TABLE S1. Bacterial strains and plasmids

Plasmid or strain	Relevant properties	Origin
Plasmids		
pCL52	Em^R, a 2.4-kb *E. coli* cloning vector derived from pBluescript KSII	[1]
PGh9	Em^R, a 3.7-kb lactococcal *repA*^{ts} cloning vector	[2]
pFC23	Cm^R, pKO3-derivative plasmid (*repA*^{ts}) containing the *rpsL*$^+$ gene. Used for replacement of the *E. coli dif* site by allelic exchange	[3]
pFX170	Ap^R, full-length *E. coli* FtsK protein fused to a FLAG epitope on its N-terminus and cloned into pBAD24 vector	[4]
pFX144	Cm^R, pKO3-derivative (*repA*^{ts}) plasmid. Used for allelic exchange at *xerC* locus in *E. coli*	[5]
pCL231	Em^R, pGh9-derivative (*repA*^{ts}) plasmid. Contains a 37-bp fragment, *dif*-2 (5'-TAAC**ATCTTTCCgAAAAACTgTAATTTTCTTgACA**AT-3') cloned at the *Xma*I site (the 31-bp lactococcal dif_{SL} site is indicated in bold)	This work
pCL235	Em^R, pCL52-derivative plasmid. Contains the same 37-bp synthetic fragment than pCL231	This work
pCL237	Em^R, pCL52-derivative plasmid. Contains a 27-bp lactococcal dif_{SL} variant, *dif*-8 (5'-**CTTTCCgAAAAACTgTAATTTTCTTgA**-3') of pCL233 (see Table 2) cloned at the *Xma*I site	This work
pCL263	Em^R, 5.35-kb *Xba*I-*Cla*I fragment from pFX170 (containing	This work

	the FLAG-tagged full-length *ftsK* gene of *E. coli*, the araBAD promoter, and the *araC* gene) cloned at the corresponding sites of pCL52	
pCL294	Cm^R, 2.04-kb *dif*-2-Km^R-*dif*-2 cassette cloned at the *Xmn*I site of pFC23. Used for introducing the cassette at the *E. coli dif* locus	This work
pCL297	Cm^R, lactococcal *xerS* ORF (*ymfD*) cloned into one *Nco*I site of pFX144. *xerS* is expressed from transcriptional read-through of the upstream *cat* gene	This work
pCL403	Em^R, pGh9-derivative ($repA^{ts}$) plasmid. Contains a 37-bp fragment (5'-TAAC**ATCTTTCCgAAAAACTATAATTT TCTTgAAA**AA-3') cloned at the *Xma*I site (the 31-bp pneumococcal dif_{SL} site is indicated in bold)	This work
pKNtergfp	Em^R, 181 first amino acids of the lactococcal FtsK protein fused to Gfpmut1 and expressed from P_{nisA} of pNG8048e vector	N. Campo, laboratory collection
pKFLgfp	Em^R, full-length lactococcal FtsK protein fused to Gfpmut1 and expressed from P_{nisA} of pNG8048e vector	N. Campo, laboratory collection

Strains

L. lactis

MG1363	Wild Type strain. Plasmid-free derivative strain of NCDO712	[6]
VEL1122	Tc^R, MG1363 *recA*::*tetM*	[7]
NZ9000	MG1363 *pepN*::*nisRK*. Recipient strain for the nisin expression system.	[8]

S. pneumoniae

R800	Wild Type strain. Derivative of strain R6	[9]
S501	R800 *xerS* (spr1046::*Km*)	This work
S502	R800 *ftsK*$_C$ (spr0781::*Km*)	This work

E. coli

LN2772	Str^R, Tc^R, W1485 *leu thyA deoB* or *C supE rpsL* Δ(*dif*)58::Tc	[3]
LN3038	Str^R, Tc^R, W1485 *leu thyA deoB* or *C supE rpsL lacZ*::*Tn*10. This strain has a wild type phenotype for XerCD/*dif* recombination.	F. Cornet, laboratory collection
E359	Str^R, Km^R, LN2772 with the lactococcal *dif*-2-Km^R-*dif*-2 cassette inserted in the *tetA* gene	This work
E367	Str^R, Tc^R, Cm^R, LN2772 containing pCL297	This work
E368	Str^R, Cm^R, E359 with one *dif*$_{SL}$ site (the Km^R cassette has been excised by XerS/*dif*$_{SL}$ recombination) and containing pCL297	This work
E372	Str^R, Km^R, Ap^R, E359 *ftsK*$_C$::Ap	This work
E375	Str^R, Tc^R, Cm^R, LN3038 containing pCL297	This work
E378	Str^R, Ap^R, Cm^R, E372 with one *dif*$_{SL}$ site (the Km^R cassette has been excised by XerS/*dif*$_{SL}$ recombination) and containing pCL297	This work
E379	Str^R, Km^R, Tc^R, E359 *recA*56	This work
E408	Str^R, Km^R, Ap^R, Tc^R, E359 *xerC*::Ap	This work
E409	Str^R, Km^R, Ap^R, Tc^R, E359 *xerD*::Ap	This work

References for Table S1

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