File: /media/morpheus/disk1/fst/pep_msa/PUMDaps: Tue Feb 114:22:36 2022 Page 1 of 4

	*. ::	
Pavo muticus	MKAWNKKKF	9
Pavo_cristatus	MKAWNKKKF	9
Gallus_gallus	<mark>MKAWNKKK</mark> F	9
Anas_platyrhynchos	<mark>MEGRARRKP</mark>	9
Chelonia_mydas	MEAKGKKRF	9
${ t Latimeria_chalumnae}$	<mark>meaqskkk</mark> q	9
Mus_musculus	MMEVKGKKKF	10
Rattus_norvegicus	MEV <mark>KGKKK</mark> I	9 9
Homo_sapiens Pan_troglodytes	MEVKGKKQF	9
Macaca mulatta	MDIAKVATMEVKGKKQF	18
Callithrix_jacchus	MEKMGQVFPTEKFKITNVKIIREIEDHHLNKRSHCCRQSPLTNAKVSRVAAMEVKGKKQF	60
Canis lupus familiaris	MMEVKGKKKF	10
Bos_taurus		9
Equus_caballus	MEVKGKKKF	9
Heterocephalus_glaber	MEVKGKKKF	9
Rhinatrema_bivittatum	M <mark>etkskko</mark> f	9
Xenopus_tropicalis	MD <mark>SRG</mark> TKQF	9
	1102030405060	
	* : :	
Pavo muticus	PGKSGKVSRGKQLHGKKKFKKDDDSVPSKTFH-SKGDEEEKPKSISKKPVRGNLRP	64
Pavo_cristatus	PGKSGKVSRGKQLHGKKKFKKDDDSVPSKTFH-SKGDEEEKPKSISKKPVRGNLRP	64
Gallus_gallus	PGKNGKVSRGKQLRGKKKFKKDDDSVPLKTFH-SKGDEEEKPKSISKKPVKGNLRP	64
Anas_platyrhynchos	AARSGKA <mark>P</mark> AGKA <mark>PQGRRKFKRDHDSGPPKKFP</mark> -NKGDEEGK <mark>P</mark> KS TS KKFVKGNLRP	64
Chelonia_mydas	MGKNGKAPQRKHKFKKDNDSGPPKKFY-TKRGEEGKPKFRSKKSEKGNKKL	59
Latimeria_chalumnae	SS-GKGGKPSFRKGKGRDGNESAPSRKIK-GKGSTEGKAKFKPKKFEKGGKKFDK	62
Mus_musculus	T <mark>GKSPQTSQGKNKFHKNSESSSSKTFP</mark> -RKAVK <mark>EGGPKVTSKNFEKG</mark> ATKP TGKSPQTSQGKNKFHKNSESSSAKAFP-RKAAKEGGPKVTSKNFEKGATKP	60 59
Rattus_norvegicus Homo_sapiens	TGKSTKTAQEKNRFHKNSDSGSSKTFPTRKVAKEGGPKVTSRNFEKSITKL	60
Pan_troglodytes	TGKSTKTAQEKNRFHKNSDSGSSKTFPTRKVAKEGGPKVTSRNFEKSITKL	60
Macaca mulatta	TGKSTKTSQEKNRFHKNSDSGSSKTLP-RKVAKEGGPKITSRNFEKSITKP	68
Callithrix_jacchus	TGKSTKTSQEKPRFHKNSDSGSSKKFP-RKVAKEGGSKITSNNFEKNITKP	110
	IGKGAKTSQEKKRFHKNSDSGSSKTFP-RKVVKEGGPKITSKNFEKCAIKP	60
Bos_taurus	TGKGTKMSQEKSKFHKNNDSGSSKTFP-KKVVKEGGPKITSKNFEKTATKP	59
Equus_caballus	TGKGTKTSQEKKRFHKNSDSGSSKTFP-RKVLKEGGPKITSKNFEKSATKP	59
Heterocephalus_glaber	TGRSTKVSQEKNNFQKNRDSSFSKTFP-KKVK-EGGPKVPSKKFEKSAMKP	58
Rhinatrema_bivittatum	KGKGRKASHGKGKSRKAAGSCLPKNFQ-ARAGEKGKPKFRSQKFEKGKKSEKT	61
Xenopus_tropicalis	KKKEKSFOKKTTDSPKFKKKIKGSAKQHNKS-TGQSPKGNAKSNKFEKGAKKDRP708090100110120	62
	*: **. * : :**:****:::*:**	
Pavo_muticus	GRASVKQVKNKQQSEKLAKKRKYQDG-TQGESDSKKPKWNDFKKKKK	110
Pavo_cristatus	GRASVKQVKNKQQSEKLAKKRKYQDG-TQGESDSKKPKWNDFKKKKK	110
Gallus_gallus	GRASVKQFKNKQQSEKLAKKRRYQDS-TQGESDSKKPKWDDFKKKKK	110
Anas_platyrhynchos Chelonia_mydas	<mark>GK</mark> ATIKQFKNKQQS <mark>G</mark> SLAKKRKLQDG-EE <mark>GGS</mark> DS <mark>KKPKWNDFKKKKK</mark> GKTSVKQFKSKQQPEKFSRKRKLPED-NE <mark>GGS</mark> VPKKPKWNDLKRKKK	110 105
Latimeria_chalumnae	TGGKAGVKQFKGKQPAEKFPKKRKLQQGDEEDDGAAKKPKWDEFKKKKK	111
Mus musculus	GKKGVKQFKNKPQGGKGPKDKFQKANKFSKKRKFQPDGESDESGAKKPKWDDFKKKKK	118
Rattus norvegicus	GKKRVKQFKNKPQGGKGPKDKFQKANKFNKKRKFQPDGKSDESAAKKPKWDDFKKKKK	117
Homo_sapiens	GKKGVKQFKNKQQGDKSPKNKFQPANKFNKKRKFQPDGRSDESAAKKPKWDDFKKKKK	118
Pan_troglodytes	GKKGVKQFKNKQQGDKSPKNKFQQANKFNKKRKFQPDGKSDESAAKKPKWDDFKKKKK	118
Macaca_mulatta	GKKGVKQFKNKQQGDKSPKNKFQQANKFNKKRKFQPDGKSDESAAKKPKWDDFKKKKK	126
Callithrix_jacchus	GKKGVKQFKNKQQGDKSPKNKFQKANKFNKKRKFQPDSKSDESAAKKPKWDDFKKKKK	168
	GKKGVKQFKNKQQGDKIPKNKFQQANKFNRKRKFQADGKSDESAAKKPKWDDFKKKKK	118
Bos_taurus Equus_caballus	<mark>GK</mark> KGVKQFKNKQQGDRIPKNKFQQANKFNQKRKFQPDSKSDESAAKKPKWDEFKKKKK GKKGVKQFTNKQQGDKILKNKFQQANKFQKKRKFQPDSKSDESAAKKPKWDDFKKKKK	117 117
Heterocephalus_glaber	GKRGVKQFTNKQQGDKTLKNKFQQANKFNKKRKFQPDSKSDESAAKKPKWDDFKKKKK GKRGVKQFKNKQQGDKGLKNKFQQANKFNKKRKFHPDSKSDESASKKPKWDDFKKKKK	117
Rhinatrema bivittatum	G-GKAVAKQFAAKPRQKDSPQKKRKRQEGDLEGGPDSKKPKWEDFKKKKK	110
Xenopus_tropicalis	G-GKAGVKQFAAKNAKQGGGFTKKRKHQAEDQEGGSEAKKPKWDDFKKKKK	112
<u>-</u>	130140150160170180	

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	<u>****.**</u> *: * :*: ::*::** :*** :*** :*::::::::	
Pavo_muticus	EL <mark>KQSRQLNDKSN-YD</mark> IIVKSKQIWESMRRKKCDKEKREKLMNELQKLLHGKIKNLAFAH	169
Pavo_cristatus	EL <mark>KQSRQLNDKSN-YD</mark> IIVKSKQIWESVRRKKCDKEKREKLMNELQKLLHGKIKNLAFAH	169
Gallus_gallus	ELKQSRQLNDRSN-YDIIVKSKQIWESVRRKKCDKEKREKLMNELQKLLHGKIKNLAFAH	169
Anas_platyrhynchos	ELKQSRQL <mark>SDKSN-YD</mark> IIVKSKQIWESVRRKKCDKEKREELMNELQKLLKGKIKNLAFAH	169
Chelonia_mydas	ELKQSRQLNDKTN-YDVIIKSKQIWESVRRKNCDKKKREKLINELHKLLQGKIKTMAFAH	164
Latimeria_chalumnae	EL <mark>KQSRQQYDRKNS</mark> FDVIL <mark>RSKQ</mark> IWESL <mark>RRKDCDKEKRVK</mark> LMNNLQELLR <mark>GKIK</mark> DIAFAH	171
Mus_musculus	EL <mark>K</mark> QSRQLSDKTN-YDIVVRAKHIWESLRRKDCDKEKRVKLMSDLQKLIQGKIKTIAFAH	177
Rattus_norvegicus	EL <mark>KQNRQLSDKTN-YDVVVRAK</mark> HIWESL <mark>RRKDCDKEKRVK</mark> LMSDLQKLI <mark>QGKIKT</mark> IAFAH	176
Homo_sapiens	EL <mark>KQSRQLSDKTN-YDIVVRAKQ</mark> MWEIL <mark>RRKDCDKEKRVK</mark> LMSDLQKLIQGKIKTIAFAH	177
Pan_troglodytes	EL <mark>KQSRQLSDKTN-YDIVVRAKQ</mark> IWEIL <mark>RRKDCDKEKRVK</mark> LMSDL <mark>QKLIQGKIKT</mark> IAFAH	177
Macaca_mulatta	EL <mark>KQSRQLSDKTN-YDIVVRAKQ</mark> IWEIL <mark>RRKDCDKEKRVK</mark> LMSDL <mark>QKLIQGKIKT</mark> IAFAH	185
Callithrix_jacchus	ELKQSRQLSDKTN-YDIVVRAKQIWEILRRKDCDKEKRVKLMSDLQKLIQGKIKTIAFAH	227
Canis_lupus_familiaris	EL <mark>KQSRQLSDKTN-YDIVVRAKQ</mark> IWETL <mark>RRKDCDKEKRVK</mark> LMSDL <mark>QKLIQGKIKT</mark> IAFAH	177
Bos_taurus	ELKQSRQLSDKTN-YDIVIRAKQIWEILRRKDCDKEKRVKLMSDLQKLIQGKIKTIAFAH	176
Equus_caballus	ELKQSRQLNDKTN-YDIVVRAKQIWETLRRKDCDKEKRVKLMSDLQKLIQGKIKTIAFAH	176
Heterocephalus_glaber	ELKQSRQLSDKTN-YDIVVRAKQIWEILRRKDCDKEKRVKLMSDLQKLIQGKIKTIAFAH	175
Rhinatrema_bivittatum	ELKQTRQLNDKSN-YDVIIKSKQIWESVRRKDCNKEKRGKLMKDLQKLLQGNIKSIAFAH	169
Xenopus_tropicalis	ELKOTROONDKON-YDIMAKSKHIWETIRRKDCDGKKRSKLMDDLEKVLHGNVKSIAFAH	171
	190200210220230240	
	*:**** ::.*:::*: :::**::**:**:**:** *:**::*	
Pavo_muticus	DSTRVIQCFIQYGNDKQRQETFEELKDSLVELSKSKYSRNIVKKFLMYGTKQQIAEIIKS	229
Pavo_cristatus	DSTRVIOCFIQYGNDKQRQETFEELKDSLVELSKSKYSRNIVKKFLMYGTKQQIAEIIKS	229
Gallus gallus	DSTRVIQCFIQYGNDKQRQETFEELKDSLVELSKSKYSRNIVKKFLMYGTKQQIAEIIKS	229
Anas_platyrhynchos	DSTRVIQCFIQYGNDKQRQETFEELKDSLVELSKSKYSRNIVKKFLMYGTKPQIAEIIKS	229
Chelonia mydas	DSTRVIQCFIRYGNDKQRQETFEELKDSLLELSKSKYSRNIVKKFLMYGTKPQVAEIIKS	224
Latimeria_chalumnae	DSTRVIQCYIQYGNNQQRQEAFEELKEHLVELSKSKYSRNIVKKFLMYGTKQQIAEIIKS	231
Mus musculus	DSTRVIQCFIQYGNEEQRKQAFQELQGDLVELSKAKYSRNIVKKFLMYGSKPQVAEIIRS	237
Rattus_norvegicus	DSTRVIQCLIQYGSEEQRKWAFEELQGDLVELSKAKYSRNIVKKFLMYGSKPQIAEIIRS	236
Homo_sapiens	DSTRVIQCYIQYGNEEQRKQAFEELRDDLVELSKAKYSRNIVKKFLMYGSKPQIAEIIRS	237
Pan_troglodytes	DSTRVIQCYIQYGNEEQRKQAFEELRDDLVELSKAKYSRNIVKKFLMYGSKPQIAEIIRS	237
Macaca mulatta	DSTRVIQCYIQYGNEEQRKQAFEELRDDLVELSKAKYSRNIVKKFLMYGSKPQIAEIIRS	245
Callithrix_jacchus	DSTRVIQCYIQYGDDKQRKQAFEELQGDLIELSKAKYSRNIVKKFLMYGSKPQIAEIIRS	287
Canis_lupus_familiaris	DSTRVIQCYIQYGNEEQREQAFEELRDDFVQLSKAKYSRNIVKKFLMYGSKPQIAEIMRS	237
Bos_taurus	DSTRVIQCYIQFGNEEQRKQAFEELRGDLVELSKAKYSRNIVKKFLMYGSKAQIAEIIRS	236
Equus_caballus	DSTRVIQCYIQYGNEEQRKQAFEELRGDLVELSKAKYSRNIVKKFLMYGSKPQIAEIMRS	236
		235
Heterocephalus_glaber	DSTRVIQCYIQYGNEEQRKQAFEELRDDLVELSKAKYSRNIVKKFLMYGSKPQIAEIIKS	229
Rhinatrema_bivittatum	DSTRVIQSYVQFGSESQRQEVFEELKEHLIELSKSKYARNIVKKFLMYGTKQQVAEIIKS	231
Xenopus_tropicalis	DTTRVIQCYIKHGNEERRQQVFEELKEHIVDLSKSKYARNIVRKFLMYGSKAQVAEIIKS	231
	250260270280290300	
	..*.*.**.********* ** ****** * *	
Danie michigue		200
Pavo_muticus	FKGHVKKMLRHAEASAVVEYAYNDKAILEQRNMLTEELYGNTFQVYKTPIVPTLDKVLEA	289
Pavo_cristatus	FKGHVKKMLRHAEASAVVEYAYNDKAILEQRNMLTEELYGNTFQVYKTPIVPTLDKVLEA	289
Gallus_gallus	FKGHVKKMLRHAEASAVVEYAYNDKAILEQRNMLTEELYGNTFQVYKTPIVPTLDKVLEA	289
Anas_platyrhynchos	FKGHVKKMLRHAEASAVVEYAYNDKAILEQRNMLTEELYGNTFQVYKTPVVPTLDKVLEA	289
Chelonia_mydas	FKGEVKKMLRHSEASAVVEYAYNDKAILEQRIMLAEELYGNTFQVYKSPVHPTLDKVLEA	284
Latimeria_chalumnae	FKGQVRKMLRHSEAASVVEYAYNDKAILEQRNMLTEELYGNTFLVCKSTISPTLEKVLEA	291
Mus_musculus	FKGHVRKMLRHSEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEL	297
Rattus_norvegicus	FKGHVRKMLRHSEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLEKVLEV	296
Homo_sapiens	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHRTLDKVLEV	297
Pan_troglodytes	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEV	297
Macaca_mulatta	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEV	305
Callithrix_jacchus	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEV	347
Canis_lupus_familiaris	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLET	297
Bos_taurus_	FKGHVRKLLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEV	296
Equus_caballus	FKGHVRKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSADHPTLDKVLEV	296
Heterocephalus_glaber	FKGHVKKMLRHAEASAIVEYAYNDKAILEQRNMLTEELYGNTFQLYKSAEHPTLDKVLEV	295
Rhinatrema_bivittatum	FRGQVRKLLRHAEASHVVEYAYNDKAILEQRNMLTEELYGNAFLVYKSAVHPTLAEVLEA	289
Xenopus_tropicalis	FKGQVKKLLRHSEASYIVEYAYNHKAILEQRNMLCEELYGNTFRFYKSAIHPSLDQVLEA	291
	310320330340350360	

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:. * . *::***:*:.****:*****
                                                                                       * ::*:***:**
                              QPEKREAILDEMKQILTPMAQKEAVIKHSLVHKVFLDFFTHALPKQRSEMIEAIREAVIY
Pavo_muticus
                                                                                                                 349
                              <mark>QPEKREAILDEMKQILTPMAQKEAVIKHSLVHK</mark>VFLDFFTHAL<mark>PK</mark>QRSEMIEAIREAVIY
Pavo_cristatus
                                                                                                                 349
Gallus_gallus
                              QPEKREAILDEMKQILTPMAQKEAVIKHSLVHKVFLDFFTHALPKQRSEMIEAIREAVIY
                                                                                                                 349
                              <mark>QPEKRE</mark>AILDEMKQIL<mark>TP</mark>MAQKEAVIKHSLVHKVFLDFFTYAL<mark>PKQRSE</mark>MIEAIREAVIY
                                                                                                                 349
Anas_platyrhynchos
Chelonia mydas
                              HPEKQEAIMDEMKQILTPVAQKEAVIKHSLVHKVFLDFFIHALPKQRSEMIEAIREAVIY
                                                                                                                 344
                              QPEKRKAIMEEMKQMLTPMAQKEAVVKHSLVHKVFLDFFTHAPDKLKTEMIEAVREAVLY
                                                                                                                 351
Latimeria_chalumnae
Mus musculus
                              <mark>QPAKLELIMDEMKQ</mark>IL<mark>TPMAQKEAVIKHSLVHK</mark>VFL<mark>DFFTYAPPKPRSELIEAIRE</mark>AVVY
                                                                                                                 357
                              <mark>QPGKLE</mark>LIL<mark>DEMKQ</mark>IL<mark>TPMAQKE</mark>AVI<mark>KHS</mark>LVHKVFL<mark>DFFTYAPPKLRSE</mark>LIEAIREAVVY
Rattus_norvegicus
                                                                                                                 356
Homo_sapiens
                              QPEKLELIMDEMKQILTPMAQKEAVIKHSLVHKVFLDFFTYAPPKLRSEMIEAIREAVVY
                                                                                                                 357
                              <mark>QPEKLELIMDEMKQ</mark>IL<mark>TPMAQKEAVIKHSLVHK</mark>VFL<mark>DFFTYAPPKLRSEMIEAIRE</mark>AVVY
                                                                                                                 357
Pan troglodytes
Macaca_mulatta
                              QSEKLELIMDEMKQIL<mark>TPMAQKE</mark>AVIKHSLVHKVFLDFFTYAPPKLRSEMIEAIREAVVY
                                                                                                                 365
Callithrix_jacchus
                              RPEKLELIMDEMKQILTPMAQKEAVIKHSLVHKVFLDFFTYAPPKLRSEMIEAIREAVVY
                                                                                                                 407
Canis_lupus_familiaris
                              QPEKLDLIMDEMKQILTPMAQKEAVIKHSLVHKVFLDFFTYAPPKLRSEMIEAIREAVIY
                                                                                                                 357
                              <mark>QPEKLELIMDEMKQ</mark>IL<mark>TP</mark>MAQKEAVIKHSLVHKVFLDFF<mark>TYAPPK</mark>LRSEMIEAIREAVVY
                                                                                                                 356
Bos taurus
Equus_caballus
                              <mark>QPEKLELIMDEMKQ</mark>IL<mark>TPMAQKEAVIKHSLVHK</mark>VFL<mark>DFFTYAPPK</mark>LRSEMIEAIREAVVY
                                                                                                                 356
                              OPEKLELIMDEMKOILTPMAOKEAVIKHSLVHKVFLDFFTYATPKLRSELIEAIREAVVY
                                                                                                                 355
Heterocephalus_glaber
Rhinatrema_bivittatum
                              H<mark>PEKQETIMEEMKQ</mark>IL<mark>TPMAQKE</mark>AVIKHSLVHKVFLDFF<mark>TYAP</mark>VKLKTEMIEAIREALIY
                                                                                                                 349
                              QPEKKDSILDEMKQILVPLGQKEAVIKHSLVHKVYLDFFSNASPKIRSEMIEAIREAVVY
                                                                                                                 351
Xenopus_tropicalis
                                 .....370......380......390......400......410......420
                                                                          :.: *::*** ***:***
                              408
Pavo muticus
                              LAHTHDGSRVAMHCLWHGTPKDRKVIVKT-MKTYIEKIATGEFSHLVLLAAFDCIDDTKL
Pavo cristatus
                                                                                                                 408
Gallus_gallus
                              LAHTHDGARVAMHCLWHG<mark>TPKDRK</mark>VIV<mark>K</mark>T-M<mark>KTYIEK</mark>IAT<mark>GEFSH</mark>LVLLAAFDCIDD<mark>TK</mark>L
                                                                                                                 408
                              LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYIEKIATGEFSHLVLLAAFDCIDDTKL
LAHTHDGARVAMHALWHGTPKDRKIIMKT-MKTYVEKIATGEFSHLVLLAAFDCIDDTKL
Anas_platyrhynchos
                                                                                                                 408
Chelonia_mydas
                                                                                                                 403
                              MAHTHDGARVAMHCLWHGTPKVSQTDFGNGLKLVLSFVLQGEFSHLAVLAAFDCIDDTKL
Latimeria chalumnae
                                                                                                                 411
                              LAHTHDGARVAMHCLWHG<mark>TPKDRK</mark>VIV<mark>KT-MKTYVEK</mark>VA<mark>NGQYSH</mark>LVLLAAFDCIDDTK</mark>L
Mus_musculus
                                                                                                                 416
                              LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYVEKIANGQYSHLVLLAAFDCIDDTKL
LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYVEKVANGQYSHLVLLAAFDCIDDTKL
Rattus_norvegicus
                                                                                                                 415
                                                                                                                 416
Homo_sapiens
                              LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYVEKVANGQYSHLVLLAAFDCIDDTKL
Pan_troglodytes
                                                                                                                 416
Macaca mulatta
                              LAH<mark>THDG</mark>ARVAMHCLWH<mark>GTPKDRK</mark>VIV<mark>KT-MKTYVEK</mark>VA<mark>NGQYSH</mark>LVLLAAF<mark>DC</mark>I<mark>DDTK</mark>L
                                                                                                                 424
                              LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYVEKVANGQYSHLVLLAAFDCIDDTKL
LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYIEKVANGQYSHLVLLAAFDCIDDTKL
Callithrix_jacchus
                                                                                                                 466
Canis_lupus_familiaris
                                                                                                                 416
Bos taurus
                              LAHTHDGARVAMYCLWHGTPKDRKVIVKT-MKTYIEKVANGQYSHLVLLAAFDCIDDTKL
                                                                                                                 415
                              LAHTHD<mark>G</mark>ARVAMHCLWH<mark>GTPKDRK</mark>VIV<mark>KT-MKTYVEK</mark>VA<mark>NGQYSH</mark>LVLLAAF<mark>DCIDDTK</mark>L
Equus_caballus
                                                                                                                 415
                              LAHTHDGARVAMHCLWHGTPKDRKVIVKT-MKTYVEKVANGQYSHLVLLAAFDCIDDTKL
MAHTHDGARVAMHGVWHGTPKDRKVIVKT-MKTFIEKIATGEFSHLVLLAAFDCIDDTKL
Heterocephalus glaber
                                                                                                                 414
Rhinatrema_bivittatum
                                                                                                                 408
                              IIHTHDGARVGMHSVWHGTPKDRKVIAKT-MKTYIEKIATGEFSHLVLLAMFDCVDDTKL
Xenopus_tropicalis
                                                                                                                 410
                               ......430......440.......450......460......470......480
                                             :*..: .:*:*:*****:. * *** : *: :*::** * :***..
                              VKQLIITELNASLPSLISNKHGKKVLLYLLSPRDPAHFVPEIVTLLQQGDGNAYSKKNTE
                                                                                                                 468
Pavo_muticus
Pavo cristatus
                              VKQLIITELNASLPSLISNKHGKKVLLYLLSPRDPAHFVPEIVTLLQQGDGNAYSKKNTE
                                                                                                                 468
                              v<mark>kq</mark>lii<mark>telnaslps</mark>lisn<mark>khgkk</mark>vllyll<mark>sprdpahfvpe</mark>iitll<mark>qqgdgnayskk</mark>ste
                                                                                                                 468
Gallus_gallus
                              VKQLIISEINASLPSIINNKHGKKVLLYLLSPRDPAHFVPEIITLLQQGDGNAYSKKNTE
Anas platyrhynchos
                                                                                                                 468
                              MKQLIISEISGSLPNIVNNKYGRKVLLYLLSPRDPAHFLPEIVKILQQGDGNAYSKKDSD
Chelonia_mydas
                                                                                                                 463
                              vkoliiseitntlpnlinnkygkkvllyllsprdpahflpeitkvloogdgnvhskkdae
                                                                                                                 471
Latimeria chalumnae
                                                                                                                 476
Mus musculus
                              VKQIIISEIISSL<mark>PS</mark>IVNDKYGRKVLLYLMSPRDPAHTVPELIELL<mark>QKGDGNAHSKKDT</mark>A
                              VKQIIISEVISSLPSIVNDKYGRKVLLYLLSPRAPAHLVPEIIQLLQKGDGNAHSKKDTA
                                                                                                                 475
Rattus norvegicus
                              V<mark>KQ</mark>IIISEIISSL<mark>P</mark>SIVNDKYGRKVLLYLLS<mark>PRDP</mark>AHTVREIIEVL<mark>QKGDG</mark>NAHSKKDTE
Homo_sapiens
                                                                                                                 476
                              V<mark>KQ</mark>III<mark>SEIISSLPS</mark>IV<mark>NDKYGRK</mark>VLLYLLS<mark>PRDPAHT</mark>VREIIEVL<mark>QKGDGNAHSKKDTE</mark>
                                                                                                                 476
Pan_troglodytes
                              V<mark>KQ</mark>III<mark>SEIISSLPS</mark>IV<mark>NDKYGRK</mark>VLLYLLS<mark>PRDPAHT</mark>VREIIEVL<mark>QKGDGNAHSKKDTE</mark>
                                                                                                                 484
Macaca_mulatta
                              VKQIIVSEIISSL<mark>P</mark>SIVNDKYGRKVLLYLLSPRDPAHTVREIIEVL<mark>QKGDGN</mark>AHSKKDTE
                                                                                                                 526
Callithrix_jacchus
                              V<mark>KQ</mark>IIISEIINSL<mark>P</mark>NIV<mark>NDKYGRK</mark>VLLYLL<mark>SPRDP</mark>AHTVREIIEVL<mark>QKGDGNAHSKKDT</mark>A
Canis_lupus_familiaris
                                                                                                                 476
Bos_taurus
                              VKQIIISEIINSLPNIVNDKYGRKVLLYLLSPRDPAHTVREIIEVLQKGDGNAHSKKDTE
                                                                                                                 475
Equus_caballus
                              V<mark>KQ</mark>III<mark>SEIISSLP</mark>NII<mark>NDKYGRK</mark>VLLYLLS<mark>PRDPAHT</mark>VREIIEVL<mark>QKGDGNAHSKKDT</mark>A
                                                                                                                 475
Heterocephalus_glaber
                              VKQIIISEIISSLSNVVNDKYGRKVLLYLLSPRDPAHTVREIIEVLQKGDGNSHSKKDTA
                                                                                                                 474
                              V<mark>KQ</mark>LII<mark>SEIISS</mark>LS<mark>S</mark>IASN<mark>KYGRK</mark>VLLYLL<mark>SPRDP</mark>AHFV<mark>PE</mark>IIKVLQQGDENAHSKKDTE
                                                                                                                 468
Rhinatrema_bivittatum
Xenopus tropicalis
                              LKOLILSELISSLPSIINDKYGRKVLLYLLNWRNPAHFVPEIVEVLKKGDDNAHSKKDPT
                                                                                                                 470
```

......490......500......510......520......530.......540

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:*: ***:*** **: : :::*:::
                                                                               :*:.:*
                                                                                         * *: **.:: :*.:**
                                LRRRELLEAISPPLLEYLQEHTQEVVMDKAAFVLVADILRTATGDIQPTLNAIANLAAEE
Pavo_muticus
                                                                                                                         528
                                L<mark>rrre</mark>lleai<mark>spp</mark>lleyl<mark>oehtoevvmdk</mark>aafvlva<mark>d</mark>ilr<mark>tatgdiopt</mark>l<mark>n</mark>aianlaa<mark>ee</mark>
                                                                                                                         528
Pavo_cristatus
Gallus_gallus
                                L<mark>RRHELLEAISPP</mark>LLEYL<mark>QEHIQE</mark>IVMD<mark>K</mark>AAFVLVA<mark>D</mark>ILR<mark>TATGDIQPTLN</mark>AIANLAA<mark>EE</mark>
                                                                                                                         528
                                LRRRELLEAISPPLLEYLQEHCQEVVMDKATFVLVADILRTAVGEIQPTLDAIANLAAEE
                                                                                                                         528
Anas_platyrhynchos
Chelonia mydas
                                VRRCELLEAISPALLGYLQEHAQEMVMDKATCVLVADVLGSALGDVQPAMNAIASLAAEE
                                                                                                                         523
                                V<mark>rrre</mark>lleai<mark>spp</mark>llkyl<mark>qeharevvmdkvt</mark>cvmvadil<mark>gs</mark>al<mark>gelqp</mark>aldviadiaaee
                                                                                                                         531
Latimeria_chalumnae
Mus musculus
                                IRRRELLESISPALLSYLQGHTQEVVLDKSACVLVSDMLGSATGDVQPAMDAIASLAAAE
                                                                                                                         536
                                IRRRELLESISPALLSYLQGHTREVVLDKSVCVLVSDILGSATGDAQPAMDAIAGLAAEE
Rattus_norvegicus
                                                                                                                         535
Homo_sapiens
                                V<mark>RRRELLESISPALLSYLQEHAQE</mark>VVL<mark>DKS</mark>ACVLV<mark>SDILGSATGDVQPTMN</mark>AIA<mark>S</mark>LAAT<mark>G</mark>
                                                                                                                         536
                                V<mark>rrrellesispallsylqehaqevvldks</mark>acvlv<mark>sdilgsatgdvqptmn</mark>aiaslaat<mark>g</mark>
Pan troglodytes
                                                                                                                         536
Macaca_mulatta
                                V<mark>RRRELLESISPALLSYLQEHARE</mark>VVL<mark>DKS</mark>ACVLV<mark>SDILGSATGDAQPAMN</mark>AIA<mark>S</mark>LAATE
                                                                                                                         544
Callithrix_jacchus
                                v<mark>rrrellesispallsyloehtoevvldks</mark>acvlv<mark>sdilgsatgdvopamn</mark>aiaslaate
                                                                                                                         586
Canis_lupus_familiaris
                                IRRELLES ISPALLSYLQGHAQEVVLDKSACVLVSDILGAAIGDVQPAMDAIASLAATE
                                                                                                                         536
                                I<mark>rrre</mark>ll<mark>esisp</mark>all<mark>sylqghaqe</mark>vvl<mark>dks</mark>acvlva<mark>dilgtatgdvqp</mark>amdavaslaaae
                                                                                                                         535
Bos taurus
                                I<mark>rrre</mark>ll<mark>esisp</mark>all<mark>sylqghaqe</mark>vvl<mark>dks</mark>acvlv<mark>sd</mark>il<mark>g</mark>aai<mark>gdvqp</mark>amdaiaslaaae
Equus_caballus
                                                                                                                         535
                                IRRHELLESISPALLNYLQRNAQEMVLDKSACVLVSDILGSATGDTQPAMDAIASLAAAE
                                                                                                                         534
Heterocephalus_glaber
Rhinatrema_bivittatum
                                IRRRELLEAISPALLKYLQENAQEMVMDKAMCVLVANILESAHGNLQPAMDSIAGLAAEE
                                                                                                                         528
                                V<mark>rqhe</mark>ll<mark>esispp</mark>llkyl<mark>eehiqd</mark>vvlqnalc<mark>g</mark>mvtsillcal<mark>gdpqp</mark>vmnaia<mark>s</mark>maa<mark>ee</mark>
                                                                                                                         530
Xenopus_tropicalis
                                      ...550......560......570......580......590......600
                                : *..:*:*:**********
                                                                                              *.:**:: *.::.:
                                                                                   ::
                                LVPGGRDGQLHIAEHPAGHLVLKWLIEQDEKMRESGKE----GCFGRTLVEYVGIENLKT
Pavo muticus
                                                                                                                         584
                                LV<mark>PGGRDGO</mark>LHIAEHPAGHLVLKWLIEODEKMRESGKE----GCFGRTLVEYVGIENLKT
Pavo cristatus
                                                                                                                         584
Gallus_gallus
                                LV<mark>PGGRDGQLHIAEHPAGHLVLKWLIEQDEKMRESGKE----GCFGRT</mark>LVECV<mark>G</mark>IE<mark>NLKT</mark>
                                                                                                                         584
                                LV<mark>PGGHDGQ</mark>LHIAEHPAGHLVLKWLIEQDEKMRESGKE----GCFGRTLLERVGIENLKT
Anas_platyrhynchos
                                                                                                                         584
                                LV<mark>PGGKDGQ</mark>LHIAEHPAGHLVL<mark>K</mark>WLI<mark>GQDEKMR</mark>DNGRE----GCFARTLVECVSI<mark>KN</mark>MKS
Chelonia_mydas
                                                                                                                         579
                                FVPAGKDGELHIAEHPAGHLVLKWLLEODEKMRMSEKK----ECFARTLLERVGIENLKS
Latimeria chalumnae
                                                                                                                         587
                                LHPGGKDGELHVAEHPAGHLVLKWLLEQDKKMKESGKE----GCFAKTLVERVGMKNLKS
Mus_musculus
                                                                                                                         592
                                LYPGGKDGELHIAEHPAGHLVLKWLIEQDKKIKENGKE----GCFAKTLVECVGMKNLKS
Rattus_norvegicus
                                                                                                                         591
                                LHPGGKDGELHIAEHPAGHLVLKWLIEQDKKMKENGRE----GCFAKTLVEHVGMKNLKS
                                                                                                                         592
Homo_sapiens
                                LH<mark>PGGKDGELHIAEHPAGHLVLK</mark>WLIE<mark>QDKKMKENGRE----GCFAKT</mark>LVEHVGMKNLKS
Pan troglodytes
                                                                                                                         592
Macaca mulatta
                                LHPGGKDGELHIAEHPAGHLVLKWLIEQDKKMKDNGRE----GCFAKTLVEHVGMKNLKS
                                                                                                                         600
                                LHPGGKDGELHIAEHPAGHLVLKWLIEQDKKMKENGRE----GCFAKTLVEHVGMKSLKS
Callithrix_jacchus
                                                                                                                         642
Canis_lupus_familiaris LHPGGKDGELHIAEHPAGHLVLKWLIEQDEKMKESGRE----GCFAKTLIEHVGMKNLKS
                                                                                                                         592
                                LH<mark>PGGKDGELHIAEHPAGHLVLK</mark>WLIE<mark>QDKKMKERGREVYFTGCFAKT</mark>LIERVGV<mark>KN</mark>LKS
Bos taurus
                                                                                                                         595
                                LHPGGKDGELHVAEHPAGHLVLKWLIEQDKKMKENGREVYFAGCFAKTLVEHVGMKNLKS
                                                                                                                         595
Equus_caballus
Heterocephalus glaber
                                LHPGGKDGKLHVAEHPAGHLVLKWLIEQDEKMKENGRE----GCFAKTLVEHVGMKNLKS
                                                                                                                         590
                                FV<mark>PGAKDG</mark>KLHMAEHPAGHLVLKWLIEQDEKKEEKGRE----ERFARTLVEHVGIENLKS
Rhinatrema_bivittatum
                                                                                                                         584
                                FV<mark>PGGKEGQ</mark>LHIAEHPAGHLVL<mark>K</mark>WLLK<mark>Q</mark>DKDMKEK<mark>GKE----GCFART</mark>LVDHVSIEKLSQ
Xenopus tropicalis
                                                                                                                         586
                                 ......610......620.......630......640......650......660
                                ** :****: **:* * .:
                                                                     : .*: ::.
                                WAEV<mark>NRG</mark>AIVLCCLLR<mark>STDQ</mark>KV<mark>TN</mark>AV<mark>R</mark>KGL<mark>K</mark>KIV<mark>P</mark>KLKL<mark>NKN</mark>-V<mark>KGVE</mark>ALLEKLT--
Pavo_muticus
                                                                                                                     638
Pavo cristatus
                                WAEV<mark>NRG</mark>AIVLCCLL<mark>QSTDQ</mark>KV<mark>TN</mark>AV<mark>R</mark>KGLKKIV<mark>P</mark>KLKL<mark>NKN-VKGVE</mark>ALL<mark>EK</mark>LT--
                                                                                                                     638
                                WAEV<mark>NRG</mark>AIVLCCLLR<mark>STDQ</mark>KV<mark>TN</mark>AV<mark>KKGLK</mark>KIV<mark>P</mark>KLKL<mark>NKN-VKGIEALLEKLT--</mark>
Gallus_gallus
                                                                                                                     638
                                WAKV<mark>NRG</mark>AIVLCCLLR<mark>STDQEVAN</mark>AVKK<mark>GLK</mark>KLVPQLKL<mark>NKN-VKGIEALLEKLTS-</mark>
Anas platyrhynchos
                                                                                                                     639
                                WAEV<mark>NRG</mark>AMVLCCLLR<mark>STDQE</mark>VA<mark>NKVKGGLKS</mark>LI<mark>P</mark>KLKC<mark>NKN</mark>-V<mark>KGIE</mark>ALLEML<mark>TS</mark>-
Chelonia_mydas
                                                                                                                     634
Latimeria chalumnae
                                WA<mark>TVNRGAMVLCRLLQSVDEE</mark>VR<mark>NKSKEGLKCLIP</mark>KLKNI<mark>QN</mark>-V<mark>KGVE</mark>ALL<mark>EK</mark>LTA-
                                                                                                                     642
                                WASINRGAIILSSLLQSCDQEVVNKVKGGLKPLIPTLEKNKSSSRGIQTLLEKLTA-
Mus musculus
                                                                                                                     648
                                WASINGAIVLSSLLQSCDQDVVNKVKAGLKTLIPTLEKTKSTSKGIQTLLEKLTA-
                                                                                                                     647
Rattus norvegicus
Homo_sapiens
                                WA<mark>SVNRG</mark>AIIL<mark>SSLLQSCDLEVANK</mark>VKAALKSLI<mark>P</mark>TL<mark>E</mark>KTKSTSKGIEILLEKLST-
                                                                                                                     648
                                WA<mark>SVNRG</mark>AIIL<mark>SSLLQSCDLEVANKVK</mark>AALKSLI<mark>P</mark>TLEKTKS<mark>TSKGIE</mark>ILLEKLST-
Pan_troglodytes
                                                                                                                     648
                                WA<mark>SVNRG</mark>AIIL<mark>SS</mark>LL<mark>QSCDLEVANKVKAALKS</mark>LI<mark>PTLEKNK</mark>S<mark>TSKGIET</mark>LLEKLST-
                                                                                                                     656
Macaca_mulatta
Callithrix_jacchus
                                WASINRGAIILSSLLQSCDPEVANKVKAALKSLIPALEKTKSTSKGVEALLEKLTT-
                                                                                                                     698
Canis_lupus_familiaris
                                WASVNRGAILLSSLLQSSDHEVAHKIKAGLKGLIPTLEKNKNTSKGIEMLLEKLAA-
                                                                                                                     648
Bos_taurus
                                WASVNRGAIIL<mark>SSLLQSSDQEVANK</mark>VKA<mark>GLKS</mark>LI<mark>P</mark>ALEKSKNTSKGIEMLLEKLTA-
                                                                                                                     651
Equus_caballus
                                WA<mark>SVNRG</mark>AIIL<mark>SSLLQSSDQEVADKVKAGLKS</mark>LI<mark>P</mark>ALEKHKSTSKGIETLLEKLTT-
                                                                                                                     651
Heterocephalus_glaber
                                WASVNRGAIILSSLLQSTDQEVANKVKVGLKSLIPTLEKNKNTSKGIETLLEKLAA-
                                                                                                                     646
                                WAEV<mark>NRG</mark>AIVLCCLLQSADKEVAMNVRSGLRSLVPKLQS<mark>NKN-IKGIG</mark>ALLDRLSSS
WAQV<mark>NRG</mark>AIVLCCLLQSSDEEIAAQVKNGLKGLVSKPKNSTN-TKAIEALIEQLH<mark>S</mark>P
Rhinatrema_bivittatum
                                                                                                                     640
Xenopus tropicalis
                                                                                                                     642
                                 ......670......680.......690.......700......710......
```