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Title	Lysogenization of a lactococcal host with three distinct temperate phages provides homologous and heterologous phage resistance
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Table S1. Bacteria, bacteriophages and plasmids used in this study.

	Features	Source
Bacterial Strains		
L. lactis subsp. *cremoris*		
3107	Host to TP901-1, LC3, Dub35A, C41431, 63301, 86501, 50101, 62601, 66901, P087, 949 and WRP3	[1]
3107-LC3lys	*L. lactis* 3107 lysogen with LC3 integrated	This study
3107-TPlys	*L. lactis* 3107 lysogen with TP901-1 integrated	This study
3107-Dub35lys	*L. lactis* 3107 lysogen with Dub35A integrated	This study
E. coli EC101	Cloning host	[2]
Bacteriophages		
TP901-1	Temperate P335 group phage induced from *L. lactis* subsp. *cremoris* 901-1	[3]
LC3	Temperate P335 group phage grown lytically on *L. lactis* 3107	[4]
Dub35A	P335 phage	[5]
63301	P335 phage	[5]
86501	P335 phage	[5]
50101	P335 phage	[5]
C41431	P335 phage	[5]
62601	Skunavirus (936 phage)	[6]
66901	Skunavirus (936 phage)	[6]
949	949 phage	[7]
WRP3	949 phage	[8]
P087	P087 phage	[9]
Plasmids		
pNZ44	*E. coli–L. lactis* high copy number shuttle vector containing the constitutive P44 promoter; Cm^r	[10]
pNZrep_{LC3}	pNZ44 vector harbouring repressor gene of LC3	This study
pNZsie_{LC3}	pNZ44 vector harbouring the *sie* gene of LC3	This study
pNZ$orf3_{Dub35A}$	pNZ44 vector harbouring *orf3* of Dub35A	This study
pNZ$orf4_{Dub35A}$	pNZ44 vector harbouring *orf4* of Dub35A	This study
pNZ$orf5_{Dub35A}$	pNZ44 vector harbouring *orf5* of Dub35A	This study
pNZ$orf4/5_{Dub35A}$	pNZ44 vector harbouring *orfs 4 & 5* of Dub35A	This study
pNZ$orf12_{Dub35A}$	pNZ44 vector harbouring *orf12*of Dub35A	This study
pNZ$orf2/3_{TP901-1}$	pNZ44 vector harbouring *orfs 2 & 3* of TP901-1	This study

Table S2. Efficiency of plaquing of *L. lactis* 3107-infecting phages on lysogens of LC3, TP901-1 and Dub35A, respectively.

Phage	3107	3107-LC3lys	3107-TPLys	3107-DubLys
TP901-1 (T)	1	$2.20 \times 10^{-1} \pm 1.38 \times 10^{-2}$	$6.34 \times 10^{-7} \pm 1.55 \times 10^{-8}$	$6.79 \times 10^{-8} \pm 5.91 \times 10^{-8}$
LC3 (T)	1	$\leq 2.97 \times 10^{-9}$	$7.41 \times 10^{-1} \pm 5.1 \times 10^{-1}$	$8.54 \times 10^{-2} \pm 3.0 \times 10^{-1}$
Dub35A (T)	1	$1.17 \times 10^{-1} \pm 2.50 \times 10^{-2}$	$2.70 \times 10^{-1} \pm 1.01 \times 10^{-1}$	$\leq 4.35 \times 10^{-9}$
C41431 (V)	1	$2.27 \times 10^{-1} \pm 2.21 \times 10^{-2}$	$1.67 \pm 6.67 \times 10^{-1}$	$\leq 1.35 \times 10^{-9}$
50101 (T)	1	$1.17\times 10^{-7} \pm 3.82 \times 10^{-8}$	$6.20 \times 10^{-1} \pm 2.1 \times 10^{-1}$	2.5 ± 4.96
63301 (T)	1	1.04 ± 0.16	$9.16 \times 10^{-1} \pm 9.05 \times 10^{-1}$	$9.09 \times 10^{-1} \pm 8.31 \times 10^{-1}$
86501 (T)	1	$1.67 \times 10^{-8} \pm 1.05 \times 10^{-9}$	$6.00 \times 10^{-2} \pm 5.10 \times 10^{-1}$	$2.56 \times 10^{-1} \pm 4.51 \times 10^{-1}$
62601	1	$2.95 \times 10^{-1} \pm 6.76 \times 10^{-2}$	$5.70 \times 10^{-1} \pm 1.07 \times 10^{-1}$	$1.73 \times 10^{-7} \pm 1.33 \times 10^{-8}$
66901	1	$2.46 \times 10^{-1} \pm 1.14 \times 10^{-2}$	$1.76 \times 10^{-5} \pm 2.54 \times 10^{-6}$	$\leq 7.90 \times 10^{-9}$
949	1	$7.05 \times 10^{-1} \pm 3.62 \times 10^{-2}$	$1.54 \times 10^{-1} \pm 1.29 \times 10^{-1}$	$9.32 \times 10^{-2} \pm 3.86 \times 10^{-3}$
WRP3	1	$6.41 \times 10^{-1} \pm 2.03\times 10^{-2}$	$1.53 \times 10^{-6} \pm 1.08 \times 10^{-6}$	$8.00 \times 10^{-7} \pm 5.88 \times 10^{-7}$
P087	1	1.13 ± 0.18	$\leq 1.60 \times 10^{-9}$	$\leq 1.60 \times 10^{-9}$

Table S3. Efficiency of plaquing of phages on *L. lactis* 3107 derivatives expressing lysogeny-related genes of LC3 and TP901-1.

Phage species	*L. lactis* subsp. *cremoris*	3107	3107::pNZ44	3107::pNZsie_{LC3}	3107::pNZrep_{LC3}	3107::pNZ$orf2/3_{TP901\text{-}1}$
P335	LC3	1	0.87 ± 0.05	$\leq 10^{-8}$	$\leq 10^{-8}$	0.92 ± 0.10
	50101	1	0.87 ± 0.03	$\leq 10^{-8}$	$\leq 10^{-8}$	0.58 ± 0.07
	63301	1	0.83 ± 0.02	$\leq 10^{-8}$	1.87 ± 0.14	0.83 ± 0.05
	86501	1	0.87 ± 0.11	$\leq 10^{-8}$	$\leq 10^{-8}$	0.02 ± 0.01
	Dub35A	1	0.95 ± 0.09	$\leq 10^{-8}$	0.99 ± 0.08	$0.01 \pm 2.0 \times 10^{-3}$
	TP901-1	1	0.80 ± 0.04	0.02 ± 0.01	1.02 ± 0.09	0.98 ± 0.06
	C41431	1	0.84 ± 0.10	$\leq 10^{-8}$	1.07 ± 0.08	0.66 ± 0.11
Skunaviruses (936)	62601	1	0.81 ± 0.12	$\leq 10^{-9}$	1.52 ± 0.25	$6.70 \times 10^{-4} \pm 3.20 \times 10^{-5}$
	66901	1	0.70 ± 0.06	$\leq 10^{-9}$	1.20 ± 0.17	$2.15 \times 10^{-6} \pm 3.1 \times 10^{-7}$
949	949	1	0.86 ± 0.06	$\leq 10^{-8}$	1.68 ± 0.22	0.12 ± 0.02
	WRP3	1	0.81 ± 0.09	$\leq 10^{-8}$	1.92 ± 0.13	$\leq 9.00 \times 10^{-11}$
P087	P087	1	0.92 ± 0.08	$\leq 10^{-9}$	1.14 ± 0.12	$\leq 1.60 \times 10^{-9}$

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