SUPPLEMENTARY FIGURE LEGENDS

FIG S1. Amino acid conservation amongst different DENV serotypes and related flaviviruses. The amino acid sequences of representative flavivirus isolates for DENV serotypes 1-4, WNV, YFV and JEV were aligned and compared using JalView software and the *ClustalW* algorithm, using default settings (see Materials and Methods for accession numbers). Residues are color-coded according to the *ClustalW* algorithm. As generated by JalView, 'Conservation' provides a graphical and numerical indication of the number of conserved physico-chemical properties of residues at each position. 'Quality' provides a measure of the likelihood of observing mutations at a given position. 'Consensus' depicts the percentage of the modal residue for each position. The location of the 25 top-ranked tolerated insertion sites (P2 / P0) are highlighted are highlighted in yellow.

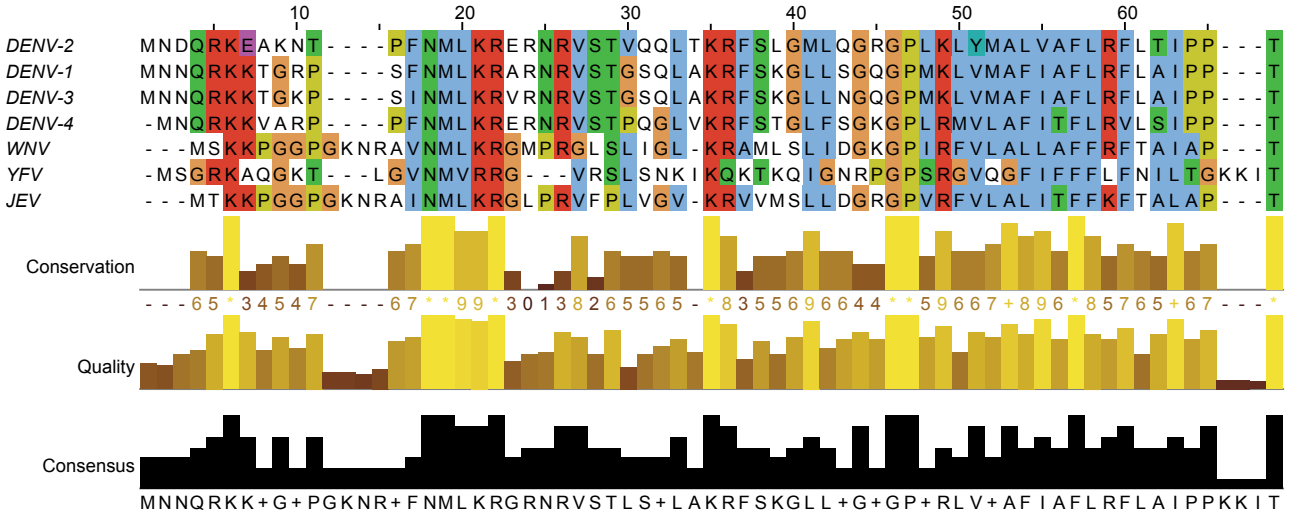
SUPPLEMENTARY MOVIE LEGENDS

Movie S1. Live cell imaging of NS1-mScarlet localization and traffic. Huh-7.5 cells were transfected with DENV2-NS1-mScarlet RNA transcripts and cultured for 6 days prior to live cell imaging. Images were acquired every 1.5 s for 5 minutes. To enhance the visibility of weakly fluorescent structures the 'Yellow Fire' lookup table and scaling was applied according to the lookup tables displayed in the upper-right corner of each panel using NIS Elements v.3.22 software (Nikon). The 'time stamp' is displayed in the upper-left corner of each panel. Playback speed is 5 frames/s (~8× original speed). Scale bars are 10 μm for the main image (top panel) and 5 μm for 'Insets' (bottom panels).

Movie S2. Intense juxta-nuclear NS1-mScarlet foci are relatively static over extended periods (~50 mins). Huh-7.5 cells were infected with DENV2-NS1-mScarlet (M.O.I. ~0.01) for 3 d before live cell imaging. Images were acquired every 10 s for 50 minutes. To enhance the

visibility of weakly fluorescent structures the ‘Yellow Fire’ lookup table and scaling was applied according to the lookup table displayed in the upper-right corner using NIS Elements v.3.22 software (Nikon). The ‘time stamp’ is displayed in the upper-left corner. Playback speed is 5 frames/s (~50× original speed). The scale bars represents 10 μm.

Fig. S1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JEV ---MTKKPGGPGKNRAINMLKRGLPRVFPLVGV-KRVVMSLLDGRGPVRFVLALITFFKFTALAP---T
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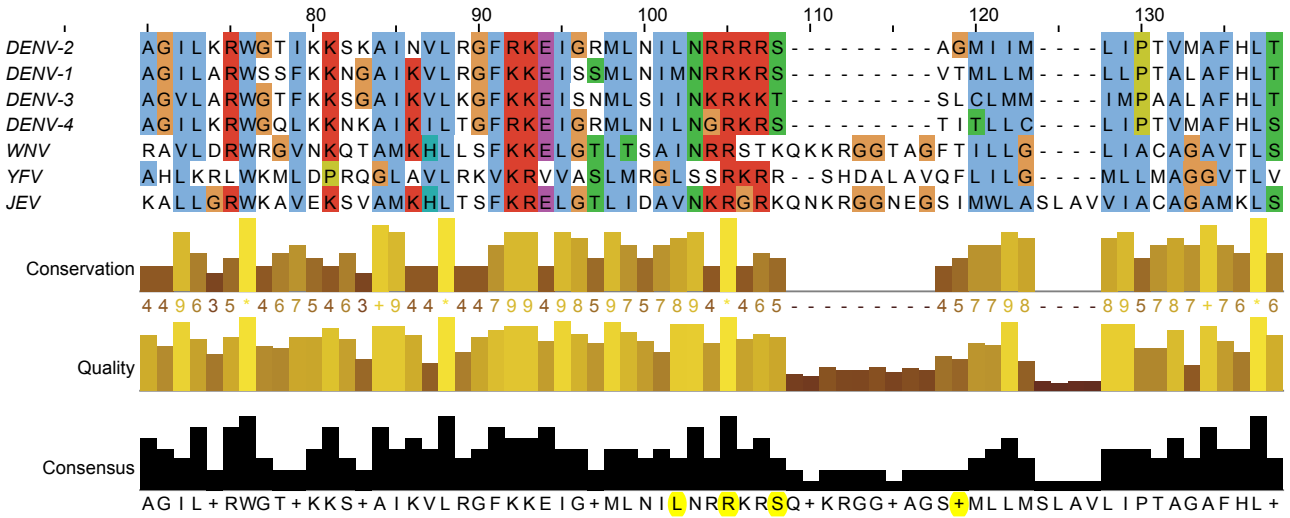
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YFV AHLKRLWKMLDPRQGLAVLRKVKRVVASLMRGLSSRKRR--SHDALAVQFLILG----MLLMAGGVTLV
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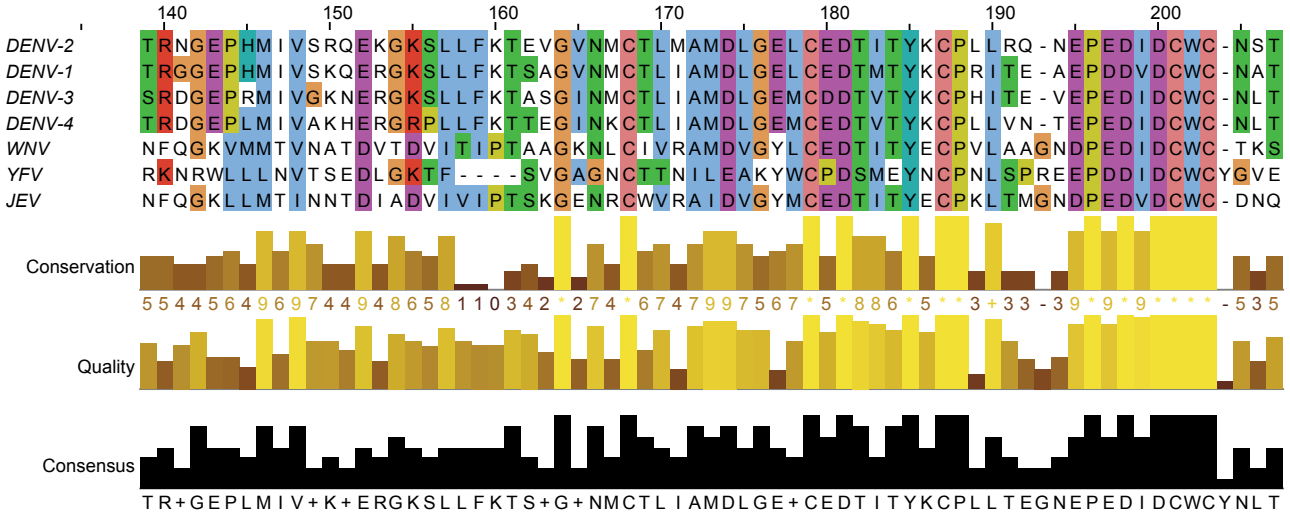
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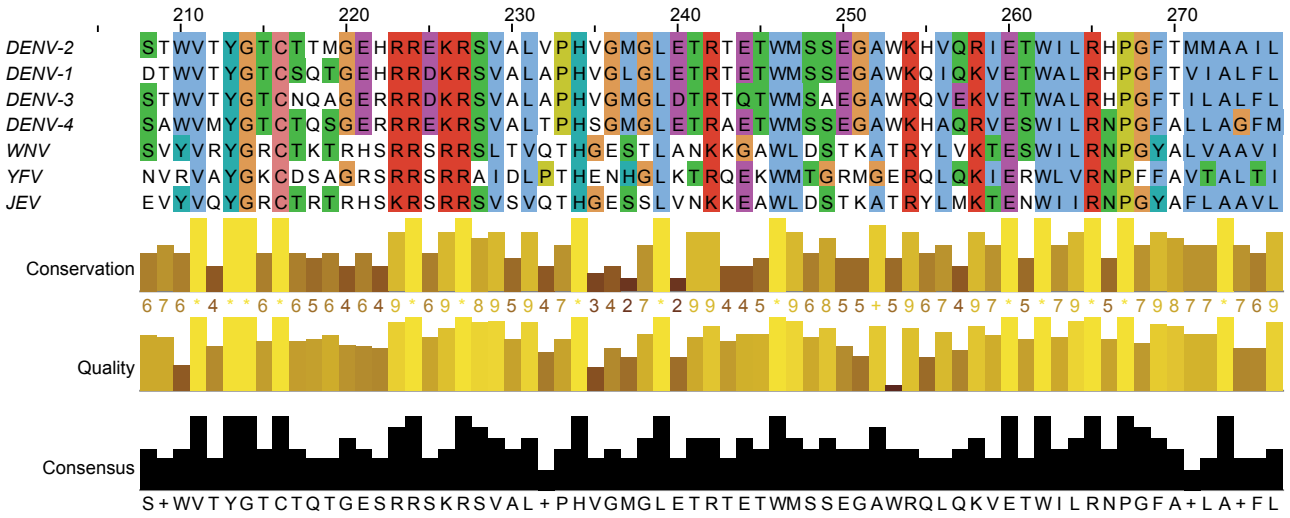
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Conservation
676*4**6*656464 9*69*8959 47*3427*2994 45*96855+5967497*5*79*5*79877*769
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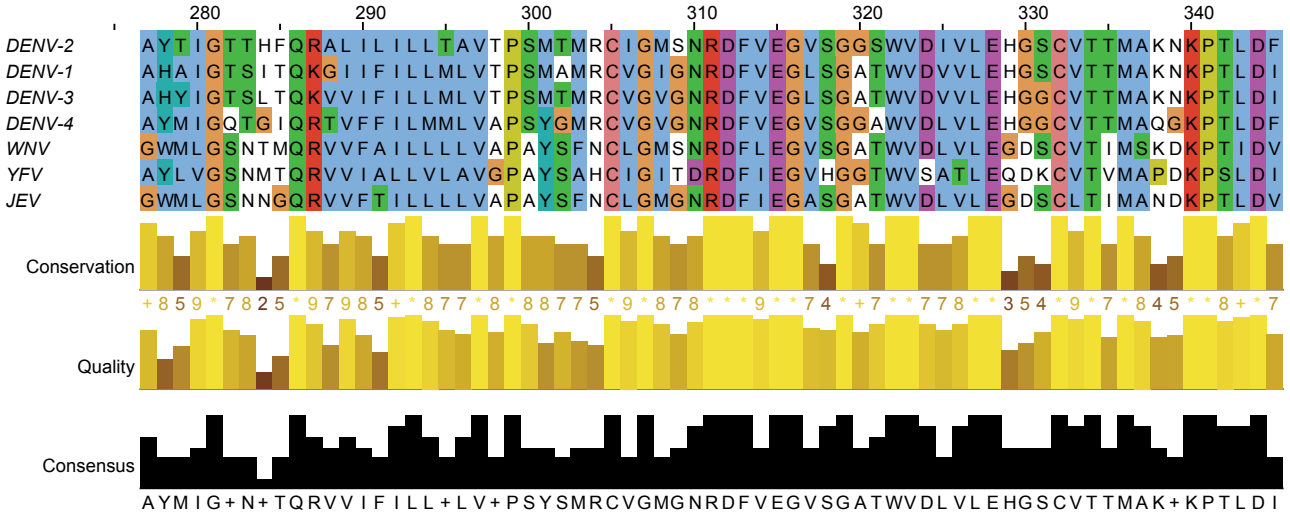
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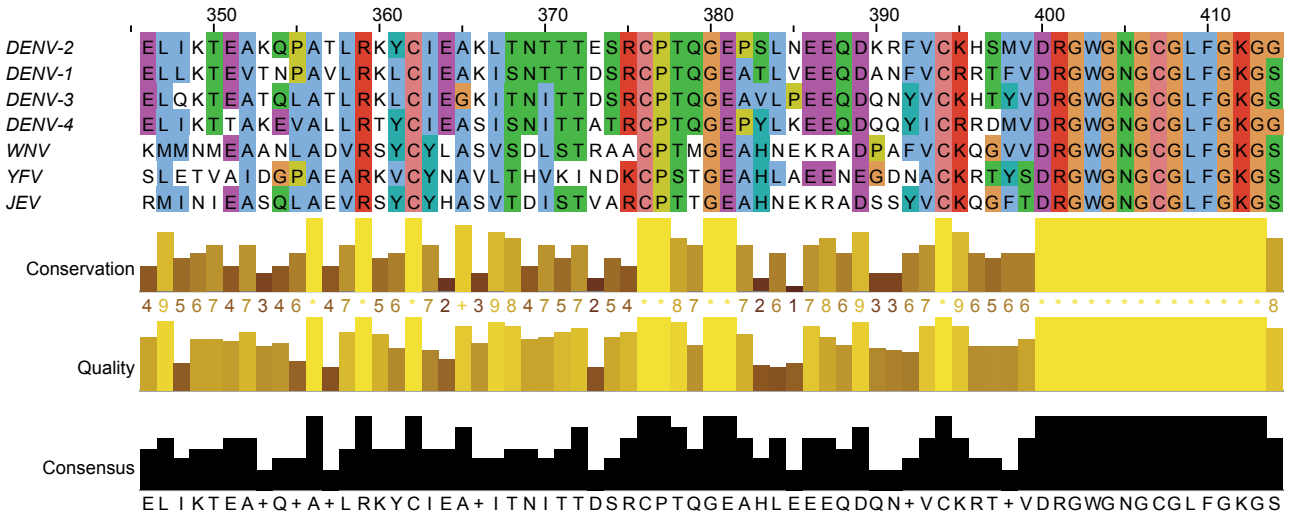
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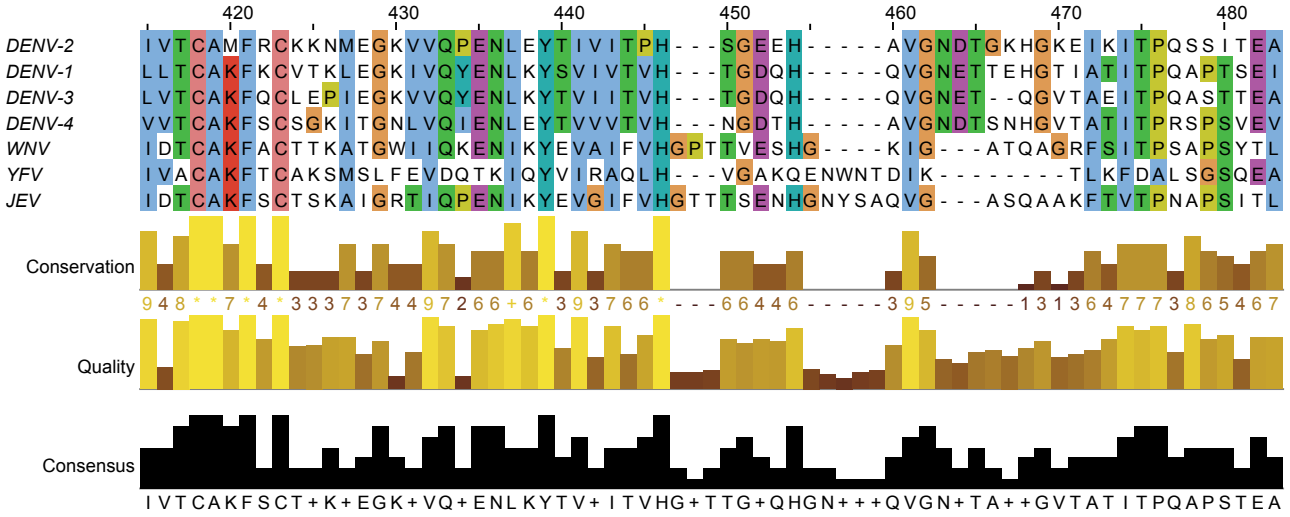
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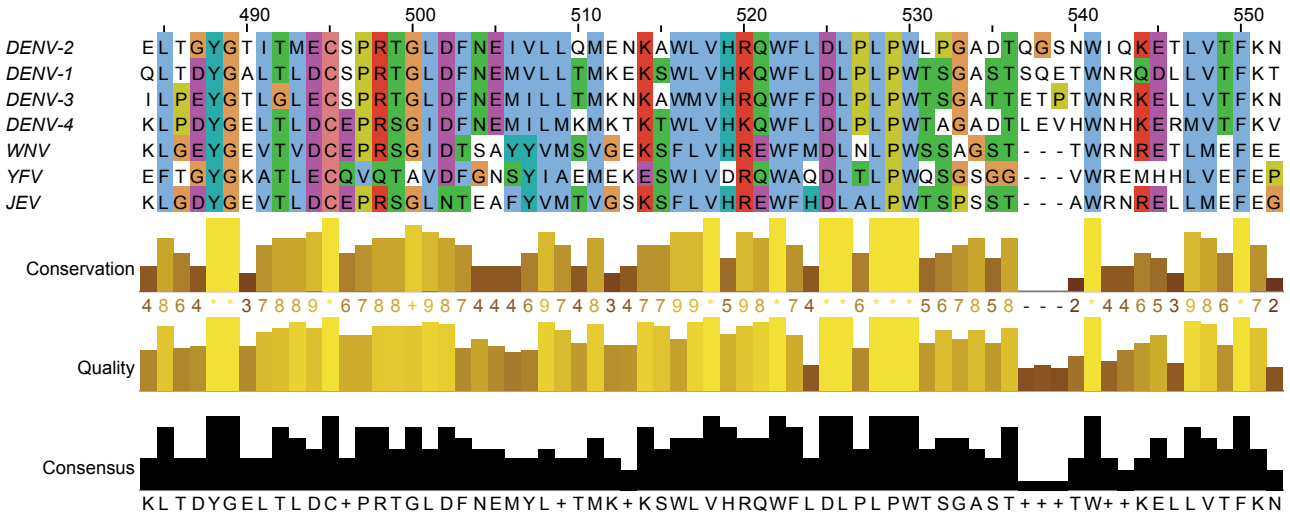
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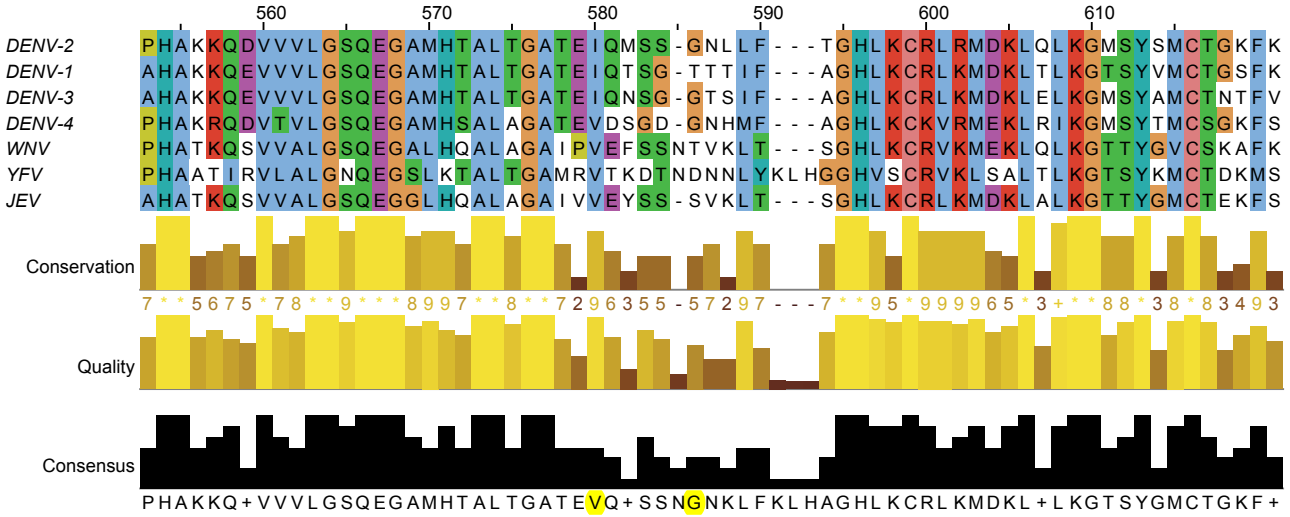
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YFV
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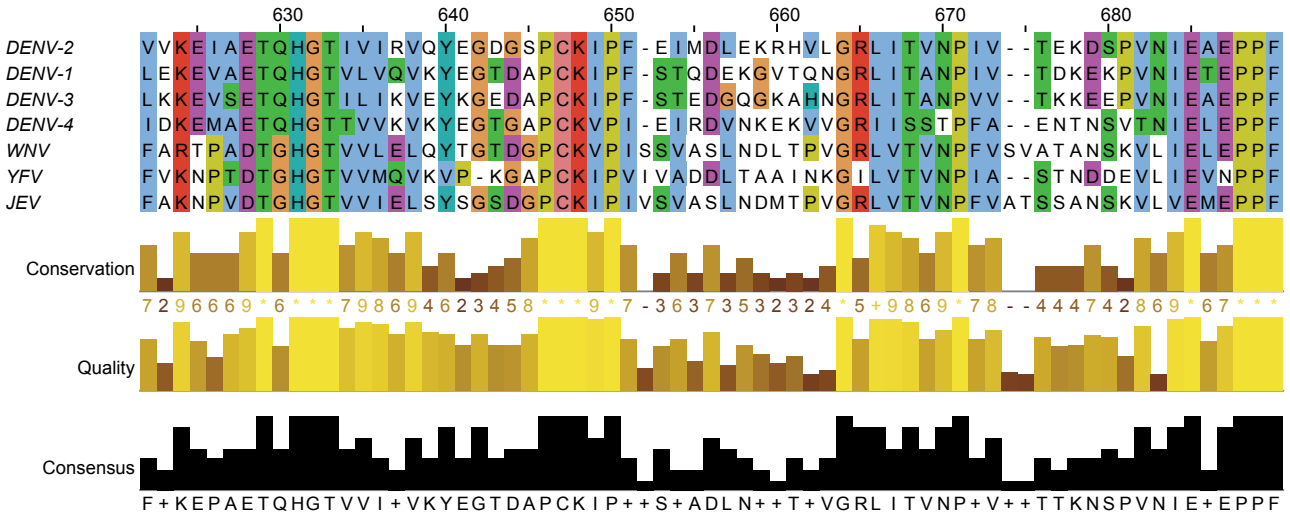
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YFV
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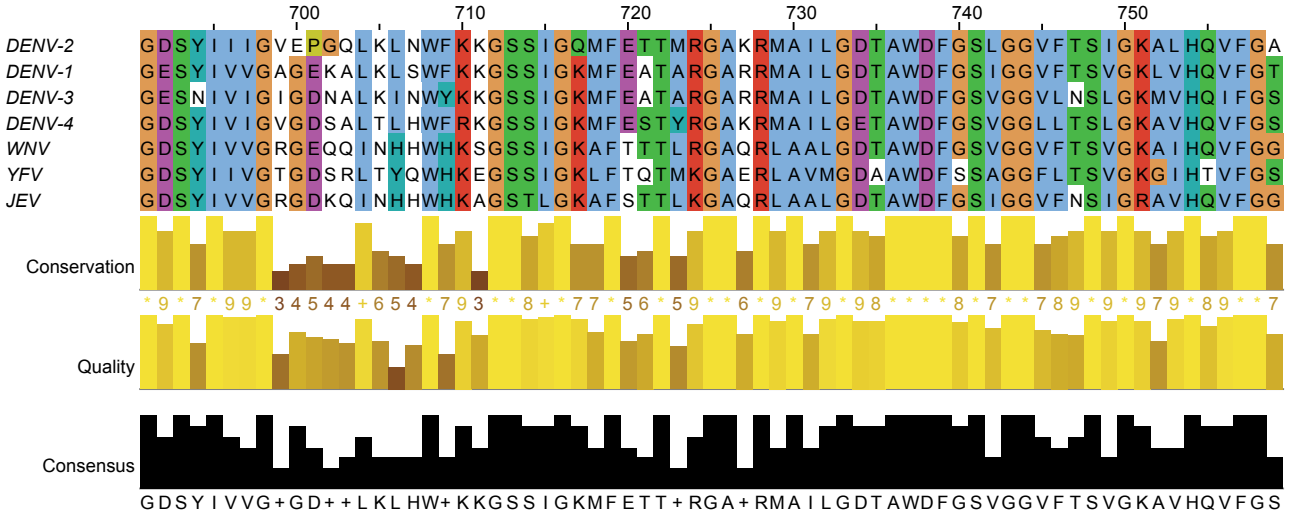
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Conservation
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Quality
Consensus
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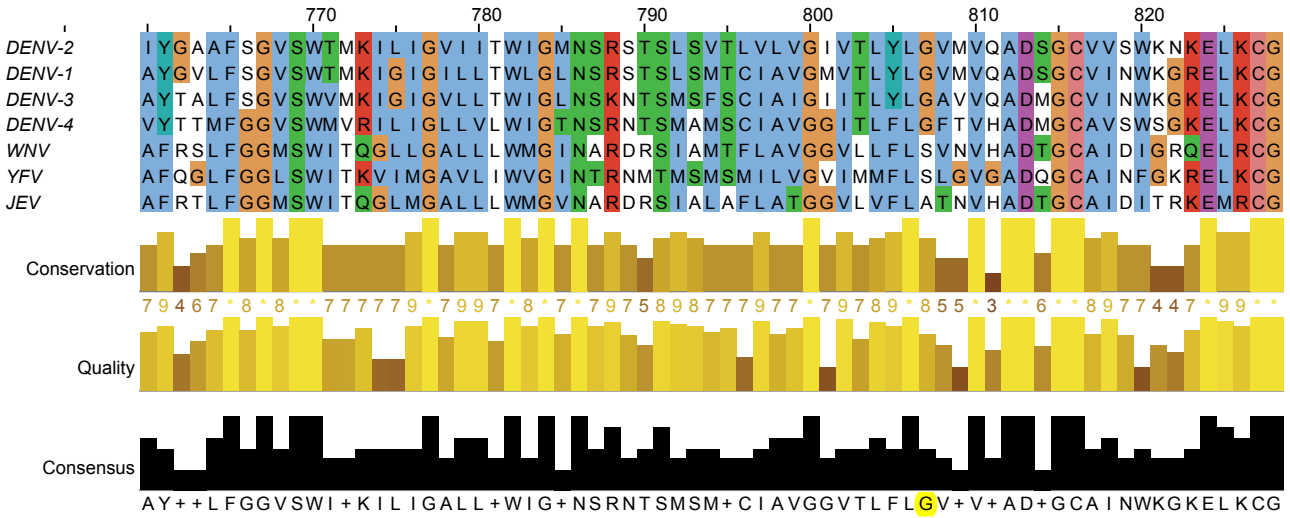
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Conservation
79467*8*8**777779*7997*8*7*79758987779778*79789*855*3**6**8977447*99**
Quality
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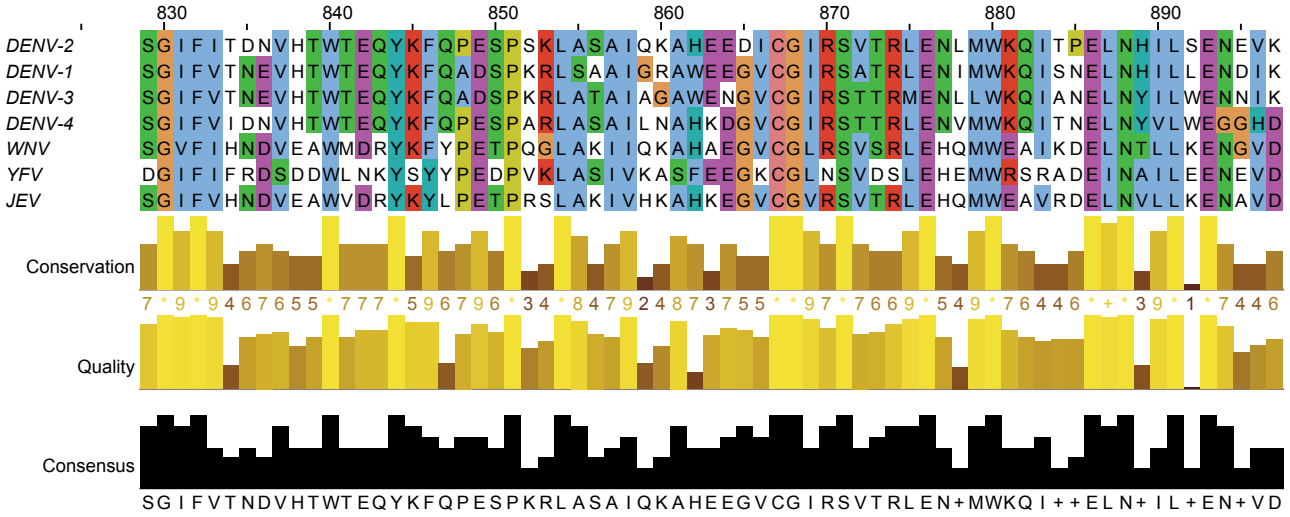
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Conservation
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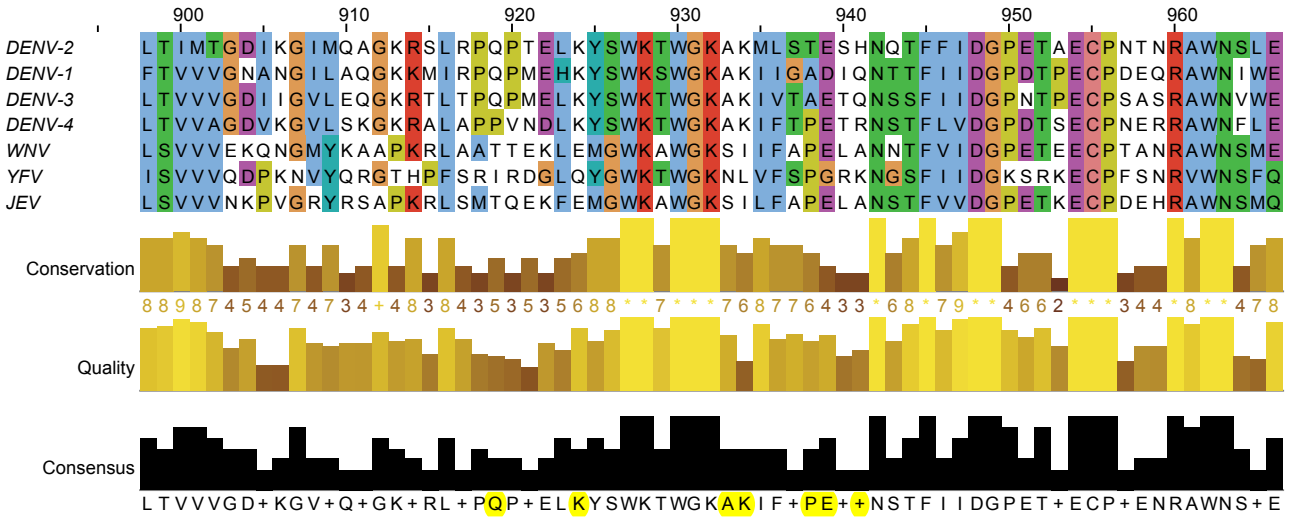
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Conservation
88987454474734+48384353535688***7***76877643368*79**4662***344*8**478
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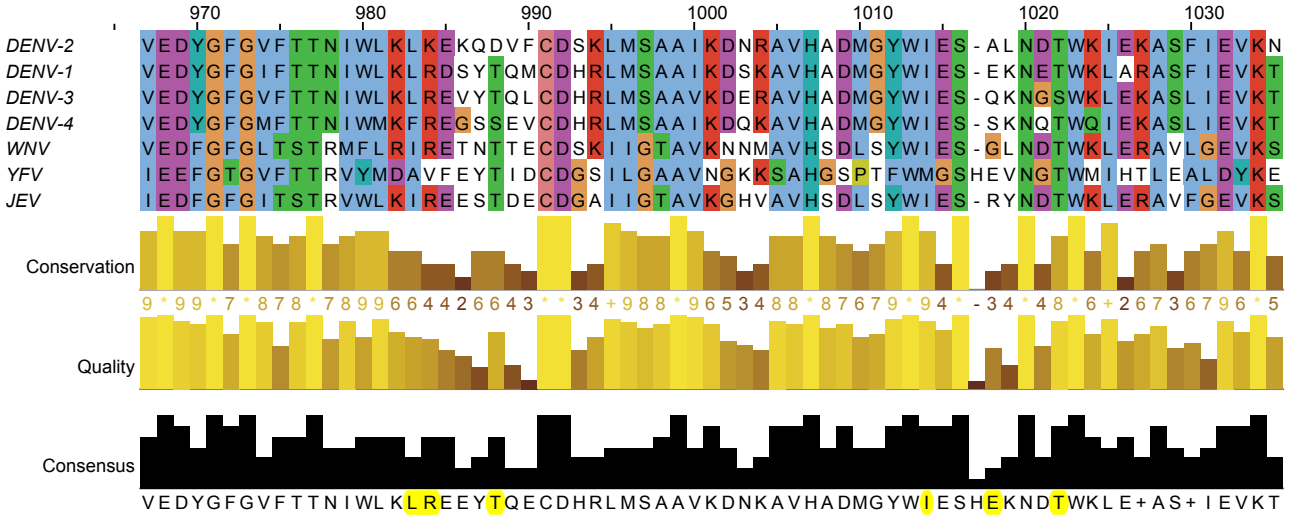
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YFV
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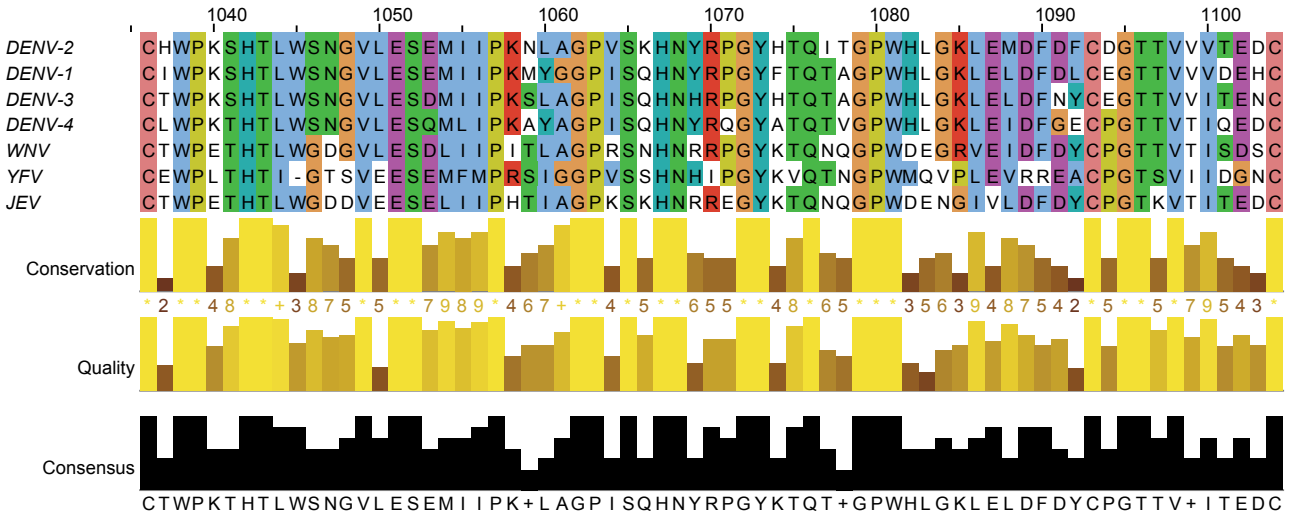
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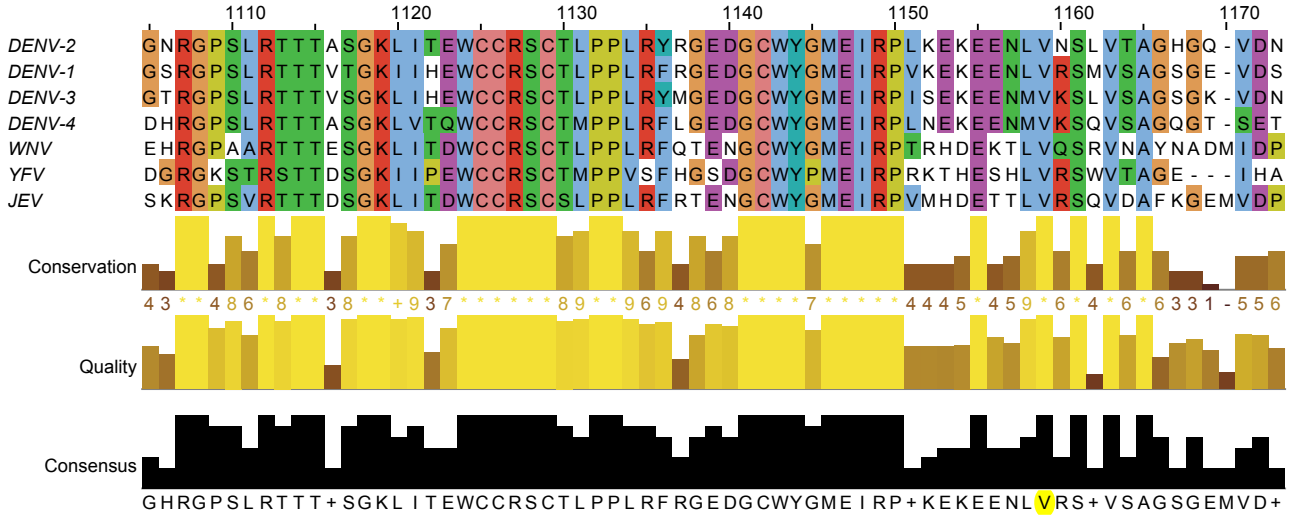
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Consensus
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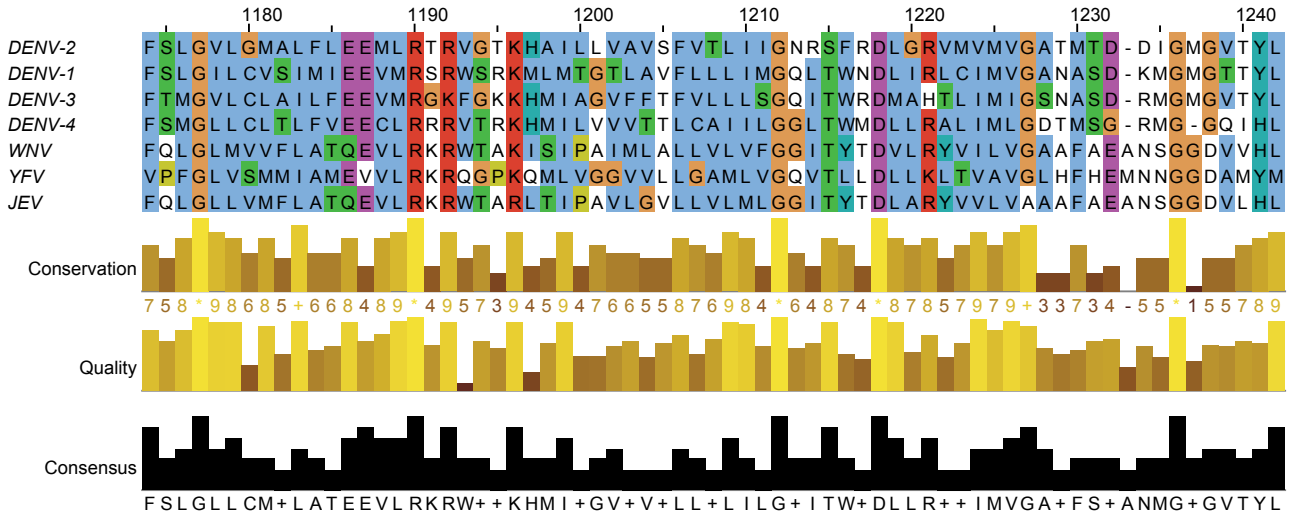
1180
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DENV-1 FSLGILCVSIMIEEVMRSRWSRKMLMTGTLAVFLLLIMGQLTWNDLIRLCIMVGANASD-KMGMGTTYL
DENV-3 FTMGVLCLAILFEEVMRGKFGKKHMIAGVFFTFVLLLSGQITWRDMAHTLIMIGSNASD-RMGMGVTYL
DENV-4 FSMGLLCLTLFVEECLRRRVTRKHMILVVVTTLCAIILGGLTWMDLLRALIMLGDTMSG-RMG-GQIHL
WNV FQLGLMVVFLATQEVLRKRWTAKISIPAIMLALLVLVFGGITYTDVLRYVILVGAAFAEANSGGDVVHL
YFV VPFGLVSMMIAMEVVLRKRQGPKQMLVGGVVLLGAMLVGQVTLLDLLKLTVAVGLHFHEMNNGGDAMYM
JEV FQLGLLVMFLATQEVLRKRWTARLTIPAVLGVLLVLMLGGITYTDLARYVVLVAAAFAEANSGGDVLHL
Conservation
758*98685+66848 9*49573945947665587698 4*64874*87857979+33734-55*155789
Quality
Consensus
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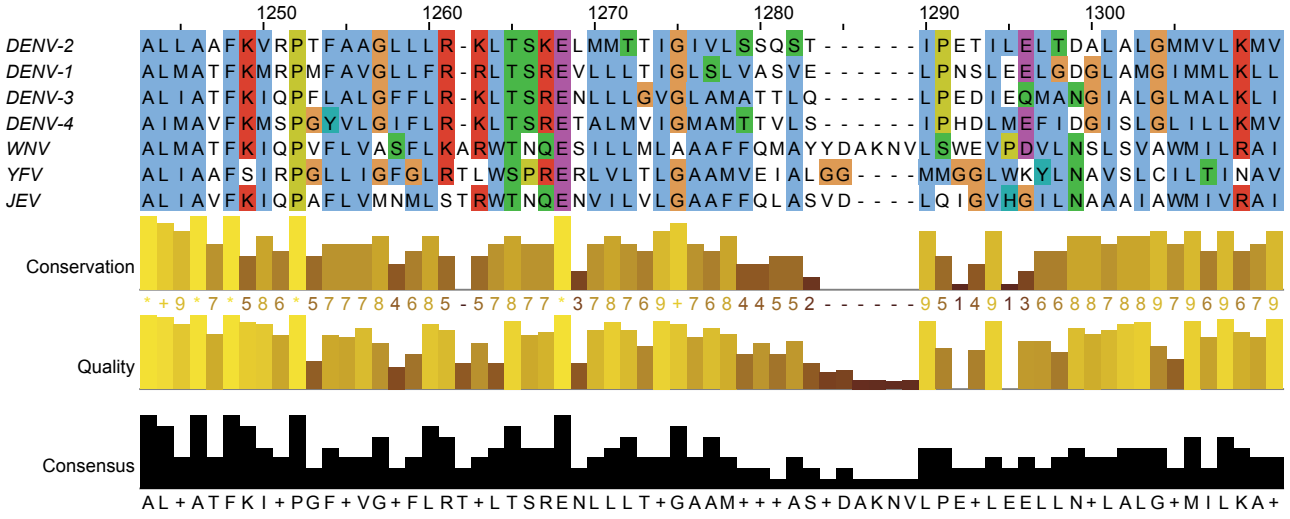
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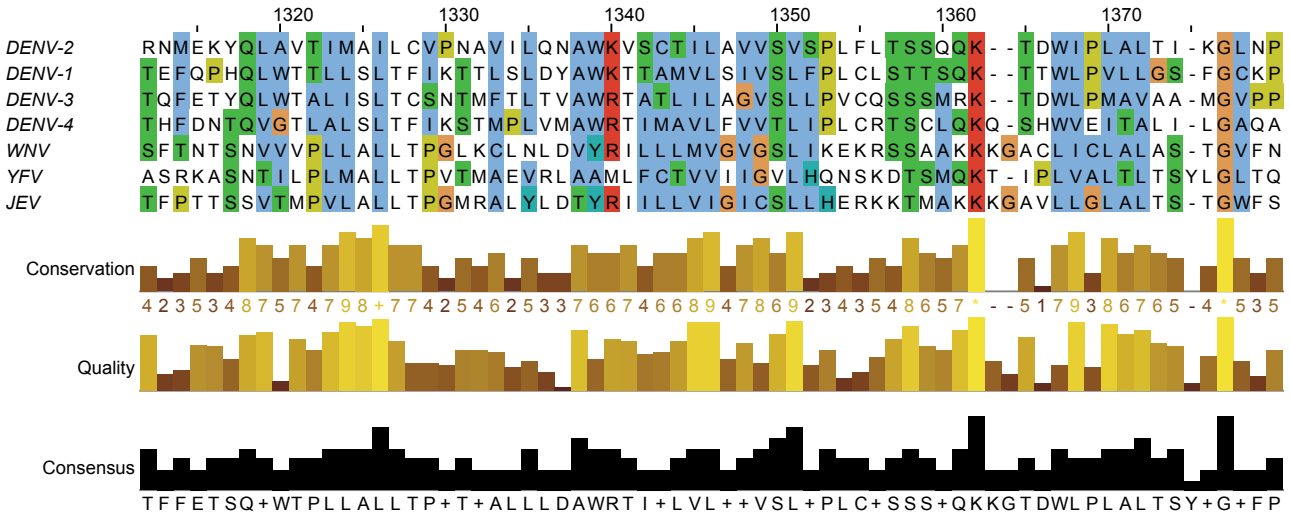
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus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DENV-1
DENV-3
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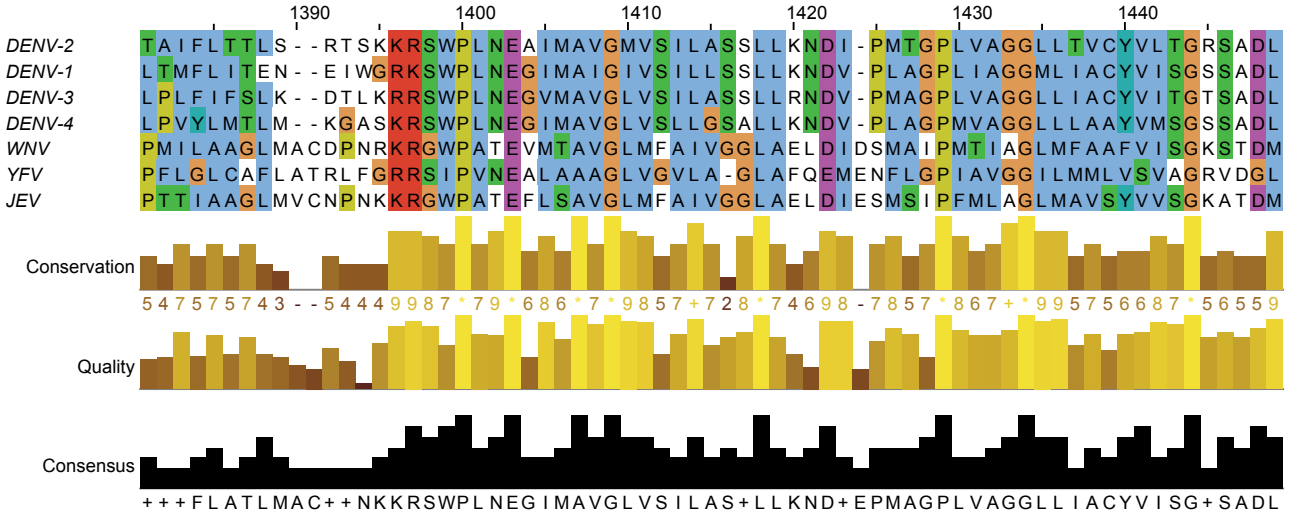
WNV
YFV
JEV
Conservation
Quality
Consensus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DENV-1 LTMFLITEN--EIWGRKSWPLNEGIMAIGIVSILLSSLLKNDV-PLAGPLIAGGMLIACYVISGSSADL
DENV-3 LPLFIFSLK--DTLKRRSWPLNEGVMAVGLVSILASSLLRNDV-PMAGPLVAGGLLIACYVITGTSADL
DENV-4 LPVYLMTLM--KGASKRSWPLNEGIMAVGLVSLLGSALLKNDV-PLAGPMVAGGLLLAAYVMSGSSADL
WNV PMILAAGLMACDPNRKRGWPATEVMTAVGLMFAIVGGLAELDIDSMAIPMTIAGLMFAAFVISGKSTDM
YFV PFLGLCAFLATRLFGRRSIPVNEALAAAGLVGVLA-GLAFQEMENFLGPIAVGGILMMLVSVAGRVDGL
JEV PTTIAAGLMVCNPNKKRGWPATEFLSAVGLMFAIVGGLAELDIESMSIPFMLAGLMAVSYVVSGKATDM
Conservation
54757574 3--5444 9987*79*686*7*9857+728*74698-7857*867+*995756687*56559
Quality
Consensus
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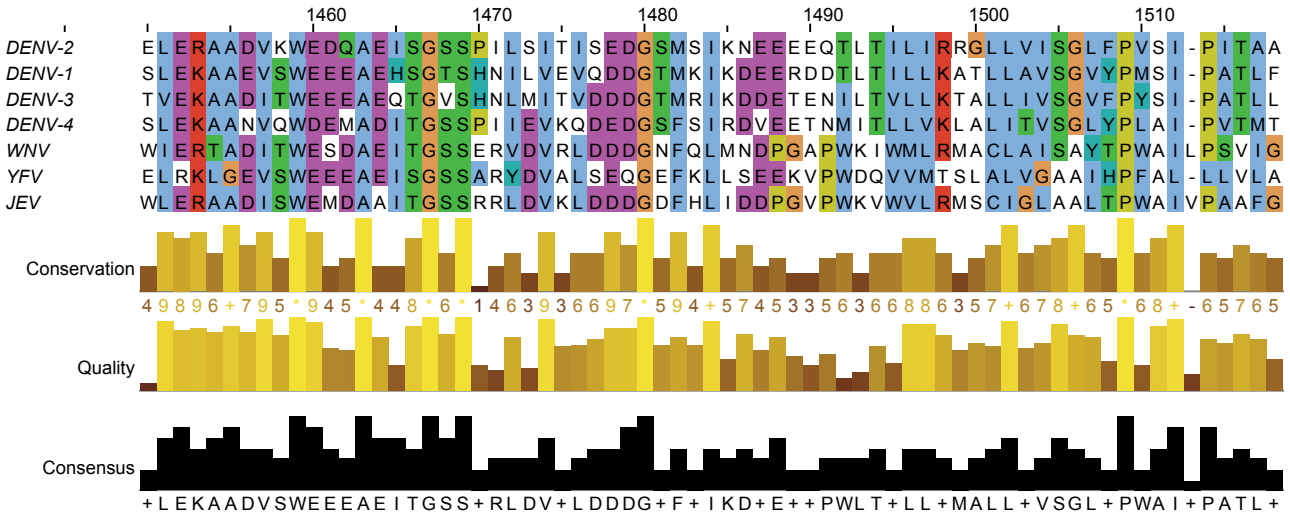
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DENV-1 SLEKAAEVSWEEEAEHSGTSHNILVEVQDDGTMKIKDEERDDTLTILLKATLLAVSGVYPMSI-PATLF
DENV-3 TVEKAADITWEEEAEQTGVSHNLMITVDDDGTMRIKDDETENILTVLLKTALLIVSGVFPYSI-PATLL
DENV-4 SLEKAANVQWDEMADITGSSPIIEVKQDEDGSFSIRDVEETNMITLLVKLALITVSGLYPLAI-PVTMT
WNV WIERTADITWESDAEITGSSERVDVRLDDDGNFQLMNDPGAPWKIWMLRMACLAISAYTPWAILPSVIG
YFV ELRKLGEVSWEEEAEISGSSARYDVALSEQGEFKLLSEEKVPWDQVVMTSLALVGAAIHPFAL-LLVLA
JEV WLERAADISWEMDAAITGSSRRLDVKLDDDGDFHLIDDPGVPWKVWVLRMSCIGLAALTPWAIVPAAFG
Conservation
49896+795*945*448*6*14639366 97*594+57453356366886357+678+65*68+-65765
Quality
Consensus
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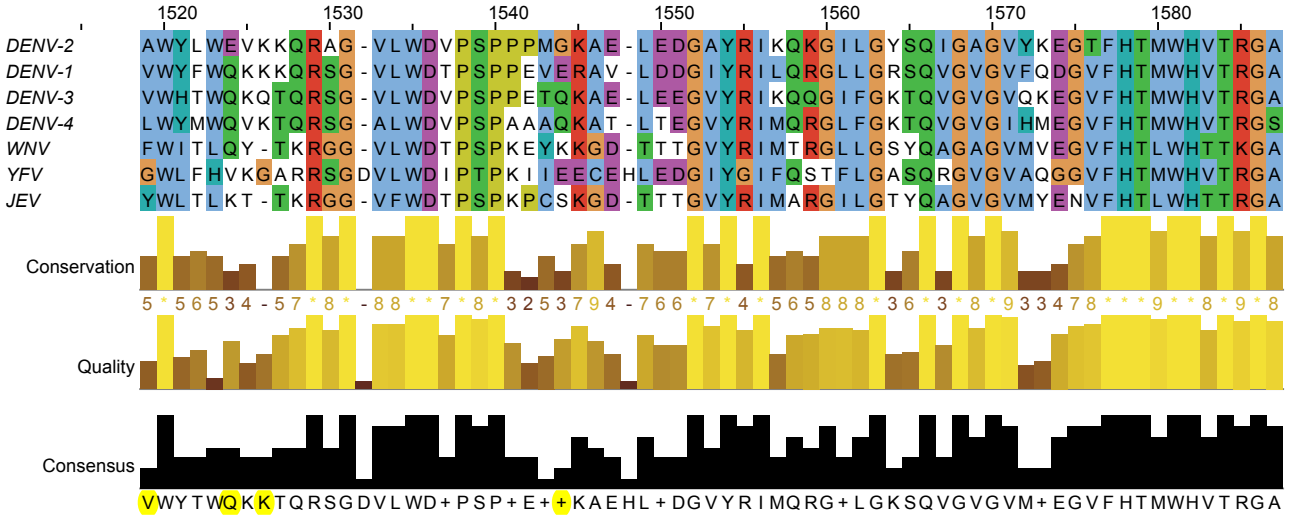
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DENV-1 VWYFWQKKKQRSG-VLWDTPSPPEVERAV-LDDGIYRILQRGLLGRSQVGVGVFQDGVFHTMWHVTRGA
DENV-3 VWHTWQKQTQRSG-VLWDVPSPPETQKAE-LEEGVYRIKQQGIFGKTQVGVGVQKEGVFHTMWHVTRGA
DENV-4 LWYMWQVKTQRSG-ALWDVPSPAAAQKAT-LTEGVYRIMQRGLFGKTQVGVGIHMEGVFHTMWHVTRGS
WNV FWITLQY-TKRGG-VLWDTPSPKEYKKGD-TTTGVYRIMTRGLLGSYQAGAGVMVEGVFHTLWHTTKGA
YFV GWLFHVKGARRSGDVLWDIPTPKIIEECEHLEDGIYGIFQSTFLGASQRGVGVAQGGVFHTMWHVTRGA
JEV YWLTLKT-TKRGG-VFWDTPSPKPCSKGD-TTTGVYRIMARGILGTYQAGVGVMYENVFHTLWHTTRGA
Conservation
5*56534-57*8*-88***7*8*32537794-766*7*4*5658888*36*3*8*933478***9**8*9*8
Quality
Consensus
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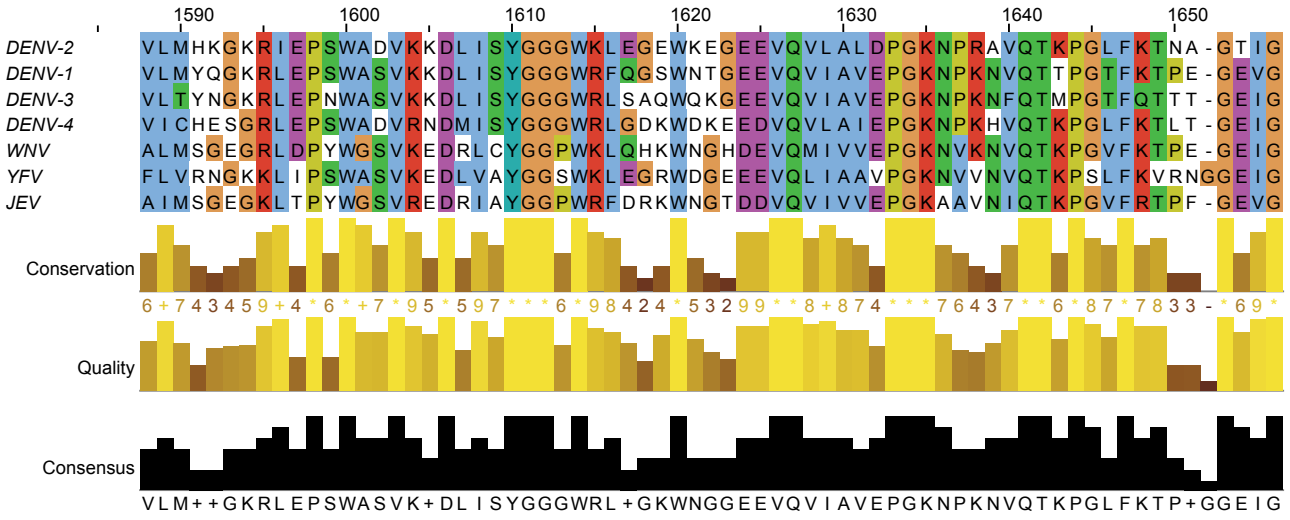
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1600
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1650
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DENV-1 VLMYQGKRLEPSWASVKKDLISYGGGWRFQGSWNTGEEVQVIAVEPGKNPKNVQTTPGTFKTPE-GEVG
DENV-3 VLTYNGKRLEPNWASVKKDLISYGGGWRLSAQWQKGEEVQVIAVEPGKNPKNFQTMPGTFQTTT-GEIG
DENV-4 VICHESGRLEPSWADVRNDMISYGGGWRLGDKWDKEEDVQVLAIEPGKNPKHVQTKPGLFKTLT-GEIG
WNV ALMSGEGRLDPYWGSVKEDRLCYGGPWKLQHKWNGHDEVQMIVVEPGKNVKNVQTKPGVFKTPE-GEIG
YFV FLVRNGKKLIPSWASVKEDLVAYGGSWKLEGRWDGEEEVQLIAAVPGKNVVNVQTKPSLFKVRNGGEIG
JEV AIMSGEGKLTPYWGSVREDRIAYGGPWRFDRKWNGTDDVQVIVVEPGKAAVNIQTKPGVFRTPF-GEVG
Conservation
6+74345 9+4*6*+7*95*597***6*98424*53299**8+874***76437**6*87*7833-*69*
Quality
Consensus
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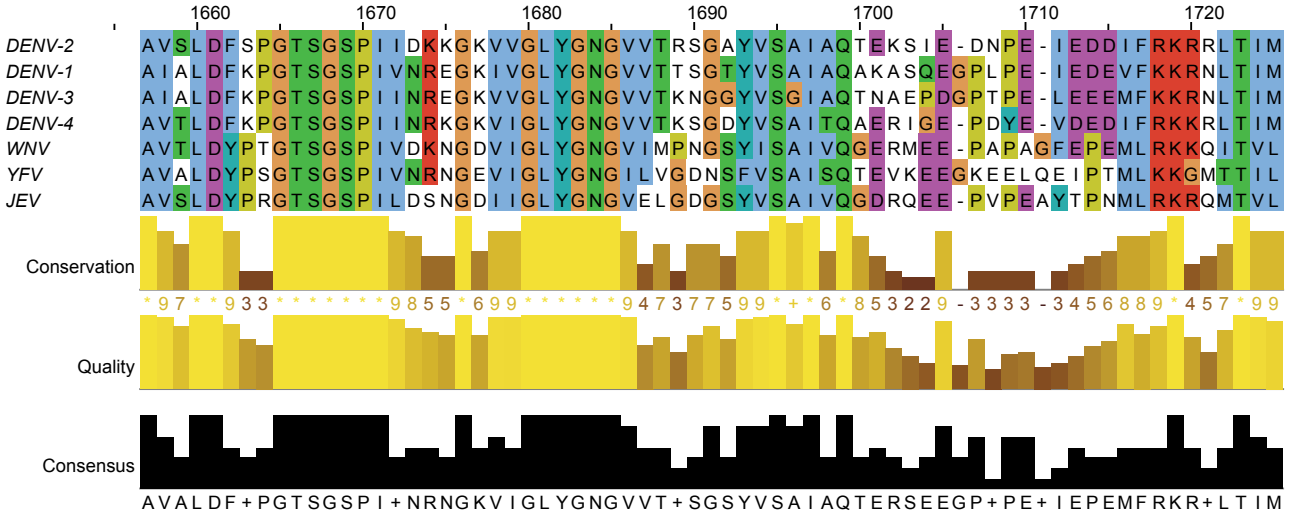
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1720
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DENV-1 AIALDFKPGTSGSPIVNREGKIVGLYGNGVVTTSGTYVSAIAQAKASQEGPLPE-IEDEVFKKRNLTIM
DENV-3 AIALDFKPGTSGSPIINREGKVVGLYGNGVVTKNGGYVSGIAQTNAEPDGPTPE-LEEEMFKKRNLTIM
DENV-4 AVTLDFKPGTSGSPIINRKGKVIGLYGNGVVTKSGDYVSAITQAERIGE-PDYE-VDEDIFRKKRLTIM
WNV AVTLDYPTGTSGSPIVDKNGDVIGLYGNGVIMPNGSYISAIVQGERMEE-PAPAGFEPEMLRKKQITVL
YFV AVALDYPSGTSGSPIVNRNGEVIGLYGNGILVGDNSFVSAISQTEVKEEGKEELQEIPTMLKKGMTTIL
JEV AVSLDYPRGTSGSPILDSNGDIIGLYGNGVELGDGSYVSAIVQGDRQEE-PVPEAYTPNMLRKRQMTVL
Conservation
Quality
Consensus
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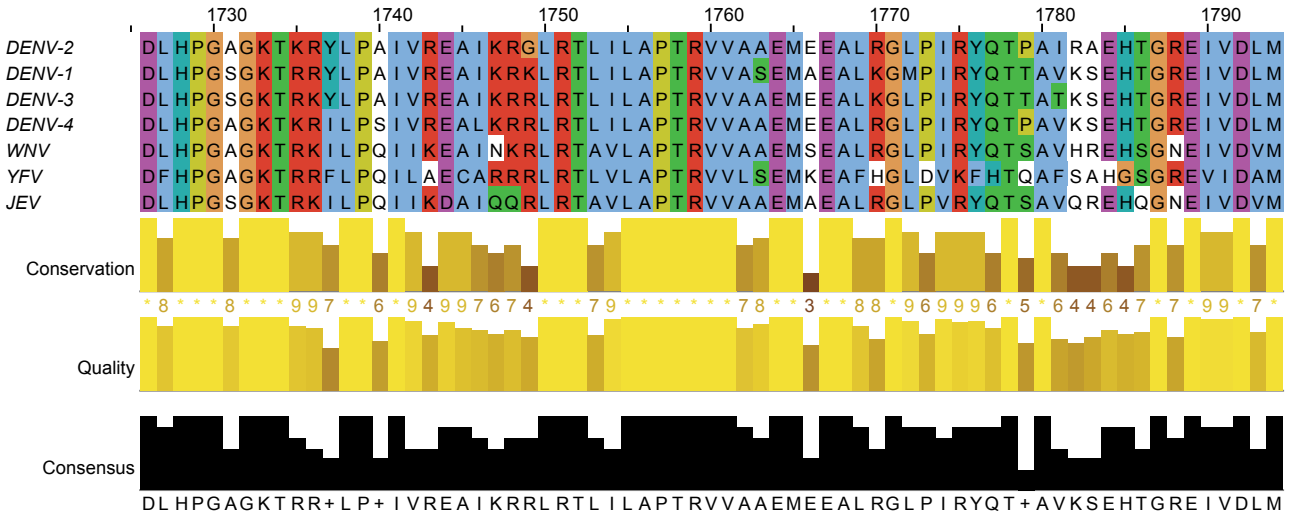
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1790
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DENV-1 DLHPGSGKTRRYLPAIVREAIKRKLRTLILAPTRVVASEMAEALKGMPIRYQTTAVKSEHTGREIVDLM
DENV-3 DLHPGSGKTRKYLPAIVREAIKRRLRTLILAPTRVVAAEMEEALKGLPIRYQTTATKSEHTGREIVDLM
DENV-4 DLHPGAGKTKRILPSIVREALKRRLRTLILAPTRVVAAEMEEALRGLPIRYQTPAVKSEHTGREIVDLM
WNV DLHPGAGKTRKILPQIIKEAINKRLRTAVLAPTRVVAAEMSEALRGLPIRYQTSAVHREHSGNEIVDVM
YFV DFHPGAGKTRRFLPQILAECARRRLRTLVLAPTRVVLSEMKEAFHGLDVKFHTQAFSAHGSGREVIDAM
JEV DLHPGSGKTRKILPQIIKDAIQQRLRTAVLAPTRVVAAEMAEALRGLPVRYQTSAVQREHQGNEIVDVM
Conservation
Quality
Consensus
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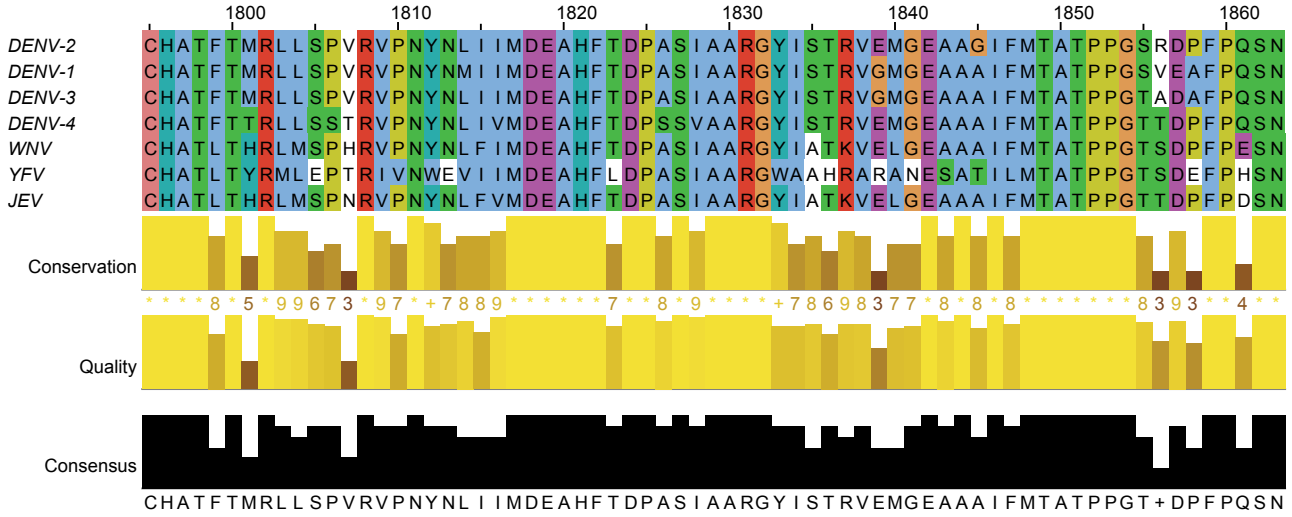
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1850
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DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus
CHATFTMRLLSPVRVPNYNLIIMDEAHFTDPASIAARGYISTRVEMGEAAGIFMTATPPGSRDPFPQSN
CHATFTMRLLSPVRVPNYNMIIMDEAHFTDPASIAARGYISTRVGMGEAAAIFMTATPPGSVEAFPQSN
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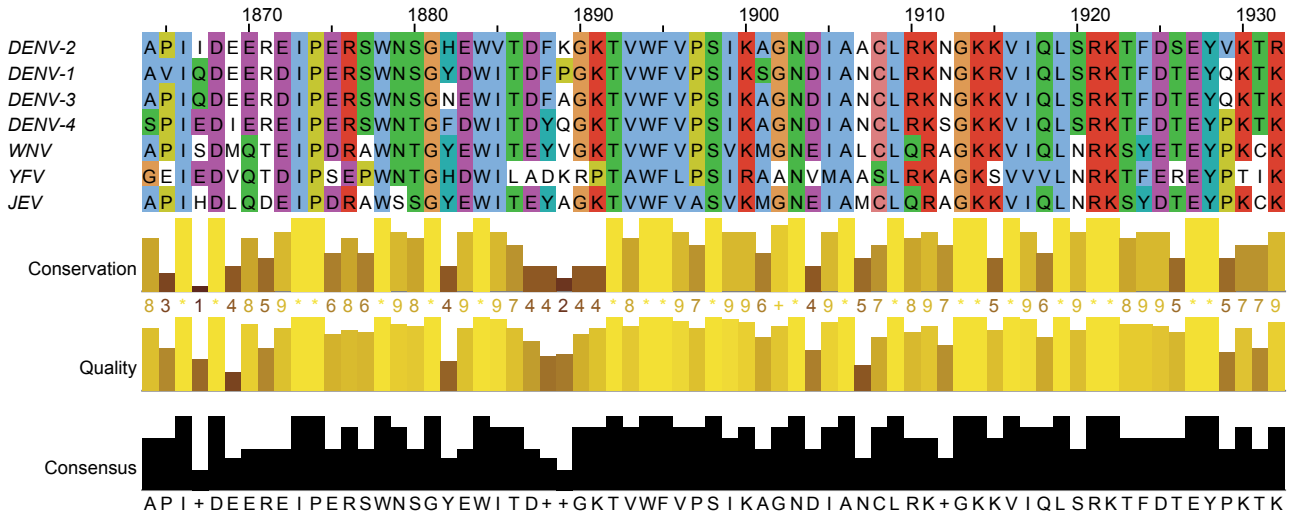
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1900
1910
1920
1930
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus
APIIDEERETPERSWNSGHEWVTDFKGKTVWFVPSIKAGNDIAACLRKNGKKVIQLSRKTFDSEYVKTR
AVIQDEERDIPERSWNSGYDWITDFPGKTVWFVPSIKSGNDIANCLRKNGKRVIQLSRKTFDTEYQKTK
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SPIEDIERETPERSWNTGFDWITDYQGKTVWFVPSIKAGNDIANCLRKSGKKVIQLSRKTFDTEYPKTK
APISDMQTEIPDRAWNTGYEWITEYVGKTVWFVPSVKMGNEIALCLQRAGKKVIQLNRKSYETEYPKCK
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APIHDLQDEIPDRAWSSGYEWITEYAGKTVWFVASVKMGNEIAMCLQRAGKKVIQLNRKSYDTEYPKCK
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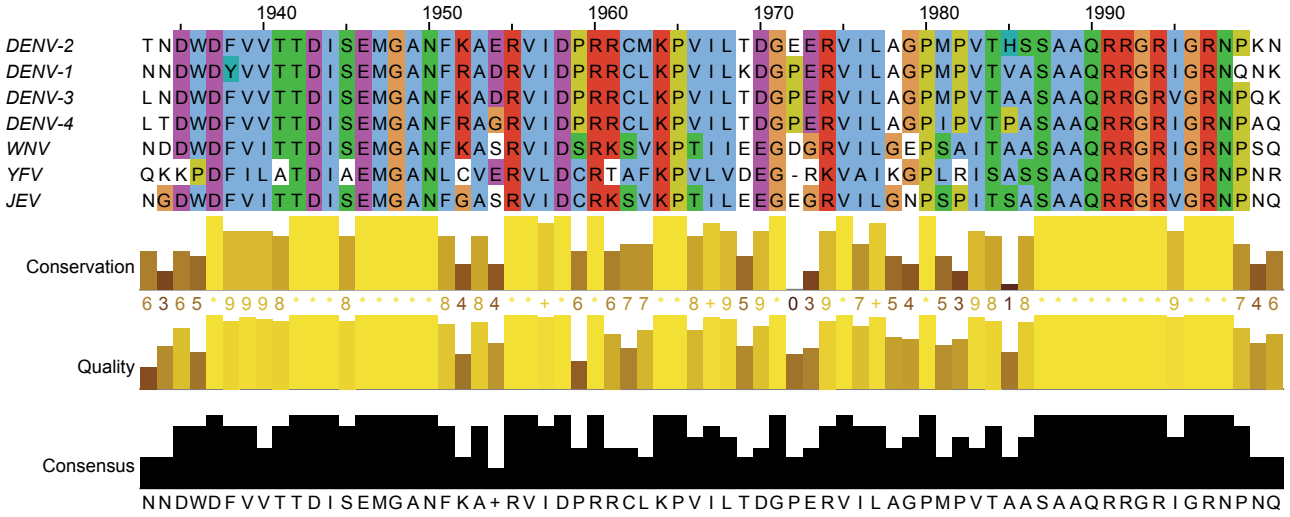
1940
1950
1960
1970
1980
1990
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DENV-1 NNDWDYVVTTDISEMGANFRADRVIDPRRCLKPVILKDGPERVILAGPMPVTVASAAQRRGRIGRNQNK
DENV-3 LNDWDFVVTTDISEMGANFKADRVIDPRRCLKPVILTDGPERVILAGPMPVTAASAAQRRGRVGRNPQK
DENV-4 LTDWDFVVTTDISEMGANFRAGRVIDPRRCLKPVILTDGPERVILAGPIPVTPASAAQRRGRIGRNPAQ
WNV NDDWDFVITTDISEMGANFKASRVIDSRKSVKPTIIEEGDGRVILGEPSAITAASAAQRRGRIGRNPSQ
YFV QKKPDFILATDIAEMGANLCVERVLDCRTAFKPVLVDEG-RKVAIKGPLRISASSAAQRRGRIGRNPNR
JEV NGDWDFVITTDISEMGANFGASRVIDCRKSVKPTILEEGEGRVILGNPSPITSASAAQRRGRVGRNPNQ
Conservation
6365*9998***8******8484***+*6*677**8+959*039*7+54*539818*********9***746
Quality
Consensus
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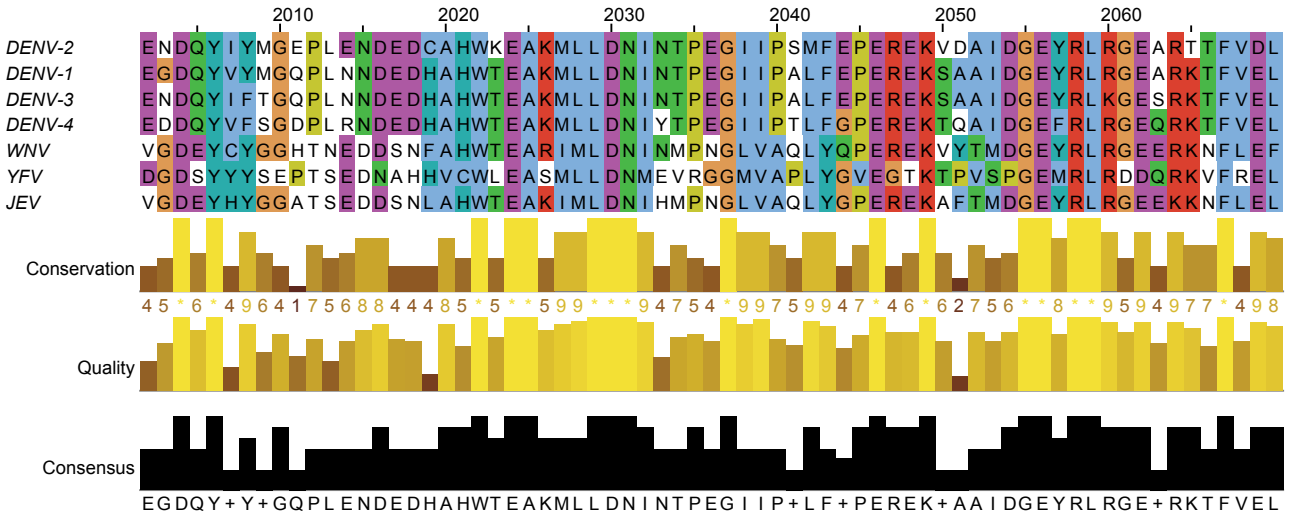
2010
2020
2030
2040
2050
2060
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DENV-1 EGDQYVYMGQPLNNDEDHAHWTEAKMLLDNINTPEGIIPALFEPEREKSAAIDGEYRLRGEARKTFVEL
DENV-3 ENDQYIFTGQPLNNDEDHAHWTEAKMLLDNINTPEGIIPALFEPEREKSAAIDGEYRLKGESRKTFVEL
DENV-4 EDDQYVFSGDPLRNDEDHAHWTEAKMLLDNIYTPEGIIPTLFGPEREKTQAIDGEFRLRGEQRKTFVEL
WNV VGDEYCYGGHTNEDDSNFAHWTEARIMLDNINMPNGLVAQLYQPEREKVYTMDGEYRLRGEERKNFLEF
YFV DGDSYYYSEPTSEDNAHHVCWLEASMLLDNMEVRGGMVAPLYGVEGTKTPVSPGEMRLRDDQRKVFREL
JEV VGDEYHYGGATSEDDSNLAHWTEAKIMLDNIHMPNGLVAQLYGPEREKAFTMDGEYRLRGEEKKNFLEL
Conservation
45*6*4964175688444485*5**599***94754*99759947*46*62756**8**9594977*498
Quality
Consensus
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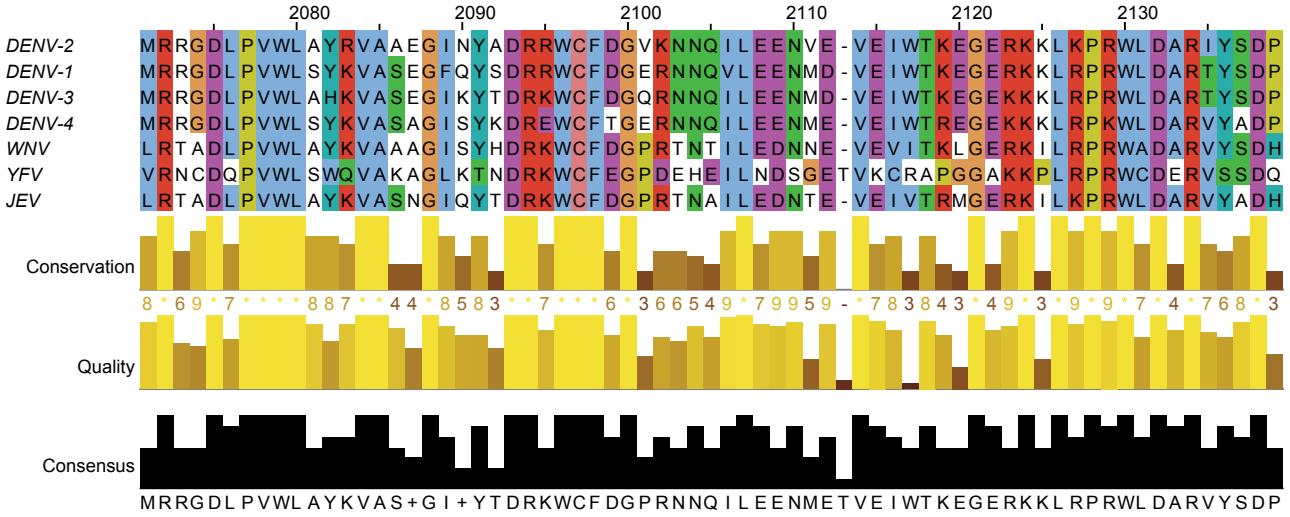
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2090
2100
2110
2120
2130
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DENV-1 MRRGDLPVWLSYKVASEGFQYSDRRWCFDGERNNQVLEENMD-VEIWTKEGERKKLRPRWLDARTYSDP
DENV-3 MRRGDLPVWLAHKVASEGIKYTDRKWCFDGQRNNQILEENMD-VEIWTKEGEKKKLRPRWLDARTYSDP
DENV-4 MRRGDLPVWLSYKVASAGISYKDREWCFTGERNNQILEENME-VEIWTREGEKKKLRPKWLDARVYADP
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JEV LRTADLPVWLAYKVASNGIQYTDRKWCFDGPRTNAILEDNTE-VEIVTRMGERKILKPRWLDARVYADH
Conservation
8*69*7****887**44*8583**7***6*3665499*79959-*7838439*3*9*9*7*4*768*3
Quality
Consensus
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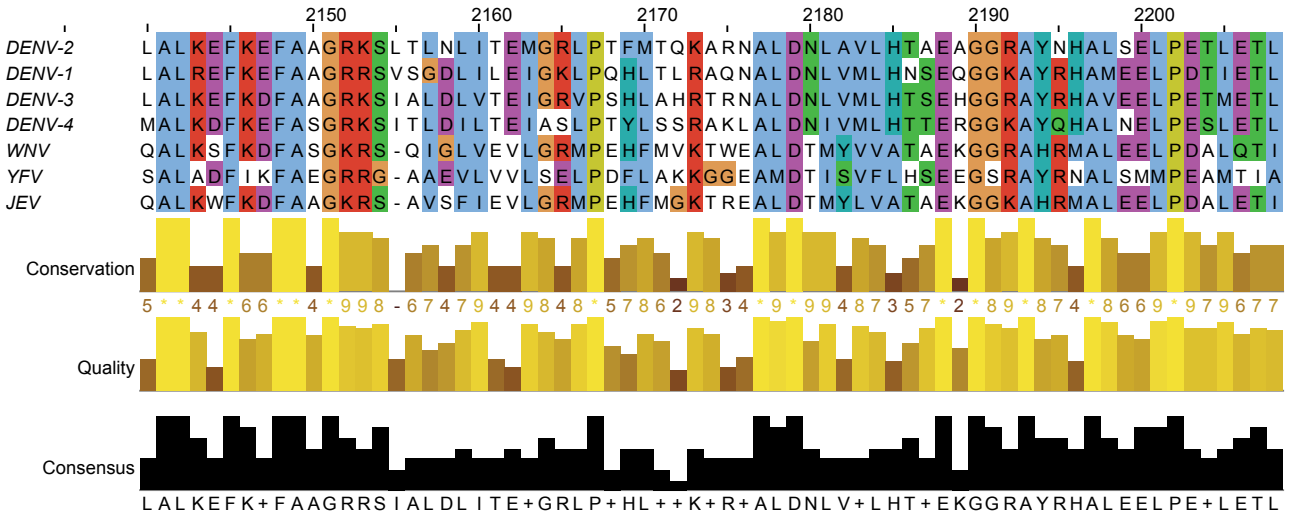
2150
2160
2170
2180
2190
2200
DENV-2 LALKEFKEFAAGRKSLTLNLITEMGRLPTFMTQKARNALDNLAVLHTAEAGGRAYNHALSELPETLETL
DENV-1 LALREFKEFAAGRRSVSGDLILEIGKLPQHLTLRAQNALDNLVMLHNSEQGGKAYRHAMEELPDTIETL
DENV-3 LALKEFKDFAAGRKSIALDLVTEIGRVPSHLAHRTRNALDNLVMLHTSEHGGRAYRHAVEELPETMETL
DENV-4 MALKDFKEFASGRKSITLDILTEIASLPTYLSSRAKLALDNIVMLHTTERGGKAYQHALNELPESLETL
WNV QALKSFKDFASGKRS-QIGLVEVLGRMPEHFMVKTWEALDTMYVVATAEKGGRAHRMALEELPDALQTI
YFV SALADFIKFAEGRRG-AAEVLVVLSELPDFLAKKGGEAMDTISVFLHSEEGSRAYRNALSMMPEAMTIA
JEV QALKWFKDFAAGKRS-AVSFIEVLGRMPEHFMGKTREALDTMYLVATAEKGGKAHRMALEELPDALETI
Conservation
5**44*66**4*998-6747944984848*57862983 4*9*994873 57*2*89*874*8669*979677
Quality
Consensus
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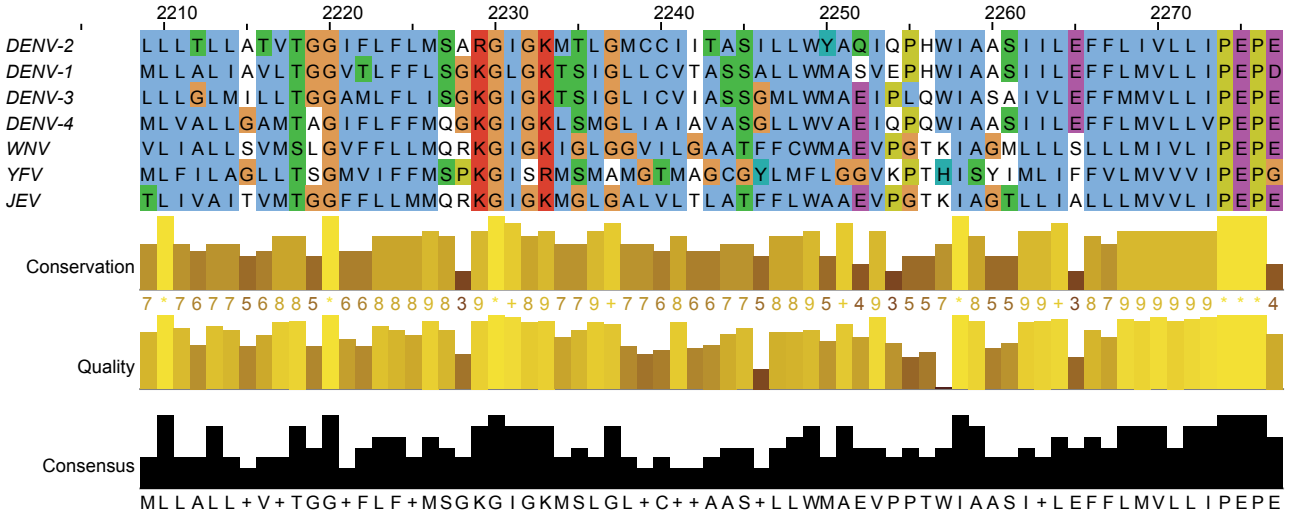
2210
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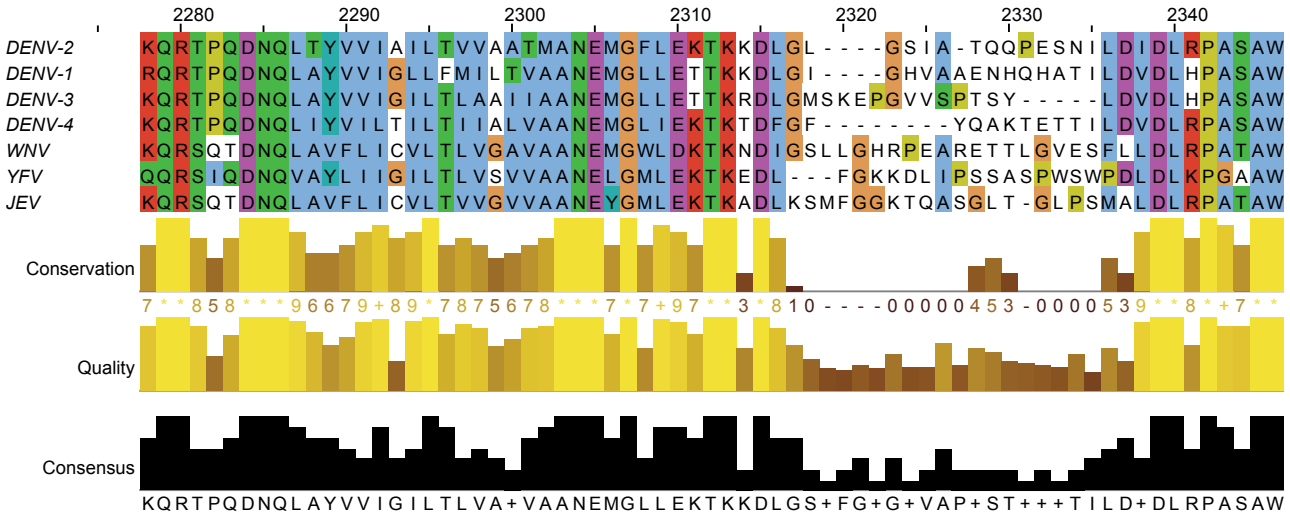
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus


2280
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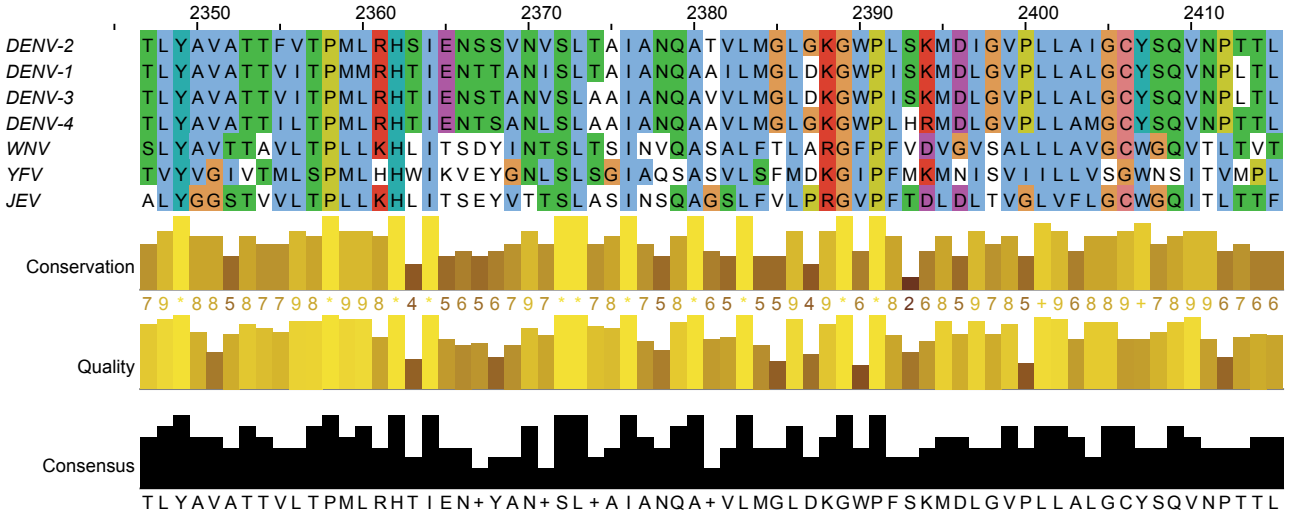
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus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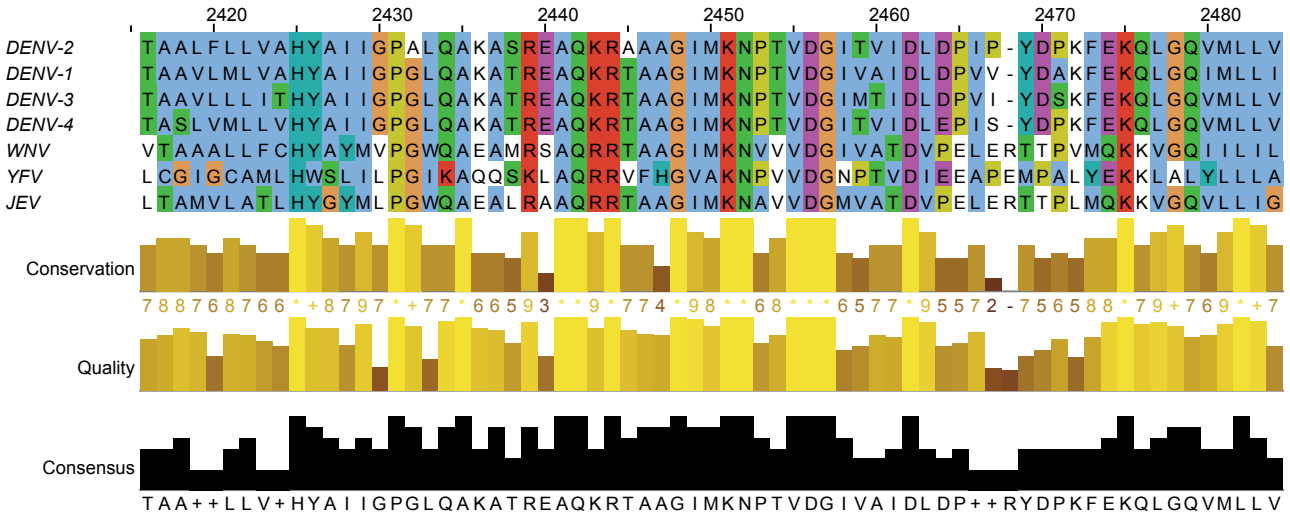
2360
2370
2380
2390
2400
2410
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus


2420
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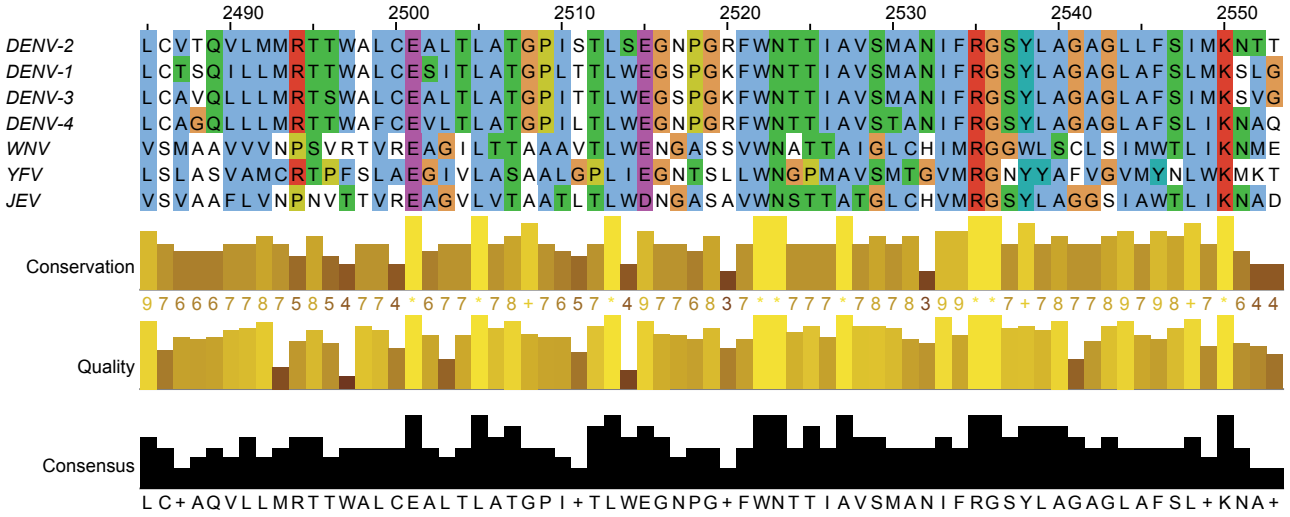
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus


2490
2500
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2520
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2540
2550
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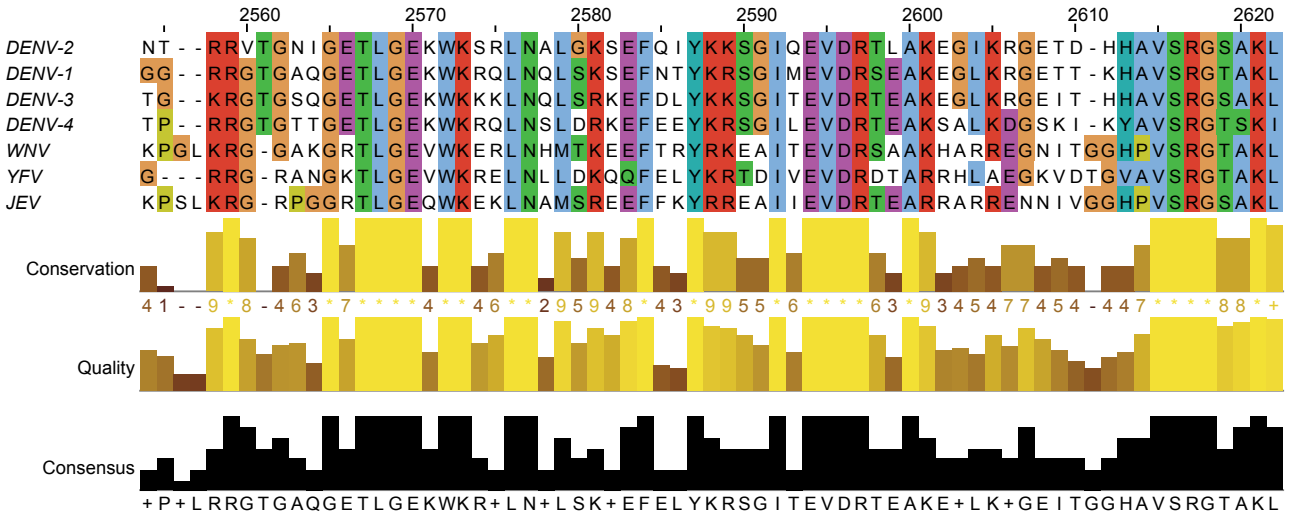
DENV-1 LCTSQILLMRTTWALCESITLATGPLTTLWEGSPGKFWNTTIAVSMANIFRGSYLAGAGLAFSLMKSLG
DENV-3 LCAVQLLLMRTSWALCEALTLATGPITTLWEGSPGKFWNTTIAVSMANIFRGSYLAGAGLAFSIMKSVG
DENV-4 LCAGQLLLMRTTWAFCEVLTLATGPILTLWEGNPGRFWNTTIAVSTANIFRGSYLAGAGLAFSLIKNAQ
WNV VSMAAVVVNPSVRTVREAGILTTAAAVTLWENGASSVWNATTAIGLCHIMRGGWLSCLSIMWTLIKNME
YFV LSLASVAMCRTPFSLAEGIVLASAALGPLIEGNTSLLWNGPMAVSMTGVMRGNYYAFVGVMYNLWKMKT
JEV VSVAAFLVNPNVTTVREAGVLVTAATLTLWDNGASAVWNSTTATGLCHVMRGSYLAGGSIAWTLIKNAD
Conservation
9766677875854774*677*78+7657*4977683 7**777*7878399**7+7877897987+7*644
Quality
Consensus
LC+AQVLLMRTTWALCEALTLATGPI+TLWEGNPG+FWNTTIAVSMANIFRGSYLAGAGLAFSL+KNA+


2560
2570
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2590
2600
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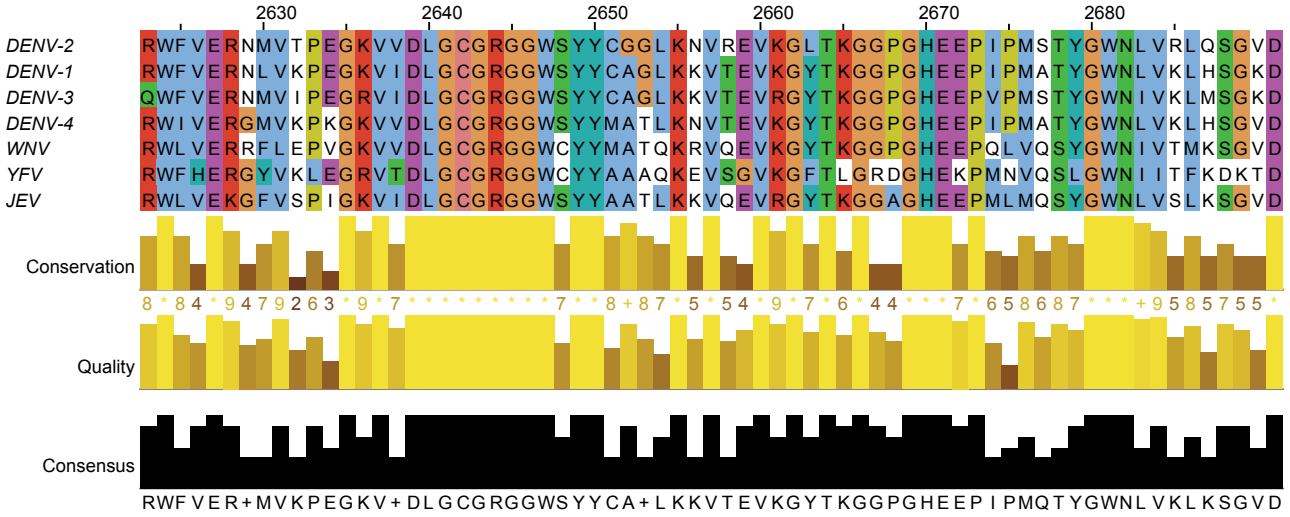
2620
DENV-2 NT--RRVTGNIGETLGEKWKSRLNALGKSEFQIYKKSGIQEVDRTLAKEGIKRGETD-HHAVSRGSAKL
DENV-1 GG--RRGTGAQGETLGEKWKRQLNQLSKSEFNTYKRSGIMEVDRSEAKEGLKRGETT-KHAVSRGTAKL
DENV-3 TG--KRGTGSQGETLGEKWKKKLNQLSRKEFDLYKKSGITEVDRTEAKEGLKRGEIT-HHAVSRGSAKL
DENV-4 TP--RRGTGTTGETLGEKWKRQLNSLDRKEFEEYKRSGILEVDRTEAKSALKDGSKI-KYAVSRGTSKI
WNV KPGLKRG-GAKGRTLGEVWKERLNHMTKEEFTRYRKEAITEVDRSAAKHARREGNITGGHPVSRGTAKL
YFV G---RRG-RANGKTLGEVWKRELNLLDKQQFELYKRTDIVEVDRDTARRHLAEGKVDTGVAVSRGTAKL
JEV KPSLKRG-RPGGRTLGEQWKEKLNAMSREEFFKYRREAIIEVDRTEARRARRENNIVGGHPVSRGSAKL
Conservation
41--9*8-463*7****4**46**2959485*43*9955*6****63*9345477454-447****88*+
Quality
Consensus
+P+LRRGTGAQGETLGEKWKR+LN+LSK+EFELYKRSGITEVDRTEAKE+LK+GEITGGHAVSRGTAKL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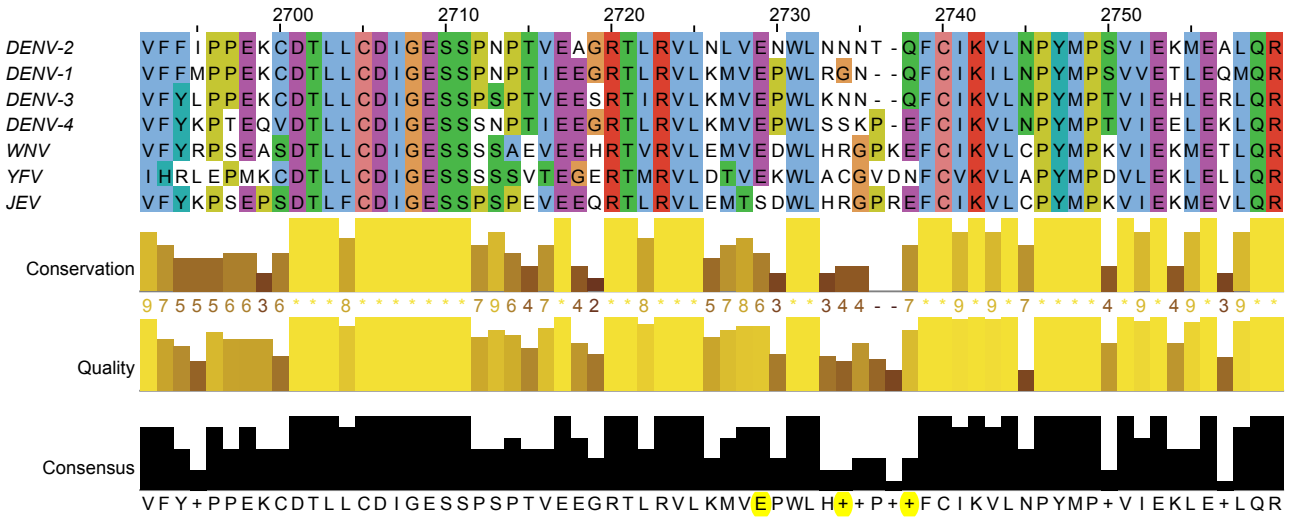
2640
2650
2660
2670
2680
DENV-2 RWFVERNMVTPEGKVVDLGCGRGGWSYYCGGLKNVREVKGLTKGGPGHEEPIPMSTYGWNLVRLQSGVD
DENV-1 RWFVERNLVKPEGKVIDLGCGRGGWSYYCAGLKKVTEVKGYTKGGPGHEEPIPMATYGWNLVKLHSGKD
DENV-3 QWFVERNMVIPEGRVIDLGCGRGGWSYYCAGLKKVTEVRGYTKGGPGHEEPVPMSTYGWNIVKLMSGKD
DENV-4 RWIVERGMVKPKGKVVDLGCGRGGWSYYMATLKNVTEVKGYTKGGPGHEEPIPMATYGWNLVKLHSGVD
WNV RWLVERRFLEPVGKVVDLGCGRGGWCYYMATQKRVQEVKGYTKGGPGHEEPQLVQSYGWNIVTMKSGVD
YFV RWFHERGYVKLEGRVTDLGCGRGGWCYYAAAQKEVSGVKGFTLGRDGHEKPMNVQSLGWNIITFKDKTD
JEV RWLVEKGFVSPIGKVIDLGCGRGGWSYYAATLKKVQEVRGYTKGGAGHEEPMLMQSYGWNLVSLKSGVD
Conservation
8*84*94792639*97**********7**8+87*5*54*9*7*6*44***7*6586887***+9585755*
Quality
Consensus
RWFVER+MVKPEGKV+DLGCGRGGWSYYCA+LKKVTEVKGYTKGGPGHEEPIPMQTYGWNLVKLKSGVD


2700
2710
2720
2730
2740
2750
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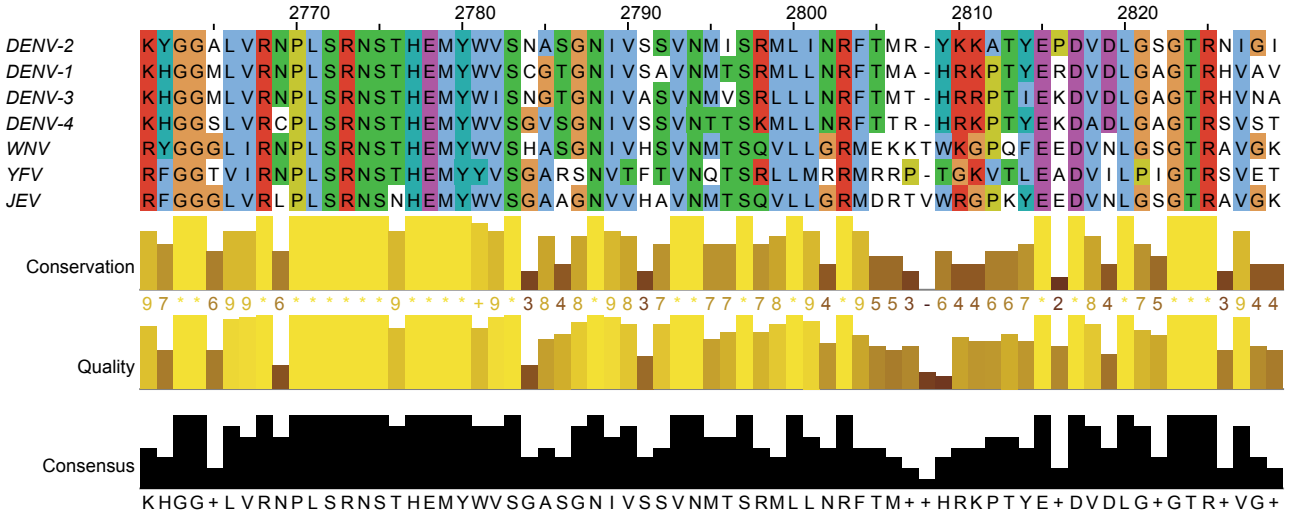
DENV-1 VFFMPPEKCDTLLCDIGESSPNPTIEEGRTLRVLKMVEPWLRGN--QFCIKILNPYMPSVVETLEQMQR
DENV-3 VFYLPPEKCDTLLCDIGESSPSPTVEESRTIRVLKMVEPWLKNN--QFCIKVLNPYMPTVIEHLERLQR
DENV-4 VFYKPTEQVDTLLCDIGESSSNPTIEEGRTLRVLKMVEPWLSSKP-EFCIKVLNPYMPTVIEELEKLQR
WNV VFYRPSEASDTLLCDIGESSSSAEVEEHRTVRVLEMVEDWLHRGPKEFCIKVLCPYMPKVIEKMETLQR
YFV IHRLEPMKCDTLLCDIGESSSSSVTEGERTMRVLDTVEKWLACGVDNFCVKVLAPYMPDVLEKLELLQR
JEV VFYKPSEPSDTLFCDIGESSPSPEVEEQRTLRVLEMTSDWLHRGPREFCIKVLCPYMPKVIEKMEVLQR
Conservation
975556636***8*********796472**8***57863**344--7**9*9*7*****4*9*49*39**
Quality
Consensus
VFY+PPEKCDTLLCDIGESSPSPTVEEGRTLRVLKMVEPWLH+P++FCIKVLNPYMP+VIEKLE+LQR


2770
2780
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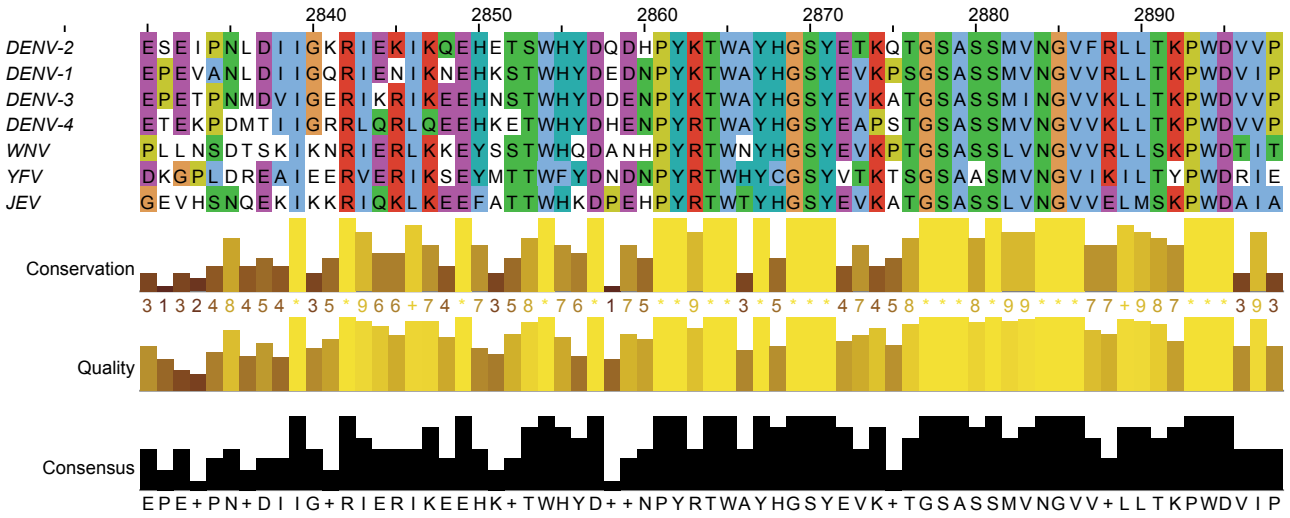
2820
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus


2840
2850
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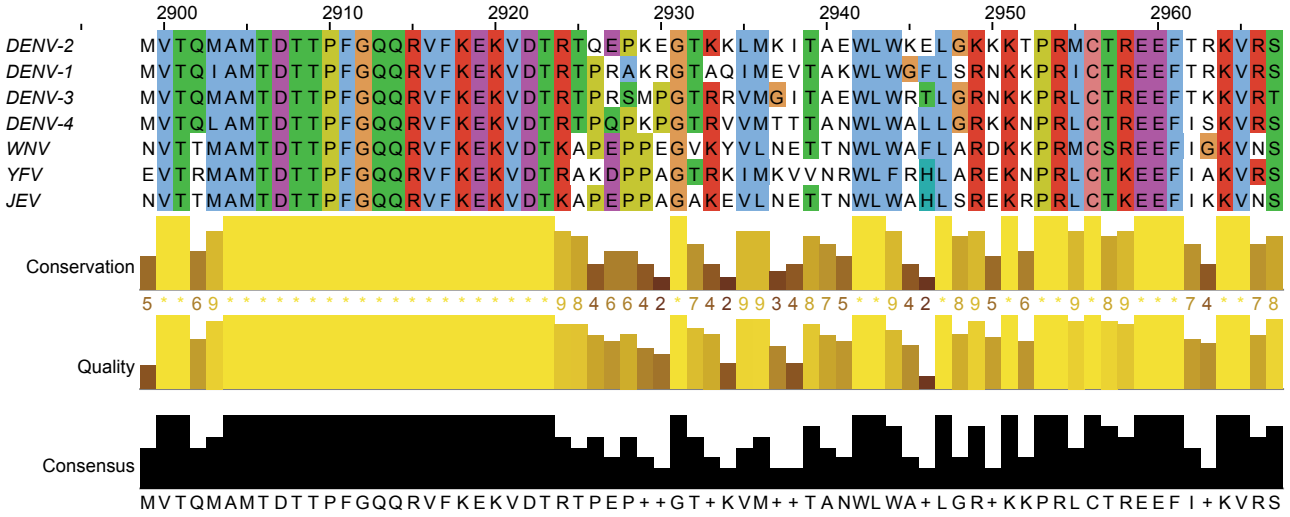
2880
2890
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus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2960
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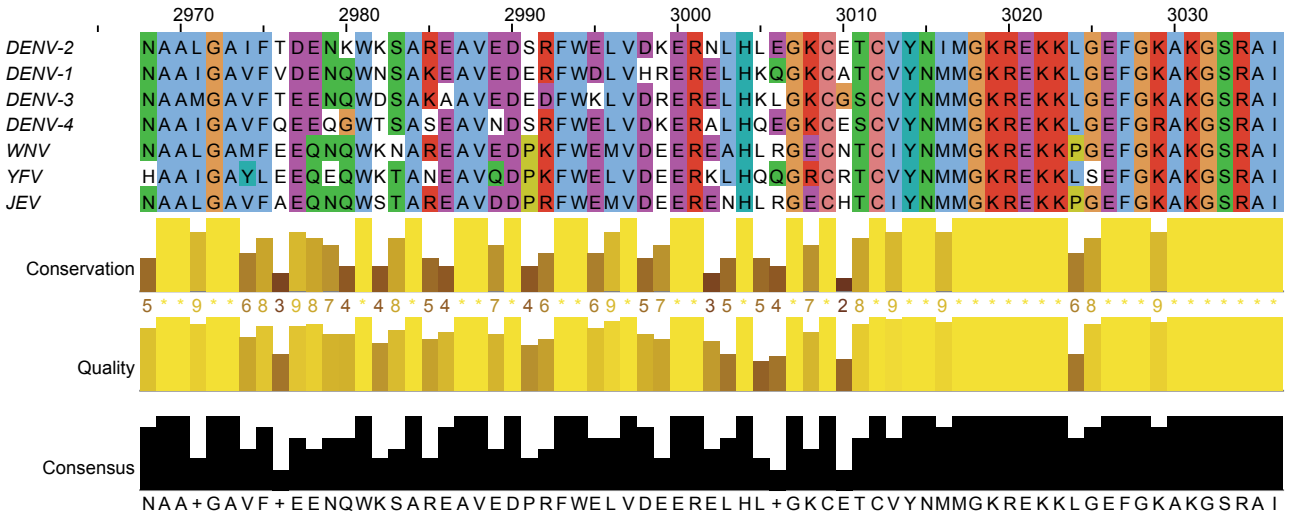
DENV-1 MVTQIAMTDTTPFGQQRVFKEKVDTRTPRAKRGTAQIMEVTAKWLWGFLSRNKKPRICTREEFTRKVRS
DENV-3 MVTQMAMTDTTPFGQQRVFKEKVDTRTPRSMPGTRRVMGITAEWLWRTLGRNKKPRLCTREEFTKKVRT
DENV-4 MVTQLAMTDTTPFGQQRVFKEKVDTRTPQPKPGTRVVMTTTANWLWALLGRKKNPRLCTREEFISKVRS
WNV NVTTMAMTDTTPFGQQRVFKEKVDTKAPEPPEGVKYVLNETTNWLWAFLARDKKPRMCSREEFIGKVNS
YFV EVTRMAMTDTTPFGQQRVFKEKVDTRAKDPPAGTRKIMKVVNRWLFRHLARENKNPRLCTKEEFIAKVRS
JEV NVTTMAMTDTTPFGQQRVFKEKVDTKAPEPPAGAKEVLNETTNWLWAHLSREKRPRLCTKEEFIKKVNS
Conservation
5**69**********************9846642*74299348752**942*8952*6**9*89***74**78
Quality
Consensus
MVTQMAMTDTTPFGQQRVFKEKVDTRTPEP++GT+KVM++TANWLWA+LGR+KKPRLCTREEFI+KVRS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2980
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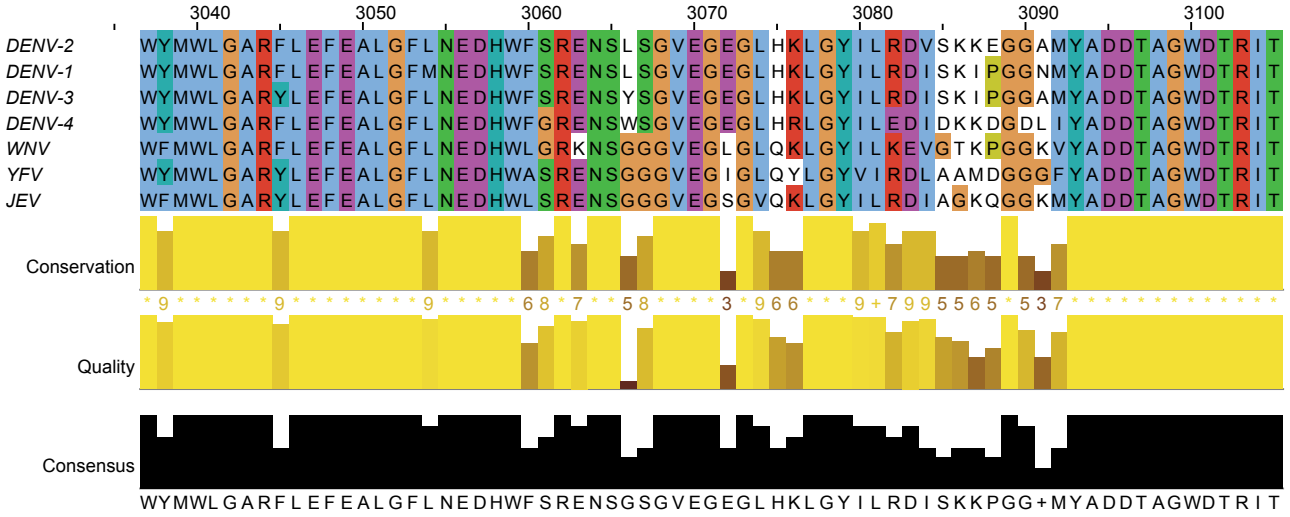
3000
3010
3020
3030
DENV-2 NAALGAIFTDENKWKSAREAVEDSRFWELVDKERNLHLEGKCETCVYNIMGKREKKLGEFGKAKGSRAI
DENV-1 NAAIGAVFVDENQWNSAKEAVEDERFWDLVHRERELHKQGKCATCVYNMMGKREKKLGEFGKAKGSRAI
DENV-3 NAAMGAVFTEENQWDSAKAAVEDEDFWKLVDRERELHKLGKCGSCVYNMMGKREKKLGEFGKAKGSRAI
DENV-4 NAAIGAVFQEEQGWTSASEAVNDSRFWELVDKERALHQEGKCESCVYNMMGKREKKLGEFGRAKGSRAI
WNV NAALGAMFEEQNQWKNAREAVEDPKFWEMVDEEREAHLRGECNTCIYNMMGKREKKPGEFGKAKGSRAI
YFV HAAIGAYLEEQEQWKTANEAVQDPKFWELVDEERKLHQQGRCRTCVYNMMGKREKKLSEFGKAKGSRAI
JEV NAALGAVFAEQNQWSTAREAVDDPRFWEMVDEERENHLRGECHTCIYNMMGKREKKPGEFGKAKGSRAI
Conservation
5**9**6839874*48*54**7*46**69*57**35*54*7*28*9**9*********68****9*******
Quality
Consensus
NAA+GAVF+EENQWKSAREAVEDPRFWELVDEERELHL+GKCETCVYNMMGKREKKLGEFGKAKGSRAI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3070
3080
3090
3100
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus
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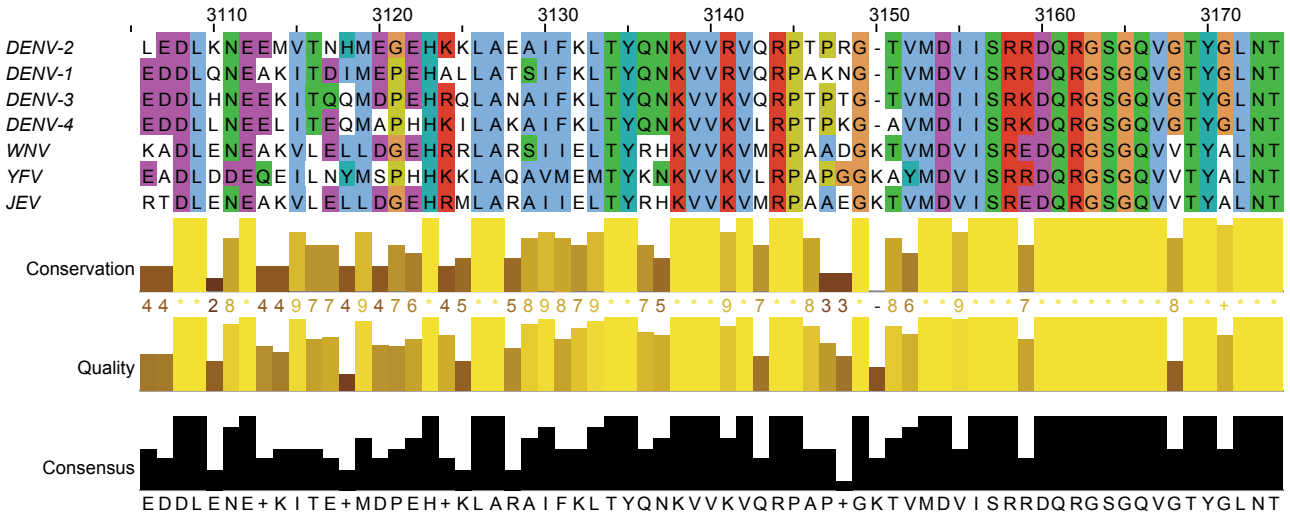
3110
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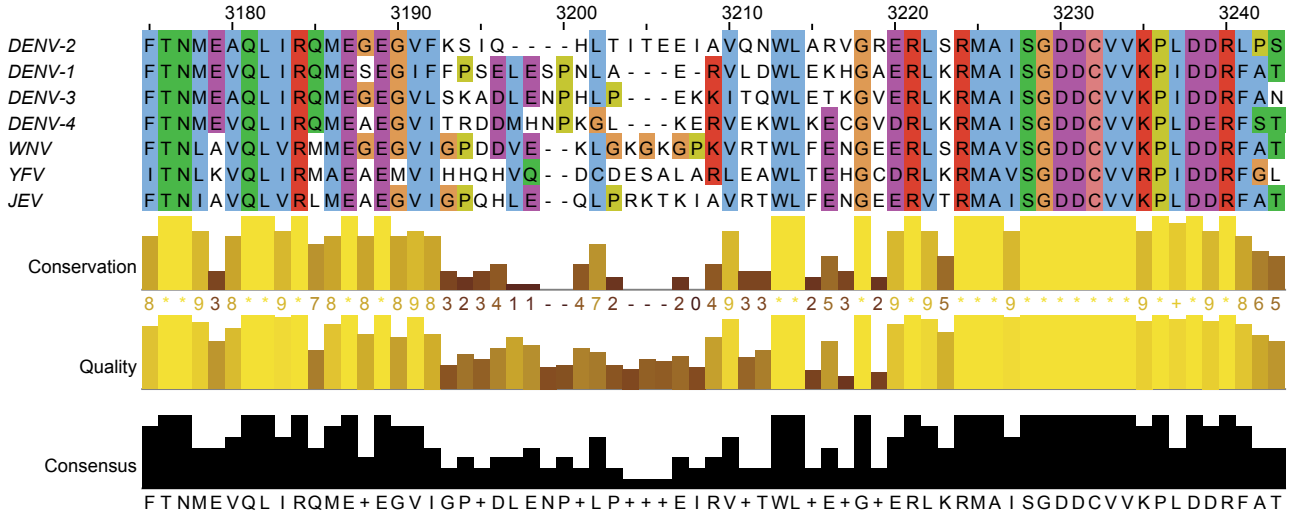
3150
3160
3170
DENV-2
DENV-1
DENV-3
DENV-4
WNV
YFV
JEV
Conservation
Quality
Consensus
EDDLENE+KITE+MDPEH+KLARAIFKLTYQNKVVKVQRPAP+GKTVMDVISRRDQRGSGQVGTYGLNT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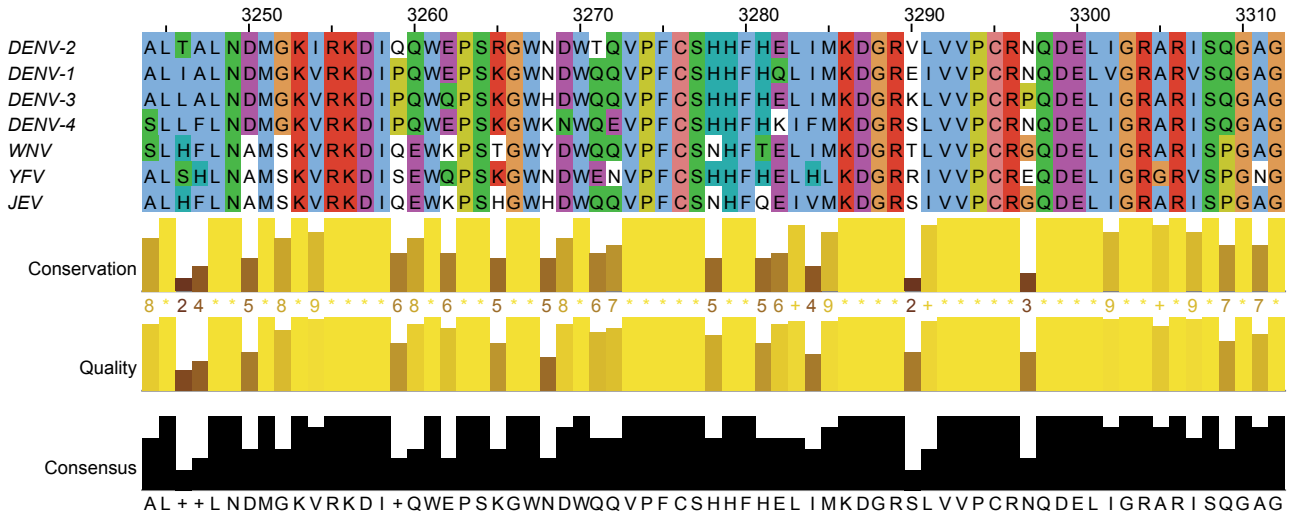
3240
DENV-2 FTNMEAQLIRQMEGEGVFKSIQ----HLTITEEIAVQNWLARVGRERLSRMAISGDDCVVKPLDDRLPS
DENV-1 FTNMEVQLIRQMESEGIFFPSELESPNLA---E-RVLDWLEKHGAERLKRMAISGDDCVVKPIDDRFAT
DENV-3 FTNMEAQLIRQMEGEGVLSKADLENPHLP---EKKITQWLETKGVERLKRMAISGDDCVVKPIDDRFAN
DENV-4 FTNMEVQLIRQMEAEGVITRDDMHNPKGL---KERVEKWLKECGVDRLKRMAISGDDCVVKPLDERFST
WNV FTNLAVQLVRMMEGEGVIGPDDVE--KLGKGKGPKVRTWLFENGEERLSRMAVSGDDCVVKPLDDRFAT
YFV ITNLKVQLIRMAEAEMVIHHQHVQ--DCDESALARLEAWLTEHGCDRLKRMAVSGDDCVVRPIDDRFGL
JEV FTNIAVQLVRLMEAEGVIGPQHLE--QLPRKTKIAVRTWLFENGEERVTRMAISGDDCVVKPLDDRFAT
Conservation
8**938**9*78*8*898323411--472---2049333**253*29*95*****9*********9*+*9*865
Quality
Consensus
FTNMEVQLIRQME+EGVIGP+DLENP+LP+++EIRV+TWL+E+G+ERLKRMAISGDDCVVKPLDDRFAT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3290
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3310
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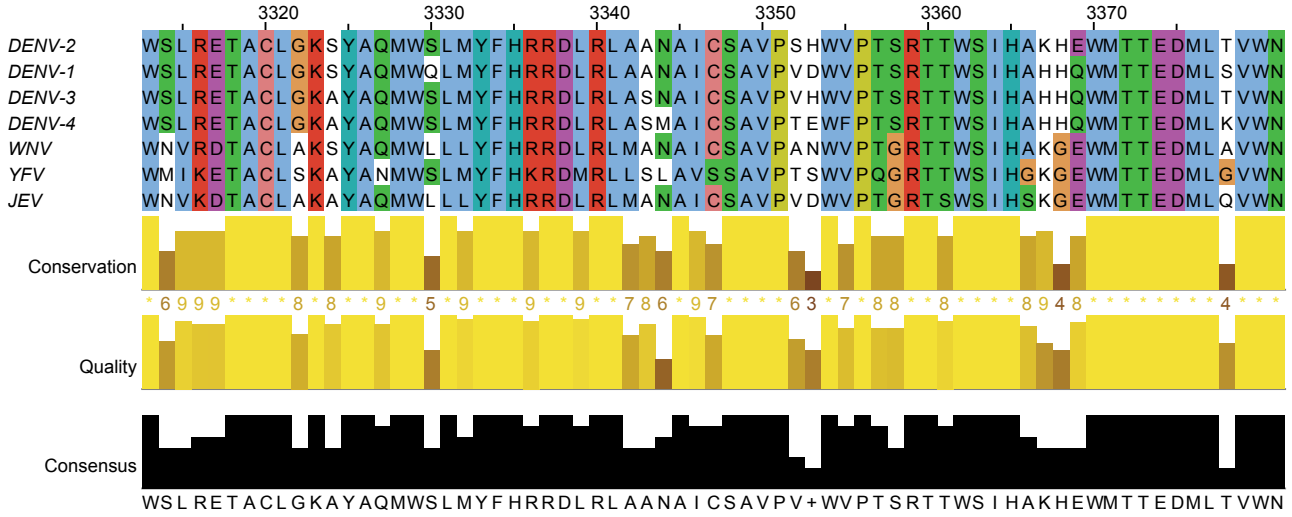
DENV-1 ALIALNDMGKVRKDIPQWEPSKGWNDWQQVPFCSHHFHQLIMKDGREIVVPCRNQDELVGRARVSQGAG
DENV-3 ALLALNDMGKVRKDIPQWQPSKGWHDWQQVPFCSHHFHELIMKDGRKLVVPCRPQDELIGRARISQGAG
DENV-4 SLLFLNDMGKVRKDIPQWEPSKGWKNWQEVPFCSHHFHKIFMKDGRSLVVPCRNQDELIGRARISQGAG
WNV SLHFLNAMSKVRKDIQEWKPSTGWYDWQQVPFCSNHFTELIMKDGRTLVVPCRGQDELIGRARISPGAG
YFV ALSHLNAMSKVRKDISEWQPSKGWNDWENVPFCSHHFHELHLKDGRRIVVPCREQDELIGRGRVSPGNG
JEV ALHFLNAMSKVRKDIQEWKPSHGWHDWQQVPFCSNHFQEIVMKDGRSIVVPCRGQDELIGRARISPGAG
Conservation
8*24**5*8*9*****68*6**5***58*67******5**56+49*****2+******3*****9**+*9*7*7*
Quality
Consensus
AL++LNDMGKVRKDI+QWEPSKGWNDWQQVPFCSHHFHELIMKDGRSLVVPCRNQDELIGRARISQGAG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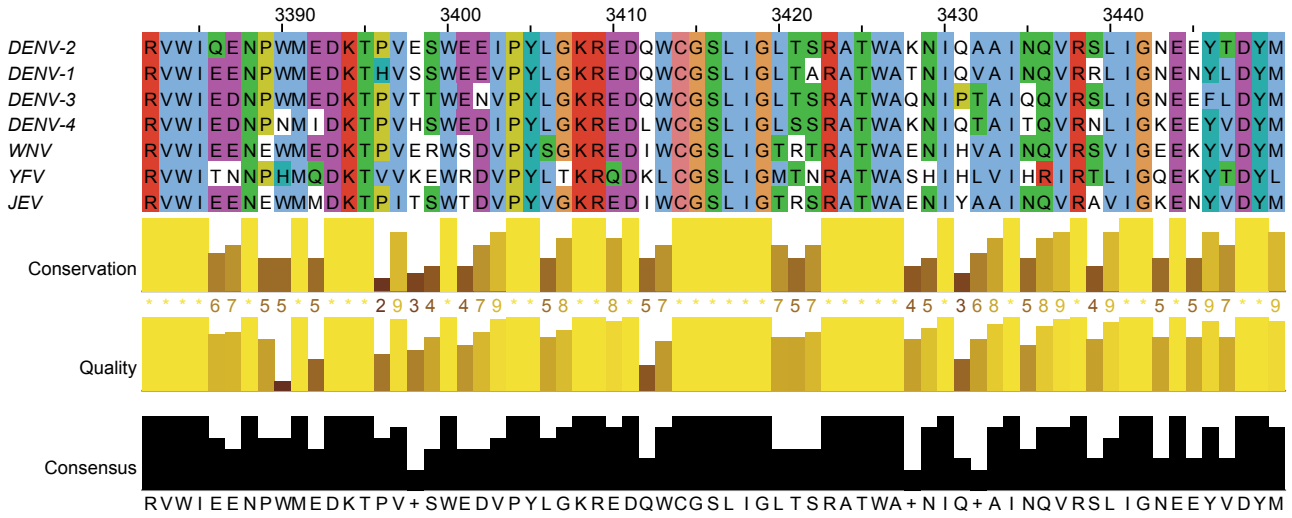
3370
DENV-2 WSLRETACLGKSYAQMWSLMYFHRRDLRLAANAICSAVPSHWVPTSRTTWSIHAKHEWMTTEDMLTVWN
DENV-1 WSLRETACLGKSYAQMWQLMYFHRRDLRLAANAICSAVPVDWVPTSRTTWSIHAHHQWMTTEDMLSVWN
DENV-3 WSLRETACLGKAYAQMWSLMYFHRRDLRLASNAICSAVPVHWVPTSRTTWSIHAHHQWMTTEDMLTVWN
DENV-4 WSLRETACLGKAYAQMWSLMYFHRRDLRLASMAICSAVPTEWFPTSRTTWSIHAHHQWMTTEDMLKVWN
WNV WNVRDTACLAKSYAQMWLLLYFHRRDLRLMANAICSAVPANWVPTGRTTWSIHAKGEWMTTEDMLAVWN
YFV WMIKETACLSKAYANMWSLMYFHKRDMRLLSLAVSSAVPTSWVPQGRTTWSIHGKGEWMTTEDMLGVWN
JEV WNVKDTACLAKAYAQMWLLLYFHRRDLRLMANAICSAVPVDWVPTGRTSWSIHSKGEWMTTEDMLQVWN
Conservation
* 6 9 9 9 * * * * 8 * 8 * * 9 * * 5 * 9 * * * 9 * * 9 * * 7 8 6 * 9 7 * * * * 6 3 * 7 * 8 8 * * 8 * * * * 8 9 4 8 * * * * * * * * 4 * * *
Quality
Consensus
WSLRETACLGKAYAQMWSLMYFHRRDLRLAANAICSAVPV+WVPTSRTTWSIHAKHEWMTTEDMLTVWN


3390
3400
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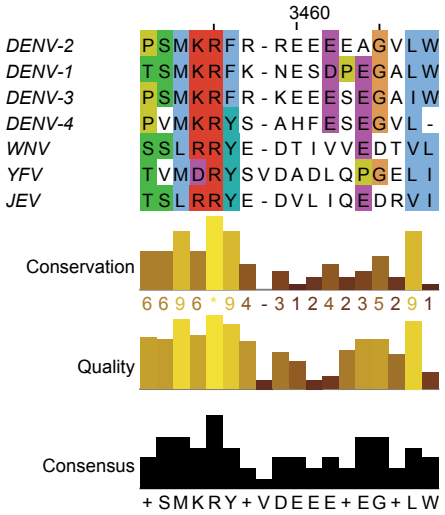
3420
3430
3440
DENV-2 RVWIQENPWMEDKTPVESWEEIPYLGKREDQWCGSLIGLTSRATWAKNIQAAINQVRSLIGNEEYTDYM
DENV-1 RVWIEENPWMEDKTHVSSWEEVPYLGKREDQWCGSLIGLTARATWATNIQVAINQVRRLIGNENYLDYM
DENV-3 RVWIEDNPWMEDKTPVTTWENVPYLGKREDQWCGSLIGLTSRATWAQNIPTAIQQVRSLIGNEEFLDYM
DENV-4 RVWIEDNPNMIDKTPVHSWEDIPYLGKREDLWCGSLIGLSSRATWAKNIQTAITQVRNLIGKEEYVDYM
WNV RVWIEENEWMEDKTPVERWSDVPYSGKREDIWCGSLIGTRTRATWAENIHVAINQVRSVIGEEKYVDYM
YFV RVWITNNPHMQDKTVVKEWRDVPYLTKRQDKLCGSLIGMTNRATWASHIHLVIHRIRTLIGQEKYTDYL
JEV RVWIEENEWMMDKTPITSWTDVPYVGKREDIWCGSLIGTRSRATWAENIYAAINQVRAVIGKENYVDYM
Conservation
* * * * 6 7 * 5 5 * 5 * * * 2 9 3 4 * 4 7 9 * * 5 8 * * 8 * 5 7 * * * * * * 7 5 7 * * * * * 4 5 * 3 6 8 * 5 8 9 * 4 9 * * 5 * 5 9 7 * * 9
Quality
Consensus
RVWIEENPWMEDKTPV+SWEDVPYLGKREDQWCGSLIGLTSRATWA+NIQ+AINQVRSLIGNEEYVDYM


3460
DENV-2 PSMKRFR-REEEEAGVLW
DENV-1 TSMKRFK-NESDPEGALW
DENV-3 PSMKRFR-KEEESEGAIW
DENV-4 PVMKRYS-AHFESEGVL-
WNV SSLRRYE-DTIVVEDTVL
YFV TVMDRYSVDADLQPGELI
JEV TSLRRYE-DVLIQEDRVI
Conservation
6 6 9 6 * 9 4 - 3 1 2 4 2 3 5 2 9 1
Quality
Consensus
+ SMKRY + VDEEE + EG + LW