

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/SECISBP21pep Feb 1 14:29:50 2022

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Mus_musculus	-----MASER-----PREPDGE-----	12
Rattus_norvegicus	-----MASER-----PREPEGE-----	12
Canis_lupus_familiaris	-----MRIDALGFEPQTLLG-----	15
Equus_caballus	-----MASEG-----PREPAG-----	11
Bos_taurus	-----MASEG-----RREPAA-----	11
Homo_sapiens	-----MASEG-----PREPES-----	11
Pan_troglodytes	-----MSPSAVTAAQ-----LRAPRSRGGGTILASFPERSWERIDCF	35
Macaca_mulatta	-----MASEG-----PREPES-----	11
Callithrix_jacchus	-----MASEG-----LREPES-----	11
Pavo_muticus	-----DVIAARRRLGRGVAGRAEWRD GALAMFAER-----RPGRGS-----	36
Pavo_cristatus	-----DVIAARRRLGRGVAGRAEWRD GALAMFAER-----RPGRGS-----	36
Gallus_gallus	-----MDVIAERRRQGC GVAGRAEWRD GALAMFAER-----FPGRGS-----	37
Chelonia_mydas	-----MATER-----ERGTAS-----	11
Rhinatrema_bivittatum	-----	
Xenopus_tropicalis	-----	
	1.....10.....20.....30.....40.....50.....60	

Mus_musculus	-----DSIKLSADV KPFV PKFAG-----	30
Rattus_norvegicus	-----DSIKLSADV KPFV PKFAG-----	30
Canis_lupus_familiaris	-----LAFRGLLEPPACFGLFVHPCCI-----	37
Equus_caballus	-----EGIKLSADV KPFV PKFAG-----	29
Bos_taurus	-----EGIKLSADV KPFV PKFAG-----	29
Homo_sapiens	-----EGIKLSADV KPFV PRFAG-----	29
Pan_troglodytes	-----KGSCVFLNVILRSTYSALPLD GALAIACIIFRPIKFS VKGIKLSADV KPFV PRFAG-----	91
Macaca_mulatta	-----EGIKLSADV KPFV PRFAG-----	29
Callithrix_jacchus	-----EGIKLSADV KPFV PRFAG-----	29
Pavo_muticus	-----EGIELSAEVKAFV PKYAA-----	54
Pavo_cristatus	-----EGIELSAEVKAFV PKYAA-----	54
Gallus_gallus	-----EGIELSAEVKAFV PKYAA-----	55
Chelonia_mydas	-----EGFKFSADV KPFV PKYTT-----	29
Rhinatrema_bivittatum	-----	
Xenopus_tropicalis	-----	
	.....70.....80.....90.....100.....110.....120	

Mus_musculus	---LNVAWSESSETRVFP GCAAT---YYPFVQEP PAAEQMYPEDMAFGAPTFPAQYVSS---	84
Rattus_norvegicus	---LNVAWSESSEACVFP GCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	84
Canis_lupus_familiaris	---CEWLSVAWAESSEARVFP GCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	94
Equus_caballus	---LSVAWSESSEARVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	83
Bos_taurus	---LNVGWSESSEARVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	84
Homo_sapiens	---LNVAWLESSEACVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	83
Pan_troglodytes	---LNVAWLESSEACVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	145
Macaca_mulatta	---LNVAWLESSEACVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	83
Callithrix_jacchus	---LNVAWLESSEACVFP SCAAT---YYPFVQEP PAAEQMYPEDMAFGAPAFPAQYVSS---	83
Pavo_muticus	---VTVAWSEPSAACVFP RYLT---GYTFVQEP SLDKQRVYAEDLP GDDLSSLSQCPSHSV---	110
Pavo_cristatus	---VTVAWSEPSAACVFP RYLT---GYTFVQEP SLDKQRVYAEDLP GDDLSSLSQCPSHSV---	110
Gallus_gallus	---VTVAWSEPSAACVFP RYLT---GYTFVQEP SLDKQRVYAEDLP GDDLSSLSQCPSHSV---	111
Chelonia_mydas	---VTVAWSEPSAACVFP RYLT---GYTFVQEP SLDKQRVYAEDLP GDDLSSLSQCPSHSV---	82
Rhinatrema_bivittatum	-----	
Xenopus_tropicalis	-----	
	.....130.....140.....150.....160.....170.....180	

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Mus_musculus      --EIALHPFAYPTTYTLESASVCSVPTLOYDYSQARCHPGFRITAKPRHEHVCPPPQEAAG 142
Rattus_norvegicus --EIALHPFAYPTTYALESTQSVCSVPTLOYDYSQACHPGFRPAKPRNEHACPP-QEAKC 141
Canis_lupus_familiaris --ELALHPCSYSYSPYSMECAQSVCPVPGSQYAYSHPSGYRGFQTMKPRNEQMCPLPQDTKA 152
Equus_caballus    --EMALHPYSYPPYTLESARSVCPVPGSQYDYHOPGCGYQGFQTMKPRKEHVCPLPQDTKA 141
Bos_taurus       --EIPLHPYAYSPTYLQSPQNVCPVPGSPYDDNQPSCFGGFQRLKPRSEHTCPLSQDTKA 142
Homo_sapiens      --EITLHPYAYSPTYLDSTQNVYSVPGSQYLYNQPSCYRGFQTVKHNENTCPLPQEMKA 141
Pan_troglodytes   --EITLHPYAYSPTYLDSTQNVYSVPGSQYLYNQPSCYRGFQTVKHNENTCPLPQEMKA 203
Macaca_mulatta    --EITLHPYAYSPTYLDSTQNVYSVPGSQYHYNHPSCYRSFQTVKHQENNVCPPLQEMKA 141
Callithrix_jacchus --EMTFHPYAYSPTYLDSTQNVYSVPGSHYHYNQPSCYRGFQTVKHGNNMCPLQOEMKA 141
Pavo_muticus      VGDPALHEYSSSSSCSPDVVSNTNRVAASQYHSNGSTYCNSRIVSESABQKCPIROESKS 170
Pavo_cristatus    VGDPALHEYSSSSSCSPDVVSNTNRVAASQYHSNGSTYCNSRIVSESABQKCPIROESKS 170
Gallus_gallus     VRDPALHENSSSSSSCSPDVS-NSNPVAAASQCHSYGSTYCNSRIVSESABQKPIROESKS 170
Chelonia_mydas    MGYTPLGEVSNLSLSSDAAPNMYSLASARCNYNNSQHYSHSRIVNECAEQICPVROETRK 142
Rhinatrema_bivittatum -----
Xenopus_tropicalis -----
.....190.....200.....210.....220.....230.....240

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Mus_musculus      VFKKKPSDERRACEEQKSSRRADNAVPCEARPARGSSHLSSRTESLKSDD--GYHKRPD 200
Rattus_norvegicus VFKKKSSDERRAWEEQKSSNRRADGAVPCEARPARGSCHL-----KSD--GYHKRPD 191
Canis_lupus_familiaris LFKKKTY-----EQKFDSSKADGSLSSDLKSVRGSHPMIPADSNLKSDDTDGYHKRTD 205
Equus_caballus      PLKKKSYD-----EQKFDRKKVEGTMSDDIKSVKGPHQVSTHAATALKSD--GCHKQTD 193
Bos_taurus         VFKKKTYD-----EQKFDSSKKTIDGVPSSDLKSVKDSPRVSIHAENSLKSD--GYHKRTD 194
Homo_sapiens       LFKKKTYDEKKTYDQKFDSEADGTISSEIKSARGSHHLSIYAENSLKSD--GYHKRTD 199
Pan_troglodytes    LFKKKTYDEKKTYDQKFDSEADGTISSEIKSARGSHHLSIYAENSLKSD--GYHKRTD 261
Macaca_mulatta     LFKKKTYDEKKTYDQKFDSEADGTISSEIKSARGSHHLSIYAENSLKSD--GYHKRTD 199
Callithrix_jacchus LFKKKTYDEKKTHDEQKFDSEADGTISSEIKSTRGSHHLSIYAENSSKSD--GYHKRTD 199
Pavo_muticus       LSKQRKVKE---GEKKSDDKKQDGEDSSVRIVKRTALQTSAGSGDSMKPD--RFNKTAS 224
Pavo_cristatus     LSKQRKVKE---GEKKSDDKKQDGEDSSVRIVKRTALQTSAGSGDSMKPD--RFNKTAS 224
Gallus_gallus      LSKQRKAKE---SEKKSDDKNQDEEDSSASTVKRTALQTSAGSRDSVKPD--RFNKTAS 224
Chelonia_mydas     TPK-RRSKG---DEQKLDNKRDLGSESSDRTANRSLSHTSVYGRDALKPD--RSHKAMN 195
Rhinatrema_bivittatum -----
Xenopus_tropicalis -----
.....250.....260.....270.....280.....290.....300

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Mus_musculus      RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNMPETQKPPRWGPLGPAASNMPLLGDV 260
Rattus_norvegicus RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 251
Canis_lupus_familiaris RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 265
Equus_caballus     RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 253
Bos_taurus        RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 254
Homo_sapiens       RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 258
Pan_troglodytes    RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 320
Macaca_mulatta     RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 258
Callithrix_jacchus RKSRIKASASTSKPEFEFSRLDFPELOSPKNSNLPETQKPPRWGPLGPAASNMSLLGES 258
Pavo_muticus       KKLTPAPKIESFPVPAFETTVLDFHKLQSLGSGEILKVH--HKNGPACSVESNIMCLSQP 282
Pavo_cristatus     KKLTPAPKIESFPVPAFETTVLDFHKLQSLGSGEILKVH--HKNGPACSVESNIMCLSQP 282
Gallus_gallus      KKLTPAPKIESFPVPAFETTVLDFHKLQSLGSGEILKVH--HKNGPACSVESNIMCLSQP 282
Chelonia_mydas     WSKPIPKNESLPPKPAFEVTLSDFPKLSLGSNDVVDLQK-HKWGPLCSTEGNTALLROP 254
Rhinatrema_bivittatum -----
Xenopus_tropicalis -----
.....310.....320.....330.....340.....350.....360

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Mus_musculus          GK---PVADMVEG-KMVKSDHTDGAVTSNATSSPSCT-QELSWTPMGYIVRQTVSS--- 312
Rattus_norvegicus     GK---PVADMVEG-KMVKTDHTDGAVTNNAAATSSPSCTRAELSWTPMGYIVRQTVSS--- 304
Canis_lupus_familiaris VK---PTVVTAEEGGVVRSTDAVESMTGSSVADPSSCT-RELSWTPMGYVVRQTLST--- 318
Equus_caballus        GK---PTPVVSEGEIVVTNTNLTKSVIDAAAS-PSSCT-RELSWTPMGYVVRQTLST--- 305
Bos_taurus           GT---PSAVLSEGEIVVKNNNRTESVIDNAVTSPPSSCT-RELSWTPMGYVVRQTLST--- 307
Homo_sapiens          VK---PAAVLSKGEIVVKNN-PNESVTANAATNSPCT-RELSWTPMGYVVRQTLST--- 310
Pan_troglodytes       VK---PAAVLSKGEIVVKNN-PNESVTANAATNSPCT-RELSWTPMGYVVRQTLST--- 372
Macaca_mulatta        VK---PAAVLSKGEIVVKNNNPNESVTANAATNSPCT-RELSWTPMGYVVRQTLST--- 311
Callithrix_jacchus    VK---PAAVLSKGEIMVK-----NESVTANAATNSPCT-RELSWTPMGYVVRQTLST--- 306
Pavo_muticus          QMSPLLKTELSSGKCFYSYSYDTPSILQEDVSVESKAS-SKTLKETVASLIPSSFDG-RV 340
Pavo_cristatus        QMSPLLKTELSSGKCFYSYSYDTPSILQEDVSVESKAS-SKTLKETVASLIPSSFDG-RV 340
Gallus_gallus         QMSPLLNTELSSGKCFYSHSYDT---REDVSVEIAS-SKALKETVASLIPSSFDS-GV 336
Chelonia_mydas        -----VRTQTSALVTT-----EDEASVEKKAV-SKIYTEAGS--VSSSIDTRAA 295
Rhinatrema_bivittatum -----MESAANPVTVW-SKVKQPPKNVMLSSTSVS--- 29
Xenopus_tropicalis    .....370.....380.....390.....400.....410.....420

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Mus_musculus          -DSAAATENVTSMINLKKTTSSADAKNVSVTS-EALSSNPSPYNREKR-VYPAPKAK---- 365
Rattus_norvegicus     -DSAAATETVNSIINLKKTTSSADAKNVSVTS-EALSSDPSPFSEKR-VHPGPKAK---- 357
Canis_lupus_familiaris -ERSAAPKNVTSMINLKMVASSADPKSVSISPPPEVLSSDLSY-KERH-VHPAKKSK---- 371
Equus_caballus        -EPSAPKNVTSMINLKMVASSADPKNVSGSSSEVLPSDPSY-KEKHVVHHTKSK---- 359
Bos_taurus           -ELSPAPKNVTSMINLKMVASPADPKNDMSSSSEVLSEPSY-KEKHVVHHTKSK---- 361
Homo_sapiens          -ELSAAPKNVTSMINLKTIASSADPKNVSISSSEALSSDPSYNKEKHIIHPTQKSK---- 365
Pan_troglodytes       -ELSAAPKNVTSMINLKTIASSADPKNVSISSSEALSSDPSYNKEKHIIHPTQKSK---- 427
Macaca_mulatta        -ELSPAPKNVTSMINLKTIASSADPKNVSISSSEALSSDRSYNKEKHIVHPTQKSK---- 366
Callithrix_jacchus    -ELSPAPKNVTSMINLKTIASSADPKNVSISSSEVLSSDPSYNKEKIVHPTKSK---- 361
Pavo_muticus          FPETSPDGSAQLRVSWAMVLSQPPKKTFSPPSECLPR---YKKGQDSQAKAETK--ND 394
Pavo_cristatus        FPETSPDGSAQLRVSWAMVLSQPPKKTFSPPSECLPR---YKKGQDSQAKAETK--ND 394
Gallus_gallus         FPEKSTDGSAQPCVSWAMVLSQPPKKTFSPPSECLPR---YKKGQDSQAKEETK--NG 390
Chelonia_mydas        LPPTSAPYSTQSHLSRATILSRAPKRVVSPASELISNNHSCSKEKPDVQANSKTKTRND 355
Rhinatrema_bivittatum -----MLGRYQHIMLSR-----KQKNLRKGRKEGK---- 25
Xenopus_tropicalis    ----VPGGLTPTNKDMTHWAQRMHMAVNIP-----AKAEPEHLVEKKKK---- 70
.....430.....440.....450.....460.....470.....480

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Mus_musculus          --ASQGGELEQNESSKKNKKKKKEKS-----KPSYEVLTVQEPRIEDAEFFPNLSVASER 418
Rattus_norvegicus     --ASQGSELEQNESSKKNKKKKKEKS-----KPSYEVLTVQEPRIEDAEFFPNLSVASER 410
Canis_lupus_familiaris --ASQGGDPEQNEASRKHKKKKKKEKS-----KSKYEVLTVQEPRIEDAEFFPNLAVASER 424
Equus_caballus        --ASQGGNPEQNEASRKHKKKKKKEKS-----KSKYEVLTVQEPRIEDAEFFPNLAVASER 412
Bos_taurus           --ASQGGNPEQNEASRKHKKKKKKEKS-----KSKYEVLTVQEPRIEDAEFFPNLAVASER 414
Homo_sapiens          --ASQGSdleQNEASRKHKKKKKKEKS-----TSKYEVLTVOEPPRIEDAEFFPNLAVASER 418
Pan_troglodytes       --ASQGSdleQNEASRKHKKKKKKEKS-----TSKYEVLTVOEPPRIEDAEFFPNLAVASER 480
Macaca_mulatta        --ASQGSdleQNEASRKHKKKKKKEKS-----TSKYEVLTVOEPPRIEDAEFFPNLAVASER 419
Callithrix_jacchus    --ASQGSdleQNEASRKHKKKKKKEKS-----ASKYEVLTVQEPRIEDAEFFPNLAVASER 414
Pavo_muticus          GSETEPVEGSEKKKKKKKKKKKKKSPTNVEKPHNESTTVQEPRIEDAEFFPDAAAASHR 454
Pavo_cristatus        GSETEPVEGSEKKKKKKKKKKKKKSPTNVEKPHNESTTVQEPRIEDAEFFPDAAAASHW 454
Gallus_gallus         GSETEPEEGSEKKKKKKKKKKKKKSPTNVEKPHNESTTVQEPRIEDAEFFPDAAAADG 450
Chelonia_mydas        ARETEPEEGSEKKK--KKKKKKPKSNPEVEKPQNDSEFVQEPRIEDAEFFPDAAAADR 413
Rhinatrema_bivittatum -----KNKKKAKPNDADSEKPNENVVIONPPKLEDTEFFPDLAASTGR 69
Xenopus_tropicalis    -----KRKKKKTSPNSDVGTEHQHKNIVVQEPKFDDEFFPDLSAAVSG 116
.....490.....500.....510.....520.....530.....540

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      :
Mus_musculus      RHR-----G 422
Rattus_norvegicus RHR-----G 414
Canis_lupus_familiaris RDR-----V 428
Equus_caballus     RDR-----V 416
Bos_taurus        RDR-----V 418
Homo_sapiens      RDR-----I 422
Pan_troglodytes   RDR-----I 484
Macaca_mulatta    RDR-----I 423
Callithrix_jacchus RDR-----I 418
Pavo_muticus      RNR---LGSQKTS--TPAGRKQAEIHLPRVSCN-----SRSSADGVVLKVDVLSGKQ 501
Pavo_cristatus    RNR---LGSQKTS--TPAGRKQAEIHLPRVSCN-----SRSSADGVVLKVDVLSGKQ 501
Gallus_gallus     RKR---LGSQKTS--TPAGRKQAEIHLPRVSCN-----SCSSTVDGALKVDVLSGKQ 498
Chelonia_mydas    KNR---VGTQKSSYTPPVSRROPEVHLTKESCDRHYQ---NDMSHLGAVVTAGKQAGKQ 466
Rhinatrema_bivittatum SDRGLKVKDQKLSPHSQINPEQPVSYTGRELVSARENYLLSDLQTPETDKIPEKKPGQR 129
Xenopus_tropicalis SGK-----GFR 122
      .....550.....560.....570.....580.....590.....600

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      ***: *:****:*.:** *::: * :.:*.
Mus_musculus      QSPKLHSSKQQTONEFKT--SGKKSQVPVOLDLGGMLAALEKQOQOQHASHAKPSSRPVVF 480
Rattus_norvegicus ESPKLQSKQQAQNDFKT--GGKKSQVPVOLDLGGMLAALEK---QQHAPHAKPSSRPVVF 469
Canis_lupus_familiaris ASPKFQSKQQPQNNFKN--SGKKSQLPVOLDLGGMLAALEK---KQHSQSSKPSKPVVF 483
Equus_caballus     ESPKFQSKQPQNNFKN--SGKKSQTPVOLDLGGMLTALEK---KQHSQNAKQSSKPVVF 471
Bos_taurus        ESPKFQSKQPQNNFKS--SRKKSQIPVOLDLGGMLTALEK---KQHSQNAKQSSKPVVF 473
Homo_sapiens      ETPKFQSKQQPQDNFKN--NVKKSQLPVOLDLGGMLTALEK---KQHSQNAKQSSKPVVF 477
Pan_troglodytes   ETPKFQSKQQPQDNFKN--NVKKSQLPVOLDLGGMLTALEK---KQHSQNAKQSSKPVVF 539
Macaca_mulatta    ETPKFQSKQQPQDNFKN--NVKKSQLPVOLDLGGMLTALEK---KQHSQNAKQSSRPVVF 478
Callithrix_jacchus ERPKFQSKQQPQDNFKN--NVKKSQLPVOLDLGGMLTALEK---KQHSQNAKQSSKPVVF 473
Pavo_muticus      ASSFMLEKKKKMQETSKS--SGKKSQIPVOLDLGGMLAVLEQ---KQQTEKSKQYKPVVF 556
Pavo_cristatus    ASSFMLEKKKKMQETSKS--SGKKSQIPVOLDLGGMLAVLEQ---KQQTEKSKQYKPVVF 556
Gallus_gallus     ASSFMLEKKKKMQETSKS--GGKKSQIPVOLDLGGMLAVLEQ---KQQTEKSKQYKSVVF 553
Chelonia_mydas    ASSAMLERKKKPQEASKS--SGKKSQIPVOLDLGGMLAVLEQ---KQHAEEKSKQSSKPVVL 521
Rhinatrema_bivittatum NLSALEARKMLVEASKAKNSGKKSKAPVOLDLGDILAALQ---RQHTKQKQPFKPIVL 186
Xenopus_tropicalis KSDSVVQGPRAEKAVNAKSTGKKSKALVOLDLGGMLAVLEG---KQHTDKTKQNTKPLVL 179
      .....610.....620.....630.....640.....650.....660

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      **. . *:.:. : : * *****:*.:*****:****:*.*****
Mus_musculus      SVG-AVPVLSKDASSSERGRSSQMKTPHNPLDSSAPLMKKGKQREIPKAKKPTSLKKII 539
Rattus_norvegicus SVG-AVPVLSKDASSGERGRSSQVKTPHNPLDSSAPLMKKGKQREIPKAKKPTSLKKII 528
Canis_lupus_familiaris SVG-AVPVLSRDASGKKGHHSQVKTPHNPLDSSAPLMKKGKQREVPKAKKPTSLKKII 542
Equus_caballus     SVG-AVPVLSKDAMS-QKGHRFSQVKTPHNPLDSSAPLMKKGKQREVPKAKKPTSLKKII 529
Bos_taurus        SVG-AVPVLSKDSMSGKKGHRLAQVKTPHNPLDSTSPMMKKGKQREVPKAKKPTPLKKII 532
Homo_sapiens      SVG-AVPVLSKECASGERGRMSQMKTPHNPLDSSAPLMKKGKQREIPKAKKPTSLKKII 536
Pan_troglodytes   SVG-AVPVLSKECASGERGRVSQMKTPHNPLDSSAPLMKKGKQREIPKAKKPTSLKKII 598
Macaca_mulatta    SVG-AVPVLSKECTSGERGRVSQMKTPHNPLDSSAPLMKKGKQREIPKAKKPTSLKKII 537
Callithrix_jacchus SVG-AVPVLSKECASGERGRVSQVKTPHNPLDSSAPLIKKGKQREIPKAKKPTSLKKII 532
Pavo_muticus      SVAGAIPLLSKESATATKDRRLNQGKMHPNPLDSSAPLVKKGKQREVPKAKRPTPLKKII 616
Pavo_cristatus    SVAGAIPLLSKESATATKDRRLNQGKMHPNPLDSSAPLVKKGKQREVPKAKRPTPLKKII 616
Gallus_gallus     SVAGAIPLLSKESATATKNHRLNQGKMHPNPLDSSAPLVKKGKQREVPKAKRPTPLKKII 613
Chelonia_mydas    SVGGAIPLLSKPATVTKNQQLNGKTPHNPLDSSAPLVKKGKQREVPKAKKPTSLKKII 581
Rhinatrema_bivittatum SVGSAAPVLTKEATAAKHQQLKQGTVPHNPLDSSAPLVKKGKQREIPKAKKPTSLKKII 246
Xenopus_tropicalis SVGSGAPVLAPEVPVPLK--QPKQGPAPHNPLDSSAPLVKKGKQREVPKAKKPTSLKKII 237
      .....670.....680.....690.....700.....710.....720

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****: * *
Mus_musculus      LKERQERMQORLQESAVSLTVASD---DSQDVESGASNOTPSQDNPTGPEKTEESVSSTP 596
Rattus_norvegicus LKERQERMQORLQESAVSPTVASD---DSQDVESGVTNQIPSPDNPTGPEKTEEPVSSTP 585
Canis_lupus_familiaris LKERQERKQORLQENAVSPAPASD---AVPDGESGGDDEAFEQVDPVVAEGPEEVLSSAP 599
Equus_caballus     LKERQERKQORLRENNAVSPAFGSD---GTQDAESGGDDRALEQADLSAPAGMEESGSSAP 586
Bos_taurus        LKERQERKQORLQENALSPAFFSDDVQDVQDEESGGDDQVLRPPD--MLGETKESVSCVP 590
Homo_sapiens       LKERQERKQ-RLQENAVSPAFTSD---DTQDGESGGDDQFPEQAELSGPEGMDLIS--TP 591
Pan_troglodytes    LKERQERKQORLQENAVSPAFTSD---DTQDGESGGDDQFPEQAELSGPEGMDLIS--TP 654
Macaca_mulatta     LKERQERKQORLQENAVSPAFTSD---DTQDGESGGDDQVPEQAEPSGPEGMDLIS--TP 593
Callithrix_jacchus LKERQERKQORLQENAVSPVFASD---DTQDGESGGDDQVPEQAEASGPEGMDLIS--TP 588
Pavo_muticus       LKERELRKQOHLLEQTAVPKDGGN--SCVSAEN-TTEDEALPQDSQ-----AVVP 663
Pavo_cristatus     LKERELRKQOHLLEQTAVPKDGGN--SCVSAEN-TTEDEALPQDSQ-----AVVP 663
Gallus_gallus      LKERELRKQOHLLEQTAVPKDGGN--CCVSAEN-TTGDEALPQDSQ-----AVVP 660
Chelonia_mydas     LKEREQRKQ-HLLEQTTIPKDDGD--TVHSEESTTEDQILTQDTKIDTADDDPITSVSV 638
Rhinatrema_bivittatum LKEREQRKQOHLLEQGDVVTQRED--LAPEDQENLEDEICELEALEDTFQT-ETAENSIV 303
Xenopus_tropicalis LKEREERKORLTSATQELTPQGS--ILSDGAG--PPVQSISPSGDCGLPLETALAETIQ 293
.....730.....740.....750.....760.....770.....780

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: : *****:****:*.**:** **
Mus_musculus      VVEGESEEPAGT---EFORDPEACQ--PAPDSATFPKIHRRFRDYCSQMLSKEVDACVT 651
Rattus_norvegicus VVEGESEEPAGT---EFORDPEACQ--PAPDSATFPKIHRRFRDYCSQMLSKEVDACVT 640
Canis_lupus_familiaris AVESGSEEPRA---ELQKEAEGCH--LVPNGASCPIKIHRRFRDYCSQMLSKEVDACVT 654
Equus_caballus     VLESKSEEPGA---GLQ-EVEACH--LAPDSTACPIKIHRRFRDYCSQMLSKEVDACVT 640
Bos_taurus        VVESKSEEPGA---EPQKETEAC-----PKIHRRFRDYCSQMLSKEVDACVT 636
Homo_sapiens       SVEDKSEEPGPT---ELORDTEASH--LAPNHTTFPKIHRRFRDYCSQMLSKEVDACVT 646
Pan_troglodytes    SVEDKSEEPGPT---ELORDTEASH--LVPNHTTFPKIHRRFRDYCSQMLSKEVDACVT 709
Macaca_mulatta     AIEGKSEEPGPT---ELORDTEASH--LAPNHATFPKIHRRFRDYCSQMLSKEVDACVT 648
Callithrix_jacchus AVEGKSEEPGPT---ELORDTEASH--LAPCHATFPKIHRRFRDYCSQMLCKEVDACVT 643
Pavo_muticus       VMQVVEGLLGST---KIKESTESSL-TSKQSTSNLPKIHRRFRDYCSQVLSKEVDSCVT 719
Pavo_cristatus     VMQVVEGLLGST---KIKESTESSL-TSKQSTSNLPKIHRRFRDYCSQVLSKEVDSCVT 719
Gallus_gallus      VMQVVEGLLGST---KMKESTESSV-TSKQSTSNLPKIHRRFRDYCSQVLSKEVDSCVT 716
Chelonia_mydas     AQSSSEVFLDCK---DLKDSTESS-NLTQLNSSLPKIHRRFRDYCSQVLSKEVDSCVT 694
Rhinatrema_bivittatum VSPVPVAQSGSQ---VLQDSPDVNC-PAAQ-PSNLPKIHRRFRDYCSQVLSKEVDSCVT 358
Xenopus_tropicalis EDSVEDLILGNSEISAIQPVTESTVSLPQOSTSNLPKIHRRFRDYCSQVLSKDVNVCVM 353
.....790.....800.....810.....820.....830.....840

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Mus_musculus      GLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCIISPNCEKIQSKGG 711
Rattus_norvegicus GLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCIISPNCEKIQSKGG 700
Canis_lupus_familiaris DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCIISPNCEKIQSKGG 714
Equus_caballus     ELLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCIISPNCEKIQSKGG 700
Bos_taurus        DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCIISPNCEKIQSKGG 696
Homo_sapiens       DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 706
Pan_troglodytes    DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 769
Macaca_mulatta     DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 708
Callithrix_jacchus DLLKELVRFQDRMYQKDPVKAQTKRRLVLGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 703
Pavo_muticus       DLLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 779
Pavo_cristatus     DLLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 779
Gallus_gallus      DLLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 776
Chelonia_mydas     DLLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 754
Rhinatrema_bivittatum ELLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 418
Xenopus_tropicalis ELLKELVRFQDRMYQKDPVKAQTKRRLVMGLREVLKHLKLRKLKCVIISPNCEKIQSKGG 413
.....850.....860.....870.....880.....890.....900

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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**:::.* **::.* *****.:*****.*.****** **::.*
Mus_musculus      LDDTLHTIIDCACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 771
Rattus_norvegicus LDDTLHTIIDCACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 760
Canis_lupus_familiaris LDDTLHTIIDYACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHRMVLT 774
Equus_caballus     LDDTLHTIIDYACEQNIPCVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 760
Bos_taurus         LDDTLHTIIDYACDQNIPIFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 756
Homo_sapiens       LDDTLHTIIDYACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 766
Pan_troglodytes    LDDTLHTIIDYACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 829
Macaca_mulatta     LDDTLHTIIDYACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 768
Callithrix_jacchus LDDTVHTIIDYACEQNIPFVFALNRKALGRSLNKAVPVSVVGVGIFSYDGAQDQFHKMVLT 763
Pavo_muticus       LDETLHNIIDCACEQNIPFVFALNRKALGRCVNKAVPVSVVGVGIFSYDGAQDHFHRMVLT 839
Pavo_cristatus     LDETLHNIIDCACEQNIPFVFALNRKALGRCVNKAVPVSVVGVGIFSYDGAQDHFHRMVLT 839
Gallus_gallus      LDETLHNIIDCACEQNIPFVFALNRKALGRCVNKAVPVSVVGVGIFSYDGAQDHFHRMVLT 836
Chelonia_mydas     LDETLHTIIGCACEQNIPFVFALNRKALGRCVNKAVPVSVVGVGIFSYDGAQDHFHKMVLT 814
Rhinatrema_bivittatum LDETLHTIIACACEQNIPFVFALNRKALGRCLNKAVPVSVVGVGIFSYDGAQDYFHKMVLT 478
Xenopus_tropicalis LDDTLQTIISHACEQNVPFVFALNRKALGRCLNKAVPVSVVGVGIFSYDGAQDHFHKLCELT 473
.....910.....920.....930.....940.....950.....960

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Mus_musculus      MAARQAYKTMLETMRQEQA---GEPGPQSPSPSPMODPIPISTEEGTLPSTG--EEPHYIE 826
Rattus_norvegicus MAARQAYKTMLETMRQEQA---GEPGPQTPSPSPMODPIQSTDEGTLPSTG--EEPHYIE 815
Canis_lupus_familiaris MAARQAYKTMLENVRQELA---GEPGTPALANPPMOGLGCTQDSPPAPTAEKEEPHYIE 831
Equus_caballus     KAARQAYKAMLENVHQELA---GEPGPQAPASPPAQGPSCTEGAPPAPTG-KEEPHYIE 816
Bos_taurus         MAARQAYRTMLENARQELP---GELGPCAPVGPSPSGPGCPVEDSPLAPTE-KEEPHYIQ 812
Homo_sapiens       VAARQAYKTMLENVQQLV---GEPRPQAPPSLPQTQGPSCPAEDGPPALKE-KEEPHYIE 822
Pan_troglodytes    MAARQAYKTMLENVQQLV---GEPRPQAPPSLPQTQGPSCPAEDGPPALTE-KEEPHYIE 885
Macaca_mulatta     MAARQAYKTMLENVQQLA---GEPRPQAPPSPTQGPSCPAEDGPPALTE-KEEPHYIE 824
Callithrix_jacchus MAARQAYKTMLENVQQLA---GEPRPQAPPSPTQDPSCTEDGPPALTV-KEEPHYIE 819
Pavo_muticus       TEARKAYKDMVAALEEEAE-GRQTETELSFVTTEFEKSCLSKTGKTSSRDHDEDIANYIK 898
Pavo_cristatus     TEARKAYKDMVAALEEEAE-GRQTETELSFVTTEFEKSCLSETGKTSSRDHDEDIANYIK 898
Gallus_gallus      TEARKAYKDMVAALEEEAE-GRQTETKLSIVTTELEKSCLSETGKTSSRDQDEIDPNYIK 895
Chelonia_mydas     MEARKAYKDMVAALEEEAEAGGGSEKHSTILITQYEEKSLSKTGKTPHVQSDQDVPNYIK 874
Rhinatrema_bivittatum MKGRQAYKDMITALENGQA---EEENTKDFLPGHEGGRNLSEIDQPP----LEDEPNYIK 531
Xenopus_tropicalis VQARQAYKDMIAAQEQQS---ETEAGKNEEDPVAVNGQNKSDDMREESKAEPDEPNYIK 531
.....970.....980.....990.....1000.....1010.....1020

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Mus_musculus      IWKKHLEA-YSQRALELEDSEASTSQMMNLNL---- 858
Rattus_norvegicus IWRKHLEA-YSQHAELELEDSEASTSQMMNLNL---- 847
Canis_lupus_familiaris IWRRHLEA-YSRCAELELEDSEASTSQMMNLNL---- 863
Equus_caballus     IWRRHLEA-YSRCAELELEDSEASTSQMRDLNL---- 848
Bos_taurus         VWRNHVEA-YSRCGLELELEDSEASTSQMMNLNL---- 844
Homo_sapiens       IWKKHLEA-YSGCTLELELEDSEASTSQMMNLNL---- 854
Pan_troglodytes    IWKKHLEA-YSGCTLELELEDSEASTSQMMNLNL---- 917
Macaca_mulatta     IWKKHLEA-YSPCALELELEDSEASTSQMMNLNL---- 856
Callithrix_jacchus IWKKHLEA-YSRCAELELEDSEASTSQMMNMNL---- 851
Pavo_muticus       IWKKRLEEEYNPYALELEK---SATADMVVLNSEEHH 932
Pavo_cristatus     IWKKRLEEEYNPYALELEK---SATADMVVLNSEEHH 932
Gallus_gallus      IWKKKLEEEYNPYALELEK---SAAADMVVLNSEEHH 929
Chelonia_mydas     IWKRKLEEEYNPYALELEK---IATTEMLTLNLEEPQ 908
Rhinatrema_bivittatum IWKRMLEEEYDSYSLTFEE---NTTTEMLNLKL---- 561
Xenopus_tropicalis VWRKMLEDYTPYALSLEG---KVTTDMLNLQL---- 561
.....1030.....1040.....1050.....

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