

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/EP400aps Tue Feb 1 12:06:43 2022

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****.*. . :****.* ...: ** : * ****.*.*:.....*.*:..*
Homo_sapiens      MHHGTGPQNVQHQLQSRACPGSEGEQPAHPNPPPSAAPFAPSASPSAPQSPSYQIQQ 60
Macaca_mulatta    MHHGTGPQNVQHQLQSRACPGSEGEQSAHPNPPPSAAPFAPSASPSAPQSPSYQIQQ 60
Callithrix_jacchus MHHGTGPQNVQHQLQSRACPGSEGEQPAHPNPPPSAAPFAPSASPSAPQSPSYQIQQ 60
Mus_musculus      MHHGSGPQNVQHQLQSRSFSTGSE-EEQPAHPNLPSPSAAPFAPSASPSAPQSPGYQIQQ 59
Rattus_norvegicus MHHGSGPQNVQHQLQSRSFSTGSE-EEQPAHPNLPSPSAAPFAPSASPSAPQSPGYQIQQ 59
Bos_taurus        MHHGSGPQNVQHQLQSRFAFAGSE-EEQQAHPNPPQSPATPFAPAVSPSAPQSPGYQVQQ 59
Equus_caballus    MHHGSGPQNVQHQLQSRVFASSEGEQQAHPNPPQSPATPFAPASPSAPQSPGYQVQQ 60
Canis_lupus_familiaris MHHGSGPQSVQHQLQSRRAFTSSEGEQQAHPNPPQSPATPFAPASPSAPQSPGYQVQQ 60
Pavo_muticus      MHHGNGPQNAQRQLQSRSFSTGSEGEQQAQAN--LPQSPAASFAPSASPSAPQSPSYQIQQ 58
Pavo_cristatus    MHHGNGPQNAQRQLQSRSFSTGSEGEQQAQAN--LPQSPAASFAPSASPSAPQSPSYQIQQ 58
Gallus_gallus     MHHGNGPQNAQRQLQSRSFSTGSEGEQQAQAN--LPQSPAASFAPSASPSAPQSPSYQIQQ 58
Chelonia_mydas    MHHGNGPQNVQRQLQSRSFSTGSEGEQQTN--LPQSPATSFVPSASPSAPQSPSYQIQQ 58
Xenopus_tropicalis MHHGNGPTSTPRLQRLQSRFTGNDGEFVTMQTSLPQSPAPSTFPAVSPAPQSPSYQIQQ 60
1.....10.....20.....30.....40.....50.....60

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Homo_sapiens      LMN-RSPATGQNVNITLQSVGPVVGNNQIITLAPLPLPSPTSPGFQFSAQPRRFEHGSPS 119
Macaca_mulatta    LMN-RSPAAGQNVNITLQSVGPVVGNNQIITLAPLPLPSPTSPGFQFSAQPRRFEHGSPS 119
Callithrix_jacchus LMS-RSPATGQNVNITLQSVGPVVGNNQIITLAPLPLPSPTSPGFQFSTQPRRFEHGSPS 119
Mus_musculus      LMS-RSPVAGQNVNITLQNVGPVVGNNQIITLAPLPLPNPTSPGFQFSAQRRFEHGSPS 118
Rattus_norvegicus LMS-RSPVAGQNVNITLQNVGPVVGNNQIITLAPLPLPNPTSPGFQFSAQRRFEHGSPS 118
Bos_taurus        LMN-RSPVAGQNVNIALQNVGPVVGNNQIITLAPLPLPSPTSPGFQFSAQRRFEHGSPS 118
Equus_caballus    LVN-RSPVAGQNVNIALQNVGPVVGNSPQIITLAPLPLPSPTSPGFQFSAQRRFEHGSPS 119
Canis_lupus_familiaris LMN-RSPVTGQNVNIALQSVGPVVGNNQIITLAPLPLPSPTSPGFQFSAQRRFEHGSPS 119
Pavo_muticus      FIMSRSPVAGQNVNITLQNVGPVAGNQQIITLPLPIPNPTSPSFQFSPQRRFEHGSPS 118
Pavo_cristatus    FIMSRSPVAGQNVNITLQNVGPVAGNQQIITLPLPIPNPTSPSFQFSPQRRFEHGSPS 118
Gallus_gallus     FIMSRSPVAGQNVNITLQNVGPVAGNQQIITLPLPIPNPTSPSFQFSPQRRFEHGSPS 118
Chelonia_mydas    FIMSRSPVAGQNVNITLQNVGPVAGNQQIITLPLPIPNPTSPNFQFSPQRRFEHGSPS 118
Xenopus_tropicalis LIMSRNPVAGQNVNITLQNVGPVAGNQQIITLPLPIPNPASPGFQFSSQPRRFEHGSPS 120
.....70.....80.....90.....100.....110.....120

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*****:.*.*:*****. * * .:.*:.*.*:..*.*.*****:****
Homo_sapiens      YIQVTSPLSQQVQTQSPTQPSPGPGQALQNVAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 179
Macaca_mulatta    YIQVTSPLSQQVQTQSPTQPSPGPGQALQNVAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 179
Callithrix_jacchus YIQVTSPLSQQVQTQSPTQPSPGPGQALQNVAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 179
Mus_musculus      YIQVTSPLSQQVQTQSPTQPSPGPGQTLQNVAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 178
Rattus_norvegicus YIQVTSPLSQQVQTQSPTQPNPGPGQTLQNVAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 178
Bos_taurus        YIQVTSPLSQQVQTQSPTQPSAPGPGQLQSVRAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 178
Equus_caballus    YIQVTSPLSQQVQTQSPTQPSPGPGPGQLQSVRAGAPGPGGLGLCSSSPTGGFVDASVLVRQ 179
Canis_lupus_familiaris YIQVTSPLSQQVQTQSPTQPSPGPGPGQLQSMRTGTPGPGGLGLCSSSPTGGFVDASVLVRQ 179
Pavo_muticus      YIQVTSPLPQQVQSQSPTQPSVPVQTLQNVAGTPGPGGLGMCSSQSPTRGFVDASVLVRQ 178
Pavo_cristatus    YIQVTSPLPQQVQSQSPTQPSVPVQTLQNVAGTPGPGGLGMCSSQSPTRGFVDASVLVRQ 178
Gallus_gallus     YIQVTSPLPQQVQSQSPTQPSVPVQTLQNVAGTPGPGGLGMCSSQSPTRGFVDASVLVRQ 178
Chelonia_mydas    YIQVTSPLPQQVQSQSPTQPSVPVQSLQNVAGTPGSGGLGMCSSQSPTRGFVDASVLVRQ 178
Xenopus_tropicalis YIQVTSPLSQQVQTQSPTQPNAMPIQALQSVRTGTAGASLGMCSQSPTRGFVDASVLVRQ 180
.....130.....140.....150.....160.....170.....180

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:*****.*****:.*.*:..*.*:..* * :***: .: .: :*** *****:.*.*:..*
Homo_sapiens      ISLSPSSGGHFVFDGSGLTQIAQG--AQVQLQHPGTPITV-RERRRSQPHTQSGGTIHH 236
Macaca_mulatta    ISLSPSSGGHFVFDGSGLTQIAQG--AQVQLQHPGTPITV-RERRRSQPHTQSGGTIHH 236
Callithrix_jacchus ISLSPSSGGHFVFDGSGLTQIAQG--AQVQLQHPGTPITV-RERRRSQPHTQSGGTIHH 236
Mus_musculus      ISLSPSSGGHFVFDGSGLTQMAQG--AQVQLQHSAGAPITV-RERRRSQPHASGGGTIHH 235
Rattus_norvegicus ISLSPSSGGHFVFDGSGLTQMAQG--AQVQLQHSAGAPITV-RERRRSQPHASGGGTIHH 235
Bos_taurus        ISLSPSSGGHFVFDGSGLAQMAQG--AQVQLQHSAGAPITV-RERRRSQPHASGGTVHH 236
Equus_caballus    ISLSPSSGGHFVFDGSGLAQMAQG--AQVQLQHSAGAPITV-RERRRSQPHASGGTVHH 236
Canis_lupus_familiaris ISLSPSSGGHFVFDGSGLAQMAQG--AQVQLQHSAGAPITV-RERRRSQPHASGGTVHH 236
Pavo_muticus      ISLSPSSGGHFVFDGSGIAQIAQGAAQVQLPSSGTPATV-RERRRSQPHSQTGGTIHH 237
Pavo_cristatus    ISLSPSSGGHFVFDGSGIAQIAQGAAQVQLPSSGTPATV-RERRRSQPHSQTGGTIHH 237
Gallus_gallus     ISLSPSSGGHFVFDGSGIAQIAQGAAQVQLPSSGTPATV-RERRRSQPHSQTGGTIHH 237
Chelonia_mydas    ISLSPSSGGHFVFDGSGIAQIAQGTTAQVQLPSSGAPATV-RERRRSQPHSQTGGTIHH 237
Xenopus_tropicalis ISLSPSSGGHFVFDGSGIAQIAQGATAQVQLPAGAAQATM-HERRRSQPHSQTGGTIHH 239
.....190.....200.....210.....220.....230.....240

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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\*\*\*\*\*.:.\*::\*.\*:.\*.\*\*\*\*:.\*\*\*\*\*.\*\*\*\*\*:\*\*\*\*.\*:\* :\*.:  
LGPQSPAAAGGAGLOPLASPSHITTANLPPOISSIIQGQLVQQQQ-VLGGPPLRPRLGFE  
LGPQSPAAAGGAGLOPLASPSHITTANLPPOISSIIQGQLVQQQQ-VLGGPPLSRPLGF  
LGPQSPAAAGGAGLOPLASPSHITTANLPPOISSIIQGQLVQQQQ-VLGGPPLRSLGFE  
LGPQSPAAAGGTGLQPLASPNHITTASLPPQISSIIQGLIQQQQVLQGPMNRS LGFE  
LGPQSPATAGGTGLQPLASPNHITTASLPPQISSIIQGLIQQQQVLQGPMNRS LGFE  
LGPQSPAAAGGAGLOPLSSPGHITTTSLPPQISSIIQGLIQQQQ-VLGGPPLTRPL---  
LGPQSPAASGGAGLOPLASPSHITTASLPPQISSIIQGLIQQQQ-VLGGPPLTRPL---  
LGPQSPAAGAASLOPLASPGHITTASLPPQISSIIQGQLVQQQQ-VLGGPPLTRPL---  
LGPQSPVASG-ANMQSLTSPGHITTTSLPPQISNIIQGLMQQQQVLGGQQLSRPIGYD  
LGPQSPVASG-ANMQSLTSPGHITTTSLPPQISNIIQGLMQQQQVLGGQQLSRPIGYD  
LGPQSPVASG-ANMQSLTSPGHITTTSLPPQISNIIQGLMQQQQVLGGQQLSRPIGYD  
LGPQSPVASG-ANMOPLTSPGHITTTNLPPQISNIIQGLMQQQQ-ALGGQQLSRPIGFD  
LGPQSPVASG-ANMOTLTTPSHITTTNLPPQISSIIQGLIQQQQ-VLHGQQLGRAISFD  
.....250.....260.....270.....280.....290.....300

.. : . \* . \*\*\*\*\*.\*\*\*\*\*: : \* \*\*\*.\*\*:.. : : \* :\*\*\*\*\*  
 RTPGVLLPGAGGAAGFGMTSPPPPTSPSRITAVPPGLSSSLPLTSVGNITGMKKVPKKLEEIP  
 RTPGVLLPGAGGAAGFGMTSPPPPTSPSRITAVPPGLSSSLPLTSVGNAGVKKAPKKLEEIP  
 RTPSVLLPGAGGAAGFGMTSPPPPTSPSRITAMPPGLSSSLPLTSAGNTGVKKAPKKLEEIP  
 RTPGVLLPGVGGPSAFGMTSPPPPTSPSRITMPPGLSSVPLTSMGSSGMKKVPKKLEEIP  
 RTPGVLLPGVGGPSAFGMTSPPPPTSPSRITMPPGLSSVPLTSMGSSGIKKVPKKLEEIP  
 -LPGVGVG-VGGTSAFGMTSPPPPTSPSRITAVPPGLSSSLPLSSAGSTGVRKAPKKLEEIP  
 -LPGVGVG-VGGTSAFGMTSPPPPTSPSRITVPLGLSSSLPLTSAGSAGVRKAPKKLEEIP  
 -LPGVGVG-VGGASAFGMTSPPPPTSPSRITAVPPGLSSSLPLTSAGSAGVRKAPKKLEEIP  
 RASGGLIAGVGGPGAFAFGMTSPPPPTSPSRATVPQGLSSSLPLTPTVNTAVKKQPKKLEEIP  
 RASGGLIAGVGGPGAFAFGMTSPPPPTSPSRATVPQGLSSSLPLTPTVNTAVKKQPKKLEEIP  
 RASGGLIAGVGGPGAFAFGMTSPPPPTSPSRATVPQGLSSSLPLTPTVNTAVKKQPKKLEEIP  
 RASGGLIAGVGGPPAFGMTSPPPPTSPSRATVPQGLSNLPLTPMVSTGVKKQPKKLEEIP  
 RTSGGMIAGVTGAS-FGMTSPPTTSPSRAAGPQGLSNLPLTTTSTTHKKQCKKLEEIP  
 .....310.....320.....330.....340.....350.....360

\*\* \* \* .\*\*\*\*\* : \* : : \* : \* : \* :\*\*\*\*\* :\*\*\*\*\* \*\*  
 PASPEMAQMRKQCLDYHYQEMQALKEVFKEYLIELFFLQHFQGNMMDFLAFKKKHYAPLQ  
 PASPEMAQMRKQCLDYHYQEMQALKEVFKEYLIELFFLQHFQGNMMDFLAFKKKHYAPLQ  
 PASPEMAQMRKQCLDYHYQEMQALKEVFKEYLIELFFLQHFQGNMMDFLAFKKKHYAPLQ  
 PASQEMAQMRKQCLDYHYKEMEALKEVFKEYLIELFFLQHLQGNMMDFLAFKKKHYAPLQ  
 PASQELAQMRKQCLDYHYREMEALKEAFKEYLIELFFLQHLQGNMMDFLAFKKKHYAPLQ  
 PASQELAEMRKQCLDYHYREMEALKEAFKEYLIELFFLQHLQGNMMDFLAFKKKHYAPLQ  
 PASQELAQMRKQCLEYHYREMEALKEAFREYLVLEFFLQHLQGNMMDFLAFKKKHYAPLQ  
 PANQETAQMRKQCLDHHHKQMEILKETFKECLIELFFLQHLQGNMMDFLAFKKKHCVPLQ  
 PANQETAQMRKQCLDHHHKQMEILKETFKECLIELFFLQHLQGNMMDFLAFKKKHCVPLQ  
 PANQETAQMRKQCLDHHHKQMEILKETFKEYLIELFFLQHLQGNMMDFLAFKKKHCVPLQ  
 PATQEAQMRKQCLDHHHKQMEILRETKEYLIELFFLQHLQGNMMDFLAFKKKHCVPLQ  
 PATQEEARMRKQCLDHHKQNMKVLENFKEYLIELFFLQHFQGNMMDFLAFKKKPTLGLQ  
 .....370.....380.....390.....400.....410.....420

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.*****:*****:*****
AYLRNDLDIEEEEEEEEEEE--KSEVINDE-----
AYLRNDLDIEEEEEEEEEEE--KSEVINDEVKVVVTGKDGQTGTPVAIATQLPPKVS
AYLRNDLDIEEEEEEEEEEEK--KSEVINDEVKVVVTGKDGQTGTPVAIATQLPPKVS
AYLRNDLDIEEEEEEEEEEEG-----KSEVIND-----
AYLRNDLDIEEEEEEEEEEE--KSEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEEEE--KSEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEEEE--KSEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEEEEEKSEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEQ-----SEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEQ-----SEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEQ-----SEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEQ-----SEVINDEVKVVVTGKDGQTGTPVAIATQLPPNVSA
AYLRNDLDLEEEEEEEEQ-----SEVINDEVKIVTGKDGQTGTPVAIATQLPPNVSA
.....430.....440.....450.....460.....470.....480

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                                     *: *: .... : : : ***** . : : .****:* : * **
Homo_sapiens      -----QALAGSLVAGAGSTVETDLFKRQQAMPSTGMAEQSKRPRLEVGHQGVVF 495
Macaca_mulatta    AFSSQQQPFQQQALAGSLVAGAGSTVETDLFKRQQAMPSTGMAEQSKRPRLEVGHQGVVF 532
Callithrix_jacchus AFSSQQQTIIQQALAGSLVAGAGSTVEADLFKRQQAMPAGVAEQPKRPRLDVGHQGVVF 532
Mus_musculus      -----EHQSLTGSLLVVGPGSATEADPFKRQQVMPPT---EQSKRPRLEVGHQGVVF 492
Rattus_norvegicus AFSSQQQPFQHQALTGSLLVVGPGSTTEADPFKRQQVMPPT---EQSKRPRLEVGHQGVVF 529
Bos_taurus        AFSSQQQPFQQQALAGTLVAAAGSAIETDPFKRQQAGPPA---EQSKRPRLEVGHQGVVF 525
Equus_caballus    AFSSQQQPFQQQALAGTLVAGAGSAIETDPFKRQQAGPPA---EQSKRPRLEVGHQGVVF 524
Canis_lupus_familiaris AFSSQQQPLQQQALTGALVAGAGSAGETDPFKRQQAGTPA---EQSKRPRLEVGHQGVVF 527
Pavo_muticus      AFSSQQQP-FQQTHTGTPVTGAVNTIEMEAFKRQQTLAPA---DSSKRPRLEVGRHGMVF 524
Pavo_cristatus    AFSSQQQP-FQQTHTGTPVTGAVNTIEMEAFKRQQTLAPA---DSSKRPRLEVGRHGMVF 524
Gallus_gallus     AFSSQQQP-FQQTHTGTPVTGTVNTIEMEAFKRQQTLTPA---DSSKRPRLEVGRHGMVF 524
Chelonia_mydas    AFSSQQQP-FQQTHTGTPVTGTVNTIEIEAFKRQQALTPA---DSSKRPRLEVGRHGMVF 523
Xenopus_tropicalis AFSSQQQP-FQQTHTGSGAVGAANTIDIEAFKRQQVLTQT---DPSKRPRLDVPRHGMVF 524
.....490.....500.....510.....520.....530.....540

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****. :*****.*****:*. :*. :*. :*****.*****.***** *
Homo_sapiens      QHPGADAGVPLQQLMPTAQGGMPPTPQAAQLAGQRQSQQQYDPSTGPPVQNAASLHTPLP 555
Macaca_mulatta    QHPGADAGVPLQQLMPTAQGGMPPTPQAAQLTGRQRQSQQQYDPSTGPPVQNAASLHTPLP 592
Callithrix_jacchus QHPGADAGVPLQQLMPTAQGGMPPTPQAAQLTGRQRQSQQQYDPSTGPPVQNAASLHTPLP 592
Mus_musculus      QHPGVNAGVPLQQLMPTVQGGMPPTPQATQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 552
Rattus_norvegicus QHPGVNAGVPLQQLMPTVQGGMPPTPQATQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 589
Bos_taurus        QHPGVNTGVPLQQLMPTVQGGMPAPQATQLAGQKQSQQQYDPSTGPPVQNAASLHTPPP 585
Equus_caballus    QHPGVNTGVPLQQLMPTVQGGMPAPQAAQLVGQKQSQQQYDPSTGPPVQNAASLHTPPP 584
Canis_lupus_familiaris QHPGANTGVPLQQLMPTAQGGMPAPQATQLAGQKQSQQQYDPSTGPPVQNAASLHTPPP 587
Pavo_muticus      QHPGVASGVPLQQLMPTAQGGMPPTPQTVQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 584
Pavo_cristatus    QHPGVASGVPLQQLMPTAQGGMPPTPQTVQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 584
Gallus_gallus     QHPGVASGVPLQQLMPTAQGGMPPTPQTVQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 584
Chelonia_mydas    QHPGVASGVPLQQLMPTAQGGMPPTPQAVQLTGQKQSQQQYDPSTGPPVQNAASLHTPPP 583
Xenopus_tropicalis QHPGVTSGVPLQQLMPTAQGGMPPTPQTVQLTGQKQNSQQQYDPSTGPPVQNAASLHTPPP 584
.....550.....560.....570.....580.....590.....600

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***. : . : * . : * . : * * : . * : . * ..
Homo_sapiens      QLPGRLLPPAGVPTAALSSALQFAQC-POVVEA-----QTQLQIPVKTOQPNVP 602
Macaca_mulatta    QLPGRLLPPAGVPTAALSSALQFAQC-POAVEA-----QTQLQIPVKTOQPNVP 639
Callithrix_jacchus QLPGRLLPPAGVPTAALSSALQFAQC-POGVET-----QTQLQIPVKTOQPSVP 639
Mus_musculus      QLPARLLPPASVPATALPSTLQFSQC-SQMVEA-----STQLQIPVKTOQLNAP 599
Rattus_norvegicus QLPARLLPPASVPATALPSTLQFSQC-SQMVEA-----PTQLQIPVKTOQLNAP 636
Bos_taurus        QLP SRLPQAGLPAAPLPPALQFPQC-POMAEP-----QTQLPVPVKTOQPNAP 632
Equus_caballus    QLPGRLLPLAGLPTTLPPLSALQFSQC-POMVEP-----QTQLQIPVKTOQPNAP 631
Canis_lupus_familiaris QLPGRLLPPTGLPAAPLPPALHFSQC-POVVEP-----HAQLQVPAKTOQPNAP 634
Pavo_muticus      QLPGRLLQPVNVPMPTSLPAALQITQQQPQIVES-----PTQPQIQVKIQPQSV 632
Pavo_cristatus    QLPGRLLQPVNVPMPTSLPAALQITQQQPQIVES-----PTQPQIQVKIQPQSV 632
Gallus_gallus     QLPGRLLQPVNVPMPTSLPAALQISQQQPQIVES-----PTQPQIQVKIQPQSV 632
Chelonia_mydas    QLPGRLLQPANVPITSLPAALQISQQQPQIVES-----PAQPQIQVKIQPQSV 631
Xenopus_tropicalis QLPGRVQASNIPISLPTALHLAQQQQQQQQQQQQQQINETQIQPQIQVQVKSQPPNVQ 644
.....610.....620.....630.....640.....650.....660

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Homo_sapiens      IPAPPSQLPIPPSQPAQLALHVPTPGKVQVQASQLSSLPQMVASTRLPVDPAAPPCPRPL 662
Macaca_mulatta    IPAPPSQLPIPPSQPAQLALHVPTPGKVQVQPSQLSSLPQTVASTRLPVDPAAPPCPRPL 699
Callithrix_jacchus IPAPPSQLPIPPSQPAQLALHVPTSGKAQVQASQLSSLPQTVVSTRLPVDPAAPPCPRPL 699
Mus_musculus      IPAPLSQLPAPSSQPAQPALHVPMGKAQMOTSQSSQTQTVASTRPPPLDSAQPCORSL 659
Rattus_norvegicus IPAPLSQLPAPSSQPAQPALHVSMGKAQMOTSQSSQTQTVASTRPPPLDSAQPCORSL 696
Bos_taurus        APAPPPGPLPTAPPQPTPTTLHIPMGPKAQMCAAPLPAPQTVAPTRPPVDPTQSCLRPP 692
Equus_caballus    VPAPPPSQLPTPPPQPAQPALHVPMGKAQMCAAPLSSQPTAVPVRPPVDPAQPCORPP 691
Canis_lupus_familiaris VPVPPPSQLPAPPPQVPQALHAPMGPKAQMCAAPLSTQPTAS-TRPSVDLAQPCORPP 693
Pavo_muticus      LTSAP---LPAPLQQQVPPAIHVQGTPTNQASQPQATIQQAQVTLTRPSADPVQTSORLT 689
Pavo_cristatus    LTSAP---LPAPLQQQVPPAIHVQGTPTNQASQPQATIQQAQVTLTRPSADPVQTSORLT 689
Gallus_gallus     LTSAP---LPAPLQQQVPPAIHVQGTPTNQVSQPQATIQQAQVTLTRPSADPVQTSORLT 689
Chelonia_mydas    ITSAPHSQLPTPVQQQVQPALHIQGTPTQVSQPQAAIQQAQVTLTRPSADAAQTSORLT 691
Xenopus_tropicalis ISASPQSQLPLQISQPLQPGFHTQMOTSQQQ---AAIQQAQVTLVTRPGTDSQ---ORLT 698
.....670.....680.....690.....700.....710.....720

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Homo_sapiens	PTSS--TSSLAPVSGSGPGGPSPARSSPVNRPSSATNKALSPVTSRTPGVVASAPTCKQSP	720																								
Macaca_mulatta	PTSS--TSSLAPVSGSGPGGPSPARSSPINRPPSATNKALSPVTSRTPGVAAASAPTCKQSP	757																								
Callithrix_jacchus	PTSSS-TSSLAPVSGSGPGGPSPARSSPINRPPSATNKALSPVTSRTPGVAASAPTKPQSP	758																								
Mus_musculus	PTSSS-SSSLVPVSGSGPGGPSPARSSPVNRPPSATNKALSPITSRSPGVAVSAPPKPQSP	718																								
Rattus_norvegicus	PTSSS-SSSLVPVSGSGPGGPSPARSSPVNRPSSATNKALSPVTSRSPGVAVSAPPKPQSP	755																								
Bos_taurus	PSTST-TSTVAPASGSGGLGPSPARASPVNRPSLATNKSLSPVTARAPGAAVSAPPKPQSP	751																								
Equus_caballus	P-TSS-AVSIAPAGSGSGGPSPARASPVNRPSSAANKSLSPVTSRSPGAAVSATPKPQSP	749																								
Canis_lupus_familiaris	PATSS-TSSIAPAGS--GLSPARVSAGNRPPSAANKSLSPVTSRSPGAAVSAPPKPQSP	750																								
Pavo_muticus	ANILPPTS AVAAPAISGTAPPSTYPVQTNRTPATNKSLSPIASKPPGLAVAAAPKTQSP	749																								
Pavo_cristatus	ANILPPTS AVAAPAISGTAPPSTYPVQTNRTPATNKSLSPIASKPPGLAVAAAPKTQSP	749																								
Gallus_gallus	ANILPPTS SVAAPAISGTAPPSTYPVQTNRTPATNKSLSPIASKPPGLAVAAAPKSQSP	749																								
Chelonia_mydas	VNSLPPTSSIPPAALSGTAPLSSYPVQTNRTPATNKSLSPIASKPPGLAVTTAPKTQSP	751																								
Xenopus_tropicalis	GNTQT-NAFVAPAAISTASPIASFSLPTRALPATNKSMS--VSKAPGSAGIVGTKIQGQ	755																								
	.....730.....740.....750.....760.....770.....780																									

		* .. : .. . ** . * . * : * * * : * * * : * * * * * * * * * * : * * . * . : : * * * *	
Homo_sapiens	AQNATSS-QDSSQDTLTTEQITLTLENQVHORIAELRKAGLWSQRRRLPKLQEQAPRPKSHWDYL	779	
Macaca_mulatta	AQNATSS-QDSSQDTLTTEQITLTLENQVHORIAELRKAGLWSQRRRLPKLQEQAPRPKSHWDYL	816	
Callithrix_jacchus	AQNATSS-QDSSQDTLTTEQITLTLENQVHORIAELRKAGLWSQRRRLPKLQEQAPRPKSHWDYL	817	
Mus_musculus	AQNAASS-QDGSQDKLAEQITLTLENQIHORIAADLRKEGLWSLRRRLPKLQEQAPRPKSHWDYL	777	
Rattus_norvegicus	AQNAASS-QDGSQDKLAEQITLTLENQIHORIAADLRKEGLWSLRRRLPKLQEQAPRPKSHWDYL	814	
Bos_taurus	AQNAAPP-QDSSQDKLAEQITALENQIHORIAADLRKEGLWSLRRRLPKLQEQAPRPKSHWDYL	810	
Equus_caballus	AQNAAPP-QDGSQDKLAEQITALENQIHORIAADLRKEGLWSVRRRLPKLQEQAPRPRSHWDYL	808	
Canis_lupus_familiaris	AQNAAPP-QDSSQDKLVEQITALENQIHORIAADLRKEGLWSLRRRLPKLQEQAPRPKSHWDYL	809	
Pavo_muticus	AQNAAVLPQDNSQDKLAEQVKLENQIHORIAELRKAGLWSLRRRLPKLQEQAPRPKSHWDYL	809	
Pavo_cristatus	AQNAAVLPQDNSQDKLAEQVKLENQIHORIAELRKAGLWSLRRRLPKLQEQAPRPKSHWDYL	809	
Gallus_gallus	AQNAAVLPQDNSQDKLAEQVKLENQIHORIAELRKAGLWSLRRRLPKLQEQAPRPKSHWDYL	809	
Chelonia_mydas	AQNAAVLPQDSSQDKLAEQVKLENQIHORIAELRKAGLWSLRRRLPKLQEQAPRPKSHWDYL	811	
Xenopus_tropicalis	LOIPSGLTSENPDQDKLAEQVKLENQVHORIAELRKAGLWSLRRRLPKIQEPRAKSHWDYL	815	
	.....790.....800.....810.....820.....830.....840		

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Homo_sapiens	LEEMQWMAIDFAQERRWKVAAAKKLVRTVVRHHEEKQLREERGKKEQSRLRRIAAS	839
Macaca_mulatta	LEEMQWMAIDFAQERRWKVAAAKKLVRTVVRHHEEKQLREERGKKEQSRLRRIAAS	876
Callithrix_jacchus	LEEMQWMAIDFAQERRWKVAAAKKLVRTVVRHHEEKQLREERGKKEQSRLRRIAAS	877
Mus_musculus	LEEMQWMAIDFAQERRWKLAIAAKKLVRTVARHHEEKKLREERGKKEQSRLRRIAAS	837
Rattus_norvegicus	LEEMQWMAIDFAQERRWKLAIAAKKLVRTVARHHEEKKLREERGKKEQSRLRRIAAS	874
Bos_taurus	LEEMQWMAIDFAQERRWKVAAAKKLVRTVARHHEEKKLREERGKKEQNRLRRIAAS	870
Equus_caballus	LEEVQWMAIDFAQERRWKVAAAKKLVRTVARHHEEKQLREERGEKEQNRLRRIAAS	868
Canis_lupus_familiaris	LEEMQWMAIDFAQERRWKMAAAKKLIRTVVRHHEEKKLREERGKKEQNRLRRIAAS	869
Pavo_muticus	LEEMQWMAIDFAQERKWKMAIAKKMVRTVARYHEEKKLNEERAKKEQNKLRIAAS	869
Pavo_cristatus	LEEMQWMAIDFAQERKWKMAIAKKMVRTVARYHEEKKLNEERAKKEQNKLRIAAS	869
Gallus_gallus	LEEMQWMAIDFAQERKWKMAIAKKMVRTVARYHEEKKLNEERAKKEQNKLRIAAS	869
Chelonia_mydas	LEEMQWMAIDFAQERRWKMIATAKKMVRTVARYHEEKKLNEERAKKEQNKLRIAAS	871
Xenopus_tropicalis	LEEMQMAADFAQERMWKOASAKKLVRKARYHDEKKMHFERAKKEENKLKRIAAS	875
	.....850.....860.....870.....880.....890.....900	

	***	*****:	*****::*::***:***.*..:*	:	:	
Homo_sapiens	EIECFWSNIEQV	-----	VEIKLRVELEEKRRKKALNLOKVSRRGKELRP	-	KGFDALQESS	892
Macaca_mulatta	EIECFWSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKELRP	-	KGFDALQESS	929
Callithrix_jacchus	EIECFWSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKELRP	-	KGFDALQESS	930
Mus_musculus	EIEKFWNSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKESRL	-	KGFDTSPEHS	890
Rattus_norvegicus	EIEYFWSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKESRL	-	KGFDTSPEHS	927
Bos_taurus	EIEYFWSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKELRP	-	KGLDVLPENF	923
Equus_caballus	EIEYFWSNIEQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKESRP	-	KGLDALPENF	921
Canis_lupus_familiaris	EIECFWSNIEQISLFAQV	-----	VEIKLQVELEEKRRKKALNLOKVSRRGKESRP	-	KGLDALPEAF	928
Pavo_muticus	EIEYFWSNIEQV	-----	VEIKLQIEFQEKRRKKALNLKKISRKGKDAKPS	-	EDLLEKESE	923
Pavo_cristatus	EIEYFWSNIEQV	-----	VEIKLQIEFQEKRRKKALNLKKISRKGKDAKPS	-	EDLLEKESE	923
Gallus_gallus	EIEYFWSNIEQV	-----	VEIKLQIEFQEKRRKKALNLKKISRKGKDAKPS	-	EDLFFIKEGE	923
Chelonia_mydas	EIEYFWSNIEQV	-----	VEIKLQIEFQEKRRKKALNLRKSSNKGKDTKPAEDISLEKESE	-		925
Xenopus_tropicalis	EIEYFWSNIEQV	-----	VEIKLQMEFQEKRRKKALNLNTESMKG-PLKAIEEACVKRDTN	-		928
	.....910.....	920.....	930.....	940.....	950.....960	

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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	***** * : * *:***** *:*:** ::*:** :.:**:* **:	
Homo_sapiens	LDSGMSGRKRKASISLTDDDEVDDDEETIEEEEEANEGVVVDHQTELSNLAKEAELPLLDLMK	952
Macaca_mulatta	LDSGISGRKRKASVSLTDDDEVDDDEETIEEEEEANEGVVVDHQTELSNLAKEAELPLLDLMK	989
Callithrix_jacchus	LGSMSGRKRKASTSLTDDDEVDDDEETIEEEANEGIVDHDQTELSNLAKEAELPLLDLMK	990
Mus_musculus	LDLGISGRKRKASTSLTDDVEDEDEETIEEEEAHEGLVDHHTELTNLAKEAELPLIDLK	950
Rattus_norvegicus	MDLGISGRKRKASTSLTDDVEDEDEETIEEEEAHEGLVDHHTELTNLAKEAELPLIDLK	987
Bos_taurus	LDSGISGRKRKASTSLTDDVEDEDEETIEEEEEANEGVVVDHQTELSNLAKEAELPLIDLK	983
Equus_caballus	LDSGISGRKRKASTSLTDDVEDEDEETIEEEEEANEGVVDHHTELTNLAKEAELPLIDLK	981
Canis_lupus_familiaris	LESGLSGRKRKASTSLTDDVEDEDEETIEEEANEGAVDHDQELSNLAKEAELPLIDLK	988
Pavo_muticus	MGSSSSGRKRKASTSLTDEEVEDEDEETIEEQEAKEGNINHQTELSNLVKEAELPLDDLK	983
Pavo_cristatus	MGSSSSGRKRKASTSLTDEEVEDEDEETIEEQEAKEGNINHQTELSNLVKEAELPLDDLK	983
Gallus_gallus	MGSSSSGRKRKASTSLTDEEVEDEDEETIEEQEAKEGNINHQTELSNLVKEAELPLDDLK	983
Chelonia_mydas	VGSLSFGRKRKASTSLTDEEVEDEDEETIEEQEAKEGNINHQAELSNLAKEAELPLDDLK	985
Xenopus_tropicalis	KASPTS-RRKRKASSWSGAVEDEDEETIAEQESKEGNIDHHAELCELAREADPLDDLK	987
	.....970.....980.....990.....1000.....1010.....1020	

[illegible][illegible]

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Homo_sapiens	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1126
Macaca_mulatta	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1163
Callithrix_jacchus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1164
Mus_musculus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1124
Rattus_norvegicus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1161
Bos_taurus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1157
Equus_caballus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1155
Canis_lupus_familiaris	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1162
Pavo_muticus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1158
Pavo_cristatus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1158
Gallus_gallus	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1158
Chelonia_mydas	AKLYRKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1160
Xenopus_tropicalis	EKQYKKNLNGILADEAGLGKTVQIIAFFAHLACNEGNWGPPLVTVVRS	1167
	.....1150.....1160.....1170.....1180.....1190.....1200	

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Homo_sapiens	CPGLKILLSYIGSHRELKAKROEWAEPNSFHVCIITSYTOFFRGLTAFTRVRWKCLVIDEMQ	1186
Macaca_mulatta	CPGLKILLSYIGSHRELKAKROEWAEPNSFHVCIITSYTOFFRGTAFTRVRWKCLVIDEMQ	1223
Callithrix_jacchus	CPGLKILLSYIGSHRELKAKROEWATPNSFHVCLTSYTOFFRGFTAFTRVRWKCLVIDEMQ	1224
Mus_musculus	CPGLKILLSYVGSHRELKAKROEWTEPNFHCICITSYKOFFRGYTAFSRVHWKCLVVDQM	1184
Rattus_norvegicus	CPGLKILLSYVGTSHRELKAKROEWTEPNFHCICITSYKOFFRGYTAFSRVHWKCLVVDQM	1221
Bos_taurus	CPGLKILLLYVGSHRELKAKROEWTEPNSFNICIITSYKOFFKGFAFTRVRWKCLVIDEMQ	1217
Equus_caballus	CPGLKILLLYVGNHRELKAKROEWTEPNSFNICIITSYKOFFRGHACFTRVRWKCLVIDEMQ	1215
Canis_lupus_familiaris	CPGLKILLLYVGSHRELKAKROEWTEPNSFNVIAPYKOFFRGYAFMRVRWRCCLVIDEMQ	1222
Pavo_muticus	CPGLKILLLYFGSQRELRAKROEWAEPNSFNVCITISYKQLFKGHPAFMKMRWKYLIVDEM	1218
Pavo_cristatus	CPGLKILLLYFGSQRELRAKROEWAEPNSFNVCITISYKQLFKGHPAFMKMRWKYLIVDEM	1218
Gallus_gallus	CPGLKILLLYFGSQRELRAKROEWSEPNSFNVCITISYKQLFKGHPAFMKMRWKYLIVDEM	1218
Chelonia_mydas	CPGLKILLLYFGSQRELRAKROEWMEPNSFNVCITISYKQLFKGNHAFMKMRWKYLIVDEM	1220
Xenopus_tropicalis	CPGLKVLLYFGKQRELRAKROKWDENPSFNVCITISYKHLFKSHQAFMKRWKYLIVLDEVH	1227
	.....1210.....1220.....1230.....1240.....1250.....1260	

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Homo_sapiens	RVKGMTERHWEAVFTLQSQRLLLLIDSP	LHNTFLELWIMVHFLVPGISRPYLSSPLRAPS	1246	
Macaca_mulatta	RVKGMTERHWEAVFTLQSQRLLLLIDSP	LHNTFLELWIMVHFLVPGISRPYLSSPLRAPS	1283	
Callithrix_jacchus	RVKGMTERHWEAVFTLQSQRLLLLIDAP	LHNTFLELWIMVHFLVPGISRPYLSSPLRAPS	1284	
Mus_musculus	RVKGMTERHWEAIFKLSQQRLLLDVPL	HNTFLELWIMVHFLIPGISRPYLSFPLKAPN	1244	
Rattus_norvegicus	RVKGMTERHWEAIFKLSQQRLLLDVPL	HNTFLELWIMVHFLIPGISRPYLSFPLKAPN	1281	
Bos_taurus	RVKGMTERHWEAVFTLQSQRLLLLIDAP	LHNTFLELWIMVHFLIPGISRPYLHFPLKAPN	1277	
Equus_caballus	RVKGMTERHWEAVFTLQSQRLLLLIDAP	LHNTFLELWIMVHFLIPGISRPYLRFPPLKAPN	1275	
Canis_lupus_familiaris	RVKGMTERHWEAVFTLRSQQRLLLLIDAP	LHNTFLELWIMVHFLIPGISRPYLHPLKAPN	1282	
Pavo_muticus	QIKNMTEKHWEALFSLRSQHRLLLLID	TPLHNTLMELWIMVHFLIPGISRPYLDFFVKAPN	1278	
Pavo_cristatus	QIKNMTEKHWEALFSLRSQHRLLLLID	TPLHNTLMELWIMVHFLIPGISRPYLDFFVKAPN	1278	
Gallus_gallus	QIKNMTEKHWEALFSLRSQHRLLLLID	TPLHNTLMELWIMVHFLIPGISRPYLDFFVKAPN	1278	
Chelonia_mydas	QIKNMTEKHWEALFHLSQHRLLLLID	TPLHNTLMELWIMVHFLIPGISRSYLDFFVKAAN	1280	
Xenopus_tropicalis	QIKNMTEKHWDVAFNLP	SHNRLLLIDTPLMTWRDHWIMVHFLIPGLSQPYLEFFPLKIST	1287	
	.....1270.....1280.....1290.....1300.....1310.....1320			

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Homo_sapiens	EESQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1306
Macaca_mulatta	EESQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1343
Callithrix_jacchus	DESQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1344
Mus_musculus	EENQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1304
Rattus_norvegicus	EENQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTRKYEHLVKCRLSNROKALYEDVILQ	1341
Bos_taurus	EENQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1337
Equus_caballus	EENQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1335
Canis_lupus_familiaris	DENQDYHKKVIRLHRVTQPFILRRTKRDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1342
Pavo_muticus	EENQDYCHKLVIRLHRMIQPFILRRSKRDVEKQLTKKYEHLVKCHLSNROKAMYEDVILQ	1338
Pavo_cristatus	EENQDYCHKLVIRLHRMIQPFILRRSKRDVEKQLTKKYEHLVKCHLSNROKAMYEDVILQ	1338
Gallus_gallus	EENQDYCHKLVIRLHRMIQPFILRRSKRDVEKQLTKKYEHLVKCRLSNROKAMYEDVILQ	1338
Chelonia_mydas	EENQDYCHKLVIRLHRMIQPFILRRSKRDVEKQLTKKYEHLVKCRLSNROKAMYEDVILQ	1340
Xenopus_tropicalis	EENQENCHKLFITLHRTVRPFIILRRSKKDVEKQLTKKYEHLVKCRLSNROKALYEDVILQ	1347
	.....1330.....1340.....1350.....1360.....1370.....1380	

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Homo_sapiens	PGTQEALKSGHFVNVLSTILVRLQRICNHPGLVEPRHPGSSYVAGPLEYPSASLILKALER	1366
Macaca_mulatta	PGTQEALKSGHFVNVLSTILVRLQRICNHPGLVEPRHPGSSYVAGPLEYPSASLILKALER	1403
Callithrix_jacchus	PGTQEALKSGHFVNVLSTILVRLQRICNHPGLVEPRHPGSSYVAGPLEYPSLILKALER	1404
Mus_musculus	PRTOEALKSGHFVSVLSTILVRLQRICNHPGLVEPRVPGSSYAAGSLQYKSASLILRVLER	1364
Rattus_norvegicus	PRTOEALKSGHFVSVLSTILVRLQRICNHPGLVEPRVPGSSYAAGSLQYKSASLILRVLER	1401
Bos_taurus	PGTQEALKSGHFVDVLSILLRLQRICNHPGLVAPRLPESSYTAGPLQYRSASLIVLKALDR	1397
Equus_caballus	PGTQEALKSGHFVDVLSILLRLQRICNHPGLVEPRLPPESSYTAGPLQYSSASLILKALDR	1395
Canis_lupus_familiaris	PGTQEALKSGHFVDVLSILLRLQRICNHPGLVEPRLPPESSYTAGPLQYCSASLILKALDR	1402
Pavo_muticus	PGTQEALKSGHFISVLHVMQLQRICNHPDLINPRLSSTSYVSETLEYRTASLIVLSALER	1398
Pavo_cristatus	PGTQEALKSGHFISVLHVMQLQRICNHPDLINPRLSSTSYVSETLEYRTASLIVLSALER	1398
Gallus_gallus	PGTQEALKSGHFISVLHVMQLQRICNHPDLINPRLSSTSYVSETLEYRTASLIVLSALER	1398
Chelonia_mydas	PGTQEALKSGHFVSVLIVLMQLQRICNHPDLINPRLSSSSYVSEALEYGTASLIVLKALER	1400
Xenopus_tropicalis	PGTQDALKGGHFVSVLHVMQLQRICNHPDLVDPRPEHSSFCETLOYRTASLILQVLEK	1407
	1390 1390 1400 1410 1420 1430 1440	



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D F W K E A D L S M F D L I G L E N K I T R H E A E L L S K K K I P R K L M E E I S T S A A P A A R P A A A K L K A S R

D F W R E T D L S M F D L I G L E N K I T R H E A E L L S K K K I P R K L M E E I S T S A A P A A R P A A A K L K A S R

D F W K E T D L S M F D L I G L E N K I T R H E A E L L S K K K V P Q K L M E E I S T S P A P A V R P A A A K L K A S R

E F W K E T D L S I F D L I G L E N K I T R H E A E L L C K K V T R K L M E E V F A S P P P S A R P A A V K L K A S R

E F W K E T D L S M F D L I G L E N K I S R H E A E L L Y K K K V T R K L M E E V F T S P P P S A R P A A V K L K A S R

D F W K E T D L S I F D L L G L E N K M T R H E A E L L G K K K V T R K L F E E L F T A P P P S S R P A A V R L K P S R

D S W K E T D L S I F D L I G L E N K M T R H E A E L L C K K K V T R K L I E E L F A A P P P S S R P V A I R L K P S R

D S W K E T D L S I F D L I S L E N K M T R H E A E L L C K K V T R K L M E E L F T A P P P S G R P A A L R L K P N R

D I W K E S D L S L F D L I G M E N K M T H Y E A Q V L P K Q K V T R K L I E E I Y S S P P P P A R P N P V K L K P S R

D I W K E S D L S L F D L I G M E N K M T H Y E A Q V L P K Q K V T R K L I E E I Y S S P P P P A R P N P V K L K P S R

D I W K E S D L S L F D L I G M E N K M T H Y E A Q M L P K Q K V T R K L I E E I Y S S P P P P T R P N P V K L K P S R

D V W K D T D M C L F D L I G V E N K M T H Y E A Q V L P K Q K V T R K L I E E I Y S S P H H A R P H P V K L K P S R

D P W K I D M S L F D L F G L E D K I T R Y E V O T L P Q K V T R K Q M E E I Y A S P E S A R P T P V K I K P S R

.1450.....1460.....1470.....1480.....1490.....1500

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***.*****.*...*. : : ** **.*:.*.*
LFQPVQYGQKPEGRIVAFPSSTHPPRTAAPTITASAAPQGPLRGRPPPIATFSANPEAKAAAA
LFQPVQYGQKPEGRIVAFPSSTHPPRTAAPTITASAAPQGPLRGRPPPIATFSANPEAKAAAA
LFQPVQYGQKPEGRIVAFPSSTHPPRTAT-TAATAAPQGOLRGRPPVATFSANPEAKAAAV
LFQPVQYGQKPEGRIVAFPSSTHPPRMANTISTATPQGQVRGRPPPIATFSANPDTKG---
LFQPVQYGQKPEGRIVAFPSSTHPPRMANTINASTATPQGQVRGRPPPIATFSANPDTKAAAA
LFQAVQYGQKPEGRIVAFPNTHPPRTATPATATATPQGHVRGRPPPIATFSANPDAKAAAA
LFQPVQYGQKPEGRIVTFPSSTHPPRTASATATAAPQGHIRGRPPPIATFSANPDAKAGAA
LFQPVQYGQKPEGRIVAFPSSTHPPRTAASATATANPQGHMRGRPPPIATFSANPDTKVAAA
LFQPVQYGQKPEGRIVVFPSTQVQRTVTTATVTQ--QGQVRGRSPPIATVSSN---QAAAA
LFQPVQYGQKPEGRIVVFPSTQVQRTVTTATVTQ--QGQVRGRSPPIATVSSN---QAAAA
LFQPVQYGQKPEGRIVVFPSTQVQRTVTTATVTQ--QGQVRGRSPPIATVSSN---QAAAA
LFQPVQYGQKPEGRIVVFPSTQVQRTVTTATVTQ--QGQVRGRSPPIATVSSN---QAAAA
LFQPVQYGQKPEGRIVTFSNVPSASRMVTTTATVTQGGQARGSPVTTASCN-----
.....1510.....1520.....1530.....1540.....1550.....1560

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PFQTSQASAS--APRHQPASASSTAASPAHPAKLRAQTTAQASTPGQPPPQPQAPSHAAG
PFQTSQASAS--APRHQPASASSTAASPAHPAKLRAQTTAQASTPGQPPPQPQAPSHAAG
PFQTSQASAS--APRHQPASASAAAASPAHPARLRAQTTAQASTPGQPPPQPQAPSHAAG
-----
PFQNSQASVG--TPRHQPTSTSSTAAGPAHPSKLRQAQTAQASTPGPPLPPPQAPSLVAG
PFQTSQASTG--APRHQPTSTFSTAPSPAHPAKLRAQTTVPASAPGPPQPQPQAPSHPAG
PFQTSQASTG--APRHQPASTFSTAPSPAHPAKLRAQTTAQASTAPGPPQPQPQAPSHPAG
PFQTSQASTSAPAPRQPAAITSSTAPSPAHPAKPRA-----PPPPPPQAPSHPAG
QFQTTQASTS--APRHQPAATFTTATSTAHPVKQRGQTAAQASQLG--QAQPQPPHTIQ
QFQTTQASTS--APRHQPAATFTTATSTAHPVKQRGQTAAQASQLG--QAQPQPPHTIQ
QFQTTQASTS--APRHQPAATFTTATSTAHPVKQRGQTAAQASQLG--QAQPQPPHTIQ
QFQTTQASTS--APRHQPAATFTTATSTAHPVKQRGQTAAQASQLG--QTQPQAPSHTLQ
.....1570.....1580.....1590.....1600.....1610.....1620

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\*:\*\*\*\*\*:\*. . .\*:\*\*\*:\*\*\*\*\*. .\*\*\*\*\*:  
 QSALPQRLVLPSQAQARLPSEVVVKIAQLASITGPQSRVAQPETPVTLQFQGSKFTLSHS  
 QSALPQRLVLTSQAQARLPSEVVVKIAQLASIAGPQSRVAQPETPVTLQFQGSKFTLSHS  
 QSALPQRLVLTSQAQARLPSEVVVKIAQLASITGPQSRVAQPETPVTLQFQGSKFTLSHS  
 -----GEVVVKIAQLASIAGPQSRVAQPETPVTLQFQGNKFTLSHS  
 QSAPPQRLVLTSQAQARLPSEVVVKIAQLASIAGPQSRVAQPETPVTLQFQGNKFTLSHS  
 QSALPQGLVLTSQAQARLPSEVVVKIAQLASLAGPPSRVAQPETPVTLQFQGNKFTLSHS  
 QSALPQGLVLTSQAQARLPSEVVVKIAQLASLAGPPSRVAQPETPVTLQFQGNKFTLSHS  
 QSTLPQGLVLTSQAQARLPSEVVVKIAQLASLAGPQSRVAQPETPVTLQFQGNKFTLSHS  
 QSVLPQRLVLTSQAQARLPSEVVVKIAQLASIAGAQGRIAQPETPVTLQFQGNKFTLSHS  
 QSVLPQRLVLTSQAQARLPSEVVVKIAQLASIAGAQGRIAQPETPVTLQFQGNKFTLSHS  
 QSVLPQRLVLTSQAQARLPSEVVVKIAQLASIAGAQGRIAQPETPVTLQFQGNKFTLSHS  
 QSVLPQRLVLTSQAQARLPSEVVVKIAHLASIASAQGRIAQPETPVTLQFQGNKFTLSHS  
 -----QGGDVVKIAQLAASGGTGRIAQPKTPVTLQFQGNFTFLSQS  
 .....1630.....1640.....1650.....1660.....1670.....1680

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*****
Homo_sapiens      QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRAPGPVVMQTVSQAGAVHG---ALGSKPPAG 1661
Macaca_mulatta    QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRAPGPVVMQTVSQAGAVHG---ALGSKPLAG 1698
Callithrix_jacchus QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRAPGPVVMQTVSQAGAVHG---TLGSKPLAG 1698
Mus_musculus      QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRAPGPVVMQTVSQAGAVHS---TLGSKPPTS 1578
Rattus_norvegicus QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRAPGPVVMQTVSQAGAVHS---TLGSKPPTS 1696
Bos_taurus        QLRQLTAGQPLQLQGSVLQIVSAPGQSYLRPPGPVVMQTVSQAGALN---ALGSKPPAS 1691
Equus_caballus    QLRQLTAGQPLQLQGSVLQIVSAPGQSYLRPPGPVVMQTVSQAGALN---ALGSKPPAS 1689
Canis_lupus_familiaris QLRQLTAGQPLQLQGSVLQIVSAPGQSYLRPPGPVVMQTVSQAGALN---ALGSKPPAG 1688
Pavo_muticus      QLRQLTAGQPLQLQGSVLQIVSAPGQQLRPPGPVVMQTVSQAGTVQNALNALGNOHQAG 1689
Pavo_cristatus    QLRQLTAGQPLQLQGSVLQIVSAPGQQLRPPGPVVMQTVSQAGTVQNALNALGNOHQAG 1689
Gallus_gallus     QLRQLTAGQPLQLQGSVLQIVSAPGQQLRPPGPVVMQTVSQAGTVQNALNALGNOHQAG 1689
Chelonia_mydas    QLRQLTAGQPLQLQGSVLQIVSAPGQQLRPPGPVVMQTVSQAGTVQNALNALGNOHQAG 1691
Xenopus_tropicalis QLRQLTAGQPLQLQGSVLQIVSAPGQPYLRPPGPVVMQTVSQAGTVQNALNALGNOHQAG 1621
.....1690.....1700.....1710.....1720.....1730.....1740

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.      :      :***. :      * : * . * :... :*: ** **:* **:.
Homo_sapiens      GPSPAPLTPQVGVPGRVAVNALAVGEPGTASKPASPIGGPTQE---EKIRLLKERLDQIY 1718
Macaca_mulatta    GPSPAPLTPQVGVPGRVAVNALAVGEPGTASKPASPIGGPTQE---EKIRLLKERLDQIY 1755
Callithrix_jacchus GLSPAPLTPQVGVPGRVAVNALAVGETGAASKPASPIGGPTQE---EKIRLLKERLDQIY 1755
Mus_musculus      GPSPAPLTPQVGVPGRVAVSAMAAGEPGLASKPASPAAGPTQE---EKSRLLLKERLDQIH 1635
Rattus_norvegicus GPSPAPLTPQVGVPGRVAVSAMAAGEPGLASKPASPAAGPTQE---EKSRLLLKERLDQIH 1753
Bos_taurus        GPSPTPTVTPFVGPGRVAVSPLAAGEPGAASKPASPVAGPTQE---EKSRLLLKERLDQIY 1748
Equus_caballus    GPGPAPVTPPVGVPGRVAVNPLAAGDPGMAKPASPIGGPTQE---EKIRLLKERLDQIY 1746
Canis_lupus_familiaris --SSVPVTAPVGVPGRVAVNPLAAGEPGAASKPASPVGGPTQE---EKIRLLKERLDQIY 1743
Pavo_muticus      VPTSTAVTQQVCIPGRTAVTNLSSGDMGAVLKPAAPAHG-QSQETYEKNRLLKERLDRI 1748
Pavo_cristatus    VPTSTAVTQQVCIPGRTAVTNLSSGDMGAVLKPAAPAHG-QSQETYEKNRLLKERLDRI 1748
Gallus_gallus     VPTSTAVTQQVCIPGRTAVTNLSSGDMGAVLKPAAPAHG-QSQETYEKNRLLKERLDRI 1748
Chelonia_mydas    VPASTAVTQQVCIPGRTAVTNLTSGDAGPTLKPAAPTHGGQSQDSFEKNRLLKERLDRI 1751
Xenopus_tropicalis --MSCVTSAGSGIPGRTILMPHG-CGDPGAALKSSSFT-PAQEFABEKKRLLMRECLDR 1677
.....1750.....1760.....1770.....1780.....1790.....1800

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***.*.:*:* ** * : .      .      *      *
Homo_sapiens      LVNERRCSQAPVYGRDLLRICALPSHGRVQWRGSLDGRGKEAGPAHSYTS-----SSE 1772
Macaca_mulatta    LVNERRCSQAPVYGRDLLRICALPSHGRVQWRGSLDGRGKEAGPAHSYAS-----SSE 1809
Callithrix_jacchus LVNERRCSQAPVYGRDLLRICALPSHGRVQWRGSLDGRGKEAGPAHSYAS-----PSE 1809
Mus_musculus      FINERRCSQAPVYGRDLLRICALPSHGRVQWRGSLDGRGKEAGPAHSYAS-----LSE 1689
Rattus_norvegicus FINERRCSQAPVYGRDLLRICALPSHGRVQWRGSLDGRGKEAGPAHSYAS-----LSE 1807
Bos_taurus        FVNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----PSK 1802
Equus_caballus    FVNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----PSK 1800
Canis_lupus_familiaris FVNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----PSN 1797
Pavo_muticus      SGNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----SASGGPSD 1807
Pavo_cristatus    SGNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----SASGGPSD 1807
Gallus_gallus     SGNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----SASGGPSD 1804
Chelonia_mydas    SGNERRCSRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----SASGGPSD 1811
Xenopus_tropicalis SSNERNCGRAPVYGRDLLGICSLPGREQVPWFRASDRHGKGAGPASRHTS-----SASGGPSD 1734
.....1810.....1820.....1830.....1840.....1850.....1860

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:: : :      : : * . * :...:*. * : .** . : : . : . * :
Homo_sapiens      SPSELMLTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1832
Macaca_mulatta    SPSELMLTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1869
Callithrix_jacchus NPSELMLTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1869
Mus_musculus      SEGDLILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1747
Rattus_norvegicus SEGDLILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1867
Bos_taurus        SHRDILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1862
Equus_caballus    SQRDILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1860
Canis_lupus_familiaris GQKDLILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1857
Pavo_muticus      PLREMIQTLVREQESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1867
Pavo_cristatus    PLREMIQTLVREQESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1867
Gallus_gallus     PLREMIQTLVREQESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1864
Chelonia_mydas    PLQALILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1871
Xenopus_tropicalis PLRHLILTLTLCRCESLQDVIDRVAFVIPPVVAAPPVSLRVPVPPPLYSHRMRIILRQGLREH 1794
.....1870.....1880.....1890.....1900.....1910.....1920

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

**File:** /media/morpheus/disk1/fst/pep\_msa/EP400  
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	*: ::* : :: : ::*:***:*****:***:** *:*****:***:****	
Homo_sapiens	AAPYFQQLRQTATAPRLLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMILMLD	1892
Macaca_mulatta	AAPYFQQLRQTATAPRLLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMILMLD	1929
Callithrix_jacchus	AAPYFQQLRQTATAPRLLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1929
Mus_musculus	TGPYHRLQQLTALRSLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1807
Rattus_norvegicus	TGPYHRLQQLTALRSLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1927
Bos_taurus	TAPYAQQLQRMIALHSLRFPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1922
Equus_caballus	TAPYAQQLQMTALRSLQFPPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1920
Canis_lupus_familiaris	IAPYAQQLQRMIALRSLRFPELRLVQFDSGKLEALAILLOKLKSEGRRVLILSQMVLMLD	1917
Pavo_muticus	AAPHLHQLQRITTPQLLOFPDLRLVQYDSGKLEALAVLLLKLKSEGRRVLILSQMILMLD	1927
Pavo_cristatus	AAPHLHQLQRITTPQLLOFPDLRLVQYDSGKLEALAVLLLKLKSEGRRVLILSQMILMLD	1927
Gallus_gallus	AAPHLHQLRRIITTPQLLOFPDLRLVQYDSGKLEALAVLLLKLKSEGRRVLILSQMILMLD	1924
Chelonia_mydas	ATPYLHQLHQTTPHLLQFPDLRLVQYDSGKLEALAVLLLOKLKAEGRRLVLILSQMILMLD	1931
Xenopus_tropicalis	VAPHLHLLLRQISPHCMQFPDLRLIQWDSGKLDALAVLLRKLRSGRRLVLILSQMLMLD	1854
	.....1930.....1940.....1950.....1960.....1970.....1980	

	***:**.* **::**** *. : * **:***:* **** ::*:**:: *: ***:..	
Homo_sapiens	I L E M F L N F H Y L T V V R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R T T G I N L V E A D T V	1952
Macaca_mulatta	I L E M F L N F H Y L T V V R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R T T G I N L V E A D T V	1989
Callithrix_jacchus	I L E M F L N F H Y L T V V R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G I N L V E A D T V	1989
Mus_musculus	I L E M F L N F H Y L T V V R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G I N L V E A D T V	1867
Rattus_norvegicus	I L E M F L N F H Y L T V V R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G I N L V E A D T V	1987
Bos_taurus	I L E M F L N F H Y L T Y I R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G V S L V E A D A V	1982
Equus_caballus	I L E M F L N F H Y L T Y I R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G V S L V E A D A V	1980
Canis_lupus_familiaris	I L E M F L N F H Y L T Y I R I D E N A S S E Q R O E L M R S F N R D R R I F C A I L S T H S R A T G V S L V E A D A V	1977
Pavo_muticus	I L E L F L N F H F L T F V R I D E Y A N H E Q R O E L M K S F N R D K R I F C A I L S S H S R S T G V N L V E A D T V	1987
Pavo_cristatus	I L E L F L N F H F L T F V R I D E Y A N H E Q R O E L M K S F N R D K R I F C A I L S S H S R S T G V N L V E A D T V	1987
Gallus_gallus	I L E L F L N F H F L T F V R I D E Y A N H E Q R O E L M K S F N R D K R I F C A I L S S H S R S T G V N L V E A D T V	1984
Chelonia_mydas	I L E L F L N F H F L T F V R I D E Y A N H E Q R O E L M K S F N R D K R I F C A I L S S H S R S T G V N L V E A D T V	1991
Xenopus_tropicalis	I L E L F L D F H A L T F L R I D E F A N Y D C Y D L M K S F N Q D P R I F C L L I S T H S H S L G V P Y V E A N T A	1914
	.....1990.....2000.....2010.....2020.....2030.....2040	

	*** *****::** **:**** *:***** *:***** *****	
Homo_sapiens	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2012
Macaca_mulatta	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2049
Callithrix_jacchus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSVEEKLLKNGTKDLIREVAAQGN	2049
Mus_musculus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	1927
Rattus_norvegicus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2047
Bos_taurus	VFYDHDLNPVMDAKAQEWCDRIGRRKDVHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2042
Equus_caballus	VFYDNDLNPVMDAKAQEWCDRIGRRKDVHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2040
Canis_lupus_familiaris	VFYDNDLNPVMDAKAQEWCDRIGRRKDVHIYRLVSGNSIEEKLLKNGTKDLIREVAAQGN	2037
Pavo_muticus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSRNSVEEKLLKNGTKDLIREVAAQGN	2047
Pavo_cristatus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSRNSVEEKLLKNGTKDLIREVAAQGN	2047
Gallus_gallus	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSVEEKLLKNGTKDLIREVAAQGN	2044
Chelonia_mydas	VFYDNDLNPVMDAKAQEWCDRIGRCKDIHIYRLVSGNSVEEKLLKNGTKDLIREVAAQGN	2051
Xenopus_tropicalis	IFYDSDLNPVMDSRQAQWCDRIGRTKDVHIYRLVANSIEEKLLKNGTKDLIREVAAQGN	1974
	.....2050.....2060.....2070.....2080.....2090.....2100	

	*:*****:~*:****: . *:~** *****::~***** :* ~:~*~:*****:	
Homo_sapiens	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSVTETIAPK~IARPFIEALK	2072
Macaca_mulatta	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSVTETIAPK~IARPFIEALK	2109
Callithrix_jacchus	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSVTETIAPK~IARPFIEALK	2109
Mus_musculus	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSVSETIAPK~IARPFIEALK	1987
Rattus_norvegicus	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSVSETIAPK~IARPFIEALK	2107
Bos_taurus	DYSMAFLTQRTIQELFEVYPPMDDTGFPVKAEFFVVL~SQEPSVTETIAPK~IARPFIEALK	2102
Equus_caballus	DYSMAFLTQRTIQELFEVYSPMDDAGFPVKAEFFVVL~SQEPSITETIAPK~IARPFIEALK	2100
Canis_lupus_familiaris	DYSMAFLTQRTIQELFEVCSPTDDAGFPVKAEFFVVL~SQEPSATEIAPK~IARPFIEALK	2097
Pavo_muticus	DYSMAFLTQQTIQELFEVHSPMEDSGFRVKAEFFVVL~SQEPSPAETISPKV~ARPFIEALN	2107
Pavo_cristatus	DYSMAFLTQQTIQELFEVHSPMEDSGFRVKAEFFVVL~SQEPSPAETISPKV~ARPFIEALN	2107
Gallus_gallus	DYSMAFLTQQTIQELFEVHSPMEDSGFRVKAEFFVVL~SQEPSPAETISPKV~ARPFIEALN	2104
Chelonia_mydas	DYSMAFLTQQTIQELFEVHSPMEDSGFRVKAEFFVVL~SQEPSPAETISPKV~ARPFIEALN	2111
Xenopus_tropicalis	DFSMAFLTQQTIH~ELFELYSPLDDTGFG~EKAEEFIMLSQEPSQTETIATK~FAPKPFIEALK	2034
	.....2110.....2120.....2130.....2140.....2150.....2160	

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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***      :::  :      :      .  * . * * : .  :  :  *****
SIEYL-EEDAQKSAQEGVLGPHTDALSSDSENMPCDDEEPSQLEELADFMEQLTPIEKYAL
SIEYL-EEDAQKSAEEGVPGPHTDALSSDSENMPCDDEEPSQLEELADFMEQLTPIEKYAL
SIEYL-EEDAQAEEGVPGPHTDALSSDSENRCDEEPSQLEELADFMEQLTPIEKYAL
SIECL-EEDAQRSTEEAVPGSSSVAVSSSDSGSRYPDEEPSQLEELADFMEQLTPIEKYAL
SIECL-EEDAQRSTEEAVPGSSTVAVSSSDSGSRYPDEEPSQLEELADFMEQLTPIEKYAL
SIEYLEEEDAQKPAEEAVPG-----SPDSSGSRWDEEPSQLEELADFMEQLTPIEKYAL
SIECL-EEDVQKPMEEAVPG-----SSDSGSGWNEEPSQLEEFADFMEQLTPIEKYAL
SIEYL-EEDAQKPEEEAVPG-----SPGTSNPRWNEEPSQLEELADFMEQLTPIEKYAL
SIERE-DEELDDHIQEIIRPESSIEPLVSEVCESKYNEEPSPLQELVAVVDQLTPIEKYAL
SIERE-DEELDDHIQEIIRPESSIEPLVSEVCESKYNEEPSPLQELVAVVDQLTPIEKYAL
SIERE-DEELDDRVEIIRPESSIEPLVSELCESKYNEEPSPLQELVAVVDQLTPIEKYAL
SIEQE-DEEPNKHGQEAQAESSIEPLISELSEPKYNEEPSPLQELVAVVDQLTPIEKYAL
SIENGAEQEEFLKGDAKKN-----FAVDSCHSIEASELMELAAVVEQLTPIEKYAL
.....2170.....2180.....2190.....2200.....2210.....2220

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**** *:.. : * : : ** : : : * . *:.. *****
NYLELFHTSIEQEKERNS EDAVMTAVRAWEFWNLKTLQEREARLRLEQEEAELLTYTRED
NYLELFHASTEQEKARDS EDAVMTAVRAWEFWNLKTLQEREARLRLEQEEAELLTYTRED
NYLELFHTSIEQEKERNS EDAVLTAVRAWESWNLKTLQEREARLRLEQEEAELLTYTRED
NYLELFHTTTEQEKERIS EDLVMSMKDWETRNRALQEREARLQLEQEEAELLTYTRED
NYLELFHTTTEQEKERSS EDLVMATMKDWETRNRALQEREARLQLEQEEAELLTYTRED
NYLELFHTSIDQEKERSS EGAVMTAVREWEARNAQSLREQEARARLEQEQEQOLLTYTRED
NYLELFHTSIDQEKERNS EEAVLTAVRAWEAQNVRTLRREREARALQEQEQOLLTYTRED
NYLELFHTPTGPEKEGSS EDAVLTAVREWEAQNVRALQEREARALQEQEQOLLTYTRED
NYLELFHVSVDENEPRLNEVELKTAKKAWEVQHLRELKEKEQKMLWEDEEEE-LLTYTRED
NYLELFHVSVDENEPRLNEVELKTAKKAWEVQHLRELKEKEQKMLWEDEEEE-LLTYTRED
NYLELFHVSVDENEPRLNEVELKTAKKVWEVQHLRELKEKEQKMLWEDEEEE-LLTYTRED
NYLELFHVS TDESKPRIS EVELKAAKKAWEFYHMKELKEKAEMLWEEEEEEELLTYTRED
NYLEEFYTS SAKGKAETIE-QLKSTKTKWEVQN LKETKDWEDEMVL EESGEDLLTYTRED
.....2230.....2240.....2250.....2260.....2270.....2280

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[illegible]

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**:*:*:***.*****.*:*****:***:**:*****:*****.*
ERKRHKTDPSAAGRKKKQRHGEAVVPPRSLFDRATPGLLKIRREGKEQKKNILLKQOQVP
ERKRHKTDPSAAGRKKKQRHGEAVVPPRSLFDRATPGLLKIRREGKEQKKNILLKQOQVP
ERKRHKTDPSAAGRKKKQRHGEAVVPPRSLFDRATPGLLKIRREGKEQKKNILLKQOQAP
ERKRHKTDPSAAGRKKKQRHGEAVVPPRSLFDRATPGMLKIRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGEAVVPPRSLFDRATPGMLKIRREGKEQKKNILLKQOQTF
ERRRHKTDPSSAAGRKKKQRHGEAVVPPRSLFDRTPGMLKIRREGKEQKKNILLKQOQTF
ERRRHKTDPSSAAGRKKKQRHGEAVVPPRSLFDRATPGMLKIRREGKEQKKNILLKQOQTF
ERRRHRTDPSVAGRKKKQRHGEFVPPRSLFDRATPGMLKMRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGETVIPPRLSLFDRATPGMLKMRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGETVIPPRLSLFDRATPGMLKMRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGETVIPPRLSLFDRATPGMLKMRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGEAVIPPRLSLFDRATPGMLKMRREGKEQKKNILLKQOQTF
ERKRHKTDPSAAGRKKKQRHGESVPPRSLFDRATPGMLKVRREGKEQKKNILLKQOQTF
.....2350.....2360.....2370.....2380.....2390.....2400

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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*****:.*.:*..*.:***:*****:*****:..:*****
Homo_sapiens      AKPLPTFAKPTAEPGQDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2371
Macaca_mulatta    AKPLPTFAKPTAEPGQDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2408
Callithrix_jacchus AKPLPAFAKPTAEPGQDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2408
Mus_musculus      AKPLPTYVKSSGEPADSPDWLIGEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2286
Rattus_norvegicus AKPLPTYVKSSGEPADSPDWLIGEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2406
Bos_taurus        AKPLPTFAKPTTESGPDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2396
Equus_caballus    AKPLPSFAKPTAESGPDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2393
Canis_lupus_familiaris AKPLPTFAKPTAESGPDNPEWLISEDWALLQAVKOLLELPLNLTIVSPAHTPNWDLVSDV 2390
Pavo_muticus      AKPLPTLVKPAAE TGQDNPEWLISEDWALLQAVKOLLELPLNLAVVSPAHTPNWDLVSDV 2405
Pavo_cristatus    AKPLPTLVKPAAE TGQDNPEWLISEDWALLQAVKOLLELPLNLAVVSPAHTPNWDLVSDV 2405
Gallus_gallus     AKPLPTLVKPAAE TGQDNPEWLISEDWALLQAVKOLLELPLNLAVVSPAHTPNWDLVSDV 2402
Chelonia_mydas    AKPLPTLVKPAAEAGQDNPEWLISEDWALLQAVKOLLELPLNLAVVSPAHTPNWDLVSDV 2410
Xenopus_tropicalis AKPLPTLVKPATESGPDNPEWLISEDWALLQAVKHLLLELPLNLTIVSPAHTPNWDLVSDV 2326
.....2410.....2420.....2430.....2440.....2450.....2460

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*****:***.***.***:*****          *:..*****.*:***
Homo_sapiens      VNCSRIYRSSKQCRNRYENVIIIPREEG-----KSKNNRPLRTSQIYAAQ 2415
Macaca_mulatta    VNCSRIYRSSKQCRNRYENVIIIPREEG-----KSKNNRPLRTSQIYAAQ 2452
Callithrix_jacchus VNCSRIYRSSKQCRNRYENVIIIPREEG-----KSKNNRPLRTSQIYAAQ 2452
Mus_musculus      VNCSRIYRSSKQCRNRYENVIIIPREEG-----KSKNNRPLRTSQIYAAQ 2330
Rattus_norvegicus VNCSRIYRSSKQCRNRYENVIIIPREEGKLLICEANPKKKAQNIYKSKNNRPLRTSQIYAAQ 2466
Bos_taurus        VNCSRIYRSSKQCRNRYENVLIIPREEG-----KSKNNRPLRTGOMYAAQ 2440
Equus_caballus    VNCSRIYRSSKQCRNRYENVLIIPREEG-----KSKNNRPLRTGOMYAAQ 2437
Canis_lupus_familiaris VNCSRIYRSSKQCRNRYENVLIIPREEG-----KSKNNRPLRTGOLYAAQ 2434
Pavo_muticus      VNCSRVYRSPKQCRNRYENVIIIPREEGKLMYEANPKKKTCSIYKTKNSRPLRTNQIYAAQ 2465
Pavo_cristatus    VNCSRVYRSPKQCRNRYENVIIIPREEGKLMYEANPKKKTCSIYKTKNSRPLRTNQIYAAQ 2465
Gallus_gallus     VNCSRVYRSPKQCRNRYENVIIIPREEGKLMYEANPKKKTCSIYKTKNSRPLRTNQIYAAQ 2462
Chelonia_mydas    VNCSRVYRSPKQCRNRYENVIIIPREEGKLMYEANPKKKTCSIYKTKNSRPLRTNQIYAAQ 2470
Xenopus_tropicalis VNCSRIYRSSKQCRNRYENVIIIPREEGKLMFEANPKKKTCSIYKTKNSRPLRTSQIYAAQ 2386
.....2470.....2480.....2490.....2500.....2510.....2520

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**..*****.*:..:*** *****
Homo_sapiens      DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2475
Macaca_mulatta    DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2512
Callithrix_jacchus DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2512
Mus_musculus      DENATHTQLYTSHFELMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2390
Rattus_norvegicus DENATHTQLYTSHFELMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2526
Bos_taurus        DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2500
Equus_caballus    DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2497
Canis_lupus_familiaris DENATHTQLYTSHFDLMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2494
Pavo_muticus      DEGATHTQLYTNHFEMMKMIAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2525
Pavo_cristatus    DEGATHTQLYTNHFEMMKMIAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2525
Gallus_gallus     DEGATHTQLYTNHFEMMKMIAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2522
Chelonia_mydas    DEGATHTQLYTNHFEMMKMIAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2530
Xenopus_tropicalis DEGVTHTQLYTNRFELMKMTAGKRSPPPIKPLLGMNPFQKNPKHASVLAESGINYDKPLPP 2446
.....2530.....2540.....2550.....2560.....2570.....2580

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*****:***.***.***:*****
Homo_sapiens      IQVASLRAERIAKEKKALADQOK-AQQPAVAQPPPPPP-----QPPPPPPQQ 2520
Macaca_mulatta    IQVASLRAERIAKEKKALADQOK-AQQPAVAQPPPPPP-----QPPPPPPQQ 2557
Callithrix_jacchus IQVASLRAERIAKEKKALADQOK-AQQPAVAQPPPPPP-----QPPPPPPQQ 2557
Mus_musculus      IQVASLRAERIAKEKKALADQOK-AQQPPVTPPPPPQQQQQQQQQQQQQQQQPPPPPPQQ 2449
Rattus_norvegicus IQVASLRAERIAKEKKALADQOK-AQQPPVTPPPPPQQPPPPPPPPPPPPPPPPPPPPPP 2583
Bos_taurus        IQVASLRAERIAKEKKALADQOK-AQQPPVTPPPPPPP-----QPQPPPPPPQQ 2546
Equus_caballus    IQVASLRAERIAKEKKALADQOK-AQQPPVAQPPPPPPPPPPPP-----QPQPPPPPPQQ 2547
Canis_lupus_familiaris IQVASLRAERIAKEKKALADQOK-AQQPPVAQPPPPPPPP-----QPQPPPPPPQQ 2540
Pavo_muticus      IQVASLRAERIAKEKKALAEQQR-AQQQAGPOS-----2557
Pavo_cristatus    IQVASLRAERIAKEKKALAEQQR-AQQQAGPOS-----2557
Gallus_gallus     IQVASLRAERIAKEKKALAEQQR-AQQQAGPOS-----2554
Chelonia_mydas    IQVASLRAERIAKEKKALAEQQR-AQQQTGPQPP-----2563
Xenopus_tropicalis IQVASLRAERIAKEKKALVEQHHRQQQTGSGTAQ-----2481
.....2590.....2600.....2610.....2620.....2630.....2640

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/EP400.snp  
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	* . *	. . *	.	*		. . :	:	: : *:	**	.
Homo_sapiens	PPPPLPQPAAAGSQPPAGPPAVQPPQPPQTQTPPVV-	APAKAQPAITTGGSAAVLG-	2578							
Macaca_mulatta	PPPPLPQPAAAGSQPPAGPPAVQSQPQPPQTQTPPVV-	ATAKAQPAITTGGSAAVLG-	2615							
Callithrix_jacchus	PPPPLPQPAAAGSQPPAGPPAVQPPQPPQTQTPPVV-	ASAKAQAIPAITTGGSAAVLG-	2615							
Mus_musculus	PPPPVPQPQAASSQTPAGQPVPVQPPQVVQTPQPVV-	PQSKGOPTMTTVGSAAVLAG-	2507							
Rattus_norvegicus	PPPPVPQPQAASSQTPAGQPVPVQ--QVCAQPPPPVQ-	AOSKGOATMTTVGSAAVLAG-	2639							
Bos_taurus	PPPPLPQPAAAGSQPPAGPPAVQPP-QACAQPPAQPA-	PPPKAPPAITTVGSAAVLQAG	2603							
Equus_caballus	PPPPLPQPCTAGSQQAAGPPAIQPP-QAPAQPPAQPAQ-	PPPKVPPAITTVGSAAVLQAG	2604							
Canis_lupus_familiaris	PPPPLPQQAAGSQPPAGPPAVQPP-QACAQPPAQPTQ-	PPPKVPPAITTVGSAAVLQAG	2597							
Pavo_muticus	-----QQQAGQQQAQQFAVQQQAQAPQPQAQAQVVQQPQAVVTAVTTTANTAVLAG-	2610								
Pavo_cristatus	-----QQQAGQQQAQQFAVQQQAQAPQPQAQAQVVQQPQAVVTAVTTTANTAVLAG-	2610								
Gallus_gallus	-----QQQAGQQQAQQFAVQQQAQAPQPQAQAQVVQQPQAVVTAVTTTANTAVLAG-	2607								
Chelonia_mydas	-----QQQAGQQQAQQFAVQQQAQACT---CAQVVQQPQAVVTAVTTTANTAVLAG-	2612								
Xenopus_tropicalis	-----QPQNQG- QOVSSFPVQPAQAQPPQVVPQQVIQQSPFVFTATS AVPATAVLAG-	2533								
	.....2650.....2660.....2670.....2680.....2690.....2700									

	***:***:*. :.:*****:**** ****.***** **:*:..* . **	
Homo_sapiens	TIKTSVTGTSMPTGAVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTPGGSAPAAQV	2638
Macaca_mulatta	TIKTSVTGTSIPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTPGGSAPAAQV	2675
Callithrix_jacchus	TIKTSVTGTSIPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTPGGSAPTQV	2675
Mus_musculus	TIKTSVTGTSIPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGTLTTSGGGSAPAAQV	2567
Rattus_norvegicus	TIKTSVTGTSIPTGTVSGNVIVNTIAGVP-ATFQSIINKRLASPVAPGALTTSGGGSAPAAQV	2698
Bos_taurus	AIKTSVTGTSMPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTSGGGSAPAAQV	2663
Equus_caballus	AIKTSVTGTSMPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTSGGGSAPAAQV	2664
Canis_lupus_familiaris	AIKTSVTGTSMPTGTVSGNVIVNTIAGVPAATFQSIINKRLASPVAPGALTTSGGGSAPAAQV	2657
Pavo_muticus	TIKTAVTGTSIQIATVSGNVIVNTVAGVPAATFQPIINKRLASPVIPGTLTTSGGTAAAAQV	2670
Pavo_cristatus	TIKTAVTGTSIQIATVSGNVIVNTVAGVPAATFQPIINKRLASPVIPGTLTTSGGTAAAAQV	2670
Gallus_gallus	TIKTAVTGTSIQIATVSGNVIVNTVAGVPAATFQPIINKRLASPVIPGTLTTSGGTAAAAQV	2667
Chelonia_mydas	TIKTAVTGTSIQIATVSGNVIVNTVAGVPAATFQPIINKRLASPVIPGTLTTSGGGTSAAQV	2672
Xenopus_tropicalis	AIKTAVTGASIQAAVSGNVIVNTVAGVPSATFQPIINKRLASPVIPGTLTAPS- -GV	2591
	.....2710.....2720.....2730.....2740.....2750.....2760	

	****	. . . : * : . . : : * : . . . : ***** . ** . *** : . : * . ** : * : . : * . ** :	
Homo_sapiens	VHTQPPPRAVGSPATAATPDLVSMATTQGVRAVTSVTASAVVTTNLTPVQTPARSLVPQVS	2698	
Macaca_mulatta	VHTQPPPRAVGSPATAATPDLVSMATTQGVRAVTSVTASAVVTTSLTPVQTPARSLVPQVS	2735	
Callithrix_jacchus	VHTQPPPRAVGSPATAATPDLVSMATTQGVRAVTSVTASAVVTTNLTPVQTQARSLVPQVS	2735	
Mus_musculus	VHTQQ--RAVGSPATAATDVLVSMITTQGVRAVTSVTASAVVTTNLTPVQTPTRSLVTQVS	2625	
Rattus_norvegicus	VHTQQ--RAVGSPATAATDVLVSMITTQGVRAVTSVTASAVVTTNLTPVQTPTRSLVTQVS	2756	
Bos_taurus	VHTQP--RAVGSPATAATSDLVSLAPTQGVRAVTSVTASAVVTTSLTPVQTPTRSLVTQVS	2721	
Equus_caballus	VHTQP--RAVGSPATAATSDLVSLAPTQGVRAVTSVTASAVVTTSLTPVQTPTRSLVTQVS	2722	
Canis_lupus_familiaris	VHTQP--RAVGSPATAATSDLVSLAPTQGVRAVTSVTASAVVTTSLTPVQTPTRSLVTQVS	2715	
Pavo_muticus	VHTQQ--RAAAAPAAST-ELVTIIASTQGVRAVTSVTASAVVTTNLTPVQTQIRSLVTQVT	2727	
Pavo_cristatus	VHTQQ--RAAAAPAAST-ELVTIIASTQGVRAVTSVTASAVVTTNLTPVQTQIRSLVTQVT	2727	
Gallus_gallus	VHTQQ--RAAAAPAAST-ELVTIIASTQGVRAVTSVTASAVVTTNLTPVQTQIRSLVTQVT	2724	
Chelonia_mydas	VHTQQ--RTAAAPAAST-ELVTIIASTQGVRAVTSVTASAVVTTNLTPVQTQARSLVTQVT	2729	
Xenopus_tropicalis	VHTQQ---RAAAAAAAPAEMVTIATNQGVRAPVPTGGAVVCSSITPAQTQTRPIVTQVT	2648	
	.....2770.....2780.....2790.....2800.....2810.....2820		

	*:	***.*::*	* *::*:**	***	
Homo_sapiens	QATG	--VOLPGKTIITP	AHFOLLR	-----	2751
Macaca_mulatta	QATG	--VOLPGKTIITP	AHFOLLRH	-----	2792
Callithrix_jacchus	QATG	--VOLPGKTIITP	AHFOLLR	-----	2777
Mus_musculus	QATG	--VOLPGKTIITP	AAHFOLLR	-----	2661
Rattus_norvegicus	QATG	--VOLPGKTIITP	AAHFOLLR	-----	2795
Bos_taurus	QATG	--VOLPGKTIITP	AHFOLLR	-----	2759
Equus_caballus	QATG	--VOLPGKTIITP	AHFOLLR	-----	2756
Canis_lupus_familiaris	QATG	--VOLPGKAITP	AHFOLLR	-----	2746
Pavo_muticus	PATPT	-VOLSGKTIITP	AHFOLLR	-----	2754
Pavo_cristatus	PATPT	-VOLSGKTIITP	AHFOLLR	-----	2754
Gallus_gallus	PATPT	-VOLSGKTIITP	AHFOLLR	-----	2751
Chelonia_mydas	QAAPT	-VOLSGKTVIP	AQFOLLR	-----	2756
Xenopus_tropicalis	TATTAG	VLASKSITP	AQLMLR	-----	2674

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/EP400aps Tue Feb 1 12:06:43 2022

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.:*****:*      *: **.*:*.*: *::*:*****:* * *      *      ..
Homo_sapiens      TSQVQVPQIQG--QAQSPAQIKAVGKLTPEHLIKMOKOKLQMPPOPP--PPQAQSAPPQP 2807
Macaca_mulatta    TSQVQVPQIQG--QAQSPAQIKAVGKLTPEHLIKMOKOKLQMPPOPP--PPQAQSAPPQP 2848
Callithrix_jacchus TSQVQVPQIQG--QAQSPAQIKAVGKLTPEHLIKMOKOKLQMPPOPP--TPQAQSAPPQP 2833
Mus_musculus      TSQVQVPQIQS--QAQSPAQIKAVSKLGPEHIIKMOKOKMOLPPOPP--PPQAQPGPPQQ 2717
Rattus_norvegicus TSQVQVPQIQG--QAQSPAQIKAVGKLTPEHLIKMOKOKMOLPPOPP--PPQAQPGPPQQ 2851
Bos_taurus        ASQVQVPQIQG--QAQSPAQIKAVGKLTPEHLIKMOKOKLQLPQQA--PAQAPAGPPQP 2815
Equus_caballus    TSQVQVPQIQS--QAQSPAQIKAVGKLTPEHLIKMOKOKLQLPQQA--PPQAPPGPPQP 2812
Canis_lupus_familiaris PSQVQVPQIQG--QAPSPAQIKAVGKLTPEHLIKMOKOKLQLPQQA--PPQAPPGPPQP 2802
Pavo_muticus      AAQVQVPQIQAAQAQAQSPAQIKTVGKLSQEQLIKLQKOKLQLPQQA--AQQTQGAQQQ 2812
Pavo_cristatus    AAQVQVPQIQAAQAQAQSPAQIKTVGKLSQEQLIKLQKOKLQLPQQA--AQQTQGAQQQ 2812
Gallus_gallus     AAQVQVPQIQAAQAQAQSPAQIKTVGKLSQEQLIKLQKOKLQLPQQA--AQQTQGAQQQ 2809
Chelonia_mydas    AAQVQVPQIQTAQAQAQSPAQIKFVGKLSQEQLIKLQKOKLQLPQQA--QQQTQGAQQQ 2815
Xenopus_tropicalis AAQVQVPQIQA--QTSPGQIKAVGKISQEQLIKLQKOKMOLPQQTQATAQSQSAPAA 2732
.....2890.....2900.....2910.....2920.....2930.....2940

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..* * *      ** : **.*:*.*: **.*:*****:*****:*
Homo_sapiens      TAQVQVQTSQPPQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2866
Macaca_mulatta    TAQVQVQASQPPQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2907
Callithrix_jacchus AAQVQVQASQPPQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2892
Mus_musculus      PAQVQVQTPPPQQ--SPQLTTVTAPRPGALLTGTTVTNLQVARLTRVPTSQQLAAGQMQ 2777
Rattus_norvegicus PAQVQVQTAQPPQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2911
Bos_taurus        TAQVQVQPPPTQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2874
Equus_caballus    TAQVQVQPQPPAQQ--SPQLTTVTAPRPGALLTGTTVANLQVARLTRVPTSQQLAAGQMQ 2871
Canis_lupus_familiaris ATQVQVQAPPPTQQ--SPQLATVTAPRPGALLTGTTVANLQVARLTRVPPSQQLAAGQMQ 2861
Pavo_muticus      AAQVQVQ-----QQQQTQQLTAVTAPRPGAVLTGTTVTNLQVARLTRVPASQLAAGQIQ 2867
Pavo_cristatus    AAQVQVQ-----QQQQTQQLTAVTAPRPGAVLTGTTVTNLQVARLTRVPASQLAAGQIQ 2867
Gallus_gallus     AAQVQVQ-----QQQQTQQLTAVTAPRPGAVLTGTTVTNLQVARLTRVPASQLAAGQIQ 2864
Chelonia_mydas    TTQVQVQ-----QQQQTQQLAAVAASRPGLVLTGTTVTNLQVARLTRVPASQLAAGQIQ 2869
Xenopus_tropicalis PVQGGQQPQQTQAQQQTQQLAAVSAPRAGAVLTGATVANLQVARL-----LQAGQIQ 2785
.....2950.....2960.....2970.....2980.....2990.....3000

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: . *.***:*****      *****.*****:*****.***: *.:*****:
Homo_sapiens      TQAPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKAAG--QTVVAQPV 2925
Macaca_mulatta    TQAPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKAAG--QTVVAQPV 2966
Callithrix_jacchus TQTPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKAAG--QTVVAQPV 2951
Mus_musculus      TQTPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKTAG--QTVVAQPV 2836
Rattus_norvegicus TQTPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKTAG--QTVVAQPV 2970
Bos_taurus        APAPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKAAG--QTVVAQPV 2933
Equus_caballus    AQAPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKATG--QTVVAQPV 2930
Canis_lupus_familiaris AQAPQPAQVALAKPPVVSVPAAVSSPGVTTLPMNVAGISVAIGQPQKAAG--QTVVAQPV 2920
Pavo_muticus      AQTQPAQVALAKPPVVSVPAAVSSAGVTTLPVTVAGISVAIGQPQKAAGGQTVVAQPL 2927
Pavo_cristatus    AQTQPAQVALAKPPVVSVPAAVSSAGVTTLPVTVAGISVAIGQPQKAAGGQTVVAQPL 2927
Gallus_gallus     AQTQPAQVALAKPPVVSVPAAVSSAGVTTLPVTVAGISVAIGQPQKAAGGQTVVAQPL 2924
Chelonia_mydas    AQTQPAQVTLAKPPVVSVPAAVSSAGVTTLPVTVAGISVAIGQPQKAAGGQTVVAQPV 2929
Xenopus_tropicalis AQPQTAQVTLAKPPVVS---AVVSSAGVTTLPVTVAGISVAIGQNKKAAGGQAVVAQPL 2842
.....3010.....3020.....3030.....3040.....3050.....3060

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:***** *:      *****:*.*: * *.* *      :      *
Homo_sapiens      HMQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIITTPGAQQ----- 2971
Macaca_mulatta    HMQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIITTPGAQQ----- 3012
Callithrix_jacchus HVQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIITAPGTQQ----- 2997
Mus_musculus      NVQQLLKKYKQTAVQQQKAIQPOVAQGGAAVQ--QKLTQQTITTOGPQQ----- 2883
Rattus_norvegicus HVQQLLKLKQ--AVQQQKAIQPOVAQGGAAVQ--QKLTQQTITTOGPQQ----- 3016
Bos_taurus        HVQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIAAGGQPO----- 2979
Equus_caballus    HVQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIAAGGQPO----- 2976
Canis_lupus_familiaris HVQQLLKLKQ--AVQQQKAIQPAAGGPAAVQ--QKITAQQIAAGGQPO----- 2966
Pavo_muticus      HVQQLLKLKHHQAQQQKAIQPOVAQGGAAPVQ--QKINAQQVTVQTOQQTS----- 2979
Pavo_cristatus    HVQQLLKLKHHQAQQQKAIQPOVAQGGAAPVQ--QKINAQQVTVQTOQQTS----- 2979
Gallus_gallus     HVQQLLKLKHHQAQQQKAIQPOVAQGGAATVQ--QKINAQQVTVQAAQQTS----- 2976
Chelonia_mydas    HVQQLLKLKHHPTAQQQKAIQPOVAQGGAATVQ--QKV-----TVQTOHOTS----- 2976
Xenopus_tropicalis NVQQLLKLKQ-----QKALQSQAATGGAAVQPKITAPQVAVQTOQQQQPQQQGGQQQQ 2898
.....3070.....3080.....3090.....3100.....3110.....3120

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

**File: /media/morpheus/disk1/fst/pep\_msa/EP4000** **Daps: Tue Feb 1 12:06:43 2022**

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	*::*:** :*****:.*.*:** *: *	*::*:..*****:.	**.*	
Homo_sapiens	KVAYAAQPALKTOFLTTPISQAOKLAGAQQVQT--QIQVAKLPQVVQQQTP----	VASI	3024	
Macaca_mulatta	KVAYAAQPALKTOFLTTPISQAOKLAGAQQVQT--QIQVAKLPQVVQQQTP----	VASI	3065	
Callithrix_jacchus	KVAYATQPALKTOFLTTPISQAOKLAGAPQVPT--QIQVAKLPQVVQQQTP----	VASI	3050	
Mus_musculus	KVAYAAQPALKTOFLTTPISQAOKLAGTQQVQT--QIQVAKLPQVVQQQTP----	VASI	2936	
Rattus_norvegicus	KVAYAAQPALKTOFLTTPISQAOKLAGTQQVQT--QIQVAKLPQVVQQQTP----	VASI	3069	
Bos_taurus	KVTYATQPALKTOFLTTPISQAOKLAGTQQVQT--QIQVAKIPQVVQQQTP----	VASI	3032	
Equus_caballus	KVTYATQPALKTOFLTTPISQAOKLAGTQQVQT--QIQVAKLPQVVQQQTP----	VASI	3029	
Canis_lupus_familiaris	KVTYATQPALKTOFLTTPISQAOKLAGTQQVQT--QIQVAKLPQVVQQQTP----	VASI	3019	
Pavo_muticus	KVTTYTTQPAIKTOFLTTPISQTKPGGTQQVQAQIQVQVAKLPQVVQQQAT----	VANI	3034	
Pavo_cristatus	KVTTYTTQPAIKTOFLTTPISQTKPGGTQQVQAQIQVQVAKLPQVVQQQAT----	VANI	3034	
Gallus_gallus	KVTTYTTQPAIKTOFLTTPISQTKPGGTQQVQAQIQVQVAKLPQVVQQQAT----	VANI	3031	
Chelonia_mydas	KVAYSADP-IKTOFLTTPISQAOKPGGTQQAPP--QIQVSKLSQVVQQQAT----	VANI	3028	
Xenopus_tropicalis	KMTYTAAQPAIKTOFLAAPINQAOKSPGAQQVQG--QIQVAKLPQVVQQQAAVTAQAVAN	2956		
	.....3130.....3140.....3150.....3160.....3170.....3180			

	* :.. **	* ..**** :* :* :.. **	** :* : :* :* :**** :***	* ..
Homo_sapiens	QQVASASQ--QASPQTVALTQATAAGQQ--VQMIPAVTATAQVVOQKLIQQQ---VVTTA	3077		
Macaca_mulatta	QQVASASQ--QASPQTVALTQATAAGQQ--VQMIPAVTATAQVVOQKLIQQQ---VVTTA	3118		
Callithrix_jacchus	QQVASASQ--QASPQTVALTQATAAGQQ--VQMIPAVTATAQVVOQKLIQQQ---VVTTA	3103		
Mus_musculus	QQVASASQ--QASPQTVTLTQATAAGQQ--VQMIPVTATQAQLVVOQKLIQQQ---VVTTA	2989		
Rattus_norvegicus	QQVASASQ--QASPQTVTLTQATAAGQQ--VQMIPVTATATAQVVOQKLIQQQ---VVTTA	3122		
Bos_taurus	QQVASASQ--QASPQTVTLTQATAAGQQ--VQMIPAVTATAQVVOQKLMQQQ---VVTTA	3085		
Equus_caballus	QQVASASQ--QASPQTVTLTQATAAGQQ--VQMIPAVTATAQVVOQKLMQQQ---VVTTA	3082		
Canis_lupus_familiaris	QQVASASQ--QASPQTVTLTQATAAGQQ--VQMIPVTATATAQVVOQKLMQQQ---VVTTA	3072		
Pavo_muticus	QQMVSVSQVQAQPQTVTLSQTITAGQQQ--VQVIPATTATAQVVOQKLIQQQ---VVTTA	3089		
Pavo_cristatus	QQMVSVSQVQAQPQTVTLSQTITAGQQQ--VQVIPATTATAQVVOQKLIQQQ---VVTTA	3089		
Gallus_gallus	QQMVSVSQVQAQPQTVTLSQTITAGQQQ--VQVIPATTATAQVVOQKLIQQQ---VVTTA	3086		
Chelonia_mydas	QQMVSVSQVQAQPQTVTLSQTITAGQQQ--VQVIPATTATAQVVOQKLIQQQ---VVTTA	3083		
Xenopus_tropicalis	PQMVPSQ--VQVQPTVTLSQATAAGQQQVQVLPAGSAAQVVOQKMQVQQQQVVSAG	3014		
	.....3190.....3200.....3210.....3220.....3230.....3240			

	:	:*:	.	.	:	:::	**.*:*:*.*::**::****.	
Homo_sapiens	SAPLQTPGAPNPAQVPASSDSPSQQPKLQMRVPAVRLKTPTKPPCQ	3123						
Macaca_mulatta	SAPLQTPGTNPNAQVPTSSDSPSQQPKLQMRVPAVRLKTPTKPPCQ	3164						
Callithrix_jacchus	SAPLQTAGAPNPAQVSASSDSPSQQPKLQMRVPAVRLKTPTKPPCQ	3149						
Mus_musculus	SASLQTPGGPSPAQLPASSDSPSQQPKLQMRVPAVRLKTPTKPPCQ	3035						
Rattus_norvegicus	SASLQTPGGPSAQLPTSSDSPNQPKLQMRVPAVRLKTPTKPPCQ	3168						
Bos_taurus	AAQLQTPGVPTPAQVPAASDSPNQPKLQMRVPAVRLKTPTKPPCP	3131						
Equus_caballus	AAQLQTPGVPNPGQVSASSDSPNQPKLQMRVPAVRLKTPTKPPCP	3128						
Canis_lupus_familiaris	AGQLQSPGVNPNAQVPASSDSPSQQPKLQMRVPAVRLKTPTKPPCP	3118						
Pavo_muticus	SPQIQAPGVQNPAQTPATSEAQNQAKVMRTPTVRLKAPT KPS--	3133						
Pavo_cristatus	SPQIQAPGVQNPAQTPATSEAQNQAKVMRTPTVRLKAPT KPS--	3133						
Gallus_gallus	SPQIQAPGVQNPAQTPATSEAQNQAKVMRTPTVRLKAPT KPS--	3130						
Chelonia_mydas	SPQIQAPGVQNPAQAPATSEAQNQAKVMRTPTVRLKAPT KPS--	3127						
Xenopus_tropicalis	AQQLQASVNQSTTPALGANDTQAQQAQKVTRPTVRI NAPT KPS--	3058						
	.....3250.....3260.....3270.....3280.....							