

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/DYNALIT.pep Feb 1 12:05:12 2022

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|   |                                 |                 |    |
|---|---------------------------------|-----------------|----|
| Pan_troglodytes                             | -----MPHSQTPCGARRLILGWSLLRACDVC | GSQAVDDAQ       | 35 |
| Macaca_mulatta                              | -----MKLSG-----KLQKLKWKKEESMEVK | ---VMELKL       | 27 |
| Homo_sapiens                                | -----MPSET-----LWEIAKAEVEK      | -----           | 16 |
| Mus_musculus                                | -----MPSET-----LWEIAK           | -----           | 11 |
| Rattus_norvegicus                           | -----MPSET-----LWEIAK           | -----           | 11 |
| Heterocephalus_glaber                       | -----MPSET-----LWEIAK           | -----           | 11 |
| Equus_caballus                              | -----MPSET-----LWEIAK           | -----           | 11 |
| Bos_taurus                                  | -----MPSET-----LWEIAK           | -----           | 11 |
| Canis_lupus_familiaris                      | -----MPSET-----LWEIAK           | -----           | 11 |
| Callithrix_jacchus                          | -----MPSET-----LWEIAK           | -----           | 11 |
| Xenopus_tropicalis                          | -----MPRTGDN-----LWDIAISEVQ     | -----           | 17 |
| Rhinatrema_bivittatum                       | MLRGSHRNCYKRARGQSSLRFTKMPKASDN  | -----LWDIALAEVQ | 42 |
| Chelonia_mydas                              | -----MPKPSDT-----LWDIAK         | -----           | 13 |
| Pavo_muticus                                | -----TSDT-----LWDIARDEVE        | -----           | 14 |
| Pavo_cristatus                              | -----TSDT-----LWDIARDEVE        | -----           | 14 |
| Gallus_gallus                               | -----MPKAGDT-----LWDIARDEVE     | -----           | 17 |
| Anas_platyrhynchos                          | -----MELQGR-----VRLGVRERLC      | -----           | 17 |
| 1.....10.....20.....30.....40.....50.....60 |                                 |                 |    |

|   |                                    |                           |    |
|---|------------------------------------|---------------------------|----|
| Pan_troglodytes                               | ARDYFRSRTFGDELHKASSPQGPPLLVRGFAVIS | EGKLGKHCGNETLWEIAKAEVEKRG | 95 |
| Macaca_mulatta                                | EKNLFSS-----LAVKMGKQEKYF           | ---LIENR-                 | 51 |
| Homo_sapiens                                  | -RGINGS-----EGDGAET                | -----                     | 30 |
| Mus_musculus                                  | -----                              | -----AEVEKRR              | 18 |
| Rattus_norvegicus                             | -----                              | -----AEVEKRR              | 18 |
| Heterocephalus_glaber                         | -----                              | -----AEVERRG              | 18 |
| Equus_caballus                                | -----                              | -----AEVEKRG              | 18 |
| Bos_taurus                                    | -----                              | -----AEVEKRG              | 18 |
| Canis_lupus_familiaris                        | -----                              | -----AEVEKR-              | 17 |
| Callithrix_jacchus                            | -----                              | -----AEVEKKG              | 18 |
| Xenopus_tropicalis                            | -----                              | -----QKENAG               | 23 |
| Rhinatrema_bivittatum                         | -----                              | -----KKENV-               | 47 |
| Chelonia_mydas                                | -----                              | -----AEVEKKE              | 20 |
| Pavo_muticus                                  | -----                              | -----KRENSG               | 20 |
| Pavo_cristatus                                | -----                              | -----KRENSG               | 20 |
| Gallus_gallus                                 | -----                              | -----KRENSG               | 23 |
| Anas_platyrhynchos                            | -----                              | -----TQRGSG               | 23 |
| .....70.....80.....90.....100.....110.....120 |                                    |                           |    |

|  |                        |   |     |
|--|------------------------|---|-----|
| Pan_troglodytes                                  | INGSEGDGAETAEKSVFFIGS  | -----KNG-GKTTIILRCLDR                   | 131 |
| Macaca_mulatta                                   | -----VMLIYYECL         | -----TMS-GKTTIILRCLDR                   | 75  |
| Homo_sapiens                                     | -----EKFVFFIGS         | -----KNG-GKTTIILRCLDR                   | 54  |
| Mus_musculus                                     | SHGSEGDGAETAEKSVFFIGS  | -----KNG-GKTTIILRCLDR                   | 54  |
| Rattus_norvegicus                                | CHGSDGDGMEIGKSVFFIGS   | -----KNG-GKTTIILRCLDR                   | 54  |
| Heterocephalus_glaber                            | SNGSEGDGVGIGDKSVFFIGS  | -----KNG-GKTTIILRCLDR                   | 54  |
| Equus_caballus                                   | SNGSESDGVEIGKSVFFIGS   | -----KNG-GKTTIILRCLDR                   | 54  |
| Bos_taurus                                       | SSENEGDGAETAEKSVFFIGS  | -----KNG-GKTTIILRCLDR                   | 54  |
| Canis_lupus_familiaris                           | --GSEGDGLEIGKSVFFIGS   | -----KNG-GKTTIILRCLDR                   | 51  |
| Callithrix_jacchus                               | INGSEGDGVFEGKSVFFIGS   | -----KNA-GKTTIILRCLDR                   | 54  |
| Xenopus_tropicalis                               | DGNEEVE--ENSERSVFFIGN  | -----KNG-GKTTIILRCLDR                   | 57  |
| Rhinatrema_bivittatum                            | DGKEDGDGVEIWEKSVFFVGN  | -----KNG-GKTTIILRCLDR                   | 83  |
| Chelonia_mydas                                   | NLEGNGDGVEVWEKSVFFVGN  | -----KNG-GKTTIILRCLDR                   | 56  |
| Pavo_muticus                                     | D---DGKRVEVWEKSVLFMGS  | -----KNG-GKTTIILRCLER                   | 53  |
| Pavo_cristatus                                   | D---DGKRVEVWEKSVLFMGS  | -----KNG-GKTTIILRCLER                   | 53  |
| Gallus_gallus                                    | D---DGKRVEVCEKSVLFMGS  | -----KNG-GKTTIILRCLER                   | 56  |
| Anas_platyrhynchos                               | TGTGSGGARAVVRDITVRFWGA | PFVWSWERPRAEGRGCGRRRLRGPKAGRGRPRLLPPAPR | 83  |
| .....130.....140.....150.....160.....170.....180 |                        |   |     |

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: .:.: : *: :
Pan_troglodytes DEPPKPTLAL EYTYGR ----- RAKGHN ----- 153
Macaca_mulatta DEPPKPTLAL EYTYGR ----- RAKGHN ----- 97
Homo_sapiens DEPPKPTLAL EYTYGR ----- RAKGHN ----- 76
Mus_musculus DESAKPTLAL EYTYGR ----- KTKGHN ----- 76
Rattus_norvegicus DEPAKPTLAL EYTYGR ----- KTKGHN ----- 76
Heterocephalus_glaber DEPAKPTLAL EYTYGR ----- RAKGHNTEFWCVLRVGVEKGECLTVKKELIEGRGFCC 107
Equus_caballus DEPPKPTLAL EYTYGR ----- RAKGHN ----- 76
Bos_taurus DEPPKPTLAL EYTYGR ----- RTKGHN ----- 76
Canis_lupus_familiaris DEPPKPTLAL EYTYGR ----- RAKGHN ----- 73
Callithrix_jacchus DEPPKPTLAL EYTYGR ----- RAKGHN ----- 76
Xenopus_tropicalis DEAPKPTLAL EYTFGR ----- RAKGHN ----- 79
Rhinatrema_bivittatum DEPPKPTLAL EYTFGR ----- RAKGHN ----- 105
Chelonia_mydas DEIPKPTLAL EYTFGR ----- RAKGHN ----- 78
Pavo_muticus EEIPKPTLVLE YTFGR ----- RARR ----- 73
Pavo_cristatus EEIPKPTLVLE YTFGR ----- RARR ----- 73
Gallus_gallus EEVPKPTLVLE YTFGR ----- RARR ----- 76
Anas_platyrhynchos NYSSQPAPRRPHGDGQPGPAGGERCPRGKDHYYTFV ----- 120
.....190.....200.....210.....220.....230.....240

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*** *****:*** ** :** :*** :.: *::*:*****:***
Pan_troglodytes -----TPKDIAHFWE LGGGTSLLDLISIPITSDTLR -----TFSIVLVLDLSKPN DLWP 202
Macaca_mulatta -----TPKDIAHFWE LGGGTSLLDLISIPITSDTLR -----TFSIVLVLDLSKPN DLWP 146
Homo_sapiens -----TPKDIAHFWE LGGGTSLLDLISIPITSDTLR -----TFSIVLVLDLSKPN DLWP 125
Mus_musculus -----TPKDIAHFWE LGGGTSLLDLISIPITVDTLR -----TFSIVLVLDLSKPN DLWS 125
Rattus_norvegicus -----TPKDIAHFWE LGGGTSLLDLISIPITVDTLR -----TFSIVLVLDLSKPN DLWP 125
Heterocephalus_glaber LPHKRKPKDIAHFWE LGGGTSLLDLISIPITSDTLR -----TFSIVLVLDLSKPN DLWP 161
Equus_caballus -----IPKDIAHFWE LGGGTSLLDLISIPITSDTLR -----TFSIVLVLDLSKPN DLWP 125
Bos_taurus -----IPKDIAHFWE LGGGTSLLDLISIPITSDTLRYFYFFRTFSIVLVLDLSKPN DLWP 131
Canis_lupus_familiaris -----IPKDIAHFWE LGGGTSLLDLISIPITSDNLR -----TFSIVLVLDLSKPN DLWP 122
Callithrix_jacchus -----TPKDIAHFWE LGGGISLLDLISIPITSDTLR -----MFSIVLVLDLSKPN DLWP 125
Xenopus_tropicalis -----TPKDIAHFWE LGGGTSLLDLIQIPITSDNLM -----SFSVVLVLDLSKPN ELWP 128
Rhinatrema_bivittatum -----TPKDIAHFWE LGGGISLLDLIRIPITLDSIR -----SFSVVLVLDLSKPN SNLWS 154
Chelonia_mydas -----RPKDIAHFWE LGGGTSLLDLICIPITNDNIR -----TFAILVLVLDLSKPN ELWP 127
Pavo_muticus ---HNAPKDIAHFWE IGGGTSLLDLIRIPITVNNIR -----SFAVVLVLDLSKPN ELWM 124
Pavo_cristatus ---HNAPKDIAHFWE IGGGTSLLDLIRIPITVNNIR -----SFAVVLVLDLSKPN ELWM 124
Gallus_gallus ---HNAPKDIAHFWE IGGGTSLLDLIRIPITVNNIR -----SFAVVLVLDLSKPN ELWM 127
Anas_platyrhynchos ---SREPKDTAHFWE LGGGTSLLDLIRIPITVNNIR -----SFAVVLVLDLSKPN ELWT 171
.....250.....260.....270.....280.....290.....300

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:*.:.: : :*: : : :*: : :*: :*: *
Pan_troglodytes TMENLLQATKSHVDKVI M KLGKTN AKAVSEMRQKIWN NMOKDHPDRELIDPFVPLVIIG 262
Macaca_mulatta TMENLLQATKSHVDKMI M KLGKTN PKAASEMRQKIWN NMOKDHPDRELIDPFVPLVIIG 206
Homo_sapiens TMENLLQATKSHVDKVI M KLGKTN AKAVSEMRQKIWN NMOKDHPDRELIDPFVPLVIIG 185
Mus_musculus TMENLLQATKSHVDKVI M KLGKTSKASAE MRQRMWSV VQK DHPDRELIDPFPIPLVIIG 185
Rattus_norvegicus TMENLLQATKSHVDKVI M KLGKANSKASAE MRQRMWSV MOKDHPDRELIDPFPIPLVIIG 185
Heterocephalus_glaber TMENLLQATRSHVDKVI M KLGRTNSKAASE MRQKIWSKMOKDHPDRELIDPFPIPLVIIG 221
Equus_caballus TMENLLQATKSHVNKVIM KLGKNSKASAE MRQKIWSNMOKDHPDRELIDPFPIPLVIIG 185
Bos_taurus TMENLLQATKLNIDKVI M KLGKNSKAASE MRQKMWSNMOKDHPDRELIDPFPIPLVIIG 191
Canis_lupus_familiaris TMENLLQATKSHVDKMI M KLGKTN SKAVSEMRQKIWSNMOKDHPDRELIDPFPIPLVIIG 182
Callithrix_jacchus TMENLLQATKSHVDKVI M KLGKNSKAVSE MRQKIWN NMOKDHPDRELIDPFVPLVIIG 185
Xenopus_tropicalis TMESLLETTRKHVDKII TGI AKNSSKIANQIKQLWQTIPKDHPDRELIDPFPLPLLIAG 188
Rhinatrema_bivittatum AMESLLQVTKNHVNKVII DMGKKNSKIANEIKQKMWKSMOKDHPDRELIDPFPIPLVIIG 214
Chelonia_mydas TMDSLLQVTRNHVDKII T KLGKTNPKVATEIKQRMWN NMOKDHPDRELIDPFPIPLVIIG 187
Pavo_muticus TMENLLQATRNVNKKILAKLGADPEVAAEMKQKMQNNLQRDHPDYDLVDPFPIPLVIIG 184
Pavo_cristatus TMENLLQATRNVNKKILAKLGADPEVAAEMKQKMQNNLQRDHPDYDLVDPFPIPLVIIG 184
Gallus_gallus TMENLLQATRNVNKKILAKLEKTDPEVAAEIKQKMQNNLQRDHPDYDLVDPFPIPLVIIG 187
Anas_platyrhynchos TMENLLQAIRHVNKKILAKLEKTNPEVATEIKQRMRSLSLQKDPDYELVDPFPIPLVIIG 231
.....310.....320.....330.....340.....350.....360

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****:::*. * * :.:*****:*****:*****: * * * .*:***** :
Pan_troglodytes SKYDVFQDFESEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 320
Macaca_mulatta SKYDIFQDFESEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 264
Homo_sapiens SKYDVFQDFESEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 243
Mus_musculus SKYDIFQDFDPEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 243
Rattus_norvegicus SKYDIFQDFDPEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--MRGVINQLAFGIDK 243
Heterocephalus_glaber SKYDIFQDFDSEKRRKAICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 279
Equus_caballus SKYDIFQDFDSEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 243
Bos_taurus SKYDIFQDFDSEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGINK 249
Canis_lupus_familiaris SKYDIFQDFDSEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--VRGVINQLAFGIDK 240
Callithrix_jacchus SKYDIFQDFESEKRRKVICKTLRFVAHYYGASLMFTSKSEALLLK--IRGVINQLAFGIDK 243
Xenopus_tropicalis SKYDIFQDFDSEIRKIICKTLRFVAHYYGASLLFTSKSDALMLKGVTRSFINHLAFGLDK 248
Rhinatrema_bivittatum SKYDIFQDFDSEKRRKVICKTLRFVAHYYGASLMFTSKSEVHMLK--TRALINHLAFGLEK 272
Chelonia_mydas SKYDIFHEFDSEMRKIMCKTLRFVSHYYGASLVFTSKSEALLLK--ARVLINHLAFGFDR 245
Pavo_muticus SKYDIFHEFDSEMRKIIISRTLRFVSHYYGASLVFTSKSEALLLK--ARALINHLAFGYDR 242
Pavo_cristatus SKYDIFHEFDSEMRKIIISRTLRFVSHYYGASLVFTSKSEALLLK--ARALINHLAFGYDR 242
Gallus_gallus SKYDIFHEFDSEMRKIIISRTLRFVSHYYGASLVFTSKSEALLLK--ARALINHLAFGYDR 245
Anas_platyrhynchos SKYDIFHEFDSEMRKTVSKTLRFISHYYGASLVFTSKSEALQLK--ARVLINHLAFGYER 289
.....370.....380.....390.....400.....410.....420

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***:.* .***:.* ** : * .
Pan_troglodytes SKSICVDQNKPLFITAGLDSFGQIG-----SPPVPENDIGKLHAHSP----- 362
Macaca_mulatta SKSICVDQNKPLFITAGLDSFGQIG-----SPPVPENDIGKLHAHSP----- 306
Homo_sapiens SKSICVDQNKPLFITAGLDSFGQIG-----SPPVPENDIGKLHAHSP----- 285
Mus_musculus SKSICVDQNKPLFITAGLDSLQIG-----SPPVPDSDIGKLQAHSP----- 285
Rattus_norvegicus SKSMCVDQNKPLFITAGLDSLQIG-----SPPVPDSDIGKLQAHSP----- 285
Heterocephalus_glaber SKSICVDQNKPLFITAGLDSLQIG-----PPPVPNDIGKPHAHSP----- 321
Equus_caballus SKSICVDQNKPLFITAGLDSLQIG-----SPPVPNDIGKLHARSP----- 285
Bos_taurus SKSICVDQNKPLFITAGLDSLQIG-----PPPLPNDIGKLHARSP----- 291
Canis_lupus_familiaris SKSICVDQNKPLFITAGLDSLQIG-----SPPIPNDIGKLHAHSP----- 282
Callithrix_jacchus SKSICVDQNKPLFITAGLDSFSQIAYLLSRDLFTNPFLSSRTDYLHLQKARGKAGNRRY 303
Xenopus_tropicalis SKSLSIDHNKPLIIPAGSDSFSQIG-----SPPASDTDISQFRVRTP----- 290
Rhinatrema_bivittatum SKSLSV DINKPLFIPAGLDSLQIG-----SPSTSERDIGQIHARTP----- 314
Chelonia_mydas SKSVSVDQNKPLFIPAGLDSLQIG-----PPPASDSDIGKLHAHTP----- 287
Pavo_muticus SKSVSVDHSPKPLFIPAGLDSLQIG-----PPPTSDSSIGKMRANTP----- 284
Pavo_cristatus SKSVSVDHSPKPLFIPAGLDSLQIG-----PPPTSDSSIGKMRANTP----- 284
Gallus_gallus SKSVSVDHSPKPLFIPAGLDSLQIG-----PPPTSDSNIGKMRANTP----- 287
Anas_platyrhynchos SKSVSVDHSPKPLFIPAGMDSLQIG-----PPPTSDSDIGKMRANTP----- 331
.....430.....440.....450.....460.....470.....480

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.* : : : : * . * . * * :
Pan_troglodytes -----MELWKKVYE---KLFPPKSIINMLKDIKDPARDPOYAES-----EVDEMRIQ 405
Macaca_mulatta -----MELWKKVYE---KLFPPKSIINMLKDIKDPARDPOYAES-----EVDEMRIQ 349
Homo_sapiens -----MELWKKVYE---KLFPPKSIINMLKDIKDPARDPOYAEN-----EVDEMRIQ 328
Mus_musculus -----MELWKKVYD---KLFPPKSTGTAKVQDPARDPOYAES-----EVDEMVRQ 328
Rattus_norvegicus -----MELWKKVYE---KLFPPKSTSTLKAIQDPARDPOYAES-----EVDEMVRQ 328
Heterocephalus_glaber -----MELWKKVYE---KLFPPKRINTLKDVKDPARDPOYAES-----EVDEMRIQ 364
Equus_caballus -----MELWKKVYE---RLFPPKNTNTLKDIKDPARDPOYAES-----EVDEMRIQ 328
Bos_taurus -----MDLWKKVYE---KLFPPKSIINMLKDIKDPARDPOYAES-----EVDEMRIQ 334
Canis_lupus_familiaris -----MDLWKKVYE---RVFPPKSTNTLKHIKDPARDPOYAEG-----EVDEMRIQ 325
Callithrix_jacchus SYGNEFCFQISLIRLCYENGKTIPLQKNKLHCRSEDDLWTTIPEESGEGVDGRDEVLT 363
Xenopus_tropicalis -----MELWKKVFE---KNFPPKNTNDFKETRDPKDPQYSEA-----EVDAMRAL 333
Rhinatrema_bivittatum -----IELWKKMYE---RTFPPKNISDLKEVKDPARDPOYAEN-----EVDMMRAQ 357
Chelonia_mydas -----VDLWKKIYE---KTFPPKSTTDLKDVNDPAQDPQYAEY-----EVDAMRAQ 330
Pavo_muticus -----LELWKKVFE---KTFPPKSVGDLQSKDPAQDSQYAEY-----EVDVMRAQ 327
Pavo_cristatus -----LELWKKVFE---KTFPPKSVGDLQSKDPAQDSQYAEY-----EVDVMRAQ 327
Gallus_gallus -----LELWKKVFE---KTFPPRSFSDQSKDPAQDSQYAEY-----EVDVMRAQ 330
Anas_platyrhynchos -----LELWKKVFE---KTFPPESFSDQSKDPAQDSQYAEH-----EVDVMRAQ 374
.....490.....500.....510.....520.....530.....540

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Pan_troglodytes      K D Q ----- A H L R R Y P I ----- K K Q D K T S C V A D N Q D Y F Q V T - K H ----- 437
Macaca_mulatta       K D Q ----- A H L T R Y P I ----- K K Q D K T S R V G D N Q D Y F Q G G - I A ----- 381
Homo_sapiens         K D ----- L E L E Q Y ----- K R S S S K S W K Q I E L D S ----- 351
Mus_musculus         K D ----- Q E L E H Y ----- K R S S S K T W K Q I E L D S ----- 351
Rattus_norvegicus    K D ----- Q E L E Q Y ----- K R S S S K T W K Q I E L D S ----- 351
Heterocephalus_glaber K D ----- Q E L E Q Y ----- K R N A S K S W K Q I E L D S ----- 387
Equus_caballus       K D ----- Q E L E Q Y ----- K R S S S K S W K Q I E L D S ----- 351
Bos_taurus          K D ----- Q E L E Q Y ----- K R S S S K S W K Q I E L D S ----- 357
Canis_lupus_familiaris K D ----- Q E L E Q Y ----- K R S S S K S W K Q I E L D S ----- 348
Callithrix_jacchus   P N N ----- G H I R N R Y K G I M R R F F G G E Q I C H A L S F V V I S T S F P L N C - L S G F Y T L 411
Xenopus_tropicalis   K D ----- Q E L E Q Y ----- K R N A D R T W K A M A L E S N A P ----- 359
Rhinatrema_bivittatum K D ----- Q E L E Q Y ----- T R N A S K S W K G M E L D V S G R ----- 383
Chelonia_mydas       K N Q ----- A K R R F R D S I F C S E E D N N L Y F T Y S G K S N V L E V R E L N Y Q V N M A S Q I P W 379
Pavo_muticus         K N Q V C A C S S I A L H N Q E L E Q Y ----- K R N A S K S W K E M D F D P D ----- 363
Pavo_cristatus       K N Q V C A C S S I A L H N Q E L E Q Y ----- K R N A S K S W K E M D F D P D ----- 363
Gallus_gallus        K N Q V C A C S S I A L H N Q E F E Q Y ----- K R N A S K S W K E M D F D P D ----- 366
Anas_platyrhynchos   K ----- K Q E L E Q Y ----- K R N A S K S W K E M D F D P D ----- 398
.....550.....560.....570.....580.....590.....600

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Pan_troglodytes      --- H L K N R P S W S T T V Q R K D P D A V C P L Q L H E W R G F P R ----- 470
Macaca_mulatta       --- F K K ----- P F S S V D W C T C ----- 394
Homo_sapiens         ----- ----- ----- 351
Mus_musculus         ----- ----- ----- 351
Rattus_norvegicus    ----- ----- ----- 351
Heterocephalus_glaber ----- ----- ----- 387
Equus_caballus       ----- ----- ----- 351
Bos_taurus          ----- ----- ----- 357
Canis_lupus_familiaris ----- ----- ----- 348
Callithrix_jacchus   W A G F A Q K G L S I G E N S A V R S S P A Y T E L C P L K E A C P S V I G S L G A R G P S Q T R E K ----- 462
Xenopus_tropicalis   ----- ----- ----- 359
Rhinatrema_bivittatum ----- ----- ----- 383
Chelonia_mydas       Y E N L A E M K M P W M W N T G P D S H V P A I Q N L N F K V Q S G O M L A I G S S A C G K T P L L D V I T C R D H G 439
Pavo_muticus         ----- ----- ----- 363
Pavo_cristatus       ----- ----- ----- 363
Gallus_gallus        ----- ----- ----- 366
Anas_platyrhynchos   ----- ----- ----- 398
.....610.....620.....630.....640.....650.....660

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Pan_troglodytes      ----- ----- ----- 470
Macaca_mulatta       ----- ----- ----- 394
Homo_sapiens         ----- ----- ----- 351
Mus_musculus         ----- ----- ----- 351
Rattus_norvegicus    ----- ----- ----- 351
Heterocephalus_glaber ----- ----- ----- 387
Equus_caballus       ----- ----- ----- 351
Bos_taurus          ----- ----- ----- 357
Canis_lupus_familiaris ----- ----- ----- 348
Callithrix_jacchus   ----- ----- ----- 462
Xenopus_tropicalis   ----- ----- ----- 359
Rhinatrema_bivittatum ----- ----- ----- 383
Chelonia_mydas       G K I K S G Q I I I N G Q P S T H Q L V K K C I A H V R Q D D R L L P N L T V K E T L L F V A K L R L P K T F S D S Q R 499
Pavo_muticus         ----- ----- ----- 363
Pavo_cristatus       ----- ----- ----- 363
Gallus_gallus        ----- ----- ----- 366
Anas_platyrhynchos   ----- ----- ----- 398
.....670.....680.....690.....700.....710.....720

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|                        |   |     |
|------------------------|---|-----|
| Pan_troglodytes        | -----   | 470 |
| Macaca_mulatta         | -----   | 394 |
| Homo_sapiens           | -----   | 351 |
| Mus_musculus           | -----   | 351 |
| Rattus_norvegicus      | -----   | 351 |
| Heterocephalus_glaber  | -----   | 387 |
| Equus_caballus         | -----   | 351 |
| Bos_taurus             | -----   | 357 |
| Canis_lupus_familiaris | -----   | 348 |
| Callithrix_jacchus     | -----   | 462 |
| Xenopus_tropicalis     | -----   | 359 |
| Rhinatrema_bivittatum  | -----   | 383 |
| Chelonia_mydas         | EKRVEDVIAELRLRQCANTRVGNEYIRGVSGGERRRVSIGVQLLWNPGLILDEPTSGLD | 559 |
| Pavo_muticus           | -----   | 363 |
| Pavo_cristatus         | -----   | 363 |
| Gallus_gallus          | -----   | 366 |
| Anas_platyrhynchos     | -----   | 398 |
|                        | .....730.....740.....750.....760.....770.....780            |     |

|                        |   |     |
|------------------------|---|-----|
| Pan_troglodytes        | -----   | 470 |
| Macaca_mulatta         | -----   | 394 |
| Homo_sapiens           | -----   | 351 |
| Mus_musculus           | -----   | 351 |
| Rattus_norvegicus      | -----   | 351 |
| Heterocephalus_glaber  | -----   | 387 |
| Equus_caballus         | -----   | 351 |
| Bos_taurus             | -----   | 357 |
| Canis_lupus_familiaris | -----   | 348 |
| Callithrix_jacchus     | -----   | 462 |
| Xenopus_tropicalis     | -----   | 359 |
| Rhinatrema_bivittatum  | -----   | 383 |
| Chelonia_mydas         | SFTAHLNVLITLSRLARGNRLVLLSVHQPRLDIFQLFDLVLLMTSGTTIYSGTARNMVOYF | 619 |
| Pavo_muticus           | -----   | 363 |
| Pavo_cristatus         | -----   | 363 |
| Gallus_gallus          | -----   | 366 |
| Anas_platyrhynchos     | -----   | 398 |
|                        | .....790.....800.....810.....820.....830.....840              |     |

|                        |  |     |
|------------------------|--|-----|
| Pan_troglodytes        | -----  | 470 |
| Macaca_mulatta         | -----  | 394 |
| Homo_sapiens           | -----  | 351 |
| Mus_musculus           | -----  | 351 |
| Rattus_norvegicus      | -----  | 351 |
| Heterocephalus_glaber  | -----  | 387 |
| Equus_caballus         | -----  | 351 |
| Bos_taurus             | -----  | 357 |
| Canis_lupus_familiaris | -----  | 348 |
| Callithrix_jacchus     | -----  | 462 |
| Xenopus_tropicalis     | -----  | 359 |
| Rhinatrema_bivittatum  | -----  | 383 |
| Chelonia_mydas         | TEIGYPCPKFSNPADFVLDLTSIDNRSKEKEMESQKRARSLATLFEKVKDVFDFLWKA | 679 |
| Pavo_muticus           | -----  | 363 |
| Pavo_cristatus         | -----  | 363 |
| Gallus_gallus          | -----  | 366 |
| Anas_platyrhynchos     | -----  | 398 |
|                        | .....850.....860.....870.....880.....890.....900           |     |



# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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|                        |  |     |
|------------------------|--|-----|
| Pan_troglodytes        | -----  | 470 |
| Macaca_mulatta         | -----  | 394 |
| Homo_sapiens           | -----  | 351 |
| Mus_musculus           | -----  | 351 |
| Rattus_norvegicus      | -----  | 351 |
| Heterocephalus_glaber  | -----  | 387 |
| Equus_caballus         | -----  | 351 |
| Bos_taurus             | -----  | 357 |
| Canis_lupus_familiaris | -----  | 348 |
| Callithrix_jacchus     | -----  | 462 |
| Xenopus_tropicalis     | -----  | 359 |
| Rhinatrema_bivittatum  | -----  | 383 |
| Chelonia_mydas         | EGDCVTTTVYSDQSSLFTPPEVINMHSHTDQLPGGLKQFTVLFSSQISSDFRDLSTLLIH | 739 |
| Pavo_muticus           | -----  | 363 |
| Pavo_cristatus         | -----  | 363 |
| Gallus_gallus          | -----  | 366 |
| Anas_platyrhynchos     | -----  | 398 |
|                        | .....910.....920.....930.....940.....950.....960             |     |

|                        |   |     |
|------------------------|---|-----|
| Pan_troglodytes        | -----   | 470 |
| Macaca_mulatta         | -----   | 394 |
| Homo_sapiens           | -----   | 351 |
| Mus_musculus           | -----   | 351 |
| Rattus_norvegicus      | -----   | 351 |
| Heterocephalus_glaber  | -----   | 387 |
| Equus_caballus         | -----   | 351 |
| Bos_taurus             | -----   | 357 |
| Canis_lupus_familiaris | -----   | 348 |
| Callithrix_jacchus     | -----   | 462 |
| Xenopus_tropicalis     | -----   | 359 |
| Rhinatrema_bivittatum  | -----   | 383 |
| Chelonia_mydas         | GSEALLMSLLIGFLYYGHDTKLSIQDTVALLFMIGALIPFTVLLDVIAKCHSERAMLYH | 799 |
| Pavo_muticus           | -----   | 363 |
| Pavo_cristatus         | -----   | 363 |
| Gallus_gallus          | -----   | 366 |
| Anas_platyrhynchos     | -----   | 398 |
|                        | .....970.....980.....990.....1000.....1010.....1020         |     |

|                        |  |     |
|------------------------|--|-----|
| Pan_troglodytes        | -----  | 470 |
| Macaca_mulatta         | -----  | 394 |
| Homo_sapiens           | -----  | 351 |
| Mus_musculus           | -----  | 351 |
| Rattus_norvegicus      | -----  | 351 |
| Heterocephalus_glaber  | -----  | 387 |
| Equus_caballus         | -----  | 351 |
| Bos_taurus             | -----  | 357 |
| Canis_lupus_familiaris | -----  | 348 |
| Callithrix_jacchus     | -----  | 462 |
| Xenopus_tropicalis     | -----  | 359 |
| Rhinatrema_bivittatum  | -----  | 383 |
| Chelonia_mydas         | DLEDGMYTVTPYFFAKILGELPEHCAFVVIYGVPIYWLTLNPEPEHFLNFLAVWLTVF | 859 |
| Pavo_muticus           | -----  | 363 |
| Pavo_cristatus         | -----  | 363 |
| Gallus_gallus          | -----  | 366 |
| Anas_platyrhynchos     | -----  | 398 |
|                        | .....1030.....1040.....1050.....1060.....1070.....1080     |     |

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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|                        |  |     |
|------------------------|--|-----|
| Pan_troglodytes        | -----  | 470 |
| Macaca_mulatta         | -----  | 394 |
| Homo_sapiens           | -----  | 351 |
| Mus_musculus           | -----  | 351 |
| Rattus_norvegicus      | -----  | 351 |
| Heterocephalus_glaber  | -----  | 387 |
| Equus_caballus         | -----  | 351 |
| Bos_taurus             | -----  | 357 |
| Canis_lupus_familiaris | -----  | 348 |
| Callithrix_jacchus     | -----  | 462 |
| Xenopus_tropicalis     | -----  | 359 |
| Rhinatrema_bivittatum  | -----  | 383 |
| Chelonia_mydas         | CARAMALWMAALLPTLQLSAFFGNVLFITFFLSGGFVVRLESILWLVPEFWISKISFVRWSY | 919 |
| Pavo_muticus           | -----  | 363 |
| Pavo_cristatus         | -----  | 363 |
| Gallus_gallus          | -----  | 366 |
| Anas_platyrhynchos     | -----  | 398 |
|                        | .....1090.....1100.....1110.....1120.....1130.....1140         |     |

|                        |   |     |
|------------------------|---|-----|
| Pan_troglodytes        | -----   | 470 |
| Macaca_mulatta         | -----   | 394 |
| Homo_sapiens           | -----   | 351 |
| Mus_musculus           | -----   | 351 |
| Rattus_norvegicus      | -----   | 351 |
| Heterocephalus_glaber  | -----   | 387 |
| Equus_caballus         | -----   | 351 |
| Bos_taurus             | -----   | 357 |
| Canis_lupus_familiaris | -----   | 348 |
| Callithrix_jacchus     | -----   | 462 |
| Xenopus_tropicalis     | -----   | 359 |
| Rhinatrema_bivittatum  | -----   | 383 |
| Chelonia_mydas         | ESLMQIQFTTELTYQMTVGNVTFQIPGKLVIQAMNLDSPYASYLILVGIISGFMVLYYL | 979 |
| Pavo_muticus           | -----   | 363 |
| Pavo_cristatus         | -----   | 363 |
| Gallus_gallus          | -----   | 366 |
| Anas_platyrhynchos     | -----   | 398 |
|                        | .....1150.....1160.....1170.....1180.....1190.....1200      |     |

|                        |               |     |
|------------------------|---------------|-----|
| Pan_troglodytes        | -----         | 470 |
| Macaca_mulatta         | -----         | 394 |
| Homo_sapiens           | -----         | 351 |
| Mus_musculus           | -----         | 351 |
| Rattus_norvegicus      | -----         | 351 |
| Heterocephalus_glaber  | -----         | 387 |
| Equus_caballus         | -----         | 351 |
| Bos_taurus             | -----         | 357 |
| Canis_lupus_familiaris | -----         | 348 |
| Callithrix_jacchus     | -----         | 462 |
| Xenopus_tropicalis     | -----         | 359 |
| Rhinatrema_bivittatum  | -----         | 383 |
| Chelonia_mydas         | SLRFIKQKSNQDW | 992 |
| Pavo_muticus           | -----         | 363 |
| Pavo_cristatus         | -----         | 363 |
| Gallus_gallus          | -----         | 366 |
| Anas_platyrhynchos     | -----         | 398 |
|                        | .....1210...  |     |