

## Supplement 4

### Sodium Action Potentials in Placozoa: Insights into Behavioral Integration and Evolution of Nerveless Animals

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**Supplementary Data.** Placozoan Ca<sub>v</sub> channels alignments: *Trichoplax adhaerens* (H haplotype), *Trichoplax* sp. (H2 haplotype), *Hoilungia* sp. (H4 haplotypes), *Hoilungia hongkongensis* (H13 haplotype).

**Yellow** – polar, acidic amino acids

**Light blue** – polar, basic amino acids

**Grey** – non-polar, hydrophobic amino acids

**Green** – polar, uncharged amino acids

**Purple** - cysteine

#### Abbreviations:

DI - Domain I

DII - Domain II

DIII - Domain III

DIV - Domain IV

H1\_Cav1 1 -----MMIEYDGKSTLDLSDIRDRLS-----  
 H2\_Cav1 1 -----MASSSFNSVTLKTNLSETVLR-----  
 H13\_Cav1 1 -----MADDKMGIDDGKSTLDPDIRDRLP-----  
 H1\_Cav2 1 -----MASSSFNSVTLKTNLSETVLR-----  
 H2\_Cav2 1 -----MADDKVGTDDGKSTLDLSDIRDRLP-----  
 H13\_Cav2 0 -----  
 H1\_Cav3 1 MDISFAIIAFTYNMTLLSILSANWNLVLLLLVDMSSNGHRCRQRF AASSSYQSDQPSHHAIDRNK-HQDLPYHGKAKSPDLLSPISAHDR  
 H2\_Cav3 1 -----MTLLSILSANWNLVLLLLVDMSSNGHRCRQRF AASSSYQSDQPSHHAIDRNK-HQDLPYHGKAKSPDLLSPISAYDR  
 H13\_Cav3 1 -----MSSNGHGYHQQLATSSGQADQSSHYVPRKRNHADTPYHKD SKL FNMLS-TSSQDQ

H1\_Cav1 21 -----PSVAGTLLETAAIARAKRRGAIQGR IQHYKAKQ GAL TPRAARVLF-FLKTDNPIRQFATTVEKKYPL-----  
 H2\_Cav1 22 -----HLVHEKIAANNANKQGGIIRAYFRRIWQYDRDKS-----LC-CLPANLLRKYAKKLV DWTYPFYRLTFNVNDSLADD  
 H13\_Cav1 25 -----PSVAGTLLETAATAKAKRRGAIQGR IHYYKAKQ GAL TPRAARVLF-IFKTDNPIRQFATT-----  
 H1\_Cav2 22 -----HLVHEKIAANNANKQGGIIRAYFRRIWQYDRDKS-----LC-CLPANLLRKYAKKLV DWTYPFYRLTFNVNDSLADD  
 H2\_Cav2 25 -----PSVAGTLLETAAIARAKRRGAIQGR IQHYKAKQ GAL TPRAARVLF-FLKTDNPIRQFATTVEKKYPL-----  
 H13\_Cav2 0 -----  
 H1\_Cav3 90 YQQGRQQQDR TNQNYKADNYRQPHDVIREFQSEQQINSNDADIDDEIHPVVCWYLHKDEWPRKYFVKLSQWRYPFIDGFNIINIYMRSI  
 H2\_Cav3 77 YQQGRQQQDR TNQNYKADNYRQPHDVIREFQSEQQINSNDADIDDEIHPVVCWYLHKDEWPRKYFVKLSQWRYPFIDGFNIINIYMRSI  
 H13\_Cav3 57 PQQSYLQEDSIGHNYKVDDPCQFQNIAEESQPEQQDSTNEAFDIEDEINPVC-----

H1\_Cav1 88 -----TFEYLILF-----TIFANCV ALALYQPLP-----NNDNTLLNENMEK-VEYVFLAIFTIESFLKIITYGFAIP  
 H2\_Cav1 95 RLGFI VEYSPMISHNAQSFTCSVIL-----TIVANCVLAMDVPLP-----DNDSTEISLLEL RNAEIGFLVVFCEIAALKIIAKGFFFH  
 H13\_Cav1 84 -----AFEYLILF-----TIFANCV ALALYQPLP-----NNDNTLLNENMEK-VEYVFLAIFAIESILKIITYGFAIP  
 H1\_Cav2 95 RLGFI V-----EYSP-----MERNAEIGFLVVFCEIAALKIIAKG-----  
 H2\_Cav2 92 -----TFEYLILF-----TIFANCV ALALYQPLP-----NNDNTLLNENMEK-VEYVFLAIFTIESFLKIITYGFAIP  
 H13\_Cav2 1 -----MDVPLP-----DNDSTEISLLEL TRAEIGFLVVFCEIAFLKIIAKGFFFH  
 H1\_Cav3 180 IINFYFLYPHKSIGLNFCLTWFERITIIIVILINCVTLGSYNPAGQFK-NNTCVDSTCQITSVVDNIIFGYFVVEMIK MVALG-VFG  
 H2\_Cav3 167 IINFYFLYPHKSIGLNFCLTWFERITIIIVILINCVTLGSYNPAGQFK-NNTCVDSTCQITSVVDNIIFGYFVVEMIK MVALG-VFG  
 H13\_Cav3 109 -----SYNPVNQAKNNNTCM DNLCRVTVGVVDNIIFGYFVVEMIK MIALG-IFG

H1\_Cav1 151 SGAYLRNGWNILDFIIVIVGIINIIFTATSSSNQIDVLRALRAFVRVLRPLRLVSGVPSLQVVMNAIMKAMVPLFHVAALVVFVIIYAT  
 H2\_Cav1 175 PQAYLRSGWNILDFLIVVGLVNAFYINAASNEID--VKILRVVRVLRPLKLVSGMPSLQIVLRSLLTAMGPLFQISLLVLFVIVIYSI  
 H13\_Cav1 147 AGAYLRNGWNILDFIIVIVGIINIIFSATSSSNQIDVLRALRAFVRVLRPLRLVSGVPSLQVVMNAIMKAMVPLFHVAALVVFVIIYAT  
 H1\_Cav2 129 -----LQIVLRSLLTAMGPLFQISLLVLFVIVIYSI  
 H2\_Cav2 155 SGAYLRNGWNILDFIIVIVGIINIIFTATSSSNQIDVLRALRAFVRVLRPLRLVSGVPSLQVVMNAIMKAMVPLFHVAALVVFVIIYAT  
 H13\_Cav2 46 PEAYLRSGWNILDFLIVVGLVNAFYINAASNEID--VKILRVVRVLRPLKLVSGMPSLQIVLRSLLTAMGPLFQISLLVLFVIVIYSI  
 H1\_Cav3 268 KYAYFSSGWNRDLFIIVLTGCL EYLINEGEF-----LTIIRTVRVLRLRRAINRVPSMRLLVNLLD TLPLLGNVLMLCFIVFSIFGI  
 H2\_Cav3 255 KYAYFSSGWNRDLFIIVLTGCL EYLINEGEF-----LTIIRTVRVLRLRRAINRVPSMRLLVNLLD TLPLLGNVLMLCFIVFSIFGI  
 H13\_Cav3 158 KYAYFSNGWNRDLFIIVLTGCL EYFINDGEF-----LTIIRTVRVLRLRRAINRVPSMRLLVNLLD TLPLLGNVLMLCFIVFSIFGI

H1\_Cav1 241 IGL ELFNGLVLRAC--YHNITKK-----LI--NDPRPCAASESFSAHCK-----SGY--  
 H2\_Cav1 262 IGM EFLGK FHLGC--RDPRTGQ-----LLTQNHMSPCNPQNSSAGFRVCINT-----TQY-QV  
 H13\_Cav1 237 IGL ELFNGLVLRAC--YHNITRK-----LI--NDPRPCAASKSVE SAHCK-----PGY--  
 H1\_Cav2 161 IGM EFLGK FHLGC--RDPRTGQ-----LLTQNHMSPCNPQNSSAGFRVCINT-----TQY-QV  
 H2\_Cav2 245 IGL ELFNGLVLRAC--YHNITKK-----LI--NDPRPCAASESFSAHCK-----SGY--  
 H13\_Cav2 133 IGM EFLGR FHTGC--RDHRTGQ-----LVTQNHMSPCDNLNLSGGFNCVINT-----TQY-QF  
 H1\_Cav3 351 VGVQLWKGILRSRCTLQQNITAPPGIFLYRYLPSYEDPDYVCSLPEYNGIHHCRLDLSNLTLDLTKITNQT LASQYGDGTCTEYLQF  
 H2\_Cav3 338 VGVQLWKGILRSRCTLQQNITAPPGIFLYRYLPSYEDPDYVCSLPEYNGIHHCRLDLSNLTLDLTKITNQT LASQYGDGTCTEYLQF  
 H13\_Cav3 241 VGVQLWKGILHNRCTLQQNF SAPPGISLYKYLPSYEDPDYVCSLPE NNGINHCCQLTLSNLTQDLTKITNQLSADIYETEICSDFLQF

**DI**

H1\_Cav1 285 --VCLRNWTGPN--AGITSFDNIGLSMLTVFCITMEGWTNIMY-----SINDAVGSEWPWIYFVTLIILG SFFVLN  
 H2\_Cav1 314 FGTCDYKYDGNP--YGITGFDNIFMALLTVFCISLEGWTLNLY-----DTNNAVGSTFTWFYFLTLIIWGSFFMLN  
 H13\_Cav1 281 --ICLSNWTGPN--AGITSFDNIGLSMLTVFCITMEGWTNIMY-----YINDAVGSEWPWIYFVTLIILG SFFVLN  
 H1\_Cav2 213 FGTCDYKYDGNP--YGITGFDNIFMALLTVFCISLEGWTLNLY-----DTNNAVGSTFTWFYFLTLIIWGSFFMLN  
 H2\_Cav2 289 --VCLRNWTGPN--AGITSFDNIGLSMLTVFCITMEGWTNIMYSVRYSFDSNRNYHIDFGFNINDAVGSEWPWIYFVTLIILG SFFVLN  
 H13\_Cav2 185 FGTICNYKYDGNP--YGITGFDHIFMALLTVFCISLEGWTLNLY-----NTNNAVGSTFTWFYFLTLIIWGSFFMLN  
 H1\_Cav3 441 YDTCST--SGPNIFYDNISFDNFAMAFIAIFQVITLEAWVDIMY-----AIQDG-HASIDWIYFVTLIILG SFLFN  
 H2\_Cav3 428 YDTCST--SGPNIFYDNISFDNFAMAFIAIFQVITLEAWVDIMY-----AIQDG-HASIDWIYFVTLIILG SFLFN  
 H13\_Cav3 331 YNTCSP--SGPNIFFDNISFDNFAMAFIAIFQVITLEAWVDIMY-----AIQDG-HSSLDWIYFVTLIILG SFLFN

H1\_Cav1 354 LVLGVLSGEFSKEREKARV-----SGDFKKLR--EKRQIEED-----YRGGLE-----  
 H2\_Cav1 384 LVLGVLSGEFAKERDRVEK-----RREYKKFQ--ENRKIERD-----FLGGLE-----  
 H13\_Cav1 350 LVLGVLSGEFSKERERVRA-----NGDFKKLR--EKRQIEED-----YRGGLE-----  
 H1\_Cav2 283 LVLGVLSGEFAKERDRVEK-----RREYKKFQ--ENRKIERD-----FLGGLE-----  
 H2\_Cav2 376 LVLGVLSGEFSKEREKARV-----SGDFKKLR--EKRQIEED-----YRGGLE-----  
 H13\_Cav2 255 LVLGVLSGEFAKERDRVEK-----RREYIKLK--ENQKIERD-----FLGGLE-----  
 H1\_Cav3 510 FTLVVMATQFSETKRRVTKKARNSPSAISR RRGFSFSLSSSAESRTCYNETIRLIRRIILYIAYLIQQFYSRCLKKIWNRLYNRCLICKR

H2\_Cav3 497 FTLVVMATQFSETKRRVTKKARNSPSAIRSRRGFSSTLSSSAESRTCYNETIRLIRRIILYIAYLIQQFYSRCLKKIWNRLYNRCLTCKR  
H13\_Cav3 400 FTLVVMATQFSETKRRVTKKARSSPSAIRSHRGFSSTLSSNPESTCYNECIRLIRRLLLYLYMLMQRFYSSQCLKKMMWNHLYRQCLTCKR

H1\_Cav1 394 -WIGKAE-----DLEVDVDDLQ-----VDMEQQVAGTQNFYIIFLNLNFCWYI-TFLANSFGHCITTDINLPAEGV-  
H2\_Cav1 424 -WIGRAE-----DLILGEQRLK-----DEETAP-----HFDTRSE-IFQFAEQDQVAELAEITLSE---  
H13\_Cav1 390 -WIGKAE-----DLEVDVDDLQ-----ADMEQQVTAEG-----LRF-----  
H1\_Cav2 323 -WIGRAE-----DLILGEQRLK-----EETAP-----HFDTRSE-IFQFAEQDQVAELAEITLSE---  
H2\_Cav2 416 -WIGKAE-----DLEVDVDDLQ-----VDMEQQVAGTENFYIIFLNLNFCRYI-TFLANSFGHCITTDINLPAEGV-  
H13\_Cav2 295 -WMGRAE-----DLMLGEQRLM-----DEETTS-----LHFDARSE-IFQLTDKQDQVAELAEITLSE---  
H1\_Cav3 600 KWSSRHQRSTSMSES RVNGNAKFTSDDQRLDRLHQNFPLPDIDGSLSDGTERSTYLAFRLDNWRQRSYSQNTTTTSQIYQESALRDL-  
H2\_Cav3 587 KWSSRHQRSTSMSES RVNGNAKFTSDDQRLDRLHQNFPLPDIDGSLSDGTERSTYLAFRLDNWRQRSYSQNTTTTSQIYQESALRDL-  
H13\_Cav3 490 KWISRHQSTTANGCQANGNVK FVSDNHSFDNFHQNVFLPDVGEGLSDGTERSTYLAFRLDNCSORSYSLNRNQHR--QDRTLSEQLP

H1\_Cav1 459 -----RFDDEHGSQGSVAE-----EKKVYCFRFRHQ-----LKRWHKRSRR  
H2\_Cav1 473 -----NPINTKAYATTH-----SPRANCLHM-----VQRSEKFLRL  
H13\_Cav1 420 -----EDVEHGSQGSVAE-----EKKIYCFRFRHQ-----VKRWHKRSRR  
H1\_Cav2 372 -----NPINTKAYATTH-----SPRANCLHM-----VQRSEKFLRL  
H2\_Cav2 481 -----RFDDEHGSQGSVAE-----EKKVYCFRFRHQ-----LKRWHKRSRR  
H13\_Cav2 345 -----NPINTKAYATVMR-----SPKRSYFHM-----LRRSEKYCRL  
H1\_Cav3 688 -----GKRNGDLAINNSLYDGTDDNDGDTPHPLESNTLQLFNFQLRHQPDGVSLLTDLN-KLTNYQKLRIRRLRV  
H2\_Cav3 675 -----GKRNGDLAINNSLYDGTDDNDGDTPHPLESNTLQLFNFQLRHQPDGVSLLTDLN-KPTNYQKLRIRRLRV  
H13\_Cav3 578 GKALANPEMIRSAISGQYNGDTATVNSLYDETTDDDRDTTIHPSVNNNESPLFKLKLHNNSESKNTESSHSSNRKISNYKNFKSMIQRRI

H1\_Cav1 497 YCRLVVKSQTFYWLVLAVLLNTICLAVEHYEQQRVVTFQFSITNSVFVGLFTIEMSIKMYALGIEGYFMSLNFNRFDFLWVLSIIEEIF  
H2\_Cav1 506 AIRRVTKSRPFFWIVILLVFLNAVTIAS EHSGEPLWLKDFREATNIVFVALFTLELILKLYGLGAVFYFSSTFNCFDFAVVIASIAELIV  
H13\_Cav1 456 YCRLVVKSQTFYWLVLAVLLNTICLAVEHYEQQVVTMFLSITNSVFVGLFTIEMSIKMYALGIEGYFMSLNFNRFDFLWVLSIIEEIF  
H1\_Cav2 405 AIRRVTKSRPFFWIVILLVFLNAVTIAS EHSGEPLWLKDFREATNIVFVALFTLELILKLYGLGAVFYFSSTFNCFDFAVVIASIAELIV  
H2\_Cav2 519 YCRLVVKSQTFYWLVLAVLLNTICLAVEHYEQQRVVTFQFSITNSVFVGLFTIEMSIKMYALGIEGYFMSLNFNRFDFLWVLSIIEEIF  
H13\_Cav2 378 AIRRAVKSIAFFWIVILLVFLNAITIAS EHSGEPLWLKDFREAAANIVFVFLFTLELILKLYSLGAILYFSSTFNCFDFAVVIASIAELIV  
H1\_Cav3 763 RCCIFTKSQKFSLIVLFAILANTIVMAIEHNNQPTYQIQALEVNCNIIFTIFFTLEMVFKLFALGLLHYAKDSFNVDIAIIVIVSLVEI--  
H2\_Cav3 750 RCCIFTKSQKFSLIVLFAILANTIVMAIEHNNQPTYQIQALEVNCNIIFTIFFTLEMVFKLFALGLLHYAKDSFNVDIAIIVIVSLVEI--  
H13\_Cav3 668 CCCFKFSEGGKFSLIVLLAILANTVVMMAIEHNNQPLYQIQALEICNIIFTIFFTLEMVFKLFALGLLRYVVKDSFNVDIAIIVIVSLVEI--

H1\_Cav1 587 IAIGGAAALGLSVLRCVRLLRIFKITRYWNTLRNLVASLLNSMRSIASLLLLFLFVLFIFALLGMQIFGGRFNFNK-----SIPRSNF  
H2\_Cav1 596 RSV--GGPKLGISVFR CIRLLRIF EITKHWSLSNLVASLISSLR SILSLLFLIGLCIMVFALLGMQIFGGRFNFAE-----GVPRSNF  
H13\_Cav1 546 IAIGGAAALGLSVLRCVRLLRIFKITRYWNTLRNLVASLLNSMRSIASLLLLFLFVLFIFALLGMQIFGGRFNFNK-----SIPRSNF  
H1\_Cav2 495 RSV--GGPKLGISVFR CIRLLRIF EITKHWSLSNLVASLISSLR SILSLLFLIGLCIMVFALLGMQIFGGRFNFAE-----GVPRSNF  
H2\_Cav2 609 IAIGGAAALGLSVLRCVRLLRIFKITRYWNTLRNLVASLLNSMRSIASLLLLFLFVLFIFALLGMQIFGGRFNFNK-----SIPRSNF  
H13\_Cav2 468 RSV--GGPKLGISVFR CIRLLRIF EITKHWSLSNLVASLISSLR SILSLLFLIGLCIMVFALLGMQIFGGRFNFAQ-----GVPRSNF  
H1\_Cav3 850 -----ATDGKGLSVLRSFRLLRIFKIVRFLPTLQRQMMVMAQTFDNVVIFLGLLFLFMFTFSILGMHLFGNRFCLARVKDGPVVC SRKNF  
H2\_Cav3 837 -----ATDGKGLSVLRSFRLLRIFKIVRFLPTLQRQMMVMAQTFDNVVIFLGLLFLFMFTFSILGMHLFGNRFCLARVKDGPVVC SRKNF  
H13\_Cav3 755 -----ATDGKGLSVLRSFRLLRIFKIVRFLPTLQRQMMVMAQTFDNVIFLGLLFLFMFTFSILGMHLFGNRFCLRRVNPNGPIACSRKNF

**DII**

H1\_Cav1 671 DSWFQSLLT VFCILTGEDWNEIMYNGIKALDGDIDRFGLAV-FYFIILVVGN YILLNVFLAIVDNLANAESL TE-----INERRNA  
H2\_Cav1 678 NDFGHAVLSVFCVLSGEDWNEIMYNGIRAYRSSGEFVS YAVSLYFVVLVCLGNYTLLNVFLAIVDNLTKAQEISKDEDEEIMLQKRLSI  
H13\_Cav1 630 DSWFQSLLT VFCILTGEDWNEIMYNGIKALDGDIDKFGILAV-FYFIILVVGN YILLNVFLAIVDNLANAESL TE-----INERRNA  
H1\_Cav2 577 NDFGHAVLSVFCVLSGEDWNEIMYNGIRAYRSSGEFVS YAVSLYFVVLVCLGNYTLLNVFLAIVDNLTKAQEISKDEDEEIMLQKRLSI  
H2\_Cav2 693 DSWFQSLLT VFCILTGEDWNEIMYNGIKALDGDIDRFGLAV-FYFIILVVGN YILLNVFLAIVDNLANAESL TE-----INERRNA  
H13\_Cav2 550 NDFGHAVLSVFCVLSGEDWNEIMYNGIRAYRSSGEFVS YVSVSLYFVVLVCLGNYTLLNVFLAIVDNLTKAQEISKDENEEIQLOKRLSI  
H1\_Cav3 936 DSLLWAFVTVFCILTQEDWNVMYDGMLA---RGKWAA---IYFALVTLGNYVLLNLLVAILVNGFQEQEKDEKNRKKDLTAKMGRAL  
H2\_Cav3 923 DSLLWAFVTVFCILTQEDWNVMYDGMLA---RGKWAA---IYFALVTLGNYVLLNLLVAILVNGFQEQEKDEKNRKKDLTAKMGRAL  
H13\_Cav3 841 DTLLWAFVTVFCILTQEDWNVMYDGMLA---RGKWAA---IYFALVTLGNYVLLNLLVAILVNGFQEQEKDEKNRKKDLTAKMGRAL

H1\_Cav1 753 KRK-----MAKEQRLQKLQTP-----VQSLRYGNISIG-----SAVENVSSEENPDDIQKLSKVMYEG--DLENDFSNP  
H2\_Cav1 768 KRK-NYSKDSGCQSALGDGQYGTDDR-----RESIRTL SI-----ASTDGRSNQRSRRTLRIIMPSSP---SINDNAFP  
H13\_Cav1 712 KRK-----MAKEQRLQKLQTP-----VQSLRYGNIGIG-----SAIENVSSSEENSDDIQKLSKVMYEG--DLENDFSNP  
H1\_Cav2 667 KRK-NYSKDSGCQSALGDGQYGTDDR-----RESIRTL SI-----ASTDGRSNQRSRRTLRIIMPSSP---SINDNAFP  
H2\_Cav2 775 KRK-----MAKEQRLQKLQTP-----VQSLRYGNISIG-----SAVENVSSEENPDDIQKLSKVMYEG--DLENDFSNP  
H13\_Cav2 640 KRK-NYSKDSGCPSAMTDGQYDIDDR-----IDSIR TSSL-----TSVDRRSVPRSTRITLRIRRISSQ---SIDDDDTLP  
H1\_Cav3 1019 KHYCDSITDVRSEDQPANRQVNAPDEN-SGYQVGKDLQGIPTTQIVEGYGKSTPICDHQSCAMESSALSQSNKREEDG--DSQTEFYIR  
H2\_Cav3 1006 KHYCDSITDVRSEDQPANRQVNAPDEN-SGYQVGKDLQGIPTTQIVEGYGKSTPICDHQSCAMESSALNQS NKREEDG--DSQTEFYIR  
H13\_Cav3 924 KHYCDSITDVRSDDQPTDRQFSSQGNDDGYQIGKDLHG VATTRENEGFYGKTTTICDHQIPHVELSTTNQLNKKEEEEVDNPDFYIR

H1\_Cav1 815 VYKMAVFSETESELSRV---EELDSN-----SDCTEEPARPRLDASFRT---NTTQINWKKI-----PDRVI-----VP  
H2\_Cav1 836 EFCNDNNTSQOETRI DEI---NDIENP-----GNENDEEENP---FRQKRLGSTKMNFO DAHQE---PELIIGKEIFAQNPV  
H13\_Cav1 774 VYKMAVFNESEAEISHT---EELESS-----SDYIEEPAKPRLDASFRT---GNTQINWKKI-----PDRVV-----VP  
H1\_Cav2 735 EFCNDNNTSQOETRI DEI---NDIENP-----GNENDEEENP---FRQKRLGSTKMNFO DAHQE---PELIIGKEIFAQNPV

H2\_Cav2 837 VYKMAVFSETESELSRV---EELDSN-----SDCTEEPARPRLDASFRT---NTTQINWKKI-----PDRVI-----V  
H13\_Cav2 708 TTSNNAIEHSVSRLLDDI---EFDPN-----VDNENDNEEPN---FRQKRIGSMKMNQNAHEQ---PELIIGREAFQAVNP  
H1\_Cav3 1106 TFQSSSLSCNHNQEEEEQQQLPNLVDPNEVQIFPCRVPIGPRDPPQSKNKFAKLRRLMPWKSQKQWQAIRRKYWICPEEVNPNW---LT  
H2\_Cav3 1093 TFQSSSLSCNHNQEEEEQQQLPNLVDPNEVQIFPCRVPIGPRDPPQSKNKFAKLRRLMPWKSQKQWQAIRRKYWICPEEVNPNW---LT  
H13\_Cav3 1014 TFQISSKPYHCNKRSDN---DLIEPNNIQIFPYRVPIGPRDPPQKENKLAKLRRLMPQWSKKKQWQAIRRKYWICPEEVNPNW---LT

H1\_Cav1 873 IPKATSMFLFKSTNRFRCIKFDFVTNL-YFSNIILIIIISSITLAAEDP-LGKDKIRNQVLSYCDKTFTAIFCVAAMKMIAFGVIMHE  
H2\_Cav1 903 ILQVNSLFI FSPQNRFR-RFCHYIVHLRHFENFMIAAIISSGLLAVEDP-MNEDPVLNLYVLRIFDSIFTGIFLIELILKVVDFGFIHR  
H13\_Cav1 832 IPKATSMFIFTSTNRFRCIKFDFVTNL-YFSNIILIIIISSITLAAEDP-LGYDKTRNQVLSICDKTFTAIFCVAAMKMIAFGVILHE  
H1\_Cav2 802 ILQVNSLFI FSPQNRFR-RFCHYIVHLRHFENFMIAAIISSGLLAVEDP-MNEDPVLNLYVLRIFDSIFTGIFLIELILKVVDFGFIHR  
H2\_Cav2 895 IPKATSMFLFKSTNRFRCIKFDFVTNL-YFSNIILIIIISSITLAAEDP-LGKDKIRNQVLSYCDKTFTAIFCVAAMKMIAFGVIMHE  
H13\_Cav2 775 ILEVNLSLFI FSPQNRFR-RFCHYIVHLRHFENFMIAAIISSGLLAVEDP-MNEESDLNLYVLRIFDSIFTGIFLIELILKVIDFGFIHH  
H1\_Cav3 1192 RHRNHSLLLPKENRFR-KWCKNVVKNPYFDRILLVVIFNCVTLAMERPGIDPNSMERHFLNLMVIIFFTFITSEMIIKVLALGLVTGD  
H2\_Cav3 1179 RHRNHSLLLPKENRFR-KWCKNVVKNPYFDRILLVVIFNCVTLAMERPGIDPNSMERHFLNLMVIIFFTFITSEMIIKVLALGLVTGD  
H13\_Cav3 1096 RHRNHSLLLMLSKDNRYR-KWCRNIVKHPYFDRVILLFIFNCVTLAMERPGIIPNSTERQFLNLMIIFFTFITSEMIIKVLALGLVTGD

H1\_Cav1 961 GSYFRNIFNILDMIVIAVSIADYT---IAEEN-----LKQLKVLRLVLRPLRALNRARGLKHVVQCFVAIKTIWSIMLVTLVLFMF  
H2\_Cav1 991 GSYCRNLWNILDMIVVVTAVTSFIYFIEIGVENQSNRNISAIAKAIKTRVLRPLKAIKRTAKKLLACFQCMVNSLKNVNLVCIWMLLFLFMF  
H13\_Cav1 920 GSYFRNVFNILDMIVIAVSIADYS---IGEDN-----LKQLKVLRLVLRPLRALNRARGLKHVVQCFVAIKTIWSIMLVTLVLFMF  
H1\_Cav2 890 GSYCRNLWNILDMIVVVTAVTSFIYFIEIGVENQSNRNISAIAKAIKTRVLRPLKAIKRTAKKLLACFQCMVNSLKNVNLVCIWMLLFLFMF  
H2\_Cav2 983 GSYFRNIFNILDMIVIAVSIADYT---IAEEN-----LKQLKVLRLVLRPLRALNRARGLKHVVQCFVAIKTIWSIMLVTLVLFMF  
H13\_Cav2 863 GSYCRNPWNILDMVVVVTAVTSFIYFIEIGTENQSNRNISAIAKAIKTRVLRPLKAIKRTAKKLLACFQCMVNSLKNVNLVCIWMLLFLFMF  
H1\_Cav3 1281 KSYLRNGWVVDLLLVIIISWVDLI---ITYTGASNILGVLRLRIGFRTLRLPLRVINRAPGLKLVVQTLFSSLKAIGNIVII CVAFFVIF  
H2\_Cav3 1268 KSYLRNGWVVDLLLVIIISWVDLI---ITYTGASNILGVLRLRIGFRTLRLPLRVINRAPGLKLVVQTLFSSLKAIGNIVII CVAFFVIF  
H13\_Cav3 1185 KSYLRSGWNILDLLLVIIISWVDLI---ITYSGGASNILGVLRLRIGFRTLRLPLRVINRAPGLKLVVQTLFSSLKAIGNIVII CVAFFVIF

H1\_Cav1 1043 AVIGVQLFKGRFYFCTDASKMDN-STCKGSYNYPTGDLNLYLQCSVVYLFITYFYVIFGDCQCTYLCNFIEVLSNFSLYFEVEPRWKES  
H2\_Cav1 1081 AVIGVQLFKGKFHYCTDQTKHTK-SQCRGNYHYTDGHVYVNV-----EVLERRWEQH  
H13\_Cav1 1002 AVIGVQLFKGRFYFCTDASKVDN-TTCKGYYNYPTGDLNLYL-----QVEQRTWKES  
H1\_Cav2 980 AVIGVQLFKGKFHYCTDQTKHTK-SQCRGNYHYTDGHVYVNV-----EVLERRWEQH  
H2\_Cav2 1065 AVIGVQLFKGRFYFCTDASKMDN-STCKGSYNYPTGDLNLYL-----QVEPRWKES  
H13\_Cav2 953 AVIGVQLFKGKFHYCTDQTKHTK-SQCRGYYHYVSGGHVYVNV-----EIFERRWEQH  
H1\_Cav3 1368 GILGVQLFSGKFYCKATDDVENKTQCV EQY-----GLSEWVNR  
H2\_Cav3 1355 GILGVQLFSGKFYCKATDDVENKTQCV EQY-----GLSEWVNR  
H13\_Cav3 1272 GILGVQLFSGKFYCKASDDVENKTQCV EQY-----GQSEWVNR

**DIII**

H1\_Cav1 1132 SFNFDNVPNAMMTLFTITTFEGWPSILYRAIDATEAGRGP SRNHQPLVAIVFYIYIIIVAF FVMNIFVGFVIVTF-----QTE  
H2\_Cav1 1132 PYNFDDLPRAMLTFTMSTAEG-----PMRDYNLAVALYFCIYIVVFPFFFINIFVALIIVTF-----QEE  
H13\_Cav1 1053 SFNFDNVPNAMMTLFTITTFEGWPSILYRAIDATEPGRGP SRNHQPLVAIVFYIYIIIVAF FVMNIFVGFVIVTF-----QTE  
H1\_Cav2 1031 PYNFDDLPRAMLTFTMSTAEG-----PMRDYNLAVALYFCIYIVVFPFFFINIFVALIIVTF-----QEE  
H2\_Cav2 1116 SFNFDNVPNAMMTLFTITTFEGWPSILYRAIDATEAGRGP SRNHQPLVAIVFYIYIIIVAF FVMNIFVGFVIVTF-----QTE  
H13\_Cav2 1004 PYNFDDLPRAMLTFTMSTAEGWPRILYWSIDATNEGPIRDPYLAVALYFCIYIVVFPFFFINIFVALIIVTF-----QEE  
H1\_Cav3 1407 PYNFDDLVNASLSLFLVSSKDGWMDITYHGIDARGVDLQPKKNHNVVLLYFISFLLL VGFFVLMNMFVGVVVFHFKQEEHERRQREKK  
H2\_Cav3 1394 PYNFDDLVNASLSLFLVSSKDGWMDITYHGIDARGVDLQPKKNHNVVLLYFISFLLL VGFFVLMNMFVGVVVFHFKQEEHERRQREKK  
H13\_Cav3 1311 PYNFDDLVNASLSLFLVSSKDGWMDITYHGIDARGVDLQPKKNHNVVLLYFISFLLL VGFFVLMNMFVGVVVFHFKQEEHERRLREKK

H1\_Cav1 1210 GEQEYRNCPLDKNQRNCIEFALKTKPKQR---YIP--KNKLQLA--VWKLATSLGFEYTFGLITLNTMTLMMQVYRPSRVYNDVLEYLN  
H2\_Cav1 1193 GDKDIANYQLNRNRQDCIEFALNAKPIHR---HMP--KDKKSYAYKVVRIVSTPFEFIMVLIIVNTIVLMMENYNGQSKDYKDMQLQIIN  
H13\_Cav1 1131 GEQEYRNCPLDKNQRNCIEFALKTKPKQR---YIP--KNKLQLT--VWKLATSLGFEYTFGLITLNTMTLMMQVYRPSKIYNDVLEYLN  
H1\_Cav2 1092 GDKDIANYQLNRNRQDCIEFALNAKPIHR---HMP--KDKKSYAYKVVRIVSTPFEFIMVLIIVNTIVLMMENYNGQSKDYKDMQLQIIN  
H2\_Cav2 1194 GEQEYRNCPLDKNQRNCIEFALKTKPKQR---YIP--KNKLQLA--VWKLATSLGFEYTFGLITLNTMTLMMQVYRPSRVYNDVLEYLN  
H13\_Cav2 1082 GDKDITNYQLNRNRQDCIEFALNAKPIHR---HMP--KDKKSYAYKVVRIVSTPFEFIMVLIIVNTIVLMMENYDQSKKEYKEMQLQIIN  
H1\_Cav3 1497 RNRKLQRAKKNQKNAKAKVIKKKVKKKNHIPPVEDYPAWRRLKLYFCVHRYFDITITIVIAVNIIFMATEHYKMSQAWEEVHKYAN  
H2\_Cav3 1484 RNRKLQRAKKNQKNAKAKVIKKKVKKKNHIPPVEDYPAWRRLKLYFCVHRYFDITITIVIAVNIIFMATEHYKMSQAWEEVHKYAN  
H13\_Cav3 1401 RNRKLQRAKKNQKANPKKLTIKKSKDKKNDLPIPENYPKWRRLKLYQICVHRYFDITITIVISLNVVFMATEHYNMSLVWEDVHKYAN

H1\_Cav1 1293 IGFTVLFGLEAILKIVAFKPNQYFRDKWNVDFVIVVGSIIDIVISEIYKDSNVTVDFSVNFFRLFRAMRLVLLSRGGMRTLWTFM  
H2\_Cav1 1278 ITVTILFTVEMLLKVIASFPRNFIKWNIFDLIVVIGSWTDIIIT---YASINGTSTVSISFFRLFRAGRLIKLLRKGTYIRVLLWTFM  
H13\_Cav1 1214 IGFTVLFGLEAVLKIVAFKPNQYFRDKWNVDFVIVVGSIIDIVISEVYKNGDVTVD FSVNFFRLFRAMRLVLLSRGGMRTLWTFM  
H1\_Cav2 1177 ITVTILFTVEMLLKVIASFPRNFIKWNIFDLIVVIGSWTDIIIT---YASINGTSTVSISFFRLFRAGRLIKLLRKGTYIRVLLWTFM  
H2\_Cav2 1277 IGFTVLFGLEAILKIVAFKPNQYFRDKWNVDFVIVVGSIIDIVISEIYKDSNVTVDFSVNFFRLFRAMRLVLLSRGGMRTLWTFM  
H13\_Cav2 1167 ITVTILFTVEMLLKVIASFPRNFIKWNIFDLIVVIGSWTDIIIT---YASTNGTSTVSISFFRLFRAGRLIKLLRKGTYIRVLLWTFM  
H1\_Cav3 1587 YFFT VVFTLEAVIHLVAFGVVYFRDRWNIFDLLIVILSWTGIIIESQVLSNPTINPTI-IRVMRLLRIVRILKLIKAAKGI RSLRTIM  
H2\_Cav3 1574 YFFT VVFTLEAVIHLVAFGVVYFRDRWNIFDLLIVILSWTGIIIESQVLSNPTINPTI-IRVMRLLRIVRILKLIKAAKGI RSLRTIM  
H13\_Cav3 1491 YFFT VIFTLEAAIHLVAFGVVYFRDRWNIFDLLIVILCW TGIIIESQVISNPTINPTI-MRVMRLLRIVRILKLIKAAKGI RALLRTIM

**DIV**

H1\_Cav1 1383 KSFQALPYVGLLIVFVFFIYAVIGMQLFGTVLTS---PGSAITEYNNFHSFFSSVLVLFRCATGENWQLITLSCTWRTGNGCSEN---SC  
 H2\_Cav1 1365 KSFQALPYVGLLIGMLFFISAVLGMQLFGQIQSD---PTTAIFRYNNFQFTFGALIVLVRCTSTGENWPEVMLACL-PGRAKCSKFP-DC  
 H13\_Cav1 1304 KSFQALPYVGLLIVFVFFIYAVIGMQLFGTIVAS---SGSAITEYNNFHSFFSSVLVLFRCATGENWQSIMLSCA-VKKCOPSGN---SC  
 H1\_Cav2 1264 KSFQALPYVGLLIGMLFFISAVLGMQLFGQIQSD---PTTAIFRYNNFQFTFGALIVLVRCTSTGENWPEVMLACL-PGRAKCSKFP-DC  
 H2\_Cav2 1367 KSFQALPYVGLLIVFVFFIYAVIGMQLFGTVLTS---PGSAITEYNNFHSFFSSVLVLFRCATGENWQLITLSCTWRTGNGCSEN---SC  
 H13\_Cav2 1254 KSFQALPYVGLLIGMLFFISAVLGMQLFGQIQSD---PTTAIFRYNNFQFTFGALIVLVRCTSTGENWPEVMLACL-PGQAKCSAKFP-DC  
 H1\_Cav3 1676 NAMPQVVNLGMLFLLFFIFAALGIELFGRLCDTTDNPENGLSQHANFKTFGMAMLTFLRIATGDNWQGILQDTL-RENCDRSENCOQNC  
 H2\_Cav3 1663 NAMPQVVNLGMLFLLFFIFAALGIELFGRLCDTTDNPENGLSQHANFKTFGMAMLTFLRIATGDNWQGILQDTL-RENCDRSENCOQNC  
 H13\_Cav3 1580 NAMPQVINLGMFLFFLFFIFAALGIELFGRLCDTESNPENGLSQHANFKTFGMAMLTFLRIATGDNWQGILKDTL-RENCDRSINCQRNC  
  
 H1\_Cav1 1467 GSN--ISYLYFSSFYVLSFLVSSFWQRLDLRIFDVI----DII-----DKIGRIKFDMMVKLLRRISPLPLGLKLC  
 H2\_Cav1 1450 GSY--VAYPFVIVFVLSTFMLNLFVAVIMDNFKYLTRDKSILGPYHLDFHFLTWAEFDPASGRIKHQELCTMLCRIPPLPGFGSSCP  
 H13\_Cav1 1387 GSN--ITYLYFSSFYVLSFLVINLFVAVIMDNFDYLTRDFSILGPHHLDLFEVQAWSSFDPEATGRIKFDMMVKLLRRISPLPLGLKLC  
 H1\_Cav2 1349 GSY--VAYPFVIVFVLSTFMLNLFVAVIMDNFKYLTRDKSILGPYHLDFHFLTWAEFDPASGRIKHQELCTMLCRIPPLPGFGSSCP  
 H2\_Cav2 1451 GSN--ISYLYFSSFYVLSFLVSSFWQRLDLRIFDVI----DII-----DKIGRIKFDMMVKLLRRISPLPLGLKLC  
 H13\_Cav2 1339 GSY--VAYPFVIVFVLSTFMLNLFVAVIMDNFKYLTRDKSILGPYHLDFHFLTWAEFDPASGRIKHQELCTMLCRIPPLPGFGSSCP  
 H1\_Cav3 1765 CSNPILSSLFFVIFVLAQAQYVLTNVAVALMKHL-----EESDEKENNDLPGSSSAKESQGLDDGMT  
 H2\_Cav3 1752 CSNPILSSLFFVIFVLAQAQYVLTNVAVALMKHL-----EESDEKENNDLPGSSSAKESQGLDDGMT  
 H13\_Cav3 1669 CSNPILSSLFFVIFVLAQAQYVLTNVAVALMRHL-----EESDEKENNDLPGSSSAKESQGLDDGIT  
  
 H1\_Cav1 1534 DSTAY--RNLMGHMPLGTDNNVKFNATIFALVRKQKIKLDGNLDRDRLELNIIKRI--WPRTP-NKLLDEIVP----LSLKNDITI  
 H2\_Cav1 1538 MRTAY--RRLMKLGIPINGDNTIRFKATLFAIRTSLSIKVREDOHEADAELEQIIRKI--WPOVT-SRTLERILPQ---VEHGARHLTI  
 H13\_Cav1 1475 DSTAY--RNLMGHMPLGTDNNVKFNATIFALVRKQKIKLDGNLDRDRLELNIIKRI--WPRTP-NKLLDEIVP----LSLKNDITI  
 H1\_Cav2 1437 MRTAY--RRLMKLGIPINGDNTIRFKATLFAIRTSLSIKVREDOHEADAELEQIIRKI--WPOVT-SRTLERILPQ---VEHGARHLTI  
 H2\_Cav2 1518 DSTAY--RNLMGHMPLGTDNNVKFNATIFALVRKQKIKLDGNLDRDRLELNIIKRI--WPRTP-NKLLDEIVP----LSLKNDITI  
 H13\_Cav2 1427 TRMAY--RRLMKLGIPINGDNTIRFKATLFAIRTSLEIKVREDOHEADHELEQVIKRI--WPOVT-GRTLERILPQ---VEHGARHLTI  
 H1\_Cav3 1828 ESNNYPPGLTDIHLSSNHKN-----LDKIGEDY----TTHQFDQNH TLKSPLPYQNKYARITVSR SITAIVPQKSTLDQAENEVVM  
 H2\_Cav3 1815 ESNNYPPGLTDIHLSSNHKN-----LDKIGEDY----TTHQFDQNH TLKSPLPYQNKYARITVSR SITAIVPQKSTLDQAENEVVM  
 H13\_Cav3 1732 ESNNYPPASSTDIHVPPNKN-----VSGIGEDLAIYPTKHSYAN--FSSPISKQNKYARITASRSINLIANKPLDQGECEFLV  
  
 H1\_Cav1 1615 AKIYALLIIRNFIRRRRERQAKORREQTSNEIQVGIRVLQDLGQTNLRRASGELRSDDDEE-EEEDIKTHAKSQFTLRTFNQSLYRFGSSL  
 H2\_Cav1 1620 GKIYAALIIEYKRYKKQQLREEDEQVRMRTKSLFHRFIDVVRTPIRTGAHKDLEIPTEYPTKQQRSKHFHSHFSKIPRPSLRSRKRD  
 H13\_Cav1 1556 AKIYALLIIRNFIRRRRERQAKORREQTSNEIQVGIRVLQDLGQTNLRRASGELRSDDDEDEEEFERTHANSQYTLKMFNQSYRFGSSL  
 H1\_Cav2 1519 GKIYAALIIEYKRYKKQQLREEDEQVRMRTKSLFHRFIDVVRTPIRTGAHKDLEIPTEYPTKQQRSKHFHSHFSKIPRPSLRSRKRD  
 H2\_Cav2 1599 AKIYALLIIRNFIRRRRERQAKORREQTSNEIQVGIRVLQDLGQTNLRRASGELRSDDDEE-EEEDIKTHAKSQFTLRTFNQSLYRFGSSL  
 H13\_Cav2 1509 GKIYAAMIIEYKRYKKQQLREEDEQVIRRTKSLFHRFIEAVRTPIRTNTHKESDAGIDSHQKHQSKHFHSHFSKILRPSLRSRKRD  
 H1\_Cav3 1906 QDKFQ-----VHDIRTKSSYPLDDHDDVEDQMELTASIHCENRKLHR-QGNSDDGHPYLQHSPLFRHQSYESNCHHGSI-----QS  
 H2\_Cav3 1893 QDKFQ-----VHDIRTKLSYPLDDHDDVEDQMELTASIHCENRKLHR-QGNSDDGHPYLQHSPLFRHQSYESNCHHGSI-----QS  
 H13\_Cav3 1812 EDKFQ-----IHVVRNKSSYISSDESDSNETA--PAMLACGDNQGIR-YRQERKDHDTKCVLSPVPDRHQSQSQNSQRRSI-----QN  
  
 H1\_Cav1 1704 KINSSDLASQKSS-SIDSIKNKYCKA--PIVYSSQNTHFS----EAETPNSVDNRYEVST----SKDMRHE TSQQNKRL-----  
 H2\_Cav1 1710 KMKSKHAVSAKPSD-SSVSGENNRSRSLPGLIFE SIDDNAGKVQDINLYLANRSSKETDFCIAEVHHEDEGYLQSEYRNNS-----  
 H13\_Cav1 1646 KINSSDLTSQKSS-SIDSIKNKYCKA--GITQSSHTLNRDHFSVNAQASNSVNTCEVTAV---SRNTRCVIGQQGSGV-----  
 H1\_Cav2 1609 KMKSKHAVSAKPSD-SSVSGENNRSRSLPGLIFE SIDDNAGKVQDINLYLANRSSKETDFCIAEVHHEDEDEGYLQSEYRNNTDERNQTL  
 H2\_Cav2 1688 KINSSDLASQKSS-SIDSIKNKYCKA--PIVYSSQNTHFS----EAETPNSVDNRYEVST----SKDMRHE TSQQNKRL-----  
 H13\_Cav2 1599 KMKPKKSVAKPSD-SSASGENNRSKSLPGLVFE SIDDNTGNVDFGPYPNTRIGKESDFCVAEVHYGNNEDESSFEYRONG-ERSQTL  
 H1\_Cav3 1983 DFNSFNSLSSDTSSFSENPLKSNNSKDNPTRDRITYADDLNRILSKKRKSLKR-SNSWDFSFT----SEFSNHRRYPCKSKK-----  
 H2\_Cav3 1970 DFNSFNSLSSDTSSFSENPLKSNNSKDNPTRDRITYADDLNRILSKKRKSLKR-SNSWDFSFT----SEFSNHRRYPCKSKK-----  
 H13\_Cav3 1887 DSNYCNLQPDTSLLSSNQLQSDTCHNPDRIRLNTADYPHRFLSAKVNLPKR-SSSWNYSST----SSAESYQH HQFSKKN-----  
  
 H1\_Cav1 1772 -----ELQFTTDSKEGTSRLNE-----  
 H2\_Cav1 1790 -----ELQFTTDSKEGTSRLNE-----  
 H13\_Cav1 1720 -----QSFANSRECPSCLN-----  
 H1\_Cav2 1698 PLLSNRRQGSRFNFIYNTSGSNLQPSPLTFEPGRPLHRMIRTPPIGTPKSPQKISIVQSTYNSANNSPPTIHDRYH-SGSANNSNNGGS  
 H2\_Cav2 1756 -----ELQFTTDSKEGTSRLNE-----  
 H13\_Cav2 1687 PQLAHRQGSRFNFIHNTSGANLQPSPLTFEPGRPLHRMIRTPPIGTPKSPQKISIVQSTYNSANNSPPTIRDHYNGTANLNNNHTGNNT  
 H1\_Cav3 2059 -----TIYPFHYPSTKLSKD-----  
 H2\_Cav3 2046 -----TIYPFHYPSTKLSKD-----  
 H13\_Cav3 1963 -----FYPFYLSGKSTKD-----  
  
 H1\_Cav1 1789 -----GLRNADIPDSGYT-----KDKDGGIVN  
 H2\_Cav1 1790 -----KKIDSNN  
 H13\_Cav1 1735 -----GTLKVDIPDTGYT-----KDKDGGIVN  
 H1\_Cav2 1787 YSPTRNQHQFKLKLQHEDSNDSCTGSLGLRLOKSGSSCGSTDDDLNDLNDAIQFNNLQD LLPVDIPDVTISISDSYPYGSTDGLDKQYASDL  
 H2\_Cav2 1773 -----GLRNADIPDSGYT-----KDKDGGIVN  
 H13\_Cav2 1777 LSPTRGNHSSKLLQHEDSNDSITGLPGLRLOKSTSSCGSTDDEVELSDAIPFNNLHELPLDIPDVTISIPDSYPYGSTDGLDKRSPSDN  
 H1\_Cav3 2074 -----DSTIPDQPMVIA-----KEKKVTLPR  
 H2\_Cav3 2061 -----DSTISDQPMVIA-----KEKKVTLPR

H13\_Cav3 1977 -----EYKDSNQPHLIVA-----VNIIYITY  
 H1\_Cav1 1812 KLYGIDIRIQGHQ-----  
 H2\_Cav1 1797 -----  
 H13\_Cav1 1758 KLYGIDITNTGPS-----  
 H1\_Cav2 1877 NGATEYKR LPSNAFWSSVQRNYNKKVLSKSSNNSLNNCNGASNLSQDYSNNHTNSTGNNASSRGTNNLHHQRHFSNNH-----STLNHS  
 H2\_Cav2 1796 KLYGIDITNTGSS-----  
 H13\_Cav2 1867 NSFSAYPRLPSPS-----GSNLSPLHQPGDKFISQYFNNTSMNGNTQEQYQSNHKNHVSH TSSFMSNNNHRSLPFSNRNGA  
 H1\_Cav3 2097 KMIQTLV-----  
 H2\_Cav3 2084 KMIQTLV-----  
 H13\_Cav3 1999 KIFGKYRQLLED-----  
  
 H1\_Cav1 1825 GM-----GPV-----  
 H2\_Cav1 1797 -----  
 H13\_Cav1 1771 GM-----SSGTIDAGKIYRRSSF E RVSVV---  
 H1\_Cav2 1961 GHQSDY--YKNDYNGIRNDDYDELELNRLMLSNFSFNSDDLTNISKCTAV---  
 H2\_Cav2 1809 GNGSGVIDSGSMPYGPYGD TLTKVSDRINRSTLTGKIHYRKSSF E RVSVV---  
 H13\_Cav2 1942 AHQSNDPYRNNYYE NYDDDRDSTEFNK NYALS NFSFSQDDVANASKCTAV---  
 H1\_Cav3 2103 -----  
 H2\_Cav3 2090 -----  
 H13\_Cav3 2011 -----TNFGQLEKNLSSKLTIWCP S LLELNNAQFYRIISWL