

Supplementary Material

Table S1. *Lc. lactis* AV1 [pRCR21] proteins with different levels when grown in MRSS at 20 °C or 37 °C.

Name	Accession number	¹ Fold change 20 °C vs 37 °C	Up- or Downregulated
Phosphonate ABC transporter substrate-binding protein	A0A1B2A136	52.93662	Up
Cold-shock protein CspA	A0A0N8VZ44	39.91730	Up
Uncharacterized protein	A0A1B2A101	25.87027	Up
Acetyltransferase	A0A1B2A1R7	19.51324	Up
Uncharacterized protein	A0A1B2A100	10.16175	Up
Phosphonate ABC transporter substrate-binding protein	A0A0Q0Z1H6	9.92723	Up
Flavodoxin	A0A1X0V3K5	8.46103	Up
Glycosyl transferase	A0A1B2A353	8.35599	Up
[Ribosomal protein S18]-alanine N-acetyltransferase	A0A1B2A1E8	7.97729	Up
ABC transporter permease	A0A0N8VYI6	7.19130	Up
Nucleoside diphosphate kinase	A0A1X0V0L1	6.72319	Up
Peptide ABC transporter substrate-binding protein	A0A1B2A105	6.51885	Up
Fructokinase	A0A1B2A288	6.20503	Up
Protein mCherry	A0A0Q00AJ0	6.17528	Up
ABC transporter ATP-binding protein	A0A1B2A0V9	5.93334	Up
PTS sucrose transporter subunit EIIBCA	A0A1X0V2U8	5.90041	Up
Energy-coupling factor ABC transporter ATP-binding protein	A0A1B2A1K6	5.63352	Up
Adenine DNA glycosylase	A0A1B2A0F	5.24170	Up
NADH oxidase	A0A1B2A2Q7	5.05173	Up
Pyridoxal 5-phosphate synthase subunit PdxS	A0A0Q1A2A1	4.78273	Up
Transcriptional regulator	A0A1B1ZZU1	4.56147	Up
RNA-binding transcriptional accessory protein	A0A1B2A2R9	4.38792	Up
Glutathione peroxidase	A0A0Q0U5X4	4.35450	Up
NADPH:quinone reductase	A0A1X0V325	4.25769	Up

Glyoxalase	A0A1B1ZZY8	4.16796	Up
DUF805 domain-containing protein	A0A1B2A2E5	4.11686	Up
2-amino-4-hydroxy-6-hydroxymethyldihydropteridine diphosphokinase	A0A1X0UZV3	4.05878	Up
Pyridoxal 5-phosphate synthase subunit PdxT	A0A1X0V2M0	3.71561	Up
ATP-dependent RNA helicase CshA	A0A1B1ZZX1	3.70038	Up
Uncharacterized protein	A0A1X0V1J7	3.67381	Up
Diguanylate cyclase	A0A1X0V3V0	3.66344	Up
Primosomal protein N	A0A1X0V3R6	3.64411	Up
CCA-adding enzyme	A0A0Q0TS06	3.61626	Up
Pseudouridine synthase	A0A0Q0Y9W8	3.60475	Up
Sortase	A0A1X0V1E5	3.53877	Up
Serine hydrolase	A0A1X0V223	3.47693	Up
Membrane protein insertase YidC	A0A0Q0YF52	3.45337	Up
Glutathione reductase	A0A1X0V483	3.42197	Up
Amino acid permease	A0A0Q1DSB1	3.36240	Up
Carboxylesterase	A0A1B2A020	3.20487	Up
Uncharacterized protein	A0A1X0V0S3	3.16399	Up
Crp/Fnr family transcriptional regulator	A0A1B2A0S7	3.14632	Up
Cytochrome O ubiquinol oxidase	A0A1X0V2Y4	3.12990	Up
Aspartate ammonia-lyase	A0A1X0V348	3.12470	Up
tRNA dimethylallyltransferase	A0A1X0V3T9	3.07506	Up
5-methylthioadenosine/S-adenosylhomocysteine nucleosidase	A0A0Q0U5Q2	3.05288	Up
ADP-ribose pyrophosphatase	A0A1B2A2Y5	2.96086	Up
Oxidoreductase	A0A1B2A2L5	2.94797	Up
Uncharacterized protein	A0A1X0V1P2	2.92770	Up
Acetylornithine transaminase	A0A1B2A0Y2	2.92693	Up
ADP-ribose pyrophosphatase	A0A1B2A280	2.90220	Up
Uncharacterized protein	A0A0Q0Y622	2.89273	Up
Signal peptidase I	A0A1X0V2C5	2.86725	Up
NADPH:quinone reductase	A0A1B2A0J1	2.85302	Up
DNA-entry nuclease	A0A1B2A032	2.80653	Up
Mini-ribonuclease HIII	A0A1X0V0Y9	2.78775	Up
Zn-dependent peptidase	A0A0N8VZ10	2.75430	Up
Zn-dependent peptidase	A0A1B2A206	2.69194	Up
RNA-binding protein	A0A1B1ZZ31	2.69079	Up
NAD(P)-dependent oxidoreductase	A0A1X0V111	2.61518	Up
Nucleoside hydrolase	A0A1B1ZYZ3	2.56641	Up
Hemolysin	A0A1B2A155	2.50640	Up
Probable cell division protein WhiA	A0A0Q1DLR8	2.50131	Up
3-oxoacyl-ACP reductase	A0A1B1ZYY4	2.49856	Up
RNA methyltransferase	A0A0Q0YER7	2.48730	Up
Adenine phosphoribosyltransferase	A0A0Q0U697	2.47319	Up

DNA polymerase I	A0A1B2A2A3	2.46976	Up
23S rRNA (Uracil-5-)-methyltransferase RumA	A0A1B2A1R1	2.43268	Up
Cell division protein FtsW	A0A1X0V3U3	2.42844	Up
Substrate-binding protein	A0A1B2A1N6	2.41511	Up
N5-carboxyaminoimidazole ribonucleotide synthase	A0A1X0V3E0	2.38425	Up
Acetolactate synthase	A0A1B2A1N1	2.38224	Up
Alpha-acetolactate decarboxylase	A0A1X0V3U4	2.38140	Up
Pyridine nucleotide-disulfide oxidoreductase	A0A1B2A0P2	2.37627	Up
Butanol dehydrogenase	A0A1B2A2P7	2.37548	Up
Ribonuclease M5	A0A0Q0U6B5	2.31630	Up
Queuine tRNA-ribosyltransferase	A0A0Q0TQJ4	2.30358	Up
Demethylmenaquinone methyltransferase	A0A0Q0U6R9	2.29504	Up
Glutamine ABC transporter substrate-binding protein	A0A1B2A017	2.29477	Up
TetR family transcriptional regulator	A0A1B2A1B7	2.27381	Up
RNA methyltransferase	A0A1B1ZZT6	2.25448	Up
50S ribosomal protein L11	A0A0Q0Z133	2.25159	Up
Undecaprenyl-diphosphatase	A0A0Q0U6T2	2.25131	Up
GNAT family N-acetyltransferase	A0A1X0V3X0	2.24580	Up
50S ribosomal protein L14	A0A0Q0U9V9	2.21838	Up
Glutamine synthetase	A0A1X9VPH5	2.21155	Up
Aminodeoxychorismate synthase, component I	A0A1X0V0Q0 I	2.18072	Up
Aspartate aminotransferase	A0A1B1ZYR6	2.17770	Up
50S ribosomal protein L17	A0A0Q1A811	2.17690	Up
50S ribosomal protein L30	A0A1X0V5B0	2.16862	Up
Sugar transporter	A0A0Q0Y7P2	2.16272	Up
Lipoprotein	A0A1B2A1N2	2.15764	Up
Acetyltransferase	A0A1B2A0U8	2.14415	Up
50S ribosomal protein L4	A0A1B2A111	2.09919	Up
2-succinyl-5-enolpyruvyl-6-hydroxy-3- cyclohexene-1-carboxylate synthase	A0A1X0V1Q5	2.09111	Up
Gluconate kinase	A0A1B1ZZS2	2.06393	Up
Cell division protein FtsK	A0A1B1ZZD1	2.05416	Up
50S ribosomal protein L23	A0A0Q0Z0X5	2.03088	Up
Cyclic-di-AMP phosphodiesterase	A0A1B2A0J8	2.01076	Up
30S ribosomal protein S9	A0A0Q0U6H5	1.99392	Up
Peptidoglycan hydrolase	A0A0Q0YGL5	1.99295	Up
3-oxoacyl-[acyl-carrier-protein] synthase 2	A0A1B2A029	1.98473	Up
Uncharacterized protein	A0A1X0V131	1.98188	Up
UDP-N-acetylmuramoyl-tripeptide--D- alanyl-D-alanine ligase	A0A1B1ZZX0	1.97726	Up
Small ribosomal subunit biogenesis GTPase RsgA	A0A1B1ZZK8	1.97542	Up
MarR family transcriptional regulator	A0A0Q0YFY4	1.96460	Up

Acetoin reductase	A0A0Q0U1J2	1.96038	Up
Single-stranded-DNA-specific exonuclease RecJ	A0A1X0V2W2	1.95694	Up
DNA-binding response regulator	A0A1B2A1V6	1.94306	Up
Gluconate permease	A0A1B2A0V6	1.93990	Up
tRNA-dihydrouridine synthase	A0A1B2A2I1	1.93245	Up
Transcriptional regulator	A0A1X0V138	1.92843	Up
Uncharacterized protein	A0A1B2A2S1	1.92667	Up
Cell division protein	A0A1B1ZZG7	1.91721	Up
50S ribosomal protein L2	A0A1B2A138	1.90606	Up
Glycosyl transferase	A0A1X0V2Q6	1.90505	Up
2-succinylbenzoate--CoA ligase	A0A1X0V2B7	1.90119	Up
ABC transporter ATP-binding protein	A0A1X0V2H5	1.90007	Up
50S ribosomal protein L18	A0A0N8VZ40	1.89416	Up
Holliday junction ATP-dependent DNA helicase RuvA	A0A1X0V2X3	1.89031	Up
50S ribosomal protein L13	A0A0Q0YK79	1.88975	Up
Pseudouridine synthase	A0A1B2A338	1.88544	Up
Ribonuclease J1	A0A1B2A1N5	1.88049	Up
30S ribosomal protein S16	A0A1B2A214	1.88030	Up
Mini-ribonuclease 3	A0A0Q0YK89	1.87422	Up
dITP/XTP pyrophosphatase	A0A0Q0Z0F6	1.86746	Up
Alkaline phosphatase	A0A1X0V0Z4	1.83468	Up
Type I restriction endonuclease subunit R	A0A1B1ZZE9	1.82333	Up
Probable GTP-binding protein EngB	A0A0N8VYG5	1.80336	Up
Phosphoesterase	A0A0Q0U9G9	1.79393	Up
50S ribosomal protein L21	A0A0N8VYR4	1.79251	Up
GNAT family N-acetyltransferase	A0A1X0V4J7	1.78381	Up
ABC transporter ATP-binding protein	A0A0Q0YEX1	1.77508	Up
DEAD-box ATP-dependent RNA helicase CshB	A0A1X0V2P8	1.77401	Up
Phosphoglucosamine mutase	A0A1B2A1W3	1.77365	Up
1,4-dihydroxy-2-naphthoyl-CoA synthase	A0A1B2A0V0	1.77266	Up
Thymidine kinase	A0A0Q0U6Q8	1.76719	Up
Histidine kinase	A0A0Q0TQU0	1.76663	Up
ACP phosphodiesterase	A0A0Q1DN29	1.75554	Up
Peptidyl-prolyl cis-trans isomerase	A0A1X0V3L1	1.74785	Up
Phosphate acyltransferase	A0A1B1ZZS1	1.74359	Up
50S ribosomal protein L5	A0A0Q1DS25	1.73661	Up
Phosphate import ATP-binding protein PstB	A0A1B2A216	1.73556	Up
50S ribosomal protein L15	A0A0Q0TVM2	1.72021	Up
Multidrug ABC transporter ATP-binding protein	A0A1B2A0P3	1.71674	Up
Protein translocase subunit SecA	A0A1X9VQY5	1.70687	Up
Thiol peroxidase	A0A0Q0TPS5	1.70315	Up
Protein translocase subunit SecY	A0A1X0V189	1.69720	Up

30S ribosomal protein S20	A0A1X0UWD3	1.69595	Up
30S ribosomal protein S8	A0A0Q0YAQ2	1.68532	Up
30S ribosomal protein S10	A0A1X0V560	1.68166	Up
Phosphomethylpyrimidine kinase	A0A0Q1A5X3	1.67968	Up
Single-stranded DNA-binding protein	A0A1B2A0H8	1.66771	Up
ABC transporter permease	A0A1B1ZZA2	1.65148	Up
Saccharopine dehydrogenase	A0A1B2A040	1.65039	Up
EDD domain protein	A0A1B2A0Z6	1.64937	Up
Thymidylate kinase	A0A1X0V0F9	1.64878	Up
UDP-N-acetylenolpyruvoylglucosamine reductase	A0A1B2A1S7	1.64572	Up
50S ribosomal protein L3	A0A0Q0TVK9	1.64317	Up
16S rRNA (Cytosine(967)-C(5))-methyltransferase	A0A1B1ZZN2	1.64315	Up
Ribosomal silencing factor RsfS	A0A0Q0YV21	1.63245	Up
30S ribosomal protein S5	A0A0Q0U6G2	1.62073	Up
1,4-dihydroxy-2-naphthoate prenyltransferase	A0A1X0V443	1.61677	Up
Glutamyl aminopeptidase	A0A1B1ZZK7	1.60946	Up
Uncharacterized protein	A0A1B2A064	1.59562	Up
Type I pantothenate kinase	A0A1B2A0Z0	1.59153	Up
Ribosomal RNA small subunit methyltransferase A	A0A1B2A1N4	1.59120	Up
Exopolysaccharide biosynthesis protein	A0A1B2A2B8	1.58796	Up
Uncharacterized protein	A0A1B2A1V0	1.58708	Up
50S ribosomal protein L16	A0A0N8VZ39	1.55594	Up
DNDP-4-keto-6-deoxy-glucose-2,3-dehydratase	A0A1B2A222	1.55571	Up
Isochorismate synthase	A0A1B2A396	1.54617	Up
Pyrroline-5-carboxylate reductase	A0A1B2A1D6	1.54573	Up
Chemotaxis protein	A0A1B2A1J7	1.54272	Up
HAD family hydrolase	A0A1B1ZZT4	1.53532	Up
NADH dehydrogenase	A0A1B2A161	1.53357	Up
ATP-dependent RNA helicase YfmL	A0A1X0V093	1.53001	Up
Histidinol-phosphate aminotransferase	A0A1B2A1Y5	1.52794	Up
Hydroxymethylglutaryl-CoA reductase	A0A1B2A088	1.51769	Up
Acetyl-coenzyme A carboxylase carboxyl transferase subunit beta	A0A0Q0YFX8	1.51597	Up
30S ribosomal protein S7	A0A0Q0Z0W8	1.51552	Up
Uncharacterized protein	A0A1B2A0E9	1.50590	Up
Redox-sensing transcriptional repressor Rex	A0A0Q0U6N1	1.50417	Up
Aminotransferase	A0A1B1ZZB3	1.50034	Up
UDP-galactopyranose mutase	A0A0N8VYY1	1.50019	Up
Type I restriction enzyme R Protein	A0A1B2A2W8	0.66578	Down
BMP family ABC transporter substrate-binding protein	A0A0Q1DL57	0.66507	Down
DNA methyltransferase	A0A0Q0U4U1	0.66434	Down
ATP synthase gamma chain	A0A1B2A0Y8	0.65937	Down

Nicotinate phosphoribosyltransferase	A0A0Q0U5F1	0.65934	Down
Nicotinate phosphoribosyltransferase	A0A1X0V320	0.65913	Down
2,3-bisphosphoglycerate-dependent phosphoglycerate mutase	A0A0Q0U9Y5	0.65316	Down
DNA-binding response regulator	A0A0Q1A1Y7	0.65025	Down
Lactate dehydrogenase	A0A1B2A0C8	0.64883	Down
DNA repair protein RecN	A0A1B1ZZL1	0.64797	Down
Uncharacterized protein	A0A1B1ZZ20	0.64723	Down
UTP--glucose-1-phosphate uridylyltransferase	A0A1B2A201	0.64433	Down
Shikimate dehydrogenase (NADP(+))	A0A0N8VYJ4	0.63359	Down
Amino acid ABC transporter ATP-binding protein	A0A1B2A0G7	0.62287	Down
Protein GrpE	A0A1B2A3D8	0.61662	Down
tr Carbamoyl-phosphate synthase large chain	A0A1X0V1Y4	0.61334	Down
Glutamine ABC transporter ATP-binding protein	A0A0N8VYK9	0.61077	Down
ADP-ribose pyrophosphatase	A0A1B2A0D5	0.61073	Down
Serine/threonine protein phosphatase	A0A0Q1DMH1	0.60742	Down
Peptidase T	A0A1B2A2Q0	0.60664	Down
Dihydroorotate dehydrogenase	A0A1B2A2K3	0.60626	Down
UPF0210 protein BCR17_07580	A0A1B2A2L9	0.60072	Down
Adenylyltransferase	A0A0Q0YVW4	0.59969	Down
PTS mannose family transporter subunit IID	A0A1B2A3C0	0.59959	Down
Uncharacterized protein	A0A1X0V047	0.59789	Down
Glutamine amidotransferase	A0A1B2A1D1	0.59165	Down
(P)ppGpp synthetase	A0A1B2A233	0.59062	Down
Ribosome-recycling factor	A0A0Q0TTH4	0.58355	Down
Adenylosuccinate lyase	A0A1B1ZZB2	0.58223	Down
UDP-glucose 6-dehydrogenase	A0A1X9VSJ0	0.58167	Down
Uncharacterized protein	A0A1B2A293	0.58079	Down
Peptidoglycan-binding protein LysM	A0A1B2A076	0.57889	Down
Diadenosine tetraphosphate hydrolase	A0A0Q0TRZ5	0.57608	Down
Probable transcriptional regulatory protein AN225_08265	A0A0Q0YUM1	0.57582	Down
BMP family ABC transporter substrate-binding protein	A0A1X0V3C7	0.56683	Down
PTS mannose transporter subunit EIIAB	A0A1B2A1F3	0.56668	Down
Orotidine 5-phosphate decarboxylase	A0A0N8VYR8	0.56340	Down
HD domain-containing protein	A0A1X0V1S0	0.56322	Down
Pyridine nucleotide-disulfide oxidoreductase	A0A1B1ZYZV7	0.56258	Down
Two-component sensor histidine kinase	A0A1B2A1A4	0.56024	Down
Endopeptidase	A0A1B2A0I4	0.55882	Down
Phosphoglycerate kinase	A0A1B2A171	0.55828	Down
Adenylate kinase	A0A0Q0Z0Z3	0.55624	Down
Dihydroorotase	A0A1B2A2G4	0.55462	Down

Gamma-glutamyl phosphate reductase	A0A1B2A046	0.55185	Down
Cysteine--tRNA ligase	A0A1B2A151	0.54625	Down
Uncharacterized protein	A0A1B2A2B2	0.54529	Down
Glucose-6-phosphate isomerase	A0A0Q0U508	0.54376	Down
Uncharacterized protein	A0A1X0V2L3	0.53830	Down
33 kDa chaperonin	A0A1B2A1J5	0.53498	Down
NADH-dependent flavin oxidoreductase	A0A1B2A103	0.52937	Down
Phosphoserine aminotransferase	A0A1B1ZZJ5	0.51636	Down
Segregation and condensation protein B	A0A1X0V3K9	0.51327	Down
ADP-dependent (S)-NAD(P)H-hydrate dehydratase	A0A0Q0YGB8	0.51260	Down
Aminotransferase	A0A0Q0TPN7	0.50830	Down
Uncharacterized protein	A0A1X0V471	0.50732	Down
Uncharacterized protein	A0A1X0V0V7	0.49061	Down
Heat-inducible transcription repressor HrcA	A0A1B2A2F1	0.48130	Down
Thymidine kinase	A0A1B2A0C3	0.48063	Down
Oxidoreductase	A0A0N8VY18	0.47725	Down
Phosphate starvation-inducible protein PhoH	A0A1B1ZYZ6	0.47497	Down
3-phosphoglycerate dehydrogenase	A0A0Q0TSD3	0.47357	Down
Peptidoglycan-binding protein LysM	A0A1X0V1C4	0.46782	Down
Maltose phosphorylase	A0A1B1ZZ46	0.46442	Down
Branched-chain-amino-acid aminotransferase	A0A1B2A2G1	0.46356	Down
β -phosphoglucomutase	A0A1B1ZZA5	0.45652	Down
Uncharacterized protein	A0A0Q0U2Z4	0.45137	Down
Carbonic anhydrase	A0A1B2A0X2	0.44656	Down
Uncharacterized protein	A0A1X9VP87	0.44182	Down
Uncharacterized protein	A0A1B2A3E3	0.44071	Down
3-5 exonuclease YhaM	A0A1X0V3G4	0.44031	Down
Serine protease	A0A1B2A0D6	0.43928	Down
Ribose-5-phosphate isomerase A	A0A0Q0U1G4	0.43628	Down
Aldo/keto reductase	A0A1X0V3K0	0.42982	Down
Uncharacterized protein	A0A1B1ZZ98	0.42546	Down
Sucrose operon repressor ScrR	A0A1B1ZZZ0	0.42047	Down
Hypoxanthine phosphoribosyltransferase	A0A0Q0YWT3	0.41976	Down
Uracil-DNA glycosylase	A0A1B1ZYU3	0.41515	Down
Uncharacterized protein	A0A1B1ZZU0	0.41084	Down
Aspartate carbamoyltransferase	A0A1B2A2I5	0.41009	Down
Phosphoenolpyruvate carboxylase	A0A1B2A1M4	0.39325	Down
Peptide ABC transporter ATP-binding protein	A0A1B2A317	0.38830	Down
Glycerol transporter	A0A1X0V3R1	0.38452	Down
X-Pro aminopeptidase	A0A1B2A2F2	0.35361	Down
Copper oxidase	A0A1X0V032	0.35105	Down
Aspartate-semialdehyde dehydrogenase	A0A1B2A0J6	0.34768	Down
GntR family transcriptional regulator	A0A1B2A260	0.34382	Down
Homoserine kinase	A0A0Q0TRW7	0.33606	Down

ATP-dependent Clp protease proteolytic subunit	A0A0Q0YV31	0.33037	Down
Potassium transporter Trk	A0A1B2A0U7	0.32919	Down
DNA-binding response regulator	A0A1B2A1C1	0.32683	Down
Alkaline phosphatase	A0A1B2A0S2	0.32603	Down
Glucosamine-6-phosphate deaminase	A0A0Q1A354	0.31876	Down
Probable transcriptional regulatory protein AN225_05420	A0A0Q0U3G9	0.30058	Down
Uncharacterized protein	A0A1B1ZZV5	0.30027	Down
Phosphoglycerate dehydrogenase	A0A1B2A2G0	0.29791	Down
Chaperone protein DnaK	A0A0Q0YZW2	0.29384	Down
Universal stress protein UspA	A0A1B1ZZC6	0.26012	Down
Aspartokinase	A0A1B1ZYX6	0.25308	Down
Uncharacterized protein	A0A1B2A098	0.25034	Down
Uncharacterized protein	A0A1B2A0P1	0.23916	Down
Uncharacterized protein	A0A1B2A083	0.23551	Down
N-acetylglucosamine-6-phosphate deacetylase	A0A1B2A398	0.23178	Down
Homoserine dehydrogenase	A0A1B1ZYY7	0.22585	Down
5-formyltetrahydrofolate cyclo-ligase	A0A1B1ZZ01	0.22311	Down
BMP family ABC transporter substrate-binding protein	A0A1B2A004	0.20130	Down
Clp protease ClpE	A0A1B2A1U8	0.19818	Down
LacI family transcriptional regulator	A0A1X0V3L0	0.19780	Down
Cyclopropane-fatty-acyl-phospholipid synthase	A0A1B2A2S7	0.18988	Down
Threonine synthase	A0A1B1ZYY5	0.18493	Down
Universal stress protein UspA	A0A1B2A0D8	0.16317	Down
Mannose-6-phosphate isomerase	A0A1X0V134	0.15799	Down
60 kDa chaperonin	A0A1B2A1I5	0.15626	Down
Ribosome hibernation promoting factor	A0A1B2A1D0	0.15569	Down
Peroxidase	A0A0Q0U9N6	0.15450	Down
Uncharacterized protein	A0A1B2A1Q1	0.14890	Down
Uncharacterized protein	A0A0Q0YZY0	0.14592	Down
MFS transporter permease	A0A0Q0YA01	0.14119	Down
ATP-dependent Clp protease ATP-binding subunit	A0A1B2A0H1	0.12864	Down
10 kDa chaperonin	A0A0Q0U6N9	0.12571	Down
Transcriptional regulator	A0A1X0V340	0.10592	Down
PTS mannose family transporter subunit IID	A0A1X0UW6	0.08901	Down
Uncharacterized protein	A0A1B2A310	0.08026	Down
Uncharacterized protein	A0A1B1ZZ24	0.06544	Down

List of proteins, fold change values and accession numbers corresponding to the detected proteins are shown.

¹Proteins are ordered taking into account the fold change, starting with the protein with the highest level at 20 °C and finishing with the protein with the highest level at 37 °C.

Table S2. *Lc. lactis* AV1 [pRCR21] proteins only detected upon growth in MRSS at 20 °C

Name	Accession number	Category
Dextranucrase	A0A411G111	EPS biosynthesis
Cold-shock protein CspA	A0A1B2A2G5	Stress response
Glutathione reductase	A0A1B1ZYQ2	Stress response
Thiol peroxidase	A0A1B2A0I8	Stress response
IS30 family transposase	A0A1X9VTK5	Processing of genetic information (DNA integration)
Phosphate ABC transporter substrate-binding protein	A0A1X0V102	Membrane transport
AI-2E family transporter	A0A1X0V387	Membrane transport
Amino acid ABC transporter substrate-binding protein	A0A1B2A1Z1	Membrane transport
Phosphonates import ATP-binding protein PhnC	A0A1X0V2A7	Membrane transport
Branched-chain amino acid transporter	A0A1X0V2C9	Membrane transport
GntR family transcriptional regulator	A0A1B2A0P8	Transcriptional regulator
LexA repressor	A0A1B2A2M1	Transcriptional regulator
Hydrolase	A0A1X0V124	General function prediction
Amidohydrolase	A0A1X9VP51	General function prediction
Cys-tRNA(Pro)/Cys-tRNA(Cys) deacylase	A0A1B2A0E3	Protein biosynthesis
Uncharacterized protein	A0A0Q1A3F8	Uncharacterized
Uncharacterized protein	A0A1B1ZYG0	Uncharacterized
Uncharacterized protein	A0A1B2A1P6	Uncharacterized
Uncharacterized protein	A0A1X0V034	Uncharacterized

List of the detected proteins, Accession number and categories to which belong are shown.

Table S3. *Lc. lactis* AV1 [pRCR21] proteins only detected upon growth in MRSS at 37 °C

Name	Accession number	Category
Clp protease ClpE	A0A1X9VPT9	Stress response
DNA repair protein RecO	A0A1X0V1Q9	Processing of genetic information
S-ribosylhomocysteine lyase	A0A0Q0TVT5	Amino acid metabolism
2,3-bisphosphoglycerate-dependent phosphoglycerate mutase	A0A1X0V3P9	Carbohydrate metabolism
6-pyruvoyl tetrahydropterin synthase	A0A1B2A1U9	Cofactor metabolism
NADH oxidase	A0A1B2A1N3	Electron transport chain
Lysophospholipase	A0A1X0V3B5	Fatty acid metabolism
Uncharacterized protein	A0A1B2A0F6	Uncharacterized
Uncharacterized protein	A0A0Q0U934	Uncharacterized

List of the detected proteins, Accession number and categories to which belong are shown.