

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Tue Feb 1 12:08:24 2022

Page 1 of 10

Mus_musculus	-----MDISAP--QSRADSR-KDRWCPGERCLAPSLDNKKLCEASIKSITVDGN	46
Rattus_norvegicus	-----MDASAP-HPRADSH-KDRWCPGERCLAPSLDNKKLCEASIKSITVDEN	46
Homo_sapiens	-----MDPSAP-QPRAETSGKDIWHPGERCLAPSPDNGKLCEASIKSITVDEN	47
Pan_troglodytes	-----MDPSAP-QPRAETSGKDIWHPGERCLAPSPDNGKLCEASIKSITVDEN	47
Macaca_mulatta	-----MDPSAP-QPCAETAGKDIWHPGERCLAPSPDNGKLREASIKSVITVDEN	47
Callithrix_jacchus	-----MDPSAP-QPRAETAGKDIWHPGERCLAPSPDNGKLCEASIKSITVDEN	47
Bos_taurus	MQPGCQALPPGQMDQSTP-KPHAETNSKDIWHPGERCLAPSPDNEKLCEASIKSITVDEN	59
Equus_caballus	-----MDPSAP-KARAEAAAGKDMWHPGERCLAPSPDNEKLCEASIKSVITVDEN	47
Xenopus_tropicalis	-----MDSGRDDQDV-----WHNEEKCLAPYSENGELCEAVIKSISCGAN	40
Latimeria_chalumnae	-----MYEASIK---SGEN	11
Rhinatrema_bivittatum	-----MDITVSESDCNREQIPGQWHAGERCLAPCSDSGKLCEARILSIELDEN	48
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	-----MALAAPFTSVKMSDAWRDRWHVGERCLAPCPENGKGFSEGTISSFENDKN	50
Anas_platyrhynchos	-----MVCWVCSEGRWHVGEKCVAPCPENGKLCGEGTISSEKDKN	40
Chelonoidis_abingdonii	-----	
	1.....10.....20.....30.....40.....50.....60	

Mus_musculus	GKPFVAVLYPDFQEKTIPLQRLQEVKSTKDYSRSLIFDDKDLEKPYFPDRKIPSLASAFQ	106
Rattus_norvegicus	GEPFVAVLYPDFQEKKIPLQRLQEVKSTKDHRSRLIFDDEDLEKPYFPDQKIPSLVSAFQ	106
Homo_sapiens	GKSFAVLYADFOERKIPLKQLQEVKFVKDCPRNLIFDDEDLEKPYFPNRKFPSSSVAFAK	107
Pan_troglodytes	GKSFAVLYADFOERKIPLKQLQEVKFVKDCPRNLIFDDEDLEKPYFPNRKFPSSSVAFAK	107
Macaca_mulatta	GKSFAVLYSDFQERKIPLKQLQEVKFVKDCPRNLIFDDEDLEKPYFPNRKFPSSSVAFAK	107
Callithrix_jacchus	GKPFVAVLYSDFQERKIPLKQLQEVKFVKDCPRNLIFDDEDLEKPYFPNRKFPSSSVAFAK	107
Bos_taurus	GKSFAVLYSNFQERRVPLKRLQEVKSVKDCSRNFIFFDDEDLEKPYFPDRKFPSSSAVFPQ	119
Equus_caballus	GKSFAVLYSDFQERKVPKRLQEVKSVKDCPRSFIFDDEDLEKPYFPDRKFPSSSVAFAK	107
Xenopus_tropicalis	GLSYAVISFLDSTQKKVPLSEIQPPSYNSSWNTSMFDDDEDLEKPPFPDRRPHGPLENFP	100
Latimeria_chalumnae	GKSVAVLTHGRS-EETRPLVKPKANNKSKERWKGFIFFDDEDLEKPYFPDREPPGLAVSFP	70
Rhinatrema_bivittatum	GDSFAVVSFLGSEERKIRLTKLCKVKADGDAWKSIFDDEDLEKPPFRNRSLGPAAAFQ	108
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	GKSFAIVSFLESEDKKILISELCRVEAGRCWSKSVIFDDGDLEKPYFPQNLPSSTDAFK	110
Anas_platyrhynchos	GKSFAIVSFLESEDKKILVSKLCRVEAGRGPRKSVIFDDGDLEKPYFPDRNLLSSAVAFK	100
Chelonoidis_abingdonii	-----	
	.....70.....80.....90.....100.....110.....120	

Mus_musculus	LSSEGDGSIPTINRYLRDYQREGAQFLYRHYIEGRGCILGDDMGLGKTIQVISFLAAVLH	166
Rattus_norvegicus	LSSEGDGSIPTINRYLRDYQREGAQFLYRHYIKRGICILGDDMGLGKTIQVISFLAAVLH	166
Homo_sapiens	LSDDGDSIPTINRYLRDYQREGITRFLYGHYIHGGGCILGDDMGLGKTVQVISFLAAVLH	167
Pan_troglodytes	LSDDGDSIPTINRYLRDYQREGITRFLYGHYIHGGGCILGDDMGLGKTVQVISFLAAVLH	167
Macaca_mulatta	LSDDGDSIPTINRYLRDYQREGAQFLYGHYIHGRGCILGDDMGLGKTVQVISFLAAVLH	167
Callithrix_jacchus	LSDDGDSIPTINRYLRDYQREGAQFLYGHYIHGRGCILGDDMGLGKTVQVISFLAAVLQ	167
Bos_taurus	LSSEGDGSIPTINRYLRDYQREGAQFLYGHFIQGRGCILGDDMGLGKTVQVISFLAAVLG	179
Equus_caballus	LSSEGDGSIPTINRYLRDYQREGAQFLYGHFIQGRGCILGDDMGLGKTVQVISFLAAVLH	167
Xenopus_tropicalis	LSNTAVSVPTINRYLRDYQREGITFLYKHFVRSVGCILGDDMGLGKTIQVIAFLAAILG	160
Latimeria_chalumnae	LSSEGEIPRTINRYLRDYQREGAKFIYNHYVGGRCILGDDMGLGKTIQVISFLAAVLH	130
Rhinatrema_bivittatum	LSSEGDGCVPTINRYLRDYQREGVQFLYGHYVGGRCILGDDMGLGKTIQVIAFVSAVLR	168
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	LSDDNGDFIPTINRYLRGYQREGAQFLYWHYANKRGICILGDDMGLGKTVQVISFLAAVLH	170
Anas_platyrhynchos	LSDDNGDFIPTINRYLRDYQREGVQFLYGHYANKRGICILGDDMGLGKTIQVISFLAAVLH	160
Chelonoidis_abingdonii	-----	
	.....130.....140.....150.....160.....170.....180	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERCC412.fasta Feb 1 12:08:24 2022

Page 2 of 10

Mus_musculus	KKGTREDIENNMPFLLKSMKKKPPS-TAKKMFLIVAPLSVLYNWKDELDTWGYFRVTVL	225
Rattus_norvegicus	KKGTREDIENNMPFLLKSMKKESSS-TARKMFLIVAPLSVLYNWKDELDTWGYFRVTVL	225
Homo_sapiens	KKGTREDIENNMPFLLRSMKKEPLSSTAKKMFLIVAPLSVLYNWKDELDTWGYFRVTVL	227
Pan_troglodytes	KKGTREDIENNMPFLLRSMKKEPLSSTAKKMFLIVAPLSVLYNWKDELDTWGYFRVTVL	227
Macaca_mulatta	KKGTREDIENNRPEFLLRGMKKEPPSSAAKKMFLIVAPLSVLYNWKDELDTWGYFRVTIL	227
Callithrix_jacchus	KKGTREDIENNMPFLLRSMNKEP-SSTAKKIFLIVAPLSVLYNWKDELDTWGYFRVTVL	226
Bos_taurus	KKGTREDIENNMPFLLRNMKKDPPS-TAKKMFLIVAPLSVLYNWKDELDTWGYFRVTIL	238
Equus_caballus	KKGTREDIENNMPFLLRSMKKEPSSSTAKKMFLIVAPLSVLYNWKDELDTWGYFRVTIL	227
Xenopus_tropicalis	KKGTREDIENNMPFLLRTVKKVCSSSPKKVFLIVSPLSVLYNWKDELETWGYFRILTIL	220
Latimeria_chalumnae	KTGTREDIENNMPFLLKTIKKETILANSKKVFLIVAPLSVLYNWKDELDTWGYFRVTVL	190
Rhinatrema_bivittatum	KKGTREDIENNMPFLLRSMKROSSVAS-KKMFLIVTPLSVLFNWKDELDTWGYFRVAVL	227
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	KKGTREDIENNMPFLLQRTMKKESKC-NPKKIFLIVAPLSVLYNWKDELDTWGYFKVSVL	229
Anas_platyrhynchos	KKGTREDIENNMPFLLRRTMKKESKY-SPKKPFLIVAPLSVLYNWKDELDTWGYFKVSVL	219
Chelonoidis_abingdonii	-----	
	.....190.....200.....210.....220.....230.....240	

Mus_musculus	HGSKKDNEILLRLKQRKCEIALTTYETLRLCLEELNSLEWSAIIIVDEAHRINKPKARVTEV	285
Rattus_norvegicus	HGSKKDNEILLRLKQRKCEIALTTYETLRLCLEELNSLEWSAIIIVDEAHRIRNPARNVTEV	285
Homo_sapiens	HGNRKDNELIRVKQRKCEIALTTYETLRLCLDELNSLEWSAVIVDEAHRINKPKARVTEV	287
Pan_troglodytes	HGNRKDNELIRVKQRKCEIALTTYETLRLCLDELNSLEWSAVIVDEAHRINKPKARVTEV	287
Macaca_mulatta	HGNRKDNELIRVKQRKCEIALTTYETLRLCLDELNSLEWSAVIVDEAHRINKPKARITEV	287
Callithrix_jacchus	HGNRKDNELIRVKQRKCEIALTTYETLRLCLDELNSVIEWSAVIVDEAHRINKPKARVTEV	286
Bos_taurus	HGNKKDSELIRVKQRKCEIALTTYETLRLCLDELNSLEWSDVIVYESHRIKNPKARLITEI	298
Equus_caballus	HGNKKDNELIRVKQRKCEIALTTYETLRLCLDELNSLEWSAVIVDEAHRINKPKARVTEV	287
Xenopus_tropicalis	HGNKKDSEISRLKQKGFCEIALTTYETLRLCLDEINSIDWSAVVDEVHRIKNPKARVTQV	280
Latimeria_chalumnae	HGNKKDIEIGRAKRGKCEVALTTYETLRLCLDEINSIEWSAIIIVDEAHKIKNPKAQITQA	250
Rhinatrema_bivittatum	HGNKRDTELSRVKQKCEVSLTTYETLRLCLDEFNSIEWSAVIVDEAHRINKPKAQVTQI	287
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	HGSKKEGDLNRIKQKCEVALTTYETLRLYLDELNNIGWSAVIVDEVHRIKNPKSQITQT	289
Anas_platyrhynchos	HGSKKDDDLNRIKQKCEVALTTYETLRLYLDELNSVIEWSAVIVDEAHRINKPKAQITQT	279
Chelonoidis_abingdonii	-----	
	.....250.....260.....270.....280.....290.....300	

Mus_musculus	MKAVKCKVRIGLTGTVLQNNMKELWCVMDWAVPGLLGSRIHFKKQFSDPVEHGQRHTATK	345
Rattus_norvegicus	MKAVKCKVRIGLTGTILQNNMKELWCVMDWAVPGLLGSRIHFKKQFSDPVEHGQRHTATK	345
Homo_sapiens	MKALKCNVRIGLTGTILQNNMKELWCVMDWAVPGLLGSRTYFKKQFSDPVEHGQRHTATK	347
Pan_troglodytes	MKALKCNVRIGLTGTILQNNMKELWCVMDWAVPGLLGSRTYFKKQFSDPVEHGQRHTATK	347
Macaca_mulatta	MKALKCNVRIGLTGTILQNNMKELWCVMDWAVPGLLGRTRCFKKQFSDPVEHGQRHTATK	347
Callithrix_jacchus	MKALKCNVRIGLTGTILQNNMKELWCVMDWAVPGLLGSNSYFKKQFSDPVEHGQRHTATK	346
Bos_taurus	MKALRCNVRIGLTGTILQNNMKELWCVMDWAVPRLLRIMHFKKQFSDPVEHGQRHTATK	358
Equus_caballus	MKALKCNVRIGLTGTILQNNMKELWCVMDWAVPGLLGSRIHFKKQFSDPVEHGQRHTATK	347
Xenopus_tropicalis	MKEIRCKVRIGLTGTILQNNMEELWCVMDWAVPGYLGSSTQFKEKFSNPVEYGQRHNATK	340
Latimeria_chalumnae	MKALKCRVRIGLTGTILQNNMEELWCVMDWAVPGCLGNKTCFKDNFGSCLERGQKHTATK	310
Rhinatrema_bivittatum	MKSLKCKVRIGLTGTILQNNMEELWCVMDWAVPACLGSRILFKKKFSDPVEYGQRHTATK	347
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	MKSLKCNVRIGLTGTILQNNMELWCVMDWAVPGLLGSRVHFKKKFSDPLEERGQRHTATK	349
Anas_platyrhynchos	MKSLKCSVRIGLTGTILQNNMKELWCVMDWAVPGLLGSRMHFKKKFSDPVEHGQRHTATK	339
Chelonoidis_abingdonii	-----MDWAIPGLLGSRTHFKKKFSDPVEHGQRHTATK	33
	.....310.....320.....330.....340.....350.....360	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Tue Feb 1 12:08:24 2022

Page 3 of 10

Mus_musculus	RELATGRKAMHRLAKKMSGWFLRRTKTLLIKGOLPKKEDRMVYCSLTDFQKAVYQTVLETE	405
Rattus_norvegicus	RELATGRKAMHRLAKKMSGYFLRRTKTLLIKGOLPKKEDRMVYSSLTDFQKAVYQTVLETE	405
Homo_sapiens	RELATGRKAMQRLAKKMSGWFLRRTKTLLIKDOLPKKEDRMVYCSLTDFQKAVYQTVLETE	407
Pan_troglodytes	RELATGRKAMQRLAKKMSGWFLRRTKTLLIKDOLPKKEDRMVYCSLTDFQKAVYQTVLETE	407
Macaca_mulatta	RELATGRKAMQRLARRMSGWFLRRTKALIKDOLPKKEDRMVYCSLTDFQKAVYQTVLETE	407
Callithrix_jacchus	RELATGRKAMQRLAKKMSGWFLRRTKTLLIKDOLPKKEDRMVYCSLTDFQKAVYQTVLETE	406
Bos_taurus	RELATGRKAMQRLARKMSGWFLRRTKTLLIKDOLPKKEDRMVYCALTDFQKAVYQTVLQTE	418
Equus_caballus	RELATGRKAMRRLAKKMSGWFLRRTKVLIKDOLPKKEDRMVYCSLTDFQKAVYQTVLETE	407
Xenopus_tropicalis	RELATGRKAIQTLANKLSPFFLRRTKALISQOLPKKEDRIIFCSLSEFQKAVYQTVLETO	400
Latimeria_chalumnae	RELATGRKAMRRLASKMSRWFLRRTKALISDOLPKKDDRIVYCSLTFEQQAVYQAVLETE	370
Rhinatrema_bivittatum	RELATGRKAMQSLARKMSSLFLRRTKSLISNOLPKKEDRIVYCSLTDFQMAVYQTVLDTE	407
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	RELATGRKAMVKLARKMSSWFLRRTKVLISDOLPKKEDRMVYCSLTFEQKAVYRAVLKTE	409
Anas_platyrhynchos	RELATGRKAMAKLARKMSSWFLRRTKALISDOLPKKEDRMVYCSLTFEQKAIYQAVLETE	399
Chelonoidis_abingdonii	RELATGRKAMQKLARKMSSWFLRRTKAFISDOLPKKEDRMVYCSLTFEQKQVYQAVLATE	93
	.....370.....380.....390.....400.....410.....420	

Mus_musculus	DVALILTSSQPCTCGSGQKRRKCCYKTNISRGDITVRLCLSYLTVLQKVANHVALLQAAS-	464
Rattus_norvegicus	DVALILTSSQPCTCGSGQKRRKCCYKTNISQGDITVRLCLSYLTVLQKVANHVALLQAAS-	464
Homo_sapiens	DVTILILQSSEPTCRSGQKRRNCCYKTNISHGETVKTLYLSYLTVLQKVANHVALLQAAS-	466
Pan_troglodytes	DVTILILQSSEPTCRSGRKRNNCCYKTNISHGETVKTLYLSYLTVLQKVANHVALLQAAS-	466
Macaca_mulatta	DVTILILQSSEPTCRSGRKRNNCCYKTNISHGETVKTLYLSYLTVLQKVANHVALLQAAS-	466
Callithrix_jacchus	DVTILILQSSEPTCSCSGRKRNNCCYKTNISHGETVKTLYLSYLTVLQKVANHVALLQAVS-	465
Bos_taurus	DVSLILQSSEPTCNSGHKRRNCCYKTNISQGETVKTLYFSYIAVLQKVANHVALLVQTVS-	477
Equus_caballus	DVTILILQSSEPTCSCSGRKRNNCCYKTNISHGETVKTLYFSYLAVLQKVANHVALLQAAS-	466
Xenopus_tropicalis	DVNILVLQGGEPCCSKSGRKRNNCCYKTNISNMFGEISVRLTYFSYLAAILRKVANHAALLQTDTS	460
Latimeria_chalumnae	EVALVLHGWEPCGCNSGRKKKNCCYKTNKYGETVRSYLYFSYLAAILRKVANHVALLQPDND	430
Rhinatrema_bivittatum	DVSLVLRAREPCCNSGRKRNNCCYKTNKYGDPVRTLYFSYLTILRKVANHAALLQTNSS	467
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	DVSLVLRAREPCCNSGRIRKNCCYKINSHGETVKSILQSLYLTILQKVANHVALLQTDN-	468
Anas_platyrhynchos	DVSLILRAGEPCNCNSGRKRNNCCYKANAYGETIKSLRFSYLTILQKVANHAALLQTDN-	458
Chelonoidis_abingdonii	DVSLVLRAREPCCSCSGRKRNNCCYKTNAGETMRLYFSYLTILRKVANHTALLQTEN-	152
	.....430.....440.....450.....460.....470.....480	

Mus_musculus	TSKHQETVIKRICDRVFSRFPDFVQSKDAAFETLSDPKYSG-----	506
Rattus_norvegicus	TSKHQETLIKRICDQVFSRFPDFVQSKDAAFETLSDPKYSG-----	506
Homo_sapiens	TSKQQETLIKRICDQVFSRFPDFVQSKDAAFETLSDPKYSG-----	508
Pan_troglodytes	TSKQQETLIKRICDQVFSRFPDFVQSKDAAFETLSDPKYSG-----	508
Macaca_mulatta	TSKQQETLIKRICDQVFSRFPDFVQSKDAAFETLSDPKYSG-----	508
Callithrix_jacchus	TSKQQETLIKRICDQVFSRFPDFVQTKDAAFETLSDPKYSG-----	507
Bos_taurus	TSRQQETLIKRICDQVFSRFPDFVQSKDAAFGLTSDSKYSV-----	519
Equus_caballus	ASKQQETLIKRICDQVFSKFPDFVQSKDAAFETLSDPKYSG-----	508
Xenopus_tropicalis	TSKKQEAHIKRVCEVFSKFPEFVRQSKDAAFETLSNPRYSG-----	502
Latimeria_chalumnae	VSKLQESHVKRVCEVFSRFPDFMQSKDAAFETLSDPKYSG-----	472
Rhinatrema_bivittatum	TSKKQEVHIERVCNQVFSKFPDFVQSKDAAFETISDPKYSG-----	509
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	TSKQQETHIKRVCEVFSFPDFMQLSKDAAFETISDPKYSGKMRISGWLKSPPSGQVPVN	528
Anas_platyrhynchos	ASKQQEAHIKRVCEVFSFPDFVQLSKDAAFETISDPKYSG-----	500
Chelonoidis_abingdonii	ISKHQEGHIKRVCEVFSKFPDFVHLSKDAAFETISDPKYSG-----	194
	.....490.....500.....510.....520.....530.....540	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Feb 1 12:08:24 2022

Page 4 of 10

Mus_musculus	-----KMKVLQQLLNHFRKQDKVLLFSFSTKLLDVLQOQYCMASGLDYR	550
Rattus_norvegicus	-----KMKVLDQLLNHFRKHDKVLLFSFSTKLLDVLQOQYCMASGLDYR	550
Homo_sapiens	-----KMKVLQQLLNHCRKNRDKVLLFSFSTKLLDVLQOQYCMASGLDYR	552
Pan_troglodytes	-----KMKVLQQLLNHCRINRDKVLLFSFSTKLLDVLQOQYCMASGLDYR	552
Macaca_mulatta	-----KMKVLQQLLNHCRKNRDKVLLFSFSTKLLDVLQOQYCMASGLDYR	552
Callithrix_jacchus	-----KMKVLQQLLNHCRKNRDKVLLFSFSTKLLDVLQOQYCMASGLDYR	551
Bos_taurus	-----KMKVLQQLLDHCRKNKDKVLLFSFSTKLLDVLQOQYCMASGLDYR	563
Equus_caballus	-----KMKVLQQLLNHCRKNKDKVLLFSFSTKLLDVLQOQYCMASGLDYR	552
Xenopus_tropicalis	-----KMKVLQQLLNHCRKNKDKVLLFSFSTKLLDVLERYSMASGLDYR	546
Latimeria_chalumnae	-----KMKVLQRLLNHCRKNKDKVLIIFSISTKLLDVLERYCMASGLDYR	516
Rhinatrema_bivittatum	-----KMKVLQQLLNHCKKNKDKVLLFSFSTKLLDVLERYCMASGLEYS	553
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	MMPPAAEGRTPHQAPLDQVLLQQLLNHFRKNKDKVLLFSFSTKLLDVLQYCIASGLDFR	588
Anas_platyrhynchos	-----KMKVLQQLLNHFRKNKDKVLLFSFSTKLLDVLQYCMASGLDYR	544
Chelonoidis_abingdonii	-----KMKVLQQLLNHFRKNKDKVLLFSFSTKLLDVLQYCMASGLDYR	238
	.....550.....560.....570.....580.....590.....600	

Mus_musculus	RLDGSTKSEERLKIVKEFNSSQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	610
Rattus_norvegicus	RLDGSTKSEERLKIVKEFNSSQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	610
Homo_sapiens	RLDGSTKSEERLKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	612
Pan_troglodytes	RLDGSTKSEERLKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	612
Macaca_mulatta	RLDGSTKSEERLKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	612
Callithrix_jacchus	RLDGSTKSEERLKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	611
Bos_taurus	RLDGSTKSEERIKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	623
Equus_caballus	RLDGNTKSEDRKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	612
Xenopus_tropicalis	RLDGNTKAEERMKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	606
Latimeria_chalumnae	RLDGNTKTEERVRIKIVKEFNSTQDVNICLVSTLAGGLGLNFVGANTVILFDPTWNPANDLQ	576
Rhinatrema_bivittatum	RLDGSTKAEERVKIVKEFNSTQDVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	613
Pavo_muticus	-----	
Pavo_cristatus	-----	
Gallus_gallus	RLDGSTKSEDRIRIVREFNRVPEINICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	648
Anas_platyrhynchos	RLDGNTKSEDRMRIVREFNKNQEINICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	604
Chelonoidis_abingdonii	RLDGNTKSEDRVKIVREFNSMODVNICLVSTMAGGLGLNFVGANVVILFDPTWNPANDLQ	298
	.....610.....620.....630.....640.....650.....660	

	:****:*****.* ***** *	
Mus_musculus	AVDRAYRIGQCRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	670
Rattus_norvegicus	AIDRAYRIGQCRDVKVFRRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	670
Homo_sapiens	AIDRAYRIGQCRDVKVLRLISLGTVEEIMYLROIYKQQLHCVVVGSENAKRYFEAVOGSK	672
Pan_troglodytes	AIDRAYRIGQCRDVKVLRLISLGTVEEIMYLROIYKQQLHCVVVGSENAKRYFEAVOGSK	672
Macaca_mulatta	AIDRAYRIGQCRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	672
Callithrix_jacchus	AIDRVYRIGQCRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	671
Bos_taurus	AIDRAYRIGQCRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	683
Equus_caballus	AIDRAYRIGQCRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFEAVOGSK	672
Xenopus_tropicalis	AIDRAYRIGQCRDVKVFRVSLGTVEEIMYLROVYKQQLQCAVVGSENAKRYFEAVOGSK	666
Latimeria_chalumnae	AIDRAYRIGQCRDVKVFRRLISLGTVEEIMYLROLYKQQLHCVVVGSENAKRYFEAVOGSK	636
Rhinatrema_bivittatum	AIDRAYRIGQSRDVKVLRLISLGTVEEIMYLROVYKQQLHCVVVGSENAKRYFAAVOGSK	673
Pavo_muticus	-----MYLROVYKQQLHCAVVGSENAKRYFEAVOGSK	32
Pavo_cristatus	-----MYLROVYKQQLHCAVVGSENAKRYFEAVOGSK	32
Gallus_gallus	AIDRAYRIGQCKDVKVFRRLISLGTVEEMMYLROVYKQQLHCAVVGSENAKRYFKAOGSK	708
Anas_platyrhynchos	AIDRAYRIGQCKDVKVFRRLISLGTVEEMMYLROVYKQQLHCAVVGSENAKRYFEAVOGSK	664
Chelonoidis_abingdonii	AIDRAYRIGQCRDVKVFRRLISLGTVEEMMYLROVYKQQLHCAVVGSENAKRYFEAVOGSK	358
	.....670.....680.....690.....700.....710.....720	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Feb 1 12:08:24 2022

Page 5 of 10

```

      .  ***:::  ***:::  :****::***  ** :
Mus_musculus      EHRGELFGVHNLFKLRSGSCLTRDILE-----REGQ      702
Rattus_norvegicus EHRGELFGVHNLFKLRSGSCLTRDILETRSQPGELQIISLGFWDFVVKCFIVLHLREGQ 730
Homo_sapiens      EHQGELFGIHNLFKFRSOGSCLTKDILE-----REGQ      704
Pan_troglodytes   EHQGELFGIHNLFKFRSOGSCLTKDILE-----REGQ      704
Macaca_mulatta    EHQGELFGIHNLFKLRSGSCLTRDILE-----REGQ      704
Callithrix_jacchus EHQGELFGIHNLFKLRSGSCLTKDILE-----REGQ      703
Bos_taurus        EHQGELFGVYNLFKLRSGSCLTRDILE-----REGK      715
Equus_caballus     EHQGELFGVYNLFKLRSHESCLTRDILE-----REGQ      704
Xenopus_tropicalis EHKGELFGVNNLFKLRPOGSCLTRDILE-----REKQ      698
Latimeria_chalumnae EDTGELYGVHNLFRLOTGGACLTKEILE-----REGQ      668
Rhinatrema_bivittatum VHQGELFGVHNLFRLOTGTCLTREILE-----REGQ      705
Pavo_muticus       EHQGELFGIHNLFKLRTHGSCLTKDILE-----REGQ      64
Pavo_cristatus     EHQGELFGIHNLFKLRTHGSCLTKDILE-----REGQ      64
Gallus_gallus      EHQGELFGIHNLFKLRTHGSCLTKDILE-----REGQ      740
Anas_platyrhynchos EHQGELFGIHNLFKLRTHGSCLTKDILE-----REGR      696
Chelonoidis_abingdonii EHQGELFGIHNLFKLRTHGSCLTKDILE-----REGQ      390
.....730.....740.....750.....760.....770.....780

```

```

      ** *: :. :. :
Mus_musculus      VEAGIMTATTWLKGEF-----SAQELTPRDPDCQEP-----TDVCELYS      742
Rattus_norvegicus VEAGIMTATTWLKGEA-----SAQKLETPRDPDCQEP-----TNVCELYS      770
Homo_sapiens      VEAGIMTATTWLKGEF-----PAHKLEMPROPDCQECRGTEQAAEP-----LAKEACDLCS      755
Pan_troglodytes   VEAGIMTATTWLKGEF-----PAYKLEMPROPDCQECRGTEQAAEP-----LAKEACDLCS      755
Macaca_mulatta    VEAGIMTATTWLKGEF-----PAHKLEMPGEPDCQECRGTEQAAEP-----LAKEVCDPCS      755
Callithrix_jacchus VEAGIMTATTWLKGEF-----PAHKLEMPTESDSQECRGTEQATEP-----LAKEACDFCS      754
Bos_taurus        VEAGIMTATTWLKEEF-----PVHKLETAREPDCREHRGPEQ-----LAEACDLCS      762
Equus_caballus     VEAGVMTATTWLKEEF-----RVHKPETPREPDCQEHGRLQPADP-----LAKEACDLCS      755
Xenopus_tropicalis VEDGVTASMYVSQTP-----VTVDTEMGADIDSDDPKVGAKHCQR--FFKESTFDFSS      750
Latimeria_chalumnae VEAGVMTATTWLKEEFPAHRLTETAKSGCEAPKDQLEPKVQMOKVDVEGKNEQEIFDFTS      728
Rhinatrema_bivittatum VEAGVMTATTWLKEEF-----PVQKLDMPMEPCGEDYIANLEHGRL--LEREPFDLSS      756
Pavo_muticus       VEAGVMTATTWLKEEF-----PQSGSENCDQPDYGGARGPSSTKAQ---LEREETDFHD      115
Pavo_cristatus     VEAGVMTATTWLKEEF-----PQSGSENCDQPDYGGARGPSSTKAQ---LEREETDFHD      115
Gallus_gallus      VEAGVMTATTWLKEEF-----PQSGSENCDQPDYGGARGPSSTKAQ---L--EETDFHD      789
Anas_platyrhynchos VEAGVMTATTWLKEES-----PPHSSERYERPDPFGDGDPPNSKAQ---LEREETDFHN      747
Chelonoidis_abingdonii VEAGVMTATTWLKEEF-----PSCRLEMHSEPGCKEDKAPLKSREQ---LEKEEFDFFYS      441
.....790.....800.....810.....820.....830.....840

```

```

      *:::  :  :::* * *:::
Mus_musculus      DISDEESVGHSLGKTDKH--KFSDTSRTPGFPAQLTLLQCGFSKLFKAKYKSDODGDGNP      800
Rattus_norvegicus DMSDEESVG----KAVKH--KVGSPSRTPGSSAQLTLLQCGFSKLFKAKCESVDGDGNP      824
Homo_sapiens      DFSDEEPVGATGIKTAKN--KAPDSSKASSSPGQLTLLQCGFSKLFKCKKAVEDSDGNT      813
Pan_troglodytes   DFSDEEPVGATGIKTAKN--KAPDSSKASSSPGQLTLLQCGFSKLFKCKKAVEDSDGNT      813
Macaca_mulatta    DFSDEEPVGAAGVKTAKN--RAPDSNKASSSPGQLTLLQCGFSKLFKCKKAVEDSDGNT      813
Callithrix_jacchus DFSDEESVGAAGVKTAKN--KAPDPSKASTSPGQLTLLQCGFSKLFKCKKAVEDSDGNT      812
Bos_taurus        DFSEDETASNSVTKTAKN--KASDSSRASVSPGQFSLQCGFSKLFKCKKAVEDSDGNT      820
Equus_caballus     DFSDEEAVGNSKLTAKN--KPRDSS-KSGSPAQLTLLQCGFSKLFKCKKAVEDSDGNT      812
Xenopus_tropicalis D-SDEETNGTSTVMKP-----SKMPNSDNRRQLTLHQYGFSLMLEREITIDNKKTSLP      802
Latimeria_chalumnae D-SEEEQSTSTNLKPKAEKNKAPKADSTTITQGFILFOWGFSLMLEREITIDNKKTSLP      787
Rhinatrema_bivittatum D-SDEEAMKNSKTKTCR--SRVSNAGNTVDSKRELTLQCGFSKLFKCKKAVEDSDGNT      813
Pavo_muticus       YFSDDDILEISMEKSNRR--KPCSTNNLMIAKRQLSLMQCGFSNLLQREIEATTKSGNN-      172
Pavo_cristatus     YFSDDDILEISMEKSNRR--KPCSTNNLMIAKRQLSLMQCGFSNLLQREIEATTKSGNN-      172
Gallus_gallus      CFSDDDILEISVKKRNRK--KPCSANNLMIAKRQLSLMQCGFSNLLQREIEATTKSGNN-      846
Anas_platyrhynchos DFSDDDMLEISMKRNRK--RPCSANNLMIAKRQLSLMQCGFSNLLQREIEATTKSGNN-      804
Chelonoidis_abingdonii DFSDDDELVGSS-RTKKS--RFCNANDMLISKQLTLQCGFSKLFKCKKAVEDSDGNT      498
.....850.....860.....870.....880.....890.....900

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERCC412 Use Feb 1 12:08:24 2022

Page 6 of 10

Mus_musculus	VP	SD	GS	DE	Q	P	M	--	CL	S	A	E	A	R	Q	A	A	R	K	T	W	D	S	----	V	C	T	S	E	H	Q	K	S	D	N	I	Q	T	P	D	E	K	V	C	V	S	D	K	852											
Rattus_norvegicus	V	S	D	G	S	S	D	E	Q	P	M	--	CL	S	A	K	A	R	Q	A	A	C	K	T	W	D	S	----	V	C	T	S	E	H	Q	K	S	D	N	I	Q	T	P	D	E	K	V	C	V	S	D	K	876							
Homo_sapiens	A	S	D	D	E	S	S	D	E	Q	P	T	--	CL	S	T	E	A	K	D	A	G	C	E	K	N	O	D	S	----	L	G	T	S	K	H	Q	K	I	D	N	I	L	N	P	K	E	K	H	I	F	Y	K	865						
Pan_troglodytes	A	S	D	D	E	S	S	D	E	Q	P	T	--	CL	S	T	E	A	K	D	A	G	C	E	K	N	O	D	S	----	L	G	T	S	K	R	Q	K	I	D	N	I	L	N	P	K	E	K	H	I	F	Y	K	865						
Macaca_mulatta	A	S	D	D	E	S	S	D	E	Q	P	T	--	CL	S	T	E	A	K	D	A	G	C	E	K	N	O	D	S	----	L	C	T	S	K	Y	Q	K	L	G	N	I	L	N	P	K	E	K	H	I	F	Y	K	865						
Callithrix_jacchus	A	S	D	E	S	S	D	E	Q	P	I	--	CL	S	T	E	A	T	V	A	D	C	E	K	N	O	D	S	----	L	G	T	S	K	H	Q	K	I	D	N	I	L	N	P	K	E	K	Y	I	F	Y	K	864							
Bos_taurus	A	S	D	N	E	S	S	D	E	Q	P	T	--	C	F	S	T	E	A	K	N	A	G	C	K	S	O	D	S	----	L	G	T	L	K	H	Q	K	L	A	N	V	L	N	P	N	G	K	C	V	F	E	K	872						
Equus_caballus	A	S	D	D	E	S	S	D	E	Q	P	T	--	CL	S	T	E	A	K	D	V	D	C	H	K	S	R	D	S	----	I	G	I	S	R	Y	R	K	L	A	N	T	L	N	P	N	E	K	C	I	F	D	K	864						
Xenopus_tropicalis	G	E	S	N	T	S	I	L	N	V	N	M	--	S	S	G	K	K	S	S	R	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	822										
Latimeria_chalumnae	D	G	P	S	S	S	V	T	S	D	S	Q	--	S	A	G	O	S	S	D	E	D	F	K	V	T	D	L	G	G	E	H	R	P	N	Y	M	F	P	G	G	Q	R	A	V	Q	L	S	K	Q	P	A	K	O	S	E	H	K	R	845
Rhinatrema_bivittatum	D	L	S	Y	N	O	S	S	A	N	Q	R	--	S	D	G	E	L	R	M	K	M	I	K	S	T	L	G	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	860			
Pavo_muticus	D	S	H	H	S	G	S	D	G	T	I	--	R	T	C	V	N	S	K	R	D	D	F	O	K	C	E	S	Y	----	V	H	I	L	E	H	R	K	A	A	Q	S	P	N	G	T	D	K	Q	G	M	H	R	224						
Pavo_cristatus	D	S	H	H	S	G	S	D	G	T	I	--	R	T	C	V	N	S	K	C	D	D	F	O	K	C	E	S	Y	----	V	H	I	L	E	H	R	K	A	A	Q	S	P	N	G	T	D	K	Q	G	M	H	R	224						
Gallus_gallus	D	S	H	H	S	G	S	D	S	Q	T	I	--	R	T	C	L	N	S	K	C	D	D	V	O	K	C	E	S	Y	----	E	H	I	L	E	H	R	K	A	A	Q	S	P	N	G	T	D	K	Q	V	M	Q	R</						

		:	:	: . . . :	:::	. : *	
Mus_musculus	SEKILEQNVSSESDDETKDHR-----AGHHCMSGGDTESEDS--DVIFPTQYPTORI	903					
Rattus_norvegicus	SEKILEQNVSSESDDETKCHST-----AGHHCMSGGDTESEDS--DVIFPTQDPTQRV	927					
Homo_sapiens	SEKILEQNISSKSD-EKKIKN-----TDKHCILQNVTESEDS--DVICPTQYTTERF	914					
Pan_troglodytes	SEKILEQNISSKSD-EKNIKN-----TDKHCILQNVTESEDS--DVICPTQYTTERF	914					
Macaca_mulatta	SEKITLEQSISSKSD-EKKFKN-----TDKHCILQNDTESEDS--DVICPTQHTTTERF	914					
Callithrix_jacchus	NEKILKQNISSKSD-EKKFKN-----TDKRCILQNVSESEDS--DVIYPTQYTTERF	913					
Bos_taurus	SEKILKENIPSESDDENKFNKT-----VDHHHILQNVTESEDS--DIIFPTQYTTORF	923					
Equus_caballus	SEKILEQKISSEFFDEKNFNKT-----TDHHCILQNVTESEDS--DVVFPTQYTTQKV	915					
Xenopus_tropicalis	-----TVLENENVSETYEYSSDESGEDIVLSTQVCCKDK	856					
Latimeria_chalumnae	QKPCCNQWAISSDSEGAEELGSKQKHCVSEBASVMMETDSSEES--DDVIWPAQVPAQR	904					
Rhinatrema_bivittatum	KKRAPNWDFSTDSEEENEIKNTSMHRRVSEHVSFVKETDSSEES--DIIYSSQLSAQQE	918					
Pavo_muticus	----ADCLVLLDSEEEVDRENED--LCISRQSDVVMETESSSEEN-CDVIFPTQFPASQQ	277					
Pavo_cristatus	----ADCLVLSDSEEEVDRENED--LCISRQSDVVMETESSSEEN-CDVIFPTQFPASQQ	277					
Gallus_gallus	----ADCLVLSDSEE-VNREND--LCISRQSDVVIETESSTDEN-CDVIFPTQFPASHQ	950					
Anas_platyrhynchos	----ADWLVLNSNEEEEDED--QCISKQNDVVMETESSSEEN-DNIIFPTQVSACHQ	909					
Chelonoidis_abingdonii	VIVAPDPVPSDSEIKKDIENKNKNQCISKEIGVVMETEGSSEES--DDIILASQVPAHQE	611					
	.....970.....980.....990.....1000.....1010.....1020					

Mus_musculus	PKNHIRFKLLLG	-----ESEDSE	ENPVKVN-----	HGDDRONSGRGN	GPV	PNL	947
Rattus_norvegicus	PKNPICCKLLG	-----ESEDSE	TEDPVKVN-----	HDDGRONSGRGN	GPV	SNF	971
Homo_sapiens	PDNSIRFKPPLE	-----GSEDSE	TEHTVKTRN-----	NDNSRNTDDKRN	GIISK		959
Pan_troglodytes	LDNSIRFKPPLE	-----GSEDSE	TEHTVKTRN-----	NDNSRNTDDKRN	GIISK		959
Macaca_mulatta	PDNSIRFKPPLE	-----GSEDSE	TEHSVKTRN-----	NDNGRKTDQRRN	GIISEK		959
Callithrix_jacchus	PDNSIRFKPPLE	-----GSEDSE	TEHSVKRRN-----	DDDGRKTDQRRN	GIISK		958
Bos_taurus	LKKNIRFKPPVD	-----GSEDSE	ENPVNIKN-----	NGDDTKTNVRGN	GLISK		968
Equus_caballus	PKNSIRFKPPVD	-----GSEDSE	TENPVKIKN-----	NGDYKKTDFRVN	GLISK		960
Xenopus_tropicalis			-----GKKISI	IIK-----	CIAESD	SSDIDLDT-----	878
Latimeria_chalumnae	KVTARNKTS	CGLLSDCSKSS	ADEQFINISSK	GSVSL-----	VCRPS	EVSDAEFAINLVK	958
Rhinatrema_bivittatum	RAPAKETSSWD	-----SESSD	AEKDS	SSIMKGRF-----	MTSEP	APTSSWSWSSFKKK	966
Pavo_muticus	AMHTKKTEIQTS	-----ASENCE	ESLKEKD-----		KEEYR	QFGFRSTESNFSK	320
Pavo_cristatus	AMHTKKTEIQTS	-----ASENCE	ESLKEKD-----		KEEYR	QFGFRSTESNFSK	320
Gallus_gallus	AVNTKKIEIQTS	-----ASENCE	EP	LPKEKDEFVL-----	KEEYR	QFRSHSTESNFSK	997
Anas_platyrhynchos	AVLTAKRAEIRHS	-----PSEN	PLESAKDRS-----	IF---	KRDC	ROLGFCSTESNVSK	954
Chelonoidis_abingdonii	TAPAKNVKRYEA	-----VSEK	LGSDAEK	TTKCTPKG	DVLACK	OSLFCNTESVLT	662
	.....1030.....1040.....1050.....1060.....1070.....1080						

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Feb 1 12:08:24 2022

Page 7 of 10

```

      . . . . .
Mus_musculus      LCLENMISKSVRKRKGTDDISDESDDIDMFPSRIRKQRTSLKFKRKKENKRKLDNSP 1007
Rattus_norvegicus LYLENMTLKSVRKRKGTDDISDESDDIDMFPSRIRKQRTASLKLKSKKENKRKHNSP 1031
Homo_sapiens      LSPENTTLKSILKRKGTSDISDESDDIEISSKSRVRKRA--SSLRFKRIKETKKELHNSP 1017
Pan_troglodytes   LSPENTTLKSILKRKGTSDISDESDDVEISSKSRVRKRA--SSLRFKRIKETKKELHNSP 1017
Macaca_mulatta    LSPENTTLKCIVKRKGTSDISDESDDIEISSKSRVRK----SSLRFKRIKETKKELHNSP 1015
Callithrix_jacchus LSPENTTLRSIVKRKVTSDISDESDDIEISSKSRVRKRV--SSLRFKRRKETRKELHSFP 1017
Bos_taurus        LNLEIETLKSNTKRKGGSDISDESDDIEVFCKSRVRKQRTSSLRFKRRKENKRELYTFP 1028
Equus_caballus    LNLENLTLPIMKRKGGSDISDESDDIEISSKSRVRKQRTTSLRFKRRKEKKRELYTFP 1020
Xenopus_tropicalis ---SDNTNRQPVNS-SCDDISDESDDIEIPNKYRSGNT-----GKDKD 917
Latimeria_chalumnae GNLOHHTSKAPQVR-GPDDVSEESDDIDISIDCLSRDQNRCLKKHYSEKKAIPYSQLKK 1017
Rhinatrema_bivittatum ICAFNNNAQKTLQAK-GTDDISDESDDFEIPAQSRVLTMKEMK-----DKNKL 1012
Pavo_muticus      IVSFKNMKNSTRGLKGASDISDESDDIEIPCHSESEKLRTFSFTKGKQRHHTSSALGKFS 380
Pavo_cristatus    IVSFKNMKNSTRGLKGASDISDESDDIEIPCHSESEKLRTFSFTKGKQRHHTSSALGKFS 380
Gallus_gallus     IVSSKNMKDSARGLKGESNVSDISDESDDIEIPCHSESEKLRTFSFMRKRHRHTSSNALGKFS 1057
Anas_platyrhynchos IRSYEDVKNSARDLKGASDVSDISDESDDIEIPCNSESEKLRTSFPFRWKQRHAHSNELGNFS 1014
Chelonoidis_abingdonii TKS WKNAQKTTTYVKGTSDISDESDDLEIPLWSKSRNQVFALRLKQKCDRNKEFYNS 722
      .....1090.....1100.....1110.....1120.....1130.....1140

```

```

      . . . . .
Mus_musculus      VTAKEANQVCAADGDRSSQVIEDFSSSDNLSLSHLSFTKLSHRAETVVKDKISLSPKLP 1067
Rattus_norvegicus ITAKDNTQVCEADGDCSSQVIEDFSSSDSSSVSHVSFTKLNHRAETVKGKSNLRNKLPG 1091
Homo_sapiens      KTMNKTNQVYAANEDHNSQFIDYSSSDESLVSHFSFSKQSHRPRTIIRDRTSFSSKLPS 1077
Pan_troglodytes   KTMNKTNQVYAANEDHNSQFIDYSSSDESLVSHFSFSKQSHRPRTIIRDRTSFSSKLPS 1077
Macaca_mulatta    KTVNKTNQVYATNEDHNSQFIDYSSSDESLVSHFSFSKQSHRTRTVKDRTSFSSKLPS 1075
Callithrix_jacchus KTMNKTNQVYATDEDHNSQFIGDYSSSDESLVSHFSFSKQSHRRTIKNRTSFSSKLPS 1077
Bos_taurus        KTMKKANQCATDEDHNSQFIDYSSSDESLVSHFSFSKQSHRRTIKNRTSFSSKLPS 1077
Equus_caballus    KTVKKTNQLYATDGDHNSQFIDYSSSDESLVSHFSFSKQSHRRTIKNRTSFSSKLPS 1088
Xenopus_tropicalis SFNNKYDA-----AKDSQTIIEVFTSSDDNLDQIKKSPSYEDTPQ-KSSNLRMHMESRK 970
Latimeria_chalumnae TASSTTESNHSVDLATESQYIDAFSPSEDEMTTQKTRLPNHSSQKSKSRRRNKYTKINFT 1077
Rhinatrema_bivittatum LTFTEKEDR-----ENNSQTIIDVFSSSEDDLPKKVRFNKEDQKLSHRHKIKIESQS-P 1065
Pavo_muticus      KSLPQKKKPPWRKEKESDSQNIIDVFSSSEDDNLEVEKIHTQEKSCCKCKSQRCRVQFKSKMLH 440
Pavo_cristatus    KSLPQKKKPPWRKEKESDSQNIIDVFSSSEDDNLEVEKIHTQEKSCCKCKSQRCRVQFKSKMLH 440
Gallus_gallus     KSLPQKKKPPWRKEKESDSQNIIDVFSSSEDDNLEVEKIHTQEKSCCKCKNRRCRVQFRSKMPH 1117
Anas_platyrhynchos KSQLQAK-PSRKEKESQNIIDVFSSSEDDNLEVEKIHTQEKSCCKCKNRRCRVQFRSKMPH 1073
Chelonoidis_abingdonii KTVLQANKPNREKETDSQNIIDVFSSSEDDSPVKKIHLKQSHKHKQRRRIQFDPKS-- 780
      .....1150.....1160.....1170.....1180.....1190.....1200

```

```

      . . . . .
Mus_musculus      PDKKNSTFISRKPPSFLNEGVI-----QEICNSMDKILDGVQEVAYIHSNQNV 1117
Rattus_norvegicus PDKKNSTFIPRKPPASFLNERVVS-----QEICNSMDKILDGVQEVAYIHSNQNV 1141
Homo_sapiens      HNKKNSTFIPRKPMKCSNEKVVN-----QECSYESMDKFLDGVQEVAYIHSNQNV 1127
Pan_troglodytes   HNKKNSTFIPRKPMKCSNEKVVN-----QECSYESMDKFLDGVQEVAYIHSNQNV 1127
Macaca_mulatta    HNKKSSTVMPRKPMKCSNEKAVN-----QECSYESMDKFLDGVQEVAYIHSNQNV 1125
Callithrix_jacchus QNKKNSTILMPRKPMKCSNEKAVN-----KEQSCESMDKFLDGVQEVAYIHSNQNV 1127
Bos_taurus        H-KRNSTFIPRKPMKFSNESVNV-----QNRICESMDKFLDGVQEVAYIHSNQNV 1137
Equus_caballus    H-KKNSTFIPRKPMKFSNERVNV-----QAMYESMDKFLDGVREVAYIHSNQNV 1129
Xenopus_tropicalis RKNKSVFQIKKAIHQEGVKYN-----GSSLDKVLDDGVQEVAYIHSNQNV 1015
Latimeria_chalumnae TKQKSVSSTKERAKCASVVKPSKVSSNSEPAVSQEAAGSVDRLLDGMQEVAYVHSNQCV 1137
Rhinatrema_bivittatum RYIKNTSTHKEEN-----VGLDRILDGVQEVAYIHSNQNV 1101
Pavo_muticus      PGQDRMCSVAQMKSSNYAVHRSSTHRAVESM--DRYLGFSFSAVSDGVQEVAYMHSNQNV 498
Pavo_cristatus    PGQDRMCSVAQMKSSNYAVHRSSTHRAVESM--DRYLGFSFSAVSDGVQEVAYMHSNQNV 498
Gallus_gallus     LVQDRMCFVAQMKSSNYAVHRSSARGAQFDH--QHNVESMDRYLDGVQEVAYMHSNQNV 1175
Anas_platyrhynchos PIQDRMCTVAEKSSSYAPHKTYAHKAEFDH--QDHKVESMDKYLDGVQEVAYIHSNQNV 1131
Chelonoidis_abingdonii PCRVRGASVTIVTSPSHSHVHKTSVSKRACVN--QENNVGSLDNLFDGVQEVAYIHSNQNV 838
      .....1210.....1220.....1230.....1240.....1250.....1260

```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Feb 1 12:08:24 2022

Page 8 of 10

```

:****:****:* * :****:****:****:
Mus_musculus      IGSSRAENHMSRWATRDVFELKQFSQLPANVAVCSSKTYKTQVKAN---IVSPTEKDQPP 1174
Rattus_norvegicus IGSSRAENHMSRWATRDVFELKQFSQLPANVAVCSSEYKSKVNAN---AVIPTKKDQPP 1198
Homo_sapiens      IGSSKAENHMSRWAAHDVFELKQFSQLPANIAVCSKTYKEKVDAD---TLPHTKKGOQP 1184
Pan_troglodytes   IGSSKAENHMSRWAAHDVFELKQFSQLPANIAVCSKTYKEKVDAD---TLPHTKKGOQP 1184
Macaca_mulatta    IGSSKAENHMSRWAAHDVFELKQFSQLPANIAVCSKTYKEKVNAN---TLPHTKKGOQP 1182
Callithrix_jacchus IGSSKAENHMSRWAAHDVFELKQFSQLPANIAVCSKTYKEKVDAD---TLPHTKKGOQP 1184
Bos_taurus        IGSSKAENHMSRWAAHDVFELKQFSQLPANIAVCTSKTHKEKMGD---ISTRTKECQPL 1194
Equus_caballus    IGSSRAENHMSRWAAARDVFELKQFSQLPANIAVCTSKTSKEKMKAD---TLTHTKKSQOP 1186
Xenopus_tropicalis VGSSKAENQLSRWAVRDVFELKQFSQLPANITP---LKITKSEYVS---DKMTPLRKTEK 1069
Latimeria_chalumnae VGSSKAENRMSYCALRDVFLRQYSQMPANVAVQSDENLEESDNLTGSPNKATTISSKGS 1197
Rhinatrema_bivittatum VGSSKAENNLRSWAVRDVFELKQFSQLPANVTVCYGGKSEDS-----LEDEMLVRENES 1155
Pavo_muticus      VGSSKAENHLSRWAMRDVFELKQFSQLPANIAVCSAKKAKEEPEEV-IAGKNIMKREHGI 557
Pavo_cristatus    VGSSKAENHLSRWAMRDVFELKQFSQLPANIAVCSAKKAKEEPEEV-IAGKNIMKREHGI 557
Gallus_gallus     VGSSKAENHLSRWAMRDVFELKQFSQLPANIAVCSAKKAKAKEEIV-IVGKNIMKREHEI 1234
Anas_platyrhynchos VGSSKAENHLSRWAVRDVFELKQFSQLPANVTVCYSAKKDEENSEE-MAGANVMKRGKEM 1190
Chelonoidis_abingdonii VGSSKAENQMSNWAVRDVFELKQFSQLPANIAVYRAKR-ETETQEA-ISAANNIKRQQQI 896
.....1270.....1280.....1290.....1300.....1310.....1320

```

```

: * : . : . **::*:** : *:* : : : :
Mus_musculus      SDGGISSPLYVSHPVVQKKKDVYRTNHTTFIIGETPRGIRRKQFEEMASYKLB-VKEFA 1233
Rattus_norvegicus SDGHISSPLYISHPVVSQKKKDVYRTNHTTFIIGETPRGIRRKQFEEMASYKLS-VKEFA 1257
Homo_sapiens      SEGSIPLPLYISNPVNQKKKKVYHTNQTFIIGETPKGIRRKQFEEMASYFNSSVNEFA 1244
Pan_troglodytes   GEGSISLPLYISNPVNQKKKKVYHTNQTFIIGETPKGIRRKQFEEMASYFNSSVNEFA 1244
Macaca_mulatta    SEGSIPLPLYISHPVVSQKKKKVYRTNQTFIIGETPKGIRRKQFEEMASYFNSSVNEFA 1242
Callithrix_jacchus SEGSIPLPLYISHPVVSQKKKKVYHTNQTFIIGETPKGIRRKQFEEMASHFNSSVNEFA 1244
Bos_taurus        SEGSIPLPLYISHPVVSQKKKKVCRIDQTFIIGETPKGIRRKQFEEMASYFKLSSVKEFA 1254
Equus_caballus    GEGGISLPLYISHPVVSQKKKGVYRTDQTFIIGETPKGVRRKQFEEMACYFNLSVKEFA 1246
Xenopus_tropicalis DLETKSYPM-LQYPVTHQKKKVHRVGKTTFLVGETPKALQKQFQEMAAHFNMAAEQFA 1128
Latimeria_chalumnae EKLSRQDPS-ILQPVQTQEKRLHQVGQTTFLIGETPKGICRKQFLEMASHFNMAVEEFA 1256
Rhinatrema_bivittatum CKDNRQFPVSIEHPITQMGKKVLRAGHITFLIGETPKGILRKQFSQMVSYFNKASVQELS 1215
Pavo_muticus      MVNSNQYNLYILHPVIRNTKVHRVGSVTFLLIGKTPKEIRRRQFEIIVSHFKMGSMEEEL 617
Pavo_cristatus    MVNSNQYNLYILHPVIRNTKVHRVGSVTFLLIGKTPKEIRRRQFEIIVSHFKMGSMEEEL 617
Gallus_gallus     MVNSNLHNLILHPVIRNTKVHRVGSVTFLLVGKTPKEIRRRQFEIIVSHVFKMGSMEEEL 1294
Anas_platyrhynchos MLNSKQH-LYVVPVHIQKNNKVHRVGSSTFLVGKTPKEIRRRQFEEMVSHFNMGSMEEEL 1249
Chelonoidis_abingdonii SDNTKQSHLCIVHPAIQKKKKAHRIGATTFLIGETPKSIRRKQFEEMVSHFNMAVEEEL 956
.....1330.....1340.....1350.....1360.....1370.....1380

```

```

. : .*: * :*: :* :* :
Mus_musculus      EQVTRATSEERQKMLRDFYSLQHPVEVKEFFVNSASELIKSVHKKEE--RVRNKSKEKESL 1291
Rattus_norvegicus EQVTSATSEEQQRMLRDFYSLQHPVEVKEFFMDSASELMKSVHEKEE--RVRNKSKEKESL 1315
Homo_sapiens      KHITNATSEERQKMLRDFYASQYPEVKEFFVDSVSQFNNSFEKGEQ-RTRKKSKDKRESL 1303
Pan_troglodytes   KHITNATSEERQKMLRDFYASQYPEVKEFFVDSVSQFNNSFEKGEQ-RTRKKSKDKRESL 1303
Macaca_mulatta    EHITSATSEERQKMLRDFYASQYPEVKELFMDSAFEFNTSFEKGE--CTRKKSEKRDLSL 1300
Callithrix_jacchus KHITNATSEERQKMLRDFYASQYPEVKEFFVDSASEFNNSAFEKGE--RIRKKSEKRR-- 1300
Bos_taurus        KRVTNATSEERQKMLRDFYTSQYPEVREFFVDSPECTKSASEKGE--RVENKSEKRRSL 1312
Equus_caballus    KHITNATSEERQKMLRDFYASQYPEVKEFFADSASEFIKSAVEEGE--RVRNKSKEKRESL 1304
Xenopus_tropicalis HHISSVKSQDVRQNMMLREYYISKYSEAGELYPVQAQLELQEDKEHK---TKEQGLATKRR 1185
Latimeria_chalumnae NHIVGITSEERQIMLRDFYSAQHPELKDILRVIVPEPAIEVDDTG---DREIPMRKSGRR 1313
Rhinatrema_bivittatum DHVLKSTSEERQKMLKDFYAAKYPELKEMFPPIQAAVLPRSVTKKGEICIKHKSQRKSTVK 1275
Pavo_muticus      EHIAKTTSESRQKLLREFYVSKHPEIESLFPVEVPAQVAHSYEEGD--AAARKSRKRKCI 675
Pavo_cristatus    EHIAKTTSESRQKLLREFYVSKHPEIESLFPVEVPAQVAHSYEEGD--AAARKSRKRKCI 675
Gallus_gallus     EHIVKATSESRQKLLREFYISKHPEIESLFPVELPAQVAHNYEEGD--AAARKSRKRKCV 1351
Anas_platyrhynchos EHITKATSETRQKMLREFYISKHPEAESLFPVEIPAQVSHDYVERE--ADARNRKRKRSV 1307
Chelonoidis_abingdonii EYIAKATSEARQKMLRDFYAGKYPELEDFPVKVPVHVSDGCSEEV--YTSR-CRKRRA 1013
.....1390.....1400.....1410.....1420.....1430.....1440

```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC041212.fst Feb 1 12:08:24 2022

Page 9 of 10

```

Mus_musculus      LKENPSNDSTLSQYDSTNKMSQVYNRKICEGKSVRSQ-----HVFHREDTFSSDAEINKS 1347
Rattus_norvegicus LKERPSNDSTLSCNDSTNKMSQVYNQKICEGKSVRFQ-----HGSHEKEDTFSSGAEIKKS 1371
Homo_sapiens      IKPRLSDSETLSFKDSTNKISQVCSLKTYKRKSVKFQ-----HISYREEVFFNDAETTKS 1359
Pan_troglodytes   IKPRLSDSETLSFKDSTNKISQVCSLKTYKRKSVKFQ-----RSSYREEVFFNDAETTKS 1359
Macaca_mulatta    IKARLSDSETLSFKDSTNKISQVCSLKTYKRKSIKFQ-----HSSCREEVYSNDAETTKS 1356
Callithrix_jacchus -PLRLSDSETLSFKDSTNKISQIGCPKTYKGKPIKFQ-----HSSYREEMFSNDAETTKS 1355
Bos_taurus        MEQPSDSETLSFKNSTKKISPIFSPSICKKKSIFQ-----HSSCKKKVLSNDVETKKL 1368
Equus_caballus     IEERLSDSETSSFDSTKNYSQICRPKIYTGKSIKFQ-----HSSCREEVLSDDAETTKS 1360
Xenopus_tropicalis QKGMNAFPD-----ETTEKRIKAQHNNKIRKNS-----EPIGIDSHGCEHS-- 1226
Latimeria_chalumnae RRGKKLPSTLAVNHACSRIVARCRKKRKKARGVQFETPVYGASEDSGDTTEHFCAADKE 1373
Rhinatrema_bivittatum ERTSMTSPS--ATKPTADSIDEEYSQSKRNQ-----SLQFQNDSCDTENL 1319
Pavo_muticus       VNSGRCKSRPSSAKEFLPSGTTTELQNSQHEVEQLHSD-----SCLQDTCVD- AKYKQ 728
Pavo_cristatus     VNSGRCKSRPSSAKEFLPSGTTTELQNSQHEVEQLRSD-----SCLQDTCVD- AKYKQ 728
Gallus_gallus      VNSGRCKSRPSSAKEFLPSKTTKLQNSHREVEQLRND-----SCLQDTCVD- VKYKQ 1404
Anas_platyrhynchos VNFGRLLKSLSSAKELLSGTTGMQKQSCCEEVEQLHSD-----FCLQDNVCVKNTKYKQ 1361
Chelonoidis_abingdonii IKCGQSRSGPSTKDLPLFVTAEICSQKRHKGEAKQFHND-----FCIQDAVCLN-SKDKQ 1066
.....1450.....1460.....1470.....1480.....1490.....1500

```

```

Mus_musculus      PVS-FTEELHSEKDHPTPKDTTTTVFCPNSNSEALEA-ELGNSPGROWDLTGACGSRNRPL 1405
Rattus_norvegicus PVN-FTQEIYSEERNHPTPKDSMTLFCPDSKSEALET-ELEGSSGHOWDLTGAGSSRNRP 1429
Homo_sapiens      PVS-STQEIDSGKNSQASEDTVTSRSLNSESETRER-RENTMKDQDDLTRTGISRKEPL 1417
Pan_troglodytes   PVS-STQEIDSGKNSQASEDTVTSRSLNSESETRER-RENTMKDQDDLTRTGISRKEPL 1417
Macaca_mulatta    PVS-STQKIDSGKNSQASKDTVTSRQNSESETER-RENTMKDKDDLTRMGISRKEPL 1414
Callithrix_jacchus PVS-STQKIDSGKNSQASEGTVTSRSLNSESEAHER-RFENTMKDQDDLTRTGVSIRKEPL 1413
Bos_taurus        PIS-CTQETDGGERSQASEGTAASCSLNSKSGADELGLKENAGKGQDDLTLGISRNGPI 1427
Equus_caballus     PIS-STQDPNNGKNSHTSKNTVPSCSLNRKSEAYES-KLENTVKDQDDLTRTGISRNGPL 1418
Xenopus_tropicalis ---SNLNMPIIISHTGNPQIYSTYESTTLKITDS-----HENQSSSTVSPISSSK 1274
Latimeria_chalumnae EAATSSSTQEEFNRRNNSDAAVFTPSGGKSPETMQGASKD--ILQLQCNCKEVKSPEKRSK 1431
Rhinatrema_bivittatum PSG-TVLESDTKRSSNASKDLMSAVICNSKLKMAVESGVGITTEVLQSYSESQFPKTGSL 1378
Pavo_muticus       SPTVTTQHTER-SNNQAFKDFMASASLNSKSEIIEVLSVK-SSEGQODREVAELPRKRS- 785
Pavo_cristatus     SPTVTTQHTER-SNNQAFKDFMASASLNSKSEIIEVLSVK-SSEGQODREVAELPRKRS- 785
Gallus_gallus      SPTVATQHTKR-SNNQAFKDFMASGSLNSKSEIIEVLSVK-SSEGQODPEIAELPRKRSE 1462
Anas_platyrhynchos SLTDATQDIER-RNSQAFKDFMASGSLNSKSEIIEVLSVK-SCEEQODSAVIELPRKRSL 1419
Chelonoidis_abingdonii LSTVNTQNSISGRNSQPFKDFMATDSVSSKSEIIEMCNVN-ITKGQODSEGTESPRKRSL 1125
.....1510.....1520.....1530.....1540.....1550.....1560

```

```

Mus_musculus      FKLRNKRVENPGSENTPEDGLLGDTSLNLDLFKSHGEGPTQLPKNV-LSGPVAKAKQKPK 1464
Rattus_norvegicus FKLRNKRVENPVSESTPEGLGDTSLNLDLFKSHGEGPTQLPKNG-PSGPVAKAKQRPK 1488
Homo_sapiens      LKLENKKIENPVLENTSVISLLGDTSLDDDLFKSHGNSPTQLPKKV-LSGPMEKAKQRPK 1476
Pan_troglodytes   LKLENKKIENPVLENTSVISLLGDTSLDDDLFKSHGNSPTQLPKKV-LSGPMEKAKQRPK 1476
Macaca_mulatta    LKLENKKIENPVLENSSVISLLGDTSLDDDLFRSHGNSPTQLPKQV-LSGPVEKAKQRPK 1473
Callithrix_jacchus LKLENEKIENPVLEKTSVISLLGDTSLDDDLFKSHGNSPTQLPKKV-LSEPMEKAKQRPK 1472
Bos_taurus        FQVENKTIENPVLEDTSVVGLLGDTSLDDDLFKSHENSPPTQLPKKV-LSGSIEKAKQRPK 1486
Equus_caballus     FKEENKKIENSMLGNTSVVGLLGDTSLDDDLFKSHGNSPTQLPKKV-LSGPMEKAKQRPK 1477
Xenopus_tropicalis LMMDN---MNKTGENGSISELLGDTSLDDDLFTNKTNRQTQLPVRPNCDPAATKAKHRPK 1331
Latimeria_chalumnae FTSDNRIIEKPNSKKDSIAELLGDTSLDDDLFKPKKNSGGETEKKP-WSAQAAKVKRSGK 1490
Rhinatrema_bivittatum SKTENTKKENEISEENSANLLGDTSVLSPLFKSNCKNKSELPSRREFLLPAEKAKNRPK 1438
Pavo_muticus       -LSEDRERRAKTDKK-SFVDLLGDTSLSVLFRNGGKKPTESPRRI-PSKQIEKSKERPK 842
Pavo_cristatus     -LSEDRERRAKTDKK-SFVDLLGDTSLSVLFRNGGKKPTESPRRI-PSKQIEKSKERPK 842
Gallus_gallus      SLSEYRERRAKTDKK-SFVDLLGDTSLNVLFRNGGKKTTESPRRI-PSEQIEKSKKRPK 1520
Anas_platyrhynchos SQSENKERKAETYKK-SFVDLLGDTSLNLDLFGNGGNEPTESPRRI-PSGQVEKSKERPK 1477
Chelonoidis_abingdonii SQSENRRERETQTYMKN-SFVDLLGDTSVLNDLFKSNNGNRPTELPRRS-LSGPAEKAKERPK 1184
.....1570.....1580.....1590.....1600.....1610.....1620

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/ERC046L2.fasta Tue Feb 1 12:08:24 2022

Page 10 of 10

[illegible]

Mus_musculus	DVDDESISNTERE-----	1537
Rattus_norvegicus	DVDDESISRRERE-----	1561
Homo_sapiens	SDTDENATNTQSTT-----	1550
Pan_troglodytes	SDTDENATNTQSTT-----	1550
Macaca_mulatta	SSDSTTNTQSTTEVYK-----	1551
Callithrix_jacchus	SDTDENTASTQSTI-----	1546
Bos_taurus	SDTDESTANTQOE-----	1558
Equus_caballus	NDTDENTINTQOE-----	1549
Xenopus_tropicalis	MHNSSTS-----	1397
Latimeria_chalumnae	EDHQSESTAGTFFESQLWKPNPKKVDEKQC	1579
Rhinatrema_bivittatum	KDDLA-----	1502
Pavo_muticus	DDSDEPSSATSFNVVK-----	918
Pavo_cristatus	DDSDEPSSATSFNVVK-----	918
Gallus_gallus	DDSDEPSSATSFNLVK-----	1596
Anas_platyrhynchos	DDPDEPSTATSCDVVK-----	1552
Chelonoidis_abingdonii	SDSDESTSGTHTF-----	1256
	.....1690.....1700.....1710	