>1.Bonobo-col4a5-201-LONGEST

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>2.Chimpanzee (Pan\_tro\_3.0)202-LONGEST

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>3.Homo\_sapiens\_ENSP00000331902\_7\_sequence

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>4. Gorilla\_gorilla\_ENSGGOP00000010791\_3\_sequence202-LONGEST

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>5. Pongo\_abelii\_ENSPPYP00000023085\_3\_sequence201-longest

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>6.Nomascus\_leucogenys\_ENSNLEP00000037621\_1\_sequence201-LONGEST

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> 7.Macaca\_mulatta\_ENSMMUP00000055012\_2\_sequence201-LONGEST

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>8.Pig-tailed-COL4A5-201-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGEKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGVTIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAVVGPPGPPGFPGERGQKGDEGPPGISIPGPPGLEGQPGAPGLPGPPGPPGPHIPRSDEICEAGPPGPPGSPGDKGLQGEQGMKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGSKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGPKGEPGFALPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGIDGLPGPKGDVGPNGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGSIGPPGSPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGAPGQPGSPGLPGQKGDKGDPGISSIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGETGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPQGPQGLPGPTGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPVSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>9.crab-eating-COL4A5-201-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGEKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAVVGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGPPGPHIPPSDEICEAGPPGPPGSPGDKGLQGEQGMKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGSKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGPKGEPGFALPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGIDGLPGPKGDVGPNGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGSIGPPGSPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGAPGQPGSPGLPGQKGDKGDPGISSIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGETGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPQGPQGLPGPTGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPVSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>10.Drill-COL4A5-201-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGMQGLPGPTGIPGPIGPSGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGEKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAVVGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGPPGPHIPPSDEICEAGPPGPPGSPGDKGLQGEQGMKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGSKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGEPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGAKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGPKGEPGFALPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGIDGLPGPKGDVGPNGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGSIGPPGSPGLPGKAGASGFPGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISSIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGETGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGMQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPQGPQGLPGPTGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPVSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>11.Vervet-AGM-COL4A5-201-LONGEST

MGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGSIGPPGSPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISSIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGETGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPQGPQGLPGPTGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPVSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

> 12.Papio\_anubis\_ENSPANP00000054610\_1\_sequence201-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGEKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAVVGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGLPGPHIPPSDEICEAGPPGPPGSPGDKGLQGEQGMKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGSKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGEPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGTGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGPKGEPGFALPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGIDGLPGPKGDVGPNGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGSIGPPGSPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISSIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGETGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPQGPQGLPGPTGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPVSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>13.Capuchin-COL4A5-201-LONGEST

MKLRGVSLAAGLSLLALSLWGQPAVAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGVKGEPGSIIMSSLPGPKGNPGHPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVITRPGTGISIGEKGNTGLPGLPGEKGERGFPGIQGPPGLPGPPGAAAMGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGPPGPHIPPSDEICEPGPPGPPGSPGDKGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGYPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRTGLEGPPGPPGFPGPKGEPGFAVPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPSGQPGPMGPPGLPGIGVQGPPGPPGIPGPTGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGPIGPPGPPGLPGKAGVSGLPGTKGEMGIMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGLPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISGMGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGEPGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFRGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSAGPEGEPGLDGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>14.Bolivian squirrel monkey-COL4A5-201-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGTAAMGPPGPPGFPGERGQKGDEGPPGISMPGPPGLDGQPGAPGLPGPPGPPGPHIPPSDEICEPGPPGPPGSPGDKGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPAGAPGTPGRTGLEGPPGPPGFPGPKGEPGFAVPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPSGQPGPVGPPGLPGIGVQGPPGPPGIPGPTGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGPIGPPGPPGLPGKAGASGFPGTKGEMGIMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGLPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGSIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISGIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGQPGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNEGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>15. 1691Callithrix\_jacchus\_ENSCJAP00000014003\_4\_sequence-LONGEST

MKLRGVSLAAGLFLLALSLWGQPAEAATCYGCSPESKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGVPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGMHGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAAMGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGPPGPHIPPSDELCEPGPPGPPGSPGDKGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQNGLPGLPGPKGEPGRITSKGERGPPGNPGLPGHPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGITGLEGPPGPPGFPGPKGEPGFAVPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPSGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGPIGPPGPPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGFPGLPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQHGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISGIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGSPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGEPGPIGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGQPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTMDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQGIQPFISRCAVCEAPAMVIAVHSQTIQIPRCPQGWNSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>16.Ma’s night monkey-COL4A5-201-LONGEST

MKLRGVSLAAGLFLLSLSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSVIMSSLPGPKGNPGYPGPPGIQGLPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKVIFLFFVSFIWCGFLFLLSVRFLNGNFSLQGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPETGITIGEKGNIGLPGLPGEKGERGFPGIQGPPGLPGPPGAAAMGPPGPPGFPGERGQKGDEGPPGISIPGPPGLDGQPGAPGLPGPPGPPGPYIPPSDEICEPGPPGPPGSPGDKGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGQAGATGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRTGLEGPPGPPGFPGPKGEPGFAVPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGSKGDVGPSGQPGPMGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGIPGEKGDPGPPGLDVPGPPGERGSPGIPGAPGPIGPPGPPGLPGKAGASGFPGTKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGLPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPPGPKGNPGLPGQPGLIGPPGLKGTIGDMGFPGPQGVEGPPGPPGVPGQPGSPGLPGQKGDKGDPGISGIGLPGLPGPKGEPGLPGYPGNPGIKGSVGDPGLPGLPGTPGAKGQPGLPGFPGTPGPPGPKGISGPPGNPGLPGEPGPVGGGGRPGQPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGNPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFHGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGLPGPEGPPGLPGNGGIKGEKGNPGQPGLPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSAGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGLPGPPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>17.Coquerel’s sifaka-COL4A5-201-LONGEST

MKLLGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCECSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPQGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSPLPGPKGNPGYPGPPGIQGPPGPAGIPGPIGPPGPPGLMGPPGPPGRPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGVTVGEKGNMGLPGLPGEKGERGFPGIQGPPGLPGPPGTAVMGPPGPAGFPGERGQKGDEGPPGISIPGSPGLDGQPGAPGLPGPPGPPGPHIPRGDEICEAGPPGPPGSPGDKGLQGEQGVKGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGLKGEPGFGLPGPPGPPGLPGFKGALGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPNGQPGPVGPPGLPGIGVQGPPGPPGLPGPIGQPGLHGIPGEKGNPGPPGFDVPGPPGERGSPGIPGAPGPIGPPGSPGLPGKAGASGFPGAKGEMGMMGPPGPQGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGHQGLPGDPGQPGLSGQPGLPGPAGPKGNPGLPGQPGLIGPPGLKGNIGDMGFPGPQGVEGSPGPPGVPGQPGSPGLPGQKGDKGDPGVSGIGFPGLPGPKGEPGLPGYPGDPGIKGSVGDTGLPGLPGTPGAKGQPGLPGFPGIPGPPGPKGINGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGESGFPGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGSPGPEGPRGLPGNGGIKGERGNPGQPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSPGPEGEPGLIGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGPPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAVGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSFIAHGFLITRHSQTTDAPQCPQGTVQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

> 18.1691Microcebus\_murinus\_ENSMICP00000001931\_3\_sequence-LONGEST

MKLLGVSLAAGLFLLALSLWGQPAEAAACYGCSPGSKCECSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPQGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGPPGPSGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPGTGITVGEKGNMGLPGLPGEKGERGFPGMQGPPGLPGPPGTAIMGPPGPPGFPGERGQKGDEGPPGISIPGSPGLDGQPGAPGLPGPPGPPGPHIPRGDEICEAGPPGPPGSPGDKGLQGEQGVKGDRGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGHAGVTGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGIVFKGERGPPGNPGLPGLPGNMGPSGPPGFGPPGPVGEKGIQGVAGSPGQPGVPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGLKGEPGFGLPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPNGQPGPVGPPGLPGIGVQGPPGPPGLPGPIGQPGLHGIPGEKGNPGPPGFDVPGPPGERGSPGIPGAPGPIGPPGSPGLPGKDGASGFPGAKGEMGMMGPPGPQGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGPPGPMDPNLLGSKGEKGEPGLPGIPGVSGPKGHQGLPGDPGQPGLSGQPGLPGPAGPKGNPGLPGQPGLEGPPGLKGNIGDMGFPGPQGVEGSPGPPGVPGQPGSPGLPGQKGDKGDPGVSGIGLPGLPGPKGEPGLPGYPGDPGIKGAVGDTGLPGLPGTPGAKGQPGLPGFPGIPGPPGPKGINGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGESGFPGFPGVQGPPGPPGSPGSALEGPKGNPGPQGPPGRPGPTGFQGSPGPEGPRGLPGNGGIKGERGNPGQPGQPGLPGLKGDQGPPGLPGNLGRPGLNGMKGDRGLPGVPGFPGMKGPSGVPGSPGPEGEPGLIGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLQGPPGLPGPQGLPGPVGSPGDPGRNGLPGFDGAVGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGMSSVAHGFLITRHSQTTDAPQCPQGTVQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>19.Greater bamboo lemur-COL4A5-201-LONGEST



>20. Otolemur\_garnettii\_ENSOGAP00000013868\_2\_sequence-LONGEST

MKLRGVSLAACLCLLAPSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPPGQKGDDGIPGPPGPKGIRGSPGLPGFPGTPGLPGMPGHDGAPGPPGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGDRGYPGPPGIQGPPGPTGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRGGEKGQKGDIGPPGPPGLVIPRPGTGVTVGEKGNIGLPGLPGEKGEQGFPGIQGPPGLPGPPGTAVMGPPGPPGFPGERGQKGDEGPPGICIPGSPGLDGKPGAPGPPGPPGPPGPHIPPGEEICEAGPPGPPGSPGDKGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGPKGEKGDAGATGPKGLPGIPGAPGAPGFPGSKGEPGDIFTFPGMKGDKGESGAPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGIAYKGERGPPGNPGLPGLPGNIGPMGPPGFGPPGPVGEKGIQGMTGSPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEIGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIVGPPGAPGTPGRIGPEGPPGPPGSPGLKGEPGFGLPGLPGPPGIPGLKGALGPKGDRGFPGPPGPPGRPGLDGLPGPKGDTGLNGQPGPMGPPGMPGIGVQGPPGPPGIPGPMGQPGLHGLPGEKGNPGPPGFDVPGPPGERGSPGIPGSPGPIGPPGSPGLPGKDGASGFPGAKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDSGLQGQPGFPGPAGEKGSKGEPGLPGPPGPMDPGLVGSKGEKGEPGLPGIPGVPGPKGDQGLPGDPGQPGLSGQPGLPGPSGPEGNPGLPGQPGLTGPPGLKGHIGDMGFPGPQGVEGPPGPPGVPGQAGSPGLPGQKGDKGDPGVSGIGLPGPPGPKGEPGLPGYPGNPGIKGSIGDIGLPGLPGTPGAKGQPGLPGFPGIPGPPGPKGISGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDVGSPGIPGNPGLPGPKGDPGFHGFPGMQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGMSRYQGLPGPEGPRGLPGNGGIKGERGNPGQPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVSGSPGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGIPGQPGLKGPPGLPGPQGLPGPIGSPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSVAHGFLITRHSQTTEAPQCPQGTVQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>21rabbit-longest

MQLRGVRLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGVKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGLPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSLLPGPKGNPGYPGPPGIQGPTGPIGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEPGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRAGEKGQKGDIGPAGPPGLVIPRPGTGVIVGEKGNIGLPGLPGEKGERGFPGIQGLPGLPGPPGTAIVGPPGPPGFPGERGQKGDEGPPGISIPGSPGLDGQPGPPGLPGPPGPPGPHIPPSDEICEAGPPGPPGSPGDKGLQGEQGVKGEKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSPGFPGQKGDKGHAGATGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGPPGPKGEPGGLAFKGERGPPGNPGLPGLPGNVGPMGPAGFGPPGPTGEKGIQGVAGNPGQPGIPGPKGEPGQTITQPGKPGLPGVPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRAGLEGPPGPPGFPGPKGEPGFALPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDVGPNGQPGPVGPPGLPGTGVQGPPGPPGIPGPVGQPGLHGIPGEKGDPGPPGFDVPGPPGERGSPGVPGAPGPMGPPGPPGPPGKAGAIGFPGAKGEMGMMGPPGPPGPLGIPGRSGAPGLKGDDGVQGQPGLPGPAGEKGSKGEPGLPGPPGPVDPDLLGAKGEKGEPGLPGIPGISGPKGYQGLPGDPGKPGLSGQPGLPGSPGPKGNPGLPGQPGLIGPPGLKGNLGDMGFPGPQGVEGPPGPPGVPGQPGSPGFPGQKGEKGDPGVSGIGLPGLPGPKGEPGLPGHPGDPGIKGSVGDTGLPGLPGSPGAKGQPGLPGFPGTPGLPGPKGVTGPPGNPGLPGEPGPVGGGGRPGSPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGMPGNPGLPGPKGEPGFQGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPRGLPGNGAIKGERGNPGPPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGMPGSTGPEGEPGLTGPPGPPGLPGPSGQSIIIKGDAGPPGVPGQPGLKGPPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTVHIYDGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIEPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>22.squirrel-longest-songshu

MKLRGVTLAAGLSLLALSLWGQPAEAAACYGCSSGSKCDCNGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGERGFPGSPGFPGLQGPPGPPGIPGMKGPAGPMGIPGPIGPPGPPGSMGPPGPPGPPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEPGEPGKRGKPGKDGENGQPGIPGLPGDRGYPGEPGRDGEKGQKGDIGPPGPPGLVIPRPETGVTIGEKGNMGLAGLPGEKGERGFPGIQGPPGLPGPPGTAIMGPPGPPGFPGERGQKGDEGPPGISIPGSPGLDGQPGAPGLPGPPGPPGPHIPPSDEICKAGPPGPPGLPGDKGLPGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGHAGAIGPKGLPGIPGAPGAPGFPGSKGEPGDILTFPGMKGDKGELGSPGVPGLPGLPGTPGQDGLPGLPGPKGEPGGIAFKGERGPPGNPGLPGLPGDMGPMGPVGFGPPGPAGEKGIQGVAGNPGHPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEIGLPGDPGLPGQPGFPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPPGPPGFPGPKGEPGFGLPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRTGLDGLPGPKGDIGPNGQPGPVGPPGLPGIGVQGPPGPPGIPGPIGQPGLHGLPGEKGDQGPPGFDIPGPPGERGSPGTPGVPGPVGPPGSPGLPGKAGASGFPGAKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGGKGEPGLPGPPGPMDPNFLGSKGEKGEPGLPGIPGVPGPKGYQGLPGDPGQPGLSGQPGLPGSSGPKGNPGFPGQPGLIGPPGLKGNIGDMGFPGPQGMEGPPGPPGLPGKPGSPGLPGQKGDKGDPGVSGIGLPGLPGPKGEPGLPGYPGSPGIKGSMGDTGLPGLPGTPGAKGQPGLPGFPGTPGLPGPKGINGPPGNPGLPGEPGPVGGGGLPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFQGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPPGFQGLPGPEGPRGLPGNGGIKGERGNPGPPGPPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPIGVPGSTGPEGERGLIGPPGPPGLPGPSGQSIIIKGDAGPPGVPGQPGLKGPPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGSSSIAHGFLITRHSQTTDAPQCPEGTVQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>23rat-longest

MQVPGVCLAAGWFLLALCLWGQPGEAAACHGCSSGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNQGYPGPPGIQGPPGPKGVSGPSGPPGPPGLMGPPGPPGPPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDLDFQKGDQGVPGDRGPPGPPGIPGPPGPPGGVKGEKGEPGEPGKRGKPGKDGETGQPGIPGLPGDPGYPGEPGRHGEKGQKGDTGPPGPPGFVIPTPGTGVTIGAKGNIGQPGLPGEKGERGFPGIQGPPGFPGPPGTAVMGPPGPPGYPGERGQKGDEGPPGICIPGSPGLDGQPGAPGFPGPPGPPGPQLPPSDEICKAGPPGPPGSPGDQGLQGEQGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGIPGEKGEKGQAGTTGPKGLPGIPGPPGAPGFPGSKGDPGDVLTLPGMKGEKGELGSPGAPGLPGLPGSPGKDGLPGLPGPKGEPGGITFKGERGPPGNPGLPGLPGNMGPTGPVGFGPPGPVGEKGIQGVAGNPGQPGLPGPKGDPGQTISQPGKPGLPGNPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGPPGPPGPKGFPGIPGPPGPPGAPGRMGPEGPPGLPGFPGPKGEPGFGLPGPPGPPGFPGFKGTPGPKGDRGLPGPPGPPGHTGLDGLPGPKGDAGPNGQPGPIGPPGLPGIGLQGPPGPPGTPGPIGQPGLHGIPGEKGDPGPPGLDVPGLPGERGSPGLPGAPGLIGPPGSPGIPGRAGVPGFPGVKGEMGMMGPPGPPGPLGTPGRSGAPGLKGDDGMQGQPGLPGPVGEKGGKGEPGLPGPPGPMRPDFLGSKGEKGDPGLPGIPGLSGPKGYQGLPGDPGQPGLSGQPGSPGLPGPKGTPGLPGPPGLTGPPGPKGNIGDMGFPGPQGVDGPPGPPGGPGQPGSPGLPGQKGSKGEPGVSGIGLPGLPGPKGEPGLPGYPGNPGIKGSMGEAGLPGLPGSPGAKGQPGLPGFPGTPGLPGPKGMNGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGAPGLPGNPGLPGSKGEPGFQGFPGMPGPPGPPGSPGPSLEGPKGNPGPQGPPGRPGPPGFQGPPGTEGPRGPPGNGGIKGERGNPGPPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPIGVPGSTGPDGEPGLTGPPGPPGLPGPSGQSIVIKGDPGPPGIPGQPGLKGLPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGSRGLDGPPGPDGLQGPPGPPGTTSVAHGFLITRHSQTTDAPQCPQGTVHIYDGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDMSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>24.algerian-mouse-longest-201 equal 202

MQVRGVCLAAGWFLLALCLWGQPAEAAACHGCSSGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSPLPGPKGNQGYPGPPGIQGPPGPKGISGPSGPPGPPGLMGSPGLPGPPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDIEFQKGDQGVPGDRGPPGPPGIPGPPGPPGGVKGEKGEPGEAGKRGKPGKDGETGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPAPGTGVTMGEKGNIGLPGLPGEKGERGFPGIQGPPGFPGPPGTAVVGPPGPPGYPGERGQKGDEGPPGICIPGSPGLDGQPGAPGLPGPPGPPGPQLPSRDEICKAGPPGPPGPPGDKGLQGERGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGIPGEKGDKGQAGITGPKGLPGIPGPPGAPGFPGSKGEPGDVLTLPGMKGDKGELGFPGAPGLPGLPGSPGKDGLPGLPGPKGEPGGITFKGERGPPGSPGLPGLPGNMGPTGPVGFGPPGPIGEKGIQGVAGNPGQPGLPGPKGDPGQTITQPGMPGLPGSPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGPPGPPGPKGDVGLNGQPGPVGPPGLPGIGLQGPPGPPGTPGPIGQPGLHGIPGEKGDPGPPGFDVPGLPGERGSPGLPGAPGLIGPPGSPGVPGKAGVPGFPGVKGEMGMMGPPGPPGPLGIPGRSGAPGLKGDDGMQGQPGLPGPAGEKGGKGEPGLPGPPGPMHPDFLGSKGEKGEPGLPGIPGLSGPKGYQGLPGDPGQPGLSGQPGSPGLPGPKGNPGLPGPPGLTGPPGPKGNIGDMGFPGPQGVDGPPGPPGFPGQPGSPGLPGQKGSKGEPGVSGIGLPGLPGPKGEPGLPGYPGNPGMKGSVGETGLPGLPGNPGAKGQPGLPGFPGTPGLPGPKGMNGPPGNPGFPGEPGPVGAGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGSPGLPGNPGLPGSKGEPGFQGFPGMPGPPGPPGSPGQALEGPKGNPGPQGPPGRPGPPGFQGPPGTEGPRGPPGNGGIKGERGNPGPPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPIGVPGSTGPDGEPGLTGPPGPPGLPGPSGQSIVIKGDPGPPGIPGQPGLKGLPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGARGLDGPPGPDGLQGPPGPPGTTSVAHGFLITRHSQTTEAPQCPQGTVHIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDMSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>25.mouse-longest-201 equal 203

MQVRGVCLAAGWFLLALCLWGQPAEAAACHGCSSGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSPLPGPKGNQGYPGPPGIQGPPGPKGISGPSGPPGPPGLMGPPGPPGPPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDIEFQKGDQGVPGDRGPPGPPGIPGPPGPPGGVKGEKGEPGEAGKRGKPGKDGETGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGPPGPPGLVIPAPGTGVTMGEKGNIGLPGLPGEKGERGFPGIQGPPGFPGPPGTAVVGPPGPPGYPGERGQKGDEGPPGICIPGSPGLDGQPGAPGLPGPPGPPGPQLPSRDEICKAGPPGPPGPPGDKGLQGERGVKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGIPGEKGDKGQAGITGPKGLPGIPGPPGAPGFPGSKGDPGDVLTLPGMKGDKGELGFPGAPGLPGLPGSPGKDGLPGLPGPKGEPGGITFKGERGPPGSPGLPGLPGNMGPTGPVGFGPPGPIGEKGIQGVAGNPGQPGLPGPKGDPGQTITQPGKPGLPGSPGRDGEVGLPGDPGLPGQPGLPGIPGSKGEPGIPGIGPPGPPGPKGFPGIPGPPGAPGAPGRMGPDGPPGPPGFPGPKGEPGFGLPGPPGPPGFPGFKGTPGPKGDRGFPGPSGPPGRTGLDGLPGPKGDVGPNGQPGPVGPPGLPGIGLQGPPGPPGTPGPIGQPGLHGIPGEKGDPGPPGFDVPGLPGERGSPGLPGAPGLIGPPGSPGVPGKAGVPGFPGVKGEMGMMGPPGPPGPLGIPGRSGAPGLKGDDGMQGQPGLPGPAGEKGGKGEPGLPGPPGPMHPDFLGSKGEKGEPGLPGIPGLSGPKGYQGLPGDPGQPGLSGQPGSPGLPGPKGNPGLPGPPGLTGPPGPKGNIGDMGFPGPQGVDGPPGPPGFPGQPGSPGLPGQKGSKGEPGVSGIGLPGLPGPKGEPGLPGYPGNPGIKGSVGETGLPGLPGNPGAKGQPGLPGFPGTPGLPGPKGMNGPPGNPGFPGEPGPVGAGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGSPGLPGNPGLPGSKGEPGFQGFPGMPGPPGPPGSPGQALEGPKGNPGPQGPPGRPGPPGFQGPPGTEGPRGPPGNGGIKGERGNPGPPGQPGLPGLKGDQGPPGLPGNPGRPGLNGMKGDPGLPGVPGFPGMKGPIGVPGSTGPDGEPGLTGPPGPPGLPGPSGQSIVIKGDPGPPGIPGQPGLKGLPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGARGLDGPPGPDGLQGPPGPPGTTSVAHGFLITRHSQTTEAPQCPRGTVHIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDMSDMFNKPQSETLKAGDLRTRISRCQVCMKRT

>26-pig-longest-X-chromosome

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>27-sheep-longest

MKLRGVSLAAGLSLLALSLWGQPAEAAACYGCSPGSKCDCSGIKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGPAGPPGIPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDTGPPGPPGLVIPRPGTGVTVGEKGNIGLPGLPGDKGDRGFPGIQGPPGLPGPPGPAVIGPPGPPGFPGERGQKGDEGPPGISIPGSPGLDGQPGAPGPPGPPGPPGPHIPPSDKICEAGPPGPPGSPGDRGLQGEQGMKGDKGDTCFNCIGTGVSGPPGQPGLPGLPGPPGSLGFPGQKGEKGHAGATGPKGLTGIPGAPGAPGFPGPKGEPGDILTFPGMKGDKGDLGSPGVPGLPGLPGTPGQDGLPGLPGPKGEPGGMAFKGERGPPGNPGLPGLPGNRGPMGPVGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGHPGRDGEVGLPGEPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGSPGRIGLEGPSGPPGFPGPKGEPGFGLPGPPGPPGLPGFKGILGPKGDRGFPGPQGPPGQAGLDGLPGPKGDIGPNGQPGPMGPPGLPGTGFQGPPGPPGIPGPIGQPGLHGLPGEKGDPGPPGFDVPGPPGERGSPGIPGAPGPMGPPGSPGLPGKAGASGFPGAKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDDGLQGQPGLPGPAGEKGSKGEPGLPGLPGPMDPDLLGSKGEKGDPGLPGIPGVAGPKGYQGLPGDPGQPGLSGPPGLPGPSGPKGNPGLPGMPGLTGPPGLKGNMGDMGFPGPQGAKGSSGPPGVPGQPGSPGLPGQKGEKGDPGISGIGLPGLPGPKGEPGLPGYPGNPGTKGSMGETGLPGLPGTPGAKGQPGLPGFPGTPGLPGPKGINGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGKPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDEGLPGIPGNPGLPGPKGEPGFHGFPGLQGPPGPPGSPGPALEGPKGSPGPQGPPGRPGPTGFQGPPGPEGPRGLPGSGAIKGERGNPGQPGQPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSTGPEGDPGLIGPPGPPGLPGPSGQSIVIKGDAGPPGIPGQPGLKGLQGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPQGTIQVYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPRCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>28.cow-bos Taurus-longest



>29.horse-202-longest equal 203

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>30.cat-longest

MQLRGISLAAGLFLLALSLWGQPAEAAACYGCSPGSKCDCSGVKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIPGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLQGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGPAGPTGLPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGVKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGSPGEPGRDGEKGQKGDIGPTGPPGLVIPRLGTGVTVGEKGSIGLPGLPGEKGERGFPGIQGPPGLPGPPGTAVMGPPGPPGFPGERGQKGDEGPPGLSIPGSPGLDGQPGAPGLPGPPGPPGPQIPPSDDICEAGPPGPPGSPGDRGLQGEQGMKGDKGDTCFNCIGTGISGPPGQPGLPGLPGPPGSLGFPGQKGEKGHAGPTGPKGLTGIPGVPGPPGFPGSKGEPGDILTFPGMKGDKGELGSPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGIAFKGERGPPGNPGLPGLPGNRGPMGPVGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRDGEVGLDPGLPGQPGLPGIPGSKGEPGIPGIGLPGPPGPKGFPGIPGPPGAPGTPGRIGLEGPSGPPGFPGPKGEPGLGLPGPPGPPGLPGFKGTLGPKGDRGFPGPPGPPGRAGLDGLPGPKGDIGPNGQPGPMGPPGLPGIGVQGPPGPPGIPGPVGQPGLHGIPGEKGDPGPPGFDVLGPPGERGSPGIPGAPGPMGPPGSPGIPGKAGASGFPGAKGEMGMMGPPGPPGPLGIPGRSGVPGLKGDNGLQGQPGPPGPVGEKGGKGEPGLPGPPGPMDPDLLGSKGEKGDPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPSGPKGNPGLPGKPGLTGPPGLKGSIGDMGFPGPQGVKGSPGPPGVPGQPGSPGLPGQKGEKGDPGISGIGLPGLPGPKGEPGLPGYPGNPGIKGSMGDTGLPGLPGTPGAKGHPGLPGFPGTPGLPGPKGISGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGSPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFQGFPGVQGPPGPPGSPGPALEGPKGDPGPQGPPGRPGPTGFQGLPGPEGPRGLPGNGGIKGERGNPGQPGQPGLPGLKGDQGPPGLQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGIPGSTGPEGDPGLVGPPGPPGLPGPSGQSIIIKGDVGPPGIPGQPGLKGLPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGLQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPHGTVQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGRSIQPFISRCAVCEAPSMVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDMSDMFSKPQSETLKAGDLRTRISRCQVCMKRT

>31.dog-longest

MKLRGVSLAAGWFLLALSLWGQPAEAAACYGCSPGSKCDCSGVKGEKGERGFPGLEGHPGLPGFPGPEGPPGPRGQKGDDGIRGPPGPKGIRGPPGLPGFPGTPGLPGMPGHDGAPGPQGIPGCNGTKGERGFPGSPGFPGLEGPPGPPGIPGMKGEPGSIIMSSLPGPKGNPGYPGPPGIQGPAGPTGLPGPIGPPGPPGLMGPPGPPGLPGPKGNMGLNFQGPKGEKGEQGLQGPPGPPGQISEQKRPIDVEFQKGDQGLPGDRGPPGPPGIRGPPGPPGGMKGEKGEQGEPGKRGKPGKDGENGQPGIPGLPGDPGYPGEPGRDGEKGQKGDIGSTGPPGLVIPRPGTGVTVGEKGNMGLPGLPGEKGERGFPGIQGPPGLPGPPGTAVMGPPGPPGFPGERGQKGDEGPPGISIPGFPGLDGQPGAPGLRGPPGPPGPHISPSDEICETGPPGPPGSPGDRGLQGEQGVKGDKGDTCFNCIGTGVSGPRGQPGLPGLPGPPGSLGFPGQKGEKGHAGLTGPKGLTGIPGAPGPPGFPGSKGEPGDVLTFPGMKGDKGELGYPGAPGLPGLPGTPGQDGLPGLPGPKGEPGGIAFKGERGPPGNPGLPGLPGNRGPMGPVGFGPPGPVGEKGIQGVAGNPGQPGIPGPKGDPGQTITQPGKPGLPGNPGRHGEVGLPGDPGLPGPPGLPGIPGNKGEPGIPGIGLPGPPGPKGFPGIQGPPGAPGTPGRIGLEGPSGPPGFPGPKGEPGLGLPGPPGPPGLPGFKGTLGPKGDRGFPGPPGLPGRTGLDGLPGPKGDVGPKGQPGTMGPPGLPGIGVQGPPGPPGIPGPVGEPGLHGIPGEKGDPGPPGFDVLGPPGERGSPGIPGAPGPMGPPGTPGLPGKAGASGFPGAKGEMGMMGPPGPPGPLGIPGRSGIPGLKGDNGLQGQPGPPGPEGEKGGKGEPGLPGPPGPVDPDLLGSKGEKGDPGLPGIPGVSGPKGYQGLPGDPGQPGLSGQPGLPGPSGPKGNPGLPGKPGLTGPPGLKGSIGDMGFPGPQGVKGSPGPPGVPGQPGSPGLPGQKGEKGDPGVSGIGLPGLPGPKGEAGLPGYPGNPGIKGSMGDTGLPGLPGTPGAKGQPGLPGFPGTPGLPGPKGINGPPGNPGLPGEPGPVGGGGRPGPPGPPGEKGNPGQDGIPGPAGQKGEPGQPGFGIPGPPGLPGLSGQKGDGGLPGIPGNPGLPGPKGEPGFQGFPGVQGPPGPPGSPGPALEGPKGNPGPQGPPGRPGPTGFQGLPGPEGPRGLPGNGGIKGERGNPGQPGQPGLPGLKGDQGPPGIQGNPGRPGLNGMKGDPGLPGVPGFPGMKGPSGVPGSAGPEGDPGLVGPPGPPGLPGPSGQSIIIKGDVGPPGIPGQPGLKGLPGLPGPQGLPGPIGPPGDPGRNGLPGFDGAGGRKGDPGLPGQPGTRGLDGPPGPDGMQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPHGTVQIYEGFSLLYVQGNKRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFISRCAVCEAPAVVIAVHSQTIQIPHCPHGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVCMKRT