

CLUSTAL W (1.83) multiple sequence alignment

```

C._elegans      MVA-----KKNILGGPPSNQLNDNSSLPPIGELVISV-----
Cat             MGSSAMDTKKKKKDVASPGESSGKKNPSQ-KRRSLRVHIPDLSSFAMPLLD
Cattle          MGSAAMDTEKKKKDVCSPPGRSGGCMNSIQ-KRRSLRVHIPDLSSFAMPLLD
Chicken        -----
Chimpanzee     MKRF-----
Dog             MGSAAMDTKKKKKDVSSPGGSGGKKNPSQ-KRRSLRVHIPDLSSFAMPLLD
Human          MGSAVMDTKKKKKDVSSPGGSGGKKNASQ-KRRSLRVHIPDLSSFAMPLLD
Mouse          -----
Rat            -----
Western_Claved_Frog -----
Zebrafish      -----
    
```

```

C._elegans      -----DDEPTTAPPVTKPVKKGWIK
Cat             GDLESSEKHASRKVDSPCSSGSPSKGFFSRGPQHRPSSPVSAPVRP----
Cattle          GDLESSEKPPSRKVDSPPFGSGSPSKGFFTRGPQPRPSSPVSAPVRP----
Chicken        -----
Chimpanzee     GSLRSNKKHKDQN-----RSTERRQSEP-----
Dog             GDLESSEKHSSRKVDSPCSSGSPSKGFFSRGPQHRPSSPVSAPVRP----
Human          GDLEGSKGHSSRKVDSPPFGSPSKGFFSRGPQPRPSSPMSAPVRP----
Mouse          -----
Rat            -----
Western_Claved_Frog -----
Zebrafish      -----
    
```

```

C._elegans      TAKSKASGTLRRTLFGIRSTK-----RRAKDAEAIHEAGEEEEDEEDYT
Cat             ----KASPGSPKTVFPFSYQESPPRSPRRMS-FSGIFRSSSKESS-----
Cattle          ----KTSPGSPKTVFPFSYQESPPRSPRRMS-FSGIFRSSSKDSS-----
Chicken        -----
Chimpanzee     -----HGL-----
Dog             ----KTSPGSPKTVFPFSYQESPPRSPRRMS-FSGIFRSSSKESS-----
Human          ----KTSPGSPKTVFPFSYQESPPRSPRRMS-FSGIFRSSSKESS-----
Mouse          -----
Rat            -----
Western_Claved_Frog -----
Zebrafish      -----
    
```

```

C._elegans      QDNYDTVKSLPASGHYKSR-----VGNTSHTKLQD
Cat             -PNSNPSTSPGGIRFFRSRKTSGLS SSPSTPTQAAKQHPFPLESYKHEP
Cattle          -PSSNPSTSPGGIRFFRSRKTSGLS SSPSTPTQVAKQHTFPLESYKQEP
Chicken        -----
Chimpanzee     -----FASGLSSSPSTPTQVTKQHTFPLESYKHEP
Dog             -PNSNPSTSPGGIRFFRSRKTSGLS SSPSTPTQVAKQHTFPLESYKHEP
Human          -PNSNPATSPGGIRFFRSRKTSGLS SSPSTPTQVTKQHTFPLESYKHEP
Mouse          -----
Rat            -----
Western_Claved_Frog -----
Zebrafish      -----
    
```

```

C._elegans      LADEMRLR-GGGPPKQGS-----EPIPKPPVIFRVPRKHANS
Cat             ERLENRIYASTSPDDTGQRYCPSSFQSTAGPPSAS-----PTHHASS
Cattle          ERLENRIYASSSPDDTGQRFSPSSFQSAARPPSAS-----PTHPSPS
Chicken        -----
Chimpanzee     ERLENRIYASSSPDDTGQRFCPSSFQSPTRPPLAS-----PTHYAPS
Dog             ERLENRIYASSSPDDTGQRYCPSSFQSAARPPSAS-----PTHYASP
Human          ERLENRIYASSSPDDTGQRFCPSSFQSPTRPPLAS-----PTHYAPS
Mouse          -----
Rat            -----
Western_Claved_Frog -----
Zebrafish      -----
    
```

C._elegans MSSLRVSP--GA-----
Cat RT--VSPWAGP-----
Cattle KS--VS-LGLLGARPPGEALGCQASQAPANLSWRSESLRYDPDGLHPPLP
Chicken -----
Chimpanzee KA--AA-LAAA-----
Dog RT--VS-LAFS-----
Human KA--AA-LAAA-----
Mouse -----
Rat -----
Western_Clawed_Frog -----
Zebrafish -----

C._elegans -----
Cat -----
Cattle GTSRPPHPYLAPHPSGPTPGRPRPHPRRLNLRGRASVGGGGKPRPCAPP
Chicken -----
Chimpanzee -----
Dog -----
Human -----
Mouse -----
Rat -----
Western_Clawed_Frog -----
Zebrafish -----

C._elegans -----IGPS-----GVV-----
Cat -----PGPL-----
Cattle LYRFPAQPLTPPLQSRTRPVRPAPAAVPRPCGPSVRASRPGPAPAAPPR
Chicken -----
Chimpanzee -----LGPA-----
Dog -----CGPG-----
Human -----LGPA-----
Mouse -----
Rat -----
Western_Clawed_Frog -----
Zebrafish -----

C._elegans -----
Cat -----
Cattle YRGPSARPLPRPRPCGSGPAPAAPPYRGPAAPRGPAAPQSPRTPALRPR
Chicken -----
Chimpanzee -----
Dog -----
Human -----
Mouse -----
Rat -----
Western_Clawed_Frog -----
Zebrafish -----

C._elegans -----
Cat -----
Cattle APPPARPGTSAAEMLIRVGPGRSRSVSSPEAAVPRRPPVQPRRGPRV
Chicken -----
Chimpanzee -----
Dog -----
Human -----
Mouse -----
Rat -----
Western_Clawed_Frog -----
Zebrafish -----

C._elegans -----KAPLSD-P-----
 Cat -----LAGLIE-----
 Cattle ETRGRRSASAVAAPVPLGGVIELAPRGARSPALGTDGRSFCPYELYSAESK
 Chicken -----MLE-----
 Chimpanzee -----EAGMLE-----
 Dog -----LQAILN-----
 Human -----EAGMLE-----
 Mouse -----MLE-----
 Rat -----
 Western_Clawed_Frog -----MLE-----
 Zebrafish -----MLE-----

C._elegans -----NDFDY-----
 Cat -----MVDF-----
 Cattle SSNAIPLAGLAFQPNFVYRKRPAASVTTVYILPHTTTITAKPRSHPLSVP
 Chicken -----KLEL-----
 Chimpanzee -----KLEF-----
 Dog -----XIEY-----
 Human -----KLEF-----
 Mouse -----KLEF-----
 Rat -----
 Western_Clawed_Frog -----KLEL-----
 Zebrafish -----KLDI-----

C._elegans --TWHTSEADNHDAVYSLFMKAHKCYDLIPTSSKLVVFDTHLPVRKAFYA
 Cat ---S---ETEDSESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Cattle PKALLCAPEDSESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Chicken ---EDEALEESESIDIYVRFMRSHKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Chimpanzee ---EDE-VEDESESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Dog ---WDXATEDSESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Human ---EDEAVEDESESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Mouse ---QEE-AEDSESGVYMRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Rat -----MRFMRSKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Western_Clawed_Frog ---EDEAVEESESIDIYTRFMKSHKCYDIVPTSSKLVVFDTTLQVKKAFFA
 Zebrafish ---EDEAVEHSESIDIYRFMKSHKCYDIVPTSSKLVVFDTTLQVKKAFFA
 * * : * * * * * : *

C._elegans LVYNGVRAAPLWDTDNQRFVTGMLTITDFIKILCKHYDKGDNSEIRALED
 Cat LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Cattle LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Chicken LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Chimpanzee LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Dog LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Human LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Mouse LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Rat LVANGVRAAPLWESKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Western_Clawed_Frog LVANGVRAAPLWETKNQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 Zebrafish LVANGVRAAPLWETKKQSFVGMILTITDFINILHRYYS--PMVQIYELEE
 *

C._elegans QQISHWRDQFELDGTLRPFVYIDPNESLHRAVELLCEKSVHRLPVLDRKT
 Cat HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Cattle HKIETWRELY-LQETFKPLVNI SPDASLFDVHSLIKNKIHRPVIDPIS
 Chicken HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPVS
 Chimpanzee HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Dog HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Human HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Mouse HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Rat HKIETWRELY-LQETFKPLVNI SPDASLFDVYSLIKNKIHRPVIDPIS
 Western_Clawed_Frog HKIETWRELY-LQETFKPLVNI FPDASLFDVYSLIKNKIHRPVIDPVS
 Zebrafish HKIETWRELY-LQETFKPLVNI SPDASIFDVYSLIKNKIHRPVIDPVS
 : * . * * : * : *

C._elegans GNITYILTHKRIMFSLYMRDLPRPSFMSCTPRELGIGAWGDILCCHVD

Cat GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDALGIGTYHNIAFIHPD
 Cattle GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDALGIGTYHNIAFIHPD
 Chicken GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDELGIGTYHNIAFIHPD
 Chimpanzee GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDELGIGTYHNIAFIHPD
 Dog GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDALGIGTYHNIAFIHPD
 Human GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDELGIGTYHNIAFIHPD
 Mouse GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDELGIGTYHNIAFIHPD
 Rat GNALYILTHKRILKFLQLFMSDMPKPAFMKQNLDELGIGTYHNIAFIHPN
 Western_Clawed_Frog GNALYILTHKRILKFLQLFVSEMPKPAFMKQNLDELGIGTYHNIAFIHPH
 Zebrafish GNALYILTHKRILKFLQLFVCEMPKPAFMKQTLLEELSIGTYNNIAFIHPD
 ** *****:***.*:: :*:*:*. . *.***: :* * .

C._elegans TPIHDALELFLKNRVSALPLIDENGRVVDIYAKFDVISLAAESSYDKLDC
 Cat TPIIKALNVFVERRVSALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Cattle TPIIKALNVFVERRVSALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Chicken TPIIKALNIFVERRISALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Chimpanzee TPIIKALNIFVERRISALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Dog TPIIKALNVFVERRVSALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Human TPIIKALNIFVERRISALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Mouse TPIIKALNIFVERRISALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Rat TPIIKALNIFVERRISALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Western_Clawed_Frog TPIIKALNIFVERRVSALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 Zebrafish TPIIKALSVMFVDRRVSALPVVDESGKVVDIYSKFDVINLAAEKTYNLLDI
 *** .**.*:*. .*:***:*. .*:***:***.***.***.***:***

C._elegans TVQEQALQHRSEWFEVQTCLETDSLQVLEAIVKAEVHRLIVTDQDKKVV
 Cat TVTQALQHRSQYFEGVVKCSKLEILETIVDRIVRAEVHRLVNVNEADSIV
 Cattle TVTQALQHRSQYFEGVVKCSKLEILETIVDRIVRAEVHRLVNVNEADSIV
 Chicken TVTQALQHRSQYFEGVVKCSMLETLETIVDRIVKAEVHRLVNVNEADSIV
 Chimpanzee TVTQALQHRSQYFEGVVKCNKLEILETIVDRIVRAEVHRLVNVNEADSIV
 Dog TVTQALQHRSQYFEGVVKCSKLEILETIVDRIVRAEVHRLVNVNEADSIV
 Human TVTQALQHRSQYFEGVVKCNKLEILETIVDRIVRAEVHRLVNVNEADSIV
 Mouse TVTQALQHRSQYFEGVVKCSKLETLETIVDRIVRAEVHRLVNVNEADSIV
 Rat TVTQALQHRSQYFEGVVKCSKLETLETIVDRIVRAEVHRLVNVNEADSIV
 Western_Clawed_Frog TVTQALEHRSQYFEGVVKCSKPETLETIVDRIVKAEVHRLVNVDEADSIV
 Zebrafish SVTQALMHRSQYFEGVMKCNRLLETLETIVDRIVKAEVHRLVNVDENGSIV
 :* :** ***:***. * : * :*:***:***.***.***:***

C._elegans GVVSLSDILKNLVLDPCKPPPPPPQSQQAGGGGPPTRNASGTSTGGASS
 Cat GIISLSDILQALILTPAGA-----
 Cattle GIISLSDILQALILTPAGA-----
 Chicken GIISLSDILQALVLTTPAGA-----
 Chimpanzee GIISLSDILQALILTPAGA-----
 Dog GIISLSDILQALILTPAGA-----
 Human GIISLSDILQALILTPAGA-----
 Mouse GIISLSDILQALILTPAGA-----
 Rat GIISLSDILQALILTPAGA-----
 Western_Clawed_Frog GIISLSDILQALVLSPPAGA-----
 Zebrafish GIVSLSDILQALVLPAGMLG-----
 *::*****: ** * .

C._elegans SDSPPHSIPEGIEVEDDDDDDEEAPPPSIDCSTPGPSSAAT
 Cat -----KQKETETE
 Cattle -----KQKQTEAE
 Chicken -----KQKENESE
 Chimpanzee -----KQKETETE
 Dog -----KQKEAETE
 Human -----KQKETETE
 Mouse -----KQKETETE
 Rat -----KQKETETE
 Western_Clawed_Frog -----KRKESAE
 Zebrafish -----KDSEAEAE
 . :