

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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      . : :* **
Homo_sapiens      -----MELELDAGDQDLLAFLLLEESGDLGTAPDE      29
Pan_troglodytes   -----MELELDAGDQDLLAFLLLEESGDLGTAPDE      29
Macaca_mulatta    -----MELELDAGDQDLLGFLLEESGDLRTAPDE      29
Callithrix_jacchus -----MSQMELELDPGDEDLLGFLLEASGDLGTA-HE      31
Bos_taurus        -----MSHMEALALDPGDHLLGFLLEESGGLGAAPDE      32
Pteropus_alecto   MLGSPLKTI RPPRRKQ GCGAIRRKRTNCVYGMELALDPDDQDLLGFLLEESGELGAVPKE      60
Mus_musculus      -----MDPGQDLLALDPGDQDLLGFLLEESGDLWAATEP      35
Ornithorhynchus_anatinus -----MIMMSVVEGPLGLGDGDLDFLLLEEGGLEPFSGD      35
Pavo_muticus      -----MAGPEPLAALPDEDLLDFLLNNDAPAAGSPAG      32
Pavo_cristatus    -----MAGPEPLAALPDEDLLDFLLNNDAPAAGSPAG      32
Gallus_gallus     -----MAGPEPLAALPDGDLDFLLNDDAPAAGSPAG      32
Chelonia_mydas    -----MSCPEEVVASADELLSFLLTDDAPCAEFSGD      32
Microcaecilia_unicolor -----MSISPEMVEFGDQELLEFLLENKFS PADPLEE      32
Bufo_bufo         -----MSLFGEMEEMGSPDFLDDLDDIFPSG--SAD      30
1.....10.....20.....30.....40.....50.....60

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      . : : : :
Homo_sapiens      AVRAPLDWALPLS-----EVPSDWEVDLLCSLLS-----PPAS-LNILSSS      70
Pan_troglodytes   AVRAPLDWELPLS-----EVPSDWEVDLLCSLLS-----PPAS-LNILSSS      70
Macaca_mulatta    SVRAPLDWELPLS-----EVPSDWEVDLLCSLLS-----PPASLNVLSSNS      71
Callithrix_jacchus AIRAPLDWELLLS-----EVPSDWELDDLSSLLS-----PPAS-LNVLSSS      72
Bos_taurus        ALTSPPDWELPLS-----ESLSDWDVEDFLSCLPS-----PPAV-LNVFNSNS      73
Pteropus_alecto   AMEAPMSWELPLS-----QALSDWDIEDFLSSLSQ-----PPAS-LSVLSSNS      101
Mus_musculus      DVKAPLDLELSPSENSVQELSDWEVEDLLSSLLS-----PSVS-RDVLGSS      80
Ornithorhynchus_anatinus GPAPRQDWSPLDP-----EILSDQDVEDFLNLLG-----SPGIPSHVSSDS      77
Pavo_muticus      DSPLLGDWALPEF-----ELL-DKEMDSFISLLLN-PSEDEPCPLQGSLPADSDSSTSEDQ      86
Pavo_cristatus    DSPLLGDWALPEF-----ELL-DKEMDSFISLLLN-PSEDEPCPLQGSLPADSDSSTSEDQ      86
Gallus_gallus     DGPLLGDWVLPPEL-----ELL-DKEMDSFISLLS-PSEDEPCLLQGCLPADSDSSTSEDQ      86
Chelonia_mydas    EANLLGDWGLLEP-----ELLNDKEVEDFLSSLLS-PFEEGPSALQGHSPNLSDSGISEDQ      87
Microcaecilia_unicolor GVKPADDWGLQE-----EMMGEDEIEDFLSSILA-PFEEDSGTMSHSPSSDSGISDD-      86
Bufo_bufo         ISQGVGGWGPLDA-----EAFSATVVRFLSELLGSPLGDDPG-----SPLASDSGISEGH      81
.....70.....80.....90.....100.....110.....120

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      : :*.***:
Homo_sapiens      NP-----CLVHHDHTYSLPR-----      85
Pan_troglodytes   NP-----CLVHHDHTYSLPR-----      85
Macaca_mulatta    NP-----CLVHHDHTYSLPR-----      86
Callithrix_jacchus NP-----CLVHHDHTYSLPQ-----      87
Bos_taurus        DP-----CLVQHHTYSLSQ-----      88
Pteropus_alecto   NP-----CLVHHDHTYSLPQ-----      116
Mus_musculus      S-----SSILHDHNYSLPQ-----      94
Ornithorhynchus_anatinus SSSGPTSGSGRAS-----PTPLQPGSVQSEHNYSILNVGLLALALEEGSPAALPEGEGSPS      131
Pavo_muticus      NLSHSSGS-----DVASSPQSSDIVQFDHNYSLHQDWP-----ALESVR      125
Pavo_cristatus    NLSHSSGS-----DVASSPQSSDIVQFDHNYSLHQDWP-----ALESVR      125
Gallus_gallus     NPFHSSGS-----DVASSPQSSDIVQFDHNYSLHQDWP-----ALESVR      125
Chelonia_mydas    NPFPSPPSSWDASP--ARDLTCSPLSSDIVQVDHSYSLHQDRA-----VLESVR      133
Microcaecilia_unicolor NSFSSPGIWDVSPPHSPKLSLSPAESDIQFDHNYSLQDANNSD-----GIALESVR      139
Bufo_bufo         AAVLSPAN-----WEPTPPDSPSFIQTEHNYSMLLEDD-----ICALQSVR      122
.....130.....140.....150.....160.....170.....180

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      : :**
Homo_sapiens      -----ETVSMGLE-----SESCRKEGT---QMTPOHMEE-      111
Pan_troglodytes   -----ETVSMGLE-----SESCRKEGT---QMTPOHMEE-      111
Macaca_mulatta    -----EPVSMGLE-----SESCRKEGT---QMTPOHMEE-      112
Callithrix_jacchus -----EAVSVDLE-----SESFGKEET---QMTTQHVEE-      113
Bos_taurus        -----EHVSIDLKPEISEVWERRGLQGLTIHICPFADNESYEKERA---QMTPLRVEE-      139
Pteropus_alecto   -----EHVSIDL-----SESYGKEG---ALIPLHVEE-      141
Mus_musculus      -----EHVSIDL-----TESFEKEGF---HVTPLPGEER      121
Ornithorhynchus_anatinus PGPAVDDVSIDLG-----AWGIPEGSGDDGLNPGLRVSLLEET      170
Pavo_muticus      SDMAEGDVSIDLETWM-----CLEGTNETLEQSCS---FPISVAVDAG      165
Pavo_cristatus    SDMAEGDVSIDLETWM-----CLEGTNETLEQSCS---FPISVAVDAG      165
Gallus_gallus     SDMAEGDVSIDLETWM-----CLEGTNETLEQSCS---FPVTVAVDAG      165
Chelonia_mydas    ADTAEGDISIDLDMWG-----DLGSTTEETLVVEEQS---FSFPVAVPM      173
Microcaecilia_unicolor SETAEGDVFIDLEAWVPD-----CPEESLTTYPEESL---SPCPVTVCME      181
Bufo_bufo         SETCDGDVLIDLDVCL-----EQSDLELTDPGN---LCVEDEEEEEE      160
.....190.....200.....210.....220.....230.....240

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      :      * *:*** ** ::*: ** :**** **: **:*****::*
Homo_sapiens      -----LAEQEIARLVLTDEEKSLLKEEGLILPETLPLTKTEEQILKRVRRKIRNKRSA 164
Pan_troglodytes   -----LAEQEIARLVLTDEEKSLLKEEGLILPETLPLTKTEEQILKRVRRKIRNKRSA 164
Macaca_mulatta    -----LAEQDIVRLVLTDEEKSLLKEEGLILPETLPLTKMEEQILKRVRRKIRNKRSA 165
Callithrix_jacchus -----MAEQETVRLVLTDEEKSLLKEEGLILPETLPLTKMEEQILKRVRRKIRNKRSA 166
Bos_taurus        -----PADQEIARLILTEEEKRLLKEEGLTLPGLMPLTKMEEQVLKRVRRKIRNKRSA 192
Pteropus_alecto   -----PSEQEMVRLILTDEEKRLLKEEGLTLPGLMPLTKMEEQVLKRVRRKIRNKRSA 194
Mus_musculus       -----AAEQEMSRLILTEEEKKLLKEEGLTLPSTLPLTKVEEQVLKRVRRKIRNKRAA 174
Ornithorhynchus_anatinus -----PPQAPASRLILTEEEKRLLKEEGLTLPETLPLTKMEERALKHVRRKIRNKHSA 223
Pavo_muticus       POLMPGSPMQSNFPFELVLTDEEKKQLLEKDGVSPLTCLPLTKAEERLLKKVRRKIRNKQSA 225
Pavo_cristatus     POLMPGSPMQSNFPFELVLTDEEKKQLLEKDGVSPLTCLPLTKAEERLLKKVRRKIRNKQSA 225
Gallus_gallus      POLMPGAPMQSNFPFELVLTDEEKKQLLEKDGVSPLTCLPLTKAEERLLKKVRRKIRNKQSA 225
Chelonia_mydas     -DFVPGTPMQFGFPFELILTDEEKKQLLEKDGVSPLSHPLTKAEERLLKRVRRKIRNRQSA 232
Microcaecilia_unicolor -DFTFKTPKQYEFQELSLSEEEKRLLAKEGVVLPVPLTKSEERVVKRIRRKIRNKKSA 240
Bufo_bufo          -BEDYGCQYQS-QQGLHLTEEEARLLGKEGVSLPQHPLTKAEERVLKRVRRKIRNKRSA 218
      .....250.....260.....270.....280.....290.....300

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      *:***: ** .**.* *.:* *****: *:.* *****.***:. *
Homo_sapiens      QESRRKKKVYVGGLSESRVLKYTAQNMELQNKVQLLEEONLSLLDQLRKLQAMVIEISNKT 224
Pan_troglodytes   QESRRKKKVYVGGLSESRVLKYTAQNMELQNKVQLLEEONLSLLDQLRKLQAMVIEISNKT 224
Macaca_mulatta    QESRRKKKVYVGGLSESRVLKYTAQNMELQNKVQLLEEONLSLLHQLRKLQAMVIEISNKT 225
Callithrix_jacchus QESRRKKKVYVGGLSESRVLKYTAQNMELQNKVQLLEEONLSLLDQLRKLQAMVIAISNKT 226
Bos_taurus        QESRRKKKVYVGGLSESRVLKYTAQNLQNKVQLLEEONLSLLDQLRRLQAMVITANKA 252
Pteropus_alecto   QESRRKKKVYVGSLESRVLYKYTAQNLQNKVQLLEEONLSLLDQLRRLQAMVVIANKT 254
Mus_musculus       QESRRKKKVYVGGLSESRVLKYTAQNLQNKVQLLEEONLSLLDQLRKLQAMVIEIANKT 234
Ornithorhynchus_anatinus QESRRKKKVYVGGLSESRVSVCTAQNLELQKKVQMLEKQNLSSLEQLRKLQALVITSTKT 283
Pavo_muticus       QDSRRKKKIYVDGLENRVAAC TAQNHLEQKKVQLLQKQNMSSLEQLRKLQALVRQSTTKT 285
Pavo_cristatus     QDSRRKKKIYVDGLENRVAAC TAQNHLEQKKVQLLQKQNMSSLEQLRKLQALVRQSTTKT 285
Gallus_gallus      QDSRRKKKIYVDGLENRVAAC TAQNHLEQKKVQLLQKQNMSSLEQLRKLQALVRQSTTKT 285
Chelonia_mydas     LDSRRKKKVYVDGLESRVVCTAQNHELEQKKVQLLQKENMSSLEQLRRLQALVRQSTTKT 292
Microcaecilia_unicolor QDSRRKKKDYVDGLENRVAAC TVQNELQKKVHLLQKQNMSSLLQLRNLQALVKQTNTKT 300
Bufo_bufo          QESRRKKKKEYVDGLENRVTVCTAHNQLQKKVQLQQRQNYSLQLRNLQALFSQTGAKT 278
      .....310.....320.....330.....340.....350.....360

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      :: *****: .****:* *:.*. ** *:***
Homo_sapiens      SSSSTCILVLLVSFCLLLVPAMYSSDTRGSLPAEHGVLSRQLRALPSEDPPYQLELPALQS 284
Pan_troglodytes   SSSSTCILVLLVSFCLLLVPAMYSSDTRGSLPAEHGVLSRQLRALPSEDPPYQLELPALQS 284
Macaca_mulatta    SSSSTCILVLLVSFCLLLVPAMYSSDTRGSLPAEHGVLSRQLRALPSENPPYQLELPALQS 285
Callithrix_jacchus SSSSTCVLVLLVSFCLLLVPAMYSSDTRGSLPAEHGVLSRQLRALPSEDPPYQLELSTLOS 286
Bos_taurus        SSSSTCVLVLLVSFCLLLVPAMYSSDTRGSLPAEHGVLSRQLRALPSEDPPYQLEPPALQS 312
Pteropus_alecto   SSSSTCVLVLLVSFCLLLVPAMYSSDTRGRLPAEHGVLSRQLRGL-SEDPHQLLELPALQP 313
Mus_musculus       SSGSTCVLVLLVSFCLLLVPAMYSSDARGSVPAEYVVLHRLRALPSEDDHQPKPSALSS 294
Ornithorhynchus_anatinus SSTSTCVLVLLVSFCLVLFPTIYPLGTGVQQDFRGVLSRRLRTVPPEPVSPQDASVSHL 343
Pavo_muticus       TTASTCIMVLVLSFCLILSPSLYSFGSRGPQPEFR-VLSRQIREFP--NKAWQAAPAVQE 342
Pavo_cristatus     TTASTCIMVLVLSFCLILSPSLYSFGSRGPQPEFR-VLSRQIREFP--NKAWQAAPTVOQE 342
Gallus_gallus      TTASTCIMVLVLSFCLILSPSLYSFGSRGPQPEFR-VLSRQIREFP--NKVWQAAPAVQE 342
Chelonia_mydas     TTASTCVMVLLSFCLVLPSPSLYPLGARVQQEGFRGVLSRQIREYPSDTAHFQAAAAQQA 352
Microcaecilia_unicolor TTSSTCVMVILLSFCLILFSPSYFPFGSRGQQQELRGVLSRQIRQFSN-DASLQDKPLGFV 359
Bufo_bufo          SSSSTCVMVLALSFCILIFPSLYPFGNLNGNLHGVLRSQRLREFPLRGGAVPAAEANELE 338
      .....370.....380.....390.....400.....410.....420

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      .
Homo_sapiens      EVP-----KDSTHOWLDGSDCVLQAPGNTSCLLHY-----MPQAPSAEPPLEW 327
Pan_troglodytes   EVP-----KDSTHOWLDGSDCVLQAPGNTSCLLHY-----MPQAPSAEPPLEW 327
Macaca_mulatta    EVP-----KDCTHOWLDSSDHVLQAPGNSSCLLYY-----MPQAPSAEPPLEW 328
Callithrix_jacchus EVL-----KDSTHOWLDGSDHVLQVPGNSSCLLHY-----MSQALRAERPLEW 329
Bos_taurus        EVP-----KDS-----LNPELQAASNSCCLFHL-----MPQAPRAEPPQLQ 348
Pteropus_alecto   EVP-----KDS-----SDRELQAPGNS-CLFYH-----MPQALGTEPPMKL 348
Mus_musculus       ELP-----MDSTHQSLDSSEHMFVSSNFSCVLYH-----APQA---EQPLHW 334
Ornithorhynchus_anatinus DPP-----AQEKEAVFLERMLNRSSGERPGPIVDD-----SPSASPGNSSSDP 386
Pavo_muticus       E-----VVLERLSPEPEDTSLGSLNNQSQEEGQSPP-----KPDPRSAFNSNSSDP 390
Pavo_cristatus     E-----VVLERLSPEPEDTSLGSLNNQSQEEGQSPP-----KPDPRSAFNSNSSDP 390
Gallus_gallus      E-----VVLERLSPEPEDTSLGSLN-QSREEGQSPP-----KPDPRSAFNGNSSDP 388
Chelonia_mydas     EGPETRGERTMEGLALESEMAPQPGSLN-HSRDGGQSPP-----KAHGSAINSSSDP 406
Microcaecilia_unicolor DD-----ADMQPEQELEQFAVELSQMMLMNQTPEAKSL-----KAESGSSLSNSSADT 409
Bufo_bufo          VR---LDKVVLDKSPLGPSQEPSLLDLSHQELHLEPSLQGAQNDTPEIQDVGTAEKPSI 395
      .....430.....440.....450.....460.....470.....480

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      :
Homo_sapiens      P---FPDLFSEPLCRGP-----ILPLQAN-----LTKGGWLPTGSP--SVILODRYSG- 371
Pan_troglodytes   P---FPDLFSEPLCRGP-----ILPLQAN-----LTKGGWLPTGSP--CVILODRYSG- 371
Macaca_mulatta    P---FPDLFSEPLCRGP-----ILPLQAN-----LTKGGWLPTGSP--SVILODRYSG- 372
Callithrix_jacchus L---FPDLFSEPLCRDP-----ILLLQAN-----LTKGVRLSTYSP--SVILODRYSG- 373
Bos_taurus        P---LPDGFSGCSCPDS-----ISPLHAN-----LTREEGWLPTPSPT-SVILQGRYSG- 393
Pteropus_alecto   P---LPDPFSKSPRPDP-----ILSLHAN-----LTREGWVPAHSSI-CVILQGRHLG- 393
Mus_musculus       P---LWDLSSSEMLFSDS-----NLLLQAN-----LSESEGWQPNHSPS-LVIFQGRYSG- 379
Ornithorhynchus_anatinus PGGGVEQRTPLPPCPSPGGNPSRPSSPVG-----GTKEMAWAAVATAAPSIVLOTWHSDE 441
Pavo_muticus       PATAGSEVGPPQPQ-EQHSRRDALHSEVL--APWKDESQEWVERTTS--VVIQQRHTDE 444
Pavo_cristatus     PATAGSEVGPPQPQ-EQHSRRDALHSEVL--APWKDESQEWVERTTS--VVIQQRHTDE 444
Gallus_gallus      P--AGSELGHPQPQ-EQHSRRDALHSEVL--APWKDENQEWVERTTS--VVIQQRHTDE 440
Chelonia_mydas     PPGASSELGPPHQQPEQLPGKGPLHSAQP--SAWGAKKQEWVERTTS--VVIQPHRADE 461
Microcaecilia_unicolor PAPGTAEELGPVPAG----PESGVLDMHVT--AAVTARKQDWFPQQTTS--VIIQPRHSDE 460
Bufo_bufo          NSNSSDDLDPKNQQGAMRQFAAAHRSPEPEAVPVVADKQVWREKGRS--VIISPVHSDE 452
      .....490.....500.....510.....520.....530.....540

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Homo_sapiens      - 371
Pan_troglodytes   - 371
Macaca_mulatta    - 372
Callithrix_jacchus - 373
Bos_taurus        - 393
Pteropus_alecto   - 393
Mus_musculus       - 379
Ornithorhynchus_anatinus M 442
Pavo_muticus       M 445
Pavo_cristatus     M 445
Gallus_gallus      M 441
Chelonia_mydas     M 462
Microcaecilia_unicolor M 461
Bufo_bufo          M 453
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