

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data.fst Tue Feb 1 12:42:05 2022

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Pavo_muticus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNSKQGE-RKPPKVFAFDH	59
Pavo_cristatus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNSKQGE-RKPPKVFAFDH	59
Gallus_gallus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNSKQGE-RKPPKVFAFDH	59
Anas_platyrhynchos	MSDTKVKVAVRVRPMNRRELDLNTKCVVEMEGNQTVLHPPPNSAKQGE-RKPPKVFAFDH	59
Chelonia_mydas	MSEIKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNSIKQGDNRKPPKVFAFDY	60
Mus_musculus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Rattus_norvegicus	-----	
Bos_taurus	MSDTKVKVAVRVRPLNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Canis_lupus_familiaris	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Homo_sapiens	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Pan_troglodytes	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Macaca_mulatta	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPANTKQGE-RKPPKVFAFDY	59
Callithrix_jacchus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Equus_caballus	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGE-RKPPKVFAFDY	59
Rhinatrema_bivittatum	MSDTKVKVAVRVRPMNRRELELNTKCVVEMEGNQTVLHPPPNTKQGENRKPPKVFAFDY	60
Xenopus_tropicalis	MSASKVLVAVRVRPMNRRELDLNTKCVVEMEGNQTVLHPPPNTKQGENRKPPKVFAFDY	60
Latimeria_chalumnae	-----	
	1.....10.....20.....30.....40.....50.....60	

Pavo_muticus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Pavo_cristatus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Gallus_gallus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Anas_platyrhynchos	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Chelonia_mydas	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	120
Mus_musculus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	119
Rattus_norvegicus	----MDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	56
Bos_taurus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Canis_lupus_familiaris	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGSAEQL	119
Homo_sapiens	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	119
Pan_troglodytes	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	119
Macaca_mulatta	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	119
Callithrix_jacchus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGHAEQL	119
Equus_caballus	CFWSMDESNTTKYAGQEMVFKCLGEGILEKAFQGYNACIFAYGQTGSGKSFSMMGNAEQL	119
Rhinatrema_bivittatum	CFWSMDESNTAKYAGQEMVFTCLGEGILENAFQGYNACIFAYGQTGSGKSFSMMGNTDQP	120
Xenopus_tropicalis	CFWSMDESNTPKYAGQEMVFKCLGEGILDNAFQGYNACIFAYGQTGSGKSFSMMGTADQP	120
Latimeria_chalumnae	-----	
	.....70.....80.....90.....100.....110.....120	

	: : * : *	
Pavo_muticus	GLIPRLCCALFQRIISVEENESHFTKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Pavo_cristatus	GLIPRLCCALFQRIISVEENESHFTKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Gallus_gallus	GLIPRLCCALFQRIISVEENESHFTKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Anas_platyrhynchos	GLIPRLCCALFQRIISVEENESHFTKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Chelonia_mydas	GLIPRLCCALFQRIISVEENESHFTKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	180
Mus_musculus	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Rattus_norvegicus	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	116
Bos_taurus	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Canis_lupus_familiaris	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGNRQSLKVREHKVLG	179
Homo_sapiens	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Pan_troglodytes	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Macaca_mulatta	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Callithrix_jacchus	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Equus_caballus	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	179
Rhinatrema_bivittatum	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGSRQSLKVREHKVLG	180
Xenopus_tropicalis	GLIPRLCCALFQRIISLEQNESQTFKVEVSYMEIYNEKVRDILLDPKGNRQSLKVREHKVLG	180
Latimeria_chalumnae	-----MFKNIFLLAKMTSLAVSGN-----PVLKPIILTS	28
	.....130.....140.....150.....160.....170.....180	

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Pavo_muticus	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIIVTQTLYDLSQG	239
Pavo_cristatus	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIIVTQTLYDLSQG	239
Gallus_gallus	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIIVTQTLYDLSQG	239
Anas_platyrhynchos	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIIVTQTLYDLHSG	239
Chelonia_mydas	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIVVTQTLYDLSQG	240
Mus_musculus	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Rattus_norvegicus	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	176
Bos_taurus	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIVITQTLYDLSQG	239
Canis_lupus_familiaris	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Homo_sapiens	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Pan_troglodytes	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Macaca_mulatta	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Callithrix_jacchus	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Equus_caballus	PYVDGLSQLAVTSFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFNIITQTLYDLSQG	239
Rhinatrema_bivittatum	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFSIIVTQTLYDHQSG	240
Xenopus_tropicalis	PYVDGLSQLAVINFEDIESLMSEGNKSRTVAATNMNEESSRSHAVFSIIVTQTLYDHQSG	240
Latimeria_chalumnae	HYRN--SGFSCIFPDIESVMSEGNKSRTVAATNMNEESSRSHAVFNIILTQTLYDLQTS	86
	.....190.....200.....210.....220.....230.....240	

	***:*****:*****:*****:.	
Pavo_muticus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLSTLGLVISSLADQAAGKGKN	299
Pavo_cristatus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLSTLGLVISSLADQAAGKGKN	299
Gallus_gallus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLSTLGLVISSLADQAAGKGKN	299
Anas_platyrhynchos	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLSTLGLVISSLADQAAGKGKN	299
Chelonia_mydas	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLSTLGLVISSLADQAAGKGKN	300
Mus_musculus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	299
Rattus_norvegicus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	236
Bos_taurus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	299
Canis_lupus_familiaris	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	299
Homo_sapiens	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKS	299
Pan_troglodytes	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKS	299
Macaca_mulatta	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	299
Callithrix_jacchus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKS	299
Equus_caballus	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	299
Rhinatrema_bivittatum	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKS	300
Xenopus_tropicalis	NSGERVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVISSLADQAAGKGKN	300
Latimeria_chalumnae	NSGEKVSKVSLVDLAGSERVSKTGAAGERLKEGSNINKSLTTLGLVSSALADQAAGKGKS	146
	.....250.....260.....270.....280.....290.....300	

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Pavo_muticus	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Pavo_cristatus	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Gallus_gallus	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Anas_platyrhynchos	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Chelonia_mydas	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	360
Mus_musculus	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Rattus_norvegicus	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	296
Bos_taurus	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Canis_lupus_familiaris	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Homo_sapiens	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Pan_troglodytes	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Macaca_mulatta	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Callithrix_jacchus	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Equus_caballus	KFVVPYRDSVLTWLLKDNLGGNSQTSMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	359
Rhinatrema_bivittatum	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	360
Xenopus_tropicalis	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	360
Latimeria_chalumnae	KFVVPYRDSVLTWLLKDNLGGNSQTAMIATISPAADNYEETLSTLRYADRAKRIVNHAVVN	206
	.....310.....320.....330.....340.....350.....360	

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Pavo_muticus	EDPNARVIRELREEVEKLKEQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Pavo_cristatus	EDPNARVIRELREEVEKLKEQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Gallus_gallus	EDPNARVIRELREEVEKLKEQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Anas_platyrhynchos	EDPNARVIRELREEVEKLKEQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Chelonia_mydas	EDPNARVIRELREEVEKLKEQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	420
Mus_musculus	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEA	419
Rattus_norvegicus	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	356
Bos_taurus	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Canis_lupus_familiaris	EDPNAKVIRELREEVEKLKGQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Homo_sapiens	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Pan_troglodytes	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Macaca_mulatta	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Callithrix_jacchus	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Equus_caballus	EDPNAKVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIKELTVTWEEKLRKTEE	419
Rhinatrema_bivittatum	EDPNARVIRELREEVEKLREQLSQAAMKAPELKEKLEESSEKLIRELTTITWEEKLRKTEE	420
Xenopus_tropicalis	EDPNARVIRELREEVEKLKEQLSQAESMKAPELKEKLEESSEKLIRELTTITWEEKLRKTEE	420
Latimeria_chalumnae	EDPNAKIIRELREEVEKLKEQLSQAESLKAPELKEKLEESSEKLIRELTTITWEEKLRKTEE	266
	.....370.....380.....390.....400.....410.....420	

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Pavo_muticus	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Pavo_cristatus	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Gallus_gallus	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Anas_platyrhynchos	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Chelonia_mydas	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	480
Mus_musculus	IAQERQRQLESMSGISLETSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Rattus_norvegicus	IAQERQRQLESMSGISLETSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	416
Bos_taurus	IAQERQRQLESMSGISLETSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Canis_lupus_familiaris	IAQERQRQLESMSGISLETSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Homo_sapiens	IAQERQRQLESMSGISLEMSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Pan_troglodytes	IAQERQRQLESMSGISLEMSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Macaca_mulatta	IAQERQRQLESMSGISLEMSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Callithrix_jacchus	IAQERQRQLESMSGISLEMSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Equus_caballus	IAQERQRQLESMSGISLETSGIKVGDDKCYLVNLNADPALNELLVYYLKDHTRVGADTSQD	479
Rhinatrema_bivittatum	IAQERQRQLESMSGISLQSSGIKVRDDKCYLVNLNADPALNELLVYYLKDHTKIGADTSQD	480
Xenopus_tropicalis	IAQGRQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKGHNRIADTSQD	480
Latimeria_chalumnae	IAQERQRQLESMSGISLESSGIKVGDDKCYLVNLNADPALNELLVYYLKHNRIGADTSQD	326
	.....430.....440.....450.....460.....470.....480	

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Pavo_muticus	IQLFGIGIQPEHCEIDIALDGEVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Pavo_cristatus	IQLFGIGIQPEHCEIDIALDGEVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Gallus_gallus	IQLFGIGIQPEHCEIDIALDGEVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Anas_platyrhynchos	IQLFGIGIQPEHCEIDIALDGEVTLTPKENARSCVNGALVCSVTQLWHGDRILWGNHHFF	539
Chelonia_mydas	IQLFGIGIQPEHCEIDIALDGEVSLSPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	540
Mus_musculus	IQLFGIGIQPEHCEIDIAADGDIITLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Rattus_norvegicus	IQLFGIGIQPEHCEIDIAATDGDITLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	476
Bos_taurus	IQLFGIGIQPEHCEIDIGSDGEVSLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Canis_lupus_familiaris	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Homo_sapiens	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Pan_troglodytes	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Macaca_mulatta	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGTLVCSVTQLWHGDRILWGNHHFF	539
Callithrix_jacchus	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGALVCSVTQLWHGDRILWGNHHFF	539
Equus_caballus	IQLFGIGIQPEHCEIDIASDGDVTLTPKENARSCVNGALVCSVTQLWHGDRILWGNHHFF	539
Rhinatrema_bivittatum	IQLCGIGIQPEHCVIVDVLSCDDITLLPKENARTCVNGTLVCSATQLWHGDRILWGNHHFF	540
Xenopus_tropicalis	IQLFGIGIQPEHCVIHVASDGDITYLIPKENARTCVNGTLVCEQIPLWHGDRILWGNHHFF	540
Latimeria_chalumnae	IQLFGIGIQPEHCVIDIAVDGDIITLTPKENARTCVNGTLVCSVTQLWHGDRILWGNHHFF	386
	.....490.....500.....510.....520.....530.....540	



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Pavo_muticus      RINLPKRKRRDWLKD FEKEALLGEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGDEF 599
Pavo_cristatus    RINLPKRKRRDWLKD FEKEALLGEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGDEF 599
Gallus_gallus     RINLPKRKRRDWLKD FEKEALLGEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGDEF 599
Anas_platyrhynchos RINLPKRKRRDWLKD FEKEALLGEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGDEF 599
Chelonia_mydas    RINLPKRKRRDWLKD FEKETVLA EHDLDAASEASSEP DYN YEF AQMEVIMKTLNSN---- 596
Mus_musculus      RINLPKRKRRDWLKD FERETS SA EHDLDAASEASSEP DYN YEF AQMEVIMKTLNSN---- 595
Rattus_norvegicus RINLPKRKRRDWLKD FEKETSA EHDLDAASEASSEP DYN YEF AQMEVIMKTLNSN---- 532
Bos_taurus        RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGFP 599
Canis_lupus_familiaris RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGFP 599
Homo_sapiens      RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSN---- 595
Pan_troglodytes   RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGFP 599
Macaca_mulatta    RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGFP 599
Callithrix_jacchus RINLPKRKRRDWLKD FEKETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGFP 599
Equus_caballus    RINLPKRKRRDWLKD LERETGPPEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSN---- 595
Rhinatrema_bivittatum RLNLPKRKRRDWLKEFEKEASLSEHDLDAASEASSEP DYN YEF AQMEVIMKTLNSNGGAC 600
Xenopus_tropicalis RLNLPKRKRRDWLKEFEKEAGCSETDLDAASEASSEP DYN YEF AQMEVIMKALNSN---- 596
Latimeria_chalumnae RVNLPKRKRRDRLKEIERESYFVEH D VETASEASSEP DYN YEF AQMEVIMKTLNSNGEAC 446
.....550.....560.....570.....580.....590.....600

```

```

***:.*:.*:*****:.
Pavo_muticus      ---QMNLPSWWSSSVLS SFVKTL L PVLRSQTIPYLCQNW D KDPVQNVVQILEKQYLEEKRS 656
Pavo_cristatus    ---QMNLPSWWSSSVLS SFVKTL L PVLRSQTIPYLCQNW D KDPVQNVVQILEKQYLEEKRS 656
Gallus_gallus     ---QMNLPSWWSSSVLS SLVKTL L PVLRSQTIPYLCQNW D KDPVQNVVQILEKQYLEEKRS 656
Anas_platyrhynchos ---QMNLPSWWSSSVLS SLVKILL PVL R PQTIPYLCQNW D KDPVQNVVQILEKQYLEEKRS 656
Chelonia_mydas    -----DPVQNVVQVLEKQYLEEKQS 616
Mus_musculus      -----DPVQNVVQVLEKQYLEEKRT 615
Rattus_norvegicus -----DPVQNVVQVLEKQYLEEKRT 552
Bos_taurus        ---IISLSAWWSSPWW SYLKILFPLMWFQT-KLLHKHWDKDPVQNVVQVLERQYLEEKRS 655
Canis_lupus_familiaris ---IISLSAWWSSPWW SYLKILFPLMWFQT-KLLHKHWDKDPVQNVVQVLERQYLEEKRS 655
Homo_sapiens      -----DPVQNVVQVLEKQYLEEKRS 615
Pan_troglodytes   ---IISLSAWWSSPWW SYLKILFPLMWFQT-KLLHKHWDKDPVQNVVQVLEKQYLEEKRS 655
Macaca_mulatta    ---IISLSAWWSSPWW SYLKILFPLMWFQT-KVLHKHWEKDPVQNVVQVLEKQYLEEKRS 655
Callithrix_jacchus ---IISLSAWWSSPWW SYLKILFPLMWFQT-KLLHKHWDKDPVQNVVQVLEKQYLEEKRS 655
Equus_caballus    -----DPVQNVVQVLEKQYLEEKRS 615
Rhinatrema_bivittatum GAHQVNMS SWSSSTWGTFIKILPPALWPQVIKYLHQSCNKDPVH SVIQVLEKQYLEEKRN 660
Xenopus_tropicalis -----DPVHNVVQVLEKQYLEEKRT 616
Latimeria_chalumnae VVKMNL SFWSLW SLWSVYSKTLFPALLPHIFRHLHQTNKDPVQNVVQILEKQYLEEKQN 506
.....610.....620.....630.....640.....650.....660

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*****:.*:.*:*****:. . :.*:.*: . :.*:.*: . :.*:.*: . :.*:
Pavo_muticus      ALEEQR L MYERELEQLRQQLSPERC-HQHGS DRLSYTAQTAQ QKVN LWTEERDELFRQSL 715
Pavo_cristatus    ALEEQR L MYERELEQLRQQLSPERC-HQHGS DRLSYTAQTAQ QKVN LWTEERDELFRQSL 715
Gallus_gallus     ALEEQR L MYERELEQLRQQLSPERC-HQHGG DRLSYTAQTAQ QKVN LWTEERDELFRQSL 715
Anas_platyrhynchos ALEEQR L MYERELEQLRQQLSPERC-HQHSTERLSYTAQTAQ QKVN LWTEERDELFRQSL 715
Chelonia_mydas    ALEEQRIMYERELEQLRQQLSPERC-HQHGS DRLSYTAQTAQ QKVN LWTEERDELFRQSL 675
Mus_musculus      ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 675
Rattus_norvegicus ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 612
Bos_taurus        ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 715
Canis_lupus_familiaris ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 715
Homo_sapiens      ALEEQR L MYERELEQLRQQLSPDRQPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 675
Pan_troglodytes   ALEEQR L MYERELEQLRQQLSPDRQPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 715
Macaca_mulatta    ALEEQR L MYERELEQLRQQLSPDRQPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 715
Callithrix_jacchus ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 715
Equus_caballus    ALEEQR L MYERELEQLRQQLSPERQPPSSASDRLAYSSQTAQ QKVTQWAEERDELFRQSL 675
Rhinatrema_bivittatum ALEEQRVIYEQELEQLRQQLSPERQHQS S DRLSYTSQT TQ QKVS LWTEERDEWFRQSL 720
Xenopus_tropicalis ALEEQR L MYERELEQLRHQLSPDRH-HQHSTERLSYGSQTAQ QKMN MWAEERDELFRQSL 675
Latimeria_chalumnae ALEEQRMMYERELEHLRQQLSPDRQ-HRHSIDRLSFM SQT AQ QK VRLWSEERDELFRQSL 565
.....670.....680.....690.....700.....710.....720

```

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data Steps Tue Feb 1 12:42:05 2022

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:*****:*****:***.***** *****.*****.***:
Pavo_muticus      AKLREQIVKANTLVREANFLAEEMSKLTDYQVTLQIPAENLSANKKRGAIVSEPAIQVRR 775
Pavo_cristatus    AKLREQIVKANTLVREANFLAEEMSKLTDYQVTLQIPAENLSANKKRGAIVSEPAIQVRR 775
Gallus_gallus     AKLREQIVKANTLVREANFLAEEMSKLTDYQVTLQIPAENLSANKKRGAIVSEPAIQVRR 775
Anas_platyrhynchos AKLREQIVKANTLVREANFLAEEMSKLTDYQVTLQIPAENLSANKKRGAIVSEPAIQVRR 775
Chelonia_mydas    AKLREQIVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 735
Mus_musculus      AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQARR 735
Rattus_norvegicus AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQARR 672
Bos_taurus        AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 775
Canis_lupus_familiaris AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 775
Homo_sapiens      AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 735
Pan_troglodytes   AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 775
Macaca_mulatta    AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 775
Callithrix_jacchus AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 775
Equus_caballus    AKLREQLVKANTLVREANFLAEEMSKLTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 735
Rhinatrema_bivittatum AKLREQIVKANTLVREANFLSEEMGKQTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRK 780
Xenopus_tropicalis SKLREQIVKANTLVREANFLAEEMNKCTDYQVTLQIPAVNLSANRKRGAIVSEPAIQVRR 735
Latimeria_chalumnae AKLREQIVKANTLVREANFLSEEMNKQTDYQVTLQIPAANLSANRKRGAIVSEPAIQVRR 625
.....730.....740.....750.....760.....770.....780

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: : **:*:*****:*****: : : :*:***** *****.
Pavo_muticus      KGKTTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Pavo_cristatus    KGKTTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Gallus_gallus     KGKATQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Anas_platyrhynchos KGKATQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Chelonia_mydas    KGKGTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 795
Mus_musculus      KGKGTQVWTIEKLENKLIDMRDLYQEWKENVPEAKRLYGKRGDPFYEAQENHNLIQVANV 795
Rattus_norvegicus KGKSTQVWTIEKLENKLIDMRDLYQEWKENVPEAKRLYGKRGDPFYEAQENHNLIQVANV 732
Bos_taurus        KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Canis_lupus_familiaris KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Homo_sapiens      KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 795
Pan_troglodytes   KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Macaca_mulatta    KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Callithrix_jacchus KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 835
Equus_caballus    KGKSTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 795
Rhinatrema_bivittatum KGKGTQVWTIDKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 840
Xenopus_tropicalis RCRGTQIWTIEKLENKLIDMRDAYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANV 795
Latimeria_chalumnae KGKGTQVWTIEKLENKLIDMRDLYQEWKEKIPKIRKLIGKRGDPFYEAQENHNLIQVANA 685
.....790.....800.....810.....820.....830.....840

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**:*:*** **:*:*****:*****:*****:***:* **:* : *****.*** :
Pavo_muticus      FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPERVVEGDDSSSENSSESGLSLE 895
Pavo_cristatus    FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPERVVEGDDSSSENSSESGLSLE 895
Gallus_gallus     FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPERVVEGDDSSSENSSESGLSLE 895
Anas_platyrhynchos FLDCLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPERVVEGDDSSSENSSESGLSLE 895
Chelonia_mydas    FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPERVVEGDDSSSENSSESGLSLE 855
Mus_musculus      FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVTRITGTIPERMAE-DDSSSENSSESGLSLE 854
Rattus_norvegicus FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGTVPERVSE-DDSSSENSSESGLSLE 791
Bos_taurus        FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERMAE-DDSSSENSSESGLSLE 894
Canis_lupus_familiaris FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 894
Homo_sapiens      FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 854
Pan_troglodytes   FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 894
Macaca_mulatta    FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 894
Callithrix_jacchus FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 894
Equus_caballus    FLECLFCDVKLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERVVE-DDSSSENSSESGLSLE 854
Rhinatrema_bivittatum FLECLFYDVRLQYAVPIISQQGEVAGRLHVEVMRVTGAVPERLAGEDDSSSENSSESGLSLE 900
Xenopus_tropicalis FLECLFYDVKLQYAVPIISQQGEVAGRLHVEVMRVTGSVPECLVG-DDSSSENSSESGLSFD 854
Latimeria_chalumnae FLECLFHDVKLQYAVPVIISQQGEVSGRLHVEVMRVS GAVPERLVGGDDSSSENSSESGLSYE 745
.....850.....860.....870.....880.....890.....900

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data/Tue Feb 1 12:42:05 2022

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[illegible]

.....\*\*.\* :.:\*\*\*\* :\*\*\*:\*\*\*:\*.\*\*\*\*:\*\*\*\*\*:\*\*\* :\*\*\*:\*\*\*:\*\*\*  
 PQSKDAHFTVTFSHCRDYVNVNTEEFLEFISEGALAIEVWGHRCGTNGTSVWEVDSLHAK  
 PQSKDAHFTVTFSHCRDYVNVNTEEFLEFISEGALAIEVWGHRCGTNGTSVWEVDSLHAK  
 PQSKDAHFTVTFSHCRDYVNVNTEEFLEFISEGALAIEVWGHRCGTNGTSVWEVDSLHAK  
 PQSKDAHFTVTFSHCRDYVNVNTEEFLEFISEGALAIEVWGHRCGTNGTSVWEVDSLHAK  
 PQSKEVQFTVTFSHCKDYVNVNTEEFLEFISEGALAIEVWGHRCGTNGSSVWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVTVTEEFLEFISDGALAIEVWGHRCAGNGSPIWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVTVTEEFLEFISDGALAVEVWGHRCAGNGSPIWEVDSLHAK  
 PQSKDAQYTVTFSHCRDYVNVNTEEFLEFISDGALAIEVWGHRCGTNGSSIWEVDSLHAK  
 PQRDAQYTVTFSHCKDYVTVTEELLEFLSDGALAIEVWGHRCAGNGSSMWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVNVNTEEFLEFISDGALAIEVWGHRCAGNGSSIWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVNVNTEEFLEFISDGALAIEVWGHRCAGNGSSIWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVNVNTEEFLEFISDGALAIEVWGHRCAGNGSSIWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVNVNTEEFLEFISDGALAIEVWGHRCAGNGSSIWEVDSLHAK  
 PQSKDAQYTVTFSHCKDYVNVNTEEFLEFISDGALAIEVWGHRCAGNGSSIWEVDSLHAK  
 LRSKEAQFTVKFAQSKDYVNVNTEEFLEFISEGALAIEVWGHRCAGNGRSLWEIDSLHAK  
 PRSKDVQFTVKFAHAKDYVVHTEEFLEFISEGALAIEVWGHRCAGNGRSLWEIDSLHAK  
 PRSKEAQFTVKFDCKDYVVHTEEFLEFISEGALAIEVWGHRCAGNGRSLWEIDLQAK  
 .....970.....980.....990.....1000.....1010.....1020

```

:***:***:***** ***: **** *:*:**:*****.***:~*****~*:~
TRTLRDRWNEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLRDRWNEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLRDRWNEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLRDRWNEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLRDRWSEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIE VWISILELNELGDYAAVELHQAQDVNTGGVFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGDYAAVELHQAQDVNTGGVFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGVLQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYS AVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLHDRWNEVTRRIEMWISILELNELGEYAAVELHQAQDVNTGGIFQLRQGHSSRRVQVT
TRTLRDRWSEVTRRIELWISVQELNELGEYTAVEVHQAQDVNTGGIILQLRQGHSSRRVQVT
SRTLDRWSEVTRRIETWISIYELNENGDYTSVELHQAQDVSTGGVFQLRQGHSSRIQVT
TRTLRDRWSEVTRRIEMWISIQELNEMGEYTAVELHQAQDVNTGGVFQLRQGHSSRIQVA
.....1030.....1040.....1050.....1060.....1070.....1080

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Dates: Tue Feb 1 12:42:05 2022

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*.*.*:*****::* :*****.*****
VKPVQHS GTLPLMVEAILS SVSIGGVTARSTKLQRLDSYQK--EEDDGGDMDSYQEEDLN 1133
VKPVQHS GTLPLMVEAILS SVSIGGVTARSTKLQRLDSYQK--EEDDGGDMDSYQEEDLN 1133
VKPVQHS GTLPLMVEAILS SVSIGGVTARSTKLQRLDSYQK--EEDDGGDMDSYQEEDLN 1133
VKPVQHS GTLPLMVEAILS SVSIGGVTARSTKLQRLDSYQK--EEDDGGDMDSYQEEDLN 1133
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDVDGGDMDSYQEEDLN 1093
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQ-----EEDLN 1079
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQ-----EEDLN 1016
VKPVQHS GTLPLMVEAILS SVSIGCITARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1132
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1132
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1092
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1132
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1132
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1132
VKPVQHS GTLPLMVEAILS SVSIGCVTARSTKLQRLDSYQR--DDEDGDDMDSYQEEDLN 1092
VKPVQHS GTLPLMVEAILS SVSIGCITARSTKLQRLDSYQK--NDDVGGDDMDSYQEEDLN 1092
VKPVQHS GTLPLMVEAILS SVSIGCITARSTKLQRLDSYQR--GEDGGDDMDSYQEEDLN 983
.....1090.....1100.....1110.....1120.....1130.....1140

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```
*****:.:****:***:***:*.: ** ***:.: *****:.*:*****:*****:.* ** *
CVRERWSDALIKRREYLDEQIQKISNKQEKSEDDKEREARLVEQWVGLTEERNAVFVPAP 1193
CVRERWSDALIKRREYLDEQIQKISNKQEKSEDDKEREARLVEQWVGLTEERNAVFVPAP 1193
CVRERWSDALIKRREYLDEQIQKISNKQEKSEDDIEREARLVEQWVGLTEERNAVFVPAP 1193
CVRERWSDALIKRREYLDEQIQKISNKQEKSEDDMEREARLVEQWVGLTEERNAVFVPAP 1193
CVRERWSDALIKRREYLDEQIKKISNKQEKTEDEIEREARLVEQWVGLTEERNAVLVPAP 1153
CVRERWSDALIKRREYLDEQIKKVSNKKEKTEDDMEREARLVEQWVGLTEERNAVLVPAP 1139
CVRERWSDALIKRREYLDEQIKKVSNKKEKTEDDMEREARLVEQWVGLTEERNAVLVPDP 1076
CVRERWSDALIKRREYLDEQIKKVSNKKEKTEDDVEREARLVEQWVGLTEERNAVLVPAP 1192
CVRERWSDALIKRREYLDEQIKKVSNKKEKTEDDMEREARLVEQWVGLTEERNAVLVPAP 1192
CVRERWSDALIKRREYLDEQIKKVSNKTEKTEDDVEREAOLVEQWVGLTEERNAVLVPAP 1152
CVRERWSDALIKRREYLDEQIKKVSNKTEKTEDDVEREAOLVEQWVGLTEERNAVLVPAP 1192
CVRERWSDALIKRREYLDEQIKKVSNKTEKTEDDVEREAOLVEQWVGLTEERNAVLVPAP 1192
CVRERWSDALIKRREYLDEQIKKVSNKTEKTEDDVEREAOLVEQWVGLTEERNAVLVPAP 1192
CVRERWSDALIKRREYLDEQIKKIINKQEKTEDDVEREARLVEQWVGLTEERNAVLVPAP 1200
CVRERWSDTLIKRREYLDEQIQKIINKQEKTEDEIEREARLVEQWVGLTEERNAVLVPAP 1152
CVRERWSEALIKRREYLHEQIQKIINKQEKTEDDVEREARLVEQWVGLTEERNAVLVPAP 1043
.....1150.....1160.....1170.....1180.....1190.....1200
```

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**.*.....*. .*.***.:*****:****:* *..*:***** **
GSGIPGAPANWIPPAGMETHIPVLFLDLNADDLSANEQLIGPHASGVNSILPKEHGSPPFF    1253
GSGIPGAPANWIPPAGMETHIPVLFLDLNADDLSANEQLIGPHASGVNSILPKEHGSPPFF    1253
GSGIPGAPANWIPPAGMETHIPVLFLDLNADDLSANEQLIGPHASGVNSILPKEHGSPPFF    1253
GSGIPGAPANWIPPAGMETHIPVLFLDLNADDLSANEQLIGPHASGVNSILPKEHGSPPFF    1253
GSGIPGAPADWTPPSGMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1213
GSGIPGAPADWVPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1199
GSGIPGAPADWVPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1136
GSGIPGAPADWIPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1252
GSGVPGAPAHWVPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1252
GSGIPGAPADWIPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1212
GSGIPGAPADWIPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1252
GSGIPGAPADWIPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1252
GSGIPGAPADWIPPPDMETHIPVLFLDLNADDLSANEQLVGPHASGVNSILPKEHGSQFF     1212
GSGMPGAPADWTTPAGMETHIPVLFLDLNADDLSANEQLTGPHASGTNSILPKEHGSQFF     1260
GSGIPGAPANWTTPAGMETHIPVLFLDLNADDLSANEQLIGSHATGVNSILPKEHGSQFF     1212
GSGIPGAPADWTSPPGMEAHVPVLFLDLNADDLTANEHLMGPHAAGVNSILPKEHGLSFF     1103
.....1210.....1220.....1230.....1240.....1250.....1260

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data.fst Tue Feb 1 12:42:05 2022

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** *****:*** . *:***:***:***:*****:***** *****:***:***:***
Pavo_muticus      YLPIIKHSDDEVSATAAWDSSVHDSVHLKRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1313
Pavo_cristatus    YLPIIKHSDDEVSATAAWDSSVHDSVHLKRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1313
Gallus_gallus     YLPIIKHSDDEVSATAAWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1313
Anas_platyrhynchos YLPIIKHSDDEVSATAAWDSSVHDSVYLN RVTPQNERIYLVKTTVQLSHPAAMELVLRK 1313
Chelonia_mydas    YLLIIKHSDDEVSATAAWDSSVHDSVHLNRVTPQNERIYLVKTTVQLTHPAAMELVLRK 1273
Mus_musculus      YLPIIKHSDDEVSATASWDSSVHDSLHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1259
Rattus_norvegicus YLPIIKHSDDEVSATASWDSSVHDSLHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1196
Bos_taurus        YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1312
Canis_lupus_familiaris YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1312
Homo_sapiens      YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1272
Pan_troglodytes   YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1312
Macaca_mulatta    YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1312
Callithrix_jacchus YLPIIKHSDDEVSATASWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1312
Equus_caballus    YLPIIKHSDDEVSATASWDSSVHDSIHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1272
Rhinatrema_bivittatum YLPIIKHSDDEVLAIASWDSTVHESVHLNRVTPQNERIYLVKTTVQLSHPAAMELVLRK 1320
Xenopus_tropicalis YLPIIKHSEEEVSATASWDSAIHDSVHLNRVTPQNERVYLVKTTVQLSHPAALVLVRK 1272
Latimeria_chalumnae YLPIIKHSDDEVSASVSWDSSVHDSVHLNRVTPQNERIYLVKTTVQLSHPASVELVLRK 1163
.....1270.....1280.....1290.....1300.....1310.....1320

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*** *:*****:*** *: :*:***:*****:*** *****:***:***
Pavo_muticus      RIAANIYNKQSFTQSLKRRISLKNIIYACGVTYEIVSNIPKATEEIEDRETLALMAARSE 1373
Pavo_cristatus    RIAANIYNKQSFTQSLKRRISLKNIIYACGVTYEIVSNIPKATEEIEDRETLALMAARSE 1373
Gallus_gallus     RIAANIYNKQSFTQSLKRRISLKNIIYACGVTYEIVSNIPKATEEIEDRETLALMAARSE 1373
Anas_platyrhynchos RIAANIYNKQSFTQSLKRRISLKNIIYACGVTYEIVSNIPKATEEIEDRETLALMAARSE 1373
Chelonia_mydas    RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALMAARTE 1333
Mus_musculus      RIAANIYNKQSFTQSLKRRISLINICYS CGVTYEIVSNIPKATEEIEDRETLALLAARSE 1319
Rattus_norvegicus RIAANIYNKQSFTQSLKRRISLINICYS CGVTYEIVSNIPKATEEIEDRETLALLAARSE 1256
Bos_taurus        RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALMAARSE 1372
Canis_lupus_familiaris RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALMAARSE 1372
Homo_sapiens      RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALLAARSE 1332
Pan_troglodytes   RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALLAARSE 1372
Macaca_mulatta    RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALLAARSE 1372
Callithrix_jacchus RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALLAARSE 1372
Equus_caballus    RIAANIYNKQSFTQSLKRRISLKNIFYSCGVTYEIVSNIPKATEEIEDRETLALMAARSE 1332
Rhinatrema_bivittatum RIAVNVYNKQSFTQSLKRRISLKNILYSGVTYEIVSNIPKATEEIEDRETLALMAARSE 1380
Xenopus_tropicalis RIAVNVYNKQSFTQSLKRRMSTKNILYSCGVSYEIVSNIPKATEEAEEDRETLALMAARSE 1332
Latimeria_chalumnae RIAINVYNKQSFTQSLKRRMSLKNVLFSCGVTYEIVSNIPKATEEEDRETLALIAARSE 1223
.....1330.....1340.....1350.....1360.....1370.....1380

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** *:***:*****:***:*****:*****:*** *: :*:***:*****:***
Pavo_muticus      NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARNIRRS MSTPNVHNVS 1433
Pavo_cristatus    NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARNIRRS MSTPNVHNVS 1433
Gallus_gallus     DEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARNIRRS MSTPNVHNVS 1433
Anas_platyrhynchos NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARNIRRS MSTPNVHNVS 1433
Chelonia_mydas    NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS ISTPNVHNVS 1393
Mus_musculus      NEGTL DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS LSTPNVHNVS 1379
Rattus_norvegicus NEGTL DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKTRHIRRS LSTPNVHNVS 1316
Bos_taurus        NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHLRRS LSTPNVHNVS 1432
Canis_lupus_familiaris NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHLRRS LSTPNVHNVS 1432
Homo_sapiens      NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS LSTPNVHNVS 1392
Pan_troglodytes   NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS LSTPNVHNVS 1432
Macaca_mulatta    NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS LSTPNVHNVS 1432
Callithrix_jacchus NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHIRRS LSTPNVHNVS 1432
Equus_caballus    NEGTS DGETYIEKYTRGVLOVENILSLERLRQAVTVKEALSTKARHLRRS ISTPNVHNVS 1392
Rhinatrema_bivittatum YEGTS DGD TYIEKYTRGVLOVENILSLERLRQAVTVKEAMSAKARHVRRS ISTPNVHHS 1440
Xenopus_tropicalis NEGTA DGESYIEKYTRGVLOVENLLSLERLRQAVTVKEALSSKTKHIRRS LSTPNMHTS 1392
Latimeria_chalumnae SEGSP DGETYIEKYTRGVLEVENILSLERLRQAVTVKEALSSKGKHIRRS ISTPNVHHVS 1283
.....1390.....1400.....1410.....1420.....1430.....1440

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data Tue Feb 1 12:42:05 2022

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.* ** . : : ** : : : : * . * : : . * . : : * . * : : . :
Pavo_muticus      CSRLDLSACDEDD--KGWSESHLDMSDCSSSYQDVSCYGTLPRESRKNKDGS--GIVSE 1489
Pavo_cristatus    CSRLDLSACDEDD--KGWSESHLDMSDCSSSYQDVSCYGTLPRESRKNKDGS--GIVSE 1489
Gallus_gallus     CSRLDLSACDDDD--KGWSESHLDMSDCSSSYQDVSCYGTLPRESRKNKDGS--GIVSE 1489
Anas_platyrhynchos CSRLDLSACDEDD--KGWSESHLDISDCSSSYQDVSCYGTLPRESRKNKDGS--GAVSE 1489
Chelonia_mydas    SSRDLDFGCEDD--KGWSESHLDISDCSSSYQDVSCYGTLPRESRKNKDAG--GCISE 1449
Mus_musculus      SSRPDLSGFDEDD--KGWPNQLDVS DYSSSYQDVACYGTLPRDSPRRSKEG----CPSE 1433
Rattus_norvegicus SSRPDLSGFDEDD--KGWPNQLDVS DYSSSYQDVACYGTLPRDSPRRSKEG----CPSE 1370
Bos_taurus        SSRPDLSGFDDDD--KGWPNQLDMSDYSPSYQDVSCYGTLPDRSPRRSKEG----GCTSE 1486
Canis_lupus_familiaris SSRPDLSGFDEDD--KGWLENQLDMSDYSSSYQDIACYGTLPRDSPRRSKEG----GCTSE 1488
Homo_sapiens      SSRPDLSGFDEDD--KGWPNQLDMSDYSSSYQDVACYGTLPRDSPRRNKEG----CTSE 1446
Pan_troglodytes   SSRPDLSGFDEDD--KGWPNQLDMSDYSSSYQDVACYGTLPRDSPRRNKEG----CTSE 1486
Macaca_mulatta    SSRPDLSGFDEDD--KGWPNQLDMSDYSSSYQDVACYGTLPRDSPRRNKEG----GCTSE 1488
Callithrix_jacchus SSRPDLSGFDEDD--KGWPNQLDMSDYSSSYQDVACYGTLPRDSPRRNKEG----GCTSE 1488
Equus_caballus    SSRPDLSGFDEDD--KGWPNQLDMSDYSSSYQDVACYGTLPRDSPRRSKEG----CTSE 1446
Rhinatrema_bivittatum SSRSDLSGCEDDA--KGWLEAOGDTSYSSSYQDVSCYGS LPRDSPRRNKDNG--GCVPE 1498
Xenopus_tropicalis SSRDLIAGDEDD--KGWSDSYQDVSEYSSSYKDIPFYSSQVSDSPRRKDSGG--GSIPD 1448
Latimeria_chalumnae SSRDLGCEEDTTKGRIESQLEMLDCSSSCQDVSLYGS LPRDSPRRNKEIGGTGSVPE 1343
.....1450.....1460.....1470.....1480.....1490.....1500

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. * :   * * * * . * * * * : : * : * * : *
Pavo_muticus      NSHTLMASPFKAFSPQPPKFFKPLMPVKEEHKRKTPLESRPLLSQESMPSSQVNCAGCVV 1549
Pavo_cristatus    NSHTLMASPFKAFSPQPPKFFKPLMPVKEEHKRKTPLESRPLLSQESMPSSQVNCAGCVV 1549
Gallus_gallus     NSHALMASPFKAFSPQPPKFFKPLMPVKEEHKRKTPLESRPLLSQESMPSSQVHCAGCVV 1549
Anas_platyrhynchos NSHALMASPFKAFSPQPPKFFKPLMPVKEEHKRKTPLESRPLLSQESMPSSQVHCAGCVV 1549
Chelonia_mydas    NPHALMTSPFKAFSPQPPKFFKPLMPVKEEHKRKIPLET RPLLCQESMPSPQVHNCAGCVV 1509
Mus_musculus      NPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRLALEARPLLSQE----- 1479
Rattus_norvegicus NPHALTISPFKAFSPQPPKFFKPLMPVKEEHKKRMAL EARPPLLSQE----- 1416
Bos_taurus        NPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMSPSQAHNPGCIV 1546
Canis_lupus_familiaris NPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMSPSQAHNPGCIV 1548
Homo_sapiens      TPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMPPPPQAHNPGCIV 1506
Pan_troglodytes   TPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMPPPPQAHNPGCIV 1546
Macaca_mulatta    TPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMPPPPQAHNPGCIV 1548
Callithrix_jacchus TPHALTVSPFKAFSPQPPKFFKPLMPVKEEHKKRIAL EARPPLLSQESMPPPPQAHNPGCIV 1548
Equus_caballus    NPHALTVSPFKAFSPQPPKFFKPLLPVKEEHKKRMAL EARPPLLSQESMPPSQAHNPGCIV 1506
Rhinatrema_bivittatum SAHAALASPFKVFSPPQPPKFFKPLMPVKEEHKRKL P VETQPLLSHESMPSSQTHCTGIVV 1558
Xenopus_tropicalis SIHAL--SPFKTF SHQPPKFFNPLMPVREEHKKRIP VETQPLLSQESMPSSQTHCTGIVV 1506
Latimeria_chalumnae SPHAPMASPFKAFSPQPPKFFKALMPVKEEHKGKNP LEMKPLLQESMSPSQVHKAGSVV 1403
.....1510.....1520.....1530.....1540.....1550.....1560

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: * : : : : : : : * . . * : * : * * * *
Pavo_muticus      PSGSNANSMPVESNSIREEKI--DSEEDSSELEAIHKKLTSPQSFKNFRPYVPVEEFADFSV 1608
Pavo_cristatus    PSGSNANSMPVESNSIREEKI--DSEEDSSELEAIHKKLTSPQSFKNFRPYVPVEEFADFSV 1608
Gallus_gallus     PSGSNANSMPVESNSIHEEKI--DSEEDSSELEAIHKKLTSPQSFKNFRPYVPVEEFADFSV 1608
Anas_platyrhynchos PSGSNANSMPVESNSIHEEKI--DSEEDSSELEAIHKKLTSPQSFKNFRPYVPVEEFADFSV 1608
Chelonia_mydas    PSGSNANSMPVENNSIHEEKI--DSEEDSSELEAIHKKLISQGFHFRPYVPVEEFADFSV 1568
Mus_musculus      -----DSEEEENELEALSRKMLTQ-----PYVPVEEFADFSV 1511
Rattus_norvegicus -----DSEEEENELEAVSRKLMHAQ-----PYVPVEEFADFSV 1448
Bos_taurus        PSGSNGSSMPVELNSKREKKI--DSEEEENDLEGLSRKLISQ-----PYVPVEEFADFSV 1599
Canis_lupus_familiaris PSGSNGNSMPVEHNSKREKKI--DSEEEENDLEALNRKLISQ-----PYVPVEEFADFSV 1601
Homo_sapiens      PSGSNGSSMPVEHNSKREKKI--DSEEEENELEAINRKLISQ-----PYVPVEEFADFSV 1559
Pan_troglodytes   PSGSNGSSMPVEHNSKREKKI--DSEEEENELEAINRKLISQ-----PYVPVEEFADFSV 1599
Macaca_mulatta    PSGSNGSSMPVEHNSKREKKI--DSEEEENELEAINRKLISQ-----PYVPVEEFADFSV 1601
Callithrix_jacchus PSGSGSSMPVEHNSKREKKI--DSEEEENELEAINRKLISQ-----TYVPVEEFADFSV 1601
Equus_caballus    PSGSNGSSMPVEHNSKREKKI--DSEEEENDLEALNRKLISQ-----PYVPVEEFADFSV 1559
Rhinatrema_bivittatum PSGFSASSMPAENNSIHEKT--DSEEDDSELEAIHKKAMS LQGTQSLRPYVPVEEFADFTV 1616
Xenopus_tropicalis PSGPYDNCMPVENNNTHEKVI--ESEEDNEFDGSSKKGIHSSSFQHFQPIPEEFADFSV 1565
Latimeria_chalumnae PSGSNASSMPIENNNTHEEKI--DSEEDENELEVINKKSIGSGFHSFQPIVPEDFADFEV 1463
.....1570.....1580.....1590.....1600.....1610.....1620

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data.fst Tue Feb 1 12:42:05 2022

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***.*.:.:: :.* *: *: *** :*****:****.*.***.*****: :. *:*
Pavo_muticus      YNAGLENREWFSSKSDFMSSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMLIPCSDS 1668
Pavo_cristatus    YNASLENREWFSSKSDFMSSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMLIPCSDS 1668
Gallus_gallus     YNASLENREWFSSKSDFMSSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMLIPCSDS 1668
Anas_platyrhynchos YNASLESREWFSSKSDFMSSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMLVPCSDS 1668
Chelonia_mydas    YNASLENREWFSTKTDFMHSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMLVPCSDS 1628
Mus_musculus      YNASLENREWFSSSKADLTDSRALEKAVSRSPPTSSITSGYFSSHSASNATLSDMAVPSSDS 1571
Rattus_norvegicus YNASLENREWFSSSKADLTDSRALEKAVSRSPPTSSITSGYFSSHSASNATLSDMAVPSSDS 1508
Bos_taurus        YNASLENREWFSSKGDLTNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1659
Canis_lupus_familiaris YNASLENREWFSSKADLVNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMAVPSSDS 1661
Homo_sapiens      YNASLENREWFSSKVDLSNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1619
Pan_troglodytes   YNASLENREWFSSKVDLSNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1659
Macaca_mulatta    YNASLENREWFSSKVDLSNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1661
Callithrix_jacchus YNASLENREWFSSKVDLSNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1661
Equus_caballus    YNASLENREWFSSKVDLTNSRVLEKEVSRSPPTSSITSGYFSSHSASNATLSDMVPSSDS 1619
Rhinatrema_bivittatum YNAGLESRDWFSSKADFISRVLEKEVSRSPPTSSITSGYVSHSASTATLSDMMVPCSDS 1676
Xenopus_tropicalis YNASLDNKDWITSKSDFICSRPLEKEISRSPPTSSITSGYFSSHSASNATLSDIILVPSSES 1625
Latimeria_chalumnae YNASLENRDLLSSKDFLTNRVLEKEVSRSPPTSSMTSGYFSSHSASNATLSDMLVTGSES 1523
.....1630.....1640.....1650.....1660.....1670.....1680

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* *. : : : : : : * * .*: .
Pavo_muticus      TDQLACHTKELDSNDPSGSSLAHDIRSSLNKEFCEAEKELAREKLPVLPLKENSALTEQV 1728
Pavo_cristatus    TDQLACHTKELDSNDPSGSSLAHDIRSSLNKEFCEAEKELAREKLPVLPLKENSALTEQV 1728
Gallus_gallus     TDQLACHTKELDSNDPSGSSLAHDIRSSLNKEFCEAEKELAREKLPVLPLKENSALTEQV 1728
Anas_platyrhynchos TDQLASHVKELDSNDSSGPPSLAHDLRSSLNKEFRESEKELAREKLPVLPLKENSALTEQV 1728
Chelonia_mydas    TDQLANQMKDLSDSDHSGPCLAYDMR--SLNREFP--ERSLARDKIHVSPKENGALAKEV 1685
Mus_musculus      SDQLAVSTKEVECAEPPGPSLAPDVRPASNOELTEVGRSGKDETIAPVPLEENSALPKGT 1631
Rattus_norvegicus SDQLALSTKEAECREHSGPSLAPDFTPTAQELTEAERGLGKDKITITVPLEENSALPQGS 1568
Bos_taurus        SDQLALPTKDDTSSSEHPGPSLQDFRPPSSNKELTELERGLGKDKMTVVPKENSALAKGS 1719
Canis_lupus_familiaris SDQLATQTKDTPDSEHCGPSLVHDSRPSSNKELTEVERGLVKEKIALVPLKENSALAKGS 1721
Homo_sapiens      SDQLAIQTKDADSTEHSSTPSLVHDFRPPSSNKELTEVEKGLVKDKIIVVPLKENSALAKGS 1679
Pan_troglodytes   SDQLAIQTKDADSTEHSSTPSLVHDFRPPSSNKELTEVEKGLVKDKIIVVPLKENSALAKGS 1719
Macaca_mulatta    SDQLAIQTKDADSTEHSSTPSLVHDFRPPSSNKELTEVEKGLVKDKIIMVPLKENSALVKGS 1721
Callithrix_jacchus SDQLALQTKDADSTEHSSTPSLVHDFRPPSSNKELTEVEKGLVKDKIMVPLKENSALARGS 1721
Equus_caballus    SDQLALQTKDADSTEHSSTPSLVHDFRPPSSNKELTEVERGLVVKDKIIMVPLKENSALAKGS 1679
Rhinatrema_bivittatum TDQLASQMRDLDFLDHSGHSLACDFKRSFSKEFTEAERELAKDRINLALLKEQSALDKRT 1736
Xenopus_tropicalis MDHLVSHTGDFESRDILVHHSKADHTVC--SHKGLN--GRISTDNATSLANLTKSAFDK-- 1681
Latimeria_chalumnae TDYLATQIRDSEPHEHTPHIAPVESRSSLNQEARVQQRDLTREKMKSTSLKETSALKEKET 1583
.....1690.....1700.....1710.....1720.....1730.....1740

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. : . *.: : . * :** :*** :*
Pavo_muticus      PLSLNATDKGSQQLPRAGSFSALS----SSDGRNTCHTIEFSVREATVEHTMEIVEDHSF 1784
Pavo_cristatus    PLSLNATDKGSQQLPRAGSFSALS----SSDGRNTCHTIEFSVREATVEHTMEIVEDHSF 1784
Gallus_gallus     PLSLNATDKGSQQLSRAGSFSALS----SSDGRNTCHTIEFSAREATVEHTMEIVEDHSF 1784
Anas_platyrhynchos PLSLNATDKDSQHLPRAGSFSALS----SSDGKNACRTIEFSAREATVEHTMDIVEDHSF 1784
Chelonia_mydas    PPSLNNTTNKNSEMLHRAGSCSGLD----SSTSKNMRDKIEFSSREATIEHTSAVVEDHSF 1741
Mus_musculus      PSPQSIPEESSRMPRCRTASCSELD----VGPSKDGHQAREFCPGEVTIEHTTNILEDHSF 1687
Rattus_norvegicus PSPQSIPEENPRMPRCRTALGSELD----AGPSKEGHQAREFCPGEVTIEHTTNILEDHSF 1624
Bos_taurus        PLSPSIPEKNSRTLCRTSSCSELD----ACSSKNGQPAREFCPREVTVEHTTNILEDHSF 1775
Canis_lupus_familiaris PSPQSIPEKNSKVLCTSSCSELD----ACSSRNGQPAREFYPREVTVEHTTNILEDHSF 1777
Homo_sapiens      PSSQSIPEKNSKSLCRTGSCSELD----ACPSKISQPARGFCPREVTVEHTTNILEDHSF 1735
Pan_troglodytes   PSSQSIPEKNSKSLCRTGSCSELD----ACPSKISQPARGFCPREVTVEHTTNILEDHSF 1775
Macaca_mulatta    PSSQSIPEKNSKSLCRTGSCSELDGVSQNCPSKISQPARGFCPREVTVEHTTNILEDHSF 1781
Callithrix_jacchus PSSQNIPEKNSKSCRTGSCAEPD----VCPSSKSSQPARGFFPREVTVEHTTNILEDHSF 1777
Equus_caballus    PSSQSIPEKNSKTLRRTGSCSELD----VFSKNGQPAREFFPREVTVEHTTNILEDHSF 1735
Rhinatrema_bivittatum AGSQHTTENTSTILNRTGSLSLD----SSSGTKNLHVSDFSSCAATVEHILDVLEDHAF 1792
Xenopus_tropicalis -VPHCTTDDKAAALLFRSASCSSVD----SPTYKTKVSTVHFLPCEVAVEHTCAILEDHSF 1736
Latimeria_chalumnae LLAQTHCCK--SETLHRAGSCSTLD----SSSTNTVNSMEFISYES--MEHTTNVVEDLSF 1637
.....1750.....1760.....1770.....1780.....1790.....1800

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data Steps Tue Feb 1 12:42:05 2022

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*****..* *::
Pavo_muticus      TEFMGVEDG-KDFDHSASPPQCSVVSSNG-----VSTSELSLGTDKEQEACGGQLG 1834
Pavo_cristatus    TEFMGVEDG-KDFDHSASPPQCSVVSSNG-----VSTSELSLGTDKEQEACGGQLG 1834
Gallus_gallus     TEFMGVEDG-KDFDHSASPPQCSVVSSNG-----VSTSELSLGTDKEQEACGGQLG 1834
Anas_platyrhynchos TEFMGVEDG-KDFDHSTAPQSCSLASSNG-----VSASELSQGTDEEQGTGAG--- 1831
Chelonia_mydas    TEFMGVEDG-KDFDQSVDPKLCSSAGSSNKRKEIPTAGVDSASDLSONTYKDG-VRLGQLE 1799
Mus_musculus      TEFMGVSDG-KDFDQ----- 1701
Rattus_norvegicus TEFMGVSDG-KDFDQ----- 1638
Bos_taurus        TEFMGVSDG-KDFDQ----- 1789
Canis_lupus_familiaris TEFMGVSDG-KDFDQ----- 1791
Homo_sapiens      TEFMGVSEG-KDFDQ----- 1749
Pan_troglodytes   TEFMGVSEG-KDFDQ----- 1789
Macaca_mulatta    TEFMGVSEG-KDFDQ----- 1795
Callithrix_jacchus TEFMGVSEG-KDFDQ----- 1791
Equus_caballus     TEFMGVSDG-KDFDQ----- 1749
Rhinatrema_bivittatum TEFMGVEDG-KDFEHATEKQTVSVCPNSG-----EKDTQVA 1827
Xenopus_tropicalis TEFMGAEDG-KDLEQHEHSLVLFNSGDKD-----RAECNSLAAL 1774
Latimeria_chalumnae TEFMGVDGGSVDFEQPDKPHNHTTGFCNE-----DKSTRSTMPECTSNP 1681
.....1810.....1820.....1830.....1840.....1850.....1860

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          .
          :
Pavo_muticus      SAAAGSOLANAVG---RPLLVKETSDCETYPDIDISIDDFTGKDHLDGSDCEDSSASADQAHV 1891
Pavo_cristatus    SAAAGSOLANAVG---RPLLVKETSDCETYPDIDISIDDFTGKDHLDGSDCEDSSASADQAHV 1891
Gallus_gallus     SAAAGNOLANAVG---RPLLVKETSDCETYPDIDISIDDFTGKDHLDGSDCEDSSASADQAHV 1891
Anas_platyrhynchos SANAGERPP-----CSVLAKETLDHETYPDASIDDFSGKDHLDGSDCEEGASADHPPHV 1884
Chelonia_mydas    SVAVGYQLSNAIENPLFSVLVKETSYCQTPDSSLNDFITKNHLDVSDSEDGASADQAHV 1859
Mus_musculus      -----LADCSVGEPSSRRALT----- 1717
Rattus_norvegicus -----LADCSVGEPSSRTDLT----- 1654
Bos_taurus        -----LTDSSAGELSSRRNLP----- 1805
Canis_lupus_familiaris -----LTDSSAGELSSRRNLP----- 1807
Homo_sapiens      -----LTDSSAGELSSRRSLP----- 1765
Pan_troglodytes   -----LTDSSAGELSSRRSLP----- 1805
Macaca_mulatta    -----LTDSSAGELSSRRNLP----- 1811
Callithrix_jacchus -----LTYSSAGELSSRRNLP----- 1807
Equus_caballus     -----LTDSSAGELSSRRNLP----- 1765
Rhinatrema_bivittatum FKGSLLDLEGEPIGRAHQMSNSKSTGFFCQACPDSPDVHGKQHLDAECEDSLHAQAP-- 1885
Xenopus_tropicalis PNATPSQHWLAEDGNDSDCLGDAALFSQSPPCSSEESLVKINLNLSDSEDNPSHN---- 1830
Latimeria_chalumnae LLDYEMSKSNQSPVDSKRNETPCDQVCVGADSSADGGVTKNDIDMLDCEDGATKEQSQA 1741
.....1870.....1880.....1890.....1900.....1910.....1920

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          .
          .
Pavo_muticus      LPSWVAVGEQVCVGSNKGVTVRYVGTVDFSAGIWWGVELNVQLGKHDGTVKGREYFHCKP 1951
Pavo_cristatus    LPSWVAVGEQVCVGSNKGVTVRYVGTVDFSAGIWWGVELNVQLGKHDGTVKGREYFHCKP 1951
Gallus_gallus     LPSWVAVGEQVCVGSNKGVTVRYVGTVDFSAGVWVGVELNVQLGKHDGTVKGREYFHCKP 1951
Anas_platyrhynchos LPSWVAVGEQVCVGSNKMGTVRYVGTVDFSAGIWWGVELNVQLGKHDGTVKGKEYFHCKP 1944
Chelonia_mydas    LPSWVAVGEQVCLGSNKTGTVRYIGPVDFSAGIWWGVELSVQLGKHDGTVKGREYFHCKP 1919
Mus_musculus      -----NETDHK-----GIPEPPD----- 1731
Rattus_norvegicus -----IETGRK-----GIPEGPPD----- 1668
Bos_taurus        -----NTADSR-----SFSGHPQD----- 1819
Canis_lupus_familiaris -----SKMDKK-----SISDGPRD----- 1821
Homo_sapiens      -----NKTGGK-----TVSDGLHH----- 1779
Pan_troglodytes   -----NKTGGK-----TVSDGLHH----- 1819
Macaca_mulatta    -----NKTGSK-----TVSDGLHH----- 1825
Callithrix_jacchus -----NKTGSR-----TVSDGLHH----- 1821
Equus_caballus     -----NKTDNK-----SMSDGLQD----- 1779
Rhinatrema_bivittatum -SDLLAVGDQVCVGNKKTGTVRYIGPVDFSAGVWVGVELCGKLGKHDGTVGEGREYFRCKP 1944
Xenopus_tropicalis -SLCLALGDQVCIGENKKTGTVRYIGTVDFSAGTWTWVGIELHAQLGKHDGTVKGKEYFRCKP 1889
Latimeria_chalumnae IPGWVVVGEHVCGVGSNKTGTIQQYVGPVDFSAGIWWGVELSVPAKGHDGTVQKGKEYFHCKP 1801
.....1930.....1940.....1950.....1960.....1970.....1980

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF Data Date: Tue Feb 1 12:42:05 2022

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Pavo_muticus	RHGVFVRPGRLSKAPASMRKCSSTSRSQVSTSEKRRSSVLQGSSTPKAGEG-LCHSGD	2010
Pavo_cristatus	RHGVFVRPGRLSKAPASMRKCSSTSRSQVSTSEKRRSSVLQGSSTPKAGEG-LCHSGD	2010
Gallus_gallus	RHGVFVRPGRLSKAPASTRKCSSTSRSQASSTSEKRRSSVLQGSSTPKAGEG-LCHSGD	2010
Anas_platyrhynchos	RHGVFVRPGRLSKAPAPTRKWSSTSRSQASSTVEKRRSSMLQGSSTSKTGEV-LCHSGD	2003
Chelonia_mydas	RHGLFVRPGRLSKSPVSTKRCSSSTSQSQASSLEKRRSSVLQGSSSSKAGEAPLCQSGD	1979
Mus_musculus	-----ADRLHPKIENDQEATATR-----	1749
Rattus_norvegicus	-----AGQLHSKIENDQTLHPFSEIP-----	1689
Bos_taurus	-----PGQLCSSAENDQSGGTAR-----	1837
Canis_lupus_familiaris	-----PAQLHSSAENDQGSTTTR-----	1839
Homo_sapiens	-----PSQLHSKLENDQVIIPEAAFWVLCCQ-----	1805
Pan_troglodytes	-----PSQLHSKLENDQVIIPEAAFWVLCCQ-----	1845
Macaca_mulatta	-----PSQLHSKLENDQVIIPEAALWVMCCR-----	1851
Callithrix_jacchus	-----PSQLHSKLENDQVIIPEEALWVLCCQ-----	1847
Equus_caballus	-----PGQLHSSAENDQVIIPEAVLWVLCYQ-----	1805
Rhinatrema_bivittatum	KHGIFIRPGCLTRAPESAPRGGSAARPRALPSTEKRRKRALLOGTSSSRAGGAHYQSGD	2004
Xenopus_tropicalis	KYGVFVRPSRLTKALGSSQRSSTSTAWGQASLNIDKRRSAVLRDSSAPKARVTAAYLSGD	1949
Latimeria_chalumnae	GHGVFVRPSRLTKVSSSTTKRHSSTSRPRAPSNQEKRRSAILLGSSSS-KADAPVLHRSGD	1860
	.....1990.....2000.....2010.....2020.....2030.....2040	

Pavo_muticus	AAASAFSRKQENRKSWIN	2028
Pavo_cristatus	AAASAFSRKQENRKSWIN	2028
Gallus_gallus	AAASAFSRKQENRKSWIN	2028
Anas_platyrhynchos	AAASAFSRKQENRKSWIN	2021
Chelonia_mydas	AAASAFSRKQENRKSWIK	1997
Mus_musculus	-----	1749
Rattus_norvegicus	-----	1689
Bos_taurus	-----	1837
Canis_lupus_familiaris	-----	1839
Homo_sapiens	-----	1805
Pan_troglodytes	-----	1845
Macaca_mulatta	-----	1851
Callithrix_jacchus	-----	1847
Equus_caballus	-----	1805
Rhinatrema_bivittatum	EAASAFSRKQENRKSWIN	2022
Xenopus_tropicalis	QAASAFSRKQEFRKSWIN	1967
Latimeria_chalumnae	AAASSFSKKQENRKSWIN	1878
	.....2050.....	