

SUPPLEMENTARY INFORMATION

FIGURE LEGENDS

Fig. S1 Gel-filtration chromatography of wild-type BglA-2 using Superdex 200 column. The chromatogram represents the absorbance at 280 nm. The elution volume in miniliter of the peak was labeled on the top.

Fig. S2 Enzymatic assays of wild-type BglA-2 and mutants towards gentiobiose-6'P (A) and maltose-6'P (B)

Fig. S3 Growth profiles of wild-type, $\Delta BglA-2$ and $\Delta BglA-2\&\Delta SP_0303$ strains of *S. pneumoniae* TIGR4 on cellobiose as carbon source.

Fig. S1

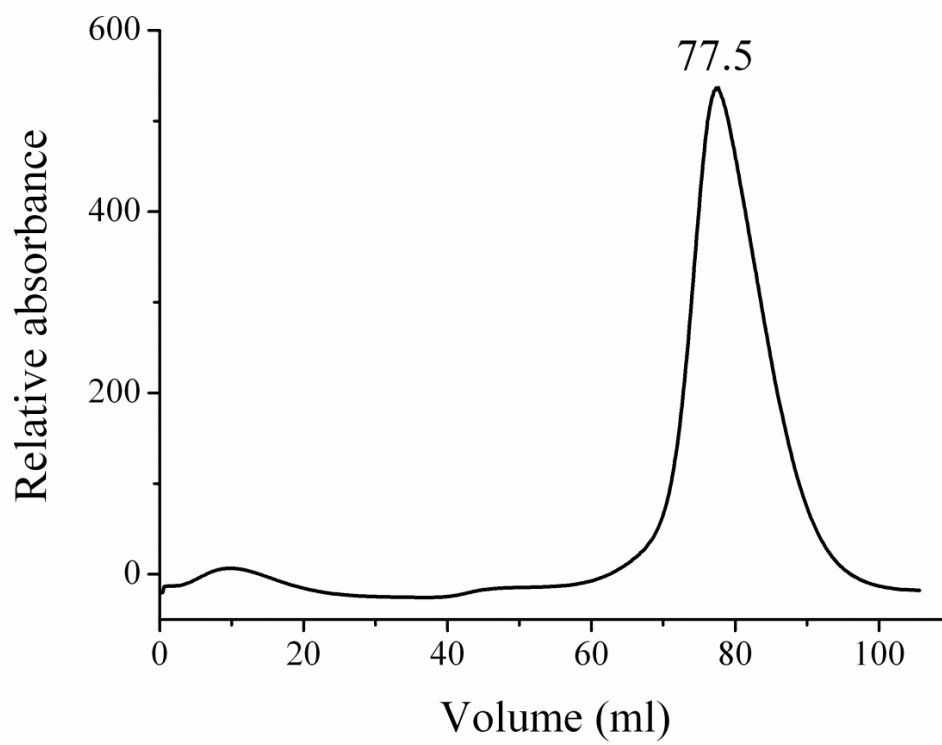


Fig. S2

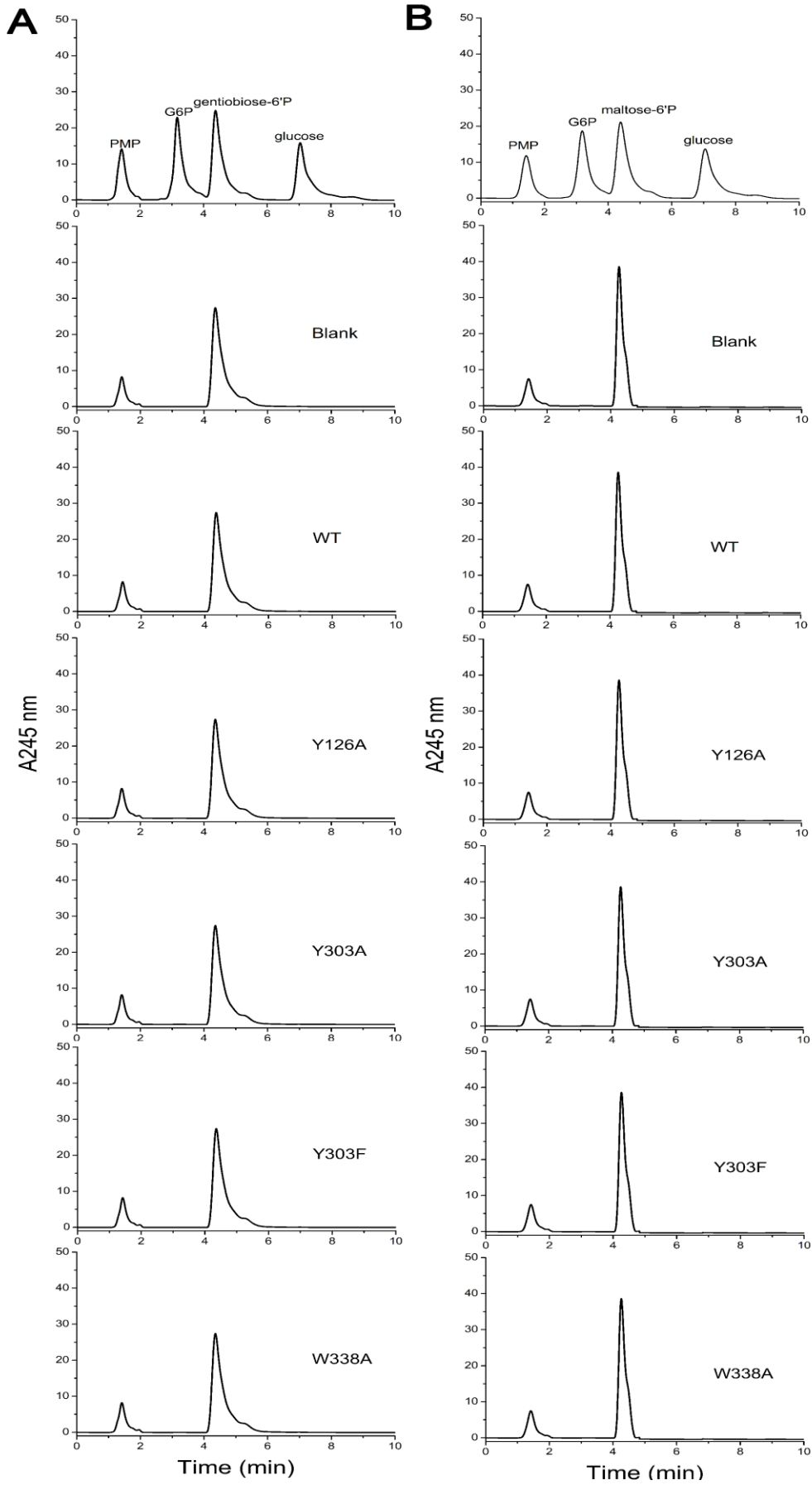


Fig. S3

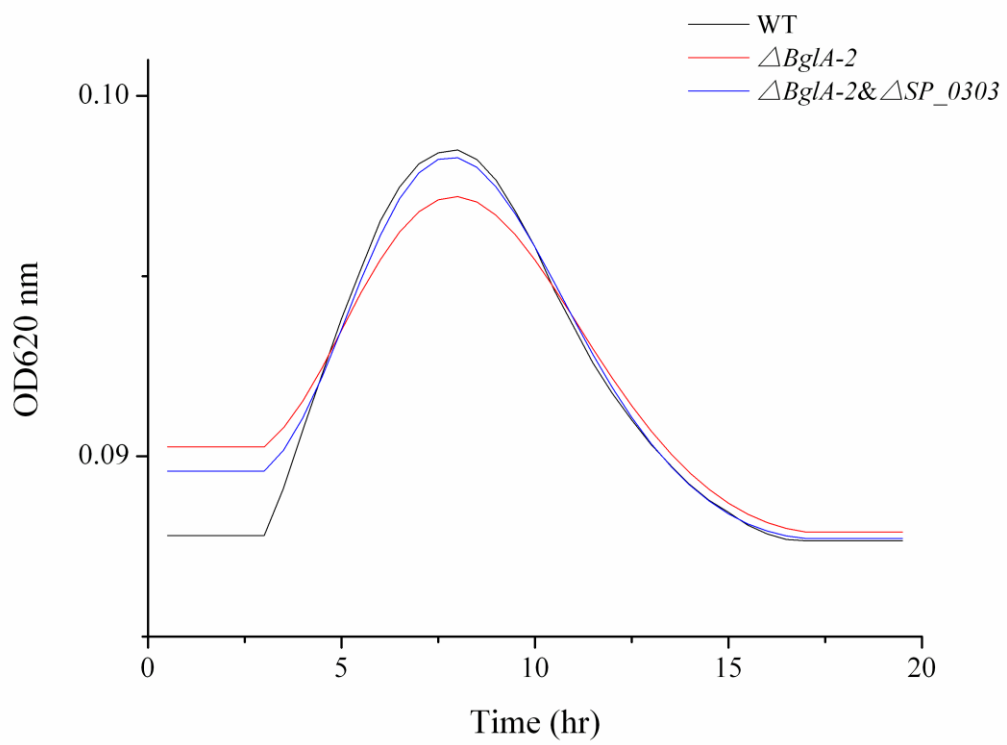


Table S1 K_d constants of wild-type BglA-2 and mutants towards cellobiose-6'P.

Enzyme	K_d (μM)
Wild-type	408.7 \pm 9.3
Y126A	2415 \pm 8.5
Y303A	2670 \pm 6.4
Y303F	2502 \pm 9.3
W338A	2705 \pm 7.1

Table S2 Kinetic constants of wild-type BglA-2 and M423W mutant towards cellobiose-6'P or ONP β Gal6P.

Enzyme	cellobiose-6'P			ONP β Gal6P		
	K_m μM	k_{cat} s^{-1}	k_{cat}/K_m $\times 10^{-1}$ $\text{s}^{-1}\mu\text{M}^{-1}$	K_m μM	k_{cat} $\times 10^{-3}$ s^{-1}	k_{cat}/K_m $\times 10^{-5}$ $\text{s}^{-1}\mu\text{M}^{-1}$
Wild-type	1135 \pm 9.8	170 \pm 3.8	1.5 \pm 0.2	ND	ND	ND
M423W	1331 \pm 12.5	139 \pm 9.4	1.0 \pm 0.3	904.3 \pm 8.5	7.6 \pm 6.4	8.6 \pm 2.1

ND: no detectable activity