```
Homo_sapiens              ------------------------------------------------------------
Pan_troglodytes           ------------------------------------------------------------
Macaca_mulatta            ------------------------------------------------------------
Callithrix_jacchus        ------------------------------------------------------------
Equus_caballus            ------------------------------------------------------------
Pteropus_alecto           ------------------------------------------------------------
Bos_taurus                ------------------------------------------------------------
Heterocephalus_glaber     ------------------------------------------------------------
Mus_musculus              ------------------------------------------------------------
Ornithorhynchus_anatinus  ------------------------------------------------------------
Pavo_muticus              ------------------------------------------------------------
Pavo_cristatus            ------------------------------------------------------------
Gallus_gallus             ------------------------------------------------------------
Taeniopygia_guttata       ------------------------------------------------------------
Anas_platyrhynchos        ------------------------------------------------------------
Chelonia_mydas            ------------------------------------------------------------
Rhinatrema_bivittatum     MGRFGKNPPPTSSSRQSGAWGNVFSLSLWLAGSLGKTLPREGGGSRRRREERARSWKGSR    60
Xenopus_tropicalis        ------------------------------------------------------------
                          1.......10........20........30........40........50........60

Homo_sapiens              ------------------------------------------------------------
Pan_troglodytes           ------------------------------------------------------------
Macaca_mulatta            ------------------------------------------------------------
Callithrix_jacchus        ------------------------------------------------------------
Equus_caballus            ------------------------------------------------------------
Pteropus_alecto           ------------------------------------------------------------
Bos_taurus                ------------------------------------------------------------
Heterocephalus_glaber     ------------------------------------------------------------
Mus_musculus              ------------------------------------------------------------
Ornithorhynchus_anatinus  ------------------------------------------------------------
Pavo_muticus              ------------------------------------------------------------
Pavo_cristatus            ------------------------------------------------------------
Gallus_gallus             ------------------------------------------------------------
Taeniopygia_guttata       ------------------------------------------------------------
Anas_platyrhynchos        ------------------------------------------------------------
Chelonia_mydas            ------------------------------------------------------------
Rhinatrema_bivittatum     FSSWFRAAEGKEGAKKVRSQPSRNWRGQPAQPSRRRRPGRQGGPGRAPGGPQRFVCRSEP   120
Xenopus_tropicalis        ------------------------------------------------------------
                          ........70........80........90.......100.......110.......120

                              *.:: :  .                    :    ** ::***:**.:::**.
Homo_sapiens              ----MALVTVSRSPPGSG---------ASTPVGPW-DQAVQRRSRLQRRQSFAVLRGAVL    46
Pan_troglodytes           ----MALVTVSRSPPGSG---------ASTPVGPW-DQAVQRRSRLQRRQSFAVLRGAVL    46
Macaca_mulatta            ----MALVTVSRSPPGSG---------ASTPVGPR-DPAVQRRSRLQRRQSFAVLRGAVL    46
Callithrix_jacchus        ----MALVTVSRSPPGSG---------ASTPVGPR-DRGVQRRSRLQRRQSFAVLRGAVL    46
Equus_caballus            ----MALVTVSRSPPVSG---------HSTPVGPTQDQRAKRRSRLQRRQSFAVLRGAVL    47
Pteropus_alecto           ----MALVTVSRSPPASG---------CSTPVGPAQDQVSKRRSRLQRRQSFAVLHGAVL    47
Bos_taurus                ----MALVTVSRSPPASG---------HSTPVGPTQDPVSQRRSRLQRRQSFAVLRGAVL    47
Heterocephalus_glaber     ----MALVTVSRSPPASG---------HSTPVGPAQDPAARRRSQLQRRQSFAVLRGAVL    47
Mus_musculus              ----MALVTVSRSPPASG---------HSTPVGPTQDRVVRRRGRLQRRQSFAVLRGAVL    47
Ornithorhynchus_anatinus  ----MALVTVQRSPSSSSPCPLPCPSPSPSPELGAADDLRSRRDQLQRRQSFAVLRGAAL    56
Pavo_muticus              ----MALVTVRRAPG------------SDGAPPVEDDAP-RRGHLQRRQSFALVRGAAL    42
Pavo_cristatus            ----MALVTVRRAPG------------SDGAPPVEDDAP-RRGHLQRRQSFALVRGAAL    42
Gallus_gallus             ----MALVTVRRAPD------------SAGAPPAEDDAS-RRGHLQRRQSFALVRGAAL    42
Taeniopygia_guttata       ----MALVTVRRAGG------------SAGG-PAEEDAP-RRGQLQRRQSFVMVKGAAR    41
Anas_platyrhynchos        ----MPMVMLPLGRC------------PPPR-LQEDNVP-RRGQLQRRQSFVMVKGAAL    41
Chelonia_mydas            ----MALVTVRRSPAGSG---------HSSPTGRKDEELS-RRSQLQRRHSFVMVKGAAL    46
Rhinatrema_bivittatum     PRAAMALITVHRSPSGSP---------HGTPTALKDEERS-RRSRMQRRHSFVMVKGAAL   170
Xenopus_tropicalis        ----MALVTLQVSSLDAG----------SNITPVQDDEKSRRKRMQRRQSFVMVKGAAL    45
                          .......130.......140.......150.......160.......170.......180
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                                 *                                                    .:     **  *: ***
Homo_sapiens                     GLQDGGDNDDAAEASSEPTEKAPSEEELHGDQTDFGQGSQSPQKQEEQRQHLHLMVQLLR   106
Pan_troglodytes                  GLQDGGDNDDAAEASSEPTEEAPSEEELRGDQTDFGQGSQSPQKQEEQRQHLHLMVQLLR   106
Macaca_mulatta                   GLQDGGDNDDAAEASPEPAEEPPNEEEPHGDQTDFGQGSQSPQKQEEQRQHLHLMVQLLR   106
Callithrix_jacchus               GLQDGGDNDDAAEASPEPSEEPPSEEQPRGDQTDLGQGPQSPQKQEEQRQHLHLMVQLLR   106
Equus_caballus                   GLQDGGDGEDAAEASPEPAEEPPGEEQPCRDETDDGPGPQSPRKQE-QSQHLHLMVELLR   106
Pteropus_alecto                  GLQDGGDSGDAAEPSHEPAKEAPGEEQLHRDQTDDRHGLQSPQKQE-QRQHLHLMVELLR   106
Bos_taurus                       GLQDGGDDGDASRPSPEPAEEPPGEGQPHGDQTDNGHGPPSPGRQE-QSQHLCLMVELLR   106
Heterocephalus_glaber            GLQDGGDSGDTPEASSEPVEEPPSEEQPRGDQPD-GQGPQSPKKQE-QRQHLHLMVELLR   105
Mus_musculus                     GLQDGGDSNVASEADSEPMEEPSGEEQPTEDQTDKGQGLQSPWKQV-QKRHLHLMVELLR   106
Ornithorhynchus_anatinus         GLQDAG------------ILGAQEEDEPRAGTQEPGQ----PERDEEQKRHLCLMVELLR   100
Pavo_muticus                     LLPAEE---------PSPSGPPPAVP--------------PGQQE---RHLQLMMQLLR    75
Pavo_cristatus                   LLPAEE---------PSPSGPPPAVP--------------PGQQE---RHLQLMMQLLR    75
Gallus_gallus                    LLPAEE---------PAASGPPPAVP--------------PGRQE---RHLQLMMQLLR    75
Taeniopygia_guttata              LLPAEE---------PPPAEPPPAEPPC-----------QAPGQQE---QHLHLMMQLLR    78
Anas_platyrhynchos               LLPAEE---------PLVAEPPPAAP--------------LGRQE---QHLQLMMQLLR    74
Chelonia_mydas                   LLQEEEK-------LETVQEAPPSPD-------------QMQSQQE---QHLQLMMGLLR    83
Rhinatrema_bivittatum            LLQEEEE------PDSIQAIPPPSLGHKRSR--------SAQTQDQQQRCHLQAMVGLLR   216
Xenopus_tropicalis               LLQDEGE-------HAVTTEPLPSYG--------------PNEQQ---IHLQSMLRLLR    80
                                 .......190.......200.......210.......220.......230.......240

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Homo_sapiens                     PQDDIRLA--------AQLEAPRPPRLRYLLVVSTREGEGLSQDETVLLGVDFPDS----   154
Pan_troglodytes                  PQDDIRLA--------AQLEAARPPRLRYLLVVSTR-GEGLSQDETVLLGVDFPDS----   153
Macaca_mulatta                   PQDDIRLA--------AQLEAARPPRLRYLLVVSTQEGEGLSQDETVLLGVDFPDS----   154
Callithrix_jacchus               AQDDIRLA--------AQLEAARPPRLRYLLVVSTREGEGLSQDETVLLGVDFPDSRCEQ   158
Equus_caballus                   PQDDIRLA--------AQLEAARPPRLRYLLVVSTR--EPLSQDETVLLGVDFPDS----   152
Pteropus_alecto                  PQDDIRLA--------AQLEAARPPRLRYLLVVSTT--DHVSQDETVLLGVDFPDS----   152
Bos_taurus                       PQDDIRLA--------AQLEAARAPRLRYLLVVSTR--EGLSRDETVLLGVDFPDS----   152
Heterocephalus_glaber            PQDDIHLA--------AQLEAARPPRLRYLLVVSTH--ECLNQEETVLLGVDFPDS----   151
Mus_musculus                     PQDDIRLA--------AQLEAARPPRLRYLLVVSTG--EELS-EEAILLGVDFPDS----   151
Ornithorhynchus_anatinus         PQDDIRLA--------VQLESARPPRLRYLLVVSPS--QLEARDETVLLGVDFPKG----   146
Pavo_muticus                     AQDAIQLVGPPPWCRAVRLESARPQRVRYLLVVRPE--EVGAEGQTALLGVDFPHE----   129
Pavo_cristatus                   AQDAIQLVGPPPWCRAVRLESARPQRVRYLLVVRPE--EVGAEGQTALLGVDFPHE----   129
Gallus_gallus                    AQDAIQLA--------VLLESARPQRVRYLLVVRPE--EVGTEGQTALLGVDFPHE----   121
Taeniopygia_guttata              PQDAIRLA--------VRLESARPRRVRYLLLVRPE--EAGAEAETALLGVDFTHE----   124
Anas_platyrhynchos               PQDAIRLA--------VRLESARPQRVRYLLVVRPE--EADAEGQTVLLGVDFPHE----   120
Chelonia_mydas                   QEDAIHLA--------VRLESTRPHRIRYLLLVSTE--ELEGKSETVLLGVDFPEE----   129
Rhinatrema_bivittatum            PQDDIRLA--------VRLESVRAHRIRYLLVVSTLG--SCGEDETILLGVNFPSD----   262
Xenopus_tropicalis               EEDTLKLA--------VRLEPVRSCLIRYLLVVSST--GKSNEEETVLLGVDFPHD----   126
                                 .......250.......260.......270.......280.......290.......300

                                                          .             :**:******* * *. :   **
Homo_sapiens                     ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   193
Pan_troglodytes                  ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   192
Macaca_mulatta                   ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVASGGQSRIFK   193
Callithrix_jacchus               GEEGRGRGEGRGTMALPLSSASSPSCTLGLVLPLWSDTQVYLDGDGGFIVTSGGQSRIFK   218
Equus_caballus                   ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   191
Pteropus_alecto                  ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   191
Bos_taurus                       ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   191
Heterocephalus_glaber            ---------------------SSPSCTLGLVLPLWSDTQVYLDGDGGFNVTSGGQSRIFK   190
Mus_musculus                     ---------------------SSHSCTLGLVLPLWSDTQVYLDGDGGFSVTSGGQSRIFK   190
Ornithorhynchus_anatinus         ---------------------SASSCSLGLALPLWSDSQVYLDGDGGFSVTSGGQSRIFK   185
Pavo_muticus                     ---------------------GXXXXXXXXXXXXXXXTQVFLDGDGGFSVTSGGQTRIFK   168
Pavo_cristatus                   ---------------------GXXXXXXXXXXXXXXXTQVFLDGDGGFSVTSGGQTRIFK   168
Gallus_gallus                    ---------------------GADRCTLGMVLPLWSDTQVFLDGDGGFSVTSGGQTRIFK   160
Taeniopygia_guttata              ---------------------GATRCTLGMVLPLWSDTQVFLDGDGGFSVTSGGQTRIFK   163
Anas_platyrhynchos               ---------------------GSTRCTLGMVLPLWSDTQVFLDGDGGFSVMSGGQTRIFK   159
Chelonia_mydas                   ---------------------GSAKCTLGMVLPLWSDTQVFLDGDGGFSVTSGGQTRIFK   168
Rhinatrema_bivittatum            ---------------------GCSSCTIGMVLPLWCNTQVFLDGDGGFSVTSAGETRIFK   301
Xenopus_tropicalis               ---------------------GSLCCTVGTVLPIWSNTQVFLDGDGGFTVTSGMDICPFK   165
                                 .......310.......320.......330.......340.......350.......360
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                                 *:*:****: :* ** .*: *  .. ... .       *    * *.*:* * * .*:
Homo_sapiens                     PISIQTMWATLQVLHQACEAALGSGLVPG-GSALTWASHYQERLNSEQSCLNEWTAMADL  252
Pan_troglodytes                  PISIQTMWATLQVLHQACEAALGSGLVPG-GSALTWASHYQERLNSEQSCLNEWTAMADL  251
Macaca_mulatta                   PISIQTMWATLQVLHQACEAALGSSLVPG-GSALTWASHYQERLNSDQSCLNEWTAMADL  252
Callithrix_jacchus               PISIQTMWATLQVLHQACEAALGSGLVPG-GSALTWASHYQERLNSNQSCLNEWTAMADL  277
Equus_caballus                   PISIQTMWATLQVLHQACEVALGSGLVPG-GSALTWASHYQDRLSSDQSCLNEWTAMADL  250
Pteropus_alecto                  PISIQTMWATLQVLHQACEVALGSGLVPG-GSALTWASHYEGRLNSDQSCLNEWMAMADL  250
Bos_taurus                       PVSIQTMWATLQVLHQACEAALSSGLVPG-GSALAWASHYQDRLSSDQSCLNEWMAMADL  250
Heterocephalus_glaber            PISIQTMWATLQVLHQACEAALGGGLVPG-GSAFAWAAHYLERLNSDQNCLNEWMAMADL  249
Mus_musculus                     PVSIQTMWATLQVLHQACEVALGSGLVPG-GSALAWATYYQEKLNSDQGCLNEWMAMSDL  249
Ornithorhynchus_anatinus         PISIQTMWATLQVLHQVCEAALAGGLVPGSGGALAWTKYYQARVTSNQSCLNEWMAMADL  245
Pavo_muticus                     PISIQTMWAVLQELHRACELAAQGGHIPG-GPALAWVQEYAAALDSEQSCLNEWLAMADL  227
Pavo_cristatus                   PISIQTMWAVLQELHRACELAAQGGHIPG-GPALAWVQEYAAALDSEQSCLNEWLAMADL  227
Gallus_gallus                    PISIQTMWAVLQELHRACELAAQGGHIPG-GPALAWAQEYAAALDSEQSCLNEWLAMADL  219
Taeniopygia_guttata              PISVQTMWAVLQELHLACEDAARGGHIPG-GPALAWARGYAAALGSEQSCLNEWLAMADL  222
Anas_platyrhynchos               PISVQTMWAVLQELHRACEQAARGGHIPG-GPALLWARDYAAALSSEQSCLNEWLAMADL  218
Chelonia_mydas                   PISVQTMWSVLQVLHKACNEAVHNNHFPG-GSALGWAEWYQRTIASEQSCINEWLAMSDL  227
Rhinatrema_bivittatum            PISVQTMWSMMQVLHKACESALLNNHFPG-GCALEWAYFYESTIASDQSCINEWKAMSDL  360
Xenopus_tropicalis               PISVQTMWSLLQMLHKACESALYNNVISS-SSLHSGLIYYQSSRGSPQGCLNAWTASPDI  224
                                 .......370.......380.......390.......400.......410.......420

                                 **.*              *  *: :   * .::   :*:.:*:**:*  ** :    * :
Homo_sapiens                     ESLRPPSAEPG--GSSEQEQMEQAIRAELWKVLDVSDLESVTSKEIRQALELRLGLPLQQ  310
Pan_troglodytes                  ESLRPPSAEPG--RSSEQEQMEQAIRAELWKVLDASDLESVTSKEIRQALELRLGLPLQQ  309
Macaca_mulatta                   ESLRPPSAEPG--RPSEQEQMEQAIRAELWKVLDASDLESVTSKEIRQALELRLGLPLQQ  310
Callithrix_jacchus               ESLRPPSTEPG--RPSEQEQMEQAIRAELRQVLDASNLESVTSKEIRQALELRLGHPLQQ  335
Equus_caballus                   ESLRPPSAEPG--RPSEQEQMEQAIRAELWEVLDTSDLESITSKEIRQALEQRLGCPLQQ  308
Pteropus_alecto                  ESLRPPSTEPG--RPLEQEQMEQAIRAELWKVLDTSDLESITSKEIRQALELRLGRPLQQ  308
Bos_taurus                       ESLRPPCVESS--RPSEQEQMEQAIRAELWEVLDTSDLDNVTSKEIRQALELRLGCPLQQ  308
Heterocephalus_glaber            ESLRPPGAEPG--RPSEQEQMEQAIRAELWEVLDASDLESITSKEIRQALELRLGCPLEQ  307
Mus_musculus                     ESFRPPNAEPG--QASEQEKMEQAILAELWQVLDTSDLDSVTSKEIRQALELRLGCPLQQ  307
Ornithorhynchus_anatinus         ESLR-ADPDPG--RVSELELMERRIREELQHVLDTSDLDSITAKEIRQALEQRLGCPLQD  302
Pavo_muticus                     ESVRPGSPLP-------TEPTERKVRALLRDVLTSADLESITSKEVRTELERRMGHSLEQ  280
Pavo_cristatus                   ESVRPGSPLP-------TEPTERKVRALLRDVLTSADLESITSKEVRTELERRMGHSLEQ  280
Gallus_gallus                    ESVRPGSPLP-------TEPTERAVRALLRDVLTSADLETVTSKEVRTELERRMGHSLEQ  272
Taeniopygia_guttata              ESVRPASPTPL--RPATPELSEQAVRALLREVMATADLENVTSKEVREELERRTGHSLAE  280
Anas_platyrhynchos               ESVRPGSPQPS--GPAVPELTEQAVRALLRDVLASADLESVTSKEVRTELERRTGRSLAQ  276
Chelonia_mydas                   ESVRPDSPALFSDRPTERELMERKIRAKLRELMATADLESITSKEIRTELERRTSCSLKE  287
Rhinatrema_bivittatum            ESVRPDSPAMFADQPTEGELTERMIRAKLREIMMTKDLENITSKEIRNELEKHANCNLKD  420
Xenopus_tropicalis               ESVRRDPATPE------REETERIIRLKLRDILRESDLENITSKEVRSALEQHTLCALQD  278
                                 .......430.......440.......450.......460.......470.......480

                                 :::****: ::::** **.* :* :::*******:******:* : ****:::*****:*
Homo_sapiens                     YRDFIDNQMLLLVAQRDRASRIFPHLYLGSEWNAANLEELQRNRVTHILNMAREIDNFYP  370
Pan_troglodytes                  YRDFIDNQMLLLVAQRDRASRIFPHLYLGSEWNAANLEELQRNRVTHILNMAREIDNFYP  369
Macaca_mulatta                   YRDFIDNQMLLLVAQRDRASRIFPHLYLGSEWNAANLEELQRNRVTHILNMAREIDNFYP  370
Callithrix_jacchus               HRDFIDNQMLLLVAQRDRASRIFPHLYLGSEWNAANLEELQRNRVTHILNMAREIDNFYP  395
Equus_caballus                   YRDFIDNQMLLLMAQQDRASRIFPHLYLGSEWNAANLEELQRNRVSHILNMAREIDNFYP  368
Pteropus_alecto                  YRDFIDNQMLLLMAQQDRASRIFPHLYLGSEWNAANLEELQRNRVSHILNMAREIDNFYP  368
Bos_taurus                       YRDFIDNQMLLLMAQQDRASRIFPHLYLGSEWNAANLEELQRNRVSHILNMAHEIDNFYP  368
Heterocephalus_glaber            YRDFIDNQMLLLMAQQDRASRIFPHLYLGSEWNAANLEELQRNRVSHILNMAREIDNFFP  367
Mus_musculus                     YRDFIDNQMLLLMAQQDRASRIFPHLYLGSEWNAANLEELQKNRVSHILNMAREIDNFFP  367
Ornithorhynchus_anatinus         HRDFIDNEALLLLAQRDRASRIFPHVYLGSEWNAANLEELQRNGVSHILNMSREIDNFFP  362
Pavo_muticus                     HKDFIDNEMLLVLAQMDRPSRVFPHIYLGSEWNAANLEELQQNCVTHILNVAREIDNFFP  340
Pavo_cristatus                   HKDFIDNEMLLVLAQMDRPSRVFPHIYLGSEWNAANLEELQQNCVTHILNVAREIDNFFP  340
Gallus_gallus                    HKDFIDNEMLLVLAQMDRPSRVFPHIYLGSEWNAANLEELQQNCVTHILNVAREIDNFFP  332
Taeniopygia_guttata              HKDFIDNEMLLVLAQMDRPSRVFPHLFLGSEWNAANLEELQQNRVTHILNVAREIDNFFP  340
Anas_platyrhynchos               HKDFIDNEMLLVLAQMDRPSCVFPHLYLGSEWNAANLEELQQNRITHILNVAREIDNFFP  336
Chelonia_mydas                   YKEFIDNEMLLIMAQMDRPSKIFDHLYLGSEWNAANLEELQRNRISHILNVTREIDNFFP  347
Rhinatrema_bivittatum            YKEFIDNEMLLILAQMDRPSRIFDYLYLGSEWNASNLEELQRNGVGHILNVTREIDNFFP  480
Xenopus_tropicalis               YKEFIDNEMIIILAQMDRPSEIFPYLYLGSEWNASNLEELQKNKVSHILNVTREIDNFFP  338
                                 .......490.......500.......510.......520.......530.......540
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                                 : * *:*: *** ::*: :* :*. *:   :  . :.****:**:****:**:*****
Homo_sapiens                     ERFTYHNVRLWDEESAQLLPHWKETHRFIEAARAQGTHVLVHCKMGVSRSAATVLAYAMK  430
Pan_troglodytes                  ERFTYHNVRLWDEESAQLLPHWKETHRFIEAARAQGTHVLVHCKMGVSRSAATVLAYAMK  429
Macaca_mulatta                   ERFTYHNVRLWDEESAQLLPHWKETHRFIEAARAQGTRVLVHCKMGVSRSAATVLAYAMK  430
Callithrix_jacchus               ERFTYHNVRLWDEESAQLLPHWKETYRFIEAARAQGTRVLVHCKMGVSRSAATVLAYAMK  455
Equus_caballus                   ERFTYHNVRLWDEESAQLLPHWKETHRFVEAARAQGTRVLVHCKMGVSRSAATVIAYAMK  428
Pteropus_alecto                  ERFVYHNVRLWDEESAQLLPHWKETHRFVEAARAQGTRVLVHCKMGVSRSAATVVAYAMK  428
Bos_taurus                       ERFTYHNVRLWDEESAQLLPHWKETHRFVEAARAQGTRVLVHCKMGVSRSAATVIAYAMK  428
Heterocephalus_glaber            DRFIYYNVRLWDEESAQLLPHWKETHRFIEAARAQGTRVLVHCKMGVSRSAATVLAYAMK  427
Mus_musculus                     ERFTYYNVRVWDEESAQLLPHWKETHRFIEDARAQGTRVLVHCKMGVSRSAATVLAYAMK  427
Ornithorhynchus_anatinus         ELFTYHNVRLWDEESSQLLPHWPETHRFIETARAQGSHVLVHCKMGVSRSAATVVAYAMK  422
Pavo_muticus                     ALFNYMNVRVYDEETAQLLPHWNDTFLFLSNIKARGGRALVHCRMGLSRSAATVLAYAMK  400
Pavo_cristatus                   ALFNYMNVRVYDEETAQLLPHWNDTFLFLSNIKARGGRALVHCRMGLSRSAATVLAYAMK  400
Gallus_gallus                    ALFHYMNVRVYDEETAQLLPHWNDTFLFLSDIKARGGRALVHCRMGLSRSAATVLAYAMK  392
Taeniopygia_guttata              ALFTYMNVRVYDEEAAELLPHWNDTFLFLSRVRAAGGRALVHCRMGLSRSAATVLAYAMK  400
Anas_platyrhynchos               ALFTYMNVRVYDEEAAELLPHWNDTFLFLSDVKARGGRALVHCRMGLSRSAATVLAYAMK  396
Chelonia_mydas                   ALFTYLNVRLYDEEASQLLPYWKETYHFISAVRAQNSRVLVHCKMGVSRSASTVIAYAMK  407
Rhinatrema_bivittatum            ESLKYLNIRVYDEEQTDLLQHWKETYRFISSARKLNSKVLVHCKMGVSRSASTVIAYAMK  540
Xenopus_tropicalis               ELFKYLNIRVLDEENTNLMQYWKETHAFITAGRRQGSRVLVHCKMGVSRSASTVIAYAMK  398
                                 .......550.......560.......570.......580.......590.......600

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Homo_sapiens                     QYECSLEQALRHVQELRPIARPNPGFLRQLQIYQGILTAS--RQSHVWEQK---------  479
Pan_troglodytes                  QYECSLEQALRHVQELRPIARPNPGFLRQLQIYQGILTAS--RQSHVWEQK---------  478
Macaca_mulatta                   QYECSLEQALRHVQELRPIARPNPGFLRQLQIYQGILTAS--RQSHVWEQK---------  479
Callithrix_jacchus               QYGCSLEQALHHVQGLRPIARPNPGFLRQLQVYQGILTAS--RQSHVWEQK---------  504
Equus_caballus                   QYGWSLEQALRHVQELRPIVRPNPGFLRQLQTYQGILTAS--RQSHVWEQK---------  477
Pteropus_alecto                  QYGWSLEQALRHVQELRPIARPNPGFLRQLQTYQGILTAS--RQSHVWEQK---------  477
Bos_taurus                       QYGWSLEQALRHVQELRPIARPNPGFLRQLQTYQGILTAS--RQSHVWEQK---------  477
Heterocephalus_glaber            QYGWSLEQALLHVQELRPIVRPNPGFLRQLQTYQGILTAS--RQSHVWEQK---------  476
Mus_musculus                     QYGWDLEQALIHVQELRPIVRPNHGFLRQLRTYQGILTAS--RQSHVWEQK---------  476
Ornithorhynchus_anatinus         QYGWELDVALRHVKDLRPVTHPIPSFLRQLHTYQGILTAS--RQSQVWEQK---------  471
Pavo_muticus                     EFGWSLEQALRHVRRCRPGVQPNPGFMRQLDFYQGILNAS--RHSSFWEPQ---------  449
Pavo_cristatus                   EFGWSLERALRHVRRCRPGVQPNPGFMRQLDFYQGILNAS--RHSSFWEPQ---------  449
Gallus_gallus                    EFGWSLERALRHVRRCRPGVQPNPGFMRQLDFYQGILNAS--RHSSFWEPQ---------  441
Taeniopygia_guttata              EFGWPLERALRHVQHCRPGVLPNPGFMRQLDFYQGILSAS--RHSSLWEPR---------  449
Anas_platyrhynchos               EFGWPLERALRHVRCCRPGVMPNPGFMRQLDFYQGILSAS--RHSVLWEPR---------  445
Chelonia_mydas                   EYGWSLERAYRHVQDQRPIVHPNPSFMRQLEFYQGILDAS--RHSSLWEQK---------  456
Rhinatrema_bivittatum            EYSWTLEEAVRHVKEKRPIVQPNPGFMRQLLTYQGILDASKQRHSHLWERKDDYNPLESP  600
Xenopus_tropicalis               EYEWTLETAMRHVKERRNIVQPNAGFIRQLQTYQGILGASKQRHSYLWDPS---------  449
                                 .......610.......620.......630.......640.......650.......660

                                                 .
Homo_sapiens                     ----------------VGGVSPEEHPAP--EVSTPFPPLP--------------------  501
Pan_troglodytes                  ----------------VGGVSPEERPAP--EVSTPFPPLP--------------------  500
Macaca_mulatta                   ----------------VGGVSPEERPAP--EVSTPFPPLP--------------------  501
Callithrix_jacchus               ----------------AGGVSPEEHPAP--EVSTPFPPLP--------------------  526
Equus_caballus                   ----------------AGGASPEEPLAP--EVSTPFPPLP--------------------  499
Pteropus_alecto                  ----------------VGGASPEEPLAP--EVSTPFPPLP--------------------  499
Bos_taurus                       ----------------AGGASPEEPLAP--EVSTPFPPLQ--------------------  499
Heterocephalus_glaber            ----------------VGGSSPEEPLAL--EVSTPLPPLP--------------------  498
Mus_musculus                     ----------------VGVVSPEEPLAP--EVSTPLPPLP--------------------  498
Ornithorhynchus_anatinus         ----------------AGGSSLEELAAQ--VPSQLPPPTP--------------------  493
Pavo_muticus                     ----------------AAERAAEPEEA----VPWDDGALP------------------P  470
Pavo_cristatus                   ----------------AAERAAEPEEA----VPWDDGALP------------------P  470
Gallus_gallus                    ----------------AAERAPEPEGA----VQWDDGALP------------------P  462
Taeniopygia_guttata              ----------------AAEQTPHPEED---TVRDTSGLSP------------------L  471
Anas_platyrhynchos               ----------------AAERVSQPGARGG-CPRGXGGPAP------------------A  469
Chelonia_mydas                   ----------------AGDSQWEDTVNGS-DTGSDQSESEGSLCQE--MLSLEEEPGRQE  497
Rhinatrema_bivittatum            GDVAERVINQLEDGFQTGETTWYDQPSPEEEEEEESPASPPYCFRP--LKDVPEELESLT  658
Xenopus_tropicalis               ----------------SAPPLPQVFPPPKNFSRHTTSPLTPRLQKMNLRTLMRSISEMDA  493
                                 .......670.......680.......690.......700.......710.......720
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                                 .                                     *
Homo_sapiens                PEPEGGGGEEKVVGMEESQAAP---------KEEPG------------------------   527
Pan_troglodytes             PEPGGGGEEKVVGMEESQAAP---------KEEPG------------------------   526
Macaca_mulatta              PEPGGGGEEKVVGMEESQAAP---------KEEPG------------------------   527
Callithrix_jacchus          PEPGGGGEEKVVGMEESQAAP---------KEEPG------------------------   552
Equus_caballus              PEPGGSGEVKVIEPEESQAAP---------TEEPG------------------------   525
Pteropus_alecto             PEPGGSGEVMAMGLEQSQATP---------KEEPG------------------------   525
Bos_taurus                  PEPGGSGELSVMGSEDSQAAP---------KEAPG------------------------   525
Heterocephalus_glaber       PEPGGSGVVKVLGLEESQAAP---------KEEPG------------------------   524
Mus_musculus                PEPGGSGEVMVMGLEGSQETP---------KEELG------------------------   524
Ornithorhynchus_anatinus    SDPGDSG------APAGAAEE---------SGPAG------------------------   513
Pavo_muticus                SPPASSPS--------PEVDG--------RPGLVG------------------------   489
Pavo_cristatus              SPPASSPS--------PEVDG--------RPGLVG------------------------   489
Gallus_gallus               SPPASSPP--------PEEDG--------RPGLEG------------------------   481
Taeniopygia_guttata         SSPLASPQ--------PSEEE------AAGGGLLG------------------------   492
Anas_platyrhynchos          PSPVPSPQ--------PPEEAS---RQPAGPGLSG------------------------   493
Chelonia_mydas              EEPATTPQYCFRPLREPPEEPA---QTQAPAGGKGPRTLVQEAEEPG--GSDDSGAEEVR   552
Rhinatrema_bivittatum       ESPEGLPEGPLLFPPERPDSPLHAAIHIQGPEEMGSSSDDSLAEEVRGHLPSARLEESQV   718
Xenopus_tropicalis          TDTISEEKESTSELEENIFKQKVNILESTSKNLQG------------------------   528
                            .......730.......740.......750.......760.......770.......780

                                          : .   : :.   ::
Homo_sapiens                ---------------PRPRINLRGVMRSISLLEPSLELESTSETSDMP------------   560
Pan_troglodytes             ---------------PRPRINLRGVMRSISLLEPSLELESTSETSDMP------------   559
Macaca_mulatta              ---------------PRPRINLRGVMRSISLLEPSLELESTSEASDMP------------   560
Callithrix_jacchus          ---------------PRPRIDLRGVMRSISLLEPSLELESTSDASDMP------------   585
Equus_caballus              ---------------PRPRINLRGVMRSISLLEPPLELESTSGAEDPP------------   558
Pteropus_alecto             ---------------PRPRINLRGVMRSISLLEPPSELESASGAGDLP------------   558
Bos_taurus                  ---------------SRPRINLRGVMRSISLLEPPSELDSPSGDADLP------------   558
Heterocephalus_glaber       ---------------LRPRINLRGIMRSISLLEPTSELDSTSEAGDLP------------   557
Mus_musculus                ---------------LRPRINLRGVMRSISLLEPS-ESESTPEAGGLP------------   556
Ornithorhynchus_anatinus    ---------------RRRRIDLRRMMRSISCLESP-ELKPMTP-GDLP------------   544
Pavo_muticus                -------------AARRPRISLCAVMRSISQMETP---ENLGEPLGG-------------   520
Pavo_cristatus              -------------AARRPRISLCAVMRSISQMETP---ENLGEPLGG-------------   520
Gallus_gallus               -------------AARRPRISLCAVMRSISQMEAP---ENVGEPLGG-------------   512
Taeniopygia_guttata         -------------ASRRPRISLCSVMRSISLLENPEPPPEQLGEPLAE-------------   526
Anas_platyrhynchos          -------------APQRPRISLCAVMRSISLMESPQPPELLGEPLDG-------------   527
Chelonia_mydas              GHLAVLQVPEIPRTPRDRRINLYAVMRSISEMDSPDAPTPLGGAAEG-------------   599
Rhinatrema_bivittatum       WSTSSSLSVPSPLTPRRHRINLWSVMRSISEMESQEVTAPLPAAAAAARDPAIADHPGDE   778
Xenopus_tropicalis          ---------------TFPKRNEHVLYKEQITLEEDKKLMKLEKGPESEVKN------HTL   567
                            .......790.......800.......810.......820.......830.......840

                              :
Homo_sapiens                -EVFSSH-----------------------------------------------------   566
Pan_troglodytes             -EVFSSH-----------------------------------------------------   565
Macaca_mulatta              -EVFSSH-----------------------------------------------------   566
Callithrix_jacchus          -EVFSSP-----------------------------------------------------   591
Equus_caballus              -EVFSSN-----------------------------------------------------   564
Pteropus_alecto             -EVFSSN-----------------------------------------------------   564
Bos_taurus                  -EVFSSK-----------------------------------------------------   564
Heterocephalus_glaber       -EVFSSH-----------------------------------------------------   563
Mus_musculus                -EVFSS------------------------------------------------------   561
Ornithorhynchus_anatinus    -EVFSAE-----------------------------------------------------   550
Pavo_muticus                -EVCEGG-----------------------------------------------------   526
Pavo_cristatus              -EVCEGG-----------------------------------------------------   526
Gallus_gallus               -EVSEGG-----------------------------------------------------   518
Taeniopygia_guttata         -EVFEAT-----------------------------------------------------   532
Anas_platyrhynchos          -AVFEAT-----------------------------------------------------   533
Chelonia_mydas              -EVFVASGHESPV-----------------------------------------------   611
Rhinatrema_bivittatum       IEVFGSLPRAAPEGMSCSCSDGHPGTPGSSDRTDWKLGPSVSRRNAKKASAPPGTGRGGE   838
Xenopus_tropicalis          QEIKETEVS---------------------------------------------------   576
                            .......850.......860.......870.......880.......890.......900
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Homo_sapiens                ------------------------------------------------------ESSHEEPLQ   575
Pan_troglodytes             ------------------------------------------------------ESSHEEPLQ   574
Macaca_mulatta              ------------------------------------------------------ESSHEEPPQ   575
Callithrix_jacchus          ------------------------------------------------------ESSHEEPPQ   600
Equus_caballus              ------------------------------------------------------ESSDEDPPQ   573
Pteropus_alecto             ------------------------------------------------------ESSDEDPPR   573
Bos_taurus                  ------------------------------------------------------ESSDEDPPQ   573
Heterocephalus_glaber       ------------------------------------------------------ESSDEEPPQ   572
Mus_musculus                ----------------------------------------------------------DEEPLH   567
Ornithorhynchus_anatinus    ------------------------------------------------------EG-------   552
Pavo_muticus                ------------------------------------------------------------   526
Pavo_cristatus              ------------------------------------------------------------   526
Gallus_gallus               ------------------------------------------------------------   518
Taeniopygia_guttata         ------------------------------------------------------------   532
Anas_platyrhynchos          ------------------------------------------------------------   533
Chelonia_mydas              ------------------------------------------------------ECPHQEPAV   620
Rhinatrema_bivittatum       RHAEPRATGGGSRAKVNQADVVPSGSGESAKASLGAREPAEPAGRQRGHGVLQRRRSRPA   898
Xenopus_tropicalis          ------------------------------------------------------IRLKEAKEK   585
                            .......910.......920.......930.......940.......950.......960

Homo_sapiens                PFPQLARTKGGQQVDRGPQPALKSRQSVVTLQGSAVVANRTQ------------------   617
Pan_troglodytes             PFPQLARTKGGQQVDRGPQPALKSRQSVVTLQGSAVVANRTQ------------------   616
Macaca_mulatta              PFPQLARTKGSQQVGKGPQPALKSCQSVVALQGSTLVANQTR------------------   617
Callithrix_jacchus          PFLQLARTKGGQQVGRGPQPALKSRQSVVALQSAALVASRTQ------------------   642
Equus_caballus              PFPQLSKAKGGGRVRKGPWPSLKSRQSVVALNSAALVASRSQ------------------   615
Pteropus_alecto             SFSQLSKAKGGRRVRKGPWPALNSRQSVVALNSAALVASRTR------------------   615
Bos_taurus                  PFPQPSSAKGGRQVHRGPWPALKSRQSVAALNSAALVASRTR------------------   615
Heterocephalus_glaber       PFPQLPRAKGGPRVHKGAWPALKSRQSVVALQTAALVANQTQ------------------   614
Mus_musculus                PFSQLSRAKGGQRVRKGPWPALKSRQSVVALHSAALVASRTR------------------   609
Ornithorhynchus_anatinus    -APQPSQEEIGRMGPSAFRPALESHQSVMALQSAALVASRSR------------------   593
Pavo_muticus                --QGLGDTGGLEAAPPGPRPRSRP---------CRVVRQAS------------------   556
Pavo_cristatus              --QGLGDTGGLEAAPPGPRPRSRP---------CRVVRQAS------------------   556
Gallus_gallus               --QGLGDTGGLRAAPPGPRRRSRP---------CRVVRQDS------------------   548
Taeniopygia_guttata         --EEAECP-----SPR-SRPSSRP---------RRVVRQAS------------------   556
Anas_platyrhynchos          --EVPGDPGDPGGSPSGARPSSRP---------RRVVRQAS------------------   563
Chelonia_mydas              PPSPPQDQEEPGASAPGSKAKQHPPQAPTDKTGKRRGRQRSRHVPRSHA-----------   669
Rhinatrema_bivittatum       PDAAPESGNTEAAEQLAARPRLLHLQSVAELKAAALVSRQAKAFEKMTSPPGAGGKKERG   958
Xenopus_tropicalis          DQETNKESSSITQQNSSLDEVFESSTPTRSPQMARYACQKFKHP---------------   629
                            .......970.......980.......990......1000......1010......1020

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Homo_sapiens                ------------------------------AFQEQEQGQGQ------------------   628
Pan_troglodytes             ------------------------------AFQEQEQGQGQ------------------   627
Macaca_mulatta              ------------------------------AFQEQEQGQGQ------------------   628
Callithrix_jacchus          ------------------------------AFQEQRQG--------------------   650
Equus_caballus              ------------------------------VFQ---------------------------   618
Pteropus_alecto             ------------------------------AFQEQEQEQ------------------   624
Bos_taurus                  ------------------------------AFQ---------------------------   618
Heterocephalus_glaber       ------------------------------AFQ---------------------------   617
Mus_musculus                ------------------------------AFQEQGQGQ------------------   618
Ornithorhynchus_anatinus    ------------------------------VFE---------------------------   596
Pavo_muticus                ------------------------------VDG---------------------------   559
Pavo_cristatus              ------------------------------VDG---------------------------   559
Gallus_gallus               ------------------------------VDA---------------------------   551
Taeniopygia_guttata         ------------------------------LDGVP-------------------------   561
Anas_platyrhynchos          ------------------------------VDG---------------------------   566
Chelonia_mydas              ----------QACKQISYHPVPGKVHKALKHVEGPSPRATAPHRARVMEHRYSVAQLMD   718
Rhinatrema_bivittatum       SEAREDGRREGEPGREPVQNGRSTGQPEREKGLDGSSEAKLEEGRTTG-----PKWSSEG  1013
Xenopus_tropicalis          ----------------------------EQHPEDIQNSK-------------------   640
                            ......1030......1040......1050......1060......1070......1080
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Homo_sapiens              --------GQGEPCISSTPRFRKVVRQASVHDSGEEGEA--------------------   659
Pan_troglodytes           --------GQGEPCISSTPRFRKVVRQASVHDSGEEGEA--------------------   658
Macaca_mulatta            --------G--EPCVSSTPRFRKVVRQASVDDSGEEGEA--------------------   657
Callithrix_jacchus        -----------EPSISSTPRFRKVVRQASVDDSGEEGEA--------------------   678
Equus_caballus            --------EQGEAGRSCTPRLRKVVRQASVDGSGEEGEA--------------------   649
Pteropus_alecto           --------EQREACRSSTPRFRKVVRQASVDGSGEEGEA--------------------   655
Bos_taurus                --------EQGEAGCASTPRHQKIVRQASVDSSGEEGEV--------------------   649
Heterocephalus_glaber     --------EQGEAGMSSTARFRKMVRQTSVDDGGEEGGA--------------------   648
Mus_musculus              --------EQSEPGMSSTPRLRKVMRQASVDDSREEDKA--------------------   649
Ornithorhynchus_anatinus  ----------GQQPLPSIPRARRMVRQASVDENSGDDQGRDHGDTS-------------   632
Pavo_muticus              ------------DRIPAEERSPVESSAPTQEPGAP------------------------   582
Pavo_cristatus            ------------DRIPAEERSPVESSAPTQEPGAP------------------------   582
Gallus_gallus             ------------DGVAAEEPGAADSSEPGP-PGAP------------------------   573
Taeniopygia_guttata       --------GPFCDHTHSDGHTQCHTHAPGHAHTDEPTP---------------------   591
Anas_platyrhynchos        --------GPAGTEAPSPPASGCD---PALASTSPLAP---------------------   593
Chelonia_mydas            AALVLSRTREFEERLEAAGRERPTREDPARSPPPSQAPQPGGGALPPSRPRKMVRQASVD   778
Rhinatrema_bivittatum     QPGSETRQHARGEGEPKTERGQNESREGKLLEGRETGQNGREGEPTCETRPNWAHEGEPE  1073
Xenopus_tropicalis        -----VCFVANLQSLSEEEKITLVSRQLKKDEHGERKARFARQQNVVDTHEEL-------   688
                          ......1090......1100......1110......1120......1130......1140

Homo_sapiens              ------------------------------------------------------------   659
Pan_troglodytes           ------------------------------------------------------------   658
Macaca_mulatta            ------------------------------------------------------------   657
Callithrix_jacchus        ------------------------------------------------------------   678
Equus_caballus            ------------------------------------------------------------   649
Pteropus_alecto           ------------------------------------------------------------   655
Bos_taurus                ------------------------------------------------------------   649
Heterocephalus_glaber     ------------------------------------------------------------   648
Mus_musculus              ------------------------------------------------------------   649
Ornithorhynchus_anatinus  ------------------------------------------------------------   632
Pavo_muticus              ------------------------------------------------------------   582
Pavo_cristatus            ------------------------------------------------------------   582
Gallus_gallus             ------------------------------------------------------------   573
Taeniopygia_guttata       ------------------------------------------------------------   591
Anas_platyrhynchos        ------------------------------------------------------------   593
Chelonia_mydas            LDPGSG--------------------------------------------------------   784
Rhinatrema_bivittatum     GAGGLGQNGRGKVEPGGKETSWNQASKKWAPLQLASLAEEQVSEAQSGGRWKRPELPCPT  1133
Xenopus_tropicalis        ------------------------------------------------------------   688
                          ......1150......1160......1170......1180......1190......1200

Homo_sapiens              ------------------------------------------------------------   659
Pan_troglodytes           ------------------------------------------------------------   658
Macaca_mulatta            ------------------------------------------------------------   657
Callithrix_jacchus        ------------------------------------------------------------   678
Equus_caballus            ------------------------------------------------------------   649
Pteropus_alecto           ------------------------------------------------------------   655
Bos_taurus                ------------------------------------------------------------   649
Heterocephalus_glaber     ------------------------------------------------------------   648
Mus_musculus              ------------------------------------------------------------   649
Ornithorhynchus_anatinus  ------------------------------------------------------------   632
Pavo_muticus              ------------------------------------------------------------   582
Pavo_cristatus            ------------------------------------------------------------   582
Gallus_gallus             ------------------------------------------------------------   573
Taeniopygia_guttata       ------------------------------------------------------------   591
Anas_platyrhynchos        ------------------------------------------------------------   593
Chelonia_mydas            ------------------------------------------------------------   784
Rhinatrema_bivittatum     ALASSTGAAAGGEADLANNLPSVPRLERTASGGRRMVRQGNVDTVEPSGVLAPEDGTSSG  1193
Xenopus_tropicalis        ------------------------------------------------------------   688
                          ......1210......1220......1230......1240......1250......1260
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CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT


```
Homo_sapiens              ---------   659
Pan_troglodytes           ---------   658
Macaca_mulatta            ---------   657
Callithrix_jacchus        ---------   678
Equus_caballus            ---------   649
Pteropus_alecto           ---------   655
Bos_taurus                ---------   649
Heterocephalus_glaber     ---------   648
Mus_musculus              ---------   649
Ornithorhynchus_anatinus  ---------   632
Pavo_muticus              ---------   582
Pavo_cristatus            ---------   582
Gallus_gallus             ---------   573
Taeniopygia_guttata       ---------   591
Anas_platyrhynchos        ---------   593
Chelonia_mydas            ---------   784
Rhinatrema_bivittatum     QPTQAEGKL  1202
Xenopus_tropicalis        ---------   688
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