



Fig. S1. Real-time quantitative PCR (qRT-PCR).

To verify the deletion and complementation of *tacL*, *S. pneumoniae* EF3030, EF3030Δ*tacL* and the complemented strain EF3030Δ*tacL*∇*tacL* were cultivated until mid-exponential phase in THY. RNA was isolated and cDNA synthesis was performed using random DNA hexamer primer. Each strain was analysed in duplicate. (a) The *enolase* gene was used as control. (b) To amplify *tacL* by PCR, the primer pair qP_*tacL*_F and qP_*tacL*_R was used as described [14].