

Supplementary File 1: Phylogenetic reconstruction of odorant receptors

We used the alignment of the OR gene family published by Poivet et al (2013; their Figure 3), which is based on the OR gene sequences found in a number of moth species and the butterfly species *Danaus plexippus* and *Heliconius melpomene*. We completed Poivet et al's OR amino acid fasta file with either all 16 Ban_OR unigenes identified in the transcriptome, or the 7 Ban_OR unigenes most expressed in our transcriptome. We aligned the additional OR sequences with Mafft V7 (website: <http://mafft.cbrc.jp/alignment/server/>) using G-INS-i reconstruction method, leave gappy regions, gap opening penalty of 3.0 and offset value of 1.0, which gave the same OR tree as in Poivet et al (2013). Phylogenetic reconstructions were carried using maximum likelihood using the "LG+I+G" substitution model and 100 BT. Rate heterogeneity was set at four categories, and the gamma distribution parameter and the proportion of invariable sites were estimated from the data set. Tree reconstruction was performed using PhyML 3.0 (ref), with SPR (Subtree Pruning and Regrafting) method for tree topology improvement. Given that the phylogenetic reconstructions using all 16 Bany-OR unigenes positioned all *B. anynana* OR sequences out of the "pheromone receptor subclade" found for moths (Poivet et al 2013), and that most weakly expressed OR unigenes displayed long branches in the phylogenetic tree, we finalized the phylogenetic reconstructions using the 7 most expressed OR unigenes only. Images were created using Evolview (website: <http://www.evolgenius.info/evolview/>).

Fasta OR aligned amino acid sequences used for the final phylogenetic reconstruction:

>DpleOR1

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-----MGLLFADAKDLVGIKKTSDINYMRLVCLKGLKVIFCYPHIEGELQSK--
YVILGKIWVTLLSIATLSGQILYLY--HKTGK-IIFLKLGHYITTAMNSVV----
SFRIMRTFLKSYNEIMNDFMIKIHIFNHKD---RSEYALKIQIIHKASH-
FVTVFLNSGMIFAIITFNIAPLYNNYRSGAFNDYKNGNASFEHSVFF-YIPEEY-
ENNNIYYTAIFISNWYVSLMCAMLFIQFDLILCLMIINLWGRFKILHSLETFGESF----
DFETFNNTTQEGFTVNQSTEVNKKLEDIITHHQQVIIKFTSKLSSTFGPVLLHYYIFHIVTLCI
LLECSKM--DPDALTRYGILTFLVVEQLIQVSVAFEILETMSSKLEKAVYYLPWE--
CMNVSQRRVVLIMLMQAQRGGTVKALDMVNVGVQTMQLQLRTSFSYFIMLQAL-
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>DpleOR2

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-----MGLLFADAKDLVGIKKTSDINYMRLVCLKGLKVIFCYPHIEGELQSK--
YVILGKIWVTLLSIATLSGQILYLY--HKTGK-IIFLKLGHYITTAMNSVV----
SFRIMRTFLKSYNEIMNDFMIKIHIFNHKD---RSEYALKIQIIHKASH-
FVTVFLNSGMIFAIITFNIAPLYNNYRSGAFNDYKNGNASFEHSVFF-YIPEEY-
ENNNIYYTAIFISNWYVSLMCAMLFIQFDLILCLMIINLWGRFKILHSLETFGESF----
DFETFNNTTQEGFTVNQSTEVNKKLEDIITHHQQVIIKFTSKLSSTFGPVLLHYYIFHIVTLCI
LLECSKM--DPDALTRYGILTFLVVEQLIQVSVAFEILETMSSKLEKAVYYLPWE--
CMNVSQRRVVLIMLMQAQRGGTVKALDMVNVGVQTMQLQLRTSFSYFIMLQALE
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>HmelOR1

-----GIEKTQDIKYMRILKRRLQILHAWPSKAIGEE----
YCLYGRIYVFLVFALSLPPGFLYLKNNLFVID---FMELAHTYVTVSMSTMA----
TFRVMLVFLKIYKNLIADFNVCIHFLFNHKD---HSEYAMSTHLLVHKISH-
FFTUYIDILLVVGLLLFNFTPLWKNIYSDAFTNYKTGNSSLELSIYY-QLPFDY-
KHNIYWYLVMFIFDWYMSILCSFCFCYIDLLISLMVFHIWGHMRIIINDMVTFRPN----
KVTIDANIQDEFFSDEEGRLVARDIGNIVQQHNKIAEFSARLISTFGPILLIYYLFHFVSGCV
LLLVCQK--NAEAIMLYGPLTFVVFQQIIQISIVFELLATVSDQYSNAVYSLPWE--
CMKVGDGRKKVFIMLINSQRPLPVKAMNIVNVGVQTMAAILKTSVSYFIMLNTFA

>HmelOR9

MDLQYMKRIKFYLNWLGSWPFDLYEVYKEELPLRNSKILIIYFICILLGGIMYVK--
VHKNE-LNFFELGHNYITLLMNVS--LQRVTMALLNS--YRVMAHFIILNFHLFHHKQ---
RSKYAMKIYKQIDTLC-
WYTIYLYSQMYVGCILFNLGPLINNIMSNA YSAENGTTPEFEFSVYL-YLPFTV--
QNKKQYGLISLLNILLTSDGACIFCTFDVLMSEIIFHVWGHLLKILKYHLESFQKPE----
REPGNRYTKVVMYTEDELPIFEKLKENIEHHKLIIEFMNLSNGFGVMICVYFIFHQVIGC
ILLEISAM--DMESFASYGVLTFFVMFQQLIQISIIFELIGSKSETIKHAVYDMPWE--
CMDIKNKKIFLFLNNVQKPIALKALGLVSIGVQTMASILKTSFSYFIMLRT--

>BmorOR1

-----MLLSFKDDSRSPDIQKPQNFQYMKILRFNLKIICAWPEKQLNEI----
GHSIHRVILPIQSVVCLACGILYIH--FHFNE-IPFFILASTFITVMMNLAT--CSTALVMLFER-
-YLVLTGRFITVMHLFNFQK---NSDYAYKLCTFVNRMSH-
FYTLYVLFMFMGLGLFNLPLYNVYVSGAFSDPYGPNVTFFHSVYF-AFPFDY-
SHNFRGYIIMALFNSYVSVTCSIGLVMFDLLMCLMVMHVWGHLLKILSHNLINFRPV----
ITTPNGPTNVETYTEESKEVFARLRECIKHYGTVDDFANDMSETFGVILLVYYGFHQVS
LCMLLLECSDL--STKAMLRYGPLTLIMIQQLIQISIIFELLGSVADRIPDAVYQLPWE--
CMDVKNRRVVYGFLRRTQNPVRFKAMGMLDVGVQTMASILKTSISYFVMLRTVA

>SlitOR13

-----MDIKLSSVKIFSDGSDLEGIEKVEDILYLRILKKIMWVIDGWPKEAHKS-----
QFFRYIICILDMVSLIPGTYLK--INTGK-IPSFELGHTYITVFMNAIA----
ALRTVLVLTRNYNEIIFYFLKEVHLFNFR---KSKYAYETHILVHKISH-
FFTMYVFMLMCCGILLFNLTPIYNSYAAGMFRDEPPPNATFDHAVYF-ALPFD-
STSFKGYAIVSLYNWYICITCSTYFCIIDLTFIMVFHLWGHMRVLSYNLENFPKPA----
NDAHAYTACENKYNEELVEVFIRLRDCIQIHSLVINFSMMADSFQWTLVYLVFFHQVS
GCLLLECSQL--DTAALARYGPLTIIIFQQLIQLSVIFELIGSSNDRLIDSVYSPWE--
YMDTANRKNVFMRLRQSQRSMNLKACSMITVGVQTMIAILKTSFSYFVMLRTVA

>HvirOR13

-----MKILSDGSDLEGVEKVEDIFYINLARKSMWILDSWP-KAFNAS-----
SKYRYFVLALNVATLIGGAIYLR--NNTGV-LSSFELGHTYITVFMNCIT--CSRCLMILSKD-
-YNHVMTLFFVQKIHFLFHHKH---KSDYAYLTHIFIHKISH-

FYTVYLLGLALNGLFLFNMIPFYNCYSRGMFRDVIPANATYDHAVFY-SVPFDY-
TTKFKGYLAMTSFNVFISYTCTSYFCVVDLTISLVIFHLWGHMRLLTYHLANFKKPS----
NDNNKDEIKDHSYTEEELKEVFSLREYIQHHNLILEFSSEMSNAFGPALLAYMVFHQVS
GCILLLECSQL--DTKTLVRYGPLTIVIFQQLIQISVIFELLGSSNDKLIDGVYLVPE--
YMDTKNRKLVFTMLRQSHRSINLTMMSMVTVGVQTMATILKTSFSYFVMLKTV

>BmorOR4

FKIKNIIVENDALKQVEKPQEFQYMKWVQYHLKYIDGWPNDMDNKKNVSKIRFHKRH
LLVVEQTITFLSQMFYIV--KNYGK-LSFFEIGHSYITALMTIVI--FSRSVVTALGR--
YRKIARYFVSSHLHYHYKD---ISEYALQTHLLVHRLSH-
YYTVYLISLVVTGMLLFNITPLYNMISSGVFNSPRPENMTFQHAYYL-GLPFDY-
TTDIKGYFVVFILNWHLSHIAASYFCTFDLFLSLLILHLWGHLRIILNKLTFPKP-----
YTNNSMYTEEENQVVLKLQECIRYHNFIISFTVMMSNVYDVVIIYYLFFHQVTGCLLLL
QCSTL--DWESLSRYGPLTLIIFQQLIQVSMIFEILGFLSDKLPNAVYSIPWE--
AMNVTNRKLVQVLLQKSQKPIQFKAMNMMSVGVQTMASIIKTSISYFIMLRTIA

>BmorOR9

-----MVARRPLQFHQGRNVDNVEDFKYVKWLRNHLKTVDWVPVHSSKR----
K-IQKRYVLPIFSAACFISQTVYLYK--NGIGT-LSFVVLVHSYICFLINGSC----
LCRGILIATERYKRLATCYLKTVHLFHHKN---RSEHAMKIHVIVHRLSH-
YYTIYLISLVFVGMVLFNFMPYNNINSAGFKSPRENVTQHAMYL-ALPFDY-
TTNIKGYFVVFILNWIYISLVTTSHFCTFDLFLSMIIHLWGHILMCSLEDIEGF-----
VPGSSFKFTIEQNRKIYILQECIRHHQFTIDFTNEMSSFTGLVILFYFFYQVSGCLLLLAC
SQM--DIESLSRFGPMTFILFQQLIQLSIVFELISSLENLPNAVYNVPWE--
FMDKNNRKMIVVLLQSQKLIQFKATSMNVGVQAMATILKTSVSYFIMLRTMY

>SlitOR6

MGLKKFLFEDES VQGITA PT DYLYVKLLRMTLRHATWPQTELGEKEPVYLVNVLKYFYLY
VATIGCQIGSYCYLRTYSDEL T---MMEAGHNYIMIMMTFID--ISRITSLTFSTE-
YRKLCKEFFTKMHLFYFKD---ISEHAMETHKRVLHLSH-
LFTLWLLFQMLFGVPLFNLVPMYYNYAAGRYKPGGTQNSTFEHSMYY-QYPFDT-
LTEIKGYIVANIINWILSSLCVIWFCDLILLMVFNWGHRLMLTYTLNFPRI---
TIDGGLTVTSAIYSDEENVQIFRKLKECVDYHRRIVEFNSKVSDVFGPMLIYYLYHQTS
CLLLECSQM--TAPVLMRYLPLTIVCTQQLIQLSVIFELIGTQSEKLPSAVYSVPWE--
CMSISNKKFVIFFLMNVKEPIAVKPLGIANVSVTTMASILRTSLSYFTFLRSI-

>SlitOR16

MYIKIVRFMLVIVGSWPRREIGEPEPRYQTIMLKLFFFSVVNAALYGSISYVYMHTSELS--
-FLEIGHMYIVILMTAND--MPRVFTLTLSQK-YRDLAKEFLT KIHLYFYFKD---
HSPYAMLTHKKVHLVCH-
LVSLCLLSQMLTGLSLFLNIPMYTNYSSGRYASGGTQNSTFEHSMYF-SYPFNT-

STDFNGYVVACIFHWLLSYFCSTQFVMFDLFLSIMVFHLWGHFKILINSLNNFPKPF----
ELEGGININAEKYSKEELVKVSEKLKECIDYHREIIQFKKAMSDVFGPMLFCYYVFHQTS
GCLLLECSQM--TAQALIRFLPLTIILTQQLIQLSIIFELVGSESEKLKDAVYGVPE--
CMDVSNRKVVAFFLMNVQEPVHIKALGVANVGVTSMAILKTSLSYFTFLRSM-

>HvirOR16

MGLRQFLFENEAVEGINTASDYLYIKILRFTLVIVNSWPRKEIGEPESPRLSAFAKYFYFLFL
TVLAAIGSIAYVAVHNRELT---FLETGHMYIVVLSLVD--VSRVATLTMSTT-
YREVARDFLTkiHLfyykd---RSKHAMETHRAVHKISH-
LFTLWLVGQMLSGLSLFLNIPMYSNYAAGRYSGDVSKNSTFEHSLYY-SYPFDT-
STDIRGYSIACVIHWVLSYLCSTWFCMFDLFLSLMVFHLWGHFKILINTLNDfPRP-----
SSKVEGAQFSDEELVDVAARLKDCIVYHREITLFTDRMSNVFGPMLFVYYSFHQASGCL
LLECSQM--TAQALMRYVPLTIILTQQLIQLSVIFELVGSESDKLKHAVYGLPWE--
CMDVKNRRVVLIFLANTQEPVHVkamGVANVGVTSMAILKTSMSYFTFLRSM-

>HvirOR6

MNLrkFLFENEAVEGINSPADYLYTRILRFNLDfIRTWPRKELGEPENLAFTVFMQYFYLI
LNIVTVMGSTSYIVVRGSELS---FIEAGLMYLIFLIGIVD--TLTVVCLTFSEK-
FRVLAKDFLTktHLfyykd---RSKHAMEIHKKIHLISH-
LFSLWILFQMLSGLSLFLNIIPMYSNLAAGKYRKGGQLQNSTFEHSLYY-LYPFNT-
STDITGYIIACILHWIISYLCSCWFCINLFLSLLVFNLWGHFKILISTLNEfPRPS----
SKSVDTQESPYKYTEEELIEVAEKLKDCINyhREIKIFTNRMSDVFGPMLFIYYAFHQASG
CLLLECSQM--TARALMRYLPLTIIMLQQLIQLSVIFELVGTESEKLKDAVYGVPWD--
CMDTKNRKVVMFFLMNVQEPVHVkamGLANVGVTTMASILKTSLSYFTFLLSQT

>HvirOR14

MTGIRDFFFNyEAKDGVtnPTEYPYmIMSRHLLTVITCWPKPKPEGLNARAWVIVQKIF
HMSLCLLTTLGMAMYIG--LHKKS-MSFLELGhLYISLLMTVVI--FSRITTLCLNPK-
YRAVSTEFLTkiHLfyykd---DSEFSMQIHkQVHKISH-
LFTLYLTGQMIAGLSLFLNLTpMYNNFSAGKYKKGGGLKNSTFEHSLYY-SYPFNA-
SSDVGGYIVSNICDWIISYLCSTWFCtDLFLSIMVFHVWGHFKILLHDLdHFPRPK----
LDNSNITLTSEKFSSIELGQVSEKLKKCIEYHRKIVSFTDEMSEVFGPMLFVYYGFHQTSg
CLLLECSQM--TVAALVCYLPLTIMLFQQLIQLSIIFELVGSVSDKLKDAVYSLPWE--
AMDikNkKTVAIFLMNVQEPVHVkaLGLAEVGVTSMtAILKTSMSYFTFLRSK-

>HvirOR15

MTGFRDFVFNYQPKDGITNPVDYPYLIiARYLLTFISMWPKKSVVYHSARAWLWVQKFY
HLLLCAVAFFGGVLYITLHKKSMT---FYELGhLYISLLMMACT--FSRITTLCFNDE-
YRVVAKDFVTKIHLFFYKN---RSDYSMQIHKKVHMISH-
VFTLYLSGQMMLGLFLFNVTpMYNNYSAGKYKSGGLKNSTYEHSLYF-SWPFNA-

STDMRGYIVSNILNWMLSYTCSSWFCVIDFFLSLMVFHIWGHFKILLHDLDFRPS----
VIEDSITITNEMYSQTELDQVFDRLGKCIDYHREIVSFTDKMSEVFGPMLFAYYGFHQAS
GCLLLECSQM--TVAALVRYLPLTHLFQQLIQMSIIFELVGSVTDKLRDAVYGLPWE--
AMDTKNRKTVAFFLMNVQEPVHV KALGLAEVGVTSMTAILKTSMSYFAFLRSM-

>MsexOR1

MIFMDDPLSKSIKDPDRDYRYMKLFRSTLRLIGSWPGRDLKEEGATKYEIAPLYWVLVIKI
TCFLLTIIYLI--ENTNK-LGFFEIGHVYITVFM TMIT--LSRSITLSLNPK-
YRRVMTKYITKMHLFYFKD---MSDIALKTHIRVHKL SH-
FFTMYLSTQVVLGTVTFNIVPMYNNYKVGRFENNILVNDSYELSIYF-KTPTKF-
LSTLNGYIAITTFN WYSSYICSNFFCFMFDLALSLIFTVSGHFKILIHNLNNFPLPS----
KVLKTDEIQAPLYNKTEKKDITLRLKQCIDYHREVLEFTQDISEAFGPMLFVYYLFHQVS
GCLLLECSQM--
DAAALMRYGLLTAVLFQQLIQLSVVVESVGTVTGYLKDAVYNVPWE--
YMDTQDRKTVCIFLMNVQEPVHINALGLAKVGVQAMAGILKTSFSYFAFLRT--

>BmorOR3

MIFVDDAVIGIKDPREYRHLRVLRTSLRLLGAWPGHYLGEETGSKYECAPMFLLMFIKIA
CLYLTIVYLRNNADV LG---FFELGHVYLTIFMTFVT--LSRGFSLTWNPN-
YHKVVKKFITEMHLLYFKD---NSEYAMKTHRRVHKISH-
FYTVFLKVQMIAGLT LFNVIPMYNNYRQGN YASDRPANITYDLSIY--YETFDI-
LNTPNGYIFICVF NWFASYICCSFFCSFDLILSLMISTVSGHFRILIHNL LTFPLPG----
NRSEFVLEEAKLYSPAEMWQVTDRLRQCIDYHRKLVEFTGDISEAFGPMLFVYYLFHQV
SGCLLLECSQL--NTAALVRYGVLT VVLYQQLIQLSVIVESVGTVTGRLKDAVYEV PWE-
-YMDTSNRKTVAIFLMNVQEPLHVNALGLAKVGVQSMAILKTSFSYFTFLRTVS

>SlitOR11

MFNLDTYAGDAVVGISGPM DYKYMKVLR FVLRIISGWPGKALGEKTLKIEGMGHAYYN
TILSLIYLALGIA YLKKNHRFG---FLELGQLYIVLLMNMLS--TSRAFTLCLSEK-
YRTVAKIFIQKVHLFYFKD---KSDYAMSIHVTVHRISY-
FAAIYVSIMLSIAACLFNLIPMYNNYAANFASFDNLQNKTYEQAISC-LYPWNF-
ETNFKGYLVATLSGWYGT VLCGSSVSMFDLFLCLMIFNLWG HFKILIYNLDHFPRPG----
EERSGRVIGSEMYSESELEEVAIKLKDCIQYHMLIVNFTNNMSDAFGMALFIYYSFHQITG
CLLLECSQM--TAAALSRYLPLTIIMFGELVLLSIIFETIGTMSEK LKDAVYKMPWE--
YMDTKNRRTVLIFLIKVQEP IHVKAGGLVDVGVTTMASILKTSFSYFAFLRTF-

>HvirOR11

MHLAGNAV TGITGPM DYKYMKVLR FVLRIISGWPGKALGEKTLRIEGMGHAYYNTILSL
VYLALGIA YLKKNFHRFD---FLELGQLYIVLLMNMLS--TSRAFTLCLSQK-
YREVAKIFIQKIHLFYFKE---KSDYAMKIHVIVHKISF-

ISAVYLSVLLFIAAVMFNLIIPMYNNYSARYSSFDNLENTTYEQAISC-LYPWNF-
ETNFNGYL VATLSGWYGTMLCGSSVSMFDLFLCLMIFNLWGHFKILIHNL EHFPRPG----
AERSGRIIGSEMY SQAELEQVAVLLRECIQYHMLIFDFTNNMSDAFGMALFIYYSFHQITG
CLLLECSQM--TAAALTRYLPLTIIMFGELVLLSIIFETIGTMSEKLD A VYKVPWE--
YMDTKNRRTLIFL-----

>CpomOR4

MSLKSRVWEKLKKKFDDGEVDSPLKYTYVKQVSCLMSSVGAWPHRQFGRQKLHTLLSI
YNLGLHGV CAGMFILGLLYWR--QRRHN-MSFFDSGHIFLCMLFDLLV----
LLRFMVTQTTKYQETIKAFLLEFHLFYFKD---RSPYAAKVHTQVHTISG-
MFSFYVICQMAHGMA LFVLMPCYSNLRKGMFGKNRPENSTFENSAYY-YLP-
DACYTTLRGYWILLAFNAFSSYIITIGLFEFDLMISMMVFQIWGHLKILKNSLLTMPLP-----

VNSKDGLYSPEENIKIKALLKEIIEHHTLIKFVDGCSNTFSEYLFTFYLFMQFITCILLLEVS
SF--TADALGKYGPLTIGMHQQLIQVSILFEVLNTKSNELIDAMTQIPWE--
HMNTSNRRTVLF LICRIQIPVSLKAGGMVPVGVNTMQAVLKGSVTYYMMLKAFA

>BmorOR7

-----MLLYHPNTQVEEKVNNVEEFTYMKFLKSFCCKIMDFWPEREEKNS----
KTRIFRLRYILVLQFCFTLVAGVLYLKNNFGK-KTFYDLGHTIITVVMNVVS--
VSRLILRCFKK--YDVVGQQFINKIHLHYFRN---DSEYSMKTYKAVHKISN-
NMTYIFSFSIFVCVVTFNLPVFNNIGSGAYKNRPDNTLQQCVYY-ALPFDY-
TGDFKWYMLVAIFNVQKTFFCTSLFILFDLLSMMIIHLWGHIRIFIHNLNHIPAP-----
RNSLEYTREERQEVDNTLKKCIQHHTLIIGFVRIMSETYGLAVLIYYAFQQVVGCLLLQ
CSRL--DLKTITRFGFLT TMVNQQLIQISVIFELLGYMNDKLQEAVYCVPWE--
YMDTSHRKMVYMMFRQSQIPLQLKAMNMLSIGVKT MASILKTSVTYYLMLKTIT

>BmorOR5

-----MLLYYPNTQVKEKVNNVEEFTYMKFLKSFCCKIMDFWPEREEKNS----
KTRIFRLRYILVLQFCFTLVAGVLYLKNSVGK-QTFYDLGHTIITVLMNVVS----
SRLILRCFKK-YDVVGQQFINKIHLHYHRN---DSEYAMKIHTVVHKISH-
NMTYIFSFCIIFGTVTFNLTPIFNNIGSGAYKNRPDNTLQQCVYY-ALPFDY-
TGNFKWYLLVAIFNVQKTFFCTSLFILFELSLSLMIICLWGH LRIFIHNLNHIPAP-----
RNSFEYTKEERQEVD DTLKKCIQHHTLIIGFVRIMSETYGLAVLIYYAFQQVVGCLLLQ
CSQM--ELKTVTRFGFLT VLNQQLIQISVIFELLGYMSDKLQDAVYCVPWE--
YMDTCHRK MVYMMFRQSQIPLQLKAMNMLSIGVKT MVSIKTSVTYYLILKT--

>MsexOR4

-----MKFFVDGSEIAHITKPQDIQYMQMLKFFTNSLAGWP I EAVEGI----
KNFYWRNGLVVIAYAYFFGQVFYIY--RYIND-YTFLVMGHSYITVLMTIVT--
IARHTLPYFKC--YDDTTAD FVHNHILFN YRN---KPGYYKEFHLKIHKISH-
AFSVYLCTLLVTGPSMFNGIPLYNNYASGA FSNRSPNVTYEQAVSL-LLPFDD-
TNNFKGYFVVFLANCCVSYISSCCLCIYD LLLSLMVFHLWGH LKILT KTLDNFPKPP----

QAIEADPNKSLKFSDEELKVIHKKLGECVAHHQLISNFSTRMSNTFGLSLFIYYGFHQLSG
CLLLECAQL--EAAAIICYGPLTLVVVFQQLIQLSFIFELIGTVNEGLTDSVYCLPWE--
AMDQGNKKIVFTFLRQSQKSMNLKALNMLSIGVQTMAKILKTTMTYFLMLQTIA

>HmelOR10

-----KEISSPMDLRYMKRIKFHLHFMGGWPLNELYDAYREN--
RHFkFLLVF-WSTIFINSLFYLK--FNLNK-LDFFKLQGVYIVIFMTAVA--LS-----
LLPVFITILN-----SQVHKEVHKVLE-
YLTTWILIELYVGTSSFHliPLYNNIRSTVNDNRNVNNGTIYEYAMYF-YIPYEQ---
NNIIFIFIFVISLILIFDIGSAFCTYDLLMSTIIHVWGHlKILIHhLENFPRPE----
ADKYGNKENDFRYNKKESRVIFDMLKENIEHHKLIMGFMNSVSIAFGVMMFVYYIFHQI
TGCILLLEISAL--NAEAFVTYGLLTAFMYQQLIQTSFIFELIGSKSEVIKEAVYGLPWE--
CMDVKNKKIVLFFLYNVQAPIRLNAMGLIAVGVTATAV---SIK-----

>HmelOR11

-----MFNSNSIIHFLFRNEEISSPMDIKYMKIIKRHLHIMGGWPFNELYEePKY-
IPLRNYKFLVVFFTAILLNCLYYLKLHIKRLD---FFKLQGIYIVLFMNVVG----
LVSFFFSINNEVNKILK-----
YFTTWILLELFTGIAAFHVIPLYNNIQSSASDHSLenGTLYEHAIYH-YMPFEE---
NNIYAIIFILNLMLTFDGASSFCIYDLLMSIIHVWGHFKILKHhLENLPRPK----
AERSEgKANGIMYSKKESQKIFNMLKENIEHHKLIMEFMDSVLSAFGIMMCVYYLFHQV
SGCILLLEMSAL--NTEAFVSYSMLTLVMFQQLIQTSVVFELIGSKSEVLKDAVYGVPWE--
CMDEKNRKIVLFFLYNVQTPISLRAMGLVTVGVQTAAT-----

>MsexOR15

-----MLYIY--TRWNN-
IAFSTHGtIFTIVPITFLI---LTKVLSAQKESYRRlMKtFLQEIHLcNFG---
SNSYMKQRAVEVEKYSR-YLATFFFVFLVVYRALWTIVPIVFNlKN--
SKAIENKEIPLKTCFYM-WLPFDY-
EHEYKYWVITHIANSTLIALGCIVVTSYDTINYSIVFHLIGHIKSLKHlIKTNISQ-----
----NLSDDETKRGLVEVIRYHCFVLKIFGEIERAFGINVTGNLYNLIADSLlLYHlMLG--
DKENKLMyGVMLLVFMGGLIVMTLILEEVRRTFDIPQTVYDMPWE--
KMSVSNQKIVVIMLARTQPTLEYKSAGGLKAGVNPTIqIKSTFSYYVMLKSSL

>HmelOR5

-----QPPLNQMFYRIIANMMSISTVGNRTNWGYKtYPK-----
MYVIMNIVAIIFAPTIVVSQVAYLCVNFTKLD---FEILIIAFSILPSTVLA---
NVDIFSSKTKTNISLSRNLLSKIHLYNIYKNDTNDEFKLIFVEKSIRISS---
YYLICFCGTNWLSWVTMPVYNnyHD--KEAVLNHTVQLQTCIFL-WLPYDY-
RYDFNnWIIVHTINSYIIFAGASAIMTYQVIFYTLTYNLIGHIEILRNKIKTEfKE-----
----DLTDDQAHSKLVEIKYHDFICQVFEDLQTAFGVNVAANYLENLVSNSILLFQIMYG--
GKEKIFQYLAMGMAYTGGPIIISIVIDELRRRTYNLSELLYSIPWE--
DMSVPNQKIVLLVLQKMqIVMDFKAFGGISAGVAPMISVSTIKYNESLCLFGMC

>HmelOR7

-----MDLFFLRQPPLNQMFYRVIANMMSISTVGNRTNWDGYKTYPK-----
IYVLINIVAIIFAPTIVVSQVAYITINFTKLD---FEILIIAFSVLPSTIVA----
NVDIFCSKTKTYLNLSDLLSKIHLYNIYKYNKNDEFIKKKLIFTEKSTR-
ISSYYFIGFCLTNWLSWITMPIFNRYN--KEAILNHTVQLQTCVYL-WLPCDY-
RYDFNNWIIVHTMNSYVIFAGASAIMIYQAIFYTFTYNLIAHIEILKEKINTEFKE-----

DLTDHQVHAKLVEIKYHNFIWQVFEDLQTAFGINVAANYLQSLVSNISILLFQVMYG--
GKENLVQYITMVMAYAGGPILSIVIEELRRRTYDLSDLLYAIWQ--
NMSVPNQKIVLLVLQKMQIVMDFKAFGGISAGVAPMISVSISIKKYYESLCFSG

>HmelOR6

-----QPPFNQKFYRFIANMMSITTVGNRTNWDGYKTYPK-----
IYVFINIVAIIFAPAVMVSEIAYLCVNFTKLD---FEILIIAFSIFPYIFSS-----
KTETYIRLSRSLLSKIHLYNIYKYN-KNEFMKKKLIFVEKSIR-
ISSYYLICFYTSNWVSWILMPIYNNYKN--KEAVLNHTVQLETCVYL-WLPYDY-
RYDFNVWIFVHTINTYIIFAGAYAIMIYQIIFYILTYNLIGHIEIFKNKLKTEFNE-----
----DLTDEQVHFRLVEIKYHNFTV--FEDLQTTFGLNVAANYLENLVGNGLLLFQLKYG--
GKDKLLQYIAMGMTYTGGPIIMSIVIEDLRRRTLNLSELLYAIW--
NMSIPNQKIVLLVLQKMQIVMDFKAFGGISAGVAPMISV-SI-----

>BmorOR6

-----MKEEYYLQHPRTQLFYKVLAVSTIESTIDLTWWGYTFPKYVGV--
FYHLQCNVVRFLFGKCVVVSQILFIILNYQTID---KSVFIITITPLGALV----
GIKAESAACEYVNLKMFMDKVHIHSYRKNENNEFVKKKVIQIERVSR-
FTAYFLVILIAINCLSWMLKPTLHNIKH---FEEIMNSMEFQYYIYF-WTPLDY-
KYNLRDYIIHTLCIYLGATAVTIVTFDIFNFIAVFHVVAHIQILKNNVKSNSWD-----
-----DFNESEKKGYSILEYHAYIIRIFGEVQSAFGLNVASNYLQNLIEDGLFLYQIMNG-
-EKENVLMYGLMIILYLGGLIFLSIVLEEIRRNQYDLCEYVYALPWE--
GMSLENQKIFVVFLQRTQPDLEFETVCGMKAGVKPAFSIVKSMFSYYVMINSRF

>DpleOR22

-----MPWNVEVLLRTLRTSYRRLNKPISWI-----
LTTLSGLFYIYSYVISPVWFLMVKS--RETGD---FTAAIVELSLSMCSLTC--
VPKIFYMKYYSSVMDLIDEYLR-----CNELIVKGTRFEKNFLKNMKTVK-
KQATVTWAVSMLNSATYLTVPLLRPRGH-----FTQDMYV-IYGLEP-
MLESNPFEIATFMMVLSIIFALKVIVYITLFFVIVIGFLESQMLALSVELTNIWEDY----
NYYILQHNEGDEYEVNRNVFVTNRLRDILKFHIMNINLRNKVEKELRFIFVIDFIFMMLGL
VTELLGLDNT-----LFQFSFT---LGIVFIDCCIGQRLIDASIAFETAVIDCKWE--
NFNLSNQKTVLFMLQCSQKTMTLTAAGIAVLNFIFLMSVLKSTYSAYTTLASFT

>DpleOR20

-----MMWNVEVLLRTLTIIRSNRRFDKPIPWIIYYVIN-----
ISTGLCYFYTYMLSTAWFVLVRC--RETGD---FISAMVALSLTMCSTC--
IPKIFYMKYYQNTVMDLVDNYLH-----CNELIVSGTRFEKNFFANMRTVK-
KQATIAWVILTLNGVVFVTLPLRPGRH-----FSQDLFA-LYGLDP-
MVESPNYEKASILLTLAVYFSLTVMVHITLFIIVIIGFLESQMLALSVELSNIWEDY----
NYYVLHHNESITKYELRNLFIKNRLRDIVKFQIMIVSLRNKVEKELRFIFVNDFIFMIFALV
SELVGLENT-----MVQMPFT---FGMVFIDCFIQRLIDASKAFERAAAYGSKWE--
NFNLSNQKTVLFMLQCSQKTMTLTAGGIAVLDFIYLM SVLKSTYSAYTTLKSSA

>DpleOR19

-----MFVCEMVARSGLLG--
LFDED-LVYFDAPHYSPATLFPSQL--EAGMTLKVYRLEAVMDLVDEYLN-----
CNELIVKGTREKNFFTNMRIK-KQATVSWFVLTLNSAIFASLPFMRPGRH-----
LTQDL-YVMY---
MMESPNYEIAAILTVSSVYFAVTIIHITLFIIVIIGFLESQMLALSVELTNIWEDY----
NYYILQHNEGDEYEVNRNVFVTNRLRDILKFHIMNINLRNKVEKELRFIFVIDFIFMMLGL
VTELLGLDNT-----LFQFSFT---LGIVFIDCCIGQRLIDASIAFETAVIDCKWE--
NFNLSNQKTVLFMLQCSQKTMTLTAAGIAVLNFIFLMSVLKSTYSAYTTLAS--

>DpleOR35giEHJ75373.1|

-----MMWNVEVLLRTLTIIRSNRRFDKPIPWIIYYVIN-----
ISTGLCYFYTYMLSTAWFVLVRC--RETGD---FISAMVALSLTMCSTC--
IPKIFYMKYYQNTVMDLVDNYLH-----CNELIVSGTRFEKNFFANMRTVK-
KQATIAWVILTLNGVVFVTLPLRPGRH-----FSQDLFA-LYGLDP-
MVESPNYEKASILLTLAVYFSLTVMVHITLFIIVIIGFLESQMLALSVELSNIWEDSKKFYN
YYVLHHNESITKYELRNLFIKNRLRDIVKFQIMIVSLRNKVEKELRFIFVNDFIFMIFALVS
ELVGGLEN-----TMVQMPFT---FGMVFIDCFIQRLIDASKAFERAAAYGSKWE--
NFNLSNQKTVLFMLQCSQKTMTLTAGGIAVLDFIYLM SVLKSTYSAYTTLKSSA

>MsexOR50giAFL70813.1|

WTGIRKFGLEYCDLPTMLWNVAFLLRPLTLNIDSRHKKPIPLL FYVLT-----
VVITSSYFYVYLISMSWFVVR--LETKE---LIPAMVVL SLGISSEIG--
TLKFFYTFVYIDKVRKIVDEYLE-----CDALVVPFSRFSKNLLTTLRFVK-
KRAIYWLVIIIGNGFAYWSKPLFMKGRH-----HLEDNLV-IYGLEP-
MLES PKYEIA YFLMTAGVCFICYPPANVTILLIVVVGYTEAQMLALSEEILNIWDDANDH
YNNLPSTNQNTN---
ELKSKIINKYIKDRLKDITKSHARNINLLRQVEFVFRGAIAIGYVFLILGLIAELLG--
GLENTFLQIPFA---FIQVAIDCFTGQRVMDANIVFETAVIDCKWE--
NFDKTNMKT VLLLLQNSQKTTLT SAGGXTMLNFKCLMSVIKSIYSAYTTLRT--

>Bany_OR2_GZKG99Z02DT2MR

-----AMAAA--
VSLTSCNVTC--ITKFLFMIIHVTHIRDITEKYVK-----FDSQFEPE SRFAVDLRTHLRVVK-
SRALYIWTVLV VNCIVFVLIPLLRPGRH-----VTEEMYI-LYGLEP-

MLESPNYEVVHTVSAISVGFCVYIMVNVAVYVIVIIGYNESQMYTSLSEVRSLWDDSQN
FYNNIKHKINNKVYGSYIKDTMVNEYIRIRLKQIVGYHVANIHLFHALNNEFLIILAIEYTL
LSIAIIGELLG--GLENTYLQVPYT---VVQIYMDCLAGQRLIDACNEFEFAVYDCQWE--
NFNASNQKTVLLMLVLSQKTLMLSAGGMANLNYECLMKILRSAYSAYTALKSSL

>DpleOR21

-----MTVSKSPVSGY-----LNKMYQYTENIF---
PETGD---IRRAAVELSLATASGTC--VAQFLYMKLCSNRLMDIVDEYLS-----
CDKLVSRGTRFEKNLSWKLREIK-KRALVVWIVLIGNAALYVTVPIFIPGRH-----
FTEDLFV-LYGLDP-
MVESPNYEKASILLTLAVYFSLTVMVHITLFIIVIIGFLESQMLALSVELSNIWEDY----
NYYVLHHNESITKYELRNLFIKNRLRDIVKFKQIMIVSLRNKVEKELRFIFVNDFIFMIFALV
SELVGLENT-----MIQMPFT---FGMVFIDCFIQRLIDASKAFERAAAYGSKWE--
NFNLSNQKTKYEVLGNNTEDLHLVCYRNVQNSRKNSNEDDGE-----

>DpleOR28

-----MNVLRKLRKFGL-----DYYDMQMML-----
WN-----IEVLFRRAFTINIRKETG-----QRNSIRDLVEKCLQ-----
CNKLIVKGTRFETNFLASLKDVK-RKAIMLWSGFAINGVVYILAPFLKTGRH-----
FPQDLIV-IYGLEP-
MYESSNYEIAMMLFMASYSFSLFIITYVSLLMIVIVGFVESQMLALSEELENLWDDY----
NDYKFDEESERKENVIRNLFIKMRLSDIVKFHIMNINLRKEIKDKMLFIFFNDFIFMAFAM
VAELVGLQNT-----AVQIPFT---FGMVCFCDCYVGQRLLDAAATFEEAVYSCQWG--
NFNVSNRKTVFLMLLCGRAMTLSAGGMSVLDYSFLMAVLRSTYSAYTTLKSTE

>DpleOR16

-----ISWIFYFLI-----
FSSCACYTSAYIFNAIWVVFVRC--VETND---FITAMVALSLTTCSASC--
VIKFFYMKLFKNQLMGLVDEYLY-----SDTLVERSTRFASNRLQNLRLVK-
RRAIIVWTILISNAIIYVIEPLLRPGRH-----FTADLYV-IYGLEP-
MFESPNYEIIYVIEAASIYFSVWTTVHLTLLIFVVLGCIEAQLLALSEELNNIWED-----
SYKYYKQENRNEYFIRNTFLRRRLRDIVRFHIVNIHLRRIVDKVTRFIFGVDCAFMILAIV
TELVGLENT-----FVQFPFT---IGIVFIECFIQKLIDASIVFEKSVYSCKWQ--
NFDVSNQKTVFCMLQTSQNTLSLSAGGVAVLNLAFFMFVLRRTTYSAYTTLKSS-

>DpleOR17

MGASNSAIERRTHGYCCLHAARGAPNLAksYRALTTKPRYFILKSTFTSSCACYTSAYIF
NAIWVVFVRCVETN--DFITAMVALSLTTCSASC--VIKFFYMKLFKNQLMGLVDEYLY----
--SDTLVERSTRFANNRLQNLRLVK-RRAIIVWTILISNAIIYVIEPLLRPGRH-----
FTADLYV-IYM-----
FESPNYEIIYVIEAASIYFSVWTTVHLTLLIFVVLGCIEAQLLALSEELNNIWED-----
SYKYYKQENRNERNTFLRRRLRDIVRFHIVNIHLRRIVDKVTRFIFGVDCAFMILAIVTE

LVGLENT-----FVQFPFT---IGIVFIECFIGQKLIDASIVFEKSVYSCKWQ--
NFDVSNQKTVFCMLQTSQNTLSLSAGGVAVLNLAFFMFVLRRTTYSAYTTLKSS-

>DpleOR18

-----NDTQPVSALYLI-----
TICSSCYFFAYVNLVWVFLVRC--VETGD---FITAMVALSLTFCSGTC--
LAKFLYMKMYTNTVMNLVDEYRL-----CDKLLVSYTRFAMNRMNLRRIK-
KRAITVWLVLVTNAVIYLLTPLLSPGRH-----FAEDLYV-LYGLEP-
SFETPNYQIIFAIEAASIFFSISTTVHITVFHIVVGCIEAQLLALSEELENMWED-----
---SAKFYDRK-----TVMKLID-----DYLHCNLVVRGTRFE-----
TNTIAIVFIDCFIGQKLIDASDVFESEIYGCRWE--
NFDVHNQKTVLFMLKNSQKTLYLSAGGIAVLNMSCLMCIFRTTYSAYTTLQ---

>HmelOR40

-----MGIFGNLGLDHSRLTIENIGILFRGLTINIDQNNIRPIPWIIYI--
FNVVAGTFYIYVYILSMIWFVLFRC--PECGD---ITICFLEVSLGMCSASA----
IHKFFYIKLTTVRKLIYEYIK-----YDRLVLPETRFADNIKKHLRIVK-
RRALIIWITFMVNGTIYIIMPFLMPGRH-----LTEDLYV-IYGLEP-
MLESPPNYEIAATMLMIPAIIGVFSALVIVAFMVVIVGYIEAQLLALSEELENLRQDF----
CEKVTRQNNSLSTIAIQNIFIKNRLRDIIRFHIMNIKLNNVENKFRIIYIIEFIFLFFAIVAEEL
GLENT-----YVQLPYT---FDQIFLDCLIGQRLLDASIVFEKALYSCWE--
NFNVANQKTVLLMLRNSQKTLTSLAGGIAVLSYPFLMHVIKSTYSAYTTLQSTV

>HmelOR35

-----MDRPAALSSRPSVWTVVRKFELDHDDFTTIMENIHFMLRILTNIFNNSNSIPVISY-----
IFVIIGSFAYFYVYILSIIWMAY--FYYGN---WTAMAVVLSLFCSTIS--
FTKLIFMKLNSKNVKNLIERFLQ-----CHAQVVPGTRFCKNLQKRLKIVQ-
QRAIIWVFGMLNGAIYVLLPFIIPGRH-----FTTDLYV-IYGLVP-
MFESPNEIATTLNITSIAFGIYALVSIAAYILIVVGYIESQLHALSEELSTIWEDY----
NVSKNNCDGIGEREDIIINQFIEVRLRDILQLHIANINLLHELDVELRMSLILEFSLITFAITAE
LLGFKNT-----YLQLSYT---ILQVYMNCLAGQRLIDAGKCFEHSLSYCKWE--
NFNVKNQKTVLIMLRMAQKTLVLSAGGIAKLDFACLMEILKSTYSAYTTLNS--

>HmelOR36

-----MIKFSFCSH--IWKRLRKFGLDYDDFPVILENVNSLLRNITIDIFKNSKPISFIFY----
LTVIGSSLYFYVYVFSMVWLVCIFY--GRAGN---WTAVAVVLSLFCSTIS--
FTKLIVFMKINSNDIKEIIAKFLQ-----CHAQVIPGTRFANNIRKRLRIVK-
RRATNIWLFVINGGIYVIIPFLTGRH-----FTTDIYF-IYGLVP-
MFESPNEIATTVNITGIGFGIYTQVTAAYVLVTVGYIESQMHALSEELQVWDDK----
HNLKDKVNAVDNKRRLMNIFIRVRLRDITKLHIANINLLHELDKELRATLALEFTFIASFIT
AELLGLENT-----HLQLPYT---VLQIFMDCLAGQRLIDASNNFEISLYNCKWE--
NFSIKNRKTVLLMLRVSQRTLVLVLSAGGVAKLGFPCMMILRTAYSAYTTLKS--

>HmelOR38

-----MRNKERGIWGTLKTFGLRHDDFPTIMNNVAILLRALTINIYASAKPISLILSI---
LTLIVSFAYIYECVISMVWLVFFYY--GRTGQ---WDGICVALTLFSCVTVC--
VTKFVYMKIFSKDVQKTVEKFHK-----CDAQVIKNTRFARNLRKRLRTVK-
KRATLIWITLVVNGGIFMMIPYVTPGRH-----FSLDLYY-MYGLMP-
VLESPNYEIA TFINTLSSIFCSYTMVCVAIYVIVVGYTEAQMYALGEELINVWNDK----
HKVQDKIHIDIKDKISNDFIKIRLRDIKFHIINIKLVQDLEEELRSTFALEFSIVAFSITVELA
GLEHT-----YLQLPFS---LVQVFMDCLAGQCLIDACNYFEDAVYSCKWE--
NFNIDNQKTILLMLGTSQRTLMSAGGVSKINFESLMVILKSTYSAYTTLKS--

>HmelOR33

-----IPTLYYI-----
FTAVVITSYIYVYNISVWVYSFFYC--RTTPT-CYRLSSIIVFSLGVASSIG----
VCKLFFMYLDKIRDIAAECLL-----CDAKTIPGSRFEINILKTMRFIK-
KRAMIFWIVIISNGVVYFLKPLLIPGRH-----FSEDDLIVLGKC----LDP-
VLESPNYEIAFALT TAGIFVTYVYLP SNITGFLIIVTGYIEAQILALSEEIIQLWVDP----
VHNEELPRQEKNEKAINEFINNRLKDIVKIHININIFHQVEDVFRGAIAIEFTLLMISLTA
VLLGLENT-----YMQIPFG---LMQVAVDCFTGQRVIDACVTFERAISQWE--
NFDVKNMKIVLLLLQNSMKTLLSAGGLSTLSFPCFMSVLNSIYSAFTTLHSTL

>HmelOR34

ILFCITIIYVYMYIFSTVWYTFVYCRRTD--NRLSAIINFSVGVSSSTIA--
FCKFMFMYLFDKVVREIIAGYLV-----CDSLIVPGSQFEKNILKTMRFVK-
KRAMIFWIVIISNGAIYMLKPLFTPGRH-----FPEDDFI-LYRLDP-
MFESPNYEIAIFLFSASIGLTVFLSSNITAFIIITGYVEAQLLALSQEILQIWDDN----
VETFEDLKQLEDQNEDINNLIRDRLKNIVKIHVINMNLIQQVEAVFRGAIAVEFILLFISITA
VLLGLENT-----YLELPYS---LMQVAVDCFTGQRLIDACVNFETAVYFCKWE--
NFDQTQNRQTVLLILHISQKTLTSLAGGLSTLSFPCLMSVLNSIYSTFTTLHSAL

>HmelOR37

-----MHVIRKFGLGFTDLPTLIWNVSVLLRVITLNIDGRNRTPIPKAFHA--
STITLISCYFYVYFVSMIYVFFYC--RRTSD---WISAIIVFSLGVASQIG--
VCQFDCIFFRSSVRDVVAEYLT-----CDELLIPASRFESNILKTMRHVK-
KRALIFWIVIISNGFVYVTKPLVIPGRH-----LPEDEFI-LLGLNP-
VHESPNFEIAYLVTIAGVMITVYLP SNITAFIIITGYTEAQM LALA QEMQLIWDDL----
RGNYPEDHIKMKKLIINNFIKYRLKDVIKIHTINLKLISKVESVFRGAMAIEFTILIISLTA
VLLGLEKT-----YLELPFA---LMQVAIDCFIQKVIDACEIFEKSVYASKWE--
RFDKSNMTTVLVILQTAQKKMTLSAGGMITLSYPSLMAILKSIYSTFTTLRS--

>SlitOR39

-----R-----

EIEDVMRGPNA XGFLFLIVGLVAEXLGLNNT-----ILQLPFT---

LSQMGTD CFLGQKIMDANIKFEHAVYDCKWE--
NFNQVNKKIVLVMLQNSQKTM TLTAGGMATLSFSYFILL-----

>BmorOR38

-----MNLSQSVNEQANEYVKMRLERISKIHSPMLPFEDIQDFRELCCIP--
GSITASYVYAFLISLLWFLFARC--TDPED---FQVAMVVFSLGISSEIG--
STKFFNSIIYIKELRKLFKDYLL-----YDATCPAQGRLRLHLLTTLRYVK-
RRAIYWLVIIGNGFIFAIKPLLVEGRH-----LAQDDL V-LIGLEP-
MRQSPNYEIA YAIMTMGVCFICYPPAHVTMFLIIVGYTEAQMLALSEELKHLWNDK----
HSRTEREADAAMKSKILNSFVNFR LVQIIKSHSTNVNLIGRVENVFRGSLAVGYVFLIVGL
IAELLGLENT-----YLQVPFA---LIQVAIDCFIGQRVNDANIDFEKAVYDCKWE--
NFDKRNMKIVLLLLQNAQKTVSLSAGGI AKLNFSCFMSVIKSIYSAYTTLRT--

>MsexOR28

-----MAWFGFIHT-----PHTGD---
LLAAMVVLSLGISVQIG--TLKFFYTFVYINKETNIVKYYLE-----
CDSLIVPGGRFSGNLLRALRNVK-KRAIVYWLVIINGITYVTKPMFMRGRH-----
HMEDRYV-IYGLEP-
MFESP NYEFAYFLMTAGLCFICYPPANVTVFLIVVVGYTEAQMLALSKELLHLWTDN----
QHETTLINAQASKNKIINDYVRYRLKEIKMHAFNIHLVRQVEFVFRGAIAIGYVFLTGLI
AELLGLENT-----YLQIPFA---LIQVAVDCYT GQKVTDASLIFERAVYDCKWE--
NFDKMNMKTVLLLLQNSQKTM TISAGGITMLNFSCLM SVIKSIYSAYTTLRT--

>BmorOR35

-----MKLWQSIREFGLEYCDLPTTLQNVASLLRAITLNIDSRHT-ARIPFI----
MTVVITLSYFYVFLVSMWV FVRS--AETRD---YLAAMVVLSLGISSEIG--
TLKFFYTFIYIKKVQRIVREYLE-----CDHMVVPESRFADNVLKTMRNVK-
KRAILYWVVVIGNGVVYVTKPLFMSGRH-----HMEDRYI-VYGLEP-
MFESP NYEVAYFLMMFGLCFICYPPANVTVFLIVVVGYTEAQMIALGEEMLR IWEDK----
YHTVGALTNSSEKNKIINQYVKFRLTEIKMHTTNIQLLRQVEFVFRSAIAMGYVFLVLGL
IAELLGLENT-----YLQIPFA---LIQVLVDCYT GQKVMDASSLFEQAVYDCKWE--
NFDKSNMKTVLLILQNSQKSMRLSVGGITVLGFSCMMSVMKSIYSAYATLRT--

>BmorOR39

-----MLWSVFSYF-----TRADD---
VLAGIVIFSLGVSSEIG--LVKLCFMYANIDKIQKITEGYLK-----
SDAASARNSRFSKNILHTMQSVK-KRGVIFWLVIISNGVVYLVKPIVTPGRH-----
FMEDQFI-ILGLEP-
KYETPNYEIGFFMMAVGVCVTCYLPANITAYLITVAGYSEAQFLALGHELANLWPDA----
QLHCRAMNLSQSVNEQANEYVKMRLREL VKIHSTNVNLLRDIEGAFRGAIAVEFLLLIGL
IAELLGLENT-----YMQVPFA---LIQVSVDCLTGQRVMDANLALERAVYDCRWE--
EFDASNRRVLLLLQNAQKVATLSAGGIATLNFSCLM AVIKSIYSAYTTLRT--

>SlitOR36

-----MLTFHEIIHEIRKFGLEYCDLPTMLENVSILLRVLTVNIDSKYKKGITILS----
YIVTAVTAACFYVFLFSMTWVFWVRARITGE---LVGAMVVLSLGISSEIG--
PFKLFYMCYCMDKTHKIADGFLE-----CDANTIKGTRFHSNLMKCLRNVK-
KRAMLYWVVVAGNGVLYVMKPVAMRGRN-----LPENYFL-IYGLEP-
MLETPNYQIAYFMMIASVFFVCYVPASVTAFLIVITGYAEAQMLALSEEMLELWSDE----
DTSEELDVYNPKVKVIINQFVERRLREIIGRHANVINLLNQVEIVFRQAIAIGFVLLVGLLS
ELLGKLENT-----FLQLPFA---LMQVSMDCFAGQRVMDASTMFEASVYDCKWE--
NFDKSNMKLVLVMLQNAQKTMTLSAGGVRTLFSFALMSVFRGIYSAYTALRS--

>SlitOR35

-----MWNKIRKFGLEYCDLPTMIWNVAVFLKVLTLNVYGKKKTGIPFI-----
FYIVVVVAALSYLEVYLICMVWFV--VRSRE---
TEDLGAAMVILSLGISSEIGTKLLYMFLYIKDIRNLTD AFLD-----
FDSHMVPGTRMYTNLLRYLRDVK-KRAIFYWAVIMGNGTLYVTMPMLRPGRH-----
LTEDMLV-IYGLEP-
MFESPNEYIAWFMMAASVATICYISANVTAYFIVIIGYAESQMRALSDEVTHVWKDD----
LNYGTDLQDFDRKKMIINEHVFKNLKYIIKRHATIKTLINQVEDVCSGPTAVGLTFLGLI
SELLGGLNT-----FLQMPFV---FMQVGTDCFIGQRIMDAGEVFEWAVYDCQWE--
NFDHKNMKMILLMLQISQKTSSISAGGMTKMSFRCLMGAMRV TYSA YTAFRSIM

>BmorOR37

-----MELGCSRHLKLPCSLHPIGISKHGNTLSELLIYFPAIPKIT----
YAILAVLLTVYYYIYLCSITWVFWVRCPQTGD---LAAASIVFSLGVSSEIG---AIKLFIIAK--
LRDITGEYLQ-----CEADM-APGRLRARVGRSLRTVR-
RRAFVYWLVLVVFNAFAYDLMPAFLPGRH-----LSEDFV-IYGFEP-
MFESPNEIASTLMGVSVFICYTAGSISAFIVIVGYSEATMLALSDEISCVWDD-----
--
ACASECQQPNDFIRARLGKIVAIHTKQIRLIREVEVVFVRGALAGGFACVAGLIAALLGGLE
NT-----FLQLPFC---VIQISVDCFVGQRLRDANVAFETA VYNCKWE--
YFDKSNMKT VLLILQNSQKTMGLTAGGVAALDFTSLMTIFKSVYSGVSQTDD--

>CpomOR38

-----METLDKFGLAHCDLPTMMWNVAVMLRVVAVKIEGGATSIPIFF-----
YLLATVAIVLYFFNYYASMLVFVLVGCRETGD---ILAGIMVLSISMNSLIG--
INKLFYIYRHQDKVQSLVADYVA-----YDRIA-PWPGTSALMAELMRSVK-
KRLILFWVTMGNAFIFNLQPLVMPSRL-----NLYDKHV-VYGLKF-
ILGITNYPPIAVNIVACTFFICYITSSIGGLLIVTTGYSEGRLLALSQEMRDLWSDY----
SENFEGDSEDKKA AKELNNYVKYRLQVIVKSHAINIDVIKKLEGIFRNAIAVEFILLTAGL
SIDLLGLEDT-----YIILPFS---LMQVGMDCYLQKLMDACKVFEDAIYDCKWE--
NFDVKNRKTVLLMLKISQRTLSLSAGGVATLSFECLMAMYKAVYSAYTALRS--

>DpleOR56

-----MPESGKTKGRRFFVHYILLRFLGLGWWHSPEENNTNN-----
FPGIYLYYSILTEVVWVAGFVGLESMDPFIGH-KDLDRMLFSLAFVVTHDLT--

IVKLYIFFFKNQIQDIIRTLEI-----KTVRITR-
IFTGLFIFFGWMTIGNGNVYGIIQDLRWVAQLNDTSLRPFRTLQPPI-YIPWEH--
QNDLSFIITFLLTVGLLWTGHIVMTIDTFIGSVILHMSTQFSIMQEAIStayDR-----
DMIVRTYCTKQEIEIALENTLKSCFRQHQMILSCVDKFASTYSYGFMTQLLSSMAAICSV
MVQVSRDASSLKSIVTSLAFFGAMIIQLALQCFTSSELTHQAERVSEAVMCCCKWE--
RMPVRLRRYLVLMIARSQRPLQLTAGGFATMNND CFLAILKAAYSYYAVLSQRQ

>HmelOR60

-----MSNAQSRDGPTRYFAPHYYLLRFLGLGWWHHPDENDTRN-----
FPGWYLYYAILTQLVWVAGFVGLESIDPFIGE-KDLDRFMFSLSFVITHDLT--
LTKLYIFYFKNDNIQDIVRTLNI-----RIQDFYQNYEKNRKTTRITKILT-
ASFVFFGWITIGNTNIYGIIQDLRWKAKVAKL NESVSKPPRTLQPPI-FIPWKY--
ESEESYIFTFLLTVGLLWTGHIVMTIDTFIGSVILHMSSQFVILQEALITAYDRP----
TRRNERLARAYYTDKDIETALENTLKSCIQQHQMILINCVKKFASTYSYGFMTQLLSSMA
AICVVMVQVSQDASSFKSIATSLAFFVAMIIQLAIQCFTGSELTYQASLVSDAVMQCKWE
--RMPRLRRMLLLTMMRAQKPLHLRAAGYAYMDNSCFLSILKAAYSYYAVLSQKQ

>SlitOR14

-----MTETRPKHYFGFHYRILRFLGLGWWHHPPEGNTSN-----
FPGWYLYYSIATQLVWVAGFVGLETIDPFVGE-KEMDRFMFSLSFVITHNLT--
LIKLYIFFFKNADIQEIVHTLEI-----GIYDYYQNDDKNRKTVRVSKIIT-
AAFIFFGWVTIGNGNVYGTIQDLKWKSLVATLNDSDVRPVRTLQPPI-YIPWDY--
QKDASYIPTFVLETVGLLWTGHIVMTIDTFIASVILHMGSQFEILHEAITTAYDRE----
DENNERIVKSFVPKQDIDAALKNTFRNCFRQHQVLINCV EKFSRTYSYGFMTQLLSSMA
AICVVMVQVSQDSFKSVRLITSVAFFVAMILQLGMQCLTGNETLQAERISDAIMQSKW
E--RIPPSQRRLLLIMMMRAQRPLRLTAAGFTHMDNACFLAIMKAAYSYYAVLSQ--

>BmorOR60

-----MVRPCRYFAIHFILLRFLGLGWWHHPHENETRN-----
YPGLYLYYSILTQLVWVVGVLVLETIDPFVGE-KDMDRFMFSLSFVITHDLT--
LIKLYIFYFRNVEIQDIVRTIEI-----DLY---RYYQNDDKIRATIRIS-
IFTAAFLFFGWVTIGNANIYGIVQDLRWVKNLNETTSKPLRTLQPPI-FIPWPY--
QEDKHYILTFILETMGLLWTGHIVMTIDTFIASVILHMSTQFAILREAIVTAYDRN----
EENNQIFLESFYKEHIESVLESTLLSCIRQHQLLIGCVEKFSKTYSYGFMTQLLSSMAGIC
VVMVQVSQGASSFKSVVTSLAFFFAMVIQLAIQCFTGNELTIQAERIA DAVMESKWE--
KMPVRLRRLLLVTMMRAQRPLHLTAAGFAYIDNTCFLSILKAAYSYYAVLSQKQ

>HmelOR8

-----MSPSTKRLLTFFCKYVYYAGAGDFLCNGVKES-----
KIYRIYTLISFSVYFIMIFLENLA-ALIGD---
FPEVEGKSAVMFSAIHDIILIKMFLIFYKSSIIKLNNEMASVM-----
SDIEESVIKRQQNKVL-WGIGLYVLT VYLSLISYGVESLRKVIVE-----GTPFYT-
VVTYFPSYYDNSFMASFRVFYMTWLYMMLPMIAADCMPIVHLIIMAYKFVTL CNYYD
RIRRN-----

FYNNLKVMNNRSAARILKLQCLRGILLHRKLMFLAEEIHRIFGIIMSLQVCESSAVAVLLL
LRLALS-PHMNLTFMTYTFVGSLLFLLALNLWNAGEITYQASLLSNAMFYCGWH--
VCHNDIRCIILIGCAQAQKPLILKAFGIQDLSYSTFVS---SICQSLKVAP--

>BmorOR8

-----MSLSTRCLLKDFCKYVYYAGA--GNFWYEDIYKET-----
VPYKMYVVISFFTYTVMIFLENLA-ALFGK---
LPEVEKNSAVMFAAIHNIVLTKMFLLLYHKRSISKLNCEMAAVG-----
ENLEEASIMRRQFRKMR-LGTALYFISVYLSLVAYGVESARRTIVE-----
GAPFYTVVTY---
LPDYDNTTVLASFLRIFFYITWLYMMLPMMSADCMPIAHLITMTYKFVTLCRHFDQIREK

FQINVKIMAKTEATEILKLGFIIEGIKMHQKLMYLADEIHRVFGIIMALQVCESSAVAVLLL
LRLALS-PHLDLTFMTYTFVCSLFLLLALNLWNAGELTYQASLLSNAMFYSGWY--
FCDFEKIRRVLIGCAQAQKPLILKAFGVLDLSYETFVSVM--TYSVFAVFYKRG

>DpleOR58

-----MAALFAD-----
FPEDEKRDSVTFSVAHTIVMIKMFSIIVNKKNIKKLISDIIAVC-----
ESHEEESLMNEKYKVMK-INVIAYFFTCYSSAACFVFEGLRKMYEV-----
-----DGFTMVILIMFKYKLITLRNYFDKLRKD-----
TEILHQSSDPQLAVNHLVNGLIKGIIMHKELLRLKEIDKAFGTVVALQLCQSSGAVSLL---
-----LGIAASL-----LSESIYFCGWH--
NSGRNIRRIVLHACIQAQRPLVMKAFKMIELTYGTFLWSVKDQGTFKELLNT--

>HmelOR21

-----MKDYLLKKICKKIFLVGS--GNFWYEESEIGNDD--V-
ILYKIFNYILFLVYALMTLLEIMA-ALIGD---
FPEDEKSDSVTFVAVSHTIVMIKIFSVIWNKELVKKLIQDLISVC-----
EIHEEEYLMKEKYNIMK-INVIAYFITVYGSAACFVFEGLRKMLTG-----SHFVTAVTY-
YPSYDD--
NSLLATITRIFMTMALFMMMLTMIVSVDCFAVVILIMYKYKFITLKNYFQNLRL-----
-
FEAFDIQENCSGEKLLKGLIDGIIMHEKLLRISKDIDKAFGTVMALQLCQSSGSAVSLLLQI
AVT-----MKILFFVIALFFLLGLFLCNAGEITYQASLLSDSIFYCGWH--
FPRNLGRLVLQACAQAQRPLVMKAFKMLELTYGTFLLVIRGTYSVFALFYA--

>SlitOR19

-----MKNHYILKTYCKRIFLIGS--GNFWYKESEIGND---
QSLLYRTYNAVLYFIYGFMTILEIMA-ATMGD---
FPPDEKRDSVSFAVSHTIAMIKIFSVIANKSLIKKLNHKMVTVC-----
ERYEENTLMAEKYKIMK-INVLAYFVTVYASAFFVFEGLRKMLTG-----
SHFVTVVT-YYP-----

-----KFEDSIGATSARVLATVILYIL-----MIT-----MIMSVDSF-----
---TM-----IYLIMYKYK-----FITL-KQ---YY-----

>MsexOR29

-----MKNYYILKTYCSKIFLLGSGDFWYENKVIGDD---
KRILYRMYSICALFFIYGFM TVLEIMA-ALMGE---
FPTDEKRDSVTF AVSHAIVMFKIISVVFQKELVKTLNRKMVTIC-----
EHYEEQALMSEKYRIMK-INVIVYFLIVYGSAACFVFEGLRKLFDG-----SHFVTVVT-
YYP-
DYEDNSMFANSVRILATVILFLMLNMIVCVDSFTMVYLYIMYKYKFITLRHYFENLSVT-

IDKLNTPGNEEVVAKMLTDGLVEGVEMHSKLLRLSKDIDKAFGTVMALQLCQSSGSAV
SLLLQIALS-DQLTFVLKIVFFVMALFFLLGLFLCNAGEITYQAAQLSDAIFYSGWH--
VCSRHRVKIVLLAIMQAQQPLVMKAFKMLELTYGT FILVVRATYSVFALFYAQD

>BmorOR22

-----MNKNHYILKTYCDKIFLVGS--GNFWHQKTESRND---
KTLLYKIYSCVLF FTYGFM TVLEIMA-ATMGD---
FPEDEKRDSVTFATSH TVVMIKFISIKNKELLKTLNRKMMM IC-----
EAHEEQTLMDEMYRTVK-INV VAYCVAVYGSATFYVFEGLRK FYNG-----
SHFVTIVT-YYP SND-
DDTMLASIVRIATTLVLLMMLLSMIISVD TYTMAYLYIMYKYKFITLRHYFKRLREN-----
-
VDELVAAGKARLAAEKLAQGLVEGIKMHNELLSLSKDIHKAFGTVMALQLCQSSGSAV
SLLLQIALSQLTFTMGMKIFFFLAAMYLLLALFLCNAGEITYQASLLSDEIFYCGWH----
NSPVIRDVLIAILRAQSPLVMKAFKMVELTYATFILVVRSTYSVFALFYA--

>BmorOR21

-----MNKNHYILKTYCDKIFLVGS--GNFWYQKTESRND---
KTLLYKIYSCVLF FTYGFM TVLEIMA-AMMGD---
FPEDEKRDSVTFATSH TVVMIKFISIKNKELLKTLNRKMMM IC-----
EAHEEQTLMDEMYRTVK-INV VAYCVAVYGSATFYVFEGLRK FYNG-----
SHFVTIVT-YYP SND--
DDTLAATIVRIATLVLLMMLLTMIISVD TYTMAYLYIMYKYKFITLRHYFKRLREN-----
VDELVAAGKARLAAEKLAQGLVEGIKMHNELLSLSKDIHKAFGTVMALQLCQSS-----
GSA-----VSLLLQIA-----LSDQLFTMGMK-----
IFFFLAAMYLLLALFLCNAGEITYQVCTSIV-----

>CpomOR19

-----MKNYFILKNLCRKIYLVGA--GDFWFEEGEISKG---
KSLRYQFLCFVLFSIYIFMTVLEIIG-VFFGD---
MPKDERSDCTTF AVSHTIVLGKMFSVILNRKR VKELNRKLVEIC-----
ANHEDEHRVAENYRIMK-INI WAFAVSVYGSFIFLFEGIRKMMSG-----SHFITIVTY-
WPFYED----NSIIAVSFRFFTLVLAVMMATMICIDSFAMIILIMYKYKFITLRYFFEGLRER-

FDRNNYTGNEEYATELLHAGFIEGIVMHSNLTRLKSDIDRSVGTVLALQVCLSSGSAVSL
LLQLALSDLTVAAQLKIIMFVIAVFFLLALFLCNAGEITYQASLLSDSIFYCGWD----
RRDLRRLVLFSCAAAQRPIVMKAFNMLELTYGTFIQVVRGTYSVFALISAQN

>HvirOR19

-----MKDRDILFKYCKVMFYIGS--GNCWYKEDEIGND---
RSILYRVCSASLMLLYSYMAIFELIA-FAFGN---
FPREEKRQALIGGAGHTVMLLKALFLTTKKLPIRSLNRKIVSIC-----
EDYEDSALMARKYKIMK-INAI SYLGLVNGGVLLYIIEGLRNMLNG-----SHFVTVVT-
YYP--SFEDDSMLATIVRVFNIIFIMIMLTIVISVDTYIVTYFIMYRYKFITLRKYFENLRND--

FFTlierKEVELATEKLANGLVEGIKMHSSLIRLKPEIDKAFATVSAIRVFESSLAVCL-
LFEISPSDQRIPIEVKTMIFIFALFFAMGLFLCNAGDITYQASQLTDAIFYCGWQ--
SCPRPIRKMVLLAIMQAQRPPVMKAFKVLELNYATYIQLVRSTYSVFLLCAQK

>HmelOR20

-----MIYETNETIKFISIANKIWCFCGI--HNLWIENIFDN-----
KFTKYFNKIITFSLMLFVSMEMGALFTRTD---
LTEKQCSDLYLFVPTHCILGSYYIGSQYYKKNIRLLIMLSIDMK-----
SVYNDSEIEKQMIKRAT-YYSIAYVMSASSALLSY-----EGSFTTVVTA-
WPDSSED-TSVFSSFARLFFYLWWAFMARISIGIVLTIISVGISHQFKILQKYFYSLNDIFNN-

ETIDSHEKQLKYEQSLKVGIKVHSQALWCTSQCQLSCSFVFGGQMMVCVYALSFLMLQ
MMNSERTLTAMVIATTSICVLICTGLIMWNAGDI--TAALIPSAIFSSGWH--
HCGDTLRRVTSIILGIAQ-----GQVNCKRSIMVER---HWVFK-----

>SlitOR37

-----METTTTSYTRSKTTNFFYKINFIVYIFGL--PNFWIQDLKLSKRF--
SNKFYDKFSMFNNTLIFLLIIFELCSYFTQTQ---
LTETHQSNRLIYAISHPMLFMRVMMTSIKDR-VKLVMYSLNVGLK-----
RVHNDPEVEKQMIACTI-MYLSALLSCLMSMLMYAAEGFGEVIRH-----
GKTFTTIITA-YPRVED-
ASDMANVVRAICFIWWIFLTRIFAVYILVISLTTCLSYQYKKPAELFHSLNDIFER-----
--
NDLSQIEKEEQYEAGFKVGIKLHADTLRCTQLTQSVCRGVFSGQIVFNILLVVLMAQM
ANSERTLVNLGSAGFTACAVLISTGFYMWNAGDVTVEASHLGTAIYFSGWY--
HCSVRIRKLVVITMSEAQRPVVLKGLGYIDLSYQSYIRIVKSSYSVFSVLF---

>MsexOR26

-----ITYLYLFGL--PNFWIEDFKLPK-W--
FMRSFDIFTKIINNVLYFFILMEMIAFFTQEN---LSERQKSDLLVYGISHP--
ILSYRVFISYKEDLRAVLLDLVVTLK-----RVYNDVKVERQMIKKSL-
LYSSALVFSCILAMFFYTFDSILHVIRT-----GATFNVVITT-WPKVED-

RSTLANAGRIVFYIWWFFMSRVSGAYTTVICLTCLSHQYTNLRSYFENLNNIFET-----

NFDQAVKEQKYEDGFKVGIALHDLRCTLRECHSICQGVFSGQIILNILLVVLMSQMVN
SERTLVTAFAATASSASAVLISTGYFMWNAGDVTVEASRLSSAMYLSGWH--
RSSITIRKLVVITMFNAQKPVILKGLGIVDLSYQSYLSIVKSSYSVLSLLY---

>BmorOR20

-----MIQASKYPNSKTKELFRKIAHIA YICGL--PNFWIEELNLPKS---
FIRVYDKIVRIFNVATYFFLGIEIAAHFTQHH---LTNKQKFDLLYSISHP--
ILNGYGVIVSRQVKKVLLDLIVNL-----
KVKYNDPVIEEAMIKISMTYSVSFITNCVLSMLTYTFDALLMVYKK-----
GVTFNVIITA-
WPDVEDTTTEASIGRIGFHIFWWLFVTRPFAVYVLVINLTTCLSHQYMNLQSYFFHLEDIF
KE-----
NLSQNEKEAKYEA EYKIGVMLHANTLRCTRCHMVWNGVMSGQIIFNISLIVII MAQMM
NSDRTL VNTFGTVLTASAILISTGFFMWNAGDVTVQASRLATAMYCSGWQ--
CRGKSIRNMVMNTIAVAQRPLVLRGLGVIDLSYQSYLSIVKASYTVFSVIY---

>SlitOR21

-----MDNFSGSYRQTKTTEFLINLNKFIFVFGL--PNCWVDNLDFPDN---
FMKVLNVL SIYGNWSVIIMNISEYGAITYQNN---LSERQKSDLMLFLISHT--
IIGFRIRICHQRDIRNV MYKLGIALK-----AVHNDCEAEQKMITRSK-
FFSWALIFNCVMSVIMY TIEGVLRVIRT-----GDTFNTVITA-WPDVHD-
RSVLSNIGRTVIYIWWIYLTRIFSVYSLVICLTIAVSHQFKNLKS YFYSLSKIFEN-----
DNLSQTEKEQEYEKAFKVGISMHSETLKCTDEIQTICREVFSGQIIFNLTL LIVLMYQMMN
SPRTFSNVLTGLTALTILFSTGFFMWNAGDITVEAEGVPVAMFSSGWE--
NCSVRVRKLIVISMSQAQKAVALTGLGII ALSYQSYVSIVKSSYSVFSVLY---

>HvirOR21

-----MDHFSGYYKSSKTTEFLINLNQFVFIFGL--PNFWVQELDISDS---
FRKIVGYLNKYGNWSIFGLILAEYGAFFTQKN---LNQRQSSDLVLFMISHS--
IIGFRVRICHQEVIRNV MYKLGIALK-----EVHNDSEAEQMIKRSK-
FFSWALILNCVISFLMYTIEAVLRVIRA-----GVTFTTVITV-
YPDVEDRSGLSNGVRVMFYIWC IYLTRVFAVYTLVICLTIAMSHQFKNLTSYFYSLSSIF
DD-----
DQMTQAEKEQEYERAFRVGIIHSDTLNCTGDIQKICRDVFSGQIIFNITLLIVLMYQMVN
SARSLTNALTLVMVALSILLSTGFFMWNAGDITVEAKSLPTAMFSSGWE--
HCRDSVRKLIVIAMMQAQEPVVL TGLGII ALSYQSYVSIVKSSYSVFSVLY---

>CpomOR34

-----MMPIKPFQNNRTSDLFHTICKI IYLSCA--TNFWFEDIDYPA----
FMKIYNSTSRVLEVTVAVL IISDWG--AFWTQ-
PNLTEKQSNDRMLFAFSHVVLYSVYCSVIYYKREIREL VMTLTVRLK-----
EVCYDGSIEKMMLRTTF-RYT TAFVFCSSTLFSFGIGSGFQALTT-----NATFTTIPI-

WPDVED-RRLVAGAARIILYIVWWIFLV--RFISVYIILLISTIGIAHQFKNLCKYFEDLTDI---

FEGSGSQEEKERRYENAFKVGIKMHSITLWCMRQIQLVGGVAFSGQVIINVSVLGLLMIQ
MMFTERTLIAVMPIIFMVSSVLVGTGVFLWNAGDVTIEASRLPAAMFHSGWH--
RQSVRVRKLVITIAIAQAQKRVRIKGLGFIELSYESYVTIVKSSYSLSFSVIY---

>MsexOR9

-----MTSPDSKIKEFFRKFTLITYLCGL--ADFWIEDLDLPTQ---

FIKCYDTFCKIFNNFLYLYVIAQILSLFTQHN---

LTEKQRNYQLMFCVAHPFVVTFTLIAKHRKKLQSVLFRLVVSLK-----

LVYNDLDIEKEMIKRIK-FYLFVAVSAPFWISMISYCVDSYVQVVTS-----GTTFNIMILA-
WPLVDD--HSVIASLARFIYHIIWILFETRVTAAAY-VMVISLTTTCISYQYRNLRSYFESIHRV-

FEEDLTQKEKEKKYEKLLKIGIQAHSOTLRVTKDGTEACSAVLSAQVLFNTVFLVILMYQ
AVVVNENRSLVFSTLCTVITLLFSTWFFTCNAGDVTYEASLIGTAMYTSGWQ--
NCSLSIRKLLVIALARAQEPILKGFWILTLSHQSFLSIVKFSYSIFSLLY---

>MsexOR5

-----MKVPLKKFRPTETTKLLDELNKLFIYIFAF--RGFWVEEVKLPKT---

FVKIYDAMYPALNVSLVIFCALQIGAHFTQKH----

LNIQQKININIMGIAQPLTKCCLNCMYKKEECKQVLYHLFVAVK-----

EIYNDEETEKMLVKKLK-FSLWVYMFSSVSTTLLYGMIALIEMVRS-----

GSTFVGTVTA-WPDTTD-

TSALAACARVYLYFWIVYTSTGSMVILMVLTFMGLTYQYKNLQKYFENLNSIFED-----

KQVTHEELEMNFEKALQKGIAHSOTLWCVNQCQTICKRINMAIVLINTILIVLMGFLILK
V-----GTCLIVLGMCLMILAFFMWNAGDVTVEAQKLSDAIYSSGWY--
NCSARIRSLVVAMIQAQEPVVFTAFGVIELSYETYVAIIKSAYSVFSVLV---

>MsexOR6

-----MEETKKYAPTDTTKLLDKFNKILYVFGF--RGFWMGDVKLPKT---

VMKIIDILYPVLIITQGTFTGLQLGAYFTQKH---

LNSVQKIDALVMGFGQPMMLLYCLNCRYKKACREVFYHLFVVLK-----

TVYNDKETENMVKRLK-LYFGAYLIFSLLVLLYGSYASVETVRK-----

GATFVTVVTA-WPDVTD-

TSKLASYARVGIFMWSVYSFTTSVVIIIIVLIIFLGLTYQYINLQRYFENLNSIFEN-----

DRLSHEEMEKNFEKALQNGIAHSETLWCVKQCRMICSAINAGVILLTTGTLVIL---

MPAILGSKDDLLEAMMYLIVLMIMAFFMCNAGDTTV-EAQKLPNAIYSCGWY--

NCSARIRSLVVVAMIQAQEPVVFTGFGVIELSYENFVTIISAYSLSISVFH---

>BmorOR19

-----MHEFVINVQNETTKLYDQLNIILYILGL--QGIWVDEIKLSRR---

FHVFFKVVTFILHIMCGMFAQLQFFAIFTQNS---

LNSQQKSDVIVIGISNPMAIYFCINFIRNRNEIKDLFIYHLAVVLK-----

IYYNDVEIEKSMVNKIK-SYLSTYVFASITILVSNGLIAFFQTINS-----DEPFLGIITA-
WPKDTSKTASYARIGFYLFWCIHFFRISTVFAVIVCILISIKYQYKFLCSYFESLNKIFDD

ETSSHEVKEAEFENAFNCNGIKIHTQIIWCVRRCQIMCRTVFSANIMLDTFVLVILMLAMV
NS--ENDFYCSQMSSVLVTVVLMFAFFMWTAGDINVQASQLPDAIYGSGWY--
NCGKSIRSLVTISMNKAQQPILMWALGFVELSHKNFVAIIKSAYSVFSVFI---

>SlitOR33

-----MSNQIKMYTPNEMTKLLGKLVICFIFGL--KNIWVED-VKLTNR--T-
RSCNRLLLFAEIFYIIFASTILGSLFTQKN---LSEKQKTDQMMFSITLP-
GNIFHYILLYRRHEIRNLLYHLAVVLK-----EHYNDEDLEREMIKKIK-V-----
FSISLCGLVGMGLSAFYRVVTA-----GETFVTITSA-WPDIHD--
RSTAAGLVRVVFVYFWWYPFAARIM-VTFLILVTMLVSICYQFKNLQSYFYSLDEI-----
FSDGTQSQEQKE--
KKYENAFKLGKIMHSLTLWCKNQHQHVSKELFATEIFLFFGMLLSQLTA--
LLDRNMTQLGTMFITSVTTCLALGFFMWNGGDITLEASKLSEAMYCSGWQ--S-
SVRVRKLVANALRQAQNPVVYKTLGIVEFSYESYVRLVKMPYSAVSVFI---

>SlitOR34

-----MNFFRNPEVPTQLYKETDTTKYNKFWFLCCCPDFWVKKVDYPDP---
FTRVYRPSMLVNHIVMVIFCSCFLSLWTQHD---
LSQSQKSDRLAYAASTPIITVYHFVILYYTEDVKQVLYKLAVVLK-----
VDHNDKNAEDEMIIKQSK-LHNGIFFSSVCNMVLVGLYNFYRAVTT-----
DATFITCISA-WPDIED-
RSTLAGLTRVVVYFWFSHVTRNMGVFLITHALLLSQQYKNLQSYFEDLNRIFLE-----

KELSQEEQELKFEVRFKKGIEQHALTLWCVDETQRIFQITFSSHVLLWCLLISILPDVLNN
DTHSPTMLVSNAPRVCAALVGLGYFMWPAGDITVEASNVPHAMYCSGWQ--
CCSPRIRKLVVLAMMQAQRSIELKAFGHLTFSYETYVAIVKMSYSLFSVLY---

>DpleORco

-----MITKSENRLVSDLMPNIKLMQMAGHFLFNYHSDNSGMSSL---
LRKCYSSIIHAFLIVMHYLCMAANMA--KYSEE---VNELTANTITVLFFSHS--
IIKLTFFAITSKNFYRTLAVWNQSNHPL-----FTESDARYHQLALTKMR-
RLLYFICGMSFFSVICWVTITFFGESVVDKETNETITEPAPRLPLKA-WYPFDA--
MSGTMYIAAFQVYVWLLFTIFIANLMDVMFCSWLIFACEQLQHLKAIMKPLMELL----
QNFGQNNNNPNGLTQKQEMLARSIAIKYWVERHKKHIVRLVSSIGDTYGTALLFHMLVSTI
TLTLAYQATKINGLNVYAFSTVGYLSYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY
--DGSEEAKTFVQIVCQQCQKAMSISGAKFFTSLDLFASVLGAVVTYFMVLVQLK

>HmelORco

-----MMTKIKTQGLVSDLMPNIKLMQAAGHFLFNYHSDNSGMSTL---
LRKVYSSVHAFLIMIHLYLCMAANMA--KYSEE---VNELTANTITVLFFTHS--
IIKLAFFAITSKNFYRTLAVWNQSNHPL-----FTESDARYHQLSLNKMR-

RLLYFISGMTIFS VVCWVTITFFGESVRDKETNDTLTEPVPRLPLKA-WYPFDA--
MGGTMYIIAFAFQIYWLLFSMAMANLLDVMFCSWLIFACEQLQHLKAIMKPLMELL----
QTFGQQNNNPNGLTQKQEMLARSAIKYWVERHKKHIVRLVSSIGDTYGTALLFHMLVSTI
TLTLLAYQATKINGLNVYAFSTVGYSYTLAQVFHFCIFGNKLIIESSSVMEAAAYSCQWY--
--DGSEEAKTFVQIVCQQCQKAMSISGAKFFTVSLDLFASVLGAVVTYFMVLVQLK

>Bany_Orco

FFAHT--IIKLTFFAITSKNFYRTLAVWNQSNHPL-----FTESDSRYHQLALTKMR-
RLLYFICGTTIFAVTCWVTITFFGDSVRMLVDKETN-ETLTEPVPRLPL---DA--
MSGTMYVAAFAFQIYWLLFAMSIANLLDVMFCSWLIYACEQLQHLKAIMKPLM-----
QN---PNN-
PNGLTQKQEILARSAIKYWVERHKKHIVRLVSSIGDTYGTALLFHMLVSTITLTLLAYQAT
KINGLNVYAFSTVGYLGYTLGQVFHFCIFGNKLIIESSSVMEAAAYSCQWY--
DGSEEAKTFVQIVCQQCQKAMSISGAKFFTVSLDLFASVLGAVVTYFMVLVQLK

>SlitORco

-----MMTKVKAQGLVSDLMPNIKLMQAAGHFLFNYHAENGGMSGL---
LRKIYASTHAILITIHFACMGINMA--QYSDE---VNELTANTITVLFFHT--
IIKLGFFALNSKSFYRTLAVWNQSNHPL-----FTESDARYHQIALTKMR-
RLLYFICGMTVLSVVS WTTLTFFGESVRSKETNETL TEVAPRLPLKA-WYPFNA--
MSGTTYIIAFAFQVYWLLFSMAIANLMDVMFCSWLIFACEQLQHLKAIMKPLMELL----
QTFGQQNNNPNGLTPKQEMLARSAIKYWVERHKKHVRLVASIGDTYGTALLFHMLVSTI
ITLTLLAYQATKINGINVYAFSTIGYLSYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY-
-DGSEEAKTFVQIVCQQCQKAMSISGAKFFTVSLDLFASVLGAVVTYFMVLVQLK

>HvirORco

-----MMTKVKAQGLVSDLMPNIKLMQMAGHFLFNYHSENAGMSNL---
LRKIYASTHAILIFIHYACMGINMA--KYSDE---VNELTANTITVLFFAHT--
IIKLAFFALNSKSFYRTLAVWNQSNHPL-----FTESDARYHQIALTKMR-
RLLYFICGMTVLSVISWVTTLTFFGESVRNKETNETL TEVVPRLPLKA-WYPFNA--
MSGTMYIVAFQVYWLLFSMAIANLMDVMFCSWLIFACEQLQHLKAIMKPLMELL----
QNFGQQNPNGLTPKQEMLARSAIKYWVERHKKHVRLVASIGDTYGTALLFHMLVSTI
TLTLLAYQATKINGINVYAFSTIGYLSYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY--
DGSEEAKTFVQIVCQQCQKAMSISGAKFFTVSLDLFASVLGAVVTYFMVLVQLK

>BmorORco

-----MMTKVKQGLVTDLMPCIRLLQAAGHFLFNYHADTSGMNML---
LRKIYSSAHAVLIVVHYICMGINMA--QYKDE---VNELTANTITVLFFAHS--
IIKLAFFAFNSKSFYRTLAVWNQSNHPL-----FTESDARYHQISLSKMR-
RLLYFICGMTVFSVISWVTTLTFFGESVRSKETNETL TEVAPRLPLKA-WYPFKT--
MSGGGYVFAYIYQIYFLLFSMALANLLDVIFCSWLIFACEQLQHLKAIMKPLMELL----
QNFNAEN-
NPNGLTAKQEMLARSAIKYWVERHKKHVRLVASIGDTYGTALLFHMLVSTITLTLLAYQ

ATKINGINVYAFSTIGYLVYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY--
DGSEEAKTFVQIVCQQCQKAMTISGAKFFNVSLDLFASVLGAVVITYFMVLIQLK

>CpomORco

-----MMGKVKSQGLVSDLMPNIKLMQMSGHFLFNYTEETGGMSLL---
LRKIYAAMHAFLILLNFVCMGINMA--QYSEE---VNELTANTITVLFFAHT--
IIKLAFFAINSKSFYRTLAVWNQSNHPL-----FTESDARYHQSLDKSR-
RLLYFICGTTCLSVVSWVTLTFFGESVRDKESNDTLTEPAPRLPLKA-WYPFDT--
MSGSMYIMAFVYQIYWLLFSMLIANLLDVMFCSWLIFACEQLQHLKAIMKPLMELL----
QNFNSTNPNPNGLTQKQEMLARSAIKYWVERHKKHVRLVASIGDTYGTALLFHMLVSTI
TLTLLAYQATKIDGLNVYAFSTVGYLRYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY
--DGSEEAKTFVQIVCQQCQKAMSISGAKFFTVSDDLFAVLGAVVITYFMVLVQ--

>MsexORco

-----LSGHFLFNYYADNSGMTMLLR-----
KMYSTVHAILIFVQFVCMGVNMA--MYADE---VNELTANTITVLFFAHS--
IIKLGFLAFTSKSFYRTMAVWNQSNHPL-----FTESDARYHQIALTKMR-
RLTYFICFMTVMSVVSWSVTITFFGESVRNKETNETLTPAPRLPLKA-WYPFDT--
MSGSMHVVFVVFQIYWLLFSMSMANLLDVLFCAWLIFACEQLQHLKAIMKPLMELL----
QNFVQNTVNPNGLTQKQEMLARSAIKYWVERHKKHVRLVASIGDTYGTALLFHMLVST
ITLTLAYQATKINSINVYAFSTIGYLCYTLGQVFHFCIFGNRLIESSSVMEAAAYSCQWY-
-DGSEEAKTFVQIVCQQCQKALTISGAKFFTVSDDLFAVLGA-----VV-----

>HmelOR65

-----EMTLRCVGCWDWYREPKNEYQIF----
FNNIYLGFLVLFILLNLPISLIVHLY--TVWTD---MMSHLENMADGLPLFAS--
VFIVAYLSAHKNDLYNLVKYMNENFRWHS-----ARGLTNMTMLKSYQTAK-
SFAYWYTGCTLFSVTMYVAMPIFAHLWT-----KNPLQP-WIYKDL--
TSSPAIVLVFMRQCLAQAFVGLAVGQLGVFFACNSILLCGQLDLLCCSLRNARHAD----
SSYHYDDKVVNIYSLHYDEATSEALRECGRVCQIINEFKVKFEFVSPLLVLRVVQVTLY
LCTLLYA-----ATLKFDMITVEYLAVALDIFVYCYFGNQIILQADRVTTAAYQSSWP--
SMGVRPRRLLLNLLANLRPTVVRAGRFLPMNLHTFVLIKTSFSYYTLLNVN

>SlitOR1

-----MASNVDKTTLNSEKPEHYIHYIEMPLKLVGCVWDLFPNSVTENRKI----
FNDIYLGIVLFLVTHIPMVLTVHLY--TEWQD---IMSSLGTIADALPLLVS--
LVIVAYYAIYRRNLYELLNYLDKNFKYRS-----ARGLTNMTMEQSCMTAR-
RFGRIYTACTMFSVTMYATLPVIVHLWT-----KEPIQS-WIYMDV--
TQPPFFEFVFMLSCLAQMYVGLAMGQFGVFFASNSILICGQLDLLCCSLRNARYTT----
HNYVDAKTNFDIYSPEYDDATMEALRDCASLCQVVKYKEMFESFVSPLLALRVVQVT
LYLCTLLYA-----ATLQFDMITVEYLAVALDIFVYCYGNQIILQADRVSTAAYQSMWH-
-TMGIRPRKVLLNILLANRRPVVVRAGKFLPMDLHTFVVII--KTSIF-LLHSSS

>DpleOR44

-----DCIFVFLFIFLYNCLLTINLY--
FLPSD---LNVIIEDLVLYFTCLSI--MSKVLTYFIRKESIRDILRFLDG-----
DKFQPKNEKELQIINAACKFNE-KYWKVVAISYSSNITHVSTPIILHLID-----
SVPVVPVSG-YFFLSE-
DRRRENLYYIYLFQAVGIHFNMLYNINIDSFFIGLLILAI AQIDILDEKLKNIATN-----
IWDADGMVNRDIDEICIRKLNDCILHYNNISKFCLLVEEVFSVTLFVQFSMSSFVICVCLY
RLTQP-APLPYYLFLGSYLFIMIIQIFVPCFFGARIMDKSSQLSHAVYSCDWT--
PRSRRFKSSMRLFVERSLRPHSITGGKIFPLSLVTFTSIMNAAYSFFTLLTN--

>MsexOR41

DLIIEELVFYFTELAA--ISKVLTFVFFRDKLAKILDALED-----
PMFQAANGREQKIIDGAKRFNK-RYWKIVATVSLTSHATHILSPIVEHLFL-----
SVPLQLPTCR-YSFLSE-
NTIQQFIYPLYLYQTLGMHSHLWFNANIDSFFLGLMILIIAQLQILDRLRLRTVTDV-----
KKNDDIGQANTSEARANYSLTQLNKCIVHFDEVGKFCGLVEDTFSMTLFMQFSMSSCIL
CVVLFRFTLP-APFEYYIFLGTVMCMISFIVPCWFGTRVMELSVLLCSSVYECDWT--
AMPKKFKSNLQLFVERAKRPLTITGGKMFMLSLTTFTSIMNSSYSFFTLLRN--

>BmorOR13

-----MAPKQIDCFEINWKFWKFLGI----WSENKPHRY---
YKYYSKIFITFFVILYDVLYTINFY--FVPRQ---LDLIIGEMLFYLTLSV--
LSKVFTFIIMRHKLKIIFEILES-----DAFQTDTEEELKILHRAKVFIK-
RYWKIVALVSITANLTHISSPLLKNLIF-----KVELVLPVCS-YSFLSE-
SFLKTFEYPLYFYQIVGIHFHMLYNLNIDTYFLGLMILIIAQLDILNVKFRNLKSG-----
----KDHTQLNESIMGLNKNLDHYNEIERFCSLVQNIFSFTLFVQFSMASCII CVCLFSFTLS-
VPVEYYIFLATYMFIMIIQIMVPCWFGSRIMDKSILLSSAIYNCDWT--
SNSKDFKINMRLFVERANKPLSITGGKMFSLSLATFTSIMNSAYSFFTLLRY--

>SlitOR8

-----MESHQIDSLNINLMYFKFLGV----WPGNNPWRF---
YNYYSKAFIMVFVIIIFILLFSINFY--FLPRQ---LNIFIEETIIYFTDLAV--
TSKVLTFVFMHEEIIILDILEC-----DLFQPEDDEEMIILENAKKSSK-
TYCKIIMIVSYLSSSTLLILSPLISHLIL-----GVELLLPICR-YAFISD-
EYRLMFIYPIYLYQIVSIHFHVLNVNVDIFFFGLMVLAIAQLDILDRKLRKVTDG-----
NKVEDTDGEASRPIDKNKEDVMKINQCIHFIKVCRFCELIEDAFSATLFVQYSAASCIIC
VCLCRFTMP-AEMGYIVFLASYMSLMISQMMAPCWLGTRLMDKSQLLAFSVYNCDWT--
SRSRQFKSNMRFFVDRANKPLSITGGKMFNLSLGTFTSIMNSAYSFFTLLQHFAQ

>HvirOR8

-----DSYCKIHNSFAIKIFFIMVFRQIDCFKINMKFLKFLAIWPGKDFTRR----
YKYYTVAFLTAYFIIFMILFTINLF--FLPKQ---LDIFIENMVFYFTDSAT--
LSKVMTIGFMRKKILQLFEMLES-----DIFQPDNAEGLAVIEKAKKFNK-
LYWNILAVSFASCASNLPPIIAHFIL-----GTELVLPICN-YGFLSE-

DFRQMFGVPLYLYQGSAMMFDMLYSVNIDTLFAGLMVLAIAQLDILGIKLRRTVDK-----
EVLEETDSETSRQHRDNHKEAIKKINHCHYEHYKHYCSLVEDVFSITLHVQFGMASCHICI
CLMRFTMP-APLVYYLFLATYMFVMILQILVPCWFGQRIIDKSNLLAFSAYDCEWT--
SETRQFKSSMRIFIERAHKPLSITGGKMFCLSLVTFTSIMNTAYSFFTLQN--

>SlitOR20

-----MGYNQIDCFKIHLTILRVLGV-----WPEENPSVY---
YVYFSRIFVFIFTVLYVIIYTMNFY--FLPQQ---LEIFAEELIFYFTNVGA--
LSKALAFIFLRDKVKKMLYMLLES-----EMFQTDNPEEVKLIKTEKESL-
FYWKITFGLSVSANTVNVFLPFVLHLIF-----SIKLEFPVCR-YSPICE-
QYEAIFLYPAYLYQSIGITSHMLYNVNIDTFLLGVMFLAMAQLDILDRKLRKVTDV-----
CVNVDAPRGSIDKMIDDQNAVLEINKCIKHYDAVCEYCKLIQDAFSEILFVLFSSGSKIC
MCLFRFTMP-AETQYFVFLTLYIVVMTLQVMVPCWFGSRLMEKSSQITFAVYDCDWT--
PRCRRFKSNLRLLLVERANRPIIKGGKMFLLSLATFTAIMNSSYSFFALLRN--

>HmelOR13

-----MPLKQSDCFKINKKYWTLLIGIYSTIDSKM-----
YIWYSRIVLFIFIFIYDTLSTLNFY--YVPRD---LDHFIEELIFYFTELSV--
ISKVLTYYILMRESITKILCVLDS-----EKFEPTDEKGIQITTAAMKFNV-
KYWRIVAFVSYFSLIHLISPLVAHLSL-----SVPLVLPLCS-YSFLE-
SFKERFIYPLYTYQCLGMHAHMLCNLNIDTFFLGMLIFTIAQLEILEDKLVTL-----
-----TNISRLPNSKTGDRNISNKNEFCDLVEDVFSITLHVQFGIASCHICVCLFRFTLP-
APIQYYMFLASYMFVMTIQIAVPCWFGTRIIVKSSLLSQAIYNCDWT--
PRPRRFKSTMRLFVERANRPLSVTGWKMFPLSLNTFTSVI--VFLYYVFFVTAC

>DpleOR45

-----MAIFIFVNFIIYNSLLILNLV--
FTPRK---IEYMIREVIFLFTEVAV--TGKVLMMFKRKKILSVFDILNC-----
EVFKGEDDISRRIVESHVSKYK-TYWSLYAILS NFAYSSQVFVPIIVYFIF-----
NTNIKLPICK-YYFLDE-
EYVRRYFVFLYLYQSLGIYGHMQYNVNIDALISGLLLIAIAQVKVLKYELKNIKPD-----

SPLKDKRETTERSQIFKLHKHLKHYEELLYCSGIQDIVGLSMFVQFGIASIICVVLSSGLRF
T-ASVEALMFMVTYLFTMILQIYVPAWLGTQLNYESQELVFAAYSSQWI--
RRSEKFKRSLKLFMERANTNIVLTGWRIFPLSLDTFTSVI--TRNIS-----

>HmelOR61

-----MVENKLSDCFKVNFIKIFGL-----WPGSRDSGY---
YKYYSTVFLILLVYNILLVFNFL--STPRK---IDLIMNEVMFLFTEVAV--
FSKVFLMLFMRQKIFDAFDILNC-----EAFKGQDDFSRQIIKNHTRKYQ-
IYWKSNAILSNFVHFSQIYPIFQHVVV-----NKDIELPVCK-YYFLDD-
QIIRNFFVFWFVYQTFGIYAHMNYNVNVDALIAGLLVHIIAQLKVIRHEIENIKVL-----
-
KSNKKSQVQETDYLQISTLNTYLLKHYEALLKYCSIVQDIIGITMFVQFGVSSVIICVVLYCLL

MP-FTIQGLMFKLAYLFAMMLQIFVPAWLGTQVEYESQKLTFAAYSCEWI--
PRSEIFKRSLKLFMERGNTSIVLTGWRIFPLSLDTFTSVS--EHSYVTYI----

>SlitOR15

-----MPSDQSKMFDNSFRIAKIFGI----WPGLKPSRY----
YKFYSFIYLFATFVCYNLLTLNLL--YTPRK---IELLLREVIFYFTEITV--
ATKILTILFMRDKIIQALNFIDC-----DEFVGDYENKKGILYKTNMGFR-
LGWRSYLVLSNIAYSQVIVPIFLDILR-----ETKSELPICK-YYFLSD-
EDRESHFLFWFIYQSFGMYGHMMYNVNIDSIIAGLLLIAIAQLKLLGNNLTNLKLS-----
--
DEESKLPKDSQDKIQIKRFHKLLRHYEVILRYCDTVQDTLNVTLFFQFGVASIIICVVMCG
LLLP-SSTETKVFLVMYLFTMTLQIFVPGFLGTQLTYGSEGLVTAAYNSEWI--
PRSESEFKSSLKLFREARAARPVVISGLKMFPLSLITFTSIMKTAYSFFTILIRNVQ

>MsexOR23

-----MSSFCQTDIFKPNFFFWKCFGI----WGGRTENKN----
YKYYSFSYLFVTLFVFNILLTINLI--YTPLK---IESLIREVIFYFTEIAI--
TVKVLMLVMSRKILDVFNLLDC-----KEFQGDDEESKQIIETNHSFYR-
TCWKLNAVLSNISFASNVFAPLFINLIW-----TAKIEFPVCK-YYFLSD-
EMRDKYFIFWFIYQSIGIYGHMMYNVNVDSEFIAGLLLMAITQLKVLNAKFTKFKLE-----

KRHEKHHQNKIQLRLNRYLKHYDCVRLRYCEIIQDLLSVTMFVQFGMASAIIICAIMCGLL
LP-STTETFMFMVTYLFAMTIQIFVPAWLGTQLSHESCGVFAA-YNCEWI--
PRSMSFKRSIMIFVERANNPIQLTGLKMFPLSLATFTSIMKTAYSFFTILFRNLQ

>BmorOR15

-----MMTLVYQTDIFKPNVFFWKMFGI----WADRKSSKT----
YKYYSFVFLFITLIMYNSLLAINLL--YTPLK---IELLIREVIFCFTEITV--
TTKVLMLFKRNKILDAFDLLNK-----NEFRGNSEESSAIIQKNNSAYK-
TYWKLYAILSNFAYSSQVLGPLIVKLIW-----KTKLELPICN-YYFLNE-
ELRHDFFSGWYIYQSFGMYGHMMYNVNIDTFISGLLMMAVTQLKIIQTKLLSLKLN-----

PRERKMDRGLMNITEVLKLNEILKHYELVLKYCSTVQSILDVAMFVQFGVASAIIICVAM
CGLIMVRSSTETLLFMVTYLFAMTLQIFVPAWMGTQLHFQSQELVFAAYNSEWI--
PRCQSFKRSIIIFVERAKIPITITGLKMFPLSLATFTSIMKTAYSFFTILIRNMQ

>BmorOR12

-----MTRITDVFSLNFIWFKFLGL----WGKSAPSK----
YNMAYTVFYFLSLFVYDIFLTLNLI--HTPRK---LETLVRETMFYFNHLVA--
VTKILMMFIMRKILVIFDILLDC-----EEFKPNDENSQEIMKRKTDFYY-
IYWRIVAVTSNLSCFMLVIGPLIKMLIW-----KIELGLPVCK-FYFMSD-
ELRNKYFVIWYIYQSFGIYNQMVNNLNLDTFNCGMLWMAVGQLQILKTKFVNKLKN----

DFENGLDLKSRDDMQIERLRKYLTHYEILKYCAIVQDILNITIFVQLGMSSIVICVGLCGF

VAMPSNTETAIFMFSYLTMTMQIFVPSWMGTQISFECGELMSAAYSCEWI--
PRSKLFKRSLILFVERAKTPVRITGLKIFTLSLDTFTSIMKTTYSFFTLIRQ--

>BmorOR61

-----MARITDVFRLNFIFWKFLGI----WGKSAPSKY----
NMAYTALYLSASLFVYDIFLTLNLI--HTPRK---LETLLRETMFYFNHLVA--
MTKILKMFIRKKILVIFDLLDC-----EEFKPSDEDSQEIMKRKNEFY-
IYWRIVAVTSNLSCFMQVVGPLIKMLIW-----KSELGLPVCK-YYFMSD-
EFRNKYFVIWYIYQSFGIYNQMVNNLNLDTFNCGMLWMAVGQLQILKTKFVNFKLN----

DIENSLDLKTRDDMQTERLRKYLTHYEILKYCATVQDILNITIFVQLGMSSIVICVGLCGF
VAMPSNTETAIFMSSYLITMTMQIFVPSWMGTQISFECGELMSAAYCCEWI--
PRSKLFKRSLILFVERAKTPVRITGLKIFTLSLDTFTSIMKTTYSFFTLIRQLQ

>HmelOR45

-----MVEFSDLPQEYIKLYSICFSLIRFNDNFNFFDDHVPFFK-----
KYWRFFVKMFLTSIQFVSMTIYLRRIQGD-FKIPELSYVISCI-----
VIFQVLYNKTNQKLI-----LSLGVMWRDNLTDIQL-----

ENKNRFLKTSFFCISVSGLGMYFGIEFLTITLCAYLSTAFSLLRDDLKRLTPR-----
NNRGNLNENLRNESPYTIEMIHKHQKLIELTKLMNNSFSVIFFTNLSFATFEICFYAFACI
VA-HTPMDFSKNILAVLIILPSIFILCYSELLREESGGIADAAAYENVWY--
RGDDGYQKSIRFIIMRAQRPCSLMSLNYTPITLNTFTKVVSTTWSYLSVAIT--

>HmelOR46

-----MVEFSDLPQEYIKPYSICFSLIRFNNFNFFDDHV-PI-----
FKKYWRVFVRMFLTSIQFVSMIYLIRRIQED-FETTELSYAMSCLMVITQG--
FLKFYLVLVYHKANIQLILSLGV-----MWKKDNLDIQLIENKNR----
LLKTLNMLAGLAY-----
IYYGVELLPITICGLLSTAFSFLREDLKRLTPR-----
NNQVNLNENFQNEPTNTIEIIKQHQKLIELTKLMMNIFTVIFFTNLAAFAIEICFYIFASIVA
-PTPMDFAKNILAVIIMLPSIFILCYSELLREESGGIADAAAYENIWY--
RGDVGYQKSICFIIMRAQRPCSLMCLNYIPITLNTFTKIVSTTWSYLSLAMT--

>SlitOR40

IIFVNLSSASISMCFFGF-
CAKVAHRAALDMANNFVAVLALTLPLFNLCDYAERLREASAGMADSVYNNLWY--
ISDKHYQKSCGFILRRSQKPCCLTSLKYSEIGLNTFS AVLSTTWSYFSLASS--

>MsexOR40

-----MTYKNRQHQELEMELSHLPGDYLKPLIACFDLLARCNIGFFHGNSSYFK-----
KYWRYSYIISCVVAYYSSLTVYALKIFLGQ-MELFELAYVVPVFVCTQA--
ILKAIIVIIHKGEIRALVLQLG-----ETWRTDNLTRQLNKKN-----LLLKKLNF-----

CYGVFRIVYSYLGTEFLLISLCSHLSTEFCLLREDLLNVKPV-----
GNRRFRILQDSSNIELHDIVVKHQKLIKFEQLNEIFNKMIFVNLSSVTITVCFFAFATKVA-
RGPVDMANNFMAVMALILPIFNLCYYAEMLINASAGKQESAYHSLWY--
VANKQYQMSIWFIIIRSQKPCCLTSLKFSPVALHTFTAVLSTTWSYFSLASSLF

>DpleOR39

-----MDYDRTLTYLTSEAFKFSGIEMGYKRIPG-----
YLKYLYHFNALWLYADVFGFEFFWLCEGIAMGK--SIDLLSRVAPCSALCILS--
TAKTLPMVTNNDILKDAVLKLRRLHQGVDL-----RNSFECDELMKTSTILK-
NIITVLVVGFCVAVLFTSMPGFLMAYD---FFTGTGYQLQLPFFT-KYFVDV-
FADARIYTFVYLHQFVSTVLVGLNIFAADTLFFAFCSYVKMHFRILGHYYENIVGQ-----

SESETRNNLRRCVRTHQVLIKLVNQINILYSKSTLVNIMTSSFIICLCGFNITITSKDMSTYL
LFIPFLMNSLTEIFLMCFFGDQ MIDSSYNITQAVYSSRWY--
DAGEDLKRSVLLILFRSQQSCKITAA NFSDLHLRSFTTVC--VYIIL-----

>HmelOR23

-----MSSIKGFVNSLKLTKKTFFISGIEIDKEDDTKTSIFK-----
WLFHFNMLWLHTDVFGEFSWLEGINMRKS---LADLSMVAPCTTICLLA--
TAKSLNIYLF RDVLDSAVAKLRE-----LYPSDVKEGSVESQILERSMKFLN-
IVVLFLSACCVVTVIFSSMPLILMGYE---YYQLGYTELKLPFLT-EYFFDS-
YANKMIWSFVYLHQVWSTVIVCLNLFATDTL FYAFCAHLQM HFNFLCHDFENIVRT-----

TDDETRREL RKCARRHQDLIELVDKMELLYSKSNLFNLS SSSLICLSGFNITLLENSKAAS
LTFIPFLVVSFTQISLMCFFGDMLMASSTKISDAIYNSRWY--
NAAPDVKRNLFLVLF RARKPCKVTAANFAVINLTAFTTILSRWSYFALLRT--

>HmelOR12

-----MSYFDKSLEIVKFVFTLSGITYKSKKLNTKEKLI-----
VRSIYYFNFSVNSDVVGAVYCFIDGVQTG-KTFVELTYIAPCITFAILC--
SLKAFCMFHYKDHVSDLIDQLRDLN-----KRKDESDIKKRETNFLH-
AILKASNIINLM LLLTFCVSPFILIAK---YVKTSEVELFLPLLI-KYPFDS--
YDIKYWPYVYVHQFWSVVLVIVNLSVSDYLLFICCTYLRIQFRFLQKDIREIVTS-----

--
NRKLTEPELVLLQEKIVNLVKWHQELIRLTGCELELIYAKSTLYNFVSSSVLICFTGFNVVTI
-DNVAFTTIFVFLSTSLQIFSLCFFGDLLMESSTEVRNAVYESKWY--
YTNTKAAKSLLIQTRTDNPCKLTAFGFSEVNLKAFMSILSSAWSYFALLKT--

>HmelOR55

-----MSNFDKSLEKIKPIFVLSGITYQSKKLNIKEKIQ----
IRCVYLFNFICLNSDLLGSIYCFIDGVRTGKT---FVELTYIAPCVTFSFLC--
NLKGIFLIHYEDRVCELIDNLRNLDNK-----RRKDDTYIKKGEINFLH-
AILKTSNILNVILVLTfIMSPFILIAIK---YLKTNKVELILPFLI-KYPFDP--
YDIRYWPFVYIHQFWS-----DYLLYICCTYLRIQFRFLQSDIKNIIRS-----
NKMLTEPDLAGFQEKIVNLVKWHQEVIRLTSCLELIYSKSTLYNFVSSSILICLTGFNVIAI-
QNMAFTIVFLVFLTASLLQIYLLCFFGDLLMKSSIEVRDAVYESKWY--YIKARAAKSLLI-
-----QT-----

>SlitOR7

-----MPKPLLFDGSLDKLGVLFYSGMNLEKDIITPMDTIK----
HRWLYTLNYFS-VLSAEIAGIYYIITGIVQGK--SFIEVTSVAPCLTFSLLA--
LIKCSYHHMYEKNIKELINLLRHLEKENDRT---ECADKQEIIDEEAGFLN-
KVINVLYVLNCCMIVVFDMPMVLIAMV---YYKTKQFEMLLPYLD-VFSFIP--
YELVYWPFAVYVHQIWSECMVLLSMAAADYLFFTCCTYIRIQFRLLQYDFERIIPD-----
-
RSVSKEERFDEAEFRDKFREL VQWHQDLIRSAIILDIYSKSTLNFNLSLSSLVICLTGFNVTI
V-DDIVIIVTFLTFLSMALMQVFFLCFFADLMMTASLEVSNAVYNCKWY--
LGNTQVGKQLLLVQTRAQEPCKLTAAGFADVNLNAFMRLSSAWSYFALLQT--

>HvirOR7

-----IEKLGVLFRFSGMNIKNKIVTPLDTIK----YRWLYTLNFLV-
VFSAIIGSVYYVILGIKQGK--NFIEVTSVAPCLTFSILS--
MIKSLYHLMYEEHIQELIELLRELELRENNRE---KCIEKEEIIASETGFLN-
KVINVLYVLNCSMIVVFDMPMIMIAMV---YYKTNEFEMLLPYLD-VFSFIP--
YELKYWPFAVYIHQIWSECVVLLDMAAADYLFFTCCTYIRVQFKLLQYDFERMIPD-----

RGISKGEENELRNKFTELLKWHQDIIYSSTILEIYSKSTLNFNLSLSSLVICLTGFNVTVI-
DDIVIIITFLTFLSMALMQVFFLCFFADLMMTASLEISNAVYNCRWY--
SANIKVGKQILFVQTRAQEPCKLTAAGFADVNLNAFMRLSSAWSYFALLQTVY

>SlitOR12

-----MEEPELLINKTLKKIEIWLRTTGTNVKSTPKTRMDTIK----
SRAIYIINFFWLNMDLSGAVVWFISGIANKKS---FTELTYVSPCITLSFLA--
NFKCFFLFLNEDTVDKLLETLRELEMNERSRP---RHKDKDAIMVHEHKFLT-
NLISFLNVFFCGLIVAFAGPVTLTIFI---YVTTNEVDLQLPFLI-IYPFDA--
FQLKIWPWVYLHQIWSEVVVIVGLGAADYLFYIFCSNISVQFQLLKYNINLIPD-----
-
DETCGRLVNVEEVRAEFVDLIKWHQDLISSVKLLETIYTRSTLLNFVSSSALICLTGFNVL
AG-SDFVYVMTFVSFLFLSALQIFFLCFFGDLLLTSGVKVSDAVYNCRWY--
LAGTSLGKDLLLVQTRSQTTPCKLTAWDFSEVNLKSFMTILSTAWSYFALLQT--

>HvirOR12

-----MMEEEPLLDKTVKKVEFLFRWTGINIKSGTKTRMDTIK----
SRAVYIINFIWLNSDLAGAVVWFFAGIANSIG---FTELTIVAPCITLSFLG--
DLKSLYLIIREKNVDNLIQMLRDLEINERARP---KSEEKDAIKEYEHNFVT-
TVISVLNVFYFVLLVAFALSPVTLVALK---YYTTNELELLLPFLI-VYPFNP--
YDIRYWPWVYLRQIWSEVVVIDICTADYLFYTFCTYIRMQFRLLKHCIERVIPE-----
--
DDGSGRLLNIEQVRAEFVQLIKWHQDLISSANMLETVYTRSTLNFVSSSVLICLTGFNVV
AI-SDVAFVVTFLSFLFMSLLQIFFLCFFGDLLMTASTEVS DAVYNCRWY--
LADTSFGKDLLLVQTRAQTPCKLTASDFS DVNLKAFMKILSTAWSYFALLQTLY

>MsexOR10

-----MALHFDDTIKKNDVFVRYAGINIKSGERKKNDIAIK----
SRRMYVFNFVWL NIDVYGSIFWFIDGLRMGKD---FIGLTYIAPCISLSTLS--
LIKSLFLISSEKHMFKLIDNLRLELTRENARP---RSVQKEEIIINTEIKFLN-
YVLKTINILYVVLVMTFALSPLIIIAIK---YMQTGEVELILPFLI-LYPFDP--
YNIKLWPFVYLHQFWSEC VVTNLIC-----CSYIRIQFRLQHD FERIISA-----
PSGNRRVRENDFKAKFIELVKWHQDAIESVSLETIYSKILFNFMSSSLIIICLTGFNITVV-
NDAFVVTFLSFLFMGLVQVFFLCFFADLLSESSVEVSNAVYNSQWY--
MADSNIGKQLLLVQTRAQKPCKLTAWGFADVNLNSFMRVLSTAWSYFALLQT--

>BmorOR11

-----MDEHSHFETSLNKIKVLFKYSGMNLENTVTNT-----
YEFLNHRWVYILNHAWTLAAVTFICIGISNGQ--NFIEMTCIAPCVAMTVLA--
VSKSFFHYINENAVKSLLNLIELERTDFERT---KSVQRTEIVATEKQLLN-
MVINVLYVLNCSMILVFDMTPLIIIAIK---YWTTNKFVRLLPYLD-IFVFVP--
YKFEYWVMAYILQIWAECIVLLFIGAADCLFFTCTYIRIHFRLLQYDFERLTSS-----
RRES DGLRDEDFRETYTNLVKRHQGLIESSSILEMIYSKSTLSN FVLSSLVICLSAFNVTV
V-NDVTIVMTYLIFLAMSLMQVYFLCFF-DMLMSASEEVGNNAVYNCSWY--
TEKASTGKDLLFTITRAQKPCELTAAHFAYVNLKAFMRV-SFSASITTLPTI--

>MsexOR36

-----MAETLLDKSLSKINILFRCSGTNIAIGKAAPTHTKR----
NRCIYSFNFIWQNTDVLGAIYWFISGLKSGKS---FTELTFIAPCIILSFLS--
VMKSISIIIEKKVYQLIKNLRMMEAHERNRE---NTTERGKITEKGVNFLN-
LVINVLYVFNMLVLVCFALNPLILMILN---YMKTN EIDFILPFPI-AYPFDP--
YNIKVWPMVYLRQIWTEIVVVLNTIAPDFVFCIFCSHITI QFRLQYDIEHVITG-----
TRKSIYNDEM RGGRIRNKLIEIHKWHQELITCVNLL ENIYSVSALYNFISSSVIICLSGFNVT
EN-KDIVLVISFIAFLFMGLLQIFFFCFFGDMLIHASIEVS DAVYNSKWY--LVPPKMRKD---
-----FTSNSNSCPTSL-----

>HmelOR25

-----FNKALKKVQAFLRPIGLQIDENNSNMTIRKW----
LRFRWAFIVNMWMNMDITGQSAWLIQSAFTGK--SFVELTNLAPCLALCLLG--
DIEAFFFM RHSNKARELVRSIRFLQSLTAEKD---MDIEDIAFLKGQIKIFY-

IAVNTITVIITVGIMGFGVSPFINMALH----YKKTSEFVLNQPFLLI-LYPFDI--
NDIRFYFIA YFHVMWTAVIAVLTVLAPCFLCYACSTFIIYQFHRLQKDLEQIIPY-----
TDNLILYEINDDVKKEFMQIIDRHRKLIIECVNLMFEIYTESTLCNVITSSLLICLTGFNVMA
I-DDIALTLPLQFLLGLVQIYILCYYGDMIMIYSAKVGDAAYNCQWY--
MIIATRAQKPCRMTALRFSDINFKTFTTRILSTSWSYFALLSS-----

>BmorOR25

-----MFEKALRSANFYMRVIGIPTDIRDGNRTLMEERL---
RNRWFYFCINFLWLNTDVAGEITWFWKGLLSGS-STLIENTYLIPCLTLCILG--
NVKTTFTIKYANHIIDLVAIKDLEIKNNA-----ARKNETEIVKERLKFLT-
TSNKFLLFVIGTGIIAFGIGPLMLTASI---YFSSGDMKLLPFLI-WYPFDS--
SDIRYWPFVYVHVQVWSACIACCAVYGPDCFYFTSCTFIHIHFIHLQNDITNVIVE-----
-
SSRARRNGLYRGCHQAFLELTNRHKDLIRCVNLLIYISKSTLVNVVSSLLICVTGFNVVM
AI-DFLPLIAPFTSFLALGLVQTYLLCYYGDTIMCSSTEVS DAVYNSTWY--
GTNISQMRDYL FVMKRAQKPKCLTAYGFSDVNLRTFSRILSTAWSYFALLIT--

>SlitOR9

-----MVEPFQKCLSQVNFFCKLLGMNIDYRGDSETLIQFL---
RSHKYFIAQFILFNSQNVSQISWVCEAVITGK--SFLDVTYMIPCLIFCILS--
IFKGVSYLYYAKYNYEFIVTMKNLLAGLTPSNEE-HNIFMKTVIDKHVLMMLT-
IIFKRMVNIVAVCLIMFALGPFIIMLSN----YYKTKEVKLELPFIG-YYPFNE--
YDLRIYPFMFHLHQWWTSLFATLMVCGTDYFFFTCCTFIQIQFTILNYDMEKLVND-----
-----SSSCDKDRLKELVLRHIELMRCVDIMEKIFSTSILFNALTSSVIICITGFNVSVV-
ENVFMVGSFLAFLIFSVEIFLYCYYGDIIMRSSMNVGNAINNSCWY--
MTGVADRKLFLIIITRSQTPCELTAHGFAKINLYTFSSILSTAW-----

>HvirOR9

-----MVDQFQKCLKSVNLYLKFIGLHLESKDTTKTFIERSR--
SHRLYFAHFFSLNLEVVAQILWVLEAVITRKS---FVEITRLIPCLILTLIS--
DFKTLSELLYYARHFIVTMKSLLLQKQLEEK----ETRFREDLIDKHVLMMLT-
SITKKISYLIGMGLLMFALAPAFIIPH----YFKTNEVKLEMPFIA-YYPFNE--
FDSRIYPWVYLHQVWTACVAMIMVYGPDCFFFTCCTFIHIQFSLLNNDMERIVNE-----
-----DTPRYDKTKFKELAVRHIELMRCVNLLKIFSKSILFNALTSSVIICVTGFNVLVV-
DNIVMMASFTAFLFLGLMQIFLYCYYGDTIMRSMQVSTSIYNPWPY--
NIRAADRKGFFIVIIRAQKPCELTANGFFKINLSAFTSILSTSWSYFALLKTMV

>HmelOR48

-----MDEATRKAAMKMEIDESLMLSTFSMRRIGLSFDKPRNATDYFLQ-----
KLIFSLSICGICCHVSTEFINIVLTFASSP--RVEDVVPFLFHTFGYGALS--
IAKVFLWYKNKVFGELIEELTG-----IWPMPPLDGDALGIKEKSLTALR-
ISHRWYFSVNVLGWVWFYNLTPIIVYFYR---VWQGQDAQVGFVWVS-WYPFDK--
HQPFAHVAVYLFEIFAGVTCVWIMVSSDLLFFGMASHIALLMRILQRRLES LAST-----
-----EQTDEENYEEIRSNIKLHQRLIRQGESVEECLNNGFAIKPILQLRLLEPFMA-----

-ISNKLFLGSALIQVGAMCWYADDIFHANGNIAAAVYSSDWY--
KMSPRCRRALLFLILRCQKPIAFTAMKFTNISLVITYSSILTRSISYFALLYT--

>MsexOR12

-----MEQAKREIDESLKLSAFCMRRIGLSFEKHKNASAHLR-----
QQLMFALSVCSICYHVFSEIMYIGLTLANS-PRVEDVVPLFHTFGYGALS--
IAKVFALWYKKDVSQLLRELVG-----IWPTPPLEDEAQAIKDKSLDALR-
ITHKWYFAVNVLGWVFNVTPIAVYFYR---LWQDGDQVGYVWVS-WYPFDK--
HQTIAHVAVYIFEIFAGQTCVWIMVSTDLLSGMASHISMLLRMLKRRLESLAST-----
-----EKTDDEYYHEILENIKLHQRLITYCYDLEDAFSLSNLVNIVLSSLNICCVFVIVLL-
-EPFVAVSNKLFLGSALIQIGMLCWYADDIFHANADVAAAAYNNGWY--
STNARCRRALLFLMQRAQKPIAFTAMKFTNISLVITYSAILTRSISYFALLYT--

>CpomOR12

-----MNTNAEARREIGATLTLCTFSMQCIGLSFERPDG-TARLLR-----
QKLMFVVSVCTIVYHVFSEIVYIGLTLSNS-PRVEDVVPLFHTFGYGALS--
IAKVFALWSKKNVFTEHLDELSD-----IWPMEPLDEDARNIKEKSLTALR-
LVHQWYFSINVGGLFYFNVTPICVMYQ---LWQGQDAVVGFWWMS-WYPFDK--
YKPINHVYVYIFEVFAAGQTCVWIMICTDLLFSGLASHIAMLLRLLHKRLETLAET-----
-----EKSQEEYYQEIVANIKLHQRLIRYCNDLEEAFTIVNLINVVFSSNICCVFVIVLL--
EPFMAVSNKLFLGSALIQIGMLCWYADDIFHSNADVALAVYNGWY--
RTDPRCRRALIFLIRRAQKPVAFAMKFTNLSLVITYSSILTRSISYFALLYT--

>HmelOR49

-----MVTQDKIIAKKEINKTLKLCNFCTRIVGFSFIDDLPKSL-----
YLKIWKYICFLVIIVLKEAGQMNYAITELLTS-TSVADVFVAGLHIFGYDCIS--
LSKLLTIWYKRNIERNLLSELSD-----LWFLTSSDRNAIEFKKKKLSKLE-
IVQFWYAFWNVLGVWLYNLTPVVIYLYQ---KIRGEPASLGYIWHL-KYFFDK--
TQPGYHELAFVFETFSGLFSVWAMLGSDILFMTMASHISMLLRMLQDKIRRLDMR-----
-----KNQNCYADITSLIKIHQRLIRYGEDLEDAFCLVNLINVLMSVNICCL-----
LDPVMVMSNKFYLGAVLTQVGILCWYADDISASSSGVATAVYESGWY--
HCDIRSRKLLLA VIQRSQKPLYFTALKFGPITMSTYSSILATSISYFALLYT--

>BmorOR51_BAH66346

-----MDCTIVAFYSQAKTQIKMLRYDLEQL-GK-----
FERSSHIWKALKDEKIHSLVFCVEHYRQIVWFVKEVESIFGEAMTVQFFVMAWVICMT
VYKIVGLSIYSAEFVSMGVYLGCM LAQLFIYCYGTQLKVESESVNTSLYCSNWL--
SSLPKVRRLQMLIMMQYCSKPLTPRTAYVIPMSLETYISVLKSSYSLFTLLNQKH

>DpOR46_gi|357617181|gb|EHJ70629.1|

MSVNQILRDFNNNTDTSSEILAKSSINVISKRVYPRQPADVGYGQIMNGMDLRLQKTTST
FCSTHSNGDDVLKMFDSAAAQYQIHNHLDILSAEFLTMGTYLCCMMMTQLYIYCYYGT
QLKVESELVNDVYQSSWL--
SLSPAFRRLVMMERCKRSIEPRTAYIPLSMETYISATSRLFSAPNVVSAI-

>Bany_OR3_GZXD38A02GNYNJ

DHYDRVVWFAKEVESIFGEAMIVQFFVMVWVICMTTYKIVGLSLMSAEFVSIVLYLGCM
LAQLFIYCYYGTHLKVESELVNDVYQSDWQ--
SLSPAFRRLVLMERCKRTVEPRTAYIIPMSLDYISVLRSSYALFTILDRK-

>DpleOR62

-----MTFKFLSNLENPDHLLGP---TLWGLQTSGIWQPCKKRVK-----
IYNTIHIM-AILFVLSQYVELY--FIRND---LAMALKNLSVTMLSTVC--
VVKAGTFIIWQKYWKDIFNYVSK---LEKNQLYKPDYLTKNITIRKYTEYSR-
FVTYFYWTLVTATVFLILAPLASYLSSQNKLGDGSGASSYPEIMSS-WVPFDK--
TQGCGYLVTLIHVLCIFYGGGIVANYDSNAVVLMSFFAGQLKILKINCERLFGN-----

GEEIVSYKEAVERIRICHHHILLIKYSKVFNLSLLSPVMFLYIIICSLMICASAVQLTTAGTT
SMQQIWIAEYLIALLVAQLFLYCWHSHKVLHMSLQVDSGVYTSAAW--
SQDVRIRRSVLLLGGQLKKKVMFTAGPFTDLNIATFVAILKGSYSYYTLISK--

>SlitOR42

-----KWYFKFLTSEDPDNPIGN-----YYLIASMWWSLGERSFX----
XKLFSHNLVHFVAFIFVLSQYVELW--VIRND---LEMAMRNLSVTMLSTVC--
VFKACNLVFWQNTWKELFDYVSE-----LKDDTINKIIFQYVKYAR-
RVTYLYWSLVTATVLIVSLAPLLIYWSSPTYRHNIRNGTVPYPEIMSSWTPFDR--
TRGIGFCVATVY-----IMTFFAGQLKVLSANCSRLFGD-----
GNELINCDETVKRIKECHLHLYLIKFSVLSLLSPVMFLYVIICSLMICASAAQLTTEGT
TTVHQVWIAEYLMALIAQLFLYCWHSDVFLSNQVDDGVYSSAAW--
SQNVRIRRSLLLGGQLRKPIVFTAGPFTKLNMATFVTILKGSYSYYTLVAKKE

>HmelOR27

-----MVILFPSLEDPECPLLGP---TLWGLQTWGMWQPNKGKAK-----
IVYNTIHIF-AIIFVMSQYIELW--YIRSN---LEMALRNLSVTMLSTVC--
VVKATTIFISWQKSWREIFEFVSL---VEKQQLNKQSKKTKRIVNEYTKYSR-
AVTYFYWCLVTATVFTVILAPLVLYFSSQRREQIRNGTLAYPEIMSS-WTPFDK--
TRGLGYWTIVVFHSLICIFYGGGIVATYDSNAVVLMSFFAGQFEFLREKCADLFGN-----

GEEFISYNTAVKRIKECHHHHVLLIKYSKILNSLLSPVMFLYVIICSLMICASAVQLTSEGT
TTMQQVWIAEYLVALVAQLFLYCWHSNKVFLK---VDEGVYTSAAW----
SSRGPHTQYSAAWRST-----E-----

>MsexOR43

-----MLERLSKYLENPNHPLLGP---TLCGLKCWGMWQPL-GVNR-----
IINYNAIHFF-AILFVISQYVELW--FIRSN---MELAIRNLSVTMLSTVC--
VIKAGTFVFWQKSWNDVIDYVSG---LENIQLSKRDRITNSVISEYTKYSR-
SITYSYWVLVTATVFTVILAPLVGFLSSDKDLMLNGTLAYPEIMSS-RLPFNR--
SRGFGYWVAAIEHSLICFYGGGVVANYDSNAIVLMSFFAGQLKLLSINCARLFND-----

NEVLKYSDTMKRIKDCHHHHVEIVKFSMVLNSLLSPVMFLYVIICSLMICASAIQLTAEG
TSNMQRIWISEYLMALIAQLFIYCWHSNEVLHMSSKVDEGVYPSHWS--
AQNVRRVRSVAPPRATAQAHRLHSRTLYQAHYIYFCSYSEGIVQLLYAAKQ--

>BmorOR27

-----MPSSFFLPNLENPDYPSLGP---TLKGLKYWGMWQSGGIKR-----
ILYNSIHAF-ATFFVITQYVELW--IIRNN---VELALRNLSVTMLSTVC--
VVKAGTFVCWQKYWSGIIGFVSN---LEKEQLSKNDAATQAAIVKYIKYSR-
RVTYFYWSLVATVFTVILAPLVGFLSSPERELIANGTLPYPEIMSS-WVPFDR--
SRGFGYWVTALVHTLICFYGGGVVANYDSNAVVLMSFFAGQMKLLSINC SRLFDD-----
-----GNEVISNNEAMKRIKECHYHHVFST----

IFNSLMSPVLFLYVIICSLMLCASAVQLTTDGTSMQRIWISEYLMALIAQLFLYCWHSN
QVLYMALERLGGLFEACLE--
RFPSKWKTGRLVLLRKDGRPADSPAGYRPIVLLDEAGKMLERIVAARIVRHL--

>CpomOR28

-----MVSVQKIISLAKRLEDPKHPLLGP---NLKGLYVYGLWQSGSKFRN-----
TCYNVIHFC-AFLFVISQLIELW--IIRHD---YLEALHNLSLTALGMVC--
IFKAVSYVMWQSDWKKLVEGISA---EEISQSDSLNDACIELKQKYTNYVR-
IVTYLYWNVVVSTNITMVSAPFLKYATSEYREQISNGTEPLPQIFSS-WFPFDK--
TTMPGYSLAIFIHILINIHGGGVIALYDSNAVAVMVFIRGQLGMLREKCKHIFDE-----

YELVNQEIIILGRIKECHRRHNFIMRHSSLFNSLLSPVMFLYVLVCSGMICCSVIQFTSEEAT
AAQKVWVLQYTTALVSQFLYCWHSNEVVVECQHVDGGVYDSEWW--
KGDTHVRKQLAMLGGKLTNNIVFSAGPFTTLCVPTFIDVIKGSYSFFTLLTQ--

>DpleOR63

-----MASKIIRIFERLESPKYPLLGP---NLQGLYWFGLWQCGNRIRD-----
GLFNILHLA-SVLFVLSEFVELF--AMEID---LMKILFNVSVTALSLVT--
VCKTVLFIYYLPHWKNLVNSISK---LEQEQLKSNNFKLVAIKRYTLYSR-
VITYSFWSVICITSLT VTAPFLKYITSSYRQSIQNGTELYPQILSS-WFPFDK--
TKMPGYLIAVSIHIIMTTQGAAIVAVYDSTAVAIMSFLKGQKILLRYKCERIFGL-----

NEVIPTEKVLANIEECHRLHCFLLEQHHRFNSITSPVMILYVLVCSVMMCCSVVQLSLGH
LSTSEKLWVIEFTTALITQLFLYCWHSNEITYESNLVDRGVYASNWW--
RGDVKVKRQILILAGKLAPSLILKAGPVTTLSMATFISILKGSYSFYTLVTQ--

>HmelOR53

-----MLLQKIIRTLSSLENPEYPLLGP---NITGLYWFGWLWQCGRKYRD-----
AFFNFVHFC-SLLFVISQFLELY--FMEKD---LLKVLFNVTITALGLVS--
ISKTLFFILFLKDWKLLIKNISA---EEIHALSVGNKNVVNYMNQYKYSYR-
NLTYLYWCIMLMTSFVIMLSPYLKLLSNNYLELVKNGTEPYPQMLSS-WFPFDD--
TKMPGYFISVTVHILIAIQGIGVIAVYDSNAVAIMSFLKGQMQLKYKCENIFGD-----

DYEVISQAEVISNIKECHRLHNFFIEQHKLFNITLSPVMFIYVLVCSIMICCSVVQLSVEGV
PISQKFWVIEYTTALIIQLLLYCWHSNEIAYESASVDLGVYTSNWW--
RGDVRLRRHALLLAGKLSPMFILDAGPFNQFSMTTFINVSHR-----

>BmorOR53

-----MALKKMLALTKGLEDPTHPLLGP---TLKALSVFGLWQTGSQKST-----
VIYNTFHFL-TFLFVITEYIDLY--TVRKE---LSKMLNNLSVTVLSTIC--
MIKTLSYVCRQSHLKVLVREISE---LELELMKTTDKNIVKRLRQYTVYTR-
AVTYVYWFLVVGINVLTSPLLKYASSIYRSEIKNGTEPPPLILCS-WFPFDS--
ARMPGYFWATMVHIIMSIIQCGGVATYDMNAVAVMSYLGQTSILKDKCKAIFDE-----

TASSRDVLNRIRDCHRRHNILLRHYYMFNSLLSPIMFVYMLICSFTICCSIIQLDSSETTISQ
RIWIIQYSIGQISQLFLYCWHSNEFAA-----KVKKKHFLF-----
-PINLF-----

>DpleOR61

-----MLKALLSSIEDPTRRLLGPNYWILKNMGL-----VLPQNP----
IAKVAYIVLHEIVSFFVLTQYMELY--VIRSN---LDLVLTNLKISMLSIVC--
IVKANTFVIWQVQWKEVIEYVTR---ADQYERDNQSVERRKIIDSYTKYCR-
GIVYFYCVLVFTTFTITVTNTPLMRYLSSQYREALRNGTELFPHIFSS-WMPFDK--
YNSPGSWITVIWHVCLCAYGAGIMAA YDTVIMVIMVFFGGKLELLRERCTHIFEN-----

TEIASDDNQTNKIRKLHNIHVLLMKHSRLFNSLLSPVMFLYVVMCSLMLCASAFLQTS
-TNTTQKLLMAEYLVFGIAQLFMFCWHSNDVLIKSQKVMFGPYESEWW--
TVNSKQARSILIT-----

>HmelOR28

-----MIQSFIITSIEDPQRPLLGPYWILKKMGLVLSKNL-----
LNKAFYIIVHEIVTVFVITQYIEAY--VIKSD---LDQVLTNLKISMLSIVC--
VVKANTFVFWQHSWGEVIEYVTQ---ADKYEREDTNVEKTQILDSYTEYCR-
RVIRFYWTLVFITFISVISTPLIKYLSS--QEAFNNGTELFPHIFSS-WMPFDK--
YSFPGNWITVICHVLFCA YGGGIMAA YDTIIIIVIMVFFGGKLQLLRERCKAIFSC-----

NGLTVSDEQAYRTIRELHKTHVLLMKYSRLFNSLLSPVMFLYVVMCSLMLCASAFLTT
E-TNTTQKVLMAEYLIFGVAQLFMFCWHSNDVLVKNQQVTLGPYESEWW--
KMDFRQRKNILLAGQLKIVHTYTAGPFTLSTFVTVY-----

>SlitOR29

-----MNSFLQSLEDPARPFLGPYWILKKMGL-----LLPKSI---
LGKVLVIFLHETVTFFVATQYMELY--VIRSD---LDLVLTNLMKISMLSVVC--
IVKVNTFVLWQKHWREVLDYITE---ADNFERQNEPDVKSQIVEAYTKYCR-
RLTYFYWALVSTTFLTTTCSPLMRYLSSMFRENMRNGTEPFPHIFSS-WMPFDK--
YHSPGCWITVLWHTVLCAYGAAIMAAAYDTCIVVTMVFFGGKLDLLRERCKHMFGS-----

YGTVTDDKQCEEVVRQLHGIHVMLIKYSRLFNSLLSPVMFFYMMCSLMLCASAYQLTS
A-QNAAQKLLMAEYLIFGIAQLFVFCWHSNDVLIKNENMTSGPFESNWW--
TANYRQKKDVLGSGQLRIKNIFTAGPFANLTLPTFINILKGAYSYYTLLRK--

>MsexOR18

-----MLSFLKNLEDSEERPLLGPYWILKKMGLLLPKNK-----
ISKIFYILVHEIVTLFVVSQYMELY--VIRSD---LDLVLTNLKISMLSVVC--
VVKVNTFVFWQSDWKQVLEYVTK---ADMFERQNQDVPKSNIINSYTKYCR-
RLTHFYWGLVFTTFLTTTNTPFMRYLSSNFRNRFANGTEMFPHIFSS-WMPFNK--
NHSPGCWITLWHVLLCAYGAAIMAAAYDTCVVVIMVFFGGKLYLLRERCSNMFKN-----

SDENASEATVKQLHGIHQIQLIKYSRLFNSLLSPVMFFYMMCSLMLCASAYQLTSA-
TNAAQKLLMAEYLIFGVAQLFLFCWHSNDVLIKNENVTLGPYESNWW--
SASLRQKKNVLILSGQLRISNKFSAGPFADLTLATFITIKGAYSYYTLLRK--

>BmorOR29

-----MFDLQNLLEDSEERPLLGPFWLINKTGL-----LLPKTN---
FGKLAYILVHEIVTFFVVTQYVELY--VIRSD---LDLVLTNLKISMLSIVC--
IVKVNTFVFWQTSWREVLEYVNE---ADKFERNQDETGRGKMIETYTKYCR-
RLTYFYWSLVFTTFLTTTNTPLMRYWSSIFRENLRNGTEDFPHIFSS-WMPFDK--
NHSPGSYCTIVWHVLLCAYGAAIMAAAYDTCIVVIMVFFGEKLNLLRERCKKMLAN-----

DLYNHAFVIGQLHDIHVQLIKQSRLFNSLLSPVMFLYILMCSLMLCASAYQLTSA-
TSTAQKLLMAEYLIFGIAQLFVFCWHGNDVLFKNANVSLGPYESNWW--
SSSPVRADVLLLCGQLRVHRVFTAGPFADLTLSTFIKILKGAYSYYTLLRK--

>BmorOR56

-----MKLLEKLEDPRPLLGP-----NVKALKFWGLLLPESR---
SKKYFYLFMHFAVTVFTATEYIDVW--FVKSD---LALLLNKMLKITMLATVS--
VLKVTTFLWQNAWRDLIGYVSR---ADLEQRATSDSRKLALINGFTGYCR-
KITYYYWFLMYTTVAIVTVQPIFKFFSSAYRLDVQSGNGTYLQVVSS-WIPWDK--
NTLPGYLLASIYQTYAAIYGGGWITSFDTNAIVIMVFFRAELELLRIDCAALFDD-----

EKSFGDMAFMRRLKECHRRHTELVKHSRLFDSCLSPIMLLYMFVCSVMLCVTAYQITIE-
TNPMERFLMTEYLVFGVAQLFMYCWSNDVLYASQDLRGPYESAWW--
SRDVKYRKNLYILVAQFNKVIVFSAGPFTKLT VATFIRILKGAYSYYTLLSQSQ

>MsexOR30

-----LENAERPLLGP-----NVKALQFWGLLLPKYR----
LKRYFYLTMHILVTLFTFTECVDVY--FVKSD---MNLLLNNLKITMLATVS--
VCKVNTFLYWQKRWTDIIAYVTR----ADLNQRNTKDEKKLALIKKFTLYCR-
KITLYLWFLMYTTVVIVVAQPIFKYAFSNYRDNVRMGTTETYLQVVSS-WVPFDK--
NTIIGYIAASIYQTYAAKPNS-----ADIHHTGGR-----
SSMHLEGPIRPIVSR-----
ITIHWV--SFNVVTGKT-----LALPNLIALI-----

>DpleOR60

-----MTSTIQRLLQKLEDPKRPLLGPIKWKLKYGLILPRTRKG-----
KMIYLSILTVMGLFIIEYVDMI--IMRND---VNHLNLFKYSMLSSVN--
VIKVITMYAWHKHWMGIFKFTTR----VDIERNSPDIYRETVRKYTKYCR-
IITYIYWFLGYCTVIMIVVQPAAKYLLSTYRQNVKDGTEKFLEVNS-WTPFDK-----
TTMSGVASLYSGGWITSYDTNAFVLMIFFRGELELLRRDCRSLFGT-----
EENPVTKEEAQKRIDHCHQRHNDILKYFRLFDSCLSPIMLLYVIVCSVMLCATTVQLTTE-
SSAMQKLITFQYLMFGVSQVFIYCWSNDVFYVSQDLMLGPYESYWW--
TRTLSEQKNLHLLAGQLNKQIVLTAGPFSYINLATFINILKGAYSYYTLLN---

>HmelOR57

-----MKLFIQKLFNVLEDPNQPFVGRILLKIFGLLLPENNNK-----
LKLIYFIFHAY-VLMFIVTQWMELF--TSRSE---IIMILRNVKYAIFASVN--
VTKVSTCILWQKDWKFILDFITK---VDEERRTTKDKVSKDILQKYTFQSK-
IVTYLYFYLTCTIAMMIIQPTVQFSLSSSYREKLKSGKEKPLEVVNSWLPVDK--
RTSSGYIIMIICQMLPLIYSGGWITSYDTNAIAVMFTVCCELELLRRDCQILFGT-----
--
IKEPASNEEAKAKLAKCHKRHNDLVICSQFLFDSCLSSVMLVYVVICSCMLCATAYQFMIE
-NEPLQKIITAVYLIFAVSQLFLYCWSNEAYYISKDLMLGPYESIWW--
MRSLSQQRNIHILTNQLDKIIVFSAGPFSSITVTTFINILKGAYSYYTLLSQSQ

>HmelOR58

-----MASLLTKFHSALEDSNYPLIGR--NVKLLKMSYLLSERPGYRAAV-----
RVKAGILLSLMVFFALTQATDTF--INISN---IVKFLRNLKYVLMSTMI--
IAKVSSYMLWQKRWETIIQYVNE---VNVDRLITDDPISIKIYKKLVKYCK-
IVTYIYIYLT SATVFLVLIQPIIYCLR--MYSSLEDDLKYIPITNTWVPFDK--
DNLIVYLLSLLLQIYATIYSLIYIVAFDANAVSTMVFFRGELELLRRDSQILFGT-----

NSPVNEETARVNLSKCQKRHKDLVTYVKLFDSCLSPIMLLYVIVCSVMLCATAYQLTVE-
TNAMQKFITA EYLIFGVSQLFMFCWSNEVLY-SKDLTLGPYESMWW--
TRSVSEQKDISILTDQFNKEIVFSAGPFTSITVATFISVS-----

>SlitOR45

QFQYFRVYRSFQKCRTNVRLGNLLKFLEDPEYPSVGPHLKLRLQTLIGRQKILFYVTITFF
FSQYVKCFIKFN-ADSLKLILQYAPFHMGIIV----KSCFFQKDYKRWELVIDYMSS----
VEKKQLDKKDKKHDDIIHEYIKRNR-KVSYFFWALAFFSNFSIFTEPYQKNQVN-----
VNGTSIYLKIFDG-YTPFDN---
EPPGYYSMLIQTVLGHIVSAYVVGWDTLVVSIMIFFTGQLKITCMYCRLAIDA-----

NSTKSHENIAKCHRFYTTLVEYTHLFNALVSPVMFMYLVVIAINLGVCIQIVEIHDDITT
LVSSILFVIACLIQLLLFYWFANEVTVESTFVSYSTFESDWP--EANKKKLQKE-----
-----V-----ALLG---

>MsexOR35

-----MVVIEKILSFLEDPRYPSVGPIRLLSLTGL-----WH-PDLKSP---K-
SRFKIIIFLVTVAFFLSQYVKCIHKFNTDD---LKLILQYAPSHMGII-----
KTCLFQKDYKIWEELIDFISS---VELKQISRKDENLDKVMKAYIRNR-
RVSYFFWALAFFSNFSIFTEPYQKNNFN-----VNGTSTYLYIFDG-YTPFSR---
EPNGYYFSMCIQTMLGHIVSAYVIAWDTLVVSIMIFFAGQLKITRLYCTRMITA-----

NNEESHRNIAECHRFTSLVKYQKTFNCLISSVMFVYLVVISVNLGVCIKQIAEIEDDLPT
LVSSCVFLMACLIQLLLFYWSNEVTIESDLVSYSTFQSNWA--
QSNKNIQKEVALLALTTRKKLVFRAGPFNVMSLSTFVSILRASYSFYTLKLG--

>BmorOR36

-----MVFNSSKKNIIISLFSLLEDNRHPSVGPHLRLLSLTGIWYPNSKT-----
NITLLKRACFYVIVLFFVSQYLKCIHKFKIDS---LQLILEYAPFHMGIIV-----
KTCFFQKDYNVWQDLVSFISK---TERDQIAKKDPKSIKTIQSYISNR-
KITYSFWALAFIANIGVFSKPYQNNQSD-----VNGTVTYNHLFDG-YTPFSE---
EPPGYYSMGIETILGHVVSFYVLGWDTLVVSIMIFFAGQMMSRLQCSRMIING-----

SPERTHKNIKCHKFHTDLIKYQKQFNSLISPVMFVYLVSSINLSVCIVQIAEIEDDFATVL
SSFIFLLACLIQLLLFYWSNEVTVQSELVSYSTFESNWT--
STQNKLQKEVALLGLTTSKTLVFTAGSFNMTLATFISIIRASYSFYALLNSTK

>DpleOR48

-----MSLLFTHIKSSLKFTNVIFTVFGVWPPPGLNDLARRVY-----
SLYSFLLLFMMSVYIIQTDGLV--QVWGD--LTLMTASVFMFTNIAY--
AIKLAYVIQRRELIQKIIFDG-----DNELDGQKTKLAIQTVE-----
-----RYPFDA--
TKRPAYQWTYAHQFIALSINA AVNLCCDVLVATLIAQCRCRLRLIAQSLRTLCD--
VDVDKKGRITADSEKVVSSRVRGIVMRHQLVLAQVEQLQCFSVPILGQFAVASFIICVT
AYQMAFV-TNLYRLISMASFETIAVTIQVYIYCVAGTNLTIDSDEVSRAYECPWY--
EFPASIRLLLLVIMVRCKRATVITVAGIVEISLDTFMSLTSTCVKTLTDLHSQI

>DpleOR49

-----ISVLMGNVLEEATAKDIKNC-----
TFIILQMIDLY--LIWGN---LSLMTGTALVLFNLSQ--
VTKIINLLARRKHIEFLIKDTNDGLEVM-----TSSRARELIKSCDHETR-
NQQVIFLLVTFVTTVGW---ATITDKNG-----LPLPA-WYPYDT--
SVSPAYELTYTHQTLSIMIVAVLNISKDSLVTTLAQTRCRLGLVGLALTTVCSDE----
DNTYSGGYSNKLFTAQQEMIKNRLRICVQQHQRALRAAKILQECFSVPTFAQFSVSLIII
CVTAFQLSVICIDGQQDAWPTPVTFIIINFSAYSDIGYYHKKTSEELARRAYEMPWY--
MCSVSVRRSIQIMMIRCHRIVKFTAGGFTTSLATFTAVIKLSYSMLTLLQQ--

>HmelOR62

-----MGILVENSIFSLRSLTALRFTGFWPPEGWSKGLILY-----
HCYGFFCFMLLGIFLITEVADLF--LIWGN---LPLMTGTAFLLFTNLAQ--
AAKFLNIIIRRSILRIITECEV---
LKEHKVAKFKGSRNLCIVQSCNRETLLQQVFFILTILTVAGW-----
LGSDEMGLPLRA-WYPYNT--
NISPLYEITYIQQGFTILLAALLNVSKDTLATTLIAQCKCRLRLIGLSLRNIGDC-----
YYGEVNEPLTSSQELKAYQHLRRCVIEHQRTLNTIMLLEKTFSEPTFAQFSVSLVIICATAF
QLVSQSGNYVRLISMGTYLNNMMFQVFIYCYQGHSLSTESEDLACVYDMPWY--
NYSVRVRRSLLVIMVRCRRIAKLTAGGFTTSLITSFMAV-----RLML---

>HmelOR63

-----MDILVKNSNFSLSLSLTILRFTGF-----WPPETLRKDKMI-
LYNCYGFIFFVLMVFLISELGLDV--LIWGN---LPLMTGTAFVLFTNLAH--
ATKFINIVRRESVLKIITDSDILKAE-----TSVEGRKIVHSCNRETR-
WQQLFYFLLTFFTCMGW-----ASSAEKNKLPLRG-WYPYNT--
NKPIAYEITYFYQVFSMFGAFLNVSKDTLVTTLIAQCRCRLRLVSLSLRNLTSL-----
TVSEKTLIFTPTQEAIVYKRLRSCAIKHQKVLETTLLQNTFSEPIFAQFNVSLVIICVTAFAQ
LVSQTGNYIRLISMSTYLMNMMFQVFLYCYQGDQLSTESEELAKAAAYEVPWY--
ASSVRLRSSLLIMMVRRCRRVVKLTAAGFTTSLNTFTAV---RFFELVGLFS--

>BmorOR63

-----MKLWIRNANFTISLSLTLLRCLGFWSPDGLAGNKRL-----
YNCYSFVFFMFLLGIIYIIVVDMI--KIWGD---LPLMTGTAFLLFTNFAH--
ATKVINIVIRKNRIQRVIQQANAVLMGV-----QSEEARRIVKSCDFETS-
IQLCLYFLLTFVTTVGW-----ATSAEKHQLPLRA-WYPYDT--
SKSPAYELTYIHQVAALLIAAYINVAKDSLVSLLIAQCRCRLRLVGLALASLGQD-----
LKIDYQSQSPAQENILNRLKTCVLEHQTVLAAVTELQACFSKPTFAQFTVSLIIICVTAFA
QLVST-GNLVRLLSMGTYLMNMIFQVFIYCYQGNKLSVESSEIAGSVYFSPWY--
LGSVKLRRALLIVMVRSRRAKLTAGGFTTSLASFMAIIKASYSLFTLLQQVK

>CpomOR16

-----MGIIKENVNFSVSVSITALKLFGFWAPEGLTREQNILY-----
NCYGFLSFMLLGTYLIIQVVDLF--LIWGD---VALMTGTAFVLFTNLAQ--
TTKIVAVVARAGTLRPLVSSADT-----LLAAETGPGKEIVDSCNRETW-
QQQLVYFCLTTVTVAGWAGSAEKNQ-----LPLRA-WYPYDT--
SVSPAYELTYLHQVGALFAAAYLNVGKDTLVTCLIAQTRCQLQLAALRLASLTDD-----
-
LTPTAQGTLTAEQEAEAWSRLEVAARRHQEALHAAAQLQACFSAPVFAQFGVSMLIICV
TAFQLTAQNGNLVRLASMGTYLLNMMFQVFIYCYQGNQLSGESMDIATAAYSCGWT--
ACGVRLRRGLLLVMVRARRAARLSAGGFATLSLASFMAIVKTSYSLFTVLQQAD

>MsexOR16

-----MGIFVQNVNRSRFLCTMLKLTGFLVPNGVIEFTVFHN-----
IYWFFWMMFVVGINVTQTGDLI--QVWGN---LSLMTSAAFLLLSDVAM--
MMKIINVVMRGRVIQTVIDGMDL-----ELRSEARAKGRKIIKECDDQTT-
RHLYLFLCLSGVTVLGW----AGSAEH-----NKLPLRA-WYPYDT--
STSPAYELTYIQQ-----NQLITTGQN-----
TIDRLRSCVLKHQAALRAASQIQECFSEPILTQFTASTVIICVTAYQLRIEQSNLVRVISM
MAYLLCMMMLQVFLYCLQGNQLAEESSNIAEAVYECPPWY--
RLPLPLRRSLLLIMVRSRRVAQLTAGGIATLSLACFTSIIKVSYTFFTVLQS--

>MsexOR34

-----MKIFIDNANGTLWLSLNLLRWVGFLVPDNFEGRKKKLL-----
PFYSFFWFMIVGIYVIVQTGDLI--QVWGD---ITLMTGTSFLLFTNMAF--
ITKIINVMMVRDAVLAIIDEGDEVLRSE-----RRIEGKAIVKSSNQETS-
RLLYLYGLLTVVTVFGWAASAEKGS-----LPLRA-WYPYDT--
SKSPAYELTYLHQSVAVILLAFLNVSLDVLVTSLAAVCRCRFQLLALSRLTLCHD-----
IPIDEKHLVSPEHKQIVHERLRLCVLQHQSIKESAAKIKTCFSGHILAQFTVSIVIICVTAYT
LALERDNPIRLIAMFSYLLGMMMQLVFLYCYQGDYLSEESSDIADAAAYECPWY--
ACPIPLRRSLLVIMARSCRVAILTAGGFSTLSLACFVSIIKASYSFFTFLQTSR

>MsexOR37

-----MKIFIHNANGTLWLSLNLLMWVGFLVPYNFECQKNNL-----
LPLYSFFWFMFIVGIYGSFRTRNLI--QVWGD---ITLMTGTSFLLVTNMAF--
ITKIINEMVPRDAGLSIFYEGDEVLRSQ-----RRIEGKAIVKSSNRETS-
RLLYLYGLLTVVTVFGW-----AAS-----AEKGSPLRA-WYPYDT--
SKSPAYELTYLHQSVAVILLAFLNVSLDVLVTSLAAVCRCRFQLLALSRLTLCHD-----
IPIDEKHLVSPEHKQIVHERLRLCVLQHQSIKESAAKIKTCFSGHILAQFTVSIVIICVTAYT
LALHDNPIRLIAMFSYLLGMMMQLVFLYCYQGDYLSEESSDIADAAAYECPWY--
ACPIPLRRSLLVIMARSRRVAILTAGGFSTLSLACFVSIIKASYSFFTFLQQVE

>HmelOR64

-----MKLVQNVNFSLIVTQVVFFTFGIWTPKCDG-----
WKKRLFSFYSFVSNFILGSYII--IQIGD---LIQVWGNLSLMTGTIFL----
LLTNFSLSTKCNRETI-----MQLSVFYTLSYMFTVFGW-----

AASAEKNELPLRA-WYPYDT--
SKTPAYQLTYAHQSIASMEATINVCLDTLVTSLICQYRCQLRLLALSLRTLCDG-----
LEFDNMGRLTEYSNEIVSRRLERCVRHQTVLHQVNLLQKYFSIPILAQFTVSMGIICVSA
YQLAFETTSLVRIISMVAYLMVMMLQVFLYCYQGNQLVMDSTGVSSAGFDFPWY--
ACSIPIQKSLILMMRTKRVARLTAGGFTELSLATFMAV-STYYILN-----

>BmorOR45

-----MKVLDNVNHAVKVTMNCCRLYGLFVSDDLTKRQLIIM-----
RAFSMLMLYFFVGGFFITTQSALII-TMWGD---LNLMTNVGLVLGTHLTL--
SAKVFTLHYKEKEITNVIYKNEVRLRAE-----TREQGKYIISEMNRETT-
LFMRLFIPFGMGTVTAWLLCTPKGELYT-----PA-WYPCNT--
TKSPAHEIILAHQGIIVILTATLEIAIVLLMTSIVAVCRCLKLVLGSLFETICDD-----
LPSNIMNKLTADEQVIVAKRVRENVIEHQAVLECINDIQDCFSAMLVHIAISTMIICATA
YQLAVESLDLTQRMTMASFLGGMSTEIFLCYQGGHLSIDSMEVATAVYSCPWY--
TFPTSLKRSLLVIMIRAQQPALLTAGGFAPLLDFTFVSIMKASYSFFTTLQN--

>BmorOR47

-----MKLVFDNFIFALKVTLNWCRYFGIFIPDELTTGRRQKL-----
LVQAYSVFMFMLFIGFFIITQIILFI-LVWGD---LSLMTDVGLVLGTNLAL--
SAKIAVFFFKREELASILKKNDDTLRFE-----TREEGKKIISEIDRETN-
AFMKVFFFCFGVGTVIAW---FLSTPKG-----ELHIAT-WYPCDT--KRSPAYEIIMIHQ---
-----LAITADLLMLSMIAVCRRCRVKLVGLYLQTICDD-----
LPCNVKNKLTSDDEEVIVAKRIREYVIEHQAILDCISELQNHFSPELLVQLLTSVVIICVTAY
QLAVESSDLLRKFTMASFLFAMSTEMFTFGYQGGHLSHDSMEVATAAYSCPWY--
TFPTSLKRSLLVIMIRAQQPALLTAGGFTTSLSETFVTIMKASYSFFTTLQE--

>BmorOR58

-----MKLVFDNFIFALKVTLNWCRYFGIFIPDELTTGRRQKL-----
LVQAYSVFMFMLFIGFFIITQIILFI-ILVWGD---LSLMTDVGLVLGTNLAL--
SAKIAVFFFKREELASILKKNDD-----TLRFETREEGKKIIS-----
-----EYPCDT--
KRSPAYEIIMIHQTIAVAVIASLAITADLLMLSMIAVCRRCRVKLVGLYLQTICDD-----
LPCNVKNKLTSDDEEVIVAKRIREYVIEHQAVLDCISELQNHFSPELLVQLLTSVVIICVTA
YQLAVESSDMLRKFTMASFLFGMSTEMFMFGYQGGHLSHDSMEVATAAYSCPWY--
TFPTSLKRSLLVIMIRAQQPALLTAGGFTTSLSETFVTVS-----

>BmorOR46

-----MAFFIRNKMLGLTITLNTLSWAGLIMRDQYTKTQRIIV-----
RVYGWLVLFLFVAATYVQIADLI--DIWGD---LDLMAETSLLLFMELAV--
ISKILTIFKYDKIMEIINGTEDILCSE-----NRLEGQKIIASIDKETT-
RFFQYYTSSVIFTTFFW---FLGEHSS-----TFFIRA-KYPFNE--
LKSPGYEFALIHQCMVMVFTGYFEFNINIFFASVVAGRCRCLKLVALSLRNICIN-----
IPVNKKNLITPEEEKLITERLHCAISQHKYALDAAEDVKHCLSKVLLVQLTVSIVIICTTAY

QMAVS-TDTIQKLSMAGYLLGASFEVFLFCFQGQSLSNASEDIADAVYECPWY--
TLTQPLKRTLIIIMMRAQSPAILTAGGFVTL DITEYMAVLTGHGGFGDFLHR--

>BmorOR57

-----MPSLIKNRIFGLTLTLNTLSWAGLILRDDYT-KTQRII---
MKVYGGGLVFLYLFVFTAYVQIADLV--VIWGN---IDFMTETSLILFMQLAV--
SAKVLTLMLKSKKIMEVTNEADA-----ILISEKKVEGQRIIASIDKNNT-
LFLKYYGFFVAFTIICW----FMGENTS-----TFFIRS-KYPFNE--
LKSPGREFAFVHQCI VVIFTGSFDFNV DIIISLVAVCRCLKLVALSLRNLCLD-----
IPMNKRNLITSDEEKVITERLRNIISQHKRALDAAEAIKHYLSGALLVQLMVSIVVICTTA
YQLAVK-STTMQSLTMAGYLFGTSLEVFLFCYQGEFLRESSEEIADAA YECPWY--
TLTRPLKKTLLIIMTRAQRPATLTAGGFVTL DITEYMAV-----SLISNT-

>SlitOR44

-----YCYQGNQLSEESFEIAGAA YECLWY--
KFSRLRLRRALLIVMVXHX-PSSTTHCWRIHYTFTCFHGH-NHSFVFISATTS--

>HmelOR47

-----VYTGDKDYDATYTIPTVILKVVGIRIFLKD TKLKSICW-----
NFYFWFNFVSILISCML SINMF SMASVGT---FVDLFTMMPCVGYLIIG--
TCKAFKIKRYYYVYKNLVEELRD-----MWPNGPITEEEHKVMNDALRRVR-
FIIKGNR NSTMALGSIFNGPPLIAWVKN-----RLGFDTELLMPFFF-
WLPFKTGRFEAIYFTQCFLCKLLTTMRIPGYMMSADLLYCIFLCHITTQFSLLSIRIKKFIY
VY---
SKKYLEQSNPIHDEETQEKLAAELFSIIQRHRALIRLSSDVESMYTFSLLVNFVNSSVIICF
CLFCCAFV--EKWNEFIYKMFLITSTLQTWMLCWYGQNLISTSTGVAESLYNCGWY--
TGSSKIKKSIFIMINRSQKQVHITTCGFSIISLAS YATILKTSWSYFTLLIN--

>SlitOR28

MTSLYRKFLFKKKLKQRIDERVYNKRDYDASYAPT KKVLGWVAIRMTHNISEK FYWFE
MMNLFLVGPS ELVSMLTTAYEAKTFRD---SIKVFR TMPCFGCVVLS--
MFKSIKMVVHRPVYENLANELRD-----MWPEGEVSEEEHQIISAALKQLN-
FIVKGY YWCNNALLISFLSPPYFITLAR-----YFGYDSPMGLHFLY-WLPFDP--
YQSVYYEITLVLTQTHALVVIWFNVAWDMFLCLFLCHITTQFDLLARRVQRLFYVE----
FIQTEGERVNSYGAQYWEARHQKEITEIVLRHHS LRITGDVENMFSLALLINFMNSSIIC
FCGFCCVLI--EKWNEVAYKSFLVTALSQTWLLCWYGQKLIDSSQRLADALYGCGWY--
NSSKRARS AVLIMLHRAQKGIYVTTHGFSVISLASYSTIIKTAWSYFTLLLN--

>MsexOR42

-----MASLWRKYFTKEIQVLKRVYEKSDYEDTYETPRKYLKWSGIRMKHNISKSLSICW-
----LVYYWFCFVNIVFASVAEIIAMCMTASAGT---
FDDAIAIFQMMPCNGFCGLSLKSFKMVKHRPVFENLITEIGN-----
MWPQRLVDEEEHKIISSALREIK-IFVKGYHWCNNYLMLSFLYPPFWELIKR-----
LSGEKWEPKLHFIY-WLPFDP--
LQPVYYECMLALQTWQAMTVIWTNMSGDFMFCFLSHITTQFNLLSVRIRKLIYVE---
YLRKNKEPVDSYTPQQWEEKHFKEITEIVLQHQAIRLSRDIENMYSLTLLVNVVNSPLVI
CFCGF-CSVVKWNE---TAYKSFLVTALSQTWFVCWYGQKLLDSSEGVAEAVYNSGWY--
RASKKIRRLMIMLHGSQKGVGVTTYGFSIISLASYSTIIKTSWSYFTLLLN--

>HmelOR42

-----MDIPNFEEMFKQININFWLVGLNFHQSRV-----
TLAYFIILFNIVIVLVEETGFFVSKFSVEN---FLELTQLAPCTCIGSLS--
LLKIIIFIAKKKQNIQDLTQYLRE-----LYNKALIDSSKKELIKQDFIFLK-
YLVKYFFILNAILICVYNFSSLVLIAYY---YYTKRTIFYILPYAM-LIPFST--
DHWYSWLIVYLHSIACGFVCVIYFTTVDALYYIMTSHICAQFSLLSEEIKGLDAD-----
-----TSCQLSDIVKRHQYILKLSQNLEEIFRAPNLFNVLVGSLEICALGFNLTMG--
PWSQVPGVVLFLLSVLVQILMISVFGENLIRESRKVGESAFCKWY--
DMDQKSKKIILLMLRSNKPQKLTAYKFSVISYESFTKIISTWSYFTILKT--

>HmelOR43

-----MDIPTFEEIFQQIKINFWLVGL-----PFGKSNV-----
TKTYIILLFNILAFVEEMGFFVSQFSVEN---FLELTQLAPCTCIGLLS--
FLKIIIFIAKKKENIYGLTQHLRE-----LYNKALSDSTKKELIKQDFIFLK-
YLVKYFFILNAILICVYNFSSLVLIAYY---YYTKRTIFYILPYAM-LIPFST--
NHWYSWLIVYLHSLASGFVCVIYFTTVDALYYIMTSHICAQFSLLSEEIKGLDAD-----
-----TSYKLSDIVKRHQYILKLSQNLEEIFRAPNLFNVLVGSIEICALGFNLTMG--
PWSQVPGVVLFLLSVLVQILMISVFGHEHLIRESRKVGESAFCKWY--
DMDRKSCKIILLMSN--KPQKLTAYKFSVISYESFTKIISTWSYFTILKT--

>BmorOR42

-----MDIPKFEELLKQIKMNFWMGI-----P-FDNPKI-----
QIRYYVLLLPLSLMLIEEIAFFGSRMSEN---FLELTQLAPCICIGVLS--
VLKILALTAKRQKIYELTQNLEC-----LHKIILNDTRKTELVRKNLVLIK-
FITKYFFVLNAVLIFFVYNFSSPVIIAYN---YIVSNEVQFVLPYAV-LLPFT--
DSWIPWLIVYVYSIFCGFTCVLYYATVDVLYCVMTSLVCNNFSLISFKLQKVNRRN-----
-----TAHLLKEVVKEQQYVLKLAEDLENIFTAPNLFNVLIGSVEICALGFNLMIG--
DLTQIPGCILFLSSVLLQILMISVFGENLISESSRIAEAAFLCKWY--
EMDQKSKKTILTIMIRSHKPKKLTAYKFSVISYGSFSKIISTWSYFTILRT--

>DpleOR53

-----MRRTNGCARTDGFH-----
SLYRALVLVLTIAVLLQEFVYAY--QERND---MTKLSRVMFLLCHITS--
IAKQIVFHYDADRIQEMIEGFDD-----PIYNGESASALSLLRSTTLVAR-

RLERAYAGCAILTCTLWLVPVLHRLSG-----NPVHFAF-WTGIDT--
DPPAMFVAVLLYSYYVTTLVGIANTTMDAFIATILFQCKTQLTILRLDFQTLRQR-----
ALIECQKNDLTYESALIKLFVKCFLHYRRVTETAALLQDIFGTAILVQFGIGGWILCMAA
YKLVSLNVLSIEFASMTLFILCILTELFLYCYYGNELTVESELIVRSVYSMRWV--
SSPLRFQRLLLLLMLRVRRTLPAAGRVIPLSLDTFVKILKSSYTFYAVLRQTK

>HmelOR26

-----MRAPGGAGK-----
GGYRALVLAVTAAYLLQECVYAY--QERSD---MSKLSQVMFLLLCHITS--
IVKQIVFHIDADRIDLQVQSLND-----PIYNSTCPRARELLSHTTARAR-
RLQRAYAGCAALTCTLWGMFAAWRRACG-----GAVEFPF-WTGPRT--
DSPAVFIVILLYSFYVTTLVGLANTTMDAFIATILYQCKTQFTILRNEFETLPER-----
AKSLSIKTNEDYERVIMTLFVKCYHHYQKIIETSTVLGHIFGVAILVQFGIGGWILCMAAY
KLVSLNILSIEFASTALFILCILTELFLYCYYGNELTVESDKLVCSVYCMRWQ--
RAPLRLRLLVLVMERARRPLCPAARLVPLSLETFLKILKSSYTFYAVLRQ--

>SlitOR17

-----MSVCAGSVAPHVRCLRRVGFCRWGAAAPANPLLAT---
AARFYHVFALAATSTYVLQQLIYAY--QERSD---MDKLSQVMFVLLCHVTC--
VAKQVAFHVDADRIDELIARLDE-----PLLNQCAGPRGALLHGTARRAA-
RLLRVYSGCAVATCVLWIVFPVLYRIRG-----ISFEFPF-WAGVSY--
DHNVVFGAVLLYSFYTTNLVAIGNTTMDAFMATILDQCKTQLRILRLNFETLPER-----
ARALQQSGGGVYEASLQRLFVDCLLHYNITETCTVLHDVFAVPLLIQFGVGGWILCMA
AYKIVSLNVFSIEFASTTLFIICILIELFIFCYYGNEVTVESSRVSESLSYMEWA--
RAGLSFRRLSLVLVMERAKRPLRPAAGRVIPLSLDTYVTILKSSYSFYAVLRQTK

>HvirOR17

-----MSLRSECARSVAPHVRVLRRVGFLRGAALP-ARPRAV----L-
RGYHALALAATSTYVLQQAVYAY--QERGD---MEKLSQVMFLMLCHVTC--
VVKQIAFHVDADRIDLRIAGLDE-----PLLNQCEGERGALLRGTARGAA-
RLLRITYGCAVATCVLWIVFPILNRIQG-----ISFEFPF-WTGFSY--
DHNVVFSVLVLLQSFYCTNLVAIGNTSMDAFMATILDQCKTQLRILRINFESLPER-----
ASALHMETGENYDTILDELFDCLVHYNKITEMCAELHDVFTAPLLVQFAVGGWILCM
AAYKIVSLEVLSIEFASTLFTICILIELFIFCYYGNEVTVESERSVQSLYSMEWR--
RARLAFRRSLVLVMERAKRPLRPAAGRVIPLSLDTFVKILKSSYSFYAVLRQ--

>SlitOR26

-----MSLSSGSVATHLRILRRCGYCRLAGGARVARLGS----
LHALYRGFTLALTTLYLQECIYAY--QVRQD---MDKLARVMFLLLCHITS--
IAKQLVFHLKADRIDEMLGGLNE-----PLYNQSAAVHQRLLRVTAARAA-
RFVRAYAGCAVVTCTLWITFPVMYHLQG-----QLVEFPF-WINVDY--
NQSKMFILVLAYSYYVTTLVGIANTTMDAFMATVLNQCKTQLRILRMNFECLPLQ-----
-
AVEVLKTSPGQSYDAVLMKLFKECLLHYEKITKTAKMLQDIFGTAILIHFIGGWILCRA

AYKIVTLNVMSVEFASMTLFISCILTEFLYCYYGNEVTDESSRVSESLSYMEWA--
RAGLSFRRLVLMERAKRPLRPAAGRVIPLSLDTFVKIIKSSYTFYAVLRQTK

>BmorOR26

-----SLSGSSVFTHLFLLRCCGFCRLSRSSSTARRGLSV---
AHEVYRALTLTLTVVYLLQECVYAY--QERTD---MDKLSRVMFLLLCHITS--
VAKQLVFYLDADRIDYLIATLDD-----PSY--NEMSHQRLLVDASRWAS-
RFVWAYSGCAVVTCTLWIVFPIIYHVQG-----QTVEFPF-WIQIDY--
TKSSMFVVVLLYSYYVTTLVGIANTTMDAFMATILGQCKTQFTILRIKFETLPTR-----
AKQALRCDSQNYDEVLMRLFHDCLKHYQKIV-----
SAILIQFGIGAWILCMAAYKIVNLSVLSIEFASMILFISCILTEFLYCYYGNEVSTESERLV
TSIYSMEWV--
GARLGFQRGLLVLLERARRPVRPAAGLVIPLSLQTFLKIIKSSYTFYAVLRQTK

>MsexOR3

MTSAGSSVAPHLRCLRMVGFCRLSAGTAGATGRGRWRRRAHGAYHAFALSATSTYVLQ
QLIYAY--QERGD---MEKLSRVMFIMLCFVTC--VVKQIVFHV DATRIDMLVAGLAE-----
PLFNPAAEWARALLRETARAAR-RQALAYAGCAVATCVLWIVFPVLDRARG-----
RHHVHFSF-WAPIDC--
THTAKFLTLLLYSFYATSLVGVGNTTMDSFVATVLHQCKTQLTILRINLET LVER-----
ARAACGDARDQYDRVVYKLLVESLVHYQKITQTCALLQDIFGAALLVQFGVGGWILCM
AA YQIVSLDVMSIEFASTTLFIVCILTEFLYCYYGNEVAVESDLVLQSMYALEWL--
AVPRRVRRALLIAMERAQRPMRPAAGAVLPLTLD TYVKILKSSYSFYAVLRQTK

>BmorOR59

-----MDTNPSAAGDSVAPHLRRLRQVGFCQLDPTSQSRRPILAL--
MHRVYHRLVLAATVLYIFEQLTYAY--QARND---MERLSRVLFLMLCHLTC--
IAKQFVFHSDADKINQLVVGLDD-----ALCNQPVETHRLLLLLETSRRAA-
RLLMLYSGCAVSTCILWAVFPLLDQLRG-----RTVEFAF-WIPIDY-
RHNAFQFAVVLAYAFYSTSLVAVANTTMDAFIATVLYQCTTQLRILRMNFESLPER-----

AYALSRKTRQDYHTVTHELLVDCLLHYKKITETCNLLEQIFGKAILVQFGVGGWILCMA
AYQIVDMEILSIEFASTALFMGCILTEFLYCYYGNEVTVQSGLVSESVYAMSWL--
SLCPRERRALVVLERARRPLRPAAGRVVPLTLNTY LKILKSSYSFYAVLRQTK

>SlitOR31

-----MEDNVAYSTFEGFRPHFDALARVGYFKIVLKPISSLKRF----
FHNVYRIISWSLILTYNLQH VIRVV--KVRHS---FNLIVDTL FILLTTLNT--
LGKQTAFNLRSRRIDDIISIING-----PTFAASKPYHVEVLKQNALVMS-
RLLTLYHGAIFTCGTLWTVFPVVNRALG-----KEVQFTG-YFPFET--
TSTLAFSLALAYMTVLITFQAYGNVTMDCTIVAFYAQAQIQLQMLRYNLEQLVEFN----
IKKFNSIKTQYRDEGEEKTELQERLKKCVRHYDQIVRYAKEVESIFGEAMVVQFFVMAW

VICMTVYKIVGLSICSAEFVSMVYLGCMALQFLIYCYFGTQLKVESELVNQSIYCCDWL
--CLSPQFRRQLLVMMQCCGRPLAPRTAYVIPMSLDYIHVLRSSYTLFTFLNR--

>CpomOR31

-----MTTTYSTFEAFRPHFNALAYVAYFKIIPKPSSGVKHT----
LHTVYRAVVWFLVYIYNLQHVIRVI--QARHS---TEQAVNTLFLVLLTTINT--
LGKQVAFNSRVERVDRLVATIEG-----PLFMARNTYDEKVLRSSNAWIMS-
RLLMMYHGSYILCGAMWGISPLVSKLSG-----EVELTG-YFPFDT--
SGWLGFGLIAVAFNTIVITLQGYAHVTMDCTIVSLHAQTKVQLQMLRNSLEHLTDSR----
EICVQSTVYKDIEDTAFGVVLKKRLTRCVEHYKLIVWFHSEVEAVFSEAMIVQFFVIAWV
ICMTVYKIAGLSLVSAEFFSMFVYLGCMALGQFLIYCYGTQVKAESEFINYSIYRCDWV--
SLSPRFRALLLILMSRGMRPVAPRIAYIIPMSIETYISVLRSSYTLTFLERK-

>HmelOR24

-----MEVKLSYRCVEQHLLRLRVGGYYQIDPHSPTLHKR-----
LHDIYMRITLVWIIYVTVQQAIRLY--EVRDD---MDMVMGTFLFLTLTHTDS--
IYKQLVLWIKADKVEELLDIMKGGIYNLLCQLFNQGEDDHMTYLLQAAYTST-
CLLNTDNCALATCFLWTLPLFVLHLQG-----KSVEFAI-WFPFDV--
NVDPAFYFLLLYVWFTTSWLAFCNNTMDVMVSFLFGQCKTQLSIMFVILSRKYLP-----
-----ATERIW----
MIEDIFSTAIA YQFLISGWIICTSVYRMVDMSPASVQFLSMVLYISCILIQIFMYCYGNEV
TIESENLTGSAYSMNWL--
EINLKLRRHVILFMERIKRPIQPLAGRIPLSNNTFVSIVKNSYTFYALLKNTN

>DpleOR51

-----MADIKSEDLFLNR-----
AKFVMKLLGVWIIYIVQVWGD---LEAVSQASYLLFTQASL--
CFKVTVFQVNVKSLRELLKRMND-----KIFLPQSSKQNRILSLQAKRIK-
RLLLAFFMISSQTTCGLWALKPLFDDPGS-----RKFPFDM-WMPVTP--
QSSPHYEFGYAFQLLTICMSAYMYFGVDSVALSMVIFACGQIDIHKDKILKINSI-----
RKESGDMSRRIVASDNNKKLIECIRQHQA VVLFKELLENTYHTYLLFQLVGSVGLICMS
ALRILVVEWRSIQFFSIVTYLSVMISQLFVCCWCGHELTATSEDLHTVFYRSTWY--
EQDVRFRQRLCFAMMRLGQPLVLRAGHYIPLSRQTFVSILRMSYSYFAVLNQTK

>HmelOR16

-----MKVLKSEDLYLNRAKFMKYLGW----WV-PAKNET----
ASKCYRLFMMSLQYLFLLFQIIYII--LVWGD---LEAVSQASYLLFTQACL--
CFKITVLQINMDMLKDLLRRMND-----KIFFPNSKEHERILKLQAKRIK-
RLLLAFFMISSQTTCGLWALKPLFDDAGN-----RKFPFDM-WMPVSP--
EFSPQYELGYVFQLLTICMSAYMYFGVDSVVLMSVIFGCAQLDIHKDKILNIGFV-----
DIKGQDSMEKKTI AENNTKLINCIRQHQA VVLFTELIENAYHTFLLFQLVGSVGLICMSA
LRILVVDWRSMQFFSILTYLSVMISQLFVCCWCGHELTATSEELHTVLYKCAWY--
DQDLKFKRTLFLFAMLRMDRPLVLRAGHYISLSRQTFVSVS-----SVL----

>SlitOR32

-----MVSSDLFLNRAKFVMKYLGV-----WVLADNASY---
FLKAYRGFMITLQYLFLIFQTIYII--QVWGD---LDAVSQASYLLFTQACL--
CLKVTVFQINMPMLKDLLRLMDS-----KIFRPENDVHEKLLELQAARIK-
RLLLAFFMVSSQITCGMWALKPLFDDADR-----KFPFDM-WMPVSP--
EDAVQYYIGYAFQLGTICISAYMYFGVDSVTFSSVIFGCAQINIIEKLMSTISI-----
KEKRGTKAVDEALAENYNKLVDCIKHHQAIVTFTTELVENAYHPYLLFQLIGSVGIICMSA
LRILVVDWRSMQFFSILTYLSVMISQLFVCCWCGHELTATSEDLHRVLYKCYWY--
EQDVKFKRELCFAMMRISRLVLRAGHYIILSRQTFVAILRMSYSYFAVLNQTH

>BmorOR16

-----MSFNSEDLYLNRAKFVMKYLGV-----WVPPENENF---
ARKFYKIFMMSLQHLFLFFQIIYIV--EVWGD---LEAVSQASYLLFTQACL--
CFKITVFQINMNKLKELLKQMNG-----YVFQPKNINQQNIIVQATRIK-
RLLFAFMISQLTCGMWALKPLFDDVGS-----RKFPFDM-WMPVSP--
ERSPHYHLGYSFQLVTICMSAYMYFGVDSVAFSSVIFGCAQIGVIKDKIMSIKPL-----
GIYRNHKTYYTKISRYNRKTLIECVKHHQAVISFTTELVEDTYNSYLLFQLVGSVGIICMSAL
RILVVDWRSVQFFSILCYLSVMISQLFVCCWCGHELSTSEELHTILYNCAWY--
DQDVKFKRDLNFMMARARRPILLRAGYYISLSRQSFVSILRMSYSYFAVLDQ--

>MsexOR32

-----MSCIMYLAVSEQLTMTLNSEDLYLNRAKFVMKFLGV-----WVPPNDENI---
IRKLYRYFMISLQYLFLIFQIIYII--QVWGD---LEVVSQASYLLFTQACL--
CFKVTVFHVNVDLLKELLQMNNG-----ETFRAQSFDHEKILESQAARIK-
RLLLAFFMISSQLTCGMWAVKPLFDDVGS-----RKFPFDM-WMPVTP--
ESSPHYHIGYTFQLVTICMSAYMYFGVDSVALSSVIFGCAQIEIHKDKLMSIQPV-----
DKNANDAINAFSDNYQQLVNCIKHHQAIVRFTDTVENAYHTFLLFQLVGSVGIICMSALR
ILVVDPRSMQFFSIVSYLSVMISQLFVSCWCGHELTATSEDLHTTLYMCAWK--
DQNTKFQKELCFAMLRMSRPLVLRARHYIALSRQTFIMILRMSYSYFAVLNQ--

>MsexOR45

-----MDVCIMYLAVSEQLTMTLNSEDLYLNRAKFVMKFLGV-----WV-PPNDEN---
IRKLYRYFMISLQYLFLIFQIIYII--QVWGD---LEAVSQASYLLFTQACL--
CFKVTVFHVNVDLLKELLQMNNG-----ETFRAQSFDHEKILESQAARIK-
RLLLAFFMISSQLTCGMWALKPLFDDVGS-----RKFPFDM-WMPVTP--
ESSPHYHIGYTFQLVTICMSAYMYFGVDSVALSSVIFGCAQIEIHKDKLMSIQPV-----
DKNANDAINAFSDNYQQLVNCIKHHQAIVRFTDTVENAYHTFLLFQLVGSVGIICTSALR
-----IL-----VSEDLHTTLYMCAWK--
DQNTKFQKELCFAMLRMSRPLVLRAGHYIALSRQTFIMILRMSYSYFAVLNQ--

>DpleOR52

-----MGIWLSSNNYVI---
LRDLYKSLIMSTQYSFLLFEIFYVF--VWGD---IDEMSEASYLLFTQTSV--

CYKASVFIINKKNLIVLLVSMKA-----KIFEPQSSIHYGILYRNARVVK-
NLCAVFLMSAITTCSLWTIMPLFDAET-----RFFPFI-WMPVDP--
RDSPQYELGYIYQVMSIYISALLFVAVDNITLGMIMFGCAQLEIVIDKIKQLKNA-----
SSKHNKERRKLICENNKLLDECIKQHQS VIRFIETLENTYHANIFFQLTATVGIICIIGLRISI
VEPRSVQFFSMLNYMVTMLS QLFLYCWC GSHLTTKSEELREWLYQCPWY--
NQDPRFRKSVFIAMERMKRPIIFKAGHYIPLSRPTFVSVLRLSYSYFAVLNQAK

>SlitOR10

-----MEAENNTTLFLGRPKKILTAHGV----WPHPNNYII----
LRKLYMLFVMWTQYSFLLFEIIV--NVWGE---IDEVSEASYLLFTQASL--
CYKSTTFMINKKS LLELLDIMDS-----DIFPKSAEHEKILAAQALKIK-
RLCLFFLTSAITTTCTLWAMIPLFDDASK--RSFPFRICKQETLTLLF-RMPVTP--
LKSPDYELGYLYQMISIIYISAF LFISVDS-VAVLMIFGCAQLEIIMDKIKKIQSI-----
FNTDQSEEGRKLLKMNNELLDECVKQHQTVERLIQLCEDTYHANIFFQLSGTVAIICNI
GLRISIVEKNSVQFFSMLNYMVTMLS QLFLYCWC GHELTSIRSENLEWLYQCPWY--
EQDTKFKRSLFIAMGRMKKPIIFKAGHYISLSRPTFVAILRCSYSYFAVLNR--

>HvirOR10

IDAVSEASYLLFTQASL--CYKSTAFMVNKQS LLELLEIMDC-----
EIFEPKSAEHEKILAAQARKIK-RLCLFFLTSAITTTCTLWAMIPLFDAASK-----
RSFPFRI-WMPVTP--
LKSPDYELGYLYQMVSIIYISAF LFISVDSVAVSMIMFGCAQLEIIMDKIQKIKYV-----
FESADSEEKRREI IKINNEFLVECIKQHQTVERFIQLCEDTYHANIFFQLTGTVAIICNIGLRI
SIVEPNSVQFFSMLNYMVTMLS QLFLYCWC GHELTSIRSENLEWLYQCPWY--
EQDTKFKRALFIAMERMKKKPIIFKAGHYISLSRPTFVAILRCSYSYFAVLNR--

>MsexOR31

-----MAQNTTELFLGRPKKILTFFGI----WLPSKQYQD----
LVKIYMILVMITQYSFVLFEIVYII--NVWGD---IEVVSEASYLLFTQASV--
CYKTTAFLIKRKL VLLLEHMEQ-----EIFASQSKDHEKILLELSLRIK-
RLCTFFLTSAITTTCTLWAMIPLFDDAGH-----KTFPFRI-WMPVTA--
DESPGYELGYLYQMVSIIYISAF LFIAVDSVALSMIMFGCAQLDIKDKMQKVREV-----
PICLNVDKKEKLKSNNDLFTECVRH YQNVISFVELVEETYHANIFFQLSGTVAIICNIGLR
ISIVDHHSVQFFSMLNYMVTMLS QLFLYCWC GNELTIRSEVLRDWMYQCPWY--
DQDTKFKRTLWITMERMKKPIIFKAGHYISLSRPTFVAILRCSYSYFAVLNR--

>CpomOR10

-----MTVSTVDNVTFLNRP RNILLYLGI----WLKPANYVS----
LYVAYAIIVMLTQYSFVFEFIYIA--LAWGD---MDAVTEASFLFTQASV--
CYKVTRFMINKDNLVLLSFMEE-----EVFQAQNERHVRCLLNQSIMIR-
RLCLFFLGSAITTTCTLWGLMPVVDSTGG-----ERIFPFI-WMPVGP--
EKSPQYELGYFYQMVAIYISAF LFIAVDSVALSMIMFGCAQLEIIMDKVQQIKRV-----
PMSGKVKKQDREQLIQENKVL FVECLKHHQAVIRFIESAEDTYHANIFFQLSGSVAIICIIIG

LRITATTPGSVQFISMLNYMVTMLSQFLYCWCGNELTIRSEILREVMYLCPWH--
EQSNSFRLLWVAMERMKRPIIFKAGHYIPLSRPTFVAILRSSYSYFAVLNQ--

>BmorOR41

-----MMGNSTDLFLDRTKSILNFFAMWRSFEKPIPL-----
KVYMAFIMTTQYLFLIFEIYIV--NVWGD---MAEVSEASILLFTQASV--
CYKITSFISKTNNFVILLGLIES-----EIFSAQTELHEKILILKARKIK-
RLCMFFLVNAVTTCSLWAVIPLLDISSK-----MLPFKI-WMPAST--
GESPHYELGYLYQMITIYISAFLEFIGVDSVPLSMIMFGCAQLEIIMDKIGKVKS-
PLDQQPMQRQAVLNSNYELLVECVRRYQSVVRFIELTEKTYHANIFFQLSGSVLIICNIGF
RIAIVDSNSLQFYSMILTYLVTMLSQFLYCWCGHELTIRGEELRETLYQSPWH--
EQDIRFRKVLITMERMKRPIIFKAGHYIPLSRPTFVAILRCSYSYFAVLNR--

>HmelOR41

-----MNSNIEIFLSTPKIILWLSI----WLRIGDHVI---
LHQLKQAIVLFTQYSFLLFELIYII--VWGD---LDEVSEASYLFFTQASV--
CYKVAVFVINKNKLKLLFMMV-----DIFASQSTVHDGYARTHVSPLI-TVCIQNLA-
----NEERSILTLGS-----LTHSHCFRMPVSQ--
HIFSQYMIGYLYQIISVYISALLFFAVDSTTSLMIIFGCAQIEIIMDKIKK-----

VKHISKCFRIELLENTYHANIFFQLSGTVAIICIIGLRISITEPDSVQFYSMVNYMVTMMS
QLLLYCWCGNELTTKSEDLREWIYQCPWY--
EQDSKFRSSLVIAMDCMKRPIIFRAGHYIPLSRPTFVSV-----

>BmorOR10

-----MRTNAKSFLFVPSKVLTLCGV-----WPVEKTSI-----
FSLIYRSIMLSSQFCFLVFNGIYIG--LMWGD---LKAVSDALYMFFTQTTC--
CSKAIGFYFNFMKIKRIVASMD------VLFTAMSIEDQATIFSHSRTVN-
KLYKGVLGFTGFTLVQWTVLSLIGSGRT-----LPFNEMWVPTDI--
SKSPNYEITFVVELWMMVISAALFMSVDTITVATMMFSCAQLDIIMKKTQQIQEI-----
PLSPDLSSRNRSSELHEKNNGILIDCIKHQAIVRFSELCEGTFQVHSFFHLGGIVFMICVIGF
RMAGESPVSAQFWAALSylvilgqlylcwcanelTTKSEQLRDKLYLTPWY--
DQDVKFKRNLCIAMECMAKALTFRAGSYIPLSRAMFVSILRSSYSYFAFLNQAN

>BmorOR40

-----MTGAGAGT-----
FRTGAGPGRGDGVARRGESGE--
TTTLGRDAFAALGCFGAADGSTARARFFPRVTVLNPSEVPGSGLAADSNSISDSESEPELD
AAQDAIDAGA-----GVGGDIGESRA-----RTVFG-
IQGHDASDSALRMHNNVAIYA--KTTMSGNSQLTFATAATIFLKNASGP-----
-----NGVAIGTDYAICVVSLSLFFRFTELVEDTYNSYLLFQLVGS-
VIICMSALRILVVDWRSVQFFSILCYLSVMISQLFVCCWCGHELSTSEELHTILYNCAWY
--DKDVKFKRDLIFMMARARRPILLRAGYYIGLSRQSFVSV-SIRIRFNAILVI--

>SlitOR27

MIILNENMKTCLAFSPVVPYGVFESWEDLNPQLYHAVHIYWLKFYGM-----WF-
NDFSPQ----Q-MMYTLIVLWVCFFPGIGEVVYLL--RRREN---IGDVAEGLYLFLSEMYT--
YFKVVVFWLNRNKVIDLLKYLHC-----EEFKPKEPEHRDIIKSIKSAR-
FVMTYYSTMCVGA VSVGIIMPLTENFDI-----LPTNV-EYPFFN-
VYQTPAYEAVYIHHIYYKPATCIIDGVM DTLAA FVASAIGQIEILXFNL RNFELL-----

EYKPPYYVRSVLKDCIVHHNCIIRYVSMIESAFSLASALQFMLSVMVLCLIGIQFLSIPTSH
PMQAWMG IYLT CMLIEVFILCWFGDELIWKSMDLAKAAFE GPWM--
NSDRKSNMFIIIFLERCKRPMRLTAGKIFTLSLD TYTVLINWSYKAFAVMRN--

>DpleOR34

-----MSFFKRFTDRVCESDLDFDNLKYLYYVGLWPREDWPKYKQILY-----
KIYEFKLHLLSITFIVITGIGTY--QQRNN---VIMLMTNLDKTLVGYNF--
VLKIFFFVIKREKLNVLNIEIKN-----SGDKVSDDRKTLMA-IHVIFITFISTALVSAF--
-SLLSQYKA-----EMTVEA-
WMPFDPFKDRMSLLMAAQILAICFVVPCLYRAFAMQGIVCSIIMYFCDQLLHLQGNLKK
LGNT-----
KHNE MQARKEFKGIVKKHVRLMRYTKTFTEIFKEFFLIQNLA VTIELCLNALMVTVVLD
EKTL LASFLTFLGLALFNAYIFCYLGDELIILSTGISQAAYESEWT--
SWPIDMQKDLLIIKVAQRPLKLSAGGMAIMCIQTYSQALYNAYSIFAVLNDVV

>HmelOR18

-----MAVLKAISEQILHRDLDFDNLKYLT FVGL-WPENWNRDKLFLY-----
KIYEINLHFLSIMFIVLTGIGTY--QYRDD-ITIAMTNLDKCLAAYNFVF----
KIFFFVLKREKL RALIVEIRS-----SSDKVNDDRKMLMG-
IYVIVITLVATILVGAFTLV AQLK-----MEMTIEA-
WMPFDQYENRSSLLMATQILAVGFVVPCLFRAYAIQGIVCSIIMYFCDQLEELQDGLSNL
DYS-----
EETDRFVREELKNIKKHVRIMGYSKTFTSIFKEFFLIQNLA VTIELCLNALMVTVVLQEKT
LLASFLVYLG LALVNAYIFCYLGDELISQSTGIANAA YEIGWT--
SWPKDLQKDLLILIIAAQRPLTLSAGGMSIMCIQTYSQVLYILATIF-----

>BmorOR18

-----MGDRMVTRGHFFDFNIKYL FYVGLWPSNEAKRIEKIAY-----
KIYEYQLHVLSLIFLVTTGIGTY--KNHKD---IIALLTNLDKTLVAYNF--
VFKVIVFVYKREELRKLIEQIVQ-----SGDQITEDRKALMA-
KL VIVLTGISTVIITAFSCLALFEGEMT-----IDA-
WMPFDPMKSKMNLFAASQILAATFVVP CGYRAFAMLGIVCSLILYLRDQLVDLQNKIRD
LRFA-----
TGNVEKLRDDFKLIVKKHVRLLGYSKVIEMIFKEYFFIQNMAVTAELCLNAMMVSVVLE
QKTLAASFLAFLSVALLNAYIYCYLGNELIVQSEGIAMAA YESSWI--
LWPVDMQKDLLIVITAAQKPMKLSAGGMAVLSVQTYSQTLYNGYSIFAVLNDIV

>CpomOR21

-----MFGSLELSDDFFAYNLKYFLVGLWPDDAWAKTHPSLY-----
KIYENITHVLSIIFLITSGIGTY--QIKDD---VVLMTNLDKCLVAYNF--
VAKVGIFVWKRRQVEILISEIVN-----SGDQLTEERKKMML-
MIIVVTGLSTSIVGAFSALALYHNELS-----VEA-
WMPFDPMESKMNLLTASQLLAITFVVPVIWRAIAMQGIVCSLIMYLCDQLVELQDRIRSL
EFT-----
SMTERVVREEFKNIVNKHVRLMGYTQDMNKIFEEYFLIQNLAVTLELCLNLMATMIGFE
QKTLLATFFAFLCVALMNAIYYCYLGNEMIIQSGNLALAAYESWI--
SWPLDLQKDLVILLRVAQKPLYLSAGGMVAMSIQTYSQTLYNGYSIFAVLNDVV

>SlitOR43

-----NVFILIDDGFFSFNIKYLFFVGL-----WPEKTLTRN----
QKFLYKIYELFIHAITIIFLIMAGVGPIKNKDDILIVLSNLDKSLVVYNFF--
KTIIFLIKRDQLSDLIDEIEA-----SGDEVTKERKKLMA-
NYVMAVTGMTAAVVSTFSLALLEGIMS-----IEA-
WMPFDPVKNSMNLVLSLQII-
AFCVFPGLCRAFAMQGLVCSMIMYSCDQLIHLQKELRSLDYV-----
KDTEMITRMKFKMIIKKHIRLMGYSMKMESIFNEYFLVQNLAVTVELCLNAVMSIVVQ
QITLLFTFLAYLVLALINAYVYCYLGNELIIQSEGIALAAAYESTWT--
SWPVDLQKDLLILINASQRPLKLSAGGIALLSIQTFSQLYNGYSIFAVLNDVV

>HvirOR3

-----LIDDGFFSFNLKYLYFVGLWPEKTLTANQKILY-----
KLYEYFITFLTTFIVLASIGTY--QHKHD---LVVFCNVDKCLVVYNF--
FLKTIIFIKRDKLRDLIDEIEM-----SGDKVTEERKKLMA-
NYVMFITGMTAAVIGAFSLLALLEGTMS-----VEA-WLPFDP-
MESLMNQILALEVLAFCVFPGLCRAFAMQGLVCSMIMYLCDQLTHLQTELRLDLYV-----

KESEMAMRLKFKNAIRKHIRLMGYSGRMESIFKEYFLVQNLAVTVELCLNAVMTVVV
HQITLLVSFVAYLLLALVNAYVYCYLGNELIIQSQGIALAAAYESTWT--
SWPVDLQKDLLIVILAAQRPLKLSAGGMALLCIQTFSQALYNGYSIFAVLNDV

>MsexOR20

-----MAVSVLKRLITYGDNIFEFNILYMLVGLWHNENWTRNQKLLY-----
KIYDNTLDVLGLIYLTITAIGH--GNMDD-ITAALAGVDKSLVAYNFML---
KIIVFHFRKHQLRKLVEIIA-----
SGDVVPEEHKILVAKLSLATTTITTIIVTIFTGISVLA-----GELPAKV-WLPFDT-
SKNFMNLLAGVQICVTFGVPICYRGLALKCFVSTMIFYLRDQLIDLQVKFKELDNF-----
-----KDAEEVVRTNFKKIVKKHIRLIRYSKTIDNLLREYFLIQNLAITIEVCMNSVTLT---
-----LSEGISSAAYNTSWT--
SWPVDLQKDLLTVIIVAQSHFKLTAGGMVMSLETYAQTLYNGYSIFAVLID--

>MsexOR21

-----MLVGFWHNENWTRNQKLLY-----
KIYDLTMHVFGITDIALSAVGIIYQTKHDLT---VALAGVDKALVAYNFMF----
KIIGFHFTKDQFKKLVKEMIA-----
SGDVVPENHEILMAKLSLATTITSTIIVVIFTGSSMMVG-----DLPARV-WLPFDI-
SKSFMHLLAGVQFCVIFAIPVCYRGLALQCFVSTLIFYLRDQLIDLQDKFKELENF-----

QNVETELRRNFKKIVKKHIRLIRYSKEMDYLLREYFLIQNVAFTTEVCMNAVILTLIGFSQ
KTLINFIAFLITALIHAFVYCYLGDEIIEQSKA-----YRLLLT--
IQPSTMQKNLLTVIIAAQSHLKLTAGGMAVMSLETYAQTLYNGYSIFAVLADAV

>HmelOR22

-----MALFDNLRKKILGSDFDYDGFVGDLYEFHPQLKILLVTNGIFFNNRDSYWR-----
FLWPVISVLLSIITCAFELMFIHHGVDIED---YSFATECFCYFLIIFTI--
PIVYTSVMLNRNNIIQILDTMNR-----DFLFICNLGSKYRKTFQGGQMLIK-
KLCVCWLIFCVSIVLMYIFSTTAILLYQ-SLFATQHENMVRPLIFPF-WLP-
ADDPYRTPNYEIFFFLQCVEGLIVPQTFMYIYVLFHILLHHYYL-MSMMTFDIEVLFHGL---
-
DESVVSLSYTDSRLMEVKVILRNRMRVVKWHNLVLGSVDAVSSVYGPPLVYQVTITSL
VTCLVAYQVADSLDHGKLHVIFTMLFIATCVQLWIPCYLGTILRNKAFAVGEAMWNSG
WH--TTLGRLLRSIIIFIKRCQKPVSIKFTGLPNLELETFSV-GVSFVYLNINLFL

>SlitOR22

-----MRLQIIKDFLMKASFDFDRPDIDLNFRIFLAVKGVFFTNRGSR-----
FRLIWPSICIQLSIIGMTFEEMFIWRGVSLKD---YSFATECFCYWLLLGCI--
PTVYVSILVHTNKIYDIVVKMNE-----EFIYVCSLGPRYRKPFLEGQLLIW-
QLCYAWFGFVSFVGGLYVVFPLVGLIYQ-SLFATLNENTTRPLQFPM-WLPHDD-
PYRTPNYELFLFIQSTLCFCFVQTFVYIYTLFHILLHHYYMIMDMIIIDFSVIFDGL----
EESVALLPRHDSRRMETQRILNARIEKIVKWHLSVFGAVKTVSSIYGPPLVYQVSFTSIAIC
LIAYQIAEKLDHGSLDILFSLLSICACQLWIPCHLGTMRNKAFEVGDAGWTCGWH--
PLGLMIRTDIIIIILRAQQPVTIKYTGLPQIQLETFSMSSSYFNMMLRQYS

>MsexOR22

-----MGWIERIKGFILKKSFDLDRPDICLYNFRILFALKGIFFNKQNSK-----
LKIILPTYFNLLTILGMVFEGMFAHRGLTIKD---YSFAIESFLYFIILTST--
PLVYLCLFYHKDKIIQLDDMNE-----EFKFVCSLGPRHRTPLKGGQLLIW-
KLCYAWYTLSISTGTAFMMFPVMALVYQ-TLFVTHTEKTIRPLAFTM-WLPNDD-
PYRTPNYEIFFFEMNYCVIIVQTFGVYIYTLFHLLHHYFILDMMILDFEAIFDGL----
DESVAALPSKHPRRREVQLILNARIKRIVTWHNSVIKTINTLSIVYKPALVFQILLSSIMVC
LIGYQIAESLDNGVIDFLFIMLGVCCTCMQVWIPCYLGTLLRNKVFAVREACWNCGWH--
SLGTILRLDILIIQRTQVPLLIKLSDMSTVELETFSMSAAYSFNMMLRNSN

>CpomOR24

-----MKAFVSTAKTFLYKNDFEWNKEITLQNFQIFLAINGVFFNNRESK-----
IRFILPVLSTLITLVAVAFEIFFIWHGISMND---YGFATECFCYFFILGSV--

GIVYSSVLLNRVKVFKLLHNMNN-----DFLFICNLKAEYRDTFLTGTGQLLIW-
RLCWSWIVFISFVSLLYISNTLLYLLYQ-STLATQDEHMIRPLIFPM-WLPEDD-
PYRTPNYEIFLALEVILIFVVLVTFGLYVYILFHLLHYYNLMDVILIALDDDLFDGL----
DESVALNRGDPRRQAVQDELNIRMGQIVRWHLVSFDSVDDISSVYGPTLVYQVMFSSI
VICLMAYQVAEQLSEGKVDYLFGLGIGACLQLWIPCYIGTLLRNKGFFVGDRCFYCGW
H--PLSRLLRPDLIIFIQRTQRPVAIKFTGLPHLQLETFSSIMSNAYSLEFNMLRQYK

>CpomOR22

PGEYSLCSQSNMTLLTIFRDIKSFVNKDG YDLERPDVTLQNFHPQLEVFFAIKGIKRFIWP
ALSSFMA SVATGFELLFIWRALTIKN---YAMATESFAYLIILGSV--
ILTYLGVLTNRRTTILTLLSEMSK-----DFRYICNLASNYRKSFLDGQLLIW-
KLTMTWGIFVICVAILYVLNTLLLLLYQ-SLFATLDEHYVRPLIFPV-WLPHDD-
PYRTPNYEMLLVFDIAILVAMASFGLYVPLSLHLFMHYYKLLDMILIAIDELFEEL----
DESVVTLPVTDQRRLDVKAELSRRMGRIVRWHSVFDSVGAITSIYGPM LVYQVMFSSV
IICLMAHQVAIQMADGKFNYL FALTTFGAILQLWIPCCMG TLLQTKALSLGERCFYSGW
Y--PLTQLVRQDLLIFITRTQVPVEIKFTGLPEMELHTFSSIMSTAYS YFNMLRQYN

>BmorOR66BAH66361.1

-----MRFG LKVYIYTLFHILLH---FYYILHMIKFDLEAIFDDI----
DESVALPHRDTRRIEVQKILNGRMKRIVTWHISVFKA VEAVSSIYG PPLAYQVMFTSIAI
CLIAIQITQKLENGILDIRFTMLGVAACLQMWIPCYLGTLLRNKA FGVGEACWNSGWHQ
TPLGRMIRQDIII VLLRAQQPVTIKFPGLQSIQLETFSSVIFNLYGYYYYYYCLDG

>BmorOR65NP_001166622

---MRLGFEVSISEYLYRNIFYIYTLFHILLHFYIILHMIKLDLEAIFDDI----
DESVALPHRDTRRIEVQKILNGRMKRIVTWHISVFKA VEAVSSIYG PPLAYQVMFTSIAI
ICLIAIQITQKLENGILDIRFTMLGVAACLQMWIPCYLGTLLRNKA FGVGEACWNSGWHQ
TPLGRMIRQDIII VLLRAQQPVTIKFPGLQSIQLETFSSVIFNLYGYYYFLLLRW

>DpleOR65EHJ63907

-----MIFHVLLHCFYMLSIIILDCEALFGGL----DES VVKLDRY-----
-----IQSVSSVFGPVLVYQVSLSSVAICLAAYQVAH-----
AFTVADAIWESGWN ETPLSLLIRTDMMIIILRSHNPITIKFTALPNLELETFSSVSIYMSVK--

>Bany_OR4_GZXD38A02FY60I

-----LLHHYYLMSMINFDCEVL FVGL----
DESVVRLPKHDP RRMGVQTILNSRMRRIVKWHNLVFQSIEAVSSIFGPPIVYQVMFSSLLI
SLTAYQVAESLDHGKLNVMFAMLGIAMCLQLWIPCYLGT LFRNKAFSVGDAMWSSGW
HETPLGRLLRADITLVIMRSQLPVSIKFTGLPNLELET FSSIMSTSYSYFTLLRQYT

>DpleOR29

-----MMWPINFEEMYKISTYSLRLNGAHPNIKNKNKFWYLK-----
IYLLRFIELLCGGLVNSIIFYD--VVSCK---YTEAIKNSLMVIVGIV--
IFKHSILINCND SIKQLLKILDE-----DYKAAELYGEREKDIILKSAMSGV-
KICRFWLV SATLT CFMFPAKAIEMGNL-----YMRGEFKLVPMFDF-
TYPIEVHKESTVAYTVLFLMCLSFDLFSLSIYIGFDPLVPIFMLHTCGQLELISNKLNVNFS
K-----
DASRQDIVDDLKRINVKLQNIYKFVKMVQNIFILYEFNMKTTTFLLPFSVFQIMQSLRNR
EISLEFIFFFSGACLHFYMPCYYSNLLMEKSESLRNAIYFSGWE--
SRDIGIRKTILLMLTRTYVPLGIKTV-FYPICLDTF AEMVRQAYGIYNIMNAAW

>HmelOR29

-----MHKFEDVFKISTLALHFNGSH PQATR-----
FRIIYEHLISFFCFVSLLYSIFFYD--MKNEV---YTEVIKNGVMVIVCVTV--
TFKFKILLQNRDDIQRLIDSINH-----DYDLAKNLSEEEQLIVSKYANMGV-
IVCKCWVTAALATGFMFPVKAFILMGYK-----
YSKDEWELIQMFDLHWPLINGIKDNLFI FTIFVSCFSFDAFSVSMYIGFDPLGPIFL LHAC
GQLDLICNRLKNLFSE-----
TTADAKENLKLINLKLIEIYRYVKTIQDIFVVLYEFNMKTTTFLIPFSTFQFVHSLREKDISL
EFAFFTICAIHFYMPCYYGSKLVDMGEKLRQSIYACGWE--
ERNIEIRKTILFMMTRTTPLVIKTI-FNSISLDAFGEMARQAYGIYNIMNA--

>HmelOR30

-----KFEDVFKLSTLALHFNGSH PQATRNRFKM-----
FRIVYEHIITFLCFVSLLYSIILYD--VNNKE---YTEVIKNGVMAIVCVTV--
TFKFTILLRNRDDIQSLIDTINQ-----DYELSEDLSEEEQHIVMKHANMGV-
DVCKIWLAA SIVTGLLFPVKAFVLMAYK-----
YINGEWELVPMFDL NWPFI NGIKKNPIIFTCIFAQCLSFDFFSASMYLGFDP LGPIFLVHAC
GQLDLLSNRFMKLFSQ-----
TTADAKENLKLHLKLLEIYMYVKKIQDIFVVLYEFNMKTTTFLIPFSTFQFVESLRKKDIS
LEFASFAISAVFHFYMPCFYGNKLMDMSEKLRQSIYACGWE--
MEDIEIRKTILFMLTRTTVPLGIKSI-FYSICLDTFGEM-ASAYGIYNLMNAAW

>BmorOR30

-----MSVSNLKFEVLFKPT-----TMSLHMNRSHPSIKRNKI----
WLLQFISLMTLTAFCATGLITSLLFHDLKFGK---YMEASKNGTIAMLSFTT--
TFKYSLLLYLQKSLNRLIAKIDM-----DYEIAKGLTPQEKVTVLNYAKKGV-

IVSKFWLFTAFAITFCFPLKAFIIMGYRFIIKDEFRLPEMFDMTYPE---
PIESYKTSFPVYFILFVVCFLFGCYASSLYVAFDPLVPIFVLHACGQLDLLSVRITKLFSD---

TKNPRIIAKELKVIIKLQELYSFVNFIKVNFSILYEYNMKITTISMPLSAFQVVESLRGEF
NIEFTYFFFGCILHFFMPCYYSNLLMERSENFRFAIYSCGWE--
NHNDKNIRQLLFMLTRAAEPLGIATV-FTNISLDTFAEVN--TFD--TVLLA--

>CpomOR33

-----LILYSMFFHD-----LKNND---
FAAACTNGILSVLYIAV--TFKYVVLLVKVEDITFAMNKKVG-----
DFAAAKHLCSDEQAITEYAYKAC-WVTKVWLLTASSVFCVFPIQVIVLSIYN-----
YAIGDFQFVHMYQM-
TFPIETRKYETNMYLFLILQTYFGVYVLLMFAGFTPLGLIFMLHVCGRIEIVKYRISKLFEG-----
EHYDPREIHQRLKNIVTPLQDALDFVDLIKKTFRLLVYEVYMKFTTIVIPIASYEVLESKE
GRLSIEFMTFIVAGAVLCFAPCYYSDDLMEKGLSLRMSVYTSWE--
AYDSAMRRTLCIIMCRLERDVAIRTL-FQTVNLDAFSELCHQSYALFNVINT--

>DpleOR30

-----MTFALKFNRSHPHSIKRDLKWMFHFG-----MHGTYFAVF---
VTLVYSSISID--LKNDD---FTQATANGVLCLIFTVS--TYKYCIIWYYQDLLLLDVIKKINM---
--DYEEAQCFKKEEKQIVHKFINKGR-EVNKYWFILIVTTAFIFLAKSLGLMLYY-
TIIDEFKLVHLYEMHYPK-FLE-DK-
KDTLNVFILLYIIFLFYDLYGALTYIGFEPFGPVLMLHSCGQLEIVRGRILKIFQS-----

NYTDAEIIQLNDIAKYLQKILSFIESIKTSFKILYELTLKATAITIPITYQIIQSLKKGELRIE
FLTVIIAGVGLSTTPCYSEMLMNAGKDLNQAIYECGWE--
NFEPKSRKLIFLLLLRTSKSMAVRTI-FVEVCLEALTDVM--AYAISNLLNAK-

>DpleOR31

-----MTFALKFNRSHPHSIKRDLKWMFHFG-----MHGTYFAVF---
VTLVYSSISID--LKNDD---FTQATANGVLCLIFTVS--TYKYCIIWYYQDLLLLDVIKKINM---
--DYEEAQCFKKEEKQIVHKFINKGR-EVNKYWFILIVTTAFIFLAKSLGLMLYY-
TIIDEFKLVHLYEMHYPK-FLE-DK-
KDTLSVFILLYIIFLFYDLYGALTYIGFEPFGPVLMLHSCGQLEIVRGRILKIFQS-----
----NYTDAEIIQLNDIAKYLQKILRS---
IKTSFKILYELTLKATAITIPITYQIIQSLKKGELRIEFLTVIIAGVGLSTTPCYSEMLMN---
-----AV-----

>HmelOR4

-----LNIKFENSFQFM---LRAMYISQFHPYTKKDIKWA---
SKLLSMYLTCLAVICIIVYSIIFID--LKVKD---ITQACSNGVICLIFSVI--
TLHYCIMFYQKLIVNMIEIMNN-----HYEKAEEYTVEEKHVILEYVEKGK-
FIVIIWRRISLFGGGLFITRPIFVMVYY-AIFSEFKPVHLYEMVYPS---

PIELKDTFSVYCFLYITFIIFTCCAMFTLHGFQPLGPIFMVHACGQLEVARTRIMKIFHD---

DNSVEEIIIVKLKHVAVSLKNIYSFIDKIQTCFKIFYELILKTTILVLPVIFQILGSFSKGELKI
EFLSIVVGAILTSSVPCYYSGMLMESGENLRLAIYSCSWE--
RWDRTSRTLILLLLLLRTTPPVVTIRTM-FCRLSLDALADVFRQAYTIFNLLNA--

>SlitOR5

-----MTNQKDLDFENIFKIT-----TTALHISGSHPSVPKDLK----
WALKFTILHGTALGFVTVIYSIIYHDLKEQN---FVQICKDCVVFLFCVT--
SLQYCVLLIHQDNLVLLIKNINS-----DYEQMQLNSDKEKQLMDKYMNLGA-
KVCRHWFVLVLVTCLIFLIKSVGFMCYY-----
YLINDIKYIPYYDIKYPEERKNENFSVFLITYCLMFYFALYSVLIYVAYVPLGPVFMLHAS
GLLEVVKNRIDDLFSD-----
SNPEKIREKLKDVVMKLQYIYSIVDDMKTIFRFGYEVSLKGTAVLLPVTFYAVLEAAKN
GEISMEFISFIAGGIVISAVPCYYSDLLMEKGEAVRLSLYMCWE--
QHDRRTRTTLQLMLLRALRPIAIQTL-FRTLCLDALDLDLQFQSYGIFNLMNAMW

>SlitOR30

-----MDATCLNFEELFKIRTVFMRLNRS-----YPSIARDRP----
WKFQFSIIMMIIFSHFFFLSYSVFYHDIRSGN---FAVACLNASVAIICITI--
TLKYIILLYHQESIKQLKIAMER-----DYAAAQEFCEKEDKEIVVQYAKRGV-
TVCKFWLVFGFGTSTIFPIKALVLTGYN-----YWKGEFVYVHVFDL-
IYPIEDYKNVTICFWLLFIFNNSFGLLASSMFVGFDPMPVIFMLHTCGQLDLLS-----
-----RHIS-----TLF-----
VDANI-----

>BmorOR33

-----MIYYRKCKMELNFDKI-FKIAIISQKFSGTYPYTKRDKK----
WATHFILMHGELTIICMLFIYNIIEFDLKAAD---YSQMCRNMCLSFVYMVI--
TLLYINMLYYQSKLKMLIETMKA-----EYELAKTMSEEEQNVILEYAKKGR-
WLCRAWAILTTCGMAQFFLKSIVCTIYS-----
AIQGNFRIVQYYEVICPIERHRNNPVIFITLYFCTFFYSLYTSALYTSVLPLGPIFLLHGCAK
LEIVRLNIKNLFDN-----
DDYVVQERLKKTVLQMQDIYCYSHEINECFQILYEFLKATSLVLPITIFAVIQALGRGQFI
PEFFAFIFGAFMVGTTPCYYSNMLMEKSEDVRMTLYSCGWE--
RFDLNTRKCIILMLCRALRPVSIRTI-FRSVSLTTLTDVFFQAYALFNLLNAVW

>BmorOR34

-----MIYYRKSKMELNFDKI-FRIAIISQKFSGTYPYTKRDKK----
WATHFILMHGELTIICMLFIYNIIEFDLKAAD---YSQMCRNMCLSFVYLVI--
TLLYINMLYYQSKLKMLIETMKA-----EYEIAKTMSEEEQNVILEYAKKGR-
WLCRAWAILTTCGMAQFFLKSIIVCTIY-----
SAIQGNFRIVQYYEVIYPIERHRNNPVIFITMYFCTFFYSLYTSALYTSVLPLGPIFLLHGCA
KLEIVRLNIKNLFDN-----

DDYVVQERLKKTVLQMQEIYCYSNEINECFQVIYEFLLKSSSLVLPITIFAVIQALGRGQFI
PEFFAFIFGAFVVGTTPCYYSNMLMEKSEDVCMTLYSCGWE--
TRDLNTRKCIILMLCRALRPVSIRTI-FRSVSLTTLTGVPFQQAYALFNLLNAVW

>MsexOR38

-----LSLPLQSSHVTMDLNFDKM-YILTVFAMRINRSHPSIAKDTK----
WFLQLLPMYGIFSIMFALLINCIIHYDLKAKD---FSSTCRNGCLCVLYFIS--
TLSYYYVMLVHQTTLTKTIINTMNE-----DYAQUALKFKADEQKVVL DYAKKGL-
YVCRQWLAMSIMGVGLFFVKNVLLYAYN-----
YYVDDMKLVPLHDMTYPIEEKRDDIIVYASLYALT VYYYGVFAAIMYMSFVPLGPVFML
HCCGQLELIVMRLLENLFIK-----
THEEANEEKLDIIRHLQNIYGFVKNIEKCFTGFYELTLKATTITLPIAVYEIIESCHRRELRM
EFLVFIFGAMIISNSPCYYSHLLMENGEQVRLAVYCSGWE----VVPIPRRLALL-----
-----SW-----

>SlitOR38

-----MADQFEKTLKLFRLTLTSPEIPITFKW-----
LIRYLLGFLTTLALAIVITYNTY--ISITN-RVFFEACRNITLSLTYYGC--
CMNNILSFWHRSSLRALLETIRH-----DYKMAAQLPREEQLIFEDYDRKKC-
LMCKIWFHLFTVSLFLFVAKAVVLMIIY-----YFIGEFRLVHL YEL-
TYPIEKRKGE LVIYLFIFCIVFLYGLLSGLGFASFVPYGTICMLHACGHLEIARKRIDS LFTG

DRRYVNEKLKNIAQLLQYTYKFMENTNGCFRLFYDATLKL SAI AIPFTLYALLEG-----
LRHGEFSMFVLNAIXQYTLLPKXXIIKGE EVRLALYSCGWE--
CEYNRRVRIILLLLTCCSRPIAMQTM-FTTLCLYAVTDMFQQAYTILNLMNA--

>DpleOR13

-----MRNPETYRSL-----
IAPFWILHFSLLVYVYGAGSVMYQL--RVASS---TRDFLKS YVNITLIILI--
VNNSYWFIKERPLLRTVLNQVIR-----NDILSMETELLQDKHEKLLSVIK-
KIILIFYGFNLFD AFF-IYIPHRSDVNN-----DHYSMTSCV GLEP----
LTATPNRQICRLILGLQEVTIMTAVLN YQTL LLLFLIAHTEAMYRLLSEEMLNFNQY-----
-----ASTPESNIFVKNRLPLLVS R HSLTLDIKNL KALYSMPMGVNF GSN AVCICLFFYL----
--PLREWITFSPVLIYCFLVFFLYCYLCQRLINASEVFENAVYSCGWE--
KFNLNEQKTIYVMLLQAQKPVTLAADIIPVNISTFATTIQAMFKFVTVVKL--

>HmelOR54

-----MKFIDNIKDYFIETRFQLRENIIWL VNLVPSKAGFSILKDKI----
SAPFWILHLSLLFYVYGVS VYQI--KFAQG---ASDFIKSYVNISILIT--
ANNSYWFLMKRPLLKV VIEQVTR-----NDSL SKETVFLKDKH GKLLSVIK-
KILFIFYGFNL LDALF-IYIPHRVDVSN-----DYYSMTPCV GLEP----
LTMSPNREICHVILFSQEISIMTVVLNYQALLFLIAHTAAMYQMLAAEMLAFEEY-----

ENSDINIVVKEHLPSLIERHALT LSIIDNL KALYSMPMGVNF GSN AVCICLFFYLSLHEW-----

--ITFAPVLIYCFLVFFLYCFLCQRLINASEVFENAVYSCGWE--
KFNMKEKKTIVMMLLQAQKPITLLAADIPVNIYTFASTLRAMYQFITVVKL--

>BmorOR54

-----MGLNTIKEFFVNVKRRFQDVSIDSLLWIVNIVPSLAGFSI--
PFWIVHWSLLVYVYAVGNAVYQW--KFANE---AIDYITSFINVSLILI--
GNNSWWFLANRLLKSVLHKIEV-----NDELSRRSEQSRLKHKLLKIIK-
RIVLVFYMSNYVNASFIYLPNRVDVLNN-----YAMTPCVGMPE----
LTVSPNRELCLTILCMQEFSIMTVVLNFQALLLCFIAHTAVMFQILADEIMALNNY-----
-----ENLEE HQAYVKEMLPFVKRHS LTL SAVDNYKSLYSVPLGVNFGSNALTILLILYL--
----PVLEWFKFIPIFVFCFMLFFLYCFLCQKLVNASEAFETA IYCCGWE--
NFALREMKMIYVMLHQAKQPVELLAADIVPVNMNTFATT LQAMYKFVTVVKF--

>DpleOR12

-----MSLIDRFKTKLV DYKETFMDYSIILLNFIPSMAGFSILNKKN-----
SVIFWIVHFFLVLYVYVLGSIMYQV--NVADG---PIDLIKSYVNLTLVILI--
INNSYWFIVKRATLTKLMENVIE-----NDTQSHQLDFLKP KHTKLLRTIK-
IIVYIFYAFNILDVIF-VYIPRRIDVTN-----EYYSNVACVGMKP----
LTHFPKKQLCQLVLFATEISICTVVLNYQALIFFLISHTAAMYRLLCEEIFALDDD-----
-----NMDTATVKKRLVVLIGRHTLTLTITKTIKDLYSMPIGINFGSNA--ICIISFA-----
LPWEEWVNLSPVYIYCFLVFFLYCHLCQMLINASEQFEYAVYSCGWE--
KFDLKEQKTAYVMLLQAQKPVTLAADIVPVNIYTFATTMQAMFKFITVVKF--

>CpomOR36

-----MECF SRAQDGFHRLKKRLRENLVCLVMVMPSLVGFEITRKKI-----
FVPFWIIHLSLLTYVYGVGSLVYQAKHARVAS-----DFIKSFVNVSVILVLT--
VNNSYWWLTHRDLLRNVL RKANA-----SDKMTIQAGLFVDKHQHSLSIK-
RILIIIFYFINLTNEFT-SYLPKRAELNE-----KTFSMTPCVGIKP----
LTSSPQREVCIVLTSLQELTIVIVVLNFQTMMLLLIAHTSTMYQLLSDEIMTFNTI-----
----LTNPSNYDLLKERLGVIIKRHILTLDI KDIRVLYSIPMGINFGSNAVCMCFFFFL-----
EPEEYFNFMPI SMYCFIVFFLYCFLGQRLTNAAEVFSRAVYSCGWE--
LMDIKEQRAISIMLLQSQKEVDLLAADLIPVNMLTFAST-SQIYKFVTVVKL--

>BmorOR55

-----MCFLKIKQIIDIQKHFKDYS LWIVNLLPRLMGFNLRADKVG V-----
FFWTIYILLVYVFGIGIFVYLW--KHVD T---MSGLMKSYLNLSLILVI--
VNNSCWFLSKRSLLNKVLKKIHL-----
IEDLSCSEHALAKYRRVFKIVTHLLLASYVLFYFTEIYFMFLFRNYDLLED-----
YSLAPCVGLEP----
LSSSPNSEICLIIVLIHEFISTTVMM SFAALFLVLIAHTAVMFLVLAEDMTKLTDL-----
----INLADHRKMIRESLRSLIHRHSLLLQIVYELRLLYSVPLGINFISNASILVLLCLPIHEW--
----PSFLHIIGYCFFAFFLYCFLGQNVINASEKFIDAIYCCGWE--
HFGVAEKKLVHVMLRQAQKPV EIIALGMISVNMNTYVEALQLIYKFVTVLKI--

>SlitOR4

-----MVNTFRGRLLNIRDRLKQNNLVWLINFLPNLAGFPLLSQKF-----
KFFFWIVHTVLLFYVYLLGTAMYQT--YFAED---FVDSINSFFNISVFILI--
GNDSWWLISKRNLDLNDLLKMVKK-----
NDDLIIESGRFQDVHQKLMKSIKIIIVIMCYMFHFVNDVMIF--IPSRTIGMD-----
DFSTVSCVGMPEP----
LTSSPNRQACMVVLALQELTAIVAVCSYDVALLFLSHTTAVFQILYQDMTEFANI-----

SKSHETYYYVVKDRLKNIVFRHVLALHTVRKLEDIYSVAIGIGFGLDAISMCLFVLPDVC-
-----LNFAPLIYHSLFIFFLYCFQGQRLTTASEKFEMAVYCCGWE--
NLRVKERRQVLLMLKQAQKPVIVYAARVIPRIHTFASTMQSIYKFVTIFKV--

>DpleOR33

-----MYPNPVYDE-----
KRKKLIVMAILSVLPAFTLAGNDIRLRILNND---MANVVRQSILVSITFV--
IIKFIISIARKDEFRLLEEIDA----DYERFNGMSEQYQDLVEDTIRKTR-
KVEKSWCFVLLVTTASYPVLGACTIYS--QLFSDYPRRYMVHELKA-
ILISEEQKYQSPYFEIVSLYTMIVIFLFIGFTGFDGMFSVCLLHVSLKLKIYQENLRNLFNE

KDIQKIKYNIGLFVKNHCGVLRRLIAKIQTCFEVWLVGIFINAVVQIGMAFTQITNQ-
TESDINQMYYLYALATVVHIYLP CYFASDVTYNAAEIANVAYSSSWE--
RVDSKIRSSICFIIAKCQTPVRLTALDMLTFNMELFVSV---GHQM-----

>HmelOR14

-----YTTFVETYKIISFIMGVGMIIYPNPKTEKRR-----
IVLLMLISIGPISMMILNDMFNC--LAMRD---YVNVIRHSTVVGPFLLGG--
FFKILIQFYKRKPAKEIVDEINR-----
DYASYNDMTVTYKKMINASIENNLFYSEKCAWAITVVTCVSAFFPIMAVLSNLHSTLFAAE
PKRYMVHDIILPY-AEPEKR--
FESPIFEIMFAYMLYASVLYIINFIGYDGGFFGLCINHACLKMEIYCRSFEDALRE-----
-----DNESCVHLKIVNIIVEQNKLKRFVDLIQDTFNIWLGLLVATMIQIGTCMYLISEG---
YALDLRYLIFIIGTVVHIYLP CRYAAKLKHMSMETATLIYSSGWE--
RLSIRIRKMVLFMIARAQPIEITAFNLMIFDMDLFTVTV---SFMFIPLL----

>SlitOR41

-----EMWR-----
LASIPFLIATITPLATMIFIDMYKCWMAKD---IVNIIRHSTVVGPFLLGG--
FFKMILMYHKRIQAKQILDEIDR-----
DYENINNYSEIYKDIARASVKNCQIYSERGWAITVVTCVMTFPVMAISLNLVQSCFKSEP
VKYMIHDLEKPFSEDPEDR--
FESPYFEIIFVYMFYCSILYVNVNFTGYDGGFFGLAINXACLKMDLYCKALEEASKL-----
-----DAHEVCGRVIGVIKEQCRMVFQVDLIQDTFNIWLGIIFLATMIQICTCLYHINEG---
YGFDLRYMIFVTGAVIHIYLP CRYAAKLKAMSLETANRFXSSGWE--
QVDQVRKMILFMVARAQVPNEIVALNMLAFNMELFVSILQTSYSMFTLLRS--

>HvirOR20

-----EFKPFHETYKVI-----TFTLCIAMIFPNPRTEK-----
WRLISIPLLIATVAPVASMIFLDMYKCWTNND---IVNIIRHSTVVGPFLGG--
FFKMILMYHKRKEAKQILDEFDR-----
DHFMFNDFSETYKDIARASIRNCQIYSERLWALLVTTCVMTFPVMAIVLNIYNFLFKSEPT
KYMIMHDLEKPFSESPEER--
FESPYFELLFAYMFYAAILYVVNFTGYDGGFFGLCINHACLKMELYCKALEEAMVA-----

DREEVYGRVVAVIREQCRMFRYVDLVQETFNIWLGIIFIATMIQICTCLYHITEG---
YGFDIRYMIFVYGAVVHIYLPORYAAKLKAMSMETSNRFYCCGWE--
KVDERVRKMVLFMIAARAQVPNEITAFNMLAFDMELFLSILQTSYSMFTLLRS--

>DpOR20_zhan2011

MMWNVEVLLRRTLIRSNRRFDKPIPWIIYVINISTGLCYFYTYMLSTAWFVLVRCRETG
DFISAMVALSLTMCSITCIPKIFYMKYYQNTVMDLVDNYLHCNELIVSGTRFEKNFFANM
RTVKKQATIAWVILTLNGVVFTLPFLRPGRHFSQDLFALYGLDPMVESPNYEKASILLT
LAVYFSLTVMVHITLFIIVIIGFLESQMLALSVELSNIWEDSKKFYNYYVLHHNESITKYEL
RNLFIKNRLRDIVKFQIMIVSLRNKVEKELRFIFVNDFIFMIFALVSELVGGLENTMVQMP
FTFGMVFIDCFIGQRLIDASKAFERAAYGSKWENFNLSNQKTVLFMLQCSQKTMTLTAG
GIAVLDFIYLMVSVLKSTYSAYTTLKSSA-----

>MsexOR7

-----MDEPEFKPFHKTYQIITFALSVGMIYPNPATDKMR-----
LASIPISILTILPLACMIFLEMYQC--WTQGD---IVNIIRHTTVLGPFLGG--
LFKMFLMYHKRQAKQILDEFER-----
DYHLINSFTGDYLNIAARDGIRNSLIYSERGWAITVTTCVMTFPVMAILLNMYNYTFKFQ
ATKYMIHDNLNPG-ASPEAR--
FDSPIYEIMFFYMMYCSLLYVINFIGYDGGFFGLSINHACMKTNLYCKMLEDWKA-----
-----EPNERYRRVVAVIDEQCRMFEFVNLIQDTFNIWLGIIFLATMIQICTCLYHITEG-
--YGFDLRYMIFVSGATIHILPCRYAAKLKAMAAETATHFYSSGWE--
RVNDRRLRNLLFMVARAQTPQLQITAFNMITFDMELFVSIMQSSYSMFTLLRS--

>BmorOR14

-----MSNYIFKPFHETYRIITFTMIAAMIYPNPATEKRR-----
LIYIGLMLLSVIPLAFMIVTEMYEFFMASD---LNNTIRHSTVIGPFIGG--
FVKVALMYKRRQANELVSEINR-----
DHLAYNGLKGEDREIAASSIRNCQIYCELGWTLIVMSCGLSFPVIAILLKIHSFTFKLDSTK
HMIHDINNPTDDPEDR--
FESPFFEIMFVYTFSSFIYIINYVGYDGGFFGLCINHACLKMKLYCRALEDAMRS-----
-----DSRRHEKIVAVIEEQRRTYEYIALIQDTFNIWLGLIYVATMIQMCTCMYHIVQS---
FNIDVRYIIFV-ISIIHIYLPORYAANLKCMAAETPTLIYCCGWE--
SVDLRIKRMMPFMVARSQVIVEITAFNMFAFDMELFVWIMKTSYSMFTLMRS--

>CpomOR20

-----MKSFRRKESSTLPLVPVTEELEFKTYKIITFTMIVGMLYPTPNTTEV-----
CRVVGILTILVTMSPVCIVALLDMWNSWFRGD---IINIIRHTTVIGPFLGA--
IFKMMLFFYSRKEAWSIICKMDS-----
DHARYNTLPEQHKEIARRHIQNTQYYSEKCWSITVATCVLTFPLTAVVLTFFYN--
YTFKENPVKYMIHDIDKPFSPRED-
RFTSPYFEIMFFYMGYCSLFYIISFTGFDAFFGITINHACMKMELACKTMEDAMLE-----

RDRDSRHRRLDVISEQNDLFRMVELIQETFAIWLGIIVATMLQICNCMYQIIEG---
YGIDPRYLVFIVGTIAHIYLPCTRYAAKLQVSALEVATHLYCCGWE--
RVDERARKMIVFMIARAQIPMKITAFNMFDMDMELFVSILQTSYSMFTLLRS--

>Bany_OR6_GZXD38A01B02O1

EVWLVGIFNA--VVQIGMALCQITSN--
AEADINAMYFAVATAVHIYVPCHLASDVTYHAAEVATVAYSSSWE-
SVQDAGVKRSIAIIARAQIPINFQALGMLTFNMEMFVSILQTSYSMYTLLRTNI

>BmorOR14_ABK27845

-----MKLYCRALEDAMRS-----
ESRRHEKIVAVIEEQRRTYE--YIALIQDTFNIWLGLIYVATMIQMCTCMYHIVQSF---
NIDVRYIIFVI-SIIHIYLPCTRYAANLKCMAAETPTLIYCCGWE-
SVSDLRIKRMMPFMVARSQVIVEITAFNMFADFMDLFWWIMKTSYSMFTLMRS--

>CpomOR14

-----MDATKAFRTSDSSAVLAPVFEDMEFKPFRETYKIITFNMIVGMLYPTPETAVC-----
-RLLGIVLVLSISPAALIALLDVWHSWQRGD---IINIVRHITVLGPCLAA--
IFKMMLFFYYTRDEAWRIIRKIDA-----
DHARYNLSSESHKEIARRHIQNTQYYSEKCWAITVAVTVLTFPLTAVVLNFFYNFVFKEEP
VKYMIHDLEKPF-SPPEDR--
FASPYFEIMFGYMA YCSLWYIISFIGFD AFGVTINHACMKLELACKIMEDAMLE-----
-----EDRDSRQSRMKEVISEQNDFFSMVELIQETFNFWLGLIIVATMCQICNCMYQIIEG-
--YGIDPKYIIFILGTIAHIYLPCTRYAAKLQVTALDVATHLYCCGWE--
HVDERARKMVAFMIARAQVPLKITAFNMFYFDMDLFWVILQTSYSLFTLLRS--

>DpleOR32_EHJ72221

-----MIYPNRENIQTRFKVIFS VIAINGV-----
MLYWFLLYLWKICNHD--MYNVSRNLTIGILVTLF--FFKSFYVTNKTHRFAQLLEKISN-
----DLLKGNMDDSYQEIEKYIKLGK-LGQTCWIFIPILLTSQFPIYAGVSTIYE--

SLKTDGQKYMHEMDL-KY-
LEDKQYDSPIYELTFAYHLITCLTLSPNFAGFDGSFCIATNHLRLKLLAHKVERAFKD--

AKNKWELHTMIKETIRDHQEALSFYEDLQEVYGSWLFTVFAVTSLLISLNIYQIYLS---
ERVDPKYAIFAISGIIHMFAPCYFASNLMKTSEELSLDLYSVEWE--
VWYPAVTKQLIFMIAKSQQTLLTGNGIVYFNMQLFISLLRSAWGVPGFIYK--

>Bany_OR7_GZXD38A02GO9NU

-IAMNLYQL-YLSDHIDMKYTIFAVSATSHVRAVLFTCNLIKVSEDLSWDIYDVPWE-
TWADPSVTKLLIFMIAKSQQTLLSGNGIVYFNMQLFISVLQTAYSFFTLISR--

>HmelOR66

-----MDKSEKKFKCFNETFPRCTFALAFSLTYPNPTNIK-----
KRLIIFSIAIFVNSGMLIWFILYLFKCIQTRD---IYNLARNITIGVLVLLF--
FSKMYYTTRNAKKFARLLEKITI----DLLGNDMAEEYQMIYEYYIKIGK-
HGETIWIIIPILLSSQFPIYAGMCNMYEKSDVGKKYMI---HEMEL-KYIEDI-
QYETPYEYELLFAYNIINVILLSPNFAGFDGSFCIATNHLRLKLLKVLAKHVCEAFRQ-----
-----AKS-
KAELKEKLKGAIKDHQEALFEYDDLQEVYGGWLLVVFLTSFLISLNIYQIYLS---
QQIDTKYSMFAISGIIHMFPTCYFSSNLIKTSSEELSWDLYNAAWE--
DWDPAVRKLLIFMITKSQQTLLVLTGQGIVYFNMQLFISVLQTSYSVFTLITS--

>SlitOR18

-----MEMKSDILTQKKYKTFNDTFKLCAFSLAFAFL----YPNRNTALK-----
RCITITLIVFCGGQLFWFITYTFKCLYTLD---LYNFARNMTLAVVLILF--
FIKTYAYIATQKFATLLDKISE----DLLEANNLGERQQKLYDEHITIAK-
FGEISWLLVPVLSALFPIYAGTLMSIESIQTDDYQRRMVHDMELLY----
VEDIQSETPFFQCMFAYNCVQCVLVPNYCAFDGSFCIATTHIQLKLKLMVLKVHDAFK
Y-----
SKTKYELRMKMNEAIRDHQEALDFYVQSQNVPFPGWLFVFMVLTSMISFNLYQIYLL---
QRIDPKYTSFGLVGVLHIYLPQYASSLTKVSEEIPNDLYLVDWE--
AWDPKVTKQLIFMITKAQKEMILTMGMGIVVFNMELFKSIMQTSYSFFTLITA--

>HvirOR18

-----MEMKVDVLPEKKYKGFNETFKLCAFSLAFAFLYPNRTTA----
LRRITITLIVFCGGQLFWFITYTFKCLYTLD---LYNFARNMTLAVVLVLF--
FIKTYVVIYATSKFAPLLDKISE----DLLEANNLEEEFQVLYDDHIKIAK-
VGEISWLLIPTIMSALFPIYAGALMTIE----
SIQTDDYERRMVHDMELLFVEDIQSETPFFQCMFAYNCVQCVLVPNYCGFDGSFCIAT
THLRLKLKLMVTLKVYKAFKY-----
SKSRQELRVRLYESIKDHQDALDFYVQLQNVYGPWLFVFLTSFMISFNLYQIYLL---

QRIDPKYTSFGVVGV LHIYLP CRYASDLTRVSEEIPDDLYLAWE--
AWDPSITKMLMFMITRAQKEMIVTGMGLVVFNMEMFKSILQTSYSFRTLITA--

>CpomOR18

-----MNQSNCLKYKSFNETFKFC----SFALALGLIYPNRKNVC-----
LRTTIFFVLLFNFGTLFWFIWYTVKCLWELD---IYNSTRNITVGVIILLF--
VFKTIYVNLKTDMFASLLEQITK----DLLKGNMDEDEYQEIYDYYIKQGL-
FGQKCYVWIPLILTSIFPTYAGISMTYGSLSRSDDFKKVMLHEMDLKY----
IEDKQYDFPYFELVFAYYFLGIYILIPNFAGFDGSFCIATSHLRMKIKLMTHGVQRAFTD---

SKDILELKARLKTCVKDHQEALFYTLIQRLYGGWLFAVFLLSFLISCNLYQIYLT----
GIDPRYTMFAATGVFHMYPCTYFASCLIELGEQTCTDIYCAKWE--
SWDPTVTKFLIFIMARAQKRLLLNGLGIVFFNMESFVSLMQTSYSFRTLITSK-

>SlitOR25

-----MGLIKNLCLKLSYTKAIDRSSGRLETIFFENYYRIAYMAGMSTADDNIGY-----
LVYSNTVKLMIVLLVFGVVWYGF--METTS---FDEFAGNLNVSLLQFIT--
FYRYRNMLAHEKFYKELASSMES-----PYFDI--STEQRKKLVEFWSRTNV-
KYLKLLMGLGNCTLVAWFIFPLDDIEY-----NLIVGL-YLPFFY--
KSPSIYPLAYMLSVIFFFYISHFVMVTDLKMQTHLIHLLCQFSVLADCFENMIPDV----
TGFEGVPRNHLMYNNHFAAKYTERLGNLVKQHKALLGHAMNLRDTLSGPLLGQLAAS
GVLICFIGYQATAT-
IGQSVVMTSFLFLAYNLDFYMICRWCQEITNQSANVGEAIYCSGWE--
CGKLPGVRSIMFVIARANKPLVLTAGGMYDLSLTSYTSLVKTSYSALTVLLRFR

>MsexOR25

-----MELCKTIWRIITPTKALQQSSGHLETIFYRVSYLMGLSTSDHDM-----
FYLLYSTTVKFMITLLVCGELWYIF--TETSS---LDGIASSINVTLIQFIT--
IYRYKNMMDHKDIYKKLATSMES-----PYFDTSNEKRRKQLVFWAKRNE-
KYLKLLLFLGNCTLAAWYLYPLVDDIEY-----NLIIGF-HTPF--
KTPLRYPVVYLVVVIAFTYISHFVMVTDLIMQAHLIHLCCQFTVLADCFENLLDDQ----
HGFEDVPRNMLVNNKQFAAKYIRRLGHLVEQHKKILKHTVNLRNTLSRPMGLGQLAASG
TLICCIGYQATTT-MTESIVLMSLFYLGYNSELYIICLWCEEITTQSMNIGDAIYCSGWE--
GVKLPGVRSIMLVLARANKPLVLTAGGMYNLSLTAYTTLVKTSYSALTVLLRFR

>BmorOR64

-----MGVSNGRGTVKPFLYPLDYNLIVGVHLPFEYKTPSRYP-----
LAYITVVIAFIYVSFVVMVTD---LIMQAH-----LLHLLCQFNV-----
LADCFENMLNDCVKGFE-----GPLVSLHEY-IHPLIDEFEY-----NLMVGL-
RLPF--
DTPLRYLFTYVIVLIAFNHTAHYVMVTDLIMQSYLIPLICQYAVLADCFENILID-----
-----CSNDYGDHARRNDIVYSRSMELRAILSRPMLGQLASSGLLICFVGYQATTS--
ISVIVLMSLFYLGYNMFTLFVVCRWCEEITNKSLNIGNAVYCSGWE--
GMTVVVRSTILLVILRANKPIVFTAGGMYNLSLTAYTTLVKGSYSALTFLRIQ

>DpleOR54_64

MSSSLDDIIEGVNVILIQIGTYVKYKTMFFYPLFDDAEY-----
NLIIVISLPFDYRTPALYPVTYTMSTFIVFMYIAYFVMLHDLVIQVYLVHLI---
CQFAILNDCFENILID---
CKKGFSKEQLDSIYFNEEFIQKYIKRLGRLVDQHTFIINNTLKLRLDILSTPMLLQVAVSTTL
ICSIGFQIATTSVNVSKMLMSLLYLGYNMLSFFIMCKRCEDLKIQSTKVGEAVYFSSWEV
VVTIPRVRTTVLLILLRAHKPIGLTGGGMYELSLEAYGNMIKTSYSALTVLLRLR

>Bany_nBa.0.1-g11159genome

MDVVYNNLPFQSEGIGEAVYCSGWEGIVMVPGVRTSILLILARANKPVRLSAGGMYDLS
LEAYATCDLRGPESKLVSDLAP

>SlitOR24

-----MRVLSHVWRRISQSKALELAGPLETAFASVYRLSFVVGLSTSDDY-----
LLYTMYSSFIRIISALVWFELWSVLGNTD-VSLDQIISVNVIFIHLVT--
FWKLVTVVKNKRIFKKLAKALES-----SSFDMSTERRKGIVNDWILINN-
KYLKVVLTLGCLTLIVWESYPMIDELKF-----NLMVDV-KLPFEY--
QSLTYMVTYTAVAIMFAYASLMVIISELMMQAHILRLICQFDVLADCFENIFEEA----
EEFPDLKKHELVKDKTFVDKYVKRLGDLVAQHREILDQTNDLRTILSAPLLGQLACSGL
LICFVGQYQATATAENLGKFVMSLLYLGYNMFTWYLMCRWCEEITIKSQRIGQSAYFSGW
E--SLAPGARATIVLVIARANKPLVFVAGGMYTSLSSSYTTLVKASYNALNILLTMS

>BmorOR50

-----MEGTSEGDEPFIYR-----LNDNGTGPNLVVKIL----
YCPCWYTAHLMFPKFLHYCFTAIEVR--LMIVP---
LVDSQDVLPPVITQIVISIFIRCYSFIVEVNREHLLMQETLL-----
KPARRDPKIANYNMVRNDRLSARGGGTVIYYRRALHCVPLDPPALA-----
NIEASVCRPI---FAAKTLKDKQHLLIQNKKE-----VTRFARLLLTYYVTVGGFIWP---
MSFCFRRIKDP-----NTVVPFYVPFTPDNWTCLI---
NEVTDIFNPCLTFQFFTSSVAICMVIYKLSDT-
YIVLEFVFLNFIQVLLTQMFIYCYGNNVVSYESKYINTSLYLSDWSS--
SASPGVRKMFLIVMPRWTRPLVVRIARVVPLSLDSFVSVYKCSIEHFIYSHVK-

>DpleOR59

-----MGSLLKWLFNPRTAYIKKSKASVKDIIDNLFQDSGVLLGKEQT-----
TVPWKVKISIFCFLVCNLLQLIALI--LALGD---LDELLACSGRLTFLTMS--
VPKLSIFLSKKLKRDLAYEYESEDE-----EDDYLTEHIDSYTKQFQ-

GFAKILSSIFYAANVYVLSPFIEYGYH---VYKGNDRMYPHILPG-WSPQDA---
NVISYSVLIVAEVIAAEYCVKLHTVYDVTAVGLMIFIRGQFLLHQFSEHIGGR-----
GNDLSLSRRRDDRAHCRICKCHYIHVSLLKSISDLDLIRNVLGIYFCIAAMTLCSAAVQL
LKW-NSLDAMVSLQFPATLIQLYLFCLYGDGMFNESAVMSGEGFRAARW--
CLSKHIIQEIAILCVSMSQSRRINAGPFVTVDLPTFVMIVRGTYSVYTVLTQE-

>BmorOR32

QERGRPPGLEGEYVANRPFKRKSLRGSQEEPRANGKSENVNSHILHCGLRFNETNC-----
-HTHYIAKVAIFCFIVTYMLQVMELY--WSKGD---QEKLFECFSILSFCGMG--
VMKLVLIRVYHQWRFLNQVSILENRHLDPGPLSDDNEIVTFITKYTDKFK-
RTSSILIKMYASTLVIYVLSPFVEYIFR-----QFLNIAYPHILPA-WTPLDE--
FSVTGYLIMVSFETVACIYCVFVHVAFDLTCVGLMIFACGQFYLLRYRSERIGGK-----
-
GRICRLKSTEVRAHYRIVFCHGIHVLLVQLIEELDRLIKHILGVYFFLATLTLCSVAVRLK
TEDMSITQLVNLLQYMCGLTLQFLYCKYGD SVYNEAYGLPDACLESGRF--
QWKTGYRPI--VLLDEAGKLLERVVAARIVQHLTGVGPDLSAQFGFRSTIDA--

>SlitOR23

-----MWQKLKEFYNKTHTDFSKGYIDPYEFHKTFYQIMVNFKVADLSNENPPSY-----
FNQNAIIFMTGFVAKLLCISSFYHGLMTFN---LRLATEAGTYIIVMAYA--
LLISSCTRRNVQPQYHNFLRAMKEDFQFICTSG---
EKYRVVPYFSNQLLTWKICIFACIFTASIAVGMVSAFLSLFYFLAT----
YKEEIGGSRPLLFPF-WLPNVDF-
GETPVYEIAFMFSNICALLYAYNYIFMIQTQIVWIRQITSKVDIVISISDLLVD-----
IHPAGSEESVYFSYLIKARMRDILLHHQSMYSLMEDYAVVYKKMLMFEQKCCGSVVC
LTAYCIAEAFDAGEFQAILLLLCIGTTVLHFVPCYFCTFLAVKVSSVCDACWNIPFW----
AGPLIRPMVLIMQSRSLRHLPLQAAGFEDISIETFSKKMTNAYSLENMLRQAN

>DpleOR37

-----MDETFQVFDRVLSFAGISLFAKRNWNSKKW-----
LFFQCFNVIIGFITFIFTAFVF--TNISN---LLLCIQGGCVWTTGVIM--
FISLCVCLIFRTKFRTFLEEMVFEEDRVFDIPLVKSELEKLVVNSQEKLFKLTRVLLKTYVG
SVWLCVTLYLCGPIYQMCVT-----KDKSLRLLAFDM-WFPYGL--EDFRVYVATFIFH-----
AYAAYPGLQSTIILFVGQIIRQLQILTFILNNLDEI-----
AKELVGKRGELWQETCIQIFSQCVDHYIQTKRFSNKLNVICQPFYALIVVATMLVCVCS
VKIAISDKLSPDTMKYYVHELCFVLVVLMMFCYLGQQVDNECEKLEAAV-TEKWY--
LFNSSHKTNIRIFMMAMCQKMPIYIYGSITLSLQTFTWFIRTGMSFFTFLMS--

>HmelOR3

-----MMYEYDTFVTFD-RILSFAGIPIFAKHKCNSKKW-----
LLFQIFNFFLAFLTFVFTSGFVL--SNLSN---LELCIQGACVWTTGVIM--
FISLGVCLVFRLQFRSFLEEIIFNDSLLEMPFINGELRKSVINSRETLFRLTRVLLKTYIASLG
VCATLYLCGPIYLMCIR-----NDKSLRLLAFDM-WFPWGL--
ENFAVYVASFVFHAYVGYLCS--FAGLQSTLVLLVGQIIRQLKILTFILSNMDDL-----

IKELVGERGDKWQRECTTLLTQCVDHFVKTGRFANRLNAICQPFYLSVILVAMMLMAV
CSVKIAISDKLSPDTVKYIHEICNILIVLMLCSLGQQVENECEQLEMAV-TDKWY--
IYNSKHRVCVRIFKMALSQRMPYIFGSITLSLPTFTWFIRTGMSFFTLVMS--

>SlitOR3

-----MDEAFLAFHRVLSFAGISIFAKQNWNSHRW-----
LAHQTFNFIIGVLCFIFTTGFVV--TNVSD---FLLCIQGACIWTTGVIM--
TITLGVCLIFRKEFRSFLEEMVFRDHMLEMPLIDHELRLNLTGSEQELFKYTTLLKSYVA
NVFLCATLYLCSPVYGMLVR-----EDKSLRLLAFDM-WFPWSL--
EDYTVYIISFIFHAYAGYLCCIAYPGLQSTIILLGQLRQTRILTFILLHMNEL-----
ALEVTGVQDERWQDICTLILSQCVDHYVKIKRFSNRLNLICRPFYLTLLVAIMLVCMCS
VKIAVSNKLSLDTFKYIHEFCFILVVLMFCLIGQQVENECEALERAV-TEKWY--
IFNHIHKSNNRIFKWALGQRMPIYIFGTITLSLPTFTWFIKTGMSFFTLVMSVL

>BmorOR17

-----MREDKMEINNSQKFYTKM-IFRYLYSVGLGDWWYQHEDRSDS---
HRKLYCLWAVI-SNAYIFLNICNELLANFRKD---
LTDVEKNDAIQFSFAHPLIFAKIASFFFNRRKKIREVFGRLLEENR-----
SVYSCGELEKESMKQIK-RYSLAFIGVSYMTLVMSTIDGLRAHFKE-----
GIPIRTEVTYYP-SPSNSGVIVNLRFLVE-
FHWYIVSVMVAIDSLAVASFVFTFKFKLLQRYFKDMGLT-----
VRRDQSNMTDEALADKFRDFIVGVKLHENALWCAENVQKAFGWVYSVQVFETVALL
VMCLVKLVTTNHNMIFLLANFAFMLCVIILNGSYMMMPAGDVTSE---VPTSIFLCGWE--
LVQTDLRFLVVVAIQRSQVPVIMKAFGIMTLSYSNFIAVS--LFKFYNLF----

>HmelOR68

-----LNLPNFSAYLKKSDVNMSILQV-----
TSIFKRLLVPYKRLLTYYNKSLDEIGFTISKE-GFFYLQINATDYVILGLYS----
RAKILALSSHTFTKNFQWLGP-----
LLLCCSSKCLTYLFFFLLIHFILHLVCRVTKILLNFVY-----IKLFN-YFIIDY-
VYLLPFYTISINFNLISKIFCFFLAINMILRSESEPIHVGASWVSSKKFSTENFD-----

TKNPVSSTKTITMLKSIMKYANYILKIYIQKEFFSYIIGCKFYCIVFFLWNKDNEQIQKNFL
TTVLL-KILRKMVWLNLFVVENLKQ---IYKIISISKYM---
KSKSKANLYLLYINYFLSYTFCTFRYSFKNKYLLEISIIQNHIYFTLINP--

>HmelOR69

-----IFFYFYTIHLWLNKKKISLKKQKNVLARKIT----
KFSIYRYFLINACTLRMINIFLII--GMQDN---FIQVGPYYNIYLLNPQL-----
AFTLVTHMCS-----CATTGLRFAGSNLATFT--
IYTFSKLSTTNYLLMALNKLYRIIMY-----
NRLSTFKTYLLYLCKIICFLCSMRGLWENYIGIIYSILPARGFVCLNLLLKYKQ-----
-----NRYINIITVTFIQIHSVVG-TYLRHTNKKI-

KIVYLCFTRSTLTSKGNQIANSTFPC-----
KCNTNGSNCLFFIFLNTRFPLPFLLCAGYSVKLNLRMKLK--KWNYFLYFCENN

>SlitOR47

-----KLLNTSATY-----

QVHQRFGGCFSVVNLINVLLSSVNICCVMFTIVFL--
DSWMEMSNKFYLGAAALTQIFIVCWYADDIYRASVGVADAVYESGWY--
KSNTEVQARARRNFKRSQRPLYFTALKFRAITMITYSSILTTAYSFYFTLLYTRD

>SlitOR46

-----GKQWYHAEDIESIVPKISGFSYRKDKV-----
SAWFWYIHMFLFYVYAVGNFWYQW--KFAHG---AGDFIKSYVNISIIVII--
GNNSVWFVKQRPLLRTVLKKIEQSDLSR-----RSSFLMRKHEKLMKIVK-
RIVLIFYGFNYIDAFF-IYFPHRVDLRN-----NYSMTPCVGLQP---
LTASPNREICMTILTLQEFTINIVALNYQALLFLIAHTAAMYQMMAYEMMALNDY-----

KKENLRQVKKKLSSLIERHCLTLDVVDNLRSLYSVPLGVNFGSNAVCISLFYLPLREC-----
--LQFMPVFVYCSLVFFLYCFLCQRLINSAEVFARAVYCCGWE--
NFGKKEKRLVFMMLRQSQKPVELLAADIXPVNIYTFATTLQAMFKFVTVVKF--

>Dp0R36_EHJ75140

MKSLVCSLAFHSITNNSGDRKRPLLFPFWIFEIDFGLTPTYEIAFILTVVKLLQLEHGLARP
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FNAILLLCVGAITLIFIPCYLCTFLCVKINSICYACWNIPFWN--
AGPVIRPYLLIMQRSLQPLPIKSPGFEEVSLQTFSENKMASAYSFFNMLRQANI

>Bmor_XP004924066

-----MK-----EDFKYIFTNG-----KKYS-----
LMEDYSQVYKKLLLFEQKCCGPVVCLTAYCATEKLAEGELNVVLILLCVGTIVMHIYPS
HLCTFLTIVKRSICDACWDTPFWN--
ADKAIRPYIVLIMQRSLRPLPLRAAGFEDICIQTFSRKMTSAYSIFYNMLRQANR

>Bany_OR5_GZXD38A01A8I9X

MHSNFPVVCILELHITCLQTVKQKHREETCIPGNFLNSLRVSLKIRIGSAWWYFWPNPSHS
MRRLELSIVGFYYLIKIMIFFVVTSIAFACWNIPFWD--
ASTVIRPYLVLMQKSLQPLPLKVPGLEEF SMLTFSNV SFL-----