

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF4B.fas Tue Feb 1 12:32:58 2022

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Xenopus_tropicalis      -----MGK---DEGIPVRVALRCRPL      18
Rhinatrema_bivittatum  -----MK---DEGIPVRVALRCRPL      17
Pavo_muticus           -----MVR-EEEKGIPVRVALRCRPL      20
Pavo_cristatus         -----MVR-EEEKGIPVRVALRCRPL      20
Gallus_gallus          -----MVR-EEEKGIPVRVVR-CRPL      19
Anas_platyrhynchos     MSLAAPPRRADLNATAAAIISSARPPSSAVCPPPKTSEMVRGEDEKGIPVRVALRCRPL      60
Chrysemys_picta_bellii -----MVK-EDEKVIPVRVLRRCRPL      20
Chelonia_mydas         -----MVK-EDEKVIPVRVLRRCRPL      20
Mus_musculus           -----MK-EEVKGIPVRVALRCRPL      19
Rattus_norvegicus      -----MK-EEVKGIPVRVALRCRPL      19
Homo_sapiens           -----MK-EEVKGIPVRVALRCRPL      19
Pan_troglodytes        -----MK-EEVKGIPVRVALRCRPL      19
Macaca_mulatta         -----MK-EEVKGIPVRVALRCRPL      19
Callithrix_jacchus     -----MK-EEVKGIPVRVALRCRPL      19
Heterocephalus_glaber  -----MK-EEVKGIPVRVALRCRPL      19
Canis_lupus_familiaris -----MK-EEVKGIPVRVALRCRPL      19
Felis_catus            -----MK-EEVKGIPVRVALRCRPL      19
Equus_caballus         -----MK-EEVKGIPVRVALRCRPL      19
Bos_taurus             -----MK-EEVKGIPVRVALRCRPL      19
Anolis_carolinensis    -----MSK-DEDKGIPVKVALRCRPL      20
1.....10.....20.....30.....40.....50.....60

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Xenopus_tropicalis      VPKELNEGCKTCLTFVPGEPOVIVGTEKSFTYDYVFDPSVEQEEVYNSAVGPLIKGLFKG      78
Rhinatrema_bivittatum  VPKELSEGQCCLTFVPGEPOVVVGNEKSFTYDYVFDPSVEQEEVNTSVLPLINGIFEG      77
Pavo_muticus           VPKEESEGCQMCLSFVPGEPOVIVGSDKAFTYDYVFDPSVEQEEVNTAVAPLIRGIFKG      80
Pavo_cristatus         VPKEESEGCQMCLSFVPGEPOVIVGSDKAFTYDYVFDPSVEQEEVNTAVAPLIRGIFKG      80
Gallus_gallus          VPKETSEGCQMCLSFVPGEPOVVVGSDKAFTYDYVFDPSVEQEEVNTAVAPLIRGIFKG      79
Anas_platyrhynchos     VPKETSEGCQMCLSFVPGEPOVVVGSDKVSFYDFVFDPSVEQEEVNTAVAPLVRGIFKG      120
Chrysemys_picta_bellii VPKEISEGCQMCLSFVPEEQOVIVGNDKSFTYDFVFDPSAEQEEVNTSVAPLIRGIFKG      80
Chelonia_mydas         VHKEISEGCQMCLSFVPEEQOVIVGNDKSFTYDFVFDPSAEQEEVNTSVAPLIRGIFKG      80
Mus_musculus           VSKEIKEGCQTCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Rattus_norvegicus      VSKEINEGCQTCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Homo_sapiens           VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Pan_troglodytes        VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Macaca_mulatta         VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Callithrix_jacchus     VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Heterocephalus_glaber  VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Canis_lupus_familiaris VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Felis_catus            VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Equus_caballus         VPKEISEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Bos_taurus             VPKEINEGCQMCLSFVPGEPOVVVGNDKSFTYDFVFDPSVEQEEVNTAVAPLIKGVFKG      79
Anolis_carolinensis    VPKEIAEGCHVCLSFVPGEQOVILGDKDPFTYDYVFDPSVEQEEVNTCIVPLIKGIFKG      80
.....70.....80.....90.....100.....110.....120

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*****:*****:*****.* **::*:* *:***:***: **::*: **::*
Xenopus_tropicalis      YNATVLAYGQTGSGKTYSMGGAYTHDQENPTVGVIPIRVKALFREIEQRSEWFLMKVS      138
Rhinatrema_bivittatum  YNATVLAYGQTGSGKTYSMGGTYTQDQENPTMGVPIRVINALFKEIERRQSWFLMKVS      137
Pavo_muticus           YNATVLAYGQTGSGKTYSMGGTYTASQEHDP SMGVIPRVIKLLFKEKEQRQDWEFVLKVS      140
Pavo_cristatus         YNATVLAYGQTGSGKTYSMGGTYTASQEHDP SMGVIPRVIKLLFKEKEQRQDWEFVLKVS      140
Gallus_gallus          YNATVLAYGQTGSGKTYSMGGTYTASQEHDP SMGVIPRVIKLLFKEKEQRQDWEFVLKVS      139
Anas_platyrhynchos     YNATVIAYGQTGSGKTYSMGGAYTASQEHDP SVGIIPRVIKLLFQEKERRQDWEFVLKVS      180
Chrysemys_picta_bellii YNATVLAYGQTGSGKTYSMGGTYTADQEHPTVGVIPIRVIKLLFQEKERRLEWFTLKVS      140
Chelonia_mydas         YNATVLAYGQTGSGKTYSMGGTYTADQEHPTVGVIPIRVIKLLFQEKERLEWFTLKVS      140
Mus_musculus           YNATVLAYGQTGSGKTYSMGGAYTAEQEHDSAIGVPIRVIOQLLFKEINKKSDFEFTLKVS      139
Rattus_norvegicus      YNATVLAYGQTGSGKTYSMGGAYTAEQEHDSAIGVPIRVIOQLLFKEINKKSDFEFTLKVS      139
Homo_sapiens           YNATVLAYGQTGSGKTYSMGGAYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Pan_troglodytes        YNATVLAYGQTGSGKTYSMGGAYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Macaca_mulatta         YNATVLAYGQTGSGKTYSMGGAYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Callithrix_jacchus     YNATVLAYGQTGSGKTYSMGGAYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Heterocephalus_glaber  YNATVLAYGQTGSGKTYSMGGAYSAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Canis_lupus_familiaris YNATVLAYGQTGSGKTYSMGGAYTADQENPTVGVIPIRVIOQLLFKEIDKKSDIEFTLKVS      139
Felis_catus            YNATVLAYGQTGSGKTYSMGGVYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDIEFTLKVS      139
Equus_caballus         YNATVLAYGQTGSGKTYSMGGTYTAEQENPTVGVIPIRVIOQLLFKEIDKRSDFEFTLKVS      139
Bos_taurus             YNATVLAYGQTGSGKTYSMGGAYTAEQENPTVGVIPIRVIOQLLFKEIDKKSDFEFTLKVS      139
Anolis_carolinensis    YNATVLAYGQTGSGKTYSMGGAYIANQENDPIVGVIPIRVIKFLFQKIQEKTDWHFSLKVS      140
.....130.....140.....150.....160.....170.....180

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF4Bases Tue Feb 1 12:32:58 2022

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*****:***** :::: *.**** * * * * * : * * *: *****..*
Xenopus_tropicalis      YLEIYNEEILDLLYAARDKTNASISIREDPKEGIKICGLTERDVKTALDVTSCLEQGNSSR 198
Rhinatrema_bivittatum  YLEIYNEEILDLLCCSHEKSSHSISIREDPKEGIKIVGLTERDVTSAVDTVLCLEQGNNSR 196
Pavo_muticus            YLEIYNEDILDLLCCSSRERSSSQISIREDPKEGIKIVGLTERNVACARDTVSCLEQGNNSR 200
Pavo_cristatus          YLEIYNEDILDLLCCSSRERSSSQISIREDPKEGIKIVGLTERNVACARDTVSCLEQGNNSR 200
Gallus_gallus           YLEIYNEDILDLLCCSSRERSSSQISIREDPKEGIKIVGLTERNVASARDTVSCLEQGNNSR 199
Anas_platyrhynchos     YLEIYNEDILDLLSPSRERSSSQISIREDPKEGIKIIGLTERSVAHAQDVTSCLEQGNNSR 240
Chrysemys_picta_bellii YLEIYNEDILDLLSPSRERS-QISIREDPKEGIKIVGLTERDVACAQDTILCLEQGNNSR 199
Chelonia_mydas          YLEIYNEDILDLLSPSRERS-QISIREDPKEGIKIVGLTERDVTCAQDTVLCLEQGNNSR 199
Mus_musculus            YLEIYNEEILDLLCCSREKATQINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 199
Rattus_norvegicus      YLEIYNEEILDLLCCSREKASQINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 199
Homo_sapiens            YLEIYNEEILDLLCCPSREKA-QINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 198
Pan_troglodytes        YLEIYNEDILDLLCCPSREKA-QINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 198
Macaca_mulatta         YLEIYNEDILDLLCCPSREKA-QINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 198
Callithrix_jacchus     YLEIYNEDILDLLCCPSREKS-QINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 198
Heterocephalus_glaber  YLEIYNEDILDLLCCPSREKACQINIREDPKEGIKIIGLTEKNVLASDVTSCLEQGNNSR 199
Canis_lupus_familiaris YLEIYNEDILDLLCCPSREKASQINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 199
Felis_catus            YLEIYNEDILDLLCCPSREKASQINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 199
Equus_caballus         YLEIYNEDILDLLCCPSREKASQINIREDPKEGIKIVGLTEKTVLVASDVTSCLEQGNNSR 199
Bos_taurus             YLEIYNEDILDLLCCPSREKAPQINIREDPKEGIKIMGLTEKTVLVASDVTSCLEQGNNSR 199
Anolis_carolinensis   YLEIYNEDILDLLSPAKDRTSQISIREDPKEGIKIVGLTAHEVTNAQETVSCLEQGNNSR 200
.....190.....200.....210.....220.....230.....240

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***:***:*****:***: * * * *:*****:*****:
Xenopus_tropicalis      TVASTAMNSQSSRSIFAFTISIDRKEGDKNSFRSKLHLVDLAGSERQKTKAEGDRLK 258
Rhinatrema_bivittatum  TVASTAMNSQSSRSIFAFTIAIEQSKKTDKNCSFRCKLHLVDLAGSERQKTKAEGDRLK 256
Pavo_muticus            TVASTAMNSQSSRSIFAFTICIDQKKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 260
Pavo_cristatus          TVASTAMNSQSSRSIFAFTICIDQKKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 260
Gallus_gallus           TVASTAMNSQSSRSIFAFTICIDQKKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Anas_platyrhynchos     TVASTAMNSQSSRSIFAFTICIDQKKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 300
Chrysemys_picta_bellii TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Chelonia_mydas          TVASTAMNSQSSRSIFAFTISIEQRKKCDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Mus_musculus            TVASTAMNSQSSRSIFAFTISIEQRKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Rattus_norvegicus      TVASTAMNSQSSRSIFAFTISIEQRKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Homo_sapiens            TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 258
Pan_troglodytes        TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 258
Macaca_mulatta         TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 258
Callithrix_jacchus     TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 258
Heterocephalus_glaber  TVASTAMNSQSSRSIFAFTISIEQRKKNDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Canis_lupus_familiaris TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Felis_catus            TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Equus_caballus         TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Bos_taurus             TVASTAMNSQSSRSIFAFTISIEQRKKSDKNSSFHSLHLVDLAGSERQKTKAEGDRLK 259
Anolis_carolinensis   TVAATAMNTQSSRSIFAFTISIEQKSKSDMNTSFHCKLHLVDLAGSERQKTKAEGDRLK 260
.....250.....260.....270.....280.....290.....300

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***.***:*****:***: * * * *:*****:*****:
Xenopus_tropicalis      EGININRGLLCLGNVISALGDENKKGSFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Rhinatrema_bivittatum  EGININRGLLCLGNVISALG-EDRKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 315
Pavo_muticus            EGININRGLLCLGNVISALGEENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 320
Pavo_cristatus          EGININRGLLCLGNVISALGEENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 320
Gallus_gallus           EGININRGLLCLGNVISALGEENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 319
Anas_platyrhynchos     EGININRGLLCLGNVISALGDENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 360
Chrysemys_picta_bellii EGININRGLLCLGNVISALGDENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 319
Chelonia_mydas          EGININRGLLCLGNVISALGDENKKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 319
Mus_musculus            EGININRGLLCLGNVISALGDD-KKGNFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Rattus_norvegicus      EGININRGLLCLGNVISALGDD-KKGNFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Homo_sapiens            EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 317
Pan_troglodytes        EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 317
Macaca_mulatta         EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 317
Callithrix_jacchus     EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 317
Heterocephalus_glaber  EGININRGLLCLGNVISALGDD-KKCGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Canis_lupus_familiaris EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Felis_catus            EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Equus_caballus         EGININRGLLCLGNVISALGDD-KKGGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Bos_taurus             EGININRGLLCLGNVISALGDD-KKCGFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 318
Anolis_carolinensis   EGININKGLLCLGNVISALGDETKKGSFVFPYRDSKLTRLLQDSLGGNSHTLMIACVSPAD 320
.....310.....320.....330.....340.....350.....360

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF4B.fas Tue Feb 1 12:32:58 2022

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Xenopus_tropicalis      SNMEETLNTLRYADRARKIKNKPIVNTDPAAEQLRLKQOVQELQVLLLAHGGTLPVLN 378
Rhinatrema_bivittatum  SNMEETLNTLRYADRARKIKNKPVNIDPKAAELQHLKQOVQELQVLLLAHGGTLPVLS 375
Pavo_muticus           SNLEETLNTLRYADRARKIKNKPIVNVDPAAELHHLKQOVQELQVLLLAHGGTLPVSI 380
Pavo_cristatus        SNLEETLNTLRYADRARKIKNKPIVNVDPAAELHHLKQOVQELQVLLLAHGGTLPVSI 380
Gallus_gallus         SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 379
Anas_platyrhynchos    SNLEETLNTLRYADRARKIKNKPIVNVDPAAELHHLKQOVQELQVLLLAHGGTLPVSI 420
Chrysemys_picta_bellii SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 379
Chelonia_mydas        SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSV 379
Mus_musculus          SNLEETLNTLRYADRARKIKNKPIINIDPAAEELNHLKQOVQELQVLLLAHGGTLPVSI 378
Rattus_norvegicus     SNLEETLNTLRYADRARKIKNKPIINIDPAAEELNHLKQOVQELQVLLLAHGGTLPVSI 378
Homo_sapiens          SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 377
Pan_troglodytes       SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 377
Macaca_mulatta        SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 377
Callithrix_jacchus    SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 377
Heterocephalus_glaber SNLEETLNTLRYADRARKIKNKPVNFDPAELNHLKQOVQELQVLLLAHGGTLPVSI 378
Canis_lupus_familiaris SNLEETLNTLRYADRARKIKNKPVNIDPAELNHLKQOVQELQVLLLAHGGTLPVSI 378
Felis_catus           SNLEETLNTLRYADRARKIKNKPVNIDPAELNHLKQOVQELQVLLLAHGGTLPVSI 378
Equus_caballus        SNLEETLNTLRYADRARKIKNKPIVNVDPAAELNHLKQOVQELQVLLLAHGGTLPVSI 378
Bos_taurus            SNLEETLNTLRYADRARKIKNKPVNIDPAELNHLKQOVQELQVLLLAHGGTLPVSI 378
Anolis_carolinensis   SNLEETLNTLRYADRARKIKNKPIVNVDPAAEELNRLRTOVQELQVLLLAHGGTLPVSI 380
.....370.....380.....390.....400.....410.....420

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Xenopus_tropicalis      S-MEPSDNLSLLERNKLNLEENGKLSRELSEAAVQTAQFLEKIILTEQNEKLASKIEE 437
Rhinatrema_bivittatum  N-MEPSNLKSLMERNQSLLEENGKLIQELSETAGQTAQMLERIILTEQNEKLGGKMT 434
Pavo_muticus           N-MAPSENLSLMEKNQSLMEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 439
Pavo_cristatus        N-MAPSENLSLMEKNQSLMEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 439
Gallus_gallus         NSMAPSENLSLMEKNQSLMEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 439
Anas_platyrhynchos    NSMAPSENLSLMEKNQSLMEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 480
Chrysemys_picta_bellii N-MKPSENLSLMEKNQSLIEENEKLSRGLSEAAGQTAQMLERIILTEQNDKMNAKLE 438
Chelonia_mydas        N-MKPSENLSLMEKNQSLMEENEKLSRGLSEAAGQTAQMLERIILTEQNDKMNAKLE 438
Mus_musculus          N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Rattus_norvegicus     N-VKPSSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Homo_sapiens          T-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 436
Pan_troglodytes       T-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 436
Macaca_mulatta        N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 436
Callithrix_jacchus    N-MEPSNLKSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 436
Heterocephalus_glaber N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Canis_lupus_familiaris N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Felis_catus           N-VEPSENLSLMEKNQSLAEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Equus_caballus        N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAVGQTAQMLERIILTEQNEKMNAKLE 437
Bos_taurus            N-VEPSENLSLMEKNQSLVEENEKLSRGLSEAAGQTAQMLERIILTEQNEKMNAKLE 437
Anolis_carolinensis   G--EPSENLSLMEKNHSLTEENAKLSRSLSEAASQIAQVLESYIAAEQNEKINAKLE 438
.....430.....440.....450.....460.....470.....480

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Xenopus_tropicalis      LKQHAACKVDLQRLVETLEDQELKENVGVLIDLQOVIMQLQDESSG-IAASIEAMTEVVA 496
Rhinatrema_bivittatum  LQQAACKLDLQKLVTETLEDQELKENMEIICSLQOVIVQLQDESSA-ITPSIEALAAAE 493
Pavo_muticus           LQQHAVCKLDLQKLVTETVEDEELKEKVEVIRNLQOVLAQFQSES----AAAVEAATEMAN 495
Pavo_cristatus        LQQHAVCKLDLQKLVTETVEDEELKEKVEVIRNLQOVLAQFQSES----AAAVEAATEMAN 495
Gallus_gallus         LQQHAVCKLDLQKLVTETVEDEELKENVEVIRNLQOVLAQFQSES----AAAAEAATEMAN 495
Anas_platyrhynchos    LQ-HAVCKLDLQKLVTETVEDEELKENIEVICNLQOALVQLQSER----AATVEAVALMAS 535
Chrysemys_picta_bellii LRQHAACKLDLQKLVTETLEDQELKENIEVIRNLQOVIVQLQDESAACVAASVEAVALMAS 498
Chelonia_mydas        LRQHSACKLDLQKLVTETLEDQELKENIEVIRDLQOVIVQLQDESAAYVAVSVEAVALMAS 498
Mus_musculus          LRRHAACKVDLQKLVTETLEDQELKENIEIICNLQOVIAQLSDEAAACMTATIDTAGEADT 497
Rattus_norvegicus     LRQHAACKVDLQKLAETLEDQEVKENIEIICNLQOAIARLSDEAVACMTATIDTAGEVDT 497
Homo_sapiens          LRQHAACKLDLQKLVTETLEDQELKENVEIICNLQQLITQLSDETVACMAAATDITAVEQEA 496
Pan_troglodytes       LRQHAACKLDLQKLVTETLEDQELKENVEIICNLQQLITQLSDETVACMAAATDITAVEQEA 496
Macaca_mulatta        LRQHAACKLDLQKLVTETLEDQELKENVEIICNLQQLITQLSDETVACMAAATDITAVEQEA 496
Callithrix_jacchus    LRQHAACKLDLQKLVTETLEDQELKENVEIICNLQQLITQLSDETVACMAAATDITAVEQEA 496
Heterocephalus_glaber LRHHAVCKLDLQKLVTETLEDQELKENVEIIRNLQOVIIQLSDETVACMAAATDITIEPEA 497
Canis_lupus_familiaris LRQHAACKVDLQKLVTETLEDQELKENVEIIRNLQOVITQLSDETVACMAAATDITAVEPEA 497
Felis_catus           LRQHAACKVDLQKLVEALEDRELKENVETIRNLQOVITQLSDETVACMAAATDITAVEPEA 494
Equus_caballus        LRHHAAACKVDLQKLVTETLEDQELKENVEIIRNLQOVITQLSDETVACMAAATDITAVEPEA 497
Bos_taurus            LRKHAACKVDLQKLVTETLEDQELKENVEIIRNLQOVITQLSDETVACMAAATDITAVEPET 497
Anolis_carolinensis   LQQHPVTKLNLQKLLETLEDQELKQVQLFQQLQELITRLPNNAN-ADADMDTSDQDSS 497
.....490.....500.....510.....520.....530.....540

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF4B.fasta Date: Tue Feb 1 12:32:58 2022

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	.	.*	:	:.*	:::	*::**	*	**	*****	***	::.
Xenopus_tropicalis	S---	SPSETEPRDSGEKRSSDAFTTIDHALRQAQLSKELIELNKALLLKEALARKMAONDS	553								
Rhinatrema_bivittatum	NPFLEENQADTSHGSKRSS-GFTTOHALRQAOMSKELIELNKAIVLKEALAKKMTONNS	552									
Pavo_muticus	SEC-DATGAEETGVITKRSSDDFSTOHALRQAOMSKELVELNKALALKEALAKKMTONS	554									
Pavo_cristatus	SEQ-DATGAEETGVITKRSSDDFSTOHALRQAOMSKELVELNKALALKEALAKKMTONS	554									
Gallus_gallus	AEC-DAAGEAETGVITKRSSDDFSTOHALRQAOMSKELVELNKALALKEALAKKMIONDS	554									
Anas_platyrhynchos	SEC-DAMTKAETGQDVKRSSDDFSTOHALRQAOMSKELIELNVKLALKEALAKKMTONDN	594									
Chrysemys_picta_bellii	SEC-ESDSAETSQDKSRSPDAFTTOHALRQAEMSKALIELNKALALKEALAKKMTONDS	557									
Chelonia_mydas	SEC-ESDAQAETSQDKSRSPDAFTTOHALRQAEMSKALIELNKALALKEALAKKMTONDS	557									
Mus_musculus	QV-----QSSPDTRSSDVDFSTOHALRQAOMSKELIELNKALALKEALAKKMTONDN	549									
Rattus_norvegicus	QE-----QSPPDTRSSDVDFSTOHALRQAOMSKELIELNELALKEALAKKMTONDN	549									
Homo_sapiens	QV-----ETSPETSRRSSDAFTTOHALRQAOMSKELVELNKALALKEALARKMTONDS	548									
Pan_troglodytes	QV-----ETSPETRSSSDAFTTOHALRQAOMSKELVELNKALALKEALARKMTONDS	548									
Macaca_mulatta	QV-----ETSPENTRSDDTFSTOHALRQAOMSKELVELNKALALKEALARKITONDS	548									
Callithrix_jacchus	QV-----ETSPEMSRRSDIFTFOHALRQAOMSKELIELNKALALKEALAKKMTONDS	548									
Heterocephalus_glaber	QV-----ETSPETSRRSDIFFTOHALRQAOMSKELIELNKALALKEALAKKMTONDS	549									
Canis_lupus_familiaris	QV-----ETSPETSRRSSDAFTTOHALRQAOMSKELVELNKALALKEALARKMTONDS	549									
Felis_catus	QV-----ETSPETSRRSSDAFTTOHALRQAOMSKELVELNKALALKEALARKITONDN	546									
Equus caballus	QV-----ETSPETSRRSSDAFTTOHALRQAOMSKELVELNKALALKEALARKITONDS	549									
Bos_taurus	QE-----ADSPDSSRRSSDAFTTOHALRQAOMSKELVELNKALALKEALAKKMTONDN	549									
Anolis_carolinensis	AVS-----EADLEARSSDEYATOHALHQAOMSKELLELNKALALKEALKARISQND	550									
	.....550.....560.....570.....580.....590.....600										

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Xenopus_tropicalis	OLEPIQSEYLNNIKQLESEVGALQKEKEDLTALHSAKKDTNQAKLSERRRKRLQLEEG	613
Rhinatrema_bivittatum	OLEPIQTOYENNIKLNLESEVGALQKEKEDLTALHMAKKDVNQAKLSERRRKRLQELES	612
Pavo_muticus	OLEPIQSQYQSNIKDLELEVSNLQKEKEELILALSMAKKDVNQAKLSERRRKRLQLEEG	614
Pavo_cristatus	OLEPIQSQYQSNIKDLELEVSNLQKEKEELILALSMAKKDVNQAKLSERRRKRLQLEEG	614
Gallus_gallus	OLEPIQSQYQTNIKDLELEVSNLQKEKEELILALSMAKKDVNQAKLSERRRKRLQLEEG	614
Anas_platyrhynchos	OLEPIQSQYQTNIKDLELEVSNLQKEKEELILALQMAKKDVNQAKLSERRRKRLQLEEG	654
Chrysemys_picta_bellii	OLEPIQSQYQTNIKGLESEVSSLOKEKEELILALHTAKKDVNQAKLSERRRKRLQLEEG	617
Chelonia_mydas	OLEPIQSQYQTNIKGLELEVSSLOKEKEELILALHTAKKDVNQAKLSERRRKRLQLEEG	617
Mus_musculus	QLOPIQFOYQDNIKNLESEVLSLOREKEELVLELQTAKKDANQAKLSERRRKRLQLEEG	609
Rattus_norvegicus	QLOPIQFOYQDNIKNLELEVLSLOKEKEELVLELQTAKKDVNQAKLSERRRKRLQLEEG	609
Homo_sapiens	QLOPIQYQYQDNIKELELEVINLOKEKEELVLELQTAKKDANQAKLSERRRKRLQLEEG	608
Pan_troglodytes	QLOPIQYQYQDNIKELELEVINLOKEKEELVLELQTAKKDANQAKLSERRRKRLQLEEG	608
Macaca_mulatta	QLOPIQYQYQDNIKELELEVINLOKEKEELVLELQTAKKDVNQAKLSERRRKRLQLEEG	608
Callithrix_jacchus	QLOPIQFOYQDNIKGLELEVISLOKEKEELVLELQTAKKDFNQAKLSERRRKRLQLEEG	608
Heterocephalus_glaber	QLOPIQFOYQDNIKNLELEVLSLOKEKEELILELQTAKKDANQAKLSERRRKRLQLEEG	609
Canis_lupus_familiaris	QLOPIHFQYQDNIKNLELEVINLOKEKEELVFELQTTKKDVNQAKLSERRRKRLQLEEG	609
Felis_catus	QLOPIQFOYQDNIKNLELEVINLOKEKEELVLELQTTKKDVNQAKLSERRRKRLQLEEG	606
Equus_caballus	QLOPIQFOYQDNIKNLELEVINLOKEKEELVLELQTTKKDINQAKLSERRRKRLQLEEG	609
Bos_taurus	QLOPIHFQYQDNIKNLELEVINLOKEKEELVLELQTAKKDVNQAKLSERRRKRLQLEEG	609
Anolis_carolinensis	OLEPIQSQYQSNIKNLEEFVSKLOKEKEELTALHVSKKDANQAKLSERRRRLQDLEGE	610
	.....610.....620.....630.....640.....650.....660	

	: :***** :*:***:::* * ** ***:** : * *****:****::*:** ****:*	
Xenopus_tropicalis	MTELKKKLGEQSKLLKLRESTEKTVTKLNHEIQGMKVQRVQLMROMKEDAEKFRTWKOQK	673
Rhinatrema_bivittatum	MTDLKKKLHESRLIKLMRESTEHTVNKLNKEIQMMKTORVOLMROMKEEAEEKFRHWKOQK	672
Pavo_muticus	MNELKKKLNEQAKLLKLKESTERIVSKLNQEIREMKSORVOLMROMKEDAEKFROWKOQK	674
Pavo_cristatus	MSELKKKLNEQAKLLKLKESTERIVSKLNQEIREMKSORVOLMROMKEDAEKFROWKOQK	674
Gallus_gallus	INELKKKLNEQAKLLKLKESTERIVSKLNQEIREMKNORVOLMROMKEDAEKFROWKOQK	674
Anas_platyrhynchos	INELKKKLNEQSKLLKLKESTERIVSKLNQEIREMKTORVOLMROMKDDEAEKFROWKOQK	714
Chrysemys_picta_bellii	MNELKKKLNEQSKLLKLKESTERIVSKLNQEIREMKNORVOLMROMKEDAEKFROWKOQK	677
Chelonia_mydas	MNELKKKLNEQSKLLKLKESTERIVSKLNQEIREMKNORVOLMROMKEDAEKFROWKOQK	677
Mus_musculus	IADLKKKLQEQSKLLKLKESTEHTVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKOQK	669
Rattus_norvegicus	IAELKKKLHESQSKLLKLKETTELIVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKOQK	669
Homo_sapiens	IADLKKKLNEQSKLLKLKESTERIVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKQKK	668
Pan_troglodytes	IADLKKKLNEQSKLLKLKESTERIVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKQKK	668
Macaca_mulatta	IAELKKKLNEQSKLLKLKESTERIVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKQKK	668
Callithrix_jacchus	IADLKKKLNEQSKLLKLKESTEHTVSKLNQEIRMMKNORVOLMROMKEDAEKFROWKQKK	668
Heterocephalus_glaber	IADLKKKLNEQSKLLKLKESTEHTVTIKLNQEIRMMKNORVOLMROMKEDAEKFROWKOQK	669
Canis_lupus_familiaris	MADLKKKLNEQSKLLKLKESTEHTVSKLNQEIRVMKSORVOLMROMKEDAEKFROWKOQK	669
Felis_catus	IADLKKKLNEQSKLLKLKESTEHTVSKLNQEIRVMKNORVOLMROMKEDAEKFROWKOQK	666
Equus caballus	IADLKKKLHESQSKLLKLKESTEHTVSKLNQEIQVMKNORVOLMROMKEDAEKFROWKOQK	669
Bos_taurus	IADLKKKLNEQSKLLKLKESTEHTVSKLNQEIRVIKNORVOLMROMKEDAERFROWKOQK	669
Anolis_carolinensis	MTDLKKKLKDQSKLLKMKESEQTVRKLNQEIRTMKVQRVOLIROMKEDGEKFROWKOQK	670

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Xenopus_tropicalis	TKEVIQLKEKDRKROYELLKLERDFOKQANVLRRKTEEAATANKRLKEALLROKEAMEKR	733
Rhinatrema_bivittatum	DKEVMOLKEMDRKROYEMIKLERDFOKQANVLRRKTEEAGAA NKRLREALOKOKEAVDDR	732
Pavo_muticus	DKEVIQLKERDRKROYELLKLERDFOKQASVLRKKTEEAAAANKRLKDALKOREAADKR	734
Pavo_cristatus	DKEVIQLKERDKRROYELLKLERDFOKQASVLRRKTEEAAAA NKRLKDALKOREAADKR	734
Gallus_gallus	DKEVIQLKERDRKROYELLKLERDFOKQASVLRRKTEEAAAA NKRLKDALKOREAADKR	734
Anas_platyrhynchos	DKEVIQLKERDRKROYDLLKLERDFOKQANVLRRAEEAAAA NKRLKDALKOQEADKR	774
Chrysemys_picta_bellii	DKEVIQLKERDRKROYELLKLERDFKNQANILRRKTEEAAAA NKRLKDALKOREVVDR	737
Chelonia_mydas	DKEVIQLKERDRKROYELLKLERDFONCANILRRKTEEAAAA NKRLKDALKOREVVDR	737
Mus_musculus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOKEVAEKR	729
Rattus_norvegicus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOKEVAEKR	729
Homo_sapiens	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	728
Pan_troglodytes	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	728
Macaca_mulatta	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	728
Callithrix_jacchus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOQEVADR	728
Heterocephalus_glaber	DKEVIQLKERDRKROYELLMKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	729
Canis_lupus_familiaris	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOQEVADR	729
Felis_catus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	726
Equus caballus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	729
Bos_taurus	DKEVIQLKERDRKROYELLKLERNFOKQSNVLRRKTEEAAAA NKRLKDALKOREVADR	729
Anolis_carolinensis	DREVIQLKERDRKOYELVKMEODFOKAASVLRRAEEAATANKRLKIALOKOEASKR	730
	.....730.....740.....750.....760.....770.....780	

[illegible]

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Xenopus_tropicalis	GERIPTKMRRTTYTVAELNMEEES--SVTKQIESLETETEMELRSAQIADLOOKLLDADA	850	
Rhinatrema_bivittatum	GEPIPAKIRRTTYAVKELSNVDDI--STTKQIESLETETEMELRSAQIADLOOKLLDADNE	849	
Pavo_muticus	GENPPSKLRRRTYSITDL--QASELDLSLSKQIESLETETEMELRSAQIADLOOKLLDADNG	851	
Pavo_cristatus	GENPPSKLRRRTYSITDL--QASELDLSLSKQIESLETETEMELRSAQIADLOOKLLDADNG	851	
Gallus_gallus	GENPPSKLRRRTYSITDL--QASEMDLSLSKQIESLETETEMELRSAQIADLOOKLLDADNG	851	
Anas_platyrhynchos	GENPPPKLRRRTYSITDL--KASEADLSLSKQIESLETETEMELRNAQIADLOOKLLDADNG	891	
Chrysemys_picta_bellii	GETPPLKLRRRTYSVADV--QASEIDHSITKQIESLETETEMELRSAQIADLOOKLLDADNG	854	
Chelonia_mydas	GETPPPKLRRRTYSIADV--QASEIDHSITKQIESLETETEMALRSAQIADLOOKLLDADNG	854	
Mus_musculus	GENPPLKLRRRTFSYDEIHGQDSGAEDSIKQIESLETETELERSAQIADLOOKLLDAESE	848	
Rattus_norvegicus	GENPPPKLRRRTFSRDEVHGQDSGAEDSIKQIESLESELERSAQIADLOOKLLDAESE	848	
Homo_sapiens	GENPPPKLRRRTFSITEVRGQVSESEDSITKQIESLETETEMEFRSAQIADLOOKLLDAESE	847	
Pan_troglodytes	GENPPPKLRRRTFSLTEVRGQVSESEDSITKQIESLETETEMEFRSAQIADLOOKLLDAESE	847	
Macaca_mulatta	GENPPPKLRRRTFSLTEVRGQVSESEDSITKQIESLETETEMEFRSAQIADLOOKLLDAESE	847	
Callithrix_jacchus	GENPPPKLRRRTFSLTEVRGQVSESEDSITKQIESLETETEMEFRSAQIADLOOKLLDAESE	847	
Heterocephalus_glaber	GENPPPKLRRRTFSLAEMPGQVSESEDSITKQIESLETETEMELRSAQIADLOOKLLDAESE	848	
Canis_lupus_familiaris	GENPPPKLRRRTFSLAELRGQVSESEDSITKQIESLETETEMELRSAQIADLOOKLLDAESE	848	
Felis_catus	GENPPPKLRRRTFSLAELRGQVSESEDSITKNIESLETETEMELRSAQIADLOOKLLDAESE	845	
Equus_caballus	GENPPPKLRRRTFSLAELRGQVSESEDSITKQIESLETETEMELRSAQIADLOOKLLDAESE	849	
Bos_taurus	GENPPPKLRRRTFSLAELRGQVPAEDSIKKQIESLETETEMELRSAQIADLOOKLLDAESE	848	
Anolis_carolinensis	GENLPAKNKRRTFS----RNDADMNYSLANQIOSLETETEMELRSAQIADLOOKLLDADAG	844	
	.....850.....860.....870.....880.....890.....900		

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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[illegible]

	. : : * : * : : : : * : * : : : : * : * * * : : : : : : : * : *	
Xenopus_tropicalis	NQMAEMETEHCQSOLMLEQQHQEKI---LYLLSOLQOQKQAPVPVQVEEPPAEQMTEREKQ	967
Rhinatrema_bivittatum	SQMAELETEHCQCLMQIEQQHEEKI---LFLLSOLKQQQS---VSTEEQICKERQTEQEKQ	963
Pavo_muticus	NHATEMEAEFQNLILLQEQQHQEKV---LYLLSQFOQKEAA-----EKRLDSVNEQEKQ	962
Pavo_cristatus	NHATEMEAEFQNLILLQEQQHQEKV---LYLLSQFOQKEAA-----EKRLDSVNEQEKQ	962
Gallus_gallus	NHATEMEAEFQNLILLQEQQHQEV---LYLLSQFOQKEAP-----GKGVEDSLSEQEKQ	962
Anas_platyrhynchos	NYITEMEAEFQNLVLVREQQHQEKVKEVLYLLSOLQOQKEAV-----EKRLDSVNEKEKQ	1005
Chrysemys_picta_bellii	NQVADIEAELQSOLVMQEQQHQEKV---LYLLSOLQOQKEAA-----EKKLDSLTEHEQQ	965
Chelonia_mydas	NQVAIEAELQSLVTQEQQHQEKV---LYLLSOLQOQKEAA-----EKKLDSLTEHEQQ	965
Mus_musculus	NHFAKIETELKEELVKVEQQHQEKV---LYLLSOLQOQSMT-----EKQLEESVSEKEQQ	959
Rattus_norvegicus	NHFAKIETELKEELVRVEQQHQEKV---LYLLSOLQOQCVI-----EKQLEESVSEKEQQ	959
Homo_sapiens	NHFAEIETELQAEVLRMEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	958
Pan_troglodytes	NHFAEIETELQAEVLRMEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	958
Macaca_mulatta	NHFAEIETELQAEVLRMEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	958
Callithrix_jacchus	NHFAEIETELQAEVLRMEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	958
Heterocephalus_glaber	NHFAEIETELQAEVLRVEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSGKEQQ	959
Canis_lupus_familiaris	NHFAEIETELQAEVLRVEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVNEKEQQ	959
Felis_catus	NHFAEIETELQAEVLRVEQQHQEKV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	956
Equus_caballus	NHFAEIETELQAEVLRVEQQHQEKV---LYLLSOLQOQSOMA-----EKILLEESVSEKEQQ	960
Bos_taurus	NHFAIEIAELQAEVLRMEQQHQERV---LYLLSOLQOQSOMA-----EKQLEESVSEKEQQ	959
Anolis_carolinensis	KVATEMEAYESOLVKMEQHQEKV---LYLLSQINHKET-----EKRLDISISEPEKQ	955
	.....970.....980.....990.....1000.....1010.....1020	

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Xenopus_tropicalis	LMERLRFC-DEEIEKMKELCEKNOQLLOENDMYKQKLALLHVASGKKLHNILPTAVLNSP	1026
Rhinatrema_bivittatum	VLERLKFQ-DEEIEKMKELCEKNOQLHLEENELLKQKLALLQVANGKKLCSTIMNETASQSP	1022
Pavo_muticus	MQERLKFQ-EEEELEKMRICEKNOQLLOENDILKQKLLLVQVASGOKLLRAQQETP-ESP	1020
Pavo_cristatus	MQERLKFQ-EEEELEKMRICEKNOQLLOENDILKQKLLLVQVASGOKLLRAQQETP-ESP	1020
Gallus_gallus	MQERLKFQ-EKELEKMRICEKNOQLLOENDVLKQKMLLVQVASGOKLRRDQGVSP-ESP	1020
Anas_platyrhynchos	LQEQLKCO-E---EKLEKISEKNOQLLOENDTLKQKLLLLQLASGQKFHRTQQESP-ESP	1060
Chrysemys_picta_bellii	LLERLKFQ-DEELEKMRLECEKNOQLLOENESLQKKLILHQIASGQKLRHIQQMPT-QSP	1023
Chelonia_mydas	LLERLKFQ-DEELEKMRLECEKNOQLLOENESLQKKLILHQIASGQKLRHIQQMPT-QSP	1023
Mus_musculus	LLSTLKCO-EEELRKMQEVCEQNOQLLOENSAIKQKLTLLOVASQKP-HLTRNIF-QSP	1016
Rattus_norvegicus	LLSTLKCO-EEELRKMQEVCEQNOQLLOENSAIKQKLNLLOVVSKEKP-HLVRNII-QSP	1016
Homo_sapiens	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROK--HLPKDTL-LSP	1014
Pan_troglodytes	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROK--HLPKDTL-LSP	1014
Macaca_mulatta	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROK--HLPKDTL-LSP	1014
Callithrix_jacchus	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROK--PLPKDAL-LSP	1014
Heterocephalus_glaber	LLSTLKCO-DEELKMQEVCEQNOQLLRENEI IKQKLTLLQVASROKP-HIPKDIIL-LSP	1016
Canis_lupus_familiaris	LLSTLKCO-DEELEKMRVCEQNOQLLOENEI IKQKLTLLQVASROKP-HLPKDTL-LSP	1016
Felis_catus	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROKP-HLPKDTL-LSP	1013
Equus_caballus	LLSTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROKP-HLPKDTL-LSP	1017
Bos_taurus	LLNTLKCO-DEELEKMRVCEQNOQLLRENEI IKQKLTLLQVASROK--HLPKDTL-LSP	1017
Anolis_carolinensis	LLKQLOFO-NQELSRMREVFKEKQALSEELDVAQKLLLLQVASGOKIRSMHPALA-DEP	1013



# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Xenopus_tropicalis  DSPFDVPPKPKRGRRTNAKAA---AVILEDLLSESE-SEGES-----DDKN 1069
Rhinatrema_bivittatum DSPFDYIPPKPRNCRRRTAKAAGLTTPRMKLEELISESEESQNEE-----EDVE 1070
Pavo_muticus        DSPFEYIPPKPKTRRQTVAKPRAPIPEMSVEELFSDSGESGEE-----EDAE 1067
Pavo_cristatus      DSPFEYIPPKPKTRRQTVAKPRAPIPEMSVEELFSDSGESGEE-----EDAE 1067
Gallus_gallus       DSPFDYIPPKPKTRRQTVAKPRAPTPEMNVEELFSDSEESGEE-----EDAE 1067
Anas_platyrhynchos  DSSFDYIPPKPKTRRQTVTKPRAPTPEMDVEELFSDSAESGEEK-----EDAE 1108
Chrysemys_picta_bellii DSPFDYIPPKPKTRRQTVAKPRAPTPEMDVQELFSESEESGGEM-----EDAE 1071
Chelonia_mydas      DSPFDYVPPKPKTRRQTTAKPRAQTPEMDVQELFSESGESGGEM-----EDAE 1071
Mus_musculus        DSSFEYIPPKPKPCR---IKEKCLEQSFAVEGLQYYSEPSVAEQDNEDSD---DHADDEE 1069
Rattus_norvegicus   DSSFEYIPPKPKPFR---IKEKCPKSFALIEDLQYYSETSVAEENEDSD---DHADDEE 1069
Homo_sapiens        DSSFEYVPPKPKPSR---VKEKFLEQSMIEDLKCYSEHSVNEHEDGDGD---DDEGDDEE 1069
Pan_troglodytes     DSSFEYVPPKPKPSR---VKEKFLEQSMIEDLKCYSEHSVNEHEDGDGD---DDEGDDEE 1069
Macaca_mulatta      DSSFEYVPPKPKPSR---VKEKFLEQSMIEDLKCYSEHSVNEHEDGDGD---DDEGDDEE 1071
Callithrix_jacchus  DSSFEYIPPKPKPSR---LKEKFLEQSMIEDLKCYSEHSVNEPEDGDGD---GDEGDDEE 1069
Heterocephalus_glaber DSSFEYIPPKPKPSR---VKEKFLEQSMIEDLKYYSEHSVNEQEDDDGY---GDDGDDEE 1071
Canis_lupus_familiaris DSSFEYIPPKPKPSR---FKEKFLEQSMIEDLKYYSEHSVNEPDDSGD---DDDGADEE 1071
Felis_catus         DSSFEYIPPKPKPSR---FKEKFLEQSMIEDLKYYSEHSVNEPEDSAGD---DDGDDEE 1068
Equus_caballus      DSSFEYIPPKPKPSR---FKAKEFLEQSMIEDLKCYSEHSVNEPEDGDGD---GDDGDDEE 1072
Bos_taurus          DSSFEYIPPKPKPSR---FKEKFLEQSMIEDLKCYSEYVNEPEDNDD---DGDGNDEE 1072
Anolis_carolinensis DSPFDVPPKPKPRR---RTTARSTFAMPEEDSTSDSEDLGGDT-----EDDE 1058
.....1090.....1100.....1110.....1120.....1130.....1140

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Xenopus_tropicalis  WEPGNNKQSKKLPSCGSCCKARCGNKMCGCRKTKQNCSDDCFCDPSKCRNRDN-SMDEGN 1128
Rhinatrema_bivittatum WVPVRTSKGAKKIIVG-CSCKGRCKANKLGCGRKQKMGCSSEDCNCDPAKCRNRDN-VMDTIS 1128
Pavo_muticus        WVPKGAVRGTKRSVSGCFCKGRCGNRQCGCRKQKLGCTAGCSCDSTKCRNRDPGCQDATV 1127
Pavo_cristatus      WVPKGAVRGTKRSVSGCFCKGRCGNRQCGCRKQKLGCTAGCSCDSTKCRNRDPGCQDATV 1127
Gallus_gallus       WVPVKAAGTKKATGCFCKGRCGNRQCGCRKQKVGCTAGCSCDSTKCRNRDPGFQDATV 1127
Anas_platyrhynchos  WVPKAVKGGKSSMMGCCCKGRCGNKQCGCRKQKVGCTGGCNCDPSTKCRNRDPSFPNATV 1168
Chrysemys_picta_bellii WVPKAAKGSKKSLSGCSCKGRCGNRQCGCRKQKLGCTAGCNCDATKCRNRDSSLDDGPM 1131
Chelonia_mydas      WVPKAAKGSKKSLSGCSCKGRCGNRQCGCRKQKLGCTAGCNCDATKCRNRDSSLDDGPM 1131
Mus_musculus        WIPTKLKVKVSKKSIQGCSCKGWCGNKQCGCRKQKSDCNVSCSDPTKCRNRHQ-NQDNDS 1128
Rattus_norvegicus   WIPTKLKVKVSKKNIQGCSCKGWCGNKQCGCRKQKSDCNGACSDPTKCRNRHH-SQDNDS 1128
Homo_sapiens        WKPTKLKVKVSRKNIQGCSCKGWCGNKQCGCRKQKSDCGVDCDDPTKCRNRQK-GKDSL 1128
Pan_troglodytes     WKPTKLKVKVSRKNIQGCSCKGWCGNKQCGCRKQKSDCGVDCDDPTKCRNRQK-GKDSL 1128
Macaca_mulatta      WKPTKLKVKVSRKNIQGCSCKGWCGNKQCGCRKQKSDCGVDCDDPTKCRNRQK-GKDSL 1130
Callithrix_jacchus  WKPTKLKVKVTRKNIQGCSCKGWCGNKQCGCRKQKSDCGVDCSDPAKCRNRQK-DKDSL 1128
Heterocephalus_glaber WKPSKLIKVRKNIQGCSCKGWCGNKQCGCRKQKSDCGMACSDPTKCRNRQK-GQDSL 1130
Canis_lupus_familiaris WKPTKLKVKVSKKNIQGCSCKGWCGNKQCGCRKQKSDCGMDCSDPTKCRNRQK-DKDSL 1130
Felis_catus         WKPTKLKVKVSKKNIQGCSCKGWCGNKQCGCRKQKSDCGTDCSDPTKCRNRQK-DKDSL 1127
Equus_caballus      WKPTKLKVKVSKKNSQGCSCKGWCGNKQCGCRKQKLDGMDSCDLTKCRNRQK-GKDSL 1131
Bos_taurus          WKPTKLKVKVSKKNIQGCSCKGWCGNKQCGCRKQKLDGADCSCDATKCRNRQK-DKDSL 1131
Anolis_carolinensis WVP---AKLAKKTALGCCCKGRCRNRKCGCRKQKVTCSSEDCRCEAECECRNRDNFILEGTL 1115
.....1150.....1160.....1170.....1180.....1190.....1200

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. : : . : : : : * : * *      * * : :
Xenopus_tropicalis  ADDQSHSESENSIKIDYPGDVTAGGSFFTPPCVPTTKKVLREISDIGOVLS-IKLQRKPS- 1186
Rhinatrema_bivittatum SEDHSQELNSLKLQDPTFVATGDSFFTPPCVSLPTTKVLRREISDIGOMGSTLKLQKKNP 1188
Pavo_muticus        CEDQTKDSEGSFKLEDLPDMTAGETFFQPVFIPPTVKVLKDITEQD-VLMKKPSTAAALL 1186
Pavo_cristatus      CEDQTKDSEGSFKLEDLPDMTAGETFFQPVFIPPTVKVLKDITEQD-VLMKKPSTAAALL 1186
Gallus_gallus       CEDQTKDSEGSFKLEDLRDVTAGETFFQPVFIPPTVKVLKDITEQD-VFMKKPSTAAALL 1186
Anas_platyrhynchos  CEDQTRDSEGSFKLEDPTFVTPGETFFQPVCIPTAKVLKDITEQD-MFLKKPSTAAPVL 1227
Chrysemys_picta_bellii SENQTRDSEGSFKLEDPTFVTPGETFFQPVCIPTAKVLKDITEQD-VFVKKANTAALLI 1190
Chelonia_mydas      SEDQTRDSEGSFKLEDPTFVTPGETFFQPVCIPTAKVLKDITEQD-VFVKKANTAALLI 1190
Mus_musculus        AIELNQDSSENSFKLEDPTFVTSGLSFFHPICATPSSKILKEMCDADQVQLKQPV-FVSSS 1187
Rattus_norvegicus   VIELNQDSSENSFKLEDPTFVTSGLSFFNPVCTTPSSKILKEMCDADQVLLRQPD-FASSS 1187
Homo_sapiens        TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLSKKTTPAPSPF 1188
Pan_troglodytes     TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLSKKTTPAPSPF 1188
Macaca_mulatta      TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLSKKTTPAPSLF 1190
Callithrix_jacchus  TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLSKKTTPAPSPF 1188
Heterocephalus_glaber TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMHEVEQGLSKKTAPALSSF 1190
Canis_lupus_familiaris TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLLKKTTPAASSF 1190
Felis_catus         TVEPTQDSEGSFKLEDPTFVTSGLSFFNPVCATPNSKILKEMCDVEQVLLKKTTPAASSL 1187
Equus_caballus      TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMCDVEQVLLKKTTPATSSL 1191
Bos_taurus          TVERTQDSEGSFKLEDPTFVTPGLSFFNPVCATPNSKILKEMSDVEQVLLKKTAPASSL 1191
Anolis_carolinensis MEGPTGDAKD---LEDPTLVAAGDTFFAPPEVTPNRKALEETPEEPPKESEANGTSVFHY 1172
.....1210.....1220.....1230.....1240.....1250.....1260

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/KIF4B.fas Tue Feb 1 12:32:58 2022

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Xenopus_tropicalis      -TVPASVSIMEESQENQTSILKKKKKALCNSNTSFFSGCSPITEDE- 1231
Rhinatrema_bivittatum  NRLFTGVSESEAEQENQIS-ILKKKKR--ILGNNTSFFFGLHAEED-- 1230
Pavo_muticus            VRDE-----ESQENQLPFVKKKKR--LLSNTSFFSGCTPIKEEI- 1224
Pavo_cristatus          VRDE-----ESQENQLPFVKKKKR--LLSNTSFFSGCTPIKEEI- 1224
Gallus_gallus           VRDE-----ESQENQLPFVKKKKR--MLSNTSFFSGCTPIKEEID 1225
Anas_platyrhynchos      DMDE-----ESQENQLPFVKKKKR--MLISNTSFFSGCTPIKEEAD 1266
Chrysemys_picta_bellii  NGDV-----ESQENQLPLVKKKKR--MLSNTSFFSGCTPIKEEDN 1229
Chelonia_mydas          NGDV-----EFQENQLPLVKKKKR--MLSNTSFFSGCTPIKEEDN 1229
Mus_musculus            DHPELKSIASESQENKAI-GKKKKR--ALASNTSFFSGCSPIQEESH 1231
Rattus_norvegicus       DHLELKPIASETQENKAM-GKKKKR--ALASNTSFFSGCSPIQEESH 1231
Homo_sapiens            DLPELKHVATEYQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1232
Pan_troglodytes         DLPELKHVATEYQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1232
Macaca_mulatta          DLPELKHVATEYQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1234
Callithrix_jacchus      DLPELKHVATEYQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1232
Heterocephalus_glaber   DLPESKHIATESQENKAP-GKKRKR--ALASNTSFFSGCSPIEEEAH 1234
Canis_lupus_familiaris  GLLELKHVATESQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAY 1234
Felis_catus             GLPESEKHVAE-SQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1230
Equus_caballus          GLPESIHVATESQENKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1235
Bos_taurus              GLSESKDVATETQGNKAP-GKKKKR--ALASNTSFFSGCSPIEEEAH 1235
Anolis_carolinensis     PSDLN-----AGGNPVPLVKKRKRTR-ALSSTRWFSGCTPIKEGF- 1211
.....1270.....1280.....1290.....1300.....

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