pyrophosphatase (EC:3.6.1.1)	Oxidative phosphorylation	NE
27.	MW0952	purL	Phosphoribosylformylglycinami dine synthase II	Purine metabolism	E
28.	MW0948	purK	Phosphoribosylaminoimidazole	Purine metabolism	NE

			carboxylase ATPase subunit		
29.	MW0110	pnp	Purine nucleoside phosphorylase (EC:2.4.2.1)	Purine metabolism	E
				Pyrimidine metabolism	
				Nicotinate and nicotinamide metabolism	
30.	MW2062	deoD	Purine nucleoside phosphorylase (EC:2.4.2.1)	Purine metabolism	E
				Pyrimidine metabolism	
				Nicotinate and nicotinamide metabolism	
31.	MW2537	nrdD	Anaerobic ribonucleoside triphosphate reductase (EC:1.17.4.2)	Purine metabolism	NE
				Pyrimidine metabolism	
32.	MW2143	rpoA	DNA-directed RNA polymerase subunit alpha (EC:2.7.7.6)	Purine metabolism	E
				Pyrimidine metabolism	
33.	MW1646	dnaE	DNA polymerase III alpha subunit	Purine metabolism	E
				Pyrimidine metabolism	
34.	MW1147	polC	DNA polymerase III PolC	Purine metabolism	NE
				Pyrimidine metabolism	
35.	MW0002	dnaN	DNA polymerase III subunit beta (EC:2.7.7.7)	Purine metabolism	NE
				Pyrimidine metabolism	
36.	MW1538	holA	DNA polymerase III subunit delta	Purine metabolism	E
				Pyrimidine metabolism	
37.	MW0439	holB	DNA polymerase III delta prime subunit	Purine metabolism	NE
				Pyrimidine metabolism	
38.	MW0887	N/A	GTP pyrophosphokinase	Purine metabolism	NE
39.	MW1051	N/A	Carbamate kinase (EC:2.7.2.2)	Purine metabolism	NE
				Arginine and proline metabolism	
				Nitrogen metabolism	
40.	MW2553	arcC	Carbamate kinase (EC:2.7.2.2)	Purine metabolism	NE
				Arginine and proline metabolism	
				Nitrogen metabolism	
41.	MW1088	pyrE	Orotatephosphoribosyltransferase	Pyrimidine metabolism	NE
42.	MW1141	pyrH	Uridylate kinase	Pyrimidine metabolism	E
43.	MW0437	tmk	Thymidylate kinase	Pyrimidine metabolism	E
44.	MW0426	gltB	Glutamate synthase large subunit	Alanine, aspartate and glutamate metabolism	NE
				Nitrogen metabolism	
45.	MW0427	gltD	Glutamate synthase subunit beta (EC:1.4.1.13)	Alanine, aspartate and glutamate metabolism	NE
46.	MW1281	lysC	Aspartate kinase	Glycine, serine and	NE

				threonine metabolism	
				Lysine biosynthesis	
47.	MW1214	N/A	Aspartate kinase (EC:2.7.2.4)	Glycine, serine and threonine metabolism	NE
				Lysine metabolism	
48.	MW1215	dhoM	Homoserine dehydrogenase	Glycine, serine and threonine metabolism	NE
				Lysine biosynthesis	
49.	MW1217	thrB	Homoserine kinase	Glycine, serine and threonine metabolism	NE
50.	MW1260	trpA	Tryptophan synthase subunit alpha (EC:4.2.1.20)	Glycine, serine and threonine metabolism	NE
				Phenylalanine, tyrosine & tryptophan biosynthesis	
51.	MW1259	trpB	Tryptophan synthase subunit beta (EC:4.2.1.20)	Glycine, serine and threonine metabolism	E
				Phenylalanine, tyrosine and tryptophan biosynthesis	
52.	MW0332	metE	5-methyltetrahydropteroyltriglutamate-homocysteine S-methyltransferase (EC:2.1.1.14)	Glycine, serine and threonine metabolism	NE
				Selenocompound metabolism	
53.	MW1550	pfs	5'-methylthioadenosine nucleosidase/S-adenosyl homocysteine nucleosidase	Glycine, serine and threonine metabolism	NE
54.	MW1980	ilvC	Ketol-acid reductoisomerase (EC:1.1.1.86)	Valine, leucine and isoleucine biosynthesis	NE
				Pantothenate and CoA biosynthesis	
55.	MW1977	ilvD	Dihydroxy-acid dehydratase (EC:4.2.1.9)	Valine, leucine and isoleucine biosynthesis	NE
				Pantothenate and CoA biosynthesis	
56.	MW1981	leuA	2-isopropylmalate synthase (EC:2.3.3.13)	Valine, leucine and isoleucine biosynthesis	NE
				Pyruvate metabolism	
57.	MW1284	dapB	Dihydrodipicolinate reductase	Lysine biosynthesis	NE
58.	MW1943	N/A	Succinyl-diaminopimelate - desuccinylase	Lysine biosynthesis	NE
59.	MW1288	lysA	Diaminopimelate decarboxylase	Lysine biosynthesis	NE
60.	MW1285	dapD	Tetrahydrodipicolinate-acetyltransferase	Lysine biosynthesis	NE
61.	MW2005	murF	UDP-N-acetylmuramoylalanyl-	Lysine biosynthesis	E

			D-glutamyl-2,6-diaminopimelate-D-alanyl-D-alanyl ligase	Peptidoglycan biosynthesis	
62.	MW1693	N/A	D-alanine aminotransferase	Lysine degradation Arginine and proline metabolism Phenylalanine metabolism D-Arginine and D-ornithine metabolism D-Alanine metabolism	NE
63.	MW2608	drp35	Drp35	Beta-Lactam resistance	NE
64.	MW0032	MecR1	Truncated methicillin resistance protein MecR1	Beta-Lactam resistance	NE
65.	MW0031	mecA	Penicillin binding protein 2 prime	Beta-Lactam resistance	NE
66.	MW2556	arcA	Arginine deiminase (EC:3.5.3.6)	Arginine and proline metabolism	NE
67.	MW0157	argJ	Bifunctional ornithine acetyltransferase/N-acetylglutamate synthase protein (EC:2.3.1.35 2.3.1.1)	Arginine and proline metabolism	NE
68.	MW0158	argC	N-acetyl-gamma-glutamyl-phosphate reductase (EC:1.2.1.38)	Arginine and proline metabolism	NE
69.	MW2598	hisG	ATP phosphoribosyltransferase catalytic subunit (EC:2.4.2.17)	Histidine metabolism	NE
70.	MW2591	hisI	Bifunctional phosphoribosyl-AMP cyclohydrolase/phosphoribosyl-ATP pyrophosphatase protein	Histidine metabolism	NE
71.	MW2593	N/A	1-(5-phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide isomerase	Histidine metabolism	NE
72.	MW2592	hisF	Imidazole glycerol phosphate synthase subunit HisF	Histidine metabolism	NE
73.	MW0686	N/A	Histidinol-phosphate aminotransferase	Histidine metabolism Tyrosine metabolism Phenylalanine metabolism Phenylalanine, tyrosine & tryptophan biosynthesis Novobiocin biosynthesis	NE

74.	MW2597	N/A	Histidinol dehydrogenase	Histidine metabolism	NE
75.	MW1680	N/A	Bifunctional 3-deoxy-7-phosphoheptulonate synthase/chorismatase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
76.	MW1355	aroB	3-dehydroquinate synthase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
77.	MW0782	N/A	3-dehydroquinate dehydratase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
78.	MW1547	aroE	Shikimate 5-dehydrogenase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
79.	MW1354	aroA	3-phosphoshikimate 1-carboxyvinyltransferase (EC:2.5.1.19)	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
80.	MW1356	aroC	Chorismate synthase (EC:4.2.3.5)	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
81.	MW1254	N/A	Anthranilate synthase component I	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
82.	MW1256	trpD	Anthranilatephosphoribosyltransferase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
83.	MW1258	trpF	N-(5'-phosphoribosyl)anthranilate isomerase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
84.	MW1257	trpC	Indole-3-glycerol-phosphate synthase	Phenylalanine, tyrosine & tryptophan biosynthesis	NE
85.	MW1252	tyrA	Prephenate dehydrogenase (EC:1.3.1.12)	Phenylalanine, tyrosine & tryptophan biosynthesis Novobiocin biosynthesis	NE
86.	MW2517	panC	Pantoate--beta-alanine ligase (EC:6.3.2.1)	Beta-Alanine metabolism Pantothenate and CoA biosynthesis	NE
87.	MW0543	eutD	Phosphotransacetylase	Taurine and hypotaurine metabolism Pyruvate metabolism Propanoate metabolism Methane metabolism	E

88.	MW1654	ackA	Acetate kinase (EC:2.7.2.1)	Taurine and hypotaurine metabolism	E
				Pyruvate metabolism	
				Propanoate metabolism	
				Methane metabolism	
89.	MW1033	murI	Glutamate racemase	D-Glutamine and D-glutamate metabolism	E
90.	MW1066	murD	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase (EC:6.3.2.9)	D-Glutamine and D-glutamate metabolism	E
				Peptidoglycan biosynthesis	
91.	MW1683	murC	UDP-N-acetylmuramate-L-alanine ligase (EC:6.3.2.8)	D-Glutamine and D-glutamate metabolism	E
				Peptidoglycan biosynthesis	
92.	MW1994	alr	Alanine racemase	D-Alanine metabolism	NE
93.	MW2006	ddl	D-alanyl-alanine synthetase A (EC:6.3.2.4)	D-Alanine metabolism	E
				Peptidoglycan biosynthesis	
94.	MW2299	N/A	PTS system sucrose-specific IIBC component	Starch and sucrose metabolism	NE
95.	MW0428	treP	PTS enzyme II	Starch and sucrose metabolism	NE
96.	MW0165	murQ, yfeU	N-acetylmuramic acid-6-phosphate etherase	Amino sugar & nucleotide sugar metabolism	NE
97.	MW1668	ptaA	PTS system N-acetylglucosamine-specific IIBC component	Amino sugar & nucleotide sugar metabolism	NE
98.	MW0454	glmU	Bifunctional N-acetylglucosamine-1-phosphate uridylyltransferase/glucosamine-1-phosphate acetyltransferase	Amino sugar & nucleotide sugar metabolism	E
99.	MW0130	cap8G	Capsular polysaccharide synthesis enzyme Cap8G	Amino sugar & nucleotide sugar metabolism	NE
100.	MW0139	cap8P	Capsular polysaccharide synthesis enzyme Cap8P	Amino sugar & nucleotide sugar metabolism	NE
101.	MW2035	mnaA	UDP-GlcNAc 2-epimerase	Amino sugar & nucleotide sugar metabolism	NE
102.	MW0295	N/A	N-acetylmannosamine-6-phosphate 2-epimerase (EC:5.1.3.9)	Amino sugar & nucleotide sugar metabolism	NE

103.	MW0138	cap8O	Capsular polysaccharide synthesis enzyme Cap8O	Amino sugar & nucleotide sugar metabolism	NE
104.	MW2024	murA	UDP-N-acetylglucosamine 1-carboxyvinyltransferase (EC:2.5.1.7)	Amino sugar & nucleotide sugar metabolism	E
				Peptidoglycan biosynthesis	
105.	MW2048	murZ	UDP-N-acetylglucosamine 1-carboxyvinyltransferase (EC:2.5.1.7)	Amino sugar & nucleotide sugar metabolism	NE
				Peptidoglycan biosynthesis	
106.	MW0700	murB	UDP-N-acetylenol-pyruvoylglucosamine reductase	Amino sugar & nucleotide sugar metabolism	E
				Peptidoglycan biosynthesis	
107.	MW2459	ptsG	PTS system glucose-specific IIBC component	Amino sugar & nucleotide sugar metabolism	E
108.	MW0645	uppP	Undecaprenyl pyrophosphate phosphatase (EC:3.6.1.27)	Peptidoglycan biosynthesis	E
109.	MW1065	mraY	Phospho-N-acetylmuramoyl-pentapeptide-transferase	Peptidoglycan biosynthesis	E
110.	MW1340	pbp2	PBP2	Peptidoglycan biosynthesis	NE
111.	MW0604	pbp4	Penicillin binding protein 4	Peptidoglycan biosynthesis	NE
112.	MW0899	murE	UDP-N-acetylmuramoylalanyl-D-glutamate-L-lysine ligase	Peptidoglycan biosynthesis	NE
113.	MW2180	fmhB	FmhB protein	Peptidoglycan biosynthesis	NE
114.	MW1261	femA	Factor essential for expression of methicillin resistance	Peptidoglycan biosynthesis	NE
115.	MW1262	femB	FemB protein	Peptidoglycan biosynthesis	NE
116.	MW1672	sgtA	Transglycosylase	Peptidoglycan biosynthesis	NE
117.	MW1814	sgtB	Glycosyltransferase	Peptidoglycan biosynthesis	NE
118.	MW1064	pbpA	Penicillin-binding protein 1	Peptidoglycan biosynthesis	NE
119.	MW1504	pbp3	Penicillin-binding protein 3	Peptidoglycan biosynthesis	NE
120.	MW1112	plsX	Putative glycerol-3-phosphate	Glycerolipid	E

			acyltransferasePlsX	metabolism	
				Glycerophospholipid metabolism	
121.	MW0297	geh	Glycerol ester hydrolase	Glycerolipid metabolism	NE
122.	MW2590	lip	Triacylglycerol lipase precursor (EC:3.1.1.3)	Glycerolipid metabolism	E
123.	MW0898	N/A	Diacylglycerolglucosyltransferase	Glycerolipid metabolism	NE
124.	MW1940	hlb	Truncated beta-hemplysin	Inositol phosphate metabolism	NE
				Glycerophospholipid metabolism	
125.	MW0201	pfIB	Formateacetyltransferase	Pyruvate metabolism	NE
				Propanoate metabolism	
				Butanoate metabolism	
126.	MW2286	N/A	Malate:quinoneoxidoreductase (EC:1.1.5.4)	Pyruvate metabolism	NE
127.	MW2526	mgo2	Malate:quinoneoxidoreductase (EC:1.1.5.4)	Pyruvate metabolism	NE
128.	MW1658	N/A	Thiamine biosynthesis protein ThiI	Thiamine metabolism	NE
129.	MW2015	thiM	Hydroxyethylthiazole kinase (EC:2.7.1.50)	Thiamine metabolism	NE
130.	MW2014	thiE	Thiamine-phosphate pyrophosphorylase	Thiamine metabolism	NE
131.	MW1709	ribA	Riboflavin biosynthesis protein	Riboflavin metabolism	NE
132.	MW1711	ribD	Riboflavin specific deaminase	Riboflavin metabolism	NE
133.	MW1710	ribB	Riboflavin synthase subunit alpha (EC:2.5.1.9)	Riboflavin metabolism	NE
134.	MW0535	N/A	Phosphomethylpyrimidine kinase	Vitamin B6 metabolism	NE
135.	MW0474	N/A	Pyridoxal biosynthesis lyasePdxS	Vitamin B6 metabolism	NE
136.	MW2518	panB	3-methyl-2-oxobutanoate hydroxymethyltransferase (EC:2.1.2.11)	Pantothenate and CoA biosynthesis	NE
137.	MW2367	N/A	2-dehydropantoate 2-reductase (EC:1.1.1.169)	Pantothenate and CoA biosynthesis	NE
138.	MW2519	N/A	2-dehydropantoate 2-reductase (EC:1.1.1.169)	Pantothenate and CoA biosynthesis	NE
139.	MW2346	N/A	6-carboxyhexanoate--CoA ligase (EC:6.2.1.14)	Biotin metabolism	NE
140.	MW2350	bioD	Dethiobiotinsynthetase	Biotin metabolism	NE
141.	MW0469	folP	Dihydropteroate synthase	Folate biosynthesis	E

142.	MW1616	hemA	Glutamyl-tRNA reductase	Porphyrin and chlorophyll metabolism	NE
143.	MW1613	hemD	Uroporphyrinogen III synthase	Porphyrin and chlorophyll metabolism	NE
144.	MW2320	nasF	Uroporphyrin-III C-methyl transferase	Porphyrin and chlorophyll metabolism	NE
145.	MW2539	N/A	Precorrin-2 dehydrogenase	Porphyrin and chlorophyll metabolism	NE
146.	MW0450	ipk	4-diphosphocytidyl-2-C-methyl-D-erythritol kinase (EC:2.7.1.148)	Terpenoid backbone biosynthesis	NE
147.	MW2466	mvaA	Hydroxymethylglutaryl-CoA reductase	Terpenoid backbone biosynthesis	E
148.	MW0545	mvaK1	Mevalonate kinase	Terpenoid backbone biosynthesis	E
149.	MW0547	mvaK2	Phosphomevalonate kinase	Terpenoid backbone biosynthesis	E
150.	MW2319	narG	Respiratory nitrate reductase alpha chain	Nitrogen metabolism	E
151.	MW2318	narH	Nitrate reductase beta chain NarH	Nitrogen metabolism	NE
152.	MW2316	narI	Nitrate reductase gamma chain	Nitrogen metabolism	NE

*E-Essential #NE-Non-essential