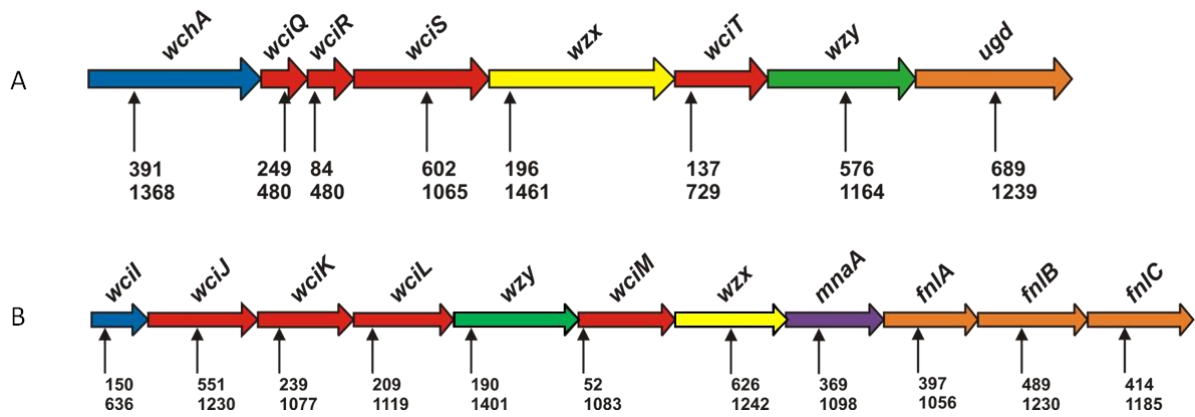


Table S1: Strains and plasmids used in this study

Strain/ plasmid	Description	Source/ reference
<i>E. coli</i> DH10B	$\Delta(\text{ara-leu})$ 7697 <i>araD139 fhuA</i> $\Delta\text{lacX74 galK16 galE15 e14-}\Phi 80\text{dlacZ}\Delta\text{M15 recA1 relA1 endA1 nupG rpsL (StrR) rph spoT1 } \Delta(\text{mrr-hsdRMS-mcrBC})$	NEB, UK
<i>E. coli</i> W3110	F- λ -IN(<i>rrnD-rrnE</i>)1 <i>rph-1</i>	(Bachmann 1996)
<i>E. coli</i> CLM24	W3110 with the O-antigen ligase, <i>waal</i> , deleted	(Feldman et al., 2005)
<i>E. coli</i> CLM37	W3110 with the initial transferase from ECA, <i>wecA</i> , deleted	(Linton et al., 2005)
<i>S. pneumoniae</i> strain 600/62	Serotype 4 strain	Statens Serum Insitut, Denmark
<i>S. pneumoniae</i> strain Ambrose	Serotype 5 strain	Statens Serum Insitut, Denmark
<i>S. pneumoniae</i> strain 573/62	Serotype 8 strain	Statens Serum Insitut, Denmark
<i>S. pneumoniae</i> strain 6312	Serotype 12F strain	Statens Serum Insitut, Denmark
pBBR1MCS-3	Cloning vector, Tet ^R	(Kovach et al., 1995)
pB-4	pBBR1MCS-3 containing a 14095 bp region including <i>wciI-fnlC</i> , from <i>S. pneumoniae</i> serotype 4, synthesised by Epoch Life Sciences, cloned into KpnI XbaI sites of the MCS. Tet ^R	This study
pB-5	pBBR1MCS-3 containing a 13506 bp region including <i>wciI-fnlC</i> , from <i>S. pneumoniae</i> serotype 5, synthesised by GeneWiz, cloned into ApaI site of the MCS. Tet ^R Trim ^R	This study
pB-8	pBBR1MCS-3 containing a 9085 bp region including <i>wchA-aliA</i> , from <i>S. pneumoniae</i> serotype 8, amplified by PCR, cloned into PstI site of the MCS. Tet ^R	This study
pB-12F	pBBR1MCS-3 containing a 16158 bp region including <i>wciI-fnlC</i> , from <i>S. pneumoniae</i> serotype 12F, synthesised by GenScript, cloned into PstI site of the MCS. Tet ^R Trim ^R	This study



Supplementary Fig 1. Location of transposon insertion sites within the cloned capsule locus. A) Transposon location in pB-8, the cloned serotype 8 locus. B) Transposon location in pB-4, the cloned serotype 4 locus. Genes are represented by coloured arrows: undecaprenyltransferase, blue; glycosyltransferases, red; flippase, yellow; polymerase, green; and sugar biosynthesis enzymes, purple or orange. The approximate location of insertion of the transposon is indicated by the vertical black arrows; the top number indicates the insertion site of the transposon in bp from 5' end of the gene, the length of which is shown by the bottom number in bp.