

Sequence S2 Nucleotide sequence of the *pepN* gene and the translated amino acid sequence from *Lactobacillus helveticus* ATCC 12046. Elements from the pET20b (+) are underlined. The restriction sites (*NdeI* and *XhoI*) are noted in *italics*. The last amino acid of PepN is D. The amino acids L and E originate from the *XhoI* restriction site, followed by the His₆ tag. The stop codon is denoted by *.

NdeI

GGA GAT ATA CAT ATG GCA GTT AAA CGT TTC TAT AAA ACT TTC CAC CCA GAA CAT TAC GAT < 60
M A V K R F Y K T F H P E H Y D

TTG CGT ATT AAT GTA AAC CGT AAG AAT AAA ACT ATT AAT GGT ACT TCC ACA ATT ACT GGT < 120
L R I N V N R K N K T I N G T S T I T G

GAT GTA ATT GAA AAT CCA GTA TTT ATT AAC CAA AAA TTT ATG ACC ATT GAT AGC GTT AAG < 180
D V I E N P V F I N Q K F M T I D S V K

GTT GAT GGT AAA AAT GTT GAT TTT GAT GTA ATC GAA AAA GAT GAA GCA ATC AAA ATT AAA < 240
V D G K N V D F D V I E K D E A I K I K

ACA GGA GTA ACT GGC AAA GCT GTA ATC GAA ATT GCT TAT AGC GCA CCA CTT ACT GAT ACT < 300
T G V T G K A V I E I A Y S A P L T D T

ATG ATG GGT ATT TAT CCT TCA TAT TAC GAA TTA GAA GGT AAG AAG AAG CAA ATC ATC GGT < 360
M M G I Y P S Y Y E L E G K K K Q I I G

ACG CAA TTC GAA ACT ACT TTT GCT CGC CAA GCA TTC CCA TGT GTG GAC GAA CCT GAA GCT < 420
T Q F E T T F A R Q A F P C V D E P E A

AAA GCT ACA TTC TCA CTT GCT CTT AAG TGG GAT GAA CAA GAT GGT GAA GTT GCA CTT GCT < 480
K A T F S L A L K W D E Q D G E V A L A

AAT ATG CCA GAA GTA GAA GTT GAC AAG GAT GGC TAC CAC CAC TTT GAA GAA ACT GTC CGC < 540
N M P E V E V D K D G Y H H F E E T V R

ATG TCT AGT TAC TTA GTT GCC TTT GCC TTT GGT GAA TTA CAA TCT AAG ACT ACT CAT ACT < 600
M S S Y L V A F A F G E L Q S K T T H T

AAG GAT GGC GTA TTA ATT GGC GTT TAC GCA ACT AAG GCA CAC AAG CCT AAG GAA TTA GAC < 660
K D G V L I G V Y A T K A H K P K E L D

TTC GCT TTG GAC ATT GCT AAG CGC GCA ATT GAA TTT TAC GAA GAA TTC TAC CAA ACC AAA < 720
F A L D I A K R A I E F Y E E F Y Q T K

TAC CCA CTT CCA CAG TCA TTG CAA CTT GCA TTG CCA GAC TTC TCA GCT GGT GCC ATG GAA < 780
Y P L P Q S L Q L A L P D F S A G A M E

AAC TGG GGT CTT GTA ACT TAC CGT GAA GCA TAC TTG CTC CTT GAC CCA GAC AAT ACT AGC < 840
N W G L V T Y R E A Y L L L D P D N T S

TTG GAA ATG AAG AAG TTA GTT GCC ACA GTT ATT ACC CAT GAA TTG GCT CAC CAA TGG TTC < 900
L E M K K L V A T V I T H E L A H Q W F

GGT GAC TTG GTA ACC ATG AAG TGG TGG GAC AAC TTA TGG CTT AAC GAA AGT TTT GCC AAC < 960
G D L V T M K W W D N L W L N E S F A N

ATG ATG GAA TAC TTA TCA GTT GAT GGT TTG GAA CCT GAC TGG CAC ATC TGG GAA ATG TTC < 1020
M M E Y L S V D G L E P D W H I W E M F

CAA ACT AGT GAA GCT GCA TCT GCA TTG AAC AGA GAT GCT ACT GAT GGT GTT CAA CCA ATT < 1080
Q T S E A A S A L N R D A T D G V Q P I

CAA ATG GAA ATT AAT GAC CCA GCA GAT ATT GAC TCA GTC TTT GAC GGT GCC ATT GTT TAT < 1140
Q M E I N D P A D I D S V F D G A I V Y

GCT AAG GGT TCA AGA ATG TTA GTC ATG GTT CGT TCA CTT CTT GGT GAC GAC GCA CTT CGC < 1200
A K G S R M L V M V R S L L G D D A L R

AAG GGT CTT AAG TAC TAC TTC GAC CAC CAC AAG TTT GGC AAT GCC ACT GGT GAT GAC CTT < 1260
K G L K Y Y F D H H K F G N A T G D D L

TGG GAT GCA CTT TCA ACT GCA ACT GAT CTT GAT ATT GGT AAA ATC ATG CAC TCA TGG CTT < 1320
W D A L S T A T D L D I G K I M H S W L
AAG CAA CCT GGT TAC CCA GTA GTT AAT GCC TTC GTT GCT GAA GAT GGT CAT TTG AAG CTT < 1380
K Q P G Y P V V N A F V A E D G H L K L
ACG CAA AAG CAA TTC TTC ATT GGT GAA GGT GAA GAT AAA GGT AGA CAA TGG CAA ATT CCA < 1440
T Q K Q F F I G E G E D K G R Q W Q I P
TTG AAT GCT AAC TTC GAC GCA CCT AAG ATT ATG TCT GAT AAG GAA ATT GAC TTA GGC AAT < 1500
L N A N F D A P K I M S D K E I D L G N
TAC AAG GTA CTT CGC GAA GAA GCA GGT CAC CCA CTT AGA CTT AAT GTT GGC AAC AAC TCA < 1560
Y K V L R E E A G H P L R L N V G N N S
CAC TTC ATC GTT GAA TAT GAC AAG ACT TTG CTT GAT GAT ATT TTG TCA GAT GTT AAT GAA < 1620
H F I V E Y D K T L L D D I L S D V N E
TTG GAT CCA ATT GAT AAG TTA CAA TTG CTT CAA GAC TTA CGT CTC TTA GCA GAA GGT AAG < 1680
L D P I D K L Q L L Q D L R L L A E G K
CAA ATT TCT TAC GCT TCA ATT GTT CCA CTT TTG GTT AAA TTC GCT GAT TCT AAG TCA AGC < 1740
Q I S Y A S I V P L L V K F A D S K S S
TTG GTA ATT AAC GCA CTT TAC ACT ACT GCA GCT AAG CTT CGT CAA TTC GTT GAA CCA GAA < 1800
L V I N A L Y T T A A K L R Q F V E P E
TCA AAT GAA GAA AAG AAC TTG AAG AAG CTT TAT GAT CTC TTA TCA AAG GAT CAA GTT GCA < 1860
S N E E K N L K K L Y D L L S K D Q V A
CGT TTA GGC TGG GAA GTA AAG CCA GGC GAA AGC GAT GAA GAT GTT CAA ATT CGT CCA TAC < 1920
R L G W E V K P G E S D E D V Q I R P Y
GAG TTG AGC GCA AGT CTT TAC GCT GAA AAT GCG GAC TCA ATT AAG GCA GCT CAC CAA ATC < 1980
E L S A S L Y A E N A D S I K A A H Q I
TTT ACT GAA AAT GAA GAT AAC TTG GAA GCA TTG AAT GCA GAT ATT CGT CCA TAC GTT TTA < 2040
F T E N E D N L E A L N A D I R P Y V L
ATC AAT GAA GTT AAG AAC TTT GGC AAT GCT GAA TTA GTT GAT AAG TTA ATT AAG GAA TAC < 2100
I N E V K N F G N A E L V D K L I K E Y
CAA AGA ACA GCT GAC CCA TCA TAC AAG GTT GAC TTA CGC AGC GCT GTA ACC AGC ACC AAG < 2160
Q R T A D P S Y K V D L R S A V T S T K
GAT CTT GCA GCT ATC AAG GCT ATT GTT GGC GAC TTT GAA AAT GCT GAC GTA GTT AAG CCA < 2220
D L A A I K A I V G D F E N A D V V K P
CAA GAT TTA TGT GAT TGG TAC CGT GGT TTA CTT GCT AAC CAT TAT GGT CAA CAA GCA GCT < 2280
Q D L C D W Y R G L L A N H Y G Q Q A A
TGG GAC TGG ATC AGA GAA GAC TGG GAT TGG CTT GAC AAG ACT GTT GGT GGT GAC ATG GAA < 2340
W D W I R E D W D W L D K T V G G D M E
TTT GCT AAA TTT ATC ACT GTT ACT GCA GGC GTC TTC CAT ACC CCA GAA AGA CTT AAG GAA < 2400
F A K F I T V T A G V F H T P E R L K E
TTC AAA GAA TTC TTT GAA CCA AAG ATT AAT GTT CCA CTT CTT AGT CGT GAA ATT AAG ATG < 2460
F K E F F E P K I N V P L L S R E I K M
GAC GTT AAG GTC ATC GAA AGC AAG GTT AAC TTG ATC GAA GCT GAA AAA GAT GCT GTT AAT < 2520
D V K V I E S K V N L I E A E K D A V N
GAT GCA GTT GCT AAA GCA ATT GAT **XhoI**
D A V A K A I D CTC GAG CAC CAC CAC CAC CAC CAC TGA GAT CCG GCT < 2580
L E H H H H H H H *

GCT AAC < 2587