

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/BRCData.ms Tue Feb 1 11:31:58 2022

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Pavo_muticus      -----MD 2
Pavo_cristatus    -----MD 2
Gallus_gallus     -----MD 2
Chelonia_mydas    -----MD 2
Mus_musculus      -----MD 2
Rattus_norvegicus -----MD 2
Homo_sapiens      -----MD 2
Pan_troglodytes   -----MD 2
Macaca_mulatta    -----MD 2
Callithrix_jacchus -----MD 2
Canis_lupus_familiaris -----MVREQGPFLRLSQAISCALIRASGSDSSHLCDVISP EWKPK EKMD 45
Felis_catus       -----MD 2
Equus_caballus    -----MD 2
Bos_taurus        -----MD 2
Rhinatrema_bivittatum -----MV 2
Xenopus_tropicalis MAACRSSVRIGEGCHWLAEAHARAVVTVARVVQMDLACWKVEVRFPQRMNCVSGKGQSKLS 60
1.....10.....20.....30.....40.....50.....60

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Pavo_muticus      LSVIAIGDVQNVLSAMQKNLECPVC-----LDVIKEPVSTKCDHVF CRFCMF 49
Pavo_cristatus    LSVIAIGDVQNVLSAMQKNLECPVC-----LDVIKEPVSTKCDHVF CRFCMF 49
Gallus_gallus     LSVIAIGDVQNVLSAMQKNLECPVC-----LDVIKEPVSTKCDHVF CRFCMF 49
Chelonia_mydas    SSVAAIGDVQSVLLAMQKNLECPIC-----LELIKEPVSTKCDHIFCRFCMF 49
Mus_musculus      LSAVQIQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Rattus_norvegicus LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Homo_sapiens      LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Pan_troglodytes   LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Macaca_mulatta    LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Callithrix_jacchus LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Canis_lupus_familiaris LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 105
Felis_catus       LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Equus_caballus    VSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Bos_taurus        LSAVRVQEVQNVLSAMQKNLECPIC-----LELIKEPVSTKCDHIFCKFCML 49
Rhinatrema_bivittatum FPTLEVEEVHNVLSVMQKNLECPIC-----LELMKEPVSTKCDHIFCRFCML 49
Xenopus_tropicalis CSRMDEIGIRNVISVMQKNLECPIC-----LELMKEPVATKCDHIFCKFCML 107
.....70.....80.....90.....100.....110.....120

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Pavo_muticus      KLLSKKKKGVIQCPLCKTEVTKRSLKENS RFKOLIEGFLEAISAFELDTGVKFLSSRYFP 109
Pavo_cristatus    KLLSKKKKGVIQCPLCKTEVTKRSLKENS RFKOLIEGFLEAISAFELDTGVKFLSSRYFP 109
Gallus_gallus     KLLSRKKKGVIQCPLCKTEVTKRSLKENS RFKOLIEGLLEAISAFELDTGVKFLSSRYFP 109
Chelonia_mydas    KLLSKKKKGVAQCPLCKTEVTKRSLQENPRFKOLIEGLLETHAFELDTGIKFLNSQDFS 109
Mus_musculus      KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Rattus_norvegicus KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Homo_sapiens      KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Pan_troglodytes   KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Macaca_mulatta    KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Callithrix_jacchus KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Canis_lupus_familiaris KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 164
Felis_catus       KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Equus_caballus    KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Bos_taurus        KLLN-QKKGPSQCPLCKNEITKRSLOESTRFSQVLEELLRIIAFAFELDTGMQNGFSFS 108
Rhinatrema_bivittatum ELLSKKKKGSTECPMCKNEVTKRSLKES PRFKLLVEGLLKIIFAFELDTGFKFSSQDYS 109
Xenopus_tropicalis QLLSKKKKGSTECPMCKNEVTKRSLKES PRFKLLVEGLLKIIFAFELDTGFKFSSQDYS 167
.....130.....140.....150.....160.....170.....180

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      . . . : : : : : * : * * * : . : :
Pavo_muticus      KTCTEASTAELLGNN-SSVIOQSKGFRNRK-SAEENG--QDSYTLWETNVDPOLTDNRVEG 165
Pavo_cristatus    KTCTEASTAELLGNN-SSVIOQSKGFRNRK-SAEENG--QDSYTLWETNVDPOLTDNRVEG 165
Gallus_gallus     KTSIEVATAELLGNN-SSVIOQSKGFRNRKRGAKENR--QDSCTLOEANVDPOLTDNRVKG 166
Chelonia_mydas    KKPVETNSTELLWKE-GSIIQSKGYRNRQKRIKEQE--QESPTL-EANAGAQVADNMVRR 165
Mus_musculus      KK--RNNSCERLNEE-ASIIQSVGYRNRVRRLPQVE--PGNATLKDS-LGVQLSNLGIIVR 162
Rattus_norvegicus KK--KNSSSELLNED-ASIIQSVGYRNRVKKLRQIE--SGSATLKDS-LSVQLSNLGIIVR 162
Homo_sapiens      KK--ENNSPEHLKDE-VSIIQSMGYRNRKRLLQSE--PENPSLQETSLSVQLSNLGTIVR 163
Pan_troglodytes   KK--ENNSPEHLKDE-VSIIQSMGYRNRKRLLQSE--PENPSLQETSLSVQLSNLGTIVR 163
Macaca_mulatta    KK--ENNSPEHLKDE-VSIIQSMGYRNRKRLLQSE--PENPSLQETSLSVPLSNLGIIVR 163
Callithrix_jacchus KK--ENNSPEHLKDE-FSIIQSMGYRNRKRLLQSE--PONPTLQETNLSVQLSNPGIIVR 163
Canis_lupus_familiaris KK--ENNSPEHLKEE-VSIIQSMGYRNRKRLLQSE--PENP-TLETSLSVQLSNLGIIVR 218
Felis_catus       KK--ENNSPEHLKEE-VSIIQSMGYRNRKRLLQSE--PENPNLQETSLSVQLSNFGIIVR 163
Equus_caballus    KK--ENDSPERVKEE-VSIIQSMGYRNRKRHRQSE--PENPTLQETSLSVHLSNLGIIVR 163
Bos_taurus        RK--EDNSPEHLKEE-VSIIQSMGYRNRKRLLQSE--PENPTLQETSLTVELSNLGIIVR 163
Rhinatrema_bivittatum KKQAESSTNEQLIRE-CDIVQSRGYRNRKKRAQEDG--QOKVTRLETNSDVLCPGNLASR 166
Xenopus_tropicalis VSGFESTIKDVLIKEDQVHVCKGYRNRKKGILKSKITFEVTTGTLLESKPEAQFAKIVTRL 227
      .....190.....200.....210.....220.....230.....240

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      : : : : : * * * . . .
Pavo_muticus      CFLRSKKQKHGIEKGVLIELGTDSS-EELFILASDTGLED-----KEELEEPKSA 214
Pavo_cristatus    CFLRSKKQKHGIEKGVLIELGTDSS-EELFILASDTGLED-----KEELEEPKSA 214
Gallus_gallus     SSVRSKKQKCGIEKGVLIELGTDSS-EEHFILASSTGLED-----KEELEEPKSA 215
Chelonia_mydas    SSLRNKRQKCESGKAVYIEFGSDSS-EDLFKKAGGCGMGDTLFTPTPPQKRERAEELKYA 224
Mus_musculus      -SVKKNRQTOPRKKSIVYIELSDSS-EETVTKPGDCSVRDQE-----LLQITAPQEAG 212
Rattus_norvegicus -SMKKNRQTOPQNKSVYIALESDDSS-EERVNAPDGC SVRDQE-----LFQIAPGGAG 212
Homo_sapiens      -TLRTKQRIQPOKTSVYIELGSDSS-EDTVNKATYCSVGDQE-----LLQITPOGTR 213
Pan_troglodytes   -TLRTKQRIQPOKKSIVYIELGSDSS-EDTVNKATYCSVGDQE-----LLQITPOGTR 213
Macaca_mulatta    -TLRTKQRIQPOKKSIVYIELGSDSS-EDTVNKATYCSVGDQE-----LLQITPOGTR 213
Callithrix_jacchus -SLRTKQWIQPOPKSVYIDLGSDDSS-EDTINKKTYCSVGDQE-----LLQITPOGTR 213
Canis_lupus_familiaris -SLRTKQRIQPOPKSVYIELGSDSS-EDTVNKASSCSVGDDE-----KLEITISQGAR 267
Felis_catus       -SLRTKQRIQPOPKSVYIELGSDSS-EDTVNKASYFSAEDDE-----LLGITPOGAR 213
Equus_caballus    -SLRTKQRIQPOPKSVYIELGSDSS-EDTVNKASYCSLGDHE-----LLQITPOGAR 213
Bos_taurus        -SLRTKQRTQSONKSVYIELGSDSS-EDTVNKASYFSVGDHE-----LLEITPOGAK 213
Rhinatrema_bivittatum RSHRSKRQKRGASEPLYIEFGLDSSSEDLLEKAGSIGSCGAE-----EFSAEPEESKE 218
Xenopus_tropicalis TSCRQKKHRKEAS-PIFVNCVPSDSECHLLNNEESGSGNDRSP-----LCEKEDTLNP 278
      .....250.....260.....270.....280.....290.....300

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      . .
Pavo_muticus      GKYG-SSCNTQPLKLGAKIILPDLIGETDFLKEALGKKNMLNITEHVKSNOVNTIEGQS 273
Pavo_cristatus    GKYG-SSCNTQPLKLGAKIILPDLIGETDFLKEALGKKNMLNITEHVKSNOVNTIEGQS 273
Gallus_gallus     EKYG-SSCNTQPLKLGAKIILPNVIGETDFLKEALDKKSMNLNITEHIKCNQVNTIEGQS 274
Chelonia_mydas    EKESESYPNMWPSTSDAGEILSSDILGECGVSEE--DSKGTWNGIEDFEAAQVNVAEGHL 282
Mus_musculus      DEGKLHSAEEAACEFSE-GIRNIEHH-----QCS-D-DLNPTENHATERHP 255
Rattus_norvegicus DEGKLNSAKKAACDFSE-GIRNIEHH-----QCSDKDLNPTENHATERHP 256
Homo_sapiens      DEISLDSAKKAACEFSETDVTNTEHH-----QPSNNDLNTTEKRAAERHP 258
Pan_troglodytes   DEISLDSAKKAACEFSETDVTNTEHH-----QPSNNDLNTTEKRATERHP 258
Macaca_mulatta    DETSLDSAKKAACEFSEKDIITNTEHH-----QSSNNDLNTTEKHATERHP 258
Callithrix_jacchus DETSLDSAKKAPCEFSEKDIITNTEHH-----QSSNNDLNTTEKHATERHP 258
Canis_lupus_familiaris AEASLNPAKKAACEFSG-DITNIEHH-----QSGNKDLTTTEKHATKKHP 311
Felis_catus       AEASLNPAKKAACEFSE-DITNIEHR-----QPSNKDLTATEKHATEKHP 257
Equus_caballus    AEASLNPTKKAACEFSEKAITNIEHH-----QSSNKDLTTTEKHAAEKHP 258
Bos_taurus        AKTNLNPAAKKAACEFSEKDIITNTEHH-----QLSIKDLITTEKHATEHP 258
Rhinatrema_bivittatum LGADLNHDDKERERLSGRPEAKVPLSAKCFSEKNLNSRRTPPQAEDIQAFPVTAQAEEN 278
Xenopus_tropicalis DMEAMVGSDDAECEFSETAERTGSNLP-----G 306
      .....310.....320.....330.....340.....350.....360

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Pavo_muticus      -SPLNVFDADLLTEQCDGIGNASPLKNNDAFSKNAEEMD-AEETQCSSKNOELDLIEDNS 331
Pavo_cristatus    -SPLNVFDADLLTEQCDGIGNASPLKNNDAFSKNAEEMD-AEETRCGSKNOELDLIEDNS 331
Gallus_gallus     -SPLNVFDADLLTGQRDGIGNASPLKN-DTSFLKNAEEMD-VEETQCASHKNOELDLIEDSS 331
Chelonia_mydas    KESQGISASNSQAEQRDRATANASSLLNEDTSLFHSAEEMD-AGETPFSSSENKESGLAHS 341
Mus_musculus      EKCQSSISISINVCVEPCGTDHASSLOPETSSILLIIEDRMN-AEKAFCNKSQOPGLAVSQ 314
Rattus_norvegicus EKCPRISVANVHVEPCGTDARASSLQGRTRSLLFTEEDRLD-AEKAFCDRSKQSGAAVSQ 315
Homo_sapiens      EKYQGSSSVSNLHVEPCGINTHASSLOHENSLLLTCKDRMN-VEKAFCNKSQOPGLARSQ 317
Pan_troglodytes   EKYQGSSSVSNLHVEPCGINTHASSLOHENSLLLTCKDRMN-VEKAFCNKSQOPGLARSQ 317
Macaca_mulatta    EKYQGSSSVSNLHVEPCGINTHASSLOHEN-SLLLTCKDRMN-VEKAFCNKSQOPGLARSQ 316
Callithrix_jacchus EKYQGSSSVSNLHVEPCGINTHASSLWHENSLLLTCKDRLN-VEKAFCNKSQOPGLARSQ 317
Canis_lupus_familiaris EKYQGISVSNLHVEPCGINTHASSLOHENSLLLTCKHRMN-VEKAFCNKSQOPGLARSQ 370
Felis_catus       EKYQGISVSNLHVEPCATNTRASSLOHENSLLLTCKGRMN-VEKAFCNESQOPGVARSQ 316
Equus_caballus    EKYQGISVSNLHVEPCGINTHASSLOHENSLLLTCKDRMN-VEKAFCNKSQOPGLAKSQ 317
Bos_taurus        EKYQGISVSDFHVEPCGTDTHASSLOHENSLLLTENRLN-VEKAFCNKSQOPVLVKSQ 317
Rhinatrema_bivittatum RRENDSTRASDSQVEQCESSVNPSSLONDAESFIWHVKGASAPAKNQLDKKSKWPNWDRRO 338
Xenopus_tropicalis SDGPGCITETSAETNVNTAANSNIYAREAEQYLN-----EHLCRFKQDIADRVHQR 357
.....370.....380.....390.....400.....410.....420

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Pavo_muticus      ESRLDKIKEKGICVPSVEDVEMYEPMNDSLPGKEPPVEKLLQPKIPRCPALHEVSRKRLK 391
Pavo_cristatus    ESRLDKIKEKGICVPSVEDVEMYEPMNDSLPGKEPPVEKLLQPKIPRCPALHEVSRKRLK 391
Gallus_gallus     EGRLDKIKEKDCICVPSVEDVEMCEPMDDSLLEKEPPVEKLPQKIPHCPTLNEVSTKRLN 391
Chelonia_mydas    ENQLDKSKKSGNGVQHTAEVETCQPESNSLHEREPASESLLQPKTLHGNPLSQVSGKRLK 401
Mus_musculus      QSRWAASKGTCDNRQVPSSTGEKVGPNADSLSDREKWTHPQSLCPENSGA-TTDVPWITLN 373
Rattus_norvegicus QSRWADSKETCNGRPVPRTEGKADPNVDSLCKGRKQWNHPKSLCPENSGA-TTDVPWITLN 374
Homo_sapiens      HNRWAGSKETCNDRRTPSTEKKVDLNADPLCERKEWNKQKLPCSENPRD-TEDVPWITLN 376
Pan_troglodytes   HNRWAGSKETCNDRRTPSTEKKVDLNADPLCERKEWNKQKLPCSENPRD-TEDVPWITLN 376
Macaca_mulatta    HNRWTGSKETCNDRQTPSTEKKVDLNANALYERKEWNKQKLPCSENPRD-AEDVPWITLN 375
Callithrix_jacchus HNRWAESEETCNDRQTPSTEKKVDLDADPLHGRKEWNEQKPPCSEKPRDDTEDVAWLTLN 377
Canis_lupus_familiaris QSRWAESKETCNDRQIPSTEKKVVNADLLCKGRKELNKKPPHSDSPRD-SQDVPWITLN 429
Felis_catus       QSRWAESKETCNDRQTPSTEKKVVLNADPLCRK-LSKQKSPCSDSPRD-SQDVPWITLN 374
Equus_caballus    QSRRAESKETCNDRQAPNSEKLVNADPLYGREELNKKPPRSDSPRD-SQDVPWITLN 376
Bos_taurus        QSRWAESKGTCKDRQIPSTEKKIVLNTDPLYRKELRKQKPCPDSPGD-SQDVPWITLN 376
Rhinatrema_bivittatum QKELGQDAIVCSTGQPMQEGETLKRIDIVLYEKELPPLPTPLPELSQSDMCPVSRKRMK 398
Xenopus_tropicalis NQHCGNVFVFNLETNFDDEETIETDFDNOYDSDNPQONIDPLCK-----VAKLMR 407
.....430.....440.....450.....460.....470.....480

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Pavo_muticus      QSIQKVNEWFSKSNEILSSGSSQNDPAEATDASGEGDIYLSDKDSCIS--EKTNPVDSV 449
Pavo_cristatus    QSIQKVNEWFSKSNEILSSGSSQNDPAEATDASGEGDIYLSDKDSCIS--EKTNPVDSV 449
Gallus_gallus     QSIQKVNEWFSKSSRILSSSSQNDHAEATDASGEGDIYLSDKDSCIS--EKTNPVDSV 449
Chelonia_mydas    RSIQKVNEWFSKSNEMLSSGSSQDAPAGAADTE-DGDSYLSDRESCIS--EKTDLMVNCT 458
Mus_musculus      SSVQKVNEWFSRTGEMLTSDSASARRHESNAEAAVVLEVSNVEDGDFSSSRKTDLVTPDP 433
Rattus_norvegicus SSIQKVNEWFSRTGEMLTSDNASDRRPASNAEAAVVLEVSNVEDGCFSSSKKIDLVAPDS 434
Homo_sapiens      SSIQKVNEWFSRSDELLGSDDSHDGESESNAKVADVLDVLNEVDEYSGSSSEKIDLLASDP 436
Pan_troglodytes   SSIQKVNEWFSRSDELLGSDDSHDGGSESNAKVADVLDVLNEVDEYSGSSSKKIDLLASDP 436
Macaca_mulatta    SSIQKVNEWFSRSDELLSSDDSHDGGSESNAKVADVLDVLNEVDEYSGSSSEKIDLLASDP 435
Callithrix_jacchus SSIQKVNEWFSRSDELLTSDDSHDEGSESNAKVAEAEVLNEVDGYSSSSSEKIDLLASDP 437
Canis_lupus_familiaris SSIRKVNEWFSRSDEILTSDDSHDRGSELNTEVGGAVEVPNEVGEYSGSSSEKIDLMASDP 489
Felis_catus       SSIQKVNEWFSRSDEMLTSDDSHDEGSESNPGVAG-AEVPNVVDGYSGSSSEKIDLMASDP 433
Equus_caballus    SSIQKVNEWFSRSSEMLTSDDSCDGGPESNTEVAGAVEVPNEVGRYSGSSSEKIDLMAGDP 436
Bos_taurus        NSIQKVNDWFSRSDEILTSDDSCDGGSESNNEVAGAVEIPNKVDGYSGSSSEKINLMASDP 436
Rhinatrema_bivittatum RSLQRVNEWLSKNNEMFMSLDATSELYPEIFPSGE-----DESQDSCASNKTELLASPM 453
Xenopus_tropicalis RSTERNVNEVLLKTNESSTLLAEEDSSFS-----VFPLQNKPESEKSGSCSSNDLMPVLH 461
.....490.....500.....510.....520.....530.....540

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      . . . . . * : : * * * : .
Pavo_muticus      EFAA-VERNKRWPQTTYSIEDKIFGKTYERGRKSNPSAILRDILPATKK-DVAVEEDCL 507
Pavo_cristatus    EFAA-VERNKRWPQTTYSIEDKIFGKTYERGRKSNPSAILRDILPATKK-DVAVEEDCL 507
Gallus_gallus     EFav-IERNKRWTQTTYSIEDKIFGKTYERGRKSNPSAILRDILPATKKEDAAAEGL 508
Chelonia_mydas    EVVVGCEndrSLskSTVhNIEDKIFGKTYKRERKSNPLVHTREMLTPKVEDVTTDMKPS 518
Mus_musculus      HHTLMCKSGRDFSKPVEDNISDKIFGKSYQRKGRPHLNHVTE--IIGTFITEPQITO-- 489
Rattus_norvegicus DNAVMCTSGRDFSKPVENIINDKIFGKTYQRKGRPHLNHVTE--IIGTFITEPQITO-- 490
Homo_sapiens      HEALICKSERVHKSksVESNIEDKIFGKTYRRKASLPNLSHVTEENLIIGAFVTEPQITO-- 494
Pan_troglodytes   HEALICKSERVHKSksVESNIEDKIFGKTYRRKASLPNLSHVTEENLIIGAFVTEPQITO-- 494
Macaca_mulatta    HEPLICKSERVHSSSVESNIKDIFGKTYRRKANLPNLSHVTEENLIIGALVTEsQIMO-- 493
Callithrix_jacchus HDALICKSERVHCKSVESNIEDKIFGKTYRRKASLPNLSHVTEENLIIGAFVTEPQITO-- 495
Canis_lupus_familiaris QDAFICESERVHTKPVGGNIEDKIFGKTYRRKASLPKVSHTTEVLIGACAIEPOTMO-- 547
Felis_catus       HDALICESERVHTKPVESNIEDKIFGKTYRRKASLPNLSHTSEDLIIGACAIEPQITO-- 491
Equus_caballus    SSALICESERVHRSKPVENIEDKIFGKTYRRKASFPNLSHITEDLIIGASAIEPQITO-- 494
Bos_taurus        HGTLIH--ERVHskPVESNIEDKIFGKTYRRKSSLPNFSHIAEDLILGAFTVEPQITO-- 492
Rhinatrema_bivittatum ETSDLHNPdIFLSKpAMISIEDKVFgKTYKREKLNPSLNVsFLMENRSIDDVATIAS-- 511
Xenopus_tropicalis KHAEQGTSGSVFDKQAVG-VKDKIFCKVYKROQKSLPPNNITCVVEVHRDSSFGTGTEN- 519
      .....550.....560.....570.....580.....590.....600

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      . . ** * : * : . : : .
Pavo_muticus      GNSRKDRLKRRKPAHVLQPEDFIKKDLLEADRCPGINSSLG--DAEKKKCHENSavK 565
Pavo_cristatus    GNSRKDRLKRRKPAHVLQPEDFIKKDLLEADRCPGINSSLG--DAEKKKCHENSavK 565
Gallus_gallus     NNSRKDRLKRRKsACILQPEDFIKKDLLEADRCPGIGKSSLG--DAEKKKCHENSavK 566
Chelonia_mydas    SNSRTSKLKRKRKTASDLQPADFIKKRDEKDLKKHSEGVNQCIvGRNARWKKGGEGSTVv 578
Mus_musculus      EQPFTNKLKRKR--STSLQPEDFIKKADSAGVQRTPDNINQGTDLMEpNEQAVSTTSNCQ 547
Rattus_norvegicus EQPFTNKLKRKR--STCLHPEDFIKKADLTvvQRISENLNQGTDOMEpNDQAMSITsNGQ 548
Homo_sapiens      ERPLTNKLKRKRRTSGLHPEDFIKKADL-AVQKTPEMINQGTNQTEQNGQVMNIITNSGH 553
Pan_troglodytes   ERPLTNKLKRKRRTSGLHPEDFIKKADL-AVQKTPEMINQGTNQMEQNGQVMNIITNSGH 553
Macaca_mulatta    ERPLTNKLKRKRRTSGLHPEDFIKKADL-AVQKTPEIINQGTNQMEQNGQVMNIITNSAH 552
Callithrix_jacchus EHPLTNKLKRKRRTSGLHPEDFIKKADL-AVQKTPEKINQGTNQMERNDQVMNIITNSGH 554
Canis_lupus_familiaris THPFMNKAehKRRTSSLHPEDFIKKVELGIVPKTPEKLIeGINQIKRDGHVINITNNGP 607
Felis_catus       AYPLTNKTKRKRRTSAGLHPEDFIKKVDLAIvQKTPEKLIeGTDRIQNGHVMNRIITNNGP 551
Equus_caballus    ERSLTNRVKKKRRTSSGLHPEDFIKKVDLAVvQKTPEKIIeGTDQIEQNSHVMNIITPNGH 554
Bos_taurus        EQPLTNKLKCRKRRTSGLQPEDFIKKVDLTIVPKTPEKMTeGTDQIEQKCHGMNIITSDGH 552
Rhinatrema_bivittatum -NPTKSNLKRKRKKVYDLQPEDFIQIDKKGEDEVSEIINSCIVQRNPKIKENPKEDAVD 570
Xenopus_tropicalis KTLRMDQLMCKRKIAHGLNPNLAITNGSINTYp-DDCISEADVEQDAQSKACSELADAD 578
      .....610.....620.....630.....640.....650.....660

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      . : : .
Pavo_muticus      ENPLLEKRKG----STLAEfKEGGLQWKNATEKvSGKHCDGQLELNncDQKST-----K 615
Pavo_cristatus    ENPLLEKRKG----STLAEfKEGGLQWKNATEKvSGKHCDGQLELNncDQKST-----K 615
Gallus_gallus     ENPLLEKRKG----STLAEfKERGLQWKNAAEKvSGKCDGQLELNncDQKST-----K 616
Chelonia_mydas    NGSPMGVKNGD-NISAEfSLREGESILKNDTEKvTCNSTDGKPAQDTCDRKNt-----K 631
Mus_musculus      ENKIAGSNLOKEKSAHPTESLRKEPASTAGAKSISNSVSDLEVLNVHSSK----- 598
Rattus_norvegicus ENRATGNDLQGRNAHPIESLRKEPAFTAKAKSISNSISDLEVLNVHSSK----- 599
Homo_sapiens      ENKTKGDSIQNEKNPNPIESLEKESAFKTKAEPISSSISNMELELNiHNSK----- 604
Pan_troglodytes   ENKTKGDSIQNEKNPNPIESLEKESAFKTKAEPISSGISNMELELNiHNSK----- 604
Macaca_mulatta    ENKTKGDSIQNEKNPNPIESLEESAFKTKAEPISSSISNMELELNiHNSK----- 603
Callithrix_jacchus ENKTKGDSIQNENPNPNVESLEKE-SFRSKAEPISSSISNMELELNiHNSK----- 604
Canis_lupus_familiaris ENETEGDYVQKEKNANPTESLEKESAFRTKTEPMSSRISNMELELNSSSSK----- 658
Felis_catus       ENGTKGDYVQKEKNAPTESLEKESAFRTKAEPISSNISNMESELNshSSR----- 602
Equus_caballus    GNETKGDYVQNEKNANLTESLETESAFRTKAEPISSSIGNLELELNiHNSK----- 605
Bos_taurus        ENKTKRDYVQKEQNANPAESLEKESVFRTEAEPISSISNMELELNiHNSK----- 603
Rhinatrema_bivittatum GSWPSCERETD--GGSDFFPVQESSAGKAETEQEKSNMKIIEPOSNTHDQESNKAKIYNT 628
Xenopus_tropicalis QSE-----LVHCITYTVDGNTPKKRCVESLANALETREEQKKLSCER----- 619
      .....670.....680.....690.....700.....710.....720

```

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/BRCData.ms Tue Feb 1 11:31:58 2022

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      .               :       .       :
Pavo_muticus      NACS-AAKGCRPSSRTGCAIHLIVDRNPGS-----FDPAEPLIDSYPSSEE 660
Pavo_cristatus    NACS-AAKGCRPSSRTGCAIHLIVDRNPGS-----FDPAEPLIDSYPSSEE 660
Gallus_gallus     NACS-TAKGCRHSTRTRCAIH-LVDRNPGS-----FDLAEPLINSYPSNEE 660
Chelonia_mydas    KMRSSLTKRSRHSARPVICALQLVVDNRSSC-----PDQTELOIDSYPSSEE 677
Mus_musculus      -APKKNRLRRKSSIRCALPLEPIS--RNPS-----PTCAELOIDSCGSSEE 642
Rattus_norvegicus -APKKNRLRRKS--TRCVLPLEPIS--RNPS-----PTCAELOIESCGSSEE 642
Homo_sapiens      -APKKNRLRRKSSSTRHIALELVVSRNLSP-----PNCTELOIDSCSSSEE 649
Pan_troglodytes   -APKKNRLRRKSSSTRHIALELVVSRNLSP-----PNCTELOIDSCSSSEE 649
Macaca_mulatta    -APKKNRLRRKSSSTRHIALELVVSRNLSP-----PNCTELOIDSCSSSEE 648
Callithrix_jacchus -ASKKNRLRRKSSSTRHIALELVVSRNLSP-----PNYTEVOIDSCSSSEE 649
Canis_lupus_familiaris -APKKNRLRRKSSARHTCALEFVNRLNP-----PDHSELQIESCGSSEE 703
Felis_catus       -APKENRLRRKSSSTRHMRALVVRNRPSP-----PDHTELOIDSCSSSEE 647
Equus_caballus    -APKKNRLRRKSSCTKQIHLELVVSKNPSP-----PNHTELOIDSCSSSEE 650
Bos_taurus        -APK--NRLKRKSSSTRKIPELELVVSRNPSP-----PNHTELPIDSSSSNEE 647
Rhinatrema_bivittatum VPRKKSSEKSKHLTQTAAQALQVGEFEFGRGQHSIVDGSLSQIPYNQTELOIDSYPSSEE 688
Xenopus_tropicalis -SQKKKCCTWAVQSVASEPETRLLQSSCG-----HLDLLLVSSQSIDD 661
      .....730.....740.....750.....760.....770.....780

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      :       .       : *::
Pavo_muticus      PSK-VDCEQRQVRRSRRLOLLSEETKETG-KLRVKEARNSDSGPGGSVSGVERNVLVP 718
Pavo_cristatus    PSK-VDCEQRQVRRSRRLOLLSEETKETG-KLRVKEARNSDSGPGGSVSGVERNVLVP 718
Gallus_gallus     PSK-ADCERRQVRRSRRLOLLSEETKETG-KMRVKEAKNSDSGPEGSVFGVERNVLVH 718
Chelonia_mydas    PKK-VDSENKRVRSSRRLOLLTEKMTKETRRRS ESNERARKHASESKDSSSGLQMNALVH 736
Mus_musculus      TKK-NHSNQPPAGHLREPOLIEDTEPAADAKK--NEPNEHIRKRRASDAFPPEKLMNKAGL 700
Rattus_norvegicus TKK-NNSNOTPAGHIREPOLIEDTEPAADAKK--NEPNEHIRKRRASDAFPPEKLMNKAGL 700
Homo_sapiens      IKK-KKYNQMPVRHSRNLQLMEDKEPATGAKKSNKPNEQTSKRHSDTFPELKLTNAPGS 708
Pan_troglodytes   IKK-KKYNQMPVRHSRNLQLMEDKEPATGVKSNKPNEQTSKRHSDTFPELKLTNAPGS 708
Macaca_mulatta    IKK-KKYNQMPVRHSRNLQLMEDKESATGAKKSNKPNEQTSKRHSDTFPELKLTKVPGS 707
Callithrix_jacchus LKK-KKYNQMPVRHSRKLQLMEDKERSTGAKKSSKNEQ--SKRHASDTFPELRLTNIPDS 707
Canis_lupus_familiaris MKK-QHLDQVPVRHNKTLQLMQDKEPAGRAKSSKPGEQINKRLASHAFPELTLTNVSGF 762
Felis_catus       MVKRKSSEQMLVRHSKTLQLVENKEPAPGAKKRKPSKQINKRLASNTFPELNLTNIPGV 707
Equus_caballus    MKK-KNSDQMPVRHSKKLQLMEDKEPATGAKKSNKPNEQINKRLASDAFPPELKLTNIPGF 709
Bos_taurus        MKK-KHSSQMPVRQSOKLQQLIGDKELTAGAKN--NKTYEQINKRLASDAFPPELKLTNIPGY 705
Rhinatrema_bivittatum ASK-AKVEQRRVRRSRRLOLLAEETS--KEAKSGNLEKQKVLDDNEDLLELRGGHTSGL 745
Xenopus_tropicalis PKN---VINQVRRSRRLOMLPGLLEKAISNAGFEPKIKNANQQONGIQSSKFKVKEKNP 717
      .....790.....800.....810.....820.....830.....840

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      .               :
Pavo_muticus      SSQRKDLRKQDILSY---MSLTDONGADLEAKGIWISPKNSAD-MAKNRSLFNPTFSCQ 774
Pavo_cristatus    SSQRKDLRKQDILSY---MSLTDONGADLEAKGIWISPKNSAD-MAKNRSLFNPTFSCQ 774
Gallus_gallus     NSQCKDLRKQDILSY---MSLADRNGADLEANGIQISSKNSSD-MAKNRSFFNPTFSCQ 774
Chelonia_mydas    VPECKDPDEQDVLNHSIPLSDTDLKGNALEVDKTPPNPENCSDGMQTKGKLLYDEISVE 796
Mus_musculus      LTSCSSPRKSPQGPVNPS---PORTG-TEQLETRQMSDSAKELGDRVLGGEPGSKTIDRSE 756
Rattus_norvegicus LTSCSSPRKSPQGPVNPS---PERKG-IEQLEMCQMPDNNKELGDLVLGGEPGSKPTPESE 756
Homo_sapiens      FTKCSNTSELKEFVNPS---LPREEKEEKLETVKVSNNAECPKDLMLSGE-RVLQTERSV 764
Pan_troglodytes   FTNCSNTSELKEFVNPS---LPREEKEEKLETVKVSNNAECPKDLMLSGE-RVLQTERSV 764
Macaca_mulatta    FTNCSNTSELKEFVNPS---LSREEKEEKLETVKVSNNAKDPKDLMLSGE-RVLQTERSV 763
Callithrix_jacchus FTNCSNTSELKEFVNPS---LPREEKE--KLETVKLSNDAKDPNDLMLSGE-SVLQTERSV 762
Canis_lupus_familiaris FANYSSSSKPOECINPG---LRREEIEESRRMTQVSDSTRDPKELVLSGG-RGLQTERSV 818
Felis_catus       FTNCSSSNTLQEFVNPG---IQREELEESRGTHIVSDRTRDPKALVSSGG-RSLQTERSV 763
Equus_caballus    FTNCSSSNKLHEFVNPS---LQREEIEQNLGANRLSNSAKDPKDLILSGG-KCLQAERSV 765
Bos_taurus        FTNCS--KPEEFVHPS---LQRE---ENLGTIQVNSTKDPKDLILREG-KALQTERSV 756
Rhinatrema_bivittatum ALVCSSESQGHKDVTDCEYWSVDVQKEKELDIAKKELHFNHENIPMVKNNGNVQLKVERIS 805
Xenopus_tropicalis MSDTVPSQMKKK-----DMFCLPFTSDTDTSMDNGSEEGVPMRKGS 759
      .....850.....860.....870.....880.....890.....900

```

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/BRCData.ms Tue Feb 1 11:31:58 2022

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      :
Pavo_muticus      HSNFNSSPSPKAGSQEGEMLGRLFLLOSPTSMTVLHTASILT-----EEKRSVSCT 823
Pavo_cristatus    HSNFNSSPSPKAGSQEGEMLGRLFLLOSPTSMTVLHTASILT-----EEKRSVSCT 823
Gallus_gallus     LSNFNSSPSPKAGSQEGEMLGKFLFLOSPTSMTVLHAASILT-----EEKRSWSCT 823
Chelonia_mydas    DLNACSVVPDSDTDYDTONSVSVLDHAHTVRYARTGSAQCMTQFVAS-----ENPKELVH 856
Mus_musculus      ESTSVSLVSDTDYDTONSVSILEANTVRYARTGSVQCMTQFVAS-----ENPKELVH 808
Rattus_norvegicus ESTSVSLVSDTDYDTONSVSILEANTVRYARTGSVQCMTQFVAS-----ENPKELVH 808
Homo_sapiens      ESSSISLVPDGYDGTQESISLLEVSTLGKAKTEPNKCVSQCAAF-----ENPKGLIH 816
Pan_troglodytes   ESSSISLVPDGYDGTQESISLLEVSTLGKAKTEPNKCVSQCAAF-----ENPKGLIH 816
Macaca_mulatta    ESSSISLVPDGYDGTQESISLLEVSTLGKAKTERNKCMSQCAAF-----ENPKELIH 815
Callithrix_jacchus ESSSISLVPDGYDGTQESISLLEVSTLGKAKTEPNKCVSQCAAF-----ENPKELIH 814
Canis_lupus_familiaris ESTSISLVLDTDYDGTQDSISLLEADTLRKAKTVSNQQANLCAT-----ENPKPEIH 870
Felis_catus       ESTSISLVDPADYDGTQDSISLLEADTLGKAKTAPNQRVSLCAAI-----ENPKAIR 815
Equus_caballus    ESSGISLVPDGYDGTQDSISLLEADTLGKAKTAPNQCANLCAAI-----ENPKELTH 817
Bos_taurus        ESTNISLVPDGYDGTQDSISLLEADTLGKAKTAPNQCANLCAAI-----ENPKELTH 808
Rhinatrema_bivittatum ESLOFSPVVFHSESQGTDMQNSMSLLQFHTPSIEHPVQIGNNIDPKEKALVETSNELPST 865
Xenopus_tropicalis TRN-----HDKVHCNDGDCDITLLCVTES----- 782
      .....910.....920.....930.....940.....950.....960

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      : * : * : * : * : * : * : *
Pavo_muticus      TFPQDKGCCSQNVPEFRIEKSPMAKNASELTIEAEDSELDMOYLRIFRSSSKRQSFSLY 883
Pavo_cristatus    TFPQDKGCCSQNVPEFRIEKSPMAKNASELTIEAEDSELDMOYLRIFRSSSKRQSFSLY 883
Gallus_gallus     VFSQDKGCCSRNVPKDFRIKSPMAKNASELTIEAEDSELDMOYLRIFRSSSKRQSFSLY 883
Chelonia_mydas    CSPKTNRHCTENYLESFRNSKSHEAKIVSELNLTETEDSELETOYFRNMFHRHSKRISFTLH 916
Mus_musculus      G-SNNAGSGTEGLKPLR---HALN-LSQEK-VEMEDSELDTOYLQNTFQVSKRQSFALF 862
Rattus_norvegicus G-SNNAGSGSECFKHPLR---HELN-HNQET-IEMEDSELDTOYLQNTFQVSKRQSFALF 862
Homo_sapiens      GCSKDNRRNDTEGFKYPLG---HEVN-HSRETSIEMEESELDAQYLQNTFKVSKRQSFALF 872
Pan_troglodytes   GCSKDNRRNDTEGFKYPLG---HEVN-HSRETSIEMEESELDAQYLQNTFKVSKRQSFALF 872
Macaca_mulatta    GCSKDNRRNDTEGFKYPLG---SEVN-HSQETSIEIESELDAQYLQNTFKVSKRQSFALF 871
Callithrix_jacchus GCSKDNRRNDTEGFKYPLG---PEVN-YSQETSIDMEESELDAQYLQNTFKVSKRQSFALF 870
Canis_lupus_familiaris GCSKDNRRNDTEGFKYPLG---CKDN-HTQETSIEIESELDAQYLQNTFKVSKRQSFALF 926
Felis_catus       GCSKDNRRNDTEGFKYPLG---REDN-HTQETSIEIESELDAQYLQNTFKVSKRQSFALF 871
Equus_caballus    DCSKDNRRNDTEGFKYPLG---REVN-HTQETSIEIESELDAQYLQNTFKVSKRQSFALF 873
Bos_taurus        RDKFKDKNNTQGVKDLPLG---HDINYVIOETSRMEDSELDTOYLQNTFKVSKRQSFALF 865
Rhinatrema_bivittatum SMKCFRDNLDENSKSKEP---PGTENALQDANPETEDSEVDIQYLLKTFKGAKRMSFILQ 922
Xenopus_tropicalis -----DVQPNDKETEESELETOQIVKMFKTSKRSTFILD 816
      .....970.....980.....990.....1000.....1010.....1020

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      .
Pavo_muticus      P---TPMKACTTDDVASEKLNSTSC-----SDQVEKRYSK-YLKTENLQEEKTTAENLSS 933
Pavo_cristatus    P---TPMKACTTDDVASEKLNSTSC-----SDQVEKRYSK-YLKTENLQEEKTTAENLSS 933
Gallus_gallus     P---TPMKACTTDDVASEKLNSTSC-----PDQVEERNKSK-YLKTENLQEEKTTAENLSS 933
Chelonia_mydas    P---SPVKESVTESTASETLRKSG-----ASSVEYRHNNSDLKNEPPYVKKTAGLDAVC 967
Mus_musculus      SKPRSPQKDC---AHSVPSKELSPKVTAKGQKE-ROGQEEFEISHVQAVATVTVGLPVP 917
Rattus_norvegicus SKLRSPQKDCITLVGARSVPSPREPSPKVTSRGEQKE-ROGQEEFEISHVQAVATVTVGLPVP 921
Homo_sapiens      SNPGNAEEECATFSAHSGSLKKQSPKVTFECEQKEENOGKKNESNIKPVQTVNITAGFPVV 932
Pan_troglodytes   SNPGNPEEEECATFSAHCSRSLKKQSPKVTFECEQKEENOGKKNESNIKPVQTVNITAGFPVV 932
Macaca_mulatta    SNPGNPEEEECATFSAHCSRSLKKQSPKVTSECEQKEENOGKKNESNIKPVQTVNITAGFPVV 931
Callithrix_jacchus SNPGNPEEEECATFSAHSGSLKKQSPKVTLECEQKEENOGKKNESNSEPVETVNTAGFPVV 930
Canis_lupus_familiaris SYPRDPEEDCVTVCPRSAGFGKQGPVKVLECGQKEESQKKESSEIRHVQAVHTNAGFSAV 986
Felis_catus       SNPGNPEEEECATFSAHSGSLKKQSPKVTLECEQKEENOGKKNESNSEPVETVNTAGFPVV 931
Equus_caballus    SNPGSPEKKCATVFAHSGSLRDQSPRDPLKCRQKEDSQKKESSEIRHVQAVHTNAGFPVV 933
Bos_taurus        SNPGNPEEEECATVFAHSGSLRDQSPRDPLKCRQKEDSQKKESSEIRHVQAVHTNAGFPVV 925
Rhinatrema_bivittatum PCSEHEPVTKTLTSETSRQPNVSNIEKSSEKQIEPPEFDMFSSKSVSGVVITCEADGKN 982
Xenopus_tropicalis SRAAEVAEVTLLSSDILQVK-----ASYDVEYRDVSSLGSAKEQSSA 858
      .....1030.....1040.....1050.....1060.....1070.....1080

```



# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Pavo_muticus      VPEKFETCESAC----VSPVSCFVSSAECAHAAENQEDVSKVANHGNTTLTLMCAARNE 989
Pavo_cristatus    VPEKFETCESAC----VSPVSCFVSSAECAHAAENQEDVSKVANHGNTTLTLMCAARNE 989
Gallus_gallus     VCEKFETCESAC----VSPVSCFVSSAACVHTVENQ-DVSKVANHGNTTLTLLRICAARNE 988
Chelonia_mydas    ERDEPKTCESAKGISGRSPGIHFSDTECGHVSDDGKNISQVDPQVQLFSPRAATAKIK 1027
Mus_musculus      CQEG-KLAADTMC--DRGCRLCPSSHYSRGENGLSATGKSGISQNSHFQKQSVSPIRSSIK 974
Rattus_norvegicus CQEG-KPGAVTMC--ADVSRCLCPSSHYSRSCENGLNTTDSKSGISQNSHFQKQSVSPIRSSIK 978
Homo_sapiens      GQKD-KPVDNAKCSIKGGSRFCLSSQFRGNETGLITPNKHGLLQNPYRIPPLFPKISFVK 991
Pan_troglodytes   CQKD-KPVDYAKCSIKGGSRFCLSSQFRGNETGLITPNKHGLLQNPYHIPPLFPKISFVK 991
Macaca_mulatta    CQKD-KPVDNAKCSIKGGSRFCLSSQFRGNETGLITPNKHGLLQNPYHIPPLFPKISFVK 990
Callithrix_jacchus CQKD-KPVDYAKG-IEGGSGLCLSSQFRGNETGLIIPNKHGLLQNPYHIPPLIPTRSFVK 988
Canis_lupus_familiaris SOKAKKPGDFAKCSIKGVSRCLSSQFKGKETELLIANYHGISQNPYHIPPLSPIRSCVK 1046
Felis_catus       SOKVEKPGDYAKCSIKGVPGLCQSSQFRGNETELFIANNHDISKNPYHIPPLSPIRSSVN 991
Equus_caballus    CQKDKKPGDYVKCSTKEASRLCQSSQFRGNETELITANKHGISQNPYIPSLSPIRSSVK 993
Bos_taurus        DQDRTPGDDAKCSAKEVTRVCQSSQLRGHKTTELVFANKQGVSEKPNLIPSLSPIKSSVK 985
Rhinatrema_bivittatum CDASGSEHSTKSTKTTTENSCLNDKDCVPATKDNFSENHEVSPSMRKTSTIKARNRNRL 1042
Xenopus_tropicalis LTNESSPSS-----EPKSSSLPWHKKRQQAQSKHG 890
.....1090.....1100.....1110.....1120.....1130.....1140

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```

Pavo_muticus      GKNGP---RKAEQGSEETLSTDIGVESKLRNLPVRNRSQSDQSNTEERAFQRTIDLNTV 1045
Pavo_cristatus    GKNGP---RKAEQGSEETLSTDIGVESKLRNLPVRNRSQSDQSNTEERAFQRTIDLNTV 1045
Gallus_gallus     DGNRP---QKGEQGSSEKTLSTDIGVESKLRNLPVRNRSQSDQSNTEERAFQRTGLNAV 1044
Chelonia_mydas    SRSRSL---QKRRQPKKRISPEMVIESQLSONLNKNGSLGDSQSNIEERISQRTDLSTI 1085
Mus_musculus      TDNRKP---LTEGRFRERTSSTEMAVGNENILQSTVHTVSLNN-RGNACQEQAGSG----- 1025
Rattus_norvegicus TDNRKT---LTEGRFEKHT---ERGMGNETAVQSTIHTISQNN-RGDACQEQAGSG----- 1026
Homo_sapiens      TKCKKN---LLEENFEEHSMSPEREMGNEN-IPSTVSTISRNNIRENVFKEASSSNINEV 1047
Pan_troglodytes   TKCKKN---LLEENFEEHSMSPEREMGNEN-IPSTVSTISRNNIRENVFKEASSSNINEV 1047
Macaca_mulatta    TKCNKN---LLEENSEEHSMSPERAVGNENIIPSTVSTISHNNIRENAFKEASSSNINEV 1047
Callithrix_jacchus TKYKKN---LLEENSEEHSMSPERAMGNKIIPSTVSTISHNN-RENAFKETSSSSSINEV 1044
Canis_lupus_familiaris TLCQEN---LSEEFQEHSMSPERAVGNERNVIOSTVSTISQNNIRECASKEVGSSSVNEV 1103
Felis_catus       AVCKKN---LSEEFQERSMSPERAVGNESVIOSTVNTISQNNIRENTFKEVSSSSVNEV 1048
Equus_caballus    TVCQKN---LPEGKLEEQSLSPERAMGNESIVQSTVSTISQNNIRESTLKEVSSS----- 1045
Bos_taurus        TICKKS---PSE-KFEETVSTISPERALGSEIIQSAVSTISQNNIQSTFKEVSSNSVNEV 1041
Rhinatrema_bivittatum QKRKMLNNCISILPKTILESSSNCEGGENLSELIKISDQFLQSDADLNLIDDMKPSRETA 1102
Xenopus_tropicalis KMCRSR-----RENSKPTDNRAKSPITNMSHSN----- 919
.....1150.....1160.....1170.....1180.....1190.....1200

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```

Pavo_muticus      SETYFSSESNPVEKAEEVDGKGPMQHFQSP-MVCPTACQQNPAEFNCKVTEKKSSKREG 1104
Pavo_cristatus    SETYFSSESNPVEKAEEVDGKGPMQHFQSP-MVCPTACQQNPAEFNCKVTEKKSSKREG 1104
Gallus_gallus     SETYFSSESNQVEKAEEVDGKGLMQHFQSP-MLCPTACQQNPAEFNCKVTEKKIITRER 1103
Chelonia_mydas    NET----GSNQGVKAAEAENKGPVLNFQSKPVLVYPVVCQQSPAEFSCVKTEKNSYECE 1141
Mus_musculus      -----SIHEVCSTGDSFPGQLGRNRGPKVNTVPPLDSMOPGVCCQSVVPS-DKYLE 1075
Rattus_norvegicus -----SVIEVHSTGENVQGLDRNRGPTVNTVSLLDSTPGVSKQSAVPS-DKYLE 1076
Homo_sapiens      GSSTNEVGSSINEIGSSDENIQAEIGRNRGPKLNAMLRLGLVLOPEVYKQSLPGSNCKHPE 1107
Pan_troglodytes   GSSTNEVGSSINEVGSSDENIQAEIGRNRGPKLNAMLRLGLVLOPEVYKQSLPGSNCKHPE 1107
Macaca_mulatta    GSSTNEVGSSINEVGSSDENIQAEIGRNRGPKLNAMLRLGLVLOPEVCKQSLPISNCKHPE 1107
Callithrix_jacchus GSSTNEVGSSINEVGSSDENIQAEIGRNRGPKLNAMLRLGLVLOPEVYKQSLPISNCKHPE 1104
Canis_lupus_familiaris VSSTNEVGSSVNEVGSSGENIQAEIGRNRGPKLNAMLRLGLVLOPEVCKQSLPISNCKHPE 1163
Felis_catus       GSSANEVGSSINEVGSSGENIQTELGRNRGPKLSAMLRLGLVLOPEVYKQSLPISNCKHPE 1108
Equus_caballus    --SINEVGSSINEVGSSGEHIQAEIGRNRGPKLNAILRLGLVLOPEVYKQSLPISNCKHPE 1103
Bos_taurus        GSSTNEVGSSVNEVGSSGENIQAEIGRNRGPKLNAILRLGLVLOPEVYKQSLPISNCKHPE 1101
Rhinatrema_bivittatum AHKADRSLKLLLLNSQPEMMLLYATASYLGPAAVNCSASESKTSQGENKQMLTDGYQDA 1162
Xenopus_tropicalis -----TIGQPADLNSPIHGGTGSYKQVINHCPTRENIDGTYIN----- 958
.....1210.....1220.....1230.....1240.....1250.....1260

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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                                * *:***
Pavo_muticus      SLVKGSEEEQVIQTVSSGLSECLV-REALEESLKGRSDFTDLSETPDGLLCSDSDTEDSAS 1163
Pavo_cristatus    SLVKGSEEEQVIQTVSSGLSECLV-REALEESLKGRSDFTDLSETPDGLLCSDSDTEDSAS 1163
Gallus_gallus     SLVKGNEERVIQTVSTGLSEFSV-REALEESLKGRSDFTDLSETPDGLLCSDNDTEESAS 1162
Chelonia_mydas    KOAKSDKEQVSOIASIGVPECLISEEALQPTGTSDFPLLSETPDGLLCSDAGDIKENIS 1201
Mus_musculus      IKKQEG-----EAVCADFSPCLF-SDHLEQSMSC-KVFOVCSETPDGLLD-DVEIQGHTS 1127
Rattus_norvegicus IK-QES-----KAVSADFSPCLF-SDHLEKPMRSDKIFQVCSETPDGLLD-DVEIQENAS 1128
Homo_sapiens      IK-KQEYEEVVQTVNTDFSPYLI-SDNLEQPMGSSHASQVCSETPDGLLD-DGEIKEDTS 1164
Pan_troglodytes   IK-KQEYEEVVQTVNTDFSPCLI-SDNLEQPMGSSHASQVCSETPDGLLD-DGEIKEDTS 1164
Macaca_mulatta    IK-KQEEHELQTVNTDFSPCLI-SDNLEQPMGSSHASQVCSETPDGLLD-DGEIKEDTS 1164
Callithrix_jacchus TK-KQE-HEVVQTVNTDFSPCLI-SDNVEQHMGSSHTCQVCSETPEDLLD-DGEIKEDTS 1160
Canis_lupus_familiaris MKWQGGQSEGAVLSVSADFSPCLI-SDNLEQPMGSSSRSSQVCSETPDGLLN-GDKIKGKVS 1221
Felis_catus       MKRQGENEGVQSVNADFSPCLI-SDNVEQPMESSRASQVCSETPDGLLN-GDEIKGKIS 1166
Equus_caballus    IKRQGEKE-VVQAVNADFSPCLI-SDNLEQPMGSSCASQVCSETPDGLLN-DDEIKENIS 1160
Bos_taurus        IKRQGENEDMPQAVKADFSPCLI-SDNLEQPTGSRHASQVCSETPDGLLN-DDEIKENSH 1159
Rhinatrema_bivittatum IDEDQTAQLTCANSSQHSVAEGFLEYPVLKNSVFNSTASATPDGLLCSDDEVKENC 1222
Xenopus_tropicalis -----ASANGSQSSVTDKSPAHFNTNTNFICDVNSATPDGLLHSDMDNAEGNSS 1006
.....1270.....1280.....1290.....1300.....1310.....1320

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:      .      .      :      * : . : : *
Pavo_muticus      FYVTNRKDTSAVFVKRSGAALVKEVNDVVSCKPRSEGIQR-SRRRAQKLRSSEESS-E 1221
Pavo_cristatus    FYVTNRKDTSAVFVKRSGAALVKEVNDVVSCKPRSEGIQR-SRRRAQKLRSSEESS-E 1221
Gallus_gallus     FYVTNRKDTSAVFVKRSGAAWKEVNDVVSCKPRSEGIQR-FRRRAQLQSSDEESS-D 1220
Chelonia_mydas    ICEIDRKEISAVFVKTGERASLRELDSSSSKERSQNFVREPRPAWKLOSSEEDSS-E 1260
Mus_musculus      FEGGDIMERSAVFNGS-----ILRRESSRSPSPVTHASKSSILHRASRKLESSEESSDSTE 1182
Rattus_norvegicus FEGGGITEKSAIFNGS-----VLRRESSRIPSPVTHASKSRSLHRGSRKLEFSEESSDSTE 1183
Homo_sapiens      FAENDIKESSAVFSKS-----VQKGELSRSPSPFTHTHLAQGYRRGAKKLESSEENLSSE 1219
Pan_troglodytes   FAENDIKESSAVFSKS-----VQKGELSRSPSPFTHTHLAQGYRRGAKKLESSEENLSSE 1219
Macaca_mulatta    FAANDIKESSAVFSKS-----IQRGELSRSPSPFTHTHLAQGYQKEAKKLESSEENLSSE 1219
Callithrix_jacchus FAEYGIKETS AVFSKS-----VQKGELSRSPSPFTHTHLAQVYQRGAKKLESSEENLSSE 1215
Canis_lupus_familiaris FAESDIKEKSAVFSKS-----VQSGEFSRSPSPSDHTRLAQGYQRTKKLESSEENMSSE 1276
Felis_catus       FAES-AKERSAVFGKS-----VQKGFRSRSPSPLDHTRLAQGHQTEIRKLESSEENVSSE 1220
Equus_caballus    FAESGVKERSAVFSKS-----VQKGFRSRSPSPIGRTCLAQGHQRRARKLESSEENTSSE 1215
Bos_taurus        FAESDIKERSAVFSSES-----VQKGFRSGPSPFTHTHLAQGHQRGAKKLESSEENTSSE 1213
Rhinatrema_bivittatum FVQG----KSVVFRESPE---EVNLSKLCSSVSSGSKLAKMCRQARKLESSEDELS-E 1274
Xenopus_tropicalis LGDITTVHDEGKNAHP-----ESFLPSVHRVGLTGKKCIPKVOSSEEGSS-- 1054
.....1330.....1340.....1350.....1360.....1370.....1380

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: : * : :
Pavo_muticus      DEDLPCFQELMFGKSVSTPLQIKKQATSVVQSSANPSMLPCSECLNEDN---EQKITLEAA 1278
Pavo_cristatus    DEDLPCFQELMFGKSVSTPLQIKKQATSVVQSSANPSMLPCSECLNEDN---EQKITLEAA 1278
Gallus_gallus     DEDLPSFQELMFGKSVSTPLQIQKQVTSVVQSSANPSMLPCSECLNENN---EQKITLEAA 1277
Chelonia_mydas    DEELPCFQALIFGKSVSTPLOPTEQIMSTVESSSPEEILALLNSSSGNNKA-VQKSPGVI 1319
Mus_musculus      DEDLPCFQHLLS-RISNTP-ELTRCSSAVTORMPEKAEGTQAPWKGSSD---CNNEVIMI 1238
Rattus_norvegicus DEDLPCFQHLLS-RVSSTP-ELTRCSSVVTQRPVEKAGTQAPRKSSISD---CNNEVILV 1239
Homo_sapiens      DEELPCFQHLLFGKVNINPSQSTRHSTVATECLSKNTEENLLSLKNSLND---CSNQVILA 1277
Pan_troglodytes   DEELPCFQHLLFGKVNINPSQSTRHSTVATECLSKNTEENLLSLKNSLND---CSNQVILA 1277
Macaca_mulatta    DEELPCFQHLLFGKVNINPSQSTRHSTVATECLSKNTEENLLSLKNSLND---CSNQVILA 1277
Callithrix_jacchus EEELPCFQHLLFGKVNINPSQSTRHNTVAIECLSKNTQENLLSLKNSLND---CSNQVILA 1272
Canis_lupus_familiaris EEELPCFQHLLIFGKVTNMPQSQSTSHNAVAAEGLSNKTEENLLSLKNSLSD---ISNQVPSA 1334
Felis_catus       EEELPCFQHLLFGKVTNIPQSQSTSHNAIATEGLSKKTEANLESILKDSLHD---CSNQVISA 1278
Equus_caballus    DEELPCFQHLLFGKVTNIPQSQSTSH-AAATEGLSKKTEESLVSLQNSLDD---CSHQVALA 1272
Bos_taurus        DEELPCFQQLLFGKVTNIPQSQSTSH-AAATEGLSKKTEESLVSLQNSLDD---CSHQVISA 1271
Rhinatrema_bivittatum DEDLPCFORIFKQTSPTSHSASQGIPTMSSEDSRKCQGESLFLVSSNVTGENEKKLFGSP 1334
Xenopus_tropicalis GDDLGSQGLFCQKSKCVSSGATDQKNSKNPQNAQRNLPDFSGSSNSGK---YNSREML 1111
.....1390.....1400.....1410.....1420.....1430.....1440

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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	. . :. ** . :*** .	.	.
Pavo_muticus	LSNECVSPSQESECNVNLFSSQSNVSEESVDGAQELKKILT-----QVSNINKSKEALQ	1332	
Pavo_cristatus	LSNECVSPSQESECNVNLFSSQSNVSEESVDGAQELKKILT-----QVSNINKSKEALQ	1332	
Gallus_gallus	LSNECASPQEQESECNVNLFSSQSNMSEESVDGAQELKKILT-----QVSNVKKSKEAPQ	1331	
Chelonia_mydas	LRDTCVSPSQESECNVNLFSSQSNMSSEDSTNRLQELKPKITLAPCSKEMSSFSGSREASP	1379	
Mus_musculus	EASQEHQFSEDPRCSGSMFSSQHSAAQGSTANANSQDSNFIP--PSKQRSHOCGNEEAFL	1296	
Rattus_norvegicus	EASQEYQFSEDAKCSGSMFSSQHSAALGSPANALSQDPDFNP--PSKORRHOAEENEEAFL	1297	
Homo_sapiens	KASQEHHLSEETKCSASLFSQCSELEDLTANTNTQDPFLIG--SSKOMRHQSESQGVGL	1335	
Pan_troglodytes	KASQEHHLSEETKCSASLFSQCSELEDLTANTNTQDPFLIG--SSKOMRHQSESQGVGL	1335	
Macaca_mulatta	KASQEHHLSEETKCSGSLFSQCSELEDLTANTNTQDPFLIG--SSKMRMHQSESQGVGL	1335	
Callithrix_jacchus	KASQEHHLSEETKCSGSLFSQCSELEDLTANTNTQDPFLID--SSKQKRHQSESQGVGL	1330	
Canis_lupus_familiaris	KASQEHHLSEEARCSCGSLFSQCSALEDLTVNTNTQDPFMSFDPTSKQVRHQSENLDV-L	1393	
Felis_catus	KESQEHHLSEEARCSCGSLFSQCSASEDSAVNTNTQDPFLMFDPSPSKQVRHQSENVDV-L	1337	
Equus caballus	EACQEHHLSEEARCSCGSLFSQCSALEDLPANNTQEPVLMFDPSPSKQVREQSENHEV-V	1331	
Bos_taurus	KVSQEHHLNEEARCSCGSLFSQCSAMEDLTNTNTQDPFLMFERPSPKQVY-QSESEEV-L	1329	
Rhinatrema_bivittatum	SREEVPSPSPESVCNVNLFSSQSNGSEDFVYGAEPPKVPLAITSGHRCRRSQSKRMVNLR	1394	
Xenopus_tropicalis	CKAVFPSPSLSQESCQSVLSFSSQLSNMQSQSANEDHKLQ-----GGGLGPSRTTEITI	1163	
	.....1450.....1460.....1470.....1480.....1490.....1500		

		..	.*..	*	*...*	
Pavo_muticus	GCSGGLKRRK-----NNSSDEYQEDPNTGANLG-EASGHDSETSRVEDSREPFSSQGEILS					1386
Pavo_cristatus	GCSGGLKRRK-----NNSSDEYQEDPNTGANLG-EASGHDSETSRVEDSREPFSSQGEILS					1386
Gallus_gallus	SCSGGLKRLK-----NNLNDEYQEDPNMGANLG-EASGYDSSETSRVEDSHEPFSQGEILS					1385
Chelonia_mydas	NGNEELTGRK-----TDLEDGHORDNAQPNLG-EASGYDSEASHQGDSSGLSSSQGEILT					1433
Mus_musculus	SDKELISDNE-EMATCLEEDNDQEDSIIPDS--EASGYESETNLSSEDCS----QSDILT					1349
Rattus_norvegicus	SDKELISDHE-DMAACLEEASDQEDSIIPDS--VASGYESEANLSEDCS----QSDILT					1350
Homo_sapiens	SDKELVSDDE-ERGTGLEENN-QEEQSMDSNLGEAASGCSETSVSEDCSGLSSSQSDILT					1393
Pan_troglodytes	SDKELVSDDE-ERGTGLEENN-QEEQSMDSNLGEAASGCSETSVSEDCSGLSSSQSDILT					1393
Macaca_mulatta	SDKELVSDDE-ERGTGLEEDN-QEEQSVDNLGEAASGYESETSVSEDCSRLSSSQSEILT					1393
Callithrix_jacchus	SDKELSDDE-ERGDLEEDN-QEEQSMDSNLGEAAGFYESETSITEDCSGLSSSQSDILT					1388
Canis_lupus_familiaris	NDKELVSDDDDEREPGLEEDSPQEEQSVDSDLGEVASGYESETSLSEDCSRLSSSQSDILT					1453
Felis_catus	SDEELVSYDD-EREPGLEEDNHEEEQSVDNLGEAASGYENETSLSEDCSGVSSSQSDILT					1396
Equus_caballus	SDKELVSDDD-EREPGLEEDSHHEEQSVDSLDEVASGYVSETNLSSEDCSGLSSSQSDILT					1390
Bos_taurus	SDKELVSDDE-ERETGLEEDSCQEEQSVDSDLGEAVSDHVSETSLSEDCGVGLSSSQSDILT					1388
Rhinatrema_bivittatum	VEAEVVVKQ-NEELAVLEDDHGDCMEQNLG-EGSGYESEASNTGDSGLSSSQSEILT					1452
Xenopus_tropicalis	SDDEETLTAA-----PDHQNPDIA-EASECESEASHTGDSLLSSSQDELLN					1210
	.....1510.....1520.....1530.....1540.....1550.....1560					

	***: * : . * : * : ** ***** : . : . *	
Pavo_muticus	TQOKNAMONNLKKLQOEMAVLEAVLKQHGSDTELLPLCRELPYSSSGGMLGMEOMR---	1443
Pavo_cristatus	TQOKNAMONNLKKLQOEMAVLEAVLKQHGSDTELLPLCRELPYSSSGGMLGMEOMR---	1443
Gallus_gallus	TQOKNAMONNLKKLQOEMAVLEAVLKQHGSDAEVLPLCRELPYCSIGGTGLGERMR---	1442
Chelonia_mydas	TQOKDAMONNLKELQOEMAVLEAVLEEHGSGQGFEGTTPHSELPPSSRVEGTLAGVOTRPAR	1493
Mus_musculus	TQQRATMKYNIKLQOEMAHLEAVLEQRGNQPSGHSPSLIADPCALED---LPDLEPNMSG	1407
Rattus_norvegicus	TQQRATMKDNLIKLQOEMAQLEAVLEQHGSPSGHPPCLPADPCALED---LPDPEQNRSG	1408
Homo_sapiens	TQQRDTMOHNLIKLQOEMAELEAVLEQHGSPSNSYPSIISDSSALED---LRNPEQSTSE	1451
Pan_troglodytes	TQQRDTMODNLIKLQOEMAELEAVLEQHGSPSNSYPSIISDSSALED---LQNPEQSTSE	1451
Macaca_mulatta	TQQRDTMODNLIKLQOEMAELEAVLEQHGSPSNSYPSIITDSSALED---LRNPEQSTSE	1451
Callithrix_jacchus	TQQRDTMODNLIKLQOEMAELEAVLEQHGSPSHSPSVITVSSAPED---LQNPEQSTSE	1446
Canis_lupus_familiaris	TQQRDTMODNLIKLQOEMAELEAVLEQHESQPSNSPSLIADSCSPED---LNFPEQNTSE	1511
Felis_catus	TQQRDTMODNLIKLQOEMAELEAVLEQHESQPSNSPALIRDSYAPED---LNFLEQNTSE	1454
Equus_caballus	TQQRDTMODNLIKLQOEMAELEAVLEQHGSPSNRSPSLIADCCASED---LLNPEQNTSE	1448
Bos_taurus	TQQRDTMODNLILKLQOEMAELEAVLERHGSQPSHSSASLTADSRGPEH---LLNLEQDTSE	1446
Rhinatrema_bivittatum	TQQRDAMQSNLKKLEQMAALEAVLEQQTQVSKITLGSNLLCRIGNDLKGKTKPKDKGEA	1512
Xenopus_tropicalis	TQQRDYMKDSLKKLQOEMAELEAVLEQHGTONLSAGTACIPSAEHTVYRQEEAVEKEIAQ	1270
	.....1570.....1580.....1590.....1600.....1610.....1620	

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Pavo_muticus          ----- 1443
Pavo_cristatus        ----- 1443
Gallus_gallus         ----- 1442
Chelonia_mydas        GTALISEVNFENHKISSSKGLSADGFHVMPSDHNTKNKELEEEGLRSPALQLSHPKSHL 1553
Mus_musculus          AAILTSKNINENPVSONLKSACDDKFOLQHLEGPTSGDDESGMRPSPFKSPLAGSRGSA 1467
Rattus_norvegicus     TAILTSKNINENPVSONPKRACDDKSQPQPDGLPSGDKESGMRRPSPFKSPLTSRRCSA 1468
Homo_sapiens          KAVLTSQKSSEYPISQNPGLSADKFEVS-ADSSTSKNKEPGVERSSPSKCPSLDDRWMY 1510
Pan_troglodytes       KAVLTSQKSSEYPISQNPGLSADKFEVS-ADSSTSKNKEPGVERSSPSKCPSLDDRWMY 1510
Macaca_mulatta        KAVLTSQKSSEYPINQNPGLSADKFEVS-ADSSTSKNKEPGVERSSPSKCPSLDDRWMY 1510
Callithrix_jacchus    KAVLTSQKSSEYPISQNPGLSADKFEVS-SDSSTSKNKEPGVERSSPSKCPSLDDRWCV 1505
Canis_lupus_familiaris R-VLTSEKSSDSPISQNPESLSTDKFQVF-LDSSTSKNKEPGMIRSSPSQSRLLDTRWYV 1569
Felis_catus           KAVLTSKSSDCLISQNPESLSTDKFQVS-LDSSTSKTKEPGMRRSSPSQSRLLDTRQCV 1513
Equus_caballus        RAVLTSKSSSEYPISQNPENLSADKFOIS-LDSSTSKNKEPGVERSSPSKCPSLDDRWCV 1507
Bos_taurus            RAILTSKSRDYSRQNPESLSTDKFQVS-LDSSTSKNKEPGMERSSASKFQLSYNRWYM 1505
Rhinatrema_bivittatum SFSTWDGEQKQKQIPADGGQAADQPHGNSQEANINSCVFTSRSTPTPTPTPTPTPTPTPT 1572
Xenopus_tropicalis    GDNSIVRTPPK-----PDANGSALIGQSTDNGLQSRNRSMPAPPHFISQTRA 1319
.....1630.....1640.....1650.....1660.....1670.....1680

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Pavo_muticus          -----QETENVVS--DSE 1453
Pavo_cristatus        -----QETENVVS--DSE 1453
Gallus_gallus         -----QETENVSEHDSE 1454
Chelonia_mydas        LKKEALEQGHWCPSLWKAKTHAQEGTFORVGVAVLLEQEAVKQCNOQYRIESENAADEFG 1613
Mus_musculus          HGCSRHLQKRNSPS-----QEELLQPAGEAS--SEPHNSTGQSCLPRELE 1512
Rattus_norvegicus     RGHRSRLQNRNSTS-----QEELLQPVLEKS---CEPHNLTGRSCLPDLE 1513
Homo_sapiens          HSCSGSLQNRNYP-----QEELIKVVDVEEQLEESGPHDLTETSYPDLE 1559
Pan_troglodytes       HSCSGSLQNRNYP-----QEELIKVVDVEEQLEESGPHDLTETSYPDLE 1559
Macaca_mulatta        HSSSGSLQNGNYP-----QEELIKVVDVETQOLEKSGPHDLMEPSYLPDLD 1559
Callithrix_jacchus    HSCSGSLQNGNSPS-----QEELIK-VDVEEQQLDKSGPHDLMEPSYLPDLE 1553
Canis_lupus_familiaris HSCPRSLQDTNCPS-----QKELTKVVSMEEQOPTSEARDLMEQSYLSRPDLE 1618
Felis_catus           RSHSSSLQSTNCLS-----QKELIKAVDGEELQTKSEPRDFMEQSYLPDLE 1562
Equus_caballus        HSHRSRLQNRNCP-----QKEFIKAVDAEEQQLTKSEAQDLMEQSYLPDLE 1556
Bos_taurus            HS-SRSLQDRNCPS-----QKEPINVADMEEQQLAKREAQDLMG-SFLPRDQ 1552
Rhinatrema_bivittatum KKMPEVARCSILLLK-----ELKDNITQEDHSALPERQPDQESSRQCVAGRPT 1621
Xenopus_tropicalis    KNTQERVGPAMGIS-----KVLKKSILVTEHKLEVRPDLETANVM 1358
.....1690.....1700.....1710.....1720.....1730.....1740

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Pavo_muticus          TKLSKASVLPVLPGNVTGNPNSS--SSSVKDPQCPQAEATNSSITVAQ-SDNKSINVQVCKS 1510
Pavo_cristatus        TKLSKASVLPVLPGNVTGNPNSS--SSSVKDPQCPQAEATNSSITVAQ-SDNKSINVQVCKS 1510
Gallus_gallus         TKLTKASVLPVLCGNVTGNPNSS--SFSVKHPCPQAEATDSSAVAQ-GDNKSINVQVCKS 1511
Chelonia_mydas        TKLNTAAVP---CGNESITPNSSPLKFSERLTHCQAEATNSAAISWNANNGKSTQGCKQ 1670
Mus_musculus          GTPYLGSGISLFS---RDPSESPKEPAHIGTTPASTSALKIPQOVA--FRSAAAAGA 1567
Rattus_norvegicus     GTPYLESGISLFS---RDPSESPKVPALVCTAPASTSALKISQGVAGSCRSAPAAAGA 1570
Homo_sapiens          GTPYLESGISLFSDDPESDPSEDRAPEARVGNIPSSSTSALKVPOLKVAESAQSPAAHT 1619
Pan_troglodytes       GTPYLESGISLFSDDPESDPSEDKAPESAHVGNIPSSSTSALKVPOLKVAESAQSPAAHT 1619
Macaca_mulatta        GTPYLESGISLFSDDPESDPSEDRAPEAHVGSIPSSSTSALKVPQWQVAESAQSPAAHT 1619
Callithrix_jacchus    GTPYLESGISLFSDDPESDPSEDRAPESSHAGSIPSSSTSLKVPQFQVAESAQSLAAHT 1613
Canis_lupus_familiaris GAPYLESGISLFSDDPESDPSSHRASELAHVSMPTSTSLKLPQFQVEESAQSTAAVHI 1678
Felis_catus           GTPYFESGISLFSDDPESDFSVDRAPFVHVSMPTSTSLKLPQFQVEESAQSTAAVHI 1622
Equus_caballus        ATPYLESGISLFSHEPESDPSEERALEAAHVCSMPASTSAMKSLQFRVEESAQSPAAHT 1616
Bos_taurus            GTPYLKSGISLFSHEPESDPSEDRAAEPAHVHSMPPSASALKLSQFRVEESTKNPAAHI 1612
Rhinatrema_bivittatum GSTEERETEDKLNSATAHCRNHSHTPSRDALSSSTERPPSCQAGEALISPCIPSRKSTESE 1681
Xenopus_tropicalis    PANPMDAKESSGQSENKSENPIILRNKCSHSQGLFSYMEEAVSPHNPKQSRAEFGIAR 1418
.....1750.....1760.....1770.....1780.....1790.....1800

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                                :.          *:.*.*** .*      : :.*:  :  ::
Pavo_muticus      KRSVCFPTSVLHNAAGKENAASSGTTTYRTAMSIVASGLNRSEHLMVQKFARKTQSTFSNH 1570
Pavo_cristatus    KRSVCFPTSVLHNAAGKENAASSGTTTYRTAMSIVASGLNRSEHLMVQKFARKTQSTFSNH 1570
Gallus_gallus     KRSVCFPTSVLHNVAGKENAASSGTTCTRTEMSIVASGLNQSEHLMVQKFARKTQSTFSNH 1571
Chelonia_mydas    ERRAFSSVSALHTGVVKENAKSPVVTCRRQMSIVASGLNQSELLLVQKFARKTQSTLSNQ 1730
Mus_musculus      D-----KAVVGIVSKIKPELTSSEERADRDISMVVSGLTPKEVMTVQKFAEKYRLTLTDA 1622
Rattus_norvegicus D-----TAVVEIVSKIKPEVTSSKERAERDISMVVSGLTPKEVMTVQKFAEKYRLALTDV 1625
Homo_sapiens      TDTAGYNAMEESVSREKPELTASTERVNKRMSMVVSGLTPEEFMLVYKFARKHHITLTNL 1679
Pan_troglodytes   TNTAGYNAMEESVSREKPELTASTERVNKRMSMVVSGLTPEEFMLVYKFARKHHITLTNL 1679
Macaca_mulatta    TNTAGYNAMEESVSRENPKLTASTERVNKRMSLVVSGLTPEEFMLVYKFARRYHIALTNL 1679
Callithrix_jacchus TNTAGCNAMEENVSRQKPELAASTERVNKRKSMVVSGLTPEELVPMYKFARQHHTLTNQ 1673
Canis_lupus_familiaris ASTAGYNKSEDSVGIEKPEVISSTRGVNKRISMVASGLTPKEFMLVHKFARKHHISLTNL 1738
Felis_catus       TNTAGYNKREDIEGKERPEMMSSTKRVNKRISMVASGLTPKELVLVQKFARRHQITLTNV 1682
Equus_caballus    TNIVGSNVKEDSVSREKPEMISTERVIRRIISMVASGLTPKEFMLVHKFARKHHITLTNL 1676
Bos_taurus        ANTTRCNLREESMSKEKPEVISSTERSKKRLSMVASGLTPKELMLVQKFARKHHVTLTNL 1672
Rhinatrema_bivittatum QKRPAYCMSPFHSRAGTPSFKSPVVTTKRKLSLVASGLAQSELLLVQKFARKTQSVFSNQ 1741
Xenopus_tropicalis KSTSPTFASPSRAKVLSVGIKSPVVSRRNLSFVASGLNQSELAVVQRFSRTTQSILSTR 1478
.....1810.....1820.....1830.....1840.....1850.....1860

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::  ****:*** ::*****  **** *:*** *: :.:* :*: .****:*
Pavo_muticus      ITDGTTHVIIKTDEELVCERTLKYFLGIAGRKWVVSYHWIIQSFKEGRILDEENFEVKGD 1630
Pavo_cristatus    VTDGTTHVIIKTDEELVCERTLKYFLGIAGRKWVVSYHWIIQSFKEGRILDEENFEVKGD 1630
Gallus_gallus     ITDGTTHVIMKTDEELVCERTLKYFLGIAGRKWVVSYQWIIQSFKEGRILDEEHFEVKGD 1631
Chelonia_mydas    ITEGTTHVIMKTDMELVCERTLKYFLGIAGRKWVVSYEWIVQSFKEGKILDEYDFEVRGD 1790
Mus_musculus      ITEETTHVIIKTDAEFVCERTLKYFLGIAGGKWIVSYSWVVRSIQERRLLNVHEFEVKGD 1682
Rattus_norvegicus ITEETTHVIIKTDAEFVCERTLKYFLGIAGGKWIVSYSWVIKSIQERKLLSVHEFEVKGD 1685
Homo_sapiens      ITEETTHVVMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKMLNEHDFEVRGD 1739
Pan_troglodytes   ITEETTHVVMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKMLNEHDFEVRGD 1739
Macaca_mulatta    ITEETTHVVMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKMLNEHDFEVRGD 1739
Callithrix_jacchus ITEETTHVVMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKMLNEHDFEVRGD 1733
Canis_lupus_familiaris ISEETTHVIMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKILDEHDFEVRGD 1798
Felis_catus       ISEETTHVIMKTDAEFVCERTLKYFLGIAGGRWVVSYFWVTQSIKERKMLDEHDFEVRGD 1742
Equus_caballus    VTEETTHVIMKTDAEFVCERTLKYFLGIAGGKWVVSYFWVTQSIKERKVLDEHDFEVRGD 1736
Bos_taurus        ITEETTHVIMKTDEPFCERTLKYFLGIAGGKWVVSYFWVTQSIKEGKMLDEHDFEVRGD 1732
Rhinatrema_bivittatum ITRGTTHVVMKTDADLVCERTLKYFLGIAGRKWVVSYQWIVQCFKEGRILDEHDFEVRGD 1801
Xenopus_tropicalis ITDSTTHVIMKTDAELVCERTLKYFQGIAGRKWVVSYEWVVQSFKEGQVLDEYDFEVRGD 1538
.....1870.....1880.....1890.....1900.....1910.....1920

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::.*  * **:*.* .      :: :.:  ***.*  .*  :  *:*:
Pavo_muticus      VINGRNHQGPKRARQSL-----AEKIFKDFEICCYPFTDMTTGHLEWIVELCGASVVVKQ 1685
Pavo_cristatus    VINGRNHQGPKRARQSL-----AEKIFKDFEICCYPFTDMTTGHLEWIVELCGASVVVKQ 1685
Gallus_gallus     VINGRNHQGPKRARQSP-----AEKIFKDFEICCCGPFTDMTTGHLEWIVELCGASVVVKQ 1686
Chelonia_mydas    VINGRNHQGPKRARRSQ-----TGKLFKDFEICCYPFTDMRTGDLEWMVELCGASVVVKQ 1845
Mus_musculus      VVTGRNHQGPRRRSRESR-----EKLFGLOVYCCEPFTNMPKDELERMLQLCGASVVKE 1736
Rattus_norvegicus VVTGSNHQGPRRRSRESQ-----EKLFEGLQIYCCEPFTNMPKDELERMLQLCGASVVKE 1739
Homo_sapiens      VVNGRNHQGPKRARESQ-----DRKIFRGLEICCYPFTNMPTDQLEWMVOLCGASVVKE 1794
Pan_troglodytes   VVNGRNHQGPKRARESQ-----DRKIFRGLEICCYPFTNMPTDQLEWMVOLCGASVVKE 1794
Macaca_mulatta    VVNGRNHQGPKRARESP-----DRKIFRGLEICCYPFTNMPTDQLEWMVOLCGASVVKE 1794
Callithrix_jacchus VVNGRNHQGPRRRARESQ-----GRKIFRGLEICCYPFTNMPTDQLEWMVOLCGASVVKE 1788
Canis_lupus_familiaris VVNGRNHQGPKRARESQDRESQDRKIFRGLEICCYPFTNMPTDQLEWMVHLCGASVVKE 1858
Felis_catus       VVNGRNHQGPKRARESR-----DRKIFGGLEICCYPFTNMPTDQLEWMVRLCGASVVKR 1797
Equus_caballus    VVNGRNHQGPKRARESQ-----DRKIFRGLEICCCGPFTNMPTDQLEWMVRLCGASVVKE 1791
Bos_taurus        VVNGRNHQGPKRARESR-----DKKIFRGLEICCYPFTNMPTDQLEWMVOLCGASVVKE 1787
Rhinatrema_bivittatum IVNGRVHGGPRRRARQAV-----DRTLFDEICCFGPFTDMSTEHLEWMVELGGALVIKQ 1856
Xenopus_tropicalis VINGRNHRGPPRRSRLGS-----DGLLLKDFEICFSGLFTDMTLDLEWMVSECCSTVVRD 1593
.....1930.....1940.....1950.....1960.....1970.....1980

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      .          :          .          : * : :
Pavo_muticus      LHLFTHK-----LNSTAVVVVQPDAMMEGT-NYEAIQRKNNVAVVTREWVLDSVACFEC 1738
Pavo_cristatus    LHLFTHK-----LNSTAVVVVQPDAMMEGT-NYEAIQRKNNVAVVTREWVLDSVACFEC 1738
Gallus_gallus     LHLFTHK-----VNSTAVVVVQPDAMMEGT-SYEAIQRKNNVAVVTREWVLDSVACFEC 1739
Chelonia_mydas    PHLFTHK-----ANSTTVIVVQPDWLNT-GYRAIQOK-CTAMVTREWVLDSVACYEC 1897
Mus_musculus      LPSLTHD-----TGAHLVVIVQPSAWTEDS-NCPDIGQLCKARLVMWDWVLDSLSSYRC 1789
Rattus_norvegicus LPLLTRD-----TGAHPIVLVQPSAWTEDN-DCPDIGQLCKGRLVMWDWVLDSISVYRC 1792
Homo_sapiens      LSSFTLG-----TGVHPIVVVQPDWATEDN-GFHAIGQMCEAPVVTREWVLDSVALYQC 1847
Pan_troglodytes   LSSFTLG-----TGVHPIVVVQPDWATEDN-GFHAIGQMCEAPVVTREWVLDSVALYQC 1847
Macaca_mulatta    LSSFTLG-----TGFHPIVVVQPDWATEDN-GFHAIGQMCEAPVVTREWVLDSVALYQC 1847
Callithrix_jacchus LSSFTLG-----TGIHAVVVVQPDWATEDN-GLHAIGQMCEAPVVTREWVLDSVALYQC 1841
Canis_lupus_familiaris PSLFTLS-----KGTHPVVVVQPDWATEDS-GFHAIGQMCEAPVVTREWVLDSVALYQC 1911
Felis_catus       PSLFTLS-----KATHPVVVVQPDWATEDS-GFHAIGQMCEAPVVTREWVLDSVALYQC 1850
Equus_caballus    PSSFTFSEEQGLLQAGYSRQITCCCHYWRNNY-DVYDHLFASSKHWRNHYFSLLTCSLGGG 1850
Bos_taurus        PSSFTPD-----QGTHPVVVVQPDWATEDA-GFHVIGQMCEAPVVTREWVLDSVALYQC 1840
Rhinatrema_bivittatum PYLFTQK-----PTLAAVVVVQPDASPEKE-DYEVIQRQYSATVVTREWVLDSVACYEC 1909
Xenopus_tropicalis LQFPKNK-----LNTTSLVIVQTDANTTEIRDYFAIRKNHKAIVVTREWLLDSIATYRL 1647
.....1990.....2000.....2010.....2020.....2030.....2040

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Pavo_muticus      QELDAY--LVSQD----- 1749
Pavo_cristatus    QELDAY--LVSQD----- 1749
Gallus_gallus     QELDAY--LVSQD----- 1750
Chelonia_mydas    QEFETY--LVSQS----- 1908
Mus_musculus      RDLDAY--LVQNITC--DSSEPQDSND 1812
Rattus_norvegicus RDLDAY--LVQNITCGRDGSEPQDSND 1817
Homo_sapiens      QELDTY--LIPQIPHSHY----- 1863
Pan_troglodytes   QELDTY--LIPQIPHSHY----- 1863
Macaca_mulatta    QELDTY--LIPQIPHSHY----- 1863
Callithrix_jacchus QELDTY--LIPQIPHSHY----- 1857
Canis_lupus_familiaris QELDTY--LIPQIPRAAADSSQPCV-- 1934
Felis_catus       QELDTY--LIPQIPRATADLSQPCV-- 1873
Equus_caballus    WGKDCYSHFIGGTTRSRTLSNVTQ-- 1874
Bos_taurus        QELDTY--LVP----- 1849
Rhinatrema_bivittatum QKFDTY--LISQT----- 1920
Xenopus_tropicalis QKFDTY--LA----- 1655
.....2050.....2060.....

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