```
                    α1                                  α2
vp7_btv10   ℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓ
            1         10        20        30        40        50        60
vp7_btv10   MDTIAARALTVMRACATLQEARIVLEANVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_btv1s   MDTIAARALTVMRACATLQEARIVLEANVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_btv17   MDTIAARALTVMRACATLQEARIVLEANVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_btv13   MDTIAARALTVMRVCATLQEARIVLEPNVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_btv2a   MDTIAARALTVMRACATLQEARIVLEANVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_btv1a   MDTIAARALTVMRACATLQEARIVLEANVMEILGIAINRYNGLTLRGVTMRPTSLAQRNE
vp7_ehdv1   MDTIAARALTVIKACNTLKEVRIVVESNVLEILGIAVNRYNGLTLRSVTMRPTSQEQRNE
vp7_ahsv4   MDAIAARALSVVRACVTVTDARVSLDPGVMETLGIAINRYNGLTNHSVSMRPQTQAERNE
vp7_brd     MDAYTARALSVLEGLAISGDPRSHRDPTTEATMSIFAMRFNSTTSRPVMGRPQ.RGKRGV

                α3                                  α4      TT      α5
vp7_btv10   ℓℓℓℓℓℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓ   ℓℓℓℓℓℓℓℓℓℓℓℓℓℓ
            70        80        90       100       110       120
vp7_btv10   MFFMCLDMMLSAAGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_btv1s   MFFMCLDMMLSAAGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_btv17   MFFMCLDMMLSATGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_btv13   MFFMCLDMMVSAAGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_btv2a   MFFMCLDMMLSAAGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_btv1a   MFFMCLDMMLSAAGINVGPISPDYTQHMATIGVLATPEIPFTTEAANEIARVTGETSTWG
vp7_ehdv1   MFYMCLDMILAAANLNVGNISPDYIQNLATIGVLATPEIPYTMESANEIARMSGETGTWG
vp7_ahsv4   MFFMCTDMVLAALNVQIGNISPDYDQALATVGALATTEIPYNVQAMNDIVRITGQMQTFG
vp7_brd     ITSTPQRCGIRDLEHHVAFVMPGYIQNPQTLAILARDEIPYTPSTFRRVQRYVSARMIIQ

            βA          βB      TT      TT      βC      TT      βD      TT      βE      η1
vp7_btv10   →           →                       →                       →       →       ℓℓℓ
                  130       140       150       160       170
vp7_btv10   PARQPYGFFLETEETFQPGRWF.MRAAQAVTAVVCGPDMIQVSLNAGARGDVQQIFQ.GR
vp7_btv1s   PARQPYGFFLETEETFQPGRWF.MRAAQAATAVVCGPDMIQVSLNAGARGDVQQIFQ.GR
vp7_btv17   PARQPYGFFLETEETFQPGRWF.MRAAQAVTAVVCGPDMIQVSLNAGARGDVQQIFQ.GR
vp7_btv13   PARQPYGFFLETEEVYQPGRWF.MRAAQVVTPVVCGPNMVQVSLNAGAIGDVQQIFQ.GR
vp7_btv2a   PARQPYGFFLETEETFQPGRWF.MRAAQAVAAVVCGPDMIQVSLNAGARGDVQQIFQ.GR
vp7_btv1a   PARQPYGFFLETEETYQPGRWF.MRAAQAVTAVVCGPDMIQVSLNAGARGDVQQIFQ.GR
vp7_ehdv1   PDRQPFGYFLAAPEVTQHGRFR.QRVGQNVTTSIVSSTLAQVSMNAGARGDIQALFQ.NQ
vp7_ahsv4   PSKVQTGPYAGAVEVQQSGRYY.VPQGRTRGGYIN.SNIAEVCMDAGAAGQVNALLAPRR
vp7_brd     MCERNDMLTPHYEAVTSPGVVLPAPAGGGPRCYAISATTLQIHIDPMQNEVLTPLIFPDQ

                βF                  TT      βG          TT      βH      TT      βI      TT      βJ          βK
vp7_btv10   →                       →                   →       →       →       →       →       →
            180       190       200       210       220       230
vp7_btv10   NDPMMIYLVWRRIENFAMAQGNSQQ...TQAGVTVSVGGVDMRAGRIIAWDGQAALHVHN
vp7_btv1s   NDPMMIYLVWRRIENFAMAQGNSQQ...TQAGVTVSVGGVDMRAGRIIAWDGQAALHVRN
vp7_btv17   NDPMMIYLVWRRIENFAMAQGNSQQ...TQAGVTVSVGGVDMRAGRIIAWDGQAALHVHN
vp7_btv13   NDPMMIYLVWRRIENFSMPQGNSQR...TLAGVTVSVGGVDMRAGRIIAWDGQAVLQIHN
vp7_btv2a   NDPMMIYLVWRRIENFAMAQGNSQQ...TQAGVTVSVGGVDMRAGRIIAWDGQAALHVHN
vp7_btv1a   NDPMMIYLVWRRIENFAMAQGNSQQ...TLAGVTVSVGGVDMRAGRIIAWDGQAALQIHN
vp7_ehdv1   NDPVMIYFVWRRIGTFSNAAGNAQD...TPQGVTLNVGGVNMRAGVIIAYDGQAPVNVNN
vp7_ahsv4   GDAVMIYFVWRPLRIFCDPQGASLESAPGAPGTFVTVDGVNVAAGDVVAWNTIAPVNVGN
vp7_brd     EDVIMAEFIWQRLANGIDNNAVMNMG..TNVELLRDNAAVEGGTPFMATPRGIHVVLASY

                βL                  TT      α6          α7
vp7_btv10   →                       →       ℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓℓℓℓℓℓℓ
            240       250       260       270       280       290
vp7_btv10   PTQQNAMVQIQVVFYISMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAILNRTTLPNML
vp7_btv1s   PTQQNAMVQIQVVFYISMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAIRNRTTLPNML
vp7_btv17   PTQQNAMVQIQVVFYISMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAILNRTTLPNML
vp7_btv13   PTQQNAMVQIQVVFYVSMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAILNRTTLPNML
vp7_btv2a   PTQQNAMVQIQVVFYISMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAILNRTTLPNML
vp7_btv1a   PTQQNAMVQIQVVFYISMDKTLNQYPALTAEIFNVYSFRDHTWHGLRTAILNRTTLPNML
vp7_ehdv1   PGLGQGMIEIEVIYYLSLDKTMTQYPSLQAHIFNVYSYKNPLWHGLRAAILNRTTLPNNI
vp7_ahsv4   PGARRSILQFEVLWYTSLDRSLDTVPELAPTLTRCYAYVSPTWHALRAVIFQQMNMQPIN
vp7_brd     EPVNLCTIHLTCTRYWVTGPPRVVYDSMEADILAVYTYRDGFWDALRSYVLQALGMPAHH

                α8                                  TT      α9
vp7_btv10   ℓ.ℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓℓ   ℓℓℓℓℓℓ
            300       310       320       330       340
vp7_btv10   PPIFPPNDR.DSILTLLLLSTLADVYTVLRPEFAIHGVNPMPGPLTRAIARAAYV.....
vp7_btv1s   PPIFPPNDR.DSILTLLLLSTLADVYTVLRPEFAMHGVNPMPWPLTAAIARAAYV.....
vp7_btv17   PPIFPPNDR.DSILTLLPLSTLADVYTVLRPEFAIHGVNPMPGPLTRAIARAAYV.....
vp7_btv13   PPIFPPNDR.DSVLTILLLSTLADVYSVLRPEFAIHGVNPMPGPLTRAIARAAYA.....
vp7_btv2a   PPIFPPNDR.DSILTLLLLSTLADVYTVLRPEFAIHGVNPMPGPLTRAIARAAYV.....
vp7_btv1a   PPIFPPNDR.DSILTLLLLSTLADVYTVLRPEFAIHGVNPMSGPLTRATARAAYV.....
vp7_ehdv1   PPIYPPHDR.ENVLLIILLSALADAFSVLAPDFNLFGVVPIQGPINRAVAQNAYV.....
vp7_ahsv4   PPIFPPTERNEIVAYLLLVASLADVYAALRPDFRMNGVVAPVGQINRALVLAAYH.....
vp7_brd     YPTRPVTEF.RQNLAIAILSRLFDVYSQWRLRSTLQLRPKVLWWLAHRLQAALRAFRLGR
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