Table S2. Bacteria species and strains for this study

Strain	Capsular type	Mutation	Reference
Streptococcus pneumoniae			
WU2		Clinical isolated	(6)
WU2*ΔpspA kam^R*		Isogenic deletion mutant of full length gene of *pspA*, kam^R	This study
WU2*ΔpspA*	3	Isogenic deletion mutant of full length gene of *pspA*, erm^R	This study
WU2*ΔNPB*		Isogenic deletion mutant of NPB on pspA, erm^R	This study
TIGR4	4	Clinical isolated	(7)
EF3030		Clinical isolated	(8)
EF3030 *ΔpspA* kam^R		Isogenic deletion mutant of full length gene of *pspA*, kam^R	This study
EF3030-01		Isogenic deletion mutant using erm^R	This study
EF3030-04	19F	Isogenic deletion mutant, replacement pspA from WU2, erm^R	This study
EF3030-05		Isogenic deletion mutant, replacement pspA without *NPB* from WU2, erm^R	This study
EF3296	4	Clinical isolated	(8)
DBL1	6B	Clinical isolated	(9)
L81905	4	Clinical isolated	(9)
E134	23	Clinical isolated	(10)
BG11703	18	Clinical isolated	(8)
RX1	Non-encapsulated		(11)
BG7817	12	Clinical isolated	(8)
AC94	9	Clinical isolated	(8)
BG6380	37	Clinical isolated	(8)
BG8743	23	Clinical isolated	(8)
Escherichia coli			
NEB®Express I^q Competent *E. coli*		*MiniF lacI^q(Cam^R) / fhuA2 [lon] ompT gal sulA11 R(mcr-73::miniTn10--Tet^S)2 [dcm] R(zgb-210::Tn10--Tet^S) endA1 Δ(mcrC-mrr)114::IS10*	NEB

BL21(DE3)		*gal (cIts857 ind1 Sam7 nin5 lacUV5-T7 gene 1)*	Novagen
XL1-Blue		*recA1 endA1 gyrA96 thi-1 hsdR17 supE44 relA1 lac [F' proAB lacI ^{q} Z DM15 Tn10 (Tet^r)]*	Novagen
Other Pathogens			
Staphylococcus aureus		Clinical isolate	(12)
Uropathogenic *E. coli*		Clinical isolate	(12)

Table S2. List of plasmids and primers for this study

Name	Relevant characteristics	Refence or source
Plasmids		
pCR2.1 erm^R	pCR2.1, contained erm^R cassette	(13)
pCR2.1 kan^R	pCR2.1, contained kan^R cassette	This study
pQE-SS01 (F-1)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(32-317aa)	This study
pQU-SS02 (PspA$_{WU2}$)	T5 promotor, N−terminal his-tagged PspA$_{WU2}$(32-417aa)	This study
pQE-SS10 (F-2)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(32-281aa)	This study
pQE-SS11 (F-3)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(32-229aa)	This study
pQE-SS12 (F-4)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(32-200aa)	This study
pQE-SS13 (F-5)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(32-148aa)	This study
pQE-SS04 (WU2PRD)	T5 promotor, N−terminal his-tagged fragment of PspA$_{WU2}$(318-417aa)	This study
pET32b-TIGR4 PRD	N−terminal thioredoxin and his-tagged TIGR4 PRD	(14)
pQE-EF6796 PRD	T5 promotor, N-terminal his tagged EF6796 PRD	This study
LDHB protein vector (human)	pPB-His-GST (PV375851) contained N-terminal Nhe1 site, C-terminal Xho1 site	Applied biological material
LDHA protein vector (human)	pPB-His-GST (PV375815) contained N-terminal Nhe1 site, C-terminal Xho1 site	Applied biological material
pTEV5	N-terminal his-tag and TEV recognition site	(15)
pTEV5-LDHA	pTEV5-human LDHA from LDHA protein vector	This study
pTEV5-LDHB	pTEV5-human LDHB from LDHB protein vector	This study
Primers		

Name	Sequence
LDHA R106Q Fw	5'-AAGAGGGAGAAAGCC<u>AGC</u>TTAATTTGGTCCAG
LDHA R106Q Rw	5'-CTGGACCAAATTAA<u>GCT</u>GGCTTTCTCCCTCTT
delNPB-MF	5'-CAACCCAAACCAGCTCCAGCAGAAAAACCAGCTCCAGCACC
delNPB-MR	5'-GGTGCTGGAGCTGGTTTTTCTGCTGGAGCTGGTTTGGGTTG
pspA-F	5'-CGC<u>GGATCC</u>AAGCTTATGATATAGAAATTTGTAAC
pspA-R	5'-GAG<u>GAGCTC</u>TTAAACCCATTCACCATTGGC
EF6796 Fw	5'-CCTTAAGAAAGCAGTT<u>GGATCC</u>CCAGAAAC
EF6796 Rw	5'-CCGTTTTCTTGTT<u>AAGCTT</u>ATATTTTTGG
PspA$_{WU2}$(31-)-F	GTA<u>GGATCC</u>GAAGAATCTCCCGTAGC
PspA$_{WU2}$(-417)-R	CCGT<u>GGTACC</u>GTTTCCATCATGTTTT
PspA$_{WU2}$(-317)-R	CTGA<u>GGTACC</u>TCACTCATTAACTGCTTTCTT
PspA$_{WU2}$(-317)-F	CCTTAAGAAAGCAGTT<u>GGATCC</u>CCAGAAA
PspA$_{WU2}$(-281)-R	ACCCG<u>GGTACC</u>TCATTCTTCAGCAGCTTTAAG
PspA$_{WU2}$(-229)-R	ACCCG<u>GGTACC</u>TCATTCTTCAGCATCCACTTTTTG
PspA$_{WU2}$(-200)-R	ACCCG<u>GGTACC</u>TCATGATTCAGACTCATCAATCTC
PspA$_{WU2}$(-148)-R	ACCCG<u>GGTACC</u>TCAAACTACCATTGTTGTTCGAATAGT
PspA-L-F	GC<u>TCTAGA</u>AATATAAAGTATAGTCTAAAAATGA
PspA-L-R	ATAAGAAT<u>GCGGCCGC</u>AACAAAACCAGCCCC
PspA-R1-F	CGC<u>GGATCC</u>GGTGAATGGGTTTAAGCCG
PspA-R1-R	CCC<u>AAGCTT</u>CAACCCATTTTCTCTAATC
kan^R-cassette-F	ATAAGAAT<u>GCGGCCGC</u>GCAAGGAACAGTGAATTGGA
kan^R-cassette-R	C<u>GGAATTCC</u>AGTTGCGGATGTACTTCAG
PspA-R2-F	GG<u>ACTAGT</u>AGCCGATTAAATT

PspA-R2-R	CGGGATCCCGTCCGGATTTGGCG