

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

**File: /media/morpheus/disk1/fst/pep\_msa/MXDA5p1 Tue Feb 1 14:06:02 2022**

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Species	Sequence	Position
Homo_sapiens	-----	
Macaca_mulatta	-----MLSAHRSRVRL	12
Callithrix_jacchus	-----MIRAHRSRVRL	12
Canis_lupus_familiaris	-----	
Equus_caballus	-----MPAGRCRLLPAHGFRDIARENSIPPGAARILLLLSSPNERNRLHRC	46
Bos_taurus	-----MLWAHRSGG SRL	12
Pavo_muticus	MTSPKAASRRAAAGCDVPRRAAAGGPAGSPLGAGPPLRSAPQPARSAPGAWERRAAPAES	60
Pavo_cristatus	MTSPKAASRRAAAGCDVPRRAAAGGPAGSPLGAGPPLRSAPQPARSAPGAWERRAAPAES	60
Gallus_gallus	MTSPKAASRRAAAGCDVPRRAAAGGLAGSPLSAGPPLRSAPPPVRSAPGAWERRAAPAES	60
Chelonia_mydas	-----	
Rhinatrema_bivittatum	-----	
Xenopus_tropicalis	-----MS	2
Danio_rerio	-----	
	1.....10.....20.....30.....40.....50.....60	

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Homo_sapiens	-----MP-KRAHWGALSVVLILLWGHPRVALACPHPCACYVPS	EVHCTFR	44					
Macaca_mulatta	LKDRYP--RIRHPDKMP-KRAHWGALSVVLILLWGHPRMALACPHPCACYVPSE	EVHCTFR	69					
Callithrix_jacchus	PKDRYP-RIRHPDKMP-TRAHWGALSVVLILLWDHPGAALACPHPCACYVPSE	EVHCTFR	69					
Canis_lupus_familiaris	-----MRHPDKMP-TRAHWRALSVVLILLWGHPRPALSCPHPCACYVPSE	EVHCTFR	50					
Equus_caballus	REERFVC SRMRHPDKMP-TRSHWRVLSVVLILVWGHPPAALACPHPCACYVPSE	EVHCTFR	105					
Bos_taurus	PTNRCAG--MAHPDEMPMTWARWRALSMVLILLWGRPHVALACPHPCACYVPSE	EVHCTFR	70					
Pavo_muticus	AALARRRSEARRADKMREAAVGALSVVLILALGLPPGALACPHPCACYVPT	EVHCTFR	119					
Pavo_cristatus	AALARRRSEARRADKMREAAVGALSVVLILALGLPPGALACPHPCACYVPT	EVHCTFR	119					
Gallus_gallus	AALARRRSEARRYEMRESAVGALSVVLILALGLPPGALACPHPCACYVPT	EVHCTFR	119					
Chelonia_mydas	-----MKTTDKMREKRANFGALSVVLIVSLGLPQIAFACPRPCACYVPT	EVHCTFR	50					
Rhinatrema_bivittatum	-----MKKSARIQERANLWALSVVLILSLGVPPITLACPHPCACYVPT	EVHCTFR	50					
Xenopus_tropicalis	CNYSCRYTGTOGKKKLISKMYNGIHLWLILAVIFVFPQNALS	CPHPCACYVNSEVHCTFR	61					
Danio_rerio	-----MGRFYAQIWIMLMLIAVPVAVOCCPRPCACHQPEVHCTFR	41						
	.....70.....80.....90.....100.....110.....120							

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Homo_sapiens	SLASVPAGIAKHVERINLGFNSIQALSETSFAGLTKLELLMIHGN EIPSIPDGALRDLSS	104
Macaca_mulatta	SLASVPAGIAKHVERINLGFNSIQALSETSFAGLTKLELLMIHGN EIPSIPDGALRDLSS	129
Callithrix_jacchus	SLASVPAGIAKHVERINLGFNSIQALSETSFAGLTKLELLMIHGN EIASIPNGALRDLSS	129
Canis_lupus_familiaris	SLASVPAGISKHVERINLGFNSIQALSETSFAGLTKLELLMIHGN DIPSIPDGALRDLSS	110
Equus_caballus	SLASVPAGISKHVERINLGFNSIQALSKTSFAGLTKLELLMIHGN NIPSIPDGALRDLSS	165
Bos_taurus	SLASVPAGISPHVERINLGFNSIQALSETSFITGLTKLELLMIHGN DIPSIPDGALRDLIS	130
Pavo_muticus	SLAAVPARISKHVERINFGFNSIQSIYENSFAGLTKLELLMIHGN DIQNI PN GALKD LVS	179
Pavo_cristatus	SLAAVPARISKHVERINFGFNSIQSIYENSFAGLTKLELLMIHGN DIQNI PN GALKD LVS	179
Gallus_gallus	SLAAVPARISKHVERINFGFNSIQSIYENSFAGLTKLELLMIHGN DIQNI PN GALKD LVS	179
Chelonia_mydas	SLAAVPARISKHVERINLGFNSIQSISENSFAGLTKLELLMIHGN DIQTI PN GALKD LMS	110
Rhinatrema_bivittatum	SLVAVPGRI PKHVERINLGFNSIRSIA DNSFSELTRLELLMMHGN DIHDIPNGAFRDLAS	110
Xenopus_tropicalis	SLAAVPSRI PKHVERINLGFNSIQSIGEDSFAGLSKLELLMIHSNDVRNVPNGAFRDLVS	121
Danio_rerio	SLLTVPAGVPKQVERMNLGFNTIHKITYSSFAGLRKMELLLMHGNVNHQIPDGTFRDLIS	101
	.....130.....140.....150.....160.....170.....180	

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Homo_sapiens	LQVFKFSYNKLRVITGQTLOGLSNLMRLHIDHNKIEFIHPQAFNGLTSLRLLHLEGNLLH	164
Macaca_mulatta	LQVFKFSYNKLRVITGQTLOGLSNLMRLHIDHNKIEFIHPQAFNGLTSLRLLHLEGNLLH	189
Callithrix_jacchus	LQVFKFSYNKLRVITGQTLOGLSNLMRLHVDHNKIEFIHPQAFNGLMSLRLLHLEGNLLQ	189
Canis_lupus_familiaris	LQVFKISYNKLRVITGQTLOGLWSLMRLHMDHNKIEFIHPQAFKGLTSLRLLHLEGNLLH	170
Equus_caballus	LQVFKFSYNKLRVITGQTLOGLWSLMRLHIDHNKIEFIHPQAFNGLTSLRLLHLEGNLLH	225
Bos_taurus	LQVFKFSYNKLRVITGETLOGLWNLVRLHMDHNQIEFIHPFAFRGLTSLRLLHLEGNLLR	190
Pavo_muticus	LQVFKISYNKLVITGQTLHGLSSLMRLHVDHNRIEFIHPPAFNGLTSLRLVHLEGNLLQ	239
Pavo_cristatus	LQVFKISYNKLVITGQTLHGLSSLMRLHVDHNRIEFIHPPAFNGLTSLRLVHLEGNLLQ	239
Gallus_gallus	LQVFKISYNKLVITGQTLHGLSSLMRLHVDHNRIEFIHPPAFNGLTSLRLVHLEGNLLQ	239
Chelonia_mydas	LQVFKISYNKLVITGQTLHGLSSLMRLHMDHNRIEFIHPPAFNGLTSLRLLHLEGNLLQ	170
Rhinatrema_bivittatum	LQVFKMSYNKLVITGQTFPGLSGLIRLHIDHNKVESIHPTAFNGLTSLRLLHLEGNLLQ	170
Xenopus_tropicalis	LQVFKMSYNKLVITGQTLHGLSGLIRLHIDHNQIEFIHPNFAFNGLMSLRLLHLEGNLLQ	181
Danio_rerio	LQMLKLSYNKLLSRLTLMGLWSLTRLHLDHNRLFIHPDAFQGLTNRLHLEGNQLQ	161
	.....190.....200.....210.....220.....230.....240	

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Homo_sapiens	QLHPSTFSTFTFLDYFRLSTIRHLYLAENMVRTLPASMLRNMPLEENLYLQGNPWTCDCE	224
Macaca_mulatta	QLHPSTFSTFTFLDDFRLSTIRHLYLAENMIRTLPASMLQNMPLLENLYLQGNPWTCDCE	249
Callithrix_jacchus	QLHPSTFSTFTFLDYFRLSTIRHLYLAENMIRTLPASMLQNMPLLENLYLQGNPWTCDCE	249
Canis_lupus_familiaris	QLHPGTFSTFTFLDYFRLSTIRHLYLADNMIRTLPTGMLQNMPLLENLYLHGNPWSCDCE	230
Equus_caballus	QLHPGTFSTFTFLDYFRLSTIRHLYLAENMIRTLPTGMLQNMPLLENLYLHGNPWSCDCE	285
Bos_taurus	QLHPATFSTFAFLDYFRLSTVRHLYLAENAI STLPTGMLQNMPLLENLYLHGNPWACDCD	250
Pavo_muticus	QLHPHTFSTFMVLNYFKLSTVRHLYLSENAISTLPAGMFQGMPLLENLYLHGNPWACDCS	299
Pavo_cristatus	QLHPHTFSTFMVLNYFKLSTVRHLYLSENAISTLPAGMFQGMPLLENLYLHGNPWACDCS	299
Gallus_gallus	QLHPHTFSTFTVLNYFKLSTVRHLYLSENAISMLPAGMFQGMPLLENLYLHGNPWACDCS	299
Chelonia_mydas	QLHPNTFSTFSFLDYFRLSTVKHLYLSENIIRTLPAGMFQGMPLLENLYLHGNPWSDCDS	230
Rhinatrema_bivittatum	QLHPNTFTTFVFLDYFRLSTLKHLYLSENVIKTLPAGMIRSMPLVLESYLYLHGNPWSDCDS	230
Xenopus_tropicalis	QLHANTFCTFNLGYFRQSTLKHLYLSENMIOQLPADMIKTMPLEENLYLHGNPWVCDCN	241
Danio_rerio	QLHPATFSTFSVLGHFPVSTLKHLYLSDNLTITLSQKMLASMPVLESLSLHGNPWTCDCE	221
	.....250.....260.....270.....280.....290.....300	
	: * : : * :*****: * .****. * :*: : .: : *.. * * *	
Homo_sapiens	MRWFLEWDAKSRGILKCKKDKAYEGGOLCAMCFSPKKLYKHEIHKLKDMTCLKPSIESPL	284
Macaca_mulatta	MRWFLEWDAKSRGILKCKKDKAYEGGOLCAMCFSPKKLYKHEIHKLKDMTCLKPSIESPL	309
Callithrix_jacchus	MRWFLEWDAKSRGILKCKKDKAYEGGOLCAMCFSPKKLYKHEIHKLKDMTCLKPSIESPL	309
Canis_lupus_familiaris	MKWFEWDAKSKGTLKCKKDKAYEGGOLCAMCSAPQLHKQEIHKLKDITCLKPSIESPL	290
Equus_caballus	MRWFLEWDAKSKGILKCKKDKAYEGGOLCAMCFSPKKMYKQEIHKLKDITCQKPSIESPL	345
Bos_taurus	MTWFLWDAKTKGVLCCKKDKAYEGGOLCSTCFSPKKWHGOELQKLRDVRCKQPSIESPL	310
Pavo_muticus	FQWLLDWNENSGGVLKCKKDKAYEGGOLCPRCHSPKQLQKEDIQNLKDSCRKPVIOSSL	359
Pavo_cristatus	FQWLLDWNENSGGVLKCKKDKAYEGGOLCPRCHSPKQLQKEDIQNLKDSCRKPVIOSSL	359
Gallus_gallus	LQWLLDWNENSGGVLKCKKDKAYEGGOLCPRCHSPKQLQKEDIQNLKDSCRKPIIOSSL	359
Chelonia_mydas	LKWLLDWNENSGGVLKCKKDKAYEGGOLCPCCTSPKQLQKEDIQNLKDSCRKPIIOSSL	290
Rhinatrema_bivittatum	MNWLLEENKQSEGVVKCKKDKAYEGGOLCPCCTSPKHLKQELQTLNDVSCTKPIIOSSP	290
Xenopus_tropicalis	IKWLLDWTQETDGIKCKKDRSYENGOLCPTCSPKHLQNRQISLKDAYSRRPVIYSAL	301
Danio_rerio	MRWFNEWNKNSQGVLCCKKDKAYPSGOLCPLCFSPKQLKKQLQLELEKPTCNSPIISIN	281
	.....310.....320.....330.....340.....350.....360	
	: * : : * :*****: * .****. * :*: : .: : *.. * * *	
Homo_sapiens	RQNRSSIEEEQEEDGGSOLILEKFOLPQWSISLNMDEHGNMVLNVCIDIKKPMDEVYK	344
Macaca_mulatta	RQNRSSIEEEQEEDGDSOLIMEKFOLSQWNVSLNMDEHGNMVLNVCIDIKKPMDEVYK	369
Callithrix_jacchus	RQNRSSIEEEQEEDGDTHLTLEKFOLPQWSISLNMDEHGNMVLNVCIDIKKPMDEVYK	369
Canis_lupus_familiaris	RQNRSSIEEEQEEDSEGQSLLEGFQFPWNISLNMDEHGNMVLNVCIDIKKPMDEVYK	350
Equus_caballus	RQNRSSIEEEQEEDSDSOLSLLEGFQFPWNISLNMDEHGNMVLNVCIDIKKPMDEVYK	403
Bos_taurus	RQNRSSIEDDQDEDEGADHPSPDGFQFPWNVSNMSDEHGNMVLNVCIDIKKPMDEVYK	370
Pavo_muticus	RHNS-----TQDEEDDESYLEPFAFOSSPWNITLNMDEHGNVHLNCEIKKPTGSTK	414
Pavo_cristatus	RHNS-----TQDEEDDESYLEPFAFOSSPWNITLNMDEHGNVHLNCEIKKPTGSTK	414
Gallus_gallus	RHNS-----TQDEEDGESYLEPFAFOSSPWNITLNMDEHGNVHLNCEIKKPTGSTK	414
Chelonia_mydas	KQNS-----IDEVEDRASYLEPFAFOSSPWNITLNMDEHGNVHLNCEIKKPTGSTK	345
Rhinatrema_bivittatum	RQNS-----STOMEDESEHPEKAFQMLKGVSLNMDEHGNMVLNVCIDIKKPMDEVYK	344
Xenopus_tropicalis	RDNS-----YAYTEENGNDPPAESYHNLGKVLNMDEHGNMVLNVCIDIKKPMDEVYK	357
Danio_rerio	RAISS-----EDTESDLLTMDEFROPLGNISLGLSDEHGHQVDLECLVIEPRELTS	332
	.....370.....380.....390.....400.....410.....420	
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Homo_sapiens	IHLNQTDPPDIDINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	404
Macaca_mulatta	IHLNQTDPPDIDINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	429
Callithrix_jacchus	IHLNQTDPPDIDINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	429
Canis_lupus_familiaris	IHLNQTDPPDIDINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	410
Equus_caballus	IHLNQTDPPDIEINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	463
Bos_taurus	LHLNQTDPPDIEINATVALDFECPMTRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	430
Pavo_muticus	VQWNQIQTDIEIDINATISLDFECPMRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	474
Pavo_cristatus	VQWNQIQTDIEIDINATISLDFECPMRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	474
Gallus_gallus	IQWNQIQTDIEIDINATISLDFECPMRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	474
Chelonia_mydas	IQWNQIQTDIEIDINATISLDFECPMRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	405
Rhinatrema_bivittatum	VQWNQIHPEDIDVNTATLALDFECPMSRDNYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	404
Xenopus_tropicalis	ITWNQHPPEIDINATISLDFECPMRENYEKLWKLIAYYSEVPVKLHRELMLSKDPRVS	417
Danio_rerio	IGWDYVNQYQISVNLTLTLDLICGIDRSSYERLWRLIAYYSDVPAHLRREIMLSKDPYLS	392
	.....430.....440.....450.....460.....470.....480	

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Homo_sapiens      YQYRQDADEE-ALYYTGVRAQILAEPWVMQPSIDIQLNRRQSTAKKVLLSYYTQYSQTI 463
Macaca_mulatta    YQYRQNADEE-ALYYTGVRAQILAEPWVMQPSIDIQLNRRQSTAKKVLLSYYTQYSQTI 488
Callithrix_jacchus YQYRQDADEE-ALYYTGVRAQVIAEPWVMQPSIDIQLNRRQSTAKKVLLSYYTQYSQTI 488
Canis_lupus_familiaris YQYRQDADED-ALYYTGVRAHVLAEPWVMQPSIDIQLNRRQSTAKKVLLSYYSHSLTM 469
Equus_caballus    YQYRQDADDD-ALYYTGVRAHILAEPWVMQPSIDIQLNRRQSTAKKVFLSYSSHYSLTM 522
Bos_taurus        YQYRQDADDD-ALYYTGVRAHVLAEPWVTQPSIELQLNRRLLSAKLVLVLSYSSRHALVM 490
Pavo_muticus      YRYKQGSDDYD-ALYYTGVKAQILAEPWVMQPLINIQLNRRQSTGKKVVLSTFTAFSQAI 533
Pavo_cristatus    YRYKQGSDDYD-ALYYTGVKAQILAEPWVMQPLINIQLNRRQSTGKKVVLSTFTAFSQAI 533
Gallus_gallus     YRYKQGSDDYD-ALYYTGVKAQILAEPWVMQPLINIQLNRRQSTGKKVVLSTFTAFSQAI 533
Chelonia_mydas    YEYRQDSDDD-ALYYTGVKAQIIAEPWVMQPLINIQLNRHQSTGKKVVLSTFTKFSQII 464
Rhinatrema_bivittatum YQYKQDLNHD-AYYYTGVTQAQILAEPWVMQPLITIRLNRRQSTAKQVALSFLTQFSQII 463
Xenopus_tropicalis YRYRONVDHD-SYYTGVKALISDPSPWIMOTTVNIQLNRKMTAKKVLTSTQFAESI 476
Danio_rerio       YRYRQDIERD-ALYFTGVKANIANPPWLMQSSMDLQLNRLQSTSKNVRLILSTYMTDVM 451
.....490.....500.....510.....520.....530.....540

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Homo_sapiens      STKDTROARGRSWVMIEPSGAVQORDQTVLEGGPCQLSCNVKASESPSIFWVLPDGSILKA 523
Macaca_mulatta    SPKDTROARGRSWVMIEPSGAVQORDQTVLEGGPCQLSCNVKASESPSIFWVLPDGSILKA 548
Callithrix_jacchus STKETROARGRSWVMIEPSGAVQRAQIVLEGGPCQLSCNVKASESPSIFWVLPDGSILKA 548
Canis_lupus_familiaris PAKEAAQSRSRSWVMIEPSRAVQRAQTVLEGGPCQLSCNVKASESPSIFWVLPDGSVLKA 529
Equus_caballus    AAKDARQSRSRSWVMIEPSGAVQRAQTVLEGGPCQLSCNVKASESPSIFWVLPDGSVLKA 582
Bos_taurus        SAKDARLSPSRSWVMIEPGRVQRAQTVLEGGPCQLSCNVKASESPSISWVLPDGSVVKKA 550
Pavo_muticus      HTKDTROQR--SWVMIEQNQSVRKAQSVVEGSECQLNCNVKASERPFQWLFPDGTKLQA 591
Pavo_cristatus    HTKDTROQR--SWVMIEQNQSVRKAQSVVEGSECQLNCNVKASERPFQWLFPDGTKLQA 591
Gallus_gallus     HTKDTROQR--SWVMIEQNQSVRKAQSVVEGSECQLNCNVKASERPFQWLFPDGTKLQA 591
Chelonia_mydas    QMKDIRQHRR-SWVMIEQNQSKTAQSVVEGSDCQLRCNVKASESPVIQWLFPDGSKLTA 523
Rhinatrema_bivittatum QTKDAVYHRN-SWVMIEQNEKIKVAQSVVEGQVQLSCNVKASESPSIEWVFPDGSKLQA 522
Xenopus_tropicalis HTKEIQYTQN-NWVLIEKNEKVKTSCTAVKGTLCQLNCHVKSSSTIPSEWSLPDGTILKA 535
Danio_rerio       ERETIRKQSQ-GWVLIESKNDTRTMQAAVVGSPTKINCTVHSSGNESVKWMLPDGSTIET 510
.....550.....560.....570.....580.....590.....600

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Homo_sapiens      PMDDPDSKFSILSSGWLRIKSMEPSDSGLYQCIAQVRDEMDRMVYRVLVQSPSTQPAEKD 583
Macaca_mulatta    PMDDPDSKFSILSSGWLRIKSMEPSDSGLYQCIAQVRDEMDRMVYRVLVQSPSTQPAEKD 608
Callithrix_jacchus PMDDSDSKFSILSSGWLRIKSMEPSDSGLYQCIAQVRDEMDRMVYRVLVQSPSTQPADGD 608
Canis_lupus_familiaris PLEDQDGRFSILTSGLWLIKSTEQSDSGLYQCIAQVRDEMDRMVYRVLVQPPATQPSDSH 589
Equus_caballus    PMEDQDSKFSILTSGLWLIKSTQDQSDSGLYQCIAQVRDEMDQMVYRVLVQPPATQPPDSH 642
Bos_taurus        PMEDRDGRFSVLTSGLWLIKSTQPSDAGLYQCIAQVRDETDRLMYRVLVQPPVIQPPDAY 610
Pavo_muticus      PFNQKDSRFSILTSGLQVLIKPVSYTDAGLYHCIAQVRDDVDVMAYRLLVQPPAVQVADSD 651
Pavo_cristatus    PFNQKDSRFSILTSGLQVLIKPVSYTDAGLYHCIAQVRDDVDVMAYRLLVQPPAVQVADSD 651
Gallus_gallus     PFNQKDSRFSILTSGLQVLIKPVSYTDAGLYHCIAQVRDDVDVMAYRLLVQPPAVQVADSD 651
Chelonia_mydas    PFNQKDSRFSILSSGQLMIKKADYTDGLYHCAQVRDDADRMVYRVLVQPPVIOPTDSD 583
Rhinatrema_bivittatum PYNPSRFSISASGQLVIRAAEHSDSGVYCIKVKHIDSVAFRVSVQPPVIOSSDGG 582
Xenopus_tropicalis PYNPSRFSVSPSGQLVIKEADFPDGLYCIARVKHEVDMQLFRVTQSSSDVAENH 595
Danio_rerio       PYRNSENRLSASSGGLLEIKSLDHSDSGVYCIQVSDDLTVFPFRLTVESSSPPPGGE 570
.....610.....620.....630.....640.....650.....660

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Homo_sapiens      --TVTIGKNPGESVTLPCNALAIPEAHLNWLIPNRRRIINDLANTSHVYMLPNTLSIPKV 641
Macaca_mulatta    --TVTIGKNPGEPVMLPCNALAIPEAHLNWLIPNRRRIINDLNTSHVYMLPNTLSIPKV 666
Callithrix_jacchus --MVTIGKNPGEMVTLPCNALAIPEAHFNLWLIPNRRRIINDLANTSHVYMLPNTLSIPKV 666
Canis_lupus_familiaris --TMTIQKNPGEPVMLPCNALAIPEAQLSWVLNRRRIINDLANTSHAYMLANGTLSIPKV 647
Equus_caballus    --TVTIQKNPGESVTLPCNALAIPEAHLNWLIPNRRRIINDLANTSHAYMLANGTLSIPKV 700
Bos_taurus        --TVTIQKNPGEPVTLPCQALAVPEAQISWILPNKRMLNMANASHAYVLADGTLIPKV 668
Pavo_muticus      --IVRVEKNVGDPIVLPSCSAIASPEAQLSWILPNSQLNVLNLSNKKGYVLNGLTLLIPKS 709
Pavo_cristatus    --IVRVEKNVGDPIVLPSCSAIASPEAQLSWILPNSQLNVLNLSNKKGYVLNGLTLLIPKS 709
Gallus_gallus     --IVRVEKNVGDPIVLPSCSAIASPEAQLSWILPSSQVLNVLNLSNKKGYVLNGLTLLIPKS 709
Chelonia_mydas    --VMRVEKNVGDPIVLPSCSAIAIPDAQLSWILPSSHVLNLSNKKAYVSHNGTLLIPKS 641
Rhinatrema_bivittatum --IQTIKKNSEGEPIVLPNCNIAVPDAQINWILPNHYLIDLXNTTREYLLNGLTLLVQNS 640
Xenopus_tropicalis --IHVLTRNVGDPIALACNVGNPDADVNWILPNNKIIDASVNTGLYLLNGLSLAITNA 653
Danio_rerio       GISEPVTRFAGEPFSLPAAATGSPDADIHWILPNSIVNKLNLISRSVASNGSLVQNS 630
.....670.....680.....690.....700.....710.....720

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Homo_sapiens	QVSDSGYYRCVAVNQOGADHFTVGIITVT	KKGSGLPSSKRG	---	RRPGAKALSRVREDIVE	697	
Macaca_mulatta	QVSDSGYYRCVAVNQOGADHFTVGIITVT	KKGSGSPSSKRG	---	RRPGAKALSRVREDIVE	722	
Callithrix_jacchus	QVSDSGYYTCVAVNQOGADHFVMTVITS	KKESGSSSKKG	---	RRPGAKALPRVREDIVE	722	
Canis_lupus_familiaris	QVSDGGFYRCVAVNQOGADHFTVGLITVN	KKGSGRSSSKKG	---	RRPGGKTLPRVPGDVVE	703	
Equus_caballus	QVSDSGHYRCVAVNQOGVDHFTVGVITVS	KKGSGRSSSKRG	---	RRPGGKARSRGRGDVVE	756	
Bos_taurus	QGSDSGYYRCVAVNQRGSDHFTVGVQVS	KKGSRGSPKRR	---	GRPGGRTLSGGRGGIVE	724	
Pavo_muticus	HISDSGHYRCVAVNQWGSQDQFTRVITVN	KMVSDRSFKRIKLKKRTRSKSSSKTRGRVID			768	
Pavo_cristatus	HISDSGHYRCVAVNQWGSQDQFTRVITVN	KMVSDRSFKRIKLKKRTRSKSSSKTRGRVID			768	
Gallus_gallus	HISDSGHYRCVAVNQWGSQDQFTRVITVN	KMVSDRSFKRIKLKKRTRSKSSSKTRGRVID			768	
Chelonia_mydas	RVSDSGYYRCVAVNQOGSDQFAVRISVN	KMLSDRSSKRIKMRKRPLGLKTS	SGKRRGGVIE		700	
Rhinatrema_bivittatum	QVSDSGHYRCVAVNQOGTDHFVVQVITVNNRKVIRKHSKKIKIKTRPVIKSPKIKIQDIVE				700	
Xenopus_tropicalis	KLSDSGLYRCIGINQHGTDHYSVQVEIN	RKVSEKPYQIIKTKKOPSFEVPTKPKYNVID			712	
Danio_rerio	QLSDNGYYKCVAGNQHGMDILATKLIIIS	RPPGILALRKYSSSPQPAEGVSTIKINILMTN			689	
	.....730.....740.....750.....760.....770.....780					

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Homo_sapiens	D	E	G	S	G	M	G	D	E	N	T	S	R	R	L	L	H	P	K	D	O	E	V	F	L	K	T	K	D	--	A	I	N	G	D	K	K	A	K	G	R	R	K	L	K	L	W	K	H	S	E	K	E	P	E	755
Macaca_mulatta	D	E	G	S	G	M	G	D	E	N	T	S	R	R	L	L	H	P	K	D	O	E	V	F	L	K	T	K	D	--	A	I	N	G	D	K	K	A	K	G	R	R	K	L	K	L	W	K	H	S	E	K	E	P	E	780
Callithrix_jacchus	D	E	G	S	G	M	G	D	E	N	T	A	R	K	L	L	R	P	K	D	O	E	M	F	L	K	R	K	D	--	P	I	N	G	D	K	K	A	K	G	R	R	K	L	K	L	W	K	H	S	E	K	E	P	E	780
Canis_lupus_familiaris	D	E	G	S	G	I	G	D	E	N	A	P	R	R	E	L	H	T	K	D	O	E	L	L	I	K	T	K	D	--	A	V	T	G	G	K	T	K	G	R	R	K	L	P	W	K	N	S	E	K	E	P	E	761		
Equus_caballus	D	E	G	S	G	M	G	D	E	N	T	S	R	T	V	L	H	P	K	D	O	E	M	I	K	T	K	D	--	A	T	T	G	G	K	T	K	G	R	R	K	L	K	L	W	K	N	S	E	K	E	P	E	814		
Bos_taurus	D	E	G	S	G	M	G	D	E	N	T	S	K	T	V	L	H	P	K	D	O	E	A	L	I	R	A	T	D	--	A	S	G	G	G	K	T	R	K	G	R	R	K	L	K	P	W	K	H	P	T	K	E	P	E	782
Pavo_muticus	D	E	G	S	G	T	G	G	D	E	F	P	R	R	K	N	H	L	K	D	R	E	I	S	F	K	Q	K	S	D	O	M	L	E	A	Q	I	K	G	K	G	R	R	K	M	I	W	K	G	T	D	R	T	Q	828	
Pavo_cristatus	D	E	G	S	G	T	G	G	D	E	F	P	R	R	K	N	H	L	K	D	R	E	I	S	F	K	Q	K	S	D	O	M	L	E	A	Q	I	K	G	K	G	R	R	K	M	I	W	K	G	T	D	R	T	Q	828	
Gallus_gallus	D	E	G	S	G	T	G	G	D	E	F	P	R	R	K	N	H	L	K	D	R	E	I	S	F	K	Q	K	S	D	O	M	L	E	A	Q	I	K	G	K	G	R	R	K	M	I	W	K	G	T	D	R	T	Q	828	
Chelonia_mydas	D	E	G	S	G	V	E	V	T	A	E	S	O	H	K	N	H	L	K	D	R	E	A	S	I	Q	K	N	D	L	M	P	E	V	Q	V	K	N	K	G	R	R	K	M	K	L	W	K	G	T	D	R	T	Q	760	
Rhinatrema_bivittatum	D	E	G	A	S	G	M	E	E	I	H	D	V	P	S	N	I	I	S	R	D	R	E	V	S	V	K	Q	R	H	D	L	S	G	T	K	G	K	N	R	K	D	R	R	M	K	A	L	K	D	L	O	G	S	Q	760
Xenopus_tropicalis	D	D	G	S	G	E	K	D	T	O	E	S	G	K	-	Y	N	V	K	N	G	A	R	P	V	K	I	G	S	A	S	T	K	V	R	V	K	O	N	R	K	D	R	R	K	M	P	W	K	G	T	E	R	S	K	771
Danio_rerio	D	M	E	S	G	D	N	E	P	E	D	F	L	A	K	A	K	V	E	I	P	N	R	R	I	P	N	---	M	G	I	R	G	G	H	P	S	R	N	S	W	R	H	A	S	T	P	R	R	V	G	745				
	.....	790	.....	800	.....	810	.....	820	.....	830	.....	840																																												

	::: : . .:****:. .:***:***.***:***. : .	
Homo_sapiens	TNVAEGRRVFESRRRINMANKQINPERWADILAKVRGKNLPKGTEVPPLIKTTSPPSLSL	815
Macaca_mulatta	TNVAEGRRVFESRRRINMANKQINPEHWADILAKVRGKNLPKGTEVPPVIKTTSLPSLSL	840
Callithrix_jacchus	TNVAEGRRGFESRRRINMANKQINPERWADILAKVRGKSLPKGTEVPQVIKTT-PSLNL	839
Canis_lupus_familiaris	TNIAEGRRVFESRRRINMANKQINPEHWADILARVRGKNLPKGTEIAQVVKTTTPPSVNP	821
Equus_caballus	TNIAEGRRVFESRRRINMASKQINPEHWADILARVRGKNLPKGTEVPRGVKTTTPPSVSP	874
Bos_taurus	TNVAEGRRVFESRRRVNVAKQINPERWADILARVRGKSLPKGTEGQVITVRAPSLMRQ	842
Pavo_muticus	SNIAEGRRAFESRRRINMASKQINPOHWADILAKVRGKNLPRTTITATAILLTTALPSDVQ	888
Pavo_cristatus	SNIAEGRRAFESRRRINMASKQINPOHWADILAKVRGKNLPRTTITATAILLTTALPSDVQ	888
Gallus_gallus	SNVAEGRRAFESRRRINMASKQINPOHWADILAKVRGKNLPRTTIVATAILLATTLPDPVQ	888
Chelonia_mydas	SNVAEGRRVFESRRRINMSNKQINPOHWADILAKVRGKNILKTTAAAGPSLMTTLPSFVQ	820
Rhinatrema_bivittatum	SNIAEGRRKFESRRRINTGNKQIDPOQWANILAKVRGQKVHKTIMEPLSLNTEIPVEHSE	820
Xenopus_tropicalis	SNIAEGRRKFESRRRINMGNKQIDPOQWANILAKVRGKNLQRTTEFPLATQATPTLSALRH	831
Danio_rerio	TQVIDRANTVDSRRRISMLKNQIDPKHWASILSKVRSGGNDKATPNYAQSTNKIQES	805
	.....850.....860.....870.....880.....890.....900	

Homo_sapiens	EVTPPFP-AISPPSASP-VQTVTSAEESSADVPLLGEEEHVLTISS-ASMGLEHNHNGV	872
Macaca_mulatta	EITPPLP-AVSPPSASP-VQTATSAEGSSADVPLLGEEKHVLTISS-ASMGLEHNHNGV	897
Callithrix_jacchus	EVTPLLA-AVSPPTS--VQTAAESAESSADVPLLGEEEHLSAISS-ASMGLEHNHNGV	895
Canis_lupus_familiaris	EVTPLLP-AVPPPSVSP-ARHTISVEETSADASLFGEDQGSSSTVSS-TRSGPESGHGGV	878
Equus_caballus	EETPLLP-VLPPPSIWP-VQTTTSAEESSADMILLGEEELVSSSTVSS-TEMPLEHGHDGV	931
Bos_taurus	EVTSPLP-AVAPGSVSP-VQITTSSSEESSGDMFVFGEERQASSAVSSPRTIPLQPGHDGV	900
Pavo_muticus	KTTPVPY-PVAIPLPS---ETTADVVDSSADASILGENEPFSVTVS-----HSSKA	935
Pavo_cristatus	KTTPVPY-PLAIPLPS---ETTADVVDSSADASILGENEPFSVTVS-----HSSKA	935
Gallus_gallus	KTTPVPH-TVAIPLHS---ETTADVVDSSADASTLSENPFVSVTVS-----HSSKA	935
Chelonia_mydas	KATTAPS-PMASPPQKPSLETAANGDESSADVSHLGEDKIFSVTISP-TVLAQDYSFDQT	878
Rhinatrema_bivittatum	RQKPRTTSPALTMPSLKPTAESQENVEESSANGPLGEDEVVVIALNSIITVDLDYNHVKI	880
Xenopus_tropicalis	KPTPPSSIAMPPPAK----ESEPYVEETSAD-----EEELLHITSSP--TIAAQGISDVTV	880
Danio_rerio	EQNTKQS-----EIVNKIEGSSSE-----FTTTRPP-----	831
	.....910.....920.....930.....940.....950.....960	

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/MXDApep Tue Feb 14:06:02 2022

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Homo_sapiens	ILVEPEVT--STPLEEVVD-DLSEKTEETSTEGDLKG-----TAAPTL	913
Macaca_mulatta	ILVEPEVT--STPLEEVVY-EFSEKTEETSTEGDLKW-----TAAPTL	938
Callithrix_jacchus	ILFERKVT--STPLEEVFD-EFSEKTEETSTNGDLKW-----IAAPTL	936
Canis_lupus_familiaris	ILAEPRVT--STHLEEFIDHDFS-KSEDTPTEAGPPW-----ATATTL	919
Equus_caballus	ILTEPKVT--SMHLEELTDDEFSEKIDDTFPIDIGSNW-----ATATTL	973
Bos_taurus	VHSEPRVT--GTRSEEFIDEDSSEKTVGATPTEVDSNQ-----TPATTL	942
Pavo_muticus	FSAWSTIR--GLETEHFYDQRLKTPASIHVSVEIPVS-----SPIFATVQPPQQHQ	985
Pavo_cristatus	FSAWSTIR--GLETEHFYDQRLKTPASIHVSVEIPVS-----SPIFATVQPPQQHQ	985
Gallus_gallus	FSAWSTIT--GRETEHFYDQRLKTPASVHSVEIPVS-----GPILATVQPPQQHQ	985
Chelonia_mydas	TSAQPTLM--STETEPSIELQSLGTPESIYTVEPSFVWSTYFTPISTPIYSHHSYDQQHV	936
Rhinatrema_bivittatum	SIEPNEIINKSNKMNESEDELELTPRELFTACTPFLWITS-----STPAPLISPNKHY	934
Xenopus_tropicalis	SPNDRIVTVISEETDNDETSLVSESCKTCKTESSTPNTD-----LTTIENSE	926
Danio_erio	-----	831
	.....970.....980.....990.....1000.....1010.....1020	

Homo_sapiens	ISEPYEPSPTLHTLTDVYEKPTHEETATEGWSA-----ADVGSSEPTTSSEYEP	962
Macaca_mulatta	ISEPYEPSPTLHTLTDVYEETHEETATEGWSA-----ADVGSSEPTTSSEYEP	987
Callithrix_jacchus	ISESYEPSPTLYTLTDVYEETQEDMATEGWST-----ADVGSSEPTTSSEYEP	985
Canis_lupus_familiaris	RATPLESSPTAQPLDMVYEEQAGESATEGWPA-----VDAGSMAEPTTSSEYEA	968
Equus_caballus	ISAPYESSPTPTLTDVYEETPTNENTATEGWST-----PDVGAMSEPTTSSEYEA	1022
Bos_taurus	ASVLYESS-TLQTLMEHKEPTEENVATDSWST-----LHVGSVPEATSPEDES	990
Pavo_muticus	DGRGDSSVVVKENTHAVTEEPLTKETVINYLNIQSSSFVRVVDATVSSKSEENSAFAEL	1045
Pavo_cristatus	DGRGDSSVVVKENTHAVTEEPLTKETVINYLNIQSSSFVRVVDATVSSKSEENSAFAEL	1045
Gallus_gallus	NGRADSSVVVKENIHAVTEEPLTEETVINYLNIQSSSFVVEHVDATVSSKSEENSAFAEL	1045
Chelonia_mydas	DVKTDYSPVAEESINAVTEEPLDEQTTT-LPNIQSSSLHTVENAATTLTYITESSTSDEL	995
Rhinatrema_bivittatum	SDGLDYSQMAKESAHSLSQESQSGEITTTMSVLYSVE--KEGTRETYAFETKTPVSNELQV	992
Xenopus_tropicalis	AEGFTYSTINEDENVILEGNEIHSSAPTYYIQTIEN-----EYIVDSVITDSYVVEQS	978
Danio_erio	-----VKDAIVSQMPDGATEF	847
	.....1030.....1040.....1050.....1060.....1070.....1080	

Homo_sapiens	PLDAVSLAESEPMQYFDPDLETKSQPDEDKMKEDTFAHLTPPTTWVNDSSSTQSFEDST	1022
Macaca_mulatta	PLDAVSLAESEPAQYFDPDLETNSTHEDNMKEYTFAHITPIPTTWVNDSSSTSKSFEDST	1047
Callithrix_jacchus	PLDITVSLAESEPTQFFDPLETNSTQPDDEKTKEDTFAYLTPPTTWVNDSSSTLQSFEDST	1045
Canis_lupus_familiaris	PLGAISLAESETVPYVQPDLEANPQDEENMKVETSTHFTPTTTLWGVDSTSTQPFSTRAT	1028
Equus_caballus	PLDATSLAESETVPYVQPDWETNSRPNEKMNELTSTHFTPTTMVWADSKTSEPFEDLI	1082
Bos_taurus	PMDAVPLAESETVTYFYFPLGTNSQPAEKTVEQASTRTPTPASWVAEARTSEPLEDPT	1050
Pavo_muticus	PLDASVLAESQT-VDLHSMETNERLSEVDQMSVDSIILTPSQLG--DIIPDTSVG--ST	1100
Pavo_cristatus	PLDASVLAESQT-VDLHSMETNERLSEVDQMSVDSIILTPSQLG--DIIPDTSVG--ST	1100
Gallus_gallus	PLDASVLAESQT-VDLHSLVLETERLNEMDQMSVDNIILAPSQLG--DIIPDTSVG--AT	1100
Chelonia_mydas	PVDATVLAEPQTAVNLPTTLETDQSHNEVDAGSINSTASQGDKISYLDLIATTTISSAS	1055
Rhinatrema_bivittatum	PSDATLLEGHHMAVDKHTESSHTIQPNKMYAQTTFNIPSQSDAKNVDFGIATNTTSIIS	1052
Xenopus_tropicalis	NEKTVFSEENNSEADLESSTIMEMLSVGTDDVKELSTASGITVAPLLPGVEKSTTIKSSDT	1038
Danio_erio	NLDIRALDYDNTRHVIYQIATPETVPNSDLFTDITQPTVGP-----	888
	.....1090.....1100.....1110.....1120.....1130.....1140	

Homo_sapiens	IGEPGVPGQS---HLQGLT--DNIHLVKSSLSTQDTLLIKGMKEM-SQLQGGNMLEG	1075
Macaca_mulatta	IGEQGVPGKS---HLQGPT--ENIQLVKSSLSTQDTLLIKGMKEM-SQLQGGDMLAG	1100
Callithrix_jacchus	VGEPGVPGQL---HLQGPTSIYNIQLAKSSLSTQDILLIKGMKEM-FQTPQRGDMPEG	1100
Canis_lupus_familiaris	LGEPDAPSRL---HPRGQT--DDTRLGKCALSTQDNPRVEKGPEDTSEKILGEEDMPER	1082
Equus_caballus	LEEPGVPTQV---PLQEQT--DNSQLVKGSLGTQGNLSLIKSTEN-FQIQWEGDMLER	1135
Bos_taurus	LGDPSIPVET---HLQEQT--DSPQLVETGLSTPGHPLTPEGMKET-SQLQEEGTLET	1103
Pavo_muticus	AISS-VTVKSNDFIHEHRDVATAQTKIADLSTTSLAVISIKVQSKEETETHRSTVTEEST	1159
Pavo_cristatus	AISS-VTVKSNDFIHEHRDVATAQTKIADLSTTSLAVISIKVQSKEETETHRSTVTEEST	1159
Gallus_gallus	AISSSVTVKSSDFIHEHRGVSTAQTKIADLSTTSHAVISIKVQSKEEETHRSTVTQESM	1160
Chelonia_mydas	PFKDSVTKESNVVKHQHREVPTDKTKITDIDLSTIFQVFTLVN--EEPQTNKDIDETQVRV	1113
Rhinatrema_bivittatum	LAENHVTTDN-SAIYQLPQVLTEETENENNANEYTSILVNGNIHEEHQAITEMDLIERKT	1111
Xenopus_tropicalis	YFPEEPSQPP---NAESDSSLTTENFILWKEDNDILPTINREIQSTPVTISNAISPT	1093
Danio_erio	-----QMTRFVVGDSG-ISKRVAMSTVWSTSYGTHLQEN	922
	.....1150.....1160.....1170.....1180.....1190.....1200	

# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/MX104.fst Date: Tue Feb 14:06:02 2022

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Homo_sapiens      DPTHSSRSSESEGGQESKSIITLPDSTLGIMSSMSPVKKPAETTVGTLDDKDT--TTATTTTPRO 1134
Macaca_mulatta    DPTHSSRSSESEGGQSKSIITLPDSTLGIMSSVSPVKKPAETTVGTLDDKDT--TTATTTTPRO 1159
Callithrix_jacchus DRTHSSRSVSGGKESKSNITLPNSTLGITSSMSPVKKPAETTVGALLDDKDT--TTAKT--PRO 1158
Canis_lupus_familiaris DPTDSRSPEGMGKRVESTTRLDSTPGVDG-ITLFTPSRGTTLGALLDRDAPAVATVMPAE 1141
Equus_caballus    DPTNSRSPESKRQGIETTLRDSTPGVIDSKALFKHPGETTLGSLFDKDTSTVAVMMPTQ 1195
Bos_taurus       HPTDSRSIKGNGQAVHLTTPLDSTLEVNSVTFDQHPRESMPGVVFGKDMITAPVTTTAPQ 1163
Pavo_muticus      SSTFIESFQGREQRNLSAPKTDPTFISPSSTNVPHKKTEETAASTS-KLTTAATTSTPYR 1218
Pavo_cristatus    SSTFIESFQGREQRNLSAPKTDPTFISPSSTNVPHKKTEETAASTS-KLTTAATTSTPYR 1218
Gallus_gallus     SSTYIESFOEREQRNLSASKTDPTFISPSSTNVPHKKTEVITAISTS-KLTTAATTSTPYR 1219
Chelonia_mydas    SSSSYGSSSEGAAHEDMPVPKSDSTFTLASTIAPLKKTESVTIAVLFGNLTMAEITTPSR 1173
Rhinatrema_bivittatum TVHIHEHSKGVHQIIPVSETDSAFGLPRISITPLKK-KEMATSALEFVGLIITTMPTTPYS 1170
Xenopus_tropicalis PSDDQLNIYALPQTQLIPITTOGAGENVIEVNTEDYAGNTDITFPKMSSKSSISRGHK 1153
Danio_erio       QSHTMDSGRVTEAIQQFDGKYQFQDVENRVVQNEHVGQVYQRGTDHSLASTIVKPIITEPSKE 982
.....1210.....1220.....1230.....1240.....1250.....1260

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Homo_sapiens      KVAPSSST--MSTHPSRRRPNRGRRLRPNKFRHRHKQT-PPTTFAP-SETFSTQPTQAPDI 1190
Macaca_mulatta    KVASSST--MTTHPPRRRPNRGRRLRPHKFRHRHKQT-PPTTFAP-SETFSTQPTQALEI 1215
Callithrix_jacchus KVASSST--MTSHPSRRRPNRGRRLRPHKFRHRHKQT-PPTTFAP-SEPFSTQPTQAPEM 1214
Canis_lupus_familiaris KTTSSPG--LTTHPSRKRPNRGRRLRPNRFRHRHKQT-PPTTFAP-TEFSTQPTQAPET 1199
Equus_caballus    KPTSPSV--LTTHPSRKRQKGRKRLHPNRFHRHRHKQT-LPTTPAP-TEFSTQPTQAPET 1251
Bos_taurus       KDTSPSA--LTTHPSRKRPNRGRRLRPHKFRHRHKQT-PPTTFAP-TEFSTQPTQAPET 1219
Pavo_muticus      KTTSPS---LVTQHARKRPYGRRLRPNRIRQRTKPF-PHVVLTEAMPHIPRTSKVEAV 1273
Pavo_cristatus    KTTSPS---LVTQHARKRPYGRRLRPNRIRQRTKPF-PHVVLTEAMPHIPRTSKVEAV 1273
Gallus_gallus     KTAPS---LVTQHARKRPYGRRLRPNRIRQRTKPF-PRVVLTEAMPNIPRTSKVEAV 1274
Chelonia_mydas    KTTISNT--LLTQHPRRRPYGRRLRPNRFRQRPKPI-PPAFTEEMPVTQKSPKIEDA 1230
Rhinatrema_bivittatum ETTSSLVTARPNOHPRRRPHGKRRYRPNRLRHRQKHHPVLSTAEAHAIHKTLSASET 1230
Xenopus_tropicalis NNYKAEP--TTVTSTGKPKTDSRLKTTMIPNTIINAVPKNMVPTVQGSTIRINYLTS 1211
Danio_erio       TAVYS---LTETLTITKQGPOTLQKHITQEKHVSEIPLILSVPTTKPTSGRKATFTN 1037
.....1270.....1280.....1290.....1300.....1310.....1320

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Homo_sapiens      KIS-SQVESSLVPTAWVDNTVNTPKOLEMEKNAEPTSKGTPRRKHGKRPKNHRYTPSTVS 1249
Macaca_mulatta    KIS-NQVESSPVPTAWVDNTVNTPKOLEMEKNAEPTSKGTPRRKHGKRPKNHRYTPSTVS 1274
Callithrix_jacchus KSS-NQVESSLVPTSWVDNTVNTPKOLEMEKNAEPTSKGTSRKHGKRPKNHRYTPSTVS 1273
Canis_lupus_familiaris KAP-GHVGSTPAPTSRVDTGTVGAKQPETEKQAEPIRGTSRRKHGKRPKNHRYSTSTGS 1258
Equus_caballus    KIP-QYVESLLVPTSWVDSTVGTQVEMGDAEPVSKGPSRRKHGKRPKNHRYSTSTVR 1310
Bos_taurus       KTPSLQVASSLVPTTWVNSAVGTAGRLDTEHAESVSRGSPHRQGGKRRNRHRYITSTLS 1279
Pavo_muticus      TKA-----FSAVLESPLDRSSVKIQAKEEHEHREITPSLVTDVVLEKITKTEEMVTTSF 1327
Pavo_cristatus    TKA-----FSAVLESPLDRSSVKIQAKEEHEHREITPSLVTDVVLEKITKTEEMVTTSF 1327
Gallus_gallus     TKA-----FSAVLESPLDKSNVRIQAKEEDHREITPSLVTDVVLEKITKTEEMVTTSF 1328
Chelonia_mydas    TRS-----SPGTVVGDKHTDAKIQIKKHNNLEMIASLITEANVLERLTKVRDTEGAFS 1284
Rhinatrema_bivittatum ENS---IKSSSLVPSVSENNKPNINIOPENDDYKTTILAAITVNTLQMSSTEDKQEGTASL 1287
Xenopus_tropicalis TTT---KISTTTTITISINGNINIHRRRPNRGRKRPNRYKLQONQIVPTVQPVLDYFPQKP 1267
Danio_erio       SLN-----VSSSHARNTSSLRRR-----NGGRRRKINRVKTRTNSKSSLY 1078
.....1330.....1340.....1350.....1360.....1370.....1380

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Homo_sapiens      SRASGSKPSPSP-ENKHRNIVTPSSETILLPRTVSLKTEGPDYSL---DYMTTTR-KIYS 1304
Macaca_mulatta    SRASGSKPSPSP-ENKHRNIVTPSSETILLPRTVSLKTEGPDYSL---DYMTTTR-KIHS 1329
Callithrix_jacchus SRASGSKPSPSP-ENKHRNIVTPSSETILLPRTVSLKTEGPDYSS---DYMTTNT-KIYS 1329
Canis_lupus_familiaris LPASVSPSPSP-ENKHNHV-ATLEAVFLSTTISLTTDRPRGTATAKDSATAT-ERLS 1315
Equus_caballus    SQPSVSNVSPSP-ESQHNNVNPSTDTVLLSTMASLRTGAPREITRKEDYITSTK-VHLS 1368
Bos_taurus       SAASVSKPSPSP-EDKHRISFPLSSQAALSPPTVSTTGDPREITGMGAYSTASISKTS 1338
Pavo_muticus      FRPTTSQP-----ERKYMTHSTSPETLVLPVTEPITVLSSVPHN-----TVPTKESNA 1376
Pavo_cristatus    FRPTTSQP-----ERKYMTHSTSPETLVLPVTEPITVLSSVPHN-----TVPTKESNA 1376
Gallus_gallus     FSPTTSQP-----EKKYMTHSASPETFVLPVTEPITVLSSVAHN-----TVPTKESNA 1377
Chelonia_mydas    HMPTASLP-----ETKHTSLNAGETQVLPVTTITITASSYGGN-----TASVTELHL 1333
Rhinatrema_bivittatum WSSAIALP-----EITASATLAATTTESVTLPKTESIRTPFAFDEYIIKENSLIGREELS 1343
Xenopus_tropicalis VAPPTKEQVVTN-DHIRPTEFKNVYTSAPVSSTPASNKIIGLPIPTPITTLQIVQTRV 1326
Danio_erio       ITDITPQP-----NFSSLEVINGLPVVTKITASS-----KTKI 1111
.....1390.....1400.....1410.....1420.....1430.....1440

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## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/MXDA5 Date: Tue Feb 1 14:06:02 2022

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Homo_sapiens	SYPKVQETLPVITYKPTSDGKEIKDDVAINVDKHKS <del>DI</del> LV <del>TG</del> ESITNAIPTSRSLVSTMGE	1364
Macaca_mulatta	SYHKVQETLPVITYKPTTDGKEIKDDDAINVDKHKS <del>DT</del> LV <del>TG</del> DSITNVIPTSCSLVSTKGE	1389
Callithrix_jacchus	SYHEVQETLTITYKPTSDGKEMKDDVSNVNKYKSDTLVPGGSITNVLP <del>TS</del> PSLVSTVGE	1389
Canis_lupus_familiaris	PPNQFOETITAVTYTPVSEGREMDYGVAIL <del>LK</del> GLK <del>LN</del> SSG <del>PD</del> DSITVSASPSEVATVGE	1375
Equus_caballus	- <del>HD</del> KLQETIPVITYKPV <del>LG</del> ENESKNDGV <del>TN</del> IND <del>HT</del> DSLVP <del>KG</del> FV <del>TD</del> AVSPSGFKVSTVGE	1427
Bos_taurus	ASDRFOETVPVTREPASD <del>GQ</del> ETKNHGV <del>TD</del> LRD <del>YQ</del> THGLV <del>PG</del> DSVTHAASPSVAEVSPARG	1398
Pavo_muticus	PLKPEQNKMP <del>TF</del> DSLEK <del>VSE</del> ERSLKADSKAPDSEAE <del>PS</del> -TATSEYRSSLTSS <del>TK</del> SSYPE	1435
Pavo_cristatus	PLKPEQNKMP <del>TF</del> DSLEK <del>VSE</del> ERSLKADSKAPDSEAE <del>PS</del> -TATSEYRSSLTSS <del>TK</del> SSYPE	1435
Gallus_gallus	PLTPEQNKMQ <del>TF</del> DSLENVSEERSLKADSKAPDSEAE <del>PS</del> -PATSEYRSSLTSS <del>TK</del> SSYPE	1436
Chelonia_mydas	SQEPDQK <del>FI</del> ATYHTLVNVSEENVIK <del>TS</del> HEVTGGKAK <del>Q</del> SDSVSTEYINSLSPGYSV <del>TI</del> PE	1393
Rhinatrema_bivittatum	PTPDNKSAS <del>P</del> ILNEVHVHSEESTQINYEVMEDN <del>SY</del> KHSTMSREK <del>SI</del> GMIAPSSLD <del>DK</del> VT	1403
Xenopus_tropicalis	GEHEHVNNVNTLHP <del>IV</del> NTDSNTIQNVQ <del>TS</del> ILVGKND <del>AV</del> STSHITKSN <del>TL</del> HVTIKPSKFSK	1386
Danio_rerio	ETPOANSVAKINT <del>VP</del> ITDIQPPSLGNM <del>TE</del> KN <del>IN</del> SLYSGRNRK <del>TK</del> SLSQVKVSM <del>TK</del> D	1171
	.....1450.....1460.....1470.....1480.....1490.....1500	

Homo_sapiens	FKEESSVPGFGPTPTWNPSTRTAQPGRLQDIPVITSGENLTDPPLLKELEDVDFTSEFLS	1424
Macaca_mulatta	FKEESSVPGFGPTPTWNPSTRTAQPGRLQDIPVITSGENLTDPPLLKELEDVDFTSEFSS	1449
Callithrix_jacchus	FKEESSVPGFGPTPTWNPSTRTAQPGRLQDIPVITSGENLTDPPLLKELEDVDFTSEFSS	1445
Canis_lupus_familiaris	RQGESAPSGFPESTRWNPPSTRTAQPGRLQDIPVTPVSSVETLTDSPFPKQLEDVGVPSPQFPF	1435
Equus_caballus	RQGEFSPSRSPGTPTWNPSPKAAQPGRLQDIPVITSSWETFTDIPFFKESQEDPFPSEFSP	1487
Bos_taurus	FKEVSLTSPFPKITSWDPPGATQLGVEHTDPPVTSPEALTESPSVRESADLG---EFSP	1455
Pavo_muticus	SQKETIITFHSDVIANETTAG---TMYTIVIDLRLPSSITLEVLEDVSDSEGLWKPRVFLK	1491
Pavo_cristatus	SQKETIITFHSDVIANETTAG---TMYTIVIDLRLPSSITLEVLEDVSDSEGLWKPRVFLK	1491
Gallus_gallus	SQKETIITFHSDVIANETTVGLGQPMYPTVIDLSDIPSDILEVLEDVSDSEGLWKPTVFLK	1495
Chelonia_mydas	FREDSIPLGSKVGENGISPRVSG-PIPPPTVLHLSAPVGTVESFKDLSISDELQKPSKSLK	1452
Rhinatrema_bivittatum	TESISTFQDHSIVTDSEGAPHILTTVVPPISLIVLQSSNPSTIVRPSILEKMKNPVNALE	1463
Xenopus_tropicalis	YTTTVPYANSIESTTGIQSEELYPLIVTVEEPLKITTTAGITEHIFQYLDNVQSSPYPPES	1446
Danio_rerio	RHSSNYMSTG-----EIKSTLAVPVFSPFSNFKKEQEKQITILNGEKSGV	1216
	.....1510.....1520.....1530.....1540.....1550.....1560	

Homo_sapiens	SLTVSTPFHQEEAGSSTTLSSIKVEVASSQAETTTLDQD---	HLETTVAILLSETRPQNH	1481
Macaca_mulatta	SVTVSTPFQEEVGSSTTLSSIKVQVSSQAETTTLDQD---	HHETTVAILLSETRPQNH	1506
Callithrix_jacchus	SVTLSTPFQEEPDSSSTTLSSNIKVEVSPQTETTTSGPD---	HHETMVAVLHSETRPQNH	1502
Canis_lupus_familiaris	PVAASTLFOREEVVASTTVSSSLRVEPSSSESTPVRAQD---	HHATTP----AEVRP---	1485
Equus_caballus	SVAVSTLFGQ---VASTLSSMKAESSSRKAETTIGGD---	HQETSP----AEIGPQNI	1536
Bos_taurus	SAAVSTLFGQORAAPSTTLPLVKVEASSLAETTVRDQG---	GRETTHTTVRSEIGPQSR	1512
Pavo_muticus	TPAITEPPQQQEIMSLSSSFSTMETQIFPPPETEIPIVS---	HTGAKTSSLDKKETISD	1547
Pavo_cristatus	TPVITEPPQQQEIMSLSSSFSTMETQIFPPPETEIPIVS---	HTGAKTSSLDKKETISD	1547
Gallus_gallus	TPAVITEPPQQQEIMSSSSSFSTMETQIFPPPETEIPIVS---	HTGAKTSSLDKKETISN	1551
Chelonia_mydas	TATVTITPPQOREIMAVSFPPFSTRSQPFILTENKKPIIVPVQI	WTKTVSSSWDKKETKPH	1512
Rhinatrema_bivittatum	TRKKP-PVTEEPQERKTSILSTTYRTPETKKLISIPLPF---	QSNLQLIPGEKKGNSHY	1518
Xenopus_tropicalis	MPLVTDSPVSTTKIPVEITVGHITTLRPETKERRKDSATFP---	SKTERKTVYSYKGNRES	1502
Danio_rerio	SHHIPPLKATIHIEEFTHAPAPKIFEEIEQEIITGEP-		1255
	.....1570.....1580.....1590.....1600.....1610.....1620		

Homo_sapiens	TPTAARMKEPASSSPS-----TILMSLGQTTTKPALPSPRISQASRDSKENVFLNYVGN	1536
Macaca_mulatta	TPTAAQMKELASSPR----TILMSLGQTTTKPALLSPRISQTSRDSKENVFLNYVRN	1561
Callithrix_jacchus	IPTPAGMKEPASQSPSP-----PTIFVSLGQTTTKSALLSPTISQISRDSKENTFLNYVGN	1559
Canis_lupus_familiaris	-----PAPIAEPASPSPA-----TTLVSSVQAFI-EPTPTVTSKILPTSTDSRENVLNLYVGI	1536
Equus_caballus	ISTPAPRKEPASSVPP-----TTLVSLAETHI-KMPLTISRIPSTSTGSKKIFILNLYVGI	1590
Bos_taurus	VSTPTPLEEPESPFP-----TTLMSSTETTAETPPPLPSGTSPAWKASKHHVTFHYVGT	1567
Pavo_muticus	VFHHNPT-LQTSEKQP--TTHSVFIPFTKPPILPPSISSTLHHSIHYTEGNAFNAQERL	1604
Pavo_cristatus	VFHHNPT-LQTSEKQP--TTHSVFIPFTKPPILPPSISSTLHHSIHYTEGNAFNAQERL	1604
Gallus_gallus	VFHHDPI-LQTSEKQP--TTH-VFIPFTKPPILS---STLHHSIHYTEGNAFNAQERL	1603
Chelonia_mydas	AFDHDQIAIYTTENPESPAIVDFVPFTKPGTTPPESVSSTLHLSIHSSITKQNTTFNQVRF	1572
Rhinatrema_bivittatum	AFDPNHTAKDGLPKQSTSAVMPITFVPIONPENSTSLGSTTVDSFHRSDKDDKEHIGL	1578
Xenopus_tropicalis	TKPKPYMTTQSSQIKFR-----PFTEKVFIPTAHLHLPTQATASIRTKYHEIIVPT	1554
Danio_reio	-----LGPTSDYFHALLDEFLIESTVKTHNQHNPTKP	1287
	.....1630.....1640.....1650.....1660.....1670.....1680	

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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[illegible]

Homo_sapiens	SLPRGPD <sup>SQ</sup> RQDGRVHASHQLTRVPAKP--ILPTAIVRLPEMSTQSASRYFVT <sup>SQ</sup> SPRHW	1642
Macaca_mulatta	SLPHGPDGHQHODGRVHASHQLTRVPAKSKLFLPTGA <sup>VRL</sup> PEMSTQSASRYFVTIOPPHW	1669
Callithrix_jacchus	ILPPSPDSHQHODGRVHTSHQARVPAKP--ILPRGTVRPPEISTE <sup>S</sup> AFRYFVTIOPPRHW	1665
Canis_lupus_familiaris	SLPHGPDGKHGGRAPVFHQAPAGIPAKP--IPPRGTARP <sup>PHT</sup> IATEGSFYRVVTFHPPRHW	1645
Equus_caballus	ILPRGPD <sup>SQ</sup> HQDGRVQVFRQPARVPAKP--IPPRGTVRPPYVATQA <sup>S</sup> SGYIVTVOPPRHF	1699
Bos_taurus	MLPHVPDS <sup>DE</sup> AAGRVPVFHQPARVPATP--IPPRGMT <sup>RPP</sup> HTIVTQSPFRYSVITFOPPRHL	1676
Pavo_muticus	SLLLNPNLNPFPAGMIPSLNQRLPVLPPKYVPVRGTVKPPYVV <sup>TQ</sup> G <sup>S</sup> FRYFITHQP-LYY	1714
Pavo_cristatus	SLLLNPNLNPFPAGMIPSLNQRLPVLPPKYVPVRGTVKPPYVV <sup>TQ</sup> G <sup>S</sup> FRYFITHQP-LYY	1714
Gallus_gallus	SLLLNPNLRPPPGMIPSLNQRLPVPPKHVPVRGTVKPPYVV <sup>TQ</sup> G <sup>S</sup> FRYFITHQP-LHY	1713
Chelonia_mydas	SLLLNPNFPHQSAGMVPIFNQQPAVAPPKHIPVRGTKRPPYLMI <sup>Q</sup> G <sup>S</sup> FHHFITHQP-LHY	1685
Rhinatrema_bivittatum	SLSLMPNIHHQP-RIIPGFNQPVVPPPFI <sup>PVRT</sup> ILKPLHLVTHAPRRYFITHKH-SHF	1693
Xenopus_tropicalis	SVLYNTKLHQSRLPINQNNVNPPVHHGP----VRGTKRPPYFG <sup>TQ</sup> GPLRYFVTINQ <sup>P</sup> -FVM	1658
Danio_rerio	NLD <sup>F</sup> SQGPATSVPTEFAHGSS-----IIIVHE <sup>T</sup> KPTRLPSVS-----	1358
	.....1750.....1760.....1770.....1780.....1790.....1800	

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Homo_sapiens	TNKPEIT	TTYP	SGALPENKQFT	TPR	----	LSSTT	IPLP	-LHMSKPSIPS	SKFT	DRRTDQ	FNG	1697
Macaca_mulatta	TNKPEIT	TTYP	SRALPENKQFT	TPR	----	LSSTT	ITPLP	-LHMSKPSIPS	SKF	ADRRTDQ	FNG	1724
Callithrix_jacchus	TNKPEV	GTYP	SRALPDSKQLT	TPR	----	LSS	-TTPLP	-SHMSKPSISS	KF	ADRRT	EQ	1719
Canis_lupus_familiaris	TNKPEIT	IAYPS	SRILPERKHS	TPR	----	PPSTT	TPVVP	APKPKPGV	TKFT	DQGD	DRFNA	1701
Equus_caballus	TNKPEIT	IAYPS	RVLPKNKHFT	TPR	----	LSSTT	TPVVP	WHRPKPGIP	SKLT	DQGT	DRFNG	1755
Bos_taurus	TRKPGV	IAYPS	RVWPEGRHAT	TPR	----	PSYPT	TPVVV	LWPGSKPSV	PGTVI	GOGA	DRFQ	1734
Pavo_muticus	TNKPEIT	IAYAAH	TIQDKKSFAS	Q	----	VTTT	TPQAT	PFHRTNM	FPTS	SKFS	NOGQ	1770
Pavo_cristatus	TNKPEIT	IAYAAH	TIQDKKSFAS	Q	----	VTTT	TPQAT	PFHRTNM	FPTS	SKFS	NOGQ	1770
Gallus_gallus	TNKPEIT	IAYAAH	TIQDKKSFAS	Q	----	ETTT	TPQAT	PFHRTNM	FPTS	SKFS	HOGQ	1769
Chelonia_mydas	TNKPEIT	IAYAAH	TIQDRKTYT	PQT	----	EPTT	ATAT	PLHRPI	PLVP	GRFG	NOGQ	1741
Rhinatrema_bivittatum	TNRPEIT	IAYAVH	SNQTRKTHA	PQT	----	VRIT	ITTT	TVLPLY	KPNPIL	SRFN	LOGH	1750
Xenopus_tropicalis	TNKPEIT	IAYTAQ	SNQEKTFPS	Q	LT	KPST	TTTT	TVVPLFR	PKPMT	PSRFN	ILG	1716
Danio_reio	TDNREVT	IAFNMP	VSKANILAT	TT	TS	TT	GIKPPT	VHTY	MLYPT	PTI	SEPILG	1408
	1810	1810	1820	1830	1840	1850	1860					

	Y	S	K	V	F	G	N	N	I	P	E	A	R	-	N	P	V	G	K	P	P	S	P	R	I	P	H	Y	S	N	G	R	L	P	F	F	T	N	K	I	L	S	F	P	Q	L	G	V	T	R	R	P	O	I	P	T	S	P	A	
Homo sapiens	Y	S	K	V	F	G	N	N	I	P	E	A	R	-	N	P	V	G	K	P	P	S	P	R	I	P	H	Y	S	N	G	R	L	P	F	F	T	N	K	I	L	S	F	P	Q	L	G	V	T	R	R	P	O	I	P	T	S	P	A	1756
Macaca mulatta	Y	S	K	V	F	G	N	N	I	P	E	A	R	-	N	P	V	G	K	P	P	S	P	R	I	P	H	Y	S	N	G	R	F	P	F	F	T	N	R	L	S	F	P	Q	L	G	V	T	L	R	P	O	I	P	T	S	P	A	1783	
Callithrix jacchus	Y	S	K	V	F	G	-	N	N	I	P	E	A	R	-	N	P	V	G	K	P	P	S	P	R	I	P	H	Y	P	N	G	R	F	P	F	F	T	N	R	L	S	F	P	Q	L	G	V	T	L	K	P	O	L	P	T	S	P	A	1777
Canis lupus familiaris	N	S	K	V	F	G	N	N	I	P	D	L	R	-	D	P	I	G	K	L	P	S	S	R	V	P	H	H	P	S	A	R	F	P	F	F	F	N	R	L	S	F	P	Q	L	G	V	T	P	K	P	O	M	P	T	S	P	A	1760	
Equus caballus	N	S	K	V	G	N	N	I	L	D	L	R	-	D	S	V	G	K	P	P	S	S	R	V	P	H	P	H	G	R	F	P	F	F	F	N	K	I	L	S	F	P	Q	F	G	V	T	L	K	P	O	I	P	T	S	P	A	1814		
Bos taurus	N	S	R	S	F	A	N	H	L	P	D	L	R	-	D	P	V	G	K	L	P	N	S	R	A	P	P	L	P	G	G	R	F	P	F	I	N	R	L	S	F	P	Q	L	G	G	T	P	K	P	Q	G	P	S	S	P	A	1794		
Pavo muticus	N	S	R	F	F	G	S	N	Y	P	D	N	R	-	G	T	A	G	R	L	P	S	Q	E	I	P	Y	P	S	S	R	V	P	F	L	N	R	T	R	I	L	P	H	L	G	I	H	P	K	P	M	V	P	G	Q	P	V	1829		
Pavo cristatus	N	S	R	F	F	G	S	N	Y	P	D	N	R	-	G	T	A	G	R	L	P	S	Q	E	I	P	Y	P	S	S	R	V	P	F	L	N	R	T	R	I	L	P	H	L	G	I	H	P	K	P	M	V	P	G	Q	P	V	1829		
Gallus gallus	N	S	R	F	F	G	S	N	Y	P	D	N	R	-	G	T	A	G	R	L	P	S	Q	E	I	P	Y	P	S	S	R	V	P	F	L	N	R	T	R	I	L	P	H	L	G	I	H	P	K	P	V	V	P	G	Q	P	V	1828		
Chelonia mydas	H	S	R	V	F	G	S	N	Y	I	P	D	N	R	-	G	T	A	G	R	L	P	S	Q	G	I	P	Y	P	N	P	G	I	S	F	V	F	N	R	T	R	I	F	S	H	L	G	V	N	P	K	P	V	V	P	S	P	L	A	1800
Rhinatrema bivittatum	N	S	R	P	F	G	N	N	Y	I	D	N	K	-	S	T	V	G	R	N	P	Y	Q	G	I	P	Y	S	N	P	R	I	P	F	V	F	N	R	T	R	A	F	P	R	L	G	V	I	S	K	P	L	T	S	T	L	S	T	1809	
Xenopus tropicalis	Y	Y	R	P	A	G	N	T	L	N	N	G	K	-	D	I	V	A	R	I	P	Y	Q	G	N	P	Y	L	N	P	R	F	H	Y	R	F	N	R	T	K	P	I																		



## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Homo_sapiens	PVMR-ERKVIPGSGYNRIHSHSTFHLDFGPPAPPPLLHTPQTGSPSTN-LQNIPLMVSSSTQS	1814
Macaca_mulatta	PVMR-ERKVNPGSGYNRIHSHSTFHLDFGPPAPPPLLHTPRTGSPSTN-LQNIPLVSSSTQS	1841
Callithrix_jacchus	PVTR-ERKVNPGFYNRIHSHSTFHLDFGPPAPPPLLHAPRTTASPSTN-FQNIPLVSSSTQS	1835
Canis_lupus_familiaris	PVIR-ERKVNPGPYNRIHSGSIIHVDFGPPAPPPLLHPPRATGPPSTN-SONAPLVYSTRS	1818
Equus_caballus	PVMR-ERKVNPGPYNRIHSGSIIHVDFGPPAPPPLLHPPRTTAPPSMN-LQNIPLVYSTRS	1872
Bos_taurus	PALR-DRKVNVPHTRIHSGSIFHMDLGPPAPPILHPPRTTAPPSMN-VQTIPPGSSSTRS	1852
Pavo_muticus	PKDMENKVAQVSPP-----RITVQKATAVPVP--SHTTTTISPPAVI-LKITPPAFFSQS	1882
Pavo_cristatus	PKDMENKVAQVSPP-----RITVQKATAVPVP--SHTTTTISPPAVI-LKITPPAFFSQS	1882
Gallus_gallus	PKDMENKVAQVSPP-----RITVQKATAVPVP--SHTTTTISPPAVI-LKVITPPAFFSQS	1881
Chelonia_mydas	PVNTNEKKATQVSSAGITIRGTVLKATAVPVAPFFHTSSSTTPPATTA-LKSTRPSFISQS	1859
Rhinatrema_bivittatum	QIIENERNVMLGSPIKVAISKSVLTATAPGPWITGNTSTPLLPVMTLMTTPTHLPOS	1869
Xenopus_tropicalis	PDSA-NKKNYTVSAAKTITISSAIIKATVAPLP-----VIPVTKPATQKQMLTTP-YIVHT	1828
Danio_rerio	SASKETGSQELGKSIK-----KKTITKRPITTPNLTLIASVPLQ	1496
	.....1930.....1940.....1950.....1960.....1970.....1980	

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Homo_sapiens	SISFITSSVC-----	SSGSFHQSSSKFFAG-GPPASKFWSLG-EKPOILITK	1858																		
Macaca_mulatta	SVSFVTSSVC-----	SSGSFHQSSSKFFAG-GPPASKFWSLG-EKPOILITK	1885																		
Callithrix_jacchus	SVSFITSSVC-----	SSGSFHQSSSKFFAG-GPPASKFWSLG-EKPOILITN	1879																		
Canis_lupus_familiaris	SIPFVASSGC-----	PSRSFHQSSSKLFSAGGPPASKFWITVG-EKPOIITK	1863																		
Equus_caballus	SIPIVTSSGC-----	PSRSFHQSSSKLFSVPVGPASKFWITLG-EKPOIITK	1917																		
Bos_taurus	SVPFTTSSVP-----	PSRSFHHGSTIKLFSAGGLPASKFWITLG-EKPOIVTK	1897																		
Pavo_muticus	RRPQISTTVQPLQPLKNAQYHOKVSPVPYVGGITSHNLSTIIQSSSHFRITPG-ERPKIITK	1941																			
Pavo_cristatus	RRPQISTTVQPLQPLKNAQYHOKVSPVPYVGGITSHNLSTIIQSSSHFRITPG-ERPKIITK	1941																			
Gallus_gallus	RRPQISTTVQPFQPLKNAQYHOKVSPVPYVGGITSHNLSTIIQSSSHFRITPG-ERPKIITK	1940																			
Chelonia_mydas	IRPQISSSIQSFRSLVLYNN--QKVSPVKLGGIMPNNSSVIOPSTINFRAHG-ERPKIITK	1916																			
Rhinatrema_bivittatum	IIPKPASTIQPHRS--SNYDYQRIPIFVKAREPKLNIPTSVQPVIRFPVLLRERPKIITR	1927																			
Xenopus_tropicalis	QTPKSSSTIIQLNRYPENHN----	NKPSIVEGAKLTNLNEIQSSSVTQR PQG-IKPRITTT	1882																		
Danio_rerio	KLPGR LGVQ-----	GRGISSEHYTSEG LQRP TALPEGRGRPOITST	1539																		
	.....1990.....2000.....	2010.....2020.....2030.....2040																			

	SPQTVSVTAETD	TVFPCEATGKPKPF	VTWKVS	--TGALMTPNTRIQRFEVLKNGT	LVIR	
Homo_sapiens	SPQTVSVTAETD	TVFPCEATGKPKPF	VTWKVS	--TGALMTPNTRIQRFEVLKNGT	LVIR	1916
Macaca_mulatta	SPQTVSVTAETD	TVFPCEATGKPKPF	VTWKVS	--TGALMTPNTRIQRFEVLKNGT	LVIR	1943
Callithrix_jacchus	FPQTVSATAETD	VAVFPC	ATGKPKPF	ITWKVS	--TGALMTPNTRIQRFEVLKNGT	LVIR
Canis_lupus_familiaris	SPQSVSVTAETD	VAVFPC	ATGKPKPF	ITWKVS	--TGALMTPNTRVQRFEVLKNGT	FVIR
Equus_caballus	FPQTVSVTAETD	AMIPCEATGKPKPF	ITWKVS	--TGAIMTPNTRVQRFEVLKNGT	FVIR	1975
Bos_taurus	SPQSVTVTVETD	TVFPCEATGKPKPF	VTWKLS	TVPGALMTPNTRLQRFEVLKNGT	FVIR	1957
Pavo_muticus	GSQSISILAETD	ALIPCD	AVGEPKPF	ITWKVS	--TGALMTANTRLQRFEVLKNGT	FLIR
Pavo_cristatus	GSQSISILAETD	ALIPCD	AVGEPKPF	ITWKVS	--TGALMTANTRLQRFEVLKNGT	FLIR
Gallus_gallus	GSQSISILAETD	ALIPCD	AVGEPKPF	ITWKVS	--TGALMTAHLRQRFEVLKNGT	FLIR
Chelonia_mydas	GPQSLSLAETD	VVIPCD	AGGEPKPF	VTWKVS	--TGSLMTANTRIQRFEVLKNGT	FIIR
Rhinatrema_bivittatum	GYQTLTIP	AEMDAVLPC	IVGEPKPF	ITWKVS	--TGALITASRIPRFEVLKNGS	LTIR
Xenopus_tropicalis	GLQSLSPVFET	DAVIPCE	TFGDPKPS	ITWKVA	--TGAVMSKNTRMORYEVL	ENGTLISQ
Danio_rerio	NIRSVTAHAET	NAYLPC	MAVGKPH	PFLTWKVS	--TGISQNTFRQRFEVSSNGT	LIH
	.....2050.....	2060.....	2070.....	2080.....	2090.....	2100

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Homo_sapiens	KVQVQDRGQYMC <sup>1</sup> TAS <sup>2</sup> NLH <sup>3</sup> GLDRM <sup>4</sup> VVLLSV <sup>5</sup> TVQ <sup>6</sup> QP <sup>7</sup> ILASHYQDVT <sup>8</sup> VYLG <sup>9</sup> DT <sup>10</sup> IA <sup>11</sup> MECLAKG	1976
Macaca_mulatta	QVQVQDRGQYMC <sup>1</sup> TAS <sup>2</sup> NLH <sup>3</sup> GLDRM <sup>4</sup> VVLLSV <sup>5</sup> TVQ <sup>6</sup> QP <sup>7</sup> ILASHYQDVT <sup>8</sup> VYLG <sup>9</sup> DT <sup>10</sup> IA <sup>11</sup> MECLAKG	2003
Callithrix_jacchus	KVQVQDRGQYMC <sup>1</sup> TAS <sup>2</sup> NLH <sup>3</sup> GLDRM <sup>4</sup> VVLLSV <sup>5</sup> TVQ <sup>6</sup> QP <sup>7</sup> ILASHYQDVT <sup>8</sup> VYLG <sup>9</sup> DT <sup>10</sup> IA <sup>11</sup> MECLAKG	1997
Canis_lupus_familiaris	KVQVQDRGQYMC <sup>1</sup> TAK <sup>2</sup> NLH <sup>3</sup> GVD <sup>4</sup> RM <sup>5</sup> VVLLSV <sup>6</sup> TVQ <sup>7</sup> QP <sup>8</sup> ILASHYQDVT <sup>9</sup> VYLG <sup>10</sup> DT <sup>11</sup> IA <sup>12</sup> MECLAKG	1981
Equus_caballus	KVQVQDRGQYMC <sup>1</sup> TAK <sup>2</sup> NLH <sup>3</sup> GVD <sup>4</sup> RM <sup>5</sup> VVLLSV <sup>6</sup> TVQ <sup>7</sup> QP <sup>8</sup> ILASHYQDVT <sup>9</sup> VYLG <sup>10</sup> DT <sup>11</sup> IA <sup>12</sup> MECLAKG	2035
Bos_taurus	SVQVQDRGQYVCT <sup>1</sup> AK <sup>2</sup> NLH <sup>3</sup> GAD <sup>4</sup> RM <sup>5</sup> VVLLAV <sup>6</sup> TAQ <sup>7</sup> QP <sup>8</sup> ILASHYKDV <sup>9</sup> TVYLG <sup>10</sup> DT <sup>11</sup> IA <sup>12</sup> MECLAKG	2017
Pavo_muticus	NAQLQDRGQYLC <sup>1</sup> TAQ <sup>2</sup> NLH <sup>3</sup> GID <sup>4</sup> KMIF <sup>5</sup> VL <sup>6</sup> TVVAH <sup>7</sup> QPKILL <sup>8</sup> SR <sup>9</sup> YQDVT <sup>10</sup> VYFG <sup>11</sup> DT <sup>12</sup> IA <sup>13</sup> IECQASG	2059
Pavo_cristatus	NAQLQDRGQYLC <sup>1</sup> TAQ <sup>2</sup> NLH <sup>3</sup> GID <sup>4</sup> KMIF <sup>5</sup> VL <sup>6</sup> TVVAH <sup>7</sup> QPKILL <sup>8</sup> SR <sup>9</sup> YQDVT <sup>10</sup> VYFG <sup>11</sup> DT <sup>12</sup> IA <sup>13</sup> IECQASG	2059
Gallus_gallus	NAQLQDRGQYLC <sup>1</sup> TAQ <sup>2</sup> NLH <sup>3</sup> GID <sup>4</sup> KMIF <sup>5</sup> AL <sup>6</sup> TVVAH <sup>7</sup> QPKILL <sup>8</sup> SR <sup>9</sup> YQDVT <sup>10</sup> VYFG <sup>11</sup> DT <sup>12</sup> IA <sup>13</sup> IECQASG	2058
Chelonia_mydas	NVQLQDRGQYLC <sup>1</sup> TAQ <sup>2</sup> NLY <sup>3</sup> GVD <sup>4</sup> KMIV <sup>5</sup> LL <sup>6</sup> TV <sup>7</sup> TAQ <sup>8</sup> PKML <sup>9</sup> VS <sup>10</sup> RY <sup>11</sup> RDAT <sup>12</sup> VYFG <sup>13</sup> DT <sup>14</sup> VAMECQAKG	2034
Rhinatrema_bivittatum	NAQLQDRGQYLC <sup>1</sup> TAQ <sup>2</sup> NQY <sup>3</sup> GVD <sup>4</sup> KML <sup>5</sup> IL <sup>6</sup> TVVAH <sup>7</sup> QPKIV <sup>8</sup> TS <sup>9</sup> HHKDV <sup>10</sup> VYLG <sup>11</sup> GET <sup>12</sup> MTIMECQATG	2045
Xenopus_tropicalis	KLQLQDHGQYVCT <sup>1</sup> TAQ <sup>2</sup> NQH <sup>3</sup> GID <sup>4</sup> KMY <sup>5</sup> VLL <sup>6</sup> TVV <sup>7</sup> QPRIL <sup>8</sup> GS <sup>9</sup> RYKDV <sup>10</sup> VYIG <sup>11</sup> DT <sup>12</sup> ISMDC <sup>13</sup> PASG	2000
Danio_rerio	KVIPLDGQYLC <sup>1</sup> SVQ <sup>2</sup> NQF <sup>3</sup> GED <sup>4</sup> RI <sup>5</sup> VN <sup>6</sup> LIV <sup>7</sup> LA <sup>8</sup> EH <sup>9</sup> PRV <sup>10</sup> LQ <sup>11</sup> PRY <sup>12</sup> REAT <sup>13</sup> AYL <sup>14</sup> Q <sup>15</sup> TI <sup>16</sup> E <sup>17</sup> FEC <sup>18</sup> QSKG	1657
	.....2110.....2120.....2130.....2140.....2150.....2160	

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

**File: /media/morpheus/disk1/fst/pep\_msa/MXDA5p1 Tue Feb 1 14:06:02 2022**

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Homo_sapiens	TPAPQISWIFPDRRVWQTVPVEGR	----	ITLHENRTLSIKEASFS	DRGVYKCVASNAAG	2032																							
Macaca_mulatta	TPAPQISWIFPDRRVWQTVPVEGR	----	ITLHENRTLSIKEASFS	DRGVYKCVASNAAG	2059																							
Callithrix_jacchus	TPAPQISWIFPDRRVWQTVPVEGR	----	ISLHENRTLSIKEASFS	DRGVYKCVASNAAG	2053																							
Canis_lupus_familiaris	TPAPQISWIFPDRRVWQTVPVEGR	----	VTLHENRTLSIKDASFSDRGVYKCVASNAAG	2037																								
Equus_caballus	TPAPQISWIFPDGRVWQTVPVEGR	----	VTLHENRTLSIKEASFS	DRGVYKCVASNPAAG	2091																							
Bos_taurus	TPVPQISWVFDPGRVWQTVPVEGR	----	VTLHENRTLSIKEASFQDRGVYKCVASNAAG	2073																								
Pavo_muticus	TPSPHISWIFPDRKILOTVTITESR	----	IMLHENRTLSIKQATFSDRGVYKCVASNAAG	2115																								
Pavo_cristatus	TPSPHISWIFPDRKILOTVTITESR	----	IMLHENRTLSIKQATFSDRGVYKCVASNAAG	2115																								
Gallus_gallus	TPSPHISWIFPDRKILOTVTITESR	----	IMLHENRTLSIKQATFSDRGVYKCVASNAAG	2114																								
Chelonia_mydas	IPSPHISWILPDRKILOTVTSSSR	----	ITFHENRTLSIKEVTFS	DRGVYKCIASTAG	2090																							
Rhinatrema_bivittatum	TPAPHISWIFPDRKMRTGSPVESR	----	IMIENGTLTIKETTFSDRGIFKCVASNAG	2101																								
Xenopus_tropicalis	VPSVHISWIFPDRKIIRTVSATSR	----	IMLHENGTLTIKETTFTDRGIFKCVASNAG	2056																								
Danio_rerio	HPQPRIITWVLNPKVEVHSVPTHGTPEHMISVLPNGTLHMKSNINQMDRGIYKCIASNAAG	1717																										
	.....2170.....2180.....2190.....2200.....2210.....2220																											

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Homo_sapiens	ADSLAIRLHVAALPPVIHOEKLENISLPPGLSIHIHCTAKAAPLPSSVRWVLGDGTQIRPS	2092
Macaca_mulatta	ADSLAIRLHVAALPPVIHOEKLENISLPPGLSIHIHCTAKAAPLPSSVRWVLGDGTQIRPS	2119
Callithrix_jacchus	ADSLAIRLHVAALPPVIHOEKLENISLPPGLSIHIHCTAKAAPLPSSVRWVLGDGTQIRPS	2113
Canis_lupus_familiaris	ADSLAIRLHVAALPPVIHOEKLENISLPPGLSIHIHCTAKAAPLPSSVRWVLWDGTQIRPS	2097
Equus_caballus	ADSLAIRLHVAALPPVIHOEKTENISLPPGLSIHIHCTAKAAPLPSSVRWVLRDGTQIRPS	2151
Bos_taurus	ADSLAIRLHVAALPPVIHOEKAENISLPPGLSIHIHCTARAAPLPSSVRWVLRDGTQIRPS	2133
Pavo_muticus	ADSI SVRLHIAALPPIIQDQKQENISLPLGSSVNIHCTAKAAPSPSIRWVLFDDGTQIRPS	2175
Pavo_cristatus	ADSI SVRLHIAALPPIIQDQKQENISLPLGSSVNIHCTAKAAPSPSIRWVLFDDGTQIRPS	2175
Gallus_gallus	ADSI AVRLHIAALPPIIQDQKQENISLPLGSSVNIHCTAKAAPSPSIRWVLFDDGTQIRPS	2174
Chelonia_mydas	ADSI AVRLHIAALPPIIQDQKQENISLSFGHNIHIHCTAKAAPLPSSIRWVLFDDGTQIRPS	2150
Rhinatrema_bivittatum	ADSLAIRLHIAALPPIIQDQKQENISLSPGHSVYVHCTTKAAPIPSSIRWVLFDDGTQIRPS	2161
Xenopus_tropicalis	ADSLTVRLHIAALPPIIQDQKQENITLPHGHSVYIHCSAKGAPSPSIRWVLFDDGTQVRTS	2116
Danio_rerio	ADAISVRLTVATLAPIIQDLSLENTVFEGSVYFNCARGAPPPSINWITPDGMQLHPS	1777
	.....2230.....2240.....2250.....2260.....2270.....2280	

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Homo_sapiens	QFLHG	NLFVFPNG	ILYIRNLAPKDS	SGRYECVAANLVGSARR	TVQLNVQR	--	AAANARIT 2149
Macaca_mulatta	QFLHG	NLFVFPNG	ILYIRNLAPKDS	SGRYECVAANLVGSARR	TVQLNVQR	--	AAANARIT 2176
Callithrix_jacchus	QFLHG	NLFVFPNG	ILYIRNLAPKDS	SGRYECVAANLVGSARR	TVQLNVQR	--	AAANARIT 2170
Canis_lupus_familiaris	QFING	NLFVFPNG	ILYIRNLAPKDS	SGRYECVAANLVGSARR	TVQLTVQR	--	AAANVRIT 2154
Equus_caballus	QFING	NLFVFPNG	ILYIRNLAPKDS	SGRYECVAANLVGSARR	TVQLTVQR	--	AAANARIT 2208
Bos_taurus	QFVHG	NLFVFPNG	ILYIRNLAPQDS	SGRYECVAANLVGSARR	TVQLTVQR	--	AAANARIT 2190
Pavo_muticus	QFVNG	NLFVFPNG	ILYIRNVSPKDS	SGIYECIAANMVGAARR	IIQLHVKK	--	QASNAKIT 2232
Pavo_cristatus	QFVNG	NLFVFPNG	ILYIRNVSPKDS	SGIYECIAANMVGAARR	IIQLHVKK	--	QASNAKIT 2232
Gallus_gallus	QFVNG	NLFVFPNG	ILYIRNVSPKDS	SGIYECIAANMVGAARR	IIQLHVKK	--	QASNAKIT 2231
Chelonia_mydas	QFVNG	NLFVFPNG	ILYIRNISPKDS	SGSYECIAANMVGAARR	TVQLYVKK	--	QSSNAKIT 2207
Rhinatrema_bivittatum	QFVNG	NMFVFPNG	ILYIRNISPRDS	SGRYECVAANIVGNARR	TVNIDVTK	--	HSSNAKIT 2218
Xenopus_tropicalis	QFVNG	NVFVFPNG	ILYIRSLSQKDT	TKGYECVATNIVGAARR	ITMLDVKK	--	LASNAKIT 2173
Danio_rerio	QFINGR	NLFVFPNG	ILHLHLSLTD	AGRYECSTNVIGNARR	AILTVRKSMKY	SR	AKIT 1837
	.....	2290.....	2300.....	2310.....	2320.....	2330.....	2340

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Homo_sapiens	GTSPRRITDVRVGGTLKLDCSASGDPWPRIILWRLPSPKRMIDALFS-FDSRIKVFANGTLVV	2208
Macaca_mulatta	GTSPRRITDVRVGGTLKLDCSASGDPWPRIILWRLPSPKRMIDALFS-FDSRIKVFANGTLVV	2235
Callithrix_jacchus	GTSPRRITDVRVGGTLKLDCSASGDPWPRIILWRLPSPKRMIDALFS-FDSRIKVFANGTLVV	2229
Canis_lupus_familiaris	GTSPQRTDVRVGAFLRLDCSASGDPWPRIILWRLPSPKRMDSLFS-FDTRIKVFANGTLVV	2213
Equus_caballus	GTSPQRTDVRVGGTLRLDCSASGDPWPRIILWRLPSPKRMIDALFS-FDTRIKVFANGTLVV	2267
Bos_taurus	GTSPQRTDVRVGGTLRLDCSASGDPWPRIIVWRLPSPKRMIDALFS-FDTRIKAFANGTLVV	2249
Pavo_muticus	GSSPQRTDVTYGSILHLDCSASGDPWPRIILWRLPSPKRMIDSLHSNLETRIKVFSNGTLVV	2292
Pavo_cristatus	GSSPQRTDVTYGSILHLDCSASGDPWPRIILWRLPSPKRMIDSLHSNLETRIKVFSNGTLVV	2292
Gallus_gallus	GSSPQRTDVTYGSILHLDCSASGDPWPRIILWRLPSPKRMIDSLHSNLETRIKVFSNGTLVV	2291
Chelonia_mydas	WSSPQRTDVTYGSTLHLDCASGDPWPWILWRLPSPKRMIDSLHS-LETRIKVFGNGTLVV	2266
Rhinatrema_bivittatum	GSSPQKTDVTYGSTLRLDCSAAGDPWPRIILWRLPSPKRLVDSLVS-FESRIKVYTNGLTI	2277
Xenopus_tropicalis	ASSPQKTDVTYGSTLRLDCSAAGDPWPRIILWRLPSPKRVVDSFFS-FDSRIKTVSNGTLLI	2232
Danio_rerio	FSSPQKTDVVYGGRLHLDCITSGNPEPRIIWRTPSKKLVDAHYS-YDSRIKVSANGTLSI	1896
	.....2350.....2360.....2370.....2380.....2390.....2400	

## CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

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Homo_sapiens	KSVTDKDGADYLCVARNKVGDDYVVLKVDVVMKPAKIEHKEENDHKVFYGGDLKVDCVAT	2268
Macaca_mulatta	KSVTDKDGADYLCVARNKVGDDYVVLKVNVMKPAKIEHKEENDHKVFYGGDLKVDCVAT	2295
Callithrix_jacchus	KSVTDKDGADYLCVARNKVGDDYVVLKVDVVMKAAKIEHKEENDHKVLYGGDLKVDCVAT	2289
Canis_lupus_familiaris	KSVTDKDGADYLCVARNKVGDDFVVLKVNVMKPAKIEHKEENDHKVFYGGDLKVDCVAT	2273
Equus_caballus	KSVTDKDGADYLCVARNKVGDDFVVLKVNVMKPAKIEHKEENDHRVFYGSDLKVDCVAT	2327
Bos_taurus	KSVTDKDGADYLCVARNKVGDDFVALKVNVMKAAKIQHKEANDHRVLYGGDLKVDCVAT	2309
Pavo_muticus	HSVTDKDGADYLCVARNKIGDDYVVLKVNVMKPAKIEHKNNENNHKVYGGDLKVDCVAT	2352
Pavo_cristatus	HSVTDKDGADYLCVARNKIGDDYVVLKVNVMKPAKIEHKNNENNHKVYGGDLKVDCVAT	2352
Gallus_gallus	HSVTDKDGADYLCVARNKIGDDYVVLKVNVMKPAKIEHKNNENNHKVYGGDLKVDCVAT	2351
Chelonia_mydas	HAVTDKDGADYLCMARNKIGDDYVVLKVNVMMPAKIEHKNNENNHKVMYGGDLKVDCVAT	2326
Rhinatrema_bivittatum	HSVTDKDGADYLCVARNKIGDDYVVLKVNVMKPAKIEHKNEVSHKVYFGKDLKVDCIAT	2337
Xenopus_tropicalis	YSVTEKDGADYLCMARNKLGDDYVVLKVNVMKPAKIQYKNEVDHKVMYGGDLKVDCIAT	2292
Danio_rerio	ISVTEKEDGEYLCVARNKIGDDFVFPKVSIMAKPAKIEQKTEADRVKMYGDLKVDCVAS	1956
	.....2410.....2420.....2430.....2440.....2450.....2460	

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Homo_sapiens	GLPNPEISWSLPGSLVNSFMQSD-DSGGRITKRYVVFNNGTILYFNEVGMREEGDYT	CFAE	2327
Macaca_mulatta	GLPNPEISWSLPGSLVNSFMQSD-DSGGRITKRYVVFNNGTILYFNEVGMREEGDYT	CFAE	2354
Callithrix_jacchus	GLPNPEISWSLPGSLVNSLMQSD-DSGGRITKRYVVFNNGTILYFNEVGMREEGDYT	CFAE	2348
Canis_lupus_familiaris	GLPNPEISWSLPGSLVNSFMQSD-DGGGRITKRYVVFNNGTILYFNEVGMREEGDYT	CFAE	2332
Equus_caballus	GLPYPEISWSLPGSLVNSFMQSD-DSGGRITKRYVVFNNGTILYFNEVGMREEGDYT	CFAE	2386
Bos_taurus	GLPNPEISWSLPGSLVNSFMQAD-DSGGRAKRYVVFHNGTILYFNEVGPREEGDYTC	CFAE	2368
Pavo_muticus	GLPNPEISWGLPDGSMINTFMQSD-DSGSRTKRYVVFNNGTILYFNDVGLREEGDYT	CYAE	2411
Pavo_cristatus	GLPNPEISWGLPDGSMINTFMQSD-DSGSRTKRYVVFNNGTILYFNDVGLREEGDYT	CYAE	2411
Gallus_gallus	GLPNPEISWGLPDGSMINTFMQSD-DSGSRTKRYVVFNNGTILYFNDVGLREEGDYT	CYAE	2410
Chelonia_mydas	GLPNPEISWGLPDGSMINTFMQSD-DSGNRAKRYVVFNNGTILYFNDVGLREEGDYT	CYAE	2385
Rhinatrema_bivittatum	GLPNPEISWSLPGDGSMINILMQSD-DSGTRTRRYVVFNNGTILYFNEVGMREEGDYT	CYAV	2396
Xenopus_tropicalis	GVPNPEISWSLPGDGSMINIMQSD-DSGTRTRRYVVFNNGTILYFNEVGLKEEGDYTC	YAI	2351
Danio_rerio	GLPNPKIQWALPDGTMINSVIKSERNVGSRTTRYVVFNDGILLLNVEGMHEEGNYTC	YAE	2016
	.....2470.....2480.....2490.....2500.....2510.....2520		

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Homo_sapiens	NQVGKDEMRVRVKVVTAPATIRNKITYLAVQVPYGDVVTVACEAKGEPMPKVTWLSPTNKV	2387
Macaca_mulatta	NQVGKDEMRVRVKVVTAPATIRNKITYLAVQVPYGDVATVACEAKGEPMPKVTWLSPTNrv	2414
Callithrix_jacchus	NQVGKDEMRVRVKVVTAPAAIRNKTHLVVQVPYGGVVTVACEAKGEPMPKVTWLSPTNRV	2408
Canis_lupus_familiaris	NQVGKDEMRVRVKVNSEPAAIRNKITYSVVQVPYGDVVTVACEAKGEPTRPVTWLSPTNRL	2392
Equus_caballus	NQVGKDEMRVRVKVWTEPAAIRNKITYSMVQVPYGDVVTVACEAKGEPTRPVTWLSPTNRL	2446
Bos_taurus	NQVGKDEMRVRVKVNSEPAAIRNKITYSVIHVPYGDVVTVACEAQGEPTPRVTWLSPTHRL	2428
Pavo_muticus	NQIGKDEMKVRVKVVAEPATIRNKITYVIINVPYGDVVTVACETKGEPTRPKVTWLSPTNRP	2471
Pavo_cristatus	NQIGKDEMKVRVKVVAEPATIRNKITYVIINVPYGDVVTVACETKGEPTRPKVTWLSPTNRP	2471
Gallus_gallus	NQIGKDEMKVRVKVVAEPATIRNKITYVIINVPYGDVVTVACEAKGEPTRPKVTWLSPTNRP	2470
Chelonia_mydas	NQIGKDEMRIRVKVVAEPATIRNKITYSVINVPYGDVVTVACEAKGEPTRPVIWLSPTNRP	2445
Rhinatrema_bivittatum	NQIGQDEMRVSVKVVAEPAAIRNKMYTVINVPYGDVITVACEAKGEPTRPLISWFSPTNRP	2456
Xenopus_tropicalis	NQIGQDEMRVSVKVVAEKAVIKNKTSHSIHVPYGDVVTVSCEAKGEPVPKIIWLSPSNRP	2411
Danio_rerio	NQVGKDEMNHVHKVVDVVPVIVNKIQDVIRVLYGESVSLQCSAKGEPTPLVLWFSPTNRA	2076
	.....2530.....2540.....2550.....2560.....2570.....2580	

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Homo_sapiens	IP <sup>T</sup> TSSEKYQ <sup>I</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>L</sup> VRNSAG <sup>E</sup> DRK <sup>T</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>K</sup> ING <sup>N</sup> PN	2447
Macaca_mulatta	IP <sup>T</sup> TTSEKYQ <sup>I</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>L</sup> VRNSAG <sup>E</sup> DRK <sup>T</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>K</sup> ING <sup>S</sup> PN	2474
Callithrix_jacchus	IP <sup>A</sup> SSSEKYQ <sup>I</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>L</sup> VRNSAG <sup>E</sup> DRK <sup>T</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>K</sup> ING <sup>N</sup> PN	2468
Canis_lupus_familiaris	IP <sup>A</sup> SSSEKYQ <sup>I</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>T</sup> VW <sup>I</sup> HVN <sup>V</sup> RS <sup>P</sup> TING <sup>N</sup> PN	2452
Equus_caballus	IP <sup>T</sup> TSSDKYQ <sup>I</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>M</sup> VW <sup>I</sup> HVN <sup>V</sup> QSP <sup>K</sup> ING <sup>N</sup> PD	2506
Bos_taurus	IP <sup>A</sup> SSDKYQ <sup>V</sup> YQD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>T</sup> VW <sup>I</sup> HV <sup>H</sup> VQPP <sup>T</sup> ING <sup>Y</sup> PE	2488
Pavo_muticus	IP <sup>T</sup> TLSEKYQ <sup>V</sup> YRD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>V</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>R</sup> ING <sup>H</sup> LN	2531
Pavo_cristatus	IP <sup>T</sup> LTSEKYQ <sup>V</sup> YRD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>V</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>R</sup> ING <sup>H</sup> LN	2531
Gallus_gallus	IP <sup>T</sup> LTSEKYQ <sup>V</sup> YRD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> VRNSAG <sup>E</sup> DRK <sup>V</sup> VW <sup>I</sup> HVN <sup>V</sup> QPP <sup>R</sup> ING <sup>H</sup> LN	2530
Chelonia_mydas	IP <sup>L</sup> LLSDKYQ <sup>V</sup> YGD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>L</sup> VRNSAG <sup>E</sup> DRK <sup>I</sup> VW <sup>I</sup> QV <sup>N</sup> VQSP <sup>R</sup> ING <sup>H</sup> PN	2505
Rhinatrema_bivittatum	IP <sup>S</sup> LS <sup>L</sup> SDKYQ <sup>V</sup> YKD <sup>G</sup> TLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTC <sup>V</sup> ARNSAG <sup>E</sup> DK <sup>K</sup> IVQ <sup>I</sup> HVN <sup>V</sup> QPP <sup>K</sup> ING <sup>N</sup> PS	2516
Xenopus_tropicalis	IP <sup>S</sup> LS <sup>L</sup> SDKYQ <sup>I</sup> YRD <sup>G</sup> SLLI <sup>L</sup> QKAQ <sup>R</sup> SDSG <sup>N</sup> YTCIAQ <sup>N</sup> TGG <sup>E</sup> DK <sup>K</sup> IVQ <sup>I</sup> QV <sup>K</sup> VLPP <sup>T</sup> ING <sup>F</sup> SN	2471
Danio_rerio	IT <sup>S</sup> SSDKY <sup>F</sup> IHN <sup>G</sup> TLI <sup>I</sup> KKV <sup>R</sup> FDG <sup>G</sup> NYICLARNSAG <sup>O</sup> DRK <sup>V</sup> TRVEIL <sup>V</sup> SPPAING <sup>F</sup> KG	2136
	.....2590.....2600.....2610.....2620.....2630.....2640	



# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/MX104.fst Date: Tue Feb 14:06:02 2022

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      .:::  :      *  ::* * * *:::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::
Homo_sapiens      PITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2507
Macaca_mulatta    PITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2534
Callithrix_jacchus PITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2528
Canis_lupus_familiaris AITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2512
Equus_caballus     AITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2566
Bos_taurus         AITTVREIAAGGSRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2548
Pavo_muticus       AITSVRETAIRDSRKLIDCKAEGIPAPQVLWAFPEGVILPAFYGNRITVHNGSLDIRS 2591
Pavo_cristatus     AITSVRETAIRDSRKLIDCKAEGIPAPQVLWAFPEGVILPAFYGNRITVHNGSLDIRS 2591
Gallus_gallus      AITSVRETAIRDSRKLIDCKAEGIPAPQVLWAFPEGVILPAFYGNRITVHNGSLDIRS 2590
Chelonia_mydas     PITSVRETAMRESRKLIDCKAEGIPTPRVLWAFPEGVVLPAFYGNRITVHNGSLDIRS 2565
Rhinatrema_bivittatum TVTTIKETAVIGSRKLINCKAEGIPTPRVLWAFPEGVILPAFYGNRITVHNGSLDIRS 2576
Xenopus_tropicalis QITTIKQLAMRDSRLMLDCKAEGVPTPRVMWAFPEGVILPAFYGNRITVHNGSLDIRS 2531
Danio_rerio        TTNSLRVSSVRDQSKLIDCATGTAPRVMWAFPEGVILPAFYGNRITVHNGSLDIRS 2196
.....2650.....2660.....2670.....2680.....2690.....2700

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      :*  :*  *::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::*.::
Homo_sapiens      LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2567
Macaca_mulatta    LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2594
Callithrix_jacchus LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2588
Canis_lupus_familiaris LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2572
Equus_caballus     LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2626
Bos_taurus         LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2608
Pavo_muticus       VRQTDVQLVLCIGRNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2651
Pavo_cristatus     VRQTDVQLVLCIGRNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2651
Gallus_gallus      VRQTDVQLVLCIGRNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2650
Chelonia_mydas     VRQTDVQLVLCIGRNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2625
Rhinatrema_bivittatum LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2636
Xenopus_tropicalis LRKSDSVQLVCMARNEGGEARLIVQLTVLEPMEKPIFHDPISEKITAMAGHTISLNCSSA 2590
Danio_rerio        VRMTDSGQLACIARNEGGETKFIVQLHVTDLDPKPKLSPKMETFLTLVGRITLNCSSA 2256
.....2710.....2720.....2730.....2740.....2750.....2760

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      *      *. * *:: : *  ::::: * : * * * * . :  ::*:*** . * . * .::
Homo_sapiens      GTPTPSLVWVLPNGTDLQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2627
Macaca_mulatta    GSPTPSLVWVLPNGTDLQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2654
Callithrix_jacchus GTPTPSLVWVLPNGTDLQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2648
Canis_lupus_familiaris GTPTPTLLWVLPNGTELQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2632
Equus_caballus     GTPTPTLLWVLPNGTELQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2686
Bos_taurus         GTPTPTLLWVLPNGTELQSGQQLQRFYHKADGMLHISGLSSVDAGAYRCVARNAAGHTER 2668
Pavo_muticus       GYPEPTTSWILPNGTEVLSGNRLHRFYHKRDGILHISGLSTGDAGTYRCTARNPGGYVER 2711
Pavo_cristatus     GYPEPTTSWILPNGTEVLSGNRLHRFYHKRDGILHISGLSTGDAGTYRCTARNPGGYVER 2711
Gallus_gallus      GYPEPTTSWILPNGTEVLSGNRLHRFYHKRDGILHISGLSTGDAGTYRCTARNPGGYVER 2710
Chelonia_mydas     GNPEPTTSWILPNGTEVLQSGHSLQRFYHKRDGILHISGLSAVDAGTYRCTARNPGGYAER 2685
Rhinatrema_bivittatum GKPEPEIIVWLIPNGTQIESGHFFHRIYHRKDGTLHISLAAESGTYRCTARNPGGYAER 2696
Xenopus_tropicalis GIPVPERIWFIPNGTEVHNGKQLHRLYHRNDGALLIGSIAVSDAGTYRCTARNPGGYAER 2650
Danio_rerio        ISPTLQLTWILQNGSPLOSQAQFNKFLHRADGTLVLSNPALSESQTYRCTARNPGGYAER 2316
.....2770.....2780.....2790.....2800.....2810.....2820

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      : *      * *:: : *  ::::: * : * * * * . :  ::*:*** . * . * .::
Homo_sapiens      LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2687
Macaca_mulatta    LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2714
Callithrix_jacchus LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2708
Canis_lupus_familiaris LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2692
Equus_caballus     LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2746
Bos_taurus         LVSLKVGLKPEANKQYHNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2728
Pavo_muticus       VVFLKVGLRPEISNQYNNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2771
Pavo_cristatus     VVFLKVGLRPEISNQYNNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2771
Gallus_gallus      VVFLKVGLRPEISNQYNNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2770
Chelonia_mydas     VIFLKVGLKPEISNQYNNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2745
Rhinatrema_bivittatum PISLKIIGLKPEINNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2756
Xenopus_tropicalis LITLQIGRKPKPMKNYNNLVSIINGETLKLPCIPPGAGQGRFSWTLPGMHLGEPQALGR 2710
Danio_rerio        TVTLIPGHKPEISNRYNSPVSIIINGQSLNLHCHMSN-TDSVHLTWLPSGMILNRPQAGR 2375
.....2830.....2840.....2850.....2860.....2870.....2880

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# CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep\_msa/MXDA pep Tue Feb 1 14:06:02 2022

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Homo_sapiens      VSLLDNGTLTVREASVFDRTYVCRMETEYGPSVTSIPVIVIAYPPRITSEPTPVIYTRP 2747
Macaca_mulatta    ISLLDNGTLEVRASVFDRTYVCRMETEYGPSVTSIPVIVIAYPPRITSEPTPVIYTRP 2774
Callithrix_jacchus FSLLDNGTLTVRETSVFDRTYVCRMETEYGPSVTSIPVIVIAYPPRITSEPTPVIYTRP 2768
Canis_lupus_familiaris FSVWENGTLTVRDASVFDRTYVCKADTEYGPSVMNFPVIVIAYPPRITSEPTPVIYTRP 2752
Equus_caballus    FSLGENGTLTVRDASVFDRTYVCKADTEYGPSVTNFPVIVIAYPPRITSEPTPVIYTRP 2806
Bos_taurus        FALWENGTLTVRDASVFDRTYVCNADGEHGSPVVSIPVIVIAYPPRITSEPTPVIYARP 2788
Pavo_muticus      FSLLENGSLTVREASVFDRTYLCKVSSDYGTSIMNVPVIVIAYPPRITSEPAPVIYARP 2831
Pavo_cristatus    FSLLENGSLTVREASVFDRTYLCKVSSDYGTSIMNVPVIVIAYPPRITSEPAPVIYARP 2831
Gallus_gallus     FSLLENGSLTVREASVFDRTYLCKVSSDYGTSIMNVPVIVIAYPPRITSEPAPVIYARP 2830
Chelonia_mydas    FSLLENGSLTVRDASVFDRTYLCKALTEYGTSIMNVPVIVIAYPPRITSEPAPVIYTRP 2805
Rhinatrema_bivittatum ISLFENGSLIVREASVYDRGTYLCKVSTEYGSMMNVPVIVIAYPPRITNGPAPVIYARS 2816
Xenopus_tropicalis VSLLQNGTLVVRDTSVYDRGSYVCKATTOYGSSSTMNVPVIVIAYPPRITSPAPVIYARP 2770
Danio_rerio       YAVLPNGTLSIQQASVHDRGSYTCRASNEYGSSLLSVPVIIAYPPRITSGPAPATYAKR 2435
.....2890.....2900.....2910.....2920.....2930.....2940

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Homo_sapiens      GNTVKLNCMAMGIPKADITWELPKDKSHLKAGVQARLYGNRFLHPQGSLLTIQHATORDAGF 2807
Macaca_mulatta    GNTVKLNCMAMGIPKADITWELPKDKSHLKAGVQARLYGNRFLHPQGSLLTIQHATORDAGF 2834
Callithrix_jacchus GSTVKLNCMAMGIPKADIMWELPKDKSHLKAGVQARLYGNRFLHPQGSLLTIQHATORDAGF 2828
Canis_lupus_familiaris GNTVKMNCMAMGIPKAEITWDLPKDKSHLTAGAARLYGNRFLHPQGSLLTIQQATHRDAGF 2812
Equus_caballus    GNTVKMNCMAMGIPKAEITWELPKDKSHLTAGAARLYGNRFLHPQGSLLTIQQATORDAGF 2866
Bos_taurus        GSIVKMNCMAMGIPKAEISWELPKDKSHLTAGTQPRVYGNRFLHPQGSLLTVQQATORDAGF 2848
Pavo_muticus      GNSVKLNCMAIGIPKAEITWELPKDKSHLTTGAQSRLYGNKFLHPQGSLLVIQQSSQORDAGF 2891
Pavo_cristatus    GNSVKLNCMAIGIPKAEITWELPKDKSHLTTGAQSRLYGNKFLHPQGSLLVIQQSSQORDAGF 2891
Gallus_gallus     GNSVKLNCMAIGIPKAEITWELPKDKSHLTTGAQSRLYGNKFLHPQGSLLVIQQSSQORDAGF 2890
Chelonia_mydas    GNAVKLNCMAIGIPKAEITWELPKDKSHLTTGAQSRLYGNKFLHPQGSLLIIQQSTORDAGF 2865
Rhinatrema_bivittatum GNAAQNLNMTIGIPKAEVTWELPKDKSHLTAAQSRLYGNKFLHPQGTLLVIQHPSPRDAGF 2876
Xenopus_tropicalis GSSVQLNCMSIGIPKPEITWELPKDKSVLTAVAQSRLYGNKFLHPQGTLLVIQHSSKRDGTGY 2830
Danio_rerio       GVAVQLNCLAIGIPKAEVAWETPDRTLRILVSPQRLIGNKYLHPQGSLLIIQNPTTKDAGL 2495
.....2950.....2960.....2970.....2980.....2990.....3000

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Homo_sapiens      YKCMAKNILGSDSKTTYIHVF 2828
Macaca_mulatta    YKCMAKNILGSDSKTTYIHVF 2855
Callithrix_jacchus YKCTAKNILGSDSKTTYIHVF 2849
Canis_lupus_familiaris YKCTAKNILGSDSKTTYIHVF 2833
Equus_caballus    YKCTAKNILGRDSKTTYIHVF 2887
Bos_taurus        YKCTAKNLLGSDSKTTYVHIY 2869
Pavo_muticus      YKCTAKNILGSDSKTTYIHIF 2912
Pavo_cristatus    YKCTAKNILGSDSKTTYIHIF 2912
Gallus_gallus     YKCTAKNILGSDSKTTYIHIF 2911
Chelonia_mydas    YKCTAKNILGSDSKTTYIHIF 2886
Rhinatrema_bivittatum YKCTAKNILGSDSKSTYIHVL 2897
Xenopus_tropicalis YKCTAKNILGADTKTTYIHVF 2851
Danio_rerio       YRCTARNVVGVDTKGTYLYVY 2516
.....3010.....3020.

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