

## Coronavirus MHV-JHM: nucleotide sequence of the mRNA that encodes the membrane protein

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The complete sequence of the membrane protein of coronavirus MHV-JHM is presented and compared with that of MHV-A59 (1). Within the coding region of 684 nucleotides there are 21 nucleotide changes which result in 7 aminoacid changes in a protein of 228 residues (mol. wt. 26,000). These aminoacid changes are conservative, both within the potential membrane (—) and non-membrane domains of the protein. The potential O-glycosylation sites (∇) at the N-terminus of the polypeptide are also conserved. In the 5' non-coding region, the homology sequence TCTAATCCAAAC is found at or near the site of fusion between the mRNA body and leader.

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1  TGGCGTCCG∇TACG∇TACCT∇TCTACTCTA∇AAACTCTTGT∇AGTTTAAATCTAATCTAATCC∇ 60
61  AAACATTAGTAGTACTACCACTCAGGCCCCAGGCCCGTCTACCAATGGACAGCCGACG∇ 120
      M S S T T Q A P G P V Y Q W T A D E
121  GCGCGTTCAAATTCCTTAAGGAATGGAAACTTCTCGTTGGGCATTATACTACTCTTTATTACT 180
      A V Q F L K E W N P S L G I I L L F I T
181  TATCATACTACAGTTCGGTTACACGAGCCGTAGCATGTTTATCTATGTTGTGAAAATGATT 240
      I I L Q F G Y T S R S M F I Y V V K M I
241  AATCTTGTGGTTAAATGTTGGCCACTGATTACTGTTTGTGTATGTTCAATTCGCGTGTATGCT 300
      I L V L M W P L I I V L C M F N C V Y A
301  GCTAAATAATGTGTATCTTGGATTTTCTATAGTGTTTACTATAGTGTCCGTTGTAATGTGA 360
      L N N V Y L G F S I V F T I V S V V M W
361  GATTATGTAATTTTGTTAATAGCATCAGGTTGTTTATCAGGACTGGTAGCTGGTGGAGCTTT 420
      I M Y F V N S I R L F I R T G S W W S F
421  CAACCCGATAAACAACCATCTAATGTGCATTAGATATGAAAGGTACCGTGTATGTTAGACC 480
      N P E T N N L M C I D M K G T V Y V R P
481  CATTATTGAGGATTACCATCACTACACAGCCACTATTATTCTGGCCACTTCTATATGCAC 540
      I I E D Y H T L T A T I I R G H F Y M Q
541  AGGTGTTAAGCTAGGCACCGTTTCTCTTGTCTGACTGCTGCTTATGTTACAGTAGCT 600
      G V K L G T G F S L S D L P A Y V V T V A
601  TAAGGTTTCCACCTTTCGACTTATAAGCGTGCATTCTTGAGACAAGGTAAGACCGGTGTAGT 660
      K V S H L C T Y K R A F L D K V D G V S
661  CGGTTTTGCTGTTTATGTGCAAAGTCCAAGGTCGGAAATTACCCGACTGCCCTCAAACAAACC 720
      G F A V Y V K S K V G N Y R L P S N K P
721  GAGTGGCGCGGACACCGTATCTGTTGAGAATCTAATCTAAACTTTAAGGATGTCTTTTGTT 780
      S G A D T V L R I

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1. Armstrong, J., Niemann, H., Smeekens, S., Rottier, P. and Warren, G. (1984) *Nature*, 308, 751-752.