

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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

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

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Pavo_muticus      -----MLR----- 3
Pavo_cristatus    -----MLR----- 3
Gallus_gallus      -----MLR----- 3
Anas_platyrhynchos -----MIG----- 3
Chelonia_mydas     -----MVN----- 3
Homo_sapiens       -----MRR----- 3
Macaca_mulatta     -----MRR----- 3
Callithrix_jacchus -----MRR----- 3
Mus_musculus       -----MRR----- 3
Bos_taurus         -----MRR----- 3
Equus_caballus     -----MNPGRAPQWGLRPGKGPWLWGIVAYACKRRLEVAPERELGQAAPPV 48
Pteropus_alecto    -----MSPG-----FAELRR----- 10
Ornithorhynchus_anatinus -----MRA-----AAAAA 8
Rhinatrema_bivittatum -----MAK----- 3
Xenopus_tropicalis HKPTTHRPTTVKSTAGPLESSTEQNHHPHHHHPHHHHHTTTTKPTTAKDQLEDNSDPS 180
.....130.....140.....150.....160.....170.....180

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:      . * : * ...      : : ** :
Pavo_muticus      ---AVAVLLAALCFH---AAVPQTTLNLNLPPELDSSG-----DDDDGFSGSGAGP 48
Pavo_cristatus    ---AVAVLLAALCFH---AAVPQTTLNLNLPPELDSSG-----DDDDGFSGSGAGP 48
Gallus_gallus      ---AVAVLLAALCFH---AAVPQTTLNLNLPPELDSSG-----DDDDGFSGSGAGP 48
Anas_platyrhynchos ---AAAVWLLALCLHA---AALPQTTLNLNLPPELDSSG-----DDDDGFSGSGAGP 49
Chelonia_mydas     ---VSAVWLLALFLQ---AACSQTINVLNLPPELDSSG-----DDDDTFSGSGSGP 48
Homo_sapiens       AALWLWLCALALSLQP---ALPQIVATNLPPELDSSG-----DDSDNFSGSGAGA 51
Macaca_mulatta     AALWLWLCALALSLQP---AMPQIVATNLPPELDSSG-----DDSDNFSGSGAGA 51
Callithrix_jacchus AALWLWLCALALSLQP---ALPQIVATNLPPELDSSG-----DDSDNFSGSGAGA 51
Mus_musculus       AALWLWLCALALRLQP---ALPQIVAVNVPPEDQDSSG-----DDSDNFSGSGTGA 51
Bos_taurus         AALWLWLCALALRLQP---ALLHSVAVNMPPEDQDSSG-----DDSDNFSGSGAGA 51
Equus_caballus     GPLPSALAVCRLHGNDGCFPSEQIVATNVPPEDQDSSG-----DDSDNFSGSGAGA 99
Pteropus_alecto    ---ALCPCARCP---QQIVATNMPPEDQDSSG-----DDSDIFSGSGAGG 49
Ornithorhynchus_anatinus AALVWVWLWLVAVCARF---CSACIAATSLPPEDLDSSG-----DDDDNFSGSGNGP 56
Rhinatrema_bivittatum ---VAVLGAFVLCFAL---VFSNDIANQPPEDQDSSG-----DDSDSFGSGGFV 47
Xenopus_tropicalis GEDKSIVHYIHHKVTTSPPDNEEPDVQIPDQDSSGSGSSSTPYMEYEETTEDPSGARIFI 240
.....190.....200.....210.....220.....230.....240

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      :                               :
Pavo_muticus      LPDQS-LTWRMPAEPNNS---LLATPVVFNEQLFPGIESRTEKKVTPPATSRVVTEEP 104
Pavo_cristatus    LPDQS-LTWRMPAEPNNS---LLATPVVFNEQLFPGIESRTEKKVTPPATSRVVTEEP 104
Gallus_gallus     LPDQS-LTWRMPAEPNNS---LLATAVVFNEQLFPRIESRTEKKVTPPATSRVVTEEP 104
Anas_platyrhynchos LADPS-LTWRIPAEPNNS---LPATPMDFNEQLFPRTESRTEKEVTAPPATSNVLTVEP 105
Chelonia_mydas    LTNHSVVAWNIPLEHANSSSRSTMSTGATVHQPAVDGTENPSEKEMVSTSPSTSDVVPDEA 108
Homo_sapiens      LQDITLSQQTPTSTWKDTQL---LTAIPTSPPE-PTGLEATAASTSTLPAGEGPK---EGEA 104
Macaca_mulatta    LQDITLSQQTPTSTWKDTWL---LTAIPMSPE-PTGLEATAASTSTLPAGEGPK---EGEA 104
Callithrix_jacchus LQDNTLLQQTTLSTRKDMWL---LTAIPVAPE-PTSLEATAASTSTLPAGEGPK---EGEA 104
Mus_musculus      LPD-TLSRQTPSTWKDVWL---LTAIPTAPE-PTSSTNTETAFTSVLPAGEKPE---EGEP 103
Bos_taurus        LPDITSSH-TPSTWKDLGP---VTTTATAPE-PTSPDAIAASTTILPTGEQPE---GGRA 103
Equus_caballus    LQDITLSKQTHAVQKDVGV---LTAIPTAPE-PTSTDITIAASTSIVPARAAPE---EGAV 152
Pteropus_alecto   LQDITLSHQT-STWKDTGL---LTVMPITAAE-PTNIDGIAASTSILPAREVPE---EGEG 101
Ornithorhynchus_anatinus MPGVSVIDLSPTRTNTLL---TSVSAASTTYPPIHREESNTEATLTSPSTEK---DNEK 110
Rhinatrema_bivittatum LRQDITVTVSQPEEREFLVLT---SVSPLASTSDQPAIEKTQSTSEMETTSTAKDLEVDEV 103
Xenopus_tropicalis GHDETATTKPSENEEDDGMFEGHHEKPTTSSSNEAGSHVQHDHHTTSSPSHHVEPDVE 300
      .....250.....260.....270.....280.....290.....300

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      *       *
Pavo_muticus      VVAVKDETPLLGSPEDEKPTDDAVVTIARNPTT----- 136
Pavo_cristatus    VVAVKDETPLLGSPEDEKPTDDAVVTIARNPTT----- 136
Gallus_gallus     VVAVKDETPLLGSPEDEKPTDDAVVTIARSPTT----- 136
Anas_platyrhynchos AVAVKDEVPIILGSPDEKPTND-VVTTERSPTT----- 136
Chelonia_mydas    VFSILKDETHELGSAVEKPTTNEAVIT-RSPTT----- 139
Homo_sapiens      VVLPEVEPGLTAR--EQEATPRPRETTQLPPT----- 134
Macaca_mulatta    VVLLEVEPDLTAR--EQEATPQPTETTQLPPT----- 134
Callithrix_jacchus VVLLEVEPDLTAR--EQEATLPPRETQLPPT----- 134
Mus_musculus      VLHVEAEPGFTARDKEKEVTTTRPRETVQLPIT----- 135
Bos_taurus        VLLAEVEPGLTAQ---KEATHPPSETTLHPPT----- 132
Equus_caballus    VYLSGVEPGFTTQ--EKETIHPSETTLHPPT----- 182
Pteropus_alecto   VLLAEVEPGFTTL--EKETTHPPSETTLHPAT----- 131
Ornithorhynchus_anatinus LVLSDHMHESYPNEGATTGPVKGTGQPTT----- 142
Rhinatrema_bivittatum LAGSEEIQKSNSTAESEEMKPSVVTIQTST----- 135
Xenopus_tropicalis VHHSTTAADLNKHHHHHHHHHPHHHTTPTTTSVDKNIPHHVDDSTTPADLNKHHHHHHHH 360
      .....310.....320.....330.....340.....350.....360

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      :       *
Pavo_muticus      -HFPSVLHVIPSEAS-----GTVH--ELEPKTPGSEMPGT-KEVPETN- 175
Pavo_cristatus    -HFPSVLHVIPSEAS-----GTVH--ELEPKTPGSEMPGT-KEVPETN- 175
Gallus_gallus     -HFPSVLHVVPSEAS-----GTVH--ELEPKTPGSEMPGT-KEVPETN- 175
Anas_platyrhynchos -HFPSVLHVIPSEAS-----DTVH--ELEPKAPGSDTPDT-INILQTD- 175
Chelonia_mydas    -QSLTVR-VTTTQAS-----TVH--VIEPSIHSSSSPGVSKETFDPS- 178
Homo_sapiens      -HLASTTTATTAAQEP-----ATSHPHRDMQPGHHETSTPAGPS-QADLH- 176
Macaca_mulatta    -HQAPTARATTAQEP-----ATSHPHRDMQPGHHETSAPAGPG-QADLH- 176
Callithrix_jacchus -HQASTARATEAQEP-----TSHPHRDMQPGHHETSAPAGPG-QSDLH- 176
Mus_musculus      -QRASTVRVTTAAQAA-----VTSHPHGGMQPGLHETSAPTAPG-QPDHQ- 177
Bos_taurus        -HSVSTARATMAPGP-----ATSHPHRDVQPDHHETSAPTGRG-RMEPH- 174
Equus_caballus    -HRASTARATTAQGP-----GTLPHRAVQPDHHKTSAPVVPDQLLDPH- 225
Pteropus_alecto   -HRASTARATTSQAP-----VTSVSHRAVQPDLLHETSPPVGPGLPDPH- 173
Ornithorhynchus_anatinus -RRPSTIKVTTVRLT-----STVH--NADLPNSRRQNASRIFPG-VFDSH- 183
Rhinatrema_bivittatum -QPTSQASSTTSTDSNVKDVVHH-----SDSHASTEGETDAPESTSENPSDGDVLSKSG 187
Xenopus_tropicalis HHPPTTTPETTTTSVDEEIPPHVDDSKAPTDLKHHHHHHHHHPHHHTTTESTTSTTSSTTKHA 420
      .....370.....380.....390.....400.....410.....420

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      :.....
Pavo_muticus      -----STTHPE-GDIAAAPTAPGDIVPTHEEVS-----EDGSGDP 210
Pavo_cristatus    -----STTHLE-GDIAAAPTAPGDIVPTHEEVS-----EDGSGDP 210
Gallus_gallus     -----STTHPE-GDIAAAPTAPGDVAPTHeEVS-----EDGSGDP 210
Anas_platyrhynchos -----STIHHEVGGITAAPTTAPEDVAPTHeEVS-----EDGSGDP 211
Chelonia_mydas    -----FTTISEEDAHSPTTTILTRGIYPIDDRTPS-----PEESSGDQ 217
Homo_sapiens      -----TPHTED-GGPSATERAAED-GASSQLPAA-----EGSGEQ 209
Macaca_mulatta    -----TPRTED-GGPSATERAAED-GASSQLPAA-----EGSGEQ 209
Callithrix_jacchus -----TPRTED-GGPSATEKAAED-GASSQLPAA-----EGSGEP 209
Mus_musculus      -----PPRVEG-GGTSVIKEVVED-GTANQLPAG-----EGSGEQ 210
Bos_taurus        -----RPHVEE-GGPPATEKAAEE-DPSTQIPVG-----EGSGEQ 207
Equus_caballus    -----PPSVAD-GGPSATEKAAED-GASTQLPAG-----EGSGEQ 258
Pteropus_alecto   -----TPNMED-RGPSATERAAED-GVVTIEFPAG-----EGSGEQ 206
Ornithorhynchus_anatinus -----LERGSE-GAVTASVSPEKASEMLTFAET-----EGSGDI 217
Rhinatrema_bivittatum FLFFPGNIHTSTAMVSDGTSPTINITAVENVVFPFEGRD-----EGSGDV 231
Xenopus_tropicalis DEVFVEVGKGRMAHGASATSAVPVLDEEVNIPDLVDLSTGNNSAVLEEGETDSKEGESSG 480
      .....430.....440.....450.....460.....470.....480

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      :      :      :      :      :      :      :      :      :      :      :      :      :      :      :      :
Pavo_muticus      GDFILVKDEDLVPTQNSEVPADSGRNAKA-----AGAS-GIMDRKEVLGGVIAGGLVGLV      264
Pavo_cristatus    GDFILVKDEDLVPTQNSEVPADSGRNAKA-----AGAS-GIMDRKEVLGGVIAGGLVGLV      264
Gallus_gallus      GDFILVKDEDLVPTQNSEVPADSGRNAKA-----AGAS-GIMDRKEVLGGVIAGGLVGLV      264
Anas_platyrhynchos GDFILIKDEDLVPTQNSEVPADSGRNAKA-----AGAS-GIMDRKEVLGGVIAGGLVGLV      265
Chelonia_mydas     GDFIFS-EERTIPSESE--LADSSRDAEA-----AGTSQGGLMDRKEVLGGVIAGGLVGLL      269
Homo_sapiens       -DFTFETSGENTAVVAVEPDRRNOSPVDQ---GATGASQGGLDRKEVLGGVIAGGLVGLI      265
Macaca_mulatta     -DFTFETSGENTAIVAVEPDHRNOSPVDQ---GATGASQGGLDRKEVLGGVIAGGLVGLI      265
Callithrix_jacchus -DFTFETSGESTAVVVVEPDHRNOSPMDQ---GATGASQGGLDRKEVLGGVIAGGLVGLI      265
Mus_musculus       -DFTFETSGENTAVAAVEPGLRNQPPVDE---GATGASQSLDRKEVLGGVIAGGLVGLI      266
Bos_taurus         -DFTFDLSGENAAGAAGEPGSRNGAPEDPEATGATGASQGGLDRKEVLGGVIAGGLVGLI      266
Equus_caballus     -DFTFDMSEESTAGAAVEPDQRKEPPVDP---EAAGASQGGLDRKEVLGGVIAGGLVGLI      314
Pteropus_alecto    -DFTFDVSGESTVGAAMEFDQONEPRDGH---GATGASQGLLERKEVLGGVIAGGLVGLI      262
Ornithorhynchus_anatinus SDFHFVGPSE-PPDIEVKHDPGKETPVDK---GATGAAQGILDRKEVLGGVIAGGLVGLL      273
Rhinatrema_bivittatum VEEFFFAVTEKENSRLNERKIHEDSKTSETDGTTDASKGIMDRKEVLGGVIAGGVVGLL      291
Xenopus_tropicalis EENFFFVNREVIQKGTAPPINRMINTDGAEKSSPDASHGIMERKEVLAGIAGGVAGLA      540
      .....490.....500.....510.....520.....530.....540

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Pavo_muticus      FAVFLVAFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPHKQEEFYA      308
Pavo_cristatus    FAVFLVAFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPHKQEEFYA      308
Gallus_gallus      FAVFLVAFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPHKQEEFYA      308
Anas_platyrhynchos FAVFLVAFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPHKQEEFYA      309
Chelonia_mydas     FAVFLVGFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPQKQEEFYA      313
Homo_sapiens       FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      310
Macaca_mulatta     FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      310
Callithrix_jacchus FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      310
Mus_musculus       FAVCLVAFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      311
Bos_taurus         FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      311
Equus_caballus     FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPTKQEEFYA      359
Pteropus_alecto    FAVCLVGFMLYRMKKKDEGSYSLDEPKQANGGAYQKPSKQEEFYA      307
Ornithorhynchus_anatinus FAMFLVGFMLYRMKKKDEGSYSLDEPKQANGG-YQKPQKQEEFYA      317
Rhinatrema_bivittatum FAVFLVGFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPQKQEEFYA      335
Xenopus_tropicalis FAVFLVGFMLYRMKKKDEGSYSLDEPKQSNGG-YQKPREQREFYA      584
      .....550.....560.....570.....580.....

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