

Appendix A: Amino acid and cDNA sequences for relevant proteins

1. TCOF1: Treacher Collins-Franceschetti syndrome 1
 LOCUS NM_000356
 AA: MAEARKRRELLPLIYHHLLRAGYVRAAREVKEQSGQKCFLAQPV
 TLLDIYTHWQQTSELGRKRKAEDDALQAKKTRVSDPISTSESESESESESEAEETAKAT
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 KVGPAATPSAQVGKWEEDSESSSEESSDSDGEVPTAVAPAQEKSLGNILQAKPTSSPA
 KGPPQKAGPVAQVKA EKPMNSESSEESSDSDADSEEAPAAMTAAQAKPALKIPQTKA
 CPKKTNTTASAKVAPVRVGTQAPRKAGTATSPAGSSPAVAGGTQRPADSSSSEESDS
 EEEKTGLAVTVGQAKSVGKGLQVKAASVPVKGSLGQGTAPVLPGKTGPTVTQVKA EKQ
 EDSESESEESDSEEEAASPAQVKTSVKKTQAKANPAAARAPSAKGTISAPGKVVTAAA
 QAKQRSPSKVKPPVRNPQNSTVLARGPASVPSVGKAVATAAQQTGPEEDSGSSEES
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cDNA: 1 gaaagaggag ccggaagtgt ggcgcgcgag gtctaagggc gcgagggaag
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 ggccgaggcc
 121 aggaagcggc gggagctact tcccctgata taccaccata tgctgcgggc
 tggtatgtg
 181 cgtgcggcgc gggaagtga ggagcagagc ggccagaagt gtttctgtgc
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 301 gcagaggaag atgcggcact gcaagctaag aaaaccctg tgtcagaccc
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 361 tcggagagct cggaagagga ggaagaagca gaagccgaaa ccgccaagc
 caccccaaga
 421 ctagcatcta ccaactctc agtcctgggg gcggacttgc catcaagcat
 gaaagaaaa
 481 gccaaaggc agacagagaa agctggcaag actgggaatt ccatgccaca
 ccctgccact
 541 gggaagacgg tggccaacct tctttctggg aagtctccca ggaagtcagc
 agagccctca
 601 gcaatacta cgttggtctc agaaactgag gaggagggca gcgtcccggc
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 acccctggg
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 ctcagagagc
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 3961 aagaagaaga agaagctggg ggccggggaa ggtggggagg cctctgtttc
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 //

2. TOP2A: Homo sapiens topoisomerase

LOCUS NM_001067

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cDNA: 1 gattggctgg tctgcttcgg gcgggctaaa ggaagggttca agtggagctc
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9. GSK3B: GSK3B glycogen synthase kinase 3 beta [Homo sapiens]

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10. HDLBP: HDLBP high density lipoprotein binding protein [Homo sapiens]

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tgagggaagc
121 gtctccgttg ggtccggccg ctctgcggga ctctgaggaa aagctcgcac
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181 cggatctgtc aacatgggta aaggagaccc caacaagccg cggggcaaaa
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241 cgccttcttc gtgcagacct gccgggaaga gcacaagaag aaacaccccg
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421 aaattacgtt cctcccaaag gtgataagaa ggggaagaaa aaggacccca
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481 aaggccacca tctgccttct tcctgttttg ctctgaacat cgcccaaaga
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661 aaaggatatt gctgcatact gtgccaaggg caaaagtga gcaaggaaaga
agggccctgg
721 caggccaaca ggctcaaaga agaagaacga accagaagat gaggaggagg
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13. HNRNPK: HNRNPK heterogeneous nuclear ribonucleoprotein K [Homo sapiens]

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KGRAQPYDPNIFYDETYDYGFTMMFDDRGRPVGFPMRGRGGFDRMPGRRGGRMPPS
RRDYDDMSPRRGPPPPPPGRGGRGGSRRNLPLPPPPPPRGDL MAYDRRGRPGDRYD
GMVGFSADETWDS AIDTWSPSEWQ MAYEPQGGSGYDYSYAGGRGSYDGLGGPIITTQV
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cDNA:  1 ccctagccgc ccctcccccc agctagttag tgccggaacg agaaaggagg
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cctcgacgtc
  121 ttgcctgtgt ccacttggt cgcgccctat aggcactgc agcactgggg
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  241 gcccgtttaa taaaagaata tggaaactga acagccagaa gaaaccttcc
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  301 aaccaatggt gaatttggt aacgcctgc agaagatatg gaagaggaac
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 TIPKDLAGSIIGKGGQRIKQIRHESGASIKIDEPLEGSEDRIITITGTQDQIQNAQYL
 LQNSVKQYADVEGF

cDNA: 1 tagggcgcgga cggcgggggag gacgcgagaa ggcgggggag gggagcctgc
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  2281 ctggtgattt cttgatgggt tggaagtcta ttgctgggaa gaaattccat
catacatatt
  2341 catgcttata ataagctggg gattttttgt ttgtttttgc aaatgcttgc
ccctactttt
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  2521 cttggttatg gaagtgacta atgctgaaaa aattgattat tttattaga
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//

14. HNRPD L: HNRPD L heterogeneous nuclear ribonucleoprotein D-like [Homo sapiens]

LOCUS NM_001207000 (isoform B)

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TRGRGRGQQSTYGKASRGGGNHQNNYQPY

cDNA: 1 gaggcgcgcg ggggcccggg cttcgccgca tcagcccggg aggccccgcc
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61 ggcccgcgcg ccggtggtca cagtggaaga ggcccgcgcg ctgcgctgcc
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 YADYSGQQSTYGKASRGGGNHQNNYQPY

cDNA: 1 gaggccgcgc ggggcccggg cttcggccga tcagcccggg aggccccgcc
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15. HSPA9: HSPA9 heat shock 70kDa protein 9 (mortalin) [Homo sapiens]

LOCUS NM_004134

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attgtcactg
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 1441 agagtacatc aggagaagtg attcttgtgg gtggcatgac taggatgccc
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 1501 agactgtaca ggatcttttt ggcagagccc caagtaaagc tgtcaatcct
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 1621 tccttgatgt cactccctg tctctgggta ttgaaactct aggaggtgtc
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 1681 ttattaatag gaataccact attccaacca agaagagcca ggtattctct
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 1861 agattgaagt tacatttgac attgatgcca atgggatagt acatgtttct
gctaaagata
 1921 aaggcacagg acgtgagcag cagattgtaa tccagtcttc tgggtggatta
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 1981 atattgaaaa tatggttaaa aatgcagaga aatatgctga agaagaccgg
cgaaagaagg

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2041 aacgagttga agcagttaat atggctgaag gaatcattca cgacacagaa
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 2101 aagaattcaa ggaccaatta cctgctgatg agtgcaacaa gctgaaagaa
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 2161 aaatgagggg gctcctggct agaaaagaca gcgaaacagg agaaaatatt
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 2221 catcctctct tcagcaggca tcaactgaagc tgttcgaaat ggcatacaaa
 aagatggcat
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 tgatctcttg
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 3301 tctctaacat gaaagtttct agatctctaa catgaaagtt ttagatctc
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//

16. MAP2K2: MAP2K2 mitogen-activated protein kinase kinase 2 [Homo sapiens]

LOCUS NM_030662

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 EAKRIPEEILGKVSIAVLRGLAYLREKHQIMHRDVKPSNILVNSRGEIKLCDFGVSGQ
 LIDSMANSFVGTRSYMAPERLQGTHYSVQSDIWSMGLSLVELAVGRYPPIPPDAKELE
 AIFGRPVVDGEEGEPHSISPRPRPPGRPVSGHGMDSRPAMAFELLDYIVNEPPPKLP
 NGVFTPDFQEFVNKCLIKNPAERADLKMLTNHTFIKRSEVEEVDFAGWLCKTLRLNQP

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 cagcggtagc
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 cgcagcgccg
 121 cccgccctcg gccgccccga cgccggcctg ggccgcggcc gcagccccgg
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 421 cctttctcac ccagaaagcc aaggctcggc aactcaaaga cgatgacttc
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 481 cagagctggg cgccgggcaac ggccgggtgg tcaccaaagt ccagcacaga
 ccctcgggcc
 541 tcatcatggc caggaagctg atccacctg agatcaagcc ggccatccgg
 aaccagatca
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 ggctccctgg
 721 accaggtgct gaaagaggcc aagaggattc ccgaggagat cctggggaaa
 gtcagcatcg
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 tacatggctc
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 ctgcccaccg
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 1561 gcctcacccc tgcggagagc accgtggcgg ggcgacagcg catgcaggaa
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 1681 tcagaggctc tgcttcctta ggttacaaaa caaacaggg agagaaaaag
 caaaaaaaaa
 1741 aaaaaaaaaa aaaaaaaaaa

//

17. LDHA: LDHA lactate dehydrogenase A [Homo sapiens]
 LOCUS NM_001135239 (isoform 2)
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 SGCNLD SARFRYLMGERLGVHPLSCHGWVLGEHGDSSVPVWSGMNVAGVSLKTLHPDL
 GTDKDKEQWKEVHKQVVESAYEVIKLGKGYTSAIGLSVADLAESIMKNLRRVHPVSTM
 IKGLYGIKDDVFLSVPCILGQNGISDLVKVTLTSEEEARLKKSADTLWGIQKELQF

cDNA: 1 gtctgccggt cggttgctctg gctgcgcgcg ccacccgggc ctctccagtg
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 61 ctccggcatcc acccccagcc cgactcacac gtgggttccc gcacgtccgc
 cgcccccccc
 121 cgctgacgtc agcatagctg ttccacttaa ggccccctccc gcgcccagct
 cagagtgtctg
 181 cagccgctgc cgccgattcc ggatctcatt gccacgcgcc cccgacgacc
 gcccgacgtg
 241 cattccccgat tccttttgggt tccaagtcca atatggcaac tctaaaggat
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 301 ataatcttct aaaggaagaa cagaccccc agaataagat tacagttggt
 ggggttggtg
 361 ctgttgatgt ggctgtgccc atcagtatct taatgaagga cttggcagat
 gaacttgctc
 421 ttgttgatgt catcgaagac aaattgaagg gagagatgat ggatctccaa
 catggcagcc
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 tacgtggctt
 541 ggaagataag tggttttccc aaaaaccgtg ttattggaag cggttgcaat
 ctggattcag
 601 cccgattccg ttacctaatg ggggaaaggc tgggagttca cccattaagc
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 661 gggtccttgg ggaacatgga gattccagtg tgccgtgatg gagtggaatg
 aatgttgctg
 721 gtgtctctct gaagactctg caccagatt tagggactga taaagataag
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 781 aagaggttca caagcagggtg gttgagagt cttatgaggt gatcaaactc
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 1261 aaaatccaca gctatatact gatgctggat ggtattaatc ttgtgtagtc
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1921 atttatttgc caactgaata taggcaatga tagtgtgtca ctatagggaa
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2041 aaaaaaaaaa aa

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KLLIVSNPVDILTYVAWKISGFPKNRVIGSGCNLDSARFRYLMGERLGVHPLSCHGWV
LGEHGDSSVPVWSGMNVAGVSLKTLHPDLGTDKDKEQWKEVHKQVVESAYEVIKLGKY
TSWAIGLSVADLAESIMKNLRRVHPVSTMIKGLYGIKDDVFLSVPCILGQNGISDLVK
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atttccgccc
61 acctttccga gcgggaagga gagccacaaa gcgcgcagtc gcgcggatca
ccgcaggctc
121 ctgtgccttg ggcttgagct ttgtggcagt taatggcttt tctgcacgta
tctctggtgt
181 ttacttgaga agcctggctg tgtccttget gtaggagccg gagtagctca
gagtgatctt
241 gtctgaggaa aggccagccc cacttggggg taataaaccg cgatgggtga
accctcagga
301 ggctatactt acacccaaac gtcgatattc cttttccacg ctaagattcc
ttttggttcc
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421 acccccaga ataagattac agttgttggg gttggtgctg ttggcatggc
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    961 gtgcctgtat ggagtggaat gaatgttgc ggtgtctctc tgaagactct
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    1081 gcttatgagg tgatcaaact caaaggctac acatcctggg ctattggact
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    2221 atagtgtgtc actataggga acacagattt ttgagatctt gtccctctgga
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SGCNLDSARFRYLMGERLGVHPLSCHGWVLGEHGDSSVPVWSGMNVAGVSLKTLHPDL
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cgccccccc
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cagagtgtctg
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gcttggaaga
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  781 tccgttacct aatgggggaa aggctgggag ttcacccatt aagctgtcat
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  841 ttggggaaca tggagattcc agtgtgcctg tatggagtgg aatgaatggt
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LOCUS

NM_001165416

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18. MAP4: MAP4 microtubule-associated protein 4 [Homo sapiens]

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 3961 tcatattagt gacacggaac agcacctcca ctatttgtat gttcaaataa
 gctttcagac
 4021 taatagettt tttggtgtct aaaatgtaag caaaaaattc ctgctgaaac
 attccagtc
 4081 tttcatttag tataaaagaa atactgaaca agccagtggg atggaattga
 aagaactaat
 4141 catgaggact ctgtcctgac acaggtcctc aaagctagca gagatacgca
 gacattgtgg
 4201 catctgggta gaagaatact gtattgtgtg tgcagtgcac agtgtgtggg
 gtgtgcacac
 4261 tcattccttc tgctcttggg cacaggcagt ggggtgtagag gtaaccagta
 gctttgagaa
 4321 gctacatgta gctcaccagt ggttttctct aaggaaatcac aaaagtaaac
 taccacaacca
 4381 catgccacgt aatatttcag ccattcagag gaaactgtt tctctttatt
 tgcttatatg
 4441 ttaatatggg ttttaaatg gtaactttta tatagtatgg taacagtatg
 ttaatacaca
 4501 catacatagc cacacatgct ttgggtcctt ccataatact tttatatttg
 taaatcaatg
 4561 ttttgagaca atcccaagtt taagggaat atttttgtaa atgtaatggg
 tttgaaaatc
 4621 tgagcaatcc ttttgcttat acatttttaa agcatttgtg ctttaaaatt
 gttatgctgg
 4681 tgtttgaaac atgatactcc tgtggtgcag atgagaagct ataacagtga
 atatgtggtt
 4741 tctcttacgt catccacctt gacatgatgg gtcagaaaca aatggaaatc
 cagagcaagt
 4801 cctccagggt tgcaccagggt ttacctaaag cttgttgccct tttcttgtgc
 tgtttatgcg
 4861 tgtagagcac tcaagaaagt tctgaaactg ctttgtatct gctttgtact
 gttggtgcct

4921 tcttgggtatt gtacccccaaa attctgcata gattatttag tataatggta
 agttaaaaaa
 4981 tgttaaagga agatttttatt aagaatctga atgtttattc attatatgtt
 tacaatttaa
 5041 cattaacatt tatttgtggt atttgtgatt tggttaatct gtataaaaat
 tgtaagtaga
 5101 aagggtttata tttcatctta attcttttga tgttgtaaac gtacttttta
 aaagatggat
 5161 tatttgaatg tttatggcac ctgacttgta aaaaaaaaaa actacaaaaa
 aatccttaga
 5221 atcattaaat tgtgtccctg tattaccaa ataacacagc accgtgcatg
 tatagtttaa
 5281 ttgcagtttc atctgtgaaa acgtgaaatt gtctagtcct tcgttatggt
 ccccgatgt
 5341 cttccagatt tgctctgcat gtggtaactt gtgttagggc tgtgagctgt
 tcctcgagtt
 5401 gaatggggat gtcagtgtct ctaggggtct ccaggtgggt cttcagacct
 tcacctgtgg
 5461 gggggggggg aggcgggtgcc cagcccatc tcctcatcct cctgaacttc
 tgcaacccca
 5521 ctgctgggca gacatcctgg gcaaccctt tttcagagc aagaagtcatt
 aaagatagga
 5581 tttcttgac atttggttct tatcaatatt gggcattatg taatgactta
 tttacaaaac
 5641 aaagatactg gaaaatgttt tggatgtggt gttatggaaa gagcacaggc
 cttggacca
 5701 tccagctggg ttcagaacta cccctgctt ataaactggg ctggtgtggt
 gccagtcatt
 5761 ctgcgtctct gctttcttcc tctgcttcag actgtcagct gtaaagtggg
 agcaatatta
 5821 cttgccttgt atatggtaaa gattataaaa atacatttca actgttcagc
 atagtacttc
 5881 aaagcaagta ctcagtaaatt agcaagtctt tttaaa

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LOCUS NM_138957 (isoform 2)
 AA/translation="MAAAAAAGAGPEMVRGQVFDVGPRYTNL SYIGEGAYGMVCSAYD
 NVNKRVAIKKISPFHQTYCQRTLREIKILLRFRHENIIGINDIIRAPTIEQMKDVY
 IVQDLMETDLYKLLKTQHLSNDHICYFLYQILRGLKYIHSANVLHRDLKPSNLLLNTT
 CDLKICDFGLARVADPDHDHTGFLTEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCIL
 AEMLSNRPIFPKHYLDQLNHILGILGSPSQEDLNCIINLKARNYLLSLPHKNKVPWN
 RLFPNADSKALDLDKMLTFNPHKRIEVEQALAHPPYLEQYYDPSEPIAEAPFKFDME
 LDDLPEKELKELIFEETARFQPGYRS

cDNA: 1 gccctccct ccgcccgcgc gccggcccgc ccgtcagtc ggcaggcagg
 caggcaatcg
 61 gtccgagtgg ctgtcggtct ttcagctctc ccgtcggcg tcttccttcc
 tcctcccgtt
 121 cagcgtcggc ggctgcaccg gcggcgggcg agtcctcgc ggaggggcga
 caagagctga
 181 gcggcgggcg ccgagcgtcg agctcagcgc ggcgaggcg gcggcgggcc
 ggcagccaac
 241 atggcgggcg cggcggcggc gggcgcgggc ccggagatgg tccgcgggca
 ggtgttcgac
 301 gtggggccgc gctacaccaa cctctcgtac atcggcgagg gcgcctacgg
 catggtgtgc
 361 tctgcttatg ataattgtcaa caaagttcga gtagctatca agaaaatcag
 cccctttgag
 421 caccagacct actgccagag aacctgagg gagataaaaa tcttactgcg
 cttcagacat
 481 gagaacatca ttggaatcaa tgacattatt cgagcaccaa ccatcgagca

aatgaaagat
 541 gtatatatag tacaggacct catggaaaca gatctttaca agctcttgaa
 gacacaacac
 601 ctcagcaatg accatatctg ctattttctc taccagatcc tcagagggtt
 aaaatatatc
 661 cattcagcta acgttctgca ccgtgacctc aagccttcca acctgctgct
 caacaccacc
 721 tgtgatctca agatctgtga ctttggcctg gcccggtgtg cagatccaga
 ccatgatcac
 781 acagggttcc tgacagaata tgtggccaca cgttggtaca gggctccaga
 aattatgttg
 841 aattccaagg gctacaccaa gtccattgat atttggctctg taggctgcat
 tctggcagaa
 901 atgctttcta acaggcccat ctttccaggg aagcattatc ttgaccagct
 gaaccacatt
 961 ttgggtattc ttggatcccc atcacaagaa gacctgaatt gtataataaa
 tttaaaagct
 1021 aggaactatt tgctttctct tccacacaaa aataaggtgc catggaacag
 gctgttccca
 1081 aatgctgact ccaaagctct ggacttattg gacaaaatgt tgacattcaa
 cccacacaag
 1141 aggattgaag tagaacaggc tctggcccac ccatatctgg agcagtatta
 cgaccgagt
 1201 gacgagccca tcgccgaagc accattcaag ttcgacatgg aattggatga
 cttgcctaag
 1261 gaaaagctca aagaactaat ttttgaagag actgctagat tccagccagg
 atacagatct
 1321 taaatttgct aggtacctgg agtttaatac agtgagctct agcaagggag
 gcgctgcctt
 1381 ttgtttctag aatattatgt tcctcaaggt ccattatctt gtattctttt
 ccaagctcct
 1441 tattggaagg tattttttta aatttagaat taaaaattat ttagaaagtt
 acatataaa

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20. MARCKS: MARCKS myristoylated alanine-rich protein kinase C
 substrate [Homo sapiens]

LOCUS NM_002356

AA/translation="MGAQFSKTAAKGEAAAERPGEAAVASSPSKANGQENGHVKNVD
 ASPAAESGAKEELQANGSAPAADKEEPAAAGSGAASPSAAEKGEPAAAAPEAGASP
 VEKEAPAEGEAAEPGSPTAAEGEAASAASSTSSPKAEDGATPSNETPKKKKKRFSF
 KKSFKLSGFSFKKNKKEAGEGGEAEAPAAEGGKDEAAGGAAAAAEAGAASGEQAAAP
 GEEAAAGEEGAAGDPQEAKPQEAAVAPEKPPASDETKAAEEPSKVEEKKAEFEAGASA
 AACEAPSAAGPGAPPEQEAPAEPEAAAAASSACAAPSQEAQPECSPEAPPAEAAE

cDNA: 1 cttgggcgtt ggaccccgca tcttattagc aaccagggag atttctccat
 tttctctctg
 61 tctacagtgc ggctacaaat ctgggatttt tttattactt cttttttttt
 cgaactacac
 121 ttgggctcct ttttttgtgc tcgacttttc cacccttttt cctccctcc
 tgtgctgctg
 181 ctttttgatc tcttcgacta aaattttttt atccggagtg tatttaatcg
 gttctgttct
 241 gtctcttcca ccacccccac cccctccct cgggtgtgtg tgccgctgcc
 gctgttgccg
 301 ccgcccgtgc tgetgctcgc cccgtcggtta caccaaccgg aggtctcttg
 tttccctctt
 361 tggatctggt gagtttcttt gttgaagaag ccagcatggg tgcccagttc
 tccaagaccg
 421 cagcgaaggg agaagccgcc gcggagaggc ctggggaggc ggctgtggcc
 tcgtgcgctt

481 ccaaagcgaa cggacaggag aatggccacg tgaaggtaaa cggcgacgct
 tcgcccgcgg
 541 ccgccgagtc gggcgccaag gaggagctgc aggccaacgg cagcgccccg
 gccgccgaca
 601 aggaggagcc cgcggccgcc gggagcgggg cggcgctgcc ctccgcggcc
 gagaaaggtg
 661 agccggccgc cgcgctgcc cccgaggccg gggccagccc ggtagagaag
 gaggcccccg
 721 cggaaggcga ggctgccgag cccggctcgc ccacggccgc ggagggagag
 gccgcgtcgg
 781 ccgcctcctc gacttcttcg cccaaggccg aggacggggc cacgccctcg
 ccagcaacg
 841 agaccccgaa aaaaaaaaaaag aagcgctttt cttcaagaa gtctttcaag
 ctgagcggct
 901 tctccttcaa gaagaacaag aaggaggctg gagaaggcgg tgaggctgag
 gcgcccgtg
 961 ccgaaggcgg caaggacgag gccgccgggg gcgcagctgc ggccgccgcc
 gaggcggggg
 1021 cggcctccgg ggagcaggca gcggcgccgg gcgaggaggc ggcagcgggc
 gaggaggggg
 1081 cggcgggtgg cgaccgcgag gaggccaagc cccaggaggc cgctgtcgcg
 ccagagaagc
 1141 cgcccgccag cgacgagacc aaggccgccg aggagcccag caaggtggag
 gagaaaaagg
 1201 ccgaggaggc cggggccagc gccgcgcct gcgaggcccc ctccgccgcc
 gggcccggcg
 1261 cgcccccgga gcaggaggca gccccgcgg aggagcccgc ggccgccgca
 gcctcgtcag
 1321 cctgcgcagc ccctcacag gaggcccagc ccgagtgcag tccagaagcc
 cccccagcgg
 1381 aggcggcaga gtaaaagagc aagcttttgt gagataatcg aagaactttt
 ctcccccggt
 1441 tgtttgttgg agtggtgcc aagtactggt ttggagaact tgtctacaac
 cagggtattga
 1501 ttttaagat gtcttttttt attttacttt tttttaagca ccaaattttg
 ttgttttttt
 1561 tttttctccc ctccccacag atcccatctc aaatcattct gttaaccacc
 attccaacag
 1621 gtcgaggaga gcttaaacac cttcttcctc tgccctgttt ctcttttatt
 ttttattttt
 1681 tcgcatcagt attaatgttt ttgcatactt tgcattctta ttcaaaagtg
 taaactttct
 1741 ttgtcaatct atggacatgc ccataatga aggagatggg tgggtcaaaa
 agggatatca
 1801 aatgaagtga taggggtcac aatggggaaa ttgaagtggg gcataacatt
 gccaaaatag
 1861 tgtgccacta gaaatggtgt aaaggctgtc tttttttttt ttttttaag
 aaaagttatt
 1921 accatgtatt ttgtgaggca ggtttacaac actacaagtc ttgagttaag
 aaggaaagag
 1981 gaaaaaagaa aaaacaccaa taccagatt taaaaaaaaa aaaacgatca
 tagtccttagg
 2041 agttcattta aaccatagga acttttact tatctcatgt tagctgtacc
 agtcagtgat
 2101 taagtagaac tacaagttgt ataggcttta ttgtttattg ctggtttatg
 accttaataa
 2161 agtgtaatta tgtattacca gcagggtgtt ttttaactgt actattgtat
 aaaaacaaat
 2221 cttgatatcc agaagcacat gaagtttgca actttccacc ctgcccattt
 ttgtaaaact
 2281 gcagtcactt tggacctttt aaaacacaaa ttttaaacct aaccaagctg

tgataagtgg
 2341 aatgggttact gtttatactg tggtatgttt ttgattacag cagataaatgc
 tttcttttcc
 2401 agtcgtcttt gagaataaag gaaaaaaaaa tcttcagatg caatgggttt
 gtgtagcatc
 2461 ttgtctatca tgttttgtaa atactggaga agctttgacc aatttgactt
 agagatggaa
 2521 tgtaactttg cttacaaaaa ttgctattaa actcctgctt aagggtgttct
 aattttctgt
 2581 gagcacacta aaagcgaaaa ataaatgtga ataaaatgta caaatgtgtt
 gtgttttttt
 2641 atgttctaata aatactgaga cttctaggtc ttaggttaat ttttaggaag
 atcttgcatg
 2701 ccatcaggag taaattttat tgtggttctt aatctgaagt tttcaagctc
 tgaaattcat
 2761 aatccgcagt gtcagattac gtagaggaag atcttacaac attccatgtc
 aaatctgtta
 2821 ccattttattg gcatttagtt ttcatttaag aattgaacat aattattttt
 attgtagcta
 2881 tatagcatgt cagattaaat catttacaac aaaaggggtg tgaacctaaag
 actatttaaa
 2941 tgtcttatga gaaaatttca taaagccatt ctcttgatc tccaggtccag
 aaacaaattt
 3001 taaactgagt gagagtctat agaatccata ctgcagatgg gtcatgaaat
 gtgaccaaatt
 3061 gtgtttcaaa aattgatggg gtattacctg ctattgtaat tgcttagtgc
 ttggctaatt
 3121 tccaaattat tgcataatat gttctacctt aagaaaacag gtttatgtaa
 caagtaattg
 3181 gtgttgaaatg gatgatgtca gttcatgggc ctttagcata gttttaagca
 tcattttttt
 3241 tttttttttt gaaagtgtgt tagcatcttg ttactcaaag gataagacag
 acaataatac
 3301 ttcactgaat attaataatc tttactagtt tacctcctct gctctttgcc
 acccgataac
 3361 tggatatctt ttccttcaaa ggaccctaaa ctgattgaaa ttttagatat
 gtatcaaaaa
 3421 cattatttca tttaatgcac atctgttttg ctgtttttga gcagtgtgca
 gtttaggggt
 3481 catgataaat cattgaacca catgtgtaac aactgaatgc caaatcttaa
 actcattaga
 3541 aaaataacaa attaggtttt gacacgcatt ctttaattgga ataattggatc
 aaaaatagtg
 3601 gttcatgacc ttaccaaaca cccttgctac taataaaatc aaataacact
 tagaagggtg
 3661 tgtattttta gttaggggtt cttgatcttg gaggatgttt gaaagttaaa
 aattgaattt
 3721 ggtaacccaa ggactgattt atgggtcttt cctatcttaa ccaacgtttt
 cttagttacc
 3781 tagatggcca agtacagtgc ctggatgta gtaagactca gtaaaaaagt
 ggatttttaa
 3841 aaataactcc caaagtgaat agtcaaaaat cctgttagca aactgttata
 tattgctaag
 3901 tttgttcttt taacagctgg aatttattaa gatgcattat tttgatttta
 ttcactgcct
 3961 aaaacacttt ggggtggtatt gatggagtgt gtggattttc ctccaagtga
 ttaaatgaaa
 4021 tttgacgtat cttttcatcc aaagttttgt acatcatgtt ttctaacgga
 aaaaaatggt
 4081 aatatggctt ttttgtatta ctaaaaatag ctttgagatt aaggaaaaat
 aaataactct

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4141 tgtacagttc agtattgtct attaaatctg tattggcagt atgtataatg
gcatttgctg
4201 tggttacaaa atacttcctc tgggttataa taatcatttg atccaattcc
tattgcttgt
4261 aaaataaagt tttaccagtt gatataatca aaaaaaaaaa aaaa

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21. NME1: NME1 NME/NM23 nucleoside diphosphate kinase 1 [ Homo
sapiens ]
LOCUS NM_000269 (isoform b)
AA/translation="MANCERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVGLKFMQAS
EDLLKEHYVDLKDPRFFAGLVKYMHS GPVVMVWEGLNVVKTGRVMLGETNPADSKPG
TIRGDFCIQVGRNIIHGSDSVESAEKEIGLWFHPEELVDYTSCAQNWIYE

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cDNA: 1 gcagaagcgt tccgtgctg caagtgctgc gaaccacgtg ggtccccgggc
gcgtttcggg
61 tgctggcggc tgcagccgga gttcaaacct aagcagctgg aaggaaccat
ggccaactgt
121 gagcgtaacct tcattgcgat caaaccagat ggggtccagc ggggtcttgt
gggagagatt
181 atcaagcgtt ttgagcagaa aggattccgc cttgttggtc tgaaattcat
gcaagcttcc
241 gaagatcttc tcaaggaaca ctacgttgac ctgaaggacc gtccattctt
tgccggcctg
301 gtgaaataca tgcactcagg gccggtagtt gccatggtct gggaggggct
gaatgtgggtg
361 aagacggggc gagtcatgct cggggagacc aacctgcag actccaagcc
tgggaccatc
421 cgtggagact tctgcataca agttggcagg aacattatac atggcagtg
ttctgtggag
481 agtgcagaga aggagatcgg cttgtggttt caccctgagg aactggtaga
ttacacgagc
541 tgtgctcaga actggatcta tgaatgacag gagggcagac cacattgctt
ttcacatcca
601 tttccctcc ttcccatggg cagaggacca ggctgtagga aatctagtta
tttacaggaa
661 cttcatcata atttgagggg aagctcttgg agctgtgagt tctccctgta
cagtgttacc
721 atccccgacc atctgattaa aatgcttcct cccagcatag gattcattga
gttggttact
781 tcatattggt gcattgcttt tttttccttc t
//

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LOCUS NM_198175 (isoform 1)
AA/translation="MVLLSTLGIVFQGE GPPISCDTGTMANCERTFIAIKPDGVQRG
LVGEIIKRFEQKGFRLVGLKFMQASEDLLKEHYVDLKDPRFFAGLVKYMHS GPVVMV
WEGLNVVKTGRVMLGETNPADSKPGTIRGDFCIQVGRNIIHGSDSVESAEKEIGLWFH
PEELVDYTSCAQNWIYE

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cDNA: 1 gcagaagcgt tccgtgctg caagtgctgc gaaccacgtg ggtccccgggc
gcgtttcggg
61 tgctggcggc tgcagccgga gttcaaacct aagcagctgg aagggccctg
tggttaggta
121 ccatagagtc tctacacagg actaagtcag cctgggtgtgc aggggaggca
gacacacaaa
181 cagaaaattg gactacagtg ctaagatgct gtaagaagag gttactaaa
ggacaggaag
241 atggggccaa gagatgggtg tactgtctac tttagggatc gtctttcaag
gcgagggggc
301 tcctatctca agctgtgata caggaaccat ggccaactgt gagcgtaacct
tcattgcgat
361 caaaccagat ggggtccagc ggggtcttgt gggagagatt atcaagcgtt

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ttgagcagaa
  421 aggattccgc cttgttggtc tgaaattcat gcaagcttcc gaagatcttc
tcaaggaaca
  481 ctacgttgac ctgaaggacc gtccattctt tgccggcctg gtgaaatata
tgcaactcagg
  541 gccggtagtt gccatggtct gggaggggct gaatgtggtg aagacgggcc
gagtcattgct
  601 cggggagacc aacctgcag actccaagcc tgggaccatc cgtggagact
tctgcataca
  661 agttggcagg aacattatac atggcagtga ttctgtggag agtgcagaga
aggagatcgg
  721 cttgtggttt cacctgagg aactggtaga ttacacgagc tgtgtcaga
actggatcta
  781 tgaatgacag gagggcagac cacattgctt ttcacatcca tttccctcc
ttcccatggg
  841 cagaggacca ggctgtagga aatctagtta tttacaggaa cttcatcata
atctggaggg
  901 aagctcttgg agctgtgagt tctccctgta cagtgttacc atccccgacc
atctgattaa
  961 aatgcttctc cccagcatag gattcattga gttggttact tcatattggt
gcattgcttt
 1021 ttttctcttc t

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22. NME2: NME2 NME/NM23 nucleoside diphosphate kinase 2 [ Homo
sapiens ]
LOCUS NM_001018137 (isoform a variant 2)
AA/translation="MANLERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVAMKFLRAS
EEHLKQHYIDLKDRPFFPGLVKYMNSGPVVAMVWEGLNVVKTGRVMLGETNPADSKPG
TIRGDFCIQVGRNIIHGSDSVKSAEKEISLWFKPEELVDYKSCAHDWVYE

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cDNA: 1 atctcagggc agtaccactg ctgtgcggct gtcagtcagt gctgcaggcg
ccgagaggag
  61 gggcttgtga ccgccccagg gaagctgggc atcaccaaag ggagcttggt
tgccagggac
 121 actgcaagta ggaagtgtct acaggtcgat gacaggccta atctctatga
caggtcttag
 181 actttcctca ggggtccagg ggcacactca ggggtgaactg gaaaactcga
ccgcacttta
 241 gtgccaggac catggccaac ctggagcgca ccttcacgc catcaagccg
gacggcgtgc
 301 agcgcgccct ggtgggcgag atcatcaagc gcttcgagca gaagggattc
cgctcgtgg
 361 ccatgaagtt cctccgggcc tctgaagaac acctgaagca gcaactacatt
gacctgaaag
 421 accgaccatt ctccctggg ctggtgaagt acatgaactc agggccggtt
gtggccatgg
 481 tctgggaggg gctgaacgtg gtgaagacag gccgagtgat gcttggggag
accaatccag
 541 cagattcaaa gccaggcacc attcgtgggg acttctgcat tcaggttggc
aggaacatca
 601 ttcattggcag tgattcagta aaaagtgtg aaaaagaaat cagcctatgg
tttaagcctg
 661 aagaactggt tgactacaag tcttgtgctc atgactgggt ctatgaataa
gaggtggaca
 721 caacagcagt ctccctcagc acggcgtggt gtgtccctgg acacagctct
tcattccatt
 781 gacttagagg caacaggatt gatcattctt ttatagagca tatttgccaa
taaagctttt
 841 ggaagccgga aaaaaaaaaa aaaaaaa

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LOCUS      NM_001018138                      (isoform a variant 3)
AA/translation="MANLERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVAMKFLRAS
EEHLKQHYIDLKDRPFFPGLVKYMNSGPVAMVWEGLNVVKTGRVMLGETNPADSKPG
TIRGDFCIQVGRNIIHGSDSVKSAEKEISLWFKPEELVDYKSCAHDWVYE

cDNA:      1 gcggccgcgc gtggtggggg aggagggacc ggccggcgccc acgtggcctc
cgcgggcccc
          61 gccagagcct gcgcccgggc cctgaccgca cctctcgccc cgcaggacca
tggccaacct
          121 ggagcgcacc ttcacgcca tcaagccgga cggcgtgcag cgcggcctgg
tgggcgagat
          181 catcaagcgc ttcgagcaga agggattccg cctcgtggcc atgaagtcc
tccgggecte
          241 tgaagaacac ctgaagcagc actacattga cctgaaagac cgaccattct
tccttgggct
          301 ggtgaagtac atgaactcag ggccggttgt ggccatggtc tgggaggggc
tgaacgtggt
          361 gaagacaggc cgagtgatgc ttggggagac caatccagca gattcaaagc
caggcaccat
          421 tcgtggggac ttctgcattc aggttggcag gaacatcatt catggcagtg
attcagtaaa
          481 aagtgtctgaa aaagaaatca gcctatggtt taagcctgaa gaactggttg
actacaagtc
          541 ttgtgctcat gactgggtct atgaataaga ggtggacaca acagcagtct
ccttcagcac
          601 ggcgtggtgt gtccctggac acagctcttc attccattga cttagaggca
acaggattga
          661 tcattctttt atagagcata ttgccaata aagcttttgg aagccggaaa
aaaaaaaaaa
          721 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa
//
LOCUS      NM_001018139                      (isoform a variant 4)
AA/translation="MANLERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVAMKFLRAS
EEHLKQHYIDLKDRPFFPGLVKYMNSGPVAMVWEGLNVVKTGRVMLGETNPADSKPG
TIRGDFCIQVGRNIIHGSDSVKSAEKEISLWFKPEELVDYKSCAHDWVYE

cDNA:      1 aggcggtggg ggcgcacccc ctggcgactc ctcccgttcc ctcttcgct
tgcgctgcgg
          61 caggaccatg gccaacctgg agcgcacett catcgccatc aagccggacg
gcgtgcagcg
          121 cggcctggtg ggcgagatca tcaagcgctt cgagcagaag ggattccgcc
tcgtggccat
          181 gaagttcctc cgggcctctg aagaacacct gaagcagcac tacattgacc
tgaaagaccg
          241 accattcttc cctgggctgg tgaagtacat gaactcaggg ccggttggtg
ccatggtctg
          301 ggaggggctg aacgtggtga agacaggccg agtgatgctt ggggagacca
atccagcaga
          361 ttcaaagcca ggcaccattc gtggggactt ctgcattcag gttggcagga
acatcattca
          421 tggcagtgat tcagtaaaaa gtgctgaaaa agaaatcagc ctatggttta
agcctgaaga
          481 actggttgac tacaagtctt gtgctcatga ctgggtctat gaataagagg
tggacacaac
          541 agcagtctcc ttcagcacgg cgtggtgtgt ccctggacac agctcttcat
tccattgact
          601 tagaggcaac aggattgatc attcttttat agagcatatt tgccaataaa
gcttttggaa
          661 gccggaaaaa aaaaaaaaaa aa
//

```

LOCUS NM_001198682 (isoform b variant 5)
 AA/translation="MANLERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVAMKFLRAS
 EEHLKQHYIDLKDRPFFPGLVKYMNSGPVAMEHHSWQ

cDNA: 1 tgcctggcga gggcgcgccc cggtctggcg tggacactgt tctccggccg
 cgtcgggccc
 61 ggcggggtggg gcgttcctgc gggttggcg gctgggccct ccgggggtgtg
 gccacccgc
 121 gctccgccct gcgcccctcc tccgccgcg gctccgggt gtggtggtcg
 caccagctct
 181 ctgctctccc agcgcagcgc cgccgcccg cccctccagc ttcccggaacc
 atggccaacc
 241 tggagcgcac cttcatcgcc atcaagccgg acggcgtgca gcgcggcctg
 gtgggcgaga
 301 tcatcaagcg cttcgagcag aagggtattcc gcctcgtggc catgaagtcc
 ctccgggccc
 361 ctgaagaaca cctgaagcag cactacattg acctgaaaga ccgaccattc
 ttccctgggc
 421 tgggtgaagta catgaactca gggccggttg tggccatgga acatcattca
 tggcagtgat
 481 tcagtaaaaa gtgctgaaaa agaaatcagc ctatggttta agcctgaaga
 actggttgac
 541 tacaagtctt gtgctcatga ctgggtctat gaataagagg tggacacaac
 agcagctctc
 601 ttcagcacgg cgtggtgtgt ccctggacac agctcttcat tccattgact
 tagaggcaac
 661 aggattgatc attcttttat agagcatatt tgccaataaa gcttttggaa
 gccggaaaaa
 721 aaaaaaaaaa aaa

//
 LOCUS NM_002512 (isoform a variant 1)
 AA/translation="MANLERTFIAIKPDGVQRGLVGEIIKRFEQKGFRLVAMKFLRAS
 EEHLKQHYIDLKDRPFFPGLVKYMNSGPVAMVWEGLNVVKTGRVMLGETNPADSKPG
 TIRGDFCIQVGRNIIHGSDSVKSAEKEISLWFKPEELVDYKSCAHDWVYE

cDNA: 1 tgcctggcga gggcgcgccc cggtctggcg tggacactgt tctccggccg
 cgtcgggccc
 61 ggcggggtggg gcgttcctgc gggttggcg gctgggccct ccgggggtgtg
 gccacccgc
 121 gctccgccct gcgcccctcc tccgccgcg gctccgggt gtggtggtcg
 caccagctct
 181 ctgctctccc agcgcagcgc cgccgcccg cccctccagc ttcccggaacc
 atggccaacc
 241 tggagcgcac cttcatcgcc atcaagccgg acggcgtgca gcgcggcctg
 gtgggcgaga
 301 tcatcaagcg cttcgagcag aagggtattcc gcctcgtggc catgaagtcc
 ctccgggccc
 361 ctgaagaaca cctgaagcag cactacattg acctgaaaga ccgaccattc
 ttccctgggc
 421 tgggtgaagta catgaactca gggccggttg tggccatggt ctgggagggg
 ctgaacgtgg
 481 tgaagacagg ccgagtgatg cttggggaga ccaatccagc agattcaaag
 ccaggcacca
 541 ttcgtgggga cttctgcatt cagggttgga ggaacatcat tcatggcagt
 gattcagtaa
 601 aaagtgtctga aaaagaaatc agcctatggt ttaagcctga agaactggtt
 gactacaagt
 661 cttgtgctca tgactgggtc tatgaataag aggtggacac aacagcagtc
 tccttcagca

721 cggcgtggtg tgtccctgga cacagctctt cattccattg acttagagggc
aacaggattg
781 atcattcttt tatagagcat atttgccaat aaagcttttg gaagccggaa
aaaaaaaaa
841 aaaaaa

//

23. PGK1: PGK1 phosphoglycerate kinase 1 [Homo sapiens]
LOCUS NM_000291
AA/translation="MSLSNKLTLDKLDVKGRVVMRVDFNVPMKNNQITNNQRIKAAV
PSIKFCLDNGAKSVVLMShLGRPDGVMPDKYSLEPVAVELKSLLGKDVLFKDCVGP
EVEKACANPAAGSVILLENLRFHVEEEGKGKDASGNKVKAEPAKIEAFRASLSKLGDV
YVNDAFGTAHRAHSSMVGVNLPQKAGGFLMKKELNYFAKALESPPERPFLAILGGAKVA
DKIQLINNMLDKVNEMIIGGGMAFTFLKVLNNMEIGTSLFDEEGAKIVKDLMSKAEKN
GVKITLPVDFVTADKFDENAKTGQATVASGIPAGWMGLDCGPESKKYAEAVTRAKQI
VWNGPVGVFEWEAFARGTKALMDEVVKATSRGCITIIGGGDTATCCAKWNTEDKVSHV
STGGGASLELLEGGKVLPGVDALSNI

cDNA: 1 gagagcagcg gccgggaagg ggcggtgcgg gaggcgggggt gtggggcggt
agtgtgggcc
61 ctgttcctgc ccgcgcggtg ttccgcattc tgcaagcctc cggagcgcac
gtcggcagtc
121 ggctccctcg ttgaccgaat caccgacctc tctccccagc tgtattttcca
aaatgtcgct
181 ttctaacaag ctgacgctgg acaagctgga cgttaaaggg aagcgggtcg
ttatgagagt
241 cgacttcaat gttcctatga agaacaacca gataacaaac aaccagagga
ttaaggctgc
301 tgtcccaagc atcaaattct gcttggacaa tggagccaag tccgtagtcc
ttatgagcca
361 cctaggccgg cctgatggtg tgcccatgcc tgacaagtac tccttagagc
cagttgctgt
421 agaactcaaa tctctgctgg gcaaggatgt tctgttcttg aaggactgtg
taggcccaga
481 agtggagaaa gcctgtgcca acccagctgc tgggtctgtc atcctgctgg
agaacctccg
541 ctttcatgtg gaggaagaag ggaagggaaa agatgcttct gggaacaagg
ttaaagccga
601 gccagccaaa atagaagctt tccgagcttc actttccaag ctaggggatg
tctatgtcaa
661 tgatgctttt ggcactgctc acagagccca cagctccatg gtaggagtca
atctgccaca
721 gaaggctggt gggtttttga tgaagaagga gctgaactac tttgcaaagg
ccttggagag
781 ccagagcgca cccttctgg ccctcctggg cggagctaaa gttgcagaca
agatccagct
841 catcaataat atgctggaca aagtcaatga gatgattatt ggtggtggaa
tggcttttac
901 cttccttaag gtgctcaaca acatggagat tggcacttct ctgtttgatg
aagagggagc
961 caagattgtc aaagacctaa tgtccaaagc tgagaagaat ggtgtgaaga
ttaccttgcc
1021 tgttgacttt gtcactgctg acaagtttga tgagaatgcc aagactggcc
aagccactgt
1081 ggcttctggtg atacctgctg gctggatggg cttggactgt ggtcctgaaa
gcagcaagaa
1141 gtatgctgag gctgtcactc gggctaagca gattgtgtgg aatggtcctg
tgggggtatt
1201 tgaatgggaa gcttttgccc ggggaaccaa agctctcatg gatgaggtgg
tgaaagccac
1261 ttctaggggc tgcataacca tcataggtgg tggagacact gccacttgct

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gtgccaaatg
  1321 gaacacggag gataaagtca gccatgtgag cactgggggt ggtgccagtt
tggagctcct
  1381 ggaaggtaaa gtccttcctg ggggtggatgc tctcagcaat atttagtact
ttcctgcctt
  1441 ttagttcctg tgcacagccc ctaagtcaac ttagcatttt ctgcatctcc
acttggcatt
  1501 agctaaaacc ttccatgtca agattcagct agtggccaag agatgcagtg
ccaggaaccc
  1561 ttaaacagtt gcacagcatc tcagctcatc ttcactgcac cctgggatttg
catacattct
  1621 tcaagatccc atttgaattt tttagtgtact aaaccattgt gcattctaga
gtgcatatat
  1681 ttatatatttg cctgttaaaa agaaagtgtg cagtgttagc ttagttctct
tttgatgtag
  1741 gttattatga ttagctttgt cactgtttca ctactcagca tggaaacaag
atgaaattcc
  1801 atttgtaggt agtgagacaa aattgatgat ccattaagta aacaataaaa
gtgtccattg
  1861 aaaccgtgat tttttttttt ttcctgtcat actttgttag gaaggggtgag
aatagaatct
  1921 tgaggaacgg atcagatgtc tatattgtctg aatgcaagaa gtggggcagc
agcagtggag
  1981 agatgggaca attagataaa tgtccattct ttatcaaggg cctactttat
ggcagacatt
  2041 gtgctagtgc ttttattcta acttttattt ttatcagtta cacatgatca
taatttaaaa
  2101 agtcaaggct tataacaaaa aagccccagc ccatttctcc cattcaagat
tcccactccc
  2161 cagaggtgac cactttcaac tcttgagttt ttcaggtata tacctccatg
tttctaagta
  2221 atatgcttat attgttcaact tctttttttt ttatttttta aagaaatcta
tttcatacca
  2281 tggaggaagg ctctgttcca catatatttc cacttcttca ttctctcggt
atagttttgt
  2341 cacaattata gattagatca aaagtctaca taactaatac agctgagcta
tgtagtatgc
  2401 tatgattaa tttacttatg taaaaaaaaa aaaaaaaaaa

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24. PGK2: PGK2 phosphoglycerate kinase 2 [ Homo sapiens ]
LOCUS NM_138733
AA/translation="MSLSKKLTLDKLDVRGKRVIMRVDFNVPMMKNQITNNQRIKASI
PSIKYCLDNGAKAVVLSHLGRPDGVPMPDKYSLAPVAVELKSLLGKDVFLKDCVGA
EVEKACANPAPGSVILLENLRFHVEEGKGQDPSGKKIKAEPDKIEAFRASLSKLGDV
YVNDAFGTAHRAHSSMVGVNLPKASGFLMKKELDYFAKALENPVRPFLAILGGAKVA
DKIQLIKNMLDKVNEMIIGGGMAYTFLKVLNNMEIGASLFDEEGAKIVKDIMAKAQKN
GVRITFPVDFVTGDKFDENAQVGKATVASGISPGWMGLDCGPESNKNHAQVVAQARLI
VWNGPLGVFEWDAFAKGTKALMDEIVKATSKGCITVIGGGDTATCCAKWNTEDKVSHV
STGGGASLELLEGGKILPGVEALSNM

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cDNA: 1 aacagtggcc gttgtgctgg agacagtgtg gagaagaaag gggcgggaca
agggcaaagg
  61 cgttagaagt caccaccgac ccagcccctc aacagcaagt tggttcttca
gcattaagat
  121 ccaggtgtca gcctatgtct ttatattgtc aagatgtctc tttctaagaa
gttgacttta
  181 gacaaaactgg atgtagtagg gaagcgagtc atcatgagag tagacttcaa
tggtcccatg
  241 aagaagaacc agattacaaa caaccagagg atcaaggctt ccatccaag
catcaagtac

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301 tgccctggaca atggagccaa ggcagtagtt cttatgagtc atctaggtcg
gcctgatggt
361 gttcccatgc ctgacaaata ttccttagca cctgttgctg ttgagctcaa
atccttgctg
421 ggcaaggatg ttctgttctt gaaggactgt gtaggcgcag aagtggagaa
agcctgtgcc
481 aaccagctc ctggttcagt catcctgctg gagaacctgc gctttcatgt
ggaggaagaa
541 gggaagggcc aagatccctc tggaaagaag attaaagctg agccagataa
aatagaagcc
601 ttccgagcat cactttccaa gctaggggac gtctatgtca atgatgcttt
tggcactgca
661 caccgcgctc atagtcccat ggtgggagtg aatctgcccc ataaagcatc
cggattcttg
721 atgaagaagg aactagatta ctttgctaaa gccttggaag acccagttag
accctttctg
781 gctatacttg gtggagccaa agtggcagac aagatccaac ttatcaaaaa
tatgctggac
841 aaagtcaatg agatgattat tgggtgtgga atggcttata ctttccttaa
ggtactcaac
901 aacatggaga ttggtgcttc cctgtttgat gaagagggag ccaagatcgt
taaagatata
961 atggccaaag cacaaaagaa tgggtgaagg attacttttc ctgttgatgt
tggtactggg
1021 gacaagtttg acgagaacgc tcagggttga aaagccactg tagcatctgg
catatctcct
1081 ggctggatgg gtttggactg tggctcctgag agcaacaaga atcatgctca
agttgtggct
1141 caagcaaggc taattgtttg gaatgggccg ttaggagtat ttgaatggga
tgcccttgct
1201 aagggaacca aagccctcat ggatgaaatt gtgaaagcca cttccaaggg
ctgcatact
1261 gttatagggg gtggagacac tgctacttgc tgtgccaaat ggaacactga
agataaagtc
1321 agccatgtca gcaactggagg cggtgccagt ctagagcttc tggaaggtaa
aatccttcct
1381 ggagtagagg ccctcagcaa catgtagtta atatagtgtt acttccttct
gtttctgtc
1441 catggccctt aagtcagctt aatgctttta catctcgatg tgacttttgt
taaaatctac
1501 tcttagatca agacctatgt aatggacaag cagcaggcca tcaggaactc
ttaatatcag
1561 cacagcaatt cattttagtt tggtcacgca tttgctgtt caagttctca
tttgaacttc
1621 accattgtgc tatctagggg ggacatatc ttaagttgcc tattaagaa
agttagctga
1681 agaaactgaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa a

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25. RAB7A: RAB7A RAB7A, member RAS oncogene family [Homo sapiens]

LOCUS NM_004637

AA/translation="MTSRKKVLLKVIILGDSGVGKTSMLNQYVNKKFSNQYKATIGAD
FLTKEVMVDDRLVTMQIWDTAGQERFQSLGVAFYRGADCCVLVFDVTAPNTFKTLD
SWRDEFLIQASPRDPENFFVVLGNKIDLENRQVATKRAQAWCYSKNNIPYFETSAKEAI
NVEQAFQTIARNALKQETEVELYNEFPEPIKLDKNDRAKASAESCSC

cDNA: 1 acttccgctc ggggcggcgg cgggtggcggg agtgggagcg ggccctggagt
cttgccata
61 aagcctgagg cggcggcagc ggcggagttg gcggtcttga gagctcggga
gagttccctg

121 gaaccagaac ttggaccttc tcgcttctgt cctccgttta gtctcctcct
 cggcgggagc
 181 cctcgcgacg cgcccggccc ggagccccc ggcgagcggc cgcgtttgaa
 ggatgacctc
 241 taggaagaaa gtgttgctga aggttatcat cctgggagat tctggagtcg
 ggaagacatc
 301 actcatgaac cagtatgtga ataagaaatt cagcaatcag taaaaagcca
 caataggagc
 361 tgactttctg accaaggagg tgatggtgga tgacaggcta gtcacaatgc
 agatatggga
 421 cacagcagga caggaacggt tccagtctct cgggtgtggc ttctacagag
 gtgcagactg
 481 ctgcgttctg gtatttgatg tgactgcccc caacacattc aaaaccctag
 atagctggag
 541 agatgagttt ctcatccagg ccagtcctcg agatcctgaa aacttcccat
 ttgttgtgtt
 601 gggaaacaag attgacctcg aaaacagaca agtggccaca aagcgggcac
 aggctggtg
 661 ctacagcaaa aacaacattc cctactttga gaccagtgcc aaggaggcca
 tcaacgtgga
 721 gcaggcgctc cagacgattg cacggaatgc acttaagcag gaaacggagg
 tggagctgta
 781 caacgaattt cctgaacctt tcaaactgga caagaatgac cgggccaaagg
 cctcggcaga
 841 aagctgcagt tgctgagggg gcagtgagag ttgagcacag agtccttcac
 aaaccaagaa
 901 cacacgtagg ccttcaaac aattcccctc tcctcttcca aaaaaacat
 acattgatct
 961 ctacatcca gctgcaaaaa gaaaaccca tcaaacacag ttacaccca
 catatctctc
 1021 acacacacac acacacgcac acacacacac acagatctga cgtaatcaaa
 ctccagccct
 1081 tgcccgtgat ggctccttgg ggtctgcctg cccaccaca tgagcccgcg
 agtatggcag
 1141 caggacaagc cagcgggtgga agtcattctg atatggagtt ggcattggaa
 gcttattctt
 1201 tttgttcact ggagagagag agaactgttt acagttaatc tgtgtcta
 tatctgattt
 1261 tttttattgg tcttgtggtc tttttacccc ccttttcccc tccctccttg
 aaggctaccc
 1321 cttgggaagg ctggtgcccc atgccccatt acaggctcac acccagtctg
 atcaggctga
 1381 gttttgtatg tatctatctg ttaatgcttg ttacttttaa ctaatcagat
 ctttttacag
 1441 tatccattta ttatgtaatg cttcttagaa aagaatctta tagtacatgt
 taatatatgc
 1501 aaccaattaa aatgtataaa ttagtgtaag aaattcttgg attatgtggt
 taagtctgt
 1561 aatgcaggcc tgtaagggtg agggttgaac cctgtttgga ttgcagagtg
 ttactcagaa
 1621 ttgggaaatc cagctagcgg cagtattctg tacagtagac acaagaatta
 tgtacgcctt
 1681 ttatcaaaga cttaagagcc aaaaagcttt tcatctctcc agggggaaaa
 ctgtctagtt
 1741 cccttctgtg tctaaatttt ccaaaacggt gatttgcata atacagtggg
 atgtgcaatg
 1801 gataaattgc cgttatttca aaaattaaaa ttctcatttt cttcttttt
 tttccccct
 1861 gctccacact tcaaaactcc cgttagatca gcattctact acaagagtga
 aaggaaaacc
 1921 ctaacagatc tgtcctagtg attttacctt tgttctagaa ggcgctcctt

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tcagggttgt
  1981 ggtattctta ggtagcgga gctttttcct cttttcccca cccatctccc
caatattgcc
  2041 cattattaat taacctcttt ctttggttgg aacctggca gttctgctcc
cttcctagga
  2101 tctgcccctg cattgtagct tgcttaacgg agcacttctc ctttttccaa
aggtctacat
  2161 tctagggtgt gggctgagtt cttctgtaaa gagatgaacg caatgccaat
aaaattgaac
  2221 aagaacaatg ataaaaaaaa
//

26. RPL17: RPL17 ribosomal protein L17 [ Homo sapiens ]
LOCUS NM_000985 (isoform A variant 1)
AA/translation="MVRYSLDPENPTKSCSRGSNLRVHFKNTRETAQAIGMHIRKA
TKYLDVTLQKQCVPFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMILTEKEQIVPKP
EEEVAQKKKISQKKLKKQKLMARE

cDNA: 1 cctgcctcct cagatctcgt ttcttcggct acgaatctcg cgagaagtca
agttctcatg
  61 agttctccca aaatccaccg ctcttcctct ttccctaagc agcctgaggg
ttgactggat
  121 tggtgaggcc cgtgtggcta cttctgtgga agcagtgtctg tagttactgg
aagataaaaag
  181 ggaaagcaag cccttggtgg gggaaagtat ggctgcatg atggcatttc
ttaggacacc
  241 tttggattaa taatgaaaac aactactctc tgagcagctg ttcgaatcat
ctgatattta
  301 tactgaatga gttactgtaa gtacgtattg acagaattac actgtacttt
cctctaggtg
  361 atctgtgaaa atggttcgct attcacttga cccggagaac cccacgaaat
catgcaaatac
  421 aagaggttcc aatcttcgtg ttcactttaa gaacactcgt gaaactgctc
aggccatcaa
  481 gggatatgcat atacgaaaag ccacgaagta tctgaaagat gtcactttac
agaaacagtg
  541 tgtaccattc cgacgttaca atggtggagt tggcaggtgt gcgcaggcca
agcaatgggg
  601 ctggacacaa ggtcgggtggc ccaaaaagag tgctgaattt ttgctgcaca
tgcttaaaaa
  661 cgcagagagt aatgctgaac ttaagggttt agatgtagat tctctggtca
ttgagcatat
  721 ccaagtgaac aaagcaccta agatgcgccg ccggacctac agagctcatg
gtcggattaa
  781 ccatacatg agctctccct gccacattga gatgacctt acggaaaagg
aacagattgt
  841 tcctaaacca gaagaggagg ttgccagaa gaaaaagata tcccagaaga
aactgaagaa
  901 acaaaaactt atggcacggg agtaaatca gcattaaaat aaatgtaatt
aaaaggaaaa
  961 gaaaaaaaaa aaaaaaaaaa aaaaa
//

LOCUS NM_001035006 (isoform a variant 2)
AA/translation="MVRYSLDPENPTKSCSRGSNLRVHFKNTRETAQAIGMHIRKA
TKYLDVTLQKQCVPFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMILTEKEQIVPKP
EEEVAQKKKISQKKLKKQKLMARE

cDNA: 1 cctgcctcct cagatctcgt ttcttcggct acgaatctcg cgagaagtca

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agtttctcatg
  61 agtttctccca aaatccaccg ctcttctctt ttccctaagc agcctgaggt
gatctgtgaa
 121 aatgggttcgc tattcacttg acccgagaa cccacgaaa tcatgcaaat
caagagggttc
 181 caatcttcgt gttcacttta agaactcgc tgaaactgct caggccatca
agggtatgca
 241 tatacgaaaa gccacgaagt atctgaaaga tgtcacttta cagaaacagt
gtgtaccatt
 301 ccgacgttac aatgggtggag ttggcaggtg tgcgcaggcc aagcaatggg
gctggacaca
 361 aggtcgggtg cccaaaaaga gtgctgaatt ttgctgcac atgcttaaaa
acgcagagag
 421 taatgctgaa ctttaagggtt tagatgtaga ttctctggtc attgagcata
tccaagtgaa
 481 caaagcacct aagatgcgcc gccggacct cagagctcat ggtcggatta
acccatacat
 541 gagctctccc tgccacattg agatgatcct tacggaaaag gaacagattg
ttcctaaacc
 601 agaagaggag gttgccaga agaaaaagat atcccagaag aaactgaaga
aacaaaaact
 661 tatggcacgg gagtaaattc agcattaaaa taaatgtaat taaaaggaaa
agaaaaaaa
 721 aaaaaaaaaa aaaaaa
//

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LOCUS NM_001199340 (isoform a variant 3)
AA/translation="MVRYSLDPENPTKSKSRGSNLRVHFKNTRETAQAIKGMHIRKA
TKYLKDVTLQKQCVFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
ELKGLDVDLSLVIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMLTEKEQIVPKP
EEEVAQKKKISQKKLKKQKLMARE

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cDNA:  1 cctgcctcct cagatctcgt ttcttcggct acgaatctcg cgagaagtca
agtttctcatg
  61 agtttctccca aaatccaccg ctcttctctt ttccctaagc agcctgaggg
ttgactggat
 121 tgggtgaggcc cgtgtggcta cttctgtgga agcagtgcgt tagttactgg
aagataaaaag
 181 ggaaagcaag cccttgggtg gggaaagtga tctgtgaaaa tgggtcgccta
ttcacttgac
 241 ccggagaacc ccacgaaatc atgcaaatca agagggtcca atcttcgtgt
tcactttaag
 301 aacactcgtg aaactgctca ggccatcaag ggtatgcata tacgaaaagc
cacgaagtat
 361 ctgaaagatg tcactttaca gaaacagtgt gtaccattcc gacgttacaa
tggtggagtt
 421 ggcagggtgtg cgcaggccaa gcaatggggc tggacacaag gtcggtggcc
caaaaagagt
 481 gctgaatttt tgctgcacat gcttaaaaaac gcagagagta atgctgaact
taagggttta
 541 gatgtagatt ctctggatcat tgagcatatc caagtgaaca aagcacctaa
gatgcgcgcg
 601 cggacctaca gagctcatgg tcggattaac ccatacatga gctctccctg
ccacattgag
 661 atgatcctta cggaaaagga acagattgtt cctaaaccag aagaggaggt
tgcccagaag
 721 aaaaagatat ccgagaagaa actgaagaaa caaaaactta tggcacggga
gtaaattcag
 781 cattaaaata aatgtaatta aaaggaaaag aaaaaaaaaa aaaaaaaaaa aaaa
//

```

LOCUS NM_001199341 (isoform a variant 4)
 AA/translation="MVRYSLDPENPTKSCSRGSNLRVHFKNTRETAQAIGMHIRKA
 TKYLKDVT LQKQCVFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
 ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMLTEKEQIVPKP
 EEEVAQKKKISQKKLKKQKLMARE

cDNA: 1 gcctgaggtg agtggtttctc ctgcgttgct ccgagggccc aatcctcctg
 ccatcgccgc
 61 catcctggct tcggggggcgc cggcctccag gcccccgga ggagaaactcc
 tagggctact
 121 aaatcctcgc tggaggcggt ggcttcttat gcgggaggac gtggcgagg
 gcctgacttt
 181 gggagccggg gtcagtcggc ctctgaggtg atctgtgaaa atggttcgct
 attcattga
 241 cccggagaac cccacgaaat catgcaaatac aagaggttcc aatcttcgtg
 ttcactttta
 301 gaacactcgt gaaactgctc aggccatcaa gggatatgcat atacgaaaag
 ccacgaagta
 361 tctgaaagat gtcactttac agaaacagtg tgtaccattc cgacgttaca
 atggtggagt
 421 tggcaggtgt gcgcaggcca agcaatgggg ctggacacaa ggtcggtggc
 ccaaaaagag
 481 tgctgaattt ttgctgcaca tgcttaaaaa cgcagagagt aatgctgaac
 ttaagggttt
 541 agatgtagat tctctggtca ttgagcatat ccaagtgaac aaagcaccta
 agatgcgcgc
 601 ccggacctac agagctcatg gtcggattaa ccatacatg agctctccct
 gccacattga
 661 gatgatcctt acggaaaagg aacagattgt tcctaaacca gaagaggagg
 ttgcccagaa
 721 gaaaaagata tcccagaaga aactgaagaa acaaaaactt atggcacggg
 agtaaattca
 781 gcattaaaat aaatgtaatt aaaaggaaaa gaaaaaaaaa aaaaaaaaaa aaaaa
 //

LOCUS NM_001199342 (isoform A variant 5)
 AA/translation="MVRYSLDPENPTKSCSRGSNLRVHFKNTRETAQAIGMHIRKA
 TKYLKDVT LQKQCVFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
 ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMLTEKEQIVPKP
 EEEVAQKKKISQKKLKKQKLMARE

cDNA: 1 gcctgaggtg agtggtttctc ctgcgttgct ccgagggccc aatcctcctg
 ccatcgccgc
 61 catcctggct tcggggggcgc cggcctccag gcccccgga ggagaaactcc
 tagggctact
 121 aaatcctcgc tggaggcggt ggcttcttat gcgggaggac gtggcgagg
 gcctgacttt
 181 gggagccggg gtcagtcggc ctctgagggt tgactggatt ggtgaggccc
 gtgtggctac
 241 ttctgtggaa gcagtgtgt agttactgga agataaaagg gaaagcaagc
 ccttggtggg
 301 ggaaagtgat ctgtgaaaat ggttcgctat tcacttgacc cggagaaccc
 cacgaaatca
 361 tgcaaatcaa gaggttccaa tcttcgtgtt cactttaaga aactcgtga
 aactgctcag
 421 gccatcaagg gtatgcatat acgaaaagcc acgaagtatc tgaaagatgt
 cactttacag
 481 aaacagtgtg taccattccg acgttacaat ggtggagttg gcaggtgtgc
 gcaggccaag
 541 caatggggct ggacacaagg tcggtggccc aaaaagagtg ctgaattttt
 gctgcacatg

```

        601 cttaaaaacg cagagagtaa tgctgaactt aagggttttag atgtagattc
tctggtcatt
        661 gagcatatcc aagtgaacaa agcacctaag atgcgcgcgc ggacctacag
agctcatggt
        721 cggattaacc catacatgag ctctccctgc cacattgaga tgatccttac
ggaaaaggaa
        781 cagattgttc ctaaaccaga agaggaggtt gcccagaaga aaaagatatac
ccagaagaaa
        841 ctgaagaaac aaaaacttat ggcacgggag taaattcagc attaaaataa
atgtaattaa
        901 aaggaaaaga aaaaaaaaaa aaaaaaaaaa aaa
//

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```

LOCUS          NM_001199343                      (isoform a variant 6)
AA/translation="MVRYSLDPENPTKCKSRGSLRVHFKNTRETAQAIGMHIRKA
TKYLDVTLQKQCVFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMLTEKEQIVPKP
EEEVAQKKKISQKKLKKQKLMARE

```

```

cDNA:  1 gcctgaggtg agtggtttctc ctgcgttgct ccgagggccc aatcctcctg
ccatcgccgc
        61 catcctggct tcgggggggc cgccctccag gccccggga ggagaactcc
tagggtact
        121 aaatcctcgc tggaggcggt ggtttcttat gcgggaggac gtggcgagg
gcctgacttt
        181 gggagccggg ggttgactgg attggtgagg ccctgtggc tacttctgtg
gaagcagtgc
        241 tgtagttact ggaagataaa agggaaagca agcccttggt gggggaaagt
gatctgtgaa
        301 aatggttcgc tttcacttg acccgagaga cccacgaaa tcatgcaaat
caagagggtc
        361 caatcttcgt gttcacttta agaacactcg tgaaactgct caggccatca
agggtatgca
        421 tatacgaaaa gccacgaagt atctgaaaga tgtcacttta cagaaacagt
gtgtaccatt
        481 ccgacgttac aatggtggag ttggcaggtg tgcgcaggcc aagcaatggg
gctggacaca
        541 aggtcggtag cccaaaaaga gtgctgaatt tttgctgcac atgcttaaaa
acgcagagag
        601 taatgctgaa cttagggtt tagatgtaga ttctctggtc attgagcata
tccaagtgaa
        661 caaagcacct aagatgcgc gccggacct cagagctcat ggtcggatta
accatacat
        721 gagctctccc tgccacattg agatgacct tacggaaaag gaacagattg
ttcctaaacc
        781 agaagaggag gttgccaga agaaaaagat atcccagaag aaactgaaga
aacaaaaact
        841 tatggcacgg gagtaaattc agcattaaaa taaatgtaat taaaaggaaa
agaaaaaaaa
        901 aaaaaaaaaa aaaaaa
//

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```

LOCUS          NM_001199344                      (isoform a variant 7)
AA/translation="MVRYSLDPENPTKCKSRGSLRVHFKNTRETAQAIGMHIRKA
TKYLDVTLQKQCVFRRYNGGVGRCAQAKQWGTQGRWPKKSAEFLHMLKNAESNA
ELKGLDVDSLVIIEHIQVNKAPKMRRRTYRAHGRINPYMSSPCHIEMLTEKEQIVPKP
EEEVAQKKKISQKKLKKQKLMARE

```

```

cDNA:  1 gcctgaggtg agtggtttctc ctgcgttgct ccgagggccc aatcctcctg
ccatcgccgc
        61 catcctggct tcgggggggc cgccctccag gccccggga ggagaactcc

```

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tagggctact
  121 aaatcctcgc tggaggcggt ggcttcttat gcgggaggac gtggcggagg
gcctgacttt
  181 gggagccggg gtgatctgtg aaaatgggtc gctattcact tgacccggag
aaccacga
  241 aatcatgcaa atcaagaggt tccaatcttc gtgttcactt taagaacact
cgtgaaactg
  301 ctcaggccat caagggtatg catatacgaa aagccacgaa gtatctgaaa
gatgtcactt
  361 tacagaaaca gtgtgtacca ttccgacgtt acaatgggtg agttggcagg
tgtgcgcagg
  421 ccaagcaatg gggctggaca caaggtcggt ggcccaaaaa gagtgtgaa
tttttgcgtc
  481 acatgcttaa aaacgcagag agtaatgctg aacttaaggg tttagatgta
gattctctgg
  541 tcattgagca tatccaagtg aacaaagcac ctaagatgcg ccgccggacc
tacagagctc
  601 atggtcggat taaccctaac atgagctctc cctgccacat tgagatgatc
cttacgaaa
  661 aggaacagat tgttcctaaa ccagaagagg aggttgccca gaagaaaaag
atatcccaga
  721 agaaactgaa gaaacaaaaa cttatggcac gggagtaa at tcagcattaa
aataaatgta
  781 attaaaagga aaagaaaaaa aaaaaaaaaa aaaaaaaa

```

//

```

LOCUS      NM_001199345                      (isoform b variant 8)
AA/translation="MHIRKATKYLKDVTLQKQCVFRRYNGGVGRCAQAKQWGTQGR
WPKKSAEFLHMLKNAESNAELKGLDVSIVIEHIQVKNKAPKMRRRTYRAHGRINPYM
SSPCHIEMLTEKEQIVPKPEEEVAQKKKISQKKLKKQKLMARE

```

```

cDNA:  1 cctgcctcct cagatctcgt ttcttcggct acgaatctcg cgagaagtca
agttctcatg
   61 agttctccca aaatccaccg ctcttcctct ttccctaagc agcctgaggt
gatctgtgaa
  121 aatggttcgc tattcacttg acccgagaaa cccacgaaa taacactcgt
gaaactgctc
  181 aggccatcaa gggatatgcat atacgaaaag ccacgaagta tctgaaagat
gtcactttac
  241 agaaacagtg tgtaccattc cgacgttaca atgggtggagt tggcaggtgt
gcgcaggcca
  301 agcaatgggg ctggacacaa ggtcgggtggc ccaaaaagag tgctgaattt
ttgctgcaca
  361 tgcttaaaaa cgcagagagt aatgctgaac ttaagggttt agatgtagat
tctctggtca
  421 ttgagcatat ccaagtgaac aaagcaccta agatgcgccg ccggacctac
agagctcatg
  481 gtcggattaa ccatacatg agctctccct gccacattga gatgacott
acggaaaagg
  541 aacagattgt tcctaaacca gaagaggagg ttgccagaa gaaaaagata
tcccagaaga
  601 aactgaagaa acaaaaactt atggcacggg agtaaatcca gcattaaaat
aatgtaatt
  661 aaaaggaaaa gaaaaaaaaa aaaaaaaaaa aaaaaa

```

//

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27.  RPL28: RPL28 ribosomal protein L28 [ Homo sapiens ]
LOCUS      NM_000991                      (isoform 2)
AA/translation="MSAHLQWMVVRNCSSFLIKRNKQTYSTEPNNLKARNSEFRYNGLI
HRKTVGVEPAADGKGVVVVVKRRSGQRKPATSYVRTTINKNARATLSSIRHMIRKNKY
RPDLRMAAIRRASAILRSQKPVVMVKRTRPTKSS

```

cDNA: 1 ctctttccgt ctcaggctgc cgctgcgaag ggagccgccg ccatgtctgc
 gcatctgcaa
 61 tggatggtcg tgcggaactg ctccagtttc ctgatcaaga ggaataagca
 gacctacagc
 121 actgagccca ataacttgaa ggcccgcaat tccttccgct acaacggact
 gattcacgc
 181 aagactgtgg gcgtggagcc ggagccgac ggcaaagggt tcgtggtggt
 cattaagcgg
 241 agatccggcc agcgggaagcc tgccacctcc tatgtgcgga ccaccatcaa
 caagaatgct
 301 cgcgccacgc tcagcagcat cagacacatg atccgcaaga acaagtaccg
 ccccgacctg
 361 cgcattggcag ccatccgcag ggccagcgcc atcctgcgca gccagaagcc
 tgtgatggtg
 421 aagaggaagc ggaccgcgcc caccaagagc tcctgagccc cctgccccca
 gagcaataaa
 481 gtcagctggc tttctcacct gcctcgactg ggctccctt tttgaaacgc
 tctggggagc
 541 tctggccctg tgtgttgtca ttcaggccat gtcataaaaa ctctgcatgt
 caccttgtec
 601 atctggaggt gatgtcaatg gctggccatg caggaggggt ggggtagctg
 ccttgteect
 661 ggtgagggca agggctactg tcttcacaga aaaagtttgc tgacttgtga
 ttgagacctg
 721 ctgtcccatt gtgagggtggc ctgaagaatc ccagctgggg cagtggcttc
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 781 aagaaaggcc ttttctagcc cagaagggtg caggctgagg gctgggccct
 gggccctggt
 841 gctgtagcac gggttgggga cttgggggtg tcccagacc tgggggacga
 cagacatcac
 901 gggaggaaga tgagatgact tttgcatcca gggagtgggt gcagccacat
 ttggagggga
 961 tgggctttac ttgatgcaac ctcatctctg agatgggcaa cttggtgggt
 ggtggcttat
 1021 aactgtaagg gagatggcag cccagggta cagccagcag gcattgagca
 gccttagcat
 1081 tgtcccccta ctcccgctct ccaggtgtcc ccataccctcc cctgtctctt
 tgagctgggt
 1141 cttgtcactt aggtctcact tcagtggccg ctctggggc acctgtcac
 ccaagctttc
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 tattacagct
 1261 tgtgaggcca ggagtttgag accatcctag gcaacataat gagacaccgt
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 1321 aaattagctg ggtgtggtgg tgcaccgcct gtggtcccag ctctcagag
 gttgagtaga
 1381 ggctgaggtg agcggagcac ttgagccaag agtatgagga tgcagtgagc
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 cactgccagg
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 acccgattca
 1621 aagaaggact ctgctccctg tctgagacca cccccggctc tgactgagag
 taaggggact
 1681 gtcagggcct cgacttgcca ttggttgggg tcgtacgggg ctgggagccc
 tgcgttttga
 1741 ggcagaccac tgcccttccg acctcagtc tgtctgctcc agtcttgccc
 agctcgaagg

1801 agagcagatc tgaccaattg ccagcccctg tctgctgtga attaccatct
 cctttgtcct
 1861 tcccttagtt gggctctatta gctcagattg agaggtgttg ccttaaaact
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 ctggagactt
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 cagagatggg
 2521 gtttcacat tttgccagg ctggtttgga actcctgact tcaaattacc
 cacctgcctc
 2581 agcctccaa agtgetggca ttacaggcgc tcgaggcttt ctgatgtggc
 tgctgtgct
 2641 cagaaggcct tgtccttaac cacctccttg cctgccctgg aggcctgtgc
 ctctaggccc
 2701 caccctctgt ggagtcctgc tggctttctc catccctatc tgaatcctcc
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 cctgcgggtg
 2821 gccagcctgt ctgtgtggct gggctgggga ggccacgtct ggtatctgaa
 tgctatcggg
 2881 gggttgggtg ggaggaacca ggagagggtt ggagggaggg agatggtctc
 agccccacag
 2941 agtttgagct cctcagtgtg ctgagcaaac gtggagacac catttcctc
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 acacaaatca
 3061 tgtctgttgg cctggaaatt ggaaaaccag ttaaaccaaa aacatgatat
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 3121 ggcaggetca ccatagtaaa aatgetgaaa gccaaagaca aaattgggag
 aacaaaagaa
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 catcagaaac
 3241 caggcccagc cagtggggac acatccagag tgetgaaaga acctccccca
 ggtcactcta
 3301 tccccagag tgatgcccg cagcattccc agctcagggc taatggttca
 cggaagccag
 3361 gaatcaaact gcctgggttc cagtcccagc tctgccagtt atgccagct
 gtggggactt
 3421 gggcagctcg tttagtagca ccgtgcctca gtttccata tgtaaaaggc
 cattttgagt
 3481 gcctttcaca gccctgcata aggcagggtg ctcagtgttc actgetgtct
 ctccagctct
 3541 tagtccagta gctgcatggg gactgagcgt agggcgacc ctggaaggct
 gccaaagcca
 3601 aagttgtgca gagcgtggg gactccagac tccccacagc agcagagact

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cgggactgag
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atctgtaaca
 3781 tgcgtgtcga tagaccctac tactcagggt tgatgagaag attaaatgtg
caaaacctgc
 3841 ttgactgtgc ccacaaatcc tgattgtagg aataaattaa tgacttttta
taaataatattt
 3901 gatcagatgg actcatgata acagatgtct tcacatgcct atgactaatt
tgtacacaaa
 3961 ctaatgctcg tgtttcccaa gcacctggaa gacatgccag atccatgtgc
agtaatgcct
 4021 ggtggctcca ggtctgcccc gccgtcctgt ggggctgtga gctttcccag
cctcctgccc
 4081 gtgtttgtga atatcattct gtcctcagct gcatttccag cccaggetgt
ttggcgctgc
 4141 ccaggaatgg tatcaattcc cctgtttctc ttgtagccag ttactagaat
aaaatcatct
 4201 actttaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa
//

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LOCUS          NM_001136134                (isoform 1)
AA/translation="MSAHLQWMVVRNCSSFLIKRNKQTYSTEPNNLKARNsFRYNGLI
HRKTVGVEPAADGKGVVVVIKRRSGQRKPATS YVRTTINKNARATLSSIRHMI RKNKY
RPDLRMVSWGLGIRLGETGQCCGEGPPTTGCNMGWRGMDSCFQPTPHTQHWPRGRLVE
CMG

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```

cDNA:  1 ctctttccgt ctcaggctgc cgctgcgaag ggagccgccg ccatgtctgc
gcacctgcaa
   61 tggatggtcg tgcggaactg ctccagtttc ctgatcaaga ggaataagca
gacctacagc
  121 actgagccca ataacttgaa ggcccgcaat tccttccgct acaacggact
gattcacgcg
  181 aagactgtgg gcgtggagcc ggcagccgac ggcaaagggt tcgtgggtggt
cattaagcgg
  241 agatccggcc agcggaagcc tgccacctcc tatgtgcgga ccaccatcaa
caagaatgct
  301 cgcgccacgc tcagcagcat cagacacatg atccgcaaga acaagtaccg
ccccgacctg
  361 cgcattggtga gctgggggttt ggggatcagg cttggggaga ctggccagtg
ctgtggggaa
  421 gggcctccca ctactggttg caatatgggc tggagaggga tggattcttg
ctttcagcct
  481 actccccaca cccagcattg gcctaggggg cggtttgtgg agtgtatggg
ctgagccttg
  541 ctctgtctcc ccgccccag gcagccatcc gcagggccag cgccatcctg
cgcagccaga
  601 agcctgtgat ggtgaagagg aagcggaccc gccccaccaa gagtcctga
gccccctgcc
  661 cccagagcaa taaagtcagc tggttttctc acctgcctcg actgggcctc
cctttttgaa
  721 acgctctggg gagctctggc cctgtgtgtt gtcattcagg ccatgtcatc
aaaactctgc
  781 atgtcacctt gtccatctgg aggtgatgtc aatggctggc catgcaggag
gggtggggta
  841 gctgccttgt ccctgggtgag ggcaagggtc actgtcttca cagaaaaagt
ttgtgactt
  901 gtgattgaga cctactgtcc cattgtgagg tggcctgaag aatcccagct
ggggcagtg
  961 cttccattca gaagaagaaa ggctttttct agcccagaag ggtgcaggct

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gagggctggg
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 ggggtgcagcc
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 ggggctggga
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 ctccagtcct
 1981 gccagctcg aaggagagca gatctgacca ctgtccagcc cctgtctgct
 gtgaattacc
 2041 atttcctttg tcttccctt agttgggtct attagctcag attgagaggt
 gttgccttaa
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 gagccccac
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 gacttcaaat
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2821 tggctgctgc tgtcagaag gccttgtcct taaccacctc cttgcctgcc
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 3361 ggagaacaaa agaaaagcgt cttgtcacat acagaaggtc cctgataaag
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 aagaacctcc
 3481 cccaggtcat cctatcccca agagtgatgc ccggcagcat tcccagctca
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LOCUS NM_001136135 (isoform 3)
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 RPDLRMDMLASTGSGLCSSVAVQPWASSSTSLCLRTLICNMRVDRPYSGLMRRLNVQ
 NLLDCAHKS

cDNA: 1 ctctttccgt ctcaggtcgc cgctgcgaag ggagccgccg ccatgtctgc
gcattctgcaa
61 tggatggtcg tgcggaactg ctccagtttc ctgatcaaga ggaataagca
gacctacagc
121 actgagccca ataacttgaa ggcccgaat tccttccgct acaacggact
gattcacgc
181 aagactgtgg gcgtggagcc ggccagccgac ggcaaagggtg tcgtggtggt
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LOCUS NM_001136136 (isoform 4)
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61 tggatggtcg tgcggaactg ctccagtttc ctgatcaaga ggaataagca
gacctacagc
121 actgagccca ataacttgaa ggcccgaat tccttccgct acaacggact
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481 cttcctcggg ggttgttgag agttaaggca cggggttgat gttttcagat
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541 aagcaagtca gggtaggggat ggatggtttc atcccacagg tgggaagatt gagg
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LOCUS NM_001136137 (isoform 5)
AA/translation="MSAHLQWMVVRNCSSFLIKRNKQTYSTEPNNLKARNSEFRYNGLI

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      61 tggatggtcg tgcggaactg ctccagtttc ctgatcaaga ggaataagca
gacctacagc
     121 actgagccca ataacttgaa ggcccgcaat tccttccgct acaacggact
gattcacccg
     181 aagactgtgg gcgtggagcc ggagccgac ggcaaagggtg tcgtggtggt
cattaagcgg
     241 agatccgagt gagtttttct caggtccttg attggaactg ctcagagacc
aagggtcctt
     301 ttactcagtg gcagcaacaa acgcagtctg ttggctagtg atcctcctgt
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     361 cgtagtccag ggagcagcca attgcttggc acttggggac cccgttctgg
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     421 aagctttcac ctcttggtt gccgaatata tgggtggccc ttctagact
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     481 cctgagttag gctgggcctc tcagccaagc tgatgttgaa ccactgctgt
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     541 ctggggttcc tgggaagctg ttcataacca ttgccaggag cgtgggtctt
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     601 ggatcagatc ctaactgaag cggcagcttt ctggcatgag aaaggagtgt
tttcatggtg
     661 gacagaattg ggctatgagt gt
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28.  RPS5: RPS5 ribosomal protein S5 [ Homo sapiens ]
LOCUS      NM_001009
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LTGENPLQVLVNAI INSGPREDSTRIGRAGTVRRQAVDVSPLRRVNQAIWLLCTGARE
AAFRNIKTIAECLADELINAAGSSNSYAIKKKDELERVAKSNR

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cDNA:      1 ctcttctgt ctgtaccagg gcggcgctg gtctacgccg agtgacagag
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      61 tgtgttctca ggatgaccga gtgggagaca gcagcaccag cgggtggcaga
gacccagac
     121 atcaagctct ttgggaagtg gagcaccgat gatgtgcaga tcaatgacat
ttccctgcag
     181 gattacattg cagtgaagga gaagtatgcc aagtacctgc ctcacagtgc
agggcggtat
     241 gccgccaac gcttcogcaa agctcagtgt cccattgtgg agcgctcac
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     301 atgatgcacg gccgcaacaa cggcaagaag ctcatgactg tgcgcacgtg
caagcatgcc
     361 ttcgagatca tacacctgct cacaggcgag aacctctgc aggtcctggt
gaacgccatc
     421 atcaacagtg gtccccggga ggactccaca cgcattgggc gcgcggggac
tgtgagacga
     481 caggctgtgg atgtgtcccc cctgcgccgt gtgaaccagg ccatctggct
gctgtgcaca
     541 ggcgtcgtg aggtgcctt ccggaacatt aagaccattg ctgagtgcct
ggcagatgag
     601 ctcatcaatg ctgccaaagg ctctcgaaac tcctatgcca ttaagaagaa
ggacgagctg
     661 gagcgtgtgg ccaagtccaa ccgctgattt tcccagctgc tgcccaataa
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29. RPS6: RPS6 ribosomal protein S6 [Homo sapiens]
 LOCUS NM_001010
 AA/translation="MKLNISFPATGCQKLEVDDERKLRITFYEKRMATEVAADALGEE
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 DANLSVLNLVIVKKGEKDIPGLTDTTVPRRLGPKRASRIRKLFNLSKEDDVRQYVVRK
 PLNKEGKKPRTKAPKIQRLVTPRVLQHKRRRIALKKQRTKKNKKEAAEYAKLLAKRMK
 EAKEKRQEQIAKRRRLSSLRASTSKSESSQK

cDNA: 1 cctcttttcc gtggcgccctc ggaggcggtc agctgcttca agatgaagct
 gaacatctcc
 61 ttcccagcca ctggctgcc aaaactcatt gaagtggacg atgaacgcaa
 acttcgtact
 121 ttctatgaga agcgtatggc cacagaagtt gctgctgacg ctctgggtga
 agaatggaag
 181 ggttatgtgg tccgaatcag tgggtgggaac gacaaacaag gtttcccat
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 241 gtcttgacct atggccgtgt ccgcctgcta ctgagtaagg ggcattcctg
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 301 aggagaactg gagaaagaaa gagaaaatca gttcgtgggt gcattgtgga
 tgcaaactctg
 361 agcgtttctca acttggttat tgtaaaaaa ggagagaagg atattcctgg
 actgactgat
 421 actacagtgc ctgcgcgcct gggcccaaaa agagctagca gaatccgcaa
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 gcgccaggaa
 721 caaattgcga agagacgcag actttcctct ctgcgagctt ctacttctaa
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30. SLTM: SLTM SAFB-like, transcription modulator [Homo sapiens]
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 KDYEMNANHKGKEDCVKGDPEKEARESSKKAESGDKEKDTLKKGPSSTGASGQAK
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 LSAKVVTNARSPGAKCYGIVTMSSSTEVSRCIAHLHRTHELHGQLISVEKVKGDPSKKE
 MKKENDEKSSSRSSGDKNTSDRSSKTQASVKKEKRSEKSEKESKDTKKIEGKDE
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 EKERASLDKKRDKYRKEILPFKMKEQRLREHLVRFERLRRAMELRRRREIAERER
 RERERIRIIREREERERLQREERERLEIERQKLERERMERERLERERIRIEQERRKEAE
 RIAREREELRRQQQLRYEQEKRNSLKRPRDVRHRRDDPYWSENKKLSLDTDARFGHG
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 PNPSRPTSWKSEGSMTDKRETRVERPERSGREVSGHSGVRGAPPNGRSSASGYGSREG
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cDNA: 1 gcggccgccc aggcctgggt ggaagttggc gctgctgccg ccgcctgca
 gccactcgc

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        61  tgccctcgga  gcgcgtgct  cttctaagat  ggctgccgct  accggtgcgg
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3721 tgttgagaac ctttttaatt gtaaaatgag aaccgatttt cagttagtg
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 SNTKAADLKNLFGKYGKVLAKVVTNARSPGAKCYGIVTMSSSTEVSRCIAHLHRT
 ELHGQLISVEKVGDPSPKKEMKKENDEKSSSRSSGDKKNTSDRSSKTQASVKKEEKS
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31. TMED4: TMED4 transmembrane emp24 protein transport domain
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32. TNRCBA: ADRBK1 adrenergic, beta, receptor kinase 1 [Homo
sapiens]

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33. TUBB: TUBB tubulin, beta class I [ Homo sapiens ]
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2461 gccaaaaata aatgggaatt gaaaaaaaaa aaaaaaaaaa aaaaaaaaaa

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34. UBE21: UBE2I ubiquitin-conjugating enzyme E2I [ Homo
sapiens ]
LOCUS NM_003345 (variant 1)
AA/translation="MSGIALSRLAQERKAWRKDHPFGFVAVPTKNPDGTMNLMNWECA
IPGKKGTPWEGGLFKLRMLFKDDYPSSPPKCKFEPPLFHPNVYPSGTVCLSILEEDKD
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cDNA: 1 gccgcgcgca gggctcctcg agctgctctg gctgcgcgcg gagcgggctc
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LOCUS NM_194259 (variant 2)
 AA/translation="MSGIALSRLAQERKAWRKDHPFGFVAVPTKNPDGTMNLMNWECA
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LOCUS

NM_194260

(variant 3)

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     241 cctcatgaac tgggagtgcg ccattccagg aaagaaaggg actccgtggg
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     301 gtttaacta cggatgcttt tcaaagatga ttatccatct tcgccaccaa
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