Figure 17 (continued)

J02203; HPBAYW Hepatitis B Virus ayw. (SEQ ID NO: 11)

ATGCAGTGGAATTCCACAACCTTCCACCAAACTCTGCAAGATCCCAGAGTGAGAGGCCTGTA
TTTCCCTGCTGGTGGCTCCAGTTCAGGAACAGTAAACCCTGTTCTGACTACTGCCTCTCCCT
TATCGTCAATCTTCTCGAGGATTGGGGACCCTGCGCTGAACATGGAGAACATCACATCAGGA
TTCCTAGGACCCCTTCTCGTGTTACAGGCGGGGTTTTTCTTGTTGACAAGAATCCTCACAAT
ACCGCAGAGTCTAGACTCGTGGTGGACTTCTCTCAATTTTCTAGGGGGAACTACCGTGTGTC
TTGGCCAAAATTCGCAGTCCCCAACCTCCAATCACTCACCAACCTCTTGTCCTCCAACTTGT
CCTGGTTATCGCTGGATGTGTCTGCGGCGTTTTATCATCTTCCTCTTCATCCTGCTGCTATG
CCTCATCTTCTTGTTGGTTCTTCTGGACTATCAAGGTATGTTGCCCGTTTGTCCTCTAATTC
CAGGATCCTCAACAACCAGCACGGGACCATGCCGGACCTGCATGACTACTGCTCAAGGAACC
TCTATGTATCCCTCCTGTTGCTGTACCAAACCTTCGGACGGAAATTGCACCTGTATTCCCAT
CCCATCATCCTGGGCTTTCGGAAAATTCCTATGGGAGTGGGCCTCAGCCCGTTTCTCCTGGC
TCAGTTTACTAGTGCCATTTGTTCAGTGGTTCGTAGGGCTTTCCCCCACTGTTTGGCTTTCA
GTTATATGGATGATGTGGTATTGGGGGCCAAGTCTGTACAGCATCTTGAGTCCCTTTTTACC
GCTGTTACCAATTTTCTTTTGTCTTTGGGTATACATTTAA

Forward HBV ayw PCR Primer (with 2 natural EcoRI sites) (SEQ ID NO: 13):
5'-CCGGGAATTCCTCGACACCATGCAGTGGAATTCCACAACC-3'

Reverse HBV ayw PCR Primer (with added KpnI site) (SEQ ID NO: 14):
5'-CCGGGGTACCCAAAGACAAAAGAAAATTGGTAACAGCGG-3'

HBsAg Protein ayw (SEQ ID NO.:12):
MQWNSTTFHQTLQDPRVRGLYFPAGGSSSGTVNPVLTTASPLSSIFSRIGDPALNMENITSG
FLGPLLVLQAGFFLLTRILTIPQSLDSWWTSLNFLGGTTVCLGQNSQSPTSNHSPTSCPPTC
PGYRWMCLRRFIIFLFILLLCLIFLLVLLDYQGMLPVCPLIPGSSTTSTGPCRTCMTTAQGT
SMYPSCCCTKPSDGNCTCIPIPSSWAFGKFLWEWASARFSWLSLLVPFVQWFVGLSPTVWLS
VIWMMWYWGPSLYSILSPFLPLLPIFFCLWVYIZ



163163



G00002

Figure 17 (continued)

J04514 OHVHEPBA Woodchuck hepatitis B virus genome (WHV8) (SEQ ID NO: 15) (PNAS 86, 1846-1849, 1989). ATCC No. 45097. EcoRI site at pos. 1 cuts the PreS1 region. HBs(S) ORF: 296-964. PreS2 starts at 116; PreS1 starts at 3039.

ATGAAAAATCAGACTTTTCATCTCCAGGGGTTCGTAGACGGATTACGAGACTTGACAACAAC
GGAACGCCAACACAATGCCTATGGAGATCCTTTTACAACACTAAGCCCTGCGGTTCCTACTG
TATCCACCATATTGTCTCCTCCCTCGACGACTGGGGACCCTGCACTGTCACCGGAGATGTCA
CCATCAAGTCTCCTAGGACTCCTCGCAGGATTACAGGTGGTGTATTTCTTGTGGACAAAAAT
CCTAACAATAGCTCAGAATCTAGATTGGTGGTGGACTTCTCTCAGTTTTCCAGGGGGCATAC
CAGAGTGCACTGGCCAAAATTCGCAGTTCCAAACTTGCAAACACTTGCCAACCTCCTGTCCA
CCAACTTGCAATGGCTTTCGTTGGATGTATCTGCGGCGTTTTATCATATACCTATTAGTCCT
GCTGCTGTGCCTCATCTTCTTGTTGGTTCTCCTGGACTGGAAAGGTTTAATACCTGTCTGTC
CTCTTCAACCCACAACAGAAACAACAGTCAATTGCAGACAATGCACAATCTCTGCACAAGAC
ATGTATACTCCTCCTTACTGTTGTTGTTTAAAACCTACGGCAGGAAATTGCACTTGTTGGCC
CATCCCTTCATCATGGGCTTTAGGAAATTACCTATGGGAGTGGGCCTTAGCCCGTTTCTCTT
GGCTCAATTTACTAGTGCCCTTGCTTCAATGGTTAGGAGGAATTTCCCTCATTGCGTGGTTT
TTGCTTATATGGATGATTTGGTTTTGGGGGCCCGCACTTCTGAGCATCTTACCGCCATTTAT
TCCCATATTTGTTCTGTTTTTCTTGATTTGGGTATACATTTGA

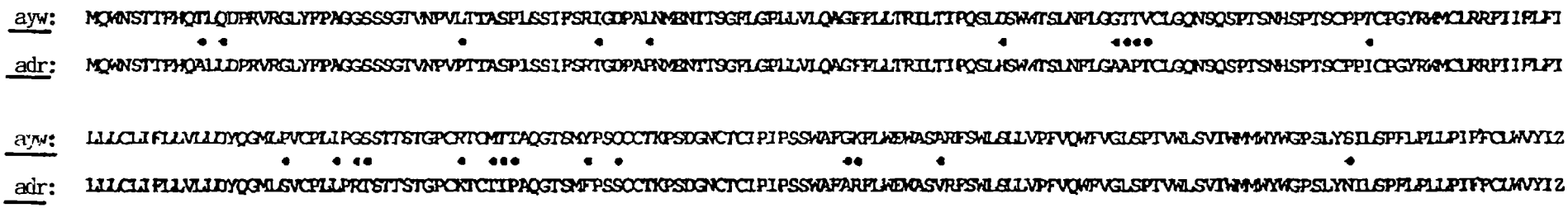
Forward WHV PCR Primer (with added EcoRI site) (SEQ ID NO:17):
5'-CCGGGAATTCTCATCTCCAGGGGTTCGTAGACGGATTACG-3'

Reverse WHV PCR Primer (with added KpnI site) (SEQ ID NO: 18):
5'-CCGGGGTACCCAAATCAAGAAAAACAGAACAAATATGGG-3'

WHV Surface Antigen Protein (SEQ ID NO: 16):
MKNQTFHLQGFVDGLRDLTTTERQHNAYGDPFTTLSPAVPTVSTILSPPSTTGDPALSPEMS
PSSLLGLLAGLQVVYFLWTKILTIAQNLDWWWTSLSFPGGIPECTGQNSQFQTCKHLPTSCP
PTCNGFRWMYLRRFIIYLLVLLLCLIFLLVLLDWKGLIPVCPLQPTTETTVNCRQCTISAQD
MYTPPYCCCLKPTAGNCTCWPIPSSWALGNYLWEWALARFSWLNLLVPLLQWLGGISLIAWF
LLIWMIWFWGPALLSILPPFIPIFVLFFLIWVYIZ

Figure 19: Alignment of amino acid sequences of different HBV subtypes.

adr (SEQ ID NO: 10) **vs. ayw** (SEQ ID NO: 12)



Replacement Page: 11 Sept 2002