

Abbreviations:

NTE, Initial methionine is missed in the transcript sequence;  
CTE, Stop codon is missed in the transcript sequence;  
INT, the transcript sequence presents internal problems.

Some GenBank accession numbers are included in the header of the transcript sequences

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NEUROPEPTIDE PRECURSOR GENES  
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>Adipokinetic\_hormone/Corazonin\_related\_Peptide-KM975505  
MG EEDSSQDHHSIYTGQMDYSSII FEMDRSKTVRRLSTVALVYLIFINIFLVEAQVTF SRDWNAGKRSNNIPDCAIAIKSAA  
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>Adipokinetic\_Hormone\_Isoform\_B  
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GEEMEYLDDELAIRDELAKRAAKMYSFGLGKRLPSIKYPEGKMYSFGLGKRVPFADQAYFLDDNDSSEESKRSNPNGHRFSF  
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>Long\_Neuropeptide\_F

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>Myosuppressin

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>Neuroparsin-GU207864

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>NVP-like

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>PDF

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>Proctolin-JN543225

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NP, hormone receptors and GPCRs  
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PLVIRGQHTSSAGSTDELTLDTHDLWIPEPDKPYATSALQQFGAEMLKLSRGFESVAVAIKSKPLNQRTSKYVSIQRGGH  
SSIDDALRLDNKKQIRKRRKANEEDRWPIKARRASTMELIRRDESEKVIKRAVSYHERVCEGSSSSSRSSGDSASSEDEG  
QSPSVQQQEHQGHASLSPQSPPPQININTVQKSQQQAQADDEDPLSLLPPPCTCPYFGDSENKKPIRNNEVVIITSEEKPAF  
LRRDDHKFKYDSSNTIVTWDSPPKRRSRRGSSFSGSI RTTLASNESSPAIRKPPILRRSATLRTGRANDFKAMEEAAQGVLLR  
YGSNQTMGRVIKSPHSRNSVLSRTSSRHGRIIRLEQKATKVLGVVFFTFVILWAPFFVLNLVPSVCAECERNIDKWWVDFVT  
WLGYASSMVNPIFYTIFNKVFRQAFKKVLLCRYRNQRWTPRT  
> Serotonin\_receptor 7A-NTE  
VAGNILVCVAVCLVKKLRRPCNYLLVSLAVSDLCVAILVMPMALLYELMGTWNLGPIMCDIWWVSFDVLSCTASILNLCMISV  
DRYAITKPLEYGVKRTPKRMMACVSVVWLGAACISLPLLLILGNTHGEETGQPGTQCLVCQDFGYQIYATLLSFYIPLAVM  
MFVYKIFRAARKIVLEERRAQTHLETSHCFLEINKNGSGPESRLAVSCASSPAARAHHRSTTTSTNTTTSIHFSVSGSVVGV  
RVSNESQCPMLSVAANAANAASTRTRRRRLQLQSSAPSRKLRFLAKERKASTTLGIIMSFAFTVCWLPFFVLALVRPFLHDQ  
DAIPASLSSLFLWLGANSLLNPVIYATLNRDFRRPFQQLYFRCGSLNHMMREEFYQSQYGDPAPTHFNEDEPTCDLMPVS  
DLKGAGHESFL  
>Octopamine alfa 2 receptor  
LTKNVLFVSLQLSKDIGYVLYSALGSFYIPSCIMVFVYIRIYAAKARARRGIRKAVARPRPAEKVTSFSKKEPLTSPVDRNSNN  
SPVAVTVEKPIPVVTCDFASDISTSDNIEQPDPATPKDTLNVSKLPTCSLTPNVTFKGSTLSVNGDLAAMSRCRAPSVGIDV

DMVSEFDPSDDSGVSRCAVVKPLKRLCKPIFGRKSSKAKREVIDMGRVISTTGSQEIPQEIPKVQKPRDPEREKRRRLARKK  
EKRTLILGLIMGSFIACWLPFFFLYILTAICSACQIPDFAFAVAFWLGVMNSALNPVIYITFNKDFRRRAFRRILFK

>Octopamine Beta 1 receptor-NTE

VNFTENQQEFATEFQTWQLFIVIKSTLMGFILAAALFGNLLVIVSVMRHRKLRVITNYFVVSALADMLVAIWAMCFNASVE  
LTDGKWLFGYFMCDVWNSLDVYFSTVSILHCCISVDRYYAIVQPLDYPLIMTFKKLVIMLAVVWISPALVSFLPIFMGWYTT  
EKHLEYRRSNPDLCEFLVNQAYALISSCVSWVPGVIMLFMYRIYIEADRQERMLYRSKVATALLNKHLQINGIAAGMEVG  
AAEQLRPLATTSKMKRERKAARTLGIIMSAFLACWLPFFLWYLITLALCGPDICYSPLVVAAVFWVGYFNSALNPIIYAYFNR  
EFRAAFKKTLESCCHQMTMCFRSETQRRRALRGTNAVNESRSNEAVRAQMVGSSNVSSAAEIHVLSACVVRTTTADD  
MAKLSTAVNNLNLEQGI

> Octopamine Beta 2 receptor

MESMEAGDVLKGLRGGHMTSSSTSTTVLPSLVAQIDFNGTNTVMQDFEDVDQSWAVILSTLIKGTIMGAIHAAIFGNLL  
VIVSVMRHRKLRITNYFVVSALAFADMLVALAVMTFNASVQLTGRWMFGPFMCDAWNSLDVYFSTASILHCCISVDRYYA  
IVKPLRYPINMTKQVVAIMLLSTWIAPAVISFVPIILCGWYTTNENQEFRNEHPDICHFKVTAIYAVVSSLISFWIPCTIMVFTYL  
AIFREAIRQEQLHARMGNQMLLNSSRDCNGDTLGSSGGSSKALALNEVGLHSTPTKDRNIIMKREHKAARTLGIIMGT  
FILCWLPFFLWYVIVSVCGEACPTPEIVVSTLFWIGYFNSTLNPIIYAYFNDRDFREAFKNTIQCAFCSLCRRPPSDLESLEVRRP  
SLRYDERTRSIYSETYKHIRRRSSEVGSSL

> Octopamine B3 receptor-NTE

MFNDMADSTPSAYLEAYPNSTGAELVEGVSVAPFLLKGFMLGLIIVGAVLGNALVIISVVRHRKLRITNYVVSALADLLVA  
LCAMTFNASVTLTGSWLFPGFMCDVWNSLDVYFSTASILHCCISVDRYYAIVRPLQYPITMTHRTVSFMLANVWVWPAIL  
SFTPIFLGWYTTSEHQEFKTHPHICIFVVKYAAIISCVSWIPGVVMVTMYFRIYKEAVRQRKALSRTSSNIILNSIQHRR  
GHPHYAPRLLPPSNEGTTMRTATSWRSEHKAARTLGIIMGVFMICWLPFFLWYVITLTCGQVCYCPDVVAVLFWIGYFN  
SALNPLIYAYFNDRDFREAFKNTLQCAFPCCTCCPKEDTSPMQYV

>Oamb-like-CTE

MVWIFGDFWCSAWLALDVMCTASILNLCAISLDRYVAVTRPVYPSIMSNRRAKILIAAVWVLSFLICFPPLVGWKDTTQ  
NTVIPEGPGRPLTPGGATVIQWPTAPTEEPPCPWRCELNDAGYVIYSALGSFYLPFMVMLFFYWRIYRAAVQTTRAINQ  
GFKLTGKNGRIGNRFDEQRLTLRIHRGRGSMVQSSGSNSTTTNSAANSVTNSPGGCGGGGGGGGGGGGGGGGGGK  
PEKKNTRRHERIKISVSYSSDAISAVNNNSPPPTSPKSSISSNSPPPSGQLFAVHYTGNETSSVYRKDPNCHLRVSGNRLASH  
RRARRTSEGOQTRPRLGDPLSVTIQKDLSPSPTYDENNPAKPKLISRMGKRNIKAQVKRFRMETKAAKTLGIIVGGFIFCW  
LPFFTIGKFY

>Octopamine-Tyramine receptor

MKMTDWDYTERYYNASNITGELAGCPEPERVFYDITLGISFAVPVWEAIATAILLSLIILTIIGNILVILSVFTYKPLRIVQNFFIV  
SLAVADLTVALLVLPFNVAISILGRWEFGIHVCKMWLTCDVMCCTASILNLCAIALDRYWAITDPINYAQKRTLKRVLIMIA  
VWLLSMLISSPPLAGWNDWPDVFDSTPCQLTSQQGYVIYSSLGsfYIPLFIMTIVYIEIFIATRRRLRERARASKLNAVQNY  
QQNSIKEKHSPVDGESVSSEANEHEHKEKKKANKKKRKSQSGTYLAPAQVAEDSFTDVHDISSVNSPQKQNKKNDEY  
RDSKKDVHVPVMAVNVQTKRAVQVNFIEEKQRISLSKERRAARTLGIIMGVFVVCWLPFFLWYVILPFCVCCPSDKFIN  
FITWLGYNALNPIIYITFNLDFFRAFKLLHIKSNT

>Dopamine Ecdysone receptor-NTE

VHLITLEPYTQAAALTSIAVAIVLANLTIAAFLNSRGPGEVINCYLLSLAVADLLCGLLVVPLSVYPALVQRWVYGDLCRLVG  
YLEVTLWAVSVYTFMWISVDRYLAVRKLRYDTVQTKIRCQCWMALTWVSAAMMCCPPLGFGNQPVFDNDSLVCLLDW  
RDMAAYSATLAVLVGPSVITITYTSYIFMMMRKVKSGAPIHDKEYATALSENLTNPSHVMFVLMVMFCVSWTPFIVVR  
AYEGTTGSRMSLPHLHFAVFWLGVLSVWKAIVLVFLSPQFRLMLRILGFTLCCRHRARMQMEIGMEDE

>RproOrphan1

MKNLNSLSGIEKELFDSIDTVLFDGCVIWLSSSEVIPGALDAINGLKRVGKRIFFVTNNSTKSRADLLKSLKLGQVTVMT  
HERRLSTNASRTMAAMSLGFIVMVTPWTIQEVVACTGTKMPEFLEFTCTWLALSNSFWNPFLYWLLNNNFRRISKELFM  
TKILCRGKKTTPPSNLQCCSVPGPSVAPLTRDIEGLSEKYWGEILERTVSSNSLQMQKMYPPPPPPRSTK

>RproOrphan2

MIRRRLFVLISSKTSQKQMVVYHSELTVLRSSKKHCHMTSFSMLIALMYNGQIEVNFYFYKFITIPLLVFCFVSLANALIL  
ASLRWIRRLSPTLHISLSLAGADMFTSLVIGLIVNSLLPQVFSIQIDKCSQLVIEALRMGGMYTSIGHLLTLAVNHYLGIKKP  
LHYPMLTTRNITVIVLALWIIPSSFAIYFSLLEQDGFAGCDYEFITRAEFRSSCCYIFVCLITMAAIYSHIYLLVRQHQRN  
RFRRVGSSYSRNPTSANDLRQSRNEKALRTLLVIGTVVLGWLPATIHFYLVCDNCFIKLNWGTPLVRIITSALVNFLILLKAL  
NSCIYAARMHEIKAAIRLMRDRFITCCKFGTDQNEHNLNSESSRHVFSRASIRPSRGTVLCRLQSLPRNEGPPRQHAHYTT  
NL

>AKH\_corazonin\_related\_peptide\_receptor1-KM975506  
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IMIPLEIGWRLTTQWVAGNIACKLFLFLRAFGLYLSSNVLVCSVDYRFAILHPLRVSDARRRGKMMMLTMAWIFSLICALPQS  
VVFHVSQHPQHPDFWQCVTFGFFGSRTQEIAYNLFCVMAMYFVPLLVIAYTCILLEISKKTKETRGPTSVPDLTNGDRCE  
GITSKNKRTSGEQVTKKEPEGGCASEEVICQILKGPELAHLG\*

>AKH\_corazonin\_related\_peptide\_receptor2-KM975507  
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IMIPLEIGWRLTTQWVAGNIACKLFLFLRAFGLYLSSNVLVCSVDYRFAILHPLRVSDARRRGKMMMLTMAWIFSLICALPQS  
VVFHVSQHPQHPDFWQCVTFGFFGSRTQEIAYNLFCVMAMYFVPLLVIAYTCILLEISKKTKETRADQWRTGHEERTRG  
RMRLRRSDMSNIERARARTLRMTVTIVLAFIWCWTPYVVMTLWYMFDRSAEKVDPRLQDALFIMAVSNSCMNPLVYG  
SYALNFRRECTTCFCYLSSHQQLDRRSTDAAAHTSRVLRVPCVLTFRVRSGITRSTAVTGYGGTLGSRNHLTVPRKNVMR  
PASAHLVIRGRMIETAPLNPEEFHSDPGTNTGIYLVTS\*

>AKH\_corazonin\_related\_peptide\_receptor3-KM975508  
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VVFHVSQHPQHPDFWQCVTFGFFGSRTQEIAYNLFCVMAMYFVPLLVIAYTCILLEISKKTKETRADQWRTGHEERTRG  
RMRLRRSDMSNIERARARTLRMTVTIVLAFIWCWTPYVVMTLWYMFDRSAEKVDPRLQDALFIMAVSNSCMNPLVYG  
SYALNFRRECTTCFCYLSSHQQLDRRSTGSGITRSTAVTGYGGTLGSRNHLTVPRKNVMRPASAHLVIRGRMIETAPLN  
PEEFHSDPGTNTGIYLVTS\*

>Adipokinetic\_hormone\_receptor-AIJ49751  
MTRTEEVFSFTFFPEWSEIRTEKNETYVIPDMRFNEGHLALAVYLLMLISGVGNVWVLRVLAKSRRSRTNRMLTHLAI  
DLFVAFLMMPAEILSAATVAWVWFGDIPCRIFAFFKTFGLYQSSVFLVCIGIDRYAIVKPLSIKDTYCRGKIVALAWVISGICS  
LPQVVVFREQEHYFTGYKQCCTFNAFPTSSHEIAYSMMYMMAMMYMLPLVVIIFCYGSIFIEYRRTSAQNSGKLRRLSTLGL  
GRAKNRTLKLTITIIAFFICWTPYYIMALWYWLDRSTAEGVDVRVKRALFLFACTNSSINPLVYGVYQRTGCGPNSRSTSHN  
TCITELRQRTNNHVRENLG

>AstA\_receptor\_KM283241  
MNGSPATAIVEAIGSMPPKIYDPNNNFTNNTINFNNNIHNFNNNNIDMRNFYSNVTDEIFMEEISPELTKIVAIVPVPLF  
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LMSLDRFLAVVHPIASMSIRTEKNAISAILVTWIVIVISNIPVFLCHGEVTFNYSSEHTVCIFLEMDPLIRPDGFNKVAFQVSFF  
ATAYVIPLALICGLYLMLVRLWGAAPGGRCSAESRRGKRRVTRMVLVVAIFAICWCPIQVILVMKSGIQYEITPTSMV  
QIVSHVLAYMNSCVNPILYAFLESENFRKAFRKVIYCGPEGGSHPPHLNQRQIDAESALTKNTRTTDIL

>Allatostatin\_C\_receptor  
MSKDTTVSWLADSLENGSIYSSYGNETQFCGSTDQPTLHIFTQVLYAFVCIVGLLGNLTVIYVVLRFKMQTVTNLYIV  
NLAVADECLIFIGPFIATMSLQLWPFNGVMCKLYMASTINQFTSSIFLTIMSADRYVAVCHPITAPKMRTPFISKIVSLSAW  
TASAIMPIFMYANIMDDQVQKSCNWLWPEGENLSGQTAFTLYSFLVGFVAVPVVLIFCYFVMVIRKLQTVGPKNKSKEKKKS  
HRKVTKLVLTIVTVVLCWLPYWITQMALIFTPPKQCQSKFTVTVFLFAGFFSYSNSAMNPILYAFVSDNFKKSFVACTCAA  
GKEVNATLHLENSVFPRTQRGGSERARAGKNRADHTDEGAETGPLVSRGEHSTALTSTRSNTVTSDDTTTPVKNVKNILN  
PTEL

>Allatotropin\_receptor\_1\_KF740716  
MTEHIFPTVYEWILIGMHAVVFAVGLTGNFLVCLVHRNPAMRTVTNYFIVNLAVADFLVILICLPPTLIWDTTETWFLGHV  
LCKLVLYLQTVSVAVSVLTLTFLSLDRWYAICFPLKFKSTTSRAKTAILIWIALLYDIPELITLRTASRKKFHVETVLFQCIASWD  
DVAERHYTTSKIVFLYLLPLTITSAAYFQIVRVLWKSNDNIPGHRYQREVCYISGSSVDSRRYMAVSRGPTSGGTQAQIRSRKA  
AKMLVLCVLMFALCYFPVHLLSILRYTVDIPQNDITVALAMLSHWLCYANS

>Lutropin-choriogonadotropic hormone receptor  
MIKNNNPLLLTAYILVHRMMYVCDRTSAENLSKKFGTQINQLWDFNFGTDFTYPGNLPAYVEEYFEEQEYNNKQTDPPP  
QCLPTPGPFLPCVDLFDWWTLCGVVWVFLAMLGNGTVVFLVIFRSKIDVPRFLVCNLAADFFMGVYVGLVTLTLVDA  
STLGEFEMYAIPWQMSAGCQLAGFLGVLSSSELSVYTLAVITLERNYAITHAMHLNKRSLKHAGYIMLCGWSFATIMATLPL  
LGVSDYRKATCLPFETSTTWSLTYVFLMFINGVAFILMGCYKMYCAIRGSQAWNSNDSRIAKRMALLVFTDFLCWSP  
AFFSLTAAFGQLVLSLEQAKVFTVFLVPLNSCCNPFYAILTKQFKKDCVLICKAIEESRVTRGIGRCRHSNFSNRQTPANTNS  
LMDRSSRDQGHQPCSCNTKLLGDSSSKRTPKRWVATKLYWLSSCMNRESNSRHRTRSDQYAYQIAEQKQKHKRASSVSS  
SENFSSRSDSWRQNHHCYHCGIPMRLDPKCRASSWIVTRKTSQDSNLSSSRNDSGSGSATTNSTTMSRVSRSNSSDIRPKPR  
LTRQSAVVDETEGPPGSPARLTVRFLTTIPSAEESMQMDEESASACYAILHTGPEPGTNAEQTSSPKEDEIKETNQRSNTIY  
AYTVRCRCRSDFIHLLHNFNRPLHRCTGHRR

>CT/DHR1b-AHB86317.1

MSDETGNQSFDPHAELVNSRYLQCLTTINESLSRSLQGLQCEATFDGWSCWPATSAGETAFAFPCPHFITGFDPNRLAHKE  
CTENGTWFRHPESGQIWSNYTTCVNLDDNLNRQQVNNIYQAGYFISLLALLSLFILSYFKSLRCPNRTLHMNLFATAFANNF  
LWLLWYRLVIPPEVILENGVWCQCLHVILHYFLLSCYAWMLAEGVYLHTLLVSAFTSEQKLVKVLTVLSWVFPVIFITLYTTL  
RLASGHTDQCWIDESDNTVLIIIVATSMGLNFILCNIMRVVVGKLRAGPAQSSRPSRALLQALRATLLLLPLLGLNYLLTPF  
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>CT/DHR1c-AHB86318

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CTENGTWFRHPESGQIWSNYTTCVNLDDNLNRQQVNNIYQAGYFISLLALLSLFILSYFKSLRCPNRTLHMNLFATAFANNF  
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RLASGHTDQCWIDESDNTVLIIIVATSMGLNFILCNIMRVVVGKLRAGPAQSSRPSRALLQALRATLLLLPLLGLNYLLTPF  
RPPNNHPWETYYELISAVTASFQGLCVATLFCFCNGEVIAQIKRQWQYAMFRTRANSYTATTFVRSNAAPVAEEENV  
>CT/DHR2-GC4395-Ortholog-AHB86571.1

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GFDINRFAFRKCLENGTWFRHPDTGQPWSNYTTCIDMDDLKFRKAVNTIYVVGYYISFAALVLSLIIFLMFRSLRCTRIAIHV  
QLFSSFAANNLMWIIWYKTVVGNTSVVQENQLICQVLHVILQYFMVANYLWMFCEGLHLHLALVVVFKDDSAMRWFY  
CIGWFLPAILTAIYAWVRSANPDDTRQCWMNESYTQWILIVPVCLSLFASLGFLLINVVVLLTKLHCNSANPAPVGLRKA  
AALILVPLFGIHHILIPFRPEPKAPGERAYEIFSALLVSLQGFVSVLFCFVNVDVHCAFAMVRRIRRAADNGNLTATQTRE  
VM

>CT/DH

MLNPAEQGLSVEEVIALRRSDCLLDNQTADVLECPKFDGWTCINSTAAGTVAHFPCPYFIFGFDPTFRGHRTCLEGTWF  
RHPASNKTWSNYTTCVDLEDLKMRTQVNMIYKGGYAISSAALTSIFIFFYFKSLTCTRIQIHKSLFISLAVNNLLWLIWYEAVA  
DNLPLVFANGFGCQLLHILVQYFLVATYLVWMFCEGLYLHTLLVTVTESKVMPLHLIGWGPAILVTIYAILRMSNKEDSV  
HCWIHESLYSWTSLGPNVSMIANFVFLINIVRLLTKLHTTAQTSRSSFESKNASIRSKRSTISTQSAPSGRTKKAVRATLILI  
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HRI

>CRF/DHR1

MEANYTKSNARLLEEAEKCLEQLEADGIPPADYCPRSWDGILCWPPSPSATIVYLPCFEELHGICYDTSQNASRWCLWNGS  
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MSMDTDMVSCILVILLYFHLTNFFWMFVEGLYLYMLVVETFNRENILRAYLAIGWGPVAVVFIWAISRSFIGDESSES  
KSNVQRGCAWMSPNSSDWINQAPAIIVLAVNLIFLVMIMWVLITKLRSSANNVETQQYRKAALVLIPLLGITYILFVIGPT  
EGQYAVIYSYIRALLSTQGLTVALFYCFLNTDVQNTVRHHLRWRREARDIDARRYHTKDWSPNTRTESVRLCAKKGRTPR  
HYKKRESTVSETTLTIVGYSSTNRVSNNGSMIATTLVRAPGLHPSEAENAV

>CRF/DH-R2A-ANJ03339.1-NTE

GLLCWPNTPPGVTAYLPCVAEIDNVKYDTNQNASRICYENGTWANQTDYGLCSELHTLTSNQILSDEGIIVQSTIYAVGYGF  
SLTALGLAVWIFLYYKDLRCLRNTIHTNLMCTYILADLMWILSSIQVYVKTDPACMVLFILLHYLILTNYFWMFVEGLYLYML  
VVETFTRENINLAYLAIGWGPVVIIPVIPSCLARAFISDDYEVYVITKLRSSNNAETQQYRKAALVLIPLLGITYILFIAGPTEG  
PYAYLFSYIRAFLLSTQGLMVALLYCFLNTEVQNTVRHHFTRWKESRNLGARRYTCSKDWSPNTRTESVRLCSKHDMVMPYR  
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>CRF/DH-R2B-ANJ04995

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NVKYDTNQNASRICYENGTWANQTDYGLCSELHTLTSNQILSDEGIIVQSTIYAVGYGFSLTALGLAVWIFLYYKDLRCLRNTI  
HTNLMCTYILADLMWILSSIQVYVKTDPACMVLFILLHYLILTNYFWMFVEGLYLYMLVVETFTRENINLAYLAIGWGPVVI  
IPVIPSCLARAFISDDYEVYGLIGHHEGCTWVVSNSSDWIYMTSSIIIVLAVNVIIFLIMIMWVLITKLRSSNNAETQQYRKA  
LALLVLIPLLGITYILFIAGPTEGYPAYLFSYIRAFLLSTQGLMVALLYCFLNTEVQNTVRHHFTRWKESRNLGARRYTCSKDW  
SPNTRTESVRLCSKHDMVMPYR  
KRESVASENTTMTLVGGSTNLRSLNGSTGQVTRTPVSLYLEPNNSNNA

>CAPA\_receptor\_variant\_A-ADG27752

MNSFDIETVTNSTPVNVSLEEYLIIVRGPKFLPLKILLPITFTYILFISGLFGLNLAFCIVAIYKNSMHNATNYFLSAMS  
DLVLL  
LLGLPNDLSVFWQQYPWILGLLVCKLRALVSEMSSYVSVLTIVAFSVERYTAICYPLKSYTTDKLNRVIVIGITLWVLSL  
GFAAP  
FAIYTTIDYVDFPPGSGKAVIESAFCAMLKQNPADVPLYELCTFFICPAVILIFLYVRIGLTIKNTKLRGNVHGELQSIQSK  
KSIVSMMLMAVVVAFFICWAPFHMQRLLIYVMSDYPWYGIWVWVLYYISGIFYFSATINPILYNLMSLKYRKAFAKQTLWCRK  
YNRIIKTPGLRETNSTSRQVNSIKSMNMQHNQSLANNIEDIT

>CAPA\_receptor\_variant\_B-ADG27753

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SEMSSYVSVLTIVAFSVERYTAICYPLKSYTTDKLNRVIVIGITLWVLSLGFAPFAIYTTIDYVDFPPGSGKAVIESAFCAMLKQ  
N



VPADVPLYELSCTFFICPAVILIFLYVRIGLTIKNNTKLRGNVHGELQSIQSKSIVSMLMAVVVAFFICWAPFHMQRLIYVY  
MSDYPWYGIVNVWLYYISGIFYFSATINPILYNLMSLKYRKAFAKQTLWCRKYNRIIKTPGLRETNSTSRQVNSIKSMNMQ  
HNQSLANNIEDIT

>CCHamide\_receptor\_1

MEYKDQLNNDLSVNTTENAITVIPYSERPETYIVPIVFAVIFLVGLGNGTLVLIFIRHRTMRNVPNTYILSLALGDLLVIISCV  
FTSTIYTVNSWPYGLFICKLSEATKDVSIQVTVFTLTALSADRFFAIVDPMRKLKLYSSIGGRGATRCTIMIACAIWLLAIACAIPGA  
LFSYIRIFKQGNHTLFEICYPYPEELGSVYPRGLVMAKFLIYYAIPLTVIGCFYILMARHLVLSTKNMPGELQGGARQVRARKK  
VAKTVLAFVLVFAVCFLPQHVFLLWFYNNPNNSDRDYNEFWHVFKIVGYCLSFINSINCINPIALYCVSGTFRKHFDR

>CCHamide\_receptor\_2

MDPETVEDFKYVSSVNSNISNVEEYTPYPERPATYIVPIVFAVMFLVGLGNGTLVLIFIRHRTMRNVPNTYILSLALGDLLVI  
SCVPFTSTLYTIESWPYGGFVCKLCEATKEISIGVSVFTLTVLSAERYCAIVNPIRRHISTKPLTIVTVFCIWWISFLLALPAAIFTHV  
SKANITNGRTIEFCSPFPEEYGPYRKLNVLLRFIIYYAGPLLIIAWFYILMARHLLSTKNMPGELQGGQSNQIRARKKVAKVVL  
VFVIFIIICFLPHHFFMLWFHFNPDSDDEEYNLFWHVLRIVGFCLSYLNSCINPIALYCISKAFRKHFNRLLCSFVRDSTLDEISLG  
NMNSSTKHVRQSSIITSHYTITQSEKT

>CCAP\_receptor\_1\_KC004225

MDWVIRDNYSNPAANITNTTDEINSFYFYQTEQFTVLWLLFAAIVLGN SAVLLALLFNKSSSRMNFIMHLAFADLSVGLIS  
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YKERLIQGSFQCWIELGSTLKWQIYMSLVAVSLFLVPALVITACYTVIVYTIWTKSIHISRDSQQSTPLKNGGDKGDDNDIRRA  
SSRGIIPRAKIKTVKMTFVIVFVILCWSPYIVFDLLQVFGYVPTQTNIAVATFIQSLAPLNSAANPVIYCLFSTHICRALSKLPP  
FSWICCCFANRGAESSIIDTSTLRRATIRNQDNL

>CCAP\_receptor\_2-NTE/CTE

LIIFRKHIDELIEVKENHVRGLQSWLGQTEQFAVLWLLFLLIVCGNSAVLAALKCAKKPKSRMNFITQLALADLCVGLSVLT  
DIIWRSTIAWNAGNIACKVIRFSQMAGKTLVFIVCWSPYFIFDLLQVYGYVPTTQTNIAVASFVQSLAPLNSAANPLIYCLFST  
RICRGIRVSTPQKIGKGITE

>CNMamide\_receptor-NTE/CTE

MTKSSSQFARNLASTNSATIVGNMAAGTNSLVTRTRTPSSQTKVTEMLLVSTVFIILNLPYVVRVWYIYLTDTHNVGTEQ  
KVTMYVLQYQCNILFNTNFGINFALYCISGQNFRRALLSLFRPEIQRRSGETTQTED

>Corazonin\_receptor\_VectorBase\_isoform

MQTLFPNISDETLRQLQDHLINSDDGHRFILPELECDLWNITVSSSSRIQCLEHAPQLTSSARTRAVLGVMAVISFIGNVLTI  
ISIRSSRRRRRNQNWSAVYALILHLSVSDLLVTIFCIAGEALWSYTVAWTADNVTCKLKFSEMFALYLSTFILVLIGLDRFVAV  
RYPKAISTAKRCGRFVAGAWFLSFLSLPQVFIFHLSKGPYEEFYQCVTYGFYTEPWQEQLYTTFSFVCMFMPLLLILIIISYVS  
TIITISRNDKMFDESNNTSATRKLDIRRRRIHRAKMKSFRLSIVVVTFIVWWTPYYTMMIIFMFLNPKHLSEELQKGIFFF  
GMSNSLVNPLIYGAFHLWRPSKKTGSARSVSVYFLLLIFFL

>Corazonin\_receptor\_isoform\_alfa-AND99324

MQTLFPNISDETLRQLQDHLINSDDGHRFILPELECDLWNITVSSSSRIQCLEHAPQLTSSARTRAVLGVMAVISFIGNVLTI  
ISIRSSRRRRRNQNWSAVYALILHLSVSDLLVTIFCIAGEALWSYTVAWTADNVTCKLKFSEMFALYLSTFILVLIGLDRFVAV  
RYPKAISTAKRCGRFVAGAWFLSFLSLPQVFIFHLSKGPYEEFYQCVTYGFYTEPWQEQLYTTFSFVCMFMPLLLILIIISYVS  
TIITISQSDKMFDESNNTSATRKLDIRRRRIHRAKMKSFRLSIVVVTFIVWWTPYYTMMIIFMFLNPKHLSEELQKGIFFF  
GMSNSLVNPLIYGAFHLWRPSKKTGSARSGREHATYSLKTRTRWHTPGGRDYLCNRTNGDSKQFQQISVLLPNNKDPITI  
TNKVS KLGLSRSMYRIAS

>Corazonin\_receptor\_isoform\_beta-AND99325

MQTLFPNISDETLRQLQDHLINSDDGHRFILPELECDLWNITVSSSSRIQCLEHAPQLTSSARTRAVLGVMAVISFIGNVLTI  
ISIRSSRRRRRNQNWSAVYALILHLSVSDLLVTIFCIAGEALWSYTVAWTADNVTCKLKFSEMFALYLSTFILVLIGLDRFVAV  
RYPKAISTAKRCGRFVAGAWFLSFLSLPQVFIFHLSKGPYEEFYQCVTYGFYTEPWQEQLYTTFSFVCMFMPLLLILIIISYVS  
TIITISQSDKMFDESNNTSATRKLDIRRRRIHRAKMKSFRLSIVVVTFIVWWTPYYTMMIIFMFLNPKHLSEELQKGIFFF  
GMSNSLVNPLIYGAFHLWRPSKKTGSAREGSTLHTPCSRGLGRGTLREEETTFVLIEQTATANNFNRSASFCQTTRIQ

>Ecdysis\_triggering\_hormone\_receptor

MISGLALVGDDHNDTAAYLFNINLTSFYTNLTVNLTNETGFVNGSYGEQTLVFPYSYRTASMLVCIVILGIGVGNMMPVPLVI  
IKTKDMRNSTNIFLMNLSIADLMVLLVCTPTVMVEVNSKPETWVLGEEMCKAVPFVEMTVAHASVLTILAISFERYYAICEP  
LRAGYVCTKTRAMLICLKAWVFAALFTSPVLVLADYRDEEYKDGSIKVCLLQVDTFWKSFYFVMSITLFFVLPLGILVILYSIIA  
RHLMNSACLAASSSHISNLRYRRQVMMMLGAVVLSFFIFLLPFRALTLCIILAPPGFIFSLGMEKFYNILYFSRIMLYLNSAVNPI  
LYNLMSSKFRDGFKRLGINHKDGLARKGTVTTTTLTSRKCSTDHHLIKRSVVRVISVEEKLDNGITTTINLIGHNGITKGD  
ESYV

>FMRamide\_receptor

MNFTNTNFSLDDNETAYISTDNENDDKSEILFEFITNGVLLNLVGLGIMGNIISMVILSRPQMRSSINYLLTGLARSDTVLIITS  
ILIFGLPALFKYNSQLLFSYYYRVYVFLAPVVYPLAVIAQTVSVYLTTLVTLERFVAVCHPLQARSLCTYGRARLYVLLIIIFSILYN  
LSRFWEVKLEQEYLVQYNVTVYIPLPSSLRSNQIYISVYIHWLYLLFIYFLPFSCLAVLNAAIYRQVRKANQERQRLSRLQKKEIG  
LATMLLCVVVVFFICNILALVSNVLEAFYGILLTKMVKTSNLLVTINSSVNFIIYVIYGEKFKRFLKLFCSHSPRICDGGVRESPD  
CATLHEDSVMLSNGDARHSVRGNRANESVKRAARALPCVYYPARHNSKWNQDDTTTTTLNQI

>FaLP/Proctolin\_receptor-NTE

MGNVVTVIVMTRKRMKSSTNTYLTALAVSDLLFLIFNMILSFEHQPAIRQSQYVTYWHLHKWTIWLV DATGACSNWLTVS  
FTLERYIAVKHPLRGKVLCTESRARKVIXTCNITSLPLNNYYSIMECRRDRRVALQSTWLGQHPTYKSVFYWFSSITVTAIPLAS  
LSVLNYLLVAARRSTKGRNQLTEDARGVRGSFRPTCNAGNSIYRCSERSPPIQGMSQRRVLKERQENKVTIVLISVVFLF  
LICQAPSAITVIVKVFYEPESDTSGDYLLRSAGNICNFLMVINAASNFFLYCALSDTYQRTLTTTCRRERRWNERNDTLSTAA  
SFRNSSVKQLRHENETQ

>GPA2/GPB2\_receptor-NTE

RIVHTFLRRLPKIKDLGKIRPLHIVDFESNMIELESNNIAITTEQLFLDYNRITTIQGWAFEGSQIGKLSFRGNRFLKDLKDAF  
SGLKSLRDLDLSETAIQYLPTSGLEELVITNTPSLKTIPSIYDLTHLKKAYLTYFFHCCAFHYPERHDPARHQKYLEAMRKFC  
SNSVERKARSIDGGFREFEHDYIEAGIHNHTIFKQNYTEGKHMYWRFHFDNDEEHMIEHMFHNQSAELPNTKVHVTCG  
NLTKRQVKVRCWPVADPLNCPEDMLSWWVLRISVWIVLTTALLGNTTVLLVLATTSHDRSLPRMLMSHLATADLSMAIYL  
LLLAIMDLVSVDEYFNAAAQWQLGAGCQIAGFLTVFSSQLSFLTSLTIERWFAIRHALYSPLLNISRACRIMSVGWLYSIIM  
AALPLLGISSYSATSICLPMDDHDYLSVGYILILLGGAALAFIVMCVCIQIYMSLSYETRHSRSEGNVARKITVLVLTNLACWA  
PVAFFSLTAVSGYPLINVTQSKILLVFIYPINSCANPYLYAILTKQFRDFILLSRHGLCTRYAQRYKVGYSRPTCNGTPATPLTS  
DTCL

>lon\_transport\_receptor

MTVLYSLIFLTGVIGNVSTCIVIARNRHMHTATNYLFLSLAISDLLLLISGLPQEMYQLWSKYPVYFGQALCVLLGLAAETSSN  
ATVLTITAFTRYVAICHPPFSHTVSKLSRAIKFVIAIWMAILCATPQAMQFGLIYATDRRGNLIDPDEFNMCGLKEHYPYSF  
EVSTFLFFAPMSAITILYILIGVRLRKSTSRKAGQRLRDSRRSHGQAKSTTRVVKMLVWVVAFFICWAPFQTQRLYALYFSP  
SGNTSPRTILYKFITYASGLLYLSTTINPFLYNIMSLKFREAFKNTLTKCLNGREV LQSEGGGGSSGGV GAGGVFPRFNYSVL  
SHRSVRHNNSTNNSLNNNNNSCSSNSYIDPVDLNRRLVVSFRKKNTRTSSLEFSGNSPEKRELLQVPRMETFMPGAPKSPS  
AQTRTAIIRTISTKYSVPRIKSGKQNGIQKIPRIEDIEIFQESQLKILQTKHAQHQQQQQQHYHRHHHHHHNYHHQSHHK  
EMENDDENHSCSVHSDDKQHTSCVDENEDHVNYYKKSFTVPCLMMN

>Kinin\_receptor1

MNCSELEDELGPLPPSANCWLLHNQSVYFYEESLYEVPAGVIVLLSVFYGTISVVAVGGNFLVMWIVATSRRMQNVTNCF  
IANLALADIVIGLFAIPFQFQAALLQRWNLPNFMCPFCFVQVLSVNVSVFTLTAIAVDRHRAVLNPLSAPPKLRKALLGAI  
WILAAILATPMAVALNVTYVEENDHVGHVYTKPFCINTKLSNNHMMAYRMILVSVQYLTPLCVISYAYAKMALRLWGSRA  
PGNAQHSRDANLMRNKKKVIIYYVIFNLLCI

>Kinin\_receptor2

MMNLSNGSWPDEEEETLYDPPVSLVFLSLCYGSISIAAVVGNGLVIWVILTSRRMRNVTNYYIANLALADIVIGLFAIPFEF  
QAALLQRWVLPFLCPFCPFKIVLSISVSVLTLAIALDRYRAIHP L TARVSRFQFRLVVSIIWIASASMAAPMAYALRVIPHPY  
IKNIENESIYFCANEKLSSEAMQWYHSVLVLLQYFIPLTVIIFAYARMGLTLWGATAPGNAQSERDANIMRNKKKVIMLVIV  
VVLFAICWLP LQTYNVLQNTAINNEYKYNILWFSFDWLAMSNSCYNPFIIAYNEKFKREFQVRLQTPCLKKRHSAPLREL  
SGFESSRSEWKRKSTMKNGMLINPATITLH

>Long\_Neuropeptide\_F\_receptor\_1\_IsoformA-AKO62910

MVCRLVGTFRNKIELCVIMELNDTFNFSLNEVYRILIEHKNDHNDPVAEAILIYALIVVIGILANLIVSFVARRPQMHT  
ARNLYIVNLTVDMTLCLVCMPTLVNILRRAWTLGIVLCKLVPALQGTNIMVSI GTITVIALDRYFTIVRGQDSATRRRVIIS  
IALVWFFSFLATLPVVFQIVPEPFKFEAVILYETCIERWPSQELKVAYAVCVLMIQAVIPALVVGCIHAKIASYLNAAHAKTQRDS  
KRAQRELQRNKRTLLLSAVAVLFAVSWLPLGLFSLMADLLYPPGSETHISSQSLYITLAACHLLAMSSAISNPVYVYVWLNLSNI  
RRELVQLLPSRCTSRQQSQQT TTNAPSPTIMLCQNGQNIHQQPATTYAL

>Long\_Neuropeptide\_F\_receptor\_1\_IsoformB-AKO62911

MVCRLVGTFRNKIELCVIMELNDTFNFSLNEVYRILIEHKNDHNDPVAEAILIYALIVVIGILANLIVSFVARRPQMHT  
ARNLYIVNLTVDMTLCLVCMPTLVNILRRAWTLGIVLCKLVPALQGTNIMVSI GTITVIALDRYFTIVRGQDSATRRRVIIS  
IALVWFFSFLATLPVVFQIVPEPFKFEAVILYETCIERWPSQELKVAYAVCVLMIQAVIPALVVGCIHAKIASYLNAAHAKTQRDS  
KRAQRELQRNKRTLLLSAVAVLFAVSWLPLGLFSLMADLLYPPGSETHISSQSLYITLAACHLLAMSSAISNPVYVYVWLNLSNI  
RRELVQLLPSRCTSRQQSQQT TTNAPSPTIMLCQNGQSIHQQPATTYAL

>Long\_Neuropeptide\_F\_receptor\_2-NTE

MLTGGGLPTMDHEYNLLPPDASGLLSSVPLHLLTGGNTTTEFNQRSLDPIFNFSYHEAIEILREHQRTKVLVDPDEIVIIIVYSV  
LMTSGVVSNALVCFVVARQCARKHHQAGPSRPNMYIVNLAVADLALCLVCMPTLVSLKRRWTLGLVLCKLVPVAVQGA  
NIMVSAGTITAIALDR

>MIP\_receptor\_IsoformA-KF958188

MVEEMEEIWPTLGGPYFQCVNCTGGGVYDVSILNTTATSITMPNSSIWHNATEEEESDYLNVTKEFPIDYAVPMYGYAVPF  
LLLITIVANTLIVVVLSKRHMRTPTNAVLAMAMALSDMFTLLFPSPWLFYMFTEFGNHYKPLSPVSACFAWDIMHEVIPSIFHT  
ASIWLTALAVQRYIYVCHAPVARTWCTMPRVLKCIGLIICLAILHQSTRFLDRVYIPVTITWRGQPQVPVCKVDMAPWVQ  
WLTPTVYFTTYFAFRVIFVHMVPCILLVGLNLLLFRALRRAQRKRDKLFKENRKSECKRLRDSNCTTMMMLIVVTVFLITEIPLA  
VLTVLHVSSSIKEILDYSVANVLVLFNTFFIIISYPINFAIYCGMSRQFRETFFKELFIRGAVQVTRRNGGGSSKYSLVNVPRTCTN  
ETVL

>MIP\_receptor\_IsoformB-KF958189

MVEEMEEIWPTLGGPYFQCVNCTGGGVYDVSILNTTATSITMPNSSIWHNATEEEESDYLNVTKEFPIDYAVPMYGYAVPF  
LLLITIVANTLIVVVLSKRHMRTPTNAVLAMAMALSDMFTLLFPSPWLFYMFTEFGNHYKPLSPVSACFAWDIMHEVIPSIFHT  
ASIWLTALAVQRYIYVCHAPVARTWCTMPRVLKCIGLIICLAILHQSTRFLDRVYIPVTITWRGQPQVPVCKVLHVSSSIKEIL  
DYSVANVLVLFNTFFIIISYPINFAIYCGMSRQFRETFFKELFIRGAVQVTRRNGGGSSKYSLVNVPRTCTNETVL

>Myosuppressin\_receptor-AGT02812

MDIMNSTALPEHQPYCGEGFDTRNVYREVHGYLSLWVCLFGSVANLLNIVVLTTRREMTSPTNAILTGLAVADLLVMLEYIP  
FVWLMYLSPPSSRSDRYTYGWSFFVLFSNFTQVCHTISIWLTAVWRYIAVAYPQRNREWCQMRTIVAIFLGYVICPIL  
CIPLYLAFNIQSKSPPLDDNTWTQNQTLIVHFSELGSANHNLLVDLNFVWVSVVIKIIPCIALTVLSRLICALMDAKRRREAL  
TSGSKKTPRNLENERQDTRTKMLLAVLLLFLITEFPQGILGMMTILGRGFFKDCYGLGDVMDILALINSAINFMIYCAMS  
RQFRNTFSLLFRPRLPVPQVENGVNHNRTTMTMTQV

>Natalisin\_receptor

MRTTNYFLVNLISDLLMSLFNCIFNFTYMLDSHWPFGAICTINTSNFVANDSVAASVFTLVAITLDRYMAIVRPLKHRMS  
RRKARIALLIWAASSLLAIPCLLYSTTKSRTINGQTSTVCYMMWPDGHYPKSMSEHVYNLIFLVVTVLGPVAVAMAICYTLMG  
RELWGSKSIGEQTRQLDNIKSRKVVRFITVISIFITCWLPHYGYFYVFFHESVAVSSYPHLYLSFYWLAMSNAMVNPI  
IYYWMNRRFRVYFRQIICLCCVRPSMHPQLQSTPNRNLVRSELLRSKSKCPQGGQFSEIEFSGGGISGSLGSSSTTMHIET  
GRFRSDKSRYNKPFVDSRYD

>Pyrokinin-1\_receptor\_variant\_A-AFO73269

MDSGIESFTNETVSVRFPKRDPLYIVIPITILYSTIFVTGIVGNVSTCVVIARNRHMHTATNYLFLSLAVSDLLLLITGLPQEMYI  
WSRYPYVFGAEFCLLRGLAAETSANATVLTITAFTIERYVAICHPFLAHTMSKLSRAVKFILAIWVVALAFAIPQALQFGLIYVN  
EPLQIQCNLKKILIVHSFEVSTLLFFIAPMTLITILYALIGLRLRRSALLTRNSGSFGHGDGRKGTNSCRHHSSQRVLKMLVAVV  
VAFFICWAPFHTQRLVAIYITNMDGLGQHVYSVVYISGILYVSTTINPILYHIMSLKFREAFKALCCRTHTRSVVGRGRSR  
VHT

>Pyrokinin-1\_receptor\_variant\_B-AFO7320

MDSGIESFTNETVSVRFPKRDPLYIVIPITILYSTIFVTGIVGNVSTCVVIARNRHMHTATNYLFLSLAVSDLLLLITGLPQEMYI  
WSRYPYVFGAEFCLLRGLAAETSANATVLTITAFTIERYVAICHPFLAHTMSKLSRAVKFILAIWVVALAFAIPQALQFGLIYVN  
EPLQIQCNLKKILIVHSFEVSTLLFFIAPMTLITILYALIGLRLRRSALLTRNSGSFGHGDGRKGTNSCRHHSSQRVLKMLVAVV  
VAFFICWAPFHTQRLVAIYITNMDGLGQHVYSVVYISGILYVSTTINPILYHIMSLKFREAFKDTYSKCCWPKRKSRPYLILS  
RGRAEPESGRSLTDSSAQHSLTNQQTNRPNDSFSQPETQPIMVMECKSTQLPPLCTRCQHPQKPLVDGDISNSSLRDVD  
KAALEDELTAAYMNELARRQLS

>Pyrokinin-1\_receptor\_variant\_C-AFO73271

MDSGIESFTNETVSVRFPKRDPLYIVIPITILYSTIFVTGIVGNVSTCVVIARNRHMHTATNYLFLSLAVSDLLLLITGLPQEMYI  
WSRYPYVFGAEFCLLRGLAAETSANATVLTITAFTIERYVAICHPFLAHTMSKLSRAVKFILAIWVVALAFAIPQALQFGLIYVN  
EPLQIQCNLKKILIVHSFEVSTLLFFIAPMTLITILYALIGLRLRRSALLTRNSGSFGHGDGRKGTNSCRHHSSQRVLKMLVAVV  
VAFFICWAPFHTQRLVAIYITNMDGLGQHVYSVVYISGILYVSTTINPILYHIMSLKFREAFKDTYSKCCWPKRKSRPYLILS  
RGRAEPESGRSLTDSSAQHSLTNQQTNRPNDSFSQPETQPIMVMECKSTQLPPLCTRCQHPQKPLIGMNE

>Pyrokinin\_receptor-NTE/CTE

KHSLLVNAYTILTHISGVLVYVSTTVNPVLYNIMSLKFRDAFKCTLSQMCGRGRSGKPRWTYSMLSRGGHQTTVGSGPH  
RVPSEVRRRLRANKPATISNSSLQDVDEAETGPELANYMGQLNSR

>Pyroglutamylate\_RFamide\_peptide\_receptor

MDQPIKSSGITKPTKMELEQENLTDYDYDQESFNNTYIWEELVPTLVVYILTIVIGVTGNFLIIFTIARYRRMKSITNVFLASLA  
SADLLLILVCIPVKLAKLFSFTWTMGVFLCKMMHYMQSVAICSVFTLTAMSVERYAIVHPMKAKYVCTISQARKIIFTTWV  
ASFFLAVPILFVQVQMPVGGRIKAYWCVRDWDVVAWRCEHYMLVLVLLLPASVMTVTYSAICREIFRVMQRRFHMT

SGKATMNCESFPLSTKEKNPRTFKPKIRSEENNTVKQMSNYKSERQVIKMLVAVVIVFILCWAPVLVDNVLTSYDILPHIRE  
GTLKQLATYFQLLAYFNVCVNPLVYGFMSKNFRESFSKALCCRRKVPRRQLSVSHTRTTSLINYVN  
>RYamideR-INT  
MTNEEDQSTFEWTFNNETYQKQNSDFNETIDCDKIGPGGLSSGYFQSAVYILYILFVTALSGNGLVCYVVQSSPRMRTVT  
NYFIGNLAVGDILMALFCVPFSCVPSLLQHWPFGLHMCRLVSYTQGVSVLVVSAYTLVAISDRYIAILWPLKPRMSKMAK  
LTILTVWTVALTALPIAAVSALGQPSVWHVQCHRCLVELWRSESAKHIYSYLLSVQYMLPLAVLLYTYTSAIVVWVGKST  
PGEAETSRDMRMARSKRKLWEANPALSDWHGLPYIYFALHWLAMSHSCYNPLIYCWLNARFRTAFVCVALKKLSCKRKP  
PDQLHRINTCTTYISMHRAKHRKTSFLEQQI  
>Short\_neuropeptide\_F\_receptor  
MNNTTIEEDLSMIVDCIVTQYNISQYKQWPNCIEIGFRKDIIDDKIVQAFCLLYTSIFVLGLFGNLCYVVGRNRAMHTVT  
NCFITNLALSDILLCTLAVPFTPLYSFLGRWIFGNALCHLVVYAQSTSVYISTLTLSIAVDRFFVYIYFVKPRMRLSTCLAVIFFIW  
TFSLIATIPFGLFMDHKSIAGRFYCEEKWPSENFQVFGGMTSTIQFVLPFVVTFCYVRVSVKLNDRARSKPGAKTSRKEEV  
DRERKRTNRMLIAMVTIFGVSWLPINLINVINDLYMHTSSWTYYNLFLLSHAVAMSSTCYNPFLYAWLNDNFRKEFKQV  
LPCFGAQTGPQASGRLGNWRSERTCNGNETCQETLLPTSVVISTTKPSPPLLNTSSNEGRGGRTDGGGARLRSTDSVEVVL  
VAYTAAEDAVHIDKLDKGTIEAQKNRPVQVV  
>Sulfakin\_receptor\_1  
MIHISFILLQIKMLPTESWWEAGKVQIPTYSIIFLLGLVGNILVILVLVKNKGMRTVTNVFLLNLAVSDILLGVLCMPFTLVGSL  
LKDFVFGHFMCRIPYMQGFFSAVSVVAVWTLVAISLERYFAICRPLKSRRWQTQFHAYKMIAIVWAMSLVWNSPILFVS  
RLLAMGGKGEGRHKCREVWPGRRSEGAIIIFLDIVLLMIPLIMSLAYSILVCLKWGLQRELKHSNSCLKSFSLLLQVIRMLF  
VVVAEFFICWAPLHVLNTWYQFRPDLVHQYVVGSTGVSLVQLLAYISSCCNPITYCFMNYRFRQAFISLF  
>Sulfakin\_receptor\_2-NTE/CTE  
MTGGRIHFLTGNIFDFAVADILLGVFCMPFTLIGQLLRNFVFRIMCKLIPYFQAVSVVAVWTLVAISLERYFAICRPLKSR  
RWQTQFHAYKMIAIVWAMSLVWNSPILFVSRLLAMGGKGRTRLFTEIVRAVAIK  
>SIFamide\_receptor  
MVSLRPLDSEYIEARGRALETGLAPTRASNTSSRRLFVNSLLVDFVMDTLVTNTTPSASSPSSPAAGAVADLPDSTSNQTY  
QHLYRHSIAMTIVFCVAYLIVFIVGLIGNCFVIMVVYRSPMRNVTNFFIVNLAVADILVIVFCLPATLMSNIFVPWVLGWV  
MCKTVPYVQGVSAASVYSLIAVTLDRFLAIWWPLKQITRRARLMILVIWVVALTTTIPWALFFDLVIFTDNPEVKVCE  
VWPEYLNGLSFLIANLLFCYILPMILISMICYVLIWIKVCKRHIPSDSKDAQMERMQQKSKVKVVKMLVVVILFVLSWLPY  
LIFARIKLGGEISGWEEDMLPMATPVAQWLGASNSCINPILYAFFNKNYRRGFAAILKSRKCCGTLRYDYTVVRANSSSTLR  
KSSYYVTNNNNNNNSSTRQLSQDTNVSYSNNTGV  
>Tachykinin\_86C  
MPLELQLAWAGLFTGMVFAVAGNLIVIVSVFAHRRMRTVTNYFLVNLSDLLMSTFNCLFNFVYVMVNDWTFGSGY  
CTVNNYLANVSVASVFTLTCITVDRYLAIITPLKPRMSKANAQLAILAIWAASLLLATPCLLYSTTITHKPSGQTACTIONWPD  
GQPLVSTLDIYINLVFLVTVVPMAMVCCYSAMGRELWGSRSIGELTQRQLDSIKSRKVVGMMLLVIVLVFGLCWLPYH  
GYFLCAHHWPALVYTRHVQHVYLAFYWLAMSNAMLNPLIYYSMNHRFREYFRKAVCEWRCQLWSRQ  
>Tachykinin\_receptor\_99D-like  
MAYTENSTLGNELTQNTVNETYDDEDGNQFILPWWRLIWTFLFGGMVIVATGGNLIVIVLVAHKRMRTVTNYFLV  
NLAIADAMVSSLNVTFNNTYTMVNSDWPFGLTYCKISQFVAVLSICASVFTLMAISVDXXMAIMHPLRPRMGRRMTLCIAVS  
IWIVGSFFSLPMLIFFFTFVQFEPNGDNRVICYAEWPDGSTNESRQEYLVNLFMVMTYFIPIASMCFTYVRVGIELWGSQSI  
GECTQRQLENIKSRVVKMMMVVVSIFAVCWLPFHIFITSHMPEITKLPYIQDLYLTIYWLAMSNSMYNPIIYCWMNM  
RFRRGFKQFFSWCPYVHPPEGLTRREAIVTSRYNYSCSGSPEAHYRIVRNGKRLLLHK  
>Orphan\_receptor\_3-NTE  
ETYTCPTTHFKCNHYCIPIDLLCNFEDDCGDKSDESKDCNHRQCWNLEFRCENGECIRPGFVCDGRKDKDGSDEALCAE  
DDFVMCRDGSRVHRSYWCWDPDCPGNHADEWNCEVCDGPNKYKCPNGRCIKKANICDSQCDCAPHNGSLECADEM  
NCSKYRSVHGKVDRCIASKYICDGSNDCHNGKYLSEYGCQPSQSESTFRCLDNRTLPESELLCDYKNDCLDGDENLC  
RALYQCDTMTFCNNSQCIDKNGRCNVTYECLDKSDELGLDVPCEGMVKCTYGGQCIPEKLLCDYFIDCPDESDEKNCP  
VTECNKLFQCDNGQCVSIEHHCIFISGNQRDGCADNSHLKKNFTCMRDHFKCRLGPCLNQSLLCNKIDCQHTWEDE  
DNCTFTCEKYPECCKDIYINCTALGLESVPLDTEGEITWFHLSGNKLNASLTNETFSSLDRLLYLDSNNSITGLPPMMFNSL  
WRLTVLNLQNNRIHTLVSSSYGLASLKLHLQNGIRVVRMLAFYGLSSLRNLDLHDQINLIEPDAFLGLRSLVGLDLSQN  
KIEYISDSTFRGMPHLLYLDISNNYIDVIDANAFRMAATLEKLVDEFRCCLARHVKSCLPPRDEFSSCEDLMSNMVLRICV  
WALAVIATVGNILVIACRARYKHCNQVHSFLITNLALGDLLMGSYLLIIVVDWHYRGVYFIHDSWRSSQLCSFAGFISTFS  
SELSVFTLVITLDRFLVIFPFRVRRLEMTRRRLMAFGWIVAVISAVPLIHIDYFKNFYGRSGVCLALHITPDKPNGWEYSVF  
VFLFLNLVSFTIIAVGYLWMLVARTTQHAVNKDRRTSESAMAWRMTLLVATDAACWVPIIILGIVSLAGYTVPPQVFAVW  
AVFVLPNAAVNPVLYTLSTAPFLTPARHGFLTFRRSCKMSLSQDQRRYTSGLNHYAGKSS

>Orphan\_receptor\_4-NTE

QVRNATAVFIINLSVSDLMSCCFNLPLAASTFWRRSWRHGLLLCRLFLLRYGLLAVSLFTVLAITINRYVMIGHPTIYPKLYRK  
QYLGLMVAATWICGFGALIA TWLGRWGKFGLDPKIGSCSILPDSSGRSPKEFLVAVFVIPCIVVCYARIFYVRKTALKSRV  
AGRSAASVTSGGTTLTRSGYYGKVKLVKRGNTSSTDDSAFATSSTAQSFSTEKSSITLDNGEMGGNETVIKVMVNLAPSPHLL  
APQRRSKICAEASSSSGIEEGLREDDEVSTRSDSPISACSSPPPAHYSVKVKQIKKRSEVNSTLSHMASVFRRTSHARGVL  
SPSRRQSCAPPQPGKMTAKDKKLLKMILVIFASFVTCYLPITLSRHTEI

>Orphan\_receptor\_5-NTE

MGKGLKEIHKYKGDIPLVSTLTLIIAWDRHRFLKDPMPKPRIPAFVCATGSWLTAICLVLPYPVYTTYMDLGFSNFSPPLY  
LYFWSYGGKPDWGFMRRTTGFNDYENYIKNCEK

>PDF\_receptor-NTE

LEIGVLPGEYDVNQMGTTVRLDLSNREFCKTKHDNVTFEDTPFCPAVWDQVLCWPPTKGGLTSTQSCPNNHGVDP SRLV  
SKRCLENGKWEIGETGWTNYTTCYSPDLIQLFKKLTGPYSHDAIKYQIAERTRTLEIYGFSLAALFISLYIFSHFRVLKNNR  
TKIHKNLFAAMVAQAVIRLTLYVDQAIIRARKVQGDINTPILCEASYVLEAYARTAMFMWVMEIEGLYLNHVVSVRVFQETFH  
YKLYTSLGWGAPVIMTSAWAVTLAVQMKTECWGYNLSIYFWILEGPRFAVVILNFLNIIIRVLVVKLRQSHTEIEQVR  
KAVRAAVLLPLLGITNLNMLGAPLDRQVWEFAAWSYATHFLTSFQGFVAALYCFNGEVSQTI

>Parathyroid\_hormone like\_receptor

MDIKPIPSKDEQDKLLDSLRECEILKNDTILYPDGCPTIWDGILCWPNTPSNTLASLPCPEYFKGFPSHRNATKYCQLNGTW  
YFDYSLNQWTWTDYACMENDPEEDLLPKSNIMYLEKYLP LTKIISQIGYSVLSLIFAFILLASFKKLRCPNVLHMHVFSFI  
MRAGIKLLRDTVFFSGLGFHYEIRALIEYASNYSYSNDLPDNWICKFVTGLWQYCVANYSWILMEGLYLNHNLIFLALFSDTSA  
ITVYVLLGWGLPLLFPVWVIVRAVYENTLCWTVNNNPYYFWIIRAPIASSVVLNFIINIVRVLMLKLTVSISEEKKRYRRW  
AKSTLLLPLFGVHYALLIGMSSSMKNQYVEMVWLFCEQLFASFQGFVIAVLYCFMNGEVRTEISKLSWNKRSPQYFQN  
QYSVTDRPISSFFRLAKRQKRGSTAESCMTSFMSSVPTDLNVRRTLPKTVTNSHLVNEIKADSCLLNKGPTICSGMQEIN

>Long\_wave\_sensitive\_opsin1

MAQPIGPSFAAYQWQSANPSANRSVDMVPPPEMLSMVDAHWHYQFPPLNPLWHGILGFVIGVLGIISIVGNMVFIFIS  
STKTLRTPSNLLVNLAFSDFLMMFTMSPPMVINCYNETWVLGPLMCELYGMLGSLFGCASIWMTMTMIALDRYNVIVKGI  
SAKPMTNKTAMLRILLVWAFSIMWTVFPFGWNRVYVPEGNMTACGTDYLTKNWVSRYSILVYSVFVYFLPFTIISYFFIL  
QAVSAHEKQMREQAKMNVASLSRAEAANTSAEAKLAKVALMTISLWFMWTPYLVINYSGIFETISISPLFTIWSLFAK  
ANAVYNPIVYAISHPKYKQALEKKFSLSCASPDQDTSVATGVTTSTDDKAPSA

>UV\_opsin\_-NTE

LLNVLFVINCHRSTSGNIRTLGWNLSPEDLKHIPHEWLSYPEPEPILNYALGVLYIFFMLIALIGNGLVIWIFSTAKTLRTPSNI  
FVNLALICDFLMMSKTPIFIYNSFKLGYALGHRACQIFALLGSFSGIGASATNAVIAYDRYRVIATPFAPKLSRTKAVLYLALVW  
AYVTPWALLPLFEQWSRFVPEGFLTSCFDYLTPTSEIRNFVTVMFFICYVFPMSLIIFYYSQIVSHVIIHEHNLRQAKMNV  
ESLRSNANMHTQSAEIRIAKAAITICFLFVASWTPYAVLALIGAYGNQDLLTPAVTMIPACACKAVACVDPYVYAISHPRYRQ  
ELSKKFPWLDIKEAPAPSSVDANSTATEMTLPTQTS

>COpsin2\_Pteropsin

MELMLMPSAGFLAASIIFLIGFLGFFGNLIVIIIMCRDKNLWTPVNFILFNIVSDFVAALGNPFTLASAIKRWFQSMC  
VAYGFFMALLGITSINSLTVLALERYLIVSQPVSHGSLSRPTALTIVGSIWLYSFVITAPPLVWGVEYGLEANISCSINWETRS  
HSSTSYILFLFTFGFFIPIIVISYSYMNIIILTMKKSTMNAGRVNKAESRVTWMIFFMIFAFFLAWTPYAILALMIAFFDSNVSPA  
ATIPAIFAKTSICYNPFYAGLNTQFRQSWRRVLGGKREDSTMATATSFGLNSKRYKEVSCVIDVKGDKIKLSALNKSTATE  
TAI

>Rh7-NTE

LCSANISTTIYPKYFHLYPIEQWKMRHFTEEYKLVNTHWFEYPPPNKQIHYIFAAYVFLVMLVGVSGNLLVIFMILSFRTLRT  
SSNILILNLAVSDFLMVAKMPVFIYNSFYFGPVLGEMGCHFYGFIGGLSGTASILTAAIAMDRYLGAHPLNFNQGRAKKRTI  
VWITFIWVYSITFASIPLSHIGVKTYVPEGFLTSCSFDYLDIQRNCFIYFVAAWCLPLLVIIITSYVGICREVLVSLIRKGQER  
EQRKREKLSAILALATFLWFLSWTPYAAVALLGIFGYKNHITQLASMI PALFCKTAACVNPFIYGLNHPRLRQQLLKLCKKR  
YNLEKTHFSRSWRNTSCSFK

>Potential Neuroparsin\_receptor

MDITSSTKRMGYLSKLFWLLLLLVQQAFLCTPCLQNEEVNPKRYLMSRFLVQLKLGVSDRILHQLTTQVYQILLTEVLGYASV  
GIVQYNSSGNVSEQLRRLWQEDENVPPEYVVDLEVMIPAHENPYEMLGVKDCGNLGPGRYGFIPKLLPHHTQNRKE  
HIDHWKIFHDLETAMLFSLSEDDWKYVQNTLVENAVVKKYHCEKSCFCENGLYTPDRCKEGKKCAVLITENPDMTEFVSD  
IERLSLYVRVAWVGSAMEVVNYLTDKYYATDPKNRGLIVFLSYTPSVLTLTVDHLSVSFPDCDLFDNTTCSYANQRHVKVAW  
PKLDEVAKFALESQKMEFRSEDLKEMVYDYMTEYKNNNERPVNITQVACAWMRRHKKILTNTTNWETWLTVDNNO  
TIYIGGIFPMSGLHAARGAVAGAIMAVNAVNKYSVIKNSLAMKLDNGQCKADVVMKTFVEYMLFGEHSLAGVLGPAC  
SDTLEPLAGISKHFKTVVISYSAEGSSFSDRTKYPYFFRTIGENKQFKYVYLELFKELNWKRVASLTEDGTYEYISLTQDLLQ

NDITFVANRKFQDWGKDSAMRQYLEEFKIDARIIIADVNDDEAARVVMCEAYHMKMTAKQGYVWFLPLWLPTDWYNT  
TIFNETRGLPLTCDTNQMIEAINGHLAITHSFFAPDDNIMQENITVRQWRDNYEKKCQVGLLTPSNYAGYAYDAVWTYAY  
ALNTLLKENQSSVSSLHDDKTVMVQIIQNTNFNGVSGHIYFGGSPRSYSIVNVVQWYNMKTIVGTYYPNIPNVTVSPD  
KFVLRKEEIVWLNEGGIIPSDGSKVIDSFASLLNVGCQAAIIVANLLGIALLILFLIVGFLIHKHRYDKKVLTKQKYMKSLGIDL  
LSVSTFGGLDSWEIPKDRVINRKLGEFAGFTVYGGEAYFNEKGWVAVAVKTLKVGSTTEEKLDLSEAEVMKRFDHKNIV  
QLLGVCTKNEPVYTIMEFMYGLDKTFLLARRHLVNEKADDNDEISNKKLTNMALDVARALSYLAQLKYVHRDVASRNCLV  
NVSrvvkladfgmtrlmfendyyrfnrkgmlpvrwmapeslalgvftpasdvwsfvgvllYEIITFGSFPFQGLSNNQVLE  
HVKAGNTLTPAGIKPQLDSLKSCWNIDHKKRPQASEIVEFLANNPRLISPCLDVPLSSVQLEDTGQLEISITDPPDKPRKFSM  
TLRQRSPSSCGGTSAAAGGGCGTLIGGGCDSKQWNEVAQPLPSPNRYKPTRTSSISEEAATSFEASDSSL

>Eclonion\_hormone\_receptor-NTE

LTISGAISLAVNEINAELAANGSEHRFRFIVAETMGDELISIRQTAILWTKNVSVYIGPQETCVHEARLAASFNIPMISYYCTNH  
ETSNKLLFPTFARTRPPDTQISKSVAAVLLAFNWTQVTFLYRNSSDLTTIAETIKQVLNSVGIIVTNSHTWKDFYHHGYTENPF  
YELIQRTYKQTRIVYVILGEDDEHLGLMVALEESNLLDNGEYVWVGVDIVQYDENDPTKYLRGLLQKKNPIYRNAFRSYLGV  
APRPPINITNFAVQVNYKMEESP FNFSNPIGHLGGVKVIAEAVYLYDAVRLYASVVLELMANGLDHKNGTLIINRLLGKHY  
HSAMGYMVYMDRNGDAEGNYTLLATQEVPRGDFGLYPVGGFSYTRSSRWLPKTIQFCFQELHLTKNIDWVGGRPVA  
VPPCGFSGEKCF SITMEIVGGITGAGLAVLILSALIVYRSWKYEQELDSLWRLDFRDIKLNEDFFSNEQKANRVIQNI RNCSSGK  
TMTNPLIRTSQVLSNPDADFRYSSILTQVGIYKGRVLAVKKINKKSVDISRKMKKELKVRDLRHDNLNSFIGACIDPPNVC  
VTEYCTRGLSKDILENGGVKLNMMFIASLVGDILRGLSFLHDSQLRYHGNLKSNNCLVDSRWVVKLADFLTELKKGSDDYQ  
QAWSLKHVFCSGLLYRAPELLRLTSSYGVGSQKGDYISFGIILYELHGRKGPFGDGLGLTPKQIIHRIICPPRNSSQAFRPLN  
QLETNFDYVKDCLIECWQENPDRDPDIKGVRAILRPMRKGMPNIFDNMIAMMETYANNLEALVDERTDQLVEEKKKTE  
ALLYEMLPRCVAEQKLRGHKVEAESFDCVTIFFSDIVGFTAMSANSTPLEVVDLNDLYTCFDSIIVNYDVYKVTIGDAYMV  
VSGLPVRNQDQHA AEIASLSDLQAILSFKIRHRPQDKLQLRIGIHSGPVCAGVVGQKMPRYCLFGDVTNTASRMESTGLA  
QKIHCSAETKNLLDRLGGYNILERGYIDIKGKEILTYFLESEDITHRTQRRSVREKRRHSKETVYHRAILRSSLKATCSLSRAASF  
ESSKRLRFSNKNVEYNNSYEIAKLESVVDSSPSKCLTVDFCDHLSVSCPCIENVQNRVNGEKLEANS DPLLTVMMSDQICT

>NPLP\_receptor-NTE

MMCEEIAAFFGPEGSCHVEAIVAQARNIPMISYKCSYRASEVPTFARTEPPNTQVTKSVISLLRHYQWSKFSIISEETWRPV  
ARSL EEEAKKKVNMTVNHKKIIMDRHKCCQLPCCQTGIWYQLLQETKNGTRIVVFLGTPVSLIDMMTTMQUALQLFEK  
GEYIVIHVDMMTYTPREATKYLWPKPTFNEPSSCLDHPGFKEKRARSLLVVVSTAPTNYENFTE RVRLYNTKEPFFPTPTVF  
KNVSYVKFVSIYAAYLYDSVWLYARALHELIYGNTSNGETRNITENVIKEVVKNGTKIIETIVRTKYKSVTGFKIKLDTNGDSE  
GNFSVLAYKPHNITEDNFTCSHHLVPIGQFQQGYNDQHGGYPELVKWTIDWAGNDKPEDEPICGFDSYRCAKEDSQGSV  
AAAVLAIALFCAMVSTLSIYRKYWRIEQEIEGLLWKIDPEDLLDPQDLMSPPSKLSLASATS FESRCPQLFAWTSKYRGIVVRL  
KEIKFSKKKDISRDIMKEMRLMRSFIHDNVNSFIGAVVEPMRIVIVTEYCAKGSYLDIVENEDIKLDKMFVAVSLVHDLIKGMM  
FLHGSAIGVHGNLKSANCVSSRWVLQVADFLNELRHCPENESIGEHPYRNLLWTAPELLRDEAHMHRGTQKGDVYA  
FAIILHEIIVRKGPFGGCGKDEPGEIVRLVRCPHSDEPFRPNVDLVRDSEVGSQVISVMVDSWAEDPEMRPDPFGTIRSRKLS  
LRGKQRNIMDQMMEMMEKYANNLEELVNQRTLEVYEEKRKTEDLLHRMLPAPVAKRLTSGFGVEPESFDLVTIYFSDIV  
GFTAMSAESTPLQVVNFLNDLYTLFDRIIKGYDVYKVTIGDAYMVVSGLPLRNGDNHAGAIASMSLDDLNAVKNYKIAHRP  
DETLKLRIGIHTGPVVAGVGLTMPRYCLFGDVTNTASRMESNGEPLKIHISQQCCAALQKGGYQVQPRGIINMKGKPKV  
QTYWLVGATEKAVKPTVDLTELPPPLFCRPRKSPKIMGLVDSRRQSSVLRCAQPVVLRLVLRGAQSLDPLPSTAIPRSPVK  
RSCHSLQEKGVVCSICNGALVSEPLLQDNKRWHSLETVSAEPCTKKS LATRSSLRSWLFGLFNNTAFNASDASLRKVG YQ  
DLQPERESIV

>Insulin\_receptor

MIVYVWVLLYCTGITFLILGMQPAYTKICPSMDIRNTVSALNKLACRVIDGYFSFVLIDYADESEYDNMTFPELREITSFLMVN  
KVSGLRSLGRLFPNLSIIRGERLFLDYALVITNMQNLLEIALTSVTLRGSVAIAWNKKLCYAETIDWDQIAPGGDHFLVGN SPI  
TDPEPCPGACKNNLCWSRNQCQEIRKWTVPDGEPCDDECVGGCTGLGPYNCKACRRFDHGGGCMKSCPSNRYAFENHY  
CVTEEECRPNPNSTYRIAERKKGQDDVVWSKPQEWFWNGTCIQDCPTGLEKTTMSCERCCKDGKCKKECYGSSVDSLEK  
AERLRKCTHILGSLEIQKSGQQSVAAELEDLSGMIEEIQGLKITRSFPLVSLDFFKNLRIIQGDRHFYFNSNYSLFKIDNQNL  
MTIWNWDKRPAGRNFTINMGRPLFNDNPKLCIKHIRELTTIAGFKDVKDTEVTKQNGVKFACNLVELNISAHLTFQSIVIHI  
HKPDFNNTSVVFTRYIAYYMEEPYGNLTTAIPSDDCEENAWKLNDAISEEDKSMSNLKMYHHTITKLQPDQYAI FVKTYT  
VDSTGGQSPVLYVRTLPSRPSMPLYLLAHSNSSSEIVVTWEPPEKPNGKLSHYIVKATMHGDDPTYLEARDYCKYPIKKEET  
TPAPRLVMLKEDSDDKSTDDCVDKKPEKRPDVCESIDPHLPKLYDAPTCEKYMYTLVDSTRLTPTAEHVMTPEPSLYER  
NIELAEEPADLIRRNKDEDEDLVEDLEQFNSDGTYASFTARYPHNVTLVTLNLKHHTAYTVEVIACRERHPRDSATTKRC  
SLNAFTTLRTPDPKADNIEGGIKESVNRVTITWTPPLANGVIVAYMLERVREGSGADSKLMVEICIPVAMARGSFELRGL  
ELGSYRIRLRALS LAGAGEFTEPEHFSISEYSSTNIIITFFIVITILLIGIVAGFVYHRRKMNLQEVLIASVNP EYFGLPTVDEEWE  
LPRDRVRLIRELKRGNFVGVCEGILSPQGTAVVKMSIDDEPSDRDAMQFLNEAVVMKQFTEAQHIVKLIGIVSRDRPFMV

VMEMMAKGDLSYLRECRNGIPSPAGMILMAAQIADGMAYLES AKFVHRDLAARNCMVSDKLVKIGDFGMTRDIYET  
DYRKGNGKLLPIRWMAPESLNDGVFTSKSDAWSYGVVLLW

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Biogenic amine enzymes  
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>Tyrosine\_3-monooxygenase (ple)

MMAVAAAQKNREMFAIKKSYSIENGYPARRRSLVDDARFESVVVKQTKQSVLEEARIKHNDKADTPSNQTNLKEEIKKSSE  
SHEPKIPVEIDDENKENVCDLQHQNGHSDAGL TEEVILSNAASESKEAEQAIQRAALILKKEGMGSLARTLKTIENTFKGS  
IVHLESRPSKDAGVQFDVLVKVDMRSQSLLLIRSLRQSAALGGVDLLADNKISLKNPWFRHARDLDCNHLMTKYEP  
DMAHPGFADKVVYRERRRVIANIAFEYKYGDPIPIYIETEVERATWEAVYNTVVELMPKHFCKEYKEKFAQMEEEGIFTPKRI  
PQLEEVSNFLKNTGFTLRPAAGLLTSRDFLASLAFRVFQSTQYVRHSTTPFHTPEPDCIHELLGHMPLPADPAFAQFSQEIGL  
ASLGASDEEIEKLSTVYWFVTEFGMCKEHEQLKAYGAGLLSSYGELLHAISDKPEHRPFDPTTALQPYQDQEYQPIYYVAES  
FEDAKEKFRRWVSTMSRPFVRYNPHQTQEVVLDSDVRLDNLVSHLNLEMQLHTTAINKLRTATFG

> DOPA decarboxylase (Ddc)

MDHKSFKDFAKAMA EYIAEYLENIRNRPVLP TVEPGYLRPLIPSAAPESPESWQQIMGDLESVIMPGVTHWHSPRFHAYFP  
TANSYPAIVADMLSDAICIGFSWIASPACTELEVVM LDWMGKLIPLKEFLACSGGKGGGVIQGTASEATLVALLGAKAKII  
HQVKEQHPEWSDYEIVSKLVAYASKQAHSSVERAGLLGGVKFRLPTDEKHRMRGSSLQEAIEKDKKDG LIPFYVVGTLGTT  
SSCAFVITEIAPICNKEEVWLHIDAAYAGSAFICPEYRYLMEGVELADSFNFNPHKWLLITFDCSTMW LKDPSSVWVNAFN  
VDPLYLKHEHQGAAPDYRHWQIPLGRRFRALKMWFVMRLYGAENLRAHIRKQIGLAHQFEQLVQSDKRFEIIAEVLMGLV  
CFRLKGSNEKNEELLKMINGRKGKIHLP SKIKDITYFLRMAVCSRYSDPDDINFSWNEIKST

> Tyrosine decarboxylase 2 (Tdc2)

MDTMEFRRRGKEMVDYICEYMTSLSKRRVTPSVEPGYLRSLLEQAPQQPESWDQIMADVENYIMPGVTHWQHPRFHA  
YFPGNSYPSILGDM LSDAIGCIGFSWAASPACTELETIVLDWLAGKAIGLPDEFLAFTEGSKGGGVIQTSASECVLVTMLAA  
RAQAIKRLKQLHPFVEEGM LLSKLMAYCSKEAHSCVEKAAMICFVKLRILEPDDRCSLRGATLRQAMEEDEAMGLIPFFVST  
TLGTTSCCSFDLSLNEIGPVCRLFSSVWLHVDAAYAGNAFILPELKSLLDGIEYADSFNTNPNKWLLVNFDCSTMWVRDRIRL  
TSALVVDPLYLQHGYSHSAIDYRHWGVPLSRRFRSLKLVFVLSYGISGLQEYIRHHCRLAKFFESLVKSDNRFLVCNDVKLG  
LVCFRLLKGTDKLNEKLLSNINGSGLHMPANVNDRYTIRFCVAQNASQKDVVDYAWGVITDHATELLEVQQIEKEQVFEL  
LERKRKETLAYKRSFFVRMVSDPKIYNPKIAKSLPGSRRHTSHVTDEDDIESTPDNGVSAHTPIASWISWPLAFLFQDTGAD  
ALPNSFVSFNRFRHLDTMVR LPAKKTGSGGSRNSHSPSSAPVLGSIDNTVNHQL

>Tryptophan\_5-hydroxylase\_1-CTE (Trh)

MSGSGKSLGLWL YRSGEKWSLKH TDSEVRRSRVQPHIQNTGRNSVVFSLKNQIGGLARVLQVFQDMGVNVVHIESRPS  
DRHDSEYEILVEVECDNRKMEQVVSLLRREVAAINLTTYESGSDLPPTPLSATT SFDFEEMPWFPKRIQDLDKAQKVL MYG  
SELDADHPGFKDPVYRKRRETFANIANSYKYGQPIPRVQYTEEEIKTWGTVFTELHKLYAKYACREYLENWPELVKYCGYRQ  
DNIPQLQDLNLF LKRTGFQLRPVAGYLSPRDFLAGLAFRVFHTCQYIRHSSDPYTPPEPDCHELLGHMPLLANPSFAQFS  
QELGLTSLGASDEDVEKLATVTISRLNMIYHGELRVYGAGLLSSIAELQHAIQATEKIKKFDPELTCHEECIISYQNAYYYTDSF  
EEAKEQMRAFAKCIQRPFVRYNPTYQSV DVLNSAQKIAALVSELRGDLCIVSNALKQIDAREDTMENIAHMLQDGIDL

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Neuropeptide processing enzymes  
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>Signal\_peptidase

MAEVNKILSDIKMNL TENVTDLHRT PATPEGMAVAYISIIIMAILPIFFGSMKSVKYHKEMIQFQKESGEMLETMSHKDAA  
MFPFIASAALFGLYIFFQIFSKEYINLLLTGYFFILGVIALCYLSSPVICSLVPA AIPNTPFHLKFTKGGKAHSEVIINYEFTLHDVICL  
MCCSLIGVWYIINKHWIANNLFGIAFAINGVELLHLNKVVTGCILLGLFVYDVFWVFGT NVMVTVAKSFEAPIKLVFPQDLL  
ENGLTANNFAMLGLGDIVIPGIFIALLLRFDCSLKRN SKVYFYTTLVAYFLGLVTTLCVMHLFNHAQPALLYLVPA CLGAPLILA  
HIRGDL SAMFYEDHPSNATDEKKDSTSNSSASNAGKVSPKTKKNK

>Silver-NTE-CTE

LGDCLYVSKSYPNLASVFEVGKSTSGLSIWGIQLTENITGPQDLKPSVKLVANLHGDETVGRELLANLTRHLVNNYGS DNRI  
TKLLHSTRIFIVPSLNP DGFASQEGHCESLKNFVGR TNANGVDLNRDFPERLEEGRKG TGLLIGRQKETQVIMRWISM SDF  
VLSAFHGGSVVASYPYDSGKGNEYSKSPDDDV FVQLAATYSQAHLTMPLGNCPDDNFRNGITNGNNWYTVKGS GMQ  
DFNYLYSNCFEVT FELSCCKYPLRELSGEWENNIESILKYVESHGWVKG VVSSVTGDRIAGSIIQVQGVNHNITTKLGEY  
WRLLLPGAYTIKVHAPGYMISSLASQIIFVAQR TVVSVRILRNIETSQVAPLR TYPIISLCPVVVEPVLEEDIKNEYGFHHVVKFR

HHNYVQMTKELQDISKEYPNITRITYIGKSVRGRDLFVLEIAEKPGVHIPGKPEVKYVANMHGNEVVGREMLLILARYLCEN  
YGS DERVTHIVKSMRTHLLPSLNP DGYEVSHEGDYNGLDGRNNANNIDLNRNFPDQYGVSKVGFKMKQAHRKDCEVHR  
GIKGFVWSSSGNPIKNAVVEVDGILKSVKTYKDGDFWRLPPGKYVISAYAEGYDRQTVNVDLTHQQDGP MQNAYVWNF  
TLQRDGLKSWSIENDFSQKDSVEQLHQYLND DQAEILKSLDAASPSIVRYEKEYGYHYLAISHEVSLGIEHKFHILVIGGLYGS  
EPSGRELVLRLSRHLSAGHHLRDPNIRTLQRSVVTLLPVVDTYIEAPCQVTDVRNPLALEIINNGNTIGKRFEQFLHEQHFD  
LIVSVPTSCCNVVEPNKIPRMWRHFLRPLMEVISSSVQGIRLTVLNSVHTPLRMAVSVNGTTSVSPNQAI AKIMLPPGSY  
VAKISCKYHEPQLLPVSI EEGQLDMKVILRETTIGASLAHAGNGIAGYVVDNFNHPVDNAIILVEGTNISQKVNDQGA FWV  
PLQEGDFVMVATAKGYAPSTKLVKVHMEPTQVLF TIMKDQDVIGLPRMGFIFLISLAIMLVLGGGLLGCMLCCNDNKSTK  
GFALLREKSSFFSYSGKNHMQLPVQEDGLKTTAYYDESDIDEESLSDEEVIDVHKLQKQAAILQQ

>PHM

MLATLLILIFSIIAAESFTTKKYSLVMPNVQPNVDELYLCTPVKVN YTKNFYIVGFEPKASMGTVHHMLLYGCQLPGSSQEVW  
NCGEMVRDVEEDQHNPCKAGSQIYAWARDA PKLNLPE SVGFKVGGDSSIQYLVLQVHYAHLHGATDNSGVLYFYTEKL  
MPKLAGVLLLTAGYIRPLSVEHMETACTIDEDKVLHPFAFRTHTHQLGKVVAGYRVRENGRNEW TLLGKKNPQDPQMF  
YPIEKNLTVRQGDQLAARCTMESHLYTTTTFIGATNKDEMCNFYLMYWVEQSEPLSKKYCFTSGPPNYYWNNPGLNINIPD  
GASSLN

>Prohormone convertase 2-Amontillado

MIRPGGWSLILGAWILVLTISY SCTALVFTNSFYVRLRGDGGQEAASLVAKRTGFDNFGPVLGSQNEFH FVHRGLQEARTK  
RSIPHTRRLKVDPLVHMAVQMAGFKRVKRGYKPLVVENLVGEMKPRDPTDPYFQLQWYLKNTGQNGGKARLDL NVEA  
AWAQGVTGKNVTTAIMDDGVDYMHQDLKFNYN AKASYDFSSNDQFPYPRYTDDWFNSHGTRCAGEVAAAARDNDICG  
VGVAYDSKIAGIRMLDQPYMTDLIEANSMGHEPNLIDIYSASWGPTDDGKTVDGPRNATMRAIVKGVNEGRNGLGNIYV  
WASGDGGEEDDCNCDGYAASMWTISINSAIN DGQNAHYDESCSSTLASTFSNGAKDPNTGVATTDLYGKCTTTHSGTSA  
AAPEAAGVFALALEANTQLTWRDIQHLTVLTSKRNSLFD AKGRFHWTMNGVGLFNHLFGFVLDAGAMVALAKQWRT  
VPARYHCEAGSINRLQKISSNQPLFLKIETTACQGTDTQVNFLEHVQAVITL NSTRRGDVELFTSPMGRSMILSRRVNDN  
DHRDGFTKWPFMTTHTWGEYPQGTWTLEVSFNSENVQSGFIKEWRLMLHGTS DPPYTGLPVS DHHSKLAIVKKAHEERN  
SRSKHVYY

>CPM-IsoformA

MLTGGWLWLLLLCIASAEENRIKKFIDANDKSRFSADEPSSRVIAGGYQPSSYIRDTNSLEMKYHDFEQMTKFLRTTSSKYPN  
LTALYSIGKSVQGRDLWVMVSSSPYEHMIGKPDVKYVANMHGNEAVGRELMLHLIQYL VNSYSVDPYIKWLLDNTRIHL  
PSMNP DGFVAREGQCDGGQGRYNARGFDLNRNFPDYFKQNNKRGQPETDAVKEWTSKIQFVLSGGLHG GALVASYPF  
DNTPN SMFQSFSSAPSLTPDEDVFRHLALTYSQNHPTMHKGRACKSGSPAFTDGITNGAAWYPLTGGMQDFNYVWYGC  
MEITL ELSCCKYPPSTELPKYWEDNRLPLVKFLAEAHRGIHGFVLDENGNPIEKASLKIKSRDVG FQTTKYGEFWRILLPGVYK  
LEVYADGYTPKDMDFMVVEEHPTLLNVTLYPAKVEGAGERGDRPYHIYTGANS GFYRPPHQHYHHQIPPPKPGSTDSGI  
FSSLTSGFNNFVNNIFG

>CPM-IsoformB

MLTGGWLWLLLLCIASAEENRIKKFIDANDKSRFSADEPSSRVIAGGYQPSSYIRDTNSLEMKYHDFEQMTKFLRTTSSKYPN  
LTALYSIGKSVQGRDLWVMVSSSPYEHMIGKPDVKYVANMHGNEAVGRELMLHLIQYL VNSYSVDPYIKWLLDNTRIHL  
PSMNP DGFVAREGQCDGGQGRYNARGFDLNRNFPDYFKQNNKRGQPETDAVKEWTSKIQFVLSGGLHG GALVASYPF  
DNTPN SMFQSFSSAPSLTPDEDVFRHLALTYSQNHPTMHKGRACKSGSPAFTDGITNGAAWYPLTGGMQDFNYVWYGC  
MEITL ELSCCKYPPSTELPKYWEDNRLPLVKFLAEAHRGIHGFVLDENGNPIEKASLKIKSRDVG FQTTKYGEFWRILLPGVYK  
LEVYADGYTPKDMDFMVVEEHPTLLNVTLYPAKNESFIVHKQVTSSPISTVQSTNGQNRESIMFPEY

>CPM-IsoformC

MLTGGWLWLLLLCIASAEENRIKKFIDANDKSRFSADEPSSRVIAGGYQPSSYIRDTNSLEMKYHDFEQMTKFLRTTSSKYPN  
LTALYSIGKSVQGRDLWVMVSSSPYEHMIGKPDVKYVANMHGNEAVGRELMLHLIQYL VNSYSVDPYIKWLLDNTRIHL  
PSMNP DGFVAREGQCDGGQGRYNARGFDLNRNFPDYFKQNNKRGQPETDAVKEWTSKIQFVLSGGLHG GALVASYPF  
DNTPN SMFQSFSSAPSLTPDEDVFRHLALTYSQNHPTMHKGRACKSGSPAFTDGITNGAAWYPLTGGMQDFNYVWYGC  
MEITL ELSCCKYPPSTELPKYWEDNRLPLVKFLAEAHRGIHGFVLDENGNPIEKASLKIKSRDVG FQTTKYGEFWRILLPGVYK  
LEVYADGYTPKDMDFMVVEEHPTLLNVTLYPAKVGGRNRDDMTLYQKPWHPPWLVS IHHKPPQSAPGMEHNEEGAGER  
GDRPYHIYTGASTHSLTTATFITCALPITIVSWPALTNHLSLPI

>Prolyl endopeptidase

MSNSFYRFAHISSIVSSRIISTSYLSKFTKLSVNYFQTRRLSKEKLSRPQEMKFNYPSARRDENIKENLFGVQISDPYRWLED P  
DSEETKKFVDAQNNISVPYLHEAKDREKINAKLTEMWDFPKYGC PFRRGDKYFYHMNTGLQNQNVLYKLDTLDAEPQVFL  
DPNLLSPDGTISLAGTAFSEDKIMGYALSES GADWVTFHFKKVDDGENLPEVLEKTKYTSLSWTHDNKGAFYGC FPDVEG  
NKAVGSESGVVKNQKLYYHRIGTPQSEDILC VEFPEDSGYILDATVSDCGRWLVL EPRKMCHFNLLYFADLSALPNGITGPIQ  
LTEVVSTLEADYQYITNTGSKFVFRNTKNAPNYKLIVIDFN YTRENWITLVEHETDVL DWAACVATDKLVLAYVHDVKS V



LHVHNLADGSFIQELPLPMGTVSGFSGKKKYPEIFYDFTSFFTPGTIYRCDLSQSPIQPQTVFRETINGLDPEMYELEQVFYPS  
KDGTKVPMFVVMYKKGTVKDGSNPCLLYGYGGFNVLQPVYSTFRLVFMKHLNGVVAVANLRGGGEYGEKWHDAGRLL  
NKQNVFDDFHSAEYLIQNKFTNNKMLAIQGGSNGLLTAACSNQRPDLYGATISMVGVLDMLRYHKFTIGAMWISDYG  
NPDEEHFKNVLKYSPLHNIKEPEQYPATLLITADHDDRVPVPAHSLKFIATLQHTLENHIGQINPLLVRVDTKAGHGAGKPT  
SKKIEECTDILSFLQRTLNLTYVG

>RPRC006957-Furin-like protease 1

MVRGEMIRVWTVLLLAVEVCCHYTSQWAAHIEGGYSVASNIAHAHDFTILAEIFPDYHLEHRKVAKRSIKPNQYHDNLIS  
EKQVKWAKQQRARRRKRDLTRKDLGFSDSHVYLNDRWPQMWYLNRGSLDMSVEGAWKEGVTGKGIIVTILDDG  
LEKDHPDLRENYDPQASFDVNSHDDNPMPRYDMIDSNRHGTRCAGEVAAVANNTICSVGIAYKASVGGVRLDGDVTD  
AVEARSLSFNPQHIDIYSASWGPDDDGKTVDGPGLAMRAFIQVTKGRGGKGSIFVWASNGGRDHDNCNCDGYTNSI  
WTLSSSATENGLVPWYSEACSSTLATTYSSGSTGEKQIVTDLHHQCTSTHTGTSASAPLAAGICALALEANTQLTWRDMQ  
HIVVATAKAPANLRAPDWTTNGVGRNVSHSFGYGLMDAAAMVQLARNWPTVPQQHKCEVSAPHIDKVIPAKSHVLSLN  
VKECAGVNYLEHVQAKISLLSQRGDIEIQLTSPAGTKTLLARRPHDISRSGFRSWPFMSVHTWGENPIGVWLEIHNEAR  
FLAQLSDWNLIIFYGTETAPGTDLDGFSSSKKKGDVLAASPVSVPDNNVETSRGFTGQGSVSSGSGEDSSPPGWPDLAQR  
TSSQQSLEGLGIGHGDMDLVPISSACRVTSRACLECSQGYLWQGHCEAKCPPGTATYATESICTSCHYSCEHCTGTNDYECT  
QCPDAEFYVNSVSSFEYCYPKSILPWLNYTKWYYRTCFGLVINGILLSFVIGILFYFRGCSFNKKKDHQPTIINSVRYKLAQNE  
SDSEN

>RPRC002472-Furin-like protease 2

MKAVVLIVSLFWIKTAVTSNRQPPIYTNQFAVHVPKGGKEYADAIAERHGFINIGQIGSLKEYLLEHRRHLKRSLSHSQEHHD  
LLEAEHVHWYQQQTEKRRVKREYAKRDFISGHPFIPSYDSDFSSSLFTHRSANRNHYRSGGGLSSFSFPDPLYKEEWYLN  
GGAKDGYDMNVAPAWAKGYTGRGVVVSILDDGIQTNHPDLAANYDPAASTDINDNDDDPMPRDNGDNKHGTRCAGE  
VAAVAFNSFCGIGVAYNASIGGVRMLDGSVNDAVEARALSNDHIDIYSASWGPEDDGKTVDGPGLARRAFINGVTTG  
RKGRGSIFVWASNGGRHTDSCNCDGYTNSIFTLSSATQGGYKPWYLEECSTLATTYSSGTPGHDKSIATVDMDGKLR  
DHICTVEHTGTSASAPLASGLCALALEANPDLSWRDMQHIVVMTSNPAPLLKESGWITNGVNRKVSHKFGYGLMDGAA  
MVTLAEQWTSVPPQHICKSHEVIEDRPIDPSFSSVLTVAVDASGCPGTVNEVRYVEHVQCKISLRFPRGNLRLVLTSPKGT  
STLLMERPRDVSSNFDDWPFLSVHYWGENPRGRWTLQVINAGNRHVNPQILRKWQLIFYGTVADPVRRLRQPSSSTN  
QDFTFPSVAPPLNSFFPSAPSQDIFSGFRNLNIFTASGSENKKMKVLMDLNELAEGENCHESCACATCAGTTQDSCLTCAPGH  
LYMTDLGLCLQPCPDGYEDQVNSNCIGCYGNCASCEHPSVCGSCDHLILFNGTCVTGCPKGTFTEDDYRCGECDSSE  
TCLHDGTTGCVTCKGGIRAGSSGKCHNKSFECPHCVLCTLQEDICTECSAGYIIDINGDCVIDEKSCPKGEYTTTNGCEPCE  
NLSNCTKCPPGLNIINNTCVAFCGTGYFSDSGWCRPCAHECAECLGDRQDQCLSCVDEYKFASGYCMESCPGGTYKTQW  
GCLKCHHFCNECSSEGPYACTSCSSGRFLDAATKLCMPCHPCNGTNTHQCHCDPTTGKCHLPAGKRRITSEQAAKAHED  
ELLAASAPHNFFTTLSNNHRNAFTGTTLVTIASCAIVVALFGLIFTVLQLRSRDRRRGGYMKVPIQDMNFSTLGENPRNS  
KIRFSRGRSRTDSDEEEEEEQVALNMTAEKS

>RPRC013490-Furin-like protease 2

MEAKLRPDHLCTLEHTGTSASAPLAAGMCALALEANPNLTWRDMQHIIVMSANPAPLEKEAGWTINGAQRKVSHKFGF  
GLMDGEAMVNLAEQWTSVPAQHICKTPVIAENRILDKTYSETKFHTNVTGCEGTESEVRYLEHVQCKITLNFQPRGNLRL  
VLTSPQGTSTLLSQRPRDEVSAAALNDWPFLSVHFWGEDPRGIWALTVIDGAKKVSANGVFTKWQLIFYGTDTKPVNLR  
PPSLQMYRKKQDLSDPAFYKEKEVEGEAGYDDNVVDDAVEVLYNCHLECDKSKCYGPANNQCISCAHYKLNKSCVASCP  
EYGYASGGLCLPCHVDCRTCTGPGYHNCLTCAHLYITDLALCIHACPHTYYQDVDTKRCISCHETCASCQDGPCLSSCD  
SHLVHHSNSCLASCPAGTYLNHHQRCAPCHPSCDTCIGGKITDCLPPSRSATCSDGQCSECPPGLFLQNSTCVSGCDPGWYHI  
GKSKRCWPGCLGCGYGRKDECVSCVAGRMLARGQCRLHCPRNMYSTSTGCANCHHFCLTCNGGGAYSCTACSSGRYL  
DEESGLCYSCHPTCLTSSAAQNACTSCPQLILDSGQCISYDDTDGNSNCINCIENQDTKIHSFGAGKRRRISEAVSWSGIVDE  
PLQAFHRGKPPPEYSPFVTVTVIAVIACLAIVVLFALLFATLQVR

>PAL1

MIFNNHILFITWINLISSKISKV GALHDPHKETYLDLTTSKLAVPEKWLPKLWLDPSIKLGQVSGLCVDRDNVYVLFHRADRV  
WSMNSFTADNIFSQRNLGPIRNHTVLVLGSDGTIHRKWGAEMFYLPHGITVDNEYNVVWTDVALHQVMKFSASSWTP  
LLSVGVAFTPGSDSRHLCKPTSAVTSNGDFFVADGYCNSRILKFNSDGDKILEWGRPTVGGGFRVPTPGEFLVPHALTIAE  
DLGIICVADRENGRVQCFNLLNASFAFQLKSEHIGPRLFSVAYCKSKGLFFLVNGEAFQRNIPVQGFVMTAKGDIVGKFGPQ  
LKTPHDLAISSNCDTLVYGEIDPYIAWKFLKGNLSSTSVAAPVMPSSASTMDSNVSRGEVEGLAGAIMVTGACLVFAASL  
LIAALVYSRSTRGTSDTIRLLPDSTISDY

>PAL2

MAPVFTSLTALFVCCIVSNHVDATSDIRQDFYKLRSMQLTTPFPEVPKGVILRPVEVQGWGRNLTELQVSGVSVNARGN  
PVIFHRGPRIWDEQSFNSSHYQQLEKGAIEVDTVLTDKTTGEVISSWGKDMFYMPHGITIDHHSNTWITDVAMHQVFK  
FPRGWITPSLILGELFTPGHDESFRCKPTSAVASTGEIFVADGYCNSRVLKFNHKGVLQRIFFQYEEFLSLLVPHSLALIEKQD

LLCVADRENMRVACWAAETGYKSAPNLPFSPFTTHQPDLGRVFGIAALGDLVYAVNGPTSSHIPIQGFTINPMAEVILDHW  
QPKSEELKNPHGIGVSPGLDALYICEIGPNRVWKFALAKHI

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Takeout genes  
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>RproTo1

MLKPLVLTFLLIYMAQAALPKNWKKCKRNDPKLDDCLRVAVTFAARDLKDGNANLILPLDPLRIDQLVIDQQGGPVSVK  
MVFSNFSISGHRNVEVLSVKNWVYKAIIVPKMTLRGKYKMDGKVLTLPIRGEGNCSLDAEDFTSSLHLVLRNNTKNGK  
HYFAVEKFDVCLKLDAEKGHVHFDNLFNGDKSLGDAMNRFNLNANWREILTEITPALSFSGLAYMRISNRILSKVPGDELFLS\*

>RproTo2

MWTAALVLLSASAFCAAKLPKNWIVCKKSAPDAGDCWKRAMFEISIQDLKNGSRTFGILPLDPLRISKIKIAPGDGPVSVVL  
SFHDLDIIGISNVKISNVKNDWVVTFNAANPRVTLVSKYVMDGKVLTLPIKGDGPCRIDIDNFKSNFTIRFKISRGGKEYLE  
VTKFQLQFTASNAKLQFDNLFNGNKALGNTMNKFLNENWEEIVNELSPALAQAFGVAMKAVSNKILTQIPFEEINL

>RproTo4

MHVLCMILLMGWAFIFHVQSALPKTWKTKCKDDPRMNDCLKIAIEEAVHDLVGGNPSLGVFPLDPMHFDTVSIDQGHG  
PVSIKLDFKHLEIIGVKDLKITNLKTDWKEMHVDVIVPAVAVGTYNVTGQVLILPIQGNFCNLFTNFSGSGQLKFKEIQKN  
DKKYYQISHDFIFDAEKMDILLENLNGDKALGDNMNVFLNQNWPEILKELRPAVSKAFSSAFKEVGNRVFSKVPLELISPP

>RproTo3

MFKFIVYLIYLLVLISDMAQPGKLPKTKTCTKGSPENNECLKGAIIEAIHELADGNPSLGVLPMDPFHFDITIDQGHGPVS  
IKLDYTDLDTGIGDLIISVKTDWKEMHFDAEIPTKVVLGDKYKIDGKVLVLPINGEGHCRIEFTKFKSFAQLKKEIEKGSKHF  
YEITNFEFDADGVHIQFDNLFNGDKALGDNMNVFLNENWKEILQELKPAISGAFGAFAKEVGNRVFGKIPIQLISPS

>RproTo5

MMFKQLFYICAIYGVVESAKLPKWTACKSNDPKKEECLKGAIQHAIRDLSNGGKASLGVLPMDPLHFDMITVDQGDGPV  
AIKLEFFNLDLIGLKTINVNSVKNDWKSMMVLDLIVPKLTLRGQYKVNKGVLVLPKIGDGDCKLEFTNYKVGINLKIKEVKKGDK  
KHFEVVQFQIKPTQEKVFIQFDNLFNGDKALGDNMNRFLNENSQEILQELGPAISRAFGTAFKTIISNRIFSKVPSNEINL

>RproTo6

MTRGYLLTIFFCLVGLSVAAMPSKWKTKCRSDKNINECLKKAVEEAVKTLKSGNPSLGVIPLDPLHFNELNIGQSGPVSIN  
LNFKNMDIHGISTAKVKRFRADWNNYYLEAEATLNVPLVLLGDYTVKGGQVLVLPVINGNGKCNLTFDNFVAKLTAKGHEITK  
GKEKYMEIDKFTFDLETSKLRVFLGNLNGDKALGNNMNVFLNENWQEILKELKPAISKAFGEAFRSIGNSVFSRIPLNQIAP  
K

>RproTo7

MYILSSITFGCVCLYLVSAAATVLPESWKICKKSDKLLNECLKSSIQTVVRELKTGNSKFGLPPTPELLIEEVLHQNGQAVGLD  
LTFRKLKMYGLSRVVVDKVSARYDKDQLSADFHDGDFRIESDYTAKGRVLVLPINGAGKNVLFKFDNLKGLDMKFNKIKKG  
ADTYNVNKCDDIMLDTSRHLDFKRSSVNEGLGQNLNTVNLNENWKEILTDLKPASKAFGAFFDLANRVFSKVPDKVM  
PA

>RproTo8

MIFLMILFGLTHCVFGGGKEVPPGVVLCRKHHPKINDCVRNAIQETMPKFISGIKSLDIPSLDPFHVDNLIIDSKRDDGSPVSI  
DLSWHNVNIKGIKSAKITSADWDNNMVSFEAALEPVDITGNYNIDGIIILPIKGTGTFDLKLEGFRAHIKVVHGKEEMRD  
GDYMMVDRLAFTFDIDHMEVHYNLFNGDPVLGEMNSFLNDNWRDIAEMTPSVEASFSKYFEQVARKVFDHIPIDKI  
ALP

>RproTo9

MARQLLTIASVVYILSTPVQGGQPELCSLSAKNLPQCLITAIQNVIPILVKGIPRYGVYPMDPMHIDTLDLSNSPGKTLNVKH  
KFTNVDLQGLSSAVIRHVRLNPKTVEIDVNAILS KPVVLTGNVYSQGKILTPIRGGGKFNITLINMRAVLKMRGHQTTKNGK  
VHVMMDSVKFPFKIDKMELLFENLLRGNRLSDTLNSVLNENWESVLEDMKPSFEEAIGSAFKEFANRIFNRIPQNYKCK

>RproTo10

MESKVLFLVFIGVVCWTAPARSMNKLPVFLKCKLDKNFDNMMKNGNLAIPTLAKGDAKWKIPVLDPLKVPVSISSESS  
AKSIALNITLNDLEIYGLKESKLVASRFDVNRKHVVVWIAVPRLTLLSKYKIVAGRFLVLPITGSGPATVMLESPMLTYKFDYKLV  
KRNNEDYLQVTKSDLKHTTTRLRINFENLNGDKALGASTNKLINENWEEFNQQLAPSVVQSIGAILTQVLSNIVKTVPYENI  
FTK

>RproTo11

MYCTLVFLLSLVGLSLAVKLPAYVKTCRNDPKLSECALRHGREMIPKIIPGDPSIRLPRLEPLLLERVEIHPSGNGGSINMRLV  
CYKCQVAGLSRASLNDIKLDLNLKHHIDIRLSIPRLMVTGKYDVSGLVLPITGKISNITLTDLDVNAGLDWKLKRRKREHS  
QFIRHKVFTASGLKINLSNLFNGDKLLSDNMNMILNANWREVLQDLKPSISDTVGQIIRITLNQIFDIIPYSQFFPDS

>RproTo12

MKTVSLNCLMRVSLLLTALPFTSQLKLPYSYIKTCRQNDPKLNECVVKNRGLAIPKFINGDTKYRVPRLDPLDINELKVHQGSR  
QLGLTMSLRDCKVTGLKHAQFIAARTDLKRRHIEWDFYHPFITIAGKYEMSGQVLVLPVIRGRGTANITLNMKTMFKFDFDL  
VKKEDGEEYMKVTKTDIDTDIGNAIFRFNNLFGNDRLLGESMNRFLNENWKEVVKELGAPVVDSSISQVFEILSRITELVPYH  
LVYTPV

>RproTo13

MVQPRSMATAAQISMAILLTIVALSAAKLPYSYIIPCKKDDPKLNECAVRHGQLAIPKFINGDPKYRAPRLDPLDITELRVNQGT  
RQIGLRMILKNVKIYGLKNTVFTHARTGLRDKHIEWDFKIPKIEIISDYEVNGQVLILPITGKGKANVTLTCLDITYKYDWELIKK  
NGKEYMNFTSSELLFENGRTFFDLKLNLFNGDEFLGNNMNRFLNENWREVTKELGPAVGEAFSNVFRLLLTRIAAQVPYNDI  
YLQE

>RproTo14

MLCSPLAFSAVVLVFCVCSANPAKKDPPVYQLPSYIKRACSRNDPNINKCVVEVGGPAIKTVAKGDPKYRIPQLDPLHIKELRV  
QQGKQVGLIELICSDCLMWGLQNTVFKSADVNWEDRKRWEFTLDMKVTGKYNVTGQVLLLPIVSGDALINLENLKF  
SYLYDWTYQKKNNGYTYVILGNSSFPFEVGHMSIKLENLFGNDPLLGGNMNRFLNEHWQDIMKDLGPAFSRSLAELTTGIL  
TNMARVVPFDIMFPDT

>RproTo15

MFLAVLCTWMMVVAPEILAKDLPVYPLPPYVKRACARNDPNLNKCVEVGSVALKTVIKGPKYRVPVLPNPMVIEELIVKQ  
GTKQVGLTLVCKDCKLWGLENTKIVKADMNFNTNHHKMDFTLSKMRVVGKYNVSGQILLPISGAGDAEFKFNLFKFSIY  
DTAYEKKSNGRTYLKVVNGSFPMDAGNLVIRLDNLFNGDKLLGGNMNRFLNENWKEILKDVQPALSESSELSERILNINISA  
LIPMDILFPKK

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Nuclear receptors

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>Estrogen\_related\_receptor

MSHGDGEMGAVPVIKKEVELSGFHAPSSPSSTVYSPTITIPPSDLKFCETSGFSSEIQCSGSPDHQYCSSTTHLSNPVVQQ  
MGEEMKEEEDMPRRLCLVCGDIASGFHYGVASCEACKAFFKRTIQGNIEYTCPGANDCEINKRRRACQACRFQKCLNKG  
MLKEGVRLDRVRGGRQKYRRNTEVSYSSTHPNPKLLEDNKLLEILIGCEPEVLSILSEEDSCRAQGVSTLKILSDLYDKELVNII  
GWAKQIPGFTELSLPNQMRLLQSTWTEILTLSLAFRSLPPTGKLNFAVDFILDEMLARECGAIEIYHLCLTVMDKLRSLICKE  
EYILLKALVLANSDARVDEASALKHLRDSIVSSLMDCVAVIRGDRSETATVLLCLPVLQRADHVLRTFWTGLLARGAVSINKLF  
IEMLEPTLR

>Hepatocyte\_NF4a-NTE/CTE

QLCSICGDRATGKHYGAYSCDGCKGFFRRSVRKNHVYNCRFNHCLVNKDKRNQCRYCRLRCKFKAGMKKETVQNERDRI  
SGTRASFEHQIVNGLSVGSLNADVLTRHQTSGTVELGFDYNLSSKQVATINDVCDMSKQQLLYLVEWAKYIPAFCDLHLD  
DQVALLKAHAGEHLLGVARRSLHLRDVLLGNCCIIPRYCGETAIPDLDISKVGTRVMDLVLVPLNEVQIDDTEFACLKAIV  
FFDPNAKGLSNRLKIKYLRHQIQINLEDYISDRQYESRGRFGELLLTPALQSITWQMIEQIQFAKLFVAKIDNLLQEMLLGG  
TTIENTNGQGTSLCNYQSSGGSPDSQNAISPVGSPEVCNPGTVVLRDIEVSMGTQEYMAFKQEPGI

> Hepatocyte\_NF4b

MLKYRGKECRDIEPIKYTDNRELVSVEYECRIGDRATGKHYGAYSCDGCKGFFRRSIRKNHIYSCRFWNHRRRIAEIMETH  
GVLYDYDISSMQIATINDVCDMSKQQLVLMVQWAKCIPAFGELHLLDQINRVFLFAESVGISPAPDISRVGTRIMDELVT  
PLNEVQIDDTEFACLKAIIFFDPNARGLRDPLKIKCFRQEIHINLQNYINERQYDSKGRFGDLLLTIPALQSITWQMIEQIQFAK  
LFGVAKIDCLLQEMLLGGTLDNVSAQSSPTDSFQSEIDDKKNISQCILEHDDKLRCTENDHFKEESSVYFYSSE

>Hormone\_receptor\_like78

MEKGGSESNGIMTTTAEKIHISICLGVVEICVCGDRASGRHYGAISCEGCKGFFKRSIRKRLGYQCRGNQTCEVTKHHRNRC  
QYCRLOKCLTMGMRSDSVQHERKPISVKKEYPTATNHYSLSLTHNNSVKLFMKREIGVDAYTVPPATIGQTNFGMYNPLSY  
NIYSDNYNFKQESQNHHLTSCFDDTNFDESSDSVIDTLCTTQDSKSMINSIAIEIATKLGLNGNPCRSDDSEENVQVDGRL  
VEDNTVQFEIQSPTMPAYSVDVHYIYESARLLFLSVHWVRNVPAFQLFSSEAQISLVRGCSWSELFALGLSQAHTLSLPTIIL  
SICNHLQNSVAQQKISPAKVIVTDHICSLQDYVNSMVALSVDHEYAYLKLITLFSPDNPGVHARRQATELQEALQELRE  
QIGENNYDRFAKLLRLPLRLSLNRHIEIQIFFPGLGDQCDIDNIIPFILKMDNCFIADQGSIQNRNMDMIYIKSENRPPEANI

>Hormone\_receptor\_like3

MDAASAALEKLFGGGGGGDTGRESGRNSKTENWPIKGEDVSSTPPPASPTNQEQSQPQTTSIRAQIEIIPCKVCGDKSS  
GVHYGVITCEGCKGFFRRSQSSVVNYQCPRSKTCVLDVRVNRNRCQYCRLOKCLRLGMSRDAVKFGRMSKKQREKVEDEV  
RYHRAQLRAQVEQTPDSSVFDHSQTPSSDQLHYTYGTYGNEVGSYTYNYSGQVTAATMQYDISADFDVSTTTAYDPRP  
SIDHVSDNSLMGNVNTGGGGGGASGKVVESGGQSQRILAIEPLAGDGVVNTFVVDSTTSRQTSQDQSSKDESEN

HTYTTSHIDPAQISELLSKTIADAHARTCLYTTEHIHNMFRKTQDISKLIFYKNMAHEELWLECAQKLTTVIQQIIEFAKMVPG  
FMKLSQDDQIVLLKAGSFELAILRMSRYIDLSSGCVLYGDTMLPQDAFYTTDTSEVKLVTLAFEVSRGVAELKLTETELALYSA  
CVLLSSDRAGLKGLAEIGRLGQAVLRALRIELDRNHALPIKGDVTVYDALLAKIPTLRELSMLHMETLGKFKRSTPHLDFPALH  
KELFSVDS

>Hormone\_receptor\_like39

MEPGGGAAALSSLKWPESRGVVTSGQVTVTTINIHHSPHDKEDKYPPHYNGGPPSSKCSVLVSGEQMHVDEDESSAADAE  
VSNFTSEPVNLRNKKREECRNSVERPMSWEGELSDSEVTAIKPEPEETAVERNAESSVDNKTANKVGSHEDEKPKQSLKISEG  
DKSVENVRTNQFNQSELPLLMKLLSSSSGGGNGVVKGPPTSSPDSAVYSCYSPAASPVTSRHILSSSSGISSPFTPSLSR  
NNSDASQYGGSQHSSCYSHSYSSVSVSPTQFSPTHSPHQGRHMHRPFGFSPVLNARGVPEYPMQEEGNTLEDKFSSTLAD  
MVQHSTGLASPGISRQQLINSPICGDKISGFHYGIFSCESCCKGFFKRTVQNRKKNYVCLRGSSCPVTIATRKKCPACRFDKCL  
NMGMKLEAIREDRTRGGRSTYQCSYTVPAGLVEQKCAELTVQPRLEQQPATNLVPLLQEIMEVEHLWQYNEADPKLVG  
RIPKPPSGNPTDLMANLCNIADHRLYKIVKWCKSLPLFKNISIDDQTSLLINAWCELLFSCCFRSMSSPGEIRVSLGKICISL  
AKNLGLGPIERMLNFTDHLRRLRVDREYVAMKIVILLSSDTSSELREPEKVRASQEKALQALQHYTLAHPDIPSKFGELLR  
IPDLQRTCQVKGEMLSIKSKEGEGPSFNLLMELLRGDH

>Ftz\_TF1

MLEMEQQALSSLSMSHFNLSPGGGGGNDHTGGGGGGGGGSPNCPQQLYAGSPPLYPIQSSLSAGHSPSMAYNLDA  
CFSSPGAGGGGGGGGGGGGGGGGGGMEAVAAASSFQQQLAQVPPSDMPDTKEGIEELCPVCGDKVSGYHYGLLTCESCK  
GFFKRTVQNKVYTCVAERSCHIDKTQRKRCPCFRFQKCLEVGMKLEAVRADRMRGGRNFKGPMYKRDRARKLQIMRQR  
QMAVQTLRNSGYSAVATTAGLGDSVALYQGNFMHIKQEIQIPQVSSLTSSPSSPITTVGLGQGNICVLPPTVANPT  
SQAGGPAALQLAGQEQRVGGGATPQATHPQVFSNDKLWTAASPPPTKNFQYEGSSQSGGTTPTTGGTKVSPMIRDFVQ  
AIDDPQWQNSLYLLQNTYNQCEVDLFELMCKVLDQNLFSQVDWARNSIFFKDLKVDQMKLLQHSWSDMLVLDHM  
HQRMHNSLPDETTLPNGQKFDLLSLGLLGVPALSEHFTEISGKLTDLKFDPSDYICIKFLLLNPVDRGLMNRKHVQEGHEQ  
VQKALHDYCLTSYPQIQDKFNKLLILPEIHLASRGEEHYMKHCSGGAPTQTLLEMLHAKRK

>Hormone\_receptor\_like38-NTE

MDPLGFGFFKRTVQKGSKYVCLAEKSCPVDKRRRNRCQFCRFQKCLSMVKEVVRTDSLKGRGRRLPSKPKSPQESPPSP  
VSLITALVRAHVDTSPLSNLDYSQYREPNEEEIPMSETEKTQQFYNNLTSSVDVIRHFAEKIPGFSELCREDDLLFQSASLEL  
FVLRRLAYRTRVMDMKTFCNGVVLRAQCQRSLGDWLHAILEFCQSLHAMDVDISSFACLCALTLITERHGLREPHKVEQL  
QMIIIGSLRDHMTYNAEAQRKSHYFSRLLGKLPRLSLSV

>Ecdysone\_induced\_protein\_75B-IsoformA-NTE

QFIFIVFTEFDGTTVLCRVCQKASGFHYGVHSCGCKGFFRRSIQKQIQRYPCTKNQCCSILRINRNRCCYCRLLKCKIAVGM  
SRDAVRFGRVPKREKARILAAMQQSTNSKCEKALAAELEDQRLRLRTVIRAHLDTCYTREKVEPMIIRAREQPSFTASPT  
LACPLNPNPQPLTGQQELLQDFSKRFSPAIRGVVEFAKRIPGFGLLSQDDQVTLKAGVFEVLLVRLACMFDTQNNSMICLN  
GQVLKRESIHSGSNARFLMDSMFDFAERLNNLRLTDPEIGLFSSIVVIAPDRPGLRNTELIERMQNKLKAGLQMMMSQNH  
NQPNAQELMCKIPDLRLNLTLSHSEKLLAFKMTQQHLAEQNHQMWNMVGEEHESKSPGGSTWSSSSDVAMEEVKS  
PLGSVSTESMCSGEVEYHTSSHAASAPLLAATLAGGCPVRHNRTINDDNKDIIHRTFRKLDSPSDGIESGTEKVDKLT  
SAPTSVCSPPRSSVEDKEEQHQIEDMPVLKRVLQAPPLYDTNSLMDEAYKPHKKFRALRKECGSEIEPDNTTSTSTLSSTH  
LAKSLMEGPRMTAEQMKRTDIIHNYIMRGEACAWSTGQQQHQQQQQQQPHQQPHQTVHQQSVITTSTPNRGA  
YVIVSNSTGGSTGASPVLYHHHHSNSPATSPCPSSTSLVELQVGTQPLNLSKKTPPPSPRPKALSLEA

>Ecdysone\_induced\_protein\_75B-IsoformB

MMTEELPILKGILNGVVNYHNAPVRFGRVPKREKARILAAMQQSTNSKCEKALAAELEDQRLRLRTVIRAHLDTCYTRE  
KVEPMIIRAREQPSFTASPTLACPLNPNPQPLTGQQELLQDFSKRFSPAIRGVVEFAKRIPGFGLLSQDDQVTLKAGVFEV  
LLVRLACMFDTQNNSMICLNQVLKRESIHSGSNARFLMDSMFDFAERLNNLRLTDPEIGLFSSIVVIAPDRPGLRNTELIER  
MQNKLKAGLQMMMSQNHNPQNAQELMCKIPDLRLNLTLSHSEKLLAFKMTQQHLAEQNHQMWNMVGEEHESKS  
PGGSTWSSSSDVAMEEVKSPLGSVSTESMCSGEVEYHTSSHAASAPLLAATLAGGCPVRHNRTINDDNKDIIHRTFRK  
LDSPSDGIESGTEKVDKLTSSAPTSVCSPPRSSVEDKEEQHQIEDMPVLKRVLQAPPLYDTNSLMDEAYKPHKKFRALRKEC  
GSEIEPDNTTSTSTLSSTHSTLAKSLMEGPRMTAEQMKRTDIIHNYIMRGEACAWSTGQQQHQQQQQQQPHQQQP  
HQTVHQQSVITTSTPNRGA  
YVIVSNSTGGSTGASPVLYHHHHSNSPATSPCPSSTSLVELQVGTQPLNLSKKTPPPSPRPKALSLEA

>Knirps-like1

MNQLCRVCGEPAAGFHGAFTCEGCKSFFGRTYNNLSSISECKNNGECVINKKNRTSCKACRLRKCLLVGMSKSGSRYGRR  
SNWFKIHCLLQEQGNQTTQQLKWEEDNNNVKGSPSKEPATHAHSPLWRLPPGLHPGAPLPLFGFPPPLHPFYLARPPAP  
PPVPVPTLPPTLHPAPPVLLHHHHHHQPPSLPPQPPPPPLPPAPTNTTTAAPPQTSIATQSPLELLRNLGPVQDSP  
MDLSVKVQQQQKGGGIGSASSCSGAPAGSNMAKLDDAQESEDDEDNQNENDDDLSEELHHFQQHEDKKTPLDLT  
CVKT\*

>Knirps-like2

MNQQCKVCGEPAAGFHFGAFTCEGCKSFFGRSYNNLSSISECKNNGECVINKKNRTSCKACRLRKCLLVGMSKSGSRYGRR  
SNWFKIHCLLQEQKQKNEESRLGSQIATLNRNKDELLLLGLDDYKTVSSPSISPHGSDSDDKYNVHRHAATMAAAAAAAA  
AAQLQHQQQHHHHHHHHHHQHQQNHHQQQQQQHSTPPLYNLLPPLLPHHYPLPYHPAFLPPSPSPNAFHHLPHHL  
NLGLSSLHDSPLDLSTKSQADTASSASCEDEDEEQEISVDCLPDQPPITRPLDLTTKVV

>Ecdysone receptor

MMGEEKRADEDWLGSGGGGGVSPRPYNAQQPNGGGYPSPTMSSNSYDPYSPNSKIGREDLSPNSLNGYSVDSCDGS  
KKKKGTSARQQEELCLVCGDRASGYHYNALTCEGCKGFFRRSITKNAVYQCKYGNCEIDMYMRRKQCERLKKCLNVGM  
RPECVPEYQCAVKRKEKLLQKDKDPVSTTNGSPEAIKSESEPIRVFSFSSLSLLKESQTLPPREGEMASKVPVNGVKPVSP  
EQEELIHRVYFQNEYEHPSEEEVRKINAGNDDEEQSDLRFRHTEITILTQVLIVEFAKRLPGFDKLLREDQIALLKACSSEVM  
MLRMARRYDAQSDSILFANNQPYTRDSYSMAGMGDVVEDLLRFRQMFNMKVDNAEYALLTAIVIFSERPSLIEGWKVE  
KIQEIYLEALKSYVDNRPKPRPPTIFAKLLSVLTELRTLGNQNSEMCISFKLQNKLLPFLAEIWDVNA

>Hormone\_receptor\_like4-CTE

MFHQLYPFVYLTPTSCTAYLFTGESVAETSTSSPDLGGPGSPCKMDQPSITPPPSSIIRGVSPDCGGRKSGEVRVKEELVFDG  
GGPSGGSGGGGGRSNTSSAVVSGSSSSGSSNYWPPGPLSPVVRINGVRPELIGGAEMRPPPCATVPRAAPTVMGEA  
GGVRTMVWSQPPPEEQPTTSNWPPPNQEETAQQLLTLGQESSGGCGSAGSGSSASSASSAPAGPSGNSGRALNMR  
LWAGDLSQLPGAQQITALNLSWAKPLGQHLLDPSAKSSLPASTDEQEDDDQPMICMICEDKATGLHYGIITCEGCKGFFKR  
TVQNRVYTCVADGVCEITKAQRNRCQYCRFKKCIQGMVLQAVREDRMPGGRNSGAVYNYLYKVKYKHKHSVRNGQLK  
GLAGEKGPAPISPEHGIPPHLVNGTILKALTNPSEVVHLRQLDNAVSSSRDRTLSIDATLAMIQTLDCEFDIATLRNLE  
DLLEHKSDDLKMLQIGDSIVYKLVQWTKRPLPFYLELPVEVRIPFSFKLTCLDFFNL

>NR2E6\_like-INT

MRQSTLNTPEQTLQNDHLTNKETACRVCGDKASGKHYGVSPCDGCRGFFKRSIRRDLYVCKEKGSCVVDVTRRNQC  
QACRFSKCLQVNMKKDAVQHERAPRSSNHQSQQLNQSQSYSPASVPVIYPSAAFLQPLHRPYLPAATVGLNYIPNVYLR  
MDQHVVNNISHSLQTSQAQPPCSENEVSSSQEPTFNSDLKPSALTTLSGLSENVHDSAIIKLLALTVSCVRAIPSYQLTC  
QDRITLLEDKWLDFLLTVAQWSLPIEGRVIDECPVDDPDNQLSCDAHRVSTALTRLAQLRADHTEFACLKALLLFPDMV  
ENSRHEVEMLQEQTHMLREYSGPRFSKLVALLTISRVSLSVLALFFRQKSYVNLLETLLASPCLDNRNTT

>Ultraspiracle

MYLQTNSTKMIKKDKPMMMSVAIIQSHWGRGLSLVENNLSLVGPQSPIDMKPDTATLHCSSFSPPTSGPTSPQGFNIVPS  
SVLGNNGKSSGNVPPNHPLSGSKHLCSICGDRASGKHYGVYSCGCKGFFKRTVRKDLSYACREDKQCLVDKQRNRCQY  
CRYQKCLSMGMKREAVQEERQRTKERDQNEVESTSSFHTDMPVERILEAEQRVDCKLEMKEEFNLGPMSDIICQATYNQL  
WQLIDWAKHIPHFTSLPIEDQVTLLSAGWNELLIAGFSHRISLAKEGLVLGPGVIVNRNNAHQIGVGPYDRVLTSLVSKMRE  
MKMDKTELGLRITILFNPEVRRLLKSVQEVLLREKVYASLEEYTRISHPNPGRFAKLLLRPLSLRSIGLKCLEHLFFCRVVG  
PVDTFLAQLLESPEVSNRI

>Ecdysone\_induced\_protein\_78C-NTE

GFFRRSIQKQIEYRCLRDGKCLVIRLNRNRCQYCRFKKCLAVGMSRDSVRYGRVPKRSRERSGSEERVSTSDNSSAATPPDP  
ETALSPVYDLIVSVQAHIANSDYSEENTRTLVRKPLPSPSPVCAGPEVASSTAESLEQQRIWLWQQFATHVTPSVQRVVE  
FAKRVPGFCELSQDDQLILIKVGFELWLSHASRLTDTTLTFSGDGTFVTRQQMELMYSIEFVQSMFEFTAGFNSLLLDME  
LGLFSAVLLSPDRPGVTDVKAQEQQHQLRLEALQVSCNLCGSDSPVLAKLPELRRVVGAKHALILDWFRNLNWDKLRPLPL  
FAEIFDIPKCEEDLQ

>Hormone\_receptor\_like51-NTE

QSGGKLGKGLSVCVCGDTSSGKHYGILACNGCSGFFKRSVRRKLIYRCQAGTGRCVVDKAHRNQCQACRLKCLNMGM  
NKDAVQNERQPRNTATIRPEALVDMMDHERALREAAVAVGVFGDPSLIKMPVRVKGKIQVVPDRVPMPGSRNLLARTNIS  
NKVIVLCMYSKHKRYLYMGAIFRGNDSPKYSALALRRSPEKNEEQANQESLQSNQYSSPRQESSKDEDEDTGQNYLVFPE  
CSLNLILKWFTEDSIDVTNEEPSSDSRIAGGPLIPPDHPIYPPGQETVYETSARLLFMAVKWAKNLPFASLPFRDQVILLES  
WSEFLNNAVQWCLPLEGSPLFSVADHLAVTQPNGKGCQVASEVRTLSDTLHRFRAVGVDPAEFACLKAIVLFRAETRGLK  
DPSQVENLQDQAQVMLCQHTRGRQPGLGPRFRLLMLPLLRAVPTHRVEAIFQRTIGSTPMEKVLCDMYKN

>Tailless-NTE

TGRILYDIPCKVCQDHSSGKHYGIFACDGCAGFFKRSIRNRQYVCKAKGDGTCLVDKTHRNQCRACRLKCLEAGMNRD  
AVQHERGPRNSTLRRQILMMKEEPPSSASPTDLTMPNLSASPQRYFYPPPSIVVPSIMAPAGPEVRFPHSPLPSSCSLPLPLR  
LINALSEPESICETAARLLFMNVRWARHVPAFTLNMKDQVTLLEESWRELFLLGWAQLLPTDLTQLIALRSTSVDAQPSSL  
IRQAALFQECLAKRSLTLDHHEFACLRALLFKTGNYKPVSLLEGKSLVDVAGVAALQDQTSFALSKYISTSYPDQPYRLGK  
LLLALPELRSVSPRTIEEMFFRRTIGPVTIERIICDMYKS

>Dissatisfaction-NTE

LFQETTARLLFMAVRWVRCLAPFQTLKRDQLLLLQDSWKELFLVHLAQWSIPWDLSPVLGGPKARERLSQEDPLVPLEIHT  
IQDILARFRQLSPDGSECGCIKAVILFTPETPGLVDVQPVEMLQDQAQCILGDYVRGKYARQPTRFGRFLLMIPGLRSVRQA  
TVERLFFRETIGDIPIQRLLGDMYLMKTYT

>Seven\_up

MDENPKPVRNACYKHAYRNSVQRGRVPPTQPPSLPGQYALTNGDAMTAAAAAAAAAAGFNGHSYLSSYISLLLRAEPYPT  
SRYGQCMQPNNIMGIDNMCELAARLLFSAVEWARNIPFFDLQVTDQVALLRLVWSELVFNASQCSMPLHVAPLAAA  
GLHASPMAADRVAFMDFIRIFQEQVEKALKALHVDSA EYSCLKAIVLFTTDKQIATVVSHRSREHVKL

>Hormone\_receptor\_like96

MDAVPSDIFKCSDNKTCAVCGDVALGYNFNAVTCESCKAFFRRNALKDKELRCPFKESCQITSITRRFCQRCRLAKCYVVG  
KRELIMTEADKERKRRKIEANKAKLGCFNSTTKKVNSTGNNTTVNEGTTQTTVDTVDCGIQTEPLSQNSDCACIMSCFLQP  
NVYLTPAVSPSFGNLNLSPTSPWLLGKIDGCIPLNSAHRLLLEDLVIANKALDAPVDQEISNLLGEEFKSCGSKNLLDVINLTAL  
AIRRLIKMCKRINAFRTLQEDQLSLLKQGCTQMMILRSVATFDADRNSWKIPHTEDRMSQIKVEVLKEARGNIYETHEAFL  
RSFDTRASRDTAVICLLIAIALFDPTRNHLEDKVIIAQHQGTYELL