

Online Supporting Information S2a. The degenerate testing dataset used for a head-to-head comparison between **MultiLoc2**, an updated version of **MultiLoc** (Hoglund et al., Bioinformatics 2006, 22, 1158-1165), and **iLoc-Hum** of this paper. The dataset contains 270 single-location proteins classified into the following nine subcellular location sites: (1) cytoplasmic, (2) endoplasmic reticulum, (3) extracellular, (4) Golgi apparatus, (5) lysosomal, (6) mitochondrion, (7) nuclear, (8) peroxisomal, and (9) plasma membrane, with each containing 30 protein sequences that were randomly picked from Swiss-Prot database (Release 2011_06 of 31-May-11). To avoid bias, none of the proteins included here occurs in the training dataset of **MultiLoc2**, nor in the training dataset of **iLoc-Hum**. See the text of the paper for further explanation.

(1) 30 cytoplasmic proteins

>A5A3E0

MVVEVDMPAASSVKPGLRSKMGKCCRCFPCCRESGKSNGTSGDHDDSAMKTLRSKM
GKCRHCFPCCRSGSGKSNVGASGDHDDSAMKTLRNKGKCHCFCRGSSSKVGAGDYD
DSAFMEPRYHVRGEDLDKLHRAAGKVPRKDLIVMLRDTDVNKQDKQKRTALHLASANGNS
EVVKLLDRRCQLNVLDNKKRTALIKAVQCQEDECALMLEHGTDPNIPDEYGNTTLHYA
IYNEDKLMAKALLLYGADIESKNKHGLTPLLGVHEQKQQVVFKLIKKNALNALDRYGR
TALILAVCCGSASIVSLLEQNIDVSSQDLSGQTAREYAVSSHVVICQILSDYKEKQML
KISSENSNPEQDLKLTSEESQRFKGSENSQPEKMSQEPEINKGDREVEEEMKKHESNN
VGLLENLTNGVTAGNGDNGLIPQRKSRTPENQQFPDNESEEYHRICELLSDYKEKQMPKY
SSENNSNPEQDLKLTSEESQRQLKGSENGQPEKRSQEPEINKGDRELENFMAIEEMKKHR
STHVGFPENLNTNGATAGNGDDGLIPPRKSRTPESQQFPDTENEYHSDEQNDTQKFCEE
QNTGILHDEILIHEEKQIEVVEKMNSELSCKKEKDILHENSTLREEIAMLRLDELDTMK
HQSQLREKKYLEDIESVKRNDNLLKALQLNELTMDDDTAVLVIDNGSGMCKAGFAGDDA
PRAVFPSIVGRPRQQGMMGGMHQKESYVGKEAQSKRGILTLYPMEHGIIITNDDMEKIHH
TFYNELRVAPEEHPVLLTEATLNPKANREKMTQIMFETFNTPAMYVAIQAVSLYTSRGT
TGIVMDSGDGVTHTVPIYEGNALPHATLRLLAGRELDPYLMKILTEHGYRFTTMAEREI
VRDIKEKLCYVALDFEQEMATVASSSLEKSYELPDGVITIGNERFRCPEALFQPCFLG
MESCGIHETTFNSIMKSDVDIRKDLYTNTVLSGGTTMYPGMAHRMQKEIAALAPSMMKIR
IIAPPKRKYSVVGGSILASLSTFQQMISKQEYDESGPSIVHRKCL

>A6NGB9

MPVPPPPPPPPLPPPPPLGAPPPPPSAPPVSTDSSLRRADPKGRSALLADIQQGTRLR
KVTQINDRSAPQIESSKGTNKEGGSANTRGASTPPTLGDLFAGGFVPLRPAGQRDVAGG
KTGQGPGRAPSPRLPNKTISGPLIPPASPRLGNTSEAHGAARTAPPRPNVPAPPPPTPP
PPPPPLPPPLPSSSPIKTPLVSPPGPLTKGNLPVVAPPVCAPPPPPPPPTPPPLPPA
SVLSDKAVKPQLAPLHLPIPPLPLLPPCGYPLKAEPASPAQDAQEPPAPPPPLPPYA
SCSPRASLPAPPPLPGVNSSSETPPPLPPKSPSFQAPPQKAGAQLPAPPAPPGSQPFLQK
KRHGRPAGGGKLNPPPAPPARSPTTELSSKSQQATATPTQQPGGQLRNGSLHIIDDFES
KFTFHSEDFFPPDEYKPCQKIPYPSKIPRSRTGPLQAEAVGQSSDDIKGRNSQVTQASC

L

>A8MTZ0

MLKAAAKRPELSGKNTISNNSDMAEVKSMFREVLPKQGPLFVEDIMTMVLCKPKLLPLKS
LTLEKLEKMHQAAQNTIRQQEMAEKDQRQITH

>O14827

MQKSVRYNEGHALYLAFLARKEGTKRGFLSKKTAEASRHEKFALYQNVLFYFEGEQSCRP
AGMYLLEGCS CERT PAPP RAGAG QGG VRD ALDK QYY FTV LFG HEG QKPLE RCEEE QDG K
EMEA IHQ ASYADILIE REV LMQ KYIHLVQIVETEKIAANQLRHQLEDQDTEIERLKSEII
ALNKT KERMR PYQS NQ EDEDP DIK KIK KVQ SFMR GLC RR KKTIV QDY ICS PHAE SMR KRN
QIVFTMVEAESEYVHQLYILVNGFLRPLRMAASSKKPISHDDVSSIFLNSETIMFLHEI
FHQGLKARIANPTLILADLF DILL PMLNIYQEFVRNHQYSLQVLANCKQNRDFDKLLKQY
EANPACEGRMLETFLTYPMFQIPRYIITLHELLAHTPHEHVERKSLEFAKS KLEELSRVM
HDEVSDTENIRKNLAIERMIVEGCDILLDTSQTFIRQGS LIQVPSVERGKLSKVRLGSLS
LKKEGERQCFLFTKHFLICTRSSGGKLHLLKTGGVLSLIDCTLIEEPDASDDDSKGSGQV
FGHLD FKIVVEPPDAAAFTVVLLAPSRQEKAAMSDISQCVDNIRCNGLMTIVFEEN SKVT
VPHMIKSDARLHKDDTDICFSKTLNSCKVPQIRYASVERLLERLTDLRFISIDFLNTFLH
TYRIFTTAAVVLGKLSIYKRPFTSIPVRSLELFFATSQNNRGEHLVDGKSPRLCRKFSS
PPPLAVSRTSSPVRARKLSLTSPN SKIGALDLTTSSPTTTQSPAASPPPHTGQIPLD
LSRG LSSPEQSPGTVEENVDNPRV DLCNKLKRSIQKAVLESAPADRA GVESSPAADTTEL
SPCRSPSTPRHLRYRQP GQTADNAHCSVSPASAFAIATAAAGHGSPPGFNNTERTCDE
FIIRRTATNRV LNVLRHVSKHAQDFELNNELKMNVNLLEEVL RDPLLPQERKAAANIL
RALSQDDQDDIHLKLEDIIQMTDCMKAECFESLSAME LAEQITL LDHVIFRSIPYEEFLG
QGMKLDKNERTPYIMKTSQHFNDMSNLVASQIMNYADVSSRANAIEKVAVADICRC LHNY
NGVLEITSALNRSAIYRLKKTAKVSKQTKALMDKLQKTVSSEGRFKNLRETLKNCNP AV
PYLG MYLTD LAFIEEGTPNFTEEGLVNF SKMRMISHITIREIRQFQ QTSYRIDHQ PKVAQY
LLDKD LIIDE DTLY ELSL KIEP RLPA

>O95810

MGEDAAQA EKFQHPGSDMRQEK PSSPMP S STPSL NLGN TEEAIR DNSQVN A TVLT
LLDKLVNMLDAVQENQHKMEQRQI SLEGSVKGIQNDLTKL SKYQASTSNTVSKL LEKS RK
VSAHTRAVKERMDRQCAQVKRLENNHAQLLRRNHFKVLI FQEE NEI P ASV FVK QPV SGAV
EGKEELPDENKSLEETLHTVDLSSDDLPHDEEA LEDSAEEKVEESRAEKIKRSSL KKVD
SLKKAFSRQNIEKKMNKL GTKIVSVERREKIKKS LTSNHQKISSGKSSPFKVSP LTFRK
KVREGESHAENETKSEDLPSSEQMPNDQEEESFAEGHSEASLASALVEGEIAEEAAEKAT
SRGSNSGMDSNIDL TIVEDEEEE SVALEQAQKVRYEGSYALTSEE AERS DGD PVQPAV LQ
VHQ TS

>P14317

MKSVVGH DVS VSVETQGDDDTDPDFVNDISEKEQRGAKTIEGSGRTEHINIHQ L RNKVSE
EHDVLRKKEMESGP KASHGYGG RFGVERDRMDKSAVGHEYVAEVEKHSSQTDAAKGFGGK
YGVERDRADKSAVGFDYKGEVEKHTSQKDYSRGFGGRYGV EKD KDAALGYDYKGETEKH
ESQRDYAKGFGGQYGIQKDRVDKSAVG FNEMEAPTTAYKTTPIEAASSGTRGLKAKFES
MAEEKRKREEEKAQVARRQ QERKAVTKRSPEAPQPVIA MEEPAVPA LPKKISSEAPP
VGTPPSSESEP VRTSREHPVPLLPIRQ TL PEDNEE PPALP PRTLEG LQVEEPVYEA EPE
PEPEPEPEPEPEPENDYEDVEEMDRHEQ EDEPEGDYEEVLEPEDSSFSSALAGSSGCPAGAGAG
AVALG ISAVAVYDYQGEGSDELSFPDDVITDIEMVDEGRGRCHGFGLFPANYVKLLE

>A8K8P3

MKNLLTEKCISSHNFHQVIKQRMEKKVDSRYFKDGAVKKPYSAKTLSNKSSASF GIRR

ELPSTSHLVQYRGTHCTRQGRLRELIRCARKFLYLRMTFGRVFPSSKARFYQEQLL
RKVFEEKEEVFQHEKLCVRADCHYRYLYNLMFQTKTIVRQQQEMRNKYIRAEVHDAKQK
MRQAKSLIYVVVRRTKLQMOTTALEFRQRIILRVSTRQRLGQVRVSRALHASALKHRLS
LQVQASQREQLLYVQKEKQKVSAVKHHHQKRRFLKALEYLQVRRVKRQQNEMAERFHH
VTVLQIYFCDQQAERRESLYAHQAQEVKLARKMALRRAFTHKHYMLLCAAEAAQFEMAEE
HHRHSQLYFCFRALKDNVTHAHLQIIRRNLAHQQHGVTLLHRFNLSQIEKKERELLPL
LHAADHYRIALLCKCIELLQYTQKRRYKQLLQARADGHFQQRALPAAFHTNRLRRHQENV
LSARATRFHRETLEKQVFSLRQMFQHRENRLAERMAILHAERQLLYRSFMHQQAARHQ
EQEQTVACAHHRHGRKKAFCLRESAQGLRTERTGRVRAAEFHMAQLLRASQRECLALRG
AERQKILMRADLHHQHSVHLRALQAVTYQGRVRSILREVAARESQHNRQLLRGALRRKENT
MARVDEAKKTFQASTHYRTTCSKVLVQREAVSVQMYRQQEDCAIEAQKVLDRCGLRTF
QRDCSRRSAQQRLQLERAVQHHHRQLLLEGILARKTHHLQCVRKRLLHQSTQLLAQRLSR
TCFRQRQQLAARRQEQRATVRALFAFSLQAKVATLAFVLEERRKKARLQALQAYQGQLLQ
EGATRLLRFAASMKASRQQLQAQQQVQAAHSLHRAVRCATLKQKVLGRGGKPQPLAAIA
PSRKVTFEGPLLNRIAAGAGDGTLETKRQPASRPLGALGRLAAEPEHALENNTAHSARKQ
PRRPFLLEPAQSQRPKPQEHLGMAQPAAPSLTRPFLAEAPTALVPHSPPLPGALSSAP
GPKQPPTASTGPPELLLPLOSSFMPCGAAAPARVSAQRATPRDKPPVPSSLASVPDPHLLL
PGDFSATRAGPGLSTAGSLDLEAELEEIQQQLLHYQTTKQNLSCRRQASSLRRLELNREE
PGPEDQEVEQQVQKELEQVEMQIQLLAEELQAQRQPIGACVARIQALRQALC

>A8MTJ3

MGSGISSESKESAKRSKELEKKLQEDAERDARTVKLLLLGAGESGKSTIVKQMKIIHKNG
YSEQECMEFKAVIYSNTLQSILAIVKAMTTLGIDYVNPRSAEDQRQLYAMANTLEDGGMT
PQLAEVIKRLRDPGIQACFERASEYQLNSAAYYLNDLDRITASGYVPNEQDVLHSRVKT
TGIIETQFSFKDLHFRMFVGQSERKKIHCFEGVTCIIFCAALSAYDMVLVEDEEVNR
MHESLHLFNSICNHKFSTTSIVLFLNKDIFQEKVTKVHLSICFPEYTGPNTFEDAGNY
IKNQFLDLNLKKEDKEIYSHMTCATDTQNVKFVDAVTDIIIKENLKDCGLF

>A9UHW6

MGEPSREEYKIQSFDAETQQLLKALKDGPAGVDLEKVANVIVDHSLQDCVFSKEAGRMCY
AIIQAESKQAGQSVFRRGLLNRLQQEYQAREQLRARSLOQGVCYVTIFICNIFDYLRVNNMP
MMALVNPVYDCLFRLAQPDSDLSEEVDCLVLQLHRVGEQLEKMNGQRMDELFLVIRDGF
LLPTGLSSLAQLLLEIIEFRAAGKTPAAHKYYYSEVSD

>O00159

MALQVELVPTGEIIRVVHPRPCALKGSDGVRVTMESALTDRVGVQDFVLLENFTSE
AAFIENLRRRFRENLIYTYIGPVLVSVNPYRDLQIYSRQHMERYRGVSFYEVPPHLFAVA
DTVYRALRTERRDQAVMISGESGAGKTEATKRLQFYAETCPAPERGGAVRDRLLQSNPV
LEAFGNAKTLRNDNSSRGKYM DVQFDKGAPVGGHILSYLLEKSRRVHQNGERNFHIF
YQLLEGGEETLRLGLERNPQSYLYLVKGQCAKVSSINDSDKVVRKALTVIDFTEDEV
EDLLSIVASVLHGNIHFAANNEESNAQVTTENQLKYLTRLLSVEGSTLREALTHRKIIAK
GEELLSPLNLEQAAYARDALAKAVYSRTFTLVGKINRSLASKDVESPRTTGLLIDY
GFEVFQHNSFEQFCINYCNEKLOQQLFIELTILKSEQEEYEAEGLIAEPVQYFNNKIIICDLVE
EKFKGIISILDEECLRGEATDLTFLEKLEDTVKHHPHFLTHKLADQRTRKSLGRGEFRL
LHYAGEVTYSVTGFLDKNNNDLLFRNLKETMCSSKNPIMSQCFDRSELSDKRPETVATQF
KMSLLQLVEILQSKEPAYVRCIKPNDAKQPGRFDEVLIRHQVKYLGLENLRVRRAGFAY
RRKYE AFLQRYKSLCPETPTAGRPQDGVAVLVRHLGYKPEEYKMGRTKIFIRFPKTLFAT

EDALEVRRQSLATKIQAAARGFHRQKFLRVKRSACICIQSRGTIGRRKAARKAAQTIRRLI
RGFVLRHAPRCPENAFFLDHVRTSFLLNLRQLPQNVLDTSPPPPALLEASELLRELCI
KNMVKYCRSISPEKQQLQQKAVASEIFKGKKDNPQSVPRLFISTR LGTDEISPRVILQAL
GSEPIQYAVPVVKYDRKG YKPRSRQLLTPNAV VIVEDAKVKQRIDYANLTG ISVSSLSD
SLFVLHVQRADNKQKGDVVLQSDHVIETLTKTALSANRVNSININQGSITFAGGPGRDGT
IDFTPGSELLITKAKNGHLAVVAPRLNSR

>O00167

MVELVISPSLTVNNSDCLDKLFNRADAATLSDRQGITKSAPL RVS QLFSRSCP RVL PRQ
PSTAMAAYGQTQYSAGIQQATPYTAYPPPAQAYGIPSY SIKTEDSLNHSPGQSGFLSYGS
SFSTSPTGQSPYTYQMHTG FYQGGNGLGNAAGFGSVHQ DYP SYPGFPQS QYPQYYGSS
YNPPYVPASSICPSPLSTSTYVLQEASHNVPNQSES LAGEYNTHNGPSTPAKEGDTDRP
HRASDGKLRGRSKRSSDPSPAGDNEIERVFVDLDETIIIFHSLLTGT FASRYGKD TTSV
RIGLMMEEMIFNLADTHLFFNDLECDQIHVDDVSSDDNGQDLSTYNFSADGFHSSAPGA
NLCLGSGVHGGVDMRKLA FRYRRV KEMYNTYKNNVGG LIGTPKRET LQLRAE LEALTDLL
THSLKALNLINSRPNCVNVLVT TQLIPALAKVLLYGLGSVFP IENIYSATKTGKESCFE
RIMQRFGRKAVYVVIGDGV EEEQGAKKHNM PFRISCHADLEALRHALELEYL

>O00294

MPLRDETLREVASDSGHEEESLSPEAPRRPKQRPAPAQR LRKKTEAPESPCTGS KPRK
PGAGRTGRPREEPSPDPAQARAPQTVYARFLRDPEAKK RD PRETFLVARAPDAEDEEEE
EEDEEDEEEAEEKKEKILLPPKKPLREKSSADLKERRAKA QGPRGDLGSPD PPPKPLRV
RNKEAPAGEGT KMRKTKKGSGEADKDPGSPASARKSPAAMFLVGE GSPDKKALKKG
PKGARKEEEEEEATVIKKS NQKGKAKGKGKKAKEERAPSPPV EDEPREFVLRPAPQ
GRTVRCRLTRDKKGMDRG M YPSYFLHLDTEKKVFLLAGRKRKRSKTANYLISIDPTNLSR
GGENFIGKLRSNLLGNRFTVFDNGQNQRGYSTNVASLRQELAAVIYETNVLGFRGPRRM
TVII PGMSAENERVPIRPRNASDGLLVRQNK TLES LIELHNKP VNDDSGSYTLNFQGRV
TQASVKNFQIVHADDPDYIVLQFGRVAEDAFTLDYR YPLCALQAF AIALSSFDGKLACE

>O14907

MSYIPGQPVTAVVQRVEIHKL RQGENLILGFSIGGGIDQDPSQNP FSEDKTDKG IYVTRV
SEGGPAEIAGLQIGDKIMQVNGDMTMVTHDQARKRLTKRSEEVVRLLVTRQSLQKAVQQS
MLS

>O14965

MDRSKENCISGPVKATA PVGGPKRV LVTQQFPCQNPLPVNSGQAQRVLCPNSSSQRVPLQ
AQKLVSSH KPVQNQKQKQLQATSVPHPSRPLNN TQSKQPLPSAPENNPEEELASKQKN
EESKKRQALEDFEIGRPLKGKFGNVYLAREQSKFILALKVLFAQLEKAGVEHQLRE
VEIQSHLRHPN IRLYGYFHDATRVY LILEYAPL GTVYRELQKLSKFDEQRTATYITELA
NALSYCHSKRVIH RDIK PENLLG SAGE LKIA DFG SVHAPSSRTTLC GTLDYLPPEMIE
GRMHDEKVDSL GLCYEFLVGKPPFEANTYQETYKRISRVEFTFPDFVTEGARDLISRL
LKHNP SQRPM LREV LEHPITAN SS KPSNCQN KESASKQS

>O14974

MKMADAKQKRNEQLKRIGSETDLEPPVVKRQTKVKFDDGAVFLAACSSGDTDEVLKLLH
RGADINYANVDGLTALHQACIDDNVDMVKFLVENGANINQPDNEG I PLHAAASC GYLDIA
EFLIGQGAHVGAVNSEGDTPLDIAEEEAMEELLQNEVNRQGV DIAARKEE RIMLDAR
QLNSGHINDVRHAKSGGTALHVA AKGYTEVLKLLIQAGYDVNIKDYDGTP LHAAA HGKE
EACRILVDNLCDMEMVNKG QTAF DVADEDILGYLEELQKKQNLHSEKRD KKSPLIEST

ANMDNNQSQKTFKNKETLIIPEKNASRIESLEQEKVDEEEEGKKDESSCSSEEDEEDDS
ESEAETDKTKPLASVTNANTSSTQAAPVAVTPTVSSGQATPTSPIKKFPTTATKISPKE
EERKDESPATRLGLRKTGSYGALAEITASKEQKEKDTAGVTRSASSPRLSSLDNKEKE
KDSKGTRLAYVAPTIPIRRLASTSDIEEKENRDSSLRTSSSYTRRKEDDLKKNNSVNEGS
TYHKSCSFGRQQDDLISSSVPTTSTPTVSAAGLQKSLLSSTTTKITTGSSSAGTQS
STSNRRAEDSTEKEKDVSPTAVTIPVAPTVNAAASTTLTTAGTVSSTTEVRERRRS
YLTPVRDEESESQRKARSQRQSRSTQGVTLTDLQEAETIGRSRSTRTREQENEKE
KEEKEKQDKEKQEEKKESETSREDEYKQKYSRTYDETYQRYRPVSTSSTPSSSLSTMS
SSLYASSQLNRPNSLVGITSAYSRGITKENEREGEKREEKEGEDKSQPKSIRERRRPRE
KRRSTGVSFTQDSDENEQEQQSDTEEGSNKKETQTDISRYETSTSAGDRYDSLLGRSG
SYSYLEERKPYSSRLEKDDSTDFKLYEQILAENEKLKAQLHDTNMELTDLQLEKATQ
RQERFADRSLLEMEKRERRRALERRISEMEEELKMLPDLKADNQLKDENGALIRVISL
K

>O15061

MLSRLQTGPEKAELQELNARLYDYVCRVRELERENLLEEEELRGRRGREGLAEGQARCAE
EARSLRQQLDELSATALAEGERDALRRELRELQRLDAEERAARGRLDAELGAQQRELQEA
LGARAALLEALLGRLQAERRGLDAAHERDVRELARAASLTMHFRARATGPAAPPRLREV
HDSYALLVAESRETVDQLYDEVRELEEARRGQESRLQAEETRLCAQEAEALRREALGL
EQLRARLEDALLRMREEYGIQAEERQRAIDCLEDEKATLTLAMADLRDYQDLLQVKTGLS
LEVATYRALLEGESNPEIVIAEHVENMPSEFRNKSYHYTDSLQRENERNLFSRQKAPLA
SFNHSSALYSNLSGHGRSGQTGTTSIGGDARRGFLGSGYSSATTQQENSYGKAVSSQTNVR
TFSPTYGLLRNTEAQVKTFPDRPKAGDTREVVPVYIGEDSTIARESYRDRDKVAAGASES
TRSNERTVILGKKTEVKATREQERNRPETIRTKEEKMFDSKEKASEERNLREELTKLDK
EARQRESQOMKEAKEKDSPKEKSVREREVPISLEVSQDRRAEVSPKGLQTPVKDAGGGT
GREAEARELRFRLGTSDATGSLQGDSMTETVAENIVTSILKQFTQSPETEASADSFPDTK
VTYVDRKELPGERKTKTEIVVESKLTEDVDVSDEAGLDYLLSKDIKEVGLKGKSAEQMIG
DIINLGLKGREGRAKVVNEIVEEPVSYVSGEKPEEFSPFKVEEVEDVSPGPGLVKEEE
GYGESDVTFSVNQHRRTKQPQENTTHVEEVTEAGDSEGEQSYFVSTPDEHPGGHDRDDGS
VYGQIHIEEESTIRYSQDEIVQGTRRRTQKDGAvgEKKVPLDPAPSLEGDLGSTHKEQ
ARS GefHAEPTVIEKEIKIPHEFHTSMKGISKSKEPRQQLVEVIGQLEETLPERMREELSA
LTREGQGGPGSVSDVKKVQGAGGSSVTLVAEVNVSQTVADRLDLEELSKDEASEMEKA
VESVVRESLSRQSPAPGSPDEEGGAEAPAAGIRFRATRELYIPSGESEVAGGASHSSG
Q RTPQGPVSATVEVSSPTGFAQSQVLEDVSQAARHIKLGSEVRTERMSYEGPTAEVVEV
SAGGDLSQLAASPTGASRSVRHVTLGPGQSPSLSREVIFLGPAPACPEAGSPEPGPAESSAD
MDGSGRHSTFGCRQFHAEKEIIFQGPISAAGKVGDYFATEESVGTQTSVRQLQLGPKEGF
SGQIQFTAPLSDKVELGVIGDSVHMEGLPGSSTSIRHISIGPQRHQTQQIVYHGLVPQL
GESGDSESTVHGEGSADVHQATHSHTSGRQTMTEKSTFQSVVSESPQEDSAGDTSGAEM
TSGVSRSPHRHIRLGPTETETSEHIAIRGPVSRTFVLAGSADSPELGKLADSSRTLRIAP
GPKETSFTFQMDVSNVEAIRSRTQEAGALGVSDRGSRADSRNDQAVGVSKASAGEGDQ
AHREQKEQAMFDKKVQLQRMVDQRSVISDEKKVALLYLDNEEEENDGHF

>O15083

MYGSARTITNLEGSPSRSPRLPRSPRLGHRRRTSSGGGGTGKTLSMENIQSLNAAYATSG
PMYLS DHEGVASTTYPKGMTLGRATNRAVYGGRVTA MGSSPNIASAGLSHTDVL SYTDQ
HGGLTGSSHSHHHQVPSMLQVRDSTM LQ AQL KELQRENDLLRKELDIKDSKLGS
MN

SIKTFSPKKERVLRKEEAARMSVLKEQMRVSHEENQHLQLTIQALQDELRTQRDLNHL
LQQESGNRGAEHFTIELTEENFRRLQAEHDRQAKELFLRKTLLEEMELRIETQKQTLNAR
DESIKKLLEMLQSKGLPSKSLEDDNERTRRMAEAESQVSHLEVILDQKEKENIHREELH
RRSQLQPEPAKTKALQTIVIEMKDTKIASLERNIRDLEDEIQMLKANGVLNTEDREEEIKQ
IEVYKSHSKFMKTKIDQLKQELSKKESELLALQTKLETLSNQNNSDCKQHIEVLKESLTAK
EQRAAILQTEVDALRLRLEEKESFLNKKTQLQDLTEEKTLAGEIRDMKDMLEVKERKI
NVLQKKIENLQEQLRDKDQLTNLDRVKSITQDSSNTDTALATLEEALSEKERIIERLK
EQRERDDRERLEEIESFRKENKDLKEKVNALQAELEKESSLIDLKEHASSLASAGLKRD
SKLKSLEIAIEQKKECSKLEAQLKKAHNIEDDSRMNPEFADQIKQLDKEASYYRDEC GK
AQAEVDRLLIELKEVENEKNDKDKKIAELESITLHMKDQNKKVANLKHNNQOLEKKKNAQ
LLEEVRRREDNSMADNSQHLQIEELMNALEKTRQELDATKARLASTQQSLAEKEAHLANLR
IERRKQLEEILEMKQEALLAAISEKDANIALLELSASKKKTQEEVMALKREKDRLVHQL
KQQTQNRMKLMADNYDDDHHYHHHHHHHRSPGRSQHSNHRPSPDQDDEEGIA
>O15231

MSISALGGRTKGKPLPPGEEERNVLKQMKVRTTLKGDKSITKQDESEGRTIELPSGRSR
ATSFSSAGEVPKPRPPSTRAPTYIIRGVFTKPIDSSSQQQFPKANGTPKSAASLVRT
ANAGPPRPSSSGYKMTTEDYKKLAPYNIRRSSTSGDTEEEEEEVVPFSSDEQKRRSEAA
SGVLRRTAPREHSYVLSAAKKSTGPTQETQAPFIAKRVEVVEEDGPSEKSQDPALARST
PGSNSADGGRTKASRAIIIECLPSMPSPAGSQELSSRGEEIVRLQILTPRALRLVAPDVE
GMRSSPGNKDKEAPCSRELQRLLAGEEAFRAPNTDAARSSAQLSDGNVGSGATGSRPEG
AAVDIGSERGSSSATSVSAVPADRKNSTAAQEDAKADPKGALADYEGKDVATRVGEAQ
RPGAPRGQGDPAVPAQQPADPSTPERQSSPSGSEQLVRRESCGSSVLTDLEGKDVATKV
GEAQDRPGAPRGQGDPAVPTQQPADPSTPEQQNSPSGSEQFVRRESCTSRVSPSSCMV
TVTVTATSEQPHIYIPAPASELDSSSTTKGILFVKEYVNASEVSSGKPV SARYSNVSSIE
DSFAMEKKPPCGSTPYSERTTGGICTYCNREIRDCPKITLEHLGICCHEYCFKCGICSKP
MGDILLDQIFIHRDTIHCGKCYEKL
>O15344

METLESELTCIPLELFEDPLLP PCAHSLCFNCAHRIILVSHCATNESVESITAFQCPTCR
HVITLSQRGLDGLKRNVTLQNIIDRFQKASVSGPNSPSETRRERAFDANTMTSAEKVLCQ
FCDQDPAQDAVKTCVTCEVSYCDECLKATHPNKKPFTGHRLIEPIPDSHIRGLMCLEHED
EKVNMYCVTDDQLICALCKLVGRHRDHQAALSERDYDKLKQNLESNLTNLIKRNTELET
LAKLIQTCQHVEVNASRQEAKLTEEDLLIEIIQQRQIIGTKIKEGKVMRLRKLAQQIA
NCKQCIEERSASLISQAEHSLKENDHARFLQTAKNITERVSMATASSQVLIPEINLNDTFD
TFALDFSREKKLLECLDYLTAPNPPTIREELCTASYDTITVHTSDDEF SVVSYELQYTIF
TGQANVVSLCNSADSMIVPNIKQNHYTVHGLQSGTKYIFMVKAINQAGSRSS EPGKLKTN
SQPFKLDPKSAHRKLKVSHDNLTVERDESSSKSHTPERFTSQGSYGVAGNFIDSGRH
EVVISGSTYAIGLAYKSAPKHEIGKNSASALCRCNNNVRHNSKEIPIEPAPHLRVGIL
LDYDNGSIAFYDALNSIHYLTFDVAFAQPVCPTFTVNKCLTIITGLPIP DHDCTEQLP
>O43164

MSQYTEKEPAAMDQESGKAVPKPAGGYQTITGRRYGRRHAYVSKPCMTRHERSLGRAGD
DYEVLELDDVPKENSSGSSPLDQVDSL PSEPIFEKSETEIPTCGSALNQTTTESSQSFVA
VHHSEERDTLGSSTNLHNHSEGEYIPGAC SASSVQNGIALVHTDSYDPDGKHGEDNDHL
QLSAEVVEGSRYQESLGNTVFELENREAEAYTGLSPPVPSFNCEVRDFEELDSVPLVKS
SAGDTEFVHQNSQEIQRSSQDEM VSTKQQNNTSQERQTEHS PEDAACGPGHICSEQNTND

REKNHGSSPEQVVRPKVRKLISSSQVDQETGFRHEAKQRSVQRREALEVEESEGSDDLLIKCEEYDGEHDCMFLDPYPSRVITQRETENNQMTSESAGATAGRQEVDNTFNGCGDYYQLYDKDEDSSECSDGESASLPHRFSGTEKDQSSDESETLPGKDENEPELQSDSSGPSEEENQELSLQEGETSLEEGERPLQYNEVNESSSDEGNEPANEFAQPAFMLDGNNNLEDDSSVSELDVDSDLFDGFADGLGVAEAISYVDPQFLTYMALEERLAQAMETALAHLESЛАVДVEVANPPASKESIDGLPETLVLEDHTAIGQEQQC PICCSEYIKDDIATELPCHFFFHKPCVSIHQKS GTCPVCRRHFPPAVIEASAAPSSEPDAPPNSNDIAEAP
>O60259
MGRPRPRAAKTMFLLLGGAAGHSRAQEDKVLGGHECQPHSQPQAALFQGQQLLCGGVLVGGNVLTAAHCKKPKYTVRLGDHSIQNKDGPEQEIPVVQSIPHPCYNSSDVEDHNHDIMLLQLRDQASLGSKVKPISLADHCTQPGQKCTVSGGTVPRENFPDTLNCAEVKIFPQKKCEDAYPGQITDGMVCAGSSKGADTCQGDGGPLVCDGALQGITSGSDPCGRSDKPGVYTNICRYLDIKKIIGSKG
>O60759
MSLQRILLQHSSNGNLADFCAGPAYSSYSTLTGSLTMDDNRIQMLADTVATLPRGRKQLALTRSSLSDFSSQRKLVTVEKQDNETFGFEIQSYPQNQNACSSSEMFTLICKIQEDSPAHCAGLQAGDVLANINGVSTEGFTYKQVVDLIRSSGNLLTIETLNGTMILKRTEAKLQVLKQTLKQKVEYRSIQLQEHRLLGDAANCPSLENMDLDELSFGPLPGPGPALVDRNRLSSESSCKSLSSMTMDSEDGYQTCVSEDSSRGAFSRQTSTDDECFIGKEGDDFLRRSSRRNRSISNTSSGMSPLEGNLSSMFGTLPKSRKGSRVKQLLKFIPLHRAVEEEESRF
>O75190
MVDYYEVLGVQRHASPEDIKKAYRKLALKHPDKNPENKEEAERKFQVAEAYEVLSDAKKRDIYDKYKGEGLNNGGGGGSHFDSPFEFGFTFRNPDDVFREFFGRDPFSFDFEDPFEDFFGNRRGPRGSRSRGTSFFSAFSGFPSFGSGFSSFTGFTSFGLGHGLTSFSSTSFGGSGMGNFKSISTSTKMVNGRKITTKRIVENGQERVEVEEDGQLKSLTINGVADDALAEERMRRGQNALPAQPAGLPRPPKPPRPA SLLRHAPHCLSEEQDRPRAPGPDPPLASAAGLK EGGKRKKQKQREESKKKSTKGNH
>O94811
MADKAKPAKAANRTPPKSPGDPSKDRAKRLSLESEGAGEGAAASPELSEALEAFRRFAVHGDARATGREMHGKNSKLCKDCQVIDGRNVTVDIVFSKIKGKSCRTITFEQFQEALEELAKKRFKDKSSEEAVREVHRLIEGKAPIISGVTKAISSPTVSRLTDTTKFTGSHKERFDPSGKGKGKAGRVDLVDESGYVSGYKHAGTYDQKVQGGK
>O94927
MELAQEARLGCAYEEMGVPVAARAPESTLRRCLGQGADIAYILQHVHSQRTVKKIRGNLLYGHQDSPQVRRKLELEAAVTRLRAEIQELDQSLELMERDTEAQDTAMEQARQHTQDTQRRALLLRAQAGAMRRQQHTLRDPMQRLQNQLRRLQDMERKAKVDVTFGSLTSAAALGLEPVVL RDVRTACTLRAQFLQNLQAKRGSLPTPHDDHFGTSYQQLSSVETLLTNHPPGHVLAALEHAAEAEIRSLCSGDGLGDEISRQPQAPDQSDSSQTLPSMVHLI QEGRTVGVLVSQRSTLLKERQVLTQRLQGLVEEVERVVLGSSERQVLILGLRRCCLTELKALHDQSQELQDAAGHRQLLRELQAKQQRILHRQLVEETQEQRLLIKGNSASKTRLCRSPGEVLALVQRKVVPTFEAVAPQSRELLRCLEEEVRHLPHILLGTLLRHPGELKPLPTVLPsiHQLHPASPRGSSFIALSHKLGLPPGKASELLPAAASLRQDLLLQDQRSLCDLLHMKTSLPPGLPTQELLQIQASQEKKQKENLGQALKRLEKLLQALERIPELQGIVGDEQPGQAALSEELCQGLSLPQRLRVQAQGALQKLCS

>P14136

MERRRITSAARRSYVSSGEMMVGGLAPGRRLGPGTRLSLARMPPPLPTRVDFSLAGALNA
GFKETRASERAEMMELNDRFASYIEKVRFLEQQNKALAAELNQLRAKEPTKLADVYQAEI
RELRLRLDQLTANSARLEVERDNLAQDLATVRQKLQDETNLREAENNLAAYRQEADEAT
LARLDLERKIESLEEEIRFLRKIHEEEVRELQEQLARQQVHVELDVAKPDLTAALKIERT
QYEAMASSNMHEAEEYRSKFADLTDAARNAELLRQAKHEANDYRRQLQSLTCLESLRG
TNESLERQMREQEERHVREAASYQEALARLEEEGQSLKDEMARCHLQEYQDLLNVKLALDI
EIATYRKLLGEENRITIPVQTFSNLQIRETSLODTKSSEGHLKRNIIVVKTVEMRDGEVI
KESKQEHKDVM

>P35573

MGHSKQIRILLNEMEKLEKTLFRLEQGYELQFRLGPTLQGKAVTVYTNPFPGETFNRE
KFRSLDENPTEREDDSKYCKLNLQQSGSFQYYFLQGNEKSGGGYIVVDPILRVGADNHV
LPLDCVTLQTFLAKCLGPFDEESRLRVAKESGYNMIHFTPLQTLGLSRSCYSLANQLELN
PDFSRPNRKYTNQVQLVEKLKKENVICITDVVYNHTAANSKIQEHPACAYNLVNSPHLK
PAVLDRALRFSCDVVAEGKYKEKGIPALIENDHHMNSIRKIIIEDIFPKLKLEFFQVDVNKA
VEQFRLLTQENRRVTKSQDPNQHLLTIQDPEYRRFGCTVDMNIALTTFIPHDKGPAAIEE
CCNFHKRMEELNSEKHRLINYHQEQAVNCLLGNVFYERLAGHGPKLGPVTRKHPLVTRYF
TFPFEEIDFSMEESMIHLPNKACFLMAHNGVMGDDPLRNFAEPGSEVYLREЛИGDSVK
LRYGNKPEDCPYLAHMKKYTEITATYFQGVRLDNCHSTPLHVAEYMLDAARNLQPNLYVV
AELFTGSEDLDNVFVTRLGISSLIAREAMSAYNSHEEGRLVYRYGGEPVGSFVQPCLRPLM
PAIAHALFMDITHDNECPIVHRSAYDALPSTTIVSMACCASGSTRGYDELVPHQISVVSE
ERFYTKNPEALPSNTGEVNFQSGIIAACAIISKLHQELGAKGFIQVYVDQVDEDIVAVTR
HSPSIHQSVVAVSRTAFRNPKTSFYSKEVPQMCIPGKIEEVVLEARTIERNTKPYRKDEN
SINGTPDITVEIREHIQLNESKIVKQAGVATKGPNEYIQEIEFENLSPGSVIIFRVSLDP
HAQVAVGILRNHLTQFSPHFKSGSLAVDNADPILKIPFASLASRLTAEQNQILYRCSE
EKEDGGCYDIPNSALKYAGLQGLMSVLAIEIRPKNDLGHPCNNLRSGDMIDYVSNRLLIS
RSGTIAEVGKLQAMFFYLKQIPRYLIPCYFDAILIGAYTLLDTAKQMSSFVQNGSTFVK
HLSLGSVQLCGVGKFPSPILPILSPALMDVPYRLNEITKEKEQCCVSLAAGLPHFSSGIFRC
GRDTFIALRGILLITGRYVEARNIILAFAGTLRHGLIPNLLGEGIYARYNCRDAVLQCIQ
DYCKMVPNGLDILKCPVSRMYPTDDSAPlPAGTLDQPLFEVIQEAMQKHMQGIQFRERNA
GPQIDRNMKDEGFNITAGVDEETGFVYGGNRFCNCGTMDKGESDRARNRGIPATPRDGA
VEIVGLSKSAVRLLLELSKKNIFPYHEVTVKRGKAIVKSYDENRKIQDNFEKLFHVSEDP
SDLNEKHPNLVHKRGIYKDSYGAASSPCDYQLRPNFTIAMVVAPELFTTEKAKALEIAEKK
LLGPLGMKTLDPDDMVYCGIYDNALDNDNYNLAKGFYHQGPELPIGYFLRAKLYFSRLM
GPETTAKTIVLVKNVLSRHVHLERSPKGLPELTNENAQYCPFSCETQASIATILELYD
L

>P53370

MRQPLSGRRAMLARTYGGPSAGYRASGAQGYVRNPPVGACDLQGELDRFGGISVRLARL
DALDRLDAAAFQKGLQAAVQQRSEGRATVLHPILOQSRFIAPAASLGFCFHAEESDSSTL
TLLREGPSRLPGYASHQGVVAGAVFDESTRKILVVQDRNKLKNMKFPGLSEPEEDIGDT
AVREVFEETGIKSEFRSVLSIRQQHTNPGAFGKSDMYIICRLKPYSFTINFCQEECLRCE
MDLNDLAKTENTTPITSRVARLLLYGYREGFDKIDLTVEELPAVYTGLFYKLYHKELPEN
YKTMKGID

>P78362

MSVNSEKSSSERPEPQQKAPLVPPPPPPPPPLPDPTPPEPEEEILGSDEEQEDP
ADYCKGGYHPVKIGDLFNGRYHVIRKLGGHFSTVLCDMQGKRFVAMKVVSAQHYTETAL
DEIKLLKCVRESDPSPNPKDMVVQLIDDFKISGMNGIHVCMVFEVLGHLLKIIKSNYQG
LPVRCVKSIIHQVILQGLDYLHSKCKIIHTDIKPENILMCVDDAYVRRMAAEATEQKAGAP
PPSGSAVSTAPQQKPIGKISKNKKKKQKRQAEELLEKRLQEIEELERAERKIEEN
ITSAAPSNDQDGECPEVKLKTGLEEAAEAETAKDNGEAEDQEEKDAEKENIEKDEDD
VDQELANIDPTIESPKTNIGHIENGPSLEQQLDDEDDEDCPNPEEYNLDEPNAESDYT
YSSSYEQFNGELPNGRHKIPESQFPEFSTSLSFGSLEPVACGSVLSEGSPLETQEESSPS
HDRSRRTVSASSTGDLPKAKTRAADLLNPLDPRNADKIRVKIADLGNACVHKHFTEDIQT
RQYRSIEVLIGAGYSTPADISTACMAFELATGDYLFEPEHSGEDYSRDEDHIAHIIELLGS
IPRHFAKSGKYSREFFNRGELRHITKLKPSLFDVLEKYGPHEADAQFTDFLIPMLEMV
PEKRASAGECLRHPLNS

>Q01484

MMNEDAAQKSDSGEKFNGSSQRRKRPKSDSNASFLRAARAGNLDKVVEYLGGIDINTC
NQNGLNALHAAKEGHVGLVQELLGRGSSVDSATKKGNTALHIASLAGQAEVVKLVKEG
ANINAQSQNGFTPLYMAAQENHDVVVKYLLENGANQSTATEDGFPLAVALQQGHNQAVA
ILLENDTKGVRLPALHIAARKDDTKSAALLQNDHNADVQSKMMVNRTTESGFTPLHIA
AHYGNVNATLLLNRGAAVDFTARNGITPLHVASKRGNTNMVKLLDRGGQIDAKTRDGL
TPLHCAARSGHDQVVELLERGAPLLARTKNGLSPHMMAAQGDHVECVKHLLQHKAPVDD
VTLDYLTALHVAAHCGHYRVTKLKDPRNADLNGFTPPLHIACKKNRIKVMELLVKY
GASIQAITESGLTPIHVAAFMGHLNIVLLLLQNGASPDVTNIRGETALHMAARAGQVEVV
RCLLRNGALVDARAREEQTPLHIASRLGKTEIVQLLLQHMAHPDAATTNGYTPLHISARE
GQVDVASVLEAGAAHSLATKKGFTPLHVAAKYGSVDVAKLLLQRRAAADSAGKNGLTP
HVAAHYDNQKVALLLEKGASPHATAKNGYTPLHIAAKKNQMQIASTLLNYGAETNIVTK
QGVTPLHLASQEGHTDMVTLLDKGANIHMSTKSLHAAQEDKVNVDILTKHGAD
QDAHTKLGYPPLIVACHYGNVKMVNFLLQGANVNAKTNGYTPLHQAAQQGHTHIINVL
LQHGAKPNATTANGNTALAIKRLGYISVVDTLKVVTEEVTTTTITEKHKLNPETMT
EVLDVSDEEGDDMTGDDGEYLRPEDLKELGDDSLPSSQFLDMNLYRSLEGGRSDSLR
SFSSDRSHTLSHASYLRSADMDDSVVIPSHQVSTLAKEAERNSYRLSGTENLDNVALSS
SPIHSGFLVSMVDARGGAMRGCRHNGLRIIIPPRKCTAPTRVTCRLVKRHRLATMPPMV
EGEGLASRLIEVGPSGAQFLGPVIVEIPHFAALRGKERELVVLRENGDSKEHFCDYTED
ELNEILNGMDEVLDSPEDLEKKRICRIITRDFPQYFAVVSRIKQDSNLIGPEGGVLSSTV
VPQVQAVFPEGALTKRIRVGLQAQPMHSELVKKILGNKATFSPIVTLEPRRRKFHKPITM
TIPVPKASSDVMLNGFGGDACTLRLCSITGGTPAQEDITGTTPLTFNECVSFTTNVS
ARFLIDCRQIQESVTFASQVYREIICVPYMAKFVVFAKSHDPIEARLRCFCMTDDKVDKT
LEQQENFAEVARSRDVEVLEGKPIYVDCFGNLVPLTKSGQHHIFSFFAFKENRLPLFVKV
RDTTQEPCGRLSFMKEPKSTRGLVHQAINCNLNITLPIYTKESEDQEQEEEIDMTSEKND
ETESTETSVLKSHLVNEVPVLASPDLSEVSEMQDLIKMTAILTSDKAGSIKVTEL
VKAEEEPGEPEIERVERVKEDLEKVNEILRSGTCTRDESSVQSSRSERGLVEEEVIVSDE
EIEEARQKAPLEITEYPCVEVRIDKEIKGKVEKDSTGLVNYLTDDLNTPVPLKEQLQTV
QDKAGKKCEALAVGRSSEKEGKDIPPDETQSTQKQHKGPSLGIKKPVRRKLKEKQKQKEEG
LQASAEKAELKGSSEESLGEDPGLAPEPLPTVKATSPLIEETPIGSIKDKVKALQKRVE
DEQKGRSKLPIRVKGKEDVPKTTHRPHPAAPSLKSERHAPGSPSPKTERHSTLSSAK
TERHPPVSPSSKTEKHSPVPSAKTERHSPASSSSKTEKHSPVSPSTKTERHSPVSSAKT

ERHPPVSPSGKTDKRPPVSPSGRTEKHPPVSPGRTEKRLPVSPSGRTDKHQPVSTAGKE
KHLPPVSPSGKTEKQPPVSPSKTERIEETMSVRELMKAFQSGQDPSKHKTGLFEHKSAKQ
KQPQEKGKVRVEKEGPILTQREAQKTNQTIKRGQRLPVTGTAESKRGVRVSSIGVKKE
DAAGGKEKVLSHKIPEPVQSVPEEESHRESEVPKEKMADEQGDMDLQISPDRKTSTDFSE
VIKQELEDNDKYQQFRLSEETEKAQLHLDQVLTPNFTPLDMKDEFILPALSQSGAL
DGSSESLKNEGVAGSPCGSLMEGTPQISSEESYKHEGLAETPETSPESLSFSPKKSEEQT
GETKESTKTETTTEIRSEKEHPTKDITGGSEERGATVTEDSETSTESFQKEATLGSPKD
TSPKRQDDCTGSCSVALAKETPTGLTEEAACDEGQRTFGSSAHKTQTDSEVQESTATSDE
TKALPLPEASVKTDTGESKPQGVIRSPQGLELALPSRDSEVLSAVADDLAVSHKDSLE
ASPVLEDNSSHKT PDSLEPSPLKESPCRDSLESSPVEPKMKAGIFPSHFPLPAAVAKTEL
LTEVASVRSRLLRDPGSAEDDSLEQTSLMESSGKSPLSPDTPSSEEVSYEVTPKTTDVS
TPKPAVIHECAEEDDSENGEKKRFTPEEEMFKMVTKIKMFDELEQEAQKQRDYKKEPKQE
ESSSSSDPDADCSVDVDEPKHTGSGEDESGVPVLVTSESRKVSSSEPELAQLKKGAD
SGLLPEPVIRVQPPSPLPSSMDSNSSPEEVQFQPVVKQYTFKMNETQEEPGKSEEKD
SESHLAEDRHAVSTEAEGRSYDKLNRTDQPKICDHGCEAMSPSSAAPVSSGLQSPTG
DDVDEQPVIYKESLALQGTHEKDTEGEELDSRAESPQADCPSESFSSSSLPHCLVSEG
KELDEDISATSSIQKTEVTKTDETENLPKDCPSQDSSITTQDRFSMDVPVSDLAENDE
IYDPQITSPYENVPSQSFSSSEESKTQTDANHTTSFHSEVSVTITSPVEDVVVASSSS
GTVLSKESNFEGQDIKMESQQESTLEMQSDSVSSSFEPMSATTVVGEQISKVIITKTD
VDSDSSEIREDEAFEARVKEEEQKIFGLMVDRQSQGTTPDTPARTPTEEGTPTSEQNP
FLFQEGKLFEMTRSGAIDMTKRSYADESFHFFQIGQESREETLSEDVKEGATGADPLPLE
TSAESLALSESSETVDEADLLPDDVSEEVEEIPASDAQLNSQMGISASTETPTKEAVSV
GTKDLPTVQTGDIPPLSGVKQISCPDSSEPAVQVQLDFSTLTRSVYSDRGDDSPDSSPEE
QKSVIEIPTAPMENVPFTESKSKIPVRTMPTSTPAPPSEAYESSVSEDFLSSVDEENKAD
EAKPKSKLPVKVPLQRVEQQLSDLTSVQKTVAPQGQDMASIAPDNRSKSES DASSLDSK
TKCPVKTRS YTETETESRERAEELESEEEGATRPKI LSRPVKS RSTTSSCRGGTSPT
KESKEHFFDLYRNSIEFFEEISDEASKLVDRLTQSEREQEIVSDESSALEVSVIENLP
PVETEHSPEDIFDTRPIDESIELTIERIPDENGDHAEDPQDEQERIEERLAYIA DHLG
FSTELARELDFTEEQIHQIRIENPN SLQDQSHALLKYLERDGKHATDTNLVECLTKINRM
DIVHLMETNTEPLQERISHSYAEIEQTITLDHSEGF SVLQEE LCTAQHKQKEEQAVSKES
ETCDHPIVSEEDISVGYSTFQDGVPKTEGDSSATALFPQTHKEQVQQDFSGKMQDLPEE
SSLEYQQEYFVTTPGTETSETQKAMIVPSSPSKTPEEVSTPAEEKLYLQTPTS SERGGS
PIIQEPEEPSEHREESSPRKTSLVIVESADNQPETCERLDEDAAFEKGDDMPEIPPETVT
EEEYIDEHGHTVVKKVTRKIIRRYVSSEGTEKEEIMVQGMPQEPVNIEEGDGYSKVIKRV
VLKSDTEQSEDNN E

(2) 30 endoplasmic reticulum proteins

>O43567

MLLSIGMLMLSATQVYTILTVQLFAFLNLLPVEADILAYNFENASQTFDDLPARFGYRLP
AEGLKGFLINSK PENACEPIVPPPVKDNSSGT FIVLIRR LDCNFDIKVLNAQRAGYKAAI
VHNVDSDDLISMGSNDIEVLKKIDIPS VFIGESSANSLKDEF TYEKGGHLILVPEFSLPL
EYYLIPFLIIVGICLILIVIFMITKFVQDRHRARRNRLRKDQLKKLPVHKFKKGDEYDVC
AICLDEYEDGDKLRILPCSHAYHCKCVDPLTKKTC PVCKQVVPSQGDSDTDSSQE
ENEVTEHTPLLRLPLASVSAQSF GALSESRSHQNMTESSDYEEDDNE DTSSDAENEINEH
DVVVQLQPNGERDYNIANTV

>P07237

MLRRALLCLAVAALVRADAPEEEDHVLVLRKSNAEALAAHKYLLVEFYAPCGHCKALAP
EYAKAAGKLKAEGSEIRLAKVDATEESDLAQGYGVGYPTIKFFRNGDTASPKEYTAGRE
ADDIVNLKKRTGPAATTLPDGAAESLVESSEAVIGFFKDVESDSAKQFLQAAEAIDDI
PFGITSNSDVFSKYQLDKDGVVLFKKFDEGRNNFEGEVTKENLLDFIKHNQLPLVIEFTE
QTAPKIFGGEIKTHILLFLPKSVSDYDGKLSNFKTAAESFKGKILFIFIDSDHTDNQRIL
EFFGLKKEECPAVRLITTLEEMTKYKPESEELTAERITEFCHRFLEGKIKPHLMSQELPE
DDKQPVKVLVGKNFEDVAFDEKKNVFVEFYAPCGHCKQLAPIDKLGETYKDHENIVIAKM
DSTANEVEAVKVHSFPTLKFPASADRTVIDYNGERTLDGFKKFLESGGQDGAGDDDDLE
DLEEAEEPDMEEEDDQKAVKDEL

>O75900

MGRGARVPSEAPGAGVERRLGAALVALCLLPALVLLARLGAAPAVPASAAGDVAALGLSA
VPPTRVPGPLAPRRRYTTLTPARLRDHFNLTIRILSFPRNLLSPRETRRALAAFRMSDV
SPFSFREVAPEQPSDLRIGFYPINHTDCLVSALHHCFDGPTGELAHAFFPPHGGIHFDDS
EYVLGPTRYSKGVLTDLVHVAHEIGHALGLMHSQHGRALMHLNATLRGKALSQDELGL
HRLYGCLDRLFVCASARRGFCDARRRLMKRLCPSSCDFCYEFPPFTVATTPPPRTKTRL
VPEGRNVTFRGQKILHKKGKVYYKDQEPLEFSYPGYLALGEAHLSIIANAVNEGTYTCV
VRRQQRVLTTYSRVRVRG

>O55232

MNLPSTKVPAAVTLLLLLPPALLSLGVDAQPLPDCCRQKTCSCRLYELLHGAGNHAAG
ILTLGKRRPGPPGLQGRILQRLLQANGNHAAGILTMGRAGAELEPYPCPGRRCPATATA
LAPRGGSRV

>O77588

MRLLLLLAPLGILLAETKGDAKPEDNLLVLTVATKETEGFRRFKRSAQFFNYKIQALGLG
EDPGEAMLAGGGLKVRLKKALEKHADKENLVLFTDSYDVVFASGPRELLKKFRQARSQ
VVFAEELIYPDPRRLEAKYPVVDGKRFGLSGGGFIGYAPNLSQLVAEEGQDSDSDQLFYT
KIFLDPEKREQINITLDHRCRIFQNLDGALDEVVLKFEMGQVRARNLAYDTLPVLIHGNG
PTKLQLNYLGNYIPRFTFETGCAVCDEGLRSLKIGIGDEALPAVLVGVFIEQPTPFLSLFF
QRLLRLHYPQKRLRLFIHNHEQHHKAQVEQFLAEHGDEYQSVKLGVPEVRVANADARNMG
ADLCRQDRGCTYYFSVDADVALTEPKTLRLLIEQNKNVIAPLMTRHGRSLNFGALSADGY
YARSEDYVDIVQGRRGVNVPYISNIYLIKGSALRAELQETDLFHHSKLDPDMAFCANIR
QQDVFMFITNRHSFGHLLSDSYQTTHLHNNDLEVFSNPEDKEKYIHENYTKALAGKMVE
PCPDVYFPIFTEACDELVEEMEHYGQSLGDNKDNRIQGGYENVPTIDIHMNQINFEREH
KFLVEYIAPMTEKLYPGYTRAQFDLAFVVRYKPDEQPSLVPHDASTFTINIALNRGV
DYEGGGCRFLRYNC SIRAPRKGTLMHPGRLTHYHEGLPTTKGTRYIAVSFVDP

>O60568

MTSSGPGRFLLLLPLLPAAASASDRPRGRDPVNPEKLLVITVATAETEGYLRFRLSAE
FFNYTVRTLGLGEERGGDVARTVGGGQKVRLKEMEKYADREDMIIMFVDSYDVILAGSP
TELLKKFVQSGSRLLFSAESFCPEGLAEQYPEVGTGKRFLNSGGFIGFATTIHQIVRQKY
KDDDDDQLFYTRLYLDPGLREKLSLNLDHKSRIFQNLNGALDEVVLKFDRNVRIRNVAY
DTLPIVVGNGPTKLQLNYLGNYVPNGTPEGCGFCNQDRRTLPGQPPPRVFLAVFVEQ
PTPFLPRFLQRLLLDYPDPDRVTLFLHNNEVFHEPHIADSPQLQDHFSAVKLGVPEALS
PGEARDMAMDLCRQDPECEFYSLSADAVLTNLQTLRILIEENRKVIAPMLSRHGKLSNF
GALSPDEYYARSEDYVELVQRKRVGVNVPYISQAYVIRGDTLRMELPQRDVSGSDTDPD

MAFCKSFRDKGIFLHLSNQHEFGRLLATSRYDTEHLHPDLQIFDNPVDKEQYIHENYSRA
LEGEGLIVEQPCPDVYFPLLSEQMCDELVAEEMEHYGQSGGRHEDSRLAGGYENVPTVDIHM
KQVGYEDQLQLLRTYVGPMTESLFPGYHTKARAVMNVVRYRPDEQPSLRPHDSSTFTL
NVALNHKGLDYEGGGCRFLRYDCVISSPRKGALLHPGRLTHYHEGLPTTGTRYIMVSFVD
P

>O08601

MILLAVLFLCFSSYSASVKGHTTGLSLNNERLYKLTYSTEVFLDGKGKPQDSVGYKIS
SDVDVLLRNPDGDDDQVIQVTITAVNVENAGQQRGEKSIFQGKSTPKIIGKDNLEALQR
PMILLHLVRGKVKEFYSYNEPVGIENLKRGLASLFFQMQLSSGTTNEVDISGDCKVTYQAQ
QDKVVKIKALDTCKIERSGFTTANQVLGVSSKATSVTTYKIEDSFVTAVLAETRAFALN
FQQTIAGKIVSKQKLELKTTEAGPRMIPGKQVAGVIKAVDSKYKAIPIVGQVLERVCKGC
PSLAHKSIKNLEPENLSKAEAVQSFLAFIQHLRTSRREEILQILKAEKKEVLPQLVDA
VTSAQTPDSLEAILDFLDFKSDSSIILQERFLYACGFATHPDEELLRALLSKFKGSFASN
DIRESVMIIIGALVRKLCQNEGCKLKAVVEAKKLILGGLEKPEKKEDTTMYLLALKNALL
PEGIPLLLKYAEAGEGPVSHLATTVLQRVDVSFITDEVKKTLNRUYHQNRKVHEKTVRTT
AAAVILKNPNSYMDVKNILLSIGELPKEMNKYMLTVVQDILHFEMPASKMIRRLKEMAVH
NYDRFSKSGSSSSAYTGYVERSRAASTYSLDILYSGSGILRRSNLNIFQYIGKAEHLHSQ
VVIEAQGLEGLIAATPDEGEENLDSYAGMSAILFDVQLRPVTFFNGYSDLMSKMLSASGD
PVSVVKGLILLIDHSQDIQLQSGLKANMEIQGGLAIDIISGSMEFSLYRESKTRVKNRVAV
VITSVDVTVDASFVKAGVESRAETEALEGIFESTVQFSQYPFLVCMQMDKAEAPLRQFETKY
ERLSTGRGYVSRRRKESLVAGCELPLHQENSEMCNVVFPPQPESDNSGGF

>O94491

MSSISIDEKLKDPESVQNKEILDVDVGDLSPKGVDAAFNYALDVYDEIDPETERLVRK
IDCTIFPVMCLVYCIQFLDKTSNSYAVIMGILKEDLKMEQMYSSGTAFYLGYLVFEFPAS
LLLQRFPLSKTLCVFLVIGFLLCMTSVANYPGFIALRVLLGMMEAASPGFILLTAQYKR
SEQQLRTSVVAFNGLQILGSCMAYGLAKRTSLPMRGKLIFIICGVLAIFLGFVILAVVP
DNPFKAFLTEEDRKLVVKRLRANKQGVGNHHFKLYQFKETMLDIRTIMFVSSVLLNIPNG
GIGTFSSLLIKGTMGYDTLQTLLMGLPAGACEFGGLIAFGFLSLFIHKRMVLATITCIA
LIGSCLLSFAGPPRAQLAGYYLLMSPGAMIVMFAIISNASGTYKKVTVGVIYLIGYCV
GNLIGPQTFKAADAPEYMPAKNTMVGCYAATLVTFPALYYVNRENKRRDQLAAEGKIEHR
PNAEFEDLTDENLDFRYTL

>O59833

MSILNVIRSHHDVEPQNVEEPPPLTGQTIVTEDKLETSAKDKKHESPSMSEDEEGSVENV
DADLTAKLMSIDPNHPAHPHKPLKLFVATVYTLEVYVISSTACINFFDIYQTNHCSIQ
VSYLVQSLFIVGNAFGPMLLGPMSDIFGRKVYVGSLILYIIFQIPQALAYNLPMAINSA
IAGAFGSSALANVASSMCDIFTPETVFGFISLFVGANAGASIGSPIGEALYDHRFYMNMI
VGGFFVILCVLCPETLPVINIMNYSSTTGEKTVQVSTLAKAKSAVVRTKFVLSTAFKLLC
TEPIIMALGLYNGFAYGLIFLYLDGLFPVFDNYKMGYMGANLTYNFLVGVTIVVMLQP
IQONLYRDKRRHGGVARPEARFLISLLTVFFPAGLFFAFTSDGRISVSPLIAGGVVLGVGDP
QLLAMINYITDSYPSVAGSAIAAFTLPSFAIAAVLVHLGIIMFDNMTTAMATLAFISLS
LVATIYVIYFFGHLIRKHSRLAVTQQALQEADAKVLPEV

>O42707

MKFCSLFHVLSCCTLAYAVPKSQFLQLHSLSNAIPVEKYGSVDEDGYVYLT SKDSNEA
RSGSLSTS VLRQVGQLSTS FVAHVSENENTFFAIYTS AVGSEG PVFGASDKDGLLISQE I

DQTGKIFVRGYLNDKSFELAQFTDPDLPPFAKCTIESPEALNNIILKYGDQSGLELFVN
DKPCFQVKDVLIPQGYYFGVSSQSTSAKDLVALSNLNILPPDTNNENLNPTSNTKQSVG
DNTSPQTVIDTEGLNAIKADLAFLNVESQRQKMDSLHFALTNALERLNDISSTSQFPS
ERFNALKEKLHDSLSAQSSADGTSKHLAEFEKEIKKAMGNAYSPYNLTNFMVFLILGAI
VSYGIMLVRDRRRHKYL

>O94401

MFFSVKNVFLLGIFGFVLGALAETSHLERLSLEAPYINHGMNRLEYGGSTVIDRKNGIFL
TQDVQNQQGISTRLLPTPSSFEVLFQFRINSESTSFLGDGLAFFLAAERAKPGPVFGFTD
KFNGYGFIDTYNNHRPGLTFPRVIVMKGDGHTPYDYENDGKANEIASCSALNVRGNDYN
LGKLKYDKNAKKLRFEIAYQGSSSFICKCFDLNEVELPLTTFMSFSAHTGDLSESHEIASI
LSRTITDIDDEGTPEIPAAEELKGTTYGQKKGSFKRLLIILLSLIVIFSIFALRSYQVQQ
EKNRRTTVL

>P12337

MLCALALASLAACTAGHPSAPPVVDTVHGKVLGKFSLEGFAQPVAVFLGVPFAKPPLGS
LRFAPPQPAESSHVKNNTSYPPMCSQDAVSGHMLSEFTNRKENIPLKFSEDCLYLNITY
PADLTKRGRLPVMVIHGGGLMVGGA STYDGLALSAHENVVVTIQYRLGIGFFSTGDEHS
RGNGHLDQVAALRVQDNIANFGGDPGSVTIFGESAGGQSVSILLSPLETKNLFHRAISES
GVALLSSLFRKNTKSLAEKIAIEAGCKTTSAVMVHCLRQKTEEELMEVTLKMKFMALDL
VGDPKENTAFLTTVIDGVLLPKAPAEILAEEKYNMLPYMVGINQQEFGIIPMQMLGYPLS
EGKLDQKTATELLKSYPINVSKELTPVATEKYLGGTDDPVKKKDLFLDMLADLLFGVPS
VNVARHHRDAGAPTYMYERYRPSFSSDMRPKTVIGHGDEIFSVLGAPFLKEGATEEEI
KLSKVMVMKYANFARNGNPNGEGLPQPAYDYKEGYLQIGATTQAAQKLKDKEVAFTELAK
AARPRETEHIEL

>Q29550

MLLPLVLTSLASSATAGQPASPPVVDTAQGRVLGKYVSLEGFAQPVAVFLGVPFAKPPLG
SLRFAPPQPAEPSFVKNTTSYPPMCCQDPVVEQMTSDLFTNGKERLTLEFSEDCLYLNITY
TPADLTKRGRLPVMVIHGGGLVLGAPAMYDGVVLAAHENVVVVAIQYRLGIGFFSTGDEH
SRGNGHLDQVAALHVQENIANFGGDPGSVTIFGESAGGESVSVLVLSPLAKNLFHRAISE
SGVALTVALVRKDMKAAAKQIAVLAGCKTTSAVFVHCLRQKSEDELLDLTLKMKFLTL
FHGDQRESHPFLPTVVDGVLLPKMPEEILAEKDFNTVPYIVGINKQEFGLLPTMMGFPLS
EGKLDQKTATSLKSYPANIPEELTPVATDKYLGGTDDPVKKKDLFLDLMGDVVFGVPS
VTVARQHRDAGAPTYMYEFQYRPSFSSDKPKTVIGHGDEIFS VFGFPLLKGDAPEEEV
SLSKTVMKFANFARSGNPNGEGLPHPMYDQEEGYLQIGVNTQAALKGEVAFNDLLSK
EAAKKPPKIKHAEL

>Q9D1Q6

MNPAPVFLSLADLRCSSLVTSIFTPITAEIASLDSENIDEILNNADVALVNFYADCRFS
QMLHPIFEASDVIKEEYPDFKNQVVFARVDCDQHSDIAQRYRISKYPTLKLFRNGMMKR
EYRGQRSVKALADYIRQQKSNPVHEIQSLDEVTNLDRSKRNIIGYFEQKDSENYRVFERV
ASILHDDCAFLSAFGDLSKPERYNGDNVIYKPPGRSAPDMVYLGSMTNFDVTYNIQDKCV
PLVREITFENGEEELTEEGLPFLILFHMKDDTESLEIFQNEVARQLISEKGTINFLHADCD
KFRHPLLHIQKTPADCPVIAIDSFRHMYVFGDFKDVLIPGKLKQFVFDLHSGKLHREFHH
GPDPTDTAPGEQDQDVASSPPPESSFQKLAPSEYRYTLLRDRDEL

>O35949

MDTSMNFSRGLKMDLMQPYDFETFQDLRPFLEEVSSFLIVVVYLLLIVVGQTYMRTRKS

FSLQRPLILSFFLAIFSILGTLRMKFMATVMFTVGLKQTVCFAIYTDDAVVRFSLFLSS
KVVELGDTAFIILRKRPLIFVHYHHSTVLLFTSGYKNKVPSSGFMTMNGVHSVMYTYY
TMKAALKHPNLLPMVITSQILQMLGTIFGILNYIRQEKGCHTTEHFFSFMLYGTYF
ILFAHFFHRAYLRPKGKVASKSQ

>P16232

MKKYLLPVVLCLGYYYSTNEEPRPEMLQGKKVIVTGASKGIGREMAYHLSKMGAHVVLT
ARSEEGLQKVVSRCLELGAASAHYIAGTMEDMAFAERFVVEAGKLLGGLDMLILNHITQT
TMSLFHDDIHSVRSMEVNFLSYVVLSTAALPMLKQSNGSIAIISSMAGKMTQPLIASYS
ASKFALDGFFSTIRKEHLMTKVNVSITLCVLGFIDETALKETSGIILSQAAPKEECALE
IIKGTVLRKDEVYYDKSSTPLLGPNPGRIMEFLSLRSYNRDLFVSN

>Q6QLL4

MAFLKYLTLIMVFLAYYYYSANEKFRPEMLQGKKVIVTGASKGIGREIAYHLAKMGAH
VVVTARSKEALQKVVARCLELGAASAHYIAGSMEDMTFAEEFVAEAGNLGGLDMLILNH
VLYNRLTFFHGEIDNVRKSMEVNFSFVVLSPAAMPMLMQSQGSIAVVSSVAGKITPLI
APYSASKFALDGFFSTLRSEFLVNKVNVSITLCILGLIDTETAIKATSGIYLGPASPKEE
CALEIIKGTLRQDEMYYVGSRVPYLLGNPGRKIMEFLSAAEYNDNVLNEKLYGRA

>P13516

MPAHMLQEISSSYTTTTITAPPGNEREKVKTVPVLEEDIRPEMKEDIHDPTYQDEEG
PPPCKLEYVRNIILMVLLHLGGLYGIILVPSCKLYTCLFGIFYYMTSALGITAGHRLSHR
TYKARLPLRIFLIIANTMAFQNDVYEARDHRAHKFSETHADPHNSRRGFFFHVGLLVR
KHPAVKEKGKLDMSDLKAEKLVMFQRRYYKPGLLLFCILPTLVPYCGETFVNLSLVST
FLRYTLVLNATLVNSAAHLYGYRPYDKNIQSRENILVSLGAVGEGFHNYHHTFPFDYSAS
EYRHINFTFFFIDCMAALGLAYDRKKVSKATVLARIKRTGDGSHKSS

>Q9TT94

MPAHLLQEISSSYTTTTITAPPSRVLQNGGGKLEKTPLYLEEDIRPEMRDDIYDPTYQ
DKEGPKPKLEYVRNIILMSLLHLGALYGITLIPTCKIYTYIVLFYYLMGALGITAGHRL
SHRTYKARLPLRFLIIANTMAFQNDVFESERDHRAHKFSETHADPHNSRRGFFFHVGL
LVRKHPAVKEKGSTLNLSDLRAEKLVMFQRRYYKPGVLLLCFILPTLVPYLDETFQNSLF
FATLFRYALGLNVTLVNSAAHMYGYRPYDKTINPRENILVSLGAAGEGFHNYHHTFPYDY
SASEYRHINFTFFFIDCMAAIGLAYDRKKVSKAAILARIKRTGEESYKSG

>Q6P7B9

MPAHILQEISGSYSATTITAPPSSGQQNGGEKFEKNPHGADVRPEIKDDLYDPSYQDE
EGPPPCKLEYVRNIVLMAILHIGALYGITLVPSCKVYTCLFAYLYVISALGITAGHRLS
HRTYKARLPLRFLIIANTMAFQNDVYEARDHRAHKFSETHADPHNSRRGFFFHVGL
VRKHPAVKEKGKLDMSDLKAEKLVMFQRRYYKPGLLLFCILPTLVPYCGETFVNLSLV
STFLRYAVVVLNATLVNSAAHLYGYRPYDKNISSRENILVSMGAVGEGFHNYHAFPYDYS
ASEYRHINFTFFFIDCMALLGLAYDRKRVSKAAVLARIKRTGEESCKSG

>P13011

MPAHILQEISGAYSATTITAPPSSGQQNGGEKFEKSSHHGADVRPELKDDLYDPTYQDD
EGPPPCKLEYVRNIILMAILHIGALYGITLVPSCKVYTCLFAYLYVISALGITAGHRLS
HRTYKARLPLRFLIIANTMAFQNDVYEARDHRAHKFSETHADPHNSRRGFFFHVGL
VRKHPAVKEKGKLDMSDLKAEKLVMFQRRYYKPDLLLFCVLPYCGETFVNLSLV
STFLRYAVVVLNATLVNSAAHLYGYRPYDKNISSRENILVSMGAVGERFHNYHAFPYDYS
ASEYRHINFTFFFIDCMALLGLAYDRKRVSKAAVLARIKRTGDGSCKSG

>P07308

MPAHMLQEISSSYTTTITEPPSGNLQNGREKMKVPLYLEEDIRPEMREDIHDP SYQD
EEGPPP KLEYVRNIILMALLHVGALYGITLIPSSKVYTLLGIFYYLISAL GITAGA HRLS
HRTYKARLPLRIFLIIANTMAFQNDVYEARDHRAHKFSETHADPHNSRRGFFF SHVGLL
VRKHPAVKEGGKLDMSDLKAELKVMFQRRYYKPGLLMCFILPTLV PYCGETFLHSLFV
STFLRYTLVNLNATLVNSAAHLYGYRPYDKNIQSRENILVSLGAVGEGFHNYHHAFPYDYS
ASEYRHINFTFFIDCM AALGLAYDRKKVS KAAVLARIKRTGDGSHKSS

>Q6AYY8

MSPTISHKD NSRQRRSGMFGHALDMKSGPLPPGGDDNHQDSVGEGDREVLLGDVPGDF
PKAKRSYRAELSSILL LFLYVLQGIP LGLAGSIPLI LQSKNVSYTDQAFFSFVFPFSLK
LLAPLVDAVYFKNFGRRKSLVPTQYILGIFMIYLSTQVDRLLGNI DGRTPDVVALTVTFF
LFEFLAATQDI AVDGALTMLSREN VGYASTCNSVGQTAGYFLGNVLFLA LESADFCNKYL
RFQPQPRGIVT LSDL FFFGTVFLIT TLV ALLKKETREASVVKEET QG I TDYKLLFSII
KMPAVLAFCLLILTSKIGFSAADAVTGLKLVEEGVPKEHL ALLAVPMVPLQI ILPLLISK
YTAGPQPLNIFYKAMPYRLLGLEYALLVTPKVEHQGGFPIYYYIIVLLSYALHQVTLYS
MYVSIMAFNAKVSDPLIGGYMTLLNTVSNLGGNPSTVALLVDPLTVKECVGASNQNCRT
PEAIELCKKLGGSCVTALDGYYVESIVCVLIGFGFLGPKFKKLQDEGPSSKCKRTN

>P19324

MRSLLL GTLC LL AVALAAEVKKPLEAAAPGTAEKLSSKATT LAERSTGLAF SLYQAMAKD
QAVENILLSP LVVASSLGLVSLGGKATTASQAKAVL SAEKLRDEEVHTGLGE LLRSLSNS
TARNVTKLGSRLYGPSSVSFADD FVRSSKQHYNCEHSK INFRDKRSALQSINEASQTTDG
KLPEVTKDVERTDGALLVNAMFFKPHDERFHH RMVDNRGF MVTRSY TVGVTM MHRTGLY
YYDDEKEKLQM VEMPLAHKLSSLI ILM PHHVEPLERLEKLLTKEQLKAMGKM QKKAVAIS
LPKG VVEVTHDLQKHLAGLGLTEAIDKNKA DLSRMSGKKDLYLASVFHATAFEDTEGNPF
DQDIYGREELRSPKLFYADHPFIFLVRDNQSGSLLFIGRLVRPKGD KMRDEL

>P12244

MLRALCALARVARVGADAEEQDNVLVAKKS NFLEPLAAHSYLA VE FYAPLCGHCK ALAPD
YAKAGGKLKAEGSEIKAAKVEATEE SDLAQ QYGV RAYPTIKFFKNGDTASPKEYTAGREA
DDIVNLKKRTGPAATT LSDTAAA ESLVDSSEITVI I GFFKDPGSDSARQFLLAADAVDDV
PFGINSNSDVY SKYQMDKDAVVL FK FAEGRNNFEGEITKEKLLDFIKHN NLPLVIEFTE
QTAPKIFGGEIKTHILLFLPKSVSDYDGKLSNLKKAADGF KGKILFVFI DSDHTDNQRIL
EFFGLKKEEC PAVR LITLDEELTKYK PETEEL TAEKLTQFCHHFLEGKIKPHL MSNEPLP
EDDKQPVKVLVGKNYEEVA FDEKKNV FIEFYAPCGHCKQLAPMDRLGEAYKDDENIVIAK
MESTANEVEAIKVHSFPTLKFFPASAERTV IDYNGERTLDGYKKFLES GGQDGYGN NDD
DLEE ALES DM EEDEDQKAMKDEL

>O54998

MNLLFRLAVFLSLCCSDAQGQTKEESTEEVKIEVLHRPENCSKTSRKGDLLNAHYDGYLA
KDGSKFYCSRTQDEGHPKFVLGVGVHVIKGLDIAMMDMC PGEKRKVII PPSFAYGKEGYAE
GKIPP NATLMFEIELYAVTKPRS IETFKQIDTDNDRQLSKAEI ELYLQKDFEK DANPRD
KSYQKAVLEDIFKKNDHNGDGFISPKEYNVHQHDEL

>Q64573

MCLSFLFLVSLATCVVYGNSSPPVVDTTKGKVLGKYVSLEGVTQSVAVFLGVPFAKPPL
GSLRFAPPQPAEPSFVKNTTYPMCSQDAAKGQRMNDLLTNRKEKIHLEFSEDCLYLNI
YTPADFTKNSRLPVMVIHGGMTLGGASTYDGRVLSAYENVVVVAIQYRLGIGFFSTGDE

HSRGNGHLDQVAALHVQDNIANFGGDPGSVTIFGESAGGFSVSLVLSPLTKNLFHRAIS
ESGVVFLPGLLTDVRPAAKQIADMAGCETTSAIIVHCLRQKTEEELLEIMKKMNLIK
SSQRDNKESYHFLSTVVNVLPKDPKEILAECNFNTVPYIVGINKQECGLLPTMMGFVP
ADVELDKKMAITLLEKFASLYGIPEDIIPVAIEKYRKGSDDSIKIRDGILAFIDVSFSI
PSVMVSRDHRDAGAPTYMYEQYYPSFSSPQRPKHVGHDADDLHSVFGAPILRDGASEE
EIKLSKMVMKFANFARNGNPNGRGLPHQYDQKEEYLQIGATTQQSQRLKAEEVAFTQLL
AKRQPQPHHNL

>Q64176

MCLSALILVSLAAFTAGAGHPSSPPMVDTVQGKVLGKYISLEGFTQPVAVFLGVPFAKPP
LGSLRFAPPQPAEPSSVKNATSYPPMCFQDPVTGQIVNDLLNRKEKIPLQFSEDCLYLN
IYTPADLTKSDRLPVMVIHGGGLVLGASTYDGLVLSTHENVVVVIQYRLGIGFFSTGD
EHSRGNGHLDQVAALHVQDNIAKFGGDPGSVTIFGESAGGESVSLVLSPLAKNLFQRAI
SESGVALTAGLVKKNTRPLAEKIAVISGCKNTTSAAMVHCLRQKTEEELLGTTLKLNLFK
LDLHGDSRQSHPFVPTVLGVLLPKMPEEILAECNFNTVPYIVGINKQEFGLPTMMNYP
PSDVKLDQMTAMSLLKSSFLNLPEDAIAVAIEKYL RDKDYTGRNKDQILLELIGDVVFG
VPSVIVSRGHRDAGAPTYMYEFQYSPSFSSMKPDTVVGDHGDEIYSVFGAPILRGGTSE
EEINLSKMMMFANFARNGNPNGQGLPHEYDQKEGYLQIGATTQQAQKLKEKEVAFTEL
LAKKQLPTEHTEL

>Q99KV1

MAPQNLSTFCLLLLLIGTVIAGRDFYKILGVPRSASI KDIKKAYRKLA LQLHPDRNPDD
PQAQEKFQDLGAAYEVLSDEKRKQYDTYGE EGLKDGHQSSHGDIFSHFFGDFGMFGGT
PRQQDRNI PRGSDIIVDLEVTLEEVYAGNFVEVVRNKPVARQAPGKRKCNCRQEMRTTQL
GPGRFQMTQEVCDEC PNVKLVNEERTLEVEIEPGVRDGMEY PFIGE GEPHVDGE PGDLR
FRIKVVKHRI FERRGDDLYTNVTSLVEALVGFM DITHLDGHKVHISRDKITRPGAKLK
KGEGLPNFDNNNIKGSLI ITFDVDFPKEQLTEEAKEGIKQLLKQGPVQKVYNGLQGY

>P81999

MAPQNLGTLCLLLYLLGAAIAGRDFYKILGVPRSASI KDIKKAYRKLA LQLHPDRNPDD
PRAQEKFQDLGAAYEVLSDEKRKQYDTYGE EGLKDGHQSSHGDIFSHFFGDFGMFGGT
PRQQDRNI PRGSDIIVDLEVTLEEVYAGNFVEVVRNKPVARQAPGKRKCNCRQEMRTTQL
GPGRFQMTQEVCDEC PNVKLVNEERTLEVEIEPGVRDGMEY PFIGE GEPHVDGE PGDLR
FRIKVVKHRI FERRGDDLYTNVTISLVE SLVGFMDITHLDGHKVHISRDKITRPGAKLK
KGEGLPNFDNNNIKGSLI ITFDVDFPKEQLTEEA REGIKQLLNQGSVQKVYNGLQGY

(3) 30 extracellular proteins

>O04012

MIFPIFFTFFLLLSTS HASVQDFCVADYKAPDGPAGYSCKKPAIVTVNDFVYSGLGIA GN
TTNIFKAAVTPAFAAQFPGVNGLGISLARLDLGP GGVPFHTPGASEVLLVQGTIIAG
FVASDNTPYLKTLLKGDIIVFPQGLLHFQVNNGDTPAIAFPSFSSPSPGLQIVDFALFKN
DLATELIAQTTLLDAPQIKKLKGVLGGTN

>O04011

MPQATMIFPILFTFFLSSSNAAVQDFCVADLAAP EGPAGFSCKKPASVKVNDVFVFSGL
GIAGNTSNI IKA AVTPAFVAQFPGVNGLGISIARLDLAVGGVVFHTPGASEVLI VAG
TICAGFVASDNTPYLQTLEKGDIMVFPQGLLHFQVNNGEAPALAFASFGSASPGLQILD
ALFKNDLPTEVIAQTTFLDAAQIKKLKGVLGGTN

>A2ASQ1

MPPLPLEHRPRQQPGASVLVRYFMIPCNICLILLATSTLGFAVLLFLSNYKPGIHFTAAP
SMPPDVCRGMLCGFGAVCEPSVEDPGRASCVCKKNVC PAMVAPVCGSDASTYSNECELQR
AQCNCQRRIRLLRQGPGCSRDP CANVTCFGSTCVP SADGQTASCLCP TCFGAPDGTVC
GSDGV DYPSECQLLRHACANQEHI FKFDGPCDPCQGSMSDLN HICRVNPRTRHPEMLLR
PENCPAQHTPICGDDGVTYENDC VMSRIGAARGLLLQKVRSQGC QTRDQC PETCQFNSVC
LSRRGRPHCSCDRVTCDGAYRPVCAQDGHTYDND CRQQAE CRQQQTIPPKHQGPCDQTPS
PCRGAQCAF GATCTVKNGKAVCECQRVC SGGYDPVCGSDGV TYGSVCELESMACTLGREI
RVARRGPCDRCGQCRFGSLCEVETGR CVC PSEC VESAQPVC GSDGHTYASECELHVACT
HQISLYVASAGHC QTGETVCTFGAVCSAGQCVC PRCEHPPP GPVCGSDGV TYLSACELR
EAACQQQVQIEEARAGPCEPAECGSGGSGSGEDNACEQELCRQHGGVDEDSEDGPCVCDF
SCQS VIKSPVCGSDGV TYSTECHLKKARCEARQELYVAAQGACRGPTLA PLLPMASPHCA
QTPYGCCQDNVTAAGVGLAGCPSTCHCNPHGSYSGTCDPVTGQCSCRPGVGLRCDRCE
PGFNFRGIVTDGHSGCTPCSCDPRGA VRDDCEQMTGLCSCRPGVAGPKCGQCPDGQALGH
LGCEADPTTPVTCVEMHEFGASCVEEAGFAQCVCPTLTCPEANSTKVGSDGV TYGNEC
QLKTIACRQLDISIQSLGPCRESVAPGVSP TSASMTPRHILSRTLASPHSSLPLSPST
TAHDPTPLPTSPQTVVGT PRSTAATPS DVASLATAIFRESGSTNGSGDEELSGDEEASGG
GSGGLEPPVGSVVVTHGPPIERASCYN SPLGCCSDGKTPSLDSEGSNCPATKA FQGVLEL
EGVEGQELFYTEMADPKSELFGETARSIES TLDDLFRNSDVKKDFSIRLRELGP GKLV
AIVDVHFDP TTAFQAPDVGQALLQQIQVS RPALAVRRPLREHVRFLDFDFPTFFTGAATG
TTAAVATARATT VSR LSASSVTPRVYPSYTSRPVGR TTAPLTTRRPTT ASIDR PRT PG
PQRPPKSCDSQPCLHGGTCQDLD SGKGFSCSCTAGRAGTVCEK VQLPSVPAFKGH SFLAF
PTL RAYHTLRLA LEFRALETEG LLYNGNARGKDFL A LLDGHVQFRDTGSGPAV L TS
LVPVEPGRHRLELSRHRQGTLSVDGEAPVVG ESGPSGT DGLNLDTKLYVGG LPEE QVAT VL
DRTSVGIGLKGCIRMLDINNQOLELSDQRAV VQSSGVGE CGDHP CSPNPCHGGALCQALE
AGVFLCQC PPPRGFGPTCADEKNPCQPNPCHGSAPCHVLSRGGA KACPLGRSGSF CETVL
ENAGSRPFLADFNGFSYLELKGLHTFERDLGEKMALEMVFLARGPSG LLYNGQKT DGKG
DFVSLALHNRHLEFRYDLGKGAAIIRSKEPIALGTVRVFLERNGRKGALQVGDGPRVLGE
SPKS RKP VPHTMLNLKEPL YVGGAPDFSKLARGAAV ASGF DGA IQLVSLRGHQLL TQEHVL
RAVDVAPFAGHPCTQAVDNPC LNGGSCI PREATYECLCPGGF SGLHCEKGIVEK SVGDLE
TLAFDGR TYIEYLN AVTE SELTNEI PAPETLDSRALFSEK ALQSNHF ELSR TEATQ GLV
LIGKVGERADYM ALAIVDGH LQLSYDLGSQPV VL RSTV KVNTN RL RVRAH REGS LQV
GNEAPVTGSSPLGATQLDTDG ALLGG LQKL PVGQ ALPKAY GTGF VGCL RDVV VGH RQLHL
LEDAVTKPEL RPCPTL

>A2SW69

MSTVHEILCKLSLEGDHSTPPSAYGSVKAYTNFDAERDALNIETAIKTKGVDEVTIVNIL
TNRSNEQRQDIAFAYQRRTKKE LASALKSALS GHLETVILGLLKTPA QYDASELKASMKG
LGTDEDSLIEII CSRTNQELQEINRVYKEMYKTDLEKDIVSDTSGDFRKLMVALAKGRRA
EDGSVIDYELIDQDARDLYDAGVKRKGTDVPKISIMTERSVC H LQKV FERYKS YSPYDML
ESIKKEVKGDLENAFLNLVQCIQNKP LYFADRLYDSMKGKGTRDKVLIRIMVRSEV DML
KIRSEFKKYGKSLYYYI QQDTKG DYQK ALLYLCGGDD

>O42720

MLFSKVIAPAFILLGAASAAPGGLAPENASKRDQPSVGDAFD KYNEAVRVFTQLSSAANC
DAACLSSLSASSAACIAAVGELGLDVPLDLACAATATSSATEACKGCL

>O54858

MPTTPLLAALAALALAAYPSCSPGPDPGKQCRLASTHSATCVDLHLRTCADAAYN
HTSFPTPLEHRSEAVEASPEYTLLGVLFLLLEGQCNPDRLLLGCSVLA
PRCQGGHTQRPC
RRVCEGLREACQPAFDAIDMAPYFLDCTQYFAPEEEGYDPLEQLRGELDVEEALPSGLP
PTFIRFAHHSYAQMVRLKRTAACSVAKTYSIGRSFEGKDLVVIEFSSRPGQHELMEP
EVKLIGNIHGNEVAGREILYLAQYLCEYLLGNPRIQRLNTTRIHL
LPSMNPDGYEVAA
AAEGAGYNGTSGRQNAQNL
DLNRNF
PDLTSEYYRLASTRGVRTDHIPISQYYGVAPETK
AIMKIQTIPFVL
SASLHGGDLVVSYP
FD
SKHPHEEKMF
SPTP
DEKMF
KLLARAYADVHP
MMMDRSENRCGGNFL
KRGSI
INGADYSFTGGMSDFNYL
HTNCFEITVEL
GCVKF
P
EE
AL
YGLQHNKEPLLN
FLEMVH
RG
IKGV
TDKY
GKPV
KNARIL
VK
G
IRHD
VTTAP
DGDY
RLLPP
GSHIVIAQAPGYSKVMKR
VTIPLRMKRA
GRVDFI
LQPLGTGPKN
FLPGPS
RAL
PRSL
DPQ
GAPAQLD
FEPPRARRQP
ASGS
KP
AYFT
SLS
PHK
P
RLL
KY
>O43405
MSAAIPALGLGVCL
LLL
PGPAGSEGAAPIAI
TCFTRG
LD
IRKEKA
DVLC
PGGC
PLEE
FSV
YGNIVYASV
SSICGA
AVH
RG
VISNSGG
P
RV
YSL
P
GRE
N
SSV
DANG
IQS
QML
S
RS
AS
FT
VTK
GK
S
ST
QEAT
GQAV
STA
H
PPT
GK
RL
KKT
PEK
KT
GN
KD
CK
AD
IA
FL
ID
GS
FN
IG
QRR
FN
LQ
KN
FVG
K
VAL
ML
GIG
TEG
PH
GLV
Q
ASE
HP
K
IE
FY
L
KN
FT
SA
KV
D
VL
FA
IKE
VG
FR
GG
NS
NT
G
K
ALK
HTA
Q
K
FFT
V
DAG
VR
KG
I
PK
VV
VV
F
ID
GPS
DD
IE
EAG
IV
ARE
FG
VN
F
IV
SV
AK
PIPE
ELGM
V
QD
VT
F
VD
K
AV
CR
RN
NG
FF
SY
H
MP
NF
G
TT
K
Y
V
K
PL
V
Q
KL
CT
H
E
Q
MM
CS
K
TC
YN
SV
NIA
FL
ID
G
SS
V
G
DS
N
F
RL
M
LE
F
V
S
NIA
KT
FE
IS
DI
G
AK
IA
AV
Q
FT
Y
D
Q
R
T
E
F
S
FT
D
Y
V
Q
G
P
A
AAA
AH
D
AG
IT
I
F
SV
G
V
A
P
L
D
D
L
K
D
M
A
S
K
P
K
E
H
A
F
F
T
R
E
F
T
G
L
E
P
I
V
S
D
V
I
R
G
I
C
R
D
F
L
E
S
Q
>O42182
MDLYMIVL
SLCG
LLRA
QET
TD
TISLD
NC
C
EDG
KK
R
G
L
E
S
Q
D
C
S
S
L
P
L
I
S
E
T
T
C
R
V
V
Q
E
QCC
SA
V
LED
S
I
C
T
SG
I
N
MA
K
D
Q
S
C
D
A
L
L
S
G
S
S
T
C
E
T
K
T
K
M
C
C
E
C
C
L
L
G
S
S
R
C
R
I
R
V
S
P
V
S
V
C
R
S
I
S
R
G
P
G
V
R
S
C
V
D
K
Q
P
A
H
G
V
Q
P
S
K
G
D
A
Q
N
T
E
D
Q
C
R
A
A
G
C
A
Q
F
I
Q
D
A
L
G
S
C
I
D
I
N
E
C
V
S
V
T
A
L
S
R
G
Q
M
C
F
N
T
V
G
S
F
I
C
Q
R
H
S
V
T
C
G
R
G
Y
H
L
N
A
E
G
T
R
C
V
D
I
D
E
C
A
G
P
D
N
S
C
D
G
H
G
C
I
N
L
V
G
S
Y
R
C
E
C
R
T
G
F
I
F
N
S
I
S
R
S
C
E
D
I
D
E
C
R
N
Y
P
G
R
L
C
A
H
K
C
E
N
I
L
G
S
Y
K
C
S
C
T
A
G
F
K
L
A
D
D
G
R
N
C
D
D
V
N
E
C
S
P
C
S
Q
G
C
A
N
V
G
S
Y
Q
S
Y
C
R
R
G
Y
Q
L
S
D
A
G
I
T
C
E
D
I
D
E
C
A
L
P
T
G
G
H
I
C
S
Y
R
C
H
N
T
P
G
S
F
H
C
T
C
P
A
S
G
Y
T
L
A
A
N
G
R
S
C
Q
D
I
D
E
C
L
T
G
T
H
S
C
E
S
E
C
F
N
I
Q
G
G
F
R
C
L
S
F
D
C
P
A
N
Y
R
R
S
G
D
T
R
P
R
V
D
R
A
D
I
I
R
C
V
K
S
C
Q
H
N
D
I
S
C
V
L
N
P
I
L
S
H
S
H
T
A
I
S
L
P
T
F
R
E
F
N
K
P
E
E
I
V
F
L
R
S
P
T
P
T
H
L
P
H
M
D
S
P
E
I
V
Y
D
I
L
E
G
N
I
Q
N
S
F
D
I
I
K
R
L
D
H
G
M
I
V
G
V
V
K
Q
V
R
P
L
G
P
V
R
T
V
L
K
L
A
M
N
Y
V
T
N
G
V
V
S
H
R
N
I
I
N
V
R
I
Y
V
S
E
F
F
>O35568
MLQT
V
F
L
T
M
L
T
L
A
L
V
K
S
Q
V
T
E
E
T
I
T
Y
T
Q
C
T
D
G
Y
E
D
P
V
R
Q
Q
C
K
D
I
D
E
C
D
I
V
P
D
A
C
K
G
G
M
K
C
V
N
H
Y
G
G
Y
L
C
L
P
K
T
A
Q
I
I
V
N
N
E
Q
P
Q
Q
E
T
P
A
A
E
A
S
S
G
A
A
T
G
T
I
A
A
R
S
M
A
T
S
G
V
I
P
G
G
G
F
I
A
S
A
T
A
V
A
G
P
E
V
Q
T
G
R
N
F
V
I
R
R
N
P
A
D
P
Q
R
I
P
S
N
P
S
H
R
I
Q
C
A
A
G
Y
E
Q
S
E
H
N
V
C
Q
D
I
D
E
C
T
S
G
T
H
N
C
R
L
D
Q
V
C
I
N
L
R
G
S
F
T
C
H
C
L
P
G
Y
Q
K
R
G
E
Q
C
V
D
I
D
E
C
S
V
P
P
Y
C
H
Q
G
C
V
N
T
P
G
S
F
Y
C
Q
C
N
P
G
Q
D
P
Y
V
L
T
S
E
N
R
C
V
C
P
V
S
N
T
M
C
R
D
V
P
Q
S
I
V
Y
K
Y
M
N
I
R
S
D
R
S
V
P
S
D
I
F
Q
I
Q
A
T
I
Y
A
N
T
I
N
T
F
R
I
K
S
G
N
E
N
G
E
F
Y
L
R
Q
T
S
P
V
S
A
M
L
V
K
S
L
T
G
P
R
E
H
I
V
G
L
E
M
L
T
V
S
S
I
G
T
F
R
T
S
V
L

RLTIIIVGPFSF

>O46378

LDHNNLTRMPGPLPRSLRELHLDHNQISRVPNNALEGLENLTALYLQHNEIQEVGSSMRG
LRSLILLDSYNHLRRVPDGLPSALEQLYLEHNNVYTVPDSYFRGSPKLLYVRLSHNSLT
NSGLASNTFNSSLLELDLSYNQLQKI

>A2AJ76

MTPGAQLLPLLVAISTAVAAVVTSDAPTKTLSATGDATLAFVFDVTGSMDDLMQVIDGA
SRILERSLSSRSRVIANYALVPFHDPDIGPVTLTADPVVFQRELRRELYVQGGGDCPEMSV
GAIKAABEVANPGSFIYVFSRARAKDYHKKKELLQLQLKQSQVVFVLTGDCGDRTHPGY
LVFEEIASTSSGQVQLDKQQVSEVLKVESAIQASKVHLLSADHEEEGEHTRIPFDPSLK
EVTIALSGPGPEIEVRDPLGRVLQTDEGLNVLLNIPDSAKVVAFKPEHPGLAIKVYSSGR
HSVRISGINSNINFRAGFSMQPSLDLNHTIEPLQGVPISLVINSTGLQAPGHLESVELSHS
SGRSLLTLPQLLSNGSTHQLAGPPFHVPKERFYLKVKGDHEGNPLLRSVGVSYSAVAP
GVPLVSMAPKIHGQLQQPLLVSCSVYSTLPFQLQLQRDGERLGEERYFQESGSSEIPRA
SKAEGTYQCIAVSRAGSGRASAQIVITDPPPQLVPGPNVTVSPGETAILSCQVLGETPY
NLTVRDRLPATTGRISQLSDLSLEVRSIIPTDGGQYQCVASNPNGVTRATTLLVREAPQ
VSINARSQRFSQGVEVRVSCSASGYPTPHISSREGALPEDSRIHVDAQGTLIIQGLAPE
DAGNYSCQATNEVGTDEETVTLYYTDPPSVSAVNAVVLTAvgEEAVLLCAASGVPPPRVI
YRGGLEVILAPGDSRSGTLRIPEAQRERDAGLYTCKAVNELGDASAEIQLVVGNAPRLTDP
PQDVTVELGKSVFLTCRATGRPPPIVTRRGDGQALEPGRGSRTGQRDSGVLFERVSLED
QAPYVCEARNVFGKAQAEARLVVTGHAPPQIANSASVVRVLEGQPVSITCVILAGRPLPE
RRLKAGSPLPPGNRHAVRADGSLHLDRALQEDAGRYSCVATNVAGSQHRDVELVVQVPPR
IHPTSTHVTNEGVPASLPCIASGVPTPKITTKETNALTTSGHYSVSRNGTLVIVQPSPQ
DAGAYVCTATNSVGFSSQEMLSVNTKPMIKMNGSQAVDVPLRVTVKAGEEVTLDCEAQGS
PTPLLTTKDANPLLPVTVNRYYELLPSGSLRLAQAOVGDNGLYGCTASNPAGATSRRYVLRV
QVPPQVQPGPRLVKVLAGEALDLNCVAEGNPQPQLNFKDMALMGEAQGSVHFAAVKTS
DAGLYRCEASNSAGTDKLELLVLEPPHGTDETKSLLERVAGENASLPCPAQGTPKPRIT
RRGPSSEPLNGRPDVAVLDEGSILFSSVSLADSGEYEYCQATNEVGSASRRAKLVVYVPPS
IREEGHITNVSGLAGQPLTLECDINGFPAPEVALKGQLVGDGGDGEASGHRLLDGS
RSLHFPRIQESHSGLYSCQAENQAGSAQRDFNLAVFIPPSLLGAGAAQEVLGLAGADVT
ECQTSGVPTPQVETKDGQPILPGDPHILLQEDGQVLRIISSHLDGEGQYQCVAFSPAGQQ
AKDFQLSIHSPTTIGSNETGEVTVLEGHTAQLCEARGMPSPAITYKDGTLLAPSSEVVY
SKGGRQLQLVKAQPSDAGLYTCQASNPAGITKKSTSLEVYVPPTEGADGGPYLVQAVAG
RPVALECVAARGHPPPTISQHEGLPVVDSNGTLEAGGALQLENPGEASGGLYSCVASSPAG
EAVLQYSVEMQVPPQOLLVAEGMGQVTATVGQSLDLPQCQASGSPVPTIQLQNRPAAELAG
VQLASQGTILHISHVELNHGLFACQATNEAGTAGAEVEVSVHGKQVSNLGASFSAHH
EPHSPFPATCNPPVCRHSAYPKPSLVERRGRGNLRQPSGTVREPGLTLLSQIEKADLRD
EGVYTCSATNLAGESKKDVTLKVLVPPNIEPGPVNKVVLENASVTLECLASGVPPDVSF
KGRQPISTQRRVIVSADGRVLHIERVQLSDAGSYRCVATNVAGSAGLKYGLRVNPPRIT
LPPNLPGPVLLGTPFRLTCNATGTPRPTLILKDGNPVSPEGIPGLKVFPGQVLTVASAR
ASDSGSYSCAVSAVGEDRRDVILQVHMPPSILGEELNMSVVVNESVTLECQSHAVPPP
LRQKDGRPLEPHGIRLSADKALLEVDRAAVDAGHYTCEAINQAGRSEKHFNLLHVVPPAF
PSKEPYTLLTVTEGQTARLSCDCQGIPFPKISRKDQPLPGEQDSLEQVLAVGRLLYLGQA
QSAQEGTYTCECSNAAGTSSQEQLSLEVLPVPPQVTGLEPLTTVSVIQDGNTTLACNATGKP

LPVVTQRDGQPVSVEPGLRLQNQNHSLHVERAQASHAGGYSCVAENTAGRAERRFALSVL
APPHTGDSDSLNTVTATLHGSFTLLCEAAGVPAPTVQFQEGQPISPREGTYLLAGGMLK
MTQAQEQRDRLYSCLASNEAGEARRNFSVEVLVPPSIEINEDLEEVIVPEGQTAQLECNA
TGHPPPKVTFKDQSLTVEDPYEMSPDGAFLIPQANLSNAGHYSCIASNAGVGEKTHTQL
SVLVVPTILGVPEKNANEETVTINNPISLICEALAFPSPNITMKDGPFEASKNIQLLP
GTHGLQILNAQKEDAGQYTCVVTNELGEATKNYHVEVLIPPSISKDDPLGEVSVKEVKTK
VNSSLTLECECATPPPSISYKDRPVTPSHRLSVLGEGRLLQIQPTQVSDSGRYLCVATN
VAGEDDDQDFNVLIQVPPMFQKMGDVDAGFEPLPHHEEAQGRVTEYREIVENNPAULYCDT
NAIPPPELTYREGQPLSAADGVSVLQGGRILQLPLVQAEDAGRYSCKAANEVGEDLHYEL
LVLTPPVIPGDTQELVEETVNASSAVSLECPALGNPAPAVSFQNGLPVSPSPRLQVLEE
GQVLKVATAEVAADAASYMCAENQAGSAEKLFTLKQVQVPPQISDTSQLTATLNSSVSLP
CEVYAHPNPEVTYKDGQPLSLGQEAFLLPGTHTLRLARAQPADSGTYLCEALNAAGRQDK
MVQLNVLVPPSFHQAPGGPQEAIQVRAGDKAILSCETDSLPEPAVTFKDQQPLALGQRIQ
GLQGGQTLEILDQSASDKGVYSCKSNTAGEAIRTFVLAIQVPPTEKPERETVNQVAGR
TLVLACDVSGIPAPTVTLKDRLPVESSVVHGVSRRGRLQLSHLQPAQAGTYTCVAENAQ
AEARKDFVVSVLVPPOIQDQSGMAQEHNVLEKQEIRLHCEAEGQPPPDTIKDGGLLDQHV
GPHLRFYLDGSTLVLKGLRTADSGAYTCVAHNAGEDARLHTVNVLVPPTIKQQAGDTGT
LVSRTGELVTMVCVQGSPIIHVSILKDGPLPLSQRPLLHSSGRTLRISQVQLADSGVFT
CVAASPAGVADRNFTLLVLVPPILEPVEFQNNVMAAQGSEVVLPCARGSPLPLVSMKD
EPILLPQSLEQGPGLKLESVSVGDAGTYSCTAAEAGEARRHFQLTVMDPPHIEESGETSE
LSLTPGAHLELLCEARGIPPPNITHKGQALRRTENDSQAGRVLRVDNAGLYTCLAESPA
GEVEKSFRVRVQAPPNVVGPRGPRSVVGLAPGQLILECSVEAEPAPEIEHRGGVLLQADA
HTHFPEQGRFLKLQALSTADGGDYSCTARNRAGSTSVAFRVEIHTAPTIQSGPNTVNVS
NRTTLLPCQTHGVPTPLVSRKDGIPHLPGSPRLEFLPEGSLRIHPVLAQDAGHYLCLASN
SAGSDRKGLDLRVFEPPAIAPGPSNLTLTAYSPASLPCEARGSPKPLVTKDGQKLDLRLQ
QGAYRLLPSNALFLTAPSPQDSAQFECVVSNEVGESRRRYQVTVHVPPTIADDQTHFTVT
RMAPVILTCSTGSPTPAVSSKAGTQLGARGSGYRILPSGALEIERALPLHAGRYTCTAR
NSAGVARKHMVLTQASPVVKPLPSVQVVAEEVLLPCEASGIPQPMVIQKEGLSIPEG
AHMQVLPSGQLRIMHASPEDAGNYFCIAQNSVGSAMAKTRLVVQVPPVIENGLPDLSIE
GSHALLPCTAKSPEPAITEKDGHLSGAEGKFTLQPSGELLVKNSEQDAGTYICTAEN
AVGRARRRVHLTILTLPVLTTLPGDRSLRLGDRLRCVARGSPTPRIGTINDQPVTEGVS
EQDGGSTLQRAAVTREDSGTYTCAENRVGRVQAVSFVHVKEAPVLQGEAFSYLVEPVGGS
IQLHCVVRGDPAPDIHTKDGPLPISRLHFQLQNGSLTILRTKMDDAGRYQCLAVNEMGT
VKKVVTVVLQSAVFQVEPQDVTVRSGVDVELRCRATGEPVPTIELRAGRPLQAGRKLRA
LPDGSLLEHVEAGDAGVYECVAHNHLGSVTAKALLAVRGEPRGSRGSMGVINGQEFGMA
TLNISVLQQGSSEAPTISSISQVPASVGPLMRVLVVTIAPIYALARESGEALNGYSLTGG
SFQQESQMEFSTGELLTMTQVARGLDPDGLLVDMKINGMIPESLADGDLRVQDFQEHYV
QTGPGQLFAGSTQRFLHDSLPAISLRCNHSIQYDETRGLQPQLVQHLRASSISSAFDPEAE
ALNFQLTALQTEENEVGCPEGFEPDVQGAFCVKDCESGGSPCSHTCRNAPGHFSCSC
PTGFSLADHRNCRDVDECAGNTHLCQEEQRCVNLLGSYNCLASCRPGFRVTADGSNCEDV
DECLEQLDECHYNQLCENTPGHHCGCPRGYRQQGHSLPCLDINECLQLPTPCVYQCQNL
QGSYRCLCPPGQTLLRDGRTCIPLERNRQNIITIVSHRSPFGPLRSVPRPSSSYHTVSLR
PGSGALNSVGRACPPGFIRQDGVCADLDECVRSLCQHACQNTEGSYYCLPSGYRLLPS
GKNCQDINECEEDGIECGPGQMCFNTRGSFQCVDTPCPTTYRQGSSPGTCFRRCSQDCSA

SGPSTLQYRLLLPLPLGVRAHHDVARLAASFSEAGIPANRTELTVLEPDPRSPFALRQLRAG
QGAVYTRRALTRAGLYRLTVRAAAPRHQSIVILLIAVSPYPY
>O42235
MMTLKVCPSLLLLFLVHSVTRTVRQVYNELDPEHSHYTFCPQECFCPPSFNALYCDNK
GLKEIPAIPARIYLYLQNLIETISEKPFVNATHLRINLNKNKITNNNGIESGVLSKLKRL
LYLFLEDNELEEVVPAPLPVGLEQLRLARNKISRIPEGVFSNLENLTMLDLHQNNLLDSAL
QSDTFQGLNSLMQLNIAKNSLKMPMSIPANTLQLFDNNNSIEVIPENYFSAIPKVTFLR
LNYNKLSDDGIPPNFGNVSSILDILQLSHNQLTKIPPINAHLEHLHLDHNRIKSVNGTQIC
PVSIAVAEDYGLYGNIPRLRYLRLDGNEIQPPIPLDIMICFQLLQAVVI
>O08677
MKLITLLCSGLLLTQGEEAQEIDCNDEAVFQAVDFSLKQFNPGVKSGNQYMLHRVI
EGTKTDGSPTFYFSKYLIKEGNCSAQSGLAQDCDFKDAEEAATGECTATVGKRENEFFIV
TQTCKIAPSKAPILKAYFPCIGCVHAISTDSPDLEPVLKHSIEHFNNNTDHSHLFTLRKV
KSAHRQVVAGLNFDITYTIVQTNCSKERFPSLHGDCVALPNGDDGECRGNLFMDINNKIA
NFSQSTCLYSGDDLVEALPKPCPGCPRDIPVDSPELKEVLGHHSIAQLNAENDHPFYKYID
TVKKATSQVVAGTKYVIEFIARETKCSKESNTELAEDECEIKHLGQSLDCANVYMRPENK
VVPTVKCQALDMTEMARRPPGFSPRSVTQETKEGRTVSPPYIAREQEERDAETEQGPT
HGHGLHEKQIKANKNHRGKHGHGDGHSPRHGLGHQKPHGLGHGHQKHTNDKNSVKQTTQRTE
DGDDHTHTVGHGHGHGHGHGHGHGHGHGHGHGHGHGHQKHTNDKNSVKQTTQRTE
ASSSEYSTTSTQMQRTEGPTLTPPRAQPTVTSSGFQDSDFIEDVVATTPPYDTGAHDDL
IPDIHVQPDSLFSKLISDFPEATSPKCPGRPKPASEDPNTETTEFSDFDLLDALS
>O15230
MAKRLCAGSALCVRGPRGPAPLLLVLGALLGAARAREEAGGGFSLHPPYFNLAEGRORIAA
SATCGEEAPARGSPRPTEDELYCKLVGGPVAGGDPNQTIRGQYCDICTAANSNKAHPASNA
IDGTERQSPPLSRGLEYNEVNVTLDLGQVFHVAYVLIKFKANSPRPDVLERSMDFGRTYQ
PQFFASSKRDCLERFGPQTLERITRDDAACTTEYSRIVPLENGEIVVSLVNGRPGAMNF
SYSPLLREFTKATNVRLRFLRTNTLLGHLMGKALRDPTVTRRYYYSIKDISIGGRCVCHG
HADACDAKDPTDPFRLQCTCQHNTCGGTCDRCCPGFNQQPKPATANSANECQSCNCYGH
TDCYYDPEVDRRRASQSLDGTYQGGGVCIDCQHHTTGVNCERCLPGFYRSPNHPLDSPHV
CRRCNCESDFTDGTCEDLTGRCYCRPNFSGERCDVCAEGFTGFPSYCPTPSSNDTREQV
LPAGQIVNCDCSAAGTQGNACRKDPRVGRCLCKPNFQGTHCELCAPGFYGPGCQPCQCSS
PGVADDRCDPDTGQCRCRVGFEGATCDRCAPGYFHFPLCQLCGCSPAGTLPEGCDEAGRC
LCQPEFAGPHCDCRCPGYHGFNCQACTCDPRGALDQLCAGGLCRCRPGYTGTACQEC
PGFHGFPSVCPCHCSAEGSLHAACDPRSGQCSCRPRVTGLRCDCVPGAYNFPYCEAGSC
HPAGLAPVDPALPEAQVPCMRAHVEGPSCDRCKPGFGLSPSNPEGCTRCSCLRGTLGG
VAECQPGTGQCFCKPHVCGQACASCKDGFFGLDQADYFGCRSCRCDIGGALGQSCEPRTG
VCRCRPNTQGPTCSEPARDHYPDLHHLRLELEAAATPEGHAVRFGFNPLEFENFSRGYA
QMAPVQPRIVARNLTSPLFLVFRYVNREGAMSVSGRVSVREEGRSATCANCTAQSQPVA
FPPSTEPAFITVPQRGFGEFPVLPNGTALRVEAGVLLDYVVLPSAYYEALLQLRVTE
ACTYRPSAQQSGDNCLLYTHLPLDGFPSSAAGLEALCRQDNSLPRPCPTEQLSPSHPPLIT
CTGSDVDVQLQAVPQPGRYALVVEYANEDARQEVGVAHTPQRAPQQGILLSLHPCLYST
LCRGTARDTQDHAVFLDSEASVRLTAEQARFFLHGVTLPVIEFSPEFVEPRVSCISS
HGAFGPNSAACLPSRFPKPPQPIILRDCQVIPLPPGLPLTHAQDLTPAMSPAGPRPRPPT
AVDPDAEPTLLREPQATVVFTTHVPTLGRYAFLLHGYQPAHPTFPVEVLINAGRVQGHAN

ASFCPHGYGCRTLTVVCEGQALLDVTHSELTVTVRVPKGRLLDYVLVVENVYSFGYLREE
PLDKSYDFISHCAAQGYHISPSSSLFCRNAAASLSLFYNNNGARPCGCHEVGATGPTCEP
FGGQCPCHAHVIGRDCSRCATGYGFPNCRPCDCGARLCDELTGQCICPPRTIPPDCLLCQ
PQTFGCHPLVGCEECNCSPGIQEELTDPTCDTSGQCKCRPNVTGRRCDTSPGFHGYPR
CRPCDCHEAGTAPGVCDPLTGQCYCKENVQGPKCDQCSLGTFSLDAANPKGCTRCFCGA
TERCRSSSYTRQEFVDMEGVLLSTDQVVPHERQPGTEMLRADLRHVPEAVPEAFPELYQ
APPASYLGDRVSSYGGTLRYELHSETQRGDVFVPMESRPDVVLQGNQMSITFLEPAYPTPG
HVHRGQLQLVEGNFRHTETRNTVSREELMMVLASLEQLQIRALFSQISSAVFLRRVALEV
ASPAGQQGALASNVELCLCPASYRGDSCQECAPGFYRDVKGLFLGRCVPCQCHGHSDRCLP
GSGVCVDCQHNTEGAHCERCQAGFVSSRDDPSAPCVSCPPLSVPSNNFAEGCVLRRGGRT
QCLCKPGYAGASCERCAPGFFGNPLVLGSSCQPCDCSGNGDPNLLFSDCDPLTGACRGCL
RHTTGPCEICAPGFYGNALLPGNCTRCDCTPCGTEACDPHSGHCLCKAGVTGRRCDCQ
EGHFGFDGCGGCRPCACGPAAEGSECHPQSGQCHCRPGTMGPQCRECAPGYGLPEQGCRR
CQCPGGRCDPHTGRNCPPGLSGERCDTCSSQHQVVPVPGPVGHSIHCEVCDHCVVLLLD
DLERAGALLPAIHEQLRGINASSMAARLHRLNASIADLSQLRSPLGPRHETAQQLEVLE
QQSTSILGQDARRLGGQAVGTRDQASQLLAGTEATLGHAKTLLAIRAVDRTLSELMSQTG
HLGLANASAPSQEQLLRTLAEVERLLEM RARDLGAPQAAAELAAAQRILLARVQEQLSS
LEENQALATQTRDRLAQHEAGLMDLREALNRAVDATREAQELNSRNQERLEEALQRKQEL
SRDNATLQATLHAARDTLASVFRLLHSLDQAKEELERLAASLDGARTPLLQRMQTFSPAG
SKLRLVVEAAEAHAQQLGQLALNLSSIILDVNQDRLTQRAIEASNAYSRILOQAVQAAEDAA
GQALQQADHTATVVRQGLVDRAQQLLANSTALEEAMLQEQQRLGLVAALQGARTQLRDVR
AKKDQLEAHIQAAQAMLA MDTDETSKKIAHAKAVAAEAQDTATRVQSQLQAMQENVERQG
QYEGLRGQDLGQAVLDAGHSVSTLEKTLPQLLAKLSTILENRGVHNASLALSASIGRVREL
IAQARGAASKVKVPMKFNGRSGVQLRTPRDLADLAAYTALKFYLQGPEPEPGQGTEDRFV
MYMGSRQATGDYMGVSLRDKKVHVYQLGEAGPAVLSIDEDIGEQFAAVSLRTLQFGHMS
VTVERQMIQETKGDTVAPGAEGLLNLRPDDFVFYVGGYPSTFTPPPRLRPGYRCIEMD
TLNEEVVSLYNFERTFQLDTAVDRPCARSKSTGDPLTDGSYLDGTGFARISFDSQISTTK
RFEQELRLVSYSGVLFKLQQSQFLCLAVQEGLSVLILYDFGAGLKKAVPLQPPPPLTSAS
KAIQVFLLGGSRKRVLVRVERATVYSVEQDNDELADAYYLGGVPPDQLPPSLRRLFPTG
GSVRGCVKGIKALGKYVDLKRLNTTGVSAGCTADLLVGRAMTFHGHGFLRLALSNAVPLT
GNVYSGFGFHSAQDSALLYRASP DGLCQVSLQQGRVSLQLLRTEVKTQAGFADGAPHYV
AFYSNATGVLYVDDQLQQMKPHRGPPPELQPPEGPPRLLLGGLPESGTIYNFSGCISNV
FVQRLLGPQRVFDLQQNLGSVNSTGCAPALQAQTPGLGPRGLQATARKASRRSRQPARH
PACMLPPHLRTTRDSYQFGGSSLSSHLEFVGILARHRNPSLSMHVLPRSSRGLLLFTARLR
PGSPSLALFLSNGHFVAQM EGLGTRLRAQS RQSRPGRHKVSVREKNRILLVTDGARASQ
EGPHRQHQGAEPQPHLFGVGLPASSHSSKLPVTVFGSGCVKRLRLHGRPLGAPTRMAG
VTPCILGPLEAGLFFPGSGGVITLDLPGATLPDVGLELEVRPLAVTGLIFHLGQARTPPY
LQLQVTEKQVLLRADDGAGEFSTS VTRPSVLCDGQHRLAVMKSGNVLRLLEVDAQSNHTVG
PLLAAAAGAPAPLYLGGLPEPMAVQPPPAYCGCMRRLAVNRSPVAMTRSVEHGAVGASG
CPAA
>A4D0S4
MQFQLTLFLHLGLSYSKAQDDCNRGACHPTTGDLLVGRNTQLMASSTCGLSRAQKYCILS
YLEGEQKCFICDSRFPYDPYDQPNNSHTIENVIVSFEPDREKKQSENGLDHVSIRLDLEAL
FRFSHLILTFKTFRPAAMLVERSTDYGHNKVFKYFAKDCATSFPNITSQQAQGVGDIVCD

SKYSDIEPSTGGEVVLKVLDPSEIENPYSPYIQDLVTLTNLRINFTEKLHTLGDALLGRR
QNDSDLKYLYALYEMIVRGSCFCNGHASECRPMQKMRGDVFSPPGMVHGQCVCQHNTDGP
NCERCKDFFQDAPRPAADLQDNACRSCSCNSHRCHFDMTTYLASGGLSGGVCEDCQHN
TEGQHCDRCRPLFYRDPLKTISDPYACIPCECDPDGTISGGICVSHSDPALGSVAGQCLC
KENVEGAKCDQCKPNHYGLSATDPLGCQPCDCNPLGSLPFLTCDVDTGQCLCLSYVTGAH
CEEECTVGYGLGNHLHGCSPCDCDIGGAYSNVCSPKNGQCECRPHVTGRSCSEPAPGYFFA
PLNFYLYEAEETTLQGLAPLGSETFGQSPAHHVVLGEPVPGNPVTTGPGFARVLPAGL
RAVNNIPFPVDFTIAIHETQSAADTVQIVVNPPGGSEHCIPKTLQSKPQSFAAPAATR
IMLLPTPICLEPDVQYSIDVYFSQPLQGESAHSHVLVDLGLIPQINSLENFCSKQDLD
EYQLHNCVEIASAMGPQVLPGACERLIISMSAKLHDGAVACKCHPQGSVGSSCSRLLGGQC
QCKPLVVGRCCDRCSTGSYDLGHGCHPCHCPQGSKDTVCDQVTGQCPCHGEVSGRRCD
RCLAGYFGFPSCHPCPCNRFAELCDPETGSCFNCGGFTTGRNCERCIDGYYGNPSSQPC
RPCLCPDDPSSNQYFAHSCYQNLSSDVICNCLQGYTGTQCGECASTGFYGNPRISGAPCQP
CACNNNIDVTDPESCSRVTGECLRCLHNTQGANQLCKPGHYGSALNQTCCRCSCHASGV
SPMECPPGGACLCDPVTGACPCPNVTGLACDRCADGYNLVPGRCQSCDCDPRTSQSS
HCDQLTGQCPCKLGYGGKRCSECQENYYGDPPGRCIPCDCNRAGTQKPICDPDTGMCRCR
EGVSGQRCDRCARGHSQEFPCTLQCHLCFDQDHITSSLKAVQGLMRLAANMEDKRETL
VCEADFKDLRGNVSEIERILKHPVPSGKFLKVKDYHDSVRQIMQLNEQLKAVYEFDL
KDTIERAKNEADLLLEDLQEEIDLQSSVLANASIADSSENIKYYHISSSAEKKINET
INTSANTRNDLLTILDLLTSGNLSLERLKQIKIPDIQILNEKVGDPGNVPCVPLPCGG
ALCTGRKGHRKCRPGCHGSLTLSTNALQKAQEAKSIRNLDKQVRGLKNQIESISEQAE
VSKNNALQLREKLGNIQNQDSEENINLFIKKVKNFLLEENVPPEDIEKVANGVLDIHL
PIPSQNLTDELVKIQQKHMQLCEDYRTDENRLNEEADGAQKLLVAKAAEKAANILLNLDK
TLNQLQQAQITQGRANSTITQLTANITKIKKVLQAEQNTREMSELELAKQRSGLEDGL
SLLQTKLQRHQDHAVNAKVQAESAQHQAGSLEKEFVELKKQYAILQRKTSTTGLTKETLG
KVKQLKDAAEKLAGDTEAKIRRITDLERKIQDLNLSRQAKADQLRILEDQVVAIKNEIVE
QEKKYARCYS

>O18767

MLPASGLAVLLVTALKFSTAAPSLPAASPRTRNNYRLAQAYLDKYYTKGGPQIGEMVA
RGGNSTVKKIKELQEFGRLVTGKLDRAATMDVIKRPRCGVPDVANYRLFPGEPKKNTLT
YRISKYTPSMTPAEVDRAMEMALRASSAVPLNFVRINAGEADIMISFETGDHGDSYPFDG
PRGTLAHAFAPGEGLGGDTHFDNAEKTMGTNGFNLFTVAHEFGHALGLAHSTDPSALMF
PTYKYQNPYGFRLPKDDVKGIQALYGPRRAFGSKPTAPHGPPHNPSIPDLCDSNLSFDAV
TMLGKELLFRDRIFRRQVHLMMSGIRPSTITSSFPQLMSNVDAAYEVAERGTAYFFKGPH
YITRGFQMGPRTIYDFGFPRYVQRIDAAYLKDAQKTLFFVGDEYYSYDERKRKMEKD
YPKSTEEEFSGVNGQIDADEVNLGYIYFFSGPKAYKSDETEKEDVVSELKSSSIGC

>C7G0B5

MQVPSIRVVFLLTAVFCVGVKSDCKTADVNVDAASDDVSDQDFDKLKRAMLMMVRGLS
IDDNQIRLGTVYGEVCDISIPLQGDRLDLARTIRYMKKPTGPSKPFKGMGEARRMFSSR
GRYNVPHITMNLGGDIVDTEVKDLMDETAKARDEDIKVMAIGLGAKVDRDEIESIAYDRD
QAYFMDEDDELLRKVKEIPDYLCKIIKAKKPVSGGKSKPAKKVDNGPAGKSPGFDAK
QSDDKSDKAKKVEVKELCDDAEVDGVGYGSVPRTRCEDFVMCQNVSGSLRKTLCNSPGQY
SKRQTSCVLTEDEDCSDDLCKTMLLPSREYDVSCRAYCEKGKSVARCCPSGMAYEPKG
CVLDLDCDEECPPKNDGDDDDSSDEDDDEIEYNPNCPLRPIKGHPEKFQHTGDDNED

FDCAPGTLFSARDACSI LGTAKKDDKNDDGGDAHKVCEPELYLPFCDDLHDYSGKETHV
ENEGBAVIENGKAYFNGRAGLKIPRFSGVPYGKSVFIKMKYKEDEDDEDKNKNDDKKLR
MKRDRERSRKDYLKAILKRDRKDCKTDDTKGRRIIDRNDIIDRRGRRKDDRKDGGRRDGK
DGRRDDRKDNRLLDIKDKNDEPMTLISNGECDNFELNDCFEKPSIAITTGKKSAGFSVTS
SEKDEVDEIDEKKGYLDKEDGPDRNGKDCKDRNGDRSDDRRGYYKKDKDCKDDNGKDCK
GDKSDDKKGYKKDKDDKNGKDCKDRDKSDDKSLDDIVREIERSKGNGKDDNKDDEDD
DKKGKTVSLKISNGHIRGRRDDREDKDVLGDLKTFSGQIGQGASNKNFKGYMDEVYI
YFCDPGKEADYDDEDDDDDDSDENDKNDKDGKTDKDKDRKDGRDDRKGDKYDKDCKDDKD
KDRRDDRKDRKGGKDDRKGKDDRKDGDRDVRDDRDRGDKYDKDCKDDKDNDRLSDKD
DRKDVKDDNDKDDNEKLYKRAMKKCDYVNKNVAKLDKR

>O09164

MLAFLFYGLLLAACGSVTMSNPGESSFIDLADRLDPVEKIDRLDLVEKIGDTHAKVLEIME
LGRRREVDAAEAHAI CRVQPSATLPPDQPQITGLVLFRQLGPGSRLEAYFSLEGFPMEQN
ASNRAIHVHEFGDLSQGCSTGPHYNPMEVPHQHPGDFGNFVVRNGQLRHRVGLTASLA
GPHAILGRSVVVHAGEDDLGKGGNQASLQNGNAGRRLACCVVGTSSSAAESQTKERKKRR
RESECKTT

>A1EC31

MDIDLLSFGGFFILFPETINCYCMAKLRSTSQISHFTNPRSCSSLFFVALLIITILITMLQ
SSTSMEVTSLPTHQPTSSNSHDESSTSSTATTTDLHPKRTHHQSHPKPTRSFEAGAHEV
PSGPNPISNR

>O41800

MEQAPEDQGPQREPYNETLELLEELKNEAVRHFPPLHGLGQYIYNTYGDTEGVAAIRI
LQQLLFIHFRIGCQHSRIGITPQRRVRDGPGRP

>O00744

MLEEPRPRPPPSGLAGLLFLALCSRALSNIELGLKLPGEPPLTANTVCLTLSGLSKRQLG
LCRLNPDVTA SALQGLHIAVHECQHQLRDQRNC SALEGGGRLPHHSAILKRGFRESAFSF
SMLAAGVMHAVATACSLGKL VSCCGKGSGEQDRLRAKLLQLQALSRGKSFPHSLPSPGP
GSSPSPGPQDTEGGCNHDMDFGEKFSRDFLDSREAPRDIQARMRIHNNRVGRQVVTENLK
RKCKCHGTSGSCQFKTCRAAPEFRAVGAALRERLGRAIFIDTHRNNSGAFQPRLRPRRLS
GELVYFEKSPDFCERDPTMGSPGTRGRACNKT SRLLDGCGSLCCRGHNVLRQTRVERCH
CRFHCCY VLCDECKVTEVNVC K

>O13267

MASRYLTAAALLASFLQVDIEANSSLAMNPVQIPEAYIVGAQPLCSQLAGLSPGQKKLC
QLYQDHMQYIGEGAKTGIKECQYQFRHRCNSTVDNISVFGRVMQIGSRETAFTYSISAA
GVVNAVS RACRAGELSTCGCSRARRPKDLQRDLGGCGDNLDYGYRFAKEFVDAREREKI
QKGSYESSRTLMLHNNEAGRRTVYNLADVACKCHGVSGCSLKTCLQLADFRKVGDFLK
EKYDSAASMKLNSRGKLVQVNSRFNPPTNDLVYVDPSPDYCVRNESTGSMGTQGRLCNK
TSEGMDGCELMCCGRGYDQFKTVQTERCHCKFHCCYVKCKCTEIVDQFVCK

>O42122

MDNRSVQRRRTGDVRHLLLAAAFLT CNSQLLVDANS SLGLTPIQRPEMYII GAQPLCSQ
LSGLSQGQRKLCQLYQDHMTYIGDGAKTGIKECQYQFRQRRNCSTVDNTSVFGRVMQIGS
RETAFTYAI SAAGVVNAISRACREGELSTCGCSRARP RDLPRLGGCGDNVYYGKRFAQ
EFVDAREREKNYPRGSREHARTLMNLHNNEAGRQAVYNLADVACKCHGVSGCSLKTCLQ
LADFRRVGEFLKEKYDSAAAMRIGRKGRLELLDKRFNPPTPEDLVYIDLSPDYCHRNETT

GSLGTQGRFCNKTSEGMDGCELMCCGRGYDQFRVYKHERCHCKFHCCYVKRCSTLVDQ
FVCK
>O15978
MVGMTRIQS AEPVILFVL TLYSSVLMQVKPQLSVGIERKKLFGETNTSVHCDEIRGLSRN
QRSLCRTYNDHMYYVESGSKQGVEECQQFRGQRNC SLASNAPDKIIAVGSKETAFTYAI
TSGGVVQSIARACKSGNLMACGCSKRERPTGLKDNGGCDDIDYAYGFAHEFIDAQERD
NSSPNDRRVKSHKAMNIHNEAGRLSVVRASHTCKCHGVSGSCSIKTCLQT P QFRTIGD
KLRQRYDDALEMRVTHR GQMKT R FSSDRNPSNIDL VYIDSSPDYCKVNHKLG ILGTSGRE
CQLDSLAMDGCGLMCCGRGYTTKMVEVVKSCNCKFQCCFVKCQQC EKV LKHICN
>O00755
MNRKARRCLGHFLS LGMVYL RIGGFSSVVALGASII CNKIPGLAPRQRAICQSRPDAII
VIGEGSQMGLDECQFQFRN GRNCSALGERTVFGKELKVG SREAFTYAI IAAGVAHAI TA
ACTQGNLSDCGCDKEKQGQYHRDEGKGGCSADIRY GIGFAKVFVDAREIKQNARTLMNLH
NNEAGRKILEENMKLECKCHGVSGSCTTKTCTLPQFRELGYVLKDKYNEAVHVEPV RAS
RNKRPTFLKIKKPLSYRKPM DTLVYIEKSPNYCEEDPVTGSVGTQGRACNKTA PQASGC
DLMCCGRGYNTHQYARVQCNCKFHCCYVKCNC SERTE MYTCK
>O42280
MALLRALLGLLACTPRPSAAYFGLTGNEAL TILPLTSEMEAAVKAHYKVC DRKL KLEKKQ
RRMCRRDPGGAETLMEAISMSALECQYQFRERNCTLEG RYRASLLKRGFKETAFL YAI S
SAGLTHAMAKACSAGR MERCTCDEAPDLENREAQGGCGDNLKYSNKFVKEFLGRKP NKDL
RARVDFHNNLVGMKVIKAGVETTCKCHGVSGSCTVRTCRQLSPFHEIGKQLQKYETSLK
VGSTTNEATGE GDISPPKKSIPGHSDQIPRTTDLVYIDDSPSFCLMSRYSPGTSGRKY
DKNCDSICCGRGHNTQS RVVTRPCQCQVRCCYVECKQCTQREEVYTCKD
>O14904
MLDGSPALARLAAFG LTL LAALRPSAAYFGLTGSEPLTILPLTLEPEAAAQAHYKACDR
LKLERKQRRMCRRDPGVAETLVEAVSMSALECQYQFRERNCTLEG RYRASLLKRGFKET
AFLYAISSAGLTHALAKACSAGR MERCTCDEAPDLENREAQGGCGDNLKYSK FVKEFLG
RRSSKDLRARVDFHNNLVGVKVIKAGVETTCKCHGVSGSCTVRTCRQLAPFHEVGKHLKH
KYETALKVGSTTNEAAGEAGAISPPRGRASGAGGSDPLPRTPELVHLDSPSFCLAGRFS
PGTAGRRCHREKN CESICCGRGHNTQS RVVTRPCQCQVRCCYVEC RQCTQREEVYTCKG
>O14905
MRPPP ALALAGLCLL ALPAAAASYFGLTGREVLT PFPGLGTAAAPAQGG AHLKQCDLLKL
SRRQKQLCRREPGLAETLRDAAH LG LLECQFQFRHERNCSLEGRMGLLKRGFKETAFL YAI
VSSAALTHTLARAC SAGR MERCTCDDSPGLESRQAQGVCGDNLKYSTKFLSNFLGSKRGN
KDLRARA DAHNT HVG IKAVKSGLRTTCKCHGVSGSCAVRTCKQLSPFRETQVLKLRYDS
AVKVSSATNEALGRLELAPARQGS LT KGLAPRSGD LVY MEDSPSF CRPSK YSPGTAGRVC
SREASCSSLCCGRGYDTQS RLVA FSCHCQVQCCYVECQ QCVQEELV YTCKH
>O35468
MRPAPALALA ALCLL VL PAAAAA AAYFGLTGREVLT PFPGLGTAAAPAQAGAHLKQCDLL
KLSRRQKQLCRREPGLAETLRDAAH LG LLECQFQFRHERNCSLEGRMGLLKRGFKETAFL
YAVSAA ALTHAL ARAC SAGR MERCTCDDSPGLESRQAQGVCGDNLKYSTKFLSNFLGP KR
GSKDLRARA DAHNT HVG IKAVKSGLRTTCKCHGVSGSCAVRTCKQLSPFRETQVLKLRY
DTAVKVSSATNEALGRLELAPAKPGGPAKGLAPRPGD LVY MEDSPSF CRPSK YSPGTAGR
VCSR DSSC SSLCCGRGYDTQS RMVVF SCHCQVQCCYVECQ QCAQ QELV YTCKR

>O54767

MARQRVYLRLSLFFALVTSVNSLSPQSENPAFPGLICDKDEVRFSSRFDMEKNPSLV
DTFGNEISNCTYALDLEKFILKFPYETCTIKVIGGYQVNIRVQDTNADSYKDDVHFFC
PAIQAEIHEVSEIVVCMDLISFSFPQLFSRLADENQNVSEMGIIKIGNGTRVHTLPLKD
AIVQGFNLLIDSQKITLHV PANATGVAHYQESSYLYTVQLKLLFSSPGQKITFSSQAIC
APDLSVACNVTHMSLTIPFPGKLKSVGFGQRNIPEDQHANGIDKEATNGLRHFRKSLL
KTKPSEKCPFYQFYFSSLELTNFQGDMLSTVIDPECHCESPVSIDELCTRDFMDFEVY
SHQTKPALNLESLLVGNSSCQPIFKVQSLGLARFHIPNGCGTRQKFE GDKVIYENEIHA
LENPPSNIIFRNSEFRMTVRCHYI RDMSLLRAHIKSHSSPVASVKPGPLALVLQYPDIS
YQRPYRKNEYPLVRYLRQPIYMEVTVLNRNDPNIKLVLDDCATTFEDPASVPQQIIMDGC
EYELDNYRTTFHAANSSAAHSGHYQRFDVKTFAFVSESRGLSSLIYFHCSALICNQASPL
CSVTCPAPLRNKREASKEGTMTVSLPGPIILLSDDSSKGVMNPDSYEITKDIASKTLGA
VAALVGSAVIIGFICYLHKKRIVRFNS

(4) 30 Golgi apparatus proteins

>P61106

MATAPYNYSYIFKYIIIIGDMGVGKSCLLHQFTTEKKFMADC PHTIGVEFGTRIEVSGQKI
KLQIDTAGQERFRAVTRSYYRGAAGALMVYDITRRSTYNHLSSLTDARNLTPNTVIILI
GNKADLEAQRDVTYEEAKQFAEENGLLFLEASAKTGENVEDAFLEAAKKIYQNIQDGSLD
LNAAESGVQHKPSAPQGGRLTSEPQPQREGCGC

>P61204

MGNIFGNLLKSLIGKEMRILMVGLDAAGKTTILYKLKLGEIVTTIPTIGFNVETVEYKN
ISFTVDVGGQDKIRPLRHYFQNTQGLIFVVDSNDRERVNEAREELMRMLAEDELRAVLL
VFANKQDLPNAMNAEITDKLGLHSLRHRNYIQATCATSGDGLYEGLDLANQLKNKK

>P62330

MGKVLSKIFGNKEMRILMLGLDAAGKTTILYKLKLGEIVTTIPTIGFNVETV руки KNVKFN
VDVGGQDKIRPLRHYFQNTQGLIFVVDSNDRERVNEAREELMRMLAEDELRAVLL
VFANKQDLPNAMNAEITDKLGLHSLRHRNYIQATCATSGDGLYEGLDLSNQLRNQK

>P84077

MGNIFANLFKGKEMRILMVGLDAAGKTTILYKLKLGEIVTTIPTIGFNVETVEYKN
ISFTVDVGGQDKIRPLRHYFQNTQGLIFVVDSNDRERVNEAREELMRMLAEDELRAVLL
VFANKQDLPNAMNAEITDKLGLHSLRHRNYIQATCATSGDGLYEGLDLSNQLRNQK

>P84085

MGLTVSALFSRIFGKKQMRILMVGLDAAGKTTILYKLKLGEIVTTIPTIGFNVETVEYKN
ICFTVDVGGQDKIRPLRHYFQNTQGLIFVVDSNDRERVQESADELQKMLQEDELRAVLL
VFANKQDMPNAMPVSELTDKLGLQHLSRTYVQATCATQGTGLYDGLDLHESLSKR

>A1X149

MSGGKYVDSEGHLYTLPIREQNIVKPNNKAMAEDMNEKQVYDAHTKEIDLVRDPKHLN
DDVVKIDFEDVIAEPGTHSF DGIKASFTTFTVTKYFYRLLSGIFGIPMALIGVYFAILS
FLHIAVVPCIKSFLIEIQCISRVYSISYVHTFCPLFEAIGKIFSNIRISTQKEI

>A7ERK2

MTTDYFTRKQSYSFGSDGADSPGSPLASRTNPLSSKVTSVLSASYADSDIRDALSLLDKR
GIQNTAETRRQLRLDVHREVIESNGDIIREFGHVAEEASELMKQQEQM QAQKELLNAFNA
HFVMSDDDIAMLTSTAEPVNDRFFSILSRAKKIQNDCEILLGTEQRLGLEIMEQT SKNIN
NGAFQKLYRIQREFKTLNLENPQISSIIRR ALRVLAERPSLFQSCLDFFAEARENILSDG

FYTALTGTTVGGDEDPSIKPIELVAHDPLRYVGDMMLATHSATVGEREALEVLFISDGDEI
AKGIQAGLDSEPNRIAESEDEVGHFDGLKALNELVDRDVAGVARVLRQKIGQVIQSHEET
IMAYKIANLLNFYRGTFQRLLGDDSVLDSLATLEESALRQFRALMRDHITSLQAETQVA
PPNLSPPDFLHEGLKQLTAIMKTYETSFSPETREAGFEPILTEAFDPFMKGSENVAKDL
SAPRSTIFTINCLLSARATLAPFDTISRVSQIKDTIEEHAAATLIDHQYIFFLEKSALQP
LLQALSATTDIRDHPVFQPASLIQASQTLDDFLPSALMDAMENLKDLQNSMLVRQITEEA
AEKFCDDFEKVEERLMKADEEREESLDEKDGEPHVRALYPRTGGEIRVLLSIRINMFKT
RLEIT

>A7THG4

MEFIDYDTFGVSDTISTSAGDGALPEPVAILNLNALSFEPDHENEINLSELLVDRGTTD
GGKNVNLNAKMSNYAKLSMESLHISGTSDNLNVNTLPSYIPDGNKESLDISKLVFQQKNQ
SLEATNMILNKKLSKILNDYSFSNYQSTSILRKSLNSLEENKVALSLDENKLTPGYIGT
LARKTLKSDVETELLKEHTLTVLEEFRPIVRKIKKLSSSIENIQNLGTSMLKESKENATGT
EEPMDRIKSLRKDIDNLKLKELLLSIRDQYTLTQVEDDKISNGSVDEELFEIINKVMR
IKEKTVFMLGLENPNAGKSLMHEVNNILQRLNRKLFNHLLDILYIFESGTNNVNEKFLSP
NEKGVQTFQRSILYLSNDLEYFNEFLKRVTSLRSKTVLDQFLSQFDFNSKDANPIMLSAY
DPLRYIGDILANVYSLIANEADFVRSLFNFQEMQMENTPVSIIQKKDEFLDGLDSKLLNE
IIQSLSNTCRIRIGQIIKFEDNPITNFEIVKLLELYKMMFERKGKIKSNSSLINNLSALGV
VSQEKLIECYNSNFVNEIEKTTYVATEDFLPPELSDYLVKITDLFEAYEQHGGRESDTNEI
IITDTFLEKVIKEPIENTLLKQLKEGFPLAKKEEQARTSLYTVQINCFLIKSRIQPFAS
VIFSKDGEKNDVLKISDKSEEVINQMELQKKILFDKTGLGMYNLLNMIFPISSVKDDL
DLDMYYSLSSENSLMNLDINTNVHEKLNDYVPIALTDMQGNLLFKLTSPVIADKICDSCF
STLSEFYITFRKTLHMIFYPEEEIKIKEILNFSEEEFKTLVGIE

>A6ZS37

MDFVVVDYQTYAMADTAAPELPEPEPRLNLTSDAQSQPTGILDQFKLPDLQRYSNNNATL
PVDNDGAGSKDLHKKMTHYAMSSIDKIQLSNPSKQLGQNSQDEKLSQQESQNFTNYEPKN
LDLSKLVSPSSGSNKNTTNLVLNSKLSKILNNYTLINYQATVQLRKSLKVLEENKERLSL
DEQKLMNPEYVGTLLARRALRTDLESQQLKEHITVLEEFKPIIRRIKRLSSVEKIORTSE
KLLSNETNEVPTNNVVLQEIDQYRLKAEQLKLCCKILLSIRDRTLNQVEDDVITNGTID
NIFFEVVKKVNIKDESSFLTLPNLNAGNALIMGVNEILEKTNKKIFNYLIDFLYSFES
SSNLLNDHGTEQESLNIFRKSLVFLSSDLELFNELLKRVTLRSKSILDEFLSQFDMNS
TTSKPIILSAHDPIRYIGDVLASVHSIIANEADFVKSLFDFQDEDLKDTPISILOQNKTFL
LKGIDNKLLNDIIQSLNSNCRIRIEQIVRFEENPIINFEIVRLKLYRVMFERKGIQDDS
SIINNLKSLDISKNRIIGYYEDYMKQTVMAETKNSSDDLLPPELSEYMNKLVELFEIYE
KTHAAEDEESENKLLSSKNLQTIVEQPIKDVLKQLQTSFPLAKNEKEKASLLTIEIN
CFDLIKSRLQPFEGLFAQDDDSRKITIVCDKLKEYTKQMLTLQIKFLFENTGLDLYSNLV
NMIFPVDSVKDELDYDMYLALRDNSLMELDMVRKNVHDKLNYYLQALTDVQGNLLFKLT
SPMIADEICDECFKKLSLFYNIFRKLLIHLYPNKKDQVFEILNFSTDEFDMLIGIDH

>A2VDR8

MDFSKFLAEDFDVKEINAAGRAGPKAAAAGKADSHAATLVMKLQLFIQEVNHAVEETSHQ
ALQNMPKVLRDVEALKQEASFLKEQMILVKEDIKKFEQDTSQSMQVLVEIDQVKSRMQLA
AESLQEADKSTLSADIEETFKTQDIAVISAKLTGMQNSLMMLVDPDYSEKCVHLEALKN
RLEALASPQIVAAFTSQSIDQSKMFVKVFSEIDRMPQLLAYYYKCHKVQLLAAQELCQTD
LPLDRQLTGLYDALLGAHAQIQAQSVFKNPHDVVTVLLIQTGLVPSLPVCLSSGVERA

GPELELVKLLFYDATAHFAKGLEMALLPHAYEQNLVKVMELVDAVYGPYKPYQLKYGDM
EEKYLLIQFSEVPLEHGEVIDCVQELSHSVNKLFGLSSAADRCIRFTSGLGTGLLTAL
KSLFAKYVSDFTSTLHSIRKKYRLDDIPLNLSLFQEDTAFQNSIRIIATCGELLRQCGDFE
QQLANRILSTAGKYLSDSFSPRSLTGFQDSILTDKKSSAKNPQEYNYLQKDSAEGS
EILYTKEKGSSNHLLSASRSALTRLNQQAHQAFDSVFLRIKQQLLIPKMDNSNTAGI
GETLTDDLPTFSLTPLEYISNIGQYIMSLPLNLEPFVTQEDSALELALHAGKLPFPPEQG
DELPELDNMADNLGIARATMQTYCDAILQIPELTPHSTKQLATDIDYLINVMDALGLQP
SRTLQNIVMLLKAKPEDYRQVSKGRLATTVATMRSVDY

>A2YHR9

MAPSGFAASRPALAAAAGGTPVVVKMDNPNSISEIDADGGEFLAGGRRGRGKNAKQIT
VLLLKAHRAAGCLALASAVALGAAARRVAAGRRTDDADAETPAPRSRLYAFIRASLLS
VFLLAVELAAHANGRGRVLAASVDSFHSSVRFRAAYVAPPLQLADACVVLFLVQSADRL
VQCLGCLYIHNLRIKPKPISSPAAAAALPDLEDPDAGDYYPMVLVQIPMCNEKEVYQQS
IAAVCNLDPRSNILVQVLDDSDDPITQSLIKEEVEKRQNGARIYRHLREGYKAGNLK
SAMSCSYVKDYEYVAIFDADFQYPDFLKRTVPFKDNEELGLVQARSFVNKDENLLTRL
QNINLCFHFIVEQVNGIFINFNGTHGTAGVRIKALEDEGGMERTTVEDMDIAVRAHLNG
KFVFLNDVECQCELPESYEAYRKQQHRHSGPMQLFRCLPDIIRCKIAFKKANLIFLFFL
LRKLILPFYSFTLFCIILPMTMFIPAEALPDVVCYIPALMSFLNILPAPKSFPFIIPYLL
FENTMSVTKFNAMISGLFQLGSAYEVVTKSGRSSEGDLIALAPKELKQQKILDLTAIKE
QSMLKQSSPRNEAKKKYRNRYKKELALSLLLLTAAARSLLSKQGIHFYFLMFQGLSFLLV
GLDLIGEDVK

>A2ZAK8

MASKGILKNGGKPPTAPSSAAPTVVFGRTDSGRFISYSRDDLDSEISSVDFQDYHVHIP
MTPDNQPMMDPAAGDEQQYVSSSLFTGGFNSVTRAHVMEKQASSARATVSACMVQGCGSKI
MRNNGRGADILPCECDFKICVDCFTDAVKGGGVCPGCKEPYKHAEVEVSASNHDAINRA
LSLPHGHGHGPKMERRLSLVQNGGAPGEFDHNRLFETKGTGYGNAIPEDDGVAGHPKE
LMSKPRPLTRKLRIQAAVISPYRLLVLIRLVALGLFLMRIKHQNEDAILGMSIVCELFAL
SVLDQLPKLCPINRATDLSVLKDKFETPTPSNPTGKSDLPGIDIFVSTADPEKEPVLT
NTILSILAADYPVDKLACYVSDDGGALLFEAMAEAASFANLVPFCRKHEIEPRNPDSYF
NLKRDPFKNKVKGDFVKDRRRVKREYDEFKVRVNGLPDAIRRSDAYHAREEIQAMNLQR
EKMKAGGDEQQLEPIKIPKATMADGTHPGTLQASPEHARGDHAGIIQVMLKPPSPSPSS
GGDMEKRVDSLGSVDTRLPMLVYVSREKPGYDHNKAGAMNALVRASAIMSNGPFIILND
CDHYVYNSKAFREGMCFMMDRGGDRLCYVQFPQRFEGIDPSDRYANHTVFFDVNMRALD
GLQGPVYVGTCGLFRRIALYGFDPYRSLDHTPSCLPQQQEEETMALR
MDMDGAMNMASFPKKFGNSSFLIDSIPVAEFQGRPLADHPSVKNGRPPGALTIPRETLDA
SIVAEAISVVSCYEKTEGTRVGIYGSVTEVVGYRMHNRGKSVYCCTHDAFRGTAPI
NLTDRLHQVLRATGSVEIFFSRNNALFASSKMKVLQRIAYLNVGIYPFTSVFLIVYCF
ALSLFSGQFIVQTLNVTFLTYLLITITLCLLAMLEIKSGIALEERNEQFLIGGTS
AVLQGLLKVIAIGIEISFTLTSKQLGDDVDEFAELYAVKTSLMIPPLTIIMINLVAIAVG
FSRTIYSTIPQSKLLGGVFFSFVLAHLYPFAKGLMGRGRTPTIVYVSGLVAITISLLIA
IKPPSAQANSQSQLGGSFSFP

>A2YU42

MASNGGGGLRHSSRLSRMSYSGEDGRSQAPGGGDPRMVTFARRTHSGRYVSYSRDDL
DSELGNSGDMSPESGQEFLNYHVTIPATPDNQPMMDPAISARVEEQYVSNSLFTGGFNSVT

RAHLMDKVIESEASHPQMAGAKGSSCAINGDAKVMSDERGDDILPCECDFKICADCFAD
AVKNGGACPGCKDPYKATELDDVVGARPTSLPPPGGLPASRMERRLSIMRSQKAMTRS
QTGDDHNRLFETKGTYGYGNAIPKENEVDNGGGGGGGGGDGQPAEFTSKPRPLTRK
LKIPAGVLSPYRLLLIRMAVLGLFLARIKHKNEDAMLGMSVVCELFGLSLLDQLPKLCP
VNRATDLAVLKDKFETPTPSNPNGRSDLPGLDIFVSTADPEKEPPLVTANTILSILAADY
PVEKLSCYVSDDGGALLTFEAMAEAASFANMVPFCRKHDIEPRNPESYFNLKRDPLYKNKV
RSDFVKDRRRVKREYDEFKVRINSLPDSIRRSDAYHAREEIKAMKRQREAALDDVVEAV
KIPKATMADGTHPGTIQPSAEHARGDHAGIIQVMLKPPSDDPLYGTSSEERPLDFTEVD
IRLPMLVYVSREKRGYDHNKAGAMNALVRSSAVMSNGPFILNLDCDHYVYNSQAFREG
MCFMMDRGGDRIGYQFPQRFEGIDPSDRYANHNTVFDVNMRALDGIMGPVYVGCLF
RRIALYGFDPFRSKEHSGCCSCCFFQRRKVKTSTVASEERQALRMAFDDEEMNMSQFPK
KFGNSNFLINSIPIAEFQGRPLADHPGVKNRPPGALTVPRLLDASTVAEAISVISCYE
DKTEGQRVGIYGSVTEVVTCYRHMNRGKSVYCVTKRDAFRGTAPIINLTDRLHQVLRATG
SVEIFFSRNNALLASRKMFLQRIAYLNVGIYPFTSIFLIVYCFLPALSLFSGQFIVRTL
NVTFLTYLLVITLTMCMLAVLEIKSGISLEERNEQFLIGGTSAHLAABLQGLLKIAGIE
ISFTLTSKSGGDEADDEFADLYIVKTSLMIPPIVIMMVNLIAIAVGFSRTIYSEIPQSKL
LGGVFFSFVLAHLYPFAKGLMGRGRTPTIVFVSGLLAITISLLVAINPPSQNSQIGGSF
TFP

>A2YC13

MSGDYANYTVLMPPTPDNQPSGGAPPAAPSAGGARPGDLPLPPYGSSSSRLVNRRGGD
DGAKMRRRLSTARVPAPSSNKSLLVRSQTGDFDHNRLFETKGTYGIGNAYQDNVYGDG
GGGAVKMEDLVEKPPLSRKVPPIPPGILSPYRLLVLVRFVALFLFLVRVTNPMDALLGI
SIVCEFFAFSLLDQMPKLNPINRAADLAALKEKFESPSPNPTGRSDLPGLDVFISTADP
YKEPTLVTANTLLSILATEYPVEKLFVYISDDGGALLTFESMAEACAFAKVVPFCRKHSI
EPRNPDSYFTQKGDPTKGKKRPDFVKDRRIKREYDEFKIRVNSLPDLIRRANALNARER
KLARDKQAAGDADALASVKAATMADGTHPGTLDPSDHAKGDHASIVQVMIKNPHDVY
GEAGDHPYLDMDTDVDMRIPMFAYLSREKRGYDHNKAGAMNAMVRASAILSNGPFMLNF
DCDHYIYNCQAIREAMCYMLDRGGDRICYIQFPQRFEGIDPSDRYANHNTVFDGNMRAL
DGLQGPMYVGTGCLFRYYAIYGFNPPRAIEYRGTYGQTKVPIDPRQGSEAMPGAGGGRSG
GGSVGGDHELQALSTAHPDHEAPQKFGKSKMFIESIAVAEYQGRPLQDHPCSVNGRPPGA
LLMPRPLDAATVAESVSVISCYEDNTEGQRVGIYGSVTEVVTCYRHMNRGRSVYCITR
RDAFRGTAPIINLTDRLHQVLRATGSVEIFFSKNNAVLASRRLKFLQRMAYLNVGIYPFTS
LFLIMYCLLPALSLFSGQFIVATLDPTFLSYLLLITITLMLLCLEVKGIGLEERNEQF
VIGGTSAHLAABLQGLLKVVAGIEISFTLTAKAAAEDDDPFAELYLIKTSFIPPLAVI
GINIIALVVGVSRTVYAEIPQYSKLLGGGFFSFVLAHYYPFAKGLMGRGRTPTIVYVAG
LISITVSSLITISPPDDSVAQGGIDV

>A1IGX5

MGTMASPLFILIACLLSMRVGGAFFAGPLYPEMSNGTFHHYFVPDGYYEENDDPEKCQML
FKMMDNRKCTLDEDQDSVIRDDFTIICKRHIEDAARVLEGIGKSISFDLDGEDSYGKYLRR
ETTQISEAFSNSEKSLLELEVVKFKQSQENELKEEHKISDDFLNMIVHTRDVLKETLDISL
GLKDKHELLSLIIRSHGTRLSRKNDYMKV

>A7S1L6

MKESLLAKSVRIA AVVAAYTISISLVFLNKYLLSSPDIKLDAPLFVTYQCVVTVICLFFL
SLLGDRYPIDTFPAFH KLSVAKQVLPLSAVFVGMITFNNLCLKNLGVSFYNVGRSLTTV

FNVICTYVILGQSTS YKAVICCAVIIGGFLMGVDQEGSSGKISYSGLFGVLASLCVSLN
AIYTKKFIPAVDNNIRLQLYNNFNACFLFLPLMALLGEIGEVAHFPNLSSAYFLMMТИGG
VFGIAIGYITGLQIKVTSP LTHNISGTAKACVQTIMS VSYF HETKTALLSNAMVLGGSMA
YTRVRHSEMKAHTIQASKDDKALQEDGQTKV

>A1YGR5

MNVKGNVILSMLAVSTVIAVF EYINSPEGSFLIYHSKNPEADDSSAQKGFP GFNNNGIHNY
QQQEEDTDKEKGKEEEQRKEDDTQLLDFNPKKRPEVVTVT KAPVVE GTYNKAILENYY
AKQKITVGLMVFAIGRYIEHYLEEFITSANRYFMVGHKVIFYVMVDDVPKVPFIELDPLR
SFKVFEVKPEKRQDICMMSMKTIGEHILAHIQHEVDFLFCMDVDQVFQDHFGVETLGQSV
AQLQAYKVDPDDFTYERRKESAAYIPFGQGDYYYAAIFGGTPIQVLSITQECFKGILLD
KKNDIEAEHDESHLNKYFLLNKPSKILSPEYCDYHIGLPSDIKTVKL PQTKEYNLVRNNV
>B0F9L4

MDLASRYKGVVGMVFGDNQSSNEDSYIQRLLD RISNGTL PDDR RTA IVEL QSVVAE SNA
QLAFGAAGFPVIVGILKDQR DLEMVRGALETLLGALTPIDHARAQKTEVQA ALMNS DLL
SREAENITLLL SLL EEDFYVRYT LQILT ALL MNSQN RLQEA ILT P RGI TRL MDM LMD
REVIRNEALLL TLH LTRE AEE IQKIVV FEGAF EKIFS IIKEEGSDG DVVV QDC LE LLNN
LLRSSSSNQILL RETMGF EPII SIKL RGITYKFTQQKTVNLLSA LETINMLIMGRADTE
PGKDSNKL ANRTV LVQKKLLDYLLMLGVESQAPVAVRCMTFKCIGDLIDGHPKNRDILAS
KVLGEDRQVEPALNSILRII LQTSSIQEFVAADYVF KTFCEKNT EGQTM LASTLIPQPHP
TSRDHLEDDVHMSFGSMLLRGLCSGEADG DLET CCR AASILSHVVKDNLRCKEKALKIVL
ESPMP SMGTPEPLFQRIVRYLAVASSMKSKESS TLGKSYIQQIILKLLVTTVDCPTAVQ
CFLDSRHHLTFLLELV TDPAATVCIRGLASILLGECVIYNKSIENGKDAFSVVD AVGQKM
GLTSYFSKFEEMQNSFIFSPSKPPQGYKPLTRTPSEAEINEVDEVDEMVKGNEDH PM
LLSLFDASFIGLVKSLEG NIRERIVDVY SRPKSEAVV PADLEQKSGENEKDYINRLKAF
IEKCSEI QNLLARNAAL AEDVASS GRNEQS QGSEQ RASTVMD KVQME SIRRELQETSQR
LETVKA EKAKIE SEASS NKNMAAKLF DLKSLSDAY NSLEQ ANYHLEQEVKSLKGGE SP
QFPDIEAIKEEV RKEA QKESE DELN DLLVCLGQEE SKVEK LSAK LIELGVDV DKLLEDIG
DESEA QA ESEED

>A8XP14

MEAQYQSTNFLLQKVQHDLGRLEGTQNEQDAQVVVQSIYGDISTLKDNLQALDNYVSREQ
PARRQAARMRV DQLRMDVQRV DMAVSAV HTRMTQRRSASEREELLSARYRPNDTALSIGD
HELQLNDRLHSSHNR LDELISQGS AVLDNLK SQHFSLRGVSRKMHDIGQALGLSNSTLQV
IDRRVREDIFVIGCIVCCIFMYAFYRFRG

>A6ZZS6

MRVYQFCRPFQLFTYFLCYLLVFVKANKEKISQKNYQVCAGMYSKEDKGKIDPFISFNK
KISGLSDES DPGLVV AYDFQDFEHLGVQLPDEEMYYICDDYAI DIGICEEENRDEFIVQ
DVYD PYT STNRSLANPIMTFSQNEVGLHDTRYPIKETGFYC VTAFRSSTSTKFNAV VNF
RNAYGQLAGTEINKLPLYG LLA VAYV VAMALYSFAFKHKHELLPLQYLLAFFVFLTAET
IFVAYYDLKNEKGDTAGIKVY MVFLSILTAGKVTFSFLLIIIALGYGIVYPKLNK TLMR
RCQMYGALTYAICIGFLIQSY LTDMEAPSPL LITLIPM ALALII FYYMIIRSMTKTVIY
LKEQRQIVKLN MYKKLLYIIYASFLSVLAGSIVSSFIYVG MNTIDMIEKNRSRFFVTD FP
TLVYFIVFVTIAFLRPTDT SYMLA ASQQLPTD PENVADF DLGDLQSFDDQDDASII TGER
GIDE DDLN LNFTD DEEGHD NVNNH SQGHGPVSPSPTK

>A5PJ65

MSEGDSVGDSVHGKPSVYRFFTRLGQIYQSLDKSTPHTAVRVVTGLSFIYMIKVYLLQ
GYIVTYALGIYHNLNLFIAFLSPKVDPQLMEDSDDGPSLPTKQNEEFRPFIRRLPEFKFHA
ATKGILVAMVCTFFEAFFNVPVFPILVMYFIMLFCITMKRQIKHMIKYRYIPFTHGKRTYK
GKEDAGKAFAS
>A0AAS4
MSASTMKEVVYSPKKVADLLENAMPEYCEPLEHFTGRDLINLTQEDFTKPPLCRVSSDNG
QRLLDMIETLKMEHHMEAHKNGHANGHSIGTDVPAPDGFSIKVKPNGMPNGYRKEMIK
IPMPEPERSQYPMEGKTFALFLYALSCFVLTTVMISVVHERVPPKEVQPPLPDTFFDHFN
RVQAFSICEINGMILVGLLIQLLLKYKSIISRRFFCIVGTLYLYRCITMYVTTLPVPGMH
FNCSPLKFGDEAQLRIMKLIAGGGLSITGSHNMCGDYLSSGHTVMLTLYLFIKEYSPR
RLYHICLLSVVGIFCILLAHDYTVVVAYYITTRLFYHTMANQVLKEASQMNLARV
YRPFQYFEKNVQGIVPRSYHPFPVVHLGRQVKYSRLVNDT
>A7S6Y0
MAAGFRTNVDPVLIISQIIAIQCTFYISLGVVLIVDYSGSIHSDLQFFAYKELDISSLKG
KLLMIAFCLNSLTGAMALFIVKRAKQCLDFTTAHIVHLVFCIYAGFPFSTLLNIICLA
LMAVIGEFVCMKTELKAIKVSAGSSGKNSV
>A4K2N5
MAGQFRSYVDPLLILSQIVLMQTVYYGSLGLLALVDGLVRSSPSLDQMFDAEILGFSTPP
GRLSMMSFILNALTCAALGFLYFIRRGKQCLDFTVTVHFFHLLGCFYSSRFPSALTLVQAV
CIALMAVIGEYLCMRTELKEIPLNSAPKSNV
>A4K2W1
MAGQFRSYVDPLLILSQIVLMQTVYYGSLGLLALVDGLVRSSPSLDQMFDAEILGFSTPP
GRLSMMSFILNALTCAALGFLYFIRRGKQCLDFTVTVHFFHLLGCFYSSRFPSALTLVQAV
CIALMAVIGEYLCMRTELKEIPLNSAPKSNV
>A7EMV1
MTIAEEFATRNFSIYGQTGVVCILLCFALGIANLFHVSLIIFSALCLVSSFLIIIEIP
LLRICPTSSTFDTFMRRFTTNMRAAIYMGMAIVQLSIIIAASSLIAAAVLLTIAAGFY
ALAGLKQGFVGSKTLGGQGVAQMIL
>A7TGB4
MEQINNFYSTILKSSHPFLLSIHLLGKAVPLIFYVLGSLFMGFTAQFISVVLLAFDFYI
TKNISGRKLVQLRYDTTGKQSSSFTFESYKQFSPGPSINPIDSKLFSIYLTPIVIVFGIM
CILRLKLFYFLLVSVGICLTGINAYGFRSCDKEPNANEDSNNSFQLPTIPGLDNLNALSQ
VQSFFQSRSG
>A7EFY0
MPADYSSTARALALPISPLESPPSSPIQHAERPPSRRRISSGVRRAYNSASPYSSQPTTSF
KDQILRKADKLQRKCITAQNLSLQKCLAIIVAILNIVLVALFLVYHQIFASLAPFAER
RDLPGGMILAMTFVAAFPPLIGYSSTITIAGFVYGVPKGAIVATSTVAGSTCSFLASRTI
LSTYVHRLVGKDKRFEALALTLKHGDGKILCMIRLCPLPYSLNAAVATFPTVHPLNYAL
ATALVTPKLFIHFIGSRLGSLAGNEGMDTSTKMINYASIVIGGLGATVGYIIYQRTMA
RAKELEIEELEAANGDVAPGRRVAAEYSDANNDDAALMNDDDISLDNTDEPARYTDFVDE
DEANVFASGDLDEEADIGGRGKMTRT
>A7TMU9
MADNYEARTSSHYDNNATEFDDYFNEFDTGIGLGPDDEDDFLDIYNLSPRQRVYYQFRRT
VNQFLSQYYALEPQRILLAIGGGLIGILALLMLIFHNKILHKLVEMSNDLKEKSTPIVLV

TLIFFVAFPPMIGFSLLSTTGLIYGISFKGVILAIGAVTGSICSFALFKTILHSRAEKL
IQMNRRFAAFASILQENNSYILALLRLCPFPYSLTNGAVGAVYGVSIKNFAIGNIITTPK
LLIYLFIGSRIKNMGETESSASKIFDLVSILLTVLALGLTAVLYFKTQKRYQQLQDQSTI
NTSNLDIDQNFEI

>A1C8D8

MISRLLLIGLLALALFSQPCATEKAEPQINSTPDFHEPFFMSYFEDSDTILMLTTQRNLF
RSFDGGKGERVDDMDGKMQHVSVLQHPSDKDKayALGSKGRHITTDRAKTNAFTIHQS
PAIQHEPLVFHGDSGVIFQTDECIGTCIVKSYYTDDFKTVSPLRVSAGGCAAVGHPQ
FAEGLNLEDQIIRNRVLCVVSGLKVPAPYANRLVYSDFFSNEADGAEMNLHQGRPVGQ
TTAAVKKFLVAAVKSQGTDEMALYVTLDKVKHRADFGGHRVEQDAYTVLESTNYSMQDV
LTDQSSMTGVLFTSNSNGTYFTRNVEHTNRDRFGHVDFEKIADIQGIVLVNTVSNKLES
DHRKKIVSEVSFDDGRTFQPLTVGDKHLHLHSVTTYANTGRVFSSPAPGVVMGVGNKGDH
LKEYSECDLYVSDDAGVTRHALDGPFKYEFGDQGAIIMAVSDKGKIGEIKYSTDHGKEHT
AKLQHEIFPKMLTTPDSTS MKFVLVGSKESTGDGFFVYSIDFGSLHGRKCEKDDFEKPA
RLNEDGE PDCLMGHKQFFNRRKANACFMDEEFKDPQPIFEPCKCTAEDYECDYNFVRSE
DGKSCLPAAPLVPPAGKCREKTDKFYGPSGR利PGNNCIREGGENLDKDIERTCEDTNGS
PETHMSHKQVFDNSKQFSGQYFYLERQASSSGNDETVMLTREREVSHDHGKKEQPLKG
VQIVAIIPHYYSDGAFLLTGGQEAFTVDRAYTFKSFVKVPIPPTRDDMPVFSFHPQYKDL
ITGAVDCGHGDCHSDAYITKNRGKDDLLLRYVGKCEFESRKNPDSSENLI FCEQYANENK
NNHKQLLSSDSFFADSHVHF DNEARYATMSEYIIIVASHDPNNANSLIASVSDGKTFAEA
KFPPNVDPVTKTAFTVLDSS THAVFLHLMGVLKGA EYGSIIKSNSNGTLYTVSLNAASR
DDRGFVDYEKMQGLEGVAVANVISNVDTVLKKGA AAKVTKITHNDGGQMLLPPP
EGKDFGCSNKDGKASDKCSLHLHYTERDSRDTFSSGSAIGLMMGVGNVDHLSKEEAD
TFMTRDGGITKPIKKGRYIEYDGSVIVIVPESRPTKILHYSLDEGDSENFKFSDV
IHLRLSTLPSDT SKNFLLGKEQDSNQLATVNVDSSLREASCLVEDGQDSDDYYLEPKHP
LQEDNCLFGHIEQYHRKKLAANCNNREPHVHSIGKNCTCTRADYECDNYEPQSDGSCAL
VPGLPKPDASIVCKEDPDKIEYPELLGYRRIPQTTCMGEPPVVKPCPGKEKEYKKH
SISGIGLFFAIVTPIAMASAAGYYYVTRDGKFGQIRLGEDIGGREAILS RDSPLVAVPIA
IIAGVVAVL KALPLLAISLRSSSFIRRRDRAYSRPYASRGFAARRGDYTSVVDDEDE
LLGVEDGEAE GEEEEL

(5) 30 lysosomal proteins

>Q64191

MERKSNL SLLLLLVLGMPLVRGSSPLPLVVNTPFKNATEAATLSSGSA LDAVENGCAV
CEKEQCDGTVGFGGSPDEGGETTL DAMIMDGTAMDVGAVGGLRRIKNAIGVARVLEHTT
HTLLVGDSATKFAESMGFTNEDLSTKTSRDLHS DLSRN CQPNYRNVI PDP SKYCGPYKPS
GFLKQ SISPHKEEVDIHSHTIGMVVIHKTGHTAAGTSTNGIKFKI PGRVGDSPI PGAGA
YADDTAGAAAATGDGDTLLRFLPSYQAVEYMRGGDDPAIACQKVILRIQKYYPNFFGAVI
CASVNGSYGAACNLPTFTQFSFMVSNSLHN EPTEKKVDCI

>O02467

EKNMPIVITTSFTNASQKAEVLKDEGKALDAVEQGGIVCENEQCDRTVG YGGSPDEDGET
TLD AFI MDGST MNVGAVA ALR RIKA ISVARH VMEY TTHSFLAGELATKFAVEMGFKEES
LSTDESREL SKRF EKQC QPNFRK NVKPDPRKHC GPYH KKRN FVDYIHPEV FVVDQY NHDT
IGMVA VDSK GDVA AGTSTNGAKFKI PGRVGDSPI PGAGA YADNTV GGAA ATGNGDTMMRF
LPSFLA VEEMRRGAS PANA AKTA IKRISA HH PDMG AVIALSK NGQY GAAC NGIETFPFV

VQDKTRKTFEVVTIKC

>P00795

GPIPEVLKNYMDAQYYGEIGIGTPPQCFTVVFDTGSSNLVPSIHCKLLDIACIHHKYNSG
KSSTYVKNGTTFAIHYGSGSLSGYLSSQDTVSPCNSALSGVGGIKVERQTFGEATKQPG
LTFIAAKFDGILGMAYPRISVNNTVPFDNLMQQKLVDKDIFSYLNRDPGAQPGGELML
GGIDSKYYKGSLDYHNVTRKAYQIHMNQAVGSSLTLCKGGCEAIVDTGTSЛИVGQPEEV
RELGKAIGAVPLIQGEYMI PCEKVPSPDVTTLGGKKYKLSSENYTLKVSQAGQTICLS
GFMGMDIPPPPGLILGDVFIGRYYTVFDRDLNRVGLAEAA

>P09648

APRSVDREKGYVTPVKDQGQCGSCAFSTTGALEGQHFRTKGKLVLSEQNLVDCSRPEGN
QGCNGGLMDQAFQYVQDNNGIDSEESYPYAKDDEDCRYKAEYNAANDTGFVDIPQGHER
ALMKAVASVGPSVAIDAGHSSFQFYQSGIYYEPDCSSEDLDHGVLVVGYFEGGKKYIV
KNSGEKGDKGYIYMAKDRKNHCGIATAASYPLV

>P25773

GGLIIDDAFQYVKDNGGLDSEESYPYHAQGDSCKYRPENSANVTDYDIPSKENELMITLA
AVGPISAAIDASLDTFRFYKEGIYYDPSCSSEDVDHGVLVVGYGADGTETENKKYI IKNS
GTDGMDGYIKMAKDR

>Q26534

MPVNLEYLGFKLPGNVDEKYVQFKLKRYKQYHETEDEIRFNIFKSNILKAQLYQVFVRGS
AIYGVTYPSDLTDEFARTHLTASVVPSRSNTPTSLGKEVNNIPKNFDREKGAVTEVKN
QGMCGSCAFSTTGNVESQFRKTGKLLSLSEQQLVDCDGLDDGCNGGLPSNAYESIIKMGG
LMLEDNYPYDAKNEKCHLKTDGAVYINSSVNLTQDETELAALYHNSTISVGMNALLQF
YQHGISHPIFCSKYLLDHAVLLVGVSEKNEPFIVKNSGVEGENGYFRMYRGDGSCGIN
TVATSAMIY

>A7MB63

MIRRLVIFILFPLQLIEKCESTVDFSVPPIVKLEKGSSTSISLPRPLNATLVITFEIT
FRSKNVTILQLPDEVVVPGBTNSSFRTSQVGQVTTYLHGNHSNQTSPIRFLVIHSN
IVSIINQVIGIYFVASVSFYPQVITNRRKSVVGLSFDFVVLNLMGFVAYSVFNIIGLFVPS
IKEQFLLKYPNGVNPVDSNDVFFSLHAVALTLLVIVQCLLYERGSQRVSLAISFLVLSFT
TLIALIMA AVGATTQFLFCFSYIKLAVTLVKYFPQAYMFHYKSTEWSIGNVLLDFTGG
SFSLLQMFLQSYNNNDQTLIFGDPTKFGLGIFSIIFDVVFFIQHFCLYRKPGYDQLN

>O60931

MIRNLTIFILFPLKLVEKCESSVSLTVPPVKLENGSSTNVSLTRPPLNATLVITFEIT
FRSKNITILELPDEVVVPGBTNSSFRTSQVGQVTTYLHGNHSNQTGPRIRFLVIRSS
AISIINQVIGIYFVASISFYPQVIMRRKSVIGLSDFVALNLGFVAYSVFNIIGLLVPS
IKEQFLLKYPNGVNPVNSNDVFFSLHAVVLTLLIVQCCLYERGGQRVSPAIGFLVLA
AFVTMIVAAVGVTTLQFLFCFSYIKLAVTLVKYFPQAYMFYYKSTEWSIGNVLLDFTGG
SFSLLQMFLQSYNNNDQTLIFGDPTKFGLGVFSIVFDVVFFIQHFCLYRKPGYDQLN

>P54639

MRVLSFLCLLLVSYASAKQQFSELQYRNAFTNMQAHQRTYSSEEFNARYQIFKSNMDYVH
QNSKGGETVLGLNVFADITNQEYRTTYLGTDFGSALIGTEEEKIFSTPAPTVDRAQGAV
TPIKNQGQCGGCSFSTTGSTEAGHFIASGTTKDLVSLSEQNLIDCSKSYGNNGCEGLMT
LAFYEYIINNKGDTESSYPYTAEDGKECKFKTSNIGAQIVSYQNVTSGSEASLQSASNNA
PVSVAIDASNESFQLYESGIYYEPACSPTQLDHGVVVGVSGSSSSGGSSSSGKSSSSSS

TGGKTSSSSSGKASSSSSGKASSSSSGKTSSAASSTSGSQGSQGSQGSQGSTGSQSG
QTSASGQASASGSGSGSGSGSGSGSGAVEASSGNYIVKNSGTSGMDGYIFMSKD
CGIATMASFPTASSN
>P54640
MKVLSFLCVLLVSVATAKQQFSELQYRNAFTDMITHQKSYTSEEFGARYNIFKANMDYVQ
QNSKGSETVLGLNNFADITNEEYRNTYLGTKFDASSLIGTQEEKVFTTSSAASKDRSEGA
VTPVKNQGQCGGCSFSTTGSTEAGHFQSKGELVSLSEQNLIDCSTENSGCDGGLMTYAFE
YIINNNNGIDTESSYPYKAENGKCEYKSENSGATLSSYKTVTAGSESSLESANVNVPVSA
IDASHQSFQLYTSGIYYEPECSSENLDHGVLAVGYGSGSGSSSGQSSGQSSGNLSASSSN
EYIVKNSGTSGIEGYILMSRNRDNNCGIASSASFV
>P06340
MALRAGLVLFHTLMILLSPQEAGATKADHMGSYGPAFYQSYGASGQFTHEFDEEQLFSV
DLKKSEAVRLPEFGDFARFDPQGGLAGIAAIKAHLIDLVERSNSRAINVPPRVTVL
PKS RVELGQPNILICIVDNIFPPVINITLRNGQTVEGVAQTSFYSQPDHLFRKFHYLP
FVPS AEDVYDCQVEHGLDAPLLRHELQVPIPPDAMETLVCALGLAIGLGVFLVGT
VLIIMGTY VSSVPR
>Q5R8E3
MEFSSPSREECPKPSGRVNIMAGSLTGLLLQAVSASGARPCIPKSFGYSSVVCVCNATY
CDSLDPLTFPALGTFSRYESTRSGRRMELSTGTIQANHTGTGLLLTLQPEQKFQKVKGFG
GAMTDAAALNILALSPPAQNLKSYFSEEGIGYNIIRVPMASCDFSIRTYTYADTPDF
QLHNFSLPEEDTKLKIPLIHRALQLARRPVSLLASPTSP TLKTN
GAVNGKGS
LKGQPGDI YHQ
TARYFVKFLDAYAEHKLQFAVTAENEPSAGLLSGY
PFQCLGFTPEHQRDFIARDLGP
TLANSTHHNVRLMLDDQRL
LLLPHAKVVLTDPEAAKYVHGIAVHYLD
FLAPAKATLGETH
HLFPNTMLFASEACVGSKFEQS
VRLGSDRG
M
QYSHSI
ITN
L
LYHVV
GTD
NL
ALN
PEG
GP
VRNFV
DSPI
IVD
ITK
DTF
YK
QPM
FY
HLGH
FSK
F
I
PEG
GS
QRV
GLV
ASQ
KND
LDT
VAL
MHPD
GSAVV
VVL
NRSS
KD
DV
PLT
IK
DPA
VG
LET
ISPGY
SI
HTY
LRRQ
>Q13571
MDPRLSTVRQTCCCFNVRIATTALAIYHVIMSVLLFIEHSVEAHGKASCKLSQM
GYLRI ADLISSFLLITMLFIISLSLLIGVVKNREKYLLPFLS
LQIMDYLLCL
LGSYIELPAY LKL
ASRSRASSSKFPLMTLQ
LDFCLS
ILTLC
SSYMEVPTYLNFK
SMNH
MNYL
PSQ
EDMP HNQ
FIK
MMI
IFS
IA
FIT
VL
I
FKV
YMF
KCV
RCY
R
LIK
CMNS
VEE
KRNS
KML
QKV
VLP
SYEE
ALSLPSKT
PEG
GP
APP
PYSEV
>B5X7X4
MLRP
KALT
QVLS
QANT
GGV
QST
LLL
N
EGS
LL
AY
SGY
G
DT
DAR
VT
AA
IAS
N
I
S
AY
DK
N
GH QAFN
ED
DKL
KF
IL
MDC
ME
GRV
A
I
TRV
AN
LLL
CMY
A
KET
V
G
F
G
ML
K
AKA
Q
AL
V
Y
LE
E
PL
TQ
VA
AS
>B5FYY5
MLRP
KALT
QVLS
QANT
GGV
QST
LLL
N
EGS
LL
AY
SGY
G
DT
DAR
VT
AA
IAS
N
I
A
AY
DK
N
GH QAFN
ED
DNL
LK
KF
IL
MDC
ME
GRV
A
I
TRV
S
N
LL
CMY
A
KET
V
G
F
G
ML
K
AKA
Q
AL
V
Y
LE
E
PL
NQ
V
SSA
>Q63ZJ2
MLRP
KALT
QVLS
QANT
GGV
QST
LLL
N
EGS
LL
AY
SGY
G
DT
DAR
VT
AA
IAS
N
I
A
AY
DK
N
GH QAFN
ED
DNL
KL
I
L
MDC
ME
GRV
A
I
TRV
S
N
LL
CMY
A
KET
V
G
F
G
ML
K
AKA
Q
AL
V
Y
LE
E
PL
NQ
V
SSA

>Q60HE8
MTDPAGPRGSETERLLTPNPGYGTQVGSPAPPTPPEEEDLRRRLKYFFMSPCDKFRAKG
RKPCKMLQVVKILVVTVQLILFGLSNQLAVTFREENTIAFRHLFLLGYSDGADDTFAAY
TQEQLYQAIFHAVDQYLALPDVSLGRYAYVHGGDPTNGSGLALCQRYYHRGHVDPANDT
FDIDPMVVTDCIQVDPPERPPPSPSDDLALLEGSSSYKNLTLFKHKLNVNTIHFRLKTIN
LQSLINNEIPDCYTFSVLITFDNAHKSGRIPISLETQAHIQECKHPSVFRHGDNSFRLLF
DVVVIILTCSLSFLLCARSLLRGFLLQNEFVRFMQRRLVISLERLEFVNGYILLVTSMDVL
TISGTTIMKIGIEAKNLASYDVCSILLGTSTLLVGVIRYLTFFHNYNILIATLRVALPSV
MRFCCCVAVIYLGYCFCGIVLGPYHVFKFRSLSMVSECLFSLINGDDMFVTFAAMQAQQGR
SSLVLFSQLYLYSFISLFIYMVLSLFIALITGAYDTIKHPGGAGAESELQAYIAQCQDS
PTSGKFRRGSGSACSLLCCCGRDPSEEHSLLVN
>A8WH34
MSCTRGRLLLGLLCVGLLGTRGQDESRKVSVQYNPGSSDTSVNVVHVRAVGDGNTIHV
STLGTPTVLLIYTHSETSQLQVNTKLLSPAPQGALRVEPEESVSYATALLFTRIFEYQDV
NNNTANFSGTDEKYFYPPYNLSEFLENANATVNATSLSANLTGSNTDPSGSFHNGSVSFR
ISAYNTSGRDSSPPRLRHTANCTKLEFLVSGVRPRGNNSRFALEMVTIEKEGRRKMKSVL
SIDDEYTPTIFEMMQLVAVAPNSSHARGFLQKSVAYGSPSGSRADLLPCQLYPLQPLNAT
FTATSIAHAYFGDDLADAYNLEAFNISFGIADGFYDKHEFLSSALIGYGDPPRDSFSIL
VICIMAVALGTPLLLIIGTVLVTAVRHKVYPNYQPIN
>C0HBB2
MYTIHFYVLFVLLTVRCSSSFIGNGENYRRNLSLELPGLNSSLMPGVGLHVRALG
KNNTLHYLLCSQGAPALLVHTNSTSSKVKVDPALVQNTTGSILKLTPESSVLYSNTLVF
TRLEYDDVNDTAVPEHLPPSSFFQPYELQNFTDDLNKTLDPMAYTALLCGRDASESFNSG
SLCLKFSAFDVEGRDQGPSLLHNANSSQLRVVLDGVVPRSNRSRFSLELQVVGQTQSMSR
VDVLRSIDDEYTPSIFKVSQVSSPVNSTSPVLYAQKPVAYRRPSPVFEDATPCRHSTPV
PIAQLPPSGLVLAYYGGESQTTGLNMTFSITGDPFYNTTNYLSTVLVGLGSPPVDSFSPL
VLVIMAVGLGTPMLIILLGGVCVCVRKNRPQPQVYEPIN
>A6BMK7
MTEEGPGIVSLGKLRRPRMLRLGICRVQIFSAIFMLMSPAGVGAGAKDDFSLVHPLVTME
QLLVSQKQIGSVDTFRIPLITTPRGTLAFAEARKMSTSDFGAKFIALRRSMDQGSTSP
TAFIVDDGETPDGLNLGAVVSDTTGVVFLFYSLCAHKAGCQVASTMLVSKDDGVSSSPR
NLSLDIGTEMFAPGPGSGIQQKQREPRKGRLIVCGHTLERDGVFCLLSDDHGVSRYGGV
SGIPYGQPKRENDFNPDECQPYELPDGSVVINARNQNNYHCRCRIVLRSYDACDTLRPRD
VTFDTELVPVVAAGAVATSSGIVFFSNPAHPEFRVNLTLSFSNGTSRKETVQLPGPSG
YSSLTTLEGNVDGKDEAPQLYVLYEKGRNQYMESISLVKVSVYGT
>O35657
MVGADPTRPRGPLSYAGRQGLAAIFLLVSAESEARAEDDFS LVQPLVTMEQLLVSG
KQIGSVDTFRIPLITATPRGTLLAFAEARAKKSASDEGAKFIAMRSTDQGSTSSTAFIVD
DGEASDGLNLGAVVNDVTGIVFLIYTLCAHKVNCQVASTMLVSKDDGISSPPRNLSVDI
GTEMFAPGPGSGIQQKQREPGKGR利VCGHTLERDGVFCLLSDDHGASHYGTGVSGIPFG
QPKHDHDFNPDECQPYELPDGSVIINARNQNNYHCRCRIVLRSYDACDTLRPRDVTFDPE
LVDPVVAAGALATSSGIVFFSNPAHPEFRVNLTLSFSNGTSRKERVQVPGPSGYSSLTA
LENSTDGKKQPPQLFVLYEKGLNRYTESISMVKISVYGT
>Q0P5F0

MAGRRFGSRAALLQLILGVNLVMMPRTQARTLRFVTLLYRHGDRSPVKAYPKDPHQEDKP
QGFGQLTKEGMLQHELGQALRQRYHGLNTSYHRQEYVVRSTDFDRTLMSAEANLAGLFP
PDGIQRFNPNIQSQPIPVHTPVAEDRLLKFPLGPCPRFEQLQNETRRMPEYQNESVQNAQ
FLDMVANETGLTDLSLETNVYDTLFCEQTHGLPLPPASPQTMQRLSRLKDFSFRFLFGI
YKQAEKARLQGGVLLAQIRKNLTLMAATSQLPKLLVYSAHDTLVALHMALGVYNGEQAP
YASCHMFELYQEDSGNFSVEMYFRNESHRAPPLTLPGCSHRCPLQDFLRLTEPVVPKDLQ
ECQLAGGPADTEVIVALAVCGSILFLLIVLLTFLRVQAQPPGYRHVPDGEDHA
>Q5NVF6

MAGKRSGSRAALLQLLLGVNLVMMPTQARSRLFVTLLYRHGDRSPVKTPKDPYQEEEP
QGFGQLTKEGMLQHELGQALRQRYHGLNTSYHRQEYVVRSTDFDRTLMSAEANLAGLFP
PNGMQRFNPNIQSQPIPVHTPITEDRLLKFPLGPCPRYEQLQNETRQTPEYQNESSRNAQ
FLDMVANETGLTDLTLETNVYDTLFCEQTHGLRLPPASPQTMQRLSRLKDFSFRFLFGI
YQQAEKARLQGGVLLAQIRKNLTLMAATSQLPKLLVYSAHDTLVALQMALDVYNGEQAP
YASCHIFELYQEDSGNFSVEMYFRNESDKAPPLSLPGCPHRCPLQDFLRLTEPVVPKDQQ
ECQVASGPADTEVIVALAVCGSILFLLIVLLTFLFRMQAQPPGYRHVADGEDHA
>P26779

MYSFFVLASLLGGALASPVLGLRECTRGSAVCQNVKTAADCGAVQHCLQTVSKPTVKSLP
CDICKDVITAAGNLLKDNAMEQEIIMYLERTCDLPKPNMSASCKEIVDSYLPVILDIMKG
QMSHPGEVCSALNLCESLQKHAELNHQKQLESNQIPELDMAEVVAPFMANIPFLLYPQD
GSHSKPQPKKANGNVCQDCIQLVTDVQEARLNTFVEALVDHAKEECDRLGPGMSDMCK
NYINQYSEVAIQMVMHMQPKEICVLAGFCDEVKEMPMKTLVPAEVVSENVIPALGLVEPI
KKDPAPAKADIYCEVCEVVKEVAKLIDNNRTEEEILHALDKVCSKLPTSLAEQCQEVVD
TYGSSILSILLDEASPELVCSDLHLCSSRGLPAATVRVMPRKDGFFCEVCKKLVGYLDRN
LEKNSTKEQILAALAKEGCSFLPDQYRKQCDQFVTEYEPUVIEILVEVMDPSFVCLKIGAC
PAAHKPLLGAEKCVGPSYCQNMEALCNAVEHCRRHVN
>P07602

MYALFLLASLLGAALAGPVLGLKECTRGSAVCQNVKTASDCGAVKHCLQTVNKPTVKSLP
CDICKDVITAAGDMLKDNAMEEEEILVYLEKTCIDLKPKNMSASCKEIVDSYLPVILDIIKG
EMSRPGEVCSALNLCESLQKHAELNHQKQLESNQIPELDMTEVVAPFMANIPFLLYPQD
GPRSKPQPKDNGDVCQDCIQMVTDIQTAVRTNSTFVQALVEHVKEECDRLGPGMADICKN
YISQYSEIAIQMHHMQPKEICALVGCDEVKEMPMQTLVPAKVASKNVIPALELVEPIK
KHEVPAKSDVYCEVCEFVKEVTKLIDNNKTEKEILDAFKMC SKLPKSLSSECQEVVDT
YGSSILSILLEEVSPVELVCSDLHLCSGTRLPALTVHVTQPKDGGFCEVCKKLVGYLDRNL
EKNSTKEQILAALAKEGCSFLPDQYRKQCDQFVAEYEPUVIEILVEVMDPSFVCLKIGACP
SAHKPLLGAEKCVGPSYCQNTEAAQCNNAVEHCRRHVN
>D3ZEH5

MIARLPLCVLLVAAVESHLGALGPKNVSQKDAEFERTYADDVNSELVNIYTFNHTVTRNR
TEGVRVSVNVLNQKGAPLLFVVRQKEAVVSFQVPLILRGLYQRKYLYQKVERTLCQPPT
KNESEIQQFYDVSTLSPVNNTYQLRVNRVDNFVLRGELFTFNTTAAQPQYFKYEFPDG
VDSVIVKVTSSKAFCPCSVISIQDVLCPVYDLDNNVAFIGMYQTMTKAAITVQRKDFPSN
SFYVVVVVKTEDQACGGSLPFYFPFVEDEPVDQGHRQKTLSVLVSQAVTSEAYVGGMLFCL
GIFLSFYLLTVLLACENQRKKTLLVAIDRACPESGHPRVLADSFGSAPYEGYNQGSFE
NGSGSTDGLVESTGSGDLSYSYQDRSFDPVGARPRLDMSSSVEEDDYDTLDIDSDKNVI
RTKQYLCVADLARKDKRVLRKKYQIYFNIATIAVFYALPVVQLVITYQTVVNVTGNQDIC

YYNFLCAHPLGNLSAFNNILSNLGYILLGLLIIILQREINHNRALLRNDLYALECGIP
KHFGLFYAMGTALMMEGLLSACYHVCNPNTNFQFDTSFMYMIAGLCMLKLYQKRHPDINA
SAYSAYACLAIVIFFSVLGVVFGKGNTAFIVFSVIHIISTLLLSTQLYYMGRKLDGIFR
RILHVLYTDCIRQCSGPLYTDRMVLLVMGNIINSLAAYGLIMRPNDFASYLLAIGICNLL
LYFAFYIIMKLRSGERIKLIPLLCIVCTSVVGFALFFFQGLSTQKTPAESREHNRDCIL
LDFFDDHDIHFLLSIAMFGSFLVLLTLDDDLTVQRDKIYVF
>Q66151
MADGERSPLLLDGRGMTGLSLGDEPYRPISKPQNFAVFPSAPPMLGEAPPPYSPLGSPE
SSSAPVISCRVCQSLISVEGKIHQHVVKGVCNEATPIKNAPAGKKYVRCPCNCLLICKV
TSQRIACPRPYCKRVINLGPVNPGAGSPNPQPTGARVSCGHCAKTFLEFTDRTLARCPH
CRKVSSIGQRYPRKRSPLICFLLCLIFVITAGTLKAQKYKGIYASVFFIVLVLVTL
VRALHACMKISEPLHNYS
>Q5PPM8
MAADGERSPLLSEAGDGGAGGNLAGPGGSATGPGGGLTPSAPPYGAGKHAPPQAFPPFP
EGHPAVLPGEDPPPYSPLTSPDSGSAAPMITCRVCQSPINVEGKMHQHVVKGVCNEATPI
KNAPGKKYVRCPCNCLLICKVTSQRIACPRPYCKRIINLGPVHPGPLSPEPQPMGVRVI
CGHCKNTFLTEFTDRTLARCPHCRKVSSIGRRYPRKRCICCFLGLLLAVTATGLAFGT
PAQQYGGIYAAAFVILLAVLCLGRALYGC MKVSHPVQNFS
>Q5XKA6
MADGERSPLLSLDLGGGMGAAMPGAPSPGSALPTAPPYGGPGPASNKPQGFPEFPAAH
GSVITGEDPPPYSPLTSPESGSAPMITCRVCQSLINVEGKMHQHVVKGVCNEATPIKNA
PQGKKYVRCPCNCLLICKVTSQRIACPRPYCKRIINLGPVHAGPLSPEPQPGVRVICGH
CKNNFLTEFSDRTLARCPHCRKVSSIGMRYPRKRCFCFLLGVLLALAAAGLVGGTTLAY
KYGGIYASAIIILLLALACIGRGIYACMRVSHPVQSFS
>Q60V75
MKESTRTSTPSSGAKPKGDREICLRPSSVFLGDQQLYFTQEYLATNSLNMKYVVYFAAC
QFSGPIAVIYAAPKSFIIRTISGRILKRDLPCTDPVFIIDTRAHCLLVL SKNGRAQVLSSI
GEKVSEVFFDNQVSDVHECRTFATSRGDSGIAVMDVDGQVAVVNSVSEPVISMRPPYSEL
PTATAFQPHSQLTHILLIFEAVFLMGCGQGESLQVQNHASVVDSTS KYVKCVVDDARSRIA
MMTENGKIQIVSIDLSTCFCTVEVTEHEIGKCINFOVGNSVVFQMSSLT FVNVSARR
KPGDEVRFMSIKMTANARISVEPDGIRLFESTRVEFVEAASREKIAVLNRSLNEDGAYLY
KAAQEMEQGTGHNSFAASTVIQDMYKAIDDCISTACDTQPEEQLLLKAARFGMAYNTTT
PDTTKLMRAIKEIRVLNELRMVRTGIPPLTHRQYRIIGDTCIINRLIDMGSYSVAIKVAQL
GGENCESVDRVILLEVRRSISKVSRNSNMKDQPALEALDEKISAKLLQFPHSMADAARRA
IEAKLPELARLFIRRETDDESHVAVLLQLNDVSAALT KAAASQRPQLIHQVVRHLMTSES
RSSYELAISRIPLAQCLYQD LVRQEGETRGISSRQMLALLEQASDFERQTLFHDVAEIE
RNPSERLNALRRAKDAAKSMGDKAIEEILNDVSAFAPLQIQRGQADMSVRDTIIEIADDT
AKVAQLKQQARLNDKQVLLTIEGLAKKGKMEQLFDLAQKRSPIGYAPFKACVRYKRNEE
VNKYFAKANGYSDLVAANLAKKNYDAAKLAYDRRDREVLHAIHMKSHDDPVQCPRVKQL
LNSMDQA

(6) 30 mitochondrion proteins

>O14925

MEGGGGSGNKTGGLAGFFGAGGAGYSHADLAGVPLTG MNPLSPYLNVDPRYLVQDTDEF
ILPTGANKTRGRFELAFFTIGGCCMTGAAFGAMNGLGLKETQNMASKPRNVQILNMVT

RQGALANTLGSLLLYSAFGVIIEKTRGAEDDLNTVAAGTMTGMLYKCTGGLRGIAARGGL
TGLTTSLYALYNNEHMKGSLQQSL
>P04372
MADQPKPISPLKNLLAGGF GG VCLVFVGHPLDTV KVR LQT QPPS LPGQ PPM YSGT FDCFR
KTLF REGIT GLYRGMA API IGVTPMF AVCF FGFLGKKLQQKHP EDVLSYPQLFAAGMLS
GVFTTGIMTPGERIKC LLQI QASS GESKY TGLDCAKKLYQEFGIRGIYKGTVL TLMRDV
PASGMYFMTYELKNIFTPEGKRVSELSAPRILVAGGIAGIFNAVAI PPDVLKSRF QTAPP
GKYPNGFRDV LREL IRDEGV TSLYKGFNAVMIRAFPANAACFLGFEVAMKFLNATPNL
>P075324
MSIMDHSPTTGVVTIVILIAIAA LGALILGCCYLRLQRISQSEDEESIVGDGETKEPFL
LVQYSAKGPCVERKA KLMT PNGPEVHG
>P00156
MTPMRKINPLMKLINHSFIDLPTPSNISANFGSLLGACLILQITTGLFLAMHYSPDASTA
FSSIAHITRDVNYGIIRYLHANGASMFFICLFLHIGRGLYYGSFLYSETNIGIILLATM
ATAFMGYVLPQMSFGATVITNLLSAI PYIGTDLVQIGGYSVDSTL TRFFT FHFI LPFI
IAALATLHLLFLHETGSNNPLGITSHSDKITFH PYYT IKDALG LLLFLLS LMTL FSPD
LLGDPDNYTLANPLNTPPHIKPEYFLFAYTILRSVPNKLGGVLALLSILILAMIPI LH
SKQQSMMFRPLSQSLYLLAADLL LILTIGGQPVSYPFTIIGQVASVLYFTTILILMPTISL
IENKMLKA
>P00414
MTHQSHAYHMVKPSPLTGALSALLMTSGLAMFHFSMTLLMLGLLTNTLT MYQRDV TRE
STYQGHHTPPVQKGLRYGMILFITSEVFFFAGFFAFYHSSLAPTPQLGGHPPTG ITPLNP
LEVPLLNTSVLLASGV SITA HSLMENN RNQMIQ ALLITILLGLYFTLLQASEYFESPFT
ISDGIVGSTFFVATGFHGLHVIIGSTFLTICFIRQLMFHFTSKHHFGFEAAAYHFVDVVL
FLYVSIYGS
>P03886
MPMANL LLLIVPILIA MAFLMLTERKILGYMQLRKGP NVVG PYGLLQPFADAMKLFTKEP
LKPATSTITLYITAPT LALTIA LLTPLPMPNPLVN LNGLL FILATSSLAVY SILSGAS
NSNYALIGALRAVAQ TISYEVT LAI ILLST LMSG SFNL STLITTQEHLLL PSPLAMMF
ISTLAETNRTPFDLAE GESELVSGF NI EYAAGP FALF MAEY TN IIMMNT LTTI FLGTT
YDALSPELYTTYFVT KTL LTLTS LFLIRTAYPRFRYDQLMHLLKNFLPLT LALLMYVSMPI
TISSIPPQT
>P03915
MTMHTTMTTLTSLIPPI LTTLVNP NKKNSYPHYVKSIVASTFI ISLFPTTMFMCL DQE
VIISNHATTQTTQLSLSFKLDYFSMMFIPVALFVTSIMEFSLYMNSDPNIQFFKYLLIF
LITMLILVTANNLFQQLFIGEVGIGMSFLLISYARADANTAAIQAILYNRIGDIGFILA
FILHSNSDPQQM ALLNANPSLTPLLGLLAAAGKSAQLGLHPLPSAMEGPTPV SALLHSS
TMVVAGIF LLLIRFHPLAENSPLI QTTLCLGA ITTLFAAVCAL TQNDIKKIVAF STSSQL
GLMMVTIGINQPHLAFLHIC THAFFKAML FMCS GSIIHNL NNEQDIRKM GLLKT MPLTS
TSLTIGSLALAGMPFLTGFY SKDHIIETANMSYTN AALSITLIATSLT SAYSTRMILLTL
TGQPRFPTLTNINENNPTLNPIKRLAAGSL FAGFLITNNISPASPFQTTIPLYLKLTAL
AVTFLGLLTALDNYLTNKLKMKSPLCTFYFSNMLGFYPSITHRTI PYLG LLTSQNLPLL
LLDLTLEKLLPKTISQHQI STSIITSTQKG MIKLYFLSFFFPLI LTLLIT
>P05141

MTDAAVSFAKDFLAGGVAAAISKTAVAPIERVKLLLQVQHASKQITADKQYKGIIDCVVR
IPKEQGVLSFRGNLANVIRYFPTQALNFAFKDKYKQIFLGGVDKRTQFLYFAGNLASGGA
AGATSLCFVYPLDFARTRLAADVGKAGAEREFRGLGDCLVKIYKSDGIKGLYQGFNVSVQ
GIIYRAAYFGIYDTAKGMLPDPKNTHIVISMIAQTVTAVAGLTSYPFDTVRRRMMMQSG
RKGTDIMYTGTLDRCRKIARDEGGKAFFKGASNVLRGMGAFVLVLYDEIKKYT
>P17152
MAAGRRRLGPSSGGSARERVSLSATDCYIVHEIYNGENAQDQEYELEQALEAQYKYIV
IEPTRIGDETARITVGNCLHKTAVLAGTACLFTPLALPLDYSHYISLPAGVLSLACCTLY
GISQFDPCCKYQVEYDAYKLSRLPLHTLTSSPVVLVRKDDLHRKRLHNTIALAALVYCV
KKIYELYAV
>P19099
MALRAKAEVCVAAPLSLQRARALGTRAARAAPRTVLPFEAMPQHPGNRLRLQIREQGYEH
LHLEMHQTFQELGPIFRYNLGGPRMVCVMLPEDVEKLQQVDSLHPCRMILEPVAYRQHRG
HKCGVFLLNGPERFNRLRLNPVLSPKAVQRFLPMVDAARDFSQALKKVLQNARGSLT
LDVQPSIFHYTIEASNLALFGERGLVGHSPSSASLFNLHALEVFMFKSTVQLMFMPRSLS
RISPKVKEHFEADCIFQYGDNCIQKIQYQELAFNRPQHYTGIVAEELLKAELSLEAIKANS
MELTAGSVDTTAFPLLMTLFELARNPDVQQILRQESLAAASISEHPQKATTELPLLRAA
LKETLRLLYPVGLFLERVVSSDLVLQNYHIPAGTLVQVFLYSLGRNAALFPRPERYNPQRL
DIRGSGRNFHHPFGFGMRQCLGRRLAEAEMLLLHHVLKHFLVETLTQEDIKMVYSFIL
RPGTSPLLTFRAIN
>P23368
MLSRLRVVTTCTLACRHLHIKEKGKPLMLNPRTNKGMAFTLQERQMLGLQGLLPPKIE
QDIQALRFHRNLKKMTSPLEKYIYIMGIQERNEKLFYRILQDDIESLMPIVYTPTVGLAC
SQYGHIFRRPKGLFISISDRGHVRSIVDNPENHVKAVVVTDGERILGLGDLGVYGMGIPV
GKLCLYTACAGIRPDRCLPVCIDVGTNDIALLKDPFYMGLYQKRDRTQQYDDLI
DEFMKA
ITDRYGRNTLIQFEDFGNHNAFRFLRKYREKYCTFNNDDIQGTAVALAGLLAAQKVISK
P
ISEHKILFLGAGEAALGIANLIVMSMVENGLOSEQEAQKKIMFDKYGLLVKGRKAKIDSYQ
EPFTHSAPESIPDTFEDAVNILKPSTIIGVAGAGRLFTPDVIRAMASINERPVI
FALSNP
TAQAECTAEEAYTLTEGRCLFASGSPFGPVKLTDGRVFTPGQGNVYIFPGVALAVILCN
TRHISDSVFLEAAKALTSQ
LTDEELAQGRILYPP
LANIQEVSINIAIKVTEYLYANKMAFR
YPEPEDKAKYVKERTRSEYDSLLPDVYEPE
SASSPPVITE
>P25874
MGGLTASDVHPTLGVQLFSAGIAACLA
DVTPLD
TAKVRLQVQGECPTSSVIRYKGVLG
TITAVVKTEGRMKLYSGLPAGLQRQISSASL
RIGLYDTVQEFLTAG
KETAPS
LGSKILAG
LTGGVAVFIGQPTEVV
KVR
LQAQSHLHG
IKPRYT
GT
NAYRI
IAT
TEGLT
GLKG
TPN
L
MRSV
I
INC
TEL
V
TY
D
LM
KE
AF
V
K
NN
I
L
ADD
V
P
C
H
L
V
S
A
L
I
A
G
F
C
A
T
A
M
S
S
P
D
V
V
K
T
R
F
I
NS
PPGQY
K
S
V
P
N
C
A
M
K
V
F
T
N
E
G
P
T
A
F
F
K
G
L
V
P
S
F
L
R
L
G
S
N
V
I
M
F
V
C
F
E
Q
L
K
R
E
L
S
K
R
Q
T
M
D
C
A
T
>P27144
MASKLLRAVILGPPSGKGTVCQRIAQNFG
LQHLSSGHFLREN
IKASTEV
GEMAKQYIEK
SLLVPDHVITR
LMMSELENRRG
QHLLDGFP
RTL
GQAEALDK
ICEV
DLV
ISLN
I
P
F
E
T
L
K
D
R
S
R
I
H
P
P
S
G
R
V
Y
N
L
D
F
N
P
P
H
V
H
G
I
D
D
V
T
G
E
P
L
V
Q
Q
E
D
D
K
P
E
A
V
A
A
R
L
R
Q
Y
K
D
V
A
K
P
V
I
E
L
Y
K
S
R
G
V
L
H
Q
F
S
G
T
E
T
N
K
I
P
Y
V
Y
T
L
F
S
N
K
I
P
I
Q
S
K
E
A
>P27338

MSNKCDVVVVGGSISGMAAKLLHDGLNVVLEARDRVGGRTYTLRNQKVKYVDLGGSY
VGPTQNRLILAKELGLETYKVNEVERLIHHVKGKSYFRGPFPVNPITYLDHNNFRM
DDMGREIPSDAPKAPLAEDNMTMKELLDKLCTESAKQLATLFVNLCVTAETHEVSALFL
YVKQCGGTTRIISTTNGGQERKFVGGSGQVSERIMDLGDRVKLERPVIYIDQTRENVLV
ETLNHEMYEAKYVISAIPPTLGMKIHFNPPLPMMRNQMITRVPLGSVIKCIVYYKEPFRK
KDYCGTMIIDGEEAPVAYTLDDTKPEGNYAAIMGFILAHKARKLARLTKEERLKKLCELY
AKVLGSLEALEPVHYEEKNCEEQYSGGCYTYFPPGILTQYGRVLRQPVDRIYFAGTETA
THSGYMEGAVEAGERAAREILHAMGKIPEDEIQSEPESDVPAQPITTFLERHLPSVPG
LLRLIGLTTIFSATALGFLAHKRGLLVRV

>P36404

MGLLTILKKMKQKERELRLLMLGLDNAGKTTILKKFNGEDIDTISPTLGFIKTLERHGF
KLNIDVGGQKSIRSRYNFESTDGLIVVDSADRQRMQDCQRELQSLVEERLAGATLLIF
ANKQDLPGALSSNAIREVLELDSIRSHCIQGCSAVTGENLLPGIDLLDDISSRIFTAD
>P40305

MEASALTSSAVTSVAKVVRVASGSAVVLPLARIATVVIGGVAVPMVLSAMGFTAAGIAS
SSIAAKMMSAAAIAANGGVASGSLVATLQSLGATGLSGLTKFILGSIGSAIAAVIARFY
>P49448

MYRYLAKALLPSRAGPAALGSAANHSALLGRGRGQPAASQPGLALAARRHYSSELVADR
EDDPNFFKMVEGFFDRGASIVEDKLVKDLRTQESEEQKRNVRGILRIIKPCNHVLSLSF
PIRRDDGSEVIEGYRAQHSQHRTPKGGIRYSTDVSVDEVKALASLMTYKCAVVDPFGG
AKAGVKINPKNYTENELEKITRRFTMELAKKGFIGPGVDVPAPDMNTGEREMSIADTYAS
TIGHYDINAHACVTGKPISQGGIHGRISATGRGVFHGIENFINEASYMSILGMTPGFRDK
TFVVQGFGNVGLHSMRYLHRFGAKCIAVGESDGSINPDGIDPKELEDFKLQHGSILGFPK
AKPYEGSILEVDCDILIPAAATEKQLTKSNAPRVKAKIIAEGANGPTTPEADKIFLERNIL
VIPDLYLNAGGVTVSYFELKNLNHVSYGRLTFKYERDSNYHLLSVQESLERKFGKHGKT
IPIVPTAEFQDSISGASEKDIVHSALAYTMERSARQIMHTAMKYNLGLDLRTAACVNAIE
KVFKVYSEAGVTFT

>P49675

MLLATFKLCAGSSYRHMRNMKGRLQQAVMAISQELNRRALGGPTPSTINQVRRSSLLGS
RLEETLYSDQELAYLQQGEEAMQKALGILSNQEGKESQQDNGDKVMSKVVVDVGKVFR
EVVVDQPMERLYEELVERMEAMGENPNVKEIKVLQKIGKDTFITHELAAEAAGNLVGP
FVSVRCAKRRGSTCVLAGMATDFGNMPEQKGVIRAEHGPTCMVLHPLAGSPSKTKLTL
IDLKGLPKSIINQVLSQTQVDFANHLRKRESHPASEARC

>P50336

MGRTVVVLGGGISGLAASYHLSRAPCPPKVVLVESSELGGIRSVRGPNGAIFELGPRGI
RPAGALGARTLLLSELGLDSEVLPVRGDHPAAQNRFLYVGGALHALPTGLRGLLRSP
FSKPLFAGLRELTKPRGKEPDET VHSFAQRRLGPEVASLAMDSLCRGVFAGNSRELSIRS
CFPSLFQAEQTHRSILLGAGRTQPQDSALIRQALAERSQSLRGGLEMLPQALET
TSRGVSVLRQPVCGLSLQAEGRKVSLRDSSLEADHVISAI PAVS VSELLPAEAAPL
LSAITAVSVAVVNLQYQGAHLPVQGFGHLVPSSEDPGVLGIVYDSVAFPEQDGSP
TVMLGGSLQTLEASGCVLSQELFQQRAQEAAATQLGLKEMPSHCLVHLHKNCIPQYTL
QKLESARQFLTAHRLPLTLAGASYEGVAVND CIESGRQAAVSLGTEPNS

>O94826

MAASKPVEAAVVAAPSSSGVGGGTAGPGTGGLPRQLALAVGAPLLGAGAIYLSRQ

QRRREARGRGDASGLKRNSERKTPEGRASPAPGSGHPEGPGAHLDMSLDRAQAAKNKGNYFKAGKYEQAIQCYTEAISLCPTEKNVDLSTFYQNRAAAFEQLQKKEVAQDCTKAVELNPKYVKALFRRAKAHEKLDNKKECLEDVTAVCILEGFQNQQSMSLLADKVLKLLGKEKAKEKYKNREPLMPSPQFIKSYFSSFTDDIISQPMLKGEKSDEDKDKEGEALEVKENSGYLKAKQYMEEENYDKIISECSKEIDAEGKYMMEAALLRATFYLLIGNANAACKPDLDKVISLKEANVKLRANALIKRGSMYMQQQQPLLSTQDFNMAADIDPQNADVYHHRGQLKILLDQVEEAVADFDECIRLRPESALAQAQKCFALYRQAYTGNNSSQIQAAMKGFEVVIKKFPRCAEGYALYAQALTDQQQFGKADEMYDKCIDLEPDNATTYVHKGLLQLQKQDLDRLGLELISKAIEIDNKCDFAYETMGTIEVQRGNMEKAIDMFNKAINLAKSEMEMAHLYSLCAAHAQTEVAKKYGLKPPTL

>O95674

MTELQRVAHEPVAPPEDKESESEAKVDGETASDSESRAESAPLPVSADDTPEVLNRAISNLSSRKNRGILTLMIAAFFIIYLGPMVLMIVMCVQIKCFHEIITIGYNVYHSYDLPFRTLSYFLLCVNYFFYGETVTDYFFTIVQREEPLRILSKYHRFISFTLYLIGFCMFVSLSVKKHYRLQFYMGFTHTVTLIVVTQSHLVIHNLFEGMIFIVPISCVICNDIMAYMFGFFFGRTPLIKLSKKTEGFIGGFFATVVFGLLSYVMSGYRCFVCVPVEYNNDTSFTVDCEPSDLFRLQEYNIPGVIQSVIGKTVRMYPFQIHSIALSTFASLIGPFGFFASGFKRAFKIKDFANTIPGHGGIMDRDCQYLMATFVNVIASFIRGPNSKLIQQFLTLRPDQQLHIFNTRSHLIDKGMLTSTTEDE

>P00973

MMDLRNTPAKSLDKFIEDYLLPDTCFRMQINHAIDIICGFLKERCFRGSSYPVCVSKVVKGGSSKGTTLGRGRSDADLVVFLSPLTTFQDQLNRRGEFIQEIRRQLEACQRERAFAVKFEVQAPRGNPRALSFVLSSLQLGEGVEFDVLPALFDALGQLTGGYKPNPQIYVKLIEECTDLQKEGEFSTCFTELQRDFLKQRPTKLKSLIRLVKHYQNCKKKLGKLPQYALELLTVYAERGSMKTHFNTAQGFRTVLELVINYQQLCIYTKYYDFKNPIIEKYLRRQLTKPRPVILDPADPTGNLGGGDPKGRQLAQEAALNYPCFKNDGPVSSILLAESNSADDETDDPRRYQKYGYIGTHEYPHFSHRPSTLQAASTPQAEDTCTIL

>P0C869

MAVAEVSRCLLTVRVLQAHRLPSKDLVTPSDCYVTLLPTACSHRLQRTTVKNSSSPVNQSFHFRIHQRLKNVMELKVFQDQLVTGDDPVLSQLFDAGTLRAGEFRRESFSLSPQGEGRLEVEFRLQSLADRGEVLNSNGVLVARELSCLHVQLEETGDQKSSEHRVQLVPGSCEGPQEA SVGTGTFRFHCSPACEQELSIRLQDAPEEQLKAPLSALPSGQVVRVFPTSQEPLMRVELKKEAGLRELAVRLFGPCAEEQAFSLRRKQVVAALRQALQLDGDLQEDEIPVVAIMATGGGIRAMTSLYGQLAGLKEGLLDCVSYITGASGSTALANLYEDPESQKDLAGPTELLKTQVTKNKLGVLAPSQQLQRYRQELAERARLGYPSCFTNLALINEALLHDEPHDHKLSDQREALSHQNPLPIYCALNTKGQSLLTFEFGECEFSPYEVGFPKYGAFIPSELFGEFFMGQLMKRLPESRICFLEGISNLYAANLQDSLYASEPSQFDRVRNQANLDKEQVPLLKIEPPSTAGRIAEFFTDLLTRPLAQATHNFLRGLHFHKDYFQPHFSTKATTLDGLPNQLTPSEPHLCLLDVGYLINTSCLPLLQPTRDVDLILSLDYNLHGAFQQLQLLGRFCQEQQGIPFPPISPSEEQLQPRECHTFSDPTCPGAPAVLHFPLVSDSFREYSAPGVRRTPPEAAAGEVNLS SSDSPHYTKVTVSQEDVDKLLHLTHYNVCNNQEQLLEALRQAVQRRRQRRPH

>P22557

MVTAAMLLQCCPVLARGPTSLLGKVVKTHQFLFGIGRC PILATQGPNC SQIHLKATKAGGDSPSAKGHCPFMLSELQDGKSKIVQKAPEVQEDVKA FKTDLPSL VS VSLRKPFSGPQE

QEIQISGKVTHLIQNNMPGNVFSYDQFFRDKIMEKKQDHDTYRVFKTVNRADAYPFAQHFS
EASVASKDVSVCSDYLGMRSHPQVLQATQETLQRHGAGAGGTRNISGTSKFHVELEQEL
AELHQKDSALLFSSCFVANDSTLFTLAKILPGCEIYSDAGNHASMIQGIRNSGAAKFVFR
HNDPDHLKKLLEKSNPKIPKIVAFETVHSMDGAICPLELCDVSHQYGALTFVDEVHAVG
LYGSRGAGIGERDGIMHKIDIISGTLGKAFCVGYYIASTRDLVDMVRSYAAGFIFTSL
PPMVLSGALESVRLLKGEEGQALRRAHQRNVKHMRLQLLMDRGLPVIPCPSHIPIRVGNA
ALNSKLCDLLLKHGIFYVQAINYPTVPRGEELLRLAPSHPSPQMMEDFVEKLLLATAVG
LPLQDVSAACNFRRPVHFELMSEERSYFGNMGPQYVTTYA
>P29803
MLAAFISRVLRRVAQKSARRVLVASRNSSNDATFEIKKCDLYLLEEGPPVTTVLTRAEGL
KYYRMMLTVRRMELKADQLYKQKFIRGFCHLCDGQEACVGLEAGINPSDHVITSYRAHG
VCYTRGLSVRSILAELTGRRGGCAKGKGGSMHMYTKNFYGGNGIVGAQGPLGAGIALACK
YKGNDEICLTLYGDGAANQGQIAEAFNMAALKPCVFICENNLYGMDTSTERAAASPDYY
KRGNFIPGLKVDGMDVLCVREATKFAANYCRSGKGPILMELQTYRYHGHMSDPGVSYRT
REEIQEVRSKRDPIIILQDRMVNSKLATVEELKEIGAEVRKEIDDAAQFATTDPEPHLEE
LGHHIYSSDSSFEVRGANPIKFKSVS
>P49419
MRLPRALCVHAAKTSKLSGPSRPAAFMSTLLINQPQYALKEGLREENEVGVNGSGGRGE
VITTYCPANNEPIARVRQASVADYEETVKKAREAKIADI PAPKRGEIVRQIGDALREKIQ
VLGSLVSLEMGKILVEGVGEVQEYVDICDYAVGLSRMIGGPILPSERSGHALIEQNPVGL
VGIITAFNFPVAVYGNNAIAMICGNVCLKGAPTTSLISVAVTKIIAKVLEDNKLPGAICS
LTCGGADIGTAMAKDERVNLLSFTGSTQVGKQVGLMVQERFGRSLLELGNNAIIAFEDA
DLSLVVPSALFAAVGTAGQRCTTARRLFIHESIHDEVVNRLKKAYAQIRVGNPDPNVLYG
PLHTKQAVSMFLGAVEEAKKEGGTVVYGGKVMDRPGNYVEPTIVTGLGHADIAHTETFA
PILYVFKFKNEEEVFANNEVKQGLSSIFTKDLGRIFRLGPKGSDCGIVNVNIPTSGAEI
GGAFGGEKHTGGGRESGSDAKQYMRSTCTINYSKDLPLAQGIKFQ
>Q5HZI1
MNDDNSDRTEDGSRYVFIRDKNSNPSEYYQTSLAQCPSVSHGDNSDNP DAMVVDYEMDP
AVDSSESVSLSHQCVEELAYPEPSSDFMGKHEFTMYSELTCQSPALVNTGKPQDLHSNCD
SLEAIQDEKFPLKPCECRSDDDYACGDSPEVLELKQTYGMKVDTANYTFIARHDIEQGQ
PLHAPGGLQTTVRDRNALSSCGRTPPHSSKMYVRGVNNRENFENLQATPSKTLNTTFTV
ISDVLMQTDSPDVGVQGQNLSGNVTKEYTDGTRRGLIGEKEIQA VTLVSDGMEVPNGSAS
QE FYCVSEDDPNSETHSHGPYAQQEMGQNLRGTLPNCHVDGECPVLVPAFEKS KTRVLGS
ECKVTVTEDPHIDSHNDNSDIQSSTEELTLSVSGQRGS PYEMGGENGGAICTDKAGCMS
TPVEQPPNLSFRLEPAEVKKYNNVENGPRDAKRAPNLKGEPTNMPKPNLGKSATKTNTTV
GSKVRKTEIISYPTPNFKNIKAKVISRSVLQPKDTSIMKDTPSPQVTGGSSPGPSKHL
TMMNKAPRSDFKASKKAEIPINKTHKQQFNKLITSQAAQVTTHSKNASLGVPRRTSATKS
NQENVDKTGSPHAGSETGSVAFFQKIKGILPVKMKSSCLEVTVSHIDQISPEKGEQD
GEAPMEKQELGKQATNEIFESKSSLVGSAPKTSTTPGRSSSKPDSRSLRKTPLKAKVGP
TAACLRRKSESRTLGS DRALSPQRIRVSGSGGHAAINKYEEKPPKQAFQNGSGPLYLKP
LVPRAHSHLLKTSPKGPSRKSLFTA FNSVEKGRQKNPRSLCIQTQTAPDVLSsertLELA
QYTKCESQSGFILHLRQLLSRGNTKFEALT VVIQHLSEREELAKQHKTLSQELVSLRG
ELVAASSACEKLEKARADLQTAYQEFVQKLNQQHQ TDRT ELENRLKDLYTAECEKLQSIY
IEEAEKYKTQLQE QFDNL NAAHETKLEIEASHSEKVELLKKT YETSLSEIKKSH EM EKK

SLEDLLNEKQESLEKQINIDLKSENDALNERLKSEEQKQLSREKANSKNPQVMYLEQELES
LKAVLEIKNEKLHQQDMKLMKMEKLVDNNNTALVDKLKRFQQENEELKARMDKHMAISRQL
STEQAALQESLEKESKVNKRLSMENEELLKLHNGDLCSPKRSPSSAIPFQSPRNSGSFS
SPSISPR

>P12617

MRGLRRGLSRLGPRLGPAVPRSLRRVLRAAGPRGQSSAGSVSERGGASMEEVLSRSVPPL
PPYETKEKAPPAERRSAEFVRYYRGLEAGSRRAEELLGCLARDFGADHGRVAEFSAKVLQ
AREQEREQGALLQAEDRVRYYLTPRYRALFQHLGRLEGLRFLVELRGDLVEGLAAKAVD
GPHVKEMSGVLKNMLSEFSTGFLNLERVTQSPCEVLQKISDSEAVHPVRNVDLKRRVGPY
RRCYFFSHCAIPGEPLIILHVALTSDISSSIQSIVKDVESLETEDAEKITTAIFYSISLA
QQGLQGVELGNHLIKRVVKELKQDLPQIEAFSSLSPIPGFTKLVGLLSSQTKEGRNELF
TESERQEISEITEDSTTETLKLLTNSEVKSEKLVKALHSPLMRLCAYLYGEKHRGYALN
PVANFHLQNGAELRINMGDTSPRGIAASCGMVNRYFLEDTASNSAAYLGTKHIKASEQ
VLSFVSQFQQNSKL

>O95822

MRGFPGPLTARRLLPLRLPPRPPGPRLASGQAAGALERAMDELLRRAVPPPTPAYELREKT
PAPAEGQCADFVSYGGLAETAQRAELLGRLARGFGVDHGQVAEQSAGVLHLRQQQREAA
VLLQAEDRLRYALVPRYRGLFHISKLDDGGVRFVLVQLRADLLEAQALKLVEGPDVREMNG
VLKGMLSEFSSGFLNLERVTHSPCEVLQKISEAEAVHPVKNMDMKRRVGPYRRCYFFSHC
STPGEPLVVLHVALTGDISSNIQAIKVEHPPSETEEKNKITAAIFYSISLTQQGLQGVEL
GTFLIKRVVKELQREFPHLGVFSSLSPIPGFTKLLGLLNSQTKEHGRNELFTDSECKEIS
EITGGPINETLKLLSSEVQSEKLVRALQTPLMRLCAYLYGEKHRGYALNPVANFHLQN
GAVLRINMADVSLRGITGSCGLMANYRYFLEETGPNSTSYLGSKIIKASEQVLSLVAQFQ
KNSKL

>P99029

MLQLGLRVLGCKASSVLRASTCLAGRAGRKEAGECGGARSFSSSAVTMAPIKVGDAIPS
EVFEGEPGKKVNLAELFKGKKGVLFVGPGAFTPFGCSKTHLPGFVEQAGALKAKGAQVVAC
LSVNDVFVIEGRAHQAEGKVRLLADPTGAFGKATDLLLDSLVSLFGNRRLKRFMSVID
NGIVKALNVEPDGTGLTCSLAPNILSQL

(7) 30 nuclear proteins

>A6NDE4

MVEADHPGKLFIGGLNRETNEKMLKAVFGKHGPISEVLLIKDRTSKSRGFATFENPAD
AKNAAKDMNGKSLHGKAIKVEQAKKPSFQSGGRRPPASSRNRSRSPGSLRSARGSRGGTR
GLPSQEGHLDGGYTPDLKMSYSRGLIPVKRGPSSRSGGPPPCKSAPS A VARSNSMGSQG
PMSQRRENYGVPPRRATISSRNDRMSTRHDGYATNDGNHPSCQETRDYAPP SRGYAYRD
GHSNRDEHSSRGYRNHRSSRETRDYAPP SRGHAYRDYGH SRRDES YRGYRNRRSSRETR
EYAPP SRGHGYRDYGH SRRHES YRGYRNHPSSRETRDYAPP HRDYAYRDYGH SSDEHSS
RGYSYHDGYGEALGRDHSEHLSGSSYRDALQRYGTSHGAPP ARGPRMSYGGSTCHAYSNT
RDRYGRSESYSSCGDFHYCDREHVCRKDQRNPPSLGRVLPDPREAYGSSSYVASIVDGGE
SRSEKG DSSRY

>A6NEQ0

MVEADHPGKLFIGGLNRETNEKMLKAVFGKHGPISEVLLIKDRTSKSRGFATFENPAD
AKNAAKDMNGKSLHGKAIKVEQAKKPSFQSGGRRPPASSRNRSRSPGSLRSARGSRGGTR
GLPSQEGHLDGGYTPDLKMSYSRGLIPVKRGPSSRSGGPPPCKSAPS A VARSNSMGSQG

PMSQRRENYGVPPRRATISSRNDRMSTRHDGYATNDGNHPSCQETRDYAPPSRGYAYRDN
GHSNRDEHSSRGYRNHRSSRETRDYAPPSRGHAYRDYGHSSRDESYSRGYRNRRSSRETR
EYAPPSRGHGYRDYGHSSRHESYSGYRNHPSSRETRDYAPPHDYAYRDYGHSSDEHSS
RGYSYHDGYGEALGRDHSEHLSGSSYRDALQRYGTAHGAPPARGPRMSYGGSTCHAYSNT
RDRYGRSESYSSCGDFHYCDREHVCRKDQRNPPSLGRVLPDPREACGSSSYVASIVDGGE
SRSEKGDSSRY

>A6NHQ2

MKSAASSRGGG
GRGRGGGDGKDRGGGQRRGGVAKSKSRRKGAMVVSVEPHRHEGVFIYRGAEDALVTLN
MVPQSVYGERVTTEGGVKQEYRTNPFRSKLAAAILGGVDQIHIKPNSKVLYLGAASG
TTVSHVSDIIGPDGLVYAVEFSHRAGRDLNVAKKRTNIIPVLEDARHPLKYRMLIGMVD
VIFADVAQPDQSRIVALNAHTFLRNGGHFLISIKANCIDSTASAEAVFASEVRKLQQENL
KPQEQLTLEPYERDHAVVVGVYRPLPKSSS

>O00268

MAAGSDLLEVFNFSEVDEKVVSDLVGSLESQLAASAHHHLAPRTPEVRAAAAGALGN
HVVGSPAGAAGAGPAAPAEGAPGAAPEPPPAGRARPGGGPQRPGPPSPRPLVPAGPA
PPAAKLRPPPEGSAGSCAPVPAAAAVAAGPEPAPAGPAKPGPAALAARAGPGPGPGP
GPGPGPGKPGPGAAQTLNGSAALLNSHAAAPAVSLVNNGPAALLPLPKPAAPGTVIQT
PPFVGAAAPPAPAPAAPSPPAAPAPAAAPAAAAPPAPATLARPPGHAGPPTAAPAVPPP
AAAQNNGGSAGAAPAPAPAAGGPAGVSGQPGPAAAAAPAGVKAESPKRVVQAAPPAQ
LAASGPASTAASMVIGPTMQGALPSAAVPPPAPGTPGLPKGAAGAVTQSLSRPTATT
SGIRATLTPTVIALPRLPQPPQNPTNIQNFQLPPGMVLVRSENGQLLMIPOQALAQMQAQA
HAQPQTTMAPRPTPTSAPPVQISTVQAPGTPIIARQVTPTTIKQVSQAQTTVQPSATL
QRSPGVQPLQLVLGAAQTAQSLGTATAVQTGTPQRTVPGATTSSAATETMENVKKCKN
STLIKlassGKQSTETAANVKEVQNLLDGKIEAEDFTSRLYRELNSSPQPYLVPFLKRS
LPALRQLTPDSAIFIQSQQQQPPPTSQATTALTAVVVLSSVQRTAGKTAATVTSALQPP
VLSLTQPTQVGVGKQGQPTPLVIQQPPKPGALIRPPQVTLTQTPMVALRQPHNRIMLTT
QQIQNLPLQPVPVVKPAVLPGTKALSAVSAQAAAQKNKLKEPGGGSFRDDDDINDVASM
AGVNLSEESARILATNSELVGTLTRSKDETFLQAPLQRRILEIGKKHGITELHPDVVS
YVSHATQQLQNLVEKISETAQQKNFSYKDDDRYEQASDVRAQLKFFEQLDQIEKQRKDE
QEREILMRAAKSRSRQEDPEQLRLKQKAKEMQQQELAQMQRQDANLTALAAIGPRKKR
DCPGPGSGAEGSGPGSVVPGSSGVGTPRQFTRQITRVNLRDLIFCLENERETSHSLLL
KAFLK

>O00321

MDLNDEASPQEVPNGNKLAGLGAKLGFCFPDLALQGDTPTATAETCKGTSSLASFPQLD
GSALLHPEVPGAEPDSQLPSQGDTDMACTADSSGASQTLGPAPLPGPGPIPAAGSEGAAGQ
NCVPVAGEATSSRAQAAGSNTSDCSVGPQDGYSGSLGGEPRTDCTISGGPAGPDCTTSN
PGLHAGGTTSLKRYQSSALTVCSESPQSDRASLARCPKTNHRGPIQLQFLLELLHDGAR
SSCIRTGNSREFQLCDPKEVARLGERKRKGPMNYEKLSRGLRYYRRDIVRKSGGRKYTY
RFGGRVPSLAYPDCAGGGRGAETQ

>O00716

MRKGIGPALEQYLVTAGGEGAAVAAAAASMDKRALLASPGFAAAAAAAAPGAYI
LTNTNTTSCSSLQSGAVAAGPLLPSAPGAEQTAGSLLYTTPHGPSSRAGLQQPPALG
RGGSGGGGGPPAKRRELGESGHQYLSDGLKTPKGKGRAALRSPDSPKTPKSPSEKTRYD

TSLGLLTKKFIQLLSQSPDGVLIDLNAEVLKVQKRRIYDITNVLEGIHLIKKSKNNVQ
MGCSLSLEDGGMLAQCGQLSKEVTELSQEEKKLDELIQSCTLDLKLLEDSENQRILAYVTY
QDIRKISGLKDQTVIVVKAPPETRLEVPSIESLQIHLASTQGPIEVYLCPPEETETHSPM
KTNNQDHNGNIPKPASKDLASTNSGHSDCSVSMGNLSPASANLLQQTEDQIPSNEGP
FVNLLPPLLQEDYLLSLGEEEGISDLFDAYDLEKLPLVEDFMCS

>O14802

MVKEQFRETDVAKKISHICFGMKSPEEMRQQAHIQVVSKNLYSQDNQHAPLLYGVLIDHRM
GTSEKDRPCETCGKNLADCLGHGYIDLELPCFHGYFRAVIGILQMICHTCCHIMLSQE
EKKQFLDYLKRPGLTYLQKRGKKISDKCRKKNICHHCAGFNGTVKKCGLLKIIHEKYK
TNKKVVVDPIVSNFLQSFETAIEHNKEVEPLLGRAQENLNPLVVLNLFKRIPADEVPLLL
NPEAGKPSDLILTRLLVPPLCIRPSVSDLKSGTNEDDLTMKLTEIIFLNDVIKKHRISG
AKTQMIMEDDFLQLQCALYINSELSGIPLNMAPKKTRGFVQLKGKQGRFRGNLSGKRV
FSGRTVISPDPNLRIDEAVPVHVAKILTFFPEKVNKANINFLRKLVQNGPEVHPGANFIQ
QRHTQMKRFLKYGNREKMAQELKYGDIVERHLIDGDVVLFNROPSLHKLSIMAHLARV
HRTFRFNECVCTPYNADFDDGDEMNLHLPQTEEAKAEALVLMGKANLVTPRNGEPLIAAI
QDFLTGAYLLTLKDTFFDRAKACQIIASIILVGKDEKIKVRLPPPTILKPVTLGKQIFS
ILRPSDDNPVRANLRTKGKQYCGKGEDILCANDSYVTIQNSELMSGMDKGTLGSGSKNN
FYILLRDGQNEAADAMSRLARLAPVYLSNRGFSIGIDVTPGQGLLKAKYELLNAGYKKC
DEYIEALNTGKLQQQPGCTAEETLEALILKELSVIRDHAGSACLRELDKSNSPLTMALCG
SKGSFINISQMIACVGQQAISGSRVPDGFENRSLPHFEKHSKLPAAKGFVANSFYSGLTP
TEFFFHTMAGREGLVDTAVKTAETGYMQRRLVKSLEDLCSQYDLTVRSSTGDIIQFIYGG
DGLDPAAMEGKDEPLEFKRVLDNIKAVFPCPSEPALSKNELILTTESIMKKSEFLCCQDS
FLQEIKKFIKGVSEKIKKTRDKYGINNDNTTEPRVLYQLDRITPTQVEKFLETCDKYMR
AQMEPGSAVGALCAQSIGEPGTQMTLKTFFAGVASMNITLGVPRIKEIINASKAISTPI
ITAQLDKDDDADYARLVKGRIEKTLGEISEYIEEVFLPDDCFILVKLSLERIRLLRLEV
NAETVRYSICTSKLRVKPGDVAHVGEAVVCVTPRENSKSSMMYVLQFLKEDLPKVVVQGI
PEVSRAVIHIDEQSGKEKYKLLVEGDNLRAVMATHGVKGTRTSNNTYEVEKTLGIEAAR
TTIINEIQYTMVNHGMSIDRRHVMLLSDLMTYKGEVLGITRFGLAKMKESVMLASFEKT
ADHLFDAAYFGQKDSVCGVSECIIMGIPMNIGTGLFKLLHKADRDPNPPKRPLIFDTNEF
HIPLVT

>O14901

MHTPDFAGPDDARAVDIMDICESILERKRHDSERSTCSILEQTDMEAVERVCMSGGQRS
QKGDLLRIRPLTPVSDGDVTTVHMDAATPELPKDFHSLSTLCITPPQSPDLVEPSTR
PVSPQVTDSSKACTATDVLQSSAVVARALSGGAERGLLGLEPVPPSPCRAKGTSVIRHTGE
SPAACFPTIQT PDCRLSDSREGEEQLLGHFETLQDTHLTDLLSTNLVSCQPCLHKSGGL
LLTDKGQQAGPGAVQTCSPKNYENDLPRKTTPLISVSVPAVPLCQMPVTGQSSMLPAF
LKPPPQLSGTVPRIILAQAAPAPQPVFGPAVPGAVMLVLPQGALPPPAPCAANVMAAG
NTKLLPLAPAPVFITSSQNCVPQVDFSRRRNVCSPGCRKTYFKSSHLSKAHLRHTGEK
PFNCSDGCDKKFARSDELSRHRRHTGEKKFVCPVCDRRFMRSDLTKHARRHMTTKIP
GQAEVGKLNRIASAESP GSPLV SMPASA

>O14981

MAVSRLDRLFILLDTGTTPVTRKAAAQQLGEVVKLHPHELNLLSKVLIYLR SANDTRIA
AGQAVEAIVKNVPENPVPRTRQEPTSESSMEDSPTERLFNDRFDICRLLQHGASLLGSA
GAEFEVQDEKSGEVDPKERIARQRKLLQKKLGLNMGEAIGMSTEELFNDEDLDYTPSAS

FVNKQPTLQAAELIDSEFRAGMSNRQKNKAKRMAKLFAKQRSRDAVETNEKSNDSTDGEPEEKRRKIANVVINQSANDSKVLIDNIPDSSSLIEETNEPLESFCIELCNDLFNPSEVRHAGTGLREILKAHGKSGGKMGDSTLEEMIQQHQELEDLVIRLLCVFALDRFGDFVSDEVVAPVRETCATLGVVLKHMNETGVHKTVDVLLKLLTQEQQEVRHGGLLGIKYALAVRQDVINTLLPKVLTRIIEGLQDLDVDRAVAAASLVPVVESLVYLTQKVPFIINTLDALLELDDLTASTNSIMTLLSSLTYPQVQQCSIQQSLTVLPRVPFLHHTISSVRRAALETLFTLLSTQDQNSSSLIPILPDMLRHIFQFCVLESSQEILDLIHKVMELLSKASVQYVVAACPMGALCLMMQPSHLPIIDLNLLEVKARAKEKTGGKVRQGQSQNKVEVLQEIAGADTIMEDPATRDFVVMRARMMAAKLLGALCCCICDPGVNVVTQEIKPAESLGQLLLFHLSKSALQRISVALVICEAALQKECKAVTLAVQPRLLDILSEHLYYDEIAVPFTRMQNECKQLISSLADVHIEGNNRVNNNVLTIDQASDLVTTFNEATSSFDLNPQVLQQLDLSKRQQVQMTVTETNQEQLQLRVHTFAACAVVSLQQLPEKLNPIIKPLMETIKKEENTLVQNYAAQCIAKLLQQCTTRTPCPNSKIIKNLCSSLCVDPYLTPCVTCPVPTQSGQENSKGSTSEKDMHHTVTKHRGIITLYRHQKAFAITSRRGPTPKAVKAQIADLPAGSSGNILVELDEAQKPYLVQRRGAEFALTTIVKHFGGEMAVKLPHDAMVGPLRNTIDINNFDGKSLLKGDSPAQELVNSLQVFETAAASMDSELHPLLQHLPHYMCLQYPSTAVRHMAARCVGVMSKIATMETMNIFLEKVLPLGAI DDSVKQEGAIEALACVMEQLDVGIVPYIVLLVVPLGRMSDQTDVRFMATQCFATLIRLMPLEAGIPDPPNMSAELIQLKAKERHFLEQQLDGKKLENYKIPVPINAELRKYQQDGVNLAFLNKYKLHGILCDDMGLGKTLQSICILAGDHCHRAQEYARSKLAECMPLPSLVVCPTLTGHVDEVGKFCREYLNPLHYTGPPTERIRLQHQVKRHNLLIVASYDVRNDIDFFRNIKENYCILDEGHVIKNGKTKLSKAVKQLTANYRIILSGTPIQNNVLELSLFDFLMPGFLGTERQFAARYGKPILASRDARSSSREQEAGVLAAMDALHRQVLPFLRRMKEDVILQDLPPKIIQDYYCTLSPLQVQLYEDFAKSRAKCDVDETSSATLSEETEKPKLKATGHVFQALQYLRKLCNHPALVLTQHPEFKTTAEKLAQVQNSLHDIQHAPKLSALKQLLDCGLGNGSTSESGTESVVAQHRILIFCQLKSMLDIVEHDLLKPHLPSVTYLRLDGSIPPGQRHSIVSRFNNDPSIDVLLTTHVGGLGLNLTGADTVVFVEHDNPMRDLQAMDRAHRIGQKRVVNVYRLITRGTEEKIMGLQKFKMNIANTVISQENSSLQSMGTDQLLDLFTLDKGKAEKADTSTSGKASMK SILENLSLDQEQYDSEYSLENFMHSLK

>O43293

MSTFRQEDVEDHYEMGEELSGQFAIVRKCRQKGTKEYAAKFIKKRRLSSSSRRGVSEEIEREVNILREIRHPNIITLHDIFENKTDVVLILELVSGGELFDLAEKESLTEDEATQFLKQILDGVHYLHSKRIAHFDLKPENIMLLDKNVPNPRIKLIDFGIAHKIEAGNEFKNIFGTPEFVAPEIVNYEPLGLEADMSIGVITYILLSGASPFLGETKQETLTNISAVNYDFDEEYFSNTSELAKDFIRRLLVKDPKRRMTIAQSLEHSIKAIRRNVRGEDSGRKPERRLKTTRLKEYTIKSHSSLPPNNSYADFERFSKVLEEAAAEEGLRELQRSRLCHEDVEALAAIYEEKEAYREESDSLQDRLRRLRQELLKTEALKRQAQEEAKGALLGTGLKRRFSRLENRYEALAKQVASEMRFVQDLVRALEQEKLQGVECGLR

>O43683

MDTPENVLQMLEAHMQSYKGNDPLGEERYIQVEENFPENKEYLITLLEHLMKEFLDKKKYHNDPRFISYCLKFAEYNSDLHQFFEFLYNHGIGTLSSPLYIAAGHLEAQGELQHASAVLQRGIQNQAEPREFLQQQYRLFQTRLTETHLPAQARTSEPLHNVQVLNQMITSKSNPGNNMACISKNQGSELSGVISACDKESNMERRVITISKSEYSVHSSLASKVDVEQVVMYCKEKLIRGESEFSFEELRAQKYNQRRKHEQVNEDRHYSRKKEANAFEEQLLKQKMDDELHKKLHQVVETSHEDLPASQERSEVNPARMGPSVGSQQELRAPCLPVTYQQTPVNMEKNPREAPPVPP

LANAISALVSPATSQSIAAPPVPLKAQTVTDSMFAVASKDAGCVNKSTHEFKPQSGAEIK
EGCETHKVANTSSFHTTPNTSLGMVQATPSKVQPSPTVHTKEALGFIMNMFQAPTLPDIS
DDKDEQSLDQNEDAFEAFQFQKNVRSSGAGVNKIISLSSAFHVFDGNKENYGLPQPKNK
PTGARTFGERSVSRLPSKPKEEVPHAEELDDSTVGIRCNKTLAPSPKSPGDFTSAAQLA
STPFHKLPVESVHILEDKENVVAKQCTQATLDSCEENMVVPSRDGKFSPPIQEKS PKQALS
SHMYASLLRLSQPAAGGVLTCEAELGVEACRLTDAAIAEDPPDAIAGLQAEMQMSSL
GTVDAPNFIVGNPDDKLIFKLLSGLSKPVSSYPNTFEQCKLPAIKPKTEFQLGSKLVYVH
HLLGEGAFAQVYEATQGDLNDAKNQKFVLKVQK PANPEFYIGTQLMERLKPSMQHMFMK
FYSAHLFQNGSVLVGELYSYGTLLNAINLYKNTPEKVM P QGLVISFAMRM LYMI EQVHDC
EIIHGDIKP DN FILGNGFLEQD DEDDL SAGL ALI D LGQS ID MKL FPK GTI FTAK C E TSGF
QC VEM LSN KPN YQID YFGVAATVY CML FG TYM KV NEGGECKPEGLF RRL PH LD MNE FFH
VMLNI PDCH HLP SLD L RQKL KK V FQ QHY TNK I RALRN RL I VL LECK RS R K
>O43805
MTQQGAALQNYNNELVKCIEELCQKREELCRQIQEEEDEKQRLQNEVRQLTEKLARVNEN
LARKIASRNEFDRTIAETEAAYLKILESSQTLLSVLKREAGNLTKATAPDQKSSGGRDS
>O75386
MEASRCRLSPSGDSVFHEEMMKMRQAKLDYQRLLEKRQRKKRLEPFMVQPNPEARLRRA
KPRASDEQTPLVNCHTPHSNVILHGIDGPAAVLPDEVAPS VSSV VEEDAENTVDTAS
KPGLQERLQKH DISES VN FDE ET DG ISQSACLERPNSASSQNSTDGTSGSATAAQPADN
LLGDIDDLED FVY SPAPQGVTVRCRIIRDKGMDRGLFPTYYMYLEKEENQKIFLLAARK
RKKS KT ANYL ISIDPV DLS REGES YVGK LRSN LMGT KFTV YDRGICPMKGRGLVGAHTR
QELAAIS YET NVLG FK GPRKMSVIIPG MTL NHKQI PYQPQNNHDSLLSRQ NRTMENL VEL
HNKA PVNS DT QSYV LNFR GRVTQ ASVKNFQIVHKNDPDYIVM QFGRVADDVFTLD NYPL
CAVQAFGIGLSSFD SKLACE
>P39019
MPGVTVKD VNQ QEFV RALA A FLKK SGKL KVPEVDTV KLA HKELAP YDEN FYTRA ASTAR
HLYLRGGAGVGSM TKIYGG RQ NGVMP SHFSRGSKS VARV LQALE GLKM VEKDQDG GRK
LTPQGQR DLD RIAG QVAAANKKH
>A4D1E9
MVHCSCVLFRKYGNFIDK LRLFTRGGSGGMGYPR LGEGGKG GDVVVAQNRMTLK QLKDR
YPRKRFVAGVGANSKISALKGSKGKDCEIPVPGISVTDENGKII GELNKENDRILVAQG
GLGGKLLTNFLPLKGQKRIIHLDLKLIA DVGLVGFPNAGKSSLLSCVSHAKPAIADY AFT
TLKPELGKIMYSDFKQISVADLPGLIEGAHMNKG MGH KFLKHIERTRQLLFVVDISGFQL
SSHTQYRTAFETIILLTKELELYKEELQTKPALLAVNKMDLPDAQDKFHELM SQLQNP KD
FLHLFEKNMIPERTVEFQHIIPI SAVTGE GIEELKNCIRKSLDEQANQENDALHKKQLLN
LISDTMSSTEPPSKHAVTTSKMDII
>O00712
MMYSPI CLTQDEFHPFIE ALLPHVRAIA YT FNLQARKRKYFKKHEK RMSKDE ERAVKDEL
LSEKPEIKQKASRLLAKLRKDIRQEYREDFVLT V TGKKHPC CVLSNP DQKGKIRRIDCLR
QADKVR LDLV M VILFKG I PLESTDGERLMKSPHCTNPALCVQPH HITV SVKEL DFLAYY
VQE QD SGS GSP SHNDPAKNPPGY LEDSFVKSGVFNVSELVRVSRTPITQGTGVNFP IGE
IPSQPYYHDMNSGVNLQRSLSSPPSSKR PKTISIDENMEPSPTGDFY PSPSSPAAGSRTH
ERDQDMSSPTTMKKPEKPLFSSAS PQDSSP RLSTFPQHHHPGIPGV AHSVISTRT PPPPS
PLPFPTQAILPPAPSSYFSHPTIRYPPHLNPQDTLK NYVPSYDPSSPQTSQSYLG

>O15016

MARNCSECKEKAHILCTYCNRLCSSCTEEHRHSPVPGPFPPRAQKGSPGVNGGPDF
TLYCPLHTQEVLKLFCECDMLTCHSCLVVEHKEHCRHVEEVLQNQRMILEGVTQVAH
KKSSLQTSAKQIEDRIFEVKHQHRKVENQIKMAKMVLNELNQANGLIELEGITNERK
RKLEQLQSIMVLRQFEHVQNFINAVCSKTSVPFLSKELIVFQMQRLLETSCNTDPGS
PSIRFTEPNFTKQLASLGCCITTEGGQMSRADAPAYGGLQGSSPFYQSHQSPVAQQEALSH
PSHKFQSPAVCSSVCCSHCSPVSPSLKGQVPPPSIHPAHSFRQPPEMVPQQLGSLQCSA
LLPREKELACSPHPPKLLQPLETQPPVEQUESTSQRQLGQQLTSQPVCIVPQDVKQQGAHAQ
PTLQTQSIQVQFGHHQKLKLSHFQQQPQQQLPPPPPLPHPPPPLPPPQPHPPLPPSQ
HLASSQHESPPGPACSQNMDIMHHKFELEEMQKDLELLLQAQQPSLQLSQTKSQHQLQQT
IVGQINYIVRQPAPVQSOSQEETLQATDEPPASQGSKPALPLDKNTAAALPQASGEETPL
SVPPVDSTIQHSSPNVVRKHSTSLSIMGFSNTLEMELSSTRLERPLEPQIQSVSNLTAGA
PQAVPSLLSAPPKMOVSSLTSVQNQAMPSLTTSHLQTVPSLVHSTFQSMPNLISDSPQAMA
SLASDHPOAGPSLMSGHTQAVPSLATCPLQSIPPVSDMQPETGSSSSSGRTSGSLCPRDG
ADPSLENALCKVKEEPINLSVKKPLAPVVSTSTALQQYQNPKECENFEQGALELDAKE
NQSIRAFNSEHKIPYVRLERLKICAASSGEMPVFKLPQKNDQDGSFLLIECGTESSSM
SIKVSQDRLSEATQAPGLEGRKVTVTSLAGQRPPEVEGTSPEEHRLIPRTPGAKKGPPAP
IENEDFCAVCLNGGELLCCDRCPKVFHLSCHVPALLSFPGGEVCTLCRSLTQPEMEYDCE
NACYNQPGMRASPGLSMYDQKKCEKLVLSSLCCNNLSLPFHEPVSPALARHYQIIKRPMDL
SIIRRKLQKKDPAHYTTPEEVVSDVRLMFNCAKFNYPDSEVAEAGRCLEVFFEGLKEIYP
EKRFAQPRQEDSDSEEVSSESgcstpqgfppymqegiqpkrrrrhmenerakrmsfrla
nsisqv

>O15047

MDQEGGGDGQKAPSQRNYKLIVDPALDPALRRPSQKVYRYDGVHFSVNDSKYIPVEDLQ
DPRCHVRSKNRDFSLPVPKFKLDIFYIGQIPLKEVTFARLNDNVRETFLKDMCRKYGEVE
EVEILLHPRTRKHLGLARVLFTSTRGAKETVKNLHTSVMGNIIHAQLDIKGQORMKYYE
LIVNGSYTPQTVPTGGKALSEKFQGSGAATETAESRRRSSDTAAAYPAGTTAVGTPGNGT
PCSQDTSFSSSRQDTPSSFGQFTPQSSQGTPTYTSRGSTPYSQDSAYSSSTSTSKPRRS
ENSYQDAFSRRHFSASSASTASTAIAATTAAATASSSASSSSLSSSSSSSSSSQFRS
SDANYPAYYESNRYQRHTSYPPRRATREEPPGAPFAENTAERFPPSYTSLPPEPSRPTD
QDYRPPASEAPPPEPPPEPGGGGGGGSPEREVRTSPRASPARGSPAPETTNESVPF
AQHSSLDSRIEMLLKEQRSKFSFLASDTEEEEENSSMVLGARDTGSEVPGSGHGPGCTPP
PAPANFEDVAPTGSGEPGATRESPKANGQNQASCSSGDDMEISDDDRGGSPPPAPTPPQ
QPPPPPPPPPPPPYLASLPLGYPPHPQPAYLLPPRDPGPPPPEYPPPPPPPHIYDFVNS
LELMDRGAQGGMPMSFQMQTQMLTRLHQLRQGKGLIAASAGPPGAFGEAFLPFPPPQE
AAAGLPYALYAQQQEGRGAYSREAYHLPMPMAEPLPSSVSGEEARLPPREEAELAEKG
TLPTAGTVGRVLAMLVQEMKSIMQRDLNRKMVENVAFGAFDQESKEEKAKPFQNAAKQQA
KEEDKEKTKLKEPGLLSSLVDAKSGGTTGIEAFAFGSLRGALRPSFKVKRKEPSEISEA
SEEKRPRTPAEDEDDEPQEKEAGEPGRPGTKPPKRDEERGKTQGKHRKSFALDSEGE
EASQESSEKDEEDDEEDEDREEAVDTTKKETEVSDGEDEEDSSSKCSLYADSDGE
NDSTSDESSESSSSSSSSSSSSSSSSSESSSEDEEEERPAALPSASPPPREGPV
PTPAPVEVPVPERVAGSPVTPLPEQEASPARPAGPTESPPSAPLRPEPPAGPPAPAPR
PDERPSSPIPLLPPPKKRRKTVFSIAIEVVPAPEPPPATPPQAKFPGPASRKAPRGVERT
IRNLPLDHASLVKSPEEVSRGGRSRAGGRGRLTEEEEAEPGTEVDSLAVLADLALT PARRG

LPALPAVEDSEATETSDEAERPRPLLSHILLEHNYALAVKPTPPAPALRPPEPVPAPAL
FSSPADEVLEAPEVVVAEAEERPQQLQQQREEGEEECEESEEEDSSSDGEG
ALRRRLSRSHARRRPPPPPPPPRAYERPRSEFEQMTILYDINSGLDSEDMSYLRLTYE
RLLQQTSGADLNNDTHVHTITNLTPKRKRRPQDGPREHQTGSARSEGYYPIKKEKDY
LDVCPVSARQLEGVDTQGTNRVLSEERRLSAIGTSAIMSDLKLNLNQLKFRKKKL
RGFRSRIHEGLFAMEPIAADEMVICEYVGQNIQMVADMREKRYVQEGIGSSYLFRVDHDT
IIDATKCGNLARFINHCCTPNCYAKVITIESQKKIVIYSKQPIGVDEEITYDYKFPLEDN
KIPCLCGTESCRGSLN

>O15084

MSRVCIVVLEEEDESPAFISKLQPENKSLHSPPSGNVLVRYPSLVQAIFNGDPDEVRAL
IFKKEDVNFDNEKRTPLHAAAYLGDAEIIIELLILSGARVNAKDSLTLPLHRAVASCSEE
AVQVLLKHSADVNDARDKNQTPLHIAAANKAVKCAEALVPLLSNVNVSDRAGRTALHAAF
SGHGEMVKLLLSRGANINAQDKDRRAIHAAYMGHIEVVKLLVSHGAEVTCDDKSYTPL
HAAASSGMISVVKYLLDLGVDMNEPNAYGNTPLHVACYNGQDVVVNELDCGAIVNQKNE
KGFTPLHFAAATHGALCLELLVNGADVNMKSKDGKTPHMTALHGRFSRSQTIIQSGA
VIDCEDKNGNTPLHIAARYGHELLINTLITSGADTAKRGIHGMFPLHAAALSGFSDCCRK
LLSSGFDIDTPDDFGRTCLHAAAAGGNLECLNLLNTGADFNKKDKFGRSPLHYAAANCN
YQCLFALVGSGASVNDLDERGCTPLHYAATSDTDGKCLEYLLRNDANPGIRDQGYNAVH
YSAAYGHRLCLQLIASETPLDVLMETSGTDMLSNSRNATISPLHLAAAYHHHQALEVLV
QSLLDLDVRNSSSGRTPLDLAFFKGHECVDFLINQGASILVKDYILKRTPIHAAATNGHS
ECLRLLIGNAEQNAVDIQDGNGQTPLMLSVLNGHTDCVYSLLNGANVDAKDKGRTALH
RGAVTGHEECVDALLQHGAKCLLRDSRGRTPIHLSAACGHIGVLGALLQSAASMDANPAT
ADNHGYTALHACYNGHETCVELLLEQEVFQKTEGNAFSPLHCAVINDNEGAAEMLIDTLG
ASIVNATDSKGRTPLHAAAFDHVECLQLLLSHNAQVNSVDSTGKTPLMMAAENGQTNTV
EMLVSSASAELTLQDNSKNTALHLACSKGHETSALLILEKITDRNLINATNAALQTPLHV
AARNGLTMVVQELLGKGASVLADEVNGYTPALACAPNKDVADCLALILATMMPVSSSSPL
SSLTFNAINRYTNTSKTVSFEALPIMRNEPSSYCSFNNIGGEQEYLYTDVDELNDSSET
Y

>O15151

MTSFSTSAQCSTSACRISPQINQVRPKLPLLKILHAAGAQGEMFTVKEVMHYLGQYI
MVKQLYDQQEQHMVYCGGDLLGELLGRQSF SVKDPSPLYDMLRKNLVTLATATTDAQTL
ALAQDHSMIDIPSQDQLKQSAEESSTS RKTTEDDIPTLPTSEHKCIHSREDEDLIENLAQ
DETSRLDLGFEEDVAGLPFLGNLRSNYTPRSNGSTDQTNQDVGTIAVSDTTDDLFLNES
VSEQLGVGIKVEAADTEQTSEEVGVVSDKVIEVGKNDDLEDSKSLSDDTDVEVTSEDEQ
CTECKKFNSPSKRYCFRCALRKDYSDCSKLTHSLSTS DITAPEKENEGNDVPCRCRTIS
APVVRPKDAYIKKENSKLFDP CNSVEFLDLAHSSESQETISSMGEQLDNLSEQRTDTEM
EDCQNLLKPCSLCEKPRDGNIIHGRTGHLVTCFH CARRLKKAGASC PICKKEIQLVIKV
FIA

>O15265

MSERAADDVRGEPRRAAAAAGGAAAAARQQQQQQQQQPPPPQQRQQHPPPPRTRP
EDGGPGAASTSAAAMATVGERRPLPSPEVMLGQSNLVEASKLPGKDGTTELDESFGKN
REVMGLCREDMPIFGFCPAHDDFYLVVCNDNCQVVKPQAFQSHYERRHSSSKPPLAVPP
TSVFFPSLSKSKGGASAGSNRSSSGGVLSASSSSSKLLKSPKEKLQLRGNTRPMHPIQ
QSRVPHGRIMTPSVKVEKIHPKMDGTLLKSAVGPTCPATVSSLVKPGLNCPSIPKPTLPS

PGQILNGKGLPAPPTLEKKPEDNSNNRKFLNKRLSEREFDPDIHCGVIDLDTKKPCTRSL
TCKTHSLTQRRAVQGRRKRFDVLLAEHKNKTREKELIRHPDSQQPPQPLRDPHPAPPRTS
QEPhQNPHGVIPSESKPFVASKPKHTPSLPRPPGCPAQQGGSAPIDPPPVEHESPHPLP
ATEPASRLSSEESEGDDKEESVEKLDCHYSGHHQPASFCTFGSRQIGRGYYVFDSRNRL
RCALNLMVEKHLNAQLKKIPPVPSSTSPISTRIPHRTNSVPTSQCGVSYLAAATVSTSPV
LLSSTCISPNSKSVPAHGTTLNAQPAASGAMDPVCMSMQSRQVSSSSSPSTPSGLSSVPS
SPMSRKPKQKLKSSKSLRPKESSGNSTNCQNASSSTSGSGKCRKNSSPLLVHSSSSSSSS
SSSHSMESFRKNCVAHSGPPYPSTVTSSHISIGLNCVTNKANAVNVRHDQSGRGPPTGSP
AESIKRMSVMVNSSDSTLSLGFIHQSNELPVNSHGSFSHSHTPLDKLIGKKRKCSPSSS
SINNSSSKPTKVAKVPAVNNVHMKHTGTIPGAQGLMNSSLHQPKARP
>O43294
MEDLDALLSDLETTSHMPRSGAPKERPAEPLTPPPSYGHQPQTGSGESSGASGDKDHY
STVCKPRSPKPAAPAAPPFSSSSGVLTGLCELDRLLQELNATQFNITDEIMSQFPSSKV
ASGEQKEDQSEDKKRPSLPSSPGLPKASATSATLELDRLMASLSDFRVQNHLPASGPT
QPPVVSSTNEGSPSPPEPTGKGSLDTMLGLLQSDLRSRGVPTQAKGLCGSCNKPIAGQVV
TALGRAHPEHFVCGGCSTALGGSSFEKGDPFCPECYFERFSPRCGFNCQPIRHKMVTA
LGTHHPEHFCCVSCGEFGDEGFHEREGRPYCRRDFLQLFAPRCQGCQGPILDNYISALS
ALHPDCFVCRECFCAPFSGGSFFEHEGRPLCENHFHARRGSLCATCGLPVTGRCVSALGRR
FHPDHFTCTFCLRPLTKGSFQERAGKPYCQPCFLKLF
>O43482
MAAQPLRHRSRCATPPRGDFCGGTERAIDQASFTSMEDTQVVKGSSPLGPAGLGAEPA
AGPQLPSLQPERCAVFQCAQCHAVALADSVHLADLSRSLGAVVFSRVTNVVLEAPFLVGI
EGSLKGSTYNLLFCGSCGIPVGFLYSTAALAALRGHFCLSSDKMVCYLLTKAIVN
EMDIQNVPLSEKIAELKEKIVLTHNRLKSLMKILSEVTPDQSKPEN
>O60306
MAAPAQPKKIVAPTVSQINADEFVTQLACKYAPHIKKKSPFDIKVIEDIYEKEIVKSRAI
RKIMLLEFSQYLENYLMNYSPEVSSKAYLMSICCMVNEKFRENVPAGEIFKKKPDHFPPFF
KHILKAALAETDGEFSLHEQTVLLLFLDHCFNSLEVDLIRSQLQQLISLPMGQLARLE
LELKKTPLRKFNLIKNDKMDPEAREQAYQERRFLSQLIQKFISVLKSVPLSEPVTMD
KVHYCERFIELDMIDLEALLPTRRFTILDDSHLLVHCYLSNLVRREEDGHLFSQQLDMLK
FYTGFEINDQTGNALTENEMTTIHYDRITSILQRAAFAHFPELYDFALSNAEVDTRESLV
KFFGPLSSNTLHQVASYLCLLPKNEDETFDKEFLLELLVSRHERRISQIQQLNQMPL
YPTEKIIDENIVPTEYYSGEGCLALPKLNQFLTLHDYLLRNFNLFRLESTYEIRQDIED
SVSRMKPQSEYGGVVGARMAQPIAVTVVAKPNIGENPTRVRADVTINLNRDH
DEEGLRKHDVCFLITVRPTKPYGTFDRRRFIEQVGLVYVRGCEIQGMLDDKGRVIEDG
PEPRPNLRGESRTFRVFLDPNQQYQQDMNTNTIQNGAEDVYETFNIIMRRKPENNFKAVLE
TIRNLMNTDCVVPDLHDIILGYGDPSSAHYSKMPNQIATLDFNDTFLSIEHLKASFPGN
VKVTVEDPALQIPPFRITFPVRSGKGKRKDADVEDEDTEEAKTLIVEPHVIPNRGPYPY
NQPKRNTIQFHTQIEAIRAGMQGLTMVVGPPGTGKTDVAVQIISNIYHNFPEQRTLIV
THSNQALNQLFEKIMALDIDERHLLRLGHGEEELETEKDFSRYGRVNYVLARRIELLEEV
KRLQKSLGVPGDASYTCETAGYFFLYQVMSREEYISKVKNKGSTLPDVTEVSTFFFHEY
FANAPQPIFKGRSYEEDMEIAEGCFRHIKKIFTQLEEFRASELLRSGLDRSKYLLVKEAK
IIAMTCTHAALKRHDVLVKLGFKYDNILMEEAAQILEIETFIPLLQNPQDGFSRLKRIMI
GDHHQLPPVIKNMAFQKYSNMEQSLFTRVVRGVPTVLDQAQRARASLCNLYNRYKNLG

NLPHVQLLPEFSTANAGLLYDFQLINVEDFQGVGESEPNPYFYQNLGEAEYVVALFMYMC
LLGYPADKISILTTNGQKHLIRDIINRRCGNPLIGRPNKTTVDRFQGQQNDYILLSL
VRTRAVGHLRDVRRLVAMSARLGLYIFARVSLFQNCFELTPAFSQLTARPLHLHIIPT
EPFPTRKNGERPSHEVQIINKMPQMANFVYNMAMYHLIQTTHHYHQTLLQLPPAMVEEGE
EVQNQETELETEEEEAMTVQADIIPSPDTDSCRQETPAFQTDTTPSETGATSTPEAIPALS
ETTPVVGAVSAPAEANTPQDATSAPEETK

>O60729

MKRKSERRSSAAAPPCSRRCSSTSPGKKIRSSSTQQDPRRDPQDDVYLDITDRLCFAIL
YSRPKSASNVHYFSIDNELEYENFYADFGPLNLAMVYRYCCKINKKLKSITMLRKKIVHF
TGSDQRKQANAALVGCMVIYLGRTPEEAYRILIFGETSYIPFRDAAYGSCNFYITLLD
CFHAVKKAMQYGFNLNSFNLDYEHEYKAENGDLNIPDRFIAFCGPHSRARLESGYHQ
HSPETYIQYFKNHNVTTIIRLNKRMYDAKRTDAGFDHHDLFADGSTPTDAIVKEFLDI
CENAEGAIAVHCKAGLGRGTGLIACYIMKHYRMTAAETIAVRICRPGSVIGPQQQFLVMK
QTNLLEGDYFRQKLKGQENGQHRAAFSKLLSGVDDISINGVENQDQQEPEPYSDDEING
VTQGDRLRALSKRSRQSKTNAIPLTVILQSSVQSCKTSEPNISGSAGITKRTTRSASRKSS
VKSLSIDRTKTVLR

>O75530

MSEREVSTAPAGTDMPAAKKQKLSSDENSNPDLSGDENDDAVSIESGTNTERPDTPTNTP
NAPGRKSGKGKSKKCKYSFKCVNSLKEDHNQPLFGVQFNHSKEGDPVFATVGSNRVTL
YECHSQGEIRLLQSYVDADADENFYTCATYDSNTSHPLLAVAGSRGIIRIINPITMQCIK
HYVGHGNAINELFHPRDPNLLSVSKDHARLNQIQTDTLVAIFGGVEGHRDEVLSADYD
LLGEKIMSCGMDHSLKLRINSKRMMAIKESYDYNPNKTNRFISQKIHFPDFSTRDIHR
NYVDCVRLGDLILSKSCENAIVCKPGKMEDDIDKIKPSESNTILGRFDYSQCDIYMRFS
MDFQKMLALGNQVGKLYVDLEVEDPHKAKCTTLTHHKCGAAIRQTSFSRDSSILIAVCDD
ASIRDRLR

>P61088

MAGLPRIIICKETQRLLAEPVPGIKAEPDESMARYFHVVIAGPQDSPFEGGTFKLELFPE
EYPMAAPKVRFMTKIHYPNVDKLGRCILDILDKSPALQIRTVLLSIQALLSAPNPPDDPL
ANDVAEQKTNEAQAIETARATRLYAMNNI

>P68036

MAASRRLMKELEEIRKCGMKNFRNIQVDEANLLTQGLIVPDNPYDKGAFRIEINFPAEY
PFKPPIPFTKTIYHPNIDEKGQVCLPVISAENKPATKTDQVIQSLIALVNDPQPEHPLR
ADLAEEYSKDRKKFCKNAEEFTKKYGEKRPVD

>Q00688

MAAAVPQRATVEQLRSEQLPKDIIKFLQEHGSDSFLAEHKLLGNIKNVAKTANKDHLVT
AYNHLFETKRFKGTESISKVSEQVKVNLNEDKPETKSEETLDEGPPKYTKSVLKKGDK
TNFPKKGDVVHCYTGLQDGTVFDTNIQTSACKKKNAKPLSFKVGVGKVIRGDEALLTMS
KGEKARLEIEPEAYGKKQPDAKIPPNAKLTFEVELVDID

>Q01196

MRIPVDASTSRRFTPSTALSPGMSEALPLGAPDAGAALAGKLRSGDRSMVEVLADHPG
ELVRTDSPNFLCSVLPHTRCNKTLPIAFKVVALGDVPDGLTVVMAGNDENYSAELRNAT
AAMKNQVARFNDLRFVGRSGRGKSFTLITVFTNPPQVATYHRAIKITVDGPREPRRHQ
KLDDQTKPGSLSFSERLSELEQLRRTAMRVSPHPAPTPNPRASLNHSTAFNPQPQSQM
DTRQIQPSPPSYDQSYQYLGSIASPSVHPATPISPGRASGMTTLSAELSSRLSTAPDLTA

FSDPRQFPALPSISDPRMHYPGAFTYSPTPVTSGIGIGMSAMGSATRYHTYLPPPGSS
QAQGGPFQASSPSYHLYYGASAGSYQFSMVGGERSPPRILPPCTNASTGSALLNPSLPNQ
SDVVEAEGSHNSPTNMAPSARLEEAVRPY

(8) 30 peroxisomal proteins

>B3DMA2

MEMDVTRDTVEVLPQHKFDIERSLEAYLNQHLPFGSDHRAVLTVTQYRSGQSNPTFFLQK
GSQAYVLRKKPPGSLLPKAHKIDREFKVQKALFSVGFPVPKPLLYCSNASIIGTEFYVME
HVQGRIFRDFSIPGVSPAERAIIYVSLVETLALHSDLIHSLGLDRYGTGVGYCKRQVSTT
KQYQASAHQSIPAMDQLSTLMRNLPDSNEECLVHGDFKLDNIVFHPKECRVIAVLDELS
TFGHPLSDLALHLSLFYFPRTLPMINRGSHIQENTGIPLMEELISIYCRRRGIDPNLPNNF
FMALSFFKLAGIAQGVSYRLMGNNSSEDSFLTANTVQPLAETGLQLSRTLSTVPPQAD
AKSRLFAQSRRGQEVLTRVKQFMQHVFPAEKEVAEYYAQNGNSAEKEHPLVIEKLKEMA
KAEGLNLFPAVSGLSQVDYALIAETGKCFAPDVNCQAPDTGNMEVLHYGSEQQQKQ
QLEPLLRGDITSVFCMTEPNVSSDATNMECSIQRDGGSYIVHGKKSSGAGNPKCKIAVV
LGRTESPSVSRHKVHSMILVPMDTPGVELIRPLSVFGYMDNVHGGHEVHFHVRVPASNL
ILGEGRGFEISQGRLGPGRIHCMRSVGLAERILQIMCDRAVQREAFGKKLYEHEVVAHI
AKSRIAIEEIRLLTLKAAHSIDLGSAAARKEIAMIKVAAPKAVCKIADRAIQVHGGAGV
SQDYPLANMYAIIRTLRLADGPDEVHLSAIAKMELQDQARQLKARM

>P07872

MNPDLRKERASATFNPELITHILDGSPENTRRREIENLILNDPDFQHEDYNFLTRSQRY
EVAVKKSATMVKKMREYGISDPEEIMFKKLYLANFVEPVGLNYSMFIPTLLNQGTTAQQE
KMRPSQELQIIGTYAQTEMGHGTHLRLGETTATYDPKTQEFILENSPTVTSIKPGGLGKTS
NHAIVLAQLITQGECYGLHAFVVPIREIGTHKPLPGITVGDIGPKFGYEEMDNGYLKMDN
YRIPRENMLMKYAQVKPDGYVKPLSNKLTYGTMVFVRSFLVGNAQSLSKACTIAIRYS
AVRRQSEIKQSEPEPQIILDFQTQQYKLFPLLATAYAFHFVGRYMKETYLRINESIGQDL
SELPELHALTAGLKAFTTTANAGIEECRMACGGHGYSHSSGIPNIYVTFTPACTFEGENT
VMMIQTARFLMKIYDQVRSGKLVGGMVSYLNLDLPSQRIQPQQVAVPTMVDINSLEGTEA
YKLRAARLVEIAAKNLQTHVSHRKSKDEVANLTSVDLVRASEAHCHYVVVKVFSKDKLPKIQ
DKAVQAVLRNLCLLYSLYGISQKGDFLEGSIITGAQLSQVNARILELLTLIRPNAVALV
DAFDKDMTLGSVLCGRYDGNVYENLFEAKKSPLNKTEVHESYHKHLKPLQSKL

>O74934

MTTNFTDPPVEMAKERGKTQFTVRDVNTFLNGGEEETQIVEKIMSSIERDPVLSVTADY
DCNLQQARKQTMERVAALSPYLVTDEKLSLRAQLHGMVDMSTRRLSIHNNLFIGSIRG
SGTPEQFKYVKKGAVAVKQFYGCFAMTELGHGSNLKGLETTATYDQDSDQFIINTPHIGA
TKIGGAAHTSTHCVCFAKLIVHGKDYGTRNFVVPLRVHDHSLKVGVSIGDIGKKMGRDG
VDNGIQFTNVRIPRQNMMLRYAKVSDTGVVTPALDQLTYGALIRGRVSMIADSFHVSKR
FLTIALRYACVRRQFGTSGDTKETKIIDYPYHQRRLLPLLAYCYAMKMGADEAQKTIETT
DRILALNPNDPAQKNDLEKAVTDTKELFAASAGMKAFTTGCAKIIDECRQACGGHGYSGY
NGFGQGYADVVQCTEGDNNVLCLSMGRGLVQSAQILAGKHVGASIQYVGDKSKISQNGQ
GTPREQLLSPEFLVEAFRTASRNNILRTTDKYQELVKTLNPDQAFEELSQQRFQCARIHT
RQHLISSFYARIATAKDDIKPHLLKLANLFALSIEEDTGIFLRENILTPGDIDLINSLVD
ELCVAVRDQVIGLTDAGLSDFFINAPIGSYDGNVYEKYFAKVNQQNPATNPRPPYYEST
LKPFLFREEDDEICDLDE

>O64894

MAS PGE PNR TAE DE SQAA RRIER LSL HLT PI PL DD S QGV E M ETCA AGKAKA KIE VDM GS
LSLYM RGKH REIQ ERF EYF NSRPELQTPVGISMADHREL CMKQLVGLVREAGIRPFRV
NEDPAKYFAIMEA VGSVDVSLAI KMGVQFSLGGSVINL GTKKHRDRFFDGIDNV DYPGCF
AMTELHHGSNVQGLQTTATFD PITDEFIINTPNDGAIKIGNAAVHGKFATVFAKLVLPTH
DSRK TADM GVHAFIVPIRDLKSHKTLPGIEIHDCGHKVGLNGVDNGALRFRSRV IPRDNL
LNRFGEVSRDGKYKSSLPSINKRFAATLGELVGGRVGLAYSSASVLKIASTIAIRYSLLR
QQFGPPKQPEVSILDYQSQQHKLMPMLASTYAFHFSTMQLVEKYAQMKKT HDEELVGDVH
ALSAGLKAYVTSYTAKSLS TCREACGGHYAVVNRFGT LRNDHDIFQT FEGDNTVLLQV
AA YLLKQYQEKFQGGTLAVTNYLRESMNTYLSQP NPVTARESADHLRDPKFQ LDAFQYRT
SRLLQSVAVRLRKHTKNLGSFGANRCLNHLLT LAES HIESVILA QFIESVQRC PNANTQA
TLKLVC DLYALDRINDIGTYRNVDYVAPNKA KAIHKL TEYLCFQVRNIAQELVDAFDL PD
HVTRAPIAMKS NAYSQYTQYIGF

>O74935

MNPNNNTGTIEINGKEYNTFTEPPVAMAQERAKTSFPVREMTYFLDGGEKNTLKNEQIMEE
IERDPLFNNDNYYDLNKEQIRELT MERVAKLISL FVRDQPEDDIKKRF ALIGIADM GTYTR
LGVHYGLFFGAVRG TGTAEQFGHISKGAGDLRKFYGCFSMTELGHGSNLAGLETTAIYDE
ETDEFIINTPHIAATKIGGAHTATHTVV FARLIVKGKDYGVKTFVVQLRNINDHSLKVG
ISIGDIGKKMGRD GIDNGI QFTNVRIPRQNLL MKYTKVDREGN VTQPPLAQLTYGSLITG
RVSMASD SHQVGKRFITIALRYACIRRQFSTTPGQ PETKI IDYPYHQRRLLPLL AYVYAL
KMTADEVGAL FSRTMLKMD DLKPDDKAGLNEV SVSDV KELFSV SAGL KAF STACADVIDKT
RQACGGHGYSGYNGFGQAYADVVQCTEGDNNIL TLSAGR ALI QSAVALRKGE PVGN AVSY
LKRYKDLANAKLNGRS LTD PKVL VEA EVAAGNI INRATDQYEKLIGEGLNADQAFEVLSQ
QR FQAA KVHTRRH LIAAFFS RIDE AGEAIKQPLLN ALLF ALSIEEDS GLFL REGF LEP
KDIDTVTEL VN KYCTTV REEVIGY TD AFNLS DYFIN APIG CYD GDAY RHYF QKV NEQ NPA
RDPRPPYYASTLKPFLFREEEDDDICELDEE

>O74936

MISP NL TAN VEIDG KQY NT FTEPP KAL AGERAKV KFPI KDMTEFL HGGE ENV TMIE RL MT
ELE RD PVL NVSGD YD MPK EQL RETA VRIA AAL SGH KKDT EK ALL RSQL HGIV DMG TRIR
LGV HTGL FMG AIRG SGT KEQYDY VRKG AADV KG FYGC FAM TEL GHGS NVA GLETT ATYI Q
DTDEFIINTPNTGATKIGGAHSATHTACFARLLVDGKDYGVK IFVVQL RDVSSHSLMPG
IALGDIGKKMGRDAIDNGI QFTNVRIPRQNML MKYAKV S STGKV SQPPLAQLTYG ALIGG
RVTM IADS FF VSQRFITIALRYACVRRQFGTT PGQ PETKI IDYPYHQRRLLPLL AFTYAM
KMAADQSQI QYDQ TTDLLQ TIDPKDKGALG KAI VDLK ELFASSA GLKA FTTCANI IDQC
RQACGGHGYSGYNGFGQAYADVVQCTEGDNNVL CLSMGRGLI QSC LGH RKG KPL GS SVGY
LANKGLEQATLSGRDLKDPKVLIEAEKVANGAIQRATDKFVELKGGLSPDQAFEELSQQ
RFQCAKI HTRKHLVTAFYERINASAKADVKPYLINLANLFTLSIEEDS GLFL REGF LQPK
DIDQVTEL VN HYCKE VRDQVAGY TD AFGL SD FIN APIG NYD GDVY KHYFA KV NQQN PAQN
PRPPYYESTLRPFLFREDED DDCICELDEE

>O00116

MAEAAAAGGTGLGAGASYGSAADRDRDPDRAGRRLRVLSGHLLGRPREALSTNECKA
RRAASAATAAPTATPAAQESGTIPKKRQEVMNGGYNDSKFIFNKKQIELTGKRYPLSG
MGLPTFKEI QNT LGVN VEHKTT SKASLN PSDT PPSV VNEDFLHDLKETNISYSQ EADDRV
FRAHGHCLHEI FLLREGMFERIPDIVLPTCHDDVV KIVN LACKY NL CIIPIGGGTSV SYG
LMCPADETRTI ISLD TSQM NRILV DENN LTAH VEAG ITGQ ELER QLKES GYCTGHEPD SL

EFSTVGGVSTRASGMKKNIYGNIEDLVVHIKMVTPRGIIEKSCQGPRMSTGPDIIHHFIMG
SEGTLGVITEATIKIRPVPEYQKYGSVAFPNFEQGVACLREIAKQRCAPASIRLMDNKQF
QFGHALKPQVSSIFTSFLDGLKKFYITKFKGFDPNQLSVATLLFEGDREKVLQHEKQVYD
IAAKFGLAAGEDNGQRGYLLTYVIAYIRDIALEYYVLGESFETSAPDRVVDLCRNVKER
ITRECKEKGVQFAPFSTCRVTQTYDAGACIYFYFAFNRYRGISDPLTVFEQTEAAAREEIL
ANGGSLSHHGVGKLRKQLKESISDVFGMLKSVKEYVDPNNIFGNRNLL

>O64883

MAHLQRTFPTEMSKGASFPKGFLFGTASSSYQYEGAVNEGARGQSVDFHSNRFPHRISD
SSDGNNAVDFYHRYKEDIKRMKDINMDSFRLSIAPRVLPYGKRDRGVSEEGIKFYNDVID
ELLANEITPLVTIFHDIPQDLEDEYGGFLSEQIIDFRDYASLCFERFGDRVSLCTMNEP
VYSVAGYDTGRKAPGRCSKYVNGASVAGMSGYEAYIVSHNMLLAHAEAVEVFRKCDHIKN
GQIGIAHNPLYEPYDPSDPDDVEGCNRAMDFMLGHQHPTACGDYPETMKKSVGDRRLPSFT
PEQSKKLIGSCDYVGINYSSLFVKSIKHVDPTQPTRTDQGVDMKTNIDGKQIAKQGGSE
SFTYPTGLRNILKYVKKTGNPPILITENGYGEVAEQSQSLYMYNPSIDTERLEYIEGHI
HAIHQAIHEDGVRVEGYYVSLLDNFENSGYGVRYGLYIDYKDGLRRYPKMSALLKEFLR
FDQEDDSSTSKEEKKESYGKQLLHSVQDSQFVHSIKDSGALPAVLGSLFVVSATVGTSL
FFKGANN

>P17598

MDPYKHRPSSAFNSPFTTNSGAPVNNNSLTVGPRGQYLLEDYHLVEKLANFDRERIPE
VVHARGASAKGFFEVT HDISHLTCA DFLRAPGVQTPVIVRFSTV IHERGSPETLRDPRGF
AVKFYTREGNF DLVGNMPVFF FIRDGMKFPDMVHALKP NP KSHIQENRILDFFSHHPESL
HMFTFLFDDLGVPQDYRHMEGSGVN TYSLINKAGKAHYVKFHKPTCGVKCLL EDEAIKVG
GANHSHATQDLYDSIAAGNYPEKLF IQTIDPDHEDKFDPLDVTKT PEDILPLQPVGRL
VLNKNIDNFFAENEQIAFCPAIIVVPGIYYSDDKLLQTRIFS YSDTQRHRLGP NYLQLPAN
APKCAHHNNHHEGFMN FMHRDEEINYFPSRYDPVRHAEMFPIPPAVCTGRREKCII EKEN
NFKQPGERYRSAADRQERFICRVDAL SDPRVTHEIRSIISYSQADKSVGQKL ASLLNVRP
SI

>P18122

MDPYKHRPSSGSNSSFTTNSGAPVNNNSALT VGQRGPI LLEDYHLIEKLAQFDRERIPE
VVHARGASAKGFFEVT HDVSHLTCA DFLRAPGVQTPVIVRFSTV IHERGSPETLRDPRGF
AVKFYTREGNF DLVGNMPVFF FIRDGMKFPDMVHALKP NP KSHIQENRILDFFSHHPESL
HMFTFLFDDVG IPLNYRHMEGFGVN TYSLIN RDGKPH LVKFHKPTCGVKCLL NEAVT VG
GTCHSHATKDL YDSIAAGNYPEKLYI QTIDLDHEDKFDPLDVTKT PEDIIPLQPVGRM
VLNKNIDNFFAENEQIAFCPAI SVPAI HYSDDKLLQTRIFS YADTQRHRLGP NYLMLPVN
APKCAHHNNHHDGF MNFM HRDEEV NYFPSRFDPARHAEK VPIP PRLTRCREK CII QKEN
NFKQAGERYRSFDPARQDRFIQRVD ALTHPRVTHEHRTIISYSQCDAALGQKLPSRLNLK
PSM

>P25819

MDPYKRYPASSYN SPFTTNSGAPVNNNSMTVGPRGPI LLEDYHLVEKLANFDRERIPE
RVVHARGASAKGFFEVT HDISNLTCADFLRAPGVQTPVIVRFSTV IHERGSPETLRDPRGF
FAVKFYTREGNF DLVGNMPVFF FIRDGMKFPDMVHALKP NP KSHIQENRILDFFSHHPESL
LN MFTFLFDDIGI PQDYRHMDGSGVN TYMLINKAGKAHYVKFHKPTCGVKSL LEEDAIRV
GGTNHSHATQDLYDSIAAGNYPEKLF IQI IDPADEDKFDPLDVTKT PEDILPLQPVGR
MVLNKNIDNFFAENEQIAFCPAIIVVPGIYHSDDKLLQTRFSYADTQRHRLGP NYLQLPV

NAPKCAHHNNHHEGMNFMHRDEEVNYFPSRYDQVRHAEKYPTPAVCSGKRERCIEKE
NNFKEPGERYRTFTPERQERFIQRIDALSDPRITHEIRSIISYSQADKSLGQKLASRLNV
RPSI
>P30567
MDPYKFRPSSFDSPFTTNSGAPVNNNSSLTVGARGPILLEDYHLVEKLANFDRERI PER
VVHARGASAKGFFEVTHDISQLTCADFLRAPGVQTPLIVRFSTVIHERGSPETLRDPRGF
AVKFYTREGNFDLVGNFPVFFIRDMKFPDMVHALKPKNPKSHIQENRILDFFSHHPESL
HMFTFLFDDIGVPQDYRHMDGSGVHTYTLINKAGKSHYVKFKPTCGVKSLLEDEAIRVG
GANHSHATQDLYDSIAAGNYPEKLFIQIMDPLHEDRFDFDPLDVTKTPEDIPLQPMGRM
VLNKNIDNFFAENEQLAFCPSLIVPGIYYSSDKLLQTRIFSYSDTQRHRLGPNYLQLPAN
APKCAHHNNHHEGMNFMHRDEEVNYFPSRYDPVRHAEKHIPSTVLSGKREKCIIGKEN
NFKQPGERYRSFSADRQERFINRIDALSDPRVTHEIRSIISYSQADKSLGQKIASRLNVR
PSI
>P25890
MDPYKHRPSSAFNSPFTTNSGAPVNNNSSLTVGSRGPILLEDYHLVEKLAQFDRERI PER
VVHARGASAKGFFEVTHDISHTCADFLRAPGVQTIVRFSTVIHERGSPETLRDPRGF
AVKFYTREGNYDLVGNFPVFFVHDGMNFPDMVHALKPKNPQTHIQENRILDFFYNFPESL
HMFSFLFDDVGVPQDYRHMDGFGVNTYTLINKAGKSYYVKFKPTCGVKCLLEEEAIQVG
GSNHSHATKDLYDSIAAGNYPEKLYIQTIDPAHEDRFEFDPLDVTKTPEDIIPLOPVGRM
VLNKNIDNFFAENEQLAFCPAIMLPGIYYSSDKMLQTRVFSYADSQRHRLGPNYLQLPVN
APKSHHNNHHEGMNAIHRDEEVNYFPSRHTVRHAERVPIPTTHLSARREKCNIPKQNH
FKQAGERYRTAPDRQERFLRRVEALSDTDPRITHEIRSIIVSYSQADRSLGQKLASHLNMR
PSI
>O49506
MEITNVMEYEKIAKEKLPKMVDYYASGAEDQTLQENRNAFSRILFRPRIIDVSKIDVS
TTVLGFNISMPIMIAPTAMQKMAHPDGELATARATSAAGTIMITLSSATCSVEEVASTGPG
IRFFQLYVYKDRNVVIQLVKRAEEAGFKAIALTVDTPRLGRRESDIKNRFALPRGLTLKN
FEGLDLGKIDKTNDSGLASYVAGQVDQSLSKDIKLQSITSPLILVKGVITAEDARIAVEY
GAAGIIVSNHGARQLDYVPATIVALEEVVKAVEGRIPVFLDGGVRRGTDVFKALALGASG
VFVGRPSLFSLAADGEAGVRKMLQMLDEFELTMALSGCRSLREISRTHIKTDDTPHYLS
AKL
>O35586
MPEINTSHLDEQQVQLLAEMCILIDENDNKIGADTKKNCHLNENIDKGLLHRAFSVFLFN
TENKLLLQQRSDAKITFPGCFTNSCCSHPLSNPGELEENDAIGVKRAAQRRLKAELEGIPL
EEVDPNEMHYLTRIYYKAQSDGIGEHEIDYILFLKKNVTLPDPNEIKSYCYVSKEELKE
LVKKAASGEVKLTPFKIIVDTFLFKDNLNHLSQFVDHEKIHRM
>O35760
MPEINASNLDEKVQLLAEMCILIDENDNKIGADTKKNCHLNENIDKGLIHR AFSVFLFN
TENKLLLQQRSDAKITFPGCFTNSCCSHPLNNPGELEENDAMGVKRAAQRRLKAELEGIPL
EEVDLNEMNYLTRIYYKAQSDGIGEHEIDYILFLRKVNTPDPNEIKSYCYVSKEELKE
ILKKEARGEIKLTPFKIIADAFLFKDNLNHLSPFVDHEKIHRM
>P00371
MRVVVIGAGVIGLSTALCIHERYHSVLQPLDVKVAADRFTPFTTDVAAGLQPYTSEPSN
PQEANNQQTNYLLSHIGSPNAANMGLTPVSGYNLFREAVPDPLYKDMVLGFRKLTPRELD

MFPDYRYGFNTSLILEGRKYLQLTERLTERGVKFFLRKVESFEEVARGGADVIINCTGVA
GVLQPDPLLQPGRGQIIKVDAPLKNFIITHDLERGIYNSPYIIPGLQAVTLGGTFQVGNN
EINNIQDHNTIEGCRLEPTLDAKIVGEYTGFRPVRPQVRLEREQLRFGSSNTEVIHNY
GHGGYGLTIHGCALEVAKLFGKVLEERNLLTMPPSHL
>O18778
MDRNRASARLTVLLRHLGCRSAGTIAAHHTSGVGLASFHPQQFQYTRENNVLSLEQRKF
YEENGFLVIKNLVSDADIQRFRNEFERICRKEVKPLGLSVMRDVTITKSEYVPSEKVVSK
VQDFQEDEELFRYCTLPEILKYVECFTGPNIAMHTMLINKPPDSGKTSRHPLHQDLHY
FPFRPSNSIVCATAMEHIDRNNNGCLVVLPGTHKGPLQPHDYPQEGGVNIMFHGIQDYDKN
NARVHLVMEKGDTVFFHPLLIHGSGRNKSQGFRKAISCHFADANCHYIDVEGTSQENIEK
EVVDIVRKKYGFKDVTLKDVTFRGRVVKGERTNL
>O14832
MEQLRAAARLQIVLGHLGRPSAGAVVAHPTSGTISSASFHPQQFQYTLDNNVLTLERKF
YEENGFLVIKNLVDPDADIQRFRNEFEKICRKEVKPLGLTVMRDVTISKSEYAPSEKMITK
VQDFQEDEELFRYCTLPEILKYVECFTGPNIAMHTMLINKPPDSGKTSRHPLHQDLHY
FPFRPSDLIVCATAMEHISRNNNGCLVVLPGTHKGSLKPHDYPKEGGVNKMFHGIQDYEEEN
KARVHLVMEKGDTVFFHPLLIHGSGQNKTQGFRKAISCHFASADCHYIDVKGTSQENIEK
EVVGIAHKFFGAENSVNLKDIMFRARLVLKGERTNL
>O35386
MNLTRAGARLQVLLGHLGRPSAPTIVAQPVGLASPASFQPEQFQYTLDNNVLTLERKF
YEENGFLVIKNLVSDDIQRFRRAEFERICREEVKPPGIVIMRDVALAKQDYMPSDRMVSK
IQDFQEDEELFRYCLLPEILKYVECFTGPNIAMALHGMLINKPPDVGKTSRHPLHQDLHY
FPFRPSNLIVCATAMEHIDRNNNGCLVVLPGTHKGTLKPHDYPKEGGVNKMYHGIQDYDPN
SPRVHLVMEKGDTVFFHPLLIHGSGRNKTQGFRKAISCHFGSSDCQCIDVSGTSQENIAR
EVVEMAKKYGFQGVMDFKDTIFRSRLVKGERINI
>O60065
MREDLLRNSVEFLREKTVLDAPDVKKIEFLSKGLTAEEIQEAFKLAKNPLFPSYPRFEN
TSNFVSRDRDFIMGVISTGFASAYSIVKYYIAPMFRAPSQNAYEADKNALDAKFLEAHKI
LENLDEQTRKLSERTEKQQDELDIALDDLEETLNTLKRTSENRDREIARIISQDVYTMSI
TLPQSLEQIKSQEEALQNLREISSLRCLQTDSSKDDTFATTSNSSIPVLENPLDTSEG
FQTKKVGTASLPDQISMHNNEASKNIDFDNDIDPAESYVAEDAY
>O94516
MKPLAYYEDQLLKDEKSFLKVTEIERLLSYAAYLLPAEFRDDQLKSQTITSILLHQFH
TGLLFRKIAELPKTEQAILKSERTQYLEYFRKKNPSFEKVSELLYFLNISTFPIELVISK
YNPSRQFLLRVHIMTTGGDLPLSNPVLQRDFNVKTFIHLHKYSNSGSAVVLKNSKKVVP
RLNTVNSSLDFLQNRTPRLSSILPDEIFTKRLPNLRIFSNFIKVRPLIYMLFMHKRKQK
SSSLKVRPGPIAVFVFEVISQLIDRRCESATSSRQGFLERRTNQSQFQHFVVAFTQGRF
YDEFTKHINRSLSVNSIPVFGKYLLSVEERQKSLNEYISSETIKEALMRTTYRNPLIY
LTRCFSL
>O59807
MIRAHLFSEPDNSKLAKSTGSDAFDLILKVLLTAPYYCLTTLFFTLIILYPRPTLACSA
ALFFTSLDTLEPDDRNTLKASEAVSTSAKTSEETAKPSETREDGENTLKNTLEADAQNL
MSGFQMLQRRSQPKTTLKTEVKEQQASQSPSVEGENEPAGVKSNEATKPSVTEEKEKNA
EQNKRRERLSISHIVTELAKDEVSSSGSNEIVNAKLKNEQLDSNFTLLDAYLEPLVHL

HEYSRRSNTLFFFYLPIVMSILIFCLPTQALFIVLSSVFLAHSPLQAVLFCIRRISFFN
LLYEKFVIGKTKEPAKPVPQPSSNEPPAPSAENKQPSVSSPEKKESPATHLKVIGSSPY
VVHNSNHTNNLTDKESSDPTEKCLYLIEHQRYVGVLNRTLPTDPPNFTNAGSTDPAEP
TAQLLPPDGLAIDDKSISPTFTDTFAQPAKTQFRTRSRERRRYRVAPPANEKPHTS
RTNTASSLSSTSEDQVSTHGSISSAKVTAIPDSNGAEAL

>O70579

MASVLSYESLVHAVAGAVGSGVTAMTVFFPLDTARLRLQVDEKRKSCTTHAVLLEIIKEEG
LLAPYRGFPVISSLCCSNFVYFYTFNSLKAVVKGQRSSTGKDLVVGFGAVGVNVLLTTP
VVNTRLKLQGAKFRNEDIIPNYKGIIDAFHQIIRDEGILALNGTFPSLLVFNPQIQFM
FYEGLKRQLLKKRMKLSSLDVFIIGAIAKAIATTVTYPMQTVQSIILRGFRHRLNPENRTL
GSLRNVLSSLLHQRVKRGIMGLYKGLEAKLLQTVLTAALMFLVYEKLTAAFTVMGLKST
HHK

>O75192

MDAFTRFTNQTQGRDRLFRATQYTCMLLRYLLEPKAGKEKVVMKKLESSVSTGRKFRL
GNVVHAIQATEQSIHATDLVPRLCITLANLNRVYFYICDTILVRSGVLTSGINKEKRTA
AHHYYYSLLSLVRDLYEISLQMKRVTCDRAKKEKSASQDPLFSVAEEETELQSFLLLL
RSLKQHPPLLLDTVKNLCDILNPLDQLGIYKSNPGIIGLGGLVSSIAGMITVAYPQMKLK
TR

>O70597

MDAFIRVANQSQGRDRLFRATQHACMLLRYLLESKAGKEAVVTKLNLETSVSTGRKFRL
GNVLHAIQATEQSIQATDLVPRLCITLANLNRVVYYICDTVLAKSVGLTSGINREKQMRA
ARHYYYSLLSLVRDLYEVLLHMGGQVARDRAKREKSSGDPPKYSVANESELQSFLLLL
QSLKRNPPFLDTVKNFCDILIPLNQLGIYKSNLGVVGFGLVSSVAGLITVVYPQLKLK
AR

>O96011

MDAVRFSAQSQARERLCRAAQYACSLLGHALQRHGASPELQKQIRQLESHLSLGRKLLRL
GNSADALESAKRAVHLSDVVLRFCITVSHLNRALYFACDNVLAGKSGLAPRVDQEKAQRS
FRYYLFSLIMNLSRDAYEIRLLMEQESSACSRRLKGSGGGVPGGSETGGGGPGTPGGGL
PQLALKRLQVLLARVLRGHPPLLDVVRNACDLFIPLDKLGLRCGPGIVGLCGLVSSI
LSILTLYPLRLKP

>O80845

MGTTLDVSRAELALVVV р LNKAЕARDKLCRAIQYGSKFLSGGQPGTAQNVDKSTS LARKV
FRLFKVNDLHGLISPVPKGTPPLVLLGKSKNALLSTFLFLDQIVLGRSGIYKNKERAЕ
LLGRISLFCMGSSVCTLVEVGEMGRLSSSMKIEKGLKNGNKYQDEDYRAKLKKS NERS
LALIKSAMDIVVAAGLLQLA PTKITPRVTGA FG FITS IISCYQLLPTRPKIKTP

>P09110

MQRLQVVLGHLRGPADSGMPQAAPCLSGAPQASAADV VV р HGRRTAICRAGRGFKDTP
DELLSAVMTAVLKDVLNRPEQLGDICVGVLQPGAGAIMARIAQFLSDIPETVPLSTVNR
QCSSGLQAVASIAGGIRNGSYDIGMACGVESMSLADRGNPGNITSRLMEKEKARDCLIPM
GITSENVAFERFGISREKQDTFALASQQKAARAQSKGCFQAEIVPVTTVHDDKGTKRSIT
VTQDEGIRPSTTMEGLAKLPKF KDG STTAGNSSQVSDGAAI LARRSKAEELGLPIL
GVLRSYAVVGVPDIMGIGPAYAI PVALQAGLTVSD DIFEINEAFASQAAYCVEKLRL
PPEKVNPLGGAVALGHPLGCTGARQVITLLNELKRRGKRAYGVVSMCIGTGMAAA VFEY
PGN

>P09118

MAHYHDDYGNDEVEFVRTGYGKDMVKVLHIQRDGKYHSIKEVATSVQLTLRSKKDYLHG
DNSDI IPTDTIKNTVHVLAKFKGKSIETFAMNICEHFLSSFSHVTRAHVYVEEVPKRFE
KNGVKHVHAFIHTPTGTHFCDVEQVRNGPPIHSGIKDLKVLKTQSGFEGFIKDQFTTL
PEVKDRCFATQVYCKRYQNRDVDFEATGAVRDIVLKKFAGPYDRGEYSPSVQKTLYDIQV
LTLSQLPEIEDMEISLPNIHYFNIDMSKMGLINKEEVLLPLDNPYGKITGTVRRKLPSRL

(9) 30 plasma membrane proteins

>A3KFT3

MAENQTFNSDFILLGIFNHSPHTFLFFLVLIAIFSVAFMGNSVMVLLIYLDTQLHTPMYF
LLSQLFLMDLMLICSTVPKMAFNLYSGSKSISMAGCATQIFFYVSLLGSECFLAVMSYD
RYIAICHPLRYTNLMRPKICGLMTAFSILGSMDAIIDAVATFSFSYCGSREIAHFFCDFP
SLLILSCNDTSIFEKVLFICCIVMIVFPVAAIASYARVILAVIHMGSGEGRRAFTTCS
SHLMVVGMYYGAGLFMYIRPTSDRSPMQDKLVSFYTILTPTMLNPLIYSLRNKEVTRALR
KVLGKGKCGE

>A4D2G3

MGGNQTSITEFILLGFPIGPRIQMPLLFGFLSYIFYIFILLGNGTILGLISLDSRLHTPMYF
FLSHLAVVDIACACSTVPQMLVNLLHPAKPISFAGCMTQMFLFLSFAHTECLLVVMSYD
RYVAICHPLRYSTIMTKVCITLALTSILGVLLALVHLVLLPLSFCGPQKLNHFFCEIMA
VLKLACADTHINEVMVLAGAVSVLVGAFFSTVISYVHILCAILKIQSGEGCQKAFSICSS
HLCVVGLFYGTAIMYVEPQYESPKEQKKYLLLHFHSLFNPMLNPLIYSLRNKEVQGTLKR
MLEKKRTS

>A6NCV1

MRNHTTVANFILLGLTDDPQLQVIIFLLLFTYMLSITGNLTITLTLDDLHLKTPMYFF
LRNFSFLEVSFTTVYIPKFLVSMATGDKTISYNDCAAQLFFTILLGATEFFLLAAMSYER
YVAICKPLHYTTIMSSRVCSSLVFAASMAGFLIIFPPLLMGLQLDFCAANTVDHFFCDVSP
ILQLSCTDTDIIELMMLLSAILTLLVTVLVLVILSYTNIIIRTILKIPSSQQRKKAFSTCSS
HMVVVSISYGSCIFMYVKPSAKERVSINKGIALLSTSVAAPMLNPFIYTLRNKQVKDVFHK
TVKKIELFSMK

>A6ND48

MDNLTKVTEFLLMEFSGIELQVLHAGLFLLIYLAFLVGNNLLIAVITLDQHLHTPMYFFL
KNLSVLDLCYISVTVPKSIRNSLRRSSISYLGCVAQVYFFSAFASAEFLTVMSYDRY
VAICHPLQYRAVMTSGGCYQMAVTTLSCFSYAAVHTGNMFREHVCRSSVIHQFFRDIPH
LALVSCEVFFVEFLTLALSSCLVLCFILMMISYFQIFSTVLRIPSGQSRAKAFSTCSPQ
LIVIMLFLTTGLFAALGPIAKALSIQDLVIALTYTVLPPFLNPIIYSLRNKEIKTAMRLF
VKIYFLQK

>A6NDH6

MEEENATLLTEFVLTGFLYQPQKIPKPLFLAFLVIYLITIMGNLGLIAVIKDPHLHIPMYLL
LGNLAFVDAISSTVTPKMLNNFLAKSKMISLSECKIQFFSIAIGVTTECFLLATMAYDRY
VAICKPLLYPAIMTNGLCIRLLLILSYIAGILHALIHEGFLFRFTFCNSNIVHHIYCCTIP
LSKISCTDSSINFLMVFIGSGSIQVFSIVTILISYTFVLFTVLEKKSDKGVRKAFSTCGA
HLFSVCLYYGPLLLMYVGPASPQADGQNMVEPLFYTVIIPLLNPIIYSLRNQKVIVSF
MLKRNVKVSY

>A6NET4

MNKENHSLIAEFILTGFYHPKLKTVLFVVFFAIYLIITMVGNIGLVALIYIEQRLHTPMY

I FLGNLVLMDSCSSAITPKMLENFFSEDKRITLYECMAQFYFLCLAETTDCFLLAAMAY
DCYVAICNPLQYHTMMSKTLCIQMTAGAYLAGNLHPMIEVEFLLRLTFCGSHQINHFFCD
VPLPLYRLSCINPYINELVLFILAGSIQIFTIVLVSYFYILFTIFTMKSKEGRGKALSTCA
SHFLSVSIFCDSLLFMYARPGAVNEGDKDIPVAIFYTLVIPLNPFIYSLRNKEVINIMK
KIMKKRKFCHLKQMSSPLAT

>A6NF89

MKNKSMIEIFILLGLTDPPQLQIVIFLFLFLNYTLSLMGNLIIIIITLLDPRLKTPMYFF
LRNFSFLEVIFTTVCIPRFLITIVTRDKTISYNCATQLFFILLPGVTEFYLLAAMSYDR
YVAICKPLHYPIIMSSKVCYQLVLSSVTGFLIIFPPLVMGLKLDFCASKTIDHFM CETSP
ILQISCTDTHVLELMSFTLAVVTLVTVLVLVILSYTCIICKTILKFSSAQQRNKAFSTCTS
HMIVVSMTYGSCIFMYIKPSAKERVTVKGVALLYTSIAPLLNPFIYTLRNQQVKEVFDV
LQKNLCFSKRPF

>A6NFC9

MGKDNASYLQAFILVGSSDRPGLEKILFAVILIFCILTLVGNTAIILLLVMDVRLHTPMY
FFLGNLSFLDLCTASIAPIQQLNLGGPEKTITYHGCVAQLYIYMMLGSTECLVLLVVMSHD
RYVAVCRSLHYMAVMRPHLCLQLVTVACCGFLNSFIMCPQTMQLSRCGRVVHDFLCEMP
ALIAMSCEETMLVEAIHLCPGGGSPPGAALPHPHLLRDCSRGADEVSSRAKESLPHLLF
SPHSGLSLLRNHHHLRVPEAGQQLLPRSGEVPDSLLHHRHSQHQPPHLHFEEQGCEGDHEE
TSGVGERGGASTRGTL

>A6NGY5

MLQNQDTMEILSNSTSFKPTFLLTGIPGLESAHVISIPFCCFYAIALSGNSVILFVIITQ
QSLHEPMYYFLFRLSATDLGLTVSSLSTTLGILFEAREISLYSCIVQMFLHGFTFMESG
VLVATAFDRYVAICDPLRYTTILTNSRIIQMGLLMITRAIVLILPLLLLLKPLYFCRMNA
LSHSYCYHPDVIQLACSDIRANSICGLIDLILTTGIDTPCIVLSYIILIIHSVLIASPEE
HKVFSTCVSHVGAVAFFYIHMLSLSLVRYGRSAPRVVHSVMANVYLLLPPVLPNIIDS
KTKQIRKAMLSLLTK

>A6NGZ8

MEPQKLLIIGFLLCSLTCLLLETVASSPLPLSALGIQEKTGSKPRSGGNHRSLNFRDYL
QLIKSALPPAAIAVAFLLTSALMGILCCFTILVVDPVH

>A6NH00

MENGSYTSYFILLGLFNHTRAHQVLFMMVLSIVLTSIFGNSLMILLIHDHRLHTPMYFLL
SQLSLMDVMLVSTTVPKMAADYLGTGSKAISRAGCGAQIFFLPTLGGECFLAAMAYDRY
AAVCHPLRYPTLMSQLCLRMNLSCLLGAADGLLQAVATLSFPYCGAHEIDHFFCETPV
VRLACADTSVFENAMYICCVLMLLVPFSLILSSYGLILAABLHMRSTEARKKAFATCSS
AVVGLFYGAAIFTYMRPKSHRSTNHDKVVSAYTMFTPOLLNPLIYSVKNSEVKGALTRCM
GRCVALSRE

>A6NHA9

MEPNRNNMTEFVLLGLTENPKMQKIIIFVVFFVIYIITVVGYVLIVVTITASPSLGSPMYLS
LAYLSFIDACYSSVNTPNLITHSLYGKKAILFNGCMTQVFGHEHFFGAEGILLTVMAYDH
YVAICKPLHYMTIMNQCVCALLMGVVMGGFLHATIQILFIFQLPFCGPVIDHFMCDLNP
LLNLACTDTHMLELFIAANSGFICLLNFALLVSYVVLCSLRTHSLEARHKALSTCVSH
ITVVLFFVPCIFVYMRPAATLPIDKAVAIIFTMITPMLNPLIYTLKNAQMKNAIRKLCS
RKDISGDK

>A6NHG9

MEEENATLLTEFVLTGFLYQPQKIPPLFLAFLVILITIMGNLGLIAVIKDPHLHIPMYLL
LGNLAFVDALLSSVTLKMLINFLAKSKMISLSECKIQLFSFAISVTTECFLLATMAYDR
YVAICKPLLYPAIMTNGLCIRLLILSYVGGLHALIHEGFLFRLLFCNSNIIQHFYCDII
PLLKISYTDSSINFLMVIFAGSIQVFTIGTVLISYIFVLYTILKKSVKGMRKAFSTCG
AHLLSVSLYYGPLAFMYMGSASPQADDQDMMESLFYTIVPLLNPMIYSLRNKQVIASFT
KMFKRNDV
>A6NIJ9
MKNHTRQIEFILLGLTDNSQLQIVIFLFLNCVLSIGNFTIIALILQLSQLKTPMYFF
LRNFSFLEISFTTACIPRFLITIVTREKTISNGCISQLFFYIFLGVTEFFLLAALSYDR
YVAICKPLRYMSIMSINKVCYQLVFSSVTGFLIIFTPLILGLNLDFCASNIIDHFICDISL
ILQLSCSDTHLLELIAFLLAVMTLIVTLFLVILSYSYIIKTILKFPSAQKQKKAFSTCSS
HMIVVSITYGSCMFIYIKPSANERVALSKGVTVLNTSVAPLLNPFIYTLRNQQVKQAFKA
VFRKIFSASDK
>A6NJW9
MRPRLLLLAAQLTVLHGNSVLQQTPAYIKVQTNKVMMLSCEAKISLSNMCIYLQRQAPS
SDSHHEFLTLDASKTIHGEVEQEKIAVFRDASRFILNLTSVKPEDSGIYFCMIVGSPE
LTFGKGTQLSVVVDLPTTAQPTKSTLKKRVCRLLPRPETQKGPLCSPVTGLLVAGVLV
LLVSLGVAMHLCCRRLARLRFMKQLYK
>A6NLE4
MATQQVDSRRQVAEQQVAEQLLERRRGSHCDDEKQTLLALLLILVLYLSTEIGSSEVSERI
RECNYYQNLAVPQGLEYQTNEPSEEPIKTIRNLKEKLHVSEKLEEEVQQLEQLADLELL
DALLGEPHQEEHCSTYKSHLHLEHEVSIRDH
>B2RN74
MCPLTLQVTGLMNVSEPNSSFAFVNEFILQGFTCETIQIFLFLSTTTYALTITGNGAIA
FVLCDRLHTPMYMFGLNFNFLEIYVSSVPKMLVNFLSEKKNISFAGCFLQFYFFFSLGT
SECLLLTVMAFDQYLAICRPLLYPNIMTGHLCALKVILCVCGFLFLIPIVLISQMPFCGP
NIIDHVVCDPGPRFALDCVSAPRIQLFCYTLSSLVIFGNFLFIIGSYTLVLKAVLGMPSS
TGRHKAFSTCGSHLAVVSLCYSSLMVMYVSPGLGHSTGMQKIELTFYAMVTPLFNPLIYS
LQNKEIKAALRKVLGSSNII
>B7U540
MTAASQANPYSIVSLEEDGLHLVTMSGAKGFNGKVHTQHRCRNRFVKKNGQCNIAFANM
DEKSQRYLADMFTTCVDIRRMLLIFSLAFLASLLFGVIFVIAVAGDLEPAEGHGRTPC
VMQVHGFMAFLFSIETQTTIGYGLRCVTEECLVAVFMVAQSIVGCIIDSFMIGAIMAK
MARPKKRAHTLLFSHNAVALRDGKLCMRVGNLRKSHIVEAHVRAQLIKPRVTEEGEYI
PLDQVIDVGFDFKGLDRIFLVSPIILHEIDEASPLLGISRQDLETDDFEIVVILEGMVE
ATAMTTQARSSYLANEILGHRFEPVLFEKNQFKIDHSHFHKTYEVPSTPRCSAKDLVEN
KFLLPSANSFCYENELAFLSRDEEDEADGDQDGSRDGLSPQARHDFDRLQAGGGVLEQR
PYRRGSEI
>O00212
MTAAQAAGEEAPPGVRSVKVVLVGDGGCGKTSLLMVFADGAFPESYTPTFERYMVNLQV
KGKPVHLHIDTAGQDDYDRLRPLFYPDASVLLCFDVTSPNSFDNIFNRYPEVNHFCKKV
PIIVVGCKTDLCKDKSLVNKLRRNGLEPVTYHRGQEMARSVGAVAYLECSARLHDNVHAV
FQEAAEVALSSRGRNFRRITQGFCVVT
>O00501

MGSAALEILGLVLCLVGGGLILACGLPMQVTAFLDHNIVTAQTTKGLMSCVVQSTGHMQC
KVYDSVLALSTEVQAARALTSAVLLAFVALFVTLAGAQCTTCVAPGPAKARVALTGGVL
YLFCGLLALVPLCFANIVVREFYDPSVPVSQKYELGAALYIGAATALLMVGGCLLCCGAV
CTGRPDLSFPVKYSAPRRPTATGDYDKKNYV
>O00526
MAPLLPIRTLPLILILLALLSPGAADFNISLSSGLLSPALTESLLVALPPCHLTGGNATL
MVRANDSKVVTSSFVVPPCRGRRELVSVDGAGFTVTRLSAYQVTNLVPGTKFYISYL
VKKGTATESSREIPMSTLPRRNMESIGLGMARTGGMVITVLLSVAMFLLVLGFIIALAL
GSRK
>O14610
MAQDLSEKDLLKMEVEQLKKEVKNTRIPISKAGKEIKEYVEAQAGNDPFLKGIPEDKNPF
KEKGGLIS
>O14807
MATS A VPS DNL PTY KLV VVG DGG VGK SALT I QFF QK I FVP DY DPT IED SYLK HTE IDN QA
I LDV LDT AGQEEFSAMREQYMRTGDGFLIVY SVTDKASFEHVDRFHQLILRVKDRESFPM
I LVANKV DLMHLRK ITREQKEMATKHNIPYIETSAKD PPL NVDKA FHDL VRVIRQQIPE
KSQ KKKKTKRGDRATGTHKLQCVIL
>O14910
MLKPSVTSAPTADMATLTVVQPLTL RDVARAI ELLEKLQESGEV PVHKLQSLKKV LQSE
FCTAIREVYQYMHEITITVNGCPEFRARATAKATVAAFAASEGHSHPRVVELPKTDEGLGF
NVMGGKEQNSPIYIISRII PGVAERH GGLKRGDQ LLSVNGV SVEGEHHEKAVELLKA AKD
SVKL VVRYTPKV LEEMEARFEKLRTARRQQQQLLIQQQQQQQQQQTQQNHMS
>A0FGR8
MTANRDAALSSHRHPGCAQR PRTPTFASSSQRRSAFGFDDGNFPGLGERSHAPGSRLGAR
RRAKTARGLRGHRQRGAGAGLSRPGSARAPSPPRPGGPENPGVLSVELPGLLAQLARSF
ALLLPVYALGYLGLSFSVLLALALLACRRSRGLKALRLCRALALLEDEERVVRLGV RACD
LPAVHFPTERAELNKTVKHMPFICQFIEKL FRETIEPAVRGANTHLSTFSFTKVDVGQQ
PLRINGVKVYTENVDKRQIILDLQISFGNCEIDLEIKRYFCRAGVKS IQIHGTMRVILE
PLIGDMPLVGALSIFFLRKPLLEINTGLTNLLDVPGLNGLSDTI ILDIISNYLVL PNRIT
VPLVSEVQIAQLRFPVPKGVLRIFIEAQDLQGKDTYLKGLVKGKSDPYGIIRVGNQIFQ
SRVIKENLSPKNEVYEALVYEH PGQELEIELFDED PDKDDFLGSLMIDLIEVEKERLLDE
FTLDEVPKGKLHRLLELTMPNASNLDKVLT DIKADKDQANDGLSSALLL YLDSARNLP
SGKKISSNPNPVVQMSVGHKAQESKIRYKTNEPVEENFTFFIHNPKRQDLEVEVRDEQHQ
CSLGNLKVPLSQLLTSED MTVSQRFQLNSGPNSTIKMKIALRVLHLEKRERPPDQHSA
QVKRPSVSKEGRKTSIKSHMSGSPGPGGSNTAPSTPVIGGSDKPGMEEKAQPPEAGPQGL
HDLGRSSSSLLASP GHISVKEPTPSIASDISLPIATQELRQRLQLENGTTLGQSPLGQI
QLTIRHSSQRNKLIVVVHACRNLIAFSEDGS DPYVRMYLLPDKRRSGRRKTHVSKTLNP
VFDQSFDFSVSLPEVQRRTLDVAVN SGGFLSKDKGLLGKV LVALASEELAKGTQYDLTE
DGTRPQAMT
>A0FGR9
MRAE EPCAPGAPSALGAQRTPGPELRLSSQLLPELCTFVV RVL FYLGPVYLAGYLG LSIT
LLL GALLMRRNRRGKLGR LAA AF EFLDN EREF ISREL RGQHL PAI HF PDVER VEANKI IS
QTPYLSMIMESKFREKLEPKIREKSIHLRTFTKLYFGQKC PRVNGVKAHTNTCNRRV
TVDLQICYIGDCEI SVELQKIQAGVNGIQLQGTLRVILEPLLVDKPFVGAVTVFFLQKPH

LQINTGLTNLLDAPGINDVSDSILLEDLIATHLVLPNRVTVPVKKGDLTNLRFPLPCVIRVHLLEAEQLAQKDNFLGLRGKSDPYAKVSIGLQHFRSRTIYRNLNPTNEVFEFMVYEVP
GQDLEVVDLYDEDTDRDDFLGSLQICLGDVMTNRVDFVLNDTSGRLHLRLELSLTDQEVLTEDHGGLTAILVVFLESACNLPRNPFDYLNGEYRAKKLSRFARNKVSKDPSSYVKL
SVGKKHTSKTCPHNKPVSQVFVHNVATERLHLKVLDQQECALGMLEVPLCQILPYADLTLEQRFQLDHGLDSLISMRLVLRFLQVEERELGSPYTGPEALKKGPLLICKVATN
QGPKAQPQEEGPTDLPCCPPDASDTKDVSRSNTTSATTVATEPTSQETGPEPKGKDSA
KRFCEPIGEKKSPATIFLTVPGPSPGPIKSPRPMKCPASPFAFPKRLAPSMSSLNSLAS
SCFDLADISLNIEGGDLRRRQLGEIQLTVRYVCLRRCLSVLINGCRNLTPCTSSGADPYRVYLLPERKACRKKTSVKRKTLPELFDETFFVPMEEVKRSLDVAVKNSRPLGSHRRK
ELGKVLIIDLSKEDLIKGSQYELTPNGQPRS
>A4D1S5
MFHSSSARAADENFDYLFKIIILIGDSNVGKTCVVQHFKSGVYTETQQNTIGVDFTVRSLD
IDGKKVQMVDTAGQERFRTITQSYYRSAHAAIIAYDLTRRSTFESIPHIEIEKYGAAN
VVIMLIGNKCDEKRHVLFEDACTLAEKYGLLAVLETSAKESKNIEEVFVLMAKELIARN
SLHYGESALNGLPLDSSPVLMAQGPSEKTHCTC
>A6NDL8
MRKHTAITTFILLGLTEDPQLQVLLFMFLITYMLSVTGKLTIIALTMLDPHLKTPMYFF
LQNLSFLEISFTATCVPRFLYSISTGNKIITYNACVIQLFFADLFGVTEFFLLATMSYDR
YVAICKPLHYMAIMSNKVCKTMVICCMAALMIIILPPLSLGFHLEFCDSNVINHFGCDALP
ILKIPCSDTSLIEQMVVASAVLTFIITLVCVVLSYTYIIRTILKFPSVQQKKAFSTCSS
HITVVSITYGSCIFIYIKPSAKEEVNINKGVSVLISSISPMLNSFIYTLRNEQVKQAFHD
SLKKIAFRLKK
>O00451
MILANVFCLFFFDETSLASPSSLQGPELHGRPPVDCVRANELCAAESNCSSRYRTL
QCLAGRDRNTMLANKECQAALEVLQESPLYDCRCKRGMKKELQCLQIYSIHLGLTEGEEF
YEASPYEPVTSRLSDIFRLASIFSGTGADPVSAKSNHCLDAAKACNLNDNCKKLRSSYI
SICNREISPTERCNRRKCHKALRQFFDRVPSEYTYRMLFCSCQDQACAERRQQTILPSCS
YEDKEKPNCLDLRGVCRTDHLCRSRLADFHAMCRASYQTVTSCPADNYQACLGSYAGMIG
FDMTPNYVDSSPTGIVVSPCSCRGSGNMEEECEKFLRDFTENPCLRNAIQAFGNGTDVNV
SPKGPSFQATQAPRVEKTPSLPDDLSSTSILGTSVITCTSVQEGLKANNKELSMCFT
ELTTNIIPGSNKVIKPNSGPSRARPSAALTVLSVMLKLAL
>O14494
MFDKTRLPYVALDVLCVLLAGLPFAILTSRHTPFQRGVFCNDESIKYPYKEDTIPYALLG
GIIIPFSIIVIILGETLSVYCNCNLLHSNSFIRNNYIATIYKAIGTFLFGAAASQSLTDIAK
YSIGRLRPHFLDVCDPSKINCSDGYIEYYICRGNAERVKEGRLSFYSGHSSFSMYCMLF
VALYLQARMKGDARLLRPTLQFGLVAWSIYVGLSRVSDYKHHSDVLTGLIQQGALVAILVA
VYVSDFFKERTSFKERKEEDSHTLHETPTTGNHYPSENQH