

Table S1. Overview of *S. mutans* genes upregulated by competence inducing pheromones and their expression in deletion mutants.

Genes induced by CSP/XIP	^a Peptide-rich medium		^b Peptide-free medium			
	CSP		XIP		CSP (not linked to competence)	
	Deletion mutants	Expression - / + ^d	Deletion mutants	Expression	Deletion mutants	Expression
Bacteriocins & immunity proteins						
<i>nImAB</i> (SMU.150/151) (1, 2), <i>cipB</i> (SMU.1914c) (1, 3), <i>immB</i> (SMU.925) (1, 4), <i>imma</i> (SMU.1913) (1) <i>nImD</i> (SMU.423) (5), SMU.1906 (5)	$\Delta comED$	-				
<i>nImAB</i> (1), <i>cipB</i> (4), <i>immB</i> (4)	$\Delta sigX$	+				
<i>nImAB</i> (1), <i>cipB</i> (3)	$\Delta DR comE$	-				
<i>cipB</i> (6)	$\Delta comRS, \Delta comS, \Delta sigX$	+	$\Delta comE, \Delta comRS, \Delta sigX$ $\Delta comC$	- +	$\Delta comED$ $\Delta comC, \Delta comRS,$ $\Delta sigX, \Delta comS$	- +
<i>immB</i> (7), SMU.1904 (7)	HdrR overexpression HdrR overexpression $\Delta sigX$	+ -				
<i>nImAB</i> , <i>cipB</i> , <i>nImD</i> , <i>bsmB</i> (8)	$\Delta sepM$	-				
Regulatory genes						
<i>comE</i> (6)	$\Delta comR, \Delta comS, \Delta sigX$	-	$\Delta comC, \Delta comD,$ $\Delta comE$ $\Delta comRS, \Delta sigX$	+ -		
<i>comC</i> (3, 8)	$\Delta comE$ $\Delta comD$ $\Delta DR comE$ $\Delta sepM$	+ - - +				
<i>comS</i> , <i>sigX</i> (9)	$\Delta comD, \Delta comE$	-	$\Delta comD, \Delta comE$	+		
<i>sigX</i> (10)			$\Delta comR, \Delta oppD,$ $\Delta comS, \Delta comE$	- +		
Late genes						
<i>comGA</i> , <i>comGB</i> , <i>comGC</i> , <i>comGD</i> , SMU.1982, SMU.1981, SMU.1980, SMU.1979, SMU.1978 (11)	$\Delta comC, \Delta ciaH, \Delta luxS$	-				
<i>lytF</i> (6)	$\Delta cipB$ <i>comED</i> and <i>comRS</i> overexpression	- +			$\Delta cipB$	-
<i>recA</i> (12), <i>cinA</i> (12)	$\Delta sigX$	-				
<i>comGA</i> , <i>comEA</i> , <i>coiA</i> , <i>dprA</i> , SMU.431, SMU.505, SMU.507, SMU.539, SMU.769, <i>lytF</i> , <i>immB</i> , SMU.1055, SMU.1904, SMU.1967, <i>cinA</i> (7)	HdrR overexpression HdrR overexpression $\Delta sigX$	+ -				
<i>coiA</i> , <i>lytF</i> , SMU.1055, SMU.1967 (7)	$\Delta sigX$ -box	-				

^a Rich medium (THB, TSB, or BHI)

^b Peptide-free medium (chemically defined medium(CDM))

^c - reduced or abolished

^d + not affected or increased

References:

1. **van der Ploeg, J. R.** 2005. Regulation of bacteriocin production in *Streptococcus mutans* by the quorum-sensing system required for development of genetic competence. *J Bacteriol* **187**:3980-9.
2. **Kreth, J., J. Merritt, W. Shi, and F. Qi.** 2005. Co-ordinated bacteriocin production and competence development: a possible mechanism for taking up DNA from neighbouring species. *Mol Microbiol* **57**:392-404.
3. **Kreth, J., D. C. Hung, J. Merritt, J. Perry, L. Zhu, S. D. Goodman, D. G. Cvitkovitch, W. Shi, and F. Qi.** 2007. The response regulator ComE in *Streptococcus mutans* functions both as a transcription activator of mutacin production and repressor of CSP biosynthesis. *Microbiology* **153**:1799-807.
4. **Perry, J. A., M. B. Jones, S. N. Peterson, D. G. Cvitkovitch, and C. M. Levesque.** 2009. Peptide alarmone signalling triggers an auto-active bacteriocin necessary for genetic competence. *Molecular Microbiology* **72**:905-17.
5. **Kreth, J., J. Merritt, L. Zhu, W. Shi, and F. Qi.** 2006. Cell density- and ComE-dependent expression of a group of mutacin and mutacin-like genes in *Streptococcus mutans*. *FEMS Microbiol Lett* **265**:11-7.
6. **Reck, M., J. Tomasch, and I. Wagner-Dobler.** 2015. The alternative sigma factor SigX controls bacteriocin synthesis and competence, the two quorum sensing regulated traits in *Streptococcus mutans*. *PLoS Genet* **11**:e1005353.
7. **Okinaga, T., Z. Xie, G. Niu, F. Qi, and J. Merritt.** 2010. Examination of the *hdrRM* regulon yields insight into the competence system of *Streptococcus mutans*. *Mol Oral Microbiol* **25**:165-77.
8. **Hossain, M. S., and I. Biswas.** 2012. An extracellular protease, SepM, generates functional competence-stimulating peptide in *Streptococcus mutans* UA159. *J Bacteriol* **194**:5886-96.
9. **Wenderska, I. B., N. Lukenda, M. Cordova, N. Magarvey, D. G. Cvitkovitch, and D. B. Senadheera.** 2012. A novel function for the competence inducing peptide, XIP, as a cell death effector of *Streptococcus mutans*. *Fems Microbiology Letters* **336**:104-12.
10. **Mashburn-Warren, L., D. A. Morrison, and M. J. Federle.** 2010. A novel double-tryptophan peptide pheromone controls competence in *Streptococcus* spp. via an Rgg regulator. *Mol Microbiol* **78**:589-606.
11. **Merritt, J., F. Qi, and W. Shi.** 2005. A unique nine-gene *comY* operon in *Streptococcus mutans*. *Microbiology* **151**:157-66.
12. **Hung, D. C., J. S. Downey, E. A. Ayala, J. Kreth, R. Mair, D. B. Senadheera, F. Qi, D. G. Cvitkovitch, W. Shi, and S. D. Goodman.** 2011. Characterization of DNA binding sites of the ComE response regulator from *Streptococcus mutans*. *J Bacteriol* **193**:3642-52.