

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN24H11pre Feb 1 12:03:34 2022

Page 1 of 25

	* * * *: * **: **	:: *****:::*	::
Pavo_muticus	--MDAEADPRKRFFISATAAANYFGLDPAAP--AALRARPELSSFLDDGSEFLLVVORSGSR		57
Pavo_cristatus	--MDAEADPRKRFFISATAAANYFGLDPAAP--AALRARPELSSFLDDGSEFLLVVORSGSR		57
Gallus_gallus	--MAAESDPRKRFFISATAAANYFGLDPAAP--AALRARPELRFLLDDGNEFLLVVORSGGR		57
Chelonia_mydas	MSLAGAGDKRRKRFILVTAANYFGLASSADPSSALVASPOLANFLDDGNEFLLTVQHSGTIQ		60
Rattus_norvegicus	-MAGSLSDVRKLFLEFITTTONYFGLRPELWDQPLPNCPEVNNFLDDGNQMLLRVORSDAG		59
Mus_musculus	-MAGSLGDVRKLFLEFITTTONYFGLRPELWDQPPLPNCPEVNNFLDDGNQMLLRVORSEAG		59
Bos_taurus	-MAGVPGDVRKLFIFATIRNYFGLVSEWDHALLGNGPEINNFLDDGNQMLLRVORSDSG		59
Equus_caballus	-MAGGTGDVRKIFIFITTTONYFGLVSEPWDQPLLYNGPEINNFLDDGNQMLLRVORSDAG		59
Canis_lupus_familiaris	-MAGGSGDVRKVFIFTTTAQNYFGLVSEPWDQPLTYSCEPVNNFLDDGNQMLLRVORADAG		59
Homo_sapiens	-MANGTADVRKLFIFITTTONYFGLMSELWDQPLLCNCLEINNFLDDGNQMLLRVORSDAG		59
Pan_troglodytes	-MANGTADVRKLFIFITTTONYFGLMSELWDQPLLCNCLEINNFLDDGNQMLLRVORSDAG		59
Macaca_mulatta	-MANGTADVRKLFIFITTTONYFGLMSELWDQPLLCNCLEINNFLDDGNQMLLRVORSDAG		59
Macaca_fascicularis	-MANGTADVRKLFIFITTTONYFGLMSELWDQPLLCNCLEINNFLDDGNQMLLRVORSDAG		59
Callithrix_jacchus	-MANGSADVRKLFIFITTTONYFGLMSELWDQQLWSHCLEINNFLDDGNQMLLRVORSDAG		59
Xenopus_tropicalis	MPGAGG-DKRRKRFVLSTVHNYLGLPWDG---EVPGCA-ELERFLDDGNEFILLSGSKAGAR		55
Rhinatrema_bivittatum	MSGAGMQDHRKQFILATSENYFGLPFSDSGASALSGK-EINNFLDDGNEFVLVSRKSGQR		59
	1.....10.....20.....30.....40.....50.....60		

	: ** :: *.:.:*****:*.***: **: ***:*.:.*: :*****:.*:	
Pavo_muticus	LSASNKIETDTSKSNVLVFFKLRPDVITEDNLHNSNVLVSSVLDSPINSLYQAVRQVFAPV	117
Pavo_cristatus	LSASNKIETDTSKSNVLVFFKLRPDVITEDNLHNSNVLVSSVLDSPINSLYQAVRQVFAPV	117
Gallus_gallus	LSASNKIETDTSKNNVLVFFKLRPDVITEDNLHNSNVLVSSMLD SPLHSLYQAVRQVFAPV	117
Chelonia_mydas	LTVSNKVEAGDSKDKVLVFFKLRPDVITEDNLHNSNVLVSSMLDSPINTLYQAVRQVFAPV	120
Rattus_norvegicus	LAFSNTIDFDDTKDKVLVFFKLRPEVITDGNLHTNILVSSMLESPINSLYQAVRQVFAPM	119
Mus_musculus	LAFSNTIDFDDAKDKVLVFFKLRPEVITDGNLHNNILVSSMLESPINSLYQAVRQVFAPM	119
Bos_taurus	IAFSNVIDFADTKDKVLVFFKLRPEVITDQNLHNNILVSSMLESPINSLYQAVRQVFAPM	119
Equus_caballus	ISFSNTIDFADTKDKVLVFFKLRPEVITDQNLHNNILVSSMLESPINSLYQAVRQIFAPM	119
Canis_lupus_familiaris	VFSNAIDFADTKDKVLVFFKLRPEVITDKNLHNSNVLVSSMLESPINSLYQAVRQVFAPV	119
Homo_sapiens	ISFSNTIEFGDTKDKVLVFFKLRPEVITDENLHDNILVSSMLESPISSLYQAVRQVFAPM	119
Pan_troglodytes	ISFSNTIEFGDTKDKVLVFFKLRPEVITDENLHDNILVSSMLESPISSLYQAVRQVFAPM	119
Macaca_mulatta	ISFSNTIEFGDTKDKVLVFFKLRPEVITDENLHDNILVSSMLESPISSLYQAVRQVFAPM	119
Macaca_fascicularis	ISFSNTIEFGDTKDKVLVFFKLRPEVITDENLHDNILVSSMLESPISSLYQAVRQVFAPM	119
Callithrix_jacchus	ISFSNTVDFGDTKDKVLVFFKLRPEVITDKNLHDNILVSSMLESPISSLYQAVRQVFAPV	119
Xenopus_tropicalis	VRFSNKLDPDGTKENVLVFFKLRPDVITEDNLGYNLISSMLESPINTLYQAVRQVYAPI	115
Rhinatrema_bivittatum	LIFSNQVDAGDTKDKVLVFFKLRPDVITEDNLHDNILVSSMLDSPINALYQAVRQVFAPI	119
	.....70.....80.....90.....100.....110.....120	

	****::**::*****:***:**:**::..::***:*.**.*****	
Pavo_muticus	LLKDKWSRTLDPKLQRLLESEAGLSAVLRRSDPNCGTGTEFT-EDDVQAILTPTDEFOF	176
Pavo_cristatus	LLKDDKWSRTLDPKLQRLLESEAGLSAVLRRSDPNCGTGTEFT-EDDVQAILTPTDEFOF	176
Gallus_gallus	LLKDEKWSKTLDPKLQKLLSELEAGLSTVLRRSDPNCGTGTEFT-EDDVQAILTPTDEFOF	176
Chelonia_mydas	LLKDEKWSREFDPKLQNLLESEIEIGLGTVLRRSDPNYSGTKFR-EDDVRAILTPNDEFOF	179
Rattus_norvegicus	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLPKCLKK-EDDTRGILTPSDEFOF	178
Mus_musculus	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLPKCLKK-EDDTRGILTPSDEFOF	178
Bos_taurus	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLSKCLKFK-EDDTRGILTPSDEFOF	178
Equus_caballus	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLAKCLKFK-EDDTRGILTPNDEFOF	178
Canis_lupus_familiaris	LLKDKQWSRNFDPKLQNLLESELTGLGIVLRRSDTNSSKCLKFK-EDDTRGILTPSDEFOF	178
Homo_sapiens	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLTCLKFK-EDDTRGILTPSDEFOF	178
Pan_troglodytes	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLTCLKFK-EDDTRGILTPSDEFOF	178
Macaca_mulatta	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLTCLKFK-EDDTRGILTPSDEFOF	178
Macaca_fascicularis	LLKDKQWSRNFDPKLQNLLESEAGLGIVLRRSDTNLTCLKFK-EDDTRGILTPSDEFOF	178
Callithrix_jacchus	LLKDKQWSRNFDPKLQSLLESEAGLGIVLRRSDTNLSKCLKFK-EDDTRGILTPSDEFOF	178
Xenopus_tropicalis	LLKDEKWSKDFDPKLQSMLEAGLGITLRRKSVSSHGKPTFGGEDDLGILTPNDEFOF	175
Rhinatrema_bivittatum	LLKDEKWSKNFDPKLQTLLESEAGLGITLRRADPNKGITKFRGEDDILGIFTPSDEFOF	179
	.....130.....140.....150.....160.....170.....180	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 2 of 25

[illegible]

:: : * : ** : *** : ** : : * : : : : : * : : : *** : : *** : **** : *
 EHDYPYQPRMHNLLDVGISCLVRFVORKLATLNLWEDAFHIVKENIKAGILICEQWVSAC
 EHDYPYQPRMHNLLDVGISCLVRFVORKLATLNLWEDAFHIVKENIKAGILICEQWVSAC
 EHDYFPQPRMRNLLDVGISCLGRFVORKLATLNLWEDAFHIVKENIKAGILICEQWVSAC
 EHDYFPQPRMQNLLDVIGSLGRFVQKMETLNLWEDAFHIVKENLKAGIMICEQWVAAC
 EHDHYEPRSMRLHLLDVGISFGRFVQKKLGSCLKWEDPYLVKENLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDVGISFGRFVQKKLGSCLKWEDPYLVKENLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKENLKAGISVCEQWVTAC
 EYDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKENLKAGISICEQWVTAC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNFWGDPYLVKDNLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKESLKAGISICEQWVIVC
 EHDQYPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKESLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKESLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLGTNLNLWEDPYLVKESLKAGISICEQWVIVC
 EHDHYEPRSMRLHLLDIIGSFGRFVQKKLETNLNLWEDPYHLVKESLKAGISICEQWVRVC
 DYDYPYEHMRMKHLLDIIGSALGRSVQRNLGDMHWKGPFTVKENLRAGITVCEQWAAAC
 EYEPYEPMRMLHLLDIIGSLGRCTQKNLGTNLNLWKDSYLTVKENLKAGITICEQWVAAC
250.....260.....270.....280.....290.....300

```

.:****:*.:. : ** .: ::.* ** *** :* : **:*** :.:. :
EYLTGQLWQRYTLHQWKN EKYIPESLIKLCKRLDEVLTVRTLHEKLT HFLPSGEQNDLHL
EYLTGQLWQRYTLHQWKN EKYIPESLIKLCKRLDEVLTVRTLHEKLT HFLPSGEQNDLHL
EYLTGQLWQRYTLHQWKN EKYIPESLIKLCKRLDEVLTVRTLHEKLT YFLPSGEQNDLHL
DHLTGQLWQRYTTPYPWKSEKYVPETLDKLGKRLDEVLTIRTLHEKLA YFLPMGEQOTLHL
SHLTGOVWQRYVPHPPWKSEKYFPETLDRLGKRLEEVLAI RTIHEKLLYFLPASEERIVCL
SHLTGOVWQRYVPHPPWKSGKYFPETLDKLGKRLEEVLAI RTIHEKLLYFLPASEERIVCL
SHLTGOVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAV RTIHEKLLYFSPASDEKIIICL
DHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAV RTIHEKLLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYVPETLEKLGKRLEEVLAV RTIHEKLLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAI RTIHEKFLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAI RTIHEKFLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAV RTIHEKLLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAV RTIHEKLLYFLPASEEKIIICL
NHLTGQVWQRYVPHPPWKNEKYFPETLDKLGKRLEEVLAV RTIHEKLLYFLPSSEEKIIICL
EHLTGQLWRRFTTPHPWKDTDFSFDISKKLGGRLA EVL SIRMVHEKLLHFLPSGEDNALRS
SHLTGQLWQRYTTPYPWKHEKYPPESLDKLGKRLEEVL TIRTVTEKLN YFLPTGEQOGLHL
.....310.....320.....330.....340.....350.....360

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 3 of 25

	*****: :***: *.*****:*****:*.*: *.*:* ***. :*::****::	
Pavo_muticus	AOVFEPFAGLNPVHCNPYTEPLWKAAVSQFERIIPAEQKMAIKLKKLISEIQDSPQQLL	416
Pavo_cristatus	AOVFEPFAGLNPVHCNPYTEPLWKAAVSQFERIIPAEQKMAIKLKKLISEIQDSPQQLL	416
Gallus_gallus	AOVFEPFAGLNPVHCNPYTEPLWKAAVSQFERIIPAEQKVAIKLKKFISEIQDSPQQLL	416
Chelonia_mydas	AOVFEPFACLNPPVHYNPYTEPLWRAAVSQYERIVAPVEQKIASLKTFTISEIQDSPQQLL	419
Rattus_norvegicus	SRVFEPFTGVNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Mus_musculus	SRVFEPFTGVNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Bos_taurus	ARVFEPFSGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Equus_caballus	ARVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Canis_lupus_familiaris	TRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKIAAKLKNYISEIQDSPQQLL	418
Homo_sapiens	TRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Pan_troglodytes	TRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Macaca_mulatta	TRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKSYISEIQDSPQQLL	418
Macaca_fascicularis	TRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKSYISEIQDSPQQLL	418
Callithrix_jacchus	PRVFEPFTGLNPVQYNPYTEPLWKAAVSQYEKIIPAEQKGIAGKLKNYISEIQDSPQQLL	418
Xenopus_tropicalis	VKVFEPFTGLNPVHYNPYTEPLWRAAVSQYERITPAEQKIAVKLKTIFYSEFHDSPQQLL	415
Rhinatrema_bivittatum	SOVFEPFAGLNPVHYNPYTEPLWKAAVSQYERILEPAERKIASLKTIFYSEIHNSPOQFM	419
	.....370.....380.....390.....400.....410.....420	

	*.**:***:*. :*:***:***.*.*.*****:*:****:*.:	
Pavo_muticus	QTFQKYKELIKHPKTSKELLFERETLLARLQDYVKDCQADFETRCHGVPGDVSGPLSGKN	476
Pavo_cristatus	QTFQKYKELIKHPKTSKELLFERETLLARLQDYVKDCQADFETRCHGVPGDVSGPLSGKN	476
Gallus_gallus	QTFQKYKELIKHPNTSKELLFERETLLARLQDYVKDYQTDfETRCHGVPGDVSGPLSGKN	476
Chelonia_mydas	QAFQKYKELVKRPSISKELLFERETLLARLQDSVKDFRTDFEARCHGVPGDVSGPLSGKN	479
Rattus_norvegicus	QAFLLKYKELVKRPTISKELMLERETLLARLQDSAKDFRLDFENRCRGIPGDASGPLSGKN	478
Mus_musculus	QAFLLKYKELVKRPTISKELMLERETLLARLQDSAKDFRLDFENRCRGIPGDPSGPLSGKN	478
Bos_taurus	QAFLLKYKELVKRPTISKELMLERETLLARLQDSVKDFRLDFENRCRGIPGDASGPLAGKN	478
Equus_caballus	QAFLLKYKELVKRPTISKELMLERETLLARLQDSVKDVRLLDFETRRCRGIPGDASGPLAGKN	478
Canis_lupus_familiaris	QAFLLKYKELVKRPTISKELMLEREALLARLQDSVKDFRLDFENRCRGVPGEASGPLSGKN	478
Homo_sapiens	QAFLLKYKELVKRPTISKELMLERETLLARLQDSIKDFRLDFENRCRGIPGDASGPLSGKN	478
Pan_troglodytes	QAFLLKYKELVKRPTISKELMLERETLLARLQDSIKDFRLDFENRCRGIPGDASGPLSGKN	478
Macaca_mulatta	QAFLLKYKELVKRPTISKELILERETLLARLQDSIKDFRSDfETRRCRGIPGDASGPLSGKN	478
Macaca_fascicularis	QAFLLKYKELVKRPTISKELILERETLLARLQDSIKDFRSDfETRRCRGIPGDASGPLSGKN	478
Callithrix_jacchus	QAFLLKYKELVKRPTISRELMLERETLLARLQDSVKDFRLDFENRCRGTPGDASGPLSGKN	478
Xenopus_tropicalis	QAFQKHKELVKRPSLKKVLNLERETLLTRLQDYNKDILSDfESRCHGSPGDSSGPLTGRN	475
Rhinatrema_bivittatum	QVFQKYKELVKRPSIRKELILERETLLSRLLDNKIGFRLLDFESRCHGIPGEISGPLSGKN	479
	.....430.....440.....450.....460.....470.....480	

	*.****.****.:*::*:.*: * :.*** **.* * :.* :*:*:*:*:*:*:*:*.:	
Pavo_muticus	LSEVVNNIVWVROLEMKVDDATKLAEALLSDLSGFQTFHRSAGSFLEQLKVYEQEQFDDW	536
Pavo_cristatus	LSEVVNNIVWVROLEMKVDDATKLAEALLSDLSGFQTFHRSAGSFLEQLKVYEQEQFDDW	536
Gallus_gallus	LSEVVNNIVWVROLEMKVDDTIKLSEALLSDLSGFQTFHRSAGSFLEQLKVYEQEQFDDW	536
Chelonia_mydas	LSEVVNNIVWVROLELKVDDAIIKIAEALLSDLSGFQTFRONADDLLEQFKLYEQEQFDGW	539
Rattus_norvegicus	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRSFHRSADLLDQFKLYEQEQFDDW	538
Mus_musculus	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRSFHRSADLLDQFKLYEQEQFDDW	538
Bos_taurus	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRSFHRSADLLDQFKLYEQEQFDDW	538
Equus_caballus	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRSFYRNAEDLLDQFKIYEQEQFDDW	538
Canis_lupus_familiaris	LSEVVNNIVWVROLELKVDDTIKIAEALLFDLSGFRSFHRSADLLDQFKLYEQEQFDDW	538
Homo_sapiens	LSEVVNSIVWVROLELKVDDTIKIAEALLSDLPGRFCFHQSADLLDQLKLYEQEQFDDW	538
Pan_troglodytes	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRFCFHQSADLLDQLKLYEQEQFDDW	538
Macaca_mulatta	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRFCFHNAEDLLDQLKLYEQEQFDDW	538
Macaca_fascicularis	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRFCFHNAEDLLDQLKLYEQEQFDDW	538
Callithrix_jacchus	LSEVVNNIVWVROLELKVDDTIKIAEALLSDLSGFRFCFHRSADLLDQLKLYEQEQFDDW	538
Xenopus_tropicalis	LPEVVNNIVWVROLMQVEDTVKTAADALLSDLSGFFSFRKSADLLDQLKLYEQEQFEDW	535
Rhinatrema_bivittatum	LPEVVNNIVWVRHLELKVDDTIKIAEALLFDLSGFSFRKSADLLDQFKIYEQEQDHFDDW	539
	.....490.....500.....510.....520.....530.....540	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 4 of 25

	::: :::*:::: :**** * *: ***** *****:***.	
Pavo_muticus	SRNIQSEVSNPKSGLCTIQANSVMELDHVFGTLNILYSDDLVTLLREVRQLSALGFVIPA	596
Pavo_cristatus	SRNIQSEVSNPKSGLCTIQANSVMELDHVFGTLNILYSDDLVTLLREVRQLSALGFVIPA	596
Gallus_gallus	SRNIQSEVSNPKSGLCTIQANSVMELDHVFGTLNILYSDDLVTLLREVRQLSALGFVIPA	596
Chelonia_mydas	SRDIQSGLSNPRSLCMQASSPIMELDHCDGELKIHYSDDLVTLLREVRQLSALGFVIPA	599
Rattus_norvegicus	SREVQSGLSDSRSGLCIEANSRIMELDPNDGALKVHYSDRLVILLREVRQLSALGFVIPA	598
Mus_musculus	SREVQSGLSDSRSGLCIEANSRIMELDPNDGALKVHYSDRLVILLREVRQLSALGFVIPA	598
Bos_taurus	SRDIQSGLSDSKSGLCTIEANSRIMELDPNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Equus_caballus	SRDIQSGLSDSRSGLSIEANGRIMELDPNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Canis_lupus_familiaris	SRDIQSGLSDSRSGLCIEANSRIMELDPNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Homo_sapiens	SRDIQSGLSDSRSGLCIEASSRIMELDSNDGLKVHYSDRLVILLREVRQLSALGFVIPA	598
Pan_troglodytes	SRDIQSGLSDSRSGLCIEASSRIMELDSKDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Macaca_mulatta	SRDIQSGLSDSRSGLCIEASSRIMELDSNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Macaca_fascicularis	SRDIQSGLSDSRSGLCIEASSRIMELDSNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Callithrix_jacchus	SRDIQSGLSDSRSGLCIEASSRIMELDSNDGSLKVHYSDRLVILLREVRQLSALGFVIPA	598
Xenopus_tropicalis	LRINAGLSDPKSGFSLOPNSQVMELDHSGNTLKIHYSDRLVTLLREVRQLSALGLVIPP	595
Rhinatrema_bivittatum	SREIQSGLSDSKSGICIQASRVMELDHSDGTLKINYSDRLVTLLREVRQLSALGFVIPT	599
	.....550.....560.....570.....580.....590.....600	

	:.*: * *:*****.*****:*.****:*****:.....	
Pavo_muticus	KI CH VANTA Q KFSK Q AVILK Q VAHFYNSID Q QMIES Q KP M ML Q SALAFE Q IIKHSKSGPG	656
Pavo_cristatus	KI CH VANTA Q KFSK Q AVILK Q VAHFYNSID Q QMIES Q KP M ML Q SALAFE Q IIKHSKSGPG	656
Gallus_gallus	KI CH VANTA Q KFSK Q AVILK Q VAHFYNSID Q QMIES Q KP M ML Q SALAFE Q IIKHSKSGPG	656
Chelonia_mydas	KI Q OVANTA Q KFKCK Q AVILK Q VAHFYNSID Q QMIO S QK P ML Q SALAFE Q IIKHSKAGSG	659
Rattus_norvegicus	KI Q OVANVA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Mus_musculus	KI Q OVANVA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Bos_taurus	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Equus_caballus	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Canis_lupus_familiaris	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Homo_sapiens	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKAGSG	658
Pan_troglodytes	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKTGSG	658
Macaca_mulatta	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKTGSG	658
Macaca_fascicularis	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKTGSG	658
Callithrix_jacchus	KI Q OVANIA Q KFKCK Q AILK Q VAHFYNSID Q QMIO S QRP M ML Q SALAFE Q IIKNSKTGSG	658
Xenopus_tropicalis	KI Q QAAKTA Q KFYK Q AILK Q VAHFYNTID Q QMIO S QRP M ML N SALAFE Q IIKNTRTSSG	655
Rhinatrema_bivittatum	KI Q QAAANTA Q KFYK Q AI V LK Q VAHFYNTID Q QMIO S QRP M ML N SALAFE Q IIKNSKTGSGV	659
	.....610.....620.....630.....640.....650.....660	

[illegible]

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNALIP.pep Feb 1 12:03:34 2022

Page 5 of 25

```

*****  ::*  :::  **:  .  :*:  :*****:*****:*****
Pavo_muticus      QRWKDGLQELRTGFASLESQGFKSMDKAWROHWNHQLYKALEHQYQIGLEALNENLPEI  773
Pavo_cristatus    QRWKDGLQELRTGFASLESQGFKSMDKAWROHWNHQLYKALEHQYQIGLEALNENLPEI  773
Gallus_gallus     QRWKDGLQELRTGFASLESQGFKSMDKAWROHWNHQLYKALEHQYQIGLEALNENLPEI  773
Chelonia_mydas    QRWKDGLQELRSGFASLESQGFLPRDMKAWROHWNHQLYKALEHQYQMGLEALNENLPEI  776
Rattus_norvegicus QRWKDGLQELRTGLASVAAQGFQPSDMRAWROHWNHQLYKALEHQYQMGLEALNENLPEI  775
Mus_musculus      QRWKDGLQELRTGLATVAAQGFQASDMRAWROHWNHQLYKALEHQYQVGLEALNENLPEI  775
Bos_taurus        QRWKDGLQELRTGLASVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Equus_caballus    QRWKDGLQELRTGLASVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Canis_lupus_familiaris QRWKDGLQELRTGLASVEAQGFQASEMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Homo_sapiens      QRWKDGLQELRTGLATVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Pan_troglodytes   QRWKDGLQELRTGLATVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Macaca_mulatta    QRWKDGLQELRTGLATVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Macaca_fascicularis QRWKDGLQELRTGLATVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Callithrix_jacchus QRWKDGLQELRTGLATVEAQGFQASDMHAWKQHWNHQLYKALEHQYQMGLEALNENLPEI  775
Xenopus_tropicalis QKWKDGLLEIRSVFSNLEYQGLRSSDMRPWROHWNHQLYKALEHQYQIGLEALNENLPEI  775
Rhinatrema_bivittatum QRWKDGLLDLRGVFSNLESQGFSSDMKAWROHWNHQLYKALEHQYQMGLEALNENLPEI  779
.....730.....740.....750.....760.....770.....780

```

```

*:  :*****:***:***:***:***:***:***:***:***:***:***:***:***:***
Pavo_muticus      NIDLTFKQGRLOFRPPFEEVRARYREMKRFSIPNQFRGVSETEESIFITVMTERNANG  833
Pavo_cristatus    NIDLTFKQGRLOFRPPFEEVRARYREMKRFSIPNQFRGVSETEESIFITVMTERNANG  833
Gallus_gallus     NIDLTFKQGRLOFRPPFEEVRARYREMKRFSIPYQFRGVSETEESIFITVMTERNANG  833
Chelonia_mydas    NIDLTYKQGRLOFKPPFEEVRARYREMKRFSIPNQFRGVSETEESIFITIMTERNASG  836
Rattus_norvegicus NVDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSVMIDRNASG  835
Mus_musculus      NVDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSVMIDRNASG  835
Bos_taurus        NIDLIYKQGRLOFKPPFEEIRAKYYREMKRFSIPNQFKGVGEAGDESIFSIMIDRNASG  835
Equus_caballus    NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSVMIDRNASG  835
Canis_lupus_familiaris NIDLMYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSVMIDRNASG  835
Homo_sapiens      NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSIMIDRNASG  835
Pan_troglodytes   NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSIMIDRNASG  835
Macaca_mulatta    NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSIMIDRNASG  835
Macaca_fascicularis NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSIMIDRNASG  835
Callithrix_jacchus NIDLTYKQGRLOFRPPFEEIRAKYYREMKRFIGIPNQFKGVGEAGDESIFSIMIDRNASG  835
Xenopus_tropicalis NIDLTFKQGRLOFKPPFEEIRSKYYREMKRFSIPNQFKGLSEAGEEPIFSVMERNANG  835
Rhinatrema_bivittatum NIDIIFKQGRLOFKPPLLEEVRAKYYRDMKRFSIPNQFKGVSEVGEEPIFSIMTERNANG  839
.....790.....800.....810.....820.....830.....840

```

```

*:  :*****:*****:  .  :*****: *****:  *  .  :*  *****  :***
Pavo_muticus      FLTAFSKAEDLFRRLAEVCDQFKEWIVIGQVDMETLAKTHLSKQDWEKNFKALKVRGKE  893
Pavo_cristatus    FLTAFSKAEDLFRRLAEVCDQFKEWIVIGQVDMETLAKTHLSKQDWEKNFKALKVRGKE  893
Gallus_gallus     FLTAFSKAEDLFRRLAEVCNQFKEWIVIGQVDMETLAKTHLSKQDWEKNFKALKVRGKE  893
Chelonia_mydas    FLTTFNKAEDLFRRLAEVSNQFKEWIIIGQVDMETLVETHLSGEQDWEKNFKALKGKGKE  896
Rattus_norvegicus FLTIYSKAEDLFRRLSAVLHQHKEWVIGQVDMREALVEKNLSTVHDWEKNFKALKIKGKE  895
Mus_musculus      FLTIYSKAEDLFRRLSAVLHQHKEWVIGQVDMREALVEKNLSTVHDWEKNFKALKIKGKE  895
Bos_taurus        FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLSTVHDWEKNFKALKIKGKE  895
Equus_caballus    FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLSTVHDWEKNFKALKIKGKE  895
Canis_lupus_familiaris FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLSTVHDWEKNFKALKIKGKE  895
Homo_sapiens      FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLFTVHDWEKNFKALKIKGKE  895
Pan_troglodytes   FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLFTVHDWEKNFKALKIKGKE  895
Macaca_mulatta    FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLFTVHDWEKNFKALKIKGKE  895
Macaca_fascicularis FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLFTVHDWEKNFKALKIKGKE  895
Callithrix_jacchus FLTIYSKAEDLFRRLSAVLHQHKEWIVIGQVDMREALVEKHLFTVHDWEKNFKALKIKGKE  895
Xenopus_tropicalis FITVFSKAEDLFRRLAATLDRFKEWVIGQVDIDVLMNKNLHDVHDWEKNFKALKVRGKE  895
Rhinatrema_bivittatum FITVFSKAENLFRRLSTALDFKEWVAIGQVDVEKLVDEHLSTVVDWEKNFKALKVRGKE  899
.....850.....860.....870.....880.....890.....900

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN24H11pre Feb 1 12:03:34 2022

Page 6 of 25

	*****::**:: **.****::***.**:: *::***:**:* :.. *: .:	
Pavo_muticus	AERLPSTIKIDCLTVNCPVKTAIDDFIQKLYDVLVLSLRKSIQAHLSDVSSFLNDAMET	953
Pavo_cristatus	AERLPSTIKIDCLTVNCPVKTAIDDFIQKLYDVLVLSLRKSIQAHLSDVSSFLNDAMET	953
Gallus_gallus	AERLPSTIKIDCLTVNCPVKTAIDDFIQKLYDVLVLSLRKSIQAHLSDVSSFLNDAMEA	953
Chelonia_mydas	VERLPSTIKIDCLTVNCPVKTVIDDLIQKLYDVLVLSLRKSIQAHLDISSFLTDATEA	956
Rattus_norvegicus	VERLPSAVKVDCLNINCSPVKTVIDDDLQKLFDLLVLSLKSSIQTHIHEIDTFVTEAMKV	955
Mus_musculus	VERLPSAVKVDCLNINCSPVKTVIDDDLQKLFDLLVLSLKSSIQTHIHEIDTFVTEAMKV	955
Bos_taurus	VERLPSAVKVDCLNINCNPVKTVIDDFIQKLFDVDLVLSLKSSIQAHLHEIDTFVTEAMEV	955
Equus caballus	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDMLVLSLRKSIQAHLHEIDTFVTEAMEV	955
Canis_lupus_familiaris	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDMLVLSLKSSIQAHLHIDITFVMEAMEV	955
Homo_sapiens	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDLLVLSLKSSIQAHLHEIDTFVTEAMEV	955
Pan_troglodytes	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDLLVLSLKSSIQAHLHEIDTFVTEAMEV	955
Macaca_mulatta	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDLLVLSLKSSIQAHLHEIDTFVTEAMEI	955
Macaca_fascicularis	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFDLLVLSLKSSIQAHLHEIDTFVTEAMEI	955
Callithrix_jacchus	VERLPSAVKVDCLNINCNPVKTVIDDLIQKLFELLVLSLKSSIQAHLHEIDTFVTEAMEA	955
Xenopus_tropicalis	AERLPSTIKIDCITINCNPVKSVVDDLIQTIFDSLLISLKSSIQAHLHEIDTFVTEGMEM	955
Rhinatrema_bivittatum	AERLPSTIKVDCLTINCNPVKTVIDDLIQKLFSLLISLKSSIQAHLHDIDSFVTEGMEA	959
	.....910.....920.....930.....940.....950.....960	

	*	**	:	**	.	:	::	.	:	::	**	:	:*****:	:	***.	:	:	***	:	*
Pavo_muticus	LVARPQTVEEISEDNLKYL	LSLHEQKGEIFLLFQEAEDKNKLLRTVAGAGLDTISNLRATW	1013																	
Pavo_cristatus	LVARPQTVEEISEDNLKYL	LSLHEQKGEIFLLFQEAEDKNKLLRTVAGAGLDTISNLRATW	1013																	
Gallus_gallus	LVVRPQTVEEISEDNLKYL	NLHEQKGEIFLLFQEAEDKNKLLRTVAGAGLDTISNLRATW	1013																	
Chelonia_mydas	LIVRPQTVDIEIGDNLKY	NLQEKKAEIFLQFEAEDKNKLLRTVAGGLDTISNLRAMW	1016																	
Rattus_norvegicus	LTVIPOSVEEIGDNLQYS	NLQDRRPEILPLFQEAEDKNRLRLRTVAGGGVETVSNLRAKW	1015																	
Mus_musculus	LTVIPOSVEEIGDNLQYS	NLQDRRPEILPLFQEAEDKNRLRLRTVAGGGVETVSNLRAKW	1015																	
Bos_taurus	LTIMPOSVEEIGNANLQY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Equus_caballus	LTVIPOSVEEIGDANLQY	SKLQERKPEILPLFQEAEDKNRLFRTVAGGGLETISNLKAKW	1015																	
Canis_lupus_familiaris	LTIMPOSVEEIGDANLQY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Homo_sapiens	LTIMPOSVEEIGDANLQY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Pan_troglodytes	LTIMPOSVEEIGDANLRY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Macaca_mulatta	LTIMPOSVEEIGDANLRY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Macaca_fascicularis	LTIMPOSVEEIGDANLRY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Callithrix_jacchus	LTMPOSVEEIGDANLRY	SKLQERKPEILPLFQEAEDKNRLRLRTVAGGGLETISNLKAKW	1015																	
Xenopus_tropicalis	LSSRPQTVEEIGEANKHA	QLKLRKPEILPLFKEAEDKNRLRLRSVAGGGLDTIGNLRAKW	1015																	
Rhinatrema_bivittatum	LSVRPQTVDIEIGEANVQ	EHLQAKKPEILPLFQEAEDKNRLRLRSVAGGLETISNLKAKW	1019																	
	.....970.....980.....990.....1000.....1010.....1020																		

	*****:.*:*:* * * ::*:::*****:.*:*:.*:****. .	
Pavo_muticus	DKFELMMESHQLMITEQIEVMKGNVMSRINIYLODLEKFKARWDQLKPSDDVIETGDQDV	1073
Pavo_cristatus	DKFELMMESHQLMITEQIEVMKGNVMSRINIYLODLEKFKARWDQLKPSDDVIETGDQDV	1073
Gallus_gallus	DKFELMMESHQLMITEQIEVMKGNVMSRINIYLODLEKFKARWDQLKPSDDVIETGDQDV	1073
Chelonia_mydas	DKFELMMESHQLMIKEQIEVMKGNVMSRVNVYLOLEKFKARWDQLKPSDDIIETHQDM	1076
Rattus_norvegicus	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDIIETGOQNT	1075
Mus_musculus	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDIIETGOQNT	1075
Bos_taurus	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDVIETGQLST	1075
Equus_caballus	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDVIETGOQNT	1075
Canis_lupus_familiaris	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIFYQELDKFKARWDQLKPGDDIIETGOQNV	1075
Homo_sapiens	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDVIETGOHNT	1075
Pan_troglodytes	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYYQELDKFKARWDQLKPGDDVIETGOHNT	1075
Macaca_mulatta	DKFELMMESHQLMIKDQIEVMKGNVKSCLQIYYQELDKFKARWDQLKPGDDVIETGOHNT	1075
Macaca_fascicularis	DKFELMMESHQLMIKDQIEVMKGNVKSCLQIYYQELDKFKARWDQLKPGDDVIETGOHNT	1075
Callithrix_jacchus	DKFELMMESHQLMIKDQIEVMKGNVKSRLQIYFOELDKFKARWEQLKPGDDVIETGOHNT	1075
Xenopus_tropicalis	DKFELMMESHQLMVKEQIEVMKEKVKSRVQIYTQETIEKFKARWDQLKPSNLIETGEEDA	1075
Rhinatrema_bivittatum	DKFELMMESHQLMVKEQVEIMKANVISRAQIYLOEIEKFKARWEQFKPSDDIIETGOQET	1079
	.....1030.....1040.....1050.....1060.....1070.....1080	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 7 of 25

	: **: ****: ** : ** :.***:: ** ** *: * : : : **: *: : * : **	
Pavo_muticus	LEKSAQIIKEKKKEEFDELETVKEKLIIECHHFKLEEPDFSLSEVVSQDIKCCAEVWALYE	1133
Pavo_cristatus	LEKSARIIEKKKEEFDELETVKEKLIIECHHFKLEEPDFSLSEVVSQDIKCCAEVWALYE	1133
Gallus_gallus	LEKSAQIIKEKKKEEFDELETIKEKLIIECHHFKLEEPDFSLSKVVSQDIKCCAEVWALYE	1133
Chelonia_mydas	LEKSAQTIKEKKIEFDELEATAKKKLIEDCHHFKLEEPDFSLAKAVCRDIESCAEVWALYE	1136
Rattus_norvegicus	MDQSAKSIKEKKIEFDDLEVIRKKLVDDCHHFGLEEPNFSLAYSIKDIIESCAQIWALYE	1135
Mus_musculus	MDQSAKSIKEKKIEFDDLEVIRKKLVDDCHHFGLEEPNFSLAYSIKDIIESCAQIWALYE	1135
Bos_taurus	LDQSAKSIKEKKVEFDDLEVIRKKLLDDCHHFGLEEPNFSLAYSIKDIIESCAQIWALYE	1135
Equus_caballus	LDKSAKSIKEKKIEFDDLEVIRKKLVDDCHHFGLEEPNFSLAYSIHKDIIESCAQIWALYE	1135
Canis_lupus_familiaris	LDTSAKLIKEKKIEFDDLEVIRKKLVDDCHHFGLEEPNFSLAYSIKDIIESCAQIWSLYE	1135
Homo_sapiens	LDKSAKLIKEKKIEFDDLEVTRKKLVDDCHHFRLEEPNFSLASSISKDIIESCAQIWAFYE	1135
Pan_troglodytes	LDKSAKLIKEKKIEFDDLEVTRKKLVDDCHHFRLEEPNFSLASSISKDIIESCAQVWAFYE	1135
Macaca_mulatta	LDKSAKLIKEKKIEFDELEVTRKKLVDDCHHFRLEEPNFSLASSISKDIIESCAQIWAFYE	1135
Macaca_fascicularis	LDKSAKLIKEKKIEFDELEVTRKKLVDDCHHFRLEEPNFSLASSISKDIIESCAQIWAFYE	1135
Callithrix_jacchus	LEKSAKLIKEKKIEFDDLEVTRKKLVDDCHHFRLEEPNFSLACSIKDIIESCAQIWAFYE	1135
Xenopus_tropicalis	LVKSAQSIKEKKVEFDELEETKRKLIEDCLHFGLEAPDFFLADEIRIDIEDCTKTWSLYE	1135
Rhinatrema_bivittatum	LEKSAQTIKEKRSEFAELIATKNKLIEDHRHFDLEVPDFSMAGIDICRDIESCTKIWSLYE	1139
	.....1090.....1100.....1110.....1120.....1130.....1140	

	:* **::: *.****:::* * :*::::*.:::*. * .*:**** *:*:** :*	
Pavo_muticus	EFYQGFOEKAKEDWITFRSKTYLFEFELFNWHDKIRKMEGHTVMTVKLQKEVDKYKMIIP	1193
Pavo_cristatus	EFYQGFOEKAKEDWITFRSKTYLFEFELFNWHDKIRKMEGHTVMTVKLQKEVDKYKMIIP	1193
Gallus_gallus	EFYQGFOEKAKEDWITFRSKTYLFEFELFNWHDKIRKMEGHTVMTVKLQKEVDKYKMIIP	1193
Chelonia_mydas	EFHQGFOEKAKEDWITFRSKTYLFEFELFNWHDKIRKMEGHTVMTVKLQREVDKYKMIIP	1196
Rattus_norvegicus	EFQOGLQEMAKEDWITYRKIYLFEEFLINWHERLRKVEEHSVMTVKLQSEVDYKIIIP	1195
Mus_musculus	EFQOGLQMAKEDWITYRAKIYLFEEFLINWHERLRKIEEHSVMTVKLQSEVDYKMIIP	1195
Bos_taurus	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKIEEHSAMTVKLQSEVDKYKIAIP	1195
Equus_caballus	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKIEEHSVMTVKLQLEVDKYKIIP	1195
Canis_lupus_familiaris	EFQOGLQEMASEDWITFRTKIYLLFEFLMTWHDRLRKVEEHSMTVKLQSEVDYKTVIP	1195
Homo_sapiens	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKVEEHSVMTVKLQSEVDKYKIVIP	1195
Pan_troglodytes	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKVEEHSVMTVKLQSEVDKYKIVIP	1195
Macaca_mulatta	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKVEEHSVMTVKLQSEVDKYKIVIP	1195
Macaca_fascicularis	EFQOQGFQEMANEDWITFRTKTYLFEFELFNWHDRLRKVEEHSVMTVKLQSEVDKYKIVIP	1195
Callithrix_jacchus	EFQOQGFQEMANEDWITFRSKTYLFEFELFNWHDRLRNVEEHSAMTVKLQSEVDKYKNVIP	1195
Xenopus_tropicalis	EFYQGFNEKAKEDWISYRSKCYSFEEFLISWHERLRKMEEHTTMSVKLQKEIDRYKTVVP	1195
Rhinatrema_bivittatum	DFYQGFHEKAKEDWITFRSKAYVEEYLLTWHDKIRKIEEHNMTMSVKLQKEVDKYKIVVP	1199
	.....1150.....1160.....1170.....1180.....1190.....1200	

	:***** :*: :*: :*: :*	
Pavo_muticus	LLKYVRGEHLSPDHWLDFRLGLPRGTTLOGLLFGDLLKVTDATIEKATDLKDLCRAQ	1253
Pavo_cristatus	LLKYVRGEHLSPDHWLDFRLGLPRGTTLOGLLFGDLLKVTDATIEKATDLKDLCRAQ	1253
Gallus_gallus	LLKYVRGEHLSPDHWLDFRLGLPRGTTLOGLLFGDLLKVTDATIEKATDLKDLCRAQ	1253
Chelonia_mydas	VLKYVRGEHLSPDHWLDFRLGLPRGTSLENLLFGDLLRVADVIVEKAALKDLSRAQ	1256
Rattus_norvegicus	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVEKASDLKDNSRAQ	1255
Mus_musculus	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVEKASELKDNSRAQ	1255
Bos_taurus	VLKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTVVAKASDLKDLSRAQ	1255
Equus caballus	VLKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKASDLKDLSRAQ	1255
Canis_lupus_familiaris	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKASDLKDLSRAQ	1255
Homo_sapiens	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKAADLKDLSRAQ	1255
Pan_troglodytes	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKAADLKDLSRAQ	1255
Macaca_mulatta	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKAADLKDLSRAQ	1255
Macaca_fascicularis	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKAADLKDLSRAQ	1255
Callithrix_jacchus	ILKYVRGEHLSPDHWLDFRLGLPRGTSLEKLLFGDLLRVADTIVAKAADLKDLSRAQ	1255
Xenopus_tropicalis	VLKYVRGEHLSQDHWLDFRLGLPKGTTLEKLLFGDLLRVADVIVSKASELKELNSAQ	1255
Rhinatrema_bivittatum	VLKYVRGEHLSQDHWLDFRLGLPKGTTLEKLLFGDLLRVADVIVSKAAELKDLSRAQ	1259
	.....1210.....1220.....1230.....1240.....1250.....1260	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNALIP.pep Feb 1 12:03:34 2022

Page 8 of 25

```

**::*****:***:*. * *****: *: *****:*****:*****
Pavo_muticus      GEVTIREALRELELWGVGAVFTLTLDYEDSQGKTVMLIKDWKDIVNQVGDHRCLLQSLKDS 1313
Pavo_cristatus    GEVTIREALRELELWGVGAVFTLTLDYEDSQGKTVMLIKDWKDIVNQVGDHRCLLQSLKDS 1313
Gallus_gallus     GEVTIREALRELELWGVGAVFTLTLDYEDSQGKTVMLIKDWKDIVNQVGDHRCLLQSLKDS 1313
Chelonia_mydas    GEVTIREALRELELWGVGAVFTLTLDYEDSQSRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1316
Rattus_norvegicus GEVTIREALRELDLWGVGAVFTSLIDYEDSQNRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Mus_musculus      GEVTIREALRELDLWGVGAVFTSLIDYEDSQNHTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Bos_taurus        GEVTIREALRELDLWGVGAVFTLVDYEDSQSRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Equus_caballus    GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Canis_lupus_familiaris GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Homo_sapiens      GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTMKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Pan_troglodytes   GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTMKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Macaca_mulatta    GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTMKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Macaca_fascicularis GEVTIREALRELDLWGVGAVFTLIDYEDSQRTMKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Callithrix_jacchus GEVTIREALRELDLWGVGAVFTLIDYEDSQSRTMKLIKDWKDVNQVGDNRCLLQSLKDS 1315
Xenopus_tropicalis GEITIREALRELDLWGAIFAFTLTLDYEDSHSRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1315
Rhinatrema_bivittatum GEITIREALRELDLWGVGAVFNLDYEDSQCRTIKLIKDWKDIVNQVGDNRCLLQSLKDS 1319
.....1270.....1280.....1290.....1300.....1310.....1320

```

```

***** :*:***:***:*. * *****:*****:*****:.. *:*****
Pavo_muticus      PYYKGFEDKVS IWEKKLAELDEFLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1373
Pavo_cristatus    PYYKGFEDKVS IWEKKLAELDEFLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1373
Gallus_gallus     PYYKGFEDKVS IWEKKLAELDEFLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1373
Chelonia_mydas    PYYKGFEDKVS IWEKKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1376
Rattus_norvegicus PYYKGFEDKVS IWERKLAQLDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Mus_musculus      PYYKGFEDKVS IWERKLAQLDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Bos_taurus        PYYKGFEDKVS IWERKLADLDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Equus_caballus    PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Canis_lupus_familiaris PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Homo_sapiens      PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Pan_troglodytes   PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Macaca_mulatta    PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Macaca_fascicularis PYYKGFEDKVS IWERKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Callithrix_jacchus PYYKGFEDKVS IWERKLADLDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1375
Xenopus_tropicalis PYYKGFEDKVS IWERKLADLDEYLQNLNLIQRKWVYLEPIFGRGALPREHARFTRVDEDF 1375
Rhinatrema_bivittatum PYYKGFEDKVS IWEKKLAELDEYLQNLNLIQRKWVYLEPIFGRGALPKDHARFTRVDEDF 1379
.....1330.....1340.....1350.....1360.....1370.....1380

```

```

**:: *:***:*. * .....:*****:*****:*****:*****:***
Pavo_muticus      RSVLSDIKRDNRITSLNARAGIRNTLIAILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1433
Pavo_cristatus    RSVLSDIKRDNRITSLNARAGIRNTLIAILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1433
Gallus_gallus     RSVLSDIKRDNRITSLNARAGIRNTLIAILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1433
Chelonia_mydas    RSIMVDIKRDNRITSLNARTGMRNALITILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1436
Rattus_norvegicus RSIMMDIKKDSRVTTLTTHAGIRNTLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Mus_musculus      RSIMMDIKKDSRVTTLTTHAGIRNTLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Bos_taurus        RSIMLDIKKDNRVTTLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Equus_caballus    RSIMTDIKKDNRVTRLTTHAGIRNSLLTILDQLHRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Canis_lupus_familiaris RSIMADIKKDSRVTMLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Homo_sapiens      RSIMTDIKKDNRVTTLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Pan_troglodytes   RSIMTDIKKDNRVTTLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Macaca_mulatta    RSIMTDIKKDNRVTTLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Macaca_fascicularis RSIMTDIKKDNRVTTLTTHAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Callithrix_jacchus RSIMTDIKKDSRVTTLTTHAGIRNALLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Xenopus_tropicalis RSIMSDIKKDNRVTTLLTSRAGIRNSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1435
Rhinatrema_bivittatum RSIMSDIKKDNRVTSLLTRVGIRSSLLTILDQLQRCQSLNEFLEEKRSAPFRFYFIGDD 1439
.....1390.....1400.....1410.....1420.....1430.....1440

```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 9 of 25

```

****:*****.* ***:*****: ** ** . * * :*:*:** **:.*: :.:
DLEILGQSTNPLVIOTHLKKLFAGIHSVSFDEEFKYIVAMKSVEGETVPLRNKVLLSND 1493
DLEILGQSTNPLVIOTHLKKLFAGIHSVSFDEEFKYIVAMKSVEGETVPLRNKVLLSND 1493
DLEILGQSTNPLVIOTHLKKLFAGIHSVSFDEEFKYIVAMKSVEGETVPLRNKVLLSND 1493
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGFKNIIAMKSLEGEVVPFKNKILLSND 1496
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMRSSLEGEVVPFKSKVLLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKSKVLLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEELKHITAMKSLEGEVVPFKNKVLLSSN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVFLSDN 1495
DLEVLGQSTNPAVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKILLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVPLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVPLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVLLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVLLSNN 1495
DLEILGQSTNPSVIOSHLKKLFAGINSVSFDGDEESKHITAMKSLEGEVVPFKNKVLISNN 1495
DLEILGQSTNPAVIOSHLKKLFAGINSVSFDGENFKHIITMKSLDGETVPLNKILVTS 1495
DLEILGQSTNPAVIOSHLKKLFAGINSVSFDGEHFKHITAMKSLEGEIVPLKNKVLSND 1499
.....1450.....1460.....1470.....1480.....1490.....1500

```

```

** ** . ** ***.***::: ** *: **: :...: *****.***** ***::* **
VEVWLNLSALEMKETLKKMLIDCVDAGKQSEGSIDPSLFP SQILSLAEQIOFTEDVENAI 1553
VEVWLNLSALEMKETLKKMLIDCVDAGKQSEGSIDPSLFP SQILSLAEQIOFTEDVENAI 1553
VEVWLNLSALEMKETLKKMLIDCVDAGKKSEGSIDPSLFP SQILSLAEQIOFTEDVENAI 1553
VEVWLNRLALEMKDTLKLILLDCVTAGRRSQGSIDPSLFP SQILSLAEQIOFTEDVETAI 1556
VEAWLNDLAEMLKQTLKQLLKECVTAGRSSQGAIDPSLFP SQILCLAEQIKFTEDVEDAI 1555
VEAWLNDLAEMLKQTLKQLLKECVTAGRSSQGAIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKQTLKELLTECVTAGRSSQGAIDPSFFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKQTLKQLLTECVTAGRSSQGAIDPSLFP SQILCLAEQIKFTEDIEDAI 1555
VETWLNLDLAEMLKQTLKQLLLECVTAGRSSQGSIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKKTLEQLLKECVTTGRSSQGAIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKKTLEQLLKECVTTGRSSQGAIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKKTLEQLLKECVTTGRSSQGAIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VETWLNLDLAEMLKKTLEQLLKECVTTGRSSQGAIDPSLFP SQILCLAEQIKFTEDVENAI 1555
VESWLNLDLAEMLKETLQQLLKECVTTGRSSQGAIDPSLFP SQILCLAEQIKFTEDIEDAI 1555
VEVWLSHLASEMKSTLEKLLVECITAGKKSHSGIDPLQFP SQILCLAEQIOFTEEVEAAI 1555
VEDWLNRLAEMLKETLKLVECITAGRKSGAMTLHAFP SQILCLAEQILFTEDIEDAI 1559
.....1510.....1520.....1530.....1540.....1550.....1560

```

```

.:. * *:: : * ** : ** : : * . :*****:*****:*****:
KNHNLQQLLELELMAKLERYTTSIDTSMEDTGSTESGILELKLKALILDIIHNIDLVKQLNQ 1613
KNHNLQQLLELELMAKLERYTTSIDTSMEDTGSTESGILELKLKALILDIIHNIDLVKQLNQ 1613
KSHNLQQLLELELMAKLERYTTSIDTSMEDTTSSTESGILELKLKALILDIIHNIDLVKQLNQ 1613
KEHNLQQLLELELMAKLEHYTTSIDTSMEDPGRADSGILELKLKALILDIIHNIDVVKQLNQ 1616
RDHSLHQIEAQLAAKLERYTSVDTSSDPGNSESGILELKLKALILDIIHNIDIVKQLNQ 1615
KDHSLHQIEAQLVAKLERYTSVDTSSDPGNSESGILELKLKALILDIIHNIDIVKQLNQ 1615
KDHSLHQIETQLVNKLEHYTNIDTISEDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVNKLEHYTNIDTSSDPGNIESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVTKLEYYSIDTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVNKLEQYTNIDTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVNKLEQYTNIDTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVNKLEQYTNIDTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
KDHSLHQIETQLVNKLEQYTNIDTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
RDHTLHQIETQLVNKLEQYTNINTSSDPGNTESGILELKLKALILDIIHNIDVVKQLNQ 1615
REQRLHQVDIELMAKLDDHYTTSIDTSMGDT--AGAGILELKLKALILDVIHNIDVVKQLNQ 1613
RDHNLYQIBIELMAKLEHYTTSIDTSMEDTGSADSGILELKLKALILDVIHNIDVVKQLNK 1619
.....1570.....1580.....1590.....1600.....1610.....1620

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNORH11.pse Feb 1 12:03:34 2022

Page 10 of 25

```

*: :.:**.*:***:: :.:* :.***:*.*****:*****
Pavo_muticus      AQIHS AEDWAWKKQLRFYMK-DQKCYVQMVD AELQYTYEYQGN SPKLVYTP LTKCYLTL 1672
Pavo_cristatus    AQIHS AEDWAWKKQLRFYMK-DQKCYVQMVD AELQYTYEYQGN SPKLVYTP LTKCYLTL 1672
Gallus_gallus     AQIHS AEDWVWKKQLRFYMK-DQKCYVQMVD AEFQYTYEYQGN SPKLVYTP LTKCYLTL 1672
Chelonia_mydas    AQINS VDDWAWKKQLRFYMK-EQKCYIQMVD AELQYTYEYQGN SPKLVYTP LTKCYLTL 1675
Rattus_norvegicus AQVHT TDDWAWKKQVRFYMKSDHTCYVQMVD SELQYTYEYQGN APKLVYTP LTKCYLTL 1675
Mus_musculus      VQVHT TDDWAWKKQVRFYMKSDHTCYVQMVD SELQYTYEYQGN APKLVYTP LTKCYLTL 1675
Bos_taurus        VQIHT TEDWAWKKQVRFYMKSDHTCYVQMVD SELQYTYEYQGN APKLVYTP LTKCYLTL 1675
Equus_caballus    VQVHT TEDWAWKKQVRFYMNSDHTCYVQMVD SELQYTYEYQGN APKLVYTP LTKCYLTL 1675
Canis_lupus_familiaris VQVHT TDDWTWKKQVRFYMKSDHTCYVQMVD SELQYTYEYQGN APKLVYTP LTKCYLTL 1675
Homo_sapiens      IQVHT TEDWAWKKQLRFYMKSDHTCCVQMVD SEFQYTYEYQGN ASKLVYTP LTKCYLTL 1675
Pan_troglodytes   IQVHT TEDWAWKKQLRFYMKSDHTCCVQMVD SEFQYTYEYQGN ASKLVYTP LTKCYLTL 1675
Macaca_mulatta    IQVHT TEDWAWKKQLRFYMKSDHTCCVQMVD SEFQYTYEYQGN ASKLVYTP LTKCYLTL 1675
Macaca_fascicularis IQVHT TEDWAWKKQLRFYMKSDHTCCVQMVD SEFQYTYEYQGN ASKLVYTP LTKCYLTL 1675
Callithrix_jacchus IQVHT TEDWAWKKQLRFYMNSDHTCCVQMVD SEFQYTYEYQGN ASKLVYTP LTKCYLTL 1675
Xenopus_tropicalis AQVYS TEDWAWKKQLRFYLPKDKCYVKMVD AEMEYTYEYQGN APKLVYTP LTKCYLTL 1673
Rhinatrema_bivittatum AQIHS TEDWVWKKQVRFYMKQDQKCYIQMVD AELRYTYEYQGN APKLVYTP LTKCYLTL 1679
.....1630.....1640.....1650.....1660.....1670.....1680

```

```

***:*****
Pavo_muticus      TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1732
Pavo_cristatus    TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1732
Gallus_gallus     TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1732
Chelonia_mydas    TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Rattus_norvegicus TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Mus_musculus      TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Bos_taurus        TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Equus_caballus    TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Canis_lupus_familiaris TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Homo_sapiens      TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Pan_troglodytes   TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Macaca_mulatta    TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Macaca_fascicularis TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Callithrix_jacchus TQAMKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1735
Xenopus_tropicalis TQALKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1733
Rhinatrema_bivittatum TQAIKMGLGGNPYGPAGTGKTESVKALGGLLGRQVLVFN CDEGIDVKS MGRIFVGLVKCG 1739
.....1690.....1700.....1710.....1720.....1730.....1740

```

```

*****:*****.*:***:* :.*****
Pavo_muticus      AWGCFDEFNRLEEAVLSAVSMQIQTIQHALKKHS SCELLGKKIEMDHNS GIFITMNPAG 1792
Pavo_cristatus    AWGCFDEFNRLEEAVLSAVSMQIQTIQHALKKHS SCELLGKKIEMDHNS GIFITMNPAG 1792
Gallus_gallus     AWGCFDEFNRLEEAVLSAVSMQIQTIQHALKKHS SCELLGKKIEMDHNS GIFITMNPAG 1792
Chelonia_mydas    AWGCFDEFNRLEEAVLSAVSMQIQTIQHALKKH R PVCELLGKEVEMDHNS GIFITMNPAG 1795
Rattus_norvegicus AWGCFDEFNRLEEAVLSAVSMQIQTIQDALKNHRS VCELLGKEVEINANS GIFITMNPAG 1795
Mus_musculus      AWGCFDEFNRLEEAVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Bos_taurus        AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Equus_caballus    AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Canis_lupus_familiaris AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Homo_sapiens      AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Pan_troglodytes   AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Macaca_mulatta    AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Macaca_fascicularis AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Callithrix_jacchus AWGCFDEFNRLEESVLSAVSMQIQTIQDALKNH RTVCELLGKEVEINANS GIFITMNPAG 1795
Xenopus_tropicalis AWGCFDEFNRLEEAVLSAVSMQIQTIQDALKNH R SCDLLGKEVALDPNS GIFITMNPAG 1793
Rhinatrema_bivittatum AWGCFDEFNRLEEAVLSAVSMQIQTIQDALKH RLS CDLLGKEVELDPNS GIFITMNPAG 1799
.....1750.....1760.....1770.....1780.....1790.....1800

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNALIP.ms Feb 1 12:03:34 2022

Page 11 of 25

```

*.....:***:***** ** *.*****:***
Pavo_muticus      K D Y G G R Q K L P D N L K Q L F R P V A M T H P D N E L I A E V I L Y S E G F K Y A K T L G R K L V A I F N L A R E L 1852
Pavo_cristatus    K D Y G G R Q K L P D N L K Q L F R P V A M T H P D N E L I A E V I L Y S E G F K Y A K T L G R K L V A I F N L A R E L 1852
Gallus_gallus     K D Y G G R Q K L P D N L K Q L F R P V A M T H P D N E L I A E V I L Y S E G F K Y A K T L G R K L V A I F N L A R E L 1852
Chelonia_mydas    K G Y G G R Q K L P D N L K Q L F R P V A M T R P D N E L I A E V I L Y S E G F K D A K T L G R K L V A I F N L A R E L 1855
Rattus_norvegicus K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N L I A E V I L Y S E G F K D A K E L G R K L V A I F N L S R E L 1855
Mus_musculus      K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N L I A E V I L Y S E G F K D A K E L G R K L V A I F N L S R E L 1855
Bos_taurus        K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G R K L V A I F N L S R E L 1855
Equus_caballus    K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G T K L V A I F N L S R E L 1855
Canis_lupus_familiaris K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G R K L V A I F N L S R E L 1855
Homo_sapiens      K G Y G G R Q K L P D N L K Q L F R P V A M S H P D N E L I A E V I L Y S E G F K D A K V L S R K L V A I F N L S R E L 1855
Pan_troglodytes   K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G R K L V A I F N L S R E L 1855
Macaca_mulatta    K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G R K L V A I F N L S R E L 1855
Macaca_fascicularis K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K V L G R K L V A I F N L S R E L 1855
Callithrix_jacchus K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K L L G R K L V A I F N L S R E L 1855
Xenopus_tropicalis K G Y G G R Q K L P D N L K Q L F R P V A M S R P D N E L I A E V I L Y S E G F K D A K N L G R K L V A I F N L A R E L 1853
Rhinatrema_bivittatum K G Y G G R Q K L P D N L K Q L F R P V A M S H P D N E L I A E V I L Y S E G F K D A K T L G R K L V A I F N L A R E L 1859
.....1810.....1820.....1830.....1840.....1850.....1860

```

```

*****.***.*.:*:::..:*.:*****:***:
Pavo_muticus      L T P Q Q H Y D W G L R A K T V L R G C G S L L H O L K R S A E K Q E I N E S H L V V Q A L R L N T M S K L T F A D C 1912
Pavo_cristatus    L T P Q Q H Y D W G L R A K T V L R G C G S L L H O L K R S A E K Q E I N E S H L V V Q A L R L N T M S K L T F A D C 1912
Gallus_gallus     L T P Q Q H Y D W G L R A K T V L R G C G S L L R O L K R S A E K Q E I N E S H L V V Q A L R L N T M S K L T F A D C 1912
Chelonia_mydas    L T P Q Q H Y D W G L R A K T A L R G C G N L L R H L K K N G M K E K I N E S H I V V Q A L R L N T M S K L T F A D C 1915
Rattus_norvegicus L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K S G T K O D V N E N H I V V Q A L R L N T M S K F T F A D C 1915
Mus_musculus      L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K N S T K O D V N E N H I V V Q A L R L N T M S K F T F A D C 1915
Bos_taurus        L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K T S V K Q N V N E S H I V V Q A L R L N T M S K F T F A D C 1915
Equus_caballus    L T P Q Q H Y D W G L R A K T V L R G S G N L L R H L K K S G I K Q V N E S H I V V Q A L R L N T M S K F T F A D C 1915
Canis_lupus_familiaris L T P Q Q H Y D W G L R A K T V L R G S G G L L R O L K K T G M K Q N V D E S H I V V Q A L R L N T M S K F T F A D C 1915
Homo_sapiens      L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L N K S G T T Q N A N E S H I V V Q A L R L N T M S K F T F T D C 1915
Pan_troglodytes   L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K S G T T Q N A N E S H I V V Q A L R L N T M S K F T F T D C 1915
Macaca_mulatta    L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K S G T T Q N A N E S H I V V Q A L R L N T M S K F T F T D C 1915
Macaca_fascicularis L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K S G T T Q N A N E S H I V V Q A L R L N T M S K F T F T D C 1915
Callithrix_jacchus L T P Q Q H Y D W G L R A K T V L R G S G N L L R O L K K N D T A Q N A N E G H I V V Q A L R L N T M S K F T F T D C 1915
Xenopus_tropicalis L T P Q Q H Y D W G L R A K T V L R G C G N L L H O L K K N G K E T A I N E S H M V V Q A L R L N T M S K L T F A D C 1913
Rhinatrema_bivittatum L T P Q Q H Y D W G L R A K T V L R G C G N L L R O V K K T G M K E T I N E N H I V V Q A L R L N T M S K L T F A D C 1919
.....1870.....1880.....1890.....1900.....1910.....1920

```

```

* ***:***: * * :*:*** : * **:..****. * * *.*****:***** ** **
Pavo_muticus      A R F D A L V K D V F A G I D F K D V E Y A K L T K A L Q E A F E E A R L E I I N T Q V K K A L E L Y E Q L S O R M G V 1972
Pavo_cristatus    A R F D A L V K D V F A G I D F K D V E Y A K L T K A L Q E A F E E A R L E I I N T Q V K K A L E L Y E Q L S O R M G V 1972
Gallus_gallus     A R F D A L V K D V F P G T D F K D V E Y A K L T A A L Q E A F E E A R L E I I N T Q V K K A L E L Y E Q L R O R M G V 1972
Chelonia_mydas    A R F D A L V K D V F P G I D F K D V E Y A E L T T A L Q V F E E A N L E I I N T Q I K K A L E L Y E Q L R O R M G V 1975
Rattus_norvegicus T R F D A L I K D V F P G I D F K E V E Y N E L S A L K Q V F E E A N Y E I P N Q M K K A L E L Y E Q L R O R T G V 1975
Mus_musculus      T R F D A L I K D V F P G I D F K E V E Y D E L S A L K Q V F E E A N Y E I P N Q M K K A L E L Y E Q L R O R T G V 1975
Bos_taurus        T R F D A L I K D V F P G I D F K E V E Y D E L S A A L K Q V F E E A N Y E I I S N Q I K K A L E L Y E Q L R O R M G V 1975
Equus_caballus    T R F D A L I K D V F P G I D F K E V E Y G E L S A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Canis_lupus_familiaris L R F D A L I K D V F P G I D F K E V E Y G E L S A L Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L R O R M G V 1975
Homo_sapiens      T R F D A L I K D V F P G I E L K E V E Y D E L S A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Pan_troglodytes   T R F D A L I K D V F P G I E L K E V E Y D E L S A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Macaca_mulatta    T R F D A L I K D V F P G I E L K E V E Y D E L S A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Macaca_fascicularis T R F D A L I K D V F P G I E L K E V E Y D E L S A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Callithrix_jacchus T R F D A L I K D V F P G I G F K E V E Y D E L R A A L K Q V F E E A N Y E I I P N Q I K K A L E L Y E Q L C O R M G V 1975
Xenopus_tropicalis S R C D A L I K D V F P G I D F K D V E Y M E L S A A L Q A F E E A N L E I I P S Q I K K A L E L Y E Q L R O R M G V 1973
Rhinatrema_bivittatum S R C D A L I K D I F R G I D F K D V E Y T E L N T A L Q H V F E E A N L E I I P S Q I K K A L E F Y E Q L R O R M G V 1979
.....1930.....1940.....1950.....1960.....1970.....1980

```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 12 of 25

[illegible][illegible]

```

**.*.*.*****:***:***:***:.*.*.*.*****:***:
THDLS CASPATISRGMIFLSD E D T D L N S L I K S W L R S Q P E E C R Y N L E N W I G D Y F E K A L N W
THDLS CASPATISRGMIFLSD E D T D L N S L I K S W L R S Q P E E C R Y N L E N W I G D Y F E K A L N W
T H N L S C A S P A T I S R G M I F L S D E D T D L N S L I K S W L R S Q P E E C R Y N L E N W I G D Y F E K A L N W
T H D L S C A S P A T I S R G M I F L S D E D T D L N S L I K S W L R N Q P E E C R H N L E N W I G D Y F E K A L N W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P V E Y R S N L E N W I G D Y F S K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P L E Y R S N L E N W I G D Y F S K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P P T Y R N N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P P K Y R N N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L H S L I K S W L K N Q P P N Y R D N I E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P A E Y R N N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P A E Y R N N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P A E Y R S N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P A E Y R S N L E N W I G D Y F E K A L Q W
T H D L S C A S P A T I S R G M I F L S D E E T D L N S L I K S W L R N Q P A K Y R N N L E N W I G D Y F E K A L Q W
T H D L S S A S P A T I S R G M I F L S D E N T D L Q S L I Q S W L R G Q P A N V R H N L E N W I G D Y F E K A L N W
T H D L S S A S P A T I S R G M I F L S D E D T D L N S L I K S W L R S Q P E N C R H N L E N W I G D Y F E R A L N W
.....2110.....2120.....2130.....2140.....2150.....2160

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 13 of 25

```

*:****:*****:*****:*** :.:*:.*:.*.***:..** **:.*:* *
VVKQNDFFVETSLVGTVMNGLSHLRGCTDRGQFIINLLRGLGGNLKMSRVEFAKQIFTW 2212
VVKQNDFFVETSLVGTVMNGLSHLRGCTDRGQFIINLLRGLGGNLKMSRVEFAKQIFTW 2212
VVKQNDFFVETSLVGTVMNGLSHLRGCTDRGQFIINLLRGLGGNLNMSRLEFAKQIFTW 2212
VLKQNDYVETSLVGTVMNGLSHLRGCTDRGQFIISLMRGLGGNLNMSRLEFTKEIFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCKYHDQFIINLIRGLGGNLNMSRLEFTKEVFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCKYHDQFIINLIRGLGGNLNMSRLEFTKEVFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDQFIINLIRGLGGNLNLSRLEFTKEVFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCKDHDQFIINLIRGLSGNLNMSRLEFTKEVFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDQFIINLIRGLGGNLNMSRLEFTKEVFNW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDEFIINLIRGLGGNLNMSRLEFTKEVFHW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDEFIINLIRGLGGNLNMSRLEFTKEVFHW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDEFIINLIRGLGGNLNMSRLEFTKEVFHW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDEFIINLIRGLGGNLNMSRLEFTKEVFHW 2215
VLKQNDYVETSLVGTVMNGLSHLHGCRDHDQFIINLIRGLGGNLNMSRLEFTKEVFNW 2215
VLKQNDFFVETSLIGTVMNGLSHLHGCTDRGFIVSLIHGLGGNLNMSRNEFAKEIFSW 2213
VLKQNDFFVETSLVGTVMNGLSHLHGCTDRGFVISLIRGLGGNLNMSRQEFKEIFNW 2219
.....2170.....2180.....2190.....2200.....2210.....2220

```

```

:::*** ::*:::* * : :*** * :::* . ***** :*:**.****
AQESPDPKPLDTYYDIDRGQLMLFRLKKPENLTADNFSNLQITLPVIOITPDMORGLDYF 2272
AQESPDPKPLDTYYDIDRGQLMLFRLKKPENLTADNFSNLQITLPVIOITPDMORGLDYF 2272
AQESPDPKPLDTYYDADSGQLMLYRLKKPENLIADNFSNLQITLPVIOITPDMORGLDYF 2272
ARESPDPKPLDYYDADTGHLMSYLQKKPIHLTADDFSNPRTLPVIOITPDMORGLDYF 2275
ARETPPDSHRPMDTYFDCDRGQLASYVLKKPESLTADDFSSGHSLPVIOTPDMORGLDYF 2275
ARETPPDSHRPMDTYFDCDRGQLASYMLKKPESLTADDFSNGHILPVIOTPDMORGLDYF 2275
ARQSPDPHKPLDTYYDSRGRLASVVLKKPENLTADDFSSSHTLPVIOITPDMORGLDYF 2275
ARESPDPHKPMDTYDSSRGRLASVVLKKPENLTADNFNNGQSLPVIOTPDMORGLDYF 2275
AQESPDPHKPMDTYDQSRRLASVVLKKPENLTADDFNNGQITLPVIOITPDMORGLDYF 2275
ARESPDPFHKPMDTYDSTRGRLATYVLKKPEDLTADDFSNGLITLPVIOITPDMORGLDYF 2275
ARESPDPFHKPMDTYDSTRGRLATYVLKKPENLTADDFSNGLITLPVIOITPDMORGLDYF 2275
ARESPDPFHKPMDTYDSTRGRLATYALKKPENLTADDFSNGLITLPVIOITPDMORSILDYF 2275
ARESPDPFHKPMDTYDSTRGRLATYALKKPENLTADDFSNGLITLPVIOITPDMORSILDYF 2275
ARESPDPFHKPMDTYDSENTGRLATYVLKKPENLTADDFSNGLITLPVIOITPDMORSILDYF 2275
ARESPDPKPLDTFYDAKTGRLMTYSLEKPHNLTTEDFCNPQITLPVIRTPDIORGLDYF 2273
SRESPDPKPLETYDYLKLGSLMTYQLEKPENLTSEDFSNPQITLPVIOITPDMORNLDYF 2279
.....2230.....2240.....2250.....2260.....2270.....2280

```

[illegible]

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 14 of 25

```

:.*:*****:*****:****:*****:*****:***:****:*****
IVISTNTGRVFRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
IVISTNTGRVFRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
IVISTNTGRVFRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKEINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
MVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYQGFYDENLEWV
LVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYHGFYDDNLEWV
LVISTNTGRVYRPKDCERLVLYLKDINLPKPKDKWGTSTLVAFLQQVLTYYHGFYDENLEWV
.....2350.....2360.....2370.....2380.....2390.....2400

```

[illegible]

.*..:.* ***:.*:::.*:*** *****:*****.*.*
 NHPVWGSGLPNIHQLAGSMVQVYEQVRSKFTIDDDHGHYLFTPCILTQWVLGLFRYNLSGGP
 NHPVWGSGLPNIHQLAGSMVQVYEQVRSKFTIDDDHGHYLFTPCILTQWVLGLFRYNLSGGP
 NHPVWGSGLPKIHQLAGSMVQVYEQVRAKFTVDDHGHYLFTPCILTQWVLGLFRYNLSGGP
 NHSVWGSGLPKIHQLAGSMVQVYEQVRAKFTVDDHSHYLFTPYILTQWVLGLFRYDLTGGG
 NHSIWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSIWGSSSKIIYLLAGSMVQVYEQVRAKFTVDEYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSVWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSIWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSIWGSSSKISLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSVWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSIWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSVWGSSSKINLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSIWGSSSKINLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHSVWGSSSKIIYLLAGSMVQVYEQVRAKFTVDDYSHYFFTPCILTQWVLGLFRYDLTGGG
 NHPWGSGLSKIHLLAGSMVQVYEQVRAKFTVDDYSHYLFTPCILTQWVLGLFRYDLTGGG
 NHPWGSGLSKIHLLAGSMVQVYEQVRAKFTVDDHSHYLFTPCILTQWVLGLFRYDLTGGG
2470.....2480.....2490.....2500.....2510.....2520

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNADH11.pse Feb 1 12:03:34 2022

Page 15 of 25

```

* . * *:***** **:***: * *: * *: * .*:*.*****.*:*** * ****
Pavo_muticus      STQTADHVMEIVAYEACRLFRDKIVGMKDLHVFDNVLMKVFSQDWGSDVLDNMEDIFYVT 2572
Pavo_cristatus    STQTADHVMEIVAYEACRLFRDKIVGMKDLHVFDNVLMKVFSQDWGSDVLDNMEDIFYVT 2572
Gallus_gallus     SMQTADHVLEIVAYEACRLFRDKIVGRKDLHVFDNLMKVFSQDWGSDFLDNMEDIFYVT 2572
Chelonia_mydas    STHTLDYVLEIVAYEARRLFRDKIVGAKELLIFDNILMKVFGDWGSDILENMADSFYVT 2575
Rattus_norvegicus SNHPLDYVLEIVAYEARRLFRDKIVGVKELHLFDNILTSVLQGDWGSIDILNMADSFYVT 2575
Mus_musculus      SNHPLDYVLEIVAYEARRLFRDKIVGVKELHLFDNILTSVLQGDWGSIDILNMADSFYVT 2575
Bos_taurus        SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDSILTSVFGDWGSDVLDNMADNFYVT 2575
Equus_caballus    SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDSILTSVFGDWGSDVLDNMADSFYVT 2575
Canis_lupus_familiaris SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDNILTSVFGDWGSDILDNMADSFYVT 2575
Homo_sapiens       SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDIILTSVFGDWGSDILDNMADSFYVT 2575
Pan_troglodytes   SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDIILTSVFGDWGSDILDNMADSFYVT 2575
Macaca_mulatta     SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDIILTSVFGDWGSDVLDNMADSFYVT 2575
Macaca_fascicularis SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDIILTSVFGDWGSDVLDNMADSFYVT 2575
Callithrix_jacchus SNHPLDYVLEIVAYEARRLFRDKIVGAKELHLFDIILTSVFGADWGSIDILNMADSFYVT 2575
Xenopus_tropicalis SKQSQDCVLEIVAYEARRLFRDRIVTAKELHVFDNILMSVLQGDWGSIDVLDNMADSFYVT 2573
Rhinatrema_bivittatum SQYTQDCVLEIVAYEARRLYRDKLVS TKELSFIDNILMSVFGDWGSDVLDNMADCFYVT 2579
.....2530.....2540.....2550.....2560.....2570.....2580

```

```

*** : . * *.*****:***:*. * * *.*:** :*: : :*:***: * ***:
Pavo_muticus      WGARQEP--FTTPGQALPPHGKPLGKLNSTDLIDTIKKGVIHYGRDKKEIEILLFQEVLN 2630
Pavo_cristatus    WGARQEP--FTTPGQALPPHGKPLGKLNSTDLIDTIKKGVIHYGRDKKEIEILLFQEVLN 2630
Gallus_gallus     WGAHQEA--FTTPGQALPPHGKPLGKLNSTDLIDTIKKGVIHYGRDKKEIEILLFQEVLN 2630
Chelonia_mydas    WGARHEVGAFAPEQALPPHGKPLGKLTSEDLKDVIKKGLIHYGRDNQKEIEILLFQEVLD 2635
Rattus_norvegicus WGAQHISGAKIAPGQPLPPHGKPLGKLSADLKDVIKKGLIHYGRDNQNLIDILLFQEVLE 2635
Mus_musculus      WGAHHVSGGKTAPGQPLPPHGKPLGKLTSEDLKDVIKKGLIHYGRDNQNLIDILLFQEVLE 2635
Bos_taurus        WGAQHTSGTRSVPGQPLPPHGKPLGKLNSSDLKDVIKKGLIHYGRDNQNLIDILLFQEVLE 2635
Equus_caballus    WGARHNSGTRAAPGQPLPPHGKPLGKLNSSDLKDVIKKGLIHYGRDNQNLIDILLFQEVLE 2635
Canis_lupus_familiaris WGARHNSGARAAPGQPLPPHGKPLGKLNSSDLKDVIRKGLIHYGRDNQNLIDILLFQEVLE 2635
Homo_sapiens       WGARHNSGARAAPGQPLPPHGKPLGKLNSTDLKDVIKKGLIHYGRDNQNLIDILLFHEVLE 2635
Pan_troglodytes   WGARHNSGARAAPGQPLPPHGKPLGKLNSTDLKDVIKKGLIHYGRDNQNLIDILLFHEVLE 2635
Macaca_mulatta     WGARHNSGARAAPGQPLPPHGKPLGKLNSTDLKDVIKKGLIHYGRDNQNLIDILLFHEVLE 2635
Macaca_fascicularis WGARHNSGARAAPGQPLPPHGKPLGKLNSTDLKDVIKKGLIHYGRDNQNLIDILLFHEVLE 2635
Callithrix_jacchus WGARHNSGAGAAPGQPLPPHGKPLGKLNSSDLKDVIKKGLIHYGRDNQNLIDILLFHEVLE 2635
Xenopus_tropicalis WGAHVGAGAVIAPGQPLPPHGRPLGRNLNSDLQDVIKKGATQYSHMRELEILFFHEVLD 2633
Rhinatrema_bivittatum WGAHVEVGALIAPEGQSLPPHGRPLGKLNSSDLKDVIRKGLIMQYSRDNKELDILLFYEVLN 2639
.....2590.....2600.....2610.....2620.....2630.....2640

```

```

*:***:***** *****:*****: * *.*****: .*:***:*****: **:***:
Pavo_muticus      YVSRVDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAFLITPKISRGYEQKQFRNDLK 2690
Pavo_cristatus    YVSRVDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAFLITPKISRGYEQKQFRNDLK 2690
Gallus_gallus     YVSRVDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAFLITPKISRGYELKQKFRNDLK 2690
Chelonia_mydas    YVSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGSILITPKISRGYELKQKFRNDLK 2695
Rattus_norvegicus YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYEPKQFRNDLK 2695
Mus_musculus      YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYEPKQFRNDLK 2695
Bos_taurus        YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYDLKHFKNDLK 2695
Equus_caballus    YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Canis_lupus_familiaris YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Homo_sapiens       YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Pan_troglodytes   YISRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Macaca_mulatta     YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Macaca_fascicularis YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFSPKISRGYELKQKFRNDLK 2695
Callithrix_jacchus YMSRIDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGALLFSPKISRGYELKQKFRNDLK 2695
Xenopus_tropicalis YMSRVDRVLSFPGGSLLLAGRSVGGRRTVTSLSVSHMHGAVLFTPKVSRGYELKQKFRNDLK 2693
Rhinatrema_bivittatum YMSRIDRVLSFPGGSLLLAGRTGVGRRTITFLVCHMHGAVLITPKISRGYELKQKFRNDLK 2699
.....2650.....2660.....2670.....2680.....2690.....2700

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN24H11pre Feb 1 12:03:34 2022

Page 16 of 25

	.:.:*..*:.....****:***:. ****:*:**:*:*****. ***** ***:.*	
Pavo_muticus	HVMELAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYKTEEEPLLSPLKDQA	2750
Pavo_cristatus	HVMELAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYKTEEEPLLSPLKDQA	2750
Gallus_gallus	HVMELAGIEAQQVLLLEDYQFVHPAFLEMINSLLSSGEVPGLYKSEEEPLLSPLKDQA	2750
Chelonia_mydas	QVMOLAGIEAQQVLLLEDYQFVHSIFLEMVNSLLSSGEVPGLYTIEEPLLSPLKDQA	2755
Rattus_norvegicus	HVLHLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Mus_musculus	HVLQLAGIEAQQVLLLEDYQFVHPTFLEMINSLLASGEVPGLYTEEEPLLLLPLKDQA	2755
Bos_taurus	VVLHLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Equus caballus	HVLHLAGVEARQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Canis_lupus_familiaris	HVLHLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDEA	2755
Homo_sapiens	HVLQLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Pan_troglodytes	HVLQLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Macaca_mulatta	HVLHLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Macaca_fascicularis	HVLHLAGIEAQQVLLLEDYQFVHPTFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Callithrix_jacchus	HVLHLAGIEAQQVLLLEDYQFVYPHFLEMINSLLSSGEVPGLYTEEEPLLLLPLKDQA	2755
Xenopus_tropicalis	QVIOMAGIEGQQVLFLLDHFVHPDFLEMINSLLSSGEIPGLYTVEEPLLSPLKNQA	2753
Rhinatrema_bivittatum	QVMOLAGIEGQQVLLLEDYQFVHAFFLEMINSLLSSGEIPGLYTEEEPLLSPLKDQA	2759
	.....2710.....2720.....2730.....2740.....2750.....2760	

	*:*** **::*** *: *****:*** ** :*****: *** * *** **: *	
Pavo_muticus	SQDGFITGPIFYNYFTYRIQQNLHVVLIMDSTNINFTINCESNPALYKKCQVLWMETWSENS	2810
Pavo_cristatus	SQDGFITGPIFYNYFTYRIQQNLHVVLIMDSTNINFTINCESNPALYKKCQVLWMETWSENS	2810
Gallus_gallus	SQDGFITGPIFYNYFTYRIQQNLHVVLIMDSTNINFTINCESNPALYKKCQVLWMETWSENS	2810
Chelonia_mydas	SQDGFITGPVFNFTYRIQQNLHIVLIMDSTNINFTINCESNPALHKKCQVLWMEWSSENS	2815
Rattus_norvegicus	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANLNFIINCESNPALHKKCQVLWMEGWSDDSS	2815
Mus_musculus	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANLNFIIVNCESNPALHKKCQVLWMEGWSDDSS	2815
Bos_taurus	SQDGGFGPVFNFTYRVRQQNLHIVLIMDSANLNFIINCESNPALHKKCQVLWMEAWSDDSS	2815
Equus_caballus	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANLNFIINCESNPALHKKCQVLWMEGWSDDSS	2815
Canis_lupus_familiaris	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANLNFIINCESNPALHKKCQVLWMEGWSDDSS	2815
Homo_sapiens	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANLNFMINCESNPALHKKCQVLWMEGWSNSS	2815
Pan_troglodytes	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANSNFMINCESNPALHKKCQVLWMEGWSNSS	2815
Macaca_mulatta	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANSNFMINCESNPALHKKCQVLWMEGWSDDSS	2815
Macaca_fascicularis	SQDGGFGPVFNFTYRIQQNLHIVLIMDSANSNFMINCESNPALHKKCQVLWMEGWSDDSS	2815
Callithrix_jacchus	SQDGGFGPVFNFTYRIQQNLHVVLIMDSANLNFMINCESNPALPKKCQVLWMEGWSDDSS	2815
Xenopus_tropicalis	SEDGFTGPVLGYFTINRVLQNLHVVLIMDCTNINFTINCESNPAFYKKCSVQWMEGWSDKS	2813
Rhinatrema_bivittatum	SEDGFMGPIFYNYFTYRIQQNLHVVLIMDCTNINFTINCESNPALYKKCLVQWMEGWSDKS	2819
	.....2770.....2780.....2790.....2800.....2810.....2820	

	* : ** *:: : . *:	** * : * : ***:***** *****	
Pavo_muticus	MTKIP EMLLYD-DEEEKTE-KTHKEFKKKHSGSDSDFWKSFLVIHESCKMYGATPSRYMTF	2868	
Pavo_cristatus	MTKIP EMLLYD-DEEEKTE-KTHKEFKKKHSGSDSDFWKSFLVIHESCKMYGATPSRYMTF	2868	
Gallus_gallus	MKKIP EMLLYD-DEQEKME-KTHKEFKKKHSGSDSDFWKSFLVIHESCKMYGATPSRYMTF	2868	
Chelonia_mydas	MKKIPEMLFADLDEQEKITG-RAHKPEPKKYSGSDSDFLKSFLVIHESCKAYGATPSRYMTF	2874	
Rattus_norvegicus	MKKIPEMLFSEADIEEKYE-KRRKDEKKKSSVDPDFIKSFLLIHESCKAYGATPSRYMTF	2874	
Mus_musculus	MKKIPEMLFSETDGEEEKYE-KRRKDEKKRNSVDPDFIKSFLLIHESCKAYGATPSRYMTF	2874	
Bos_taurus	MKKIPEMLLSEMGGERYSKRRKEEKKKKSVDPEFLKSFLLIHESCKAYGATPSRYMTF	2875	
Equus_caballus	MKKIPEMLFSETGGEEKYSDKKRKEEKKKNSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Canis_lupus_familiaris	MRKIPEMLFSETDGEEEKYSDKKRKEEKKKSSVDLDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Homo_sapiens	MKKIPEMLFSETGGEEKYNDKKRKEEKKKNSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Pan_troglodytes	MKKIPEMLFSETGGEEKYNDKKRKEEKKKNSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Macaca_mulatta	MKKIPEMLLSETGGEEKYNDKKRKEEKKKNSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Macaca_fascicularis	MKKIPEMLLSETGGEEKYNDKKRKEEKKKNSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2875	
Callithrix_jacchus	MKKIPEMLFSETG-EEKHNHKKRKEEK-NSVDPDFLKSFLLIHESCKAYGATPSRYMTF	2873	
Xenopus_tropicalis	MKKIPEMVILDPNSKEKMQ--MDPGYKKVSSGDSEFFNSFLMIHESCKSYGATPSRYMTF	2871	
Rhinatrema_bivittatum	MKQIPTMLFTINENGQEKITG--TDKDYKNISGNIDFLKSFLVIHESCKPYGATPSRYMTF	2877	
	.....2830.....2840.....2850.....2860.....2870.....2880	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 17 of 25

[illegible][illegible]

```
***** :***:*****:*****:***.***.*  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVKEDIATFDARNI  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVKEDIATFDARNI  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVKEDIATFDARNI  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
RPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
RPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
RPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARNI  
KPESLSEIRSLRMPPDIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFDARSI  
KPESLSEIRSLRAPPDIIIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIVTFDVRI  
KPESLSEIRSLRMPPDVIRDILEGVLRLMGIFDTSWVSMKSFLAKRGVREDIATFVDRNI  
.....3010.....3020.....3030.....3040.....3050.....3060
```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNCH111.ppe Feb 1 12:03:34 2022

Page 18 of 25

```

. *** ***** :: **: *.:***:***** **.:***:***:*.***.*:
Pavo_muticus      PKEIRESVEEELLSKNRTSFDPKNAKRASAAAAPLAAWVNANVOYSHVLERIOPLEKEKAV 3108
Pavo_cristatus    PKEIRESVEEELLSKNRTSFDPKNAKRASAAAAPLAAWVNANVOYSHVLERIOPLEKEKAV 3108
Gallus_gallus     PKEIRESVEEELLSKNRTSFDPKNAKRASAAAAPLAAWVNANVOYSHVLERIOPLEKEKAV 3108
Chelonia_mydas    PKEIRESVEEELLSKNKASFDPKNAKRASAAAAPLAAWVKANVOYSYVLERIOPLEKEQSG 3114
Rattus_norvegicus PKEIRESVEEELLFKNKASFDPKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQSG 3114
Mus_musculus      PKEIRESVEEELLFKNKASFDPKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQSG 3114
Bos_taurus        PKEIRESVEEELLFKNKGSFDPKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQAG 3115
Equus_caballus    PREIRESVEEELLFKNKGSFDPKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQAG 3115
Canis_lupus_familiaris PKEIRESVEEELLYKNKGSFDSKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQAG 3115
Homo_sapiens      SKEIRESVEEELLFKNKGSFDPKNAKRASAAAAPLAAWVKANIQYSHVLERIHPLETEQAG 3115
Pan_troglodytes   SKEIRESVEEELLFKNKGSFDPKNAKRASAAAAPLAAWVKANIQYSHVLERIHPLETEQAG 3115
Macaca_mulatta    SKEIRESVEEELLYKNKGSFDPKNAKRASAAAAPLAAWVKANIQYSHVLERIOPLETEQAG 3115
Macaca_fascicularis SKEIRESVEEELLYKNKGSFDPKNAKRASAAAAPLAAWVKANIQYSHVLERIOPLETEQAG 3115
Callithrix_jacchus SKEIRESVEEELFRNKGSFDPKNAKRASAAAAPLAAWVKANVOYSHVLERIOPLETEQAG 3113
Xenopus_tropicalis TSEIRTSVEEELLMKMRTSFEKKNARRASAAAAPLAAWVIANVOYSHVLEKIOPLEKEQSV 3111
Rhinatrema_bivittatum TKEIRASVEELLEKNRTSFEAKTAKRASAAAAPLAAWVKANVOYSHVLEKIOPLENEQAV 3117
.....3070.....3080.....3090.....3100.....3110.....3120

```

```

* **.:** :*.:** :.***:*****:*** **.:*****: ***: :****:*
Pavo_muticus      LEANLKKTEGRKRKLEDLVNSVGQKVSLEKDKFQSRTEAAKLEAELSKAQKTLKAAEIL 3168
Pavo_cristatus    LEANLKKTEGRKRKLEDLVNSVGQKVSLEKDKFQSRTEAAKLEAELSKAQKTLKAAEIL 3168
Gallus_gallus     LEANLKKTEGRKHKLEDLVNSVGQKVSLEKDKFQSRTEAAKLEAELSKAQKTLKAAEIL 3168
Chelonia_mydas    LEANLKKTEDRKQKLEDLLNSVGQKVSLEKDKFQSRTEAAKLEAEVVKAEITLKAEEIL 3174
Rattus_norvegicus LELNLKKTEDRKRKLEDLLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3174
Mus_musculus      LELNLKKTEDRKRKLEDLLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3174
Bos_taurus        LESNLRKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Equus_caballus    LELNLKKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Canis_lupus_familiaris LELNLKKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Homo_sapiens      LESNLKKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Pan_troglodytes   LESNLKKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Macaca_mulatta    LESNLKKTEDRKRKLEDLLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Macaca_fascicularis LESNLKKTEDRKRKLEDLLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3175
Callithrix_jacchus LELNLKKTEDRKRKLEELLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQETIKAAEVL 3173
Xenopus_tropicalis LESNLRRTEKKKKLERQLNSVGQKVSLEKEKFQSRTEAAKLEAEVSKAQEVIQAAEIL 3171
Rhinatrema_bivittatum LVSNLRKTEDKKORLEDQLNSVGQKVSLEKEKFQSRTEAAKLEAELTKAQEITIKAAEVL 3177
.....3130.....3140.....3150.....3160.....3170.....3180

```

```

* *** *:***:*** ** :*: **.:*****:*.*** *. ** :: * * . *
Pavo_muticus      ISQLDREHKRWSTQVSEIRDELATLPKRAQLAAAFVITYLSAAPEDQQRKTRLDWTKSAGL 3228
Pavo_cristatus    ISQLDREHKRWSTQVSEIRDELATLPKRAQLAAAFVITYLSAAPEDQQRKTRLDWTKSAGL 3228
Gallus_gallus     ISQLDREHKRWSTQVSEIRDELVTLTPKRAQLAAAFITYLSAAPEDQQRKTRLDWTKSAGL 3228
Chelonia_mydas    INQLDREHKRWNTQVSEITDELTTLPKRAQLAAAFITYLSAAQEDQQRKISLDWTKSAGL 3234
Rattus_norvegicus ISQLDREHRRWNAQVAEIAEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKAAGL 3234
Mus_musculus      ISQLDREHRRWNAQVAEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKAAGL 3234
Bos_taurus        INQLDREHRRWNAQVAEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKAAGL 3235
Equus_caballus    INQLDREHKRWNAQVAEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSACL 3235
Canis_lupus_familiaris ISQLDREHKRWNAQVAEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSACL 3235
Homo_sapiens      INQLDREHKRWNAQVVEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSAGL 3235
Pan_troglodytes   INQLDREHKRWNAQVVEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSAGL 3235
Macaca_mulatta    INQLDREHKRWNAQVVEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSAGL 3235
Macaca_fascicularis INQLDREHKRWNAQVVEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSAGL 3235
Callithrix_jacchus INQLDREHKRWNAQVVEITEELATLPKRAQLAAAFITYLSAAPEGLRKNCLEEWTKSAGL 3233
Xenopus_tropicalis INQLDGENKRWNSQVVEITEELALPKRAQLAAAFITYLSAAPEDQQRKGSIEQWMKCVGL 3231
Rhinatrema_bivittatum IHQLDGEHKRWNAQVAEITEELDTLPKRAQLAAAFITYLSAAPEDQQRKASLDWTKSAGL 3237
.....3190.....3200.....3210.....3220.....3230.....3240

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 19 of 25

```

: **:****.*****:*****:*****:****          *:***** :**
EKFDLRRFLCTESEELVWKSEGLPSDDLSENALVILQ-----SKVCPFLIDPSFRAT 3281
EKFDLRRFLCTESEELVWKSEGLPSDDLSENALVILQ-----SKVCPFLIDPSFRAT 3281
EKFDLRRFLCTESEELVWKSEGLPSDDLSENALVILQ-----SKVCPFLIDPSFRAT 3281
EKFDMRRFLCTESEQLIWKSEGLPSDDLSENALVILQ-----SRICPFLIDPSFRAT 3287
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQ-----SRVCPFLIDPSSQAT 3287
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQ-----SRVCPFLIDPSSQAT 3287
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSRVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSRVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSQVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQ-----SRVCPFLIDPSSQAT 3288
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSRVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSRVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSWSRVCPFLIDPSSQAT 3295
EKFDLRRFLCTESEQLIWKSEGLPSDDLSENALVILQIIGLKSRSRVCPFLIDPSSQAT 3293
ETFDLRRFLSTESEQLIWKSEGLPSDELSSENALVILQ-----SKICPFLIDPSSQAT 3284
DAFDLRRFLSTESEQLIWKSEGLPSDDLSENALVILQ-----SHVCPFLIDPSSQAT 3290
.....3250.....3260.....3270.....3280.....3290.....3300

```

```
*****:  **:***: .*:*:*****: **:*:*****: *:*: .**
EWLKTHLKESHLEVVNQDDTNFLTTELELAVRFGKTLIIQEMDGMPEVPLYPLLRKDLVVQG 3341
EWLKTHLKESHLEVVNQDDTNFLTTELELAVRFGKTLIIQEMDGMPEVPLYPLLRKDLVVQG 3341
EWLKTHLKESRLEVVNQDDANFLTTELELAVRFGKTLIIQEMDGMPEVPLYPLLRKDLVVQG 3341
EWLKTHLKESRLEVINQDDASFITALELAVRFGKTLIIQEMDGMPEVPLYPLLRKDLVAQG 3347
EWLKTHLKDSHLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3347
EWLKTHLKDSHLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3347
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3355
EWLKTHLKDSRLEVVNQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPILRRDLVAQG 3355
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3355
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3348
EWLKTHLKDSCLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3355
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3355
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3355
EWLKTHLKDSRLEVINQDDSNFITALELAVRFGKTLIIQEMDGVEPVLYPLLRRDLVAQG 3353
EWLKTHLKESRMEVINQDDANFMTALELAVRFGKTLIIQEMDGVEPVLYPLLRKDLIAQG 3344
EWLKTHLKELRLEVINQDDANFITAVELAVRFGKTLIIQEMDGVEPVLYPLLRKDLIAQG 3350
.....3310.....3320.....3330.....3340.....3350.....3360
```

```

***.:***:* *****.:***:*.***.***.*: : ***** :*****
PRYAIQIGEKMIDYNEEFRLFLSTRNPNPFIPPDASSVMEVNFTTTGSGLRGOLLALTI 3401
PRYAIQIGEKMIDYNEEFRLFLSTRNPNPFIPPDASSVMEVNFTTTGSGLRGOLLALTI 3401
PRYAIQIGEKMIDYNEEFRIFLSTRNPNPLIPPDASSIVMEVNFTTTGSGLRGOLLALTI 3401
PRYAVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAIIIEVNFTTTTRSGLRGOLLALTI 3407
PRYVVQIGDKIIDYNEDFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3407
PRYVVQIGDKIIDYNEDFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3407
PRYVVQIGDKIIDYNEEFRLFLSTRSPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAIIIEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3408
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3415
PRYVVQIGDKIIDYNEEFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRSGLRGOLLALTI 3413
PRYVVQIGDKIIDYNEDFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRAGLRGOLLALTI 3404
PRYVVQIGDKIIDYNEDFRLFLSTRNPNPFIPPDAAISIVTEVNFTTTTRAGLRGOLLALTI 3410
.....3370.....3380.....3390.....3400.....3410.....3420

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 20 of 25

***** : ***** : ***** : ***** : * : ** *****

Pavo_muticus	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3461
Pavo_cristatus	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3461
Gallus_gallus	QHEKPDLEEQKTKLLQOEE	EKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3461
Chelonia_mydas	QHEKPDLEEQKTKLLQOEE	EKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3467
Rattus_norvegicus	QHEKPDLEEQKTKLLQOEE	DKKIQLARLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3467
Mus_musculus	QHEKPDLEEQKTKLLQOEE	DKKIQLARLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3467
Bos_taurus	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Equus_caballus	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Canis_lupus_familiaris	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Homo_sapiens	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3468
Pan_troglodytes	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Macaca_mulatta	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Macaca_fascicularis	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3475
Callithrix_jacchus	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILENKDLT	ESLNQTKASS	3473
Xenopus_tropicalis	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILDNKYLT	ESLNQTKASS	3464
Rhinatrema_bivittatum	QHEKPDLEEQKTKLLQOEE	DKKIQLAKLEESLLET	LATSQGNILDNKDLT	ESLNQTKASS	3470
	.....3430.....3440.....	3450.....3460.....	3470.....3480		

***** ** ** ***** ** ** ***** *****

Pavo_muticus	ALIQESLAESHRLQSSLDQERNAYLPLAESASKMYFIISDLSKTNMMYRFSLAAFLRLFQ	3521
Pavo_cristatus	ALIQESLAESHRLQSSLDQERNAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3521
Gallus_gallus	ALIQESLAESHRLQSSLDQERNAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3521
Chelonia_mydas	ALIQESLAESHKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3527
Rattus_norvegicus	ALIQDSLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLASFLRLFQ	3527
Mus_musculus	ALIQDSLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLASFLRLFQ	3527
Bos_taurus	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLASFLRLFQ	3535
Equus_caballus	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3535
Canis_lupus_familiaris	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3535
Homo_sapiens	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3528
Pan_troglodytes	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3535
Macaca_mulatta	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3535
Macaca_fascicularis	ALIQESLKESYKLQISLDQERDAYLPLAESASKMYFIISDLSKINMMYRFSLAAFLRLFQ	3535
Callithrix_jacchus	ALIQESLKESYKLQISLDQERDAYLPLAESTSKMYFIISDLSKINMMYRFSLAAFLRLFQ	3533
Xenopus_tropicalis	ALIQESLSSESHKLQISLDQERNAYLPLAESASKMYFIICDLSKINMMYRFSLAAFLRLFQ	3524
Rhinatrema_bivittatum	ALIQESLSESHRLQIFLDQERDAYLPLAECASKMFFIISDLSKINMMYRFSLTAFLRLFQ	3530
	.....3490.....3500.....3510.....3520.....3530.....3540	

* * . * : * . * : ** . * : : * : * ** : * : ** . * : * * : * : *

Pavo_muticus	RALQSEQDSNTIDERIESLIYTLKHTVVEYVCRCLFKYCTLIFILKDVR-TNEVFIYSLE	3580
Pavo_cristatus	RALQSEQDSNTIDERIESLIYTLKHTVVEYVCRCLFKYCTLIFILKDVR-TNEVFIYSLE	3580
Gallus_gallus	RALQSEQDSNTIDERIESLIYTLKHTVVEYVCRCLLKADQLMFALHFVRGMHPPELFOETE	3581
Chelonia_mydas	RALQSKQDSSENTEERIMSLTSSLKHMVVEYVCRCLFKADQLMFALHFVRGMHPPELFOENE	3587
Rattus_norvegicus	RALONKQDSSENTEQRIQCLVNSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPEFOENE	3587
Mus_musculus	RALONKQDSSENTEERIQCLVNSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPEFOENE	3587
Bos_taurus	RALONKQDSSENTEQRIKSLINSLKHMVVEYICRCLFKADQLMFALHFIRGMHPPELFOENE	3595
Equus_caballus	RALONKQDSSENTEQRIQSLTSSLKHMVYKYICRCLFKADQLMFAFHFVRGMHPPELFOENE	3595
Canis_lupus_familiaris	RALONKQDSSENTEQRIQSLTSSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3595
Homo_sapiens	RALONKQDSSENTEQRIQSLTSSLQHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3588
Pan_troglodytes	RALONKQDSSENTEQRIQSLTSSLQHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3595
Macaca_mulatta	RALONKQDSSENTEQRIQSLTSSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3595
Macaca_fascicularis	RALONKQDSSENTEQRIQSLTSSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3595
Callithrix_jacchus	RALONKQDSSENTEQRIQSLTSSLKHMVVEYICRCLFKADQLMFALHFVRGMHPPELFOENE	3593
Xenopus_tropicalis	RILIGKQESKSIDVRIKSLIDALKHMYVEYVCRSLFKADQLMFALHFVRGMHSELFOENE	3584
Rhinatrema_bivittatum	RALLNKQESGNTNIRIKSLTSSLKHMVVEYVCRSLFKADQLMFALHFVRGMHPPELFOENE	3590
	.....3550.....3560.....3570.....3580.....3590.....3600	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNADH11.ppe Feb 1 12:03:34 2022

Page 21 of 25

```

*.:*****:.* **:: :*:*****:*** :*** :* :** *** * :.* :*
Pavo_muticus      WETFTGVVIGDPVRKSDSKRSVHDIQIPSWIEQERAYAVASLKTSLPCLYQTLCFEDEGLW 3640
Pavo_cristatus    WETFTGVVIGDPVRKSDSKRSVHDIQIPSWIEQERAYAVASLKTSLPCLYQTLCFEDEGLW 3640
Gallus_gallus     WETFTGVIIIGDPVRKSDSKRSVHDIQIPSWIEQERAYAVASLKTSLPCLYQTLGFEDEGLW 3641
Chelonia_mydas    WDTFTGVIIIGDMLRKSDSQRGIRDQIPSWIEQERTWAVASLKISLPALYQTLCFEDADLW 3647
Rattus_norvegicus WDTFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKISLPGLYQTLCFEDGTLW 3647
Mus_musculus      WDTFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKISLPGLYQTLCFEDGAFW 3647
Bos_taurus        WDTFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDVALW 3655
Equus_caballus    WDTFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDVALW 3655
Canis_lupus_familiaris WDTFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFDDVALW 3655
Homo_sapiens      WDTFTGVVVGDMRLKADSQQKIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDAALW 3648
Pan_troglodytes   WDTFTGVVVGDMRLKADSQQKIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDAALW 3655
Macaca_mulatta    WDTFTGVVVGDMRLKADSQQKIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDAALW 3655
Macaca_fascicularis WDTFTGVVVGDMRLKADSQQKIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDAALW 3655
Callithrix_jacchus WETFTGVVVGDMRLKADSQQRIRDQLPSWIDQERSWAVATLKIALPSLYQTLCFEDAALW 3653
Xenopus_tropicalis WDVFTGVIIIGDMFKKSDSQRTLRQVPSWIEQERAWAVALLKTSLPALYQSLSLSDSNLW 3644
Rhinatrema_bivittatum WDAFTGVIIIGDMFRKSDSQKTIRDQIPSWIDQERVVAVALLKASLPVLYQILNLEDANLW 3650
.....3610.....3620.....3630.....3640.....3650.....3660

```

```

: . * ***:** : *.: : ***:***:***:*****:*.:***: * :*:*** **
Pavo_muticus      RTFSQSSVCEQDFPSAIVKRISLFQOVLVVQALRPDRLOSAMALFACKALGIKELSPSPPL 3700
Pavo_cristatus    RTFSQSSVCEQDFPSAIVKRISLFQOVLVVQALRPDRLOSAMALFACKALGIKELSPSPPL 3700
Gallus_gallus     RTFSQSSVCEQDFPSAIVKRISLFQOVLVVQALRPDRLOSAMALFACKALGIKELSPSPPL 3701
Chelonia_mydas    RTFSQSSVCEQDFPSAIVKRISLFQOVLVVQALRPDRLOSMAVFACKALGIKELSPPPPL 3707
Rattus_norvegicus RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKALGLKELSPPLPL 3707
Mus_musculus      RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKALGLKELSPPLPL 3707
Bos_taurus        RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKILGLKELSPPPPL 3715
Equus_caballus    RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACRTLGLKELSPPLPL 3715
Canis_lupus_familiaris RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKDLSPPLPL 3715
Homo_sapiens      RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKEVSPPLPL 3708
Pan_troglodytes   RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKEVSPPLPL 3715
Macaca_mulatta    RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKEVSPPLPL 3715
Macaca_fascicularis RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKEVSPPLPL 3715
Callithrix_jacchus RTYYHSMCEQEFPSSILAKKVSFLQOVLVVQALRPDRLOSAMALFACKTLGLKEVSPPLPL 3713
Xenopus_tropicalis SHFSKSSACEQEFPQTVAKKLSLFQQLLVVQALRPDRLOSAMGLFACKNLELKELSPPPL 3704
Rhinatrema_bivittatum LNFSRSSMCEQDFPANIVKKISLFQOVLVVQALRPDRLOSAMALFACKALEMKELSPPPPL 3710
.....3670.....3680.....3690.....3700.....3710.....3720

```

```

.*:* :*** **:****** * :*:*
Pavo_muticus      NLKHLYKETLETEPILIIISPGADPSQELQELASVERNTECYHQ----- 3744
Pavo_cristatus    NLKHLYKETLETEPILIIISPGADPSQELQELASVERNTECYHQ----- 3744
Gallus_gallus     NLKRLYKETLETEPVLIIISPGADPSQELQELASVERNTECYHQ----- 3745
Chelonia_mydas    NLKRLYKETLEIEPILIIISPGADPSQELQELASVERHGECYHQ----- 3751
Rattus_norvegicus NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSSECYHQ----- 3751
Mus_musculus      NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSSECYHQ----- 3751
Bos_taurus        NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3759
Equus_caballus    SLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3759
Canis_lupus_familiaris NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3759
Homo_sapiens      NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3752
Pan_troglodytes   NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3759
Macaca_mulatta    NLKRLYRETLEIEPILIIISPGADPSQELQELANTERSGECYHQRETGESRAKIGDTMIQ 3775
Macaca_fascicularis NLKRLYRETLEIEPILIIISPGADPSQELQELANTERSGECYHQ----- 3759
Callithrix_jacchus NLKRLYKETLEIEPILIIISPGADPSQELQELANAERSGECYHQ----- 3757
Xenopus_tropicalis NLKRLSKETLAIEPILIIISPGADPSQELQELACAEVGRDCFHE----- 3748
Rhinatrema_bivittatum NLKRLYKETLEIEPILIIISPGADPSQELQELASIEIGRECYHE----- 3754
.....3730.....3740.....3750.....3760.....3770.....3780

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 22 of 25

		*****:* * :*: .*:*****:.	
Pavo_muticus	-----	IAMGQGQADLAIQTLKECARNGEWLCLKNLHLVIP	3779
Pavo_cristatus	-----	IAMGQGQADLAIQTLKECARNGEWLCLKNLHLVIP	3779
Gallus_gallus	-----	IAMGQGQADLAIQTLKECARNGEWLCLKNLHLVIP	3780
Chelonia_mydas	-----	VAMGQGQADLAIQTLKECARNGEWLCLKNLHLVVS	3786
Rattus_norvegicus	-----	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3786
Mus_musculus	-----	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3786
Bos_taurus	-----	IAMGQGQADLAVQMLKECARNSGDWLCLKNLHLVVS	3794
Equus_caballus	-----	VAMGQGQADVAIQMLKECAHNGDWLCLKNLHLVVS	3794
Canis_lupus_familiaris	-----	VAMGQGQADLAIQMLKECSRNGDWLCLKNLHLVVS	3794
Homo_sapiens	-----	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3787
Pan_troglodytes	-----	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3794
Macaca_mulatta	VEVREERICCATGFGEDGGTGHKORN	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3835
Macaca_fascicularis	-----	VAMGQGQADLAIQMLKECARNGDWLCLKNLHLVVS	3794
Callithrix_jacchus	-----	VAMGQGQADLAIQMLQECASNGDWLCLKNLHLVVS	3792
Xenopus_tropicalis	-----	VAMGQGQADIATQSLRECARDGEWLCLKNLHLVIS	3783
Rhinatrema_bivittatum	-----	VAMGQGQADLAVQTLRECAVNGEWLCLKNLHLVIA	3789
	.....3790.....3800.....3810.....3820.....3830.....3840		

	*** *****:***: .*****:.*.*.:*****:*****:*****:*****	
Pavo_muticus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3839
Pavo_cristatus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3839
Gallus_gallus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3840
Chelonia_mydas	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3846
Rattus_norvegicus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3846
Mus_musculus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3846
Bos_taurus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3854
Equus_caballus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3854
Canis_lupus_familiaris	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3854
Homo_sapiens	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3847
Pan_troglodytes	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3854
Macaca_mulatta	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3895
Macaca_fascicularis	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3854
Callithrix_jacchus	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3852
Xenopus_tropicalis	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3843
Rhinatrema_bivittatum	WLPVLEKELNLTLPQPNFRLWLTTVEHPKFTPIILQSSSLKITYEAPPGLKKNLLRRTYESW	3849
	.....3850.....3860.....3870.....3880.....3890.....3900	

	****.*..**::** :*****.*****:***.*****:****.:** **	
Pavo_muticus	TPEQINKKGNLSRAHSLSFCIAWFHAVCQERRNYIPOGWTKFYEFSLSDLRAGFDIIDRLF	3899
Pavo_cristatus	TPEQINKKGNLSRAHSLSFCIAWFHAVCQERRNYIPOGWTKFYEFSLSDLRAGFDIIDRLF	3899
Gallus_gallus	TPEQINKKGNLSRAHSLSFCIAWFHAVCQERRNYIPOGWTKFYEFSLSDLRAGFDIIDRLF	3900
Chelonia_mydas	SPEQISKKGNLSRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYHVIDGLF	3906
Rattus_norvegicus	TPEQISKKDNIHRAHALFSIAWFHAACQERRNFIPQGWTKFYEFSLDLRAGYHVIDRLF	3906
Mus_musculus	TPEQISKRDNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYHVIDRLF	3906
Bos_taurus	TPEQISKKDNVHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3914
Equus_caballus	TPEQISKKDNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3914
Canis_lupus_familiaris	TPEQISKKDNVHRAHALENFAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYSIIDRLF	3914
Homo_sapiens	TPEQISKKDNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3907
Pan_troglodytes	TPEQISKKDNIHRAHALFSIAWFHAACQERRNFIPQGWTKFYEFSLDLRAGYNIIDRLF	3914
Macaca_mulatta	TPEQISKKDNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3955
Macaca_fascicularis	TPEQISKKDNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3914
Callithrix_jacchus	TPEQINKKNNIHRAHALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYNIIDRLF	3912
Xenopus_tropicalis	TPEQISKNGQIPRAQALFSIAWFHAVCQERRNYIPOGWTKFYEFSLSADLRAAYDIIDRLF	3903
Rhinatrema_bivittatum	TPEQISKNGLLPRAQALFSIAWFHAACQERRNYIPOGWTKFYEFSLSDLRAGYDIIDRLF	3909
	.....3910.....3920.....3930.....3940.....3950.....3960	

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYN2411pre Feb 1 12:03:34 2022

Page 23 of 25

[illegible]

```

****:***:**:*.:**:
HSISLPNSCSILDYRHHIESLPEDDKPDDFFGLPANIARSSQRMISQVISQLRILSRSVT 4019
HSISLPNSCSILDYRHHIESLPEDDKPDDFFGLPANIARSSQRMISQVISQLRILSRSVT 4019
HSISLPNSCSILDYRHHIESLPEDDKPEFFGLPANIARSSQRMISQVISQLRILSRSVS 4020
YSISLPNSCSILDYRHHIESLPEDDKPDDFFGLPANIARSSQRMISQVISQLRILSRSVT 4026
YSISLPNSCSILDYRAVIEKLPEDDKPDDFFGLPANIARSSQRMISQVISQLRILGRSVT 4025
YSISLPNSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSVT 4025
YSISLPKSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLKILGRSVT 4033
YSLSLPKSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSVT 4033
YSISLPKSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSAT 4033
YSVSLPQSCSILDYRAVIEKIPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSIT 4026
YSVSLPQSCSILDYRAVIEKIPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSIT 4033
YSVSLPQSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSIT 4074
YSVSLPQSCSILDYRAVIEKLPEDDKPSFFGLPANIARSSQRMISQVISQLRILGRSIT 4033
YSVSLPNSCSIVDYRAVIEKLPEDDKPGFFGLPANIARSSQRIISQVISQLRILGRSVT 4031
LPFSLPNSCSIMDYRAVIESIPEDDQPAFFGLPANIARSSQRMISQVISQLRTLRSRVT 4021
LPISLPSTCSILDYRSVIESLPEDDAPAFFGLPANIARSSQRMISQVISQLRILRSRVT 4029
.....4030.....4040.....4050.....4060.....4070.....4080

```

```

** .*****:** *****:*****:*****: ** ::**** ** ** ** ** **
AGCKFDREIWSAELSPILSLWKKLNQNSNLIHQKVTTPPVEOQGSPILSFITLEQFSAIRL 4079
AGCKFDREIWSAELSPILSLWKKLNQNSNLIHQKVTTPPVEOQGSPILSFITLEQFSAIRL 4079
AGCKFDREIWSTELSPILSLWKKLNQNSNLIHQKVTTPPVEROGSPILSFITLEQFSAIRL 4080
AGCKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVSPPTEOQGSPILSFIILOQFNAILL 4086
AGCKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVSPPNDRQSPILSFIILOQFNAILR 4085
AGCKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVSPPNDRQSPILSFIILOQFNAILR 4085
AGCKFDREIWSNELSPVLNLWKKLNQNSNLIHQKLLPPNDRQSPILSFIILOQFNAILR 4093
AGCKFDREIWSNELSPILSLWKKLNQNSNLIHQKVSPPNDRQSPIVSFIVLEQFNAILR 4093
AGCKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVSPPNDRQSPILSFIILOQFNAILR 4093
AGSKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVPPNDRQSPILSFIILOQFNAILR 4086
AGSKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVPNNDRQSPILSFIILOQFNAILR 4093
AGSKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVPNNDRQSPILSFIILOQFNAILR 4134
AGSKFDREIWSNELSPVLNLWKKLNQNSNLIHQKVPNNDRQSPILSFIILOQFNAILR 4093
AGSKFDREIWSNELSPVLNLWKKLNQNSNLIHQKMPPSDRQSPILSFIILOQFNAILH 4091
AGSKFDREVWSNELSPVLNLWKKLNQNSNLIHQKVSPPTERHGSPISSFIILOQFNAILR 4081
AGCKFDREIWSNELSPVLNLWKKLNRRNSNLIHQKVSPPNEROGSPILSFIILOQFNAILR 4089
.....4090.....4100.....4110.....4120.....4130.....4140

```


CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNALIP.pep Feb 1 12:03:34 2022

Page 24 of 25

```

***:*****:*****:***:*** **.*:**** :*.:****:***:*.***
VQSVHQSLASLSKVIRGTSLLSSEVQRLASALINQKCPLTWQSKWEGPEDPQYIRSLVA 4139
VQSVHQSLASLSKVIRGTSLLSSEVQRLASALINQKCPLTWQSKWEGPEDPQYIRSLVA 4139
Gallus_gallus VQSVHQSLASLSKVIRGTSLLSSEVQRLASALINQKCPLTWQSKWEGPEDPQYIRSLVA 4140
Chelonia_mydas VQSVHQSLAALS KVIRGTSLLSSEVQSLASALLNOKCPLTWQSKWEGPDDPQYLRGLVA 4146
Rattus_norvegicus VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLTWQSKWEGPEDPQYLRGLVA 4145
Mus_musculus VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLTWQSRWEGPEDPQYLRGLVA 4145
Bos_taurus VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLTWQSKWEGPEDPQYLRGLVA 4153
Equus_caballus VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLTWQSKWEGPEDPQYLRGLVA 4153
Canis_lupus_familiaris VQSIHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4153
Homo_sapiens VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4146
Pan_troglodytes VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4153
Macaca_mulatta VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4194
Macaca_fascicularis VQSVHQSLAALS KVIRGTTLLSSEVQKLASALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4153
Callithrix_jacchus VQSVHQSLAALS KVIRGTTLLSSEVQKLANALLNOKCPLAWQSKWEGPEDPQYLRGLVA 4151
Xenopus_tropicalis VQSIHQSLAALS KVIRGTSLLTSDVORLASALLEQKCPLAWQSKWEGPEDPQYLRGLVA 4141
Rhinatrema_bivittatum VQSIHQSLAALS KVIRGTSLLSSEVQKLASALLEQKCPLTWQSKWEGPEDPQYLRSLVA 4149
.....4150.....4160.....4170.....4180.....4190.....4200

```

```

*:***.*:***: *:::*****. *:***.*:***:
RALAIQNWVEKAQKLLSDTLDLSELFHPDTFLNALRQETARVMSCSVDSLKFTASWKG 4199
RALAIQNWVEKAQKLLSDTLDLSELFHPDTFLNALRQETARVMSCSVDSLKFTASWKG 4199
Gallus_gallus RALAIQNWVEKAQKLLSDTLDLSELFHPDTFLNALRQETARVMSCSVDSLKFTASWKG 4200
Chelonia_mydas RALAIQNWVDKAQKLLSDTLDLSELFHPDTFLNALRQETARVMSCSVDNLFKVASWKG 4206
Rattus_norvegicus RTLAIQNWVEKAQKQALLADTLDLSELFHPDTFLNALRQETARATGCSVDSLKFVASWKG 4205
Mus_musculus RTLAIQNWVEKAQKQVLLADTLDLSELFHPDTFLNALRQETARATGCSVDSLKFVASWKG 4205
Bos_taurus RALAIQSWVERAEKQTLSDTLDLSELFHPDTFLNALRQETARAMVCSVDSLKFVASWKG 4213
Equus_caballus RALAIQNWVERAEKQALLSDTLDLSELFHPDTFLNALRQETARAMGCSVDSLKFVASWKG 4213
Canis_lupus_familiaris RALAIQSWVERAEKQALFSDTLDLSELFHPDTFLNALRQETARVMGCSVDSLKFVASWKG 4213
Homo_sapiens RALAIQNWVDKAQKQALLSETLTLSELFHPDTFLNALRQETARAVGRSVDSLKFVASWKG 4206
Pan_troglodytes RALAIQNWVDKAQKQALLSETLTLSELFHPDTFLNALRQETARAVGRSVDSLKFVASWKG 4213
Macaca_mulatta RALAIQNWVDKAQKQALLSETLTLSELFHPDTFLNALRQETARAVGRSVDSLKFVASWKG 4254
Macaca_fascicularis RALAIQNWVDKAQKQALLSETLTLSELFHPDTFLNALRQETARAVGRSVDSLKFVASWKG 4213
Callithrix_jacchus RAVAIQNWVDKAQKQTLSETLTLSELFHPDTFLNALRQETARAVGRSVDSLKFVASWKG 4211
Xenopus_tropicalis RAVAIQNWVEKAENQTLSDTLDLSELFHPDTFLNALRQETARAMNCMDNLRVASWKG 4201
Rhinatrema_bivittatum RALAIQTWVEKAQKQVLLSDNLDLSELFHPDTFLNALRQETARVMICSMNLFKVASWKG 4209
.....4210.....4220.....4230.....4240.....4250.....4260

```

```

:: :.* :*: ** ***** :.* *****: * ** :.* **
RIQEGKLQVKITGLLLEGCSFDGNRLSENLDSPSVSSVLP CYMAWIPO----- 4248
RIQEGKLQVKITGLLLEGCSFDGNRLSENLDSPSVSSVLP CYMAWIPO----- 4248
Gallus_gallus RIQEGKLQVKITGLLLEGCSFDGNRLSENLDSPSVSSVLP CYMAWIPO----- 4249
Chelonia_mydas QIQEAKLQVKISGLQLEGCSFDGRRLSNQHDSPSVSSVLP CDMGWIPQ----- 4255
Rattus_norvegicus RLQEAKLQIKISGLLLEGCSFDGSRLSNQHDSPSVSSVLP CYMGWTPQ----- 4254
Mus_musculus RLQEAKLQIKISGLLLEGCSFDGNRLSENQHDSPSVSSVLP CYMGWTPQ----- 4254
Bos_taurus RLQEAKLQIKISGLLLEGCSFDGNRLCENQHDSPSVSSVLP CFMGWIPO----- 4262
Equus_caballus RLQEAKLQIKISGLLLEGCSFDGNRLSENQHDSPSVSSVLP CFMAWIPO----- 4262
Canis_lupus_familiaris RLQEAKLQIKMGLLLEGCSFDGSRLSNHDSPSVSPVLPCCVGIPOQGTWRSLLNGG 4273
Homo_sapiens RLQEAKLQIKISGLLLEGCSFDGNQLSENQLDSPSVSSVLP CFMGWIPO----- 4255
Pan_troglodytes RLQEAKLQIKISGLLLEGCSFDGNQLSENQLDSPSVSSVLP CFMGWIPO----- 4262
Macaca_mulatta RLPEAKLQIKISGLLLEGCSFDGNQLSENQLDSPSVSSVLP CFMGWIPO----- 4303
Macaca_fascicularis RLPEAKLQIKISGLLLEGCSFDGNQLSENQLDSPSVSSVLP CFMGWIPO----- 4262
Callithrix_jacchus RLQEAKLPIKISGLLLEGCSFDGNRLSENQHDSPSVTSVLP CFMGWIPO----- 4260
Xenopus_tropicalis KIADAKLQVKISGLQLEGCSFDGNRLSENQHDSPSVSVVPP CYMAWIPO----- 4250
Rhinatrema_bivittatum RIHEAKLQVKISGLQLEGCSFDGNRLSENQHDSPSVSSVLP CYMAWIPO----- 4258
.....4270.....4280.....4290.....4300.....4310.....4320

```

CLUSTAL 2.1 MULTIPLE SEQUENCE ALIGNMENT

File: /media/morpheus/disk1/fst/pep_msa/DYNADH11pe Feb 1 12:03:34 2022

Page 25 of 25

```

                                *.***:
Pavo_muticus                   -----DAYGPYSPE 4257
Pavo_cristatus                 -----DAYGPYSPE 4257
Gallus_gallus                  -----DAYGPYSPE 4258
Chelonia_mydas                 -----DAYGPYSPE 4264
Rattus_norvegicus              -----GSYGPYSPD 4263
Mus_musculus                   -----GSYGPYSPD 4263
Bos_taurus                     -----AAYGPYSPD 4271
Equus_caballus                 -----GSYGPYSPE 4271
Canis_lupus_familiaris        GGWRVPASGPPCHQPRCLETQKGRSFTKNSWNKETALEELLEHYQSEGLGAYGPYSPD 4333
Homo_sapiens                   -----DACGPYSPD 4264
Pan_troglodytes               -----DACGPYSPD 4271
Macaca_mulatta                 -----DACGPYSPD 4312
Macaca_fascicularis           -----DACGPYSPD 4271
Callithrix_jacchus            -----DVCGPYSPD 4269
Xenopus_tropicalis            -----QSLGTYSPD 4259
Rhinatrema_bivittatum         -----NASGPYSPE 4267
                                .....4330.....4340.....4350.....4360.....4370.....4380

```

```

*****:*** **: :* *:.:*****:***.*****.*
Pavo_muticus                   ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4300
Pavo_cristatus                 ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4300
Gallus_gallus                  ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4301
Chelonia_mydas                 ECISLPVYTSMERDCVVTNLDVPCGGNQDQWIQCGAALFLKNQ 4307
Rattus_norvegicus              ECISLPVYTSMERDCVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4306
Mus_musculus                   ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4306
Bos_taurus                     ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4314
Equus_caballus                 ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4314
Canis_lupus_familiaris        ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4376
Homo_sapiens                   ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4307
Pan_troglodytes               ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4314
Macaca_mulatta                 ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4355
Macaca_fascicularis           ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4314
Callithrix_jacchus            ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4312
Xenopus_tropicalis            ECISLPVYTSMERDRLVTNIDLPCCGNQNKWIQSGAALFLKNQ 4302
Rhinatrema_bivittatum         ECISLPVYTSMERDRVVTNIDVPCGGNQDQWIQCGAALFLKNQ 4310
                                .....4390.....4400.....4410.....4420...

```