Rotavirus serotype IV: nucleotide sequence of genomic segment nine of the St Thomas 3 strain

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The serotype specific antigen (VP7) of human rotavirus is encoded by genomic segment 9 (1). A series of incomplete overlapping clones of this gene were obtained (2) for the reassortant virus St Thomas 3 (3), which is representative of the fourth rotavirus serotype. Sequencing of both clones and viral RNA generated 5' and 3' terminal sequences respectively. A number of full length clones also were obtained by extension of flanking oligonucleotide primers by the polymerase chain reaction (4) using cDNA:RNA molecules as template: further sequence data was obtained from the full length PCR product. The St Thomas strain of rotavirus is derived from a single well-studied outbreak of largely asymptomatic rotavirus in a nursery for newborns (5), yet the amino acid sequence inferred from our nucleic acid sequence differs at three positions (amino acids 38, 78 and 146) from the amino acid sequence of Green et al (6). All three differences were confirmed on four separate clones as well as the PCR product, implying that the single laboratory reassortant event (3) which yielded our virus strain, selected a gene from a pool that exhibited moderate sequence heterogeneity.

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GCCTTTAAAGAGAGAATTTCCGTTTGCTAGCGATAGCTCCTTTTAAATGTATGGTATTGAATATACCACAGTTCTATTTTATTTTGATATCGTTCGTTTC
      M Y G I E Y T T V L F Y L I S F V L

TTGTGAGTTATATCTGAAACCATAATAAGATAATGGACTATATTATTTATAGAATAACATTGTGAATTGTAGTATTATCAGTATTATCGAATGCACAC
V S Y I L K T I I K I M D Y I I Y R I [T] F V I V V L S V L S N A Q

AAATTTAGGAATAAATTTGCCAATTACTGGATCTATGGATACAGCATATGCTAACTCAACACAAGACAATAATTTTATTTTCACTTTATGCTATAT
N Y G I N L P I T G S M D T A Y A N S T Q D N N F L [E] S T L C L Y

TATCCATCAGAAGCTCAACTCAAATTAGTGACACTGAATGGAAAGATACACTATCTCAGCTGTTTTTAACCAAGGATGGCCGACAGGTTCAAGTTTATT
Y P S E A P T Q I S D T E W K D T L S Q L F L T K G W P T G S V Y F

TTAATGAATATTCAAACGTTTTAGAAATTTCCATCGACCCAAAGCTATACTGTGATTATAATGTTGTGCTAATTAGATTCTGTTTTGGTGAGGAGTTGGA
N E Y S N V L E F S I D P K L Y C D Y N V V L I R F V [E] G E E L D

CATATCTGAATTAGCTGATCTAATACTGAATGAGTGGTTATGTAATCCAATGGATATAACATTATATTATACCAACAACTGGAGAGGCAACAAATGG
I S E L A D L I L N E W L C N P M D I T L Y Y Y Q Q T G E A N K W

ATATCAATGGGATCATGTACCGTTAAAGTGTGTCATTAAATACTCAGACATTAGGAATGGAGTGTCAAACGACAAATACAGCTACTTTTGAAACAG
I S M G S S C T V K V C P L N T Q T L G I G C Q T L N T A T F E T V

TTGCTGATACGCAAAAATGGCAATAATGTATGTTGTCGACAGCGTAAATCATAAATTAATATCACATCTACTACATGTACAATACGGAATTGTAATAA
A D S E K L A I I D V V D S V N H K L N I T S T T C T I R N C N K

ACTAGGACCGGAGAGAAAATGGGCTATATAACAGGTTGGCGGTTCTAATATATTAGATATAACAGCTGATCCCACTTCTCCACAAACAGAACGAATG
L G P R E N V A I I Q V G G S N I L D I T A D P T T S P Q T E R M

ATGCGCGTAAACTGGAAGAAATGGTGGCAAGTATTCTACACTGTAGTTGATTACATTAAATCAGATAGTACAAGTAATGTCACAAAGATCAAGATCGTTAG
M R V N W K K W Q V F Y T V V D Y I N Q I V Q V M S K R S R S L D

ATTGCTCATCTTCTATTATAGAGTGTAGATATATCCTAAAAATAGAAGTGTGATGTGAC
S S S F Y Y R V *
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