

Figure S1. Alignment of PBP4 amino acid sequence of MRSP8150 and *S. aureus* N315 (GenBank accession no. BA000018).

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PBP4_SAU_N315 1 MKNLISIIIIILCLTSLIMTPYAQTNSDVTVPVQAAQYGYAGLSAAYEPTSAVNVSQTGQLLYQYNIDTKWNPASMTKLM 80
PBP4_MRSP8150 1 MKKIILSIVVVFFASTIITPFARAYTP--TPVELAQQSGYP-VTWAYQPEGMINISQTGQILYEFQSEQQWYPASMTKLM 77

PBP4_SAU_N315 81 TMYLTLEAVNKGQLSLDDTVTMTNKEYIMSTLPELSNTKLYPGQVWTIADLLQITVSNSSNAAALILAKKVSKNTSDFVD 160
PBP4_MRSP8150 78 TMYLTLQAVKEKKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAEELLQITVSSASSNAAALILANQVSDSTSDFVD 157

PBP4_SAU_N315 161 LMNNKAKAIGMKNTHFVNPTGAENSRLRSFAPTKYKDQERTVTTARDYAILDLHVIKETPKILDFTKQLAPTTHAVTYT 240
PBP4_MRSP8150 158 KMNDTAKSLGMTHYVNPPTGAENRLLLEFAPKKYQHESSSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTYT 237

PBP4_SAU_N315 241 FNFSLEGAKMSLPGTDGLKTGSSDTANYNHTITTKRGKFRINQVIMGAGDYKNLGGKQRNMMGNALMERSFDQYKYVKI 320
PBP4_MRSP8150 238 FNDLLEGGNMSLPGTDGLKTGSSDIAADYNNSLTTRKGFRIFHIIMGAGDYKHLGGKQRNMMSSASAINYTFSSQYDYKKI 317

PBP4_SAU_N315 321 LSKGEQRINGKYYVENDLYDVLPSDFSKKDYKLVVEDGKVVHADYPREFINKDYGPTVEVHQPIIQKANTVAKSMWEEH 400
PBP4_MRSP8150 318 VSKGKHKIDGKSYVTELDYDVVPKDMSKP-YHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWHAF 396

PBP4_SAU_N315 401 PLFTIIGGACLVAGLALIVHMIINRLFRKRK 431
PBP4_MRSP8150 397 PILTSLAFLVIVLILAFILRRLKLLFRK-- 425

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Figure S2. Multiple alignment of PBP4 from MRSP8150 and PBP4 of species shared more than 74% of amino acid identity. *S. aureus* PBP4 which shares only 60% amino acid identity and was included for illustrative purposes.

<i>S. pseudintermedius</i>	1	--MKKIILSIWVFFASTIITP--FARAYTPVVELAQQSGYP-VTWAYQPEGMINISQTGGIILYEFQSEQQWYPASMTK	75
<i>S. delphini</i>	1	--MKKIILSIWVFFASTIITP--FARAYTPVVELAQQSGYP-VTWAYQPEGMINISQTGGIILYTFQSEQQWYPASMTK	75
<i>S. cornubiensis</i>	1	--MKKIILSIWVFFASTIITP--FARAYTPVVELAQQSGYP-VTWAYQPEGMINISQTGGIILYDYQSEQQWYPASMTK	75
<i>S. intermedius</i>	1	--MKKIILSIWVFFASTIITP--FARAYTPVVELAQQSGYP-VTWAYQPEGMINISQTGGIILYDFQSEQQWYPASMTK	75
<i>S. lutrae</i>	1	--MKKILSIWVFFATTIITP--FARAYTPVVELAQQSGYP-VTHPYQPEGMINISSETGGIILYVNSQKQWYPASMTK	75
<i>S. schleiferi</i>	1	mqMKKIILSIWVFFATTIITP--FARAYTPVVELAQQSGYP-VTLFPQPEGVINISQTGGIILYDYNQKQWYPASMTK	77
<i>S. coagulans</i>	1	--MKKILSIWVFFATTIITP--FARAYTPVVELAQQSGYP-VTLTFQPEGVINISQTGGIILYDYNQKQWYPASMTK	75
<i>S. fleurettii</i>	1	--MKKILSIWVFFATTIITP--FARAYTPVVELAQQSGYP-VTLFPQPEGVINISQTGGIILYDYNQKQWYPASMTK	75
<i>S. hyicus</i>	1	--MKKVILSILVFFATTIITP--FTKANTATPVDIANQGYA-VGYGFQPEGLVNISETGGIILYQYQDKQWYPASMTK	75
<i>S. agnetis</i>	1	--MKKVILSILVFFATTIITP--FTKANTATPVDIANQGYG-VGYGFQPEGLVNISETGGIILYQYQDKQWYPASMTK	75
<i>S. chromogenes</i>	1	--MKKVILSILVFFATTIITP--FTKANTATPVDIANQGYG-VGYGFQPEGLVNISETGGIILYQYQDKQWYPASMTK	75
<i>S. aureus</i>	1	--MKRRFTMILVALLTIAIAPkYASEYEPTPEIARQYGYpNVTDAYQPEGSINVSQTGGIILYDYSNQKQWYPASMTK	78
<i>S. pseudintermedius</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	155
<i>S. delphini</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	155
<i>S. cornubiensis</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	155
<i>S. intermedius</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	155
<i>S. lutrae</i>	76	LMTMYLTLQAVKEKLSLNDTVKITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSGNTSDF	155
<i>S. schleiferi</i>	78	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	157
<i>S. coagulans</i>	76	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILADQVSDSTSDF	155
<i>S. fleurettii</i>	76	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILANQVSDSTSDF	155
<i>S. hyicus</i>	76	LMTMYLTLKAVKSGTLNLDTVKITNTHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILAKVSGSTSQF	155
<i>S. agnetis</i>	76	LMTMYLTLKAVKSGDLNLDTVKITDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILAKVSGSTSKF	155
<i>S. chromogenes</i>	76	LMTMYLTLQAVKSGDLSDDTIKIDQHYRMSTLPELSNTKLYPGETYTVAEELQITVSASSNAAILAKVSGSTSKF	155
<i>S. aureus</i>	79	LMTMYLLEAINKGELSLNDKVHITDQHYRMSTLPELSNTKLYPGETYTVISELQITVSASSNAAILADEVSGVNDVF	158
<i>S. pseudintermedius</i>	156	VDKMNDTAKSLGTMTHYVNPVTPGAENRLLLEFAPKQYQHESSSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. delphini</i>	156	VDKMNDTAKSLGTMTHYVNPVTPGAENRLLLEFAPKQYQHESSSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. cornubiensis</i>	156	VDKMNDTAKSLGTMTHYVNPVTPGAENRLLLEFAPKQYQHESSSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. intermedius</i>	156	VDKMNDTAKSLGTMTHYVNPVTPGAENRLLLEFAPKQYQHESSSTSSARDYAILAQHVVKDTPKILHFTKQIAPTQHGVTY	235
<i>S. lutrae</i>	156	VDKMNETAKALGTMTHYVNPVTPGAENRLLLEFAPEKYRNEASSTSPRDYAILALHTVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. schleiferi</i>	158	VDKMNQTAQSLGMNTHYVNPVTPGAENRLLLEFVPKRYQNESSSTSAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	237
<i>S. coagulans</i>	156	VDKMNQTAQSLGMNTHYVNPVTPGAENRLLLEFVPKRYQNESSSTSAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	235
<i>S. fleurettii</i>	156	VDKMNQTAQSLGMNTHYVNPVTPGAENRLLLEFVPKRYQNESSSTSAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	235
<i>S. hyicus</i>	156	VDDMNQTAQSLGTMTHYVNPVTPGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. agnetis</i>	156	VDDMNQTAQSLGTMTHYVNPVTPGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. chromogenes</i>	156	VDDMNQTAQSLGTMTHYVNPVTPGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. aureus</i>	159	TDLMNKAKALGMSNTHFVNPVTPGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	238
<i>S. pseudintermedius</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYTF	315
<i>S. delphini</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYTF	315
<i>S. cornubiensis</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYTF	315
<i>S. intermedius</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYTF	315
<i>S. lutrae</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYRHLGGEKQRNMSASAINYF	315
<i>S. schleiferi</i>	238	YTFNDLLEGGNMSLEGTGDLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	317
<i>S. coagulans</i>	236	YTFNDLLEGGNMSLEGTGDLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	315
<i>S. fleurettii</i>	236	YTFNDLLEGGNMSLEGTGDLKTGSSDIADYNNSLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	315
<i>S. hyicus</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDLADYNNLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	315
<i>S. agnetis</i>	236	YTFNDLLEGGNMSLQGTGDLKTGSSDLADYNNLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	315
<i>S. chromogenes</i>	236	YTFNDLLEGGNMSLQGTGDLKTGSSDLADYNNLTKRGKFRIFHIIMGAGDYKHLGGEKQRNMSASAINYF	315
<i>S. aureus</i>	239	YTFNHSLEGADMNSLPGTDGLKTGSSDADYNNHTITTKRGKFRINQVIMGAGDYVSLGGEKQRNMSASAINYF	318

S. pseudintermedius 316 KIVSKGKHKIDGKSYVVTEDLYDVVPKDM^{SK} - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. delphini 316 KILSKGKHKIDGKSYVVTEDLYDVVPKDM^{AE} - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. cornubiensis 316 KILSKGKHKIDGKSYVVTEDLYDVVPKEM^{TE} - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. intermedius 316 KILSKGKHKIDGKSYVVTEDLYDVVPKDM^{SE} - PYDFVVKDSQVHLDYPRKFITKNDGPPTVKVESPIYESKSAVSSWH 394
S. lutrae 316 KVL SKGKHVIDDKYYVTQDLYDVVPKSL^{KT} - PYHFVVTDSQVHLEYPRQFITKNQGPSPVKVENPLIYESKSVVSSWH 394
S. schleiferi 318 KVL SKGKHKIDGKTYVVTKDLYDVVPKNL^{KK} - PYHFVIDDNQVHLDYDRKFITKHDGPPKVEVENPLIYESKSVVSSWQ 396
S. coagulans 316 KVL SKGKHKIDGKTYVVTKDLYDVVPKNL^{KK} - PYHFVIDDNQVHLDYDRKFITKHDGPPKVEVENPLIYESKSVVSSWQ 394
S. fleurettii 316 KVL SKGKHKIDGKTYVVTKDLYDVVPKNL^{KK} - PYHFVIDDNHVLHLDYDRKFITKHDGPPKVEVENPLIYESKSVVSSWQ 394
S. hyicus 316 KILSKGEHKINGKTYVVTEDLYDVVPKSM^{TK} - PYQFVVERGEVHLDYKRFISKAYGPPKVEVEKPIVYQSKSFVSSWK 394
S. agnetis 316 KILSKGEHKINGKTYVVTQDLYDIPKSM^{TK} - PYQLVIENGEVHLNPKRFISKAYGPPKVEVEKPIVYQSKSFVSSWK 394
S. chromogenes 316 KVLAKGEHKINGKAYVVTEDLYDVVPKGM^{TK} - PYRFVIEKGEVHLDYDRQFISKAYGPPPTVTEKPIVHQSFSFVSSWK 394
S. aureus 319 NVLSKGTHKINGKTYVVKENLYDVVPKDM^{NQ}kDYKFIKDKGKVLHLDYDRQFLT^KDDGPPKVDVTKPL^LHKANTIAQ^TTKW 398

S. pseudintermedius 395 AFPILTSLAF^LVIVLILAFIL - RRLKLLFRK - 425
S. delphini 395 AFPVLTLLALLVIVLILAFIL - RRLKLLFRK - 425
S. cornubiensis 395 AFPVLTLLAF^LVIVLILAFIL - RRLKLLFRK - 425
S. intermedius 395 AFPVLTLLASLIVLVLALL - RRLKSLLRK - 425
S. lutrae 395 AYPVLTLLAF^AVIVLILAFIL - NRIFSLRKK - 425
S. schleiferi 397 THPWMTILAF^GVIVVFLSIVF - YSLMSRFRRK - 427
S. coagulans 395 THPWMTILAF^GVIVVFLSIVF - YCLMSRFRRK - 425
S. fleurettii 395 THPWMTILAF^GVIVVFLSIVF - YSLMSRFRRK - 425
S. hyicus 395 DHPLLTTLGF^IFLIGFLSVIIyYMLFLT^IKRR - 426
S. agnetis 395 DHPILTSLGF^IFLIGFLSVIIyYLLFLT^IKRR - 426
S. chromogenes 395 DHPILTSGLL^LFLIGFLSVIIyYLLFLT^FNRRk 427
S. aureus 399 EHPIVTFIALALLA^IACILIV - RSIHLLFKRk 430