

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 MKNLISIIIIILCLTSLIMTPYAQTNSDVTVPVQAANQYGYAGLSAAYEPTSAVNVSQTGQLLYQYNIDTKWNPASMTKLM 80
PBP4_MRSP8150 1 MKKIILSIVVVFFASTIITPFARAYTP--TPVELAQQSGYP-VTWAYQPEGMINISQTGQILYEFQSEQQWYPASMTKLM 77

PBP4_SAU_N315 81 TMYLTLEAVNKGQLSLDDTVTMTNKEYIMSTLPELSNTKLYPGQVWTIADLLQITVSNSSNAAALILAKKVSKNTSDFVD 160
PBP4_MRSP8150 78 TMYLTLQAVKEKKLSLNDTVQITDQHRYRMSTLPELSNTKLYPGETYTVAEELQITVSAASSNAAALILANQVSDSTDFVD 157

PBP4_SAU_N315 161 LMNNKAKAIGMKNTHFVNPTGAENSRLRSFAPTKYKDQERTVTTARDYAILDLHVIKETPKILDFTKQLAPTTHAVTYT 240
PBP4_MRSP8150 158 KMNDTAKSLGMTHTHYVNPTGAENRLLEFAPKKYQHESSSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTYT 237

PBP4_SAU_N315 241 FNFSLEGAKMSLPGTDGLKTGSSDTANYNHTITTKRGKFRINQVIMGAGDYKNLGGEKQRNMMGNALMERSFDQYKYVKI 320
PBP4_MRSP8150 238 FNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTRGKFRIFHIIMGAGDYKHLGGEKQRNMMASAINYTFQYDYKKI 317

PBP4_SAU_N315 321 LSKGEQRINGKKYYVENDLYDVLPSDFSCKDYKLVEDGKVVHADYPREFINKDYGPTTVEVHQPIIQKANTVAKSMWEEH 400
PBP4_MRSP8150 318 VSKGKHKIDGKSYVVTEDLYDVVPKDMSP-YHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWHAF 396

PBP4_SAU_N315 401 PLFTTIIGGACLVAGLALIVHMIINRLFRKRK 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	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTWAYQPEGMINISQTGGIILYEFQSEQQWYPASMTK	75
<i>S. delphini</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTWAYQPEGMINISQTGGIILYFQSEQQWYPASMTK	75
<i>S. cornubiensis</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTWAYQPEGMINISQTGGIILYDYQSEQQWYPASMTK	75
<i>S. intermedius</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTWAYQPEGMINISQTGGIILYDFQSEQQWYPASMTK	75
<i>S. lutrae</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTWAYQPEGMINISQTGGIILYVNSQKQWYPASMTK	75
<i>S. schleiferi</i>	1	mMKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTLFPQPEGVINISQTGGIILYDYNQKQWYPASMTK	77
<i>S. coagulans</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTLTFQPEGVINISQTGGIILYDYNQKQWYPASMTK	75
<i>S. fleurettii</i>	1	--MKKIILSIIVVFFASTIITP--FARAYTPVPELAQQSGYP-VTLFPQPEGVINISQTGGIILYDYNQKQWYPASMTK	75
<i>S. hyicus</i>	1	--MKKVILSILVFFASTIITP--FTKANTATPVDIANQGYGA-VGYGFQPEGLVNISETGGIILYQFDQKQWYPASMTK	75
<i>S. agnetis</i>	1	--MKKVILSILVFFASTIITP--FTKANTATPVDIANQGYG-VGYGFQPEGLVNISETGGIILYQYQDKQWYPASMTK	75
<i>S. chromogenes</i>	1	--MKKVILSILVFFASTIITP--FTKANTATPVDIANQGYGS-VGYGFQPEGLVNISETGGIILYQYQDKQWYPASMTK	75
<i>S. aureus</i>	1	--MKRRFTMILVALLTIAIAPkYASEYEPTPEIARQYGYPhVTDAYQPEGSINVSQTGGIILYDYNQKQWYPASMTK	78
<i>S. pseudintermedius</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	155
<i>S. delphini</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	155
<i>S. cornubiensis</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	155
<i>S. intermedius</i>	76	LMTMYLTLQAVKEKLSLNDTVQITDQHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	155
<i>S. lutrae</i>	76	LMTMYLTLQAVKEKLSLNDTVKITDQHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSGNTSDF	155
<i>S. schleiferi</i>	78	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	157
<i>S. coagulans</i>	76	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILADQVSDSTSDF	155
<i>S. fleurettii</i>	76	LMTMYLTLQAVKEKLSLNDTVKITPEHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILANQVSDSTSDF	155
<i>S. hyicus</i>	76	LMTMYLTLQAVKSGTLNLDNVTIKTNHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILAKVSGSTSGF	155
<i>S. agnetis</i>	76	LMTMYLTLQAVKSGDLNLDNVTIKTNHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILAKVSGSTSGF	155
<i>S. chromogenes</i>	76	LMTMYLTLQAVKSGDLSDDTIKITDEHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILAKVSGSTSGF	155
<i>S. aureus</i>	79	LMTMYLTLQAVKSGDLSDDTIKITDEHYRMSTLPELSNTKLYPGETYTVAE LLQITVSASSNAAALILADEVSGNVNDF	158
<i>S. pseudintermedius</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFAPKKYQHESSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. delphini</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFAPKKYQHESSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. cornubiensis</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFAPKKYQHESSTSSARDYAILAQHVVKDTPKILYFTKQIAPTQHGVTY	235
<i>S. intermedius</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFAPKKYQHESSTSSARDYAILAQHVVKDTPKILHFTKQIAPTQHGVTY	235
<i>S. lutrae</i>	156	VDKMNETAKALGTMTHYVNPATGAENRLLLEFAPEKYRNEASSTSPRDYAILALHTVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. schleiferi</i>	158	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFVPKRYQNESSSTSTAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	237
<i>S. coagulans</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFVPKRYQNESSSTSTAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	235
<i>S. fleurettii</i>	156	VDKMNDTAKSLGTMTHYVNPATGAENRLLLEFVPKRYQNESSSTSTAHDYAILAQHTVQDTPKILHFTKQIAPTQHGVTY	235
<i>S. hyicus</i>	156	VDDMNQTAKEGLGTMTHYVNPATGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. agnetis</i>	156	VDDMNQTAKEGLGTMTHYVNPATGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. chromogenes</i>	156	VDDMNQTAKEGLGTMTHYVNPATGAENRLLLEFVPEKYSHTSSISSPRDYAILAQHAVQDTPKILDFTKQIAPTQHGVTY	235
<i>S. aureus</i>	159	TDLMNKAKALGMSNTHFVNPTGAENSQLKDFAPSKYKQDNSTSTAKDFAILDHHVVKETPKILHFTNQLAPTQHGVTY	238
<i>S. pseudintermedius</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. delphini</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. cornubiensis</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. intermedius</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. lutrae</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. schleiferi</i>	238	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	317
<i>S. coagulans</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. fleurettii</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. hyicus</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. agnetis</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. chromogenes</i>	236	YTFNDLLEGGNMSLPGTDGLKTGSSDIADYNNSLTTKRGKFRIFHIIMGAGDYKHLGGKEQRNMMSASAINYTF	315
<i>S. aureus</i>	239	YTFNHSLEGANMSLPGTDGLKTGSSDIADYNNHTITTKRKQFRINQVIMGAGDYKHLGGKEQRNMMSASAINYTF	318

S. pseudintermedius 316 KIVSKGKHKIDGKSYVVTEDLYDVVPKDMSE - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. delphini 316 KILSKGKHKIDGKSYVVTEDLYDVVPKDMAE - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. cornubiensis 316 KILSKGKHKIDGKSYVVTEDLYDVVPKEMTE - PYHLVVKDSQVHLDYPRKFITKNDGPPTVKVENPLIYESKSVVSSWH 394
S. intermedius 316 KILSKGKHKIDGKSYVVTEDLYDVVPKDMSE - PYDFVVKDSQVHLDYPRKFITKNDGPPTVKVESPF IYESKSAVSSWH 394
S. lutrae 316 KVL SKGHVIDDKKYYVTQDLYDVVPKSLKT - PYHFVVTDSQVHLEYPRQFITKNQGPSPVKVENPLIYESKSVVSSWH 394
S. schleiferi 318 KVL SKGKHKIDGKTYVVT KDLYDVVPKNLKK - PYHFIDDNQVHLDYDRKFITKHDGPPKVEVENPFIYESKSVVSSWH 396
S. coagulans 316 KVL SKGKHKIDGKTYVVT KDLYDVVPKNLKK - PYHFVIDDNQVHLDYDRKFITKHDGPPKVEVENPFIYESKSVVSSWH 394
S. fleurettii 316 KVL SKGKHKIDGKTYVVT KDLYDVVPKNLKK - PYHFVIDDNHVLHLDYDRKFITKHDGPPKVEVENPFIYESKSVVSSWH 394
S. hyicus 316 KILSKGEHKINGKTYVVTEDLYDVVPKSMTK - PYQFVVERGEVHLDYKRFISKAYGPPKVEVEKPIVYQSKSFVSSWH 394
S. agnetis 316 KILSKGEHKINGKTYVVTQDLYDVVPKSMTK - PYQLVIENGEVHLNLYKRFISKAYGPPKVEVEKPIVYQSKSFVSSWH 394
S. chromogenes 316 KVLAKGEHKINGKAYVVTEDLYDVVPKGMTK - PYRFVIEKGEVHLDYDRQFISKAYGPPPTVTEKPIVHQSKSFVSSWH 394
S. aureus 319 NVLSKGTHKINGKTYVVKENLYDVVPKDMNQKDYKFIKDGKVHLDYDRQFLT KDDGPPKVDVTKPLLHKANTIAQTWK 398

S. pseudintermedius 395 AFPILTSLAF LVIVLILAFIL - RRLKLLFRK - 425
S. delphini 395 AFPVLTTLAL LVIVLILAFIL - RRLKLLFRK - 425
S. cornubiensis 395 AFPVLTTLAF LVIVLILAFIL - RRLKLLFRK - 425
S. intermedius 395 AFPVLTTLAS LVIVLVLALL - RRLKSLLRK - 425
S. lutrae 395 AYPVLTTLAF AVIVLILAFIL - NRIFSLLRK - 425
S. schleiferi 397 THPWTILAFGVIVFLSIVF - YSLMSRFRRK - 427
S. coagulans 395 THPWTILAFGVIVFLSIVF - YCLMSRFRRK - 425
S. fleurettii 395 THPWTILAFGVIVFLSIVF - YSLMSRFRRK - 425
S. hyicus 395 DHPLLTTLGFI FLIGFLSVIIyYMLFLTIKRR - 426
S. agnetis 395 DHPILTSLGFI FLIGFLSVIIyYLLFLTIKRR - 426
S. chromogenes 395 DHPILTSGLLFI FLIGFLSVIIyYLLFLTINRRK - 427
S. aureus 399 EHPIVTFIALALLAIACILIV - RSIIHLLFRK - 430