

## SUPPLEMENTARY MATERIAL

**Supplementary Table 1.** Bacterial strains, plasmids and primers used in this study

<b>Bacterial strains</b>				
	<b>Genotype or characteristics</b>	<b>Reference or source</b>		
<i>E. coli</i> TE1	$\Delta$ <i>endA</i> derivative of TX1	[61]	[61]	
<i>E. coli</i> ClearColi®	Lipid IV <sub>A</sub> modification of BL21(DE3)	Lucigen, Madison, WI		
<i>S. aureus</i> Newbould 305	Bovine clinical isolate	[19]		
<b>Plasmids</b>				
	<b>Gene</b>	<b>Vector</b>	<b>Reference or source</b>	
pLR001	<i>isdA</i> (Newbould )	pARLDR19	This study	
pLR003	<i>clfA</i> (Newbould)	pARLDR19	This study	
pCK001	<i>isdA</i> -HIS (Newbould)	pTRCHisA	This study	
pMAH001	<i>clfA</i> -HIS (Newbould)	pBAD18	This study	
<b>Primers</b>				
		<b>Gene</b>	<b>Amplicon</b>	<b>Source</b>
<b><u>Cloning</u></b>				
pLR001:	<b>FW</b> GCTACTGGCATGCGGCAACAGAAGCTACGAAC <b>RV</b> GTGCATGATCGATTTTGGTAATTCTTTAGC	<i>isdA</i>	846 bp	[22]
pLR003:	<b>FW</b> GACTGGGCATGCAGGTGTAACTTCAACTGCTAAAG <b>RV</b> GCATGGCTCGAGGGAATTGGTTCAATTCACCAG	<i>clfA</i>	840 bp	This study
pCK001:	<b>FW</b> GCTACTGGATCCGCGGCAACAGAAGCTACGAAC <b>RV</b> GTGCATAAGCTTTCAAGTTTTTGGTAATTCTTTAGC	<i>isdA</i>	852 bp	[22]
pMAH001:	<b>FW</b> GATCCTCGCTAGCGGATGGAGTAAGACCATGG <b>RV</b> GTACCAGAAGCTTTTAGTGATGGTGATGGT GATGGGGAATTGGTTCAATTTAC	<i>clfA</i>	994 bp	This study
<b><u>Bovine cytokine qPCR:</u></b>				
	<b>FW</b> GCATCGTGGAGGGACTTATGA <b>RV</b> GGGCCATCCACAGTCTTCTG	GAPDH		[62]
	<b>FW</b> CAGCATGGAGCTGCCT <b>RV</b> ACAGAACAGGTCTTGCTTGC	IL-4		[63]
	<b>FW</b> CAGAAAGCGGAAGAGAAGTCAGA <b>RV</b> TGCAGGCAGGAGGACCAT	INF- $\gamma$		[62]
	<b>FW</b> GCCCACCTACTGAGGACAAG <b>RV</b> GCTGGATGGTGACAGAGTTC	IL-17A		[64]

**Supplementary Table 2.** Temperature and somatic cell count (SCC) from Trials 1 and 2.

	Trial	Group	Day											
			Screen <sup>c</sup>	1	2	3	14	15	16	49	50	51	60	70
<b>Temp<sup>a</sup></b>	<b>1</b>	1	-	101.2	101.1	100.4	101.1	100.6	100.5	101.2	100.6	100.7	101.3	101.3
		2	-	100.9	101.7	100.6	101.5	100.5	100.6	101.6	100.7	100.5	101.7	101.8
		3	-	101.1	101.6	99.9	101.2	100.2	100.6	101.1	100.7	100.7	101.6	101.1
	<b>2</b>	1	-	100.8	98.5	98.7	99.4	-	-	-	-	-	-	-
		2	-	101.1	98.3	98.6	99.5	-	-	-	-	-	-	-
<b>SCC<sup>b</sup></b>	<b>1</b>	1	50	-	-	-	-	-	-	-	-	-	296	851
		2	155	-	-	-	-	-	-	-	-	-	847	52
		3	151	-	-	-	-	-	-	-	-	-	127	132
	<b>2</b>	1	68	-	-	-	-	-	-	-	-	-	589	72
		2	211	-	-	-	-	-	-	-	-	-	1080	69

<sup>a</sup> temperature in Fahrenheit by rectal thermometer.

<sup>b</sup> SCC in cells/mL X1000 as determined by California Mastitis Test (CMT)

<sup>c</sup> sample taken on day of screening; -14 for Trial 1 and -9 for Trial 2.

**Supplementary Table 3. Culture and genotyping of *Staphylococcus***

<i>PCR primers</i>	Sequence		Gene	Amplicon	Reference
		<i>Staphylococcus</i> : FW GGCCGTGTTGAACGTGGTCAAATCA RV TIACCATTTCAGTACCTTCTGGTAA		<i>tstaG</i>	370 bp
	<i>S. aureus</i> : FW GCGATTGATGGTGATACGGTT RV AGCCAAGCCTTGACGAACTAAAGC		<i>nuc</i>	270 bp	[66]
	<i>isdA</i> : FW CGGTTCAACCAAAACCTGCT RV GCGAAGGCAACTGTGCTAAT		<i>isdA</i>	380 bp	[51]
	<i>clfA</i> : FW CCTATGCCAGTAGCCAATGTC RV GCACCAAGCAGGTTATGTC		<i>clfA</i>	318 bp	[51]

  

<i>Percent Staph positive<sup>a</sup></i>	Trial	Sample	Group <sup>b</sup>	Day					
				Screen <sup>b</sup>	1	14	49	60	70
	<b>1</b>	nose	1	1	-	0	57	14	14
2				-	29	57	0	50	17
3				-	0	14	29	43	43
milk			1	14	-	-	-	-	0
			2	29	-	-	-	-	17
			3	29	-	-	-	-	14
<b>2</b>		milk	1	9	-	-	-	-	22
			2	27	-	-	-	-	40

<sup>a</sup> percent of cows in each vaccine group positive for staphylococcal species as determined by culture and PCR.

<sup>b</sup> Groups are defined as: Trial 1: 1=vaccinated 2X, 2=vaccinated 3X, 3=mock; and Trial 2: 1= vaccinated 2X, 2=mock.

# Supplementary Figure 1

