

>Human

MQLKIMPKKKRLSAGR-----VPLILFLCQMISALEVPLDPKLLLEDLVQPPTITQQSPKDYIIDPRENIVIQCEAKGKPP
PSFSWTRNGTHFDIDK-DPLVTMKGPGTGLTIINIMSEGKAETIEGVYQCTARNERGAAVSNNIVRPSRSPLWTKEKLEP
ITLQSGQSLVLP CRPPIGLPPPIIFWMDNS-----FQRLPQSERVSQGLNGDLYFSNVLPEDTREDYICYARFNHTQTIQ
QKQPI SVKVISVDELNDTIAANLSD-TEFYGAKSSRERPTFLTPEGNASNKEELRGNVLSLECIAEGLPTPIIYWAKED
GMLPK-----NRTVYKNFEKTLQIIHVSEADSGNYQCI AKNALG-AIHHTISVRVKAAPYWITAP-QNLVLSPGEDGTLI
CRANGNPKPRISWLTNGVPIE IAPDDPSRKIDGDTIIFSN---VQERSSAVYQCNASNEYGYLLANAFVNVLAEPPIRLT
PANTLYQVIANR PALLDCAFFGSP LPTIEWFKGAKG-SALHEDIYVLHENG TLEIPVAQKDSTGTYTCVARNKLGMAKNE
VHLEIKDPTWIVKQ--PEYAVVQRGSMVSFECKVKHDHTLSLTVLWLKDNR--ELPSDERFTVDKDH-LVVADVSDDDSG
TYTCVANTTLD SVSASAVLSV VAPTPTPAPVYDVPNPPFDLELTDQLDKSVQLSWTPGDDNNSPITKFIIEYEDAMHKPG
LWHHQTEVSG--TQTTAQLKLS PYNYSFRVMAVNSIGKS-----LPSEASEQYLTKASEPDKNPTAVEGLGSEPDNLV
ITWKPLNGFESNGPGLQYK VSWRQKGDDEWTSVVVANVS--KYIVSGTPTFPYLIKVQALNDMGFA-PEPAVVMGHSG
EDLPMVAPGNVRVNVVN-STLAEVHWD PVPLKSI RGH LQGYRIYYWKTQSSSKRNRRIEKKILTFQGSKTHGMLPGLP
FSHYTLNVRV VNGKGE GPASPDRVFNTP EGVP SAPSSLKIVNPTLDSL TLEWDPPSHPNGILTEYTLKYQPI NS--THEL
GPLVDLKI PANKTRWTLK NLFSTRYKFYFYAQTSAGSGSQITEEA VTTVDEAGILPPDVGAGKVQAVNPRISNL TAAAA
ETYANISWEYEGPEHVNFYVEYGVAGSKEEWRKEIVNGSR SFFGLKGLMPGTAYKVRVGAV---GDSGFVSS E DVFETG
PAMASRQVDIATQGWFI GLMCAVAL-LILILLIVCFIRRNKGGKYPVKEKEDAHADPEIQPMKEDDGTGFEYS DAEDHKP
LKKGSRTPSDRTVK KEDSDDSLVDY GEGVNGQFNEDGSF IGQYSGKKEKEPAE-----
-----GNESSEAPSPV NAMNSFV

>cattle

MQLKIMPKKKRLSAGR-----APLMLFLCQMISALEVPLDPKLLLEDLVQPPTITQQSPKDYIIDPRENIVIQCEAKGKPS
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IILRNGQSLVLP CRPPIGLPPPIIFWMDNS-----FQRLPQSERVSQGLNGDLYFSNVLPEDTREDYICYARFNHTQTIQ
QKQPI SVKVISVDELNDTIAANLSD-TEFYGAKSHRQRPPTFLTPDGNTSRKEELRGNVLSLECIAEGLPTPIIY WIKED
GTLPI-----NRTFYRNFKKTLQIQVTEADSGNYQCI AKNALG-AIHHTISVTVKAAPYWI IAP-QNLVLSPEEDGTLI
CRANGNPKPRISWLSNGVPIE IAPDDPSRKIDGDTIIFSK---VQERSSAVYQCNASNEYGYLLANAFVNVLAEPPIRLT
SANTLYQVIANR PALLDCAFFGSP LPTIEWFKGAKG-SALREDIYVLHENG TLEIPVAQKDSTGTYTCVARNKLGMAKND
VHLEIKDPTRI IKQ--PEYAVVQRGSTVSFECKVKHDHTLIPTVMWLKDHG--ELPNDGRFTVDKDR-LVVADVND D DGG
TYTCVANTTLD NVSASAVLSV VAPTPTPAPIYDVPNPPFDLELTDQLDRSVQLSWTPGDDNNSPITKFIIEYEDAMHEPG
LWHHQTEVPG--TQTTAQLKLS PYNYSFRVMAENNLGRS-----LPSEASEQYLTKAAEPDKNPTAVEGLGSEPDNLV
ITWKPLNGFESNGPGLQYK VSWRQKGDDEWTSVVVANVS--KYIVSGTPTFPYLIKVQALNDAGFA-PEPAAVM GHSG
EDLPMVAPGNVRVNVVN-STLAEVHWD PVPLKSI RGH LQGYRIYYWKAQSSLTRNRRIEKKILTFQGSKTHGMLPGLP
FSHYTLNVRV VNGKGE GPASPDKVFNTP EGVP SAPSSLKIVNPTLDSL TLEWEP SHPNGILTEYTLKYQPI NS--THEL
GPLVDLKI PANKTRWILK NLFSTRYKFYFYAQTAAGSGIQITEEA ITTVDEAGILPPDVGAG--KAVYPGISKLT TAAA
ETSANISWEYEGPELVNFYVEYGVAGSKEEWRREIVNGSR SFFGLKGLMPGTAYKVRVGAE---GDSGFVSS E DVFETG
PAMASRQVDIATQGWFI GLMCAVAL-LILILLIVCFIRRNKGGKYPVKEKEDAHADPEIQPMKEDDGTGFEYS DAEDHKP
LKKGSRTPSDRTVK KEDSDDSLVDY GEGVNGQFNEDGSF IGQYSGKKEKEPAE-----
-----GNESSEAPSPV NAMNSFV

>Mouse

-----MPKKKHL SAGG-----VPLILFLCQMISALDVPLD-----LVQPPTITQQSPKDYIIDPRENIVIQCEAKGKPP
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IVLQNGQSLVLP CRPPIGLPPAIIFWMDNS-----FQRLPQSERVSQGLNGDLYFSNVLPEDTREDYICYARFNHTQTIQ
QKQPI SLKVISVDELNDTIAANLSD-TEFYGAKSSKERPTFLTPEGNESHKEELRGNVLSLECIAEGLPTPIIY WIKED
GMLPA-----NRTFYRNFKKTLQI THVSEADSGNYQCI AKNALG-AVHHTISVTVKAAPYWIVAP-QNLVLSPGENGTLI
CRANGNPKPRISWLTNGVPIE IALDDPSRKIDGDTIIFSN---VQESSAVYQCNASNKYGYLLANAFVNVLAEPPIRLT
SANTLYQVIANR PALLDCAFFGSP MPTIEWFKGTGK-SALHEDIYVLHDNG TLEIPVAQKDSTGTYTCVARNKLGMAKNE
VHLEIKDPTRI IKQ--PEYAVVQRGSKVSFE CRVKHDHTLIPTIMWLKDN G--ELPNDERFSTDKDH-LVVSDVKDD DGG
TYTCTANTTLD SASASAVLRV VAPTPTPAPIYDVPNPPFDLEL TNQLDKSVQLTWTPTGDDNNSPITKFIIEYEDAMHDAG
LWRHQAEVSG--TQTTAQLKLS PYNYSFRVMAENSIGRS-----MPSEASEQYLTKAAEPDQNPMAVEGLGTEPDNLV
ITWKPLNGFQSNPGLQYK VSWRQKGDDEWTSVVVANVS--KYIVSGTPTFPYLIKVQALNDVGFA-PEPAAVM GHSG
EDLPMVAPGNVRVSVVN-STLAEVHWD PVPPKSVRGHLQGYRIYYWKTQSSSKRNRRIEKKILTFQGT KTHGMLPGLQP
YSHYALNVRV VNGKGE GPASTDRGFHTPEGV SAPSSLKIVNPTLDSL TLEWDPPSHPNGILTEYILQYQPI NS--THEL
GPLVDLKI PANKTRWTLK NLFSTRYKFYFYAQTSVGP GSGQITEEA ITTVDEAGIPPPDVGAGK-----
-----KEEWRKEIVNGSR SFFGLKGLMPGTAYKVRVGAE---GDSGFVSS E DVFETG

PAMASRQVDIATQGWF IGLMCAVAL-LILILLIVCF IRRNKGGKYPVKEKEDAHADPEIQPMKEDDGTTFGEYSDAEDHKP
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>Rat

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IILRSGQSLVLP CRPPIGLPPAII FWM DNS-----FQRLPQSERVSQGLNGDLYFSNVLPEDTREDYICYARFNHTQTIQ
QKQPI SLKVISVDELNDTIAANLSD-TEFYGAKSSKERPPTFLTPEGNEHKEELRGNVLSLECIAEGLPTPVIYWIKED
GTLPV-----NRTFYRNFKKTLOI IHVSEADSGNYQCI AKNALG-AVHHTISVTVKAAPYWI VAP-HNLVLSPGENGLTI
CRANGNPKPRISWLTNGVPEIALDDPSRKIDGDTIMFSN---VQESSAVYQCNASNKYGYLLANAFVNVLAEP RILT
SANTLYQVIANRPALLDCAFFGSPMPTIEWFKGTGK-SALHEDIYVLHDNGTLEIPVAQKDSTGTYT CVARNKLGMAKNE
VHLEIKDPTRFIKQ--PEYAVVQRGSKVSFECKVKHDHTLIPTILWLKDNQ--ELPNDRFVSVDKDH-LVSDVKDEDGG
TYTCAANTLDSVVSASAVLRV VAPTPTPAPIYDVPNPPFDLELTNQLDKSVQLTWTTPGDDNNSPITKFI IEYEDAMHEAG
LWRHQAEVSG--TQTTAQLKLSPYVNY SFRVMAENSIGRS-----VPSEASEQYLTKAAEPDQNP TAVEGLGTEPDNLV
ITWKPLNGFQSNPGLOQYKVS WRQKDGDDDEWTSVVVANVS--KYIVSGTPTFPVYLIKVQALNDVGF A-PEPAAVMGHSG
EDLPMVAPGNVRVSVVN-STLAEAHWDPVPPKSVRGHLQGYRIYYWKAQSSSKRNRRIEKKILTFQSGKTHGMLPGLQP
YSHYVLNVRVNGKGE GPASADRGFHTPEGVPSAPSSLKIVNPTLDSL TLEWDPPSHPNGILTEYILKYQPIN S--THEL
GPLVDLKI PANKTRWTLKLNLFSTRYKFFYAQTSVGSQSQITEEAITTVDEAGILPPDVGAGKVRVSPRIGNV TAAAA
ETYANISWEYEGPEHV KFYVEYGVAGSKEEWRKEIVNGSR SFFGLKGLMPGTAYKVRVGA E----GDSGFVSS E DVFETG
PAMASRQVDIATQGWF IGLMCAVAL-LILILLIVCF IRRNKGGKYPVKEKEDAHADPEIQPMKEDDGTTFGEYSDAEDHKP
LKKGSRTSPDRITVKKEDSDDSLVDYEGEVNGQFNEDGSFIGOYSGKKEKEPAE-----
-----GNESSEAPSPVAMNSFV

>Chicken

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PSFSWTRNGTHFDIDK-DAQVTMKNP SGTLVVNIMNGVKAEAYEGVYQCTARNERGA AISNNIVIRPSRSPLWTK EKLEP
NHVREGDSLVLNCRPPVGLPPP IIFWMDNA-----FQRLPQSERVSQGLNGDLYFSNVQPEDTRVDYICYARFNHTQTIQ
QKQPI SVKVFST-----KPVTERPPVLLTPMGSTSNKVELRGNVLLLECIAAGLPTPVIRWIKEG
GELPA-----NRTFFENFKKTLKI IDVSEADSGNYKCTARNTLG-STHHVISVTVKAAPYWITAP-RNLVLSPGEDGTLI
CRANGNPKPSISWLTNGVPIA IAPEDPSRKVDGDTIIFSA---VQERSAVYQCNASNEYGYLLANAFVNVLAEP RILT
PANKLYQVIADSPALIDCAYFGSPKPEIEWFRGVKG-SILRGNEYVFDHNGTLEIPVAQKDSTGTYT CVARNKLGKTQNE
VQLEVKDP TMI IKQ--POYKVIQRSAQASFECV IKHDPTLIPTVIWLKDN N--ELPDDERFLVGKDN-LTIMNVTDKDDG
TYTCIVNTLDSVVSASAVLTVVAAPPTPAIIYARP NPPLDLELTGQLERSIELSWVPGEENNSPITNFVIEYEDGLHEPG
VWHYQTEVPG--SHTTVQLKLSPYVNY SFRVIAVNEIGRS-----QPSEPSEQYLTKSANPDENPSNVQIGIGSEPDNLV
ITWESLKG FQSNPGLOQYKVS WRQKDVDDDEWTSVVVANVS--KYIVSGTPTFPVPEIKVQALNDLGYA-PEPSEVIGHSG
EDLPMVAPGNVQVHVIN-STLAKVHWDPVPLKSVRGHLQGYKVYYWVQSLSRRSKRHVEKKILTFRGNKTFGMLPGL EP
YSSYKLNVRVNGKGE GPASDPKVFKTPEGVPSPPSFLKITNPTLDSL TLEWGSPTHPNGVLT SYILKFQPIN N--THEL
GPLVEIRIPANESSLILKLNLYSTRYKFFNAQTSVGSQSQITEEAVTIMDEVQPLYP-----RIRNVTTAAA
ETYANISWEYEGPDHANFYVEYGVAGSKEDWKKEIVNGSR SFFVLKGLTPGTAYKVRVGA E----GLSGFRSSEDLFETG
PAMASRQVDIATQGWF IGLMCAVAL-LILILLIVCF IRRNKGGKYPVKEKEDAHADPEIQPMKEDDGTTFGEYSDAEDHKP
LKKGSRTSPDRITVKKEDSDDSLVDYEGEVNGQFNEDGSFIGOYSGKKEKEPAE-----
-----GNESSEAPSPVAMNSFV

>Zebrafish]

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ITVQRGTSLILQCRPPAGLPPP IIFWMDNN-----FQRLPQNSRV SQALNGDLYFSNVIMEDTRNDYICYARFPHTQTIQ
QKQPI TVKVL D IEAMNDTVLAAFLNGSDFWGDSPSGERVPSFLHPPGMESTTMVLKGD TLELECIADGLPTPNISWTKVN
GELPS-----GRFSFY SFQKTLKI KEVTEADGGDYRCIAKNRMG-SSQHTITVVVRAAPFWISAP-QNLILAPKETGNLT
CDVDGNPKPTITWSVNGNPI ESSHNDPSRKVSDGVITLSD---VQTGSSAVYQCNASNDYGYLLANAFVSVLAEP RVL T
SLNHEYSVISNSRALLDCASF GSPLKITWFKDSQ--SILNSDLYHIHKNGTLEINVAQPQNSGKYTCIASNNLGNKENH
VHLQVKEPTRIIRQ--PEYKEVQRNSIAVFECKVKHDPTLIPSMIWLKDNQ--ELPDDPRFEVGS DS-LTIHDVTE DDEG
TYTCIRNTL DQDSASATLTVVE-----QPDPPTDLELTDQRERSVRLTWTTPGDEHNSPIKLF LIQYEDSLHEPG
VWLNMT EVSG--TSTTAQLELSPYVYYSFRVLALNGVGLS-----ESSDPSRQYRTNPAKPDVNP SDVEVSGTSPDTMT
ISWRELSGLE SNGPGLQYKVS WRMKD-AEQWTTVTLANVS--QHVVGTPTFTLYEVTVQAVNDY GEG-PRPEVVLGYSG
ENSPTVAPENVKVSQS-GTEAEVHWEAVPLSSVRGRLKGYKVTYQKMRSLHKQDYDRENPOVLIFS GEETVGRPLD LHP

YSHYRLNIRAFNGHGDGSPSSTDQQFQTPEGVPGPPTNVNIRNLNLDSSLVEWTPPLEDNGHLTGYYLLKYQPINT--TEEA
GLLKEVLLPANETSYTLDKLTHTSTHYKFFLNAMTETGSGPAVTKEAFTEVDEALIRHPAVEAGKAPPAGPMFGNVNSSVK
EDHAVISWEYLGPD-GNVYVEYVVDNSKEPWKTEFVNGTR-TFQIRGLKPGMSYRVRLVAKD--HSDATIHSTQEMLITV
PAMTNRQAEIATQGWFIGLMAIAL-LILVLLIVCFIKRNKGGKYPVKEKEDAHQDPEIQPMKEDDGTTFGEYSDTEDHKP
LK-GSRTPSNGTVKKDDSDSLVDYEGEGDGFNEDGSFIGQYSGKKEKDTAE-----
-----GNESSEAPSPVAMNSFV

>Drosophila]

-----MWRQSTILAAL-----LVALLCAGSAESKGNRPPRITKQPAPGELLFKVAQONKESD--NPFIECEADGOPE
PEYSWIKNGKFFDQAYDNRMLRQPGRGLVITIPKD----EDRGHYQCFASNEFGTATSNSVYVRKAELNAFKDEAAKT
LEAVEGEPFMLKCAAPDGFPSPTVNWMIQESIDG-SIKSINNSRMTLDPEGNLWFSNVTREDASSDFYACSAATS VFRSE
YKIGNKVLVDVKQMG-----VSASQNKHPPVRQYVSRROSLALRGKRMELFCIYGGTPLPQTVWSKDG
QRIQWS----DRITQGHYGKSLVIRQTNFDDAGTYTCDVSNVGVNAQSFSIILNVNSVPYFTKEP-EIATAAEDEEVVFE
CRAAGVPEPKISWIHNGKPIEQSTPNPRRTVTDNTRIRIIN---LVKGDGTGNYGCNATNSLGYVYKDVYLVNQAEPP-TIS
EAPAAVSTVDGRNVTIKCRVNGSPKPLVKWLRASN---WLTGGRYVNVQANGDLEIQDVTFS DAGKYTCYAQNKFGEIQAD
GSLVVKEHTRITQE--PQNYEVAAGQSATFRCAEHDDTLEIEIDWWDGQSIDFEAQPRFVKTNDNSLTI AKTMELD SG
EYTCVARTRLDEATARANLIVQD-----VPNAPKLTGITCQADK-AEIHWEQQGDNRSPILHYTIQFN TSFTPAS
WDAAYEKVPN--TDSSFVVQMSPWANYTFRVIAFNKIGAS-----PPSAHSDSCTTQPDVVPFKNPDNVVGQTEPNLV
ISWTPMPEIEHNAPNFHYVSWKRDIPAAAWENNIFDWRQNNI VIADQPTFVKYLIKVVAINDRGESNVAAEEVVGYSG
EDRPLDAPTNFTMRQITSSSTSGYMAWTPVSEESVRGHFKGYKIQTWTE-----NEGEEGLREI HVKGDTHNALVTQFKP
DSKNYARILAYNGRFNGPPSAVIDFDTPEGVPSVQGLDAYPLGSSAFMLHWWKPLYPNGKLTGYKIYYEEVKESYVGER
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GPIMVANETVANAGWFIGMMLALAF-IIILFIIICIIRNRGGKYDVHDREL ANGRDYP----EEGGFHEYSQPLDNKS
AGRQSVSSANKPGVESDT-DSMAEYGDGDTGQFTEDGSFIGQYVPGKLOPPVSPQPLNNSAAAHQAAPTAGGSGAAGSAA
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>Worm

-----MRLVIAQ-----FLLITQVFAAQKNSIGPPKLEQSGEEVWYHLDDDEDLLKN---RLTLRCEADEN-T
DRYSWLKDGEPFVIDSEDLWEKESQSGSIVFTKPHA----SHQGYQCFASNIFGTALSNKMHLRLGSLEHFPKRDKL
LRVKEGESLTLNCTPPRGTPDPKIVWLYRSLDDSSVIETIRSRHITVDNEGHLHFSSVELSDGKATLVYECAATSPVLRG
EYRSGDRIQLDIE-----PSQDKSHPVKMSVSPSEVTVRAGGQLKLOCFGGRPLPTIFWSKID
GELPKSRIKDLTSHESDFGRSLIVENVHPDDAGAYE CRGR-----HLVHTVNVVRVMAAPWFEFDPDRDISLPEESTGELE
CLAGGQPTPIITWSMNGKFLHELAEDSRRVLLDHGRILRVNLNHDLDGTGVYQCNASNPLGYVFANAFVHVRHAPFFRM
PAARHWKVVLHSTVVLDCDVDAAPEAMVRWVDADDRPLQVVEGKNKLPNHTFMVYDVNSADEGLYCNVSNKYGINRAT
NRLQVFKPTYFVRIPTPKRLILEAGETAEVFCEAVADPRLPIRYQWTINGK--VLTESQYYEILPDR-LRFRSVRGRHSG
IIDCAAITDVDVKLASMQLIVKD-----VPAHPVETAHC SERKATVKVVAASDHGDSIKKYIVEMFTDFKKN
WEVINEEVNVNKETFEVDITLTPWVNYTFRVAVNSHGRSDMKIDGQPKEDWLTCTQTRPSFPYTNPTGVKGEGETEPDNLV
ISWKPLDRYYWNAPNMQYLVRVKLDEPIHGWTEFLVEDSLANFTIIRDQPTFRKYLIQVQSVNSVGPSIVEPEIHHGWSG
EDVPDEAPRDFHIDTQINFTTINF TWNPDANTVNGHFVGYEIEYWKAEN-----TIRKYSIKIPANSTYKVIN SFHA
VTNYSAHIRTRNKRLRSAPSDYVSFAMPEGPPGVHNLRVYSVGSTAILLQWDAPLQPNGRIRGYFISFQNEKN-----
-ETEETVIHRQKHYLHEKSEPD TG YKVSVAETRAGEGPVTLRPVRTWPARIPDAPIFRVKN-----ISLDSFV
VEWQPNNSVVKMPGAFFVNYTAESSKTWFQSEIIYLPYTEITIRNLKEDQKYFMQGI AKDGPRRSESVFLPIKTLNRD
YANRLKEDSLRSAAWFIAVLGVLGIGLFTICLTFCCGNKNRQEKFAVRRKEIEIG---HQODNEEEKQFLEYQYGFKN--

