

Supplementary Materials

Table S1. Bacterial strains, plasmids and primers used in this study

Strains, Plasmids, Primers	Description, NCBI Accession Number	Source (Reference)
	Strains	
<i>Bacillus cereus</i> IBB3390	indicator strain	IBB PAS
<i>Bacillus subtilis</i> BSB1	indicator strain	[1]
<i>Campylobacter jejuni</i> 12	indicator strain	[2]
<i>Campylobacter jejuni</i> 480	indicator strain	[3]
<i>Campylobacter jejuni</i> 81176	indicator strain	[4]
<i>Campylobacter coli</i> 23/1	indicator strain	[2]
<i>Candida albicans</i> CAI-4	indicator strain,	[5]
<i>Carnobacterium maltaromaticum</i> IBB3447	indicator strain	IBB PAS
<i>Enterococcus durans</i> IBB3441	indicator strain	IBB PAS
<i>Enterococcus faecalis</i> IBB3439	indicator strain	IBB PAS
<i>Enterococcus faecalis</i> IBB3444	indicator strain	IBB PAS
<i>Enterococcus faecium</i> LMGT 2783	indicator strain	LMGT NMBU
<i>Enterococcus faecium</i> LMGT 2787	indicator strain	LMGT NMBU
<i>Escherichia coli</i> EC1000	indicator strain	[6]
<i>Escherichia coli</i> TG1	indicator strain	[7]
<i>Lactobacillus johnsonii</i> IBB3155	indicator strain	IBB PAS
<i>Lactobacillus kunkeei</i> AH1	indicator strain	LMGT NMBU
<i>Lactobacillus kunkeei</i> AH38	indicator strain	LMGT NMBU
<i>Lactobacillus kunkeei</i> AH119	indicator strain	LMGT NMBU
<i>Lactobacillus paracasei</i> IBB3418	indicator strain	IBB PAS
<i>Lactobacillus paracasei</i> IBB3425	indicator strain	IBB PAS
<i>Lactobacillus paracasei</i> IBB3426	indicator strain	IBB PAS
<i>Lactobacillus paracasei</i> IBB3427	indicator strain	IBB PAS
<i>Lactobacillus paracasei</i> IBB3428	indicator strain	IBB PAS
<i>Lactobacillus paracasei</i> LOCK 0919	indicator strain, CP005486.1	[8]
<i>Lactobacillus paracasei</i> subsp. <i>paracasei</i> IBB3423	indicator strain	[9]
<i>Lactobacillus paraplantarum</i> IBB3438	indicator strain	IBB PAS
<i>Lactobacillus plantarum</i> NC8	indicator strain, AGRI00000000.1	LMGT NMBU [10]
<i>Lactobacillus plantarum</i> WCSF1	indicator strain, AL935263.2	LMGT NMBU [11]
<i>Lactobacillus plantarum</i> IBB3433	indicator strain	IBB PAS
<i>Lactobacillus plantarum</i> IBB3436	indicator strain	IBB PAS
<i>Lactobacillus plantarum</i> subsp. <i>plantarum</i> IBB3434	indicator strain	IBB PAS

<i>Lactobacillus rhamnosus</i> GG	indicator strain, AP011548	Dicoflor [12]
<i>Lactobacillus rhamnosus</i> IBB3429	indicator strain	IBB PAS
<i>Lactobacillus rhamnosus</i> LOCK 0900	indicator strain, CP005484.1	LOCK [13]
<i>Lactobacillus rhamnosus</i> LOCK 0908	indicator strain, CP005485.1	LOCK [14]
<i>Lactobacillus salivarius</i> IBB3154	indicator strain	IBB PAS
<i>Lactococcus garvieae</i> IBB3403	indicator strain	IBB PAS
<i>Lactococcus garvieae</i> IBB66	indicator strain	IBB PAS
<i>Lactococcus lactis</i> IBB3404	indicator strain	IBB PAS
<i>Lactococcus lactis</i> IBB3411	indicator strain	IBB PAS
<i>Lactococcus lactis</i> QU5 LMGT 3419	indicator strain	LMBT NMBU
<i>Lactococcus lactis</i> subsp. <i>cremoris</i> IBB3409	indicator strain	IBB PAS
<i>Lactococcus lactis</i> subsp. <i>lactis</i> IBB3407	indicator strain	IBB PAS
<i>Lactococcus lactis</i> subsp. <i>lactis</i> IL1403	indicator strain, host strain, AE005176	INRA [15]
<i>Lactococcus raffinolactis</i> IBB91	indicator strain	IBB PAS
<i>Leuconostoc lactis</i> IBB3446	indicator strain	IBB PAS
<i>Leuconostoc mesenteroides</i> IBB3442	indicator strain	IBB PAS
<i>Leuconostoc mesenteroides</i> IBB3443	indicator strain	IBB PAS
<i>Listeria monocytogenes</i> EGD-e LMGT 2604	indicator strain, AL591824.1	LMGT NMBU [16]
<i>Pediococcus acidilacti</i> LMGT 2002	indicator strain	LMGT NMBU
<i>Pediococcus parvulus</i> IBB3448	indicator strain	IBB PAS
<i>Pediococcus pentosaceus</i> IBB3369	indicator strain	IBB PAS
<i>Pseudomonas aeruginosa</i> ATCC 9027	indicator strain	ATCC
<i>Salmonella typhimurium</i> TT622	indicator strain	[17]
<i>Staphylococcus aureus</i> ATCC 6538	indicator strain	ATCC
<i>Staphylococcus caprae</i> DSM-20608	indicator strain	DSMZ
<i>Staphylococcus delphini</i> DSM-20771	indicator strain	DSMZ
<i>Staphylococcus epidermidis</i> DSM-20044	indicator strain	DSMZ
<i>Staphylococcus hyicus</i> DSM-20459	indicator strain	DSMZ
<i>Staphylococcus intermedius</i> DSM-20373	indicator strain	DSMZ
<i>Staphylococcus lugdunensis</i> DSM-4804	indicator strain	DSMZ
<i>Staphylococcus pseudintermedius</i> DSM-21284	indicator strain	DSMZ
<i>Staphylococcus saprophyticus</i> DSM-18669	indicator strain	DSMZ
<i>Staphylococcus schleiferi</i> DSM-6628	indicator strain	DSMZ
<i>Streptococcus agalactiae</i> IBB123	indicator strain	IBB PAS
<i>Streptococcus agalactiae</i> IBB130	indicator strain	IBB PAS
<i>Streptococcus mitis</i> IBB3449	indicator strain	IBB PAS
<i>Streptococcus sobrinus</i> IBB3450	indicator strain	IBB PAS
<i>Streptococcus parauberis</i> IBB272	indicator strain	IBB PAS
<i>Lactococcus lactis</i> IL1403 - spontaneous missense mutants**		

LLN1	GarQ ^r ; Man ⁺ ; Pro123→His in PtnD	[18]
M3, M8, M9	BacSJ2-8 ^r ; Man ⁺ ; Gly62→Val in PtnC	This study
M6, M33	BacSJ2-8 ^r ; Man ⁺ ; Arg200→His in PtnD	This study
M16	BacSJ2-8 ^r ; Man ⁺ ; Leu83→Phe in PtnD	This study
M19	BacSJ2-8 ^r ; Man ⁺ ; Phe226→Ser in PtnD	This study
M30	BacSJ2-8 ^r ; Man ⁺ ; Leu197→Phe in PtnD	This study
<i>Lactococcus lactis</i> IL1403 derivative strains with deleted <i>ptnABCD</i> **		
B464	IL1403 strain with <i>ptnABCD</i> deletion; Man ⁺ ; GarABCQ ^r	LMBT NMBU [18,19,20]
B488	B464 carrying pNZ9530	LMBT NMBU [18,19,20]
B520	B488 carrying pNZ8037; Man ⁺ ; GarABCQ ^r	LMBT NMBU [18,19,20]
B515	B488 carrying pNZ8037 with <i>ptnABCD</i> ; Man ⁺ ; GarAB ^r ; GarCQ ^s	LMBT NMBU [18,19,20]
B538	B488 carrying pNZ8037 with <i>ptnC</i> ; Man ⁺ ; GarABCQ ^r	LMBT NMBU [18,19,20]
B541	B488 carrying pNZ8037 with <i>ptnD</i> ; Man ⁺ ; GarABCQ ^r	LMBT NMBU [18,19,20]
B529	B488 carrying pNZ8037 with <i>ptnCD</i> ; Man ⁺ ; GarAB ^r ; GarCQ ^s	LMBT NMBU [18,19,20]
B557a	B488 carrying pNZ8037 with <i>manABCD</i> ; Man ⁺ ; GarABCQ ^s	[19]
B558a	B488 carrying pNZ8037 with <i>manCD</i> ; Man ⁺ ; GarABCQ ^s	[19]
B561a	B488 carrying pNZ8037 with <i>manCD</i> without γ ⁺ ; Man ⁺ ; GarABC ^r ; GarQ ^s	[19]
H1	B488 carrying pNZ8037 with <i>mptCD</i> ; Man ⁺ ; GarABC ^r ; GarQ ^s	[21]
Plasmids		
pNZ9530	Em ^r , carrying nisin-regulatory <i>nisRK</i> genes	[22]
pNZ8037	Cam ^r , nisin regulated expression system containing nisin-responsive promoter	[23]
Primers	Nucleotide sequence (5'→3')	
<i>ptnC</i> for/rev	TCTGACCTCTTTGGTTTG/GCATACGTTCTAGT	
<i>ptnD</i> for/rev	AACCTCCAAGCTTCTG/AGCCACAGATTCTCTCC	

*Bacterial strains derived from the Regional Strains and Plasmids Collection of the Institute of Biochemistry and Biophysics, Warsaw, Poland (IBB PAS), from the Pure Cultures Collection of the Institute of Fermentation Technology and Microbiology, Technical University of Lodz, Poland (LOCK), from the dietary supplement Dicoflor, Vitis Pharma, Poland (Dicoflor), the collection of the Laboratory of Microbial Gene Technology, Department of Chemistry, Biotechnology and Food Science, Norwegian University of Life Sciences, Ås, Norway (LMGT NMBU), the Collection of Microorganisms and Cell Cultures, Germany (DSMZ), the collection of the National Institute for Agricultural Research, France (INRA), the American Type Culture Collection (ATCC), and obtained in this study. **Man—mannose phenotype.

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The protein accession numbers and host organisms are: CAR92206.2 - bacteriocin BacSJ (plasmid) [*Lactobacillus*

paracasei subsp. *paracasei* BGSJ2-8]; WP_012669554.1 - bacteriocin [*Lactobacillus paracasei*]; WP_016370066.1 - bacteriocin [*Lactobacillus paracasei*]; BAB86318.1 - acidocin M, partial (plasmid) [*Lactobacillus acidophilus* TK8912]; WP_109990520.1 - bacteriocin [*Lactobacillus paracasei*]; WP_048486328.1 - bacteriocin [*Lactobacillus rhamnosus*]; WP_016369810.1 - hypothetical protein [*Lactobacillus paracasei*]; WP_054642783.1 - hypothetical protein [*Lactobacillus paralimentarius*]; EDY98021.1 - hypothetical protein LRH_09920 [*Lactobacillus rhamnosus* HN001]; WP_003081942.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus macacae*]; WP_128833820.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus troglodytae*]; WP_002295719.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002270875.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002307353.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002286438.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002282764.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_086269000.1 - MULTISPECIES: hypothetical protein [*Enterococcus*]; WP_002264120.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; BAH88694.1 - putative bacteriocin peptide precursor [*Streptococcus mutans* NN2025]; WP_019314526.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; ESS18432.1 - putative bacteriocin peptide [*Streptococcus mutans* PKUSS-LG01]; WP_002262918.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002267385.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_019802917.1 - hypothetical protein [*Streptococcus mutans*]; WP_002310902.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_099735261.1 - hypothetical protein [*Lactobacillus plantarum*]; WP_002312350.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus mutans*]; WP_002997545.1 - MULTISPECIES: hypothetical protein [*Streptococcus*]; WP_019313835.1 - bacteriocin [*Streptococcus mutans*]; KJU74943.1 - bacteriocin [*Pediococcus damnosus* LMG 28219]; WP_019783418.1 - hypothetical protein [*Streptococcus sobrinus*]; KRL52547.1 - hypothetical protein FD35_GL001890 [*Lactobacillus rossiae* DSM 15814]; ARW18733.1 - hypothetical protein S100892_00127 (plasmid) [*Pediococcus pentosaceus*]; WP_075140346.1 - MULTISPECIES: hypothetical protein [*Pediococcus*]; WP_003133047.1 - bacteriocin [*Lactococcus garvieae*]; AEN79392.1 - prepeptide GarQ (plasmid) [*Lactococcus garvieae*]; EQC79567.1 - hypothetical protein HSIEG1_1895 [*Enterococcus* sp. HSIEG1]; WP_081579535.1 - hypothetical protein [*Leuconostoc carnosum*]; WP_019771036.1 - hypothetical protein [*Streptococcus sobrinus*]; WP_002963417.1 - hypothetical protein [*Streptococcus sobrinus*]; WP_076150142.1 - bacteriocin [*Lactobacillus murinus*]; WP_003025420.1 - MULTISPECIES: hypothetical protein [*Streptococcus*]; AGU72420.1 - hypothetical protein SCRE_0568 [*Streptococcus constellatus* subsp. *pharyngis* C232]; WP_014623337.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; ACG62855.1 - bacteriocin-like peptide [*Streptococcus equi* subsp. *zooepidemicus* MGCS10565]; WP_012677516.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; WP_019786937.1 - hypothetical protein [*Streptococcus sobrinus*]; WP_075530729.1 - hypothetical protein [*Lactobacillus ruminis*]; WP_019775993.1 - hypothetical protein [*Streptococcus sobrinus*]; WP_116877990.1 - MULTISPECIES: ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus*]; AAG29818.1 - bovicin 255 peptide precursor [*Streptococcus* sp. LRC 0255]; WP_012679942.1 - hypothetical protein [*Streptococcus equi*]; WP_089135223.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Lactobacillus murinus*]; WP_050321538.1 - hypothetical protein [*Streptococcus equi*]; WP_074615778.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equinus*]; AAR02622.1 - bovicin 255 variant, partial [*Streptococcus equinus*]; WP_039694458.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus gallolyticus*]; VEF05156.1 - bacteriocin [*Streptococcus equi* subsp. *zooepidemicus*]; PRO95083.1 - ComC/BlpC family peptide pheromone/bacteriocin, partial [*Lactobacillus pentosus*]; WP_015695690.1 - hypothetical protein [*Streptococcus infantarius*]; WP_043031280.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; WP_058621360.1 - hypothetical protein [*Streptococcus gallolyticus*]; WP_018364975.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus caballi*]; WP_043039332.1 - hypothetical protein [*Streptococcus equi*]; WP_040087900.1 - hypothetical protein [*Lactococcus garvieae*]; WP_074450823.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equinus*]; WP_039697853.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equinus*]; WP_095559356.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus thermophilus*]; WP_114318987.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus gallolyticus*]; WP_074581655.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus gallolyticus*]; AND80395.1 - bacteriocin [*Streptococcus pantholopis*]; WP_100911945.1 - bacteriocin [*Streptococcus uberis*]; WP_012658036.1 - MULTISPECIES: bacteriocin [*Streptococcus*]; WP_114319025.1 - ComC/BlpC family peptide pheromone/bacteriocin, partial [*Streptococcus*

gallolyticus]; WP_045798434.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equinus*]; WP_119448348.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Lactobacillus murinus*]; AAR02624.1 - bovicin 255 variant, partial [*Streptococcus equinus*]; WP_111678341.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; WP_081442276.1 - bacteriocin [*Streptococcus infantarius*]; WP_111692693.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; WP_043030062.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus equi*]; WP_099092232.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus pantholopis*]; WP_114318989.1 - ComC/BlpC family peptide pheromone/bacteriocin [*Streptococcus gallolyticus*]; WP_082306751.1 - bacteriocin [*Streptococcus gallolyticus*]; SQG21326.1 - bacteriocin peptide precursor [*Streptococcus sobrinus*]; WP_019787230.1 - hypothetical protein, partial [*Streptococcus sobrinus*]; CCK84999.1 - Bovicin 255 peptide [*Lactobacillus equicursoris* DSM 19284 = JCM 14600 = CIP 110162].

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