

Table S2. The amino acid sequences of ORs, GRs, and IRs/iGluRs used in phylogenetic analyses.

**ORs :**

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>BmorORco
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>BmorOR1
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>BmorOR3
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>BmorOROR8
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>BmorOR9
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>BmorOR13  
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>BmorOR15  
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>BmorOR20  
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>BmorOR21

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>BmorOR22

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>BmorOR24

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>BmorOR25

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>BmorOR26

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>BmorOR27

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>BmorOR28

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>BmorOR29

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>BmorOR30

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>BmorOR32

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>BmorOR33

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>BmorOR34

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>BmorOR35

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>BmorOR36

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>BmorOR37

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ASIVFSLGVSSEIGA IKLFI IAKLRDITGEYLQCEADMAPGRLRARVGRSLRTVRRRAFVYWLVLVNAFAYDLMP  
AFLPGRHLSDEDV FVIYGFEPMPFESP NF EIASTLMGVS VVFI CYTAGSISAFIIVIVGYSEATMLALSDEISCVWDD  
ACASECQPNDFIRARLGKIVAIHTKQIRLIREVEVVFRLAGALAGGFACVAFGLIAALLGGLENTFLQLPFCVQIS  
VDCFVGQRLRDANVAFETAVYNCKWEYFDKSNMKTVLLILQNSQKTMGLTAGGVAALDFTSLMTIFKSVYSGVHHS  
QTDD

>BmorOR38

MNLSQSVNEQANEYVKMRLERISKIHSPLPFEDIQDFRELCCIPLAVYAVTGSITASYVYAFLISLLWFLFARCT  
DIPEDQVAMVVFSLGISSEIGSTKFFNSIIYIKELRKLFDYLLYDATCPAQGRRLHLHLLTTRYVKRRAIIYWL  
VIGNGFI FAIKPLLVEGHLAQQDDLVLIGLEPMRQSPNYEYAYAIMTMGVCFICYPPAHVTMFLIIIVGYTEAQML  
ALSEELKHLWNDAIEHYEKHSRTEREADAAMKSKILNSFVNFRVLVQIIKSHSTNVNLIGRVENVFRGSLAVGYVFL  
IVGLIAELLGGLENTYLVQVPFALIQVAIDCFIGQRVNDANIDFEKAVYDCKWENFDKRNMKIVLLLLQNAQKTVSL  
SAGGI AKLNFSCFMSVIKSIYSAYTTLRTTMK

>BmorOR41

MMGNSTDLFLDRTKSILNFFAMWRSFEKPIPLKVYMAFIMTTQYLFLIFEIYIVNVWGDMAEVSEASILLFTQAS  
VCYKITSFISKTNNFVILLGLIESEIFSAQTELHEKILILKARKIKRLCMFFLVNAVTTCSLWAVIPLLDISSKML  
PKFIWMPASTGESPHYELGYLYQMITYISAFPLIGVDSVPLSAMIMFGCAQLEIIMDKIGVKSRPLDQQPMQRQA  
VLNSNYELLVECVRRYQSVVRFIELTEKTYHANIFFQLSGSVLII CNIGFRIAIVDSNSLQFYSM LTYLV TMLSQ L  
FQYCWC GHELTIRGEELRETLYQSPWHEQDIRFRKVLIIITMERMKRPIIFKAGHYIPLSRPTFVAILRCSYSYFAV  
LNRVRNE

>BmorOR42

MDIPKFEELLKQIQMNFWMGIPFDNPKIQIRYYVLLLTLSLMLIDEIAFFGSRMSSENFLELTQLAPCICIGVLS  
VLKILALTAKRQKIYELTQNLECLHKIILNDTRKTELVRKNLVLIKFITKYFFVLNAVLI FVYNFSSPVI IAYNYI  
VSNEVQFVLPYAVLLPFKTD SWIPWLI VYVYSIFCGFTCVLYYATVDVLYCVMTSLVCNNFSLISFKLQKVRNRTA  
HLLKEVVKEQQYVLKLAEDLENIFTAPNLFNVLIGSVEICALGFNLMIGDLTQIPGCILFLSSVLLQILIMSVFGE  
NLISESSRIAEAAFLCKWYEMDQKSKTILTIMIRSHKPKKLTAYKFSIISYGSFSKIISTSWSYFTILRTMYTPP  
GTKFQDDL

>BmorOR45

MKVLDNVNHAVKVTMNCRLYGLFVSDDLTKRQLIIMRAFSLMLYLFFVGGFITTTQSALIIITMWGDLNLMTNVGLV  
LGTHLTLSAKVFTLHYKEKEITNVIYKNEVRLRAETREQKYIIISEMNRETTLMRLFI PFGMGTVTAWLLCTPKG  
ELYTPAWYPCNTTKSPAHEIILAHQGI AVILTATLEIAIVLLMTSIVAVCRCLKLVLGSLFETICDDLPSNIMNKL  
TADEQVIVAKRVRENVIEHQAVLECIINDIQDCFSSAMLVHIAISTMII CATAYQLAVEKSLDLTQRMTMASFLGGM  
STEI FLFCYQGGHLSIDSMEVATAVYSCPWYTFPTSLKRSLLVIMIRAQQPALLTAGGFAPLLDFTVSI MKASYS  
FFTVLQNAS E

>BmorOR46

AATYVQIADLIDIWGDLDLMAETSLLLFMELAVISKILTIFIKYDKIMEIINGTEDILCSENRLLEGQKIIASIDKE  
TTRFFQYTTSSVIFTTFFWFLGEHSSTFFIRAKYPF NELKSPGYEFALIHQCM MVFTGYFEFNINIFFASVVAGC  
RCRLKLVALSLRNICINIPVNKKNLITPEEEKLITERLHCAISQHKYALDAAEDVKHCLSKVLLVQLTVSIVI ICT  
TAYQMAVVRILYWWQEKINYYASLT MAGYLF GTSLEVFLFCYQGEFLRESSEEIADAAYECPWYTLTRPLKKTLLI  
IMTRAQRPATLTAGGFVTL DITEYMAIMKASYSFFTVLQQVSE

>BmorOR47

MKLVDNFIFALKVTLNWCRYFGIFIPDEL TGRRQKLLVQAYSVFMFMLFIGFFIITQIILFILVWGDLSLMTDVG  
LVLGTNLALSAKIAVFFFKREELASILKKNDDTLRFETREEGKKIISEIDRETNAFMKVFFCFGVGTVIAWFLSTP  
KGELHIATWYPCDTRKSPAYEIIIMIHQLAITADLLMLSIAVCRCRVKLVGLYLQ TICDDLPCNVKNKLTSD E EVI  
VAKRIREYVIEHQAILDCISELQNHFS PALLVQLLTSVVIICVTAYQLAVEKSSDLLRKFTMASFLFAMSTEMFTF  
GYQGGHLSHDSMEVATAAYSCPWYTFPTSLKRSLLVIMIRAQQPALLTAGGFTTSL ETFTVIMKASYSFFTVLQ E  
ATD

>BmorOR48

AAACVQIADIIDIWGDINLMAETALLLFMEFAVISKILTLLRLYDRIMEIINGTEEILYFENGLEGQRIIASVDKE  
TTRFLQFNSAFVVLSTTFWFTGEHSSTFFIRAKYPFNELKSPGYEFALIHQCMVMVFTGYTVFNINIFFASVVAGC  
RCRLKLVALSIRNICINIPVNKNLITPEEEKIVKERLHCAISQHKCALNAAKDIKNCISEFLLVQFTVSI I I I CT  
TAYQLAVVCLFQNKAIIGNIQKTSMFGYILGASLEVFLFCFQGEFLRNAVRDCEEIADAAAYECPWYTLTQPLKRTLL  
IIMMRAQSPVILTAGGFIDLSIREFMGILKASYSFFTTLVQVSE

>BmorOR50

MPSLLKTESLALTLTLNLSWAGLILRDDYTKTQRIIMKVYGGVLVFLYLVFTAYVQIADLVVIWGNIDFMTETSL  
ILFMQLAVSAKVLTLMMLKSKKIMEVTNEADAILNSEKKVEGQRIIASIDKNTTLFLKYYGFFVAFTIICWFMGENT  
STFFIRSKYPFNELKSPGREFAFVHQCI VVI FTGSFDFNVDI I I I SLVAVCRCRLKLVALSLRNLCLDIPMKNRNL  
ITSDEEKVITERLRNII SQHKRALDAAEAIKHYLSGALLVQLMVSIVVICTTAYQLAVKKSTTMQSLTMAGYLFGT  
SLEVFLFCYQGEFLRESSEEIADAAAYECPWYTLTRPLKKTLLIIMTRAQRPATLTAGGFVTLDDITEYMAIMKASYS  
FFTTLVQVSE

>BmorOR53

MALKKMLALTKGLEDPTHPLLGPTLKALSVFGLWQTGSQKSTVIYNTFHFLTFLFVITEYIDLYTVRKELSKMLNN  
LSVTVLSTICMIKTL SVYCRQSHLKVLRREISELELELMKTTDKNIVKRLRQYTVYTRAVTVYVWFLVVGINVVLL  
TSPLLYASSEIYRSEIKNGTEPPPLILCSWFPPDSARMPGYFWATMVHIIMSIOGCGVATYDMNAVAVMSYLKG  
QTSILKDKCAIFDETTASSRDVLRNIRDCRHHNILLRHYMYMNSLLSPIMFVYMLICSFITICCSI IQLDSSETTI  
SQRIWIIQYSIGQISQLFLYCWHSNEFAAKVKKKHFPFLFPINLF

>BmorOR54

MGLNTIKEFFVNVRKRFQDVSIDSLLWIVNIVPSLAGFSIRSDRVSAFPWIVHWSLLVYVYAVGNAVYQWKFANEA  
IDYITSFINVSLILILIGNNSWWFLANRRLLKSVLHKIEVNDELSRRSEQSRLKHKKLLKIIKRIVLVFYMSNYVNA  
SFIYLPNRVDVLNNYAMTPCVGMEPLTVSPNRELCLTILCMQEFISIMTVVLNFQALLLCFIAHTAVMFQILADEIM  
ALNNYENLEEHAQYVKEMLP I FVKRHSLTLSAVDNYKSLYSVPLGVNFGSNALTILLILYLPVLEWFKFPIPIFVFC  
FMLFFLYCFLCQKLVNASEAFETAICYCGWENFALREMKMIYVMLHQAQKPVELLAADIVPNMNTFATTLQAMYK  
FVTTVKF

>BmorOR55

MCFLKIKQQIIDIQKHFKDYSLNGSLWIVNLLPRLMGFNLRADKVGVFVFTIYIILLVYVFGIGIFVYLWKHVDTM  
SGLMKSYLNLSLILVIVNNSCWFLSKRSLLNKVLKKIHLIEDLSCSEHEHALAKYRRVFKIVTHLLASYLVFYFTE  
IYFMFLFRNYDLLEDYSLAPCVGLEPLSSSPNSEICLIIVLIEHFIISTVMMSFAALFLVLIHTAVMFVLAEDM  
TKLTDLNLADHRKMIRESLRSILHRHSLLLQIVYELRLLYSVPLGINFISNAMSILVLLCLPIHEWPSFLHIIGY  
CFFAFFLYCFLGQNVINASEKFIDAIYCCGWEHFGVAEKKLVHVMRLQAQKPVETI IALGMISVNMNTYVEALQLIY  
KFVTVLKI

>BmorOR56

MKLEKLEDPDRPLLGPVVKALKFWGLLLPESRSKKYFYLFMHFAVTVFTATEYIDVWFVKSDDLALLNNLKITML  
ATVSVLKVTTFLLWQNAWRDLIGYVSRADLEQRATSDSRKLALINGFTGYCRKITYYYWFLMYTTVAIVTVQPIFK  
FSSAAAYRLDVQSGNGTYLQVVSWSIPWDKNTLPGYLLASIQTYAAIYGGGWITSFDTNAIVIMVFFRAELLELR  
IDCAALFDDEKSFQDMAPMRRLKECHRRHTELVKHSRLFDSCLSPIMLLYMFVCSVMLCVTAYQITIEETNPMERFL  
MTEYL VFGVAQLFMYCWHSNDVLYASQDLSRGPYESAWSRDVKYRKNLYILVAQFNKIVIFSAGPFTKLT VATFI  
RILKGAYSYYTLLSQSQMNKT

>BmorOR57

MPSLIKNRIFGLTLTLNLSWAGLILRDDYTKTQRIIMKVYGGVLVFLYLVFTAYVQIADLVVIWGNIDFMTETSL  
ILFMQLAVSAKVLTLMMLKSKKIMEVTNEADAILISEKKVEGQRIIASIDKNTTLFLKYYGFFVAFTIICWFMGENT  
STFFIRSKYPFNELKSPGREFAFVHQCI VVI FTGSFDFNVDI I I I SLVAVCRCRLKLVALSLRNLCLDIPMKNRNL  
ITSDEEKVITERLRNII SQHKRALDAAEAIKHYLSGALLVQLMVSIVVICTTAYQLAVKKSTTMQSLTMAGYLFGT  
SLEVFLFCYQGEFLRESSEEIADAAAYECPWYTLTRPLKKTLLIIMTRAQRPATLTAGGFVTLDDITEYMAVSLISNT

>BmorOR60

MVRPCRYFAIHFIILLRFLGLGWHPHENETRNYPGLYLYYSILTQLVWVVLVGLGETIDPFVGEKMDRDMFSL  
FVITHDLTLIKLYIFYFRNVEIQDIVRTIEIDLRYRYQNDDKIRATIRISRIFTA AFLFFGWVTIGNANIYGIVQD  
LRWKDIVKNLNETTSKPLRTL PQPIFIPWPYQEDKH YILTFILETMGLLWTGHIVMTIDTFIASVILHMSTQFAIL  
REAI VTA YDRTMIALSEGALQSGVLCENSGNGEENNQIFLESFYKHEHIESVLESTLLSCIRQHQLLIGCVEKFSK  
TYSYGFM TQLLSSMAGICVVMVQVSQGASSFKSVRLVTSLAFFFAMVIQLAIQCFTGNELTIQAERIADAVMESKW  
EKMPVRLRRLLLVTMMRAQRPLHLTAAGFAYIDNTCFLSILKAAYSYYAVLSQKQG

>BmorOR63

MKLWIRNANFTISLSLTLLRCLGFWSPDGLAGNKRLLYNCYSFVFFMFLGIIYILIQVVDMIKIWGDPLMTGTAF  
LLFTNFAHATKVINIVIRKNRIQRVIQQANAVLMGVQSEEARIVKSCDFETSIQLCLYFLLTFVTTVGWATSAEK  
HQLPLRAWYPYDTSKSPAYELTYIHQVAALLIAAYINVAKDSLVSLLIAQCRCRLRLVGLALASLGQDLKIDYQSQ  
LSPAQENILNLRKTCVLEHQTVLAAVTELQACFSKPTFAQFTVSLIIICVTAQQLVSQGTGNLVRLLSMGTLYLMNM  
IFQVFIYCYQGNKLSVESSEIAGSVYFSPWYLGSVKLRRALLIVMVRSSRVAKLTAGGFTTSLASFMAIKASYS  
LFTLLQVQKQK

>BmorOR64

MGVSNRGRTVKPFLYPLVDELVDYNLIVGVHLPFEYKTPSRYPPLAYITVVI AF IYVSYFVMVTDLIMQAHLLHLLCQ  
FNVLADCFENMLNDCVKGFEGPLVSLHEYIHLIDEFEYNLMVGLRLPFSFDTPLRYLFTYVIVLIAFNHTAHYVM  
VTDLIMQSYLIPLICQYAVLADCFENILIDCSNDYGDHARRNDIVYSRSMELRAILSRPMLGQLASSGLLICFVGY  
QATTSISVNIVKCLMSLFYLGYNMFTLVVVCRWCEEITNKS LNIGNAVYCSGWESGMTVVPTRSTILLVILRANK  
PIVFTAGGMYNLSLTSYSLVKGSYSALTFLRLRIQHE

>BmorOR65

MRLGFEVSISEYLYRNIFYIYTLFHILLHFYIILHMIKLDLEAIFDDIDESVALLPHRDTRRIEVQKILNGRMKRV

VTWHISVFKAVEAVSSIIYGPPPLAYQVMFTSIAICLIAIQITQKLENGILDIRFTMLGVAACLQMWIPCYLGTLLRN  
KAFGVGEACWNSGWHQTPGLGRMIRQDIIIVLLRAQQPVTIKFPGLQSIQLETFSSVIFNLGYYYYFLLLRWVDELT  
AHLVLSGYWSP

>HarmOR3

MTLSVLDRFYLIIDGGFFSFNLKYLFFVGLWPEKTLTRNQKILYKMYEHFISFLTTFIVLAGIGTYQHKDDLVVVF  
CNIDRCLVVYNFFFKTIIFFIKRNQLRDLIDEIEMSGDEVTEERKKLMANYVMFITGVTAAVIGAFSLLALFEGTM  
SIEAWLPSPDPMESLMNQILSLEILAFCVFPGLCRAFAMQGLVCSMIMYLCDQLIHLQKELRDLTYVKETEMVMRTK  
FKNAIRKHIRLMGYSGRMENIFKEYFLVQNLAVTVELCLNAVMMTVVGVQQITLLITFLAYLMLALVNAYIYCYLG  
NELIIQSQGIALAAYESTWTSWPVDLQKDLLIVILAAQRPLKLSAGGMALLCIQTFSQALYNGYSIFAVLNDAVN

>HarmOR6

MSFRKFLFENEAVDGIKSPSDYLYIKILRFTLDVIRSWPRKELGEPESASFTVFMKYFYLVLTITATVVGSILYVVV  
HVSELSFLEAGLMYLIIILMSFLDALTVMSLTFSAKYRVLAKDFTLTKIHLFYKDRSKAAMEIHKKVHLISHLFSW  
LLFQMLSGLSLFLNLTMPYSNLAAGKYRRGGLGNTTFEHSLYYLYPFNTSTDVFGYIVACILHWIISYLCSTWFCMF  
NLFISLMVFNLWGHFKILITLEEFPRPKSIGTSESAYKYSQEELVEVAERLKDCINYHREIKNFTNRMSDVFGPM  
LFVYYSFHQASGCLLLLECSQMTAQALMRYLPLTIILTQQLIQLSVVFELVGSESEKLDKAVYSVPWECMDTKNRK  
MVRFFLMNVQEPHVKAMGLANVGVTMAAILKTSMSYFTFLRSM

>HarmOR7

MKIKMSKPLIFDQSIEKLGVLFRFSGMNIKNKIVTPLDTIKYRWLYTLNFLVVFSAIIGSVYYVILGIKQGKNFIE  
VTSVAPCLTFSILSMIKSLYHLMYEEHIQELIDLLTHEIRENNREKCIEKEEIIANETGFLNKVINVLYVLNCSM  
IVVFDMTPIVMIAVKYKYKTNEFEMLLPYLDVFSFIPYELKYWPFAYIHQIWSECVLLDMAAADYLFCTCTYIRV  
QFKLLQYDFERMIPDRSISKGLFFEENELRNKFTELLKWHQDIIYSSTILEIISYKSTLFNFLSSSLVICLTGFNV  
TIVDDIIVIITFLTFLSMALMQVFFLFCFADLMMTASLEITNSVYNCKWYSANIKVGKQILFVQTRAQEPCKLTAA  
GFADVNLNAFMRVLSSAWSYFALLRTVYGAK

>HarmOR8

MILFAMNFSFLPKQLDIFVEDLLFYFTDCAAISGILTIVFMREKVCELLEMLSDIFQPDDEGLAIVEGAGKFIK  
LYWNI FASVSFTSSAVHLSPIIVHFVIGTELKLPVCSYRFLSENFGQMFVPLYLYQGSGNMFMHMYNVSIDTFFA  
GLMVLTTIAQLDVLDDKKLRRVTDKDEHEDADGETFRQRHDKHREAVRKINQCIHYEEINKFRRLVQDVFSISLQVQ  
FGMGSCIIICICLMRFTMPAPLSYFFFLATYMFMLVIQIMVPCWFGQRIIDKSNFLAFSAYNCEWTSETRQFKSNMR  
FFVERANKPLSITGGKMFRLSLVTFTSIMNSAYSFFTLLQNVKSRK

>HarmOR9

MLDQFDRCLKSVNLYLKFLGLYLESKDTDKTFVERTSRHRLYFAHLFSLNLEVVAQVLWVLEAVITGKSFVEITRL  
IPCLILCLISNFKTSLSLYYGRHNEFIVTMRSLLLNQMQVEEKEHRFRKNLIDKHVLILTSISKKISYIVLDDL  
MFALAHAFIIIPHYFKTDEVKLEMPFIAYYPFNEFDLRVYPWVYFHQVYSAVIAMIMVYGPDCFFFTCCTFIHQF  
SLLNNDMERIVTEETPRYDKTKFKKLAVRHIELMRCVNLEKIFSKSILFNALTSSVICTVGFNVLVVDNI VMMA  
SFTAFLIFGLMQIFLYCYGDTIMRSSMEVSTSIYNSLWYNIPAADRKGFLIIVIRAQKPCALTADGFFKMNLASF  
ASILSKSWSYFALLKTMYPHE

>HarmOR10

MAVKNTSLFLGRPKKILSAHGVPWHPNPNFVILRKLYMLFVMWTQYSFLLFEIYYIADVWGDIDAVSEASYLLFTQA  
SLCYKSTAFMVNKQSLELLEIMDCEIFEPKSAEHEKILAAQARKIKRLCLFFLTSAITTTCTLWAMIPLFDAASKR  
SFPFRIWMPVTPLKSPDYELGYLYQMVSIIYISAFLFISVDSVAVSMIMFGCAQLEIIMDKIQIKIYVFESADSEEG  
RRNI IKTNNEFLVECVKQHQTVVERFIQLCEDTYHANI FFQLTGTVAI ICNIGLRISIVEPNSVQFFSMLNVMVMTL  
SQLFLYCWCGHELTIRSENLEWLYQCPWYEQDTEFKRALFIAMERMKKPIIFKAGHYISLSRPTFVAILRCSYSY  
FAVLNRVNTE

>HarmOR11

MHLAGNAVGTITGPM DYKMKVLRFLVRIISGWPGKALGEKTLRIEGMGHAYNTILSLVYLALGIAYLKKNFHRF  
DFLELGQLYIVLLMNMSTSRFTLCLSQKYREVAKIFIQKIHLFYFKEKSDFAMKIHITVHKISFISAVYLSVLL  
FIAACMFNLIPMYNNYSAGRFASFDNLENTTYEQAISCLYPWNFETNFNGYLAATLSGWYGTILCGSSVSMFDLFL  
CLMIFNLWGHFKILYNLEHFPRPASEVVDAGEEERSGRTVGSEMYSQSELEEVAVLLRDCIQYHMLIYNFTNNMS  
DAFGMALFIYYSFHQITGCLLLLECSQMTAAALTRYLPLTIIMFGELVLLSIFETIGTMSEKLDKAVYKVPWEYM  
DTKNRRTVLIFLIKVQEPHVKAGGLVDVGVTMASILKTSFSYFAFLRTF

>HarmOR12

MEDEPLLDIKTVKNIEFLFRCTGINIKSGTKTRKDMIKSRTVYIINFLWLNIDLAGAVMWFFTGIANSKSFTELTY  
VAPCITLSFLGNLKSFLILREKHVDKLIQVLRDLEINEKARPKSEETDAIKYEHNFVTTVISVLNVLYFVLLVA  
FALSPVSLVALKYFTTNELELLLPFLIIVYFPDPYDIRYWPVYLRQIWSEVVVIIDICTADYLFYTFCTYIRMQFR  
LLKHYIERVIPEDDGGRLTNIEQVRAEFVLLIKWHQDLISSANMLETVYTRSTLNFNVSSSVLICLTGFNVMAIS  
DVAFVATFLSFLFMSLLQIFFLFCFFGDLLMTSSTEISEAVYNCRWYLADTSLGKDLLLVQTRAQTPCKLTASDFSE  
VNLKAFMKILSTAWSYFALLQTLYGAPT

>HarmOR13

MKILSDGSDLEGVEKVEDIFYINLARKSMWILDSWPRTPNESVTYRYFVLALNVATLVGGAVYLRNNTGVLSSFEL  
GHTYITVFMNCITCSRCIMILSREYNEVMSLVNKHILFHHRHKSEYAYKTHIFIHKISHFYTVYLLGLALNGLLL  
FNMI PFYNCYSRGMFRDVI PANATYDHSVFYSVPFDYTKFKGYIAMTSFNCFISYTCTSYFCVVDLTVSLVIFHL  
WGHMRPLTYHLANFKKPASVLESNNTDAIKDHSYTQEELKEVFGKLRREYIRHNNLILKFSSEMSNAFGPALLAYM  
VFHQVSGCILLLECSQLDMKTLVRYGPLTVVILQQLIQISVIFELLGSSNDKLIDAVYLVPEYMDTKNRKLVFVM  
LRQSQRSIDLKMMSMLTVGVQTMTAILKTSFSYFVMLKTVAEEE

>HarmOR14a

MGGIRDFIFNLEAKEGITKPTDYPYMI LCRHLLTVITCWPKEPKEGLDTRAKLKARIWVTFQKIFHLNGCFITTTIG  
MAMYIALHKNSMSFFELGHLYISLLMTVVIFSRVTTLCWNPEYQAVATDFLTKIHLFYKDDSDFSMQTHQVHKI  
SHLFTLLLTGQM VAGMSLFLNLTMPHNNFSTGKYKKGGLKNSTFEHSLYFSYFPNASSDVRGYILSNI FHWIISYLC

STWFCTLDLFLSIVVFHVWGHFKILIHDLNHFPRSLNTISFRLDQSNITLTTEMYSSRELQVQSERLNKSVEYHRR  
IVSFTDKMSEVFGPMLFVYYGFHQTSGLLLECSQMTVEALVRYLPLTIILFQQLIQLSIIIFELVGSVSDKLKDA  
VYGLPWEDMDTKNRKTVAFFLMNQEPVHVKALGLADVGTSMTAILKTSMSYFTFLRSM

>HarmOR14b

MAGLRDFFFNYEANEAITTPKNYPYLIIMRISLSLIKCWPKKTENLAAGAKMKAKVWGMVQNVLHLAFCVLTIVG  
TATYVMIHKKNMTFFELGHLIYITLMLS CVVFSRLATLTFNEEYQVVANEFLNKIHLFYYKDNSEFSMQTHKQIHRV  
SHLFTLYVTGQMLGGLSLFNLT PMYNNYSAGKYSKGGLKNSTFDHSLYYSYPFDVSTGVRGYIFSNIHWWFFSYIV  
STWICTLDLFLSVIVFHIWGHFKILLHDIDNFPKPSKMVSFKLKNTNVTISNENYSTEELEQLADKLKKCIDYHRE  
IISFTNKISEVFGPMLLAYYGFGHQASGCLLLECSQMTPEALARYLPLTLILFQQLIQLSIVFELVGTVS SKLND  
VYGLPWEDMDVKNRKTVAFFLNVQEPVHVKALGPADVGTSMTKILKTSMSFFTFLRSM

>HarmOR15

MTFYELGHLIYISLLMIVCTFSRITTLCNDEYRVIADKFVTKIHLFFYKDRSDYSMETHKKVHMISHIFTLYLSGQ  
MMLGLFLFNVTPIYNNYSAGKYTSGLKNSTYEHALYFSWPFNASTDFRGYVVSNIHWWLSFSCSSWFCVVDFFL  
SLMVFHVWGHFKILLHDLDHFP RPANKISFILEDSYVTITDEIYSRNELNQVDFRLNKCIDYHRDIVSFTDKMSEV  
FGPMLLAYYGFGHQASGCLLLECSQMTVAALVRYLPLTIILFQQLIQLSIIIFELVGSVSDKLKDAVYGLPWEAMDT  
KNRRIVAFFLMNQEPVHVKALGLADVGTSMTAILKTSMSYFAFLRSK

>HarmOR16

MGLRQFLFENEAVEGINSASDYLYIKVLRFMILLIVNSWPRKEIGEPESPKLSAFVKYFYLVVTVLASAGFILYLVK  
HNSELTFLETGHMYIVLLMSFNDVSRVATLTMSTTYREVARDFLTKIHLFYYKDRSKQAMETHRAVHKIAHLFTLW  
LVSQMLSGLSL FNLI PMYSNYAAGRFSGEVSKNSTFEHSMYYPY PFDTSTDIRGYSIACITHWII SYLCATWFCMF  
DLFLSLMVFHLWGHFKILNYTLNDFPRPSSKVEAAKYSDEELVEVAARLKDCILYHREIILFTDRMSNVFGPMLFL  
YYMFHQASGCLLLECSQMTAQALIRYGPLTIILTQQLIQLSVIFELVGSESDKLKHAVYGVPEWECMDVKNRSSV  
IFLANTQEPVHVKAMGVANVGVTSMAILKTSMSYFTFLRSL

>HarmOR17

MFLRSECARSVAPHVRVLRVCGFLRGAALSSRGRAERLALRSYHALALAATS LYVLQQAVYAYQERGMDDKPSQVM  
FLMLCHVTCVVKQIAFHVADRIDRLIASLDEPLLNQCAGERGALLRG TARGAARLLRTYAGCAVATCVLWIVFPV  
INRIQGISFEFPFWTGFSYDHNAVFTLVLLQS FYCTNLVAIGNTSMDAFMATILDQCKTQLRILRINFESLPERAR  
ALHVESGENYDITLDKLFVDCLVHYNKI TEMCTELHDVFAVPLLVQFGVGWIPCM AAYKIVSLDVLSEFASITL  
FITCILIELFIFCYGNEVTVESERVSQSLYSMEWRRARLTFRRSLVLVMERAKRPLRPAAGRVIPLSLDTFVKIL  
KSSYSFYAVLRQTK

>HarmOR18

MEMKVDVLPEKKYKGFNETFKLCAFSLAFALYPNRTTALRRCITITLIVTF CGQLFWFITYTFKCLYTLDIYNF  
ARNMTLAVVLV LFFIKTYVVIYATSKFAPLLDKISDDLLEANNEEEFQVLYDDHIKIAKVG EISWLLIPTIMSAL  
FPIYAGALMTIESIQTDYERRMVHDMELLFVEDIQSETPFFQCMFAYNCVQCVVLVPNYCGFDGSFCIATHTLRL  
KLKMLTLKVNKA FKYSKRQELRMRLYDSIKDHQDALDFYVQLQNVYGPWLFAVFLLT SFMISFNLYQIYLLQRID  
PKYTSFGVVGVLHIYLP CRYASDLTRVSEEIPDDL YLAQWEAWADPSITKLLMFMITRAQKEMIVTGMGLVVFNME  
MFKSILQTSYSFFT LITA

>HarmOR20

MDEELEFKPFHETYRLITFSLCIAMIYPNPRTEKWRLSIPIL IATVAPVAIMIFLDMYKCWKNGDIVNIIRHSTV  
VGPFLGGFFKMILMYHKRVQAKQILDEFDRDHLMFNTVAET YKD IARASIRNCQIYSERLWACLVTTCVMTFPVMA  
IVLNIYNFMFKSEPTKYMIHDLEKPF SKEPEERFESPYFELLFVYMFYAAILYVVNFTGYDGGFFGLCVNHARLKME  
LYCKALEEAMMADREEVYGRVIAVIREQCRMFRYVDLIQDTFNIWLGII FIATMIQICTCLYHITEGYGFDIRYMI  
FVYGAVVHIYLP CRYAAKLKAMSMETS NRFYCSGWERVDDERVRKMIVFMIARAQVPNEITAFNMMAFDMELFLSI  
LQTSYSMFTLLRS

>HarmOR21

MIKRSKFFSWALILNCVLSLLMYTVEAVMRVIRAGATYTTVITAYPDVEDRSALSHVVRVIAYIIWCIYLTRIFAV  
YSLVISLTIAMS YQFKNLTSYFCNL SKIFEDERMTQTEKEQEYERAFRVGIKIHSETLKCTEDIQAICRDVFSGQI  
IFNILMLIIVLMHQMVNSARNLTNAVTLVMAALTILLSTGFFMWNAGDITVEAQLLPTAMFSSGWENCGRDS SVRVR  
KLIVIAMMQAQEPVVL TGLGII ALSYQSYVSVSTFTK

>HarmOR21.2

MTKFLDELNTIFFLVGLTDLWISEVKFSKRFIQIYKKINYMDFLCLFFV FVLLGSYFTQKDLTEKLANDRLMFSI  
ILPGNLV FYYISVYYKEEIRNLLYHHRVLKEQHNDTRLEREMIRNIRVFSITLNSIAFVVDTSYGF GALYE VVTKG  
ENFNTIVPVWPDVDHNSLAGAMRVFFYFCWLNPIATRVLTTFSLLLTEMVAVCYQFRNLQSYFYSLDDIFSDDTL  
SQKEKEIKYEEGFKIGIRMHIMTLWCKKLHQHVNKEILAIEMVLFFAMLMSELTTLLGGERNASQLCMMFLISVST  
CISLGFFMWNGGDITIEASKISEAMYSSGWQHCRGHSSVRMRKLVTF AIKQAQDPVYKTLGVVDLSHTSYVTLVK  
MPYSAVS VLY

>HarmOR22

MMAIHVIMVIFCF SCTL SLWTQKNLSESQQSDRLAYGASAPIITIFYHFVILCYKDDVRKVLYKLVVVLKVDHNDK  
QAEREMMEQSRLHNGLFFSSCVCNMVFGLYNCYLAVTTDATFITCISAWPDIEERSLPAGLTRVVVYFVWFAHVV  
RNMGVFLI IHTVLLCLTQQYKNLQSYFEDLNKIFDETKLSQEEKELKYEIKFKRGIEQHALTLWCVD ETQRVFKIT  
FSSHVLLWCGLLISILPDVMNDDHTLKM LVSNA PRVAAALVGLGYFMWPAGDMSVEASNLPQAMYGSWQCCYHR  
SSRVRLKLV LAMMQAQRQIEMKAFGHLTFSYE

>HarmOR24

MDKLARVMFLL LCHITSIAKQLV FHLKAERIDEMLAGLEDPLYNQPEEAHRRLLGATAASASRFVRAYS GCAVVTC  
TLWITFPVMYRLQGLPVEFPFWITVDYNRPTMFILVLAYSYYVTTLVG IANTTMDAFMATVLNQCKTQLRLLRMNF  
ECLPERAAALSRQLGGSYDAALFALFRECLVHYEKITETAKMLQNIFGTAILIQFGIGGWILCMAAYKIVSLNMLS  
VEFASMALFISCILTELFYCYGNEVTDESERVSQSLYSMEWRRARLTFRRSLVLVMERAKRPLRPAAGRVIPLS  
LDTFVKI IKSSYTFYAVLRQTK

>HarmOR25

MPSDQSRMFDPLTLVLKIFGVWEGRTPSKYYKTFSFLFLFVSWFFYNFLLTSLVYTTPRSVELFLRELMFYFTEIS  
ITSKFLTIVLLRNKILEVFSVIDSDEFVGDYENKDGILYRTNKGYSLCKWVYNVLANIDYTCVIMPVVIDLIQGT  
KSVLPICNYYFLSEDFRDSHFVILYLYQSIGMYGHMMYNLNMDSLAWGLLAVGIAQIKVLNKNFTDLKLSAEESKL  
PLEIQDNINQKTRLFKLLRHYEAILNYCDAIQNLLSVTFFQFSFGALTTCVIMCSLLMPGTMVYRIFLVIYLFAMA  
GQIAVPGFFGTLLTHESQELVTAAYNCEWIERSQSFKRTLILFRERAGTPIIISGMKMFPLSLVTFVAIMKTTYSF  
FTLIRNA

>HarmOR26

MDCTIVAFYAQAKIQIQLRHNLEQLVEFDDSAKINTQFNKTGLYSTSYKDEQQERVAIQERLKKCVQHYHYQILRF  
AKEVESIFGEAMVVQFFVMAWVICMTMYKIVGLSIYSAEFVSMAYLGCMLAQLFIYCYFGTQLKVESELVNQSIY  
CCDWMKLSPRFRRLVMMQCCGRPIAPRTAYVIPMSLDTYIAVLRSSYTLFTFLNR

>HarmOR27

MGKDDPDLRFECFSVLSFCAMGMLKLLSLRKNHRKWRKLLTQITILENTQLSNRSISCVEYQSDSESDSNFSEHIS  
IYTKKFRGTSIVLTRIYSFTAFLFILSPFAERIICEIRGVECVGYPHVFPGWTPLDDFSIFGYLVTVLCEVFSAVY  
CVCVHMAFDLTVIGIMIFVCGQFSLLRDYSSRIGGKGRQCNLMSRRDERARFRIIRCHDINLLLVNSITELDMLLK  
NIIGVYFFVATLTLCSVAVRLKSEDMGMVQLVSLIQYMCGLTLTQLFLFCRYGDAVLHESTMGMGEGPFAAASWCLS  
PRVRDLMSLSAGMMSQRHLRAGPFSFIDLPSFIQVVRAAYSYYAVLGKKE

>HarmOR29

MGYQQIDCFDIHLKILRILGVWPHDNPSIYYIYFSRIFVFVTVLYVVIYTMNFIYFLPQQLEVFADELIFYFTNVG  
ALSKALAFIFLRDKVKKMLFMLESEIFQSDDEEIKLIKEGKEKSNFYWKITAGLSVSANTVNVCLPLLVIHIFSV  
ELEFPVCRYFSFIPEKYEAMFAYPAYFYQSIGITTHMLYNVNIDTFLLGVMFLAMTQLDILDRKLRKVTDVCINPDA  
ARGSVDKFIDQNAVLEIIKCIKHYDAICEYCKLIQDAFSEILFVLFSSGSKICMCLFRFTMPATTGYFVFLYTY  
VTVMTLQVMVPCWFGSRLMDKSSQITIAAYDCDWTPRCRRFKSNLRLVERANRPITIIIGKMFLLSLGTFTAIMN  
SSYSFFTLMRHMQSR

>HarmOR30

MVSSQITCGLWAMKPLFDDADRKFPPDMWMPVSPEKAVQYYIGYAFQLGTICISAYMYFGVDSVVFSSVIFGCAQI  
DIIKEKLMSITTVDRKQGTKEALAQYNKLVDCIKHHQAIVTFTELVENAYHPYLLFQLVGSVGIICMSALRILVV  
DWRSMQFFSILTYVSVMSQLFVCCWCGHELTSSEDLHTVLSNASGTSRT

>HarmOR31

MNSILQNLLEDPNRPFLGPNYWIIKNMGLLLPKNFLAKILYIILHEIVAFFVITQYMELYVIRTDLDLVLTNMKISM  
LSVVCIVKVHSFIWQKHWHDVLDYVTAADKFERQSDDEPKSRIVETYTRYCRRLTYFYWLVFTTFLTTGTPLM  
RYLSSSTFRQNMRNGTEPPPHIFSSWMPIDKYHSPGCWITVLWHTLLCAYGAAIMAAYDTCIVVIMVFFGGKLDLL  
RERCKQMFGPSTISDRQCEEVVRQLHGIHVMMLKYSRFLNSLLSPVMFFYVMVMSLMLCASAYQLTSAQNAAQKLL  
MAEYLIFGIAQLFVFCWHSNDVLIKNENMTSGPFESNWFANRQRKDVLTLSGQLCIKNIFTAGPFANLTLPTFI  
NILKGAYSYYTLRK

>HarmOR32

MNKDFQTSKDLPPKERDSIKKYINQGLWVCKQWLFLTISGCAIFLFKNLGLMLYYYCMNEFRLVPFYEVVLYPPIM  
EENRDNI FVYLLMYAIMLLFSAYSALMYAAFVPLGPFI FILHACQQLVLVKLRIDDLFVECDDEVIRKKLKGIIHL  
QYVHSFVDRIQQVFKIGYELTLKFTALILPITIYAVLEGFYRGEVNVEFVTFIVGGVMISGSPCYSDLLMEKGED  
VRMSLYTCGWEQHYDRRTRTTLQLMLQNALKPIAIQTVFTVMCLDALTDLFQQSYAIFNLMNCMW

>HarmOR33

MWRYIRKFGLEYCDLPTMLWNVSULLKVLTVNIYGKNRKAIPLIFYIIIVTVGLLTYFYVYVSMIWFVFSRCPVTG  
DVLAAIIVFSLGVASEISTVKFLYMRIHIKDVVKMADCLDSYSKVVPGTRFSNNLLRTLREAKRRAMLFWMVIIG  
NGLMYVVKPLLLPGRHFMDVLLYGLEPMFETPNYQISFVLMGSSCVLICYLKANISAFIIITGYVQAQMLALS  
EELTHLWEDAENYRGNLELIDTDDGDQNDNRKDAIILNDYVTVHLKDIKSHAENINLLGQIEGTFRGAIAIEFCL  
LVVALIAELLGGLQNTYMEVPFALMQVGMDCCLIGQRVMDAGAVFEDAVYDCKWERFNKKNMKTAMVLLLNAQRPM  
TISA

>HarmOR34

MSAKFSIMQIFKFLEDPAYPSVGPLKLLGFTGLWHPNRHTLVGRFKHILFYITISFFFSQYIKCFINFNASSLKL  
ILQYAPFHMGIKSCFFQKDYKTWQQVIDYMSSVELAQLSKSNKEQYKIIYDIKRNKRVSYFFWALAFFSNFSIF  
TEPYQKNQINVNGTSIYLNIFDGYTPFQKEPPGYIISMLIQTVLGHIVSAYVVGWDTLVVSIIMIFFAGQLKITCLR  
CKMMIDVTNPMKSHLKIAECHRFTTLVEYTRIFNALISP

>HarmOR35

MCLYLPFDLVIVIMTSNVSALLRLLQVDLKNAIQLRDEQHKTKSHLNVSDTQSYEELKRIVDIHQRLRLRIADQLSS  
IFGLVIFIHVACAALCFFGFLTMVYGGLAETIANMLTVLNAVFTIFLLSLSGQFLCDTSSEVADAAYESYWYES  
DHKVKKLTLSIIIRAQRPSYLSALGFSQTLKSF SKIMSSAWTYFSLLIQMYEET

>HarmOR38

MIILSENIKQKLAFLSPYLPYGVIESWEDLNPRLYHAVHIYWLKFGYGMWFNNYSPNNIKFWLHMVYTLTVLWLACF  
FPGIGEVVYLLKQRENIGDIADGLYFLSEMYTYVKIAVFWMNRDKVISLLEYLHCKEFPKPEPEHRDIITKSIKS  
ARFVMTYYSTMCVGAVSVGIIMPLTENFDILPTNVEYPPFNVYRSPAYEAVYIHHIYYKPATCIIIDGVMDTILAAF  
VASAIGQIEILAFNLRNPNLVAERQRRDLAQNKYIEEYPAQHYVRSVLKECIRHNCIIRYVSMIESAFSLASAL  
QFMLSVMVLCIGIQFLSIENPSAHPMQIAWMGIYLTCLMIEVFILCWFGDELIWKSMDLAKAAFEQPMNSDRQT  
NMFIIILLERCKRPLRLSAGKIFTLSLDTYTVLINWSYKA  
FAVMRNMKK

>HarmOR39

MHRKRKEFNDLLEVAQKNDLIIETGRFLHVHEKMLRSIKIIILFCYVFHFINEVVYIPFRILRMEDFSIASCVG  
FGPLNVSPNREVCMLTAHILISIMVICYDISLLFLFSHTTAVFQILFEEMMSINDITQTCQNSDEDYAVIVAR  
LKNVIVRHVALQTVGKVEDIFSISIGICFGLDAISLCLILCVATRSLYAFCSDFITAFSIFFLYCCQGQRLTTAS



EKFEMAVYCCGWENLRVKERKQVLLMLKRAQKPVIVYAAKVIPIRIYTFASTMQAIYKFVTIFKV  
>HarmOR40  
MAMRNLSTLMTSTVCVFKACNMLWQNSWKELIDYVSELEERSQLSKNDPVVNKIIISDYVKYARRVTTYLYWALVTAT  
VVTVILAPLFIYLSPPNYQESIKNGSAPYPEIMSSWTPFDRSRGLGFCGATLYQMLACFYGGTVVANFDSTAVVIM  
TFFTQGLKVLSSVNCERLFGDGNELVDYDEAVKRITECHLHHYVMKFSSVLNLLSPVFLYVYIICSLMICASAVQ  
LTTEGTGNMQRIWIAEYL  
>HarmOR42  
MTNSRPRHYFGFHYRILRFLGLGWWHHP EEGKTTNFPGWYLYYSIVTQVVWVAGFVGLETIDPFVGEKEMDRFMFS  
LSFVITHNLTLIKLYIFFFKNVDIQEIVRTLEIELDYDYQNIIEKNRKTVKISKIITGSFIFFGWLTIGNGNVYGTI  
QDLHWKSLVATLNDTSQIPVRTLPQPIYIPWNYQKDKSYIPTFVLETVGLLWTGHIVMTIDTFIASVILHMG AQFE  
ILNEAITTAYDRMTSLREGIRPEDSGHQGQSSILSVEDSNERIVHAFIPKEEIDAALQTTFRNCFRQHQVLINC  
VEKFSRTYSYGFMTQLLSSMAAICVVMVQVSQDASSFKSVRLITSVAFFFAMITQLGMQCFTGNELTLQAERISDA  
VMQCKWERIPTRQRRLLLMMMMRAQRPLRLTAAGFTNMDNACFLAIMKAAYSYYAVLSQRQE  
>HarmOR43  
MVKNENRSLQYCLTVLKVAGFLHPLGDGRIPRLTRRLYCFGVFMFLVGCIIMAGTGAMFEIWGDLALMTSASFLLF  
TNLAFATKIINVVVRCREIQEIIDEQDADLLAEDRYLGIEVIKSCNVETSLSMGLYTLLSGVTVF GWAASAEKNQL  
PLRAWPYDTSKSPAYELTYIDQSSAVTLAALVNVCDLTIVTSLIAVCRCLRLVALSLRTLCDGIPLPKQLISP  
TEERIVLTRLSQCIKH EAALKAARQIQRCFSLPILAQFAVS VVIICVTAYQLAMELNNRNWFRICIPMAYLLCMA  
LEVFLYCYQGNELLEESSEIAGAAYECPWYHCSVRMRRTLLIVMVRTRRALRLTAGGITTLTSLACFTSIIKGSYTF  
FTVLQQAEDRNPK  
>HarmOR44  
MGYMIYSSSARMLSALVVICEIWHALGNMMSLDELISSVNVI F IHLITLWKL MIMVSNKKVFKKLARALESPSFDI  
STENRQAI VNHVWLTHKKYLKVLCLAYLTLAVVWLHPLVDDMDFNLMVDVKLPFAYDSP LRYVISYLFVGTMTFSY  
ASSMVIMSEVIMQAHILPVLCQFNVLANCFENVFEECASEFPDINKHELVKHNMFVEKYRKR LGDLVKQHREILDQ  
TTDLKTLISAPMLGQLACSGLLICFVG YQATATIAENLGKFVMSLFYLGYNMFTLYIICRWCEBITIQSQRIGQSA  
YFSGWESGVSHVPGARATIILVIARSNKPLVFLAGGMYTSLTSYTSLVKASYSALNILLTTKHE  
>HarmOR45  
MRLQIILED FLLKKT FDFDRPDINLYNFHPQLRILLAVKGVFFTNRRSLLRFIWP CICIQLSIVAMTLEE I FIWRGV  
TVKDYSFATECFCYWVILGCIPMVYVSIVVNTNKIYD I VVTMNEDFIYVCSLGDRYRKPFLEGQLLIWQLCYAWFI  
FVCFVGGLYV I I PLVGLLYQSLFATIDENTVRPLQFPMWLPND DPYRTPNYE I FLVIESTLIFCFVQTF CVYIYTL  
LHILLHYTTIMNMIIIDFSVIFEGLDES VALLPRHDP RRRETQLILNARIAKIVRWHL SVFKAVSTVSSVYGPPLV  
YQVSFSSLAICLIAYQIAEKL DNGKVDILFCLLGIAACLQLWIPCHLGT MIRNKAFEVG DAGWTCGW HETPLGLMI  
RNDILIIILRAQKPVTIKFTGLPSVQLETFSSSTMSSAYS YFNMLRQYSK  
>HarmOR46  
MSSLGTIADSLPLLVS LII VAYYAMYRQDLYDLMEYMERNFKYHSAGGLTNMTMEESCKTAQR FARIYTACTMFSV  
TMYATMPV I IHLWTKEPIQSWMYMDITRSPFYEFVFLV SCLAQMFVGLAMQFGVFFASNSILICGQLDLLCCSLR  
NARYTALLQHGVKHAALRVSHATI QDDEKHNYIYNVSEMKE SVYHYDKKVS NLYAEAKTQFDIYSSEFDDATVNAL  
RDCASLCQVINRYKEMFENFVSPLLALRVVQVTLYLCTLLYATLKFDMITVE  
>HarmOR50  
METTTYTRSKTTEFFYKMF AIIYIFGLPNFWIEDLKLSKR FVKIYDKISL FNDLLVYLLLVMEFGAFFTQHNLTDK  
QKFNLMVFAISHPLLCSFCVMVSKLKKKVRLVMYSQAVALKRDYNDPEVEKQMIARSLTYVLA FMSSCTITMIMFA  
IEAIWDVIRHGATFTTLITAYPDVQDRSILADVVRVLAFVTWWIFLTKMVAVYMLVIPLTISLRYQFKNLQSYFLS  
LAELFERSDLSQKEKEEY EAGLKLGIKLHSETLSCAEDTQDVCRGVFSGQIIFNILLIIVLMAQMVTSERTFVNM  
FGTVATSTCVITSTGFFMWNAGDVTVEASYLPTAIYFSGWQHCQRDSSMRVRRLVVT CMSHAQQPVIK FGLGYIEL  
SYQSFTITVKSSYSVFSVLY  
>HarmOR52  
MRTLREIGQEIRKFGLEYCDLPTMFENVAILLRLLTLNIDIKYKGGITFYSYIITIVSGACYYVFFFSMTWYVFW  
RSRELGBDIGAMIILSLGITSEIGPLKLFYMSYNKDKTQKIANDFLECDANTIKSTRFYANLLKH CRTVKKRAMLY  
WIVVAGNGVIYLLKPITMKNRNLPENYFLIFGLEPIFETPNYQIAYCMMVSALFFVCYVPACVTAFLIVVTGYAES  
QMLALSEEMIQLWPD AIKRAEERTQLDPSKVL DVYNLEVKTIMNQFVEKRLKEI I KRHALVINLLNQVEIVFRQAI  
AMGFVLLI VGLLAELLGKLENTFLQMPFAFMQVSI DCFAGQVRVMDASLVFEKAVYDCRWENFDKANMKLVLM LQS  
SQKTLALSAGGISTLSFTALMSIYRGLYSSYTALRSTVK  
>HarmOR53  
MSEKEFDKTLKLTNYALIMSGIKTSENDMNKALEYFINHYLFYCNAIALHTVIFGEVYWIVDGI RTNHPFVELSLV  
SPCATISILSTIKCGFIFSNKGILMRVVHKLKEIHTSFDDNELSKESSARTKI VTD SLKLLQFVQISFATIIYFVF  
FSFCFIPVILAENYNYRTGEFVVTYPPFVKYPFD FDVHHC PVWQLIYFHQVWATAIVIMSMFGCDSLFYGLCVYIK  
THFQLGLRFENIVGATKSETQRNLAKAVVRHQELIDLNVQMEMLYSKSSLVNIITSSILICLSAFNITVVDKLN  
ILAFVTVFLVMSLSQISLV CYFADLLMAASMEISGSVYRSPWY EADNHSKILLLVIMRSQKACKLTAWKFADLNLG  
AFTTILSRWSYFALLKT VYK  
>HarmOR54  
MLTASSRLKTVFEMSHHGLSLIPEGTASKKIMLATLQQARYFSWL VVANLAVTHVTYLLMPFLFTVLGNDRYLPTT  
PGETYGLSPKYETPFFEITFVLT SVATAFSAINQ TGYIVLFVT LICHELGHFYAITEALHEIHTILTKEERSRNS  
EQNEQKSVDKLLIFCVKHHQFLMNFHGKIRDMYKVI FGAHFLSMTVVLVTTLQTMNVWDYRNTILTGMSGIMPLFL  
YCFGGEK LISAGLQMSAAYS CGWEMMEAKQAKVLLMLCLVQRPLYLTAADIFIMNRETFGDVAQVYKIYAVFN  
>HarmOR60  
MGVLVRNATMSVSI SLTALQFVGFWAPEYLGKTQKQLYTCLSVFSFMFL LGTYLIIQVVDLFLIWGD IAMMTSTAF  
LLFTNMQAAKIVNIVYRKERIQRIVNDCDAVLSRAQSLEEKEIVKSCNREMIVLQILYFSLTLITS LGWATSAEP  
HQLPLRAWPYDTTKSPAYELTYVHQVGALLIAAYLNVAKDTLVAALIAQCRCRLRLLYALRTL DKGMGNEAYTF

TSEQEKTNLNRLGSCVMQHQKALDVGKELQECFSEPTFAQLTVSLIIICATAFQLSMGHSDNMVRLLSMGTYLLNM  
TFQVFIYCYQGNQLSEESSEIAGAAYECPWYKCSVRVRRLGLLIVMVRTRRALRLTAGGFTTSLACFTSIIKGSYT  
FFTVLQQAEDRNP

>HarmORco

MMTKVKAQGLVSDLMPNIIKLMQAGHFLFNYHSEENAGMSNLLRKIYASTHAILIFIHYACMGINMAKYSDEVNELT  
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TLTFFGESVRMVTNKETNETLTEVVPRLPLKAWYFPFNAMSGTMYIVAFQVYWLLFSMAIANLMDVMFCSWLIFA  
CEQLQHLKAIMKPLMELASASLDTYRPNTAELFRASSTEKSEKIPDPTVMDIRGIYSTQQDFGMTLRGAGGRLQNF  
QQNPNPNGLTPKQEMLARSIAIKYWVERHKHVRLVASIGDYGALLFHMLVSTITLTLAYQATKINGINVYAFS  
TIGYLSYTLGQVHFHCIFGNRLIEESSSVMEAAAYSCQWYDGSSEAKTFVQIVCQQCQKAMSISGAKFFTVSLLDLFA  
SVLGAVVTYFMVLIQLK

>SfruORco

MMTKVKAQGLVSDLMPNIIKLMQAAGHFLFNYHSENGGMTGLLRKIYASTHAILITIHFACMGINMAQYSDEVNELT  
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TLTFFGESVRLITSKETNETLTEIAPRLPLKAWYFPFNAMSGTMYIIAFQVYWLLFSMAIANLMDVMFCSWLIFA  
CEQLQHLKAIMKPLMELASASLDTYRPNTAELFRASSTEKSEKIPDPTVMDIRGIYSTQQDFGMTLRGAGGRLQTF  
QQNNNPNGLTPKQEMLARSIAIKYWVERHKHVRLVASIGDYGALLFHMLVSTITLTLAYQATKINGINVYAFS  
TIGYLSYTLGQVHFHCIFGNRLIEESSSVMEAAAYSCQWYDGSSEAKTFVQIVCQQCQKAMSISGAKFFTVSLLDLFA  
SVLGAVVTYFMVLVQLK

>SfruOR53

MFLKKVLYKTKRLEDKPNLLGPTLKGLYLFGLWQGTGKFRTVVYNIHLTFTFFVTSQFVDLYFVRHDINKVLNN  
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LTPLLKYVSSHYSYREEIRMGTEPLPQILCSWFPFDNERMPGYLISVIVHIMGSGQSGVLAVYDMNAVAIMSYLKG  
QMIIILREKCNLSLFDVDTSTQDVLDRIKECHRHHNVLLKHSSVFNSLLSPTMFVYVLMCSITICGSVVQFSSEKATA  
SQKLWVFQYTSGLISQLFLYCWHSNEVTLHSLVDGRGIYSSDWWKSNVRVRKQLLLLAGKLNHPLILDAGPYTTLS  
IPTFIEIMKGSYSFFTLLFSQMQUEN

>SfruOR30

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PFDMMVPSPEDAMQYIYGAQFQLTICISAYMYFGVDSVTFSSVIFGCAQIDIIKEKLSITSIKERRGTKEVDE  
ALADNYKNLVDICIKHQAIVTFTTELVENAYHSYLLFQLIGSVGIICMSALRILVVDWRSMQFFSILTYLSVMISQL  
FVCCWCGHELTIRSENLRWLYQCPWYEQDTKFRSLFIAMERMKKPIIFKAGHYISLSRPTFIAILRCSYSYFAV  
LNRVNT

>SfruOR60

MGIFVKNATLSVSIISLTALQTVGFWAPEGLTETQRCCLYRWFGVFSFMFMLGSYIFIQVVDLFMIWGDPLMTGA  
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HQLPLRAWYPYDTSKSPAYELTYVHQIGALLIAAFLNVGKDTLVAALTAQCRCRLRLGLSLRNLDKGLDTEKFM  
LTPDQEKTVSSRLRLCVVQHQETLQAAKELQECFSEPTFAQLTVSLIIICVTAQFQLSMTQPDNMVRLLSMGTYLLN  
MTFQVFIYCYQGNQLTEESFEIAGAAYECLWYKFSRLRLRALLIVMVRTRRALRLTAGGFTTSLTSFMAIIKASY  
SLFTLLQVNEE

>SfruOR32

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GLMLYYHLINDFYVPLVDIKYPALIEDRKNDNLFVFLGTYLLLSFACYSSLYTSYVPLGPIFMLHASGQLELV  
RNRIEDLFLCDAAEIRVKLKGIIIMKLQYIYSAVDDMKVKFKGYEITLKGTAIVLPITFYAVLETAKNGEISLEF  
ISFIVGGIMISGAPCYSDLLMEKGEALRMSLYTCGWEQHYDRRTTTLQMLQHALRPIAIQTIFRTLCLDALTD  
LYQQSYAIFNLMNATWN

>SfruOR35

MTSLYRRYFFKKKSKQRSNERIYDKSDYDTSYAPTCKVLGWVAIRMTHNISEKTMLWDMFYWFEMANLFLVGPSE  
LVSMLTAYEAKTFRDSIKVFRTPMPCFGCVVLSMFKSIKMVVHRPVYENLANELREMWPEGEVSEEEHHIISSALK  
QLNFIKGYIYWCNNALLISFLSPPYFITIARYFYGYDSMGLHFLYWLFPDPYQPVYIEITLVLTQTHALVVIWVFN  
AWDMLFCLFLCHITTTQFDLLARRVRLFYVQVDKQLVSSYPMASVSKEFLETEGDRVNSYGAQYWEARYQKEITEI  
VLRHHSILRLTNDVENMFSLALLINFMNSSIIICFCGFCVVLIEKNEVAYKSFLVTALSQTWLLCWYGQKLIDSS  
QRLSDALYGCWYNSSKRARS AVLIMLHRAQKGIYVTTGHGFSVISLASYSTIIKTAWSYFTLLNFFKEKSVN

>SfruOR16

MDLKKFLFENESVVGINTPSQYIYIKIVRFMLVIVGWSWPREMGEPEPRHQTIMINSFFFCVVNAALYGSISYVCM  
HTSELSFLEVGHMYIVILMSAIDMSRVFTLTYSQRYRDLAKEFLTKIHLFFFKDRSPYAMLTTHKKVHLICHFLSLC  
LLSQMLTGLSLFNLIIMYTNYASGRYSTGGTQNSTFEHSLYFPYPFNTSSDMNGYVVACILHWLLSYFCSTWFCMF  
DLFLSIMVFLHWGHFKILINSLNNFPKPSAETRCELEKGFIIINADKYSKEELVEVSQKLKECIDYHREIVQFTNAM  
SDVFGPMLFCYIIFHQTSGCLLLLECSQMTAQALIRYVPLTIILTQQLIQLSVIFELVGSESEKLDKDAVYGPWEC  
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>SfruOR45

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FHILLHYYIIMDMIIIDFSVIFADLEESVALLPRYDTRRMETQORILNARIEKIVKWHLSVFRVAKTVSSIYGPPLV  
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>SfruOR50

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YFVSLNDIFERSDLSQTEKEEQYEAGFIVGIKLHADTLRCTLQTSVCRGVFSGQIIIFNILLVVLMAQMANSERT  
LVNLCAGFTACAVLISTGFYMWNAAGDVTVEASHLGTAVYFSGWYHCQGPSSVRIRKLVVFTMSQAQRPVVLKGLG  
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>SfruOR39

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IFIPSRITIGMDDFSTVSCVGMPLSSSPNRQACMAVLALQELTAIVAVCSYDVALLFLFSHTTAVFRILYQDMTDF  
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TIFKV

>SfruOR13

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SFGWTLVLVYLFHQVSGCLLLECSQLDTAALMRYGPLTIIIFQQLIQLSIIIFELLGSSNDRLVDSVYSPWEYMN  
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>SfruOR3

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SIEAWMPFDPMESSMNLVLSLQIIAVCVFPALCRAFAMQGLVCSMIRYLCQDLIHLQKELRSLDYVKDTEMITRMK  
FKMIIRKHIRLMSYSMKMESIFKEYFLVQNLAVTVLCLNAVMMTTVGQQITLLFSFLVYLVLALINAYIYCYLG  
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**GRs :**

>DpleGR64e

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>DpleGR43a

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>DpleGR24

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>DpleGR64a

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>DpleGR5a

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ICMSYYLTSRLRHINTKVLVARQKHLPEIFWGRTREDYTRAVKLVRKVDDVISGIIIFISFAHNLFVVCVQLFHTLE  
RSSALGGYKTETYFVFSLIYLIIRSAVAVSLITSQINTASMPALVLYDVPTSLYCIEVQRFLDQVTGDKIALTGLQ  
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>DpleGR22

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AHQVAIYKTNWKGQVRYRYRTGENLKFPNLKTSIVIISVGCLLLAVCFLLSLCALLDGFLLRHTTAYYHIITMIN  
MNCALWYINCKGIIKIASQSLSNCFSRDVSIECTASLISSYRFLWLNLSELLQSLGNAYARTYSTYCLFMFFNITIA

VYGALSEIVDHGFRFSFKEMGLIVDAAYCSTLLFI FADCSHKSTLKVAAAGVQDCLLSIDVLSVDRPTQKEVAAGVQ  
DCLLSIDVLSVDRPTQKEIDHFIQAIEMNPAVVSLKGYAHVNRELLTSVCINS

>HarmGR1

MNKEEHGFRVYNTNTVHKNETRKREMFQRIDEKDGIKEYDAKDLYGPEITDKD GALLDAHDSFYITTKSLLVL FQI  
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HFLLP IASWRHGPQVAIFKNMWTHYQLKYLKITGTPIVFPNLYSLTWGLCVFSWGLSFAVILSQHYLQDDFELWHS  
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DDDFTD DDEE

>HarmGR2

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AVYGALSEIVDHGFGFSFKEMGLFVDAAYCSTLLFI FVDCSHNSTLTVAAGVQETLLSIDVLSVDRPTQKEIDHFI  
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>HarmGR3

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RKIANVLNGWVDFEMVYKQLSGRTL PVKLYKKALAMAVIIPILSTTTVI VTHVTMVHF KPMQLVPYVFLEILTYML  
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>HarmGR4

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IYITAFVVSVAVVEHILSMISATGVGFPP EEFLYRYVTLSHGFI LKAQDYTIWKAIPIFVLSKLATALWNFQDLII  
ILISMGLSSRYNRLNLYVRHVVSVEKQFESKQRFGTLEYLQIQVWRR LREAYVRQSTLVRMVDRNLGSLVLLSNIN  
NL YFICLQIYLG IHKSSGSTISR CYFLFSLGWLIFRACVSVLAASDVHLHSQRALKSLHACPSAAYNVEIKRLQYQ  
LAHDFVALTGMGFFSLRRELLLEVA AAILKYELVLIQYDK

>HarmGR5

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YNRSVHLVRQVDKIIGGVFMSFASNLFVCSQLLHTLAGGIKASQCKPEIGADRRFFYGYEHSIYFVFSFSLV  
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>HarmGR6

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NITCAVVLILALCEHILSLLSAFAGASACYS GMDTYEGFVTHFYPPWVFSYLPYSIVLGVITQFLHFQSTFIWNFS  
L FVICMSYYLTSRLEQVNRKLLAAQ GKYLPEIFWRATREDYCRATQIVRKVDEVISGVVFISFANNLFFICLQLFN  
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>HarmGR7

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>HarmGR8

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>HarmGR9

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>HarmGR10  
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>HarmGR11  
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>HarmGR12  
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>HarmGR13  
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>HarmGR14  
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>HarmGR15  
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>HarmGR16  
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RDSVLY  
>HarmGR17  
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>HarmGR18  
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>HarmGR19  
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>HarmGR20  
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EVIYMRFVIKNLKL SFILKRLYRRF  
>HarmGR21  
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QFFNLTEVHLIIILNLFYSVDAVMGLCLDIDYLGKFLQKVRNMDTEHFEMKLKAPVTVFFIFYILIARFYCHTKFRY  
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>HarmGR22

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>HarmGR23

MVARLMVGFYWKTSNKL VNALVKTYCVTIATVFNIMSITYITNEDEHIPTANTIYMAFVICLYDIIIVVNLFYTG  
EYLEDFFDKMENPAIAQDMEAGDKLIVTTAVIIFSLTTKFITGSIYIYEKFTLTNTSKNFILLIMQIINPISNFT  
IMVFELLWRRMAMLRKSLQQDLTSARMEGEEIFKTKLRTSLIKYQLILDTLKKIKHPIQFLVIVSFMNYVKSSYH  
MPDKKKLFSVVILFSDFKYSSLYSTCTASYVWFYCIWRS

>HarmGR24

MVARLMVGFYWKTSNKL VNASVKTYCVIIAIVLNILSINFITSEDEHIPTINLINMAFVICLYDIIIVVNL CYAG  
EYLEDFFDKLENPAVPQDMEAGDKLIVTTAVIIFCLTTRFISCSKYIYETYIALNNTAIDIHCLLLIMQIINPISN  
FTRIMVFELLWRRMAMLRKSLQQDLTTARIFREEEILKMKLRTFLMKYQLILD TVN KIKHPIQFLVIVSLMNYVKF  
SIHMRDKKKLLSVVYLIVRFFQVQ

>HarmGR25

MVARLMAGFYWKTSNKLVTALVKTYCVTIATAFNIMSITFITSEDEHIPLLNQFYLA FVLCLYDIIIVVNLR YAG  
EYIEDFLDKMENPAVPQDTEAGDKFVVSIAVIMFCLTTRFMFYSKLLYKSLIDPSDLSISRNFILLIMQMIHPVSN  
FTQIMMFELIFRRMAMLRQSLQQDVTNTRIFGGEIILKMKLRTYLMKYQLILD TINKTKQPVKYLVI V

>HarmGR26

MDVQATPASIKTIMFIRLLCGFYCDISANKIVTVLVRYCVAIITLVMAFGIYLWNGIIGISSKIHFLFITTPYIT  
SMVTNICFHGEYFSEFLNKMENFNLTGHFLSSIKIPISSLFFVFLQRF LFQMKFTFDAIGLPFRGVLTHASFIL  
ILCLMNYTAEFSIHIMFELLWHRMGMLRKRLEQDISTARILRDGEESIRENIRTCMRRYQHLL ETARVTDGPVKFL  
VDTYIFITAR

>HarmGR27

MYSVNAI IYRFIMGFYTEFSSNKIINFISKIVCVLLNIFITTKLFSLIDYNIVSSFIAFAGYSIIYLTNALASLF  
NSKWIQTYVNDLKSIGNAMGTGADIDIPIIRIILLCLHGLSSTQIVTCEHEFCSGFYQKINGFVYSLATAMATIL  
HMVVFELLFHKVRANRKYLENQLTI FKRHQNIMDLKNNLR LCM SNHVKLIDSLDKTDKSLKTTFFVADLAVIPIIM  
SRVFEIVKSPDRSALVNILLIGKGVVLRSM PGILADLTSREIDKMKHII GQNLLVYEDDDVKYLLKDTHLFFE HQP  
FQYTVWRLFSINTAMNVVAFKMVVSYTLAMIQFAHFFG

>HarmGR28

MPSFRESGLESFFTLKGILIMRSIFGYYYKFSNSVPISVLLKLYCIACCIIIWCHIFVWSDVNSRAAFYDVTL LIE  
ITINMLISL FVEDEFSTLNDLIASLPTKQNLRLTYAVI ICTIIEQVTAFTYGRSLFTAEDAALYMFQYISCTYGR L  
SLIYQAHNNEKAIKTLCDSLDKIEDMNM DAAEKRGHVEKFIDTFKQIINF SFD AKQVMKFKVAVLGYVCDFFRV  
QFMVYIYIEFHLKIQVTLMLPWYCGVAYSIFIICLPSMLGELANYHLDEIKVVLVDEVIRNEGTYFVILGLRFD

>HarmGR29

MPSFRESRLESFFTLKGILIMRSIFGYYYKFSNSVPISLLLKLYCIACCIIIWCHIFVWSEVNSRAVFDVTL LIE  
ITINMLISL FVEDEFSTLNDLIASLPTKQNLRLTYAVI ICTIIEQVTAFTYGRSLFTAEDAALYMFQYISCTYSRL  
SLIYQAHNNEKAIKTLCDSLDKIEDMNM DAAEKRGHVEKFIDTFKQIINF SFD AKQVMKFKVIQFISTSHIFVK  
FKIMQ

>HarmGR30

MAYLQKNLHIVKFLEPLMSVKTIMLIRISGGFYHKISSNKLISCITALYCLAITAFLSVNLTLNYP SYFILVKNY  
VGFLIYYLLVGICLLTDSGYFQNFLNEIKKIDHMLGASSNIKVPIS SFLLLGIITGVTGMDVLYVIYEVENNRQEK  
GFFITLFCMSLLVQTCAIANYTNVMAFELLWYRMRI FKQFLENTL KREFRSQDEEIKINAVRNCMVLYQRI LDTVN  
KNNLPMKLLTFVLVTKFIPKTVATLYDITNAIPEVSYMLIHEFFVDFMVLCAPIFADLICGEISSIKSMFKKQL  
LTCQGTFTNCYLVLAKRSQ

>HarmGR31

MDKSLYKLLLRFFFGHYFKLSSSKRICFIAKIFCLFTVIYISVIFVKFLLFGSVISSAINLWILLIEAILSIFL  
SLHTEEAYVLKFSAKIKNYVSSSSTCRVTNVLAF LII PINLFYLLAAYQEFSITNNLLYNITFTVCYCSYLTSLY  
ITEMFASAINNLTSDTVIKLDVDITDEEKRFCIENFLDNYLKL MNINVTATVSRIKVS V

>HarmGR32

MPWLKGTEIESFFTVKGILLFRLIFGFYFKLSNSIIIDLLIKSYCFLCMILMWLHII FVPNPENPAARVYDTLLAI  
EITLHIFLSLSKNEFGLDLIHSFDSAILQTKPRCLISYSMIFPVVFLEIYVAAFIINWNETKF INITMFYYQFVAC  
YASRLAAIFQSENYAHATKTLVYQMKENFESNMNSAGCEHVQQFNDKITITVDFFDKHRNVTRFKVKHLCSIFF  
FYIKK

>HarmGR33

MTDDTLVCDIKNVLFIRFALGFLQNFNGTSKTRWLSYLYTICFLLFAVLSLFPNEVIYVSYRILALIEYFFLFMI  
SFLSKEEYIYESYKLIYGLDTIPGAKLIFQNL EYCLKVYFVSVFTGSFFTGISICFRIQEACSITNSFAVILTIL  
DRTARDIGAYSLIMFIGLLYSRVKLLRN YLDTKSANTAWDRYSVKQYINMYESLTNTIDDSAVPVKVTVCFSCTLL  
L

>HarmGR34

MTDDTLVCDIKNVLFIRFAFGFRQNFNGSSKIKRLSYLYTIFFSLLFTALT LFSNDLSYHLSY LILALTEYFVL F  
TVSFLT KDEYIQRNFKLIYGLDTLP GAKKIFQNL EYFLKVSFVLGLANILFFATMICFRISGLCSIANLLSFFYIL  
LHRLACDLGDYVLIMFIGLLYSRVKLLRN YLVTKSANTAWDRYSVKQFINMYESLANTIHDSAAPVKVTVCFSMYS  
SSELSIN

>HarmGR35  
MMIDSLVSSLQYIMFLRFIFGFRLCDNSSPQMRLFTKLYPVLFFIVLNFVWSSENVLNPTLRYSTVIEYCAQFFV  
SFLAKQEFVNKNYQFIYIGIDSLPGAHNFKRLRVFIKFFCLYYILLRLLAILQLVVYVGPLLKNVTADIIYFHVCD  
IGRLNIFLVCILFCRVKTFEMNFQTTIDVVVLDKYSVKKYINMYQTLIDYVESMDMLFKLMVIFFIYRNDRFR  
>HarmGR36  
MIGDSLVCNIKYVIWLRFAFGYLPNFHGSPPKMFASFYTYITFLFISFTTIVIAFPYKFPWFVRVLALLEYTHFL  
AFVTKDDYLYQSFRFIYIGIDTNANVRKLYRNLEVFVKFIILYFLANKILVMMMLCYRLPSICLFSNTLDFSVNII  
RLACDMGRFTVILSIGLLYVRSKILKMNFLTQSPNTICGRHSVRNFINMYESLINTFDKIKTPTNITVCFVITY  
>HarmGR37  
MIKNNLVVNIKPIMIFRSLFGYRQKFNSPLKSNFFDVFSLSISFFMWLSLFFFKTYFPLVYVMSDNIEYCICFFVA  
FFTKEEYIYFFYKRQSSIDNLPGAEKLF SRLNLILRAFVVCFLT KIVVIIILRVFAPEIFQLGLYLDIVMGLSQS  
MSCDMGRFTIILMVGLMYCRMKIIKDNMDMIGSDLNRNRFVARNFIQMYQSLVCSLQRIDVPLKVSVSPLFSINQK  
>HarmGR38  
MTDDTLVCDIKIVLFI RFAFGFLQNFNGSSKIRRLSYIYSIFFLLLLTALLLAHNELVALSYRIMALIEYLI LFM  
SFLTKEEYIHQYKLIHGLDTPGAKKIFQNLNFKVSVFLGLTNNLLCASFCFRYPKTC SIATPFFVPIILH  
RLACDVGGYTLIMFISLLYSRVKLLRTYFDTKPANTAWDRYSVKQYINMYESLTNTIDISAVPVKVTVCFSMCS  
LVSIN  
>HarmGR39  
MNSNKKVCNLHHILYFRLIFGYFYKQPTLKLRI LTKLYIALFISGLTWLFITKVNGMLYYLQYCDILEYITFIIYS  
LITEDSSLLRSYEEKIKIDSLPVAKQYFRQLEKFLYLLFLICGLRLFASSLCIYAFEICKMAPFGVSVTNTFLT  
AMDWRHLNTVIWFSLLQTRVKILKNTLEIQGFDRGPMQRFSPRMYIKMYEELVGFSEFNGYAMKSIVRITSH  
>HarmGR40  
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MTRDIGAYSLIMFIGLLYSRVKLLRTYLDTKSTNTAWDRYSIKQYINMYERLSNTIDSAVPVKVTVCFLMHYPSLE  
LSIN  
>HarmGR41  
MILKYLKINSLLKIIYSVNGIIITRFTLGFYTEFCSNKKIILL SKIYVVLTI LNVSVNHIYTKEQNISATLSLS  
FFAIIYFMNSTASLIIDSKWIKYVNDLKSIRQSMVADKCFDIPISRIIMIYQAFTLMMILVYCHYDICRHHIYL  
RVIEGYAVTSTVTITVPTLVVLELMFYAIRENRKCLEKNLSKFNTSGSVDDLKKNFRNCMSNYTKLRDCLKSTDA  
PKTMVSMNEV  
>HarmGR42  
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FVTKEEYIRQSYKVIYGLDTPGAKKIFQNL EHF LKVSFVLSWTNNLCFSSLICFKIPEACSI SYLSVSPLLLHR  
LTCDAGRYTLIMFLGLLHSRAKLLRNYLDTKSANTAWDRYSVKQYINMYESFTNTIDISAVPVKLTVSYSMFSPSL  
ALSITLSR  
>HarmGR43  
MCILYGFYSYIESEDPLYTIIFTFVDYMSCDLGRFSLFIIIFGLFYCRTKGFR LNMEGEGTDIPWDSYTVKKYMNSYQ  
ALYNSLFIA YKIIITVVRFKAYLFVARLFLQVG  
>HarmGR44p  
MIGGNLVCNIRSIMLFRFAFGYRQKFNGSFKL RVFSYIYPITFLIICNL DIFIISTLSLYXIANILEYSIYFFVAF  
LTKDEYVFKCYEFINGIDNLP EIQKLYNLNKIIKLG PWLFLV LKNSIMCIIYAFYSESEDNPLYIIFFTFVNDMS  
RDLGRFSLYLIFGLFYCRTKGLRLNMEGEGTDIPWDSYTVKKYMNSYQALHNNLFIAYKIFIKVVS YKVYLVFFV  
LQVGHRKIFIA  
>HarmGR45p  
MKSMIFFYCINKALLMYSLCILFPNICHGPLKL VFIADHIYGMGADLGRFGFLVLGILICRLKTVSMSFKNIATE  
VSRDKYAVKKYMNMYETLINYVEEIDTPIKFTV  
>HarmGR46  
MVKQFINKLKTQFQYFGLNAVLFFKLIFGSY YDFSSSVILRRFAKAYCIFVIIAYWFVIYFIWTVNSKISLAFFL  
IVMTVDAAANILFSFITEEKYVIEFSSMVL FESGLNDRNIYFYLQIFHLVIVISSYLKRYYSIYAYAVAFVNISAY  
NNRIISFYVMNTFKDAVRSRLRLSLSKHFKNKNLTS DQKLLQINKFLNAYMKLLRIIDKVFKIIRFKVSFCTICDII  
FLPASNFLKCFVCPVLDCLCIDSRLQNIRYIIPWISICISGKCYFALFIYLYAYR  
>HarmGR47  
MFQQIMIKIKNKIRSFYSLNSILFVRLFLGLYKLSESIIRLF AKIYCILYLILYLI FVKIYNTTDTDNFTFEFY  
GSVIL IETVTNILFSLFSGELYVMKFLSSLPESDLYSFGVPLNLIICHSIKVILEYLFVPIPVFIGWVYLSVHMTI  
YNSRMTTVCMMLRQAYKSVSGTLIRNIMRRNVTDEEKITEIKIFVKGVMKLGHNMSIDINITRFKVRF  
>HarmGR48  
MLQQLLINLKSQFRSYPLNAILIYRFIFGLY YDLSSSAILCLFARLYCILIL IATVYTIN FVKAISPLMSVTFYA  
MTKIINAIVNMLLSLITAEKHEIEFSSKVLSETGLRHRNFYRNLI FCYLAVNVSV CIEHSEAPTTYPISFLNIT  
NSRATSGYILQIFKDTVRSYRLSLINNFKNKQLTSQEKKYELNKFLNSYMKLIINLERVLKIARFKVRQLNGNFFI  
TGLGK  
>HarmGR49  
MIAKIKYILKQ RSPWILKLVTFCLFYGQYLKISESKIICGFLRVYCIFISSVIIWGFYISYTKNVIYYGFAIEY  
VFTIVIYFILIYND SIFKFYNNLEIYDRIMGFKEIPH FACYMIMFLIVNAIFRPITGFFRSTYIFSTW IQRISVGGA  
LCIIE MNMF GIAHFFSLFHQRMQLMRKFLESNSVPVNITGMDEVAVSVRNVKKSLYYYDKLLDCLQSLDIQVQIMV  
IVFII FVF  
>HarmGR50  
MEMLSKLKLLSSCVDHFLPILRLGFR CYSRISDSKHVCYIAKLYTVIIFIFSTSGFLYWHRSTVISILLATQYCV

HAIYSFVTS DKQAFR FHR SVKTS DAIMG FKNLPYISKPVLPVIYITVLLWMFYVYFWIDDLHLSTYIMTICSDLN  
TVTVGILLIGVFSRMPIMKIALENNFVPVNI V GKDQLQKNVKIVRKCVGYSNLLDSFDVIHTQFQFTVSDFMKA  
SCHYIVQ  
>HarmGR51  
MQEVKKLTKTQISAMWLVIFFTSARAFLGCKYKISESKLICFLFRIYCFISFSLVAYYFRDNIDTGSSSHMLVII  
EYIIIVIFHMFTGDTYMRFTFVNAIKMNDRIMGFKGIPFTFKYVYLLMFLGTVSKTVAGSFRYMYSLATLLRCLTIG  
AILVSVDNFQLTIIISF SMLHYRMKVLRRFIDSNSVPVNI TGRDKVAISIRNTKMSLFYNNLLDSLQLINKELQF  
LVKNKFCY  
>HarmGR52  
MITKIKYILKQRSTSKWIIKLATYLCLLFLGLYSEISESKIICGFLRAYCIFISSLTVWAFCVTNTTNFISYVFVIV  
KYVS AVVFIILHND SFIKFNNLEINDRIMGFKEMPYFSIHGFMFFMCNSIIRTATGFSRNTYIFSSWFQKLSIG  
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MVNAFNIFVFDCTLCYYLYYTIAIIAT  
>HarmGR53  
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VFLVIYHFICENNSFVIDVIKINDRVMGFKETPLVNKYLSFYMVLSVLRYYTTGQLRYTYHFVSWNEHISLGIAL  
ISVDISMWGSIAILTMIHDRIKILRKFIQSNKVSVNITGRDEVFISLRNIIKKS LHYDKLLDSL DLVNQLQFQVN  
VLFRIVHIKYIC  
>HarmGR54  
MPQYSPTAILITIQSVTVIYGYITSEKHAIRFFTHVITSDAIMG FKNLPFVRNAVLPVLYIFYLIWGFALYYRWV  
DLIRLPTIIMLLATDFNALCTGILFFGLYERMQLIQRTLENNFVPVNI V GKDQLQKNVKIVRKCVGYSNLLDSFD  
AVETQLQVMVSGLMKVIEQIRCSSLHKIATYEGVVLFLKIYSVIFLGSICVALPRAVLVAGI  
>HarmGR55  
MDASKKLKFILEVSIDIFLPLTRNLLGYYTKLVDSKYVCYFCKFYCVFVNFYLVLTQTYLHGFFSVRDLIVFQYSV  
GAIISFLKADVCGVFFPKHLKTS DAIMGFENV SFGKRSVIAPLYFLYIARQIMVYI I WFDAMSFPVYFMCAASDLN  
SLLISIIYLSIFGRMKLLKKTLENNLPVNI V GKEQLDKNVNIVRKCVGYTNMIDAWNII DNDMQIMLAVALLTN  
TPIWIMNFYAVVMLFLQPTGQQEAVKLVQGNILSLLMATSPTIVSELISNEIDA IKATLVTLVRCSDPSLSSELE  
VALHYIHI PPFKFVICRAVPVDINMPTIIGFCITYVIVFMQLHFSNL  
>HarmGR56  
MIVKRNNFIQNRQPSLWLYKFITILRCLLGNYREVS KWKPICYLFLKLYCIFICSVIVVSFYLSHYSSNFTNYIVIL  
EYVAIVFFHFVCGDNYIMSFSDVKINDRIMGFEEIRLPNYVCYVGFAGLLLRSTVSIIRIPIVGNLSRYYSITSA  
ILSTDINQLTVIVIFSIIQDRIKTVSTFIASNSVPVNI TGRDEVAISMRNVKKSMLYNNLLDSLQHINKQLQFLV  
TTFLTILKIFGNLVGFIPCN  
>HarmGR58  
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LRSKTNLIMLIFVILHAANFVLEFLT SNKTLWLIFISYHLHMTQEIELLAFFNCVSMITYRIQLINKFLTFFNNGQ  
EQRDLTVFIVREKNNEAQEKLNFVGRVSETNVKLRDLATMYDIIGKICLMINKAYNLKLFMILVTAFTFILVTIWQ  
ALSFYQSPQYCTQDFVKLSLWCFSTVCNLSALAFVCERLLRARNKTRILVNKIIMNYDLPKTMRVQAKAFMELVEA  
WPLRIIYIDMFSLDITLLLK FISVATTYLIVIIQIFHFI  
>HarmGR59  
MEAEYDNKNKYFTRMTLTKSHEKQIIETLNI FIIFEYFFGIFRFRERVNEELREP NWKKVLSFCITSTCAISFVAY  
SVITLNIVMRATMREAIYINLTCITTMLLQFCSSALSSSTFFNFNTNIRIITTLANLDVMLQIEDYKNFYKKCLFTT  
YKYVTVFITQVTL SII DGFTMYLGWAVPA AFLDFSQRILTILTFCKYVDLLRRLKIINNYLKAFTDECEKETITV  
FTLRSRTNKTQAINFIGHASDNNTKIRDL SRMYGMIGQACSMVNKI FNLILITILFNSFIFIITIMWISLVMYRN  
SSDNLGLYINVVLSFFCWISYLLFITITCQRLVSLRNKTKILLNKIVMNYDLPTTMRDQAKAFMQLVEAFPLRIHV  
YDMFSIDISMLKFISVATTYLIVVIQIFNFF  
>HarmGR60  
MKEKIKGKLNSSPEKFNIRSVKRIVDTINVI IKA EYFLGIFRFTIVHGS LREP NWKLKILSALIVLICSTLFLLLS  
ESYYGLSSHLYRNFTDSTVINLSYFVMAMQYSIHAIITITFCFNASNICIINMLANMDTMLKAKILNNFYKKS L FQ  
SYIYVLLVSTQFSITTLACCTLNTSWSLIAGILDIVQRLEIVIFCRYIDLRLQRLGVINNYIKKFVSEQEKEPSAL  
VFTIRNRTIETTETINFIGEASESNDKIRDLAKIYGTIGHTSSMVNMKMFNFQILTVIMSTFIFI IAIMWTLCKFYR  
NNYSNTGYLLNLILSTMFWISYIALMSITCERLILLRKETKSLVNKIVMNYDLPTTMRDQAKAFMQLVEAWPLRIH  
IYDMFSDITLILKFISVATTYLIVVIQIIKFF  
>HarmGR61  
MQRFVMKDNNEVKAKEPSESNEKQEENKYNDKLAKIMYTKKPVTTILEYCFGVIKFYFRNGQMHPNKKIIGKTYVF  
FVVLYTFVLF EYFYEP IQTNDLNSKIVLAALPGIIVFIQYIASSIKNSSNSYPKLNIEIITTFAKLDTLLQVEDIN  
NYYNISRSKVNLMVFLPIV FHSVNLLLEIMTYTYQIW PPIIWFHLFVTQKMEIVNFLHIVYMSTYRLDVINKMLRT  
FILENRQKDVTVFIIRKKIKNTQTKNFIGSASEDNEKIRDL SAIYNIIGNNCSLTNKVYNFNLLMSLVTA FVFI L V  
AIWQTLTSLYQSSSQYDMKDIMKVTLWCCNTVFNLAA LAVVCEKLLRTRNKTRILVNKIIMNYDMPTTMRDQAKAFM  
ELVEAWPLRFFVYDMFSIDITLILNFISVATTYLIVIIQISHFI  
>HarmGR62  
MENNMTEEKNQENKQNM EYSEENECKIKIQKVMYTVKPVTVLEYCFAMFKYNFCDGQLQPTKTGMKIYSSLCIIVY  
ALVFFRFFFM PAVGYPIITLVPPICAFIHYVISSFIAFFLSGSKAYICIFTTIAKLDQLLQVDIVKDFYKKSRSRT  
NILVFI AVS IHALNCFLEIIGDLKEYVMTLTSFHLFFTQRIELASFFNCVAMVTDRLNVVNKFLDTFVTEQDKDI  
TVFIVKERKKESKETLNFIGRASENNVKIRDLAAIYDILGRTCMMINKAYNFSLLMILTNSLAFILITFWQALSFY  
QSQEMDSSDLIYMAVWCMTISNLIALAFGCERLLRARNKTRILVNKIIMDYDLPRSMRVQAKAFMELVEVWPLHI  
YIYDMFSDITLILKFISVATTYLIVIIQISHLI



>HarmGR63p

MEFQLEEKIPSYRNTNKRREGEEQIFNTLKIIKIEYFVGIFRFTLLNEKLSRPNWRMKSISIFIITISVVWFFSFA  
AYNLELPSVDVTSYKFMNLICIIFMFLQFFASASTTFTNTSNICIIISMLAKVDTMLKVENLSNFYKKCSLNTYI  
YLTfVIATQILISIIDILTVRISWAITAGILDFVQRLEIAAFCSYVDLLKCRNLNIINRLKTFVDDQEKKATAALT  
IEFRSGIIENFSFIGQFRENNTKIRDLAKIYVMIGQICSKVNEIFNMQILTILIPLYL

>HarmGR64

MEFQLEEKIPSYRNRNKRREGEEQIFNTLKIIKIEYFVGIFRFALLNEKLGRPNWRMKSISIFIITINVVWFFSFA  
AYDLELPSVDNVT SYKFMNLICIIFMFLQFFVSASTTFTNTSNICIIISMLAKVDTMLKVENLSNFYKKSSLDNTNI  
YLALVITTQILVNITDFTLVHISWAITAGFLDFVQRLEIAAFCIYVGLLKGRLLNMVNHYLKTfVDDQGKKAATALT  
IEFRRGIIENFTFIGQVRENNTKIRDLAKIYVMIGQICSKVNEIFNMQILTILMNTFITIMDMWTCCLVMYRAPTS  
PKLGVLINVTLSCTTWISFIAMMSIRCERFLYVRNETKILVNKIIMNYDLPTTMRDQAKAFMQLVEAWPLSIHIYD  
MFSVDISLTLSFISVATTYLVLIQVIKFF

>HarmGR65

MEFGKDQDNESNIDQDYSNQKKIVNIYNNIKRELIFEYFTGIYRFQLIDGELRTPNWKLKALGIVIVSIYTAAFI  
WFIIPDPSDCMTGLHVLNNIDDFPCIVVLIQYIASMITCNFLMNSKNIRSIITLLGEVDITLQVEKIEDFYKKIES  
KLNKYLILLILTHFIHGVLDFVSSDDIVWEMTILPLYLNQKIVVLIFCSYVIMLNSRLRLINSYLREFIQEQDKRS  
VPVFTVRGKTKEKTLNYIGRPSIRNTKIRDLATTYDIMEICFMVNEIFNFQIFISLVTFTFIVITITWTSNLV  
YRKPDYQSSQLINVLIIWCMNMCNVAAMSFACERLLVLRNETRILVNKIIMNYNLPKTVRVQAKAFMELVEAWPLR  
IYVYDMFSIDITLMLKFISVATTYLVLIQISHFI

>HarmGR66

MLDALLGMVWAFVAGIITFVQRLEIITFCKYIDLRRRLQIINQYLKTFANEQDSKYVTVFTMESETIKTKETVN  
FIGNASESNTKIRDLAQMYGMIGHTCSMVGKIFSLQILTILMSVFILLITIMYSKQSHRLPNFNGCLWSNGKCSSF  
IFLLDFLLGFHVIQM

>HarmGR67

MANVKKVEPNPKVENKKCDQKRTMLAIINTIKPMLFVEYLYGIHRFYFIKGQLRPPNWIMRAYAVIHTGSFLVLF  
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YVLLALSVSHFINSVIDFVTADDITIKGMIVLPLYFVQKLETFTFCKYMYMVRRLTIIVNDYLRAFVEEQEKNSA  
NIFTVTNNKVEKKREVNFIGRASDTNTKIRDLATMYDIGKICHMINKVFNFQIFMTLVSTFTYVVTITWTSLYYY  
RKPGSNLGEINTAVWCCSAIYTVGIMSVSCERLLLVRNETRVLVNKIMNYDLPKTMRVQAKAFMELVEAWPLRI  
YIYDMFSVDITLMLKFISVATTYLVIIQISHFV

>HarmGR68

MDDDKEQDNESNTVKDDVKTDENPKNMVEIINGMKTELIFFEYCCGIYRYQLVDGELRRANWKRKALGTILIIY  
IVFFWFLFMDPDDDDLHFFMSTIEELPSVVVLFQYVSSVIANNFIFNSKSIRVITLLAEVDTMLQVEKFADFYKKI  
SFRLNKVVIFLIISHIVNTAMNFCSVQDVAWGITVLPYFIQRVEIFIFCGAVYMLKCRVKIINNYLKEFIQKQDK  
KSVTVFTVGAKPKPDTTLNYIGRPSIRNAKIRDLATAYDNIGEICSMITDVYNFQVFLTLVSTFSYIVITITWTS  
NFYRKRDYRIRQLINVMICWCFNMIFNVAAMSFTCERLLVARTETRTLNVKIMNYDLPKTMRVQAKAFMELVEAWP  
LRIYVYDMFSIDITLMLKFISVATTYLVIIQISHFL

>HarmGR69

MEDTTNEDTNYAKEKEKLISESKQILDTMHLINVIECINGIFRFSFVNELLPPNRIMKMLTVFCILIIYVIFV  
CFISLSPLSDDEFDVALVIQFSITLDFLQYAACTVTATFLVNSNYIRIIDSACLDTLEIGKLSNFYKLSRFET  
YKYIFLVVFTQGLRAIADWFSDASTILYTLNFLLSFIQNVEMTFCKYNDMLRRRLKVINQYVQVFADEQEQTAT  
VFIVKPKNEQEKEELHFIGRPSDDNTKIRDLAKMYNAIGQICTMVNEVFNFILAFATFTTYIILNMWTCCLHYR  
IGLNDLGMLINITSSFFFWILYVVVISITCERLLLVRNDTKIQVNKIMNYDLPKTMREQAKTFMELIEAWPLRIH  
VDFMFSVDISLMLKFISVATTYLVIIQIFNL

>HarmGR70

MEPIDKTEIRNRAAKILHTLKPITIFENVYGIFKFNLVNGDLRPPNWKLKTVAVIYMSIFCYLYVVKHYSQDFVES  
TTKWSREYIMKQVPAWFLVIQYVVSCLKASFPDKSKSDIHIKTFAECLLHFETLNRFYAKSRSTNIIVLILL  
IYHLLNFVLDIFSDYDPRVFLEAHIYLVQKLKIVGFRLMYMVTHRLDINGCLNKFILEQERANTTVFSITKRQ  
KRMKDMFNFIGHPSESNVQIRNLALMYNIGKQCCMINELHNFKFFMILLAAFGYVVVTIWTALSYYQTQQFNATG  
TVIIAIWCLSTICNLTAWACEALRRERRRKTISVNMIVMDYSLPKTMRVQAKAFMELIEAWPLRICIYDIFSID  
ITLLLKFISVSTTYLVIIQIYHLI

>HarmGR71

MFVTIKKKPFNIIIGNHNHIEALSRTNFFRRFSGISVFTLKLSDADNRVIRGFSKFGFTCFLTWLSLYIYCTYRAHA  
EDQTVLRVLFSTKVQRYGDDYERISSTIYVIFAFWKIPFRLNINNGFMGMVVKVDKALEELGATVNYNFDALLALS  
MSISQTFLCVTRLSSVWLTLRHLGVPVPSEKMFQVILSDSLALIAAHFSFFLTVLRRCFRHMNKILQDIKNHKS  
W EHKLFIRGSMFSNPQKAVSLQDKFICEKIKACANIHAMLYQMTDLTNKVFGSILMVTILYQTYTIWFMFSFMEAT  
AAGLFHIVERYVFCINVFWEIGYATFITFMVIYVSERAVYEVSVTHRA

>HarmGR72

MSATMKVPVKNKYFSYPFKLDGCKNIVEALSRSNFFRRLGGISVFLKVGSDNRVTREISTYGLLFYIVWYAIYVY  
CTYKAHYEDQTILRIIYSTKLQRYGDDYERISSTAFIIFAYYKIPFGVNINKVFISMTVDLDKALENLGENVDYRL  
DALLALVISISQIALSTTRFFSIWLTIIYQLDVPIPLERMHQVICSOTLALIAAHYCFYVKVICKRFQHMNKILED  
IKNHKSWEYKLFTRGSMVANVQAKGLEDKYICEKIKACGKIHSMLYKMI EANNKMFGSMIMLTVLVYISYITLYM  
FYFMEATAAGLFHHPDKYAVLFVYVWLWEIGYASVTIYVIVYISEYAAEVS

>HarmGR73

MKFDHNVSLKQMLWLKIIFFQFCNWSSSVYVSFAKLYCISNYLFIFIYGSIKMSHFNQYSASIRLNYITSIVELN  
VDTLFSLIHGEEYVRRFVKMLEKDFPGLQKFKYKYVVTIYLSLIGLVGFLIFFTMDIRGGDNILKPCLFFNRSVACY  
FCRISVIYVIEGYRNTVSI LRKQLNTQLNMNNITEAQKTVFIFEKTHSFIKLTEHFDSAMTIRPLTIFRFVIDFC  
KILNIIYYISFFDISSFVISWTFEVIIEMLSLCCPMLILESAAADDLDEIRKIIAKELLTYEDYYLRSVIYESMEFV

DGYTTGLNVWNQYPMNKDMVLAFIGLITSYVIALLQFSY

>HarmGR74

MNITESKTI CYFMKLYCICFSAVVIANFYFIEVHEKNIYSLIFVSIVEYALISSLSLIYGFNLFNFFTAIKTNDR  
IIGFERMSLITRYSYLIIFVNSVMRYVITVSFGSTYIHSLEHFFVFLAAIALDLYYVTIIILFALIQRNMKCLRL  
FLASNSVPICITARNNVANSIRNVRKSLVYNNLLDYLEGLGQQQLQYMVHFLFIYFFVLLLELVKDTISYLSLFFLL  
QIFVNWVCYTSRVIILLYSITVFYSTGVS

>HarmGR75

MITFQSFLSKDLTLRMLQIIAFLRLFYGNVVTISESRAICYLVKLYCIGVCSFIALFGFYAITQLYSFTTIIISFTLI  
DYFMTALIFVVFSDQPILHFFSGVQTQDRIIGFKKMSYINKYMYFILFCTSFMRLAFFIHRITSYRSNLEFILVV  
YILTATDLNYLLIIIFSVLHNRNMNRLRLFLESNSIPINITGQNRIAISIQNVKKGLIYYDRLLDSLQSLDKILQC  
QLMVYSITQFLRISMMYSRLIQQFMVEYILLRSTINVLELIPTALFVFAPLIFVEATTYEVERIKTILTAQILRSS  
DECLRFELQTALQYVRLRPFYRTL CRAVPLDINLI FT TASLCITYVIVACQLVYFSK

>HarmGR76

MKPIQNFLFRDNATLSELLRTIAYLRFLGNYVHVTKSGGIRYFLKLYCICFFMSVMSIYVYTSVPFQFTVFSFT  
VFEYILTAIVFVVSDDKHIHDYFINIITNDRIMGFKKMPYMTTYVYLILFSSTITRFCLCIIRIHTNIHTVITFCA  
ILISITAMDLHYLLVIFLFSILHTRMNMNLSLYIESNSVSVNIIAHNEIAKSIRAVRKSLSYYDKLLDSFENLAKIL  
QYELIIYWVTEFLRASIIITYNGLQGLISSKGEHLVLQHSNSVMTLNLMEVIIISVALISFPAPIVEATVYEVNRIKK  
TLTAQILKCSDECLRFELQTALQYVRLRPFYRTL CRAVPLDINLLFTTAALCITYVIVALQLTHFAA

>HarmGR77

MIPEQLPNQQIVSEWVLKIIAACRLLGSYMNITESKPICYFMKLYCICFSAVVISNYFTEVYENHTFSVFYVFI  
VEYICMSFLSLIYDYKFLDFFTTIKTNDRIGFERMSLITHYTYMIIIFVNSVMRFGITVAHGSTTTKSDLGHLICI  
LLTFTALDLQYLTNIIIFALLQNRMKCLRLFLASNSVPICITARNNVANSIRNVRKSLVYNNLLDYLEGLGQQIQ  
SMHYTDLFLGTLTIGVHVKVMIYSPALIVEVTIREVEKIKAILTTQILRTSDECLRFELQTALQYVRLRPFYRTL  
CRAVPLDINLLFTATAFCITYVIVALQLNHFAE

>HarmGR78p

MAIQYSVHAIYSFVTSEKQVIRLYTSVKTSDAIMGFKNLPYVSKAVLVPIHITLVLWMLFIYLFWIDSLYLPRYII  
AIASDVNLLTVSLLLFGLYSRMRVIQNALENNFVPVNI VGKDQLQKNSNPMHGFTLAIINMASIIVSTSPAIISEL  
ISNEIETIKATLVTLVRCSDPSLSSELEVALHYIHIRPFKFVICRAVPVDINMPNTIISFCVTVIVIMQFIHFS  
SVY

>HarmGR79

MNPKLLFQFKSPTLCLIQIIALLRLLLGNYINLGHSKLTFRFLTCLYCVVCSSIVSMYILSLSERALFPVYSFIIII  
DYTCAVILSIIIFGYDRYPAPFLAANMTNDRIIGFKINLSLTNYAILSIGSAFLRICLIIAHFLSHPSILAFCSIT  
CAIAATDVNYIAVIIIFTMLHRRMKNLRTFLETNSIPINITGQDEIAISITNVRKSLLYNNLLDNFQSLDELLOQY  
AVSKYTIWRMFQITINWITNFSRTC VVVYFFVQHIIAQLYPSLVLISSPAIIIVETIMYEVDRIKETLTQTILRCSD  
PKCYTSIGISLSSVCHQTSVSGSSCRRRCSTCACVRS DTRSAARCRSTSTCCSPPPHFALLMSL

>HarmGR80

MDRASTFRSKLNVKRGTKLNPIFTKNLHSEVLLDNFIEKDLQSLKPLNIMYSVFICAKYSIRDNFITCNNFLYNF  
IGVFTTGLFLCISVYRICSTLSSKRIQYVIFEWNTIFNFMSYSLGLIMNYIINIRFSDKNIQLVVKIQSVLRVLKM  
NRKDLTCLLVYNWSGVLAINALIVGSIAYMMYIFFPHVDILDVIYFYSTIVFDVNIMYSLVFVANFSRKALCSWIND  
VLQSGDDSDFYWNRMFNVYLNMLDIYTTLEVVFQYSVRFHYLEIFLNY

>HarmGR81

MHNLQPKMKMLKMKKIIQKREKSFDPNRI GF DYQLDKELHQIVNSFNFALNLCFSSKYYVQSNHIEARGMKYRLLT  
SCYTIIMGLLCIYRIVTADIRDALMSYSENCFLRFLSGLYYTDYLLGFILCYILDIVHSHNHIILVAIFKVIHRSI  
DCSKIYSRFIWNWITLCTTICIDLFIYVMYGGFFARFSLIENISDCLCDVMFITFYINYIIAIRVIIILKVYLDE  
WILNIRNLSNGLDRDEVCLKLIRVYNDIMKAYDLYKSIYQLLVSSLMNHLFQKFSVAFLECFIFADSNSRTGHIF  
AKFNVLSDHHPQEECTGRR

>HarmGR82

MSSITRYDVGTGNSCHSVNSRCPVNKVVDLQSI FLPLNLLQILVLNPKFYIRKNLVKPNDC LQKLILMCGLVIFL  
SGYVYRVTEIILDDNLKRYGSINFLYASYFDFVFYSSGFIMNVIHCKQSSKMVTFVLIFQKIHVFLNTGSIKRS  
VIRNWTNVTVIFVFYILVMLFSSLSIYNQASWNFALNLLYLASLDSNIIY AISLMRLLVDKLELWSVRVLTSTDG  
NDVTYRYQMFEAYKQILKCYDLCKDV FQQQVSQVNLNAYSETYIDSVES

>HarmGR83

MYVRSVEDIPTLPINRLHINNMVDNDLQALLRPLNLVPRLLFCASYRIRHNFI CPNSFLYNVLVVFYFVSFRCLAL  
YTVIYLCIYIVDFHGGSKIFFTLDCLDFTIFSIGFLINTYVCFKESDNNILLILKIQYVLRNLNVSRCLCKSLIA  
SSWWSVILIHAF FIVSGTYCYFYFSELRITDVLTQYPTILFDVNVVIYASLLIKLLEKTLRWIEAVQKQNI DNSER  
ERHLEMLFDVYFNIQAGAYKIDKTFQIQVNIYFHVLLIIKNVMTMLLIKNYESIKNIKYFVLVFIISQTWLLKSIVV  
FIYLSVECFERFYAAMRDVHDTSIMLMNSEQFAELDMRVYKNIHRARRSLFSKLDGCRLFQVDAELPLQLSRLISSY  
IIVCLQFAFL

>HarmGR84

MKFDHNVSLKQFMWLKII CFQFCNWSSSVYVS VFAKLYCISNYLFILIYGSMLMVYLGQYSASVYINYVTANTELN  
VDTLFSLIHGEEYVRRFVKMLEKDFPGLQKSYKHYVTIYLTLMFIEISIFFIMDIGERQLQSAMFFNKHVACYF  
CRISVIYIMEGYCNTVSILKKQLTTQLDTKNVTEAQTKTVFIKEFTRSFMKLTEHLD SAMKIRPLTIFRFIDFCK  
ILNIIYHVCFFDFSRFILSWCFEVIIE MFALCCPMLILEWAANDLDEIKRIIAKELLTYEDYNLRS AIYESMEFVD  
GYTMGLNVWNQYPMNKDMVLAFIGLITSYVIALLQFSY

>HarmGR85p

MFSLLNFKRKQQSDPVLTKAPNIPYSEGLLDNRVEKDLQSVLRPLNLTLGIFICSKYSIRYNFITPNGIYYNICG  
FVCVVIYCSYSIYTTVSSSIELVQLKNNFNPRLHWSSIIEVFFNAFGLMLHYINN VKHRCNNTAIVLKIQFAIKVL  
EFNSNELKSLKFFNWLSIIILNGICLVSI AFFSYFFFENLRF FGILSFYCSVIFDVSLLYAACVIKLLRKLAAWN

DHVVRSKNILDSQRESYWNTMYDVYISILEAYMIVEKSF GALFTFLAIIAKAWLCKSVVLGIILSLECEKFYSAMK  
KVQITVTPLIQSTRYLESQLPFCCKNIHRVQLADYEKMSACGLFTVDAMMSLRLFDFITTTTIVIM

>HarmGR86

MPFYTI FNSRIAARRRSLTTANQRHEIETNEGLGRENVEKEYLQRI FQPLDIMQAI FLSTKYKIRDNIITPIGRIY  
SFISISGEFGLMIVYYFLYIHTDIWTDNIHFI FGVD F ILYFCGVLLNPLVNV IQKLNNVLLVLKLQNIHRVLNM  
NENYFKHII ISNWIFSFTVSNFQLLWLCGYYYAFYNIGVDNILT VYICIRFDMNVVYATRTIKLLCKSLEKWTE DL  
WRSGYFEDSDDQYWD RMFEAFLDTIKAFHIIETIYQQT VGF LNSNHS DLKYGFLTFLSLSWLMKNLT LQTL LSVET  
ERLYAAMREVQSSC ILIPTLKQPSVYQRRFYKNIQRVQEISFKKMSMCR LVTVD AELPLRVLHTITTTFTIVILQFE  
FL

>HarmGR87

MIFTNNKISAKTREPEVLLDNRLGKDIQRMLYPVNLILSLFLSSKYTIKDDYITPKGKKFYIATFFFILLLYGLGI  
NRVFFEDI EDTMGTDNRD IVTII F SFAFVFYSIGFTLIFVLNIHSDCSISLILTLQKVFNSLDFSDKIVAITRWN  
WFAICIAFGT NVFLYMLYYVTYHDFNPVDLVMDIMFITFDINLVYGILVITWLRKILEKWIEDVLA FEDGDEEFYS  
EYFQVYRNILNAYNCYKTLFQLLVRIFSIFCFSKNLMYYF FLPVVYFLQVLFHTADTFFRCLCYFAIILQILQMPD  
STVYEQMVQYTVVKVVA AVWQIKDVLLVVMQCLECEKFYMAVEDVETTCIQRLLKKHHLAAEERLCSSVLQANRTS  
YCKMSACGLFDIDATPLPLDLIGLLTNYIVIMLQSFFL

>HarmGR88p

MSEKRKIVPYPSMPLP NTEIDKEMQGI VKSFNVLHLFFSSKYCLRRNNVYPRGTYR FMTVLHTSFLNGLNVFRA  
YRDSSIGVTVND FMRIMNCCYDFVQMYAFILLFILD FVHKQNHVLLILAIQTINRSFDLSKSIRSFI IWNWIVLFI  
TLCLESYMHIVYAIYAHSRFSDVIPDCICDFMFISFNVNYIFATRIIILLKIYLDEWVKFILI LNEREENNEYCL  
KLEIYENIMQAYNLA KT VFKNLISVSH TDLFFVWTKMLLSLVHCAYCERFYISVEEAECACIQLIKNINCPKS  
HKYLCKAVIRINRSFSKMTACGLFYIDASLAICFFGAVTNYAIVMLQFTF

>HarmGR89

MLAYFKKKPKSKVNDVI IKTLP TVQYKEVLLNNVIEKDLQSVLKPLDLMQRLFICAKYCIQDNFITSNSRSYNILG  
ITLAI TLRSLLFYNLLRIVSSEDQNNYVLA FSNIFDDVFFSIGFILNYYSNIIQCNNHVLLVLKIQEVHRI LRVNG  
KQLKCLII INWVYIVLVNVVYILGALFYCLIVSFARILDPVSNYCSIAFDINIVYTA FVMSLLRKTL SIWIEDIRT  
SKHVAIESYWTVMFDVYSNILEAFKIFEK

>HarmGR90

MTESGIPLTNKLSKEVQQIFQPLYLMQMLVLNPRYQLSNNFIHPNMWLNKFILLTSLGLYVSFSLYRIFDIYLYFD  
LTMFLGLGNYLQFASYFNLVFYCVGFI INFTNLFIH SKRYAVFVLIFQRIHTCIGNKASFSAVNISRIYVSIFFGA  
YFLMSCFVITIFKQTSWIVFNTAIMLTIDANMIYAITLHLLTNEVKLWN SHISMFSKKGSD EDQHKIMFETYLH  
IAKSHRICRTV FQYMVRYFIILSRKCSNGIGLNSSVFLHVPRSYRIHLHFHGDLC LDSKSRGHTNSAGPQFRSLLP  
SYRRCTRFLRSHDMVKQSYARTYCVSTVPVSAG

>HarmGR91

MITKITQMVKQPITEPDSSFRVLKDDRDLKELQHIVRPINFALHLFFSSKFDVRYNHIYPIGTYRLLTFCYTMIM  
IIFCIYEI FTFDNLVEA AFDYQKILVKFLHIVYFTLYV VQFLTWFVLDNVQTQNI VSFILMIQVIHRGIGCSTEFR  
SFVIWNWISLFSVLCVNLIIHIIYYIFLDDL SNMTTFIAFLLDILYISLDVNYAVAVSFIRLIEKYLEIWTKEVLK  
MNAEKENG EQRRKLLKIYHNIMDVYDLYKTI FQYLVCLK

>HarmGR92

MLHIVRKLQTAIKKVKCASSYMNTDNLAVNVIEKYLQATLLPLNIMQELFFCAKYQIQNDFIYTNGLYDIVSAIG  
TILYVLSL SFYLISSSFNKIHNLLDLVVF AIGSILNYFVNIMQKNNVLLI CSIQNAHRMLDINGMVFKRSLIFNW  
IYVIALNSFHIFWLFYYCYTFDDISIRDIFTSYLHICFDVNVVYAAK LLEINRKTAQIWIERIQQSVGNIVHCD SN  
NLFKAYLEILKSYQLIEKTFQYLVSLFVACN

>HarmGR93

MTVESCVKKN SITRPDPQVKALPGDFIDNDVKRMLRPLRLIHFFSFCPPYRLKGNLILPNSLCSKLLSFCVTMFFM  
FLFAYRCYDHRYIRQQRNVAFHTINSYVLVLISCFGVLSNFISALQSKLVNKFVLKIQDVHAFLNDSKVFKRFIY  
RNWIFVISIICYEVFGWISVNTLLKLSYMDVLCGAASMSFNVNIVNATRLIVLLQDKLNLWNRV LQLEGMESNSD  
TEDY CQKLYQKYIDIMECYDIHKL SFQMKVS

>HarmGR94

MLENRLDKEVERIAFSFNLPLNLLLSKYRLKYNRIYPNGIKYDIYALFCTFLFLGVLCFYRIFTLDMTNASMSYM  
ERAILTVVPILFFTIIYFIGFVIVFVSDIVYKDNNVLLILTIQTIHRSISFSKTNHSFNMWTHISFATVILVNLITR  
GTFYLTCRYSHVSEEISDIVRDFSFTTVDVNMVIATRIIILLKQYIDLWIKAILTTNVAQATDLYCQKLFVYMNI  
LKAYKIYRKVFQALVSDFYIFHLFI

>HarmGR95

MLSHLNKFWKPNKSATTL EHG TRESTENEPNSFVIEDDLQSILKPLNMLGYFFCSKYSIRDKLITYNSYIYEYIR  
VLVVIIISWNFYNTILLNKKMLDQHHGLICLGLGSMGFFLSLIGDTIITWSNIIQKQCNIILLVIKIQQILRVL  
QIYGNELRNVINWSWICVIVLNI FMSYFICYCVTIEEINVIGIIISFASVTYDINVVFAFLLKLCEKILRVWLE  
KIKLLKDN GDEASDEFWNRMLKVYLSLLDIYLMIESTFKHMASIS

>HarmGR96

MLTTKTRMQTQONNAEAVSCQILPKNRLEKEIQKIVCSFN FALRLFLVSNYCIKNNHINPNGKIYHTFAFFWMLFMS  
VLCVYRMFTLEEAVEHLEAAILVNLLFLYYAVYWLGFVTVIFIQNLVNRNRIVSLILKIQTIFRSLGFLKDIQSYII  
WNYVSLASIVCANIFVHVTFYISWSHIKFIDQIIDNVTNALFVSIHIYTIAIRV IILLRKFL EEWMSV VNTMNVE  
HDNNELCLKLFESYKNILEAFNLFKEVFNLLVSNRNVYCL

>HarmGR97

MSQTQINVATVSFKILKNRDLNEIQKIAYSFDFAVQLFLFSLYNIKNNHIDPNGKIYHTSGIIFMFLNLSLCFYR  
MHSIAGLRGKIEQFDLII FLIFFYFGWYCVVFTMMYIQNILHKNYIVELILKIQAIHRNIGYKQSLHSFVIINWIS  
IATIIISNIMCLITFCASGNYNVDVIELVSDNICHTFYVAHHINIVATRIII

>HarmGR98

MYQPNSRSDISHCKNLYNRLDDEILKIVYPFRCVLYLFFTIKYRIRNNRIYPSGKLYRIFAFCWMLFLNSLCILRI  
SNVEVRNNGKTKQLEYSILLVLCTGFFVTYFIEFTLMFIFDMINEENNILLILRIQNIHRSIGSRKTIQRYITWNW  
ISVAIIIFSDFAIRVLYYISSYYPHFMHSVYDAIIDAMFIALDVNIVITMRILVLLRVYLNNEWINNITKMKADDEE  
YRKMFDQYKNILLAYDLFKTVYQAFVGSVSTYLFNCCEY

>HarmGR99

MLKSQVLVNSLNNFIDKDLQSMMLPLSLMQNFTFCPKFKRIKNNRITPISYFHKFVAFVGTVMFIYFYVLRVYIQSFE  
KIFKNDFFELYTCCYCSFGIAINFIDSIIQTKLYVNVFLLIQKVHRLLNDEHHFRFYVISNWLRIIAVYGGFFIIIL  
IEVSVWIQMPYIIYIASCYPMVAFDLNLVYAIISLITLLKDKIILWDIHVSNLQAMQEENEPKKMYQTYVNILKCYEI  
YATCFERNVSGFFLVISLISLFLVLLPKLF

>HarmGR100

MLSSIKKTNLKNIALMVVKRPTVSSERRNKIEEDLESILKPLNIMQSLFICAKYSIRNRIITHNSKLYNALRVFCT  
CIYSCIYLYRMISQDHQTINKSWRKFWFGMAWIAGFILYVMGDLINTISNIKSHKNILLVLKIQHVLSILRISGT  
DLRIFVCYSWASVIIINIFISYVICYCFTTNIIFEIISAYTSIAHDINIAYAIILMKLNEKMVRVFMEELESSK  
CDDSKIEEYWNRLNMYLNILEIYNIWKTFQQMLVLLPLMAQIWNNAKMVVMCLSTECERFYTAMKDVETACTK  
IFKSRNCVHLTRVCNKNIQRGQNTYFKKMNACGGFYIDVHLPVMLSSFITSYTIIVLLQFVYLD

>HarmGR101

MSPARFQKISNNRLERDMYRTAYSFNLPIFIMLLASKYQFKYDRIYPNGKKYLLFNFVYMLFMNGLCIYQCYSVEMN  
SDRINFGLKIAIEISINFYIVTYFIGFTMMFITDFVFNKYVLFILKIQSIYVEIGSRSIITSFITWNWIYLLLT  
AINILLHGLFYSNYNERAFDVSIYIIRDFHLIVLDINVVLAIRIIVLLRKFIESWIQYISVKNEADNALYCRELF  
GIYVKILNAYSLEYELFQLMKPIIAILKVLLLVKDLGLIVHSEQCEKFMVAVTKSESVCIQLIKNGHFTKYQKRL  
YKNVIRNRVFSKMSACGLFDIDATLPIRFTEALTHYVIVLLQFNLY

>HarmGR102

MTETNDDSQTNNQLNMRPKYPKSKPCQVLPNNRLDKEVQMANSYNIALFVSVSSKYYVKDNHIYSRERTFLLFKI  
PHILFTNTLCIYRMFTININTLGSMGHYEDECMKILNVVYVYTFICYTFIFINDVVQQNNYVVLILKIQEIHG  
DCSEKIRSYVMFTYFGVIFTICIDSLIIVAFYMFDDTLXWFDIITTCYCDIMILSFNINIVISMRIIDLKLYLEE  
WTIEVLNRNVGKNDDQCIKLLKMYQTIIEAYNLHATIFEKLVG

>HarmGR103p

MSIIKTDIFTKMIIIGLQLICGFYCKISTNKVVNALVRAYCVSIAATNIVLILCELFITIIYRSGIGIVVFVATLYFL  
HLIIDLCSNCENFLKFVNIRQPISQDLQSDVSTPITAIVL

>HarmGR104

MIGYHQFYRLRFFIYFRIFFGLGNFMSFPQNFVLKLYSIVVAIIITAAGAFIQYYGTDTFHRVVVLVEYFAYSL  
ISFVAKGEDVRSFFQYLPSLDSFPGANREYRKMMNSVIFVLSFSIAWRITVTVIVLYLYSASLNTLVGMEIFFFIV  
ITVAIDLGRASTFIYFSILYFRLKIFKTMLRSTDFNSTRNISVVYKFIQIYELLADKFRKIQKVLKLQVSIARQIV

>HarmGR105

MFEPQTVCNIEPLMYRFLGFCQNFQHSRLTRILSKIYPIVLVVALIVKTFIFNDTATLYNKYFIGLEYSFNIVV  
SLVTTDKYINMYFKYYHTIDSISGAKKIYKNLEKLAIISVFYASSFRSWAFIVISRYNEAFFKGFDRSNIIELAVM  
YYVNDLSKITTLCTLLYFRTKVMKMALEATEFNDALDRFAVNRLIQMYETIIDTFEIVAQPLKFTVRSIIMNR  
YYLGVQGRFRPRWLFRKRKSASWAGHIIVHEHVRRHKCTPYIPSL

>HarmGR106p

MRKMELFARLCVIYSVFRLYTFHVFCQNAPPVSANSFETFDIAVLVFLNIANDMRRIMTLFCFVLLYCRTRVMKI  
ALDAIDFNDSIRDRFAVNRLIQMYEALVDTLKYIGYPFKVAVCIYSPESVNRQKKTIVILEIFLFSGYILFDLFLV  
IKNLRIDCKIITY

>HarmGR107

MNADLLKCFAPIHNVLLFLGSSRLKIKNNMIAPSTRYQKMYALCCIFIVTLSFSYIQLYLYLTYYHEDTTIYVCYA  
IGIMVQNVSYLSHTIFARFLDVNESSVKLCQNLQKVDNILLRLKQFKRYNEQQYYWNVVVLVFIITSFECGFLVHIWY  
TVEYPILAFFAGIGLLNVYMEVLVAASLIVYLAIRLKFLNKIAHNFKIKGYNNNTRACAVDEHLLINSDVKDAN  
IDLGNFLICMKEILKMYQHITQVFSFPVSRCTTRAKIIKVRASWRALSSRLLSF

>HarmGR108

MPRNIEELSEDFTDDFIRIFQPIFLVLRALGLARVSIKYRYPTGTSKWYLLYSNVFWLLNALSAVYFFFHCGESF  
DSKYADSTLKFGVLNSGINGILVVRNRLERNKFGAMYVKLQKIERHLNMEDTKSINKQLRSQSTIVMVVAFVFT  
IFWIVLFKYLEFMKSMCIPLIVNVVTSIGLQTEMAQIYFIKFIITRVNYINDMLRQVSLLSIEPLTKPMDDGILFV  
VSNTLKHQDGEVPGELVSGMHCIFETLSDFTLGFLQFSLFYFICQILAWNLTIVHYLVTSMEQGAADTDLCLCVMP  
VLVALQFIILTCLKAQDLSTKLEEARLCLIDIISSPLNGKSREHAKQLTLLVEGRRSVSIYNICTFGTRPLHL  
LAITASYTIVLLQLALL

>HarmGR109

MKNLKENIKIEYLSKIDILDEEFMKSFSLYYTQRLIGSTRVQIKHRFVTTSPFLQKFHTLISVVLLGLDYLVIQK  
YDKILFDRETIYYLSICVTGLQTITFLCNIINVRFIGDANVELLVNLQQIDRRMNINRNKSITTLVKTNVISLV  
VVLIMFITLLGVASAKGTAAFWPYTGIAYSQFSFVIELSCSNMFMFYVRARFINSIIKNYIDQKGTQEILYSKE  
RFLSSYFASKVFMRRLAAGSHNFVSSDSDVYLKQLLEGFFKQDIYKFQVFMFCKLVASALLTFEFLLYAVQNDT  
VGLWDSLTPSFFTVIDLVMAILLGVRCEVFIREVKETKRLVITVMSRHYDGRLEKSKRMLKLVEETPPHFSVYDM  
WQLDANVLLQMFMLVTGLIVTQMQFAFL

>HarmGR110

MISLKSIVITIKTLMAIRLGISGLYFPITSNKIIISLLKIKYCAIFTITVMYYILTCTYGLPFRYNLTSYSILTMYFA  
NVIHTVFHNGDGEYLNFFVAINKIDLAIGERPDDEIKISRLIFIVFLVMRTTGMVICYQSEYKKYCSLLRSLLL  
AGLFVSIAQWCHTSYIMMFESVYHRMRLLRKRFENRLSASRQFEADEKVMENQLRQCCLDIYKNLLGVTGLYGARI  
KIMVITQLFIYVHIFLAKMYILKKNLLIDLKIELIT

>HarmGR111

MSPARFQKISNNRLERDMYRTAYSFNLPIFIMLLASKYQFKYDRIYPNGKKYLLFNFVYMLFMNGLCIYQCYSVEMN

SDRINFLGKIAIEISINFYIVTYFIGFTMMFITDFVFKNKYVLFILKIQSIYVEIGSRSIITSFITWNWIYLLLT  
AINILLHGLFYSNYNERRAFDVSIIYIRDFHLIVLDINVLAIIRIVLLRKFIESWIQYISVKNDEADNALYCRELF  
GIYVKILNAYSFLYEKLFQLMKPIIAILKVLVLLVKDLGLIIVHSEQCEKFYMAVTKSESVCIQLIKNGHFTKYQKRL  
YKNVIRNRNVFSKMSACGLFDIDATLPIRFTEALTHYVIVLLQFNYL

>HarmGR112

MLFNGLPNTNVSVNRSSKVVPIITVKPTQRNNYVPSKTVSAIQTIKYQVCTALVFGINRLYLFPKNTFVLLLSYVYT  
IFLPILVWDIMFNADDSATYFVFKYTCCIEYVLLISISVFTSRSKLVNLLRDLDKFDSSLNIRKDLKVIDSGYIS  
VFWFCGCFIYSLCEYICCYFYLTVFIDRSVYCLYVMMLAHDCEQILFFVLLRTIYTRLRVIKAHVLLKVFSANRTN  
NYRRKLDKVEALSNNALQDIDSSLRHVYDLLHKCAEQNLSIMSLSVSFEELFAN

>HarmGR113

MNLFYVLIFCENFMCVYRNYFDINKYQRIVAITRIIVELTSLSVVITAHNVLLTKAVNYESTEKDVLLTMLFQILTL  
FKSIVIIIGGIMNSESFKQFYENLRKLYHCFENDVDYKMFEEKLRIKSLVGFSIFTFMSLVQMFGKIFQYYFLGTY  
QLTEIIVLVLYELWVDMRYSLEHVVFCAISCISDFLKLCLNISVNKVLNRFSEQPSLEPNSNEENVNLPEKVNNT  
EKYQKIMACCKNISLCYQELVSNHPLSLFMTRLGSASSLTACS

>HarmGR114

MSEIKLLTYLLHIENLLGIYRITNHHKNVKKYLITIQIFLISLLYTSVVVEIDLNIRRVGDGDHEIDDIYLISS  
SWYNFLTSLASSVYRSFESYYESINRVYDWFREKSNVTSMTKFQWCTLMFSSFTMFNLFQPVFALFKYDFT  
YPLFVAYILLTVSFLKITLLFEHFVLFSSIIILIVRVLKCLNHLVNAAEKRLRSQISDSECEIATKQIQEWASLYTD  
LANC

>HarmGR115

MTPIKLLNYLLFVENILGVHRKYNIQNKIKKYLIIFQIVIQTTFHAIITLISEIYLLFKEEKWKNYIDINVIKSCYA  
VTAHINAISAVLTGICYSQSFLSYLDSITRVSDSFQDDRKLAKSLKMMYLSISLMFLSISFVMYRVKEYLKRFSY  
MHPLIVVPVVSQFFIRSTLIVQPLILFTIIMIVAHLFRSFNFYFISVNVKRARSVDLSLEENDITREEIQNWVELY  
RDLENSCENVAIFFGHQYFFTLTMSISNSIMMVYHVGC SVLLKAITPDLRRMVI GLLNVAWSMLPVISGQVVRNQ  
AVKCHREFARLYNTVVIDPSEEKGKLIKDFIRVIKKKPLDIKLLSKLPIGMYMLPAMLTMGVNYAIMVLQINHI

>HarmGR116

MSSAKLFKYLLVFENILGIYRNYGNKNRKVCLIIIFQILVQTIYHIINVS GELYLLQKRLSTQTFIELGFVLSAN  
INASVTLVSGFLYSREFQKFHRTISLISERFKHEKSLKRSKLTLYFVTGIITGFLITSVILRAREVYVRHYSFSDA  
LLVNFMFPLQFLTRLTLTYQLIITYVYVMVVNLVKCFNSLISDGQRKVSRRNTSVLVNCGCDVTKEQIQDWVELYQ  
EFSNCCEDVTICHGWQASLFCICY

>HarmGR117

MADHLINLLTKTETIIGIYRNYDSLKKQKILCKLRIFFEILFVFSIATYNVLVLENFLSTRIFHYMMMYHISNFL  
GGPIVAISGILCSNTYKNFIDNFM TMDMHYQKKSAYVKCLKMKILFVVTCTISCLSI VFFLITKITARFFIHHY  
VNIGFVLMVAVFVQQRFFLEHTLMYIFIRMIQNVLRCLNDCMLDAQVGYNDMTRSGQSDSREWRPLLTAEQVQL  
WAEHYKCLLICSKNLSICFRSQVI

>HarmGR118p

MTKIQWCTLMFSLFTMFNVFKPVEAIFKYGYGFARPLFMAYVLF SVSFLKITMLFEHFVLFSSIIILIVRVVKCLN  
QLVNAAEESLRYQTFDSESEITTKQIQEWASLYTDLTNCKEVTQCFGGLVIFQQLLYSSVGANSHNVDSLTSVLV  
APFWQA

>HarmGR119

MIEDKVIKTFVISENIMGVCRNFAALTTSQKIFSIIRIVVEISAYIIISLFFLDKCNHVLIEGGHFLSLMMIYHP  
VNFVCGSMILLCPVYNPCGNKLFIKEFTMVQCEFRHTPFYAQSMKRVKSYIITCITFFSIIIVAILVLYTKVLLVFEW  
STFGPQSLYIGLITIEIIFEIRQTVESVTIFS YITLLQYHLKTINSCIASVVAQYDPLEARSDSQTNNDHLTVD RV  
QYWADTYEKISNCSKLLSQCFSTQVNFGLNSILLFIY

>HarmGR120

MSLLNNLIKSEN YMCYRNFMLMKNYQKIIIVLIRIFLELCATIIITHKIFFRDLGNVSSLLFVPYCYQALVLLK  
NLVIVVGSVLNSKSFIVNEKTRVLHNRFRNEPSYSKSVKILNLKCSVISIAFLILVFIVIIIRIYIISFNKDRFN  
KGRVVIILFEAWVDVRFMLEHLVIYTVITLIYDFLKCLNNYVYEDLKKYNIDTKDEEVHLDEQFNETADKLT VWT  
EVYQDILSCTKNTSICFNLVIKYEFI

>HarmGR121

MLTKIETILGVNRNYPSTSKTRKILFEIRIVLEVLYIIGFIYTYRTKIKFKDQGYLMEIFHLANYLSGP IIMING  
ILTSQQYKRYLENFIPVHAYYIKESKYAEKMKKIKTIFIIVTSISFAISCAGFLVKYYNRYVQNQEITFLVTIFLL  
SALLVHYRFMLENGVMFTHMAMLRNLLKCLNDCILDAQVGYSYFVQSGRSDRNEW RP LLSEEKVQLWASQYMSLLN  
CSKNLSVCFRAQVREPQIQ

>HarmGR122

MSSVKLIKNNLFGENMLAIYRTYDCQNRLMKCFIIIHILILILLNTFIVSLELYYLFDLGEPDQMSVVFCGFSIAS  
YVNTLSSIMSGIYFSSGFLSFMKSITFISESFKNDTIVIKSEKRLRWFSLLILTFPFGLFIRLQEVLLKKFKDLNL  
MILIPIVVSQTFTRMTLLYQPIVFFIVISTVVIYFKCLNRLISIATDSLKICRLRSGLHGECDLGRDQIEGWVELY  
RDLANCCEKVSICFGRQFSFSLVLTMSNYILLLYQICYMNTYHIPNDFEFKKIILV IISYIIMTMLPIFAGQLICN  
QELKCHRVL SRLYNTMLIYSNEAEVKLVKDFIRLMKKYPLDIKLMNKLPA GMYMVPAILSF AVNYTIVMLQFHHVI

>HarmGR123p

MTKQQWRITLMFLIFTMFFNVLPVEAMFRYEFTHPLFVG YILLSVSVFLKITMLFEHFVLFSSIIILIVRVVKCLNHM  
VNAAEESLRNQIFDNECEIVTKQIQEWASLYTDLTNCKKHVTQSFNCLLSFSIMLSISHFVLLTYEIIYTIYRKGI  
IITDDLQISFVILADTAVMTMPMIAGQLLLNQGVKLHRLRLARLYNVLIIRPEDSEAKLIKDFLRLKKKPLEVRF  
GSNYQAGMSLLPVMLMMSVNYLVILLQFNHVV

>HarmGR124

MIKTFLLAENIMCVYRNVVSFSGYKKVLILIRITLEI IWMLITILIFVWQVSEQFSTRNHFLYLMGVYHLTNALCG  
IALVICGVQYSES YKFLNNFEVIRHEFQNSPAYTKNIKKLRNLTILIVFFAFVSIIDFFFKLRANMITWRQNHI

KITFLTLLFTLVYIEIRKILVNSIHYANITILRSTLESLTDRVSEIREKLSKPGMSDRSYKLTVAIVDEWAVNYQK  
VLISSKLLSECAGCQVICTFFLICVLFYLYLCCLKSICFYFGYCLLLFFYPVHNVV  
>HarmGR125  
MVLHYSSNLLCGSMIILCAICCAGSHKLFINNLIKIVQREFWYTPTYIKGMKKLKIYIAVTTTFFSLAVASVLYSKC  
RNATIWMTPDIILCYIALLVIEIYVEIRQILESIIIFSYSMLQYSLKCLNVDVLGTRKQYNRLGIFLYVELKSSN  
FLNVQVEEWAAKYQNILVCSKLLSDCFSNQVSWYNSIKITLQTKQLADW  
>HarmGR126  
MLFTSKFSIAYNCIRPHRFFYYVFSFIGVLTFFILYHLQRLFNGNFATYNYLSLAATLNVFFVVIPFPIFYTLNVLQ  
REDNVEIILKIQNALKIINYKRYMIRTYWNWFYIIRHLIAYLIIVCITRNSQIAIYYYYTLNVVDVNVIIYGVIMI  
ELIRDGVIIVWSEVEHYSKLCLDLNEETYNKTMKKLFHAYISLMEAFDIFKGLFQYSVSFVVISWQICFTRDHLAPVG  
LHSLSEG  
>HarmGR127  
MSGAESSVVRIRIIIAVRLLCGFYTKVSSNKIVDALVRAYCVIFSMTVFSILCTVFSRVPLIKVTFMITFSLIYACN  
VILDHCFYGDKFFEFVRKMRHISISQDSRLRHVKLPITMFLTILLFCSRLFSHLKYMLENKYVIHMISSQSLGLAY  
DLIQLVSVLPRIILMFELIWRQMIILRKQVQQDLSSIRRFEEAGEELLKNKLKVFSNAYKNLLNSTREIDSASKLLVR  
NAILIEIAIKFVVIISPALLAEMVNSEIDMKMLCIVKQLLVCHGDSTRDAIEDVMLYLKQNPFKYTIWRFLTDMT  
MLYLKQNPFKYTIWRFLTDMTLILSFIVFTTYTVALVQFTHFFV  
>HarmGR128  
MSITKTDIFTKIIIAIRLICGFYKISTNKVVALVRAYCVSIATTVIVIIYEWFIISLDRSAVKILVFSSTLYSL  
NIFVDFCSNRENFMFLVKYIRQPISQDMQLVVNTPITAILLISTLCLRVFISHIKYQYDNGIWFAFISEETMLVL  
DILQYVSIQKMMMFELLWRKMAALRNHLERDLSSARRYETREDLLKNKLKACVDIYNNILNSTREIDAQTKFLVIN  
>HarmGR129  
MIQKNYVDKDLQSMLLPLNLMQNIMFYPKYSIFNNCIVPNSVLSKVVALCSTMAFVLIHLYRSYNLYYNQMIREFV  
NILYITSYFDIILSCIGFAINFIVSIYQTENNVLFILKFQKVHRFLNDKNLNFNRVFMNWILVLVLLFSFVIFIMSS  
FFLYMEVPLPDDFFCGLAAFCFDINIIYALRLIKLLEDKVKLWNFEAQHLLQIYHSNIESHCQRMFEAYFNILECYN  
LYKYSFQLMVCMPESLFLRYFLFHHLRC  
>HarmGR130  
MLPSLENSLESPENVHTIESISPEASNEETVNNKIDKDLQSVLRPLNLMQAIVICSKYRISDNKIKPHSRLYNWLG  
FTLVIAFRILSIHKLLTSNYPNSVSRVAFLYMINIFDFVFNAIGFFLNSYVNIHRYNNVWLVLKLQHIHRILNI  
NSKNLQMLIIYNWISAIISIYIVFIMYMCYISLFFPVFSVFGTIVTFSTISFDINVIHALLIKLLRQTLRMWILKL  
LDLKNTDTVSNDESLEWTQMFDAYKNILDVYKMIKLFKLMVSIFL  
>HarmGR131  
MKFYRKTEKTETKNVHLVFNLLDKDVQSIFPPLNLMHYIVFCPKYTIKNNFIPTSFIVKLISILGTLVFI  
SVTLYRNYLFFYQESVTISPFMYSSYYDALFYSFGFSMNCFLGIFKSELIIRSIMTFQNIHRYLNNESENTR  
RNIIILNWTYVIVTFVGYSIYTYFYQLSNSYNLTNAFFLVSF DINAVLAIRSLNLLDKISLWNVSI  
CKNQELENVDRNYAKKMYQAYNVNLECYETLKTLSRSFVST  
>HarmGR132  
MRSHTRQTRQHGIFFPFESILNNQLDKDVQSILFPLNLLQFIVLNPCKHIKNSFINPNN  
SFNKVILFFGMIIYVSAIYIRVLEITLDVNLRAYGTLISFLYIASYFDFAFYSTGFILNSI  
INFCKTKDMVNLILMYQDVNRFLKDKSNFRWSVIRSWIYVALIIGFYVFTMLFMSVAPFHIVFN  
LIILISLDSNIIYTIILLKLLTEKVVVWNSAILKVHKNGCSTSYCTKMFDVYVDIFSCYNLIKDMFQ  
QPVSLLKFFSTTFLIIYYEASKIFRLCYFVFRFYTKL  
>HarmGR133  
MLLPLNLMQTIALYPKYSISNNVITPNSAISNVLSLCATMAATVTHFYEGFKLCYDADVVFKYIASNIQYFASFFD  
IFLTCIGFIFYFFICIFHSKNNVLFVLTQKIHRFLNDEKISKRFICWNWITMAVVFIDIVVLT  
YFNLRLHPLTYTFVCCFLAITFDVSIYALRLMKLLSDTIKVWNMEAQNLRRLRHSNINQPN  
CQKMFKAYSQILECYNLFERSFQQIVCILMFYFFVLEPSLL  
>HarmGR134  
MAEKHYVDKDVQSMLLPLNLMQTIALYPKYSIWNNVITPNSAISNVLSLCATMAATIVHIYEVFELCYDADVVFKY  
IVSSIQYFASFFDIFLTCIGFNFYFFICIFHSKNNVSVFLVKFQKVHRFLTDSKRKRFI  
FWNWITMASLIIFDVAVLIIYHVKLHFPLYNLFCCLMSISFDVSMNYALRLMKLLSDKIEVWN  
MEAQNLRLLHHSNSDMHCCQNMFKAYVQILECYNLFKCSFQQIVCITDVFFCIF  
>HarmGR135  
MESARQKTNTKTKSCSVSIATIKTIDKDMQRMLLPLNLFHNILLCPKYRIKNNFINPNSFLSII  
LGLFGLILSIFSFICYRVYKYRINPKKYVMVMYVTSYIDFVIFSIGTIINFKINVLETVRNVS  
LVLKIQDIHRFLPGQNYFKCFTIWNWISIFSGVGfyTYMLIFTVLTfEMHIDGMLFGFTLLFIDVNI  
IYCIRLIKLINNKVDIWNRRALKMHQMDPIDNEYCEKMFAYMNLKCYDFYKDSFQLMVRNNLFHSSARYF  
>HarmGR136  
MCGKRYEMRNRKRRIICRKIRVHNYKNNQIDQDIKWMLFPLNLMQMITFFPKYSIRSNI  
IKPNSLILKFVSLTATILFISAFIHRHFTLLSRNIHSSSLIYTYAATVAFCLGCIINFIYSVIKTRDQII  
FVLTIQRIHRFLNNRNVYKHFIWNWIIYVIGLFIFYISAVTYFTIMLNLPIYSTYSSVILICH  
DVNLICAIRLMRLLDQKAVLWNDKIWFQENENGHHNNVCRRTFKVYVDILKSFNVYRTV  
FQIPVSKFMLNS  
>HarmGR137  
MEPKGRIKRIFRYIDKDIQKMILPLQMMQTIICLNPKFSLKNNFIKPNNIANNLLAVVGVI  
FFVSLLIYRICDMMLDENLRRYQTVNFLYFATCVDSFFYGC GFIMNFILHFVHTMNNVNIILIFQ  
EIHRRHINDKASSNMAVFRNYVIVSMVFAFQTAASIYVYIVYMHPPWYVVCYVLVLI  
SLDSNIIAYSVCFMKLIADKLVLWNAKLLWSLQHGSHVMRCKKMARAYVQILNCFDVYKNIFELPVSIR  
>HarmGR138  
MAINIEDISTQNNVVEKEVLSLFPFRMMHALFVTAKYKIKDDVISANTLLYTCMSGFTSIVILV  
FYFFSFIFQTAF

VFKWEGNLAKQVCNIFIYAIYLMGSMNFCSDIINKDFNVLLVYKIQSICETLKIKGKSLKNFIMINWIYVITLN  
VYHMMWIVFFSYAFSSSYLYYEVVTNYFYIIFDMNVLYGMRVMKII RQPLQIWLEEVRLNLSVIDEDYEYFWNKMF  
KIYEETLETYQIFAKIFRSVSVKVNWRLLIILAYEICLKLILRNYLSCSLIRTSTIYFRCSL

>HarmGR139

MVTVEVIPVNKNKQIEKDVQSLFKPFNIMFALFFCSKYRIRNDVIHTNSLFYKVVSGICCLAIFIGYICISVFIKI  
FTIHLEGINYSKFCYNITVCALFFSGYTLIYYTHVIESNRNVLLMYKIQNIYKIVKTRGVFVKNFIKYNWIGVAVV  
ALYQLLWLWFFFTIAFASNYEYEVIANVYVIFDLTGLYCVIRIMRIIREPLRLWLDDVKNVQHVDHEGKASFWNKM  
LRIYLETLDAYQVAARTIQPGVSLIFNY

>HarmGR140

MKLKVAMEASIVAKNNIIDEDLQSVLKPLNFMQAVFFLSKYSIRNNLIKPNSLIYDLISVTCLLMFRIVSIYRII  
IFSFASKWTPLLQFLYVSQILDSIFYSVGFLNNYINIVYSKINIGLVKLQFVHKVLNINRHKLRPLIYNWIFA  
ISVYSYFIIFNLYMWLKFPNPSYALILVFSALAFDINIVYALLIKLLTQMLRIWLVEIQELTNVGMGSGDESYW  
NKMFDVYKNILEAYKTVEELFKLLVRFYFCE

>HarmGR141

MRSTSRKIWNRIIILSSEEFSSNNKLDKDVQSIFFPNLMLQLVVLGQKCRICKNNRINPNHCFNKVILFCGMVTYLM  
TYMNRFLIEIMLDENFRTYVKNPFLFLSTYFDHFFYMSGFILNFIISVTKTKDVVNLILTYQKVNRIKDESSFKGT  
VTRSWIYVGAIFAFYLYTLFFSLLASFNVLFNTVVVITLDANLIYTMVVIKLLTEKVKLWNARIITDSENDENNKM  
FDVYVDLLKCYDLLKNVFQQSVSQATPF

>HarmGR142

MKIIIIINNYKKINFVDEDIRSMLPLNLAMLCPKYSIKGNLIAPNTFRNNCVSIVITLVLISAMCYRTYGLSFYQD  
GFSNIVYYSYDVCYYSFGYIMNYIISVYQTEQNISLVLTLQKLHRLFNDAAAFKRFIIFNWIFVITALVTHLLL  
VTSACLDMLYHSKVNLIYGILLVLFDIYIICYFRLMKFMEDKVHLWKSLESSEEFDVCKFCEIMFESYVDILKCYD  
MIKDCFQRFVSMILFFNVSNINIENSCWSA

>HarmGR143

MAVTIEEQNIIDKDLQSLRLPLNLMYILFGCAKYKIHNDKISPNSVIYNTISSITAIFIFCISFYFMIGTFSLNF  
NGYIYINHLGKIYTYILLIVGCLSDLYTNIFQKSNIYSFVMNIQNIYRSLNISGIFRSYIFPNWVSVIALNCFHFT  
WMFYTFYAFQSLDHSFVFASYCIVFDMNIVYAIRIMRLINKSLKYWLEDVEMSGRFVTESYWNKMFETYIEILKT  
YQIIESTFQRTVCLSV

>HarmGR144

MVKIDSKSPSEKSELSSNNVIEKDVQALLKPFNVIFALFISSKYRIQNDVIYQNTLLYKILSGISYTFIAGYFYS  
IFRTAFIYKWEGINFTKQWCNVFIYAIYFLCCVINYHTNIVCSKINVVLVFKIQNISEILKVKGISLNDFIKFNWV  
YFTILNVYHVFWIVFFFTIAFSDTYEYEEFLTNYVYILFDMSVLHGTRFLKVLRLQPLKLWIREMRNSDSVLDEDNEY  
FNNMFRIYEEILDYQILTKTIQPVVSY

>HarmGR145

MVLSRRNSMSLIETNQGDVEILSNNFIDKKLERLFFPLNLMQNLVLNPKYIIKQNRICKPNDVFNFKFIFLSMVIFL  
AVFAYRLCEVIFDENLRRYGSVKFLYFEIYSECFVYCTRSVNCIVNLVQSKNFVAFVLTQEIHRILTYEHMIKF  
YIIRNWVYFSIVFGYIIVLVLPLIFERWAFHFDINVTYIILDANLIYTIALLKHLNDKVQWNIIEVVRSPHRI  
CSERMFQVYVQIFECYEIYKNVVQENV

>HarmGR146

MELITNNYLDRGFQNMMLPFRCLNHLVFISSRSIEYNCIRPHSRSYIISFMGVLCYIIFHSLKFFDANLTAIPNQ  
FIQFFLKVNIIMLLIPYAGFFILNVLHRNKHVQILLKMQAFRIINYKRYKLAILWNWFGVFRHIGGFIIITAYIR  
LLSVAEYFYTLIFFDVHITYAISLITLIRDGVITWIAELERHSQNLEVDKDKHDERMCKLFQAYINLMEAYEIFKK  
LFQVAVRILSF

>HarmGR147

MFPCFKHEGQSDPSSDVEHEDLQSVLKPLNLMQAPFFLSKYTIRNNCIKPNsiiYNLMAVISMLIFRIVNVYKIV  
VFPFVTKVNSSVTFLFLYVSQILDTVFTYVGFVLNNYLNIVYSRINIGLVKLQFVHRVLNINRRNLKSLIYNWIF  
VVSLSYFIFIGIFSWITYPFITLYSYILVVSALSFDMNIVYALRLIKLLTQLLRFWLMEIQELRNLGVCRSDESY  
WMKMFDVFNIVEAYKTIQDLFSLTV

>HarmGR148

MPKKNRIVEVIRKDGIKNPLIKDIKRIFLPFNALNLFLNSKYEIRNNNIYPNGPKYNIIFASFFLILMNALCVYR  
MFTFDVADNSSIIEEDLTAKILGFLGTSFYFVTLIGFTITFISNTLHRENVLLIILMIQTIYRSIDISKSINSYIIR  
NWICLVIVIIISDFTERLMYHVTCHYHVLFEQAFDIITDIMPVLVDINIMLFNRILVLLRIYLEEWIKIVETTND  
EEQWVRFYKIYTNILNAFNLNAKVFEWLVRILPYLMQNSIIFLSEYLYMS

>HarmGR149

MIDNTNSNYIDKNLQTMFLPPLNLMQNMFFPKYSIYNNNIRSNSLLSNFVSLCTTIAVISLHLYRSYKLYSDNIIR  
EFINILYITSYFDIILTICIGFTINFIVSVYQSKNNVLFILKLQKVHTFLNGEQQFKRFMYRNWMFLVFEFLYFTFG  
LCFFCVKLNLPKYDYFCSLTALCFDVNLVYAIRMIKLLSDKVELWNIEAQKLLQLNYVDIESHCQKMFDAYVHILE  
CYDLFQCSYQQLVRIFFSLSYLFNKVFFVLKIIFTIFYRSCSTAFNSFFTSSFISKRLTF

>HarmGR150

MNTVDKDVQSMLPLNLMQYLTFCPKYRIKDNFIIPNSRVSYFISAIASLIFMFILETFYYQILKSPDFDEEPAYL  
IACTTYDTLFGYFGYTINIMDSVIRSKNIQFILTQFVRHRLVNIIEKCFKNFVWNWIIITLFLTLQTLITVFCFL  
LSDFFDATVGIFYVLAIFDLSIVYAMRVLKLENTTVLWIQVLNSHQFGNLYDCKKLFQAYVDILQCYDMFKSCFQ  
HFVSFYQAKCFFHVMF

>HarmGR151p

MVFRLLCGFYFKISSNKIITVLVRAYCLFIGATIVLGTIVYISQLEAILISILNVTNIINVVTDCFFYGENFTAFL  
QKITKLDISGDLEGQIDTPVTMFILLFTLFVRLCNHIRYLIIRVYFSVEFCFGIGSTALCFYHTKNNDVRATVAP  
DEKTP

>HarmGR152

MVLTFTKTVCDKRNNKIKVKPRINMPTEAKLNNEIDKDLQSVLKPLNLIQGLFIMAKYKISDNRIQKDTLLYNLLSI  
ICLIYRVLNIFYKITISSLNRDWEGTRFFIYMSNINDTIFYTFGFLNNCINIFYSDSNILLVLKLQQVHRILKIN  
SKHLNDLISFYWRFIISFFISHLLFEMYFIFQFPVYTMYGVLSSFAILTTDINIYAYFLMKLLNKTLRVWIEEIQ  
KLRNFVTFISINDSYWIEMFNAFEYILKVYNFIRKVKLMVSYCFIIMTETFIIIVLYSFFTFTTIVEIMSFPCHF  
>HarmGR153  
MTPDTSVSLRNDKINHSAIHNFVDKDVQTMLWPLNLIENILLCPKYCIKNNIKFNSLTCLVSVIGFIIICESLR  
LYRIYNLHFDYFTRNFNNIKYIMAYVDFVLSFGFFIVYFVNIFHMKYNVLFVLKFQNIHRFLNEKKYFMRYIIFY  
RISVVIPIFFTGVILYSFLRHSVTVMDCICAISLICFDNTNYVYAIRMMKLLKSKVDLWNIQIGQLQKLDQDEKVI  
CCNKMLEAYKNILDCLDLYKTVFQPLVSLNFFCILIYH  
>HarmGR154  
MKMKIICNTIKKYFSKPVMMKLIDKDLQSMLLPINLMQNILLSPQYRIKDNLIKTNTLTALVSVFCGVMISIFAFL  
LRICLTSEAIKQYSSLYIVSKIELVLYSTGFIINYISVLRSNKNVLFILKVQDIHRFVNDGIYLRKRLIVCNWISV  
ILIFSDFDTIIYAWVKLELRFYNLICGVSVICFDINFIYAIIFLKLLRNQAEWLNRKLNFSGQSNGESVCRSMF  
EAYDNILKCYEMYKDYFQQNVCFNHFQRFVY  
>HarmGR155  
MSVVEDGISNSNDRNVIGKDAQAWLKPNWMDALFICSKFKIKDNVISSNSLFYNIMSITSCVLVLVIYFYCIFKD  
CFHIAWEGLLLAKYVHYCFEYLVYVIGVIAFFFNKRNHSNVVFALKIQRICEIFKIHGKSLKSLIVLNWVLVIV  
LNSYQVFWFFFYAFSRYGFPIEELVPNYFNIQFDVNAVHTSRIMKLMWQTLRTWLEGLQNVYIVEDEDVEHYWR  
KIIAVYKEIEAYDIFRKSQVLRV  
>HarmGR156  
MSNTLRSKVFQNLHLKDVQKMFYFPFYFFLLLLSPKYCIKDNITPNSLKRNLSVFLGAFYVFTSIVYACEEGYK  
DYYNESNVHSLAMMSFIYSLDISSFALGIMLVFVQNIYSRKNILIIIMFERIRQSIDISKSIRSMVWVWVFGTL  
YFSIHAIVFIELHVLQSVNFMQIGGFCINMYAIFDVNSVYGLRIMKILTTYLNLRWTEMLVNLKEGENLISCVK  
LFDIYTNILKAFELFKDVFQVLVRSVDLIGSNYSACLFELERIIYFTGIIYNNQRVYS  
>HarmGR157  
MLKPCIFLRKTRSYPEVLLNNRLDKEVESIFYPFHVILTLLCASKYCI RDHFITPNEYKFYTVNFISLSYVVASF  
AYQMYNNQLVHIHRSDNNIVVSFSLSVFLPISRCICHILYFVLNIMHCQNNVFIIVLINIYKSLNSFQKVRCHIIN  
SWILLALILLIHAWLTIYIVYIYFDVIHVVSEVLLYIFDIDFVYNVRVLLMLTNYLNSWIENIKLFDDGQEYD  
KIHYYKMFQTYLNLRAVDVYKTVSQVLVRWQKSFTQIKCMSNLCFILGLPPSLTKCS  
>HarmGR159  
MCSVLNMYKIRNKLRCAREAVLIDGVSPAAYKEVLFNDIIEEDLQSLKPFNLMTALWIGKKYTIRDNFITFNSN  
VYNYIGITLCVAFLIARVSRYLIVEGIDLDSFAFSLLRTNAMLDLIIFLFGILLTYSTNIIHSHYNILLVLNVQNA  
LRILKINRKDLRRLTVYNWTTIACIWAFFVPHVFYSMGTKRFDIFENLGILFKISFDVNMMYIIFLVNLEKILH  
EWIRNFEKSMFKTSDLEYWKKMLYLYLVNQESYQIVETVFRTHVSLQYHYSKFLHTESV  
>HarmGR160  
MTPYSREVLLNNRLDKDVQRILFPFNFFLTMLFLSSKYCIRDNYITPSKRKYVFGFLGICIIITAANVHQMYGQIAN  
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TIAYGYAILQSWHILSFIDHVLMMVLDIDLIYKIRLLILLTTYLNEWIKNICLKDDWQQQDQANCVNLFATYQNIL  
KAYDVSNELSEIIVSYEVYL  
>HarmGR161  
MRSFKNIVNIYPKIINNKNVDNDVQEMLYPLDFMQCLIFISKYHIRNNLIAPIGVITTFISMIATMAFVVVHIYQTL  
FATSETNSIASITTENITRYFSCVFCVFTINFIMCVIQTNKSIFVLTYQKVHRFLKNSSGSSSYNNNYIWNVW  
FVITAVIWHSTSTIVYCVVSIYGNFFVATCYMYPIMLFDINMVYAMRIIKLENEINIWNVDIKSRLHTQDENYCRD  
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>HarmGR162  
MKLKICRYCSVSTKKTSLTMNSVLDKDVQSMMLPLNLMQYLTFPCPYRTKDNFIISTSRVSNVISVIGTLVLILSL  
ELYYYKIVFDNISEKQYRFMYSLIFDSIYLSFGFILNFMGILGSKNNINFLRLQGVRFLTKGNNDKKRFKY  
FIICSWIIVISFVSVCFPSVPLTFIHTEFYIHIYYLIIIFDINLIYATRIIKLLEHQVATWIQVFSCELNDYLC  
EETLLKKLFRAYVDILQCYDIYKLCFQHFVSIGRKSDYIF  
>HarmGR163  
MFQSLNNVKHKQKIPRNILNFPPEVCLNNYLEKEIQNIFRPFNYAFILLSSKYTMQDNYITPNGKLRTFLSCMSA  
SYVSGVGFPYMYISNKYLEYNSSVYSITVVTIVVQLIIIGYCFGVILIMVNNFVFSQKNILLIVTIQTIGKNINLSK  
VVKNFIVGNWIAILIPSAIYAGIQGSFYIFYIIDYTLVLATLCTIAFLAFELVYALRVIVLLRKYLQGWVQMV  
SKLNYDQDDGYDCVKLFKIYQNILQAFELYKAVSQFLVIGLHLLSSQKSFLKRTLIL  
>HarmGR164  
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SFFMSFVLYYDCIYYVVGFMNCAMGILQTKNMVKFVLIFQKIHRFLNDGSLFTRYVIMNWIYFIAALGFFFIILM  
LFVMLFENWIFIYGYELIFFDLNVVYLIRIIKLEDKVLLYNKYLLNCQNLTHDESYRQKMVQVYVDLLECYSIL  
KKSFFQQFVSNAFIFCFSD  
>HarmGR165  
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IHLNLASSTIFYMYFIIYFNLIYAIRIIKLENNQVVLWIIQGLNCTQLENTYDKNCYKNLFQAYVDILQCYDIFKS  
CFQHFSILICKFSTDFNICIIYFFGLQYLLYVTFQILYIYSEVFIYSLINAEAIILLKIGWVYLHQVRSFLES  
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>HarmGR166  
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SSEYTA MFVVLVYYYSYDIDVYTFGLTMGCTLSIIQTKKNVEFVLIFQKVHRFLNDETSFKNLIVFNWIFFVAAI



VCHFFIVSGFFSLLTYYSKFVWVTAYLLVFLDFYIINVIRAIKLIEDKARLWSLNLNKNIENMDVQNYCKRMFESY  
FNILKCYDIIKVCFQQFVSMIITWLVDNLIVAEL  
>HarmGR167  
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AFNIMVATAFSSGKDGFNFIGCFTDVIYTSFDVDFVYSIRVLNLLNKYLYEWIKSVRIMNEGKENDKMNCTKLLKT  
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>HarmGR168  
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ALSLFFIYFYIVTNDFSKSSIIMSIIHVSQTVTFMGLTLII VVNIVFENYNIQLIKMIQFINRGIDFSRSVKSFI  
IYNWVFVIFVFSIDLFTYIFFMVTYYMDVLGI VTLWARLMMFISYDINRVYAIRIITLLRKYLDEWNKNVQSQVNNED  
GTRFMKLLLEVYENILESFKLYKTIFQELVSI FNELNVYLL  
>HarmGR169  
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SGFDSNVMTNIIHYFLPAMRLLGFVTNFVLTIIHRYNNVILVLHIQRIYRSIDFSKSVDSYVLGNRITVAIILVTN  
GVIFTVFITMYNGFDVLNVLFDIYFVTLDVDFIYAIRILILLVRFLEEWIKSNKLIIEQADIGEYSSKLRESHRYI  
LLAYEMYKTTTQLMVSQEGPQKVDR  
>HarmGR170  
MCSYFKEYFESCQELII IKDISPEADFGNNIVDEDLQSI LRPLNLMQSLFLSAKYCIRDKNITSTTRFYTFRLRIIF  
VLVHRCFQAYQII VWNNTMNFENSTSPNYYSMLYLCIASTVGFFIYFIGDVISIISNIVFRSRNILLVLKIQHVFS  
FLRLNRNEIRGFIVSSWVLVIVSNVMSLSFVVYYVFTFAEVHFITMFTAYASISFEINVLYAFILLKLTENMLREW  
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>HarmGR171  
MKHNIIRYTLCTIDMYPSTLTYLKQFRNFAKVENISAVTSEDRFQNNKVEEDLQSI FKPFFNMMNLFLCAKYSVRG  
KCFTPNTRFYNWFRLICVIVNRCFNLRQFI IWHYTIKKT HFVFSYYYGHLCCINIGSAIIYILYLTGDLII SVSTIT  
QSDYINFLVIKMQEVLKSLKINGSEIKGFLSFSWWSVII SNILSIGYIILYCFTLADMVSI VDVISAYASISYEIH  
VLYALLLKLTKNMLTVWIKFRNSRNLGDSTNEEYINRMFFIYWDVQDIYMTIEKTFHHTVRNSIYCFIWI VAVV  
QYIYIFQILFYIIFTISISLWEIFSSLVFKTAGHQSVSIKVTWLILSGIL  
>HarmGR172  
MTRRTRIQQNNNNIIFQVEMLLNYYVDEDIQSMLLPLNMLHFI RLCPKFIIRDNFITPNSSKFNSVFFIATIVWLFA  
LFYDIHTEFWEELVNFNITDSVSFSVFFSSGLIVNLSLSVFRTRDYVSFVLKFQNVHRFLNNESDFKVFTFINWFI  
VILFVYIYGGFVYIILILITDTLTIQLFCAFVLLSFDADIYIIRFMKLLKDKFNLWNEQALQVRNMRDGNKEEYQ  
KLYQAYIDIMECYRLIKTFSRLVVS KQASLPVSLESFLVNYFIAKTSCYCSISSTSRNYPQ  
>HarmGR173  
MWSCFKQYWLPHRSV IIENTSSFSPPDII EYNRIEEDLQAILRPLNFMENIFLCAKYSIRRQYITSNSRIYNFFR  
VFCIILNRCFHTNQIIDWNITVWNERNTLHFYSTLCVSI SGFIGYMLYLTGDSVSTVSNIVLSRYNILLALKIQC  
ALSSLRINRSQVTGIIICSWCCV IISNIYSISWVIFYCCYGNINIVTIVTAYASISYEISVAYAFILIKLTDKLL  
QQWINECRALSLEDSENVENVDKLFIYVCDIQEIYMIIEKTFQHLVSFEPS  
>HarmGR174  
MFSYLKEYFKLYKMSTVENISRVPSDNICENNRIEEDLQILRPLNFMQGLFFCAKYSIRGKSITCTTRGYHLLRV  
ICVIVAHGYNAYLFIVNSIAFWNNPIASSFFYSSLC LWSSFIAYILYMIGDSLNSIVNISMSHLNIVLVKIQHV  
LSFLRLRRSDVKGSIIICSWACVIIANILSFGWIAYFCATAPEINYIPIITSYASITYEINVIIYAFTLLNLTTKMLN  
VCINEFRTSSCLKASENVKYLHELFTYCNILEIYMIIEKTFQHMVSI  
>HarmGR175  
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SSCYMFLEKYTAYINNVSIIKIIFFIFHGVLI LYCIANIMLFMSNIALSKQNI ELILKIQLVHTNIDFSKSSKNFI  
IWNWIYLIIFLVIDLAISSYYVTTYEQDVVDALGYLCNYLFAVFDMNVIYACRLITLLRKYL NKWSKVLKLSDG  
VNNRNCQQLFEIYDNIIRAFQLYKT VQVVSLLTIAVAIDSFVHTFKQISCWCHVPLQLLSTTVNIFSRNLGFI  
ESRLQIITDTAESVNEVIFVLLSLKFLLSLFYL  
>HarmGR176  
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LSFNQNSAAFSPLIYYSYDYTIYYGFLILSCVLSIRNTKKHVRFILIFQKVHRFLNDKTVFKQSVVFNWLFVIT  
CLVIHFTTVISVALMLIYIYKYVWNGFVLVVF DLNVVHTVRFIKILLEDKVEVWRTRLLNSPDLEITDLP SYSGMF  
QAFFFFF  
>HarmGR177  
METLPLSNAPKSSSFSSNVIDKDVQAI FYPPLNVMSVLLLHPKYVIKNNKITPLSNVIKIFSACVTTLYLCQHAHKFF  
SVVLDNIRRIQPVSYYATGSDLLFLT WGFIMNCAGNI IYTKKYVAFILKFQESHRLFGSACFKRFIIVNWLSI  
ISMFGYFISSCIYTYTFFHPPWGTFIHMVLANLDADAVYACRLILLISEQFIQWNERALLLKENGEDKDYCRKM  
FETYGQILKCYKIYRNTMQFMVSRI LGLMIISCL  
>HarmGR178  
MSIKMKPTAHPKEFTCTYIDRDVQKMYQPLNLMQQLTLNPKYQIKAGFIKPNNVKSILLSFCGLISYVGVS IYRVW  
ELATDENMQRYP I KFLNFATLIDASFNSTGYIMNFILPIIEVKQNITFILTQEIHRFIHKTDNCKIIVNNWISV  
ITYFSFYIFACIYIYVYMPNWWYVMYVFI LCTRDTPNPIYAGVIKLLTEKVFLWNSELLMSSKAGHREMRCDRMF  
RAYGHILSCYDVYKNIFQIPVSIIFGKL RNYNCVYIKSSF LFLN  
>HarmGR180  
MQVSDIIKPGDFNNKSYNSMIP IIRILKVFAINGNVAPNKTSMLIKSICACSI FGC LSSYCLYKTKYVYNRLDIS  
IRVTDMTQMICDFFQYTVDLFFVYKFGRLYIEYFRQFEI IDVCLETSCYAEMKRRLKTM TFFFLVIWFISSFTDL  
GAWVITYGWMIPVVHLSYLYLLIKILATLDLIANI IQVEVRLRIINNFIKNCYNCASACPVGILADCI RNKNWLH

GEDGSPDQSLKARSIDSHEIKRLSKCYLMLTEQVMFINKMYGFRILLNTTSLLFDMVKILNLAIRIIVGSQRTLYN  
SAGYNFLPGVSGFVRFLTCAAAILITLVNRCEQAYRQRERILNVIDHLLINKNPDLTLSA IQDLQSLQLDRPICFN  
MAGFFTNLNFSLLVSIASVVVTTYTIILLQSVN

>HarmGR181

MAQTVMNFPVVGVSQTHKSIRFVLTFQKVHRFLKNDPHFDNLI IWNWIVV IIAATFYNSAFVYFTNYLGLPMYFIYV  
SVILSAFDNFNIVYAYRLMTCLTHKLEVWNIKVLSSETNCDIFSKNMFQAYLDILECYDLVEACFQHYFFVFQIL  
FYIGEVEFIHYLDLMSIAGMAIFSTVIWLMKNLAWQIMLSQCEKFYSTVQSAQDNCFVLKSNCTESVQRLCKNVR  
RLHRSRFSKLRVCALFRADAALQLSLMALLTDYIVVVLQFAFL

>HarmGR182

MSLMCTVATARSSLNTKKALDIGRLQNINVMFPSPNVVDKDVQSILLPLNLLQLLTFCKYRIKNNVVYPNSLIA  
ISIIIVATSIFVLSFVYRSYYLLSANVLPWFSDFSVYFDVIFYSIGFIMNCFIIVQSKQNVQFVLIFQSLHSFLK  
ETNLKNLVIWNWVFVILVLLVFHII FIFYLLVILKLPFHFLYYSILLNSLDFHIVYASRLMKLLEHKLILWNIQVLS  
CQGNIDESYGRKLFQAYIDMLQCYELVKVFFQQFVKVLVHSLFYIKASLDLFSMTVKLGQMHRIAMAALSISSIVI  
WLVKNLLWQIQTLTVQCERFYSVILHSQDTCAIVLNSNGSEAEKRLCKNVRVRTRARFSKLRVCALFYVDASLQLSL  
MALLTDYIVVLLQFAFLDP

>HarmGR183

MSINLVDKDVQSMMLPLNLMQYIAFCPKYCIKNNFISINLSFSNFISFCGLLI FLSSFLYRNTLIAQSLGHSFTVF  
MYITAYFDVYVYCCGYVMNFIVGIMQTKNSVNFVLTFQNIHRFLNNETYSRNFKVLNWI I VILT VVGQTTIFAYFN  
ITVGLSHFYIYISFIIITVDFNIIYATRLLGILENKLLWSNNVLDLREIGEYDENYCRNMYLAYVDILKCYELH  
KVCQFEYICFYITETFLHSLICIQVSIEMCKMAASRGNISTIGTAILSTMSVLLWILKDLFWQLLFCRQCEKFYSS  
MENVPDYCTLILKTSCSESVRRCLKNVRRVHRARFSKLRVCSLFDAGAALQLSLMVLLADYTIIVLLQFAFL

>HarmGR184

MEIFVNSRQINSNNIVSDVQSMMLPLNLLQNVFFCPKYRIKNNYITPTNLSNLISSIATLVFIIMYAYRNYLIG  
LFKTSQFSTAWKYSSYFNGFCYSLGFIMNLVIGIIQSQNSVQFVLTFQNVHRFLKNENGFRSFI IWNWVAVCLTLV  
YVFFFIYQYTRGTIGKIHACVGFLSSFDNFVYATRLLRLLEYQLVLWNNRFFKLRSDIRDKDIIQKLFNAY  
ANILECYDIIKISFQHYVSFTLQLIIDLLKYAANNDCQKTVIIAIRVSI AVLWL IKNLMWQMTFSHQ CERLYLAN  
ERTLDHCAFILTSYCSGMEKRLCKNVL RMSRVRF SKLRVCGLFYAGAALQLSLIALLADYTIIVLLQLAFL

>HarmGR186

MWKKSIHAFKILPNNRLEKEVQRIVTPFNVILTAVCSPKFRIRNGYITPSSKKIHILLFFGITACNVWSCYGITKS  
QNEYTTTSIVSYFFSLTIFFFYIDFILFTSCNVLHSSRRQVSLILKIQELRYNIDITKKVKNYIIW TWIWF L ATFSV  
FLVNFLGFLMNLDRIFFIHLSTYFANLQFDLNF IYSVRIMTLLVIYLKEWTKSVVDLNEEEQNKEYFVKFKFTYQN  
ILRAFKIFTLCFKDIVSTSSYI

>HarmGR187

MADSSRRLFELVFRNKLD EDTLMI IKPFNIFLRIF FSSKF KIRNGYITPRDKTYIILPFIFVSLFKVWTVVYVYIY  
NSSILNNTFRHIYFWHIFISYCIYSSLLVYCNIVNSQNNVVLILRIQEIFRSIHLKNGIRS YVIWNWITFVVLASL  
ECFCTTIYARTMNNLSSLSN SFDILLSICYDFNVACSIRLIKSLTLNLVEWSNTDK

>HarmGR188

MWYSHRPSQLLLFTNKLKDVQRILKPFNIILTIF FSSKF KIRNGYITPCDKKLHIILFICVIFLNAWSVYEMRVY  
ISGKASIIINSQII F SFLLIICFFTYFILIFSNIAYCQSNILLIYTIQDIHRAMRNSSSFKNYITWNWITILICIC  
FDILIMSSYCMLLSKIHIFSVSTLYLNMASEINVFYCI RVLAF LIMSLEEWIENVLVVKSDDYCEEYCGKLFKVYQ  
DIIKAHKLQNCFRLLVRS LIFILIKIF

>HarmGR189

MFQSKRSVILLTTNKLEDEDILRIVRPFNVVLTAIASSKF KIKNRHITPCVKTFHLLICFSIIALKLWSSFMFVVG  
GDFKHKKIVDNFFCLTVFFYCVNYTLLTYNNIMHSCHNISLFMKIQDINRNINISVQSYVWVWISFLITLILFIS  
DISWFLKSGIVGTVHVSENI L VFQFDIN FVYGIRLV TLLVMYLKEWARSIIIMTEERPNEYFVRKLETYVNILEA  
FKLFTICFKAMVSWFYKLDEMLS

>HarmGR190

MKVTVVHPFVLSPSNKLDK DILRIVKPFNIILTAVCSSKYKIRHG YITPCGLNYYILTYAGIGVFLVWSTYNMISI  
NIDELNQRADLAAYLYCTMFLFYISYGQFI IYNI IHRQDHISLILKIQEIYRSVDISKVQNVVLWNWLSFFLMFC  
CMIPNISLLYLSQNFVSYTHITNHSNIMFDFNF IYGI RIIALLVVLK K WSESILDKEFNLEKKLKAYQNI LEAF  
QLFAICFRAIVSSS

>HarmGR191

MEGKTREKKFSCNYVDKDVRTIFRPLKIMQTC SFNPKYQFKNNFIYPANTISDVIA YFGVITFLT IMIWRITDILF  
DENLRRYQTLNFLYFAS YADSLFYSFGYIMNLILHFLHSKDSVKMILIFQEIHRFIRKSASLKNIVCRNWWALALM  
GGFQSI VVIYLYIVYMHPWYII F YV FYLLSPDYNTVY AICFMKLLLDKAVLWNVNLLLSLQGGQRKLCRQMTRTY  
GQILDCFDVYKNVFELPVSTYKIFIC

>HarmGR192

MNMNQEFAPVFTVDKDVQTM LPLNLMQNVFFNKYRIKNN TILPNNLTSNILSFVASLTCTLI FL YRVYLMSALE  
DSRFTSILYSSFFDCLY YCVGYVIN FVSGVIFTKKSIEFVFI FQKIHRFISNETDFRLFVIWNWVSVSVAASGYV  
LICIFFVTNADLSVFNGFPCLFLC I FDFNIVYAMRLIQLLRSKLVLWNLSLETTSI

>HarmGR194p

MSIIKTDIFTKMIIGLQLICGFYCKISTNKVVNALVRAYCVSIAATNIVLILCELFIT IYRS GIGIVVFVATLYFL  
HLIIDLCSNCENFLKFVNNIRQPI SQDLQSDVSTPITAIVL

>HarmGR195

MEIKSSSFFKSFQKCMGPLYFYKVLILLQVLLGRYFSLSKSKLTRFFTKLYCVFMYIHM IYKWN DVVLVSHKFVLP  
PFIMSEYTG YFVISIILSEDYFFNFCDNLLTND RVMGFKNIPHVPPNVIGFMLITVISR VAVL TRHFTVSLPSVH  
LIYVTVLLISLDLSHIYTCVIFCMIQLRMKVLRCFLENIHIPINIVSGNEVEMSIKNVRKSLYYYYNNLLDSMAAID  
KHTQCMVSKLYLHQ

>HarmGR196

MFSYLKEYFKLYKYMSTVENISRVPSDNICENNRIEEDLQLILRPLNFMQGLFFCAKYSIRGKSITCTTRGYHLLRV  
ICVIVAHGYNAYLFI VNSIAFWNNPIASSFFYSSLCWVSSFIAIYILYMIGDSLNSIVNISMSHLNIVLVKIQHV  
LSFLRLRRSDVKGSII CSWACVIIANILSFGWIAFYCATAPEINYIPIITSYASITYEINVYAFITLLNLTTKMLN  
VCINEFRTSSCLKASENVKYLHELHFTYCNILEIYMIIEKTFQHMVSI

>HarmGR197

MDNSVYKLLSLRLLFGHYFKLSSSKWICYIAKIFCFMSMLIVNFAINCILLDDFTSFDISQISLWMLLWIMLVESSE  
SILISLYTDETYLLKFSAKIKNYVSSPTPCRATYVMASFIIPLNFSVLIAYLYEFGVAVNIFYNISYTTTCYCSYL  
TSLYITEMYAKAINNLTSAIVNRLKDNISDEEKRVCIENFLDNYLKLLKIYNATMTVSRINVSVCKSFE

>BmorGR1

MNRHDHRSIYNPKRNEAMWKRELFVNNEGKDIKDFQIKDIYGPEITDKDGALLDKHDSFYLNTKSLLVLFQIMGV  
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LPIASWRHGPQVAIFKNMWTHYQLKYLKITGKPIVFPNLYILTWGLCIFSWVLSFAVVLSSHQYHQDDFELWHSFAY  
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IFFTTTTISLYGALSEILHGLSYKEMGLFVIVAYCMTLLFIICNEAYHASRKVGHEFQDRLLNVNLGAIDRSTQRE  
VEMFLVAIAKNPPIMNLDGFTNINRELFTANISFMSTYLIVLMQFKLTLLRQGARKTVTAIVRAIFNTTTITDNG  
AGGSEDEQE

>BmorGR2

MIPDHLFEEGINNTFLDYDMRHVQRNRNIQEKTKQDYEQEQRDLSSQDGTCEIHDQFYRDHKLVLVFRALAVM  
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AHQVAIYKTNWGKFQVRYRVTGENLKFPNLKTLIVII SVGCLLLAVCFLLSLCALLDGFLKHTSAYYHIITMIN  
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>BmorGR3

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SIYGLLSKISSEFGTKDIGLALTALCSVFLFFICDEAHYASHNVRTNFQKLLMVELSWMNTDAQTEVNMFLRAT  
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AFAKRKND

>BmorGR4

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NYMRFQIWRRIQAYVYRQAALVRLVDDQLGALVLLSNVNLYFICLQLFLGINSKDRGSFNRLYYFISLGWLMFR  
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QFSNED

>BmorGR5

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DLFESYIIRNFPWLFEFDVPYYPPIGVILQFLTIVSTINWSYSDLFIVCMSIYLTSLKQINKKIEMAGNSNHLPI  
PFWRTLREDYTRATRLVRSFDDTIISSVIFLSFASNLFICLQLYNILSNGVTSKYNLLKEMCPNYPSPGPLGGYEQI  
MYLLFSLSLVLLGRSLVSLVAAKVHSAVMVPASALYNI PRNMYCSEIQRFQDQVHGDKVALSGLRFFVYVTRSLVLS  
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>BmorGR6

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TLLLVLVLAILEHIFSI RSAYSASQICYPHGTGYEGFVRYLYPVWVDFLPPYSAALGMVTFQFLNIQSHFIWNFTDLF  
VICMSYYLTSRLDLVNKKLLPAQGGKYLPEIFWRTTRETICRATKLVRKVDIINGILFISFANNLFFVCVQLFNFTF  
DDSDVMVGLCYNYSEERRTKPVGREPVIYLLFSLGFLISRSITVSLIASQVNLA STVPAPILYDVPSAVYCEVQRF  
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>BmorGR7

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MIEHALSKVFNIRSVMCCLGETSLNHTVINNYFKFKWKFVFDYFSTSTTYSYFVGFI AEFLCMQATFLWSFTDVLII  
MCFSIYLSFFEDFNSTVSSFMKKASKTPWSTLRVQYSQIVLIVKQMDQLDYFVLISYFTNLFFICFQLYNSLN  
RIYDANDVCNENMDIIATASVTYLTYYVFSFLFLVTRALLLSIMAANVHSCAQVPQALAYEVPADYSLDQRFQQL  
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>BmorGR8

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VHIYDLFAFFFGHQRLGRLIYHMNFYTITILIFMGSRKWKNVIKEIETIELTLPRLRNSKKALATKSFFVFAFFVF  
SLAEVVLILQFTLRLLTKQRHVLPGDSGLYLRSYFVYIFPYLDHFPFSYVMGFIVQIIKVQGIITLNMVNCVSVIL  
SIYLTNRLLKHYNRIVFAKGSKTNNTRLKWVELNLLYTRISNLVKIIDKNLNPFFVIFSTANLSYICAQLFYILNKL  
TSSRTVKITSFLEDKRSWETVLYISISFALVVLKVLLVSITAAEVHTTSREPLRLLYTLPTAEYTIETQRLMTQV  
YYSNLSLSGLNFFHITRGMLLGMVATLLTYEIVLLQI

>BmorGR9

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IGVGVEKSVRMSSRMSQVVSACDILVVAVTAGVGVGAPARMRTMSYMENIVAVDRELGRHHSAAATERKLCALLL  
LILLSFTIILLVDDFCFYAMQAGKTGRQWEIVTNYAGFYFLWYIVMVLELQFAFTALSLRRLKLFNEALNVTASQV  
CKPVKKPKNSQLSVYATSVRPVSCKRENVIVETIRVRDKDDAFVMMKTADGVPCLQVPPCEAVGRLSMRCTLCEV  
TRHIADGYGLPLVIIIMSTLLHLIVTPYFLIMEIIVSTHRLHFLVLQFLWCTTHLIRMLVVVEPCHYITREGKRTE  
DILCRMLTAPHGGLSSRLEVL SRLMLQNISSYPLGMCTLDRPLMVTVLGAVTTYLVILIQFQRYDS

>BmorGR10

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KLSIRMQTETKRFVWIADVIMGILSGVGVYTAPIQMRRLIAYLHRIHKINSDLGTYSSSLTDKMLHRLTIGMLLI  
TSVIIVTDFTFVMYLADLNHRQLLIAIMYWCYCYCFIAHLLMQFVLIAALALSSLKLVNNGRLTLLHQSGIESL  
TEIPNSNEQHTANAILPQPPKKSNNNSIDTLAFVVTKRSVRFPTAGWMDQRTIRRLALSYSICEVVRQIDNNNGI  
IVLALLASFLHLVVTPTYLIISFVTESPHGTGEKVLNPILQTVWCPLYHTFGLVMIIEPCHRTHEEMETTRELVS  
VMCSADPRDPISIELEMFRRQLVLNKASYAPLKVCTLTRSLVATILGSIITTYLIVIVQLEIKNMQ

>BmorGR11

MKPFRFFLFVENVICVYRNYSFHKRYARAIILSRVMFEVSLIILTLHSCRNFAGVKYKTEIFTYLATASSTILIL  
LALYKTNRFTELFLNFKAFYRNRNLVDHLEKWNKQKMATVIIVLFCVIKFSTLIYTDLIGEYSTPCRGYFTEYL  
FYTNLFMCNARYLFEFSTACVVLHLVSEQLDYIAISMDCTMFLYIDISKKNIMSSAKKRKLKYFDIFKQFEKWTDA  
YMNVKRSANLCDTVFRAQLAIMITTTITLYIILLYGITSFNIERGKFSVVKSLSYLISLFGFLIALLLLSKAGQRI  
QKSAENLRKLSKFLHLSEDEPFHRAATNLLRLVCTHHIKMRCFGFIDIDMTLLPSCLMFVTSYT  
VIALQFNNVV

>BmorGR12

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TIGVNLSLMPIIVIFELMWRAVKALRKSLGEHLKGPVLEIGRERLKAQQILRCLNVYKDLNATLKFNSTPMKTMIL  
ISTLATFIRLTFLFYQAILGHNEGLHLPRKILAIYYALPVCLLGVLMELVARECDKLKTLMTKELLVKDDSYCT  
VIVDAVSYIELNPLKFSILRAFNVNSTLILGLTNLCCTTYLIAVIQFTYSCEDINGLSHSHSH

>BmorGR13

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IICLRYNQNYFFQYWNGLHEIDIKMNLTSIDKEKVPISR AVFTVFLILRSTAFAMTIFVFGYLETGILSNTIISIY  
SINLTEFYRNM SNIPMILMFETFYVRILKEQLCSELSTVLGCNNDARQLKLILKYLRNYSRSLVRHLMDDTLFPK  
ILILVILVGSFLRSL LIGYAFVYNSDQIILLSLPVMFSTKILSEVVEIKLICTEKLLKNKNEGLVLLDLDLSSKPTF  
LTSKACGEQLQDALSFLLNRSYSYTLQVIEFDCSLAFVFTSFCITHLIVVVQFTHVLD

>BmorGR14

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SFVYCSYYPQNCIRPRYAQILFMLPWLTDVLLTTNMFLFYATYCRIAKFPMLIKNSMNTVALRNSYKLIIVDSLEK  
TQTSFDIVFIIALVFSVPEIMMSIYSTLLEVISKHFLEVASILSLNYVAIAQSLLLTLAPSLCAGVLPWKTNNIKI  
ILHEKLFTEKDKASAREIELFIKYIESRPLKLRACNLVPLDFSLTIIVLNICVTYLVIVIIQFTHLY

>BmorGR15

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ATVLRKNAFFYWFYVLFISQYMIIVFI FTLSNGMSFTDYKMLLRFD AKYQINSNNYYFNKIILVIIISILNRIG  
MAI IYCSYTKNCYEMSFSQIIFVLPWLTRDVILIMNVLFYVTYCRITKFPALLEN TKNVGSLRNSYKLIIVDSLE  
KTQKPFDFVFTISL VFNIP EIMLSIYFTLLQVIHSHFLEVAPTLSISYFSITHSVVLILAPSLCAGVLPWKTNNTIK  
IVLHDKLFLFKDKNSARNIKLFIKYIEARPLKLRACNLVPLDFSLPVIVLNLCVTYLVIVIQFSHLS

>BmorGR16

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LIISNIFENQLFFGWYTLFVCQYTIIVFMFTFSNGMTFIDYKMMLLRFD AKYQIDSNVYHFNIKIVLVVISVTSR  
LFLCAVYCIYSTENCIKPWYNQLLFFPWLSLDIVLIMNMF LFYATYCR LAKFP SLFENPKNVVPLRNSYKLIIVDSL  
EKT KSFDAVLIAALIFNIP EIMMSIYYTLFQVMNKHFEVAPVLSLSYFTIILSVLLILAPSLCAGVLPWKTRHM  
RLILLEKLFAEKDKNSAREIELFIKYIEARPLQLRACNLVPLDFNL PVIVLNLCITYLVIVIIQFT

HLF

>BmorGR17

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IGDESFRIGVKLISSTILIGVTRCFTTTTYCLLGFCAPKPTAAQILFQIPWLTIDLMLLQYMFIFYACYCRLVKILR  
ILKKRNTDIEEMRIYKTLVDVLDRARAPFDLAYLLGLLFSIPDVLYSIYESIIKVGEINTAKALSMSIIYITNIQ  
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>BmorGR18

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FRLL EAIWYSLTFSES LAIVVCFMLSRSALSCKNLF EYLYSVDQELKKS VGPSIEVKLALYTVVVS VLR LTVVFC  
AIAYYETLHEGFCVELVYNTPCYCSLDLYLVHFTIIFHSVYCRLKALRISMNEKFDVYKGTLIYKSLIDNLEEIKKS  
LDVPPFVILLNAVAIAMINILVTLEISYGQTMKFIRTAPRYLETVLLFSSAFAPVLAADMMASEAQKIKVTLNNIL  
QRDDSLLEDDRKVKQFAGYVSARPFRLRACRVLSLDC TLPVTVLSICVTYLVIVVVQFTHLY

>BmorGR19

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SPLLEVIWCCLTASENLAVVCFMLSRSALSCKNLF EYLYSVDQELKKS VGPSIEVKLALYTVVVS VLR LIIYVFC  
ATAYYRKLFDGLRLELLYHTPCYSLDLYLVVHFTIIFHSVYCRLKALRISLNEKFDVYKGTLIYKSLIDNLEEIKKS  
LDVPLFVILLNAVAIAMINILVTLHISYGTGCRIDYKSV AEMACSQLVIRTSRSETANGSSEAKRKKLVVGPLMK

LITAAPRYLETVLLFSAAAFAPVLAADMMASEAQKIKVTLNNILQRDDSLLEDDRRKVKQFAGYVVSARPFRLRACRV  
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>BmorGR20

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FRVLEAIWYCLTFSESLMVVVCFMLSRSAISCKSLFEYLYSVDQELKKSVGPSIEVKLVLYTVVVSVLRLTVYVFC  
AIAYYESLHEGFSVELIYNTPCYCSDLYLVVHFTIFHSVYCRLKALRISMNEKFDVYKGTLIYKSLIDNLEEIKKS  
LDVPMKFIRTASRYLETVLLFSSAFAPVLAADMMASEAQKIKVTLNNILQTDDSLRKSYGATVFSFALLVTMIVEA  
TMVGVEDNNIIGPYIDVEREARLTGLYVMAIILTLMFLAKFIFDLVFBVYGVVMERAGIVKAYFIMWAVFFFLSVSV  
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>BmorGR21

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IYCRFKKLRELMKNDFEIRANLIYIALKDCTDKIKQSLDVPFLVVLVFTVLVVMVDVFITLEMIISNKYNMAVYV  
VRYLEITLDFLMLFAPVLLADMMAVQVDGLKITLHDLCLNNGVGHDDLSDAMWMSFVDMKRYSSLAEFIYGVEAR  
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>BmorGR22

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IYCRRLTRLKALSNNFDVYRAHLIYKTLIDCTEEIKKCLDIPVSRSDRHRHSLHKPMGTFLKSyrTPRVMFQLVVI  
LIATILVVMVNVLVTLRMLFKGEVTQRGSVHVQVLPENPLSYFNIVHCISLQSIISAFLLRYIEVILSLALLKL  
LDELKPDFAFKSHWKIWRVLIVGNDGQFARNQTSTDNIYQAAQNWMTRWIRADRTSDIREVAGSQDHLTETDLEE  
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FTHLY

>BmorGR23

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AARLLIAAASSLSLHEAFSASVGAAEVLYSFQSYCLDFYILANFFIFYSVYCRLKNLRRVLQNNFNIIYRGNMIYKV  
LVEHMDDIKKFLDIPFVTSLLVTVMAMINVLKTLQLIHDGENDVLTIVLRYLEMFLSFSLIFAPVILSDLMSIEA  
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>BmorGR24

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SGSTYMAIIVFFGLSLNVLPRIIIFELIYKRIKYINLSLKRK  
LKALALECDHTIARFEIINENLIYKNLLQSLGNVNVSLKSSILLTFTCFFRCSLICYYVITMNEDKVYIMQIIIE  
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NVCSTYLIITQFLNAYVN

>BmorGR25

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FEYVANVLDCILTGQSYFFHLRMELMRIDPRLRGLDRPPASSIVFTAILSYKIFILAVYIHGKARTTYLQYEWFS  
IGIHLLVLFSNLVHMNRMLIFEMVTFSLAQKKTGLGELLKSSLRERVERKCEILNRLFKTYKRIIELFNNTMAAT  
KLMTLISVVSCEFIRILTYLYQVLTTLQSSSSAGSIFTTRHLTFIVTFVREHVLVSFYFLKKVGIQORLQINFKIKCN  
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>BmorGR26

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YIWGTLALHFLWLASHMGRVLFILVYGILFCRMRTIRIIFENRGFQNTPOQNLTPKRYILMYEAVLNSIESVDPPV  
KFLIFTFICCFAPKLVSLSFEIMEEMKKGELSITTFIWFVLVSPSYLFLLLSAIALDLVSEDVQELLSITIDRRL  
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>BmorGR27

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IVFSNDLNSLTIMNVFGLLNRMNLLRKSLEAMTVPINIIGKNEVAPKVLVRNAFRYYSNLLDNLDSVNHCVQYS  
LSVTLLLFKPKAVLLCYDSIKTYFVKIDNNFAMDIVDPTEIILSIVVMSFPAMLCEMITNEVEKIKAILTKHLIQ  
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>BmorGR28

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LAFRFTIIGVYLAIFSLRISYMLITVIFFAMYHRMKFLRKKFEIITIPVTIIGKQKVASKIRLIRKYLINYHLLD  
CLRDINGGLQYFLAIMIACNLPKYIFFAYSARKIQVLEHITIHSVQNVEMFEGFLFVVVPAIFAELTTAEVERII  
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>BmorGR29

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ILMTIMFSTLHTRMKSIQKLFANNPIPVNIVGKNENASHIKVRKGLICYNNLLDTLKDAEKEIQFTLTVTCLCHV  
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>BmorGR30.1  
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KRVKGLICYNNLLDTLKVAEKEIQFTLTVTYLCBV  
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>BmorGR30.2  
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>BmorGR30.3  
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>BmorGR30.4  
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>BmorGR30.5  
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>BmorGR30.6  
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>BmorGR30.7  
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>BmorGR30.8  
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>BmorGR31  
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>BmorGR32  
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FSVVLASMTFLTTLRSFTTIIMFDLVWIRMRLRKILVNALESDDLSEDEKVKSIESFLKAYKQIIASIRITKLAT  
RNLVTFNFBVSLFGKIMTLIYFCINCPGYLNTYLISSWIFGILLAGFVTCAPPVLVEMNVNELDEIKYALADQLVDY  
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>BmorGR33  
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FSVILTSMTFLTTLRSFTTIIMFDVWIRMRLRKILVNALESDLAENKAKSIESFLNAYKQIIASTRITKLAT  
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>BmorGR34  
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RNLVTFNFMFVGKIMTLIYFCINNPGYLNTYLISSWIFGILLAGFVTCAPPVLVEMNVLDEIKYALADQLVDY  
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>BmorGR35  
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HVIRHISICREKALSFCFSTEYLTASFIIISGYWNYLNIITMMFDLLYQRLVAVKQMLTNGLNICDTDEYKIKSVQK  
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ILETFLMLNKIKESGPIVEKLAVYAIETFYTHLFFVVSILFIDLINVDLQRIKILIVEKRMKTNTKHKRIEVEKLF  
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>BmorGR39  
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SDTVSREFICGMQSLEEIIGNIKDIYQFPFI FLSTCQVMLCILVIVQNLIISVKEQMGGRAHSPPGFKWLLLEPIDIY  
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>BmorGR44  
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>BmorGR45  
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ITRYLAAQTHDFIVNDTDVYLKQIFEGFSMFIDIYRFQVCPLCIKLVVLTLNFEFCLVAIQRNVLGPNHIGNYYI  
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>BmorGR46

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LIYVVLVISTIMLNEYSLVTLFGLLYGQLIFMVEMAHCSNLILFFFTVRVFNNAIKNHVHPENQNQPPKLVRYFV  
TNRITRYLAAQTHDFIVNDTDVYLKQIFEGFSMFTDIYRFQVCLFCIKIVVLSLLTFELCFVAVQRNLLKETKNLTN  
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>BmorGR47

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LWIGLLLARLSLPVIYGLLYFRLRVLRTLESKGFSNSPQNRFTPKKYITIYEKIMKDLLKMDYPLKYVFIIFLIG  
SVPKLLQNSWQFLNSLKNYGPEISKILEFTLECLHSYIVILPIVVALDLSDEIKMKIITLNRKLACLNERNQKM  
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>BmorGR48

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TLRLAYINDRIAMYYKRSPLRKDSGIRRSRWICGSWIFQIMPKIKNNGTRMKNYTFIKYQSLIFNILKCYRLIT  
EIYSLPVFLITATVSIWTFVLVIGSIVAGSRSEIKLFSIVAMITVGLWILFFIIQLTSLAFVNDLFLMEVKNTKQLC  
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>BmorGR49

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VYWTKEPMKNSHLVIRLFSFIEYILLICISVFLKMKMMKFENLSMFDQILKIDKNVNSTFCMKRVFFVWTGSIV  
YNLIEFYALEFYDNTSKGLMTIICTYTIALTHDCEQIFFFTLQRVVYLRLLVVKRHIQEHFKVDEDSNRKKPNKYE  
MLSKNVQLNLTALHEVYGLLHNCAEKLNKIMSI PVLLMLFTSGLTTTTILLKILVRVIQLADPSNPGPAAIGVCVYL  
IVHCIKYTLLVVI PCYSSITATQVSLIRITLHDAINTIPLGKCKLQRRKVKAFYLMTKEYSFVYTLAGVIKLNMS  
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>BmorGR50

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MLSNNVQLNLTALHEVYALLHNCAEKLNTVMSIPVLLMLFTSGLSTTILLKFFVRVIQLTDPSPNGSAIGVCMYLI  
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>BmorGR51

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VYNLIEFYALEFYDNTSKGLMTIICTYTIALTHDCEQIFFFTLQRVVYLRLLVVKRHIQEHFKVDEDSNRKKPNKY  
EMLSKNVQLNLTALHEVYGLLHNCAEKLNKIMSI PVLLMLFTSGLSTTILLRILVRVIQLADPSNPGSAIGLCVYL  
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>BmorGR52

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YNLIEFYAIEFYDNTNKGKLTICTYTFALAHDCQIFFFTLQRVVYLRLLVVKRHIQEFYFKVDEDSNRKKPNKYE  
MLSNNVQLNLTALHEVYALLHNCAEKLNTVMSIPVLLILFTSGLSTTILLKILVRVIQFTDPSNPGQQQSECACICI  
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SLCTTYLVII IQFSKFLD

>BmorGR53

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KYLIIILGVSHIISSTLDDLTDDEIVWCKFFVLPIYFLQKLEVLTFCKLIVMIQCRLQINKYLTNFIIEQEKNKAL  
VFTLAESNPKKTDFKNWIGCPSPNNMKIRDLATMYDVIETICSLINDLFNIQIFMTLVSTFTYIVIAIWSTLYFYR  
APNFTFTGLTTII IWCITII LSVVMSFVCERLVSVRNNTKILVNKVINNYDLPKTMRVQAKAFMELIESWPLKIM  
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>BmorGR54

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DVYLRISNRRFVLEKCKIFTITSVIFLLRIVYTSIYCSHHCNFVLIYFLLSQFALVCLD VNRIWRCIVFDAIRYR  
LKTLLRMEENPDCCNYLYVKNKNSIRKNKISFCFLYRTIADLVLDLVSPELNVSRSTTNICGLKTHIRGAPKTA  
DTSCTRYSSLPEKNQCCISILFLSVACSLPKIVSNAYHLLLI IEDREPLETGGYVLMHTLQVSLLLFTPFIVECY  
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>BmorGR55

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SFYVITFFTMVNGILKSREYKTFIFSINKIHDYILNDTDYLRKLRKCTNIFCTATIIILFVVTLIRTAIDGSNYGQL  
SGINARSVIWMLTTLILECQYQTECVVYFGFILFIHAIMKYLNIRVTNTIIKIARSDMAVKRIPKYIIGRTELKDE  
TDTGVDVNNVVDLEEVRWVFIYRQLGLTTELLQKCFGMQTAFIFVTAVLNQIITVFRVIAVFIYGS LANRGAEHS  
IIANFLFTLLYRPLGLLMIIVGGQMVQNQTDMLRRSMARLNNIISNNPHRETFSSALSDFHRMIVKNPVKIIYVLSVL  
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>BmorGR56

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FYVVTFSIVMGILRSEEFKDLVTSLELINFNFTNNTYKLSLGRSNTMIIAITTILYCVTCIGIAVDKITLNDFY  
EFTSSDVIWTVSSTLLELRYQTECVVYFGIEYLFILFTKHLNLLVKEAIKKVSLDNNGTVKDVPISSDAVTKNEVK  
RWATIYRQLMMSSKLLQACFSLQIICVFVSAVINFITTAFRMVKVSVLGSIATDMNEIIIVNLIFTLLYQNI GLVL  
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IVMLQFGHV

>BmorGR57

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VSLRDSLLILSKIHMDFYHFYEVVYFTHIKIFHLTLRYLNSRVKMAQFEMKMTRRDVHDEGERNIRILLTKELTT  
EWAVLYKCLVFGTKTMSLFLGLQMLIAMVMSFVNFTLSLYGIIILICSIEQSQTASQHNLLILTYTATMLLI FIV  
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QFSNVF

>BmorGR58

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MNKIAVYDTFTTMLLISKYFDVALYCIGFIVNTYVNIAYSNNVLLYKLQTIKTFIPRNEIMKNVKWYSVILII  
VLF CGTLAMFSFFHLSFSYFNIFDLTTDLAVFSFDLNLVYACSVLNFLAQSLDELNKEIWR LGNAKVTVCKDGSKP  
DWNGINLTYINVLDAYNYFKEAFRLIIFHFTFKTLTHMFIYIQSIIELCKKFYPGDDYDAITVGAVVGWVFRNIT  
LQCLVGVSQCNFYSATSNTESICAVQVGSIVSDEHKFLKAVRRLNNVVFYKWSMYGMFIVDATLPRRLIELIATY  
TVVFLQFAFK

>BmorGR59

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LIIIVRLIMYIHFHWSLGYLSYLDLITDLGVISFDLNLVYASSIVKFLGYNLEELNKEILRLDEIKATMDEEGSKPD  
WNGIRRTYLFKFSEAYNYFKDAFRILIFHFTLNTFAHVFIYVQSVIELCKAPADNYMGGRAHSPPGVKWLLLEPLDIY  
NSAAFSVLIAVIVWLLRNIIQLSLIGISCQS FYSATSNTQSI CSILVRSVLSGEYNQWFL LKKYDVETHFFIAYVV  
GRAHSPSGVKWLLLEPIDIYNVNSTTHLEI

>BmorGR60

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EQEQFARSNWAHLAVTALYLAVVGLLNVVVLKQSLPDTLYLL LFCIDVNVLYATRMLALLRCYLQLWTRKINEK  
AFNPVHHNMFTAYLDLILQEYEVYTTLFKKIITYYVLETFLHGLLYVQVAIQICKSIRSRGRFSEQLM MIVSIFTWT  
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DLATTYVTVLLQFAFVSRT

>BmorGR61

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THATSFHALVTSVYLSYNIYGILIGSVLIIWLSDRNIEFVLKIQDLIKILEFNKCF LIEYAFINSIIMAAFILNF  
LLYGYFVVHLQKFALGLTFSAIVCILNQDLDIYVIIIFANILKKCASRWTVEARQKNFNNDQGWVKLFN AFLNLT  
ESYQLYQKIFEFYELLRRVGIVFLGLQLTVCRVCSNDIKSIQCTVMLHAFQLICVWIVKKFITLSILSFEMEIFYE  
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RATNDIYDL

>BmorGR62

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FFIYMNFIANYSYFNFYVNTFSFHKCFAFIKMCFDLNIVYTI FIFKMI GDSLTMFKDTAFCSKNMKLYEVS NRVY  
WNKMLRLYSNILDVFELSKRTL NFFIIFYFVSNILLRILSHVQLAILMNSINWLQHVAYSNI VMVLLTLAKEGIILI  
VLI AKCEKIYCVIGDVQTACQLALGNAACPEKRRFCKNVRSSSAAFSKIYICN ILAVDAKLAVSLMSVTTTYTIV  
MLQAILIK

>BmorGR63

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NISIKITDCVQMVYDFCQYIVDLYFVTNYGRNISSEYFQQYKIDKILEVV CYEIIKHRIVKLLWVFMCIWFSSC  
FDFIAWFLNYGWITPLVSVAYIFLLIKILTTLDL SAHIMNVEIRLKM IADLIHHYMSCEDNFQAEETLCHKNWL  
NSKERAKYYELQFRIHALKQLSCNNNEIKLLSRCYLMLEQVEI INRMYGFRILLNSL SLLIDMVRFTNISVRIMI  
GSQNLAYNCGYFPAVSSI FRL LTCGAVIINLVSHCERVYQRT RICNVIDHMI VKNKLSRESTEALQEF RNLVQNH  
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>BmorGR64

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VFGANFTEFARTIGYFPRVIMFEMFYKRVNYLKSQLRNDLAHANLYPIGFVCSKVIMKYINFYKLLLRNLQQNSLQ  
FKILMSMSSLYIIIKALASAYAFIYREDGVHVFIFIEFATGVFLFFVMSSIIISIFNEIEDIRQIVLAQLRYCKQG  
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>BmorGR65

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VFGANFTEFARTIGYFPRVIMFEMFYKRVNYLKSQRLNDLAHANLYPIGFVCSKVIMKYINFYKLLLRNLQONSLQ  
FKILMSMSALYII I KALATAYAFIYCEDGIHVFI FIEFAIGVFLFFVMSSII ISIFNEIEDIRQIVLAQLRYCKQG  
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>BmorGR67

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SEDQITILRTIYNTKLKRYGDDFERIASIIYVTYSMWKVPFRMSGNQVFIQRIVDIDSAIENMGAEVDYNKNAKTAL  
VISIAQLGDFLVRMFCIWLSENLSVIVPTEKLYQVVYTDALS FVITSHYCFSLIVLRGRYKYINKVLSEIKTRSA  
WEYKVFVRNKVAPDLEKVRQLQDRIVCEKIKACARIYSMLYKATEAINRMYGTALVLTMLLYLVFIILYMFYFMEA  
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>BmorGR66

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IGQIATYLFRLFCVWGCLGNLNSPVPVEKLYQDIFTDALSLLLTSQYCFSLVILRDRCRYINKILCGIENRESSRL  
RLFYVSSMPGAEKDITCRKIKDCSKIYGMIIYKAVESTNITYGFALVLTMLLYLIFIILYMFYFMEATAAGFLDTK  
KYIDFLICVLSELLHAMLII FLNIYFSEETVKETRTTSFVIHGI INSDFNTQAKTEAIHFSTQLLHQIPKFTASGL  
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>BmorGR68

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LRLKIHFSIGILMFLLSIQVCVNFTRVDSLWKKVLVMFTFNIPQMIQFTAILFYIILVNMVITLLVIIQENISIST  
RDTKTSSSIRVEHRMPLSLKQLELIYIKAFELKRDINKAFEAPILLTMMQCFHSIVSESHIIYHGAVMEPHMVLHS  
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>SfruGR30

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>SfruGR2

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>DmelGluRIIC

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>DmelGluRIIB

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>DmelClumsy

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>DmelGluRIID

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>DmelGluRIIE

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>DmelGlu-R1B

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>DmelNmdar2

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>DmelIR8a

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>DmelIR25a

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>DmelIR21a

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TFRI

DN

>DmelIR31a

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>DmelIR40a

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>DmelIR64a

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>DmelIR75a

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>DmelIR75b

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>DmelIR75c

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>DmelIR75d

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>DmelIR76a

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>DmelIR76b

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>DmelIR84a

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>DmelIR92a

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>DmelIR93a

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>DmelIR7a

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>DmelIR7b

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>DmelIR7c

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SDLMLPSTSYTSFP IVLVVPSSGGSISP MGRLTRPFRYI IWSCILVSLIFGFVLI CLLKITALPGLRNLVLGRNRNL  
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>DmelIR7d

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SSDPM DGLDGLDGLLLRIVARKMNFTLKLIPNEPNGLIGSSFMNGTFTGAYKMLRERRANITIGCAACTPERSTF  
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ASVFNFI QNSPVKPSPR TLDQALSGGFRFITD HASYRMTLKIPS FQGTKLISAGQPVDVFDALLKAPWKTGAF TSR  
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>DmelIR7e

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>DmelIR7f

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>DmelIR7g

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>DmelIR10a

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RADVIDEVARFRNKAGVSRYSLSILESSHFTLLRKIWWVPECPKYTISYVMPRDSPEWEDAVNALLRLFLNAGLIV  
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>DmelIR11a

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>DmelIR20a

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>DmelIR41a

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>DmelIR47a

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>DmelIR47b

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>DmelIR48a

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>DmelIR48b

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>DmelIR48c

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>DmelIR51a

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>DmelIR51b

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>DmelIR52a

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>DmelIR52b

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>DmelIR52c

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>DmelIR52d

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>DmelIR54a

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>DmelIR56a

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>DmelIR56b

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>DmelIR56c

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>DmelIR56e

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>DmelIR60b

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>DmelIR60c

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>DmelIR60d

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>DmelIR60e

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>DmelIR60f

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>DmelIR62a

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>DmelIR67a

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>DmelIR67b

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>DmelIR67c

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>DmelIR68a

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>DmelIR68b

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>DmelIR94c

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>DmelIR94e

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>HarmiGluR1

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>HarmiGluR2

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>HarmiGluR3

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>HarmiGluR4

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>HarmiGluR5

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>HarmiGluR6

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>HarmiGluR7

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>HarmiGluR8

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>HarmiGluR9

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>HarmiGluR10

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>HarmiGluR11

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>HarmiGluR12

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>HarmIR1.1

MHQARLRKMILIGVLFGMLQAVSGFNLDVANLAADYVKHKDLRHVCYFTCQSRYYNTILVHKLTKQSVRVSVRRID  
ESVNRDVVRAASRSTGAVGLLLDAHCRGTPLVLLEASKNKLFDAMHPWLILTNIEDADNCTDYIQQSFFQQLNLSVD  
ADIAVASYNGGDNYTLTDVYNFGTIQGNNEVNLHGSWRPETGLEIKLKGKYNNRWNFQNLTLRAISVIDQP  
FYPEMLSEMTYTAGVAAMTKITSQMLNTLKEQHNFRFNYSIAGRWIGSPKRNSTLAVTNALFWEEQDLSSTCARIF  
PKWLDWVDI IHPPTTNLQTKFYLIIPETGVGQYENRFLTPMSHGVWGCAFIAGIAC TLVLTGAAWMESRPKPGLYA  
FFSVFAAVCQQGYEDGVQLLESYSSQGRRLTLLVIGLTSMLLYNYTSSVSWLLNAAAPSIGNLDGLINSDFELI  
FEDIGYTRGWL DNSGFFYYSGFKNVKEDEL RDKKVTKAKRTVPVLQTVNTGVELLRTGKYAFHTEPYTAAQVISKT  
YEDEELCNL GALQMMLPAHVYIMAQKRSPYKEFFDWSLLRLLERGHVKAIRARFAGTMPACSGARPRALALGQAAP  
AFLMLLLCVLLSWIILAFEVLWSRVQLKKRG

>HarmIR1.2

MISYQILLVLILPCIIFGLNQNTLKLGI EYFKYRDVKFVCLLTCEKYSSWALQYSKSASTVSI AVSETSI LRSKVN  
YNRVENCLRRKTYGLGVIIDTNCEMAADALYFASQNMWLD SHHKWLLIDDDKAKLEVYNDETEIENVIYEDRNSTLI  
DILSNLNI SV DADIVVAEKGNSSYNLYEVYNYGKIQGGNLIVNEIGFWSHENGFNLNINLNGYKYRWD FQNI SM  
RMILVAQRASKNF DLES LTGP EPVPGVAIIITQTPTDILYIVAKIHNIRYVSTITDRWIGSYEKNSSKVVS TSLYFR  
EQDVSPVIRGLSTVYERIDVINPPLTSIETRYYYRIPTMGPGKFENQFLRPLSTTAWWSVIGVSTLCAGLLLLSAL  
LEQRPSVQYAVFSVASL CQQFFQDIDDSG TKRISTARKVTILVTGLSCVLLYNYTSSVSWLLNGPPPSINSL  
KELLESPL ELYIEDIGYTRSWLQSPSYFNKRNAPIEDEL RQKKVFVNKKKNAPLLEPLVQGIKMOVQKGYYAHTEV  
NSANALISRTFSQSELCELGSLQSMETLLHPC LQKHSPYKEFMTWSLMRLSEQGIVSCIQIRRSSFEVKCEGSSP  
RALALGGAAPAFILLGGYMLATVIMLVERLVFKMKHENQVK

>HarmIR2

MRTANVVKSSLDTIFII IHKILLLSAYDNADICKLVSIDL LSGITKYFYTSKKFQYKEQFKIGFLRIKESGLLNR  
LVSTDFEEPKCTKSHIIQISMQHIAIPLTILAVTSVLSTIIMVAEKIHYNRNMWPYFN

>HarmIR2.1

MALVNMNTNVTLRVATQYNCDSLNRNARTSDPHTFDPMWRETILGCMILDLLRDMYGFKIPWIAATTAACGLRQSSA  
ARDNSQPMKMYGAAAEARDSRARPTNFGCCIFFSMCYVFDNPERNVTVIGGLNNASQSYRDSVDVYSRSMTLTQDL  
AEQIYPIHALHTWKLGLLSRPGNKIFSTFYSKPFSRPVWNCLYCFGLLIIVFFYILKRWEFSVIGGWQICFYEA  
LLVVGAYCQHIPPIDPRLPSRRIAYLIFFTFVYIVYTYT SNLLSNLVNDKDHGIDL PMLADSDYVFLAVNHMMA  
IFERSQIYHYNRNISLVVKKLMRIHTVSI PDGLEAVKTGKYALLSDFITVYPYMKKIRTLNVTQARPLVAFPVKQH  
FGALGRVVVSAASAELSLDRVFVSSCCTHLETALRHV

>HarmIR7d.1

MEVRDTEVNHTLEHFVTEDPASELGILAAKVAYYNFEWRFLTIVMYNTVQAIGLNTFLMHYEKSVIVKLGRFLPAR  
RSAPQMIIFGEDASEISSTIRWTVRAKYDSNGKFIIICAHHEQECELKIFQTLQSLYMFNAVVLKTSNKTESL  
AYSYDFLSEGGCKNSVPYKVNLTDDCFNDNCFKNLYPERLSNFRKCPLIMSTIEQPPFMYLHNLTSKPTGIDG DIM  
RLVADMLNATLHLKPPYDGADSGHFANNNWTGSLGDIYNNHSHASVCSAPITSGKYGNFQISFTYYSMDIVWATRL  
PAQQAPWQKLLHPLNIYIRIILLMFICIFMNTFCKTNLFKVISKIRDVFKIAPPKYSLLFYSWVFLGVPILRT  
PERRSFVVTYVTWIWCFIMRSAYQAALMNSLKNPAYLDNLKTFQEV LKENYPFGGLDSLKEYYIDRAIYDKWKV  
VELKNLDKTLDDILEGSTDFVLASNKEFIKHHIMKYNGTKQLQIIPQKIVNSPTVVYFKKFSPLVPPMNFALRIAF  
EAGFIQRTYVRYLDHDKKLLQRLRSKQAEPLSMEHFAGCFVLLVLGWVSLTYFAVEYICGNLDDE

>HarmIR7d.2

MSNQMLYGHILTANMAISELNHFFDTNVTAGSQLGDMAAKVAIQNFDLRHATMLFFNSTLCYGEVFLQFYHYNIVI  
NRAKVLARKTTTRQFVLFASDTADIELLLDSIISFEMDNTGKFIIICESSTPKECDEQDIMVLCWNRYIVNMVFIQ  
EETEAVGFTYYPVADGICNNLKPIKLN SHNHYTKTTYGEIFRKKFRNLNFCPIIASTFIQPPYMIKNGIPTGIDG  
DLLRMLIHGMNASLKMMTPSRGTGWGFREKNGTWMGSLADVYDDL ANFSMTSAAITLTRFTDFQISSGYSTSKVVW  
VSESAQVQNVALKLLHPFEKNTRFLLIASFLLVICCAFVLKSSCW TAMCNEENQSSRSVVFYSWMICMGQAVEKLP  
TKSAYVQMTLFFIWCFLVRTAYQVYLISLKGFRFYDSQFESIDEAINAQYFPGGPPAL KDYYVDYPFVYKNWVNI  
DTQQIAPTAVNISKGMNFV LAMNIDAARVVMKTRKAKLHILPEPIIISPTVLF FKKYSP LSETVNTILHRLIAAGF  
PDKLYKIYSSTFDIVDQGSDEGETLKMSHFTACYVVLILGWIVSAIFFSLEVYFGKIYKHPS

>HarmIR7d.3

MIWVLRILVILQLMLRSCSASSNLIETAVNISTTTFNLFHTTTTVIWKQNESECVTGYLQSYPGSVVLSPWATYNDS  
KVREINETIGFKQTIYFATNLLYEYIIMELINEVIRFPPIRIFILVLENPVKSISELSESAFIEVTARNDQADLILISEN  
DAGEVSLSTFFFPYSEGLCGNYTPVFLKYGDDLWPKKFSNFYQCPIRTALLEYFPYVTVHFEKGKITSVGGYDGKIL  
MIILKLNASLEVTSAYNNVFGTYVNGTATGSIGDLATEKADILIPADILTEKRYTPTLPSHTYHTVDIRWVGPKQ  
REVYDWLKFIIIPDKTNFTYLHLVLVYILFVIVAMLVKCKPHLTSATNRILYQSFIILLGQSARFVTKSWLLNSLFLV  
LWIWFCFFFRIDYQADLVDALQTLDLLEPPFESIEEAVTKVDGYGGVEVVVDYKDTPLERNYKVIIPMNELKNYIRR  
IVEGENFILATDIALVKLLEPYVQILKKRISATGACFYMRPGWPAAKDVDDVIFSLVEAGFIENLLSDNNNHRWIV  
NRMNADDVLQPKSLSVEKLSTCFYGLGIMWLICFIILLIEIVHNNKHHNK

>HarmIR7d.4

MFVDFSKTLYFAIFFLKIFSCSALNDITQCAVEVANYNFFYRLPAVILYRDVNDKLVTDLFLKAYKGTVMIESRGVE  
PAKQVVIIVDNYQSFIIRLLSMLKPDLRGRNLLNGRVKLLIVINSNRRKLDHINGILWSYVTDVVIVTKDKQGRIA  
LYTTYYPYKNHLCQNTPEVLIGYWSRNMYSYNMYPDKMTNMHECPLYISTNKIYDQATERKIPLQTIKKAIVRLLR  
DIMNFTPIVSARDYISIDSDRAKNWSDSLNDVISGFANISTCTIPLGVDRLGLLDYSMPYFRIRIAWLAPPVAPGP  
VWRLLSPLNGYLWLILLVVTFVLVISLFPVLKLRKIKYFCHRYFKNFDKVQGAAFRVWGALLGQTIIRVAPRRFRDF  
YIVGLWLWFTFVVRNAYQSVLIGALKTDTLTGNFANLKETVDNGYNFNGGRAGIYSHFEFDPLIRDGFEIIPVVKFE  
EVFRDLIDGKKKFVLAASLEYAYAYCLAQKKENECGHVLPDSILTVPLVVMKMYSPFVRPLTTWLPRIESGLL  
EKDAVLKTSYVTTITSDPSPLTRHQTLS CFLCLGFGCLISLVILILLEIVRKKTSEYTVVKKSQLVELDRESKFVID  
F

>HarmIR8a

MSFHYLFLLIFLINLGCVLSELSLRFVFIIESQEQLDTHIEISKSLKLAESVRTDVKLDDAIVVLDRETEDES YRML  
CSSLSKGVSMIIDLSWTPWEMAEDLAAETGVPVVRTLLGSQQVLKALDEYLESRNATDAAIIESESDDVDRTLIEL  
LGASNIRVWVHAGLTRDSAKALKTMPEPSFYVIVGENGFIMDTYRRAVKEKLVRRDYRWNVLVTDYSTLELSQLV  
LPTVTLPQDPGECCKMKREDCCPNDFQRKQYILNALIQYIAEVYSKLDRLPLVTSSISCREEPAVMNSTRDLR  
YRQFAEDAEISNETLFWMDRSGFLRSRIFLSTYKPTAGQQTATWSADEBYKLLPGVELEPLKMFFRIGTAPA  
VPWTLMKLDPETGEQMYDDDGQPLYEGYCIDLIARLSETMSFDYIEIVSPKSGGFGKKLPNGTWDGVVGDLMRGETD  
IAISALTMTAEREEVIDFVAPYFEQTGILIVIRKPIRKTSLFKFMTVLRTEVWLSIVAALVLTGFMIWLLDKHSPY  
SARNNPAYPYPCREFTLKESFWFALTSFTPQGGGEAPKALSGRTLVAAYWLFVVLMLATFTANLAAFLTVERMQT  
PVSSLEQLARQSRINYTVVEGSSVHQYFINMKFAEDTLRVWKEITLNATSDQAQYRVWDYPIREQYGHILLAINA  
SEPVDAKTGFQVQVNEHTDADFADFIHDSAEIKYEVTNRNCLTEVGEVFAEQPYAIAVQQGSRLQEELS RALLELOK  
ERFLEQLAGKYWNESARQACPDADSEGITLES LGGVFIATLFGGLGLAMITLAWEVFYKRKEKNKVQTLNTKPEK  
VAFESKSTLETKVAESVAKLKKRGKGNLAKNVTFGDTFKPVAEKGVSYISVFPKDYRP

>HarmIR21a

MAVSWFIVIFLLFYVPVYGEEVLVEYYPSQSILDTQHVKVKNKREIKSNAAAIALDNSNNVSTREINWRKFNQEKTD  
DAKIKKRALDPVFRGHPKTREELWNEHFLNETTKFDQTPSLVHLLHNITLTLYLKDCTPVILYDSQVKSKEYSLVQN  
LLKGFPMFSVHGYINDGGELVERKLLHASTDCQNYILFLTDIKASAKILGQPKNKIIIVARSSQWAVQEFASV  
SRMFVNLLVIGQSFKEGDDANLESPIILYTHKLYTDGLGASQPVVLSNWNHGKFSRNVNLFPPKMTEGYAGHRFLV  
AAANQPPYVFRRIKADLDDGGNPRVAWDGVEIRLVKLLAERNNFSIEIEPLELHLGSGNAVAKEITSGRADIAG  
MYLTTRDIRDLVDVSQAHSQDCAVFITLMSTALPRYAILGPFHWHVWVALTFTYLFGMFPLAFSDKHTLRHLLHNS  
GEIENMFYVVFGTFTNCFTFLGKNSWSKTDKITTRLLIGWYWIFTIIITSCYTGSIIAFVTLVPVPETVDTIKQLL  
AGFYRVGTLDRGGWEKWFNLSSDPQTKKLLNKLEFVVPNVEAGIRNTTKAFFWPYAFLGSKAELEYIVQANFTATKS  
KRAALHISNECFAPFGTITGFPNNSVYSEKMSLDISRMIQSGIIDKIADEVRFEMQRSVTGKLLAAGSGTIKIPSA  
EEKGLTLEDTOGMFLLLGAGFIIAATLVSEWMMGGFTRRCRFQRKVDTPISVNSREHLIPTPKTDIGSEIKIGDT  
ESRLHFDSRPSTAASRDITLEGQIINVTEDNIDVHNSFNVDRFDSRRSSSLDLREVREIFEKQKRRRIVSQDMES  
VDEHGPTVSRVAFGDPIKHEK

>HarmIR25a

MSTVTVLLLFNLVHIAFGQTTQONINVLLINEESNALAEKAFEVAKEYVRRNPSLGLAVDPVIVVGNRTDAKSFLEN  
VCRKYNDMLLAKKTPHVVLDTMTGVGSETIKSFTEALGLPTISGSFGQVGDLRQWRTLNANQTRFLLQVMPADI  
LPEAIRAVVTQDITNAAIIFDEFFVMDHKYKSLQNIPTRHVITPVKSFEANEIKTQLESRLNLDIVNFFIVGSL  
RTIKNVLDAADKNQYFGRKTAWFALSLEKGDISCGCKNATIVHMRPTPDANSRDLGKIKTYSMNGEPEITSFY  
FDLSLRTFLSIKSLDLSGKWPNDMKYITCDDYDGKNTPNRTLDLKTAFQEIKETPTYAPFFIPQDDPMNGRSYM  
STDLLAITVKDGASISSHSLGSKAGLSSNLTLTDPNMSNYSQAQLVYRIVTVEQKPFIIIRDDKAPKGFKGICYDL  
IEEIRQIVKFDYEIILAPDGNFGTMDENGWNWNGIIEKELVDKKADIGLASLSVMAERENVVDFTVPYDVLVGTIMM  
KLPRTPSLFKFLTLENDVWLSILAAFYFTSFLMWVFDKWSYQNNREKYKEDEEKREFTLKECLWFMTSLT  
PQGGGEAPKNLSGRLLAATWWLFGFIIIASYTANLAAFLTVSRLDTPIESLDDLKQYKIQYAPLNGSAAMYFQR  
MANIEEKFEYIWKEMSLNDSLKEVERAKLAVWDYVPVSDKYSKMWQAMEEAVLPNTIEEAIQVRVDSKSSSEGF  
GAWLGDATDVKYHVMTSCDLQSVGDEF SRKPYAIAVQQGSPDKDQFNNAIQLLNKRKLEKLEIWWNNNPETMKCEKQD  
DQSDGISIQNIGGVFIVIFMIGLACVTLGVEYWWYKWRKRPVVGDTVQVEPAKSTRNNVVDKQGEFTFRGRNLGL  
TFKPKF

>HarmIR31a

MLAQAVVEFFKNKVSSIIIVLACWPAVDQMKFTRQLSQYGSATFSCEPAILDKIHPQYLQGVLYMVRDDDNLAFF  
KKVKRVHFTMKYKWLGLGDHVPALRDIRYDSDVTFKLGWRNNRNETKKSTNLALLPEPPTSPIYFYDVYVHLREG  
ISIHWAHWTKESGFVTHDREKILRRLDLQRYPLRIATPVGHYSSDKYDGTFFVDYLDKETMLDQDPGIRSAHSAS  
MLLTEAVNAQDVLIEENELWATVVNNNSMFLMVSNGQADLSGGVLRLLLDRSFKLDYVTPLWPFVRVGFTYLAERESS  
SNMYLEPFSPGVWWSCLGIMAILAMVEWITAKTPKERE GALYTVLT'TWLQQDASAVPEGASGRWAFTVLSISAMLV  
HAYYTSIAIVSALMSTGRGGPETL KALGDSKYAIASEDYDMRYLFFDVETTWDDLEYLKKKKKTSKFYQELERGVE  
LIQQGNTAFHSEYNQIYPHFKTFSDDHICKLQHIDTIP EILTWTVT'TTKHGQWTEVLRIAGSWLQETGLRKRLVNRL  
RIPQPPCRASLLAERVKLGDIAPLLALTMLGAILSVVLGIEIMYAKAKGRKLQEGDAKHALEDSDSSSEVTDVVY

NYLA

>HarmIR40a

MELLLLLFLLINGVQSLLDIQDVTSDVMTSLPKDFSIAVKDIAEGMPTKAITIVRGNSTNIRSQDIFELLCLLSQHK  
VLTTNLDIATKENKQKYEFGLKALDVSDQRTSLILCEPYECENILFELTENNLIHSMILYFFYWSYGPVSDTFLM  
TMKEAMRVAVITNPRESVFRIYYNQGTDLRLNLHLTVNWWAGTLYKSPVLPPTDKVYHNFRGRVFEVPVLHAPPWH  
FVKYNNNDNTITVTGGRDDKLLALMSKKLNFKYRYDPPDRSQSSISSNGTFKGTGLGLIWKRKADFFLGDVTMTWE  
RLQAVEFSFMTLADSGAFLTHAPAKLSETLAIIRPFQWEVWPLVFATLLVTGPALWIVIAAPSLWQRRECDQLGLF  
SSCCWFTTTLFLRQSSSKEPSSTHKARLVSVLISLGATYVIGDMYSANLTSLIAKPSRERPIGTQLQALEEAMRDYG  
YELVVESHSSSLAILENGTVGYGRLANLMRRQRVQRVRNVEVGVRLVLSHKRVAVLGGRETLYYDTERFGSHNFHL  
SEKLYTRYSAIALQIGCPYLETFNNVLMTLFEAGIIAKMTTDEYKNLPEQARRSDPVTESDKQGNELMGDSTASQ  
APQSESAKGLQPVSLRMLRGAFCLLGIGHLLAAISLAVEIQLHRRSKRRHEPPPPSEHRKTQKLLVLGKSVMLFKRG  
YKRVCA TVYT GIDKALGPEVKD

>HarmIR41a

MLVSTPALAPLEILLNTIINRYLQSAYCITVFSETPFTFILPTSFISLIPNETILVEQIFNVSETGCSDYIVMRD  
PQIFMEAFERVVHIANVRRSDRKIIIFLPYDEEYNEENDVNLPSLVFAMKGSKYLANMLMIVNHASVNDCKIFNLV  
THQFVGRSEEATHLPKYLDSDWSDCTQKFENEANLFPDHLTNLYGKVVRVACFTYKPYALLDIDPAIEPLGRDGVEI  
RIVDELCRWINCTVEIVKEDVDQWGEIYANESGGIGVIGSVVEDRADIAITALYSWYEEYRVMDFSVAGVRTAITC  
IAPAPRLSSWEMPLMPFTWYMWLAVVFTYFYASTGLLTAQGCSTTTYPPFNVFMMIGQSQYESRASWRIRGVTG  
WLLIAGLILSCAYGAGLASTFTVPRYEPSIDTVQDIVDREMEWGATHDAWIFSLTLSTEPLVKQLVVSQFRIHSFDE  
LKRKSYTRSMAYSIEKLPAGNFAIGEYITQEAVLDMMLMLEDFYEQCVMMRKSSPYTEKVSQVLGRHLHQSGLLL  
AWETQVALKHLNLYKVQVEVRLSRSKNDVGITKPLNLDNVVGIFIVYAIGLTISFAIFLGEIYVHQKKKNEVLHID

>HarmIR60a

MSVDKIFLVNVVIFIQVHISDGVVNPFGPTVVNDYTNCSKVIDNEFHEPGLLI FANTNNVSTSVTRIRTKLLKRL  
HKEIKFSIEIMSPNNEVEICDLNRYNLGVLHVDVYVAIPFANYFVIIIDSYTDFSFLASKLIRSRSWNPFAKFIIL  
LFNFVQDDKVNIDYVERVLSCLFKYNAINVIAVPKANFNRAIIYSWRPYDPPKYCGYFNETAKDRLVQNMCES  
GVLKHDRKVFDNKIPHDMEGCVIEVLALQRHPFISDDEYDANIEKLMIDAMLKRFKMKARYNFIDGYRGERENVGE  
WNGGLKKLASKSGHLLGGIFPDFDVHEDFETSVTYLADAYTWVVPRAHKSAAWVALVIFKSLVWYSVIAGFFLC  
GITWKIIAELSEDSYNNRSFRHCFNLNWTITVLGFVSYLHPVKESLRVFFVFLNIYCMLFSTAYQTKLFEVLTNPSY  
EYQIQTVHEELVESGLKFGGFEELHDLFYNSTDPFDYRIGDQWTDITNITEAMIDVAHRNFSLLCSRLELAHISGI  
TPELSDSVGNKYTYFTDNVFSVPIETIALRGFPFMMEFSTTITIFKQSGLNEGLRQHFAHFNERRRARQLRALLK  
EKSDVNPLSSEHLQGGFLALALGYVSGTLALIVEIVNCDYVQNKFANFKRRVNLLS

>HarmIR64a

MNLFCNLLLTLSVTEVPLVIDILKHKNIKNAVLFCQYNNHFVSGVHKIFNENNVLIASSKIIISNGTYIIPDRKKT  
GIVVDTSCBGWNSVLDSTRVTSFKDYSFIIIAEHLSPILEALSRYPIILVSDSVIVAHKLNQSYNLYEVYNTGFKLKG  
KYVIRLLGHWNSSLYIEDLNRWDLGGAFVKTAVVVINPTKLTNQTTQEYMEKPIRMQVKVDTVHRMKFFILLKYMR  
DMYNFRFDMHRVHSGWYKRNGTFDGMVHALYCGQAELEGAPIFYRIDRWELVQYVSEVWTSRHSFIFRHPKYPGGF  
YTIYTRPLSGIYVWCVIAMLVVTAVILWAMLLVQNTWGDNEDSSSLAGIIIWGAICQQGIAINRESTSTKLIFIT  
YFYAVTLYQYNNATIVSLLLEAPRNIRTLKDLLSDSLKAGAHDIVYNYDYFKRTTDPVAIELYHKKVVTATQHN  
YFPAEKCMDLVRRGGYAIHIDTSVAFPLIKATFNEREICDTTLVQMYPQQRMGVVMRKNTQYREHVAYAIRRFSEA  
GLPQRLRSDVDEPMPECAHTPDSSVFCVGIREFSTPLLVLALGMLVSVLLLI CEIVLHRVVQRAGLRDFVH

>HarmIR68a

MFKIIVLFCFFTAVKLDTFPILKDLHERKDLEYVLIDLINVLMREYEVT CIAIICDEVYLVNVSGLPFKRTSAIPY  
VMTVVEDYEDLLSPNFVTLESRAARKEGCNVYVILLANGLQASRLLRFGDRHRILDTRAKFIMLHDFRLFHSELH  
YIWRRIVNIIFIKHHNKMTGTAKSRPFELSTVPFPNP IKGVFVPRRVDIWKNNENFHYKRPLFADKTSNLNGEVLN  
VYLDHVPSPVVMKNNVSTKLGGVEVEILHTLAEKMNFKPRAYQAANAEIHKWGQKQPNGSFSGLLGEMVNGRADV  
ALGNLQYTPYHLGLTDLISIPYTSQCWFTLTPEALTDNSWKTILPFLKLYMWIAVLLVLLITGTIFYGLAKNHMNLQ  
EYRRKS KSKRSNIDENTKPGLYLFG EIIINSILYTYGMLLVVSLPRLPMGWSIRLLTGWYWLICYILLVVSYRASMT  
AILANPAPRVITDTLKLVD SKVTCGGWGTQSKKFFEQSLDEYSQRIGDKFETIDDPMEAAANKVAQGVYAYYDNSD  
FLKYISVVRKNSFMDPKQNNVTNTEVTGRKDTQRNLHIMTDCVVNIPI SIGFHKNSPLKPLADIYMWVRVVEVGLV  
EKWLNDAMYQIRLTLETSEDEVKALMNLKKLYGAFIALAIGYSLSAICLIGELIHWIIIVKRDPNFDKYALHLYLH  
KNKKH

>HarmIR75d

MELISFILSYFITKDLSSMTAFICWTPERTSELCRSASGAGVRLQLATDFHQPPMPTPRGRFREAMLDDLTCPHAA  
LIMEAASSSRGFNYRHSWLLLLHNSSERGLIADALSPYEILPDADVVSAPDALLDVYKIKPATPYLLTDLGLTRNC  
SRHQLRALWGALPSAVTRRRDLKNVTMKGISVVTEPYNFKGWSDLRNRQIDTFPKFTYPLMMLAAQDMHFRFDLRQ  
MDVYGVSHNGSFDGLVGRLQRNDAEVLGASIFIRPDRMQVADYISETCVLLCAFI FRQPARSAVSNVFLAPFSAGV  
WAASAGVAAAAALLVALRAVLQRTQRDDALFTLPETLTFALGTLCCQGFFHTTGPVTSVRLVMFSTLLASLFFV  
TAYSAKIVAILQTPSDALRTIDDLTRS PITIGVQDTTYKKVYFLESPDESTQQLYRRKILPQGERAYHSVVDGIAR  
VRTGLFAFQVESSGYDIIRQTFTEREKCSLKEIEAFKLPLVAVPMRKNSGYREL FATRLRWQREVGLMSRERRVW  
LVSRPRCDAAGGGFVSIGIGDVL PALQVLGLGALISLTLAAELAHAIRNSRRWNHI

>HarmIR75p

MNIFTFIFLLLIHKS VYAKDANTINFIKLFIQNDQKPTHLIYGGLCWKKNINKLVVELSTIGVRTSASF PKPSKY  
QDHAILYLTDLCAQSKAII SYALSKELFQFTYRWLVLTSTKQLQQSKI SLLMNGSVLVSDLVLAERAGNHFKMV  
EMHRPGLNGSMITTPRGFYNGSFVDVRPHRELYRRRRNMGHPITMSNV IQDSNTTREHLPKEDRLELQYDSITKA  
CWSAAKIGFEMINATAKYIFSRYGYKVDGQWSGMIADLYSNKADVG TN CVIFRDRFDVVYTDLVAPMRMLFIFR  
QPPLAYVANVFYLPFSTRVWVTI AVCTAIATVTLYLASKVELVLT KASTQQQLDGGICDALLLTMSAVTQQGCYLE  
PRRAPGRMMVFVLTALMALYAAYSANIVVLLQAPSDSIRSLPQLANAKITLAANDVDYNHFVFNQSKPELHTSIR  
DRVFPENGKARLYSLADGVERIRKGLFALHSVAEPVYRQIEATFLESEKCDIATVDYLVTFDSFTPVRKGS PYLEL

IRVVHKQIRESGIQSAIRKRFLVSKPHCTTKMSSFSSVGLMDMKPVLILMLYGVCLSVTIAAAEILVFKLSEHRKK  
YKVESTPEPPS

>HarmIR75p.1

MNLKILYLLSFLYVFMVKCDGNFNSDVIMSFVTLEERPTSLLIPLHCWSQHALTSLVRSMTSVAVTTATSLQYNRT  
EYHLQVYVLIADLACPGTDRFLIKASKEGYFKAPYRWLLLNYYDDDKTVLKDVMHMLVDSVVTVKRISDQEYWFIEA  
YKISENSEVIYTLRSKWGRMEDHRSSNVLSRRHDLRGHILTMSNVIDTSDNETRVHMNDRLNLHQDSITKMSYAVV  
KICFEMLNATERLMFTHTWGYKDKNGQWQGIQVDQLLKKEADLGTLTIFTQERMMAVDYIAMVGSTAVRFVFREPP  
SYISNIFALPFGAVWLAIFFICVLGCSIFLYIASKWEASGMHPLQLDGSWADVLILMIGAVLQQGCTLEPRYAAG  
RCVTLILFLALTILYAAYSANIVVLLRAPSSSVRSPLDLLNSPLKLGASDFEYNRYFFKKLNDPIRKSIYEKKIAP  
KGKKANYYSMEKGEVERIRKGLFAFHMELNPGYRLIQETYQEDEKCDLVEIDYINEIDPWVPGQKRSPFKDLFKINF  
LKIRESGVQANIHQRLTVPRPRCSGHVSTFSSVGITDMYPAMLMTLYGMLLAPAVLLMEIMYHRLMIARQQKRGTS  
DYDHIPIFRH

>HarmIR75p.2

MLSMRIILQAFILVLILVERKAFARDHTLVHFIKSYVQNEEKPTILIMNNLCWEKKVVVSLANEMSKIGSRSSSTM  
GVDSRYYYHDLLEYLLDLDCPGAEDI IALATARNLFRSPYRWLVITAWSKNANIAALWNSPLLADSDLVLAAGSGGV  
LKLVELHKPSPNGTMI STLGRFYNGSLYDVRPHRELFRRRRDVMGHTITMSNVIQDSNTTVYHLPREDGMEPQYDS  
ISKICWMNVKLAQMLNATPGYVFSYRWGYKVNGKWSGMIDDIHSGRAELGTNCVVS DIERLDVVAYTDRLAPFRV  
RFVFRQPPLPYVANI FSNPFSKNVWIAMSVC AVLSTATVYLA AKWEAKEGKGPTQLDSIGDAMLLTFS AIGQQGCV  
MEPRRLSGRMMVFVFLFTALMALYAAYSANIVVLLQAPSDSIRSLPQLANAKITLAANDVDYNHFVFKLHKDPVREI  
VYKRIDPEKGKKHFYDLNEGVERIRQGLFAFHSIVEPVYMRIEQTFLETEKCDLMEVDFLNSYDTFVPVRKESPYL  
ELLRVVFKQIRESGIQSALS KRLQVPKPHCTSKMSSFSSVGLMDMKPVLILMLYGVCLSVTIAAAEILVFKLSEHR  
KKYKVDSTEPSPS

>HarmIR75q.1

MKYFTLFLNILLCLKWCVSILPNNDLQMIVDLANSYEKPTAIVANVCWNSKADEVKLSKMLTNLERPITVRYLRKNK  
TFANSYPNNHLLLLLDKNCVDAEFFLKQANANKMFSKSYRWLV LGNPIQKESIVPPEFRGLNISVDSEVIMAQKTA  
NNDTLLHTIYKIRPKSEWNI EYYGVWSADYGLNKS DKTIQSNVMRRKDFKGEPLTASSVVEDKRTTSLDLITLRHI  
LVDTVAKSTFRSINPLDFLNASRRILFNDTWGYKVNGTWNMGIGEINTGKAELCGMVTFMSLERLKILEYFTNPT  
PVTVKIVFRKPPLSYQNNLFLLPFTTGWVICLGAFVLIMIVVLYINTKWDIKKYEQFNEQNM DQTCLPPTWSDITI  
FVLSAISQQGSSNELKGTGLRLVMFIVFLAFLFLYTSYSANIVALLQSTSNQIRTLSDLLNSKLELGVEDVPYNY  
YFSPAQSASDP IKKAIYETKVAPRGKPNFLTLEEGVKAMQKRPF AFNMNTGTGYRIVSALFQEHEKCGLHEIEYYQ  
NAKAWLCSGKNSPFGEMFKVGYIRIQEHGLTDRENRLAYAKKPVCSVMGSSFD SVNMDVDFYVCLMLLYGMILAFV  
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>HarmIR75q.2

MKTIFFI AALCSLSLCNGQDSQNMQVMLS DVIEASGRPSSVIAKL CWTPSKIIQLH THLTNKYIQFSANDVIKTDN  
PEFYDEEQHIVFMADLDCPDIDTYFEKNSARNVFRAPFRWILFGNSSNTDDDIVPRAISNDVLLDSEVLVLRSD  
DVYEMHFYIKISPNNWTQTEFYGTWNAKHRFQKSPRFFEP TSLRRLDIDGYEISICYVLTNNESVNHLS DGLDHI  
DTITKVNFPPTNHLDFLNAKRKYIFANTWGYRVNGSWNGMTGYLVRGEVEVGGSPMFFTFERVSIVDYIASPTPT  
RSKFVFPQPKLSYENNLFLLPFTT VWYSTIALVFIIYLVLLLVTKWEWKTKQD LLETREK DAGVLRANVDDIIVL  
IFGAACQQGSPSELKGS LGRVVMLVLFLALMFLYTSYSANIVALLQSSSSH IKTLEDLLHSRIKFGVHDTVFNRY  
FSTATEPVRKAIYEKKVAPPGTTPRFMTMDEGVIQMRKGLFAFHMETGVGYKFVGK YFNEGEKCGLREIQYLQVID  
PWLAVRKNTPFREMFKIGTKRIQEHGLQYRENRLMYEKRPKCTGGGSNFVSVSMVDCYPAVLILSYGAIVALFLA  
LEILAHKKENILRKLNCRKDEM

>HarmIR76b

MAGIELIISSICNATFCDVPYGGADKGSEVLTPEVINFKSLMQDVNGKNLKVTTYNNTPLSWTEHHNGTVVGKQVA  
FTVMEILRKKFNFTYDVEIPKRNyelGGRVTDDSIIGLLNSSKVDMAAFMPTLIAYRKQVSFSIDLDEGVWMMML  
KRPKESAAGSGLLAPFNDLVWYLVLA AVLTFGPCITFFTRVRTKLIADGEGVLPLKPSFWFVYSAFLKQGTNLSP  
ANTTRVLVFTWWLFMILLSAFYTANLTAFLTL SKFTLAIENPRDLYQKNFRWVASAGSSVEHIVKTEGEDLYLSA  
MINNGKARFLSVLSDKDFLDPVKRGAVLVKEQTVDHLMYNDYTSKKDVEESDKCTYVVA PNAFMKKQRAFAYPV  
SKLKSFLDPVLTQIFQAGILDFLKRSDLPSTKICPLDLQSKDRKLNSDLIMTYLVMVAGSATAVAVFAAEI FIKR  
YLSVKVNKTKKTRDNKKSKIGKKSTRYDDSRPPYPDSLFGKNPRFNVE TTRTKIINGREYYVFETGNGDRKLIPA  
RAPSSFLYRSDK

>HarmIR87a

MFAPLPTLLFFIHFSS TMSENPLLMTTGNSGQTTKTAECVLKLSAKYFVEKKALSGSIVIININSYTSTTQGLLLQ  
TVHSGIKYSIMVKDSFYPHANASHFPEKAKNYMLILEEKSELERNILQLNKLPTWNPLAKAIVFYQLKHNETAEET  
SIEFINELRDYKLFKTIIVFIYDEYNDVVISYTWRPYSDTNCGGRCD SVYVLDRCTNNTIYEF EKQHDMFPSPDMKGC  
PLVAYAVIAEPYVMPVGKITNSSFDDAYEFAKGGEINLVKIIISQFTNMSLITRTSDILENNGVVYQNGTATGA  
FVLRNESADLVIGNVEVTRILRKWFHPTVNYLQDEMTFC LPKAGQAPTWDNLVIFQWTTWATFFSLVIMGLVFHV  
FYYREHTNATKWPTNSLLMTFSMLLWGASFE PKSPTRILIFAWLCFSINMGISYESFLRSFLMHPRFEQISTE  
ADLIQSRIPLGGREIYRSYFETNNASSFYLYREYNSTTFSEGVRRALERNFAVVSSRRQAVYQDQKLGKGA PLIY  
CFPESNNMYKYGVAILTRRWFPMLERFNNIIRSVSENLIDKWMNELLIHVSSEEASTIMPLSIQNLLGAFMFIG  
FMYGASIVIFIGEVVIGFIEKRKQTKKVMNKRLR

>HarmIR93a

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ISLKKGLAVFSIASCEDTWDLFSRTEEEELLLFALTEVD CPrLPshSAITATFTEPGEELPQLLLDLRTSNAFQW  
KSAIILHDDTL SRDMVSRVVKSLTSQIDEESASPVSVTVFKMKHEINEYLRRKEMHRVLSRLPVKYIGENFIAVVT  
SDVMTTMAETARDLLMSHTQAQWLYVISDTNAQNGNLSSFINDL YEGENVAYIYNMTDNNPDCKNGIMCFCQELMD  
AFISALDAATQDEFDVAQVSD EEWEARPSKIQRNMMLLKHMQQH LAAKSRCGNCSTWRALAADTWGATYRGLSD  
ASDLSNVNTNGSSGVIDKIDLLKVGFWRPIDAVRFDDVLFPHIHGFRGKELPIITFHNPPWTILERNESGAIVKY

SGLIFDI VNQLAINKNFTLKI I LASVLKKELANDTLADTMHGMDAKLTIAAISKGQ GALAAASFTVLADPMPGINY  
TMPVSIQPYAFMIARPRELSRALLFLLPFTTDTWLCGLAVILMGPTLYI IHRMSPY YEAMEITRQGGLATIHNCL  
WYIYGALLQQGGMYLPRADSGRLVVG TWVLVVLVVVTTYSGNLVAF LTFPKQEV PVTTVAELLENRALYTWSITKG  
SYMEMELKNSDEPKYIALLKGAEMVTT SVGMGGTMTSGSALLQVRVFRHRV I IDWKLRLSYLMRADRLESDNC DFA  
LSAEFFDEK VAMIVPAGSPYLPVINKELDRMHKAGLITRWLEAYLPKKDRCWKASSMMQEVNNHTVNLSDMQSGSF  
FVLFMGFFSASTVLVLEFLYHRRKRRELTVIKPYVE

>HarmIR100b.1

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RRPEVNFTNKRIMTNEFPNVIITTNHLSFKAVRCNKSP LLELFMKSNWSWLYIIVTGDSVFSCKNGTMTSKHFRLL  
EKFMNTIWHRFEVMRVGLAFPIACKQKMI IYHRKR PSTQKLYDRS IKLINATSYKDLLAAINYS GTGLCAHYPIKA  
NIFERYPT SITQCKNLHYD IHFNLNLTFGYCGLDGMVMDLLTHFRFNLSSPKNEDCN IYGF AIPGNISGLGCI  
VRNELDLSFNSRFMTLYSDEHIYYLHYITTDKLCALVRKTGVVPLWHGPNVFRPPLWFIIMGVVLVLSIGIMWVYA  
IINRTITGQKV MAYWYLLNAVMTT MIGCSPMKNSRMIIIRSACLSGSILFLAVYQGHTSRVYTTLKHFERISTLD  
DLAFA GAILYTTPGMRQFTRQLQRPGNKLEEDFFNRSRLILNERIGAGITLEI PRATTLD RKS DAEMKILEHFS DR  
EGRPLIDIVDEC FMNYFLSYITRSGFPFFEEI QIFTQRLL EAGLP TKYKWTQ QMLNIPTSLPETRSEPRPF SKIK  
LKDQ RVAFFVL FVGSALS IIVFAVEI FKGPPVEF

>HarmIR100b

MHRIKYFV FVVC IASSNCELR TKLMPAVLPNCPLLPVEKYSQT VVIDINTNTNP ELKSCLVKTCGHSVVIINVC GK  
RYTINMDIDRKS IKT TDYPNIILITKHFTKKTADSGLLKYVVKSLNWSL LYFIVTGQQQYQCLNGTMTSDMLLLD  
NIMNSIWHKFKIMRVIVAFPYT CEDKMLVYHGKRPSTGDCLYDRPVKLINATNKEELLKAIRKS GEKLS ENYPIK  
ASIFERYPTS I KDCSNLHYYGHNLSRSHGYCGLDGI VMDLITHFNFNLSFPENETCNTYGF AVPGNLSGSLGCI  
ARNELDISFNSRFMTLYSDEHIYYLHYVITDKLCAFVKRTGVIP IWHGAFNVYSPPSWMMFIIGVIMIISV I IWGSA  
IVNKKLTGVKNKSCWYLYHTLTMTMTGSSPMKQRTLLMRGSCLAGSVLFLAVYQVSWSGHISR VYTTLRRIEQI  
STLEELYRSGATLYTSPSFRELSKQLLNKKNKLQVEFFNRSLLTPHETLDIVLQQPFATSLERKS DAEMEILT KYS  
NEQGPLIDMVAECLHNYLSYIARS GFPPFFEDLQVFAARLKEAGLPEAYYRWTQKMLNIPTSMPEDHSI PRCFRPI  
RLRDQ RVFPFVGLFVGTILSLIVFAEIRKGKSRNVK

>HarmIR85a

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QYGYGYNVMLLSGCPYSNNSFVKPRHN RHGETAYLVTSNDLSLDVSETVIAALKRTGIFKPRSAVIFVIKNVLELD  
NYFYHALSNHFQMLWSSSVTNSVLILKTDRLRMYSYNPFFQEI KIDITNVRDVS KLLSKQYN NLYGYGLRLSVFRKV  
YVSDRTGVPVRCDSYLAQVTM KFLNASCYPLPRDGSTVGDLLENGTATGVTSDLIDGYTDL ELSNRILKN TYGYGI  
DTTYPLDQDEL CFLVKKSDTQSTFKTTINLISMEMLL LFFFTFTVFIIITILVRKAENLLNLNDERRAEDTLIDL  
IKCFIRQTMDFDFMGPVFRSLVLLII IYSLIIDCAIDG IITSAITYPRYKPD IETMAQLGASNLTFGIHN RDLKIF  
NSSLSTDY YELIKNRIVPFS DKKIKEVLEKREYQYATLLRKS DSQYVSRKVSNM RKGKPLFYTPDCPLPCFIVYG  
LRYGSPYLNRLNYIIHHLFQAGILQYWSKTEELNADRSRLGAIENKDRKPLNIKNLQEMFYMLAIGELISTLVFIF  
EILYHKYHKQ

>HarmIR100f

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PFCNFCHYKRVHAS YVFFANNSQDFSEN FQYL VQEPFWNPY GKFLIVISSLQGD LRVIFDVLLMFHVNNVLLNGT  
GPGHLYTYNPFANYACGRYYDEIIGFGTCLNNRANLPDKLVSGLRNCTFRVSFPHKPPFTVNPSIVKHLIRQQPL  
IGFEEKLLKVLAEQEHFNITYNDRY GKPFYSVILPNMTAVGPLSLIQRNKTDIIIGGMMLSPARYSALSHVSGHFD  
YLDELIFAVRKADLV TNSKKIFLEFHPTVWLL LILVFI IYFILLIIVLRPKDKSLIMLKM LSSSLVLHGCGMSCRYT  
VKWLVL IWL VFAV IINIFYQTSLSYLTNNPIREH QINEEH EHLNNLKACIEPALVAYLRAEHI PNNTLTSEEDINDC  
DNIARNVHKVQG NRKLYTVLRKMMFEFSKD HFTDPWGHSPIHTFTKPLSKTISAILLYKGFPPTHQLKVTLRLIE  
SGLVNKFLGEHMLKKIKFVFPREPFR AHV IIPWNLFAVGCILALITFFLET LHRK YKIYFRGDY

>HarmIR100e

MLTVHFLLT LSLASCRSDNIHIEPQTKMPLIMCITHVIEKYFSEQVLT YVDMDSDDNVLLKAIHSLKATAV VFR  
QPFIRSPFRHRGYLIAAKTSNIFADHFKLRQEPTWNP AARFLIVIKILKEDELKKIFDVLL ESHVFN SLLINATD  
EAQIYTYNPFDKYACGHYYSEVIYYGEC SQTKTDLYPNKLVTGFKNCSFRASVPHRPPYSVDRAQLNNITQTDILG  
TEQLVLKLLGEKEQFQVNYTYDYDKFIYSTISP NMTVSGPMKTLTNNESDIIFGGIWLVASRSDAFTYLYGHLD FE  
DDLLIIVKRASLVAIWKTTFLEFQPTVWGLLVMTFLLYSVM MIRILGADDKFGVMMTLFKNLLANSVHI PNRSEVK  
RIFLTWIFWSFLINSIYQSSLSLTSHPAKEHQVYKIREIFVYKMKPCINPSMLIYIETEMNVSTPIDNNCLDTPK  
NL YRVCQSDKIFTLAQKFVYQYKKLYCDRFGQPRVYYFNAPYAQLMFGIFFYKGFPI TDRMQTHLLRFKENG LVS  
KCLKDHYSRKIKHHFHEKEFEARFILPWVMHLIGCVLATIVFIFELLSKRFKWFQR

>HarmIR100c

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ENICHSIIVRSFDDCDWYIWTNVYVITAPDLLAFWFGMLDLSRD LFWNPRAKFIIQVDYLGANGEGIEDVFKIVIK  
HRMYNVLLQNLKDDAVIYTYHPFENN SCGRFDKIIITLGK CENEDDIVDYFPNKIPSEMNCTFNVVATDDVPNF  
ISKSSNYTVYKGK VSGLEQFVLDTIAEREGSFVEYEVITGDATFGVVL PNRTTTGLLNYIDRNKADIAAGGFILMQ  
NRVELFDYIWGFNYAAFYLYTPAAGNQVWRRVYREFGLRTWLTGAALVLMIVVGLVIKRLINDKSFSVLYIWGYF  
FGNSNGGFSTHKKFKLLMLMWSFFAFCISSFYNTALVGLVSVHVQE QPHSLNVGNLKTLSYEP CIDSNSRLFFQYA  
YNQTL PVGKD IHNCTNTDSSLELVASTKKYAVAMEYSYKLKEYQYMDKQ GKPKLESWLF SNTNVI VVYLVRGF PF  
IEKFQDYAHRLYESGLTLNHFKLISLSRSY SVLQRHPKPF SVTKLLDLKMHFGILVAGWVLSFICF LLEI WYNNINI  
SKKIQRVYVN

>HarmIR100d

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FWNTNDLSNKYYLVMS EDFQELEEGLKEVTS DIFWNPLAGFIIVL KSHKHSSHDITDLHTYNIFFASLILHKDD  
KYFIYKYNFTASNRCYKAGHLTLWASCSDFCSEKQLPILIEGNIRNCQYKFSRNLWPFTNFDTAFKGTEQWFVAL

FEKQYGVKIDLKFKGKIDKCETITYDTKYIMLKVENNEVEGAVGGYSITEEYSGNVSHSYPI SIDYMYIILPHKK  
YVGPLVAVLHGSTGTFFVLIGLLFVIFCIAAKFLSIFAAQKDFSQDVLVFGYLLNKCSANRISAGWPQAI VFSLL  
FTSFIFPYAIQANLYSVTTEPVRGQEPKTSQDLKNYKAVLYTDFQYRHNKEFSGYLDCGNRINCLMLVKNCPDKSC  
YTVMTSAHYFANLWQLTDDCKMTTYILREPYITSLRTIYLRRGSVLIRPIKEFLLRI INSGVLSKYSRDLIYREW  
LKRKCHHRSEHVPLSMSSTYYVFMMLIAGYCLSVITFICEFMARSQII IRRRT

>HarmIR100h

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STKRMIIPHEAYLLSGKNATFIAKHFPKVRRET SWNPLARFLVLVKNLTESDLKIVFDMFLQLHARHVI IVNATED  
AHLYGYNPFDNYGCGKRYDYIFS YGKCAKAFYKELYVNKIITKLRNCTFNVVITQWPPYTIILPTNDSNDLSPLRHG  
AEPYLFQLIGRMLNFKINITYDYTAVEEFPTVSTDMEAVGSLKKLQDNQADAAIGGMLLTPSRALAFS FVYGHAY  
TDEIRFYVPFDNYACGKYVTDIIDYGPCKENPNDLYPNKLV TGLKNCTFRAAIVHRPPFTVNPLKAPKTIILGTEEYI  
KTVLILWMWFAYLVNTFYQSTLFSLTTPAQEYQISNEEDLARFRLKPCFSKVMENYYRESVQSN DG YQRIKGC DG  
LVESVHTVANSEDLYTILLNGQFRYNMQEFRDKYGT SRVVALPKPYSKVMAIFLYKGFPMIN YFLHKSRLRLRELG  
LVDKVLKKLTYRRLIKYRFHEKEFQTRFAIPWIIYVFGCSIAIITFII EINMPRH

>HarmIR100i

MLVAWVFTILLNFGQCQNILPPEAEDNQELRQCVTDILDKYFNESI ELYVNMETDNEDLLQT VYKSQKFSLVTRN  
SMYQSVLPN YGYLIITRNVTNFI EYFKYLQTDTTWNPYARFLII IETLEDEDIKSVFDILLRKHVNNVVMNGTTD  
AHLFTYNPFDNYACGKYVTDIIDYGPCKENPNDLYPNKLV TGLKNCTFRAAIVHRPPFTVNPLKAPKTIILGTEEYI  
LKALAELEHEFEVTFNYSVNP AVFSSAFPNMTAFGPMEMLQNNETDVI FGGNMMVLTRGQAFSFLNGYHDYNDLRF  
VVKRASLVPLWKT VYIEFDTTVWMLIL LALVVYSVMVIYLLQTKDKGFVFMELLDNLLTHSRDIRCSMTIKCILMI  
WVMFAYLINTCYQSSFLS LTTNPSKEHQVASEEDI IQYKYPKCF SVALKTFLSLEITEGMLSTRSSPADIDQNACS  
TTIQAITTVSRTKGVSFLIPNYIYLYNKPSFNDKFGNPLIY YFDKPF AKFLYCFYFYKGFPI SNRMRMNAIRMREN  
GLADKSMKDHFFKRALKQRF SQEFETR FVLPWGLYIIGCTISII TFLVEYMSQS QLKIQEQHVL

>HarmIR100g

MSAAILFSILCLNYCTSANGFYLGEELRNENLIVCVTGIIEKYFSEYKGLTHVQFETNSEHVRLMRAIHSSAITAL  
VTQDPNQQLRVSHQGYLITASTAKEFTDNFSTFVDDLSWNP FARFLIVRRVHEEELYQIFDVLLRWHVNNIILVN  
GTNDAQLYSYNPF DN YGCGKIYKDVIRHGF CLETTSNLYPNKVVTGLRNCTLRAAI PHRPPFTLRPYMIEQNDRMK  
MGSEQYLFCLLAETE QFVEFYEGDY YPLSKLYDNISIPGPMENLRNNKYDVMFGSVMLVASREARFTY LHHGLD  
YHDEIRFIVKKANDTANWKNAYFEFHARVWWTVLAVFIVHSTLLNIHLRSKDKTDTMLKMFDLLLSHGCKMPHRMS  
ARCLFLIWWFAFLINNLYQSALVSLV RTPVKEYQV KDEEDIVRMQLKPCISP LLQYMYTESNITNSFNSNCTNP  
FSSINFVAKSKHYYSVQKTVFYFNKKQFCDEEGENTVYF FKKPYAKLIFGIF FHKGFPISDRMRTNAIRLRENGF  
VKKKLKDHIFAREIKIKYHDKGFKCRITVPWFIIYVGGGSLAVIVLIVEI IWSRYKE

>HarmIR100j

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STIKRTSKHQAYLITASNATFFAQRFIKTTKEPSWNP NARFLIIVTDLDGDLKLMFNTFLKLHANNVIVVNATDDA  
HLYSYNPF DN YNCGKRYDEIIEYGKCSQAHA YDLYPKKLV TGLKNCTFNILITQWPPYTIINTNDSNND DPLKSGA  
EPYLFQLIGELGFDINILNTNDSEEFPTVSSEMTAVGSLKRVQDNEADVVLGGMLLTPSRALAFSYLYGHFVYT  
DEIRFVVKRASDVANWKYIYLEFESTVWLLLLLALVIYSLAMILLRTNDKSYVALILLGNLVLHGRSLRTRWSVK  
YVLI IWWVFAYLVNTFYQSSLVSLVTHPV RDYQISTEEDITKYQLKPCFSSIMGKYVSVQSGTGFDVTHGCGYL  
MESVTTVSQSNMFTIILYGVFQYHEQKFDEYGNPLIISLPKPYSKVIYSMYMYKGFPMMDQLRHRALQLRENGL  
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>HarmIR100a

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SFVVMNLDDPDDYFIEDTVPYHANFIIISCQDYEELEELRQKLVASPYFHPLANILTYHHRREDKATMAKFFSAW  
YYKAINSILVQFSDEEETLLVSDFTPYVNEDYKI QPENKFGCWTARNLGMPVVGFD TG YVCVEKHNVS IHTRLRA  
NNLGT CIGFNTNSVSYNDFTHLRNKL FEDRTKDLHG VF FRAYAVQVKPF FLIKNHGNGTYTLYARDGMIWNTMAE  
LFNFGIDLSPSVDMMPNFNFEISIDQIFAFARRKGDLC LFP IYQFDVI VVGLDFTY PFKDSGICILSARAGFETS  
LFRIKTLRANISTII LFLACFACTWATFTVYKAAEKRLHSFDQIGKDFMNTCRQILMINLYKPPTHHFFRI FLAIA  
LWCFFVINFTSQATII SFFTAVKRGKEVDTFDDV VAKGYPLEAMASPD LILPDTEEFRIINSRLVNEVDIYGCVD  
RLKTDPRRFCLMDCSVGRYIKRNLNRHGEQYLHIAEQDRIHSHYLAMV FSEHSPMTERFSRYMMILCEAGLIRKW  
EQRYRTDIKDEVTTKPLAFDDLSGIFQVFCFMVGNTLMIFFLELVASRIKTCQNIKIPNRLPKRNTE

>HarmIR143

MWKYLVYSTLIIVNSVHGKTD TMKLLPKNNEKNA SEFNSITDCIISISDKELFFMPTVAILKQAENNIKENL FINE  
LIDKLT LFNIPQIIIVEEDNEENHELYINSLTIAFIETCDDINKIDFNKVDAMRFLITISDSTKDKCIENLQEI G  
ESISHDAVTFIFRSNEADINEMFTIFPKIDGNTCKEVVDEPKHINTCINGTLDNDDIFPIKNPGNLNKC PFKVGMS  
TLRFPFSTMKNKEKLKYDRVDDIKGSDFEIMKI INEYFNATLEIYYIFKTEENPYS DVEFIPFVINGSLDACAGGI  
YRIYGDIVEYSGIYVSQIFWVYYVEREDRSWQNL MHKLNDIYIFMIFYISYSIIWCLIRLFDGEAVSLMKTLLYC  
WGALVGASSLQDPRSRKQKFLTLMYLIMCIYLSAYVSMQFYAFLTITAPHTFTKNSDVMSGR TAYLKDITKYFI  
SDERYTRFANKSADCVSFLDCSEKTLTYNGLTVILQGGFFYNFQAATAVND EARILRATENILTVYNEMIIRKDSPL  
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ILEIFLKREKRLLTKEI

>DpunIR25a

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EAADENQFFGSKTAWFALTLDKGDISCGCKEATIIYMKPTDAKSRDLGKIKT TYSMNGEPEITS AFYFDLSLRT  
FLAVKSLLD SGKWPNDMKYITCDDYDGKNTPNRTLDLKA AFQEVKEIATYAPFLIPEDDPMNGRSYMEFTTDVA AV  
TVKDGASIGSRSLGTWKAGLNSPLSLSDPDSMIEYSAKLIYRIVTVEQHPFIKDDTAPKGFKGFCIDLIDEIKEI  
VKFDYEITVAPDGNFGSMDDNGNWNNGIIKELIEKRADIGLSSLSVMAERENVVDFTVPY YDLVGT TILMKLPRTPT

SLFKFLTVDLWLSILAAYFFTSFLMWVFDKWSYQNNREKYKDDEEKREFTLKECLWFCMTSLTPQGGGEA  
PKNLSGRLLAATWWLFGFIIIASYTANLAAFLTVSRLDTPIESLDDLKSKYKIQYAPLNGSSAMTYFKRMANIESK  
FYDIWKDMSL NESLS DVERAKLAVWDYVPSEKYNKMWEAMREAGLPNSIEEAIQVRVDSKTSSEGFALWGDATDVR  
YHVLTS CDLQ MVGDEF SRKPYAIAVQQGSPLKDQFNNALLQLLNKRILEKIKENWWINNPNAMKCDKQDDQSDGIS  
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SKF

>DpunIR8a

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GNSNIRIWNPNGLSRDSSKMLKSMRPEPSFHVLVGESGFVMETYKRAVKEKLVRRSYRWNVLVTDYRIDTTLQVLV  
PTVILQADPSECCRMGKECTCPGDLQRTQELLNSLLQYITEVYLKLSDDLFTFTIKINCDNLQSSDNMNNTKEVI  
YKQFAEDCESSNETLFFWEEDKQTLYLRSRFILSIYKPEQVLEKIASWNADEDYSLLPGVLTLEPLRMFFRIGTSAA  
VPWTMHKLDPNTGEPMITEDGQPVYEGYCIDLIDKIAEAELEFDYEILTPKSGGFGQKL PNGSWDGVVGDLMHGETD  
MAVAALMTAEREEVIDFVAPYFEQTGILIVLRK

>DpunIR40a

MKRMFVIYLRVNI VFCFFDIRDITSDSLKSLPKDFPIAVKDIAEGLPTKALTIVRGNSTSIRTQDIYELLCLLSEH  
RIQVINLDIATKDNKDKYYTFLKTALDVSDETSIIILCNPHECENVLEELTETNLIHRTILYIFYWPYGDVSKKFL  
NTMREAMRVAVITNPRESVFRIYYNQATPDRLLHHLALVNWWSGRLYKSPVLPPSNKIYRNFNGRVLNVPVLHAPPW  
HFVSYNNDSSVNVKGGRRDDKLLALLANKLNFRYRYDDPPDRSQGSSISGNCTFKGTLGLIWKRKADI FLGDVTMTW  
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LTNCCWPTTTLFFLRQSSSKEPSSTHKARLVSVLISLGATYVIGDMYSANLTSLLARPAREQPIGTLQALEEAMRY  
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HLSEKLYTRYSAIALQIGCPYLETFNDVVMTLFEAGILAKMTTDEYKNLPEQSRSEPTETERPSADFTGESLQS  
SQVQNESTIGLEPVSLRMLRGAFCLLIGYSLAGLTFIIEIQTHRRSELSKSSPAGTKQMRSVTLVTRTKRFISEH  
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DFTLKESFWFVLTSFTPQGGGEAPKALSGRTLVAAYWLFVVLMLATFTANLAAFLTVERMQTPVSSLEQLARQSRI  
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NEHTDADF AFIHDSAEIKYEVTRNCNLTEVGEVF AEQPYAIAVQQGSRLQEDLARALLQLQKERFLEQLASKYWNE  
TARQGPCDADESEGITLES LGGVFIATLFLGLGLAMITLAWEVFYYKRKERNKVQAIDSTIEKSGFEGPKKLNLEKR  
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>DpunIR75q.1

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AMSQQSGCFELKGTIGRLVMFILFLTFLFLYTAYSASIVALLQSSNQIRTLSDLLHSRLBLEGLENTVYNEYYFRT  
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>DpunIR7d.3

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FNSNGTFQVQYKGPWNSTKNKTNIIFLTRMDLTGVLIKVTVVVTRNII NETIEESLVNGAKDGMDSLHKLKFMI LK  
YIQDMYNFTMELRSTHSGWYIRNGSFDGMVGALINGQADIGGSPIFFRIDRSKFIDYAVETWPSSFSFVFRHPKHS  
SGFHTIYTRPLDHSVWYCIFGLLLITGVSMFLILKVKIRNQSNDAEESSISLAFLFSFGSLCQQGMPISRKTASVK  
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SKHYNFFEPDKGMALVKQGGFAFHLDNIIAYRFMQKQFTEREICELRDVILYPPQKMAAAVAKRSPYKEHMATGIR  
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>DpunIR87a

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FPESDNLYKYGVVLLARKWFPLLERFNGIIRSVSENGLISKWNQEFLYQTKNDGTNTIVPLSTQHLLGAFMLIGLM  
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>DpunIR68a-2

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YLWKRIVNVIIFLKYHRKITGVQKS KAWFDLSTVPFPNP IQGVFVPRRVDIWSKGFHYNRSLFKDKTNLNGETLN  
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ALGNLQYNPYHLEHTDLSIPYTAQCWTFVTPEALSDNSWKTLILPFKLYMWIAVLLVLLITGSIIFYGLARYYINLQ  
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>DpunIR75q2-2

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FGAACQQGSPVELKGVLRVVMLILFLTLMFLYTSYSANIVSLLQSSSTQIKTLEDLLNSRIKLGVDHDTVFNKYF  
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>DpunIR75p.1-2

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KVLARSNNLKRHTLTMANVITDSNETRKHMDRLHLHQDSITKMSYGVVKVCFEMLNATEKLIFHTWGYRDKNG  
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ELNPGYRLIQETYQEDEKCDLVEIDYINEIDPWVPGQKRSFPKDLFKINFLKIRESGLQMLHRRLLQVGKPKCSGQ  
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>DpunIR75p-3

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FLELLRVV

>DpunIR75d-2

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>DpunIR41a-2

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>DpunIR93a-2

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>DpunIR21a-2

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>DpunIR76b

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>DpunIR68a

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>DpunIR93a

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>DpunIR75d

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>SfruIR25a

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GDATDVKYHVMTSCDLQSVGDEF SRKPYAIAVQQG SPLKDQFNNAI LQLLNKRKLEKLEIWNWNNNPESMKCEKQD  
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NFKPKF

>SfruIR60a

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>SfruIR75d

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>SfruIR64a

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>SfruIR40a

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