

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/GRAMM3.fasta Tue Feb 1 12:15:03 2022

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Pavo_muticus      -----MMRKGSLLDDSVFEIQS--SFRK      21
Pavo_cristatus    -----MMRKGSLLDDSVFEIQS--SFRK      21
Gallus_gallus     -----MTRKGNLDDSVFEIKS--SFQK      21
Anas_platyrhynchos -----MMRKGNLDDSVFHFESQSSFRK      23
Chelonia_mydas    -----MVRKRHSQDKSVFHYANQNSFPK      23
Homo_sapiens      -----MTELQQDVEDT-----KP        13
Bos_taurus        -----MTELQQDVDDT-----KS        13
Pan_troglodytes   -----MVKKRLPSSDITVFRFETPGSPRK      23
Callithrix_jacchus -----MVKKRLPSSDITVFRFETPDSPSK      23
Macaca_mulatta    -----MVKKRQPSSDITMFQFETPGSPRK      23
Canis_lupus_familiaris -----MVKKSLSSSDITVFRFETPGSPRK      23
Equus_caballus    MRELSRAKSQEIFTLLGKFRNEPLSLFLNLVIDKHTMMKKKTSSSSDIVFRFEIPGSPRK      60
Mus_musculus      -----MTELQQEVEDAKPAKVL--TKRE      21
Rattus_norvegicus -----MVKKPISSSDEVFKFEIP--SSPK      22
Latimeria_chalumnae -----MVKKYAYDDSVLPNFKMQNSFLK      23
Xenopus_tropicalis -----MKKSFLDDSVFLDDSELLSEY      21
Rhinatrema_bivittatum -----MKTVKRFSLDDSLQNDRHPSFRS      24
1.....10.....20.....30.....40.....50.....60

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Pavo_muticus      SSSNSP-VSPTESSGSVFLSSDGENGTSER-RKPGKSPAALLQIPTSEVEHFDDGKKVDF      79
Pavo_cristatus    SSSNSP-VSPTESSGSVFLSSDGENGTSER-RKPGKSPAALLQIPTSEVEHFDDGKKVDF      79
Gallus_gallus     SSSNPP-ASPTESSGIVFLSSDGENGTSER-RKPGKSPAVLLQIPTSEVEHFDDGKKADF      79
Anas_platyrhynchos SSNDPPPVSPTESSGSVFISSDGENGTDER-RKPGKSPTLLQIPTGEVEHTDDRKKVDV      82
Chelonia_mydas    PGDGSP-LSLTDSIGSVFMSSDGEYGAEK-KKGGKSPSLLPQIPTSEAEFCDDRKKAGA      81
Homo_sapiens      AKVLGK-RESKLG-----AHSEAENGVEEK-KKACRSPTAQSPTPSVEADSPDQ-KKIIS      66
Bos_taurus        AKVLGK-RESKVG-----AHSEAENGVEEK-KKVCSPGALSPTPSSEAESQDQ-KRTIS      66
Pan_troglodytes   ANVEAS-RSSTDSPSSVFLSSEAENGVEEK-KKACRSPTAQSPTPSVEADSPDQ-KKIIS      80
Callithrix_jacchus ANVEAS-RSSTDSPSSVFLSSEAENGVEEK-KKASKSPTAQSPTPSVEADSPDQ-KKIIS      80
Macaca_mulatta    ANVEAP-RSSTDSPSSVFLSSEAENGVEEK-KKACRSPTAQSPTPSVEADSPDQ-KKIIS      80
Canis_lupus_familiaris TGPEAP-HSSTDSPGSSVFLSSEAENGVEDK-KKICKSPTAQSPSPSNEAESSDQ-KRLIS      80
Equus_caballus    PNAEAP-HSSADSPSSVFLSSEAENGVEEK-KKVCSPSPTAQSPAPCSEAESPDF-KRLIS      117
Mus_musculus      GKVGPA-HS-----EAENGAEDR-RRVSKSPTAQSPTPSVEAESPDQ-KRSLG      66
Rattus_norvegicus SSAGAS-HSSTDSPSSVFLSSEAENGVEDR-KRFSKSPTAQSPTPSVEAESPDQ-KRSLG      79
Latimeria_chalumnae P-INSPLPSPADSFQPMFVLSLEAENGVEDEKTKKAGKQLNSQLQSLNIDAEIFDNRRKKAPL      82
Xenopus_tropicalis PSDHSP-LSLAESL--EFPSETENGTDER--KIAKSQCTPQTRINDADLLDSKGGKIPF      76
Rhinatrema_bivittatum TGLDSP-LSPTDSVGSVFFSSEAENGVEDEK--RGGRHASTPLQTLNETELIDSKKKLPI      81
.....70.....80.....90.....100.....110.....120

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Pavo_muticus      ARTKSSTESPLLT-----MESKNSKIERKKHISN-QLKANAHFHKLFLLDVPSIDEPLK      131
Pavo_cristatus    ARTKSSTESPLLT-----MESKNSKIERKKHISN-QLKANAHFHKLFLLDVPSIDEPLK      131
Gallus_gallus     PRTKSSAESPLLT-----MESKNSKIERKKHISN-QLKANAHFHKLFLLDVPSIDEPLK      131
Anas_platyrhynchos ARTKSSSDSPVLT-----TDIKNSKIERKKRASN-QLKANAHFHKLFLLDVPSIDEPLK      134
Chelonia_mydas    TRTKISVDSPLLT-----TDIKSDSKPERKKHASN-QFKANAHYHKLFLFLLDVPTIEPLK      133
Homo_sapiens      LWSKSSFDGASLASDKNDCKTESKNDPKTERKKSSSSSQYKANMHFHKLFLLSVPTIEPLK      126
Bos_taurus        LRSKSSFDGAPVANESDKNDCKTESKNSKIERKKSSSSSQDKANMHFHKLFLLDVPTIEPLR      126
Pan_troglodytes   LWSKSSFDGASLASDKNDCKTESKNDPKTERKKSSSSSQYKANMHFHKLFLLSVPTIEPLK      140
Callithrix_jacchus LRSKSSSDGASLAGDKNDCKTESKNDPKTERKKSSSSSQYKANMHFHKLFLLNVPTIEPLR      140
Macaca_mulatta    LRSKSSFDGASLASDKNDCKTESKNDPKTERKKSSSSSQYKANMHFHKLFLLSVPTIEPLK      140
Canis_lupus_familiaris LRSKSSFDGASLASDKNDCKTESKNSKMDRKKYSSSSSQYKANMHFHKLFLLDVPTIEPLR      140
Equus_caballus    LWSKSSFDGASLASDKNDCKTESKNSKSERKKSSSSSQYKANMHFHKLFLLDVPTIEPLR      177
Mus_musculus      LWSKSSFDGSSLLSDKNDCKTESKTDKTERKKSSSSSQYKANMHFHKLFLLDVPTIEPLR      126
Rattus_norvegicus LWSKSSFDGSNLLSDKNDCKTESKADSKTERKKSSSSSQYKANMHFHKLFLLDVPTIEPLR      139
Latimeria_chalumnae LRSKT-FDPSFPA-----VNVDFEVKLEKKKSVSGQFSKANAHFHKLFREISEEELLK      134
Xenopus_tropicalis SGTRIYES-DQAID-----MQQELKRERKKKTSQGFSKSNAQFHKLFKDVPEEPLI      127
Rhinatrema_bivittatum TRSKVGESPFVTTD-----TKNEPKLERKKAWQTQFSKANIHFKLFKEVPDDEPLK      133
.....130.....140.....150.....160.....170.....180

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*****::*****:* ** : ***** ** . :*:*****:*****
Pavo_muticus      QSFTCALQKEILYQGKLFLENWICFHSKVFGKDTKISIPVLSVTLLKKTKTALLVPNAL 191
Pavo_cristatus    QSFTCALQKEILYQGKLFLENWICFHSKVFGKDTKISIPVLSVTLLKKTKTALLVPNAL 191
Gallus_gallus     QSFTCALQKEILYQGKLFLENWICFHSKVFGKDTKISIPVLSVTLLKKTKTALLVPNAL 191
Anas_platyrhynchos QSFTCALQKEILYQGKLFLENWICFHSKVFGKDTKISIPVLSVTLLKKTKTALLVPNAL 194
Chelonia_mydas    QSFTCALQKEILYQGKLFLENWICFHSKVFGKDTKISIPVLSITLIKKTKTALLVPNAL 193
Homo_sapiens      QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 186
Bos_taurus        QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 186
Pan_troglodytes   QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 200
Callithrix_jacchus QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 200
Macaca_mulatta    QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 200
Canis_lupus_familiaris QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPVFSVTLIKKTKTALLVPNAL 200
Equus_caballus    QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 237
Mus_musculus      QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 186
Rattus_norvegicus QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKISIPAFSVTLIKKTKTALLVPNAL 199
Latimeria_chalumnae QSFTCALQKEILYQGKLFVSENWICFHSKVFGKDTKIIIPVASVTLIKKTKTALLVPNAL 194
Xenopus_tropicalis ESFTCALQKDLLYQGKLYISANWVCFHSKVFGKDTKIAIPVLTITLIKKTKTALLVPNAL 187
Rhinatrema_bivittatum QSFTCALQKEMLYQGKLYVSENWIAFHSKVFGKDTKIAIPVLSVTLIKKTKTALLVPNAL 193
.....190.....200.....210.....220.....230.....240

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Pavo_muticus      IIATVTDTRYMFVSLLSRDTTYKLLKSICRHLEDT-STGNSPNPSSVENSFRADRPTTTL 250
Pavo_cristatus    IIATVTDTRYMFVSLLSRDTTYKLLKSICRHLEDT-STGNSPNPSSVENSFRADRPTTTL 250
Gallus_gallus     IIATVTDTRYMFVSLLSRDTTYKLLKSICRHLEDT-SMGNSTNPSSVESFRADRPTTTL 250
Anas_platyrhynchos IIATVTDTRYMFVSLLSRDTTYKLLKSICRHLEDT-SIGNSSNPSSAENSFRADRPTTTL 253
Chelonia_mydas    VIATVTDTRYIFVSLLSRDTTYKLLKSVCRHLEDI-SVGNSPNPSSPENSFRANRPMITL 252
Homo_sapiens      IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSAENSFRADRPPSS 245
Bos_taurus        IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-GIGSGPSPSSLENSFRADRPPSS 245
Pan_troglodytes   IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSAENSFRADRPPSS 259
Callithrix_jacchus IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSSTENSFRADRPPSS 259
Macaca_mulatta    IIATVTDTRYMFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSAENSFRADRPPSS 259
Canis_lupus_familiaris IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSLENSFRADRPPSS 259
Equus_caballus    IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPSPSSLVNSFGADRPPSS 296
Mus_musculus      IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSAENSFRADRPPSS 245
Rattus_norvegicus IIATVTDTRYIFVSLLSRDSTYKLLKSVCGHLENT-SVGNSPNPSSAENSFRADRPPSS 258
Latimeria_chalumnae IIATETERHVSVSLLSRDTTYKLLKLVCIHIEDK-SAGNSPNPSSVESFRAPERPTNL 253
Xenopus_tropicalis VVSTITERFIFVSLLSRDTTYKLLKSICGHLELGGSTGNSPNPSPIDQSFRTDRPNFPL 247
Rhinatrema_bivittatum VITTDTERYMFVSLLSRDATYKLLKSVCVHLENE-SVGNSPNPSSPDSSFRAPERPTNL 252
.....250.....260.....270.....280.....290.....300

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*** : * : * :*: :*: * *:*.:*. * * : . :*: :
Pavo_muticus      DFNEDYSDDLGDGIVQEQROEMEES SSTGSQTPELERFQ-DYHVVETQTHLKVSKAETKSVR 309
Pavo_cristatus    DFNEDYSDDLGDGIVQEQROEMEES SSTGSQTPELERFQ-DYHVVETQTHLKVSKAETKSVR 309
Gallus_gallus     DFNEDYSDDLGDGIVQEQROEMEES SSTGSQTPELERFQ-DYHVVETQTHLKVSKTETKSVH 309
Anas_platyrhynchos DFNEDYSDDLDRIVQQRROEMEES SSTGSQTPELECFQ-DYHVVETQTHLKVSKTEAKSAR 312
Chelonia_mydas    DFNEDYSDDLGDGIVHRRROELEES SSTGSQTPESEHFQ-DYHVIETQTHLKVAKAEAKSIH 311
Homo_sapiens      DFNDEFSDDLGDGVVQQRQDMEGYSSSGSQTPESENSR-DFHATESQTVLNVSKGEAKPTR 304
Bos_taurus        DFNDEFSDDLGDGVVRRRRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGEAKPTR 304
Pan_troglodytes   DFNDEFSDDLGDGVVQQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGEAKPTR 319
Callithrix_jacchus DFNDEFSDDLGDGVVQQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGEAKPTR 318
Macaca_mulatta    DFNDEFSDDLGDGVVQQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGEAKPTR 319
Canis_lupus_familiaris DFNDEFSDDLGDGVVRQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGETKPAR 318
Equus_caballus    DFNDEFSDDLGDGVVRHRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVSKGEAKPAR 355
Mus_musculus      DFNDEFSDDLGDGVVRQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVTKGETKPPR 304
Rattus_norvegicus DFNDEFSDDLGDGVVRQRQDMEGYSSSGSQTPESENSR-DFHVTESQTVLNVTKGETKPPR 317
Latimeria_chalumnae DFNVDSLDAIDGVVRHRRQDVEETSSTGSQSPSENSQ--EFPSETQKFLKVAKNEELPVH 311
Xenopus_tropicalis DFNVDFSSELDGLVRQRNDIEDCSSTGSQSAESENSQ--EFHQPOQ---NVAKSQALNQ 301
Rhinatrema_bivittatum DFNVDFSSELDGMVKHRRQEMEESSTSSQTPESENSQ--EFPLETPNLLKATKPEVSIQ 310
.....310.....320.....330.....340.....350.....360

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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:*          :          .   .   :          :  :*:***:*
Pavo_muticus      SDARSKWVPEGKARNCLRN-----GHSEPFRRFVHRVKFQKLLSLNHILIFYAVLVC 360
Pavo_cristatus    SDARSKWVPEGKARNCLRN-----GHSEPFRRFVHRVKFQKLLSLNHILIFYAVLVC 360
Gallus_gallus      SDARSKWVPEGKARNCLRN-----GHSEPFRRFVHRVKFQKLLSLNHILIFYAVLVC 360
Anas_platyrhynchos SDAHSHKVPDGGKARNSLRNA-----GHSEAFRRFFHKMKSQKLLSLNHILIFYAVLVC 364
Chelonia_mydas     TDLCSKHMPEGTGRNIPRN-----GQTGAFGFFHRVKSHRFLSLNHILIVIFYAVLVC 362
Homo_sapiens       ADAHVNRVPEGKAKSLPVQG-----LSETVGILHKVKVSQKCPMLHHILIFYAIVVC 355
Bos_taurus         ADPLVNRVPEGKAKSLPGHGKERIMMPAQOSETTGIIPRVKSEKCPMLHHILIFYAIVVC 364
Pan_troglodytes    ADAHVNRVPEGKAKSLPVQG-----LSETVGILHKVKVSQKCPMLHHILIFYAIVVC 370
Callithrix_jacchus ADAHVNRVPEGKAKSLPAHG-----QSETVGILHKVKVSQKCLMLHHILIFYAIVVC 369
Macaca_mulatta     ADAHVNRVPEGKAKSLPAQG-----LSETVGILHKVKVSQKCPMLHHILIFYAIVVC 370
Canis_lupus_familiaris ADAHVNRVPEGKAKSLPVHG-----QSETIGVLHKVKVSQTRTLHHILIFYAIVVC 369
Equus_caballus     ADAHVNRVPEGKAKSLPAHG-----QSETIGIVNKVKVSQKYPTLHHILIFYAIVVC 406
Mus_musculus       TDAHGSRAPDGKAKILPAHG-----QSETIGILHKMESRKCPTRLHHILIVYAIIVC 355
Rattus_norvegicus  TDAHGSRAPDGKAKILPAHG-----QSETIGILHKMESRKCPTRLHHILIFYAIIVC 368
Latimeria_chalumnae ADIHIRHSLEGRIOKYHEPG-----NSWLQELIQSVRSFHLISLNLIIYAVLVC 362
Xenopus_tropicalis SDMFT-----IRTQERTG-----VTEHRKGPWQFLACVNIWKMLSMNALLLIYAVIVC 349
Rhinatrema_bivittatum ADIFPRSH-EGKMRKSFNRGL---LCSDRNRPFALFHQVTSPPFLSMNMLLIIFYAVLVF 366
.....370.....380.....390.....400.....410.....420

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*.:***:*  :*  *.:*
Pavo_muticus      VLIFSTFYMYRKINVLEERLISIASFDP-HVK-----EHPVHQRSSESHLOI 405
Pavo_cristatus    VLIFSTFYMYRKINVLEERLISIASFDP-HVK-----EHPVHQRSSESHLOI 405
Gallus_gallus      VLILSTFYMYRKINVLEERLISIASFDS-HVK-----EHPVHQRLSESHLOI 405
Anas_platyrhynchos VLIFSTFYMYRKINVLEERLISITSFDS-HVK-----DHPVRQGLGSHLOI 409
Chelonia_mydas     VLVLSTFYMYRKINVLEERLVSMASFVASHIN-----DQPVQQGLGSHLOI 408
Homo_sapiens       ALIISTFYMYRINTLEEQLGLLTSIVDTHN-----TEQAAPSGLR----- 396
Bos_taurus         ALIISTFYMYRINTLEEQLGLTSLTIVDTHQ-----TDEVTSLSFARLFAT 410
Pan_troglodytes    ALIISTFYMYRINTLEEQLGLLTSIVDTHNTHEYKITYRSCLRMVTDREDCSGHRNTSCF 430
Callithrix_jacchus ALIISTFYMYRINTLEEQLGLLTSIVDTHN-----TAQTAPSGLRISQVQF 415
Macaca_mulatta     ALIISTFYMYRINTLEEQLGLLTSIVDTHN-----TEQAAPSGLGSQVQF 416
Canis_lupus_familiaris ALIISTFYMYRINTLEEQLGLTSLTIVDTHH-----EQTAPSGLGSQVQL 414
Equus_caballus     ALIISTFYMYRINTLEEQLGLTSLTIVDTHHT-----EQTAPSGLGSQVQL 452
Mus_musculus       ALIISTFYMYRINTLEEQLGLTSLTIVDTHST-----EQTAPSGLGSQVQL 401
Rattus_norvegicus  ALIISTFYMYRINTLEEQLGLTSLTIVDTHST-----EQTAPSGLGSQVQL 414
Latimeria_chalumnae ILIMSTFYMAHKIVTLEQRLATVGMQPNSSQGG-----NEQLAQRFMGSNLQI 409
Xenopus_tropicalis LLLFSTLYMHSRIEHLERLSLGSIGKSPNLN-----LWSLEKAMEGWPI 394
Rhinatrema_bivittatum VLFLSTLYMRSKILITLQQLATLGSFMAHRM-----DQSAHRLGPLLHT 411
.....430.....440.....450.....460.....470.....480

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          :          :   .   :   :
Pavo_muticus      N-----ADAFCD-----ELTAN-LIKLEKIQNNLOKLLLEDGE----- 436
Pavo_cristatus    N-----ADAFCD-----ELTAN-LIKLEKIQNNLOKLLLEDGE----- 436
Gallus_gallus      N-----ADAFCD-----ELTAN-LIKLEKIQNNLOKLLLEDGE----- 436
Anas_platyrhynchos N-----ADALCD-----ELTAN-LIKLEKIQNNLOKLLLEDGE----- 440
Chelonia_mydas     N-----ADALCG-----ELTAN-LIKLEKIQNNLOKLLLEDGD----- 439
Homo_sapiens       -----SQVQFNVEVLCQELTANI-----VKLEKIQNNLOKLLLENGD----- 432
Bos_taurus         LWTIVYKAPLSMEFSRQEWYSGLPFSPGDLDPGIEPRSPHCRQTLYRLSHQGSPPNPVS 470
Pan_troglodytes    PLKKVLPEAFCLSSAP---CWSEAAQADENPDIAAG---GLQLRKVGREIILVLVQ----- 478
Callithrix_jacchus N-----VEVLCQ-----ELTAN-IVKLEKIQNNLOKLLLENGD----- 446
Macaca_mulatta     N-----VEVLCQ-----ELTAN-IVKLEKIQNNLOKLLLENGD----- 447
Canis_lupus_familiaris N-----VEVLCQ-----ELTAN-IKLEKIQNNLOKLLLENGD----- 445
Equus_caballus     N-----VEVLCQ-----ELTAN-IMKLEKIQNNLOKLLLENGD----- 483
Mus_musculus       N-----VEVLCQ-----ELTAN-IVKLEKIQNNLOKLLLENGD----- 432
Rattus_norvegicus  N-----VEVLCQ-----ELTAN-IVTLEKIQNNLOKLLLENGD----- 445
Latimeria_chalumnae H-----ADAFYS-----ELSAN-LVKLEKIQKLNQRLLEDTE----- 440
Xenopus_tropicalis N-----INAICG-----ELTDN-LEKLDKIQRNLOKLLLEDSE----- 425
Rhinatrema_bivittatum D-----ADNIYN-----ELTAN-LATLDQIQKLNQRLLEDAD----- 442
.....490.....500.....510.....520.....530.....540

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Pavo_muticus	-----	436
Pavo_cristatus	-----	436
Gallus_gallus	-----	436
Anas_platyrhynchos	-----	440
Chelonia_mydas	-----	439
Homo_sapiens	-----	432
Bos_taurus	DPEGLWFRYMLGEIYSVRSVVLFP	494
Pan_troglodytes	-----	478
Callithrix_jacchus	-----	446
Macaca_mulatta	-----	447
Canis_lupus_familiaris	-----	445
Equus_caballus	-----	483
Mus_musculus	-----	432
Rattus_norvegicus	-----	445
Latimeria_chalumnae	-----	440
Xenopus_tropicalis	-----	425
Rhinatrema_bivittatum	-----	442
	.....550.....560.....	