**Supplementary File 3 Amino acid sequences of neuropeptide G Protein-Coupled Receptors (GPCRs) and related receptors from multiple arthropod species**

> neuropeptide GPCR A1 Nilaparvata lugens BAO01050.1

MELPFEEGFTLGMSPLNGSLDNETLLGNTTFCKTIDQTTLLLFTQVLYAIVCIVGLFGNSLVIYVVLRFSKMQTVTNMYIVNLAVADECFLIGIPFLIATMSLQLWPFGKIMCKFYMTTTSINQFTSSIFLTIMSADRYVAVCHPISAPKMRTPFISKVVSATAWTASALLMIPIFMYASLMNDGQVNMSCNILWPESENLSGQTAFTLYSFVLGFALPLLLIFCFYVMVIRKLKTVGPKNKSKEKKKSHRKVTKLVLTVITVYVCCWLPYWITQMSLIFTEPNKCQSRFVVTVFLLTGILCYSNSAMNPILYAFLSDNFKKSFLKACTCAAGKDVSRIKLQINTIINLLKYYIFWYSEVHVIQ

>neuropeptide GPCR A1 Bombyx mori NP\_001127736.1

MEIEEIELYRQMNYSYDFNGTFNGTMGTCPIVNLPYVSIVTQVLYALVCIVGLLGNTLVIYVVLRYSKMQTVTNMYIVNLAIADECFLIGIPFLITTMSLNKWPFGDYMCKTYMISTGINQFTSSIFLCIMSADRYIAVC

HPIAAPRLRTPCVSRIVSAAAWTASAAIMTPIFMYAKLVRIGNKLSCNIVWPEQDFSQGQITFTLYSFALGFAAPLTLIFIFYCLVIRKLKTVGPKNKSKEKKRSHRKVTKLVLTVIAVYVLCWLPYWAFQMALIYSPPS

QCVNHITITVFLVAACFSYSNSAMNPILYAFLSDNFKKSFLKACTCAAGKDVNATLHVENSVIPRRRARAQARAAEARGGFAAAVGGSRSEASTAMTSRSMAASEVLPLEARPPTLTPLIAHNGLSHSRL

>neuropeptide GPCR Tribolium castaneum 52 NP\_001280528.1

MFRTRDSTSAMIIFSDSNDDMGIVFTLEGLTQAGIIFIMAIAIIVTNILIIATFLNFRGPSEVINCYLLS

LAVADLLCGLLVVPLSVYPAVVREWVYGDIVCRLVGYLEVTLWAVTVYTFMWISVDRYLAVRKPLRYETL

QTKTRCQCWMAFTWISAAMLCCPPLLGFNQPVFDKDAYICMLDWGSMAAYSVTLSILVLGPSLITIVYTY

TYIFNMLRKLRSGYAFHDKEYATALSENLSNPSHLMSFSLVVAFWVSWTPYIGVKLYEYFTGVKLQVQFL

HFGIVWLGFLNSFWKSMILITMSPQFRLALRIFCMTICCRYKGRMQAELIGMEADD

>allatostatin C R1 Drosophila melanogaster NP\_649040.2

MFTWLMMDVLQFVKGEMTADSEANATNWYNTNESLYTTELNHRWISGSSTIQPEESLYGTDLPTYQHCIA

TRNSFADLFTVVLYGFVCIIGLFGNTLVIYVVLRFSKMQTVTNIYILNLAVADECFLIGIPFLLYTMRIC

SWRFGEFMCKAYMVSTSITSFTSSIFLLIMSADRYIAVCHPISSPRYRTLHIAKVVSAIAWSTSAVLMLP

VILYASTVEQEDGINYSCNIMWPDAYKKHSGTTFILYTFFLGFATPLCFILSFYYLVIRKLRSVGPKPGT

KSKEKRRAHRKVTRLVLTVISVYILCWLPHWISQVALIHSNPAQRDLSRLEILIFLLLGALVYSNSAVNP

ILYAFLSENFRKSFFKAFTCMNKQDINAQLQLEPSVFTKQGSKKRGGSKRLLTSNPQIPPLLPLNAGNNN

SSTTTSSTTTAEKTGTTGTQKSCNSNGKVTAPPENLIICLSEQQEAFCTTARRGSGAVQQTDL

>allatostatin C R2 Drosophila melanogaster NP\_001027135.2

MEGGWWRGGGGGGRLGGKAIMEGHSTPNGAAASHRNNSTRTNIATNGCAHSGILLFVLTAMTLTSLITPT

EQLAVAPNGTTLHQLESVESESYPSINGTQNETMVTSVRPHLDHRNRPTQQNGSHYLEYDDDGPDCSYSY

NFILKLITMILYALVCIIGLFGNTLVIYVVMRFSKMQTVTNIYILNLAIADECFLIGIPFLLYTMQVGNW

PFGNYMCKAYMVSTSITSFTSSIFLLIMSADRYIAVCHPISSPRYRTPFVSKLVSAFAWMTSVLLMLPVI

LFASTVQSSNGNVSCNIEWPDTQNSHTDSTFILYSLVLGFATPLTFILVFYCLVIRKLHTVGPKHKSKEK

KRSHRKVTKLVLTVISAYIFCWLPHWISQVALISSAPQRCASRLELAVFLACGCLSYSNSAMNPILYAFL

SDNFKKSFMKACTCAARKDVNAQLQLENSFFPKFGKGRQSERLLGGNGKGGAQRGALTKKKCLATRNNNA

PMATTTTTTTTTTGTDAVTCLQPPVHQVPAEIQVGNPATVLVVNAETNNCKPPVLHTDL

>neuropeptide allatostatin CR Tetranychus urticae XP\_015794199.1

MDTSKLLNDSIYIPPDGFNNIGLIPSSSNISAFIEFQGFGKNDTSYADRLDLMKKLEEIKVNRVIDQDAL

IWLMLSYILLIAVGSIGNGLVCIAVIRKPSMRTPRNLFIINLAISDLTLCLITMPFSFIEIAAKFWSLGL

FTCKLIAGLEATSIFVSTMSITAIALDRYFVIIKPTPETPKITGILYGLLSIWIIALILSIPLFWSRTTY

RIEVPEILSSADHSKETLEYCYEEWPVNRGRAIYSVFTIVLQYFVPTILVTLIYMKIYKRLKNRMSQKRT

AIKLDERIKAEERRTKRTNYLLISVSLIFGISWLPLNILNIISDVYYPFQDTSTFRIVFACCHMVGMSSA

CFNPLLYGWLNDNFQKEFKEIFALITGKLSSCCSVKGSIISGRTSISLEGRIETTVVYGESHDKESNHLQ

HMHHKSSDTDHNTGNCNTNSDTSNGNGSAAKKSLVVKQV

> AstA-R1 transcriptome GPCR A2 [Nilaparvata lugens] BAO01051.1

MAVPPNVMGVGIPVFMYNNCLNLTNLSEVAFCQNASSISTPEDNGDPDSFTVMEKIVSIAVPILFGIIVLLGLFGNLLVVIVVAANQQMRSTTNLLIINLAVADLLFIVFCVPFTATDYILPFWPFGDFWCKTVQYLICVTAYASVYTLVLMSLDRFLAVVHPIASMSVRTERNAITAIVVVWVVIVVGCVPVFLSHGVASYVYSSNVQSACVYLQYDPVNRPDGHNKPLFQITFFTTSYVVPLALICGLYLCMIMRLWRGVAPGGHCSAESRRGKKRVTRMVVVVVAIFAICWCPIQVILVLKSVDRYEITNTSVMVQIVSHVLAYMNSCVNPILYAFLSENFRKAFRKVIYCGPDRAHMTGQINGPEKSALTKTTRTNDIL

> allatostatin-A receptor [Bombyx mori] NP\_001037035.1

MESTEDEFYTICLNLTAEDPSFGNCNYTTDFENGELLEKVVSRVVPIFFGFIGIVGLVGNALVVLVVAANPGMRSTTNLLIINLAVADLLFVIFCVPFTATDYVMPRWPFGDWWCKVVQYFIVVTAHASVYTLVLMSLDRFMAVVHPIASMSIRTEKNALLAIACIWVVILTTAIPVGICHGEREYSYFNRNHSSCVFLEERGYSKLGFQMSFFLSSYVIPLALISVLYMCMLTRLWKSAPGGRVSAESRRGRKKVTRMVVVVVVVFAVCWCPIQIILLV

KALNKYHITYFTVTAQIVSHVLAYMNSCVNPVLYAFLSENFRVAFRKVMYCPPPYNDGFSGRPQATKTTRTGNGNSCHDIV

> allatostatin-A receptor1 [Drosophila melanogaster] NP\_524700.1

MAGHQSLALLLATLISSWPKASWGATGNGSIISVSNSSGNNYAFTSEHTDHSDHNANDSMEYDAESVALERIVSTIVPVFFGIIGFAGLLGNGLVILVVVANQQMRSTTNLLIINLAVSDILFVIFCVPFTATDYVLPEW

PFGNVWCKFVQYMIVVTCHCSVYTLVLMSFDRFLAVVHPVTSMSLRTERNATLAIMCAWITIVTTAIPVALSHSVRIYQYHGNAGTACVFSTEEEIWSLVGFQVSFFLSSYVAPLTLICFLYMGMLARLWKSAPGCKPSA

ESRKGKRRVTRMVVVVVLAFAICWLPIHVILVLKALNLYGGSHLSVIIQIISHVVAYTNSCINPILYAFLSDNFRKAFRKVVWCGSPPPLMTNQQVTKTTRTATGNGTSNIEML

> allatostatin-A receptor2 [Drosophila melanogaster] NP\_524544.1

MENTTMLANISLNATRNEENITSFFTDEEWLAINGTLPWIVGFFFGVIAITGFFGNLLVILVVVFNNNMRSTTNLMIVNLAAADLMFVILCIPFTATDYMVYYWPYGRFWCRSVQYLIVVTAFASIYTLVLMSIDRFLAV

VHPIRSRMMRTENITLIAIVTLWIVVLVVSVPVAFTHDVVVDYDAKKNITYGMCTFTTNDFLGPRTYQVTFFISSYLLPLMIISGLYMRMIMRLWRQGTGVRMSKESQRGRKRVTRLVVVVVIAFASLWLPVQLILLLKS

LDVIETNTLTKLVIQVTAQTLAYSSSCINPLLYAFLSENFRKAFYKAVNCSSRYQNYTSDLPPPRKTSCARTSTTGL

> allatostatin-A receptor [Tetranychus urticae] XP\_015789363.1

MDPPGINNIFSQLRTLYSPSPSSSHLPSSPLSDSSEEPLYLDHLSVDPSLNSTGTSFCGSLISSLDPNVS

QIYADECSFANVEEVVRILVPLVFSIIVVIGLLGNSLVVIVVLWDDQMRSTTNVLIFNLAVADLLFIIFCVPFTATDYALKYWPFGDIWCRIVQYLIYVSAFASIYTLVLMSLDRFLAVVHPIASLSIRTEVNAYRAITI

LWIAIIFLCLPILIVHQVHVDLDSETSHLCHINPAENKFFAPSVFLSSYAIPLTLAFVLYVYMLKRLWHNDIRTGRSVRNKRKVTRMVVVVVVIFAICWGPIHIVLTLRSQGMFEPDSKFKLVTLIVSQILAYINSCINP

ILYAFLSENFRKAFRKVISCRPSGSRRRHDRPGSAKEETNRMDELTTATCQTTKRTELTNGCV

> MIPR/AstBR BAO01060.1 neuropeptide GPCR A10 [Nilaparvata lugens]

MYPTMSNYILIEYSNSSDGGAASLNFTTLLPPNITLDSNLTADQLIPDYLNVTRELPIQYAQPMYGYVMP

LLLLITIVANTLIVVVLSKRHMRTPTNAVLMAMALSDMFTLLFPAPWLFYMYTFGNHYKPLSPVGACYAWNVMNEVIPALFHTASIWLTLALAVQRYIYVCHAPVARTWCTMPRVLKCVAWISVLATLHQSTRFVDRVYEPLTIKWRDQEHVTVCQVRIAYWVEHWVSTNLYFTLYFCFRVIFVHAIPCVCLVALNVLLFRALRVAQLKRDKLFKENRKSECKRLRDSNCTTLMLIVVVTVFLATEIPLAVVTVLHIISSSITEILDYSVANVLVLFTNFFIIVSYPINFAIYCGMSRQFRETFKELFMRGAVTVARRNGGAGGSSRYSLVNGPRTTTNETVL

> sex peptide receptor [Tribolium castaneum] NP\_001106940.1

MGEMASNSTLIFPNQTYANETVPNVTSVEKVQYINITMEMPIAYAVPLYGYVMPFLLIITIIANTLIVVV

LSKRQMRTPTNVVLMAMALCDMFTVLIPAPWLIYMYSFGNHYKPLWPISLCYAWFVMHEVIPNMFHTASIWLTLALAVQRYIFVCHAPLARKLCTMSNVYKCLIYILVIAALHQGFRFFDSEYSTVDVLWNNHTTHVCKREHAHWVKEYVTEDFYFVTYFMFRVLFVHLIPCVALVILNILLFRALKQAQQRREQLLSKKNQKNECKKLRDSNCTTLMLIVVVTVFLIVEIPLVVVTLLHIISSTFIEFLDYYVANTLILFTNFFIILSYPINFAIYCGMSRQFRETFKELFIRGAVTTRNGSSRYSLVNGPRTCTNETVL

>sex peptide receptor [Bombyx mori] NP\_001108346.1

MAVTIDNSTNDFEFQKPFNYSINENITYFDYTNFTSDDFCASNNSHVYLNVTCEFAISYAEPMYGYIAPF

LLATTTVANTLIVVVLSRRHMRTPTNAVLMAMALCDMFTMLFPAPWLFYMYTFGNHYKPLSPVRACQAWNYMNEVIPAMFHTASIWLTLALAVQRYIYVCHAPVARTWCTMPRVMKCLIYIGIAAFLHQLPRFFDRCYTPHKTVWRGRVEEVCRIEMASWVKALSVDAYFISYFGFRVLFVHLIPCTSLVVLNVLLFRAMRTAQINRQKLFKENRKSECKRLRDSNCTTLMLIVVVTVFLLVEIPVAVVTILHIISSTIVEILDYHIANILVLVTNFFIIVSYPINFAIYCGMSRQFRETFKELFIRGTVTSRKNGGSSRYSLVNGPRTCTNETVL

>SPR [Drosophila melanogaster] NP\_001368972.1

MDNYTDVLYQYRLAPSASPEMEMELADPRQMVRGFHLPTNESQLEIPDYGNESLDYPNYQQMVGGPCRME

DNNISYWNLTCDSPLEYAMPLYGYCMPFLLIITIISNSLIVLVLSKKSMATPTNFVLMGMAICDMLTVIF

PAPGLWYMYTFGNHYKPLHPVSMCLAYSIFNEIMPAMCHTISVWLTLALAVQRYIYVCHAPMARTWCTMP

RVRRCTAYIALLAFLHQLPRFFDRTYMPLVIEWNGSPTEVCHLETSMWVHDYIGVDLYYTSYYLFRVLFV

HLLPCIILVTLNILLFAAMRQAQERRKLLFRENRKKECKKLRETNCTTLMLIVVVSVFLLAEIPIAVVTA

MHIVSSLIIEFLDYGLANICIMLTNFFLVFSYPINFGIYCGMSRQFRETFKEIFLGRLMAKKDSSTKYSI

VNGARTCTNTNETVLXXLVMLVPRRGSSDHRRSSTSTTTTTTTKTIGGSMIIGGEASAQHQHLVTHHLQT

HSQPSQQRRVSTMDIITEERIL

>SPR [Tetranychus urticae] XP\_015790938.1

MRVEPWVEFYFYGVLLTSMCLFGISANTVTLFILNAFNEMRRQPINVYLTVLAIYDNGVLINALLMLGIP

ALVTNSKHNPSDYLPSVFPSLDSSSPSSISPVNSLHPSSSSSPLSSSFSTSSSPLPVSPHLSSSLPNQLS

SVNLPSSESSELEKSQSTDGSTDSMRLTDNTFDYTSTDYLNRLQSLDPYSVNLTLMNKSHSWTPTELINL

NPSSIDPPLLFDLSLAHGYSNPEDLPPLVIPPISHSTPTNHHHHQHSLPPSPGYSTELPDDPLNYYVTFV

YPLALISQTGSIWTTCLITAERYFAVCHPFRIRTFSNRNRAIWAVVFLSLGAFLYNIPRFIEIEVITSPE

GIRSVRQTALRQNRLYYWLYYICLNLALLYIIPLSLLTALNTEIYKAVRRASRNRATLTNQEETELNIAS

MLVLLVSIFIACNAPAFVVNCMEFFNAPGYEMATIFSNLLVCLNSSINFVIYCIFGKKFRKKLSQVFHCS

KLAHQDRLANSYQARVNVTTTALNANLIVKNTVNDEQNNSNNVNLVNNISIATTNSMHAINETYV

>A16 transcriptome [Nilaparvata lugens] BAO01066.1

MMFVVVADFDSDLRFDFNNPFNDSYIYDAKGIDTWENIHYESMTKRTLIVEPPRLLESSSQQTGVAVQKPGSSDAKKMDNSAGVKDLVLLDTKDSEPTTNATNGTTAVGNSTLDDNCSNDYCISDQDYYDMIVQHILPSKSECLLIALHGVVFCVGLVGNALVCLAVYRNRSMRTVTNYFIVNLAVADFMVILFCLPPTVLWDVTQTWFMGTLVCKIVLYFQTVSVAVSVLTLTFISVDRWYAICFPLKFKSTTGRAKTAILIIWLLALVFDIPELLVLEAQKFGKFKEIDMDLIFFTQCQATWSEGTEGMYQMARILLLYTFPLMFMSIAYCQIVIVLWRSDNIPGHSETVLVHSGNGHGGKGRVANNSTECQLRSRRKAAKMLVAVVVMFAVCYFPVHLISILRMTMDIKQTEVTGGLAIVSHWLCYANSAVNPVIYNFMSGKFRKEFQRAFGNVFKRKPSQRTTRRGESTLGCRYTTMSAGTHTTPKTEIVQLNTTVVTINEIPEQSARATTPATAPATATATAPTTAPATAPRTAAVALNRAHRALCRQDISPRQGRIQRIGLEEKGCIFEMRNITEEQQDADLEEIVIDRG

>neuropeptide receptor A5 [Bombyx mori] NP\_001127740.1

MALRKESLAIITMLIICNYVLSSNFDSIPESIRVRKSVDNTTSRSSLKNLNETMKQSNNETEFGRLLDATEMTTEYDNFTEEPCVGDRAFCNLTREEYMEMLNDYVFPQPYEWVLIATHAIVFVIGLIGNALVCIAVYRNHSMRTVTNYFIVNLAVADFMVILICLPPTVLWDVTETWFFGTAMCRIVLYFQSVSVTVSVLTLTFISVDRWYAICFPLKFKSTTGRAKTAILIIWLLSLLFNIPEFVVLQVQTKMQLRFNVQYFMQCASTWSDESDLTWHIIKALFLYTFPLLLMTIAYCQIVRVLWRSDNIPGHTESHKLCSTQTGQSNWLAASRRTTPSIHTNASTEGQLRSRRKAAKMLVAVVAMFAVCYFPVHLLSVLRVAFDVQQTDVMTCIALISHVMCYANSAVNPLIYNFMSGKFRREFHRSYFKCFCCCHTTPAPEQNGASFEPIGSSRARTIRTTVRRHDSCVSYRLAHLSPSNHNIHRDYIQNTNTSFIEPMNGNRRSKIRDESISDTATRFTVTTDIPCKD

>neuropeptide receptor A16 [Bombyx mori] NP\_001127714.1

MTTVEDDLNVPKKMKANKIISEHDDRFKTDTNSSEFEEAENETCVGDPQYCNMTKEEYVKMIQEYIYPNPYEWILIATHTFVFITGLFGNALVCVAVYRNHSMRTVTNYFIVNLAVADFMVILFCLPATVLWDVTETWFL

GEGLCKVLPYFQSVSVTVSVLTLTFISVDRWYAICFPLKFKSTTGRAKTAILIIWLVSLCFNIPELVVLKLVRFVPLRFELPYLLQCYGTWSPSSELVWHILKVLLIYTLPLVLMAVAYHQIARVLWSSNGIPGQADTKK

LATAELTQLRSRRKAAKMLVSVVIMFAVCYFPVHLLSVMRYTIDMGQTEFITIWALVSHVMCYANSAINPLIYNLMSDKFRREFRRAFCCSTSPGQQDFTSMSRVTTKKDSSIMASFKPGHTSTTFVHNNKNGHMT

>neuropeptide receptor TC37 [Tribolium castaneum] XP\_973738.2

MLFFLLATILLSHAQAHDGLTSPHERANNSLFVSKPRPRNDTFIDDQFDYLVRDKRDWDEDNASYINGSGNVTFSEQEFIDSLWELIAPKSWTWILVILHSLVFIIGIIGNILVCVAVYRNHTMRTVTNYFIVNLAVADF

LVILFCLPPSVVWDVTVTWFFGVTMCKIVLYFQSVSVTVSVLTLTFISIDRWYAICFPLKFKSTTGRAKTAIGIIWIVALACDIPEMIYVTTIPTVDEVDTVLLTQCAPTWSTETDTIFFILKMVLFYLIPLLFMSIAYL

QIIRVLWKSGNVPHQIMDASGGGGRQTNTFAMNMNASTEGQLRSRRKAAKMLVAVVVMFAFCYFPVHLLSILRKTVGLKNTDGNRAFSLISHWLCYANSAVNPIIYNFMSGKFRKEFHRAFEHCCQRSGGHGFQFSAVYR

KTEKDSGIASRTHSRTDLEIQRVNDFEPRHNRKGTKTSMLLVET

>neuropeptide receptor A16 [Tetranychus urticae] XP\_015790996.1

MQLISSYSNISVDIETPIYDNLTSNLICFKEHGNYSSCWFEEELQSNIIPRPYEWIFITLHTLVFIIGLT

GNALICLFVYRNRHLRNVTNYFIVNLAVADFLVILICLPPTVLWDITNTWFFGDLMCKLVVYFQFVSVSV

SVLTLTFISVDRWYAICRPLKFKSTITKTRVAIIFIWISSLAINLPDLIHLQTISPFHRNETIYYTDCVH

DWSEETEKIYQLWIVTTYFILPIILMSVAYHQIAIVLWNKNIPGSCETGQHHHYSNRHSNHNSHNHSQDN

HPDASSIEMNSTIAKRSDCVQGTRSKSKPSYKSSVENSHFGASTNGGNSRTVTKNTSKYPYDSQVTSRQR

VAKMLIAVVIMFGLCYLPVHVLNTLRCFIAIPQNDVISILSLSSHWLCYANSAINPIIYNFMSAKFRKEF

QTTFQNLCGLKFCRKKRRHQGSMESATRRQSNQTQYENINLNSVARYNGS

>metabotropic glutamate receptor [Drosophila melanogaster] NP\_001259076.1

MKQKNNNGTILVVVMVLSWSRVVDLKSPSNTHTQDSVSVSLPGDIILGGLFPVHEKGEGAPCGPKVYNRGVQRLEAMLYAIDRVNNDPNILPGITIGVHILDTCSRDTYALNQSLQFVRASLNNLDTSGYECADGSSPQL

RKNASSGPVFGVIGGSYSSVSLQVANLLRLFHIPQVSPASTAKTLSDKTRFDLFARTVPPDTFQSVALVD

ILKNFNWSYVSTIHSEGSYGEYGIEALHKEATERNVCIAVAEKVPSAADDKVFDSIISKLQKKPNARGVV

LFTRAEDARRILQAAKRANLSQPFHWIASDGWGKQQKLLEGLEDIAEGAITVELQSEIIADFDRYMMQLT

PETNQRNPWFAEYWEDTFNCVLTSLSVKPDTSNSANSTDNKIGVKAKTECDDSYRLSEKVGYEQESKTQFVVDAVYAFAYALHNLHNDRCNTQSDQTTETRKHLQSESVWYRKISTDTKSQACPDMANYDGKEFYNNYLLNVSFIDLAGSEVKFDRQGDGLARYDILNYQRQENSSGYQYKVIGKWFNGLQLNSETVVWNKETEQPTSACSLPCEVGMIKKQQGDTCCWICDSCESFEYVYDEFTCKDCGPGLWPYADKLSCYALDIQYMKWNSLFALIPMAIAIFGIALTSIVIVLFAKNHDTPLVRASGRELSYTLLFGILVCYCNTFALIAKPTIGSCVLQRFGIGVGFSIIYSALLTKTNRISRIFHSASKSAQRLKYISPQSQVVITTSLIAIQVLITMIWMVVEPPGTRFYYPD

RREVILKCKIQDMSFLFSQLYNMILITICTIYAIKTRKIPENFNESKFIGFTMYTTCIIWLAFVPIYFGT

GNSYEVQTTTLCISISLSASVALVCLYSPKVYILVFHPDKNVRKLTMNSTVYRRSAAAVAQGAPTSSGYS

RTHAPGTSALTGGAVGTNASSSTLPTQNSPHLDEASAQTNVAHKTNGEFLPEVGERVEPICHIVNK