

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Xenopus_tropicalis	-----MTPKANLYVDCYFVLL	16
Rhinatrema_bivittatum	-----MLLISIGLPKLDRTKFS	18
Pavo_muticus	-HYLAGNCLTLPRAVVKS LWR TN LQLLSGSDQPKKSVLHPGLKPDGORSQKLEDNDDTDL	59
Pavo_cristatus	-HYLAGNCLTLPRAVVKS LWR TN LQLLSGSDQPKKSVLHPGLKPDGORSQKLEDNDDTDL	59
Gallus_gallus	MHCLAGNCLTLPRAVMKS LWR TDFQLVSGSDQPKKSVLHPGLKPDGORSQKLEDNDDTDL	60
Chelonia_mydas	-----	
Mus_musculus	-----	
Rattus_norvegicus	-----	
Homo_sapiens	-----	
Pan_troglodytes	-----	
Macaca_mulatta	-----	
Callithrix_jacchus	-----	
Canis_lupus_familiaris	-----	
Equus_caballus	-----	
Bos_taurus	-----MPVC	4
Heterocephalus_glaber	-----	
Danio_rerio	-----	
	1.....10.....20.....30.....40.....50.....60	

		** : : : . : *** .	
Xenopus_tropicalis	QIRLQVSLVDGPGAGQMEEDRTNHDEGNRLSP TLLYSSACQNKGL---LQNGN-LPTD	72	
Rhinatrema_bivittatum	SIHIKGS LVDGPGENQMEQDRTNHVDGNKLS PFLTPHPSVPCQSN TLSVAQONGSPVTAN	78	
Pavo_muticus	SIRSEGS LVDGPGAGQMEQDRTNHVDGNRLSPFLISQSSHMCQAEPSAVKLQNGSPATER	119	
Pavo_cristatus	SIRSEGS LVDGPGAGQMEQDRTNHVDGNRLSPFLISQSSHMCQAEPSAVKLQNGSPATER	119	
Gallus_gallus	SIRSEGS LVDGPGAGQMEQDRTNHVDGNRLSPFLISQSPSHICQADPSAVKLQNGSPATER	120	
Chelonia_mydas	-----MEQDRTNHVDGNRLSPFLIPHPSHVSVQVEPLSVKLQNGSPITER	44	
Mus_musculus	-----MEQDRTTHAEGTRLSPFLIAPPSPISHTEPLAVKLQNGSPLAER	44	
Rattus_norvegicus	-----MEQDRTTHAEGTRQSPFLIASPSPVSHTEPLAVKLQNGSPLAER	44	
Homo_sapiens	-----MEQDRTNHVEGNRLSPFLIPSP-PICQTEPLATKLQNGSP LPER	43	
Pan_troglodytes	-----MEQDRTNHVEGNRLSPFLIPSP-PICQTEPLATKLQNGSP LPER	43	
Macaca_mulatta	-----MEQDRTNHVEGNRLSPFLIPSP-PICQTEPLATKLQNGSPVPER	43	
Callithrix_jacchus	-----MEQDS TNHVEGNRLSPFLIPSP-PICQTEPLATKLQNGSP LPER	43	
Canis_lupus_familiaris	-----MEQDRSNHVEGNRLSPFLTPSPSPNCQTEPLALKLQNGSP LTER	44	
Equus_caballus	-----MEQDRTNHVEGNRLSPFLTPSPSPIGQTEPLA KLQNGSP LTER	44	
Bos_taurus	KIHSEGSLLDGP EASLMEQDRTNHVEGNRLSPFLIPSPSPICQTEPLARKLQNGSP LTER	64	
Heterocephalus_glaber	-----MEQDRSSHAAGSTLGPFLVPAPAPPCQPEPLA KLQNGSPVP--	42	
Danio_rerio	-----METEKTSNETEKS---HILAKISATQQTDFLTKHQNGDQSP E-	39	
70.....80.....90.....100.....110.....120		

		. . : . : * : : *	
Xenopus_tropicalis	KDLLVNGDICLP-TKNNYNVAYMKG--SQEHGASALIH DNKAYPNHIQNGGIKRTYSEP-	128	
Rhinatrema_bivittatum	AHLQVNGDK----WKSSHGIIHMKGNHOKNYNNSNLTHGKKEHSKYVQNGGIKRIFNESS	134	
Pavo_muticus	PEVEVNGD HKRLFNKSNYGEPTKGS-PNHCI SPDLLQEKKACSKYMONGGIKRTFSEPS	178	
Pavo_cristatus	PEVEVNGD HKRLFNKSNYGEPTKGS-PNHRISP DLLQEKKACSKYMONGGIKRTFSEPS	178	
Gallus_gallus	PEVEVNGD HKRLFNKSNYREPHAKGS-PNHRISP DLLQEKKACSIYMONGGIKRTFSEPS	179	
Chelonia_mydas	THAEVNGD HKWLLFNKSYGIPHVKG N-PNNRISP DLLQEKRVYSKYMONGGIKRTFSEPS	103	
Mus_musculus	PHPEVNGD TKWQSSQSCYGISHMKGS-QSSHESP---HEDRGYSRCLQNGGIKRTVSEPS	100	
Rattus_norvegicus	PHPEVNGD TKWQSFQSYYGIPHMKG S-QSSHESP DFIHEGRGYSCLQNGGIKRTVSEPS	103	
Homo_sapiens	AHPEVNGD TKWHSFKSYYGIPCMKG S-QNSRVSPDFTQESRGYSKCLQNGGIKRTVSEPS	102	
Pan_troglodytes	AHPEVNGD TKWQSFKSYYGIPCMKG N-QNSRVSPDFTQESRGYSKCLQNGGIKRTVSEPS	102	
Macaca_mulatta	SHPEVNGD TKWQSFKSYYGIPHMKG S-QNSRVSPDFIQESRGYSKCLQNGGIKRTVSEPS	102	
Callithrix_jacchus	THAEINGD TKWQPF RSYYGIPRMKG S-QNSRVSPDFIQESRGYSKCLQNGGIKRTVSEPS	102	
Canis_lupus_familiaris	PYPEVNGD TKWQSFKSYYGIPHMKG S-QNSRVSPDFIQEGRGYSRCLQNGGIKRTVSEPS	103	
Equus_caballus	LYPEVNGD TKWQSFESYYGIPHMKG S-KKSRVSPDFIQEGRGYSKCLQNGGIKRTVSEPS	103	
Bos_taurus	PYLEVNGD SKWPSLKSYYGIPHMKG S-QKSRVSPDFIQEGRGYSRCLQNGGIKRTVSEPS	123	
Heterocephalus_glaber	---EVNGD TKWQALKNWPGVP-----PSSCASPDFLHEGRSFS CCLENGGIKRTVSEPS	93	
Danio_rerio	-----VLSQQKV PANLQIGFDQSMFMGMKGQMKHALSEQA	73	
130.....140.....150.....160.....170.....180		

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: . . : . :
Xenopus_tropicalis LFSESQLKKVRT-DEINGENKGDQRQNNI-----QASVSEFCNEDQSVRIFQPVN--- 177
Rhinatrema_bivittatum LLGFQQGKKIRTGEEINGEIDAVGKKN-----QLNIFNSCNEKKFVRITQENAFF 186
Pavo_muticus LFGGLQSSKKVKQDKEVNGEKAEPEDNYE-----KPSISNICYSEKKSE--MGLNEAS 228
Pavo_cristatus LFGGLQSSKKVKQDKEVNGEKAEPEDNYE-----KPSISNICYSEKKSE--MGLNEAS 228
Gallus_gallus LFGGLQSSKKVKQDKEVNGEKAEPEDNYE-----TPSISNICYSEKKSE--MGOENEAL 229
Chelonia_mydas LYGLHQNKKKIKRDEEGNGEKDEPGENNE-----KPTVSNSCNEKESSEFTGOENAAAS 155
Mus_musculus LSGLHPNKKILKLDQKAKGESNIFEESQERNHGKSSROPNVSGLSDNGEPTSTTOES--S 158
Rattus_norvegicus LSGLHLNLTKLTLTDQKAKGESNNFGESQEGNPGKSSSHPNVSGLSDDREPCTSTAQES--T 161
Homo_sapiens LSGLLQIKKKLQDQKANGERRNFGVSGQERNPGE--SSQPNVSDLSDKKESVSSVAQENAVK 161
Pan_troglodytes LSGLLQIKKKLQDQKANGERRNFGVSGQERNPGE--SSQPNVSDLSDKKESVSSVAQENAVK 161
Macaca_mulatta LSGLLQIKKKLQDQKANGERCNFGVSGQERNPGE--SSQPNVSDLSDKKESVSSVAQENAVK 161
Callithrix_jacchus LSGLHQIKKKLQDQKANGQRHNFGVSGQERNPGE--SSQPNVSDLSDKKESVSSVPQVNAVK 161
Canis_lupus_familiaris LSGLHQNKKKLQDQKANGERNNFGVSGQESNPGKSSQLNVSDLSDKKRESVSSVAQENAVK 163
Equus_caballus LSGLHQNKKKLQDQKANGERNNFGVSGQERNPGGSSQPNVSDLSDKKRESVSSVAQENAVK 163
Bos_taurus LSGLHQNKKKLQDQKANGERSFGESREGNPDGSSQPNVSDVSGRRESVSSVAQENAVK 183
Heterocephalus_glaber VSGFQONKKLRQDQKADGERKSLREIRERNPRGSSGRPDPTDVGENREPESSGAPEDAVE 153
Danio_rerio LLDHFQTKTLVNGNENPRIWDKSEAGMEN-----RLEVFPHKNKAGDLT----- 117
.....190.....200.....210.....220.....230.....240

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Xenopus_tropicalis -----SPALQVPNEQ-KKDLNYSNRDIVSCLKDKTVPMCNAGATASVSSME 221
Rhinatrema_bivittatum DFTKSSASNYNGSE-SLFFRTQNELEKKNINYQNKDITVPLKNKTVPIPNAGATVSTSSME 245
Pavo_muticus ELMPSARYNSGGSEDPVLLIQNEQERENINCHNRDIVLLLLKNKAVPMPNGATVSASSMD 288
Pavo_cristatus ELMPSARYNSGGSEDPVLLIQNEQERENINCHNRDIVLLLLKNKAVPMPNGATVSASSMD 288
Gallus_gallus ELMPSARYNSGGSEDPHELLIQDEQEGENINCHNRDIVLLLLKNKAVPMPNGATVSASSMD 289
Chelonia_mydas DFIQSSRYNCDGSENPEDLQIQNEQERENINCHNKNIVLLLLKNKAVPMPNGATVSASSME 215
Mus_musculus GADAFPTRYNNGVE----IQVLNEQEGE----KGRSVTLK-NKIVLMPNGATVSAHSEE 209
Rattus_norvegicus DIDAFPTRYNNGVEN---TEIPPEQEGG---NDRNALLK-NKAVLMPNGATVSAPSVE 213
Homo_sapiens DFTSFSTHNCSGPENPE-LQILNEQEGKSANYHDKNIVLLK-NKAVLMPNGATVSASSVE 219
Pan_troglodytes DFTSFSTHNCSGPENPE-LQILNEQEGKSANYHDKNIVLLK-NKAVLMPNGATVSASSME 219
Macaca_mulatta DFTSFSTHNCSGPENPE-LQILNEQEGKSANYRDKNIVLLK-NKAVLMPNGATVSASSME 219
Callithrix_jacchus DFTSFSTHNRSGSENPE-LQILNEQEGKSANCHDKNIVLLK-NKAVLMPNGATVSASSME 219
Canis_lupus_familiaris DLISSSTQNCSEKSEKPE-LQIPNEQEKKNANYRDKNFTLLLTNKAIVLMPNGATVSASSME 222
Equus_caballus DITGFSTHNCSGSENPE-LQITNEQEEKRANSRDKNIVLLLSNNAIVLMPNGATVSASSME 222
Bos_taurus DFTSFPTHNCGGSENPE-LQILNKEGKSANYHNKNIVLLLLKNKAVLMPNGATVSASSME 242
Heterocephalus_glaber DAATFPTHNCSGLGKPE-LQAPREQEPKDAQYQDENPALLLNKAALVPNGATDSASSLE 212
Danio_rerio -----HAKINCFTNGDLFSLSRNKQVQMPNGATTSPPSVK 153
.....250.....260.....270.....280.....290.....300

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. . : * : * * . : :
Xenopus_tropicalis NVN---NELLEKLPSQYYPEHVSTVVHN-NTSLANAINTLNDASNDLSTLATHPSHTSGQ 277
Rhinatrema_bivittatum NNTPSSELLEKTLSSYYYPYQVSIAMQK-NTSPMHAINTHIVAANGLSPETAEKSHSTSGQ 304
Pavo_muticus SMH---GELLEKTLSSQYYPEHVSIAMQK-NTSHINAITSQ--ATNELSHETTHSSHTSGQ 342
Pavo_cristatus SMH---GELLEKTLSSQYYPEHVSIAMQK-NTSHINAITSQ--ATNELSHETTHSSHTSGQ 342
Gallus_gallus SMH---GELLEKTLSSQYYPEHVSIAMQK-NTSHINAITSQ--ATNELSHETTHSSHTSGQ 343
Chelonia_mydas NMH---GELLEKTLSSQYYPDHVSIAMQK-NTSHINAINSQ--ATNVLSEYETTHSSHTSGQ 269
Mus_musculus NTR---GELLEKT--QCYPDCVSIAVQS-TASHVNTPSQ--AAIELSHEIPQPSLTSAQ 261
Rattus_norvegicus DTH---GEFLEKT--QCYPDCVSMVONNTTPHVNALSGO--AAIELPREITQPSLTSAQ 266
Homo_sapiens HTH---GELLEKTLSSQYYPDCVSIAVQK-TTSHINAINSQ--ATNELSCEITHPSHTSGQ 273
Pan_troglodytes HTH---GELLEKTLSSQYYPDCVSIAVQK-TTSHINAINSQ--ATNELSCEITHPSHTSGQ 273
Macaca_mulatta HTH---GELLEKTLSSQYYPDCVSIAVQK-TTSHINAINSQ--ATN----EITHPSHTSGQ 269
Callithrix_jacchus HTH---GELLEKTLSSQYYPDCVSIAVQK-TTSHMNAINSQ--ATNELSCEITHPSHTSGQ 273
Canis_lupus_familiaris NTH---GELLEKTLSSQYYPDCVSVAVQK-TTSHKHAINSQ--ATNELSCEITHPSHTSGQ 276
Equus_caballus NTR---GELLEKTLSSQYYPDCVSIAVQK-TTSHIHAINSQ--ATNESSCEITHPSHTSGQ 276
Bos_taurus NTH---GELLEKTLSSQYYPDCVSIAVQK-TTSHIHAINSQ--ATNELSCEVTHPAHTSGQ 296
Heterocephalus_glaber NTG---GEVLDKAPSRCHPDCVSSALQKTASHSSSAGPGO--ASPQVPCAVTQPSHTSGQ 267
Danio_rerio GTT---GDLLEKTLSSQYYPEHVSIAPQT-NSSQVDQVTN-----LPDQATSPSFTSGF 204
.....310.....320.....330.....340.....350.....360

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Xenopus_tropicalis      MTPQOTS--VLPQVSGAIVDGAPNSDHGSE--PLVLPGSYSLNRQEQKPLSQETILNYS 332
Rhinatrema_bivittatum  IISPQVSNSEPPQVPVVVSTIVQRKGNISK---EPPTSSSYSLQLREHVQPOK-PDYDS 360
Pavo_muticus            ITSPQTSNSELQPQVPAVVVTEVYGADSSK---PPVLPGSCSLQKPELQ-LQQQIPGYDT 398
Pavo_cristatus         ITSPQTSNSELQPQVPAVVVTEVYGADSSK---PPVLPGSCSLQKPELQ-LQQQIPGYDT 398
Gallus_gallus          ITSPQTSNSELQPQVPAVVVTEVYGADSSK---PPVLPGSCSLQKPELQ-LQQQIPGYDT 399
Chelonia_mydas         IISPQTSNSELQPQVPAVVATEVYNTEDSSK---PPVLPGSYSLQKSELQ-LQQQNPQGYDT 325
Mus_musculus           INFSTSSSLQLPPEPAAMVTKACDADNASK---PAIVPGTCPPFOKAEH---QOKSALDIG 315
Rattus_norvegicus      INFSTSSSAQLPPEPAAMVTKACDLDASK---PAGVLGTCAFOKAEH---QOKSVLIGIG 320
Homo_sapiens           INSAQTSNSELPPKPAAVVSEACDADDADNASKLAAMLNTCSFQKPEQL-QQOKSVFEIC 332
Pan_troglodytes        INSAQTSNSELPPKPAAVVTEACDADDADNASKPAAMLNTCSFQKPEQL-QQOKSVFEIC 332
Macaca_mulatta         INSAQTSNSELPPKPAAVVTEACDADDADNASKPAAMLDTCPFOKPEQL-QQOKSVFEIC 328
Callithrix_jacchus     INSAQTSNSELPPKPAAVVTEACVADDADNASKPAAMLDTPFOKPEQL-QQOKSVFEIC 332
Canis_lupus_familiaris INLPQTSNSELRPPEPAVVTEACDADKASK---TAAMIGTCPPFOKPE---KOKLLFDRC 329
Equus_caballus         INFPQTSNSELPPPEAAAAPEARADNASKP---AAVLIGTCPPFOKPE---QOKPVFELC 330
Bos_taurus            INFPQTSNSELPPPEAAAAATESCEADGASK---PAATLGACPPFOKPE---QONSFAFEIR 349
Heterocephalus_glaber  IECPPSPGSELPPPEAAVAITKACSS-----AMPETRPFORPAQ---PRETGLEPC 314
Danio_rerio            PISPQISASETLVKAPPEVQNSNGYNP-----ELAVNGYSSFAAEQK----- 246
.....370.....380.....390.....400.....410.....420

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Xenopus_tropicalis      HNLVGSMDGACKSMGQMSAQLDVSNGNSFHQNSSSNETIASL-----EAIKKD 382
Rhinatrema_bivittatum  QILLAENSSROETIEQVPIGNLAGSPSSDLOPQISITEDLSEKANMNSTFFKYRLAFNKL 420
Pavo_muticus           HRLPVGNSAVHGSVGVQVNPQDLSSLSSSNLQAQNAAPERFSEQAGKNGAFFTKNSMFHKD 458
Pavo_cristatus         HRLPVGNSAVHGSVGVQVNPQDLSSLSSSNLQAQNAAPERFSEQAGKNGAFFTKNSMFHKD 458
Gallus_gallus          HRLPLGNSAVHGSVGVQVNPQDLSSLSSSNLQAQNAAPERFSEQAGKNGAFFTKNSMFHKD 459
Chelonia_mydas         HQLPTGNSSSVHGNMGRAPNODLSLSSSNLQSHNNLEGISQAEKNGALFKHNSMSNKO 385
Mus_musculus           PS-RAENKTIQGSMEFPA-EEYYPSDRNLQASHGSSSEQYSKOKETNGAYFROSSKFPKD 373
Rattus_norvegicus      PSSCAENINIQGNTKPPA-EEYYAGSDDLQTSLGSSSEQCIKOKETNGAYFROSSVFPED 379
Homo_sapiens           PS-PAENN-IQGTTKLASGEEFCSGSSSNLQAPGGSSERYLKONEMNGAYFKOSSVFTKD 390
Pan_troglodytes        PS-PAENN-IQGTTKLASGEEFCSGSSSNLQAPGGSSERYLKONEMNGAYFKOSSVFTKD 390
Macaca_mulatta         PS-PAENN-IQGTTKLASGEEFCSGSSSNLQAPGGSSERYLKONEMNGAYFKOSSVFTKD 386
Callithrix_jacchus     PS-PAENNDIQGTTKLVSGEEFCSGSSSNLQAPGGSSERYLKONEINGAYFKOSSVFTKD 391
Canis_lupus_familiaris PS-RAENSDNIQGTTKLVSGEEFCSGSSSNLQAPGGSSERYLKONETNGAYFROSSVFTKD 388
Equus_caballus         PA-PAENDNIQGTTKLVSGEEFCSGSSSNLQAPGGSSERYLQONEMNGAYFKOSSVFTKD 389
Bos_taurus            PS-LAENSNIQATAKLGSGEFCLGPSGNLQSPSGSSERYLKONEMNGACFKOSSVFTKD 408
Heterocephalus_glaber  PC-PVQPSDAQGNSVLASTEGLRSGS-----SSQQYSQHDETNGAYFROGSVFPED 364
Danio_rerio            -----KPAYSLSDLPELSQKDSSENVPSQTVVNGSSQIQEDRE-----ALPND 289
.....430.....440.....450.....460.....470.....480

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Xenopus_tropicalis      P-----APSLQLHHIMPKNQNE---SSISQSHDGHPIA 412
Rhinatrema_bivittatum  S-----CASLEMNSTLDTIREGQHSSQNQSNQNLRA 453
Pavo_muticus           S---STPP-----APEMNSALSMVREGHRSYDNRCDETLPGE 493
Pavo_cristatus         S---STPP-----APEMNSALSMVREGHRSYDNRCDETLPGE 493
Gallus_gallus          S---STPP-----APEMNSALSMVREGHRSYDNRCDETLPGE 494
Chelonia_mydas         S---FTPPPA-----SVPPPAPEMNSTLSLGVTEGHHYPYDNRNVELTPRE 427
Mus_musculus           SISPTTVTPPS---QSLAP---RLVLQPPLEGKALNDVALEEHHYPNRSNRTLLRE 426
Rattus_norvegicus      SISATTMTPPS---PSLAP---RPVLQPLSEGKTLNDVALEEHHYPNQSDDLTLRE 432
Homo_sapiens           SFSATTTPPPP---SQQLLSPPPPPLPQVPOLPSEGKSTLNGGVLEEHHYPNQSNTLLRE 448
Pan_troglodytes        SFSATTTPPPP---SQQLLSPPPPPLPQVPOLPSEGKSTLNGGVLEEHHYPNQSNTLLRE 448
Macaca_mulatta         SFSATTTPPPPPPSQQLLSPPPPPLSQVPOLPSEGKSTLNGGVLEEHHYPNQSNTLLRE 446
Callithrix_jacchus     SFSATTTPPPP---SQQLLSPPPPPLSRVPOLPSEGKSTLNGGVLEEHHYPNQSNTLLRK 449
Canis_lupus_familiaris SFSAPTTPPPS---QLLLSPTTLPQVSPOLPSEGKSTLNDGVLEEHHYPNQSNTALLRE 445
Equus_caballus         SFSATTTPPPS---QLLLP PPPPLPQVPOLPSEGKSTLNDGVLEEHHYPNQSNTLLRE 446
Bos_taurus            SFSATTTPPPS---QLLLP PPPPLPQVPOLPSQNGTLNDGVLEELHHYPNQS DPTLLRE 465
Heterocephalus_glaber ---PMTTPALQ---QLLLPPLPLPSVPLFS-DGKALLQNAASEDPQQFPNQSNTLLRE 415
Danio_rerio            S-----ECVNMFSKSNQNLSHG 306
.....490.....500.....510.....520.....530.....540

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Xenopus_tropicalis      S----QTNESCHSHDPRVSPH---PNDQ---QLQNER TAMFPLTRLPALHSVNEILAKH 462
Rhinatrema_bivittatum  RENEVENDGLHSRSPTLSQQ---NSPQSV PQVQVVSQQMGNGNSLLASPTSLAQTC SKG 510
Pavo_muticus           IKNEGQQ-QGPVPESPGLSQQLLHPQQRLPQVQTSQHEVSQSDPRAAAATSIQQHPHEM 552
Pavo_cristatus         IKNEGQQ-QGPVPESPGLSQQLLHPQQRLPQVQTSQHEVSQSDPRAAAATSIQQHPHEM 552
Gallus_gallus          IKNEGQH-QGPMPE SPGLNQQLLHPQQRLPQVQTSQHKVSHSDPRAAAAASIQQHPHEM 553
Chelonia_mydas         VKNEGQQ-EELMSRSPGLAQQQPNSQQKLPQKPEVVSQQDGSSESLPATMMTSIQQHTTEEI 486
Mus_musculus           GKIDHQP-KTSSSQSLNPSVHTPNPPLMLPEQHON--DCG-----SPSPEKS 470
Rattus_norvegicus      GKTEHQPKKTTSSQSLNTPSVHTPNPPLMLPEQHON--DCV-----PPCSEKT 477
Homo_sapiens           VKIEGKP-EAPPSQSPNPSTHVCSPSPMLSERPQN--NCVNRNDIQTAGMTVPLCSEKT 505
Pan_troglodytes        VKIEGKP-EAPPSQSPNPSTHVCSPSPMLSERPQN--NCVNRNDIQTAGMTVPLCSEKT 505
Macaca_mulatta         VKTEGKP-EAPPSQSPNPSTHVCSPSPMLSERPQN--NCVNRNDIQTAGMTVPLCSEKT 503
Callithrix_jacchus     VKIECKP-EAPPSQSPNPSTHVCSPSPVLSERPQN--NCANRNDIQTAGMTVPLCSDKI 506
Canis_lupus_familiaris VKIEGQC-EAQPSPSPNPSTHIPNHSMLLPERPQN--NCVNKNDIQTPGMMTVPACSEKV 502
Equus_caballus         VKIEGQT-KAPPSQSPNPPTHVPSPSMLLPERPQN--NCVDKNDIWTPTGMTVPLCAEKT 503
Bos_taurus             VKIEGQH-EAPPPQSPTPSAHVSNPSLMLPVRPQN--NCVNKNDISRTPTGMTIPLGSEKT 522
Heterocephalus_glaber  VKIEAGP-EAPPPQSSSPALLTTCGPRLLGAGS--DDVPQNGTGLTG--ARFACTGRA 470
Danio_rerio            SYTLPPVTAGSPSQTSTQGOYN--PQIKVPQKTT-----DENLHGN 346
.....550.....560.....570.....580.....590.....600

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Xenopus_tropicalis      KFHNS-----LEMONEHLRQIKVMQNCNG-----TSKDDSFIKSTKEF--QSNPF 505
Rhinatrema_bivittatum  MKPSSDDHIQDLPMHGSTTELLQHYONFLESKEPVHLPEKAKEMFPQAKADLSLKTHPS 570
Pavo_muticus           PPPPSKPPQLNLHACGSDGELPQLCORFPQGOREP-----EIPPDKEKDQVKESVQQSHRY 607
Pavo_cristatus         PPPPSKPPQLNLHACGSDGELPQLCORFPQGOREP-----EIPPDKEKDQVKESVQQSQRY 607
Gallus_gallus          PPPPSEPPLQLNLHACGSDGELPQLCORFPQGOREP-----EIPPDKEKDQVKESVQQPQRY 608
Chelonia_mydas         KPS-SEPHIQDLQVVGNGNGELQCHYQCHLQKEH-----EMPPEKGKDQVKQ---QPHHY 537
Mus_musculus           R-KMSEYLMYYLPNHGHSGGLQEHSHQYLMGHREQ-----EIPKDANGKQTQGSVQ----- 519
Rattus_norvegicus      R-KVSDYRMYLPNHGHGGDLQENSQYLMGHGEH-----EILKDANKGQTQGSVL----- 526
Homo_sapiens           R-PMSEHLKHNPPIFGSSGELQDNCCQLMRNKEQ-----EILKGRDKEQTRDLVPPTQHY 559
Pan_troglodytes        R-PMSEHLKHNPPIFGRSGELQDNCCQLMRNKEQ-----EILKGRDKEQTRDLVPPTQHY 559
Macaca_mulatta         R-PMSEHLKHNTPIFGSSIGQQDNCCQLMRNKEQ-----EILKGRDKEQTRDLVPPTQHY 557
Callithrix_jacchus     R-LISEQLKHKPPIFGSSDQLQDHCRKLMRNKEQ-----EILKARNKEQTRDLLPPTQHY 560
Canis_lupus_familiaris R-QISEHLKHNPTILGSSGDPQDHCCQLMGHREQ-----DILKGRDKEQTRGLVLPAPY 556
Equus_caballus         R-QISEHLKHNPPILGSSGDPQNHCCQLMGHKEQ-----EILKGRDKEQTRDLVLSIQPY 557
Bos_taurus             R-QLSEHLKPNPPILRSGGDPQDHCHLMGHKQ-----EILKSQDKEQTRDLMLPTQCY 576
Heterocephalus_glaber  TPDQVDPLKHSPPVLGLGRQVQDPCPPLGPKEP-----ELLQDQDQQQIRGLAPLPQHY 525
Danio_rerio            RDFSLQQQTHEPQAVESKLIPQACTSPSQNRNN-----DQDNKSKLGLEKTL SKGTDPS 401
.....610.....620.....630.....640.....650.....660

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Xenopus_tropicalis      LKSGWLELRPNQRLKEGSSSETSCENLLNLLQSQTNN----- 542
Rhinatrema_bivittatum  LNTSKMDLGFSPFYHTLSARKSNEALLRSLLQFSSHQNEQELLKHPSENPDIFKSVPA-- 628
Pavo_muticus           SKPAWIELVSTPFRQELPHKPNEALLRSILQYQANTSKAAYMKQYAGSPDALKGPLGQP 667
Pavo_cristatus         SKPAWIELVSTPFRQELPHKPNEALLRSILQYQANTSKAAYMKQYAGSPDALKGPGSQP 667
Gallus_gallus          SKPAWIELVSTPFRQELPHKPNEALLRSILQYQANTSKAAYMKQYAGSPDALKGPGSQP 668
Chelonia_mydas         PKPGWIELISTHFHHRDSPQKPNEALLRSILQFQPNPMEQMLNQTGNPDALKEPSGQP 597
Mus_musculus           AAPGWIELKAPNLHEALHQTKRDISLHSLVLSQTPVNMSSKQSTGNVNMPPGGFQRLP 579
Rattus_norvegicus      AAPGWIELKASHFHKALHQTECKATSLHSGRLRYQTSPTNQIGSIQSTGSVNMTGEFQRP 586
Homo_sapiens           LKPGWIELKAPRFHQAESHKLRNEASLPSILQYQPNLSNQMTSKQYTGNSNMPGGLPROA 619
Pan_troglodytes        LKPGWIELKAPHFHQAESHKLRNEASLPSILQYQPNLSNQMTSKQYTGNSNMPGGLPROA 619
Macaca_mulatta         LKPGWIELKAPHFHQAESHKLRNEASLPSVLQYQSNLSNQMTSKQYTGNSNMLGGLPROA 617
Callithrix_jacchus     VKPGWIELRAPHFHQAESHKLRNEASLPSVLQYQSNPSNQMTSKQYTGNSNMPGGLPRHA 620
Canis_lupus_familiaris LKPGWIELKPPHFHQAESHKLRNEASLPSVLQYQSNPSNQMTSKQYTGNSNMPGGLPGQA 616
Equus_caballus         LKPGWIELKAPYFHKAESHKLRNEASLPSILQYQSNPSNQMTSKQYTGNSNMPGGLSGQA 617
Bos_taurus             LKPGWIELKAPHYRQAESHKLCNETTLRSILQYQSNPSNQMTSKQYTGNSNMPGGLPGQA 636
Heterocephalus_glaber  VKPEWIELKTG-PLQAESQPTCKEPC-SILQYQPKAALLMTRPYTGKP-MPGAQTGQA 582
Danio_rerio            SOMEWIDLNSTSASTPSTEHSQMWDLFLPQTNIQHTVPSQSQQCIN----- 448
.....670.....680.....690.....700.....710.....720

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Xenopus_tropicalis      --KKKLRQYPGKQGLANRKCNSQDSEEHLPNISEQOPNFPKHLSSQSYQYQYPSQKTNNG      600
Rhinatrema_bivittatum  --EKVIEQEPGLQFYKTEMAQQDSTADLQLAFQKPS-OGYHTKSESPLVSYEQQQNNN      685
Pavo_muticus           QSQKIMQEQEISLQYKSESSQLPHPTADPQLLFQKHSPQPQLTKMDSLLKPRVQOHPPQ      727
Pavo_cristatus         QSQKIMQEQEISLQYKSESSQLPHPTADPQLLFQKHSPQPQLTKMDSLLKPRVQOHPPQ      727
Gallus_gallus          QSQKIMHQEQIPLQYKSESSQMQHPHTADLQLLFQKHSPQPQLTKMDSLLKSRVQOHPPQ      728
Chelonia_mydas         HSQKIIQEQEQMPQLYKSEAAQLQVHPIADQQRQFQKHSPQPQLTKRNSLVKSYVQOHHTQ      657
Mus_musculus           YLQKTAQPEQKAQMYQVQVNGPSPGMGDQHLQFQKALYQECIPRTDPSSEAHPOAPSVP      639
Rattus_norvegicus      YIQKTAQPEHKSQMYQVEMNQGPSPGMGDQHLQFQKTSYQECISRTDLPPEAHG-----P      641
Homo_sapiens           YTQKTTQLEHKSQMYQVEMNQGSQGTVDQHLQFQKPSHQVHFSKTDHLPKAHVQSLCGT      679
Pan_troglodytes        YTQKTTQLEHKSQMYQVEMNQGSQGTVDQHLQFQKPSHQVHFSKTDHLPKAHVQSLCGT      679
Macaca_mulatta         YTQKTTQLEHKSQMYQAE MNQGSQGAVDQHLQFQKPSHQVHFSKTNHLPKAYVQSLCGT      677
Callithrix_jacchus     YTKKMTQLEHKSQMYQAE MNQGSQGTVDQHLQFQKPSHQVHFSKTDHLPKAHVQSVCGT      680
Canis_lupus_familiaris YIQKIMQPEHRPQRYHGEMNQGSQGTVDQHLQFQKPSLQVHFSKTDPSSEKAHMSLCAH      676
Equus_caballus         YIQKIMQPEQRPQRYQADMNQGSQGAVDQHLQFQKPSLQVRFSTDPSPPEAHVQSLCTP      677
Bos_taurus             YIQKIMQPEQRPQRYQVEMNQGSQGTVDQHLQFQNPSLQAHFSKVEPSDTHROPLCAP      696
Heterocephalus_glaber  LIPQAALPQQ-SQGPSTGRQGPQSTVDDQLQHLPLSRQGHVSKTDPSPDAHTQALCAP      641
Danio_rerio            -----SIPNNFQSHNFSNSSFPSSHEIEACENKNMLPPTRFPHSAAPESQQRNSGMNHNI      503
.....730.....740.....750.....760.....770.....780

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Xenopus_tropicalis      ----LMWPDLEQASEG-----TQLGDIVQ      619
Rhinatrema_bivittatum  TQHFLSRPRLEQTEQAFSSLLKQOYLNPKTTEAGRFSQPDGLYQSLNQOQOQTQVSQNA      745
Pavo_muticus           QLHFQQQP--EQQIEQPLGAPLKQOHLNPQGESEQFLHSHILQOMLQKQTQQTQ--MPC      783
Pavo_cristatus         QLHFQQQP--EQQIEQPLGAPLKQOHLNPQGESEQFLHSHILQOMLQKQTQQTQ--MPC      783
Gallus_gallus          QLHFQQQL--EQQTEQPLGAPLKQOHLNPQGESEQFLHSHILQOMLQKQTQQTQ--MPC      784
Chelonia_mydas         QLHFQARQ--EQQTEQPLGALLKQOHLTPQTTENEPFLHSHILQOMLQKQAQTQ--LSR      713
Mus_musculus           QYHFQQRV--NPSSDKHL-S-----QATEQRLSG--FLQHTPQTQASQTP--ASQ      684
Rattus_norvegicus      QYHFHQRV--DPSTDK-----QATEAEFSS--FLQHTPHKQAAQTQ--ASQ      683
Homo_sapiens           RFHFQORA--DSQTEKLM-SPVLKQHLNQCASETEPFNSHLLQHKPHKQAAQTQ--PSQ      734
Pan_troglodytes        RFHFQORA--DSQTEKLM-SPVLKQHLNQCASETEPFNSHLLQHKPHKQAAQTQ--PSQ      734
Macaca_mulatta         RFHFQORA--DSQTEKLM-SPVLKQHLNQCASETEPFNSHLLQHKPHKQAAQTQ--PSQ      732
Callithrix_jacchus     RFHFQORA--DSQTEKLM-STFLKQHLNQCASETEPFNSHLLQHKSHKQAAQTQ--PSQ      735
Canis_lupus_familiaris RFYFQORP--DSQTEKLM-PPTLKQHLNQCASETEPFNSHLLQHKPHKQAAQTQTPPSQ      733
Equus_caballus         QYHFQORP--APQTEKLM-PLTLKQHLNSCASETEPFNSHLLQHKPHKQAAQTQ--PSQ      732
Bos_taurus             RWHFQORP--DPQTEKLM-PPTLRQHLNQQTSETEPFNSHLLQHKPHKQAAQTQ--LPQ      751
Heterocephalus_glaber  QYHFQQVA--DPPAEQLS-SPLLKQHL-NLASELEPFDPDQSHVLQHPQSKQAAQTQ--PPQ      695
Danio_rerio            NMQFNNPQ-----HMSQKLCKNDQDQILS      527
.....790.....800.....810.....820.....830.....840

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Xenopus_tropicalis      HFLQAQP-----SEYIEELLKQHFDSLRNCNQNRDSPLN-----HFKLEEG      661
Rhinatrema_bivittatum  QLSSNQ-----QAFEVNMEHLAQTFTHSHINNDQQTNGQ-----PFSLIKPEC      791
Pavo_muticus           SPQLTPNQ-----QALQMKSKEP-PQTISHSQSNAEQQPDRT--SFSQPKADEC      830
Pavo_cristatus         SPQLTPNH-----QALQMKSKEP-PQTISHSQSNAEQQPDRT--SFSQPKADEC      830
Gallus_gallus          SPQLTPNQ-----QALQMKSKEP-PQTIPHSSQSNAEQQPDRT--SFSQPKADEC      831
Chelonia_mydas         SPQLTPNH-----HQOTLQKSEEL-SQTFSSQSNNEQQIDGA--SYSQKLEEC      762
Mus_musculus           NSNFPQICQ-----QQQQQQLQKKNKEQMPQTFSHLQGSNDKQREGS--CFGQIKVEES      736
Rattus_norvegicus      NSNFPQVCQ-----QQH--QLQKKNKEQMPQTFSHLQGTNHEQSQGQ--CFGTIKAEES      733
Homo_sapiens           SSHLPQN-----QQQQQKLQIKNKEEILQTFPHQSNNDQQREGS--FFGQTKVEEC      784
Pan_troglodytes        NSHLPQN-----QQQQQKLQIKNKEEILQTFPHQSNNDQQREGS--FFGQTKVEEC      784
Macaca_mulatta         NSHLPQN-----QQQQQKLQMKNKEEVLQTFPHQSNNDQQREGS--FFGQIKVEEC      782
Callithrix_jacchus     NSHLPQN-----QQQQQRLQIKNKEEVLQTFPHQSNYDQQREGS--FFGQIKVEEC      785
Canis_lupus_familiaris SSLISQNHQQQQQQQQQQQKLQMKNKEQMPQTFSSQSGNNDQQREGS--FFSQIKVEEC      791
Equus_caballus         NSLLSQN-----QQQQQKLQMKNKEQGSQTFPHQSNNDQQREGS--FFSQVKVEEC      782
Bos_taurus             NSHLSQN-----QQQQQKLQKKNKEQMPQTFSHLQGSNDQPREGT--FFSQVKVEEC      801
Heterocephalus_glaber  NSQFPPNQ-----QKQKQKLOVKNKEQMPHTFPHQSGNSDQGEQGPFFGHVKVEEC      749
Danio_rerio            PSFLSOLF-----PTETHQCATSTFSNQLPQDRQNMQAS-----PLSRDA      567
.....850.....860.....870.....880.....890.....900

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Xenopus_tropicalis      AQAANQYQKH--HPYP-QFEMEPKSLSNMNSPFSQIQENNTVNPNSYPDKQIYLSQ 717
Rhinatrema_bivittatum  IQTETQYTKANQFRPHT-POVGLEQIQRLSSKNSHSNHTQERNAKNMEHSCAKQMLFASE 850
Pavo_muticus           FQTGNKYMKPTAFPLHS-POLGLEQVQSMNKTPLYSQKTSAG---LQHPCPNNVHLMSE 886
Pavo_cristatus         FQTGNKYMKPTAFPLHS-POLGLEQVQSMNKTPLYSQKTSAG---LQHPCPNNVHLMSE 886
Gallus_gallus          FQTGNKYMKPTAFPLHS-PQGLEQVQSMNKTPLYSQKTSAG---LQHPCPNNVHLMSE 887
Chelonia_mydas         FQSENKYIKPTEFP-HN-POLGPEQEQSSNSKTSLYNQILKTN---TNLQHPGRMHLVSE 817
Mus_musculus           FCVGNQYSKSSNFQTHNNTQGGLEQVQVNI-KNFPYSKILTNPSSNLQILPSNDTHPACE 795
Rattus_norvegicus      FCGENQYSKSPSNFQTHS-AQGGLEQVQVNI-RSFPYAKIETPNSSKVQTLCSNYTHPASE 791
Homo_sapiens           FHGENQYSKSSSEFETHN-VQMGLEEVQVNI-RRNSPYSQTMKSSACKIQVSCSNNTHLVSE 843
Pan_troglodytes        FHGENQYSKSSSEFETHN-VQMGLEEVQVNI-RRNSPYSQTMKSSACKIQVSCSNNTHLVSE 843
Macaca_mulatta         FHGENQYSKSSSEFQTHN-VQMRLEEVQNMNSRNSPYSQTVKSSACKIQVSCSNNTHLVSE 841
Callithrix_jacchus     FHGENQYSKSSSEFQTHN-AQMGLEEVQNMNSRNSPYSQTMKSSCKVQVSCSNNIHLVSE 844
Canis_lupus_familiaris FRGENQYLLKSSSEFQTHN-TQMGLEQVQNMNSRNPYPYGVVLSNAGKLQIACSNNTHLVPE 850
Equus_caballus         FRGENQYSKSSSEFQTHN-TQMGLEQVQNMNSRNSPYGQILKSNASKVHISCSNSIHLVPG 841
Bos_taurus             FPGEDQYSKSSSEFQTHN-PQMGLEQVQVNI-SINSPYQILKSNANKVQISGNSHIQLVDP 860
Heterocephalus_glaber  FGGENQYSKASEFQTS-TQAGLEHGQVNSRNSLYGQILKSNASKTQISCSNNTHVVLPE 808
Danio_rerio            SRSQEEVEPLLKKLTEDYLHSEFQMLPACIKTPAQVQISSKAIRENFQFQDSKSNTPSL 627
.....910.....920.....930.....940.....950.....960

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Xenopus_tropicalis      KTENSCG---FAENKPDPLQYMOYQANSTECC-----EIS----- 750
Rhinatrema_bivittatum  EKEKDTNHKRFSLSKSDLHDVOCYSNSVNPQD-SHCYPKQEISLATALQQP----- 903
Pavo_muticus           KKENAANLEHFGANKARDLQHVQYFSNNLPPKQD-VNHCFOEQEQQTQOQASVIO----LP 941
Pavo_cristatus         KKENAANLEHFGANKARDLQHVQYFSNNLPPKQD-VNHCFOEQEQQTQOQASVIO----LP 941
Gallus_gallus          KKENATNLEHFGANKARDLQHVQYFSNNLPPKQD-VNHCFOEQEQQTQOQASVIO----LP 942
Chelonia_mydas         KKENIINAELFGINKMODLQHMQYYPNSMTPKQE-VHHCFOEQEQQSQQOQASVIOPLQQP 876
Mus_musculus           -REQALHP---VGSKTSNLQNMQYFPNNVTPNQD-VHRCFOEQEQKPPQOQASSLO----- 844
Rattus_norvegicus      SREQNLHLDLFIGNRTPNQNTQCFPNNVTPSDVAHRCFOEQEQKPPQOQASSLO----- 845
Homo_sapiens           NKEQTTHPELFAFNKTONLHHMQYFPNNVIPKQDILLHRCFOEQEQKSQQOQASVLO----- 897
Pan_troglodytes        NKEQTTHPELFAFNKTONLHHMQYFPNNVIPKQDILLHRCFOEQEQKSQQOQASVLO----- 897
Macaca_mulatta         NKEQTTHPELFAFNKTONLHHMQYFPNNVIPKQDILLHRCFOEQEQKSQQOQASVLO----- 895
Callithrix_jacchus     NKEQTTHPELFAFNKTONLHHMQYFPNNVIPKQD-LHRCFOEQEQKSQQOQASVRO----- 897
Canis_lupus_familiaris NKEQIINSELFAGNKTQNLHHMQYFPNNVTPKQDVLHRCFOEQEQKPPQOQASVLO----- 904
Equus_caballus         KKEQSINSELFAGNKTQNLHHMQYFPNNVTPKQDIPHRCFOEQEQKPPQOQASVLO----- 895
Bos_taurus             NKEQTVNSELFAFNKTPNVHMQYFPNNVTPKQDILHRCFOEQEQKPPQOQASVLO----- 914
Heterocephalus_glaber  NKEQEICPELSARNKTON---LACPPNSTPQAGILHGCFFEQEPEQLQVAALO----- 859
Danio_rerio            FKEVEALTERKLQONTECSQNIISTG--QQIYQOPLQHRIYNHSEFSQSLISQSQ----- 679
.....970.....980.....990.....1000.....1010.....1020

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Xenopus_tropicalis      -----NYEHDLSARIAKQTHCLPESFSSSPHLHDKMG--YYSQFENQVDCIPKHA 798
Rhinatrema_bivittatum  FQHIQGYSLNQLATASEQAVQSQERYLTHSPVSPLAQDRRGSHLLSQLQNTGDIQKRT 963
Pavo_muticus           QGYSGSLSDPPSQQ---ATPMPQRYLPHSQQTPAHSQDQRSCHLQSQTPPKD---FHKHA 995
Pavo_cristatus         QGYSGSLSDPPSQQ---ATPMPQRYLPHSQQTPAHSQDQRSCHLQSQTPPKD---FHKHA 995
Gallus_gallus          QGYSGSLSDPPSQQ---AAPMPQRYLPHSQQTPAHSQDQRGCHLQSQAPKD---FHKHA 996
Chelonia_mydas         EGCNGNLKQGMSSQQ---APPIQORYLPHSQQT--LPQDQRCGYLQAPHKD---FQNH 928
Mus_musculus           -GLK-DRSQGESAP--PAEAAQORYLVHNEAKALPVPEQGGSQQTQTPPKD---TQKHA 897
Rattus_norvegicus      -GLK-GRSRDEFSVP--PAEATQARYLVHICAKALPVPKQGGSHQTSISPKD---TQKHA 898
Homo_sapiens           -GYK-NRNQDMSGQQ--AAQLAQORYLIHNHANVFPVDPQGGSHQTSISPKD---TQKHA 950
Pan_troglodytes        -GYK-NRNQDMSGQQ--AAQLAQORYLIHNHANVFPVDPQGGSHQTSISPKD---TQKHA 950
Macaca_mulatta         -GYK-SRNQDMSGQQ--AAQLAQORYLIHNQANVFPVDPKGGSHQTSISPKD---TQKHA 948
Callithrix_jacchus     -GCK-SRNQDISGQQ--AAQLAQORYLTHNQANAFVFPDQGGSHQTSISPKD---TQKHA 950
Canis_lupus_familiaris -GYR-SRNQDMSGQQ--ATQLPQORYLMQNQPNTFPVSDQGGSHSQTTPPKD---TQKHA 957
Equus_caballus         -GYK-SRSQDVSQHQ--AAQLAQORYLMQNQANAFVFPDQGGSHSQTTPPKD---TQKHA 948
Bos_taurus             -GYK-SRNQDVSQHQ--AAQLAQORYLMQNQANAFVFPDQGTHTVQTPPKD---TQKHA 967
Heterocephalus_glaber  -GYT-SRNQDMSTQQAAPQVQSYSAQSAQAFPAKQGGHGHAPPORD---TQKHA 914
Danio_rerio            -----HSQASDG---LQIPVRTLTKAEFHESFAQIQRESLSNGAQM---VQHA 724
.....1030.....1040.....1050.....1060.....1070.....1080

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***  **::      .      *      .      *
Xenopus_tropicalis  ALRNHLLQRSRSVKAD-----RLVKAESSHSNACMHTPMESKTKKNTDKKIK      846
Rhinatrema_bivittatum ALRWHLHLKLEQQKSES-----CNSLHKPIKVESSSRNICMPPPTTEOMENKPVKRKTIK      1017
Pavo_muticus        ALRWHLHLKQEQQAYQQSKTETGAGAARKPIKIEAGAKSNLCMRLSAGOLENKMWKKTVK      1055
Pavo_cristatus      ALRWHLHLKQEQQAYQQSKTETGAGAARKPIKIEAGAKSNLCMRLSAGOLENKMWKKTVK      1055
Gallus_gallus       ALRWHLHLKQEQQAYQQPKTETGAGAARKPIKIEAGAKSNFCMRLSAGOLENKMWKKTIK      1056
Chelonia_mydas      ALRWHLHLKQEQQIHIQPKPEICPSVTRKPIKVEAGSKSNICMHLSTGHLENKTWKKTKIK      988
Mus_musculus        ALRWLLHLKQEQQQTQOSQP--GHNOMLRPIKTEPVSKPSSYRYPLSPPOEN--MSSRIK      953
Rattus_norvegicus   ALRRLLHLKQEQQQIQQSQSESQGHOMPRPIKIEPGSKLSSCKHPTSGPOEN--MPKRIRK      956
Homo_sapiens        ALRWHLHLKQEQQQTQQPQTESCHSQMHRPIKVEPGCKPHACMH--TAPPENKTWKKVTK      1008
Pan_troglodytes     ALRWHLHLKQEQQQTQQPQTESCHSQMHRPIKVEPGCKPHACMH--TAPPENKTWKKVTK      1008
Macaca_mulatta      ALRWHLHLKQEQQQTQQPQSESCHSQMHRPVKVEPGSKPHACMH--TAPPENKTWKKVTK      1006
Callithrix_jacchus  ALRWHLHLKQEQQQTQSQTESCHSQMHRPIKVEPGSKPHACMH--AAOPENKTWKRVTIK      1008
Canis_lupus_familiaris ALRWHLHLKQEQQQTQHPQTESCHNQMHRPIKVEPGSKPHACMH--AAOPENKTWKKTTIK      1017
Equus_caballus      ALRWHLHLKQEQQQTQHPQTESCHNQMHRPIKVEPGSKPHACMRPTSSOPENKTWOKITIK      1008
Bos_taurus          ALRWRLHLKQEQQQTQL-QAESCHSQMQRPIKVEPGSKPHACMRPLSAOPENKMWKKIK      1026
Heterocephalus_glaber ALRWYLLHRQGGQQQAKQPLAEPCLGPMNRPIKLEPGSTLHACARPGSEQQDSKTWKKPTIK      974
Danio_rerio         ALRMHLHLQROERQSPNNIRQMPAIAKSENCSGFEISAQPMEVQR--QHEDHTKVLKAVVK      782
.....1090.....1100.....1110.....1120.....1130.....1140

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**      . : : .** : ***:::      . : : : : .* : .
Xenopus_tropicalis  QETRHSSTEAGQQKSIIETMEQOMRHYPGKSSFHROVSSIKSPKHVKVESSGPVTVLTH      906
Rhinatrema_bivittatum QEIQHFGCENVOQKSIIETMEQQLKQIOVRSPFDROTILNIKSPRHVKVETSGSVTVLTH      1077
Pavo_muticus        QENQHFGCENTQQKSIIETMEQQLKQIOVKSILFDHKTFTVKSPKHVKVETAGPITILSRN      1115
Pavo_cristatus      QENQHFGCENTQQKSIIETMEQQLKQIOVKSILFDHKTFTVKSPKHVKVETAGPITILSRN      1115
Gallus_gallus       QENQHFGCENTQQKSIIETMEQQLKQIOVKSILFDHKTFTVKSPKHVKVETAGPITILSRN      1116
Chelonia_mydas      QENQHFGSCENMQQKSIIETMEQQLKQIOVKSILFDHKALTIKSPKHVKVETAGPITILSRN      1048
Mus_musculus        QEISSPSRDNGQPKSIIETMEQHLKQFOLKSLCDYKALTLKSQK--HVKVP-----TD      1004
Rattus_norvegicus   QESPLLSCDGGRTESIIETMERHLKQFOLKALCDYKILTLNSQROGDVETA-----TN      1009
Homo_sapiens        QENPPASCDNVQQKSIIETMEQHLKQFQAKSLFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1068
Pan_troglodytes     QENPPASCDNVQQKSIIETMEQHLKQFQAKSLFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1068
Macaca_mulatta      QENPPPSCDNVQQKSIIETMEQHLKQFQAKSLFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1066
Callithrix_jacchus  QEIPPPSCDNVQQKSIIETMEQHLKQFQVKSILFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1068
Canis_lupus_familiaris QEIPPPSCDNVQPRSILETMEQHLKQFQVKSILFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1077
Equus_caballus      QEIPPPSCDNVQPRSILETMEQHLKQFQVKSILFDHKALTLKSQKQVKVEMSGPVTVLTRQ      1068
Bos_taurus          QEIPPPSCDSVQORSILETMEQHLKQFQVKSILFDHKALNLKSQKQVKVEMSGPVTVLTRQ      1086
Heterocephalus_glaber QEAPALGCDLVQPRSILETMEQHLKQVQVKSILFDHKALALQPKQVKVVEVSALTMLSRQ      1034
Danio_rerio         QEHPSSCDENQORSILATMEQQLKQYQLSPVFEKSLVIKSPNKVKVEMAGAVTVISTN      842
.....1150.....1160.....1170.....1180.....1190.....1200

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      . *      *      . : *      . * :
Xenopus_tropicalis  TNFS-----TLDQQTVPPEHKTPTKRAAGSALHNFIESPSNLLSTPVKN-----      950
Rhinatrema_bivittatum ANAAEPDSSHPSALEQLAIPSTKPTKRTAGSILNHFLESPSKLLDTPIKN-----      1128
Pavo_muticus        TSAAEFDTHTPILEQQANVSAEKTPTKRTAGTVLNNFLDSPSKLLDTPVKN-----      1166
Pavo_cristatus      TSAAEFDTHTPILEQQANVSAEKTPTKRTAGTVLNNFLDSPSKLLDTPVKN-----      1166
Gallus_gallus       TSAAEFDTHTPILEQQANVSAEKTPTKRTAGTVLNNFLDSPSKLLDTPVKN-----      1167
Chelonia_mydas      SIAAEFDSHTSTLDQQAIPSAEKTPTKRPAGSVLNNFLESPSKLLDTPVKN-----      1099
Mus_musculus        IQAAESENHARAAEPQA-----TKSTDCSVLDDVSES-----DTPGE-----      1041
Rattus_norvegicus   ARSAGSENHHTPAAEPQASLS-EKTPTKRTADSVLTDVSESPS-DSDTPVEDISCEACKNA      1067
Homo_sapiens        TTAAELDSHTPALEQQQTSS-EKTPTKRTAASVLNNFIESPSKLLDTPIKN-----      1118
Pan_troglodytes     TTAAELDSHTPALEQQQTSS-EKTPTKRTAASVLNNFIESPSKLLDTPIKN-----      1118
Macaca_mulatta      TTAAELDSHTPALEQQATSS-EKTPTKRTAGSVLNNFIESPSKLLDTPIKN-----      1116
Callithrix_jacchus  TTAAELDSHTPAPEPQATSS-EKTPTKRTAGSVLNNFIESPSKLLDTPIKN-----      1118
Canis_lupus_familiaris TTAAELDSHTPALEQQATPSSEKTPTKRTAGSVLNNFLESPSKLLDTPIKN-----      1128
Equus_caballus      TTAAELDSHTPAVEQQAAPS-EKTPTKRTAGSVLNNFLESPSKLLDTPIKN-----      1118
Bos_taurus          TTAAELSHTPVLEQQATPSSEKTPTKRTAGSVLNNFLESPSKLLDTPIKN-----      1137
Heterocephalus_glaber LSAAELAGLVAMAPPSE-----KTPTKRTAGPVLSSFIESPSILLDTPMKN-----      1080
Danio_rerio         AEGN-----AKEQCKQHFPPKKIEPG--LQSFLESPMKLLNTPIKN-----      883
.....1210.....1220.....1230.....1240.....1250.....1260

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::*
Xenopus_tropicalis  ---LLDTPIKTQYDFP-----SCSCVDQIIEKDEGPYYTHLGAGPNVAAIR  993
Rhinatrema_bivittatum ---LLDTPVKTKQYDFP-----PCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1171
Pavo_muticus        ---LLDTPAKTKQYDFP-----SCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1209
Pavo_cristatus      ---LLDTPAKTKQYDFP-----SCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1209
Gallus_gallus       ---LLDTPAKTKQYDFP-----SCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1210
Chelonia_mydas      ---LLDTPVKTKQYDFP-----SCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1142
Mus_musculus        ---LLDTPVKTKQYDFP-----SCSCVEQIIEKDEGPYYTHLGAGPNVAAIR  1074
Rattus_norvegicus   AEKRKKRKRKRSQNNNSNRMVQRKSGPSKAKORRKRKRKRSNEKDEGPYYTHLGAGPNVAAIR  1127
Homo_sapiens        ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1161
Pan_troglodytes     ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1161
Macaca_mulatta      ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1159
Callithrix_jacchus  ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1161
Canis_lupus_familiaris ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1171
Equus_caballus      ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1161
Bos_taurus          ---LLDTPVKTKQYDFP-----SCRCVEQIIEKDEGPYYTHLGAGPNVAAIR  1180
Heterocephalus_glaber ---LLDTPIKTKQYDFP-----SCHCVEQIIEKDEGPYYTHLGAGPNVAAIR  1123
Danio_rerio         ---LMDTPLKTKQYEIP-----SCHCVEQISERDEGPYYTHLGASASNVAGIR  926
.....1270.....1280.....1290.....1300.....1310.....1320

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:**** * ...*:***:*****. ***** *: :*: * * * * *:
Xenopus_tropicalis  EMMEERFGQKGNAIRIERVVYTGKEGKSAQGCPIAKWVIRRSCTDEKMLCLVRERAGHSC  1053
Rhinatrema_bivittatum GIMEERFGKEKNSAVRIEKVVYTGKEGKSSQGCPIAKWVIRRANEDKLLCLVRERAGHTC  1231
Pavo_muticus        EIMEERFGQKGKAIRIERVVYTGKEGKSSQGCPIAKWVVRSSQEEKLLCLVRERAGHTC  1269
Pavo_cristatus      EIMEERFGQKGKAIRIERVVYTGKEGKSSQGCPIAKWVVRSSQEEKLLCLVRERAGHTC  1269
Gallus_gallus       EIMEERFGQKGKAIRIERVVYTGKEGKSSQGCPIAKWVVRSSQEEKLLCLVRERAGHTC  1270
Chelonia_mydas      EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSDEKLLCLVRERAGHTC  1202
Mus_musculus        TLMEERYGEKGAIRIEKVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRVRPNHTC  1134
Rattus_norvegicus   TIMEERFGEKGAIRIERVIYTGKEGKSSQGCPIAKWVVRSSTEKLLCLVRVRKHTC  1187
Homo_sapiens        EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1221
Pan_troglodytes     EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1221
Macaca_mulatta      EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1219
Callithrix_jacchus  EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1221
Canis_lupus_familiaris EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1231
Equus_caballus      EIMEERFGQKGKAIRIERVVYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1221
Bos_taurus          EIMEERFGQKGKAIRIERVIYTGKEGKSSQGCPIAKWVVRSSSEKLLCLVRERAGHTC  1240
Heterocephalus_glaber EIMEERFGQKGKAIRIEKVVYTGKEGKSSQGCPIAKWVIRRSSEKLLCLVRERRGHTC  1183
Danio_rerio         KIMEERSGMTGSAIRIEKVLVTGKEGKSLGCPPIAKWVIRRANEDKILVLVRERAGHSC  986
.....1330.....1340.....1350.....1360.....1370.....1380

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: : *: *: *:* . **..** *: : * . * *.***: ** *.**.* :*:
Xenopus_tropicalis  ETAVIVILILVWEGISFSLADRLYSELTDILNKYGTLTNRRCALNEERTCACQGLDSETC  1113
Rhinatrema_bivittatum ETAVVILILAWEGIPRSLADQLYSELTDILQYGVLTNRRCALNEERTCACQGLDPETC  1291
Pavo_muticus        ETAVIVILILVWEGIPTSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1329
Pavo_cristatus      ETAVIVILILVWEGIPTSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1329
Gallus_gallus       ETAVIVILILVWEGIPTSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1330
Chelonia_mydas      ETAVIVILILVWEGISLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1262
Mus_musculus        ETAVMVIAMLDWGIPKLLASELYSELTDILGKCGICTNRRCSQNETRNCCCOGENPETC  1194
Rattus_norvegicus   DTAVIVIVILLWDGIPKPLASELYSELTEILSNRGICTNRRCAQENRNCCCOGENPETC  1247
Homo_sapiens        EAAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1281
Pan_troglodytes     EAAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTSRRCALNEERTCACQGLDPETC  1281
Macaca_mulatta      EAAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1279
Callithrix_jacchus  ESAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1281
Canis_lupus_familiaris EAAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1291
Equus_caballus      EAAVIVILILVWEGIPLSLADKLYSELTDILRKYGTLTNRRCALNEERTCACQGLDPETC  1281
Bos_taurus          EAAVIVILILVWEGIPVSLADKLYSELTDILRKYGMLTNRRCALNEERTCACQGLDPETC  1300
Heterocephalus_glaber EVAVIVVILLWEGIPLPLANRLYTELTNTLCRNGSLTNRRCALNEERTCACQGLDPETC  1243
Danio_rerio         ETSCVVVILIWEGIPTSLADRLYSELTDILTKHGALTNRRCALNEERTCACQGLEADAC  1046
.....1390.....1400.....1410.....1420.....1430.....1440

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[illegible][illegible]

: * *::****:* : ***** * * : * * *:** **** :* : :
 DNRENGKIPDEQLHVLPLYKVSVDVEFGSSSESQEEKKRTGAIQVLTsfRR-QVRMLAEP
 DNRDIGKVPDEQLHVLPLYKISTVDEFGSAEROKEKMMNGNIQVLSSfRR-KVRILPEP
 DNREIGQTPDEQLHVLPLYKVSVDVEFGSTEGQEEKKRNGSIQVLTsfRR-KVRMLAEP
 DNREIGQTPDEQLHVLPLYKVSVDVEFGSTEGQEEKKRNGSIQVLTsfRR-KVRMLAEP
 DNREIGQTPDEQLHVLPLYKVSVDVEFGSTEGQEEKKRNGSIQVLTsfRR-KVRMLAEP
 DNREIGQMPDEQLHVLPLYKVSVDVEFGSTEGQEQKKNGSIQVLSSfRR-KVRMLAEP
 DNREVGAKEPDEQFHVLPYMIIAPEDEFGSTEGQEKKIRMGSIQVLTsfRRRRRVIRIGEL
 DNREVGQPEDEQLHVLPLYTIATEDVEFGSTEGQEEKILQGSIQVLHsfRRRRRVRLVDP
 DNREFGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEEKKRSGAIQVLSSfRR-KVRMLAEP
 DNREFGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEEKKRSGAIQVLSSfRR-KVRMLAEP
 DNREFGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEEKKRSGAIQVLSSfRR-KVRMLAEP
 DNREIGGKPEDEQLHVLPLYKVSVDVEFGSIEAQEEKKRSGAIQVLSSfRR-KVRMLAEP
 DNREIGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEKKKNGAIQVLSSfRR-KVRMLAEP
 DNREIGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEEKKRNGAIQVLSSfRR-KVRMLPEP
 DNREIGGKPEDEQLHVLPLYKVSVDVEFGSVEAQEEKKRNGAIQVLSSfRR-KVRMLAEP
 DNREFGVVPEDEQLHVLPLYKISDVDEFGSAEAQEEKMRSGAIEVLTsfRR-KVRMLAEP
 DNREIGKIPDEQLHVLPLYKPSSTDEFGSAEAQLEKTKTGAIQVLTsfRR-QVRMLPEP
1570.....1580.....1590.....1600.....1610.....1620

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<i>Xenopus_tropicalis</i>	VKTCRQKKLEKQ	EAKKAAA	EKLNA	ALENGH	SKNEKKS	SRHKNAH	--VEASTODKQQA	EF 1350
<i>Rhinatrema_bivittatum</i>	VKTCRQKKL---	EAKKAAA	EKL	SALENGS	SKGEKDKST	RQKPAT--	TETAVHAMQLAD	F 1524
<i>Pavo_muticus</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENG	SKAERDKS	AAARNKOG	NSEAAGHAKQLA	D 1564
<i>Pavo_cristatus</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENG	SKAERDKS	AAARNKOG	NSEAAGHAKQLA	D 1564
<i>Gallus_gallus</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENG	SKAERDKS	AAARNKOG	NSEAAGHAKQLA	D 1565
<i>Chelonia_mydas</i>	VKTCRQKK---	LEAKKAAA	EKL	SSLENS	SKTEKDKS	AAARHKQAS	SEAAGHAKQLA	D 1497
<i>Mus_musculus</i>	PKSCKKKAEPK	KAKTKKA	ARKR	SSLENC	SRTEKGKS	S-SHTKL--	MENASHMKQMTA	Q 1430
<i>Rattus_norvegicus</i>	PKNCRQKK---	LEAKKAR	KL	SSLENC	SNKNEKKS	S-SRTRP--	MENASPMIQMTA	Q 1478
<i>Homo_sapiens</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENS	SNKNEKKS	SAPSRTK--	TENASQAKQLAE	L 1514
<i>Pan_troglodytes</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENS	SNKNEKKS	SAPSRTK--	TENASQAKQLAE	L 1514
<i>Macaca_mulatta</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENS	SNKNEKKS	SAPSRKQ--	TENASQAKQLAE	L 1512
<i>Callithrix_jacchus</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLDNS	SNKNEKKS	SAASRSKQ--	TENASQAKQLAE	L 1514
<i>Canis_lupus_familiaris</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLENN	SNKNEKKS	SASSRTK--	TENASQAKQLAE	L 1524
<i>Equus_caballus</i>	VKTCRQRK---	LEAKKAAA	EKL	SSLESS	ANKNEKEK	PALPRTK--	TENGSO TKQLAE	L 1514
<i>Bos_taurus</i>	VKTGRQRK---	LEAKKAAA	EKL	SSLETS	INKSEKEK	SAASRLKQ--	TENASQAKQLAE	L 1533
<i>Heterocephalus_glaber</i>	AKTCRQRK---	LEAKKAAA	EKL	ALLEN	TIKTEKAA	-SRTK--	VETAGAQKLT	TEL 1475
<i>Danio_rerio</i>	AKSCRQKK---	LDAKRANK	P	---	NNNTPNSKTDN	IQAKQKQ	TAYENPTVTGRGN	MR 1276
1630.....	1640.....	1650.....	1660.....	1670.....	1680		

Xenopus_tropicalis	SRMP-----ALQQN-----TLINMNRH-----N	1368
Rhinatrema_bivittatum	LQFSGPTIQQQQQQH-----SVSNNSHS-----S	1548
Pavo_muticus	LRLSGPATQQQQQHP-----ORTLPNNPQS-----N	1590
Pavo_cristatus	LRLSGPATQQQQQHP-----ORTLPNNPQS-----N	1590
Gallus_gallus	LRLSGPATQQQQQHP-----ORTLPNNPQS-----N	1591
Chelonia_mydas	LRLSGPAMLQQQC-----OHTLANSPQS-----N	1521
Mus_musculus	PQLSGGPVIRPPFTLC-----RHLOQGQRPPQPPOPPOPOTTTPQFPQFPQHIMPGNSQ	1483
Rattus_norvegicus	LRLSGSVIQQPQSIC-----RHLOQVQRPPQPPOPPOP-----HILPSNSQ	1519
Homo_sapiens	LRLSGPVMQSSQQPQ-----PLQKQPPQPQQQRPQQQQP-----HHPQT-----E	1555
Pan_troglodytes	LRLSGPVMQSSQQPQ-----PLQKQPPQPQQQRPQQQQP-----HHPQT-----E	1555
Macaca_mulatta	LRLSGPVMQSSQQPQ-----PLQKQPPQPQQQRPQQQQP-----HHPQT-----E	1553
Callithrix_jacchus	LRLPGPVMQSSQQPQ-----PLKNPQPQPQQQRPQQQQP-----HHPQT-----E	1555
Canis_lupus_familiaris	LRLSGPVMQSSQPPP-PPPLQKQPPQPQKQPPQQQQQQQQQQ-----HHPMTNNSQSE	1578
Equus_caballus	LRLSGPVMQSQPQPQ-QPPPHSQPQLQKQPPQPQPPQPORPQPLQFLHHPLTTDPQSE	1573
Bos_taurus	LQPPGPVMQLPQPQSQPQLQKQLPQPQKQPPQLQQPQQQPPQQQP---HHPLTNNSQSE	1590
Heterocephalus_glaber	LRLSGPAVPLPQTPEP-----LQHSILPRKPQF-----E	1503
Danio_rerio	TNLDSGHLPCAAGH-----Q-----	1292
1690.....1700.....1710.....1720.....1730.....1740	

Xenopus_tropicalis	SLNHYPSSAPITNPYTRIPNLDP-PYQN---SFSPPYPGSSHMIFQTAASSSVSCAN--SP	1422
Rhinatrema_bivittatum	SSNSFFPGSGAANLYTRLNPNSN-PYQSSSQSDPYGASNPMLFGFTPSITLVGTYLNTSS	1607
Pavo_muticus	AINTYSGSGANLYVRLPNPAS-AYPSSSYSDPYGGSGPMNLYTTSSQPAGSYLNSSSP	1649
Pavo_cristatus	AINTYSGSGSANLYVRLPNPAS-AYPSSSYSDPYGGSGPMNLYTTSSQPAGSYLNSSSP	1649
Gallus_gallus	AINTYSGSGSANLYVRLPNPAS-AYPSSSYSDPYGGSGAMNLYTTSSQPAGSYLNSSSP	1650
Chelonia_mydas	PVNSYSGSGPANLYMRLPNPAN-AHPSSSYSDLYGGSNPMNLYRTSSQPSGSYLNSSNP	1580
Mus_musculus	SVGSHCS-GSTSVYTRQPTPHS-PYPSSAHTSDIYGDTNHNVFYPTSSSHASGSYLNPSNY	1541
Rattus_norvegicus	PVGSHSS-GSTNVYMRQPAPLS-PYPSSSHAADMYGDANHNVFHTSSHAAGLYLSPSNS	1577
Homo_sapiens	SVNSYSASGSTNPYMRRPNPVS-PYPNSSHTSDIYGSTSPMNFYSTSSQAAGSYLNSSNP	1614
Pan_troglodytes	SVNSYSASGSTNPYMRRPNPVS-PYPNSSHTSDIYGSTSPMNFYSTSSQAAGSYLNSSNP	1614
Macaca_mulatta	SVNCYSASGSTNPYMRRPNPVS-PYPSSSHTSDIYGSTSPMNFYSTLSQAAGSYLNSSNP	1612
Callithrix_jacchus	SVNSYSASGSTNPYMRRPNLVS-PYPSSSHTSDIYGS---NFYSTSSQAAGSYLNSSNP	1610
Canis_lupus_familiaris	SVNSYSSSGSANLYMRPNPVIQAPSSSHTSDIYGASPMNLYSTSSQATGSYLNSSNP	1638
Equus_caballus	PVNSYSS-GSSNLYIRRSHPVS-PYPSSSHTSDLYGGTNPLNLYSTSSQAAASYLNSSSP	1631
Bos_taurus	SVSSYSSSGSTNLYMRRPNAMS-PYPGSSHTSDIYGGANPVNLYSTSSQAAGSYLNSSNP	1649
Heterocephalus_glaber	STGAYST-GAPGLHVRPSPVS-PYPNSSPAADMYRGTSPVSVINSSSPQAAGSCLSSPNP	1561
Danio_rerio	PQQQFPQOQTHPNPSYASPPFTR--FPNASKPSTPHPQTPSVDPYASPLHAPNSYINASNA	1350
1750.....1760.....1770.....1780.....1790.....1800	

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      .      :      .      **      .      :      :      :
Xenopus_tropicalis  MNSFQGSFNQGNSCPSYPSNGNASLHNCPPYLD--SSQQQSMDDYKFKNQDSMAKLGVP  1480
Rhinatrema_bivittatum MNPCASSLNQNSQCPGYQCNGNIPMDNCPSYLSFSHPQHLDLYRYQSOEPLSKLSLPP  1667
Pavo_muticus        MNLYSGSLSQNNQYPPYQCNGNIQMDNCPSYLSGYSPSHQHMDLYNCQSQDPVSKLSLPP  1709
Pavo_cristatus      MNLYSGSLSQNNQYPPYQCNGNIQMDNCPSYLSGYSPSHQHMDLYNCQSQDPVSKLSLPP  1709
Gallus_gallus       MNPYSGSLSQNNQYPPYQCNGNIQMDNCPSYLSGYSPSHQHMDLYNCQSQDPMKLSLPP  1710
Chelonia_mydas      MNPYSGSLSQNNQYPPYQCNGNMPMDNLPYLSGYSPSQPHLDLYRYQSQDPLSKLSLPP  1640
Mus_musculus        MNPYLGLLNQNNQYAPFPYNGSVFVDNGSPFLGSYSPQAQSRDLHRYPNQDHLTNQNLPP  1601
Rattus_norvegicus   MNPYPGLFNQNNQYAAASQCNGSMSADSGPPFLGPYSPQSQRGLHRYPNQDHLNLNLPP  1637
Homo_sapiens        MNPYPGLLNQNTQYPSYQCNGNLSVDNCSYLSGYSPQSQPMDLRYRPSQDPLSKLSLPP  1674
Pan_troglodytes     MNPYSGLLNQNTQYPSYQCNGNLSVDNCSYLSGYSPQSQPMDLRYRPSQDPLSKLSLPP  1674
Macaca_mulatta      MNPYPGLLNQNNQYPSYQCNGNLSVDNCSYLSGYSPQSQPMDLRYRPSQDPLSKLNLP  1672
Callithrix_jacchus  MNPYPGLLNQSNQYSSYQCNGNLSADNCSYLSYSPQSQPMDLRYRPSQDPLSKLNLP  1670
Canis_lupus_familiaris MNPYTGLLNQNNQYPAQCNGNVSDNCSYLSGYSPQSQPMDLRYRPNQDPLSKLNLP  1698
Equus_caballus      MNPYPGLLNQNNQHPSYQCNGNVSDTCSLYLSGYSSQSQPMDLRYRPNQDPLSKLNLP  1691
Bos_taurus          MSPYPGLLNQSNQYPSYQCNGNISVDNCSYLSGYSPQSQPMDLRYRPNQDPLSKLNLP  1709
Heterocephalus_glaber RSPYPGLLNQNNQYPAQCNGTVSMDSCSHYLSGYSSQAQPMDLRYRTPHEHLTKLNLP  1621
Danio_rerio         PSPYRSRLAPSPLYNGYQCNGGIPMDNYHPYHSNLKHPDMFHPQRP-----  1398
      .....1810.....1820.....1830.....1840.....1850.....1860

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      :      :      :      :
Xenopus_tropicalis  IQSLYQGFANNQAYGNKMFSYGNQR---VQADDFSG-CNAYP-----APQ  1522
Rhinatrema_bivittatum IQTLYQQRYGNNQCYGSKYWNYGQN---MQIDAFSG-CSIRPNVQSVASFDCPIYQAD  1723
Pavo_muticus        IQTLYQHRFGNNQSFGPKYLYNGNQ---MQVDSFSN-CAIRPNVHHVGSFSSYSTHEAD  1765
Pavo_cristatus      IQTLYQHRFGNNQSFGPKYLYNGNQ---MQVDSFSN-CAIRPNVHHVGSFSSYSTHEAD  1765
Gallus_gallus       IQTLYQHRFGNNQSFGPKYLYNGNQ---MQVDSFSN-CAIRPNVHHVGSFSSYSTHEAD  1766
Chelonia_mydas      IHTLYQHRLGNNQSFGPKYLYNGNQ---MQVDSFSN-CTNRPNVHHAGSFSPYSTLEAD  1696
Mus_musculus        IHTLHQQTFGDSP---SKYLSYGNQ---MQDAFTTNSTLKPVHHLATFSPYTPKMD  1655
Rattus_norvegicus   IHTLYPQRS-DSP---FKYLYNGNQNNVQRDRDAFTN-CPLKPNVHHLPFSSYATPKMD  1692
Homo_sapiens        IHTLYQPRFGNSQSFTSKYLGYNQ---MQGDGFSS-CTIRPNVHHVKGKLPYPPTHEMD  1730
Pan_troglodytes     IHTLYQPRFGNSQSFTSKYLGYNQ---MQGDGFSS-CAIRPNVHHVKGKLPYPPTHEMD  1730
Macaca_mulatta      IHTLYQPRFGNSQSFTSKYLGYNQ---MQGDGFNS-CTIRPNVHHVKGKLPYPPTHEMD  1728
Callithrix_jacchus  IHTLYQPRFGNSQSFTSKYLGYNQ---MQGDGFSS-CTIRPNVHHVGTLPYPYSTHEVD  1726
Canis_lupus_familiaris IHTLYQPRFGNSQSFTSKYLGYNQ---IQGDAFSS-CTIKTNVHHVGTFFPYSTHEMD  1754
Equus_caballus      IHTLYQPRLGSSQSFTSKYLGNGNQS---VQGAFAFN-CTIRANTHAGTFPPYSTPEMD  1747
Bos_taurus          IHTLYQPRFGNSQSFTSKYLGYNQ---MQGDAFSS-CTIRPNVHHVGTFFPYSTHEMD  1765
Heterocephalus_glaber IHTLYQQRFGNTQGFPSKFLGCGNPN---RQGAFAST-CALRPSIHHTGFPFPYTPHEMD  1677
Danio_rerio         --LYSEQQYNAPQHYGVNYPHYGEA---MATNGYGN-CNMRPGIHSMGHYPGFDSNMST  1452
      .....1870.....1880.....1890.....1900.....1910.....1920

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      .      :      .      :
Xenopus_tropicalis  ADIMNPATSSRPITSNQ--DFSSATKNGE--YPLPHSFQGHEN---MSSSILGGRAGSL  1575
Rhinatrema_bivittatum SHLMEMASRLKSTLNNPSLDYTSINKNGDY-FPYPPPYLAHDSH---TAASLLCNPTNSL  1779
Pavo_muticus        GHFMEVASRLKSNLSNPSMDYASMSKTTTEHHHVQPPPHLARDYH---SASSMFSGPPN-L  1821
Pavo_cristatus      GHFMEVASRLKSNLSNPSMDYASMSKTTTEHHHVQPPPHLARDYH---SASSMFSGPPN-L  1821
Gallus_gallus       GHFMEVASRLKSNLSNPSMDYASMSKTTTEHHHVQPPPHLARDYH---SASSMFSGPPNSL  1823
Chelonia_mydas      SHFMDVASRLKSNFSNPSMDYTSMNKNGE-HPLHPPSHLAHDYH---SASSIFSGLPPHSL  1752
Mus_musculus        SHFMGAASRSP--YSHPHTDYKTSE-----HHLPSHTIYSYTA--AASG--SSSSSHAF  1702
Rattus_norvegicus   GHFMGAASRLP--YSHPNMEYKSSD-----HHLPPHMIHGYP--AASGSVSSSSSHAF  1741
Homo_sapiens        GHFMGATSRLPPNLSNPNMDYKNGE-----HHSPSHIIHNYS---AAPGMFNSSLHAL  1780
Pan_troglodytes     GHFMGATSRLPPNLSNPNMDYKNGE-----HHSPSHIIHNYS---AAPGMFNSSLHAL  1780
Macaca_mulatta      GPFIGATSRLPPNLSNPNMDYKNGE-----HHSPSHIIHNYS---AAPGVFNSSLHAL  1778
Callithrix_jacchus  GHFMGATSRLPPNLSNSNVYKNGE-----HHSPSHIIHNYS---AASGMFNSSLHAL  1776
Canis_lupus_familiaris GHFMGATSRLPTNLSNSNIDYKNGE-----HPPSSHIIHNYS---AAPGMFNSSLHAL  1804
Equus_caballus      GHCMGAAARLPPNLSNPSIDYTNDE-----HNPSSHIIHNYS---AAPSLFNSSLHAL  1797
Bos_taurus          GHFIGATSRLPPNLSNPNMDYKNGE-----HHPASHLIHNYS---AAANVFNSSLHAL  1815
Heterocephalus_glaber GHLVGAPSRCPSSLGGANVDCNGE-----YHPASHLVPSHRSYSTVAGSISSSLHAL  1730
Danio_rerio         NAFARPP-----SAHLHLDYAAAGN-----AYPKPHISQNP-----MFSNLTNTL  1493
      .....1930.....1940.....1950.....1960.....1970.....1980

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CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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      ::          . * ..
Xenopus_tropicalis  PFF-GKQSEMHSTANGTSEMLPGLNHDRIN--FGGAGRTNGANVQGLPYTLPPVP--- 1629
Rhinatrema_bivittatum HLH-NKDNEMNSHITNGISKMLPSLNYDRITIPSGELNITHGANIPEMLPQTPVQVPM 1838
Pavo_muticus         HLQ-NKDSEMIHAVNGLSNTIPGQNHDR--TTPOGGLDKTDVLNPEKAE----- 1868
Pavo_cristatus       HLQ-NKDSEMIHAVNGLSNTIPGQNHDR--TTPOGGLDKTDVLNPEKAE----- 1868
Gallus_gallus        HLQ-NKDSEMIHAVNGLSNTIPGQNHDR--TTPOGGLDKTDVLNPEKAE----- 1870
Chelonia_mydas       HLQ-NKDSEMTSHTANGLSNMLPGLNHDR--TTPOHGLNKTDLSLNPKEAE----- 1799
Mus_musculus         HNK-END-----NIANGLSRVLPGFNHDRITASACELLYSLTG--SSQEKOP--EVSQGDAA 1753
Rattus_norvegicus    HNK-ENDN-MVSHNTANGLSRVLPGFNHDRITASAGPLYSLPD--YSQEKOP--GVSGQDGA 1796
Homo_sapiens         HLQ-NKENDMLSHTANGLSKMLPALNHDRITACVQGGHLKLSDANGQEKOPALAVQGVASG 1839
Pan_troglodytes      HLQ-NKENDMLSHTANGLSKMLPALNHDRITACVQGGHLKLSDANGQEKOPALAVQGVASG 1839
Macaca_mulatta       HLQ-NKENDMLSHTANGLSNMLPALNHDRITACVQGGHLKLSDANGQEKOPALAVQGVASG 1837
Callithrix_jacchus   HLQ-NKENDMLSHTANGLSKMLPALNHDRITACVQGGHLKISDANGQEKOPALAVQGVASA 1835
Canis_lupus_familiaris HLQ-NKENDMLSHTANGLSKMLPGLNHDRITASVQEGHLKLDAGNQEKOP-----SA 1855
Equus_caballus       HLQ-NQENHMLAHTALGLSKMLPALNHDRITASVQEGHLKLPDDSSQEKOP-----SA 1848
Bos_taurus          HLQ-NKENDMLSHTANGLSKVLPGLNHERTPPVQEGHLKVHEAGSQEKOP-----SA 1866
Heterocephalus_glaber RLQ-SKENAVLPHTANGLPRMPTGVPQGSASTQAVLPRLSEARSLEKRG-----MVLAP 1784
Danio_rerio          SMQSHKDLGISMHEANGISQGFPPLGKECFNFNQPSCLKLPNEAHNPAVN-PTQLPQVS 1552
.....1990.....2000.....2010.....2020.....2030.....2040

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Xenopus_tropicalis  -EEPAEVDSDSEQNFLDPDIGGVAVCPHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1688
Rhinatrema_bivittatum AEEPEDVSDSEHNFLDSDIGGVAVAPSHSGSILIECAKRELHATTVPKNPNRNHPTRISL 1898
Pavo_muticus        --DPDEVSDSEQSFLDPEIGGVAVAPSQGSILIECAKRELHATTPLKNPNRNHPTRISL 1926
Pavo_cristatus      --DPDEVSDSEQSFLDPEIGGVAVAPSQGSILIECAKRELHATTPLKNPNRNHPTRISL 1926
Gallus_gallus       --DPDEVSDSEQSFLDPEIGGVAVAPSHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1928
Chelonia_mydas      --DPDDVSDSEHSFLLADIGGVAVAPSHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1857
Mus_musculus        AVQEIEYSDSEHNFDQPCIGGVAIAPTHSGSILIECAKCEVHATTKVNDPDRNHPTRISL 1813
Rattus_norvegicus   SVEDIENVSDSEHNFDQPSIGGVAIAPTHSGSILIECAKCEVHATTKVKNPNRKKPARISL 1856
Homo_sapiens        AEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1899
Pan_troglodytes     AEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1899
Macaca_mulatta      AED-DEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1896
Callithrix_jacchus  AEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1895
Canis_lupus_familiaris AEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1915
Equus_caballus      AEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1908
Bos_taurus          TEDNDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLKNPNRNHPTRISL 1926
Heterocephalus_glaber RAEDDEVSDSEQSFLDPDIGGVAVAPTHSGSILIECAKRELHATTPLNNPNRTHPARVSL 1844
Danio_rerio         EKKEEDVSDSEHNFLDPEIGGVAVAPSHSGSIIECAKRELHATTVPKKPDRNHPTRISL 1612
.....2050.....2060.....2070.....2080.....2090.....2100

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Xenopus_tropicalis  VFYQHKS MNPKHGLALWEAKMAGKAREKEEDCERYGPDYVAPKSYNRKAKREPVEPIHE 1748
Rhinatrema_bivittatum VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGSDYVPPKSYHKKAKREPVEPHE 1957
Pavo_muticus        VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSYGKKAKREPAEPHE 1985
Pavo_cristatus      VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSYGKKAKREPAEPHE 1985
Gallus_gallus       VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSYGKKAKREPAEPHE 1987
Chelonia_mydas      VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSYGKKAKREPTESHE 1916
Mus_musculus        VLYRHKNLFLPKHCLALWEAKMAEKAREKEEE--CGKNGSDHVSQKNHGKQEKREPTGPFQ 1871
Rattus_norvegicus   VFYQHKNLNEPKHSLAVWEAKMAGKAREKEEECEKYGSDHVSQKNHGKRVKREPTGPFQ 1915
Homo_sapiens        VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSHGKKVKREPAEPHE 1958
Pan_troglodytes     VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSHGKKVKREPAEPHE 1958
Macaca_mulatta      VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKSHGKKVKREPAEPHE 1955
Callithrix_jacchus  VFYQHKS MNPKHGLALWEAKMAEKAREKEEESEKYGPDYVPKSHGKKVKREPTTELHE 1954
Canis_lupus_familiaris VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKTHGKKVKREPTEPHE 1974
Equus_caballus      VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEKYGPDYVPKTHGKKVKREPTSEPHE 1967
Bos_taurus          VFYQHKS MNPKHGLALWEAKMAERAREKEE--EKCGPDYVSQKTHGKKVKREPTEPHE 1983
Heterocephalus_glaber VFYQHKS MNPKHGLALWEAKMAEKAREKEEECEGQGPDPVAHKAHKKVKRELAEPPE 1903
Danio_rerio         VFYQHKNLNEAKHGLSLWEAKMAEKAREKEEDAEEKHGAENTSSKSGKKAKREHSEHSE 1671
.....2110.....2120.....2130.....2140.....2150.....2160

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Xenopus_tropicalis  PAEPTYLRFIKSLTQRTMSITTD SQVTTSPYALTRVTGPYNRYI 1792
Rhinatrema_bivittatum PSEPTYLRFIKSLTERTMSVITDSTVTTSPYAFTRVTGPYNRYI 2001
Pavo_muticus        PSEPTYLRFIKSLAQRTLSVTTDSTVTTSPYAFTRVTGPYNRYI 2029
Pavo_cristatus      PSEPTYLRFIKSLAQRTLSVTTDSTVTTSPYAFTRVTGPYNRYI 2029
Gallus_gallus       PSEPTYLRFIKSLAQRTLSVTTDSTVTTSPYAFTRVTGPYNRYI 2031
Chelonia_mydas      PSEPTYVRFVKSLAQRTMSVTTNSTVTTSPYAFTRVTGPYNRYI 1960
Mus_musculus        ---PSYLRFIQSLAENTGSVTTDSTVTTSPYAFTQVTGPYNTFV 1912
Rattus_norvegicus   TPKPSYLRFIHSLAENTVSMTTDSTVTTTRPYAFTQVTGPYNTYV 1959
Homo_sapiens        TSEPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 2002
Pan_troglodytes     TSGPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 2002
Macaca_mulatta      PSEPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 1999
Callithrix_jacchus  PSEPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 1998
Canis_lupus_familiaris PSEPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 2018
Equus_caballus      SSEPTYLRFIKSLTERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 2011
Bos_taurus          PSEPTYLRFIKSLAERTMSVTTDSTVTTSPYAFTRVTGPYNRYI 2027
Heterocephalus_glaber PQAPPYLRVFKSLAECTSSATTDSTVTTAPYAFTRVTGPYNRYM 1947
Danio_rerio         PSEPPYKQFLLMLTERSMSCTTNTYVSTSPYAFTKVTGPYNRFM 1715
.....2170.....2180.....2190.....2200.....

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