

Title	Structure and assembly of TP901-1 virion unveiled by mutagenesis
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Mutant strain and phages	Accession numbers, ORF numbers and genomic coordinates of mutation region	Original DNA sequence	Original protein sequence ^{1,2}	DNA sequence following recombineering ³	Protein sequence following recombineering
<i>L. lactis</i> NZ9000 NZ9000-Cro _{t712}	NC_017949 782805..782833	TTGACAAGTTGCAACGA CGATGTTATAAT	N/A	TTGACAAGTTGCAACGA CGAT <u>CAGGATCC</u>	N/A
TP901-1 NZ9000-Cro _{t712} -Portal _{TP901-1} ::Ter	NC_002747 ORF32; 15816..15839	AAACAAGAGCCTTTATT TGCCGTG	KQEPLFAV	AAACAAGAGCCTT <u>GAA</u> <u>TTCT</u> ATTTGCCGTG	KQEP*ILFAV
NZ9000-Cro _{t712} -MCP1 _{TP901-1} ::Ter	ORF33; 17151..17174	GGAATTCTTGGTTAAG CGTTCCA	GILGLSVP	GGAATTCTTGGTT <u>GAA</u> T <u>TC</u> ATAAGCGTTCCA	GILG*IHKRS
NZ9000-Cro _{t712} -MCP2 _{TP901-1} ::Ter	ORF34; 18500..18523	TATCATTACTATTTTGA CGGTGAT	YHYYFDGD	TATCATTACTATT <u>GAA</u> T <u>TC</u> ATTGACGGTGAT	YHYY*IH*R*
NZ9000-Cro _{t712} -Sfp _{TP901-1} ::Ter	ORF35; 19028..19051	GTTAAAGAAAAATCTG ACGAAGAA	VKEKSDEE	GTTAAAGAAAAAT <u>GAA</u> <u>TTCT</u> CGACGAAGAA	VKEK*IPDEE
NZ9000-Cro _{t712} -MHP _{TP901-1} ::Ter	ORF36; 19812..19835	GCTAAGACTACCTCTCA AACTGTT	AKTTSQTV	GCTAAGACTACCT <u>GAA</u> T <u>TC</u> GCTCAAACCTGTT	AKTT*IRSNC
NZ9000-Cro _{t712} -MCP3 _{TP901-1} ::Ter	ORF37; 20318..20341	GATGAACCTAACGACGCT TACCGTT	DELTLTV	GATGAACCTAACGT <u>GAA</u> T <u>TC</u> ACGCTTACCGTT	DELT*IHAYR
NZ9000-Cro _{t712} -HTC1 _{TP901-1} ::Ter	ORF38; 20526..20549	CTTATTCTTGGTTCTGA CATTAAA	LILGSDIK	CTTATTCTTGGTT <u>GAA</u> T <u>TC</u> CTGACATTAAA	LILG*IPDIK
NZ9000-Cro _{t712} -HTC2 _{TP901-1} ::Ter	ORF39; 20900..20923	AGTGTAAGATTTTGG AGATATT	SVEVFGDI	AGTGTAAGATTT <u>AGAA</u> <u>TTCT</u> TGGAGATATT	SVEV*NSWRY
NZ9000-Cro _{t712} -Tap _{TP901-1} ::Ter	ORF40; 21107..21130	CTTGTAAGCATTTGGA TAAAGCA	LVKHLDKA	CTTGTAAGCATT <u>GAA</u> T <u>TCT</u> GGATAAAGCA	LVKH*ILDKA
NZ9000-Cro _{t712} -Ttp _{TP901-1} ::Ter	ORF41; 21444..21467	TTCAAACGAATCCAAGC TTTGGGG	FKRIQALG	TTCAAACGATGATGAGC TTTGGGG	FKR**ALG
NZ9000-Cro _{t712} -MTP _{TP901-1} ::Ter	ORF42; 22061..22084	ATGCAGCAATTATTGAA GTGTGGG	MQQLKCG	ATGCAGCAATTAT <u>GAA</u> T <u>TC</u> ATGAAGTGTTGGG	MQQL*IHEVW
NZ9000-Cro _{t712} -gpG _{TP901-1} ::Ter	ORF43; 22579..22602	AACATTGCAACTTTATC GAATGTA	NIATLSNV	AACATTGCAACTT <u>GAA</u> T <u>TC</u> TATCGAATGTA	NIAT*ILSNV
NZ9000-Cro _{t712} -gpT _{TP901-1} ::BamHI	ORF44; 22731..22737	GAAAGCAATACGGGAA AGTTAATC	ESNTGKLI..[6 aa].*	GAAAGCAATACG <u>GGAT</u> <u>CCG</u> GAAAGTTAATC	ESNTGSGKLI..[6 aa].*
NZ9000-Cro _{t712} -gpG/sT _{TP901-1}	ORF43-44; 22731..22737	GAAAGCAATACGGGAA AGTTAATC	ESNTGKLI..[6 aa].*	GAAAGCAATAC <u>TGGTA</u> <u>AAGCTGATC</u>	ESNTGKVN..[126 aa].*

- 1 The original protein sequence of NZ9000-Cro_{t712}-gpT_{TP901-1}::Ter mutant shows only the amino acid sequence of gpG. Protein sequence of gpGT (produced through a -1 frame-shift in *gpG* DNA sequence GGGAAAG, fusing it to *gpT*) is not shown.
 - 2 The original protein sequence of NZ9000-Cro_{t712}-gpG/sT_{TP901-1} mutant shows only the amino acid sequence of gpG.
 - 3 Introduced DNA bases causing mutations are underlined once, while introduced bases resulting in a novel restriction site are double underlined.
- N/A Not applicable
- * Translation terminating stop codon