

Supplementary Appendix

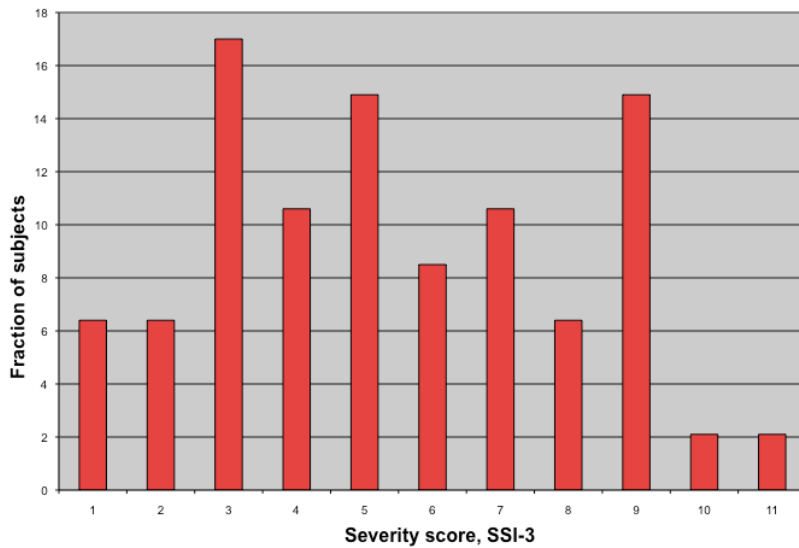
This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Kang C, Riazuddin S, Mundorff J, et al. Mutations in the lysosomal enzyme–targeting pathway and persistent stuttering. *N Engl J Med* 2010;362:677-85. DOI: 10.1056/NEJMoa0902630.

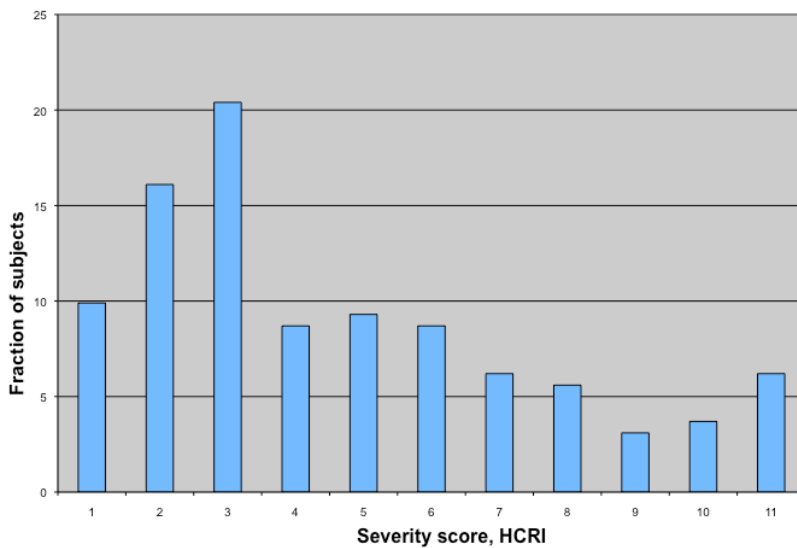
Supplementary Materials

Research subject ancestries were determined by self-report using the following categories: White/Caucasian, Black/African American, Hispanic, Asian, Native American, and Other/Unknown.

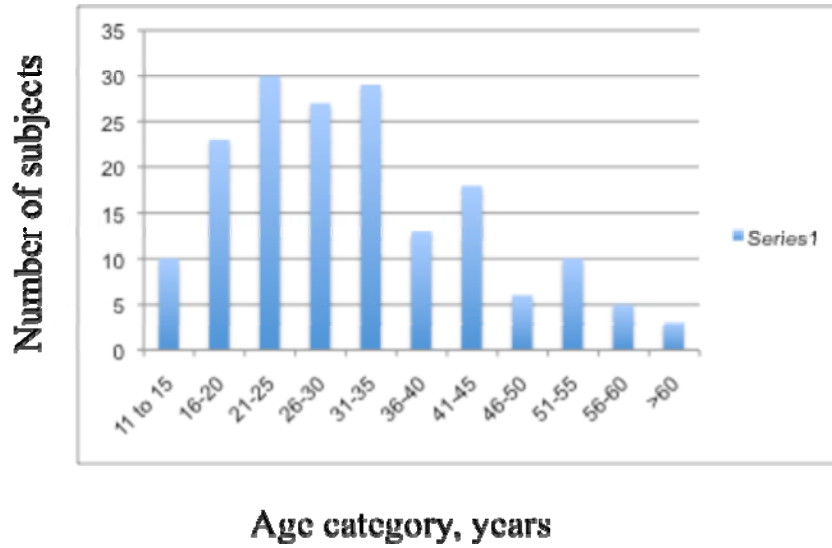
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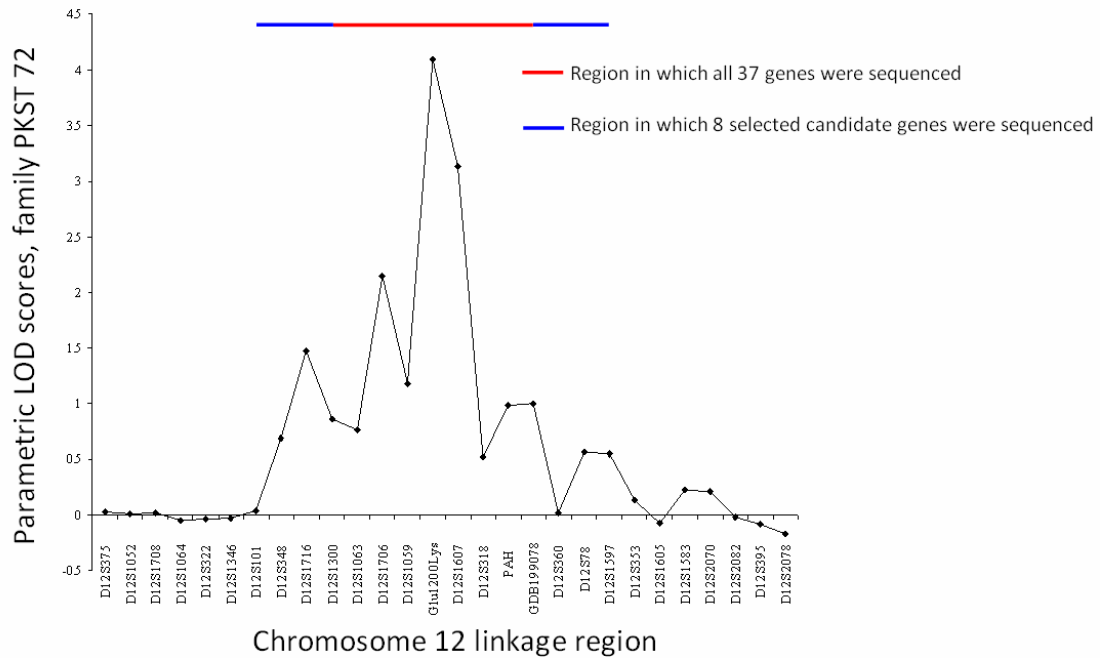
b



Supplementary Figure 1. Distributions of severity scores for the SSI-3 and HCRI reading passage dysfluency score. a) SSI-3 severity scores of the Pakistani subjects (N=47), **b)** severity scores from the HCRI reading passage used for North American affected individuals (N=181). The scores were divided into 10 percentile groups (categories 1-10), plus one more (category 11) to encompass the long tail with small numbers of very severe scores.



Supplementary Figure 2. Age distribution of unrelated stuttering subjects.



Supplementary Figure 3. Two-point linkage scores for markers within the chromosome 12 candidate locus for family PKST72. LOD scores for each marker were obtained using MLINK with penetrance values for the disease locus set at 0.01/0.40/0.80. Of the markers used in the linkage study, D12S1607 showed highest LOD score of 3.13. The Glu200Lys variant of *GNPTAB* (which gave a LOD score of 4.09 under identical analysis parameters) was not included in the initial linkage survey across this region in this family, but is included in this figure to allow convenient comparison.

TTTTTCACCAGGACCGCCTGGCTAGCCCTCACCCCTGGCGCTGGCCTTCCT 1400
CCTGCTGATCAGCACTGCAGCAAACCTGTCCTTGCTCCTGTCCAGAGCAG 1450
AGAGGAACCGGGCGCCTGCATGGGGACTATGCATAACCACCCGCTGCAGGAG 1500
ATGAACGGGGAGCCTCTGGCCGCAGAGAAGGAGCAGCCAGGGGGCGCCCA 1550
CAACCCCTTCAAGGACTGAagcctcaagctgcccggggtggcacgtcgcg 1600
aaagcttgtttccccacgggtctggcttctgcaggggaaatctcaaggcca 1650
ctggcgtggaccatctgggtgtcctcagcccctgtggggcagccaagtctc 1700
ctgatagcacttgtgcctcagcccctcacctggccacctgccagggcacc 1750
tgcaaccctagcaataccatgctcgctggagaggctcagctgcctgcttc 1800
tggcctgcctgtgtctgctgcccgagaagcccgtgccccgggagggctgc 1850
cgcaactgccaagagtgctccctcctcctggggaaggggctgccaacgaac 1900
cagactcagTGAaccagctcatgacagaacagcacatcctggccagcacc 1950

Supplementary Figure 4. A 16-bp deletion mutation in *NAGPA* gene. The 16 bp deleted region in exon10 of *NAGPA* gene is underlined, and stop codon positions of wild type and mutant are noted in blue and red, respectively. Numbering is based on the cDNA (NM_016256) sequence of *NAGPA*.

Gene	Exon	rs number	Amino acid change	Minor allele frequency in unrelated Pakistani controls (N=96)
<i>UTP20</i>	Exon31	rs111110755	p.Ser1316Ser	0.06
<i>UTP20</i>	Exon44	rs12309241	p.Leu192Leu	0.14
<i>GNPTAB</i>	Exon19	New variation	p.Glu1200Lys	0.005
<i>CHPT1</i>	Exon3	rs3205421	p.Ser162Phe	0.20
<i>PAH</i>	Exon6	rs1126758	p.Gln232Gln	0.45
<i>PAH</i>	Exon7	rs1042503	p.Val245Val	0.39
<i>STAB2</i>	Exon38	New variation	p.Cys1356Cys	0
<i>IKIP</i>	Exon3	rs1048906	p.Gly265Ser	0.41
<i>SLC5A8</i>	Exon5	rs1709189	p.Val193Ile	0.26
<i>SLC5A8</i>	Exon12	rs164365	p.Ile490Met	0.26
<i>SLC5A8</i>	Exon14	rs2671444	p.Tyr554Tyr	0.30

Supplementary Table 1. List of frequent variations found in PKST72 family in linkage locus on chromosome 12. We sequenced exons and exon/intron boundaries in all the 37 genes between D12S1300 and GDB199078 (denoted in red in Supplementary Figure 3), and in one gene between D12S101 and D12S348, and 7 genes between GDB199078 and D12S1597 (denoted in blue in Supplementary Figure 3). In total, exons in 45 out of 87 genes in 10 cM locus on chromosome 12 were sequenced. Variations with minor allele frequencies higher than 10% in PKST72 family are listed, these variations were further genotyped in unrelated Pakistani controls by complete gene sequencing. One synonymous rare variation, Cys1356Cys in *STAB2* was not found in unrelated Pakistani and North American affected and unaffected individuals.

Genes	Number of exons	Fragment Name	PCR primers (5' → 3')	Sequencing primers (5' → 3')	
<i>GNPTAB</i>	21	5'UTR 2	FWD: CTGGGCTCCCAGACTCCT REV: AGTTCTGAGGTCTTTTCAAGCA	FWD: CTGGGCTCCCAGACTCCT REV: AGTTCTGAGGTCTTTTCAAGCA	
		5'UTR 3	FWD: TCCTGTTGAGTGGCAGATGT REV: ATCCTTTCCTTGGTGCCTCT	FWD: TCCTGTTGAGTGGCAGATGT REV: ATCCTTTCCTTGGTGCCTCT	
		5'UTR 4	FWD: AATGCTTTGAATGATGGCAAC REV: TCGAGACTGTGCCATAGACC	FWD: AATGCTTTGAATGATGGCAAC REV: TCGAGACTGTGCCATAGACC	
		5'UTR 5	FWD: CACCTTCCCTATGCCCTCCGTCCTC REV: CAGGAGCTTGAACAGCATCA	FWD: GGAAAGGAGCCACATACAGC REV: CAGGAGCTTGAACAGCATCA	
		Exon 1	FWD: CTATGCCCCCTCCGTCCTC REV: AATCACATACATGCCTTTTCCAGTTCT	FWD: CTATGCCCCCTCCGTCCTC REV: AATCACATACATGCCTTTTCCAGTTCT	
		Exon 2	FWD: TTCACCTGGATCTAACACGATG REV: TCAGATGGGCATACTCCTGA	FWD: TTCACCTGGATCTAACACGATG REV: TCAGATGGGCATACTCCTGA	
		Exon 3	FWD: TGTCATGGTTGGATTACTTCTTCA REV: TCAGTTTACCAGATCCTTTTGT	FWD: TGTCATGGTTGGATTACTTCTTCA REV: TCAGTTTACCAGATCCTTTTGT	
		Exon 4	FWD: CAGCCTGGTACCATGTTTTACT REV: TGTACCTAATTTGGGGTCAAAAA	FWD: CAGCCTGGTACCATGTTTTACT REV: TGTACCTAATTTGGGGTCAAAAA	
		Exon 5	FWD: TCCATGAGATAAAAAGTCTTCATTG REV: TGTTTTGCTTCTTTTGTCAT	FWD: TCCATGAGATAAAAAGTCTTCATTG REV: TGTTTTGCTTCTTTTGTCAT	
		Exon 6	FWD: TTTTGTCTCCTTCAGCTTCCTT REV: GCATCACAAACAAGCTTCAA	FWD: TTTTGTCTCCTTCAGCTTCCTT REV: GCATCACAAACAAGCTTCAA	
		Exon 7	FWD: GCTGTTTTCTTTGAGAATCTTTTT REV: TGGCAGAACAGAAATCCCTCT	FWD: GCTGTTTTCTTTGAGAATCTTTTT REV: TGGCAGAACAGAAATCCCTCT	
		Exon 8	FWD: TGAGGTGAGCAGAGATCGTG REV: TACCAAACCAATGGCAGTGA	FWD: TGAGGTGAGCAGAGATCGTG REV: TACCAAACCAATGGCAGTGA	
		Exon 9	FWD: TGCTGTCTCTTTGAATTTTGG REV: AGGAAGGGAAGGCAATGAAG	FWD: TGCTGTCTCTTTGAATTTTGG REV: AGGAAGGGAAGGCAATGAAG	
		Exon 10	FWD: CCCTTTACCTTCTACCTCCA REV: TATGCTTCCCAAGCTGGTCT	FWD: CCCTTTACCTTCTACCTCCA REV: TATGCTTCCCAAGCTGGTCT	
		Exon 11	FWD: TCAACGCAGCAGGATCTAAA REV: AGGTTTGCACCACCACACTT	FWD: TCAACGCAGCAGGATCTAAA REV: AGGTTTGCACCACCACACTT	
		Exon 12	FWD: AGGTGATCCAGCCTCCTCTG REV: GAATGCAAGGCTGGTAAAGG	FWD: AGGTGATCCAGCCTCCTCTG REV: GAATGCAAGGCTGGTAAAGG	
		Exon 13_1	FWD: CAAGGACGACATGCAAATTC REV: GCGTCTTTTGAAGGAGTGA	FWD: CAAGGACGACATGCAAATTC REV: GCGTCTTTTGAAGGAGTGA	
		Exon 13_2	FWD: TACAGCCCAGAAGGGTTACG REV: AATCAGAGATGGGGCTTTT	FWD: TACAGCCCAGAAGGGTTACG REV: AATCAGAGATGGGGCTTTT	
		Exon 13_3	FWD: TGCAGAGGTTGACTTTTCCTG REV: TCACACTTGGGCTGTTTCT	FWD: TGCAGAGGTTGACTTTTCCTG REV: TCACACTTGGGCTGTTTCT	
		Exon 14	FWD: TTTGCTCCTAATGAAGAGTTTCG REV: CTTCAGGGAACCTGTCCAAA	FWD: TTTGCTCCTAATGAAGAGTTTCG REV: CTTCAGGGAACCTGTCCAAA	
		Exon 15	FWD: CGTGTTTGTAGTTGTTTGCTTG	FWD: CGTGTTTGTAGTTGTTTGCTTG	

			REV: GCTCAGCTGCCTCAGCAT	REV: GCTCAGCTGCCTCAGCAT	
		Exon 16	FWD: TGGGTATCTCAGAGCCAGA REV: AACAGGACATCCGTTATGG	FWD: TGGGTATCTCAGAGCCAGA REV: AACAGGACATCCGTTATGG	
		Exon 17	FWD: TTGGTGTTTTTCTTACCTCCAGA REV: CCGTAGTGGACTCAACATCCA	FWD: TTGGTGTTTTTCTTACCTCCAGA REV: CCGTAGTGGACTCAACATCCA	
		Exon 18	FWD: TAAAATTTATATGAGATTGTTTGCTG REV: ACTCAACCACCAGCTCCAAC	FWD: AAAATTTATATGAGATTGTTTGCTG REV: ACTCAACCACCAGCTCCAAC	
		Exon 19	FWD: TCATTCCTCCAGAGAATCAT REV: AGCTTGGGCAACAAGAACAA	FWD: TCATTCCTCCAGAGAATCAT REV: AGCTTGGGCAACAAGAACAA	
		Exon 20	FWD: TTGCAAGACAATGTTTTTGCTG REV: TTGCTGCCTGAATATTGTGAA	FWD: TTGCAAGACAATGTTTTTGCTG REV: TTGCTGCCTGAATATTGTGAA	
		Exon 21	FWD: TGGAAAGAGGAATGATGGAGATT REV: GGAGCCTCTTAGCAATCACTC	FWD: TGGAAAGAGGAATGATGGAGATT REV: GGAGCCTCTTAGCAATCACTC	
		3'UTR 1	FWD: GCTCATGGACCTGTCACTCCT REV: CAGTGCCATCAGCACTACTCA	FWD: GCTCATGGACCTGTCACTCCT REV: CAGTGCCATCAGCACTACTCA	
		3'UTR 2	FWD: GACTTCAGCCCTAAGAATGC REV: AGGCTGAGACAGAACTGCTTG	FWD: GACTTCAGCCCTAAGAATGC REV: AGGCTGAGACAGAACTGCTTG	
		3'UTR 3	FWD: GACCCTCAGGCCATCATT REV: TCAGCACAGAACCTGATACACA	FWD: GACCCTCAGGCCATCATT REV: TCAGCACAGAACCTGATACACA	
<i>GNPTG</i>	11	5'UTR 1	FWD: TCACCGATCTCCTCCTCCT REV: TGCCCAGAGAATCCTCCTTA	FWD: TCACCGATCTCCTCCTCCT REV: TGCCCAGAGAATCCTCCTTA	
		5'UTR 2	FWD: TTGCTGCGAAACAAACATTC REV: GAGACACCGTTTGGGAAGAT	FWD: TTGCTGCGAAACAAACATTC REV: GAGACACCGTTTGGGAAGAT	
		5'UTR 3	FWD: CCATAGTTCACGGGTTGG REV: CCCGAGGTCGTCTTCATT	FWD: CCATAGTTCACGGGTTGG REV: CCCGAGGTCGTCTTCATT	
		5'UTR 4	FWD: GCAACGGAGGCAAACCTAGAC REV: GAGAGCGGGTCAGGGTTT	FWD: GCAACGGAGGCAAACCTAGAC REV: GAGAGCGGGTCAGGGTTT	
		Exon 1	FWD: AGGCCCTCAAACCCTGAC REV: TCCTCCACCACCTCATCTT	FWD: AGGCCCTCAAACCCTGAC REV: TCCTCCACCACCTCATCTT	
		Exon 2	FWD: GTTGCTCCTCGGGCTCTC REV: AAGGCTGACAAACCAATGCT	FWD: GTTGCTCCTCGGGCTCTC REV: AAGGCTGACAAACCAATGCT	
		Exon 3	FWD: AAGATGAAGGTGGTGGAGGA REV: ACCTCTCGGAAAGGAAAGGA	FWD: AAGATGAAGGTGGTGGAGGA REV: ACCTCTCGGAAAGGAAAGGA	
		Exon 4 & 5	FWD: CAGACTCTGCCAGTCTTTGC REV: CTCCCCTCGTGCCAGAT	FWD: CAGACTCTGCCAGTCTTTGC REV: CTCCCCTCGTGCCAGAT	
		Exon 6 & 7	FWD: GTGGGATCCTCGGGTGAGT REV: CAAGAGAAGCCAGGCTCAG	FWD: AGGGATCCCAAAGCAGCA REV: ACCCCACTGGGCTCAACT	
		Exon 8	FWD: AGCTGAGCCTGGCTTCTCTT REV: GCCAGCATCCTCAAAAAGTG	FWD: AGCTGAGCCTGGCTTCTCTT REV: GCCAGCATCCTCAAAAAGTG	
		Exon 9 & 10	FWD: CAGGACCTGGCCGATGAG REV: AGTTTCTGCCAAAACACCAG	FWD: CAGGACCTGGCCGATGAG REV: AGTTTCTGCCAAAACACCAG	
		Exon 11	FWD: TACACGAGGCCACAGGT REV: TTATTTGAATGGAATTTCTTAACC	FWD: TACACGAGGCCACAGGT REV: TTATTTGAATGGAATTTCTTAACC	

<i>NAGPA</i>	10	5'UTR 1	FWD: CCAGAAGTGCTGACTGTGGA REV: AGGTGATCCGCCCTCCTC	FWD: CCAGAAGTGCTGACTGTGGA REV: AGGTGATCCGCCCTCCTC	
		5'UTR 2	FWD: TGCACAGGCAGTTTACTGG REV: TGATACTGTTGCCGGTCTTGC	FWD: TGCACAGGCAGTTTACTGG REV: TGATACTGTTGCCGGTCTTGC	
		5'UTR 3	FWD: CTTTGTGTCCACGCTCCTTA REV: AAGGCTCCTCAGCCTTTTGT	FWD: CTTTGTGTCCACGCTCCTTA REV: AAGGCTCCTCAGCCTTTTGT	
		5'UTR 4	FWD: GTGTCCCCACGTTTTTCATTT REV: AATTACCTGCGCTCTTTTCG	FWD: GTGTCCCCACGTTTTTCATTT REV: AATTACCTGCGCTCTTTTCG	
		Exon 1	FWD: GAGAGTTCCTTATGCTCTCCTTGC REV: GAGGCCAACTCTCGTGCTC	FWD: GCTCTCCTTGCAACTTCCTG REV: GGGCAGTAGCAAGTCGTCGT	
		Exon 2	FWD: GCACTATTCGGCTTCCTCTG REV: GCGATTTCCTATCCCCATTCT	FWD: TCCTCTGGGAAGCGTCCGG REV: GTTAAGTGACTTGAACACGG	
		Exon 3	FWD: GAATCTAGCAGCCAGGTTGG REV: ATCTTCCTCCCCATGAATCC	FWD: AGGTTGGGATGGCTAGGGAG REV: CTCCCTAGCCATCCCAACCT	
		Exon 4	FWD: GAGACTGGGATGTGCAGAGG REV: GGGGGACAGATAGGTGTCAA	FWD: GGAGACGAGCAAGGAGGCT REV: CCAGAAAGCAGGTAGAGTCA	
		Exon 5	FWD: TGGGTGTGATCTCACGTGTT REV: ACCAACTGACCCTGCTCCTA	FWD: GCTCTGCACTGTGGAAGGAA REV: AGGGACTGCAGCAATTTCTG	
		Exon 6 & 7	FWD: GGTAGACAGGTGAGAAATGGAGAG REV: ACAGTGATGTGCAGGTGAGG	FWD: GGGCAGCCTGGAGGGAGTT REV: GAGACAGAAGCAGCAGAGGA	
		Exon 8 & 9	FWD: ACGTTCAGGGGCTAGTCCAG REV: GAGGCTGGGCACTCGAAG	FWD: CAGGTATCCTGTCTGTCTGA REV: GGAGAGCTGGTCCCCTTCC	
		Exon 10	FWD: TCTTAAATGTTGCCCATCC REV: CAGCGAGCATGGTATTGCTA	FWD: ACTGCAGCAAACCTGTCTT REV: GGAGGAGGGAGACTCTTTGG	
<i>VEZT</i>	12	Exon 1	FWD: CTCTCTCGCTTACACGCTCA REV: TTCCAGGAAGGAAGAGACA	FWD: CTCTCTCGCTTACACGCTCA	
		Exon 2	FWD: TTGGGTTCTCTGTTGAATTG REV: CAGTGTGAGGAGGATATGGA	FWD: TTGGGTTCTCTGTTGAATTG	
		Exon 3	FWD: GATTTTCAGGCCTCATTCCA REV: AAAATCAATTGCTGGCCAAA	FWD: GATTTTCAGGCCTCATTCCA	
		Exon 4	FWD: TCTTCTGAAAATAAACACCACCAA REV: CCCATTTGCTAGGTTGCTGA	FWD: TCTTCTGAAAATAAACACCACCAA	
		Exon 5	FWD: TCTTTCACATCACCTTCTTAAATGT REV: AAATGCAACATAGAAATGAAAATAGG	FWD: TCTTTCACATCACCTTCTTAAATGT	Fail
		Exon 6	FWD: ATCCATTGTTTCCCCACATC REV: TTATTGTCATTCCCCAGGA	FWD: ATCCATTGTTTCCCCACATC	
		Exon 7	FWD: TGCTGTAAACCTCCTCATCCA REV: GCAGCAAACAATGAGTGGAA	FWD: TGCTGTAAACCTCCTCATCCA	
		Exon 8	FWD: GGTTCACACACATAATTTGA REV: CACAAGCCAACAACCACAAT	FWD: GGTTCACACACATAATTTGA	
		Exon 9	FWD: GTGAAAAAGGGGTTTACCA REV: CAAAATGAGAGCCAAGAATTG	FWD: GTGAAAAAGGGGTTTACCA	Fail
		Exon 10	FWD: CTTTGTTCAGGCTGGTGT	FWD: CTTTGTTCAGGCTGGTGT	

			REV: TCCAGCATCCCAAAAGGTAG		
		Exon 11	FWD: GTGCCAAATGCAAGTCCTTT REV: TTCAACTCACTGCCCATTTCT	FWD: GTGCCAAATGCAAGTCCTTT	
		Exon 12_1	FWD: TCATCAAATCCCTATCTCATTCA REV: TCTGCTTAATGGAGGGCTGT	FWD: TCATCAAATCCCTATCTCATTCA	Fail
		Exon 12_2	FWD: TAAATCCGCCACAACAGACA REV: TCAAACCAGGGTTCTTCCTG	FWD: TAAATCCGCCACAACAGACA	
		3'UTR	FWD: GAACCCTGGTTTGAATAA REV: CCAGCACACATCAATTGTATCAA	FWD: GAACCCTGGTTTGAATAA	
<i>LOC121456</i>	1	Exon 1_1	FWD: GAGACGGGGGTTTCCTCAT REV: CTCTCTCCGCCTCCTTCTC	FWD: GAGACGGGGGTTTCCTCAT	
		Exon 1_2	FWD: TGGGTAGGGGACTTCGAGTA REV: TGGAGGCAGAAGAAATGTTGA	FWD: TGGGTAGGGGACTTCGAGTA	
		Exon 1_3	FWD: GATCAGGCCTTCAGCACTTT REV: TGGCTGGTAGCCAACAATAG	FWD: GATCAGGCCTTCAGCACTTT REV: TGGCTGGTAGCCAACAATAG	Fail
		Exon 1_4	FWD: CCAGTGACTGTGCTGGTGAT REV: CAGGATCATGCAGGAGAAGA	FWD: CCAGTGACTGTGCTGGTGAT	
		Exon 1_5	FWD: ACAGGCGTTGTAGCTGTCCT REV: CGTTGTGGTCTCTTTGGAG	FWD: ACAGGCGTTGTAGCTGTCCT	
		Exon 1_6	FWD: ATCCTATGCTCGCCAGATGA REV: CTGGGGACTGGTCAGACATC	FWD: ATCCTATGCTCGCCAGATGA	
		Exon 1_7	FWD: TTACCTGAAGCCCATCCTCA REV: TCTAGTCACTGCCACCTC	FWD: TTACCTGAAGCCCATCCTCA	
		Exon 1_8	FWD: AGGGTACCCGCCTAGTGTTT REV: TCAGCTTGACTTGCACCACT	FWD: AGGGTACCCGCCTAGTGTTT	
<i>LOC643770</i>	1	Exon 1_1	FWD: CCATCCTGACTGCTTTGTCC REV: TTTTATCTGTGCCAATCTGGT	FWD: CCATCCTGACTGCTTTGTCC	
		Exon 1_2	FWD: AAAGGCATGAAAAGCTTGGA REV: GTGCAGGATTGTCATGAAGG		Fail
		Exon 1_3	FWD: GCGGAGAACAACCTGACGAT REV: CCACCATGCCTGGCAAAT	FWD: GCGGAGAACAACCTGACGAT	
		Exon 1_4	FWD: CACACACTTTTGAGATTGAATGC REV: AAATCCTTCCAAGGCATCTTA	FWD: CACACACTTTTGAGATTGAATGC REV: AAATCCTTCCAAGGCATCTTA	
		Exon 1_5	FWD: TCAAACTGCCTCAGTTGCT REV: ACTATTGGGCCACACAGAGG		
<i>TMPO isoform a</i>	4	5'UTR 1	FWD: AGCCGTCTCGCCAATCAC REV: TGCAGGIAGAGCTGGACGTA	FWD: AGCCGTCTCGCCAATCAC REV: TGCAGGIAGAGCTGGACGTA	Fail
		Exon 1	FWD: CTTTGTGTCCGCGAGTTTTT REV: CAGACCCACACGTCAAAGAA	FWD: CTTTGTGTCCGCGAGTTTTT REV: CAGACCCACACGTCAAAGAA	Fail
		Exon 2	FWD: AATGGAATTGCTAAGGCCTAATA REV: CAGTTCTGCTGATAACAAATGA	AATGGAATTGCTAAGGCCTAATA	
		Exon 3	FWD: TCGTGAGCCACTATGTCTGG	FWD: TCGTGAGCCACTATGTCTGG	Fail

			REV: TTGCAATTTGAGGTGATGGA	REV: TTGCAATTTGAGGTGATGGA	
		Exon 4_1	FWD: GCTTTGTCTACCAGGGCAAA REV: TCAGGCTGAGAAGATGACGA	FWD: GCTTTGTCTACCAGGGCAAA	
		Exon 4_2	FWD: TCTTGTGCCACAACTTGC REV: CCAGTGGGGGCATAGAGTTA	FWD: TCTTGTGCCACAACTTGC	
		Exon 4_3	FWD: CAGATCAATCGCCTCTCTCC REV: CTGTCAACTTGCTGCCATTC	FWD: CAGATCAATCGCCTCTCTCC	
		Exon 4_4	FWD: CCTGGATCCGAACTGATGTC REV: GCTTGGTGGGTACGACTAGG	FWD: CCTGGATCCGAACTGATGTC	
		Exon 4_5	FWD: AGGTATTCAAGCAGCCTCCA REV: GAAAAATGTTGGCATAAAAGTACCTG	FWD: AGGTATTCAAGCAGCCTCCA	
		Exon 4_6	FWD: TGGCTGAAGGATTGCAAAAT REV: TGTCTAGGTATAAAGGAGGATGC	FWD: TGGCTGAAGGATTGCAAAAT	
<i>TMPO</i> <i>Isoform b</i>	9	Exon 1	FWD: AGCCGTCTCGCCAATCAC REV: TGCAGGTAGAGCTGGACGTA	FWD: AGCCGTCTCGCCAATCAC REV: TGCAGGTAGAGCTGGACGTA	Fail
		Exon 2	FWD: AATGGAATTGCTAAGGCCTAATA REV: CAGGTTCTGCTGATAACAAATGA	FWD: AATGGAATTGCTAAGGCCTAATA	
		Exon 3	FWD: TCGTGAGCCACTATGTCTGG REV: TTGCAATTTGAGGTGATGGA	FWD: TCGTGAGCCACTATGTCTGG	Fail
		Exon 4_1	FWD: GCTTTGTCTACCAGGGCAAA REV: TCAGGCTGAGAAGATGACGA	FWD: GCTTTGTCTACCAGGGCAAA	
		Exon 4_2	FWD: TCTTGTGCCACAACTTGC REV: CCAGTGGGGGCATAGAGTTA	FWD: TCTTGTGCCACAACTTGC	
		Exon 4_3	FWD: CAGATCAATCGCCTCTCTCC REV: CTGTCAACTTGCTGCCATTC	FWD: CAGATCAATCGCCTCTCTCC	
		Exon 4_4	FWD: CCTGGATCCGAACTGATGTC REV: GCTTGGTGGGTACGACTAGG	FWD: CCTGGATCCGAACTGATGTC	
		Exon 4_5	FWD: AGGTATTCAAGCAGCCTCCA REV: GAAAAATGTTGGCATAAAAGTACCTG	FWD: AGGTATTCAAGCAGCCTCCA	
		Exon 4_6	FWD: TGGCTGAAGGATTGCAAAAT REV: TGTCTAGGTATAAAGGAGGATGC	FWD: TGGCTGAAGGATTGCAAAAT	
		Exon 5&6	FWD: TTCATGGCTTCTCAGTGTGC REV: TTTGCCAAAATTCACCACCT	FWD: TTCATGGCTTCTCAGTGTGC	
		Exon 7	FWD: TGTGTTTGTAGGCTGTGTTGC REV: CTCCCTCCCACTCCAAAAA	FWD: TGTGTTTGTAGGCTGTGTTGC	
		Exon 8	FWD: TTGAAGAGAGCCTTGGAAGC REV: CATTGTACCTGGCTCCAAAAA	FWD: TTGAAGAGAGCCTTGGAAGC	
		Exon 9	FWD: TTGGAATTAGGAGTGGCAATG REV: CATTATTGAGGCGAAATCACA	FWD: TTGGAATTAGGAGTGGCAATG	
<i>PPIAP8</i>	1	Exon 1_1	FWD: CCCAAAATATGCAGGGAAA REV: AAGCACTCCATGGTCTCCAC	FWD: CCCAAAATATGCAGGGAAA	
		Exon 1_2	FWD: AACTTCATCCGGAAGCATACA REV: ACAATTGTCCAAGGGACAGC	FWD: AACTTCATCCGGAAGCATACA	

<i>SLC25A3</i>	7	5'UTR 1	FWD: CTGCGCAGAACGAATCCT REV: CCTTCGAAAGAGGCTGCTC	FWD: CTGCGCAGAACGAATCCT	
		5'UTR 2	FWD: ACCTTTCCAAGGGAGTGGTT REV: ACTGTATTGGGCAGGGTCTG	FWD: ACCTTTCCAAGGGAGTGGTT	
		Exon 1	FWD: GTGGAGACGGGAAGGAAAAG REV: TATGGTGGAAAAGGCCGATA	FWD: GTGGAGACGGGAAGGAAAAG	
		Exon 2	FWD: CAGGTTTGTGTTTGCATGCTG REV: CTGAAGTTTCTAGCAGTTGTGATG	FWD: CAGGTTTGTGTTTGCATGCTG	
		Exon 3	FWD: TTGCTGAAATTTATTATGGAACC REV: CACTTTGTAGGACCATTTCTTCA	FWD: TTGCTGAAATTTATTATGGAACC REV: CACTTTGTAGGACCATTTCTTCA	Fail
		Exon 4	FWD: TTCCATATCATCGTGTGTTACTTT REV: AGGAGATGGAGACGGTGAAG	FWD: TTCCATATCATCGTGTGTTACTTT	
		Exon 5	FWD: GCTGCCATTTGTTACTATCAGG REV: AAACACTGCTTTATAACCTTTGGA	FWD: GCTGCCATTTGTTACTATCAGG	
		Exon 6	FWD: GTACCCGTGTCACCCTGAGT REV: GGCAAACAGTCCCTCCATA	FWD: GTACCCGTGTCACCCTGAGT	
		Exon 7	FWD: GCAGTGCTTCTCTGGTCCCTC REV: TCACAGGCAAATCATGAAGA	FWD: GCAGTGCTTCTCTGGTCCCTC	
		3'UTR 1	FWD: GGACTGTTTGCCCGTATCAT REV: TGGAATATTC AACCAACAATGG	FWD: GGACTGTTTGCCCGTATCAT	
		3'UTR 2	FWD: TCTTCATGATTTGCCTGTGA REV: GAATCAGCCTAATTTGGTTTACCT	FWD: TCTTCATGATTTGCCTGTGA	
<i>IKIP</i>	3	Exon 1	FWD: ACTCAGTGAAGCAACGAGGA REV: TTCCTTTGGGGTCAAGACAG	FWD: ACTCAGTGAAGCAACGAGGA REV: TTCCTTTGGGGTCAAGACAG	
		Exon 2	FWD: CCTACAGCTACCCATACCAGAA REV: GGCTCAGAGGGAGAATGTCA	FWD: CCTACAGCTACCCATACCAGAA	
		Exon 3_1	FWD: CCATCCTGGGTAAACAGAACAA REV: ACTGCTTGAAAGAAGATCACCTA	FWD: ACTGCTTGAAAGAAGATCACCTA	
		Exon 3_2	FWD: TCTGACGACGCTTTCTCAAG REV: CGGTAACCAATCTCCCAATG	FWD: TCTGACGACGCTTTCTCAAG	
		Exon 3_3	FWD: GAAGGTGACAGAGCCAAAGTTC REV: CAACATGTATGTCAGAAGGATGG	FWD: GAAGGTGACAGAGCCAAAGTTC	
<i>APAF1</i>	26	5'UTR 1	FWD: GGGCTTGGGGTGTGTTTAT REV: GTTTTCCACCGGGAATTAGG	FWD: GGGCTTGGGGTGTGTTTAT	Fail
		5'UTR 2	FWD: GTGTCCAGTAGTGGGGTCCA REV: TGGTACAGGAGCAGGATGGT	FWD: GTGTCCAGTAGTGGGGTCCA	Fail
		Exon 1	FWD: GCACTGGGTTTTGTCCATTT REV: TGCTCTTGCTGTGAGTGG	FWD: GCACTGGGTTTTGTCCATTT	
		Exon 2	FWD: GCTCTCTGAAGCAGTCCACAC REV: TGCAGTTTTCAGTGAACCTGGTC	FWD: GCTCTCTGAAGCAGTCCACAC	
		Exon 3	FWD: CACATTTTCTTAACCTCTCTTGAA REV: GGAAGCTTGCTCATCCATCC	FWD: CACATTTTCTTAACCTCTCTTGAA	

		Exon 4	FWD: GCCTACCAGTATCTTGCACGTAA REV: GCCGCAATGGTTCTCTCTTA	FWD: GCCTACCAGTATCTTGCACGTAA	
		Exon 5	FWD: AGAGTATAGCAAAGAGGAAGAATCA REV: GGACTACATATTTAGGACCTGCAA	FWD: AGAGTATAGCAAAGAGGAAGAATCA REV: GGACTACATATTTAGGACCTGCAA	
		Exon 6	FWD: CAACCAGAGACAAGAGTGTTACAGA REV: AACACACTGTGGGTAGATGGTAAA	FWD: CAACCAGAGACAAGAGTGTTACAGA	
		Exon 7	FWD: GCTTTTGATAACATGCAGCAG REV: AACACCCACCACCTCAGT	FWD: GCTTTTGATAACATGCAGCAG REV: AACACCCACCACCTCAGT	
		Exon 8	FWD: TCTTGAGGAGTAGCTGAGTTTCTT REV: TCTGGCTTTAACAAGTACTATGG	FWD: TCTTGAGGAGTAGCTGAGTTTCTT	
		Exon 9	FWD: TCGAAGTCCTGGCCTCAA REV: CACTCCAGCCTGAGAAAACAA	FWD: TCGAAGTCCTGGCCTCAA	Fail
		Exon 10	FWD: TGGATGTGTTCTTTCTCACTAGC REV: CCAAAAATCAAAGGAGGGAAA	FWD: TGGATGTGTTCTTTCTCACTAGC	
		Exon 11	FWD: AATGGTTGGCTGTTCAATTTT REV: TAAAAGTTCCAGCCCTTCG	FWD: AATGGTTGGCTGTTCAATTTT	
		Exon 12	FWD: TGTCATTTGCATGTTAGTAATCTGA REV: GAGCTGGATTCTCTGTATTTC	FWD: TGTCATTTGCATGTTAGTAATCTGA	
		Exon 13	FWD: TTTGCCAAGGTTCTTTCTG REV: CCTGGGTACAGAGCAAAT	FWD: TTTGCCAAGGTTCTTTCTG	
		Exon 14	FWD: GGGGAGAGGTTTCATTAGCA REV: CTGAAGCCATGCTCCCTCTA	FWD: GGGGAGAGGTTTCATTAGCA	
		Exon 15	FWD: TGTTTGATACGTTTGTGTTACTGTG REV: TCCTGGAAATTGAAAGAAGCA	FWD: TGTTTGATACGTTTGTGTTACTGTG	
		Exon 16	FWD: TGGGCAGTGCTTCTAATTTT REV: AGACTGCCAAAATCACACA	FWD: TGGGCAGTGCTTCTAATTTT	
		Exon 17	FWD: TGTCAATAATTATGCCAGTTATCAG REV: ATGCTTGCTGAATTCCTCTG	FWD: TGTCAATAATTATGCCAGTTATCAG	
		Exon 18	FWD: TTTTGATAGTGTGTTTCTGAGCA REV: ACAGCACTTTCCAGGGTGA	FWD: TTTTGATAGTGTGTTTCTGAGCA	
		Exon 19	FWD: CTGAGGAATTTGGCTCTGG REV: AATGCTGCTGGACACCTGTT	FWD: CTGAGGAATTTGGCTCTGG	
		Exon 20	FWD: TCCCCTGAGAGCTCTTGTG REV: GGCTGTGATCGTGCACTGT	FWD: TCCCCTGAGAGCTCTTGTG	
		Exon 21	FWD: ATTAGGCTGGAAGCACCAGA REV: AGGTTTCATCTAAGCCCATGT	FWD: ATTAGGCTGGAAGCACCAGA	
		Exon 22	FWD: TCCTCTCTGTTTTACTGAAATGC REV: TGTAGGTGACTGCAATTAACAGAA	FWD: TCCTCTCTGTTTTACTGAAATGC	
		Exon 23	FWD: AAGGGGTCAGAACAGCCAGT REV: GGCATCCTCCAAAAGATCAC	FWD: AAGGGGTCAGAACAGCCAGT REV: GGCATCCTCCAAAAGATCAC	
		Exon 24	FWD: CTGGAACCTGGGCATCTCAT REV: GCCTCATCCAACCACAACCTT	FWD: CTGGAACCTGGGCATCTCAT	
		Exon 25	FWD: AAATGCCACTGGAAATAAATGG REV: GCCTTGACCTCACAGACTCC	FWD: AAATGCCACTGGAAATAAATGG	
		Exon 26	FWD: AAGAGGCTGACCAGGTTGAA	FWD: AAGAGGCTGACCAGGTTGAA	

			REV: TCCAACCACAAAACACTTTTGTA		
		3'UTR	FWD: TTCTAATGAAACCCTGATATCAACT REV: GCTGCAGACTATGCACACAGA	FWD: TTCTAATGAAACCCTGATATCAACT	
<i>ANKS1B isoform a</i>	26	5'UTR	FWD: ACTCTCTCTGCCGCCTCCT REV: GCCAGACAGGAGTTTCTCCA	FWD: ACTCTCTCTGCCGCCTCCT REV: GCCAGACAGGAGTTTCTCCA	Fail
		Exon 1	FWD: CCCTGGATTTTGGGGAGT REV: GCAATAACCGTGAGGAGGAG	FWD: CCCTGGATTTTGGGGAGT	
		Exon 2	FWD: GGGCTACCAGCCTTCTTTTT REV: GAGACATGAGAAAGGTATCGTCAA	FWD: GGGCTACCAGCCTTCTTTTT	
		Exon 3	FWD: CTCTAAATCCCACCCAGCA REV: GCCTTTGGGCAAGGTAAAG	FWD: CTCTAAATCCCACCCAGCA	
		Exon 4	FWD: CATTTCAAAGCATTGCAGGTT REV: TTCCAAAAGTAGGTGGCATA	FWD: CATTTCAAAGCATTGCAGGTT	
		Exon 5	FWD: TGTGAGCATTATTTCAACCTG REV: TTTCCCTTTGCTATTCCCAAAA	FWD: TGTGAGCATTATTTCAACCTG	
		Exon 6	FWD: TCACTTTCAATGCTTGGTCTG REV: ACTCAAAATCCAAAAGAAAAGTGT	FWD: TCACTTTCAATGCTTGGTCTG	
		Exon 7	FWD: TTGAAGTTCTTTGAAAAGTTAGGA REV: GGCTGAGAAGCCCTAATCAGTA	FWD: TTGAAGTTCTTTGAAAAGTTAGGA	
		Exon 8	FWD: CAGCAGAATAGTGCTGACTGCTT REV: ATGCACCACATCCCATACTT	FWD: CAGCAGAATAGTGCTGACTGCTT	
		Exon 9	FWD: GCTGACTTGTGGCCGAGAT REV: CGAAGGGGAGGGAGATTTTA	FWD: GCTGACTTGTGGCCGAGAT	
		Exon 10	FWD: TCAGCTGTCAATCACTTTGGA REV: TGGGGGAACCTTTCATTTTGA	FWD: TCAGCTGTCAATCACTTTGGA	
		Exon 11	FWD: GAGCATATTCCTCATTATGATCTTG REV: TCCAGGCATTGCAATATAAGTG	FWD: GAGCATATTCCTCATTATGATCTTG	
		Exon 12	FWD: TGAAAAGCCTAACCTATCACATCA REV: CGAAGACTCCTCCTAATTCCTC	FWD: TGAAAAGCCTAACCTATCACATCA	
		Exon 13_1	FWD: TTGGATAGCCCACATGTTCA REV: CAGGCTCTCTCCACAAATCC	FWD: TTGGATAGCCCACATGTTCA	
		Exon 13_2	FWD: GCAACCAACTCGAAAACCAT REV: AAAATCCTTCCCCAAACCT	FWD: GCAACCAACTCGAAAACCAT	
		Exon 14	FWD: TTGCTCCCTTCATTTGAAAAGTT REV: TGTTAGATCTGAGAGTGGAAGGAA	FWD: TTGCTCCCTTCATTTGAAAAGTT	
		Exon 15	FWD: GCATGGAGCTGCATACTGAT REV: ATGCTTTCCAACCATTTGTC	FWD: GCATGGAGCTGCATACTGAT	
		Exon 16	FWD: AACAAGGTGACCGACTCTGC REV: GATCTGCTCTTGAGGTTGCAT	FWD: AACAAGGTGACCGACTCTGC	
		Exon 17	FWD: TTCCTTGTTCCGTCTCCAG REV: TCTGGAGCTTGAGAGAGATCG	FWD: TTCCTTGTTCCGTCTCCAG	
		Exon 18	FWD: TCTGGACTTCAGCGGTCAC REV: CACAACCACACTGGCTAAA	FWD: TCTGGACTTCAGCGGTCAC	
		Exon 19	FWD: GTTGCTTCAAAAAGCGACTCC	FWD: GTTGCTTCAAAAAGCGACTCC	

			REV: AGGCACGGACAATAAGCATC		
		Exon 20	FWD: TTCACATAAGACACCCAAATGC REV: TTGGACTTCTCTTTGGATAGAAG	FWD: TTCACATAAGACACCCAAATGC	
		Exon 21	FWD: AGCCCCCAGAACTTATGGTT REV: CCAATGTGATTGAGCAGACC	FWD: AGCCCCCAGAACTTATGGTT	
		Exon 22	FWD: GCCTGTTCTTTTGTGGCATC REV: TGCATCTGCAAAAAGTTTCTCT	FWD: GCCTGTTCTTTTGTGGCATC	
		Exon 23	FWD: TGTGCGTGGTGTGTATCTGA REV: TGTAGGAAGCATGAAGGTTGG	FWD: TGTGCGTGGTGTGTATCTGA	
		Exon 24	FWD: TGGACCACTTTGAGTGTGCT REV: TCTGCCATTTAAGCCTCTCG	FWD: TGGACCACTTTGAGTGTGCT	
		Exon 25	FWD: CCGGAGTGTCTGTTCTTTG REV: AGGCAGAGGTGATGATGGAC	FWD: CCGGAGTGTCTGTTCTTTG	
		Exon 26	FWD: TTTGCTCACTCCTGTGTCC REV: TTCATGCAGTCGGTCAAGAG	FWD: TTTGCTCACTCCTGTGTCC	
<i>ANKS1B isoform b</i>	13	Exon 1	FWD: GCATGGAGCTGCATACTGAT REV: ATGCTTTCCAACCATTGTCC	FWD: GCATGGAGCTGCATACTGAT	
		Exon 2	FWD: AACAAAGGTGACCGACTCTGC REV: GATCTGCTCTTGAGGTTGCAT	FWD: AACAAAGGTGACCGACTCTGC	
		Exon 3	FWD: TTCCTTGTTTCCGTCTCCAG REV: TCTGGAGCTTGAGAGAGATCG	FWD: TTCCTTGTTTCCGTCTCCAG	
		Exon 4	FWD: TCTGGACTTCAGCGGTCAC REV: CACAACCACACTGGCTAAA	FWD: TCTGGACTTCAGCGGTCAC	
		Exon 5	FWD: TTCACATAAGACACCCAAATGC REV: TTGGACTTCTCTTTGGATAGAAG	FWD: TTCACATAAGACACCCAAATGC	
		Exon 6	FWD: CCTTCCTGGATGCTACCTTG REV: CATTGCCAGGACACAGTACC	FWD: CCTTCCTGGATGCTACCTTG	
		Exon 7	FWD: TTCACATAAGACACCCAAATGC REV: TTGGACTTCTCTTTGGATAGAAG	FWD: TTCACATAAGACACCCAAATGC	
		Exon 8	FWD: TCACTTTCAATGCTTGGTCTG REV: ACTCAAAATCCAAAAGAAAAGTGT	FWD: TCACTTTCAATGCTTGGTCTG	
		Exon 9	FWD: GCCTGTTCTTTTGTGGCATC REV: TGCATCTGCAAAAAGTTTCTCT	FWD: GCCTGTTCTTTTGTGGCATC	
		Exon 10	FWD: TGTGCGTGGTGTGTATCTGA REV: TGTAGGAAGCATGAAGGTTGG	FWD: TGTGCGTGGTGTGTATCTGA	
		Exon 11	FWD: TGGACCACTTTGAGTGTGCT REV: TCTGCCATTTAAGCCTCTCG	FWD: TGGACCACTTTGAGTGTGCT	
		Exon 12	FWD: CCGGAGTGTCTGTTCTTTG REV: AGGCAGAGGTGATGATGGAC	FWD: CCGGAGTGTCTGTTCTTTG	
		Exon 13	FWD: CGGTATGCGGTAATGTGTG REV: GGGCGGAGTCATCAGAAATA	FWD: CGGTATGCGGTAATGTGTG	
<i>ANKS1B isoform c</i>	11	Exon 1	FWD: TGTGGAGCTAGGATCAAGTCA REV: TAAGGGCATCCAATTTTCCA	FWD: TGTGGAGCTAGGATCAAGTCA	

		Exon 2	FWD: AACAAAGGTGACCGACTCTGC REV: GATCTGCTCTTGAGGTTGCAT	FWD: AACAAAGGTGACCGACTCTGC	
		Exon 3	FWD: TTCCTTGTTTCCGTCCTCCAG REV: TCTGGAGCTTGAGAGAGATCG	FWD: TTCCTTGTTTCCGTCCTCCAG REV: TCTGGAGCTTGAGAGAGATCG	
		Exon 4	FWD: TCTGGACTTCAGCGGTCAC REV: CACAACCACACCTGGCTAAA	FWD: TCTGGACTTCAGCGGTCAC	
		Exon 5	FWD: TTCACATAAGACACCCAAATGC REV: TTGGACTTCTCTTTGGATAGAAG	FWD: TTCACATAAGACACCCAAATGC	
		Exon 6	FWD: AGCCCCCAGAACTTATGGTT REV: CCAATGTGATTGAGCAGACC	FWD: AGCCCCCAGAACTTATGGTT	
		Exon 7	FWD: GCCTGTTCTTTTGTGGCATC REV: TGCATCTGCAAAAAGTTTCTCT	FWD: GCCTGTTCTTTTGTGGCATC	
		Exon 8	FWD: TGTGCGTGGTGTGTATCTGA REV: TGTAGGAAGCATGAAGGTTGG	FWD: TGTGCGTGGTGTGTATCTGA REV: TGTAGGAAGCATGAAGGTTGG	
		Exon 9	FWD: TGGACCACTTTGAGTGTGCT REV: TCTGCCATTTAAGCCTCTCG	FWD: TGGACCACTTTGAGTGTGCT	
		Exon 10	FWD: CCGGAGTGTCTGTCTTTG REV: AGGCAGAGGTGATGATGGAC	FWD: CCGGAGTGTCTGTCTTTG	
		Exon 11	FWD: TTTGCTCACTCCTGTGTTC REV: TTCATGCAGTCGGTCAAGAG	FWD: TTTGCTCACTCCTGTGTTC	
<i>FAM71C</i>	2	5'UTR	FWD: GGTAGTGGTCTGCTGAGCTGT REV: CGTGTCTGCAGGCTTCTT	FWD: GGTAGTGGTCTGCTGAGCTGT	
		Exon 1_1	FWD: ACCTGTGCTCCTGACAGCTC REV: GAACGATGCCATTGTTACC	FWD: ACCTGTGCTCCTGACAGCTC	
		Exon 1_2	FWD: GCAGCGGCAACTGTACAAAG REV: GCATCCGATGGAGGACAC	FWD: GCAGCGGCAACTGTACAAAG	
		Exon 1_3	FWD: CTGCCACCCAGAAAAGAGAA REV: AAGTTCATTTGGCCTCAGA	FWD: CTGCCACCCAGAAAAGAGAA	
		Exon 2	FWD: TCCCTGCAATTGCCACTTAT REV: ATGGTACCTGTGGTGGTGCT	FWD: TCCCTGCAATTGCCACTTAT	
		3'UTR	FWD: TGAAATGTTTGGGTCCACCT REV: CCCAATGCTGAGTAGCAGAG	FWD: TGAAATGTTTGGGTCCACCT	
<i>KIAA0701</i>	13	Exon 1	FWD: GCCAATGCCACAAACCTC REV: CGGGGAAGTCCGAAGGTC	FWD: GCCAATGCCACAAACCTC	Fail
		Exon 2	FWD: GGACATTATGTTGTGTCCACTCC REV: GGCACACATTTATGCAAAGG	FWD: GGACATTATGTTGTGTCCACTCC	
		Exon 3	FWD: TGGGTACATCTGGTTTCAAAG REV: AAAGGATGAAAAACCTGAGTCC	FWD: TGGGTACATCTGGTTTCAAAG	
		Exon 4	FWD: GGCACCTTAAATGACTCTGCTCA REV: TTGTAAAATGTTGATGGGAGA	FWD: GGCACCTTAAATGACTCTGCTCA	
		Exon 5	FWD: AGTGATCTGCCTGCCTCAG REV: GAGGTCAAGGCTGCAGTGAG	FWD: AGTGATCTGCCTGCCTCAG	Fail
		Exon 6	FWD: TTGAATTTGATGGAATAATGCAA	FWD: TTGAATTTGATGGAATAATGCAA	

			REV: GCATTATTTTAATATGCCACTGGT		
		Exon 7	FWD: GCCCGGCCAGTAAATACTTC REV: TGCCTAATACAGAGCTCTAAACAGA	FWD: GCCCGGCCAGTAAATACTTC	
		Exon 8	FWD: GGCATGAGCCTAGTTTTACCG REV: ATGCTTCCAGTTGTGCCTTT	FWD: GGCATGAGCCTAGTTTTACCG	
		Exon 9	FWD: AAAATCCTTAATGTGCCGTCAT REV: TGCCAGGAGAAAAATACCAA	FWD: AAAATCCTTAATGTGCCGTCAT	
		Exon 10	FWD: TTCGAAATTACATGTAGGTGAAGC REV: GCAAGACCCCATCTCTACA	FWD: TTCGAAATTACATGTAGGTGAAGC	
		Exon 11	FWD: CAAGAGTCCCATTCCAGAGTTT REV: TGGCCATTTCATAAACCTTGT	FWD: CAAGAGTCCCATTCCAGAGTTT	
		Exon 12	FWD: GGGTGTTTAAAAATAATTCCATGTG REV: GGCTTGAGCCTAGGAGTTTG	FWD: GGGTGTTTAAAAATAATTCCATGTG	
		Exon 13	FWD: TGGCATTTAATCCTATCTTCATGT REV: CTCCAGTGATGGGTGCAG	FWD: TGGCATTTAATCCTATCTTCATGT	
<i>GOLGA2L1</i>	4	5'UTR 1	FWD: GAGCAGCTTTCCTTGTGAGG REV: GGGCTGGCTGACAAGATTT	FWD: GAGCAGCTTTCCTTGTGAGG	
		5'UTR 2	FWD: ACCCCATCCCCATAAGGTC REV: TCAGCTTCTCTGATACAAGGATTT	FWD: ACCCCATCCCCATAAGGTC	
		5'UTR 3	FWD: TGCAGCATTATTGGCACAAG REV: GGCTGAGAAGGAGGTGTCTG	FWD: TGCAGCATTATTGGCACAAG REV: GGCTGAGAAGGAGGTGTCTG	Fail
		5'UTR 4	FWD: AGCCATATGGAAGGGTGTGT REV: CCCACATTCCCATGTTATT	FWD: AGCCATATGGAAGGGTGTGT	
		5'UTR 5	FWD: GCAGTCATTTAGGCCTGGAG REV: AGGCTGCTGGTCTGCTG	FWD: GCAGTCATTTAGGCCTGGAG	Fail
		5'UTR 6	FWD: AGCAGCAGAAAGCTCAAAGC REV: GCTCCCAGAAAGGTCACCATA	FWD: AGCAGCAGAAAGCTCAAAGC	
		Exon 1	FWD: CCAGCCTGGATGATAGAATGA REV: GGTGAAATGGTGTCTGACCA	FWD: CCAGCCTGGATGATAGAATGA REV: GGTGAAATGGTGTCTGACCA	Fail
		Exon 2	FWD: AGCCAGTGGTCAGACACCAT REV: TTCCTCAACCCTCTCCTTCA	FWD: AGCCAGTGGTCAGACACCAT REV: TTCCTCAACCCTCTCCTTCA	Fail
		Exon 3	FWD: TGCTGCATCTAGCTGTCTGG REV: CACTTGTTCAGTCGTCCAC	FWD: TGCTGCATCTAGCTGTCTGG REV: CACTTGTTCAGTCGTCCAC	Fail
		Exon 4	FWD: CAGGACAAGGGAGAGGTGAA REV: CTCCTGGAGGTTCTGCATCT	FWD: CAGGACAAGGGAGAGGTGAA	
		3'UTR	FWD: GGAGTCTGCACAAGGAGAGG REV: TGTCTGGCTTCATAACTTCTCA	FWD: GGAGTCTGCACAAGGAGAGG	
<i>ACTR6</i>	11	Exon 1	FWD: AAGCACAGCCCCTAACATTC REV: GGAATCCCTCTGGCTAAGT	FWD: AAGCACAGCCCCTAACATTC	
		Exon 2	FWD: ATCATCCTGCTCCCAAAGTG REV: TGGTCGTTTATTTTACCCTAAA	FWD: ATCATCCTGCTCCCAAAGTG	
		Exon 3	FWD: ACAGCATTACACTGGAAATGG REV: TCAACCTCTACTTCAACATGGAAA	FWD: ACAGCATTACACTGGAAATGG	Fail

		Exon 4	FWD: TCCCTGGATTCAAATCTTACC REV: AAGTGATCTACTCGCCTCAGC	FWD: TCCCTGGATTCAAATCTTACC	Fail
		Exon 5 & 6	FWD: GGGAACATTTTTGTCTTGGTG REV: GCGTGAGTACAATGACTGG	FWD: GGGAACATTTTTGTCTTGGTG	
		Exon 7	FWD: CCCTCAGAGGAATAGTGTGGA REV: TTGTAAGTCAAGTCAGGCAAGACA	FWD: CCCTCAGAGGAATAGTGTGGA	
		Exon 8	FWD: GGCAGCTACATGTTATGGATGA REV: TAGAGACAGGGGCTTGCTTT	FWD: GGCAGCTACATGTTATGGATGA	
		Exon 9	FWD: CAACAGTAAAGGCAGCCACA REV: TGGGATCTACAAATCTCTGCAA	FWD: CAACAGTAAAGGCAGCCACA	
		Exon 10	FWD: AAATTTATTTGGTTTCCCACCA REV: GAATATTCAGCAGGTGAAATGAA	FWD: AAATTTATTTGGTTTCCCACCA	
		Exon 11	FWD: TGCCACATTTAATGGCAA REV: GCCGTTAAATTTGTGCTTTCA	FWD: TGCCACATTTAATGGCAA	
		3'UTR	FWD: TCCACATTTTCATTTAGGAGCTA REV: TTCAAATCTCTTTTCATTCATCC	FWD: TCCACATTTTCATTTAGGAGCTA	
<i>DEPDC4</i>	5	Exon 1	FWD: AAGGGAGGGGGAAAAAGACT REV: CCCCTAAAAAGCCTCAGTCC	FWD: AAGGGAGGGGGAAAAAGACT REV: CCCCTAAAAAGCCTCAGTCC	Fail
		Exon 2_1	FWD: TGTGAGATGACACGTAAGAAGGA REV: TTTTGTCTTTTGCAACAATCG	TGTGAGATGACACGTAAGAAGGA	
		Exon 2_2	FWD: TCTTAAAGGGGTTTCATCTTTGC REV: CACATTCGAGTTTAGCTCAATAAA	FWD: TCTTAAAGGGGTTTCATCTTTGC REV: CACATTCGAGTTTAGCTCAATAAA	
		Exon 3	FWD: GCCTGAAATCGTTTTGGAA REV: CAAGGGGTATGTGGGAACCTG	FWD: GCCTGAAATCGTTTTGGAA	
		Exon 4	FWD: AATATGGCTCATAACTCTGATGTTT REV: TCGTACGAACCAACCCTCT	FWD: AATATGGCTCATAACTCTGATGTTT	
		Exon 5	FWD: GAAAAGAACCTGCAAATAATACAA REV: GGCAAAATGCCAGAGATACC	FWD: GAAAAGAACCTGCAAATAATACAA	
<i>SCYL2</i>	17	5'UTR	FWD: AGTCCTCGAAAGAGGCCTTG REV: CCCACCTCACACACAATAACC	FWD: AGTCCTCGAAAGAGGCCTTG REV: CCCACCTCACACACAATAACC	Fail
		Exon 1	FWD: GGTTCTCTGAAGATAAAACCAACA REV: TGAGAACTAAAGAACCCATTTAAGA	FWD: GGTTCTCTGAAGATAAAACCAACA	
		Exon 2	FWD: TCATAAGGAAACCAACTCTTTGA REV: TGCAAATAAATTTAGGGAGAAAAC	FWD: TCATAAGGAAACCAACTCTTTGA	
		Exon 3	FWD: TGCAGAGGCTCCTAACTTTG REV: CCGAACAACAACTGCAGAA	FWD: TGCAGAGGCTCCTAACTTTG	
		Exon 4	FWD: TGGCAATTGACTACATCTGTG REV: TGTGGTAGTAATGTGCCGAAG	FWD: TGGCAATTGACTACATCTGTG	
		Exon 5	FWD: TTGGGAATTTGGGAATTTTG REV: GCTGATCTTATGCAAACCTAAAATG	FWD: TTGGGAATTTGGGAATTTTG	
		Exon 6	FWD: TTGGGTATTAAGATAAGGGTTTTG REV: TTTGGGGCTGTATCTGACTG	FWD: TTGGGTATTAAGATAAGGGTTTTG	
		Exon 7	FWD: AGGTGATCTTCAGCATTTTGC	FWD: AGGTGATCTTCAGCATTTTGC	

			REV: TTTTGGCTTCAGTTGGCAGT		
		Exon 8	FWD: GCATCCCACCTTTACTCTGAAAA REV: TTTGGTTCAAACATGTAAAGCAG	FWD: GCATCCCACCTTTACTCTGAAAA	
		Exon 9	FWD: CAGGCTAGCAACATGGTGAG REV: TGCAGGTATTATGTACACAGACTGA	FWD: CAGGCTAGCAACATGGTGAG	
		Exon 10	FWD: CAAAGAGTTGTTGAAAGGACCA REV: GCACTCAAAGTAAAGGGACAGC	FWD: CAAAGAGTTGTTGAAAGGACCA	
		Exon 11	FWD: TTGTGAAACAAGCCAGGAAA REV: TGTCAAGATTCTACTGCTTTTGCTA	FWD: TTGTGAAACAAGCCAGGAAA	
		Exon 12	FWD: AGGCATTGATTGGGAAAAAC REV: CCTTCCACCCACAAACTTTC	FWD: AGGCATTGATTGGGAAAAAC	
		Exon 13	FWD: ATATCAGCGCTGTGACTGGA REV: TTGAAATGTTTACATGTGGTCAA	FWD: ATATCAGCGCTGTGACTGGA	
		Exon 14	FWD: GGGGCAAGCAGACATTAACA REV: CAGTCAGAAGGTCTGTCCCA	FWD: GGGGCAAGCAGACATTAACA	
		Exon 15	FWD: TTGGGAATCAGGTAAGAAGCA REV: TCTCAAAATGGGTTAGGGTCA	FWD: TTGGGAATCAGGTAAGAAGCA	
		Exon 16	FWD: TGTGACAATCACCAAGACAAGA REV: TGCCCATACTTCTTAGAAACCA	FWD: TGTGACAATCACCAAGACAAGA	
		Exon 17_1	FWD: TTGACCGGCAGGCTATAGTT REV: GCAGGAGGAACACTCAAAGC	FWD: TTGACCGGCAGGCTATAGTT	
		Exon 17_2	FWD: GGGCTTTCAGACTTCAGGAT REV: TTGAAACTGAAATAATCCTTCAAA	FWD: GGGCTTTCAGACTTCAGGAT REV: TTGAAACTGAAATAATCCTTCAAA	Fail
		Exon 17_3	FWD: TGCTTTTGGTATGCAGGGTA REV: GAGCTTGCAATGACCATCAC	FWD: TGCTTTTGGTATGCAGGGTA	
<i>SLC17A8</i>	12	5'UTR 1	FWD: GATCTGAAACCTGGCTCTGC REV: CTGCCTGGGTAACCTCTCTGC	FWD: GATCTGAAACCTGGCTCTGC	
		5'UTR 2	FWD: GATTTGGAGGCACAGAGGAG REV: TAGATGCCATTTGGGACCAT	FWD: GATTTGGAGGCACAGAGGAG	
		5'UTR 3	FWD: AGAGGGAGAAAAAGGGGAAAA REV: CAGTATCCGTGGCCTAGCTC	FWD: AGAGGGAGAAAAAGGGGAAAA	
		5'UTR 4	FWD: TCAGAAAAGCAAAGGGCTGT REV: CTCCTTCCTTCCCAGGTTTC	FWD: TCAGAAAAGCAAAGGGCTGT	
		Exon 1	FWD: TCCCTCCACGAGAACTGACT REV: AGGGGCTCCAGAAGGATCTA	FWD: TCCCTCCACGAGAACTGACT	
		Exon 2	FWD: TGGGTCTTCTTTTTGTTTTTC REV: AATGGGAGGATGCTGAGATG	FWD: TGGGTCTTCTTTTTGTTTTTC	
		Exon 3	FWD: CAGGACTTTTGCTTGCTGCT REV: CAGGGTCATTGGGATCAGT	FWD: CAGGACTTTTGCTTGCTGCT	
		Exon 4	FWD: TCTTTCCACAGGATTTCCA REV: GGAAACAGCAGGAAAAGGAA	FWD: TCTTTCCACAGGATTTCCA	
		Exon 5	FWD: TCACTTCCCAAAGGTCCATC REV: GGCTCCAGGATCCTCCT	FWD: TCACTTCCCAAAGGTCCATC	
		Exon 6	FWD: ACACTGGGAGTTTGCTGTGTC	FWD: ACACTGGGAGTTTGCTGTGTC	

			REV: TGACGTTCTCTTGTTAACTGGT		
		Exon 7	FWD: GGGTGTTACAGTGCATGTAT REV: GCATAAACCCGGCAAAGATGT	FWD: GGGTGTTACAGTGCATGTAT	
		Exon 8	FWD: GGGCCAACGTGGTTAGTCT REV: CAGCCAGGCTATTAGGTGTCA	FWD: GGGCCAACGTGGTTAGTCT	
		Exon 9	FWD: CCTACCCAGTCCCACATAA REV: GCAGCACTGTGATGGACAAC	FWD: CCTACCCAGTCCCACATAA	
		Exon 10	FWD: GGGCCCAAACCTAGATGAT REV: ACATTCTCTGGACGGTGGTC	FWD: GGGCCCAAACCTAGATGAT	
		Exon 11	FWD: GTGCAGACACAGCCTCTTGA REV: CTAGCCTTGGTGCCATTGAT	FWD: GTGCAGACACAGCCTCTTGA	
		Exon 12_1	FWD: TGCTTCTGACACACGTCCCTC REV: TCGCTCCTCTCTGTCCCTTC	FWD: TGCTTCTGACACACGTCCCTC	
		Exon 12_2	FWD: CCTGGTGCATTACAGTGGTG REV: TCTTTCCCTGTTGCTGGTT	FWD: CCTGGTGCATTACAGTGGTG	
		3'UTR 1	FWD: TTTCTTGTAGCCCAGCTTGC REV: CCTTGGGCAAGTTCATTCT	FWD: TTTCTTGTAGCCCAGCTTGC	
		3'UTR 2	FWD: ATGTTTGGCCAGAAGGAATG REV: CCAATCTCTTGTTACTGCTTICA	FWD: ATGTTTGGCCAGAAGGAATG	
		3'UTR 3	FWD: GGGAAACATTTGGGTTGATG REV: AAGTATCCAATGTAATTGCCATTATGC	FWD: GGGAAACATTTGGGTTGATG	
		3'UTR 4	FWD: TCTTTAGCCTTTTCTGCTGGA REV: CTGTTTATGGGGCTTGCAT	FWD: TCTTTAGCCTTTTCTGCTGGA	
		3'UTR 5	FWD: TGTATTTCTGGTCCCCAGTGA REV: CGTGGGTTTCTGCATATGAT	FWD: TGTATTTCTGGTCCCCAGTGA	
<i>NR1H4</i>	9	5'UTR 1	FWD: TCCCAAGGTTCTTTCTATGT REV: TCATTAACCTTTTGCTTCTGCTTC	FWD: TCCCAAGGTTCTTTCTATGT	
		5'UTR 2	FWD: CCTTGGTGGAGACAGAAAAA REV: CCTTGTATCTGCCTTTTAGAGGA	FWD: CCTTGGTGGAGACAGAAAAA	
		Exon 1	FWD: CTTGGGCATTTTtaggtcca REV: TCCGATCTACCTCTAACCTTGC	FWD: CTTGGGCATTTTtaggtcca	
		Exon 2	FWD: AGAGCCCACACTCCTAACCA REV: GGTGAGGATGTAGGAGGAGGT	FWD: AGAGCCCACACTCCTAACCA	
		Exon 3	FWD: GATGGCCTGGGTGCTCTC REV: GATGGCTTAGTAGGTTCTTCTTT	FWD: GATGGCCTGGGTGCTCTC	
		Exon 4	FWD: AAGGCTAGCGTTAGTTCTGTGC REV: TCCATTTTAATGAACAATTGGACT	FWD: AAGGCTAGCGTTAGTTCTGTGC	
		Exon 5	FWD: AGGTCCCTCCAGATGAATGC REV: TCAGATCTTTGGAGGGCAAT	FWD: AGGTCCCTCCAGATGAATGC	
		Exon 6	FWD: ATTGCCCTCCAAAGATCTGA REV: GAAAAATAGAGCTGATCTCACAGGAA	FWD: ATTGCCCTCCAAAGATCTGA	
		Exon 7	FWD: GGACTCAACTAGACTACCCAATTTT REV: TTCATGCTAGGCACAACAGG	FWD: GGACTCAACTAGACTACCCAATTTT	
		Exon 8	FWD: CAATGTCCTTCCTTTGGACA	FWD: CAATGTCCTTCCTTTGGACA	

			REV: TGAAAAGAAGTGCCTGAAAGGT		
		Exon 9	FWD: CGTGTGTGTGCATAAAAAATTCA REV: TGAGTGAAACTGGGTACAAGTGA	FWD: CGTGTGTGTGCATAAAAAATTCA	
		3'UTR	FWD: CGACCACAAGTTTACCCCACT REV: GATTCAATAGGATGTCTTTCAACA	FWD: CGACCACAAGTTTACCCCACT	
<i>PIGAP</i>	1	Exon 1_1	FWD: CCATTTGATGAGGAGGAGGA REV: GCTTTCCACACCTCCCATATT	FWD: CCATTTGATGAGGAGGAGGA	
		Exon 1_2	FWD: ACCATCTCAGCATGGCGTAT REV: AATCCAGAAAAGGGGATGGTC	FWD: ACCATCTCAGCATGGCGTAT	
		Exon 1_3	FWD: TTCACAGTCTGCCATTGCTC REV: TTCTCTTGGTCCCTCTCCCTC	FWD: TTCACAGTCTGCCATTGCTC	
		Exon 1_4	FWD: AGACCCATTTAGAAGGCATGA REV: TGTCCAGTTGTTTGCCATTG	FWD: AGACCCATTTAGAAGGCATGA	
		Exon 1_5	FWD: TGTGAGGGATTGAAAAAGC REV: TGCAAGGTTTCTACACTCAGGA	FWD: TGTGAGGGATTGAAAAAGC	
		Exon 1_6	FWD: TTTGGGGGCTTGTGTTTTT REV: TGTGCTGGTAACTGATGGACT	FWD: TTTGGGGGCTTGTGTTTTT	
		Exon 1_7	FWD: TGGCCAGTTTTTAATGTTATGC REV: CTGCTCAGAAAACCGAAGG	FWD: TGGCCAGTTTTTAATGTTATGC	
		Exon 1_8	FWD: GCCTTCATCTTCCATTGTGTT REV: TCTAGTGCACCCACAAGTGC	FWD: GCCTTCATCTTCCATTGTGTT	
		Exon 1_9	FWD: TAATTGTTGTGCCAGAGC REV: AAAAACGGTGGTATGCCTTT	FWD: TAATTGTTGTGCCAGAGC	
		Exon 1_10	FWD: GGGAGTTCCTTTGTTGGAGAAA REV: CTCCTTTTTTCAGACTCAGTCCA	FWD: GGGAGTTCCTTTGTTGGAGAAA	
<i>GAS2L3</i>	8	5'UTR 1	FWD: GGACCTGCTCTGACTGAACC REV: GAGACCCAACAAACCTCAGC	FWD: GGACCTGCTCTGACTGAACC REV: GAGACCCAACAAACCTCAGC	Fail
		5'UTR 2	FWD: AAGCAGCTTTCCAAATTATGC REV: GCGGTAAGAACAAAGGTGTTA	FWD: AAGCAGCTTTCCAAATTATGC	
		Exon 1	FWD: GAAGAAAAAGTTTTGCGTTTGC REV: GCTTAGAATTGAACGTTTTTGA	FWD: GAAGAAAAAGTTTTGCGTTTGC	
		Exon 2	FWD: TGAGCCACAGCAGCTTTTTA REV: TCCCCAGCTGAAATGTAACC	FWD: TGAGCCACAGCAGCTTTTTA	
		Exon 3	FWD: AAGTTAACTGGCCATTATTTGCT REV: TTCACCATTTAATTGATTGAAC	FWD: AAGTTAACTGGCCATTATTTGCT	
		Exon 4	FWD: GGTGGGGACCTCTGCTTTA REV: TCCAGAACCTTCTGTAGCC	FWD: GGTGGGGACCTCTGCTTTA	
		Exon 5	FWD: TTTTCTAAACAAGTAAACCTGCTG REV: TGCTCATGCAAACAGAATGA	FWD: TTTTCTAAACAAGTAAACCTGCTG	
		Exon 6	FWD: CCCAGTGAACAATTGGTAGAA REV: CCCACCACTCCTCAACTAC	FWD: CCCAGTGAACAATTGGTAGAA	
		Exon 7	FWD: AGCACAGGAGAAGCGATTAAA REV: CCTGTACAGTGAAATCCTTCCA	FWD: AGCACAGGAGAAGCGATTAAA	

		Exon 10_1	FWD: CTGTTGGCAAATGCTCTGAA REV: GTGAAGATGCTGGCACCAAT	FWD: CTGTTGGCAAATGCTCTGAA	
		Exon 10_2	FWD: AACACCTCAGCCTCCTGAAA REV: GGGGTATTGGGGGATGAAA	FWD: AACACCTCAGCCTCCTGAAA	
		Exon 10_3	FWD: CAGGCTCCTTCAAAACAATGC REV: TGATTAAATTCAAGGCCGATT	FWD: CAGGCTCCTTCAAAACAATGC	
		Exon 10_4	FWD: TCCAGTCCTCTGCAAAAATG REV: TCATCATCTTCCTTTTCTTTGC	FWD: TCCAGTCCTCTGCAAAAATG	
		Exon 10_5	FWD: CTGTCGCTAAGAGCCAGCAT REV: CAGAAGGGCTCTTCCAGTG	FWD: CTGTCGCTAAGAGCCAGCAT	
<i>TMEM16D</i>		Exon 1	FWD: TCTTCTCGCCTTTCCTAGCC REV: CCATGAAAACAGAGGAAATGC	FWD: TCTTCTCGCCTTTCCTAGCC REV: CCATGAAAACAGAGGAAATGC	
		Exon 2	FWD: GTGATGCATACCTTAAGAATTGA REV: AGGTGAGCAGAAGGGGAAAT	FWD: GTGATGCATACCTTAAGAATTGA REV: AGGTGAGCAGAAGGGGAAAT	
		Exon 3	FWD: GCTTGTCACTCAAGGAGTTAATGA REV: AAAACCTGTCCCTTGTTTTACA	FWD: GCTTGTCACTCAAGGAGTTAATGA REV: AAAACCTGTCCCTTGTTTTACA	
		Exon 4	FWD: GCTGGAACACTACAGGCACACG REV: TTGGAACATTCCCCAAACTC	FWD: GCTGGAACACTACAGGCACACG REV: TTGGAACATTCCCCAAACTC	Fail
		Exon 5	FWD: GTCTGGCCTATFGGTGAGGA REV: TTGGCCATGAAGGCTTATTT	FWD: GTCTGGCCTATFGGTGAGGA REV: TTGGCCATGAAGGCTTATTT	
		Exon 6	FWD: GCCCTGTGTTCCCACTGTAT REV: CGGAGAGGGACGTTTTTCAT	FWD: GCCCTGTGTTCCCACTGTAT REV: CGGAGAGGGACGTTTTTCAT	
		Exon 7	FWD: AGTGAGAGGGCCTGGAATG REV: TAGGGGAGAAGGGCACTATG	FWD: AGTGAGAGGGCCTGGAATG REV: TAGGGGAGAAGGGCACTATG	Fail
		Exon 8	FWD: TGTTCCAGACACACCCTGTC REV: TGCGACGAAGATTTTACTTG	FWD: TGTTCCAGACACACCCTGTC REV: TGCGACGAAGATTTTACTTG	
		Exon 9	FWD: GTGCCCCTAAGAGGGTTGAT REV: CCCTCCCTAATTACCCATTGA	FWD: GTGCCCCTAAGAGGGTTGAT REV: CCCTCCCTAATTACCCATTGA	
		Exon 10	FWD: ATCAAACCTGCCTGCCCTTA REV: GCCAGATATGAGTGAGAGCTGTA	FWD: ATCAAACCTGCCTGCCCTTA REV: GCCAGATATGAGTGAGAGCTGTA	
		Exon 11	FWD: GGCTTACCTTGCTTGCAGTT REV: CCATGAGAGGGTAGGAAGTTTG	FWD: GGCTTACCTTGCTTGCAGTT REV: CCATGAGAGGGTAGGAAGTTTG	
		Exon 12	FWD: TGGGCAAGAACTTGTTTACATT REV: GCCATGCCTTCCAAATACAT	FWD: TGGGCAAGAACTTGTTTACATT REV: GCCATGCCTTCCAAATACAT	
		Exon 13	FWD: ATTCCCCCTACCCAAAACAA REV: TGAAGGTTTAAGAGAAATCAGACA	FWD: ATTCCCCCTACCCAAAACAA REV: TGAAGGTTTAAGAGAAATCAGACA	
		Exon 14	FWD: GAAATGAAGCTCAGCTGAAAA REV: GGCAATTGAAAATGCTTTATGAG	FWD: GAAATGAAGCTCAGCTGAAAA REV: GGCAATTGAAAATGCTTTATGAG	
		Exon 15	FWD: CAAACCCACTTCATTGGTTG REV: TGAGGAATAAATAACAAAGTGCAAA	FWD: CAAACCCACTTCATTGGTTG REV: TGAGGAATAAATAACAAAGTGCAAA	
		Exon 16	FWD: TGCATTTGATTGTGATCTCTTG REV: CTGCCAGGACATCAGTGCTA	FWD: TGCATTTGATTGTGATCTCTTG REV: CTGCCAGGACATCAGTGCTA	
		Exon 17	FWD: TCTTGCCCTGAAAATTACGC REV: TTCTGTTGAAGGCAAAGAAAA	FWD: TCTTGCCCTGAAAATTACGC REV: TTCTGTTGAAGGCAAAGAAAA	

		Exon 18	FWD: TCCGTGGGTAAACTGGAGTC REV: TTTGGGAAGAGAAGGGAGGA	FWD: TCCGTGGGTAAACTGGAGTC REV: TTTGGGAAGAGAAGGGAGGA	
		Exon 19	FWD: TTTCTAATTCCCCAGACC REV: GGCCTGCAAGTAAGCAA	FWD: TTTCTAATTCCCCAGACC REV: GGCCTGCAAGTAAGCAA	
		Exon 20	FWD: TCCCATCATTCTTGTTTCC REV: TGATTTTCATGGCTGCCTTT	FWD: TCCCATCATTCTTGTTTCC REV: TGATTTTCATGGCTGCCTTT	
		Exon 21	FWD: TTCTTTGATAGCCTGCCTGAA REV: ATGCCTCCTCTCTGTTGC	FWD: TTCTTTGATAGCCTGCCTGAA REV: ATGCCTCCTCTCTGTTGC	
		Exon 22	FWD: GATATCCCCTGTGCGTCTGT REV: AAGCACAAATCTCTAGCACTGG	FWD: GATATCCCCTGTGCGTCTGT REV: AAGCACAAATCTCTAGCACTGG	
		Exon 23	FWD: TGCAAATGTCAGTATTTGGAAAG REV: TCACAGGCCTCTCCTTCTG	FWD: TGCAAATGTCAGTATTTGGAAAG REV: TCACAGGCCTCTCCTTCTG	
		Exon 24	FWD: AAGGAAGGGCCAGTTAAAG REV: GCTTGAAAATTCTTCATGTGCTT	FWD: AAGGAAGGGCCAGTTAAAG REV: GCTTGAAAATTCTTCATGTGCTT	
		Exon 25	FWD: GCTGGACAAGCAAAACAACA REV: GCAACGAGTTCAGATTTGTCC	FWD: GCTGGACAAGCAAAACAACA REV: GCAACGAGTTCAGATTTGTCC	
		Exon 26	FWD: CCCTGGTCACTTTGCCTCT REV: GCTTCTTTGGATTGGGAAG	FWD: CCCTGGTCACTTTGCCTCT REV: GCTTCTTTGGATTGGGAAG	
		Exon 27_1	FWD: TGACTCCATTTGGGGTTACAA REV: TGTGTTGTTGGTGACATGGA	FWD: TGACTCCATTTGGGGTTACAA REV: TGTGTTGTTGGTGACATGGA	
		Exon 27_2	FWD: TACTGGGCCTGTTTTTCAGC REV: TTCTGCACAGTCCCTCAGA	FWD: TACTGGGCCTGTTTTTCAGC REV: TTCTGCACAGTCCCTCAGA	
SLC5A8	15	5'UTR	FWD: GCACAGATTTCTGCTCTCC REV: AGTCCCACACCACGAAGGT	FWD: GCACAGATTTCTGCTCTCC REV: AGTCCCACACCACGAAGGT	Fail
		Exon 1	FWD: GGGATCCGGGATAAGAAGTG REV: GAGTGAAGGGAGGGTGATGA	FWD: GGGATCCGGGATAAGAAGTG REV: GAGTGAAGGGAGGGTGATGA	Fail
		Exon 2	FWD: TGGGTGATGGAAGTGTCTTG REV: GCATATTTCCGACTGTTGCT	FWD: TGGGTGATGGAAGTGTCTTG REV: GCATATTTCCGACTGTTGCT	
		Exon 3	FWD: ACCATTTGCACTAAGCACCA REV: ATTCCTCCATCTCCCATCT	FWD: ACCATTTGCACTAAGCACCA REV: ATTCCTCCATCTCCCATCT	
		Exon 4	FWD: AGCCAGTGTGAGATCTGTGTG REV: CTGCAGGAGGTTGGGAATAG	FWD: AGCCAGTGTGAGATCTGTGTG REV: CTGCAGGAGGTTGGGAATAG	
		Exon 5	FWD: CTCCATCTTGCCTCTGCTT REV: CCTTAGCAATTTGTTGGCTTG	FWD: CTCCATCTTGCCTCTGCTT REV: CCTTAGCAATTTGTTGGCTTG	
		Exon 6	FWD: ATGTGCATTGCTTGCTTCC REV: TTTATCCCCCATGGGTCTT	FWD: ATGTGCATTGCTTGCTTCC REV: TTTATCCCCCATGGGTCTT	
		Exon 7	FWD: GGAAATCCCATCCATTCAAA REV: GCATGTCCACTTCCGTTTC	FWD: GGAAATCCCATCCATTCAAA REV: GCATGTCCACTTCCGTTTC	
		Exon 8	FWD: CAGTTCCCGAAGGAGACAAG REV: CAACAGGACGCTAGTCCACA	FWD: CAGTTCCCGAAGGAGACAAG REV: CAACAGGACGCTAGTCCACA	
		Exon 9	FWD: TTTGTTTCCCCCTTCTCATT REV: GGATGAAGGCACAGGAAAAA	FWD: TTTGTTTCCCCCTTCTCATT REV: GGATGAAGGCACAGGAAAAA	
		Exon 10	FWD: TGATGTGTGGCCATTCTT REV: CCCTGCCACTTGATATGTCC	FWD: TGATGTGTGGCCATTCTT REV: CCCTGCCACTTGATATGTCC	

		Exon 11	FWD: TTTCAGAAGGAGGCCGAATA REV: TGGTTC TGGAAAGTTTCCATTG	FWD: TTTCAGAAGGAGGCCGAATA REV: TGGTTC TGGAAAGTTTCCATTG	
		Exon 12	FWD: TGAATGTTTTCTGCCCTGTG REV: TTTTGT TACCCTGCAGAA	FWD: TGAATGTTTTCTGCCCTGTG REV: TTTTGT TACCCTGCAGAA	
		Exon 13	FWD: TCAAGGTGAAGTTTGTCTTCA REV: GGGCAGAACCAAGATTCAAA	FWD: TCAAGGTGAAGTTTGTCTTCA REV: GGGCAGAACCAAGATTCAAA	
		Exon 14	FWD: CTTTCAAGACCTGGGGCTAA REV: CCTTCCTGTCCATCACTTTTC	FWD: CTTTCAAGACCTGGGGCTAA REV: CCTTCCTGTCCATCACTTTTC	
		Exon 15	FWD: TTGTCTGATGGGCTATTTTGT REV: TCCCCAAAACACTCATGATA	FWD: TTGTCTGATGGGCTATTTTGT REV: TCCCCAAAACACTCATGATA	
		3'UTR 1	FWD: GAGCAATGGGACTCGTTTGT REV: TATGCCCTGGACTGATAGGG	FWD: GAGCAATGGGACTCGTTTGT REV: TATGCCCTGGACTGATAGGG	
		3'UTR 2	FWD: GGAAGTTTGCCAAACATCACA REV: CCATGGAGCTTAACCATTTTG	FWD: GGAAGTTTGCCAAACATCACA REV: CCATGGAGCTTAACCATTTTG	
		3'UTR 3	FWD: CCCAAATCCTGGCTTATCAA REV: TCAGCCTCCCAAATGTTTCAAG	FWD: CCCAAATCCTGGCTTATCAA REV: TCAGCCTCCCAAATGTTTCAAG	Fail
		3'UTR 4	FWD: GCCCTGTACATTTAGAGGTTGC REV: GTTTTGAACATTGCCCAGGT	FWD: GCCCTGTACATTTAGAGGTTGC REV: GTTTTGAACATTGCCCAGGT	Fail
<i>UTP20</i>	62	Exon 1	FWD: AAGAACACCTCACCAAACG REV: TCCAGTGTCTCCCTCTTTTCG	FWD: AAGAACACCTCACCAAACG	
		Exon 2	FWD: CGGCCGTATGTTTTTCAGTT REV: GAAACAGCACAGGTCTAAAGCA	FWD: CGGCCGTATGTTTTTCAGTT	
		Exon 3	FWD: TGTGTTACTTAATGGCCTGTTTT REV: GATTGAATGATTGGCATTGTGTC	FWD: TGTGTTACTTAATGGCCTGTTTT	
		Exon 4	FWD: AAACCTCACAGAACACTTCGGTA REV: AAAAGGAAAATCCTCCTTGTTTCT	FWD: AAACCTCACAGAACACTTCGGTA	
		Exon 5	FWD: TTGCCTGATTCTTTTGTCTGA REV: TGGCTGGAGAATCAACTTTGT	FWD: TTGCCTGATTCTTTTGTCTGA	
		Exon 6	FWD: TGTTTGATACCTGCTGTGTATTCC REV: GGGTTTTGCCATGTTGGT	FWD: TGTTTGATACCTGCTGTGTATTCC REV: GGGTTTTGCCATGTTGGT	
		Exon 7	FWD: TGAGAGTTCTTCATTTGGATATGTTT REV: CTTCCCTCCACATCAATTGC	FWD: TGAGAGTTCTTCATTTGGATATGTTT	
		Exon 8	FWD: TTACAAATGTCTGTTCTTTTCACAA REV: CCAACACTCCTCATCTAGTGCT	FWD: TTACAAATGTCTGTTCTTTTCACAA	Fail
		Exon 9	FWD: AAATGTATCTTTTTCTCCAAAGC REV: AGCAAGATGTGGAGAGACTGG	FWD: AAATGTATCTTTTTCTCCAAAGC	
		Exon 10	FWD: GGAAGTGGGACAAAGATAACC REV: CATGCAATTCCCATTTCCTT	FWD: GGAAGTGGGACAAAGATAACC	
		Exon 11	FWD: GCATCTGTGGAAGCACCTTT REV: TGACTAAAACATCAAGCACTTATCC	FWD: GCATCTGTGGAAGCACCTTT	
		Exon 12	FWD: GACATGGCTGCACAGTCTTT REV: TTTTCACACA ACTTATCATGGACA	FWD: GACATGGCTGCACAGTCTTT	
		Exon 13	FWD: GCCAGTGGAGTTGAAAAAGC REV: CTGTCCAAGGGGAGAAAA	FWD: GCCAGTGGAGTTGAAAAAGC	

		Exon 14	FWD: CCCTCGTGGTGTACCTCAT REV: TATCATCCAGGGGTTATGC	FWD: CCCTCGTGGTGTACCTCAT	
		Exon 15	FWD: TGACAGACAATTCTTTGGAAGG REV: TTTCACTACGTGAATACAACTCAGG	FWD: TGACAGACAATTCTTTGGAAGG	
		Exon 16	FWD: CGTGAGACTTTTGCCTGTACC REV: TCGCTTAAACAGAAATCATCC	FWD: CGTGAGACTTTTGCCTGTACC	
		Exon 17	FWD: GCACATATACTCTGGTCAAATGGT REV: ATCTCCTGGCCTTGTGATCC	FWD: GCACATATACTCTGGTCAAATGGT	
		Exon 18	FWD: TGGTATGGGGAGAAAAGAATCA REV: GAGAACTGGGGATTCCCTTA	FWD: TGGTATGGGGAGAAAAGAATCA	
		Exon 19	FWD: GGTTGTCCAACCTGGGATGT REV: AGAATAATCTGGGCCCATC	FWD: GGTTGTCCAACCTGGGATGT	
		Exon 20	FWD: CTCCACATTGAGGGATAACCT REV: TCTGTTTTCCAATTCGTGAG	FWD: CTCCACATTGAGGGATAACCT	
		Exon 21	FWD: TGCCCTCTCTTGAGAAAACAC REV: TCAGCCACTTTGGGAGGTTA	FWD: TGCCCTCTCTTGAGAAAACAC	
		Exon 22	FWD: TCATGAACAGAATCAGCACCTT REV: GAAAATCCCAGGAAGATGTAGC	FWD: TCATGAACAGAATCAGCACCTT	
		Exon 23	FWD: GCGGGGTGTTTGAAGTTCT REV: TGGGCCCTATTAGCAATTA	FWD: GCGGGGTGTTTGAAGTTCT	
		Exon 24	FWD: GCAAATAACCACAAGTAAATTGCTA REV: GCTTGAAATACGATGACCTC	FWD: GCAAATAACCACAAGTAAATTGCTA	
		Exon 25	FWD: GGATTTTCCTTTATGGATATCAACC REV: CAAAGAAAATGCAATCAAAAAGA	FWD: GGATTTTCCTTTATGGATATCAACC	
		Exon 26	FWD: GCTCTTCTAGCCTTTTAGGCAAA REV: TGGGAGGAACAACCCTGTTA	FWD: GCTCTTCTAGCCTTTTAGGCAAA	
		Exon 27	FWD: TTTGGTAAGAGTCAAAAAGGAGATAA REV: CAAACTTGAAATGAGAGTTGGAAG	FWD: TTTGGTAAGAGTCAAAAAGGAGATAA	
		Exon 28	FWD: TGCCTCTCTGAGGAATCAGG REV: TCTGGGTGGTAGCTATGTTGG	FWD: TGCCTCTCTGAGGAATCAGG	
		Exon 29	FWD: ATCCTGTGCTGTGATTTCTGT REV: GTTTCCTGGACTGCTTAAACC	FWD: ATCCTGTGCTGTGATTTCTGT	
		Exon 30	FWD: CATGGTGAATAATTCATATGGACA REV: GGGAAAAGAACTTCTGAGCA	FWD: CATGGTGAATAATTCATATGGACA	
		Exon 31	FWD: TG TTCATAGTGGTTGAGTGCTTTT REV: ACGCCTGGCCAAGATAATAA	FWD: TG TTCATAGTGGTTGAGTGCTTTT	
		Exon 32	FWD: GCTAGCTGTGTATTGGAATGCT REV: TGCTGCTCGCAATTAACCT	FWD: GCTAGCTGTGTATTGGAATGCT	
		Exon 33	FWD: GGAAGAACTGGTTCACACATTC REV: GCTACCTGTCCCCATTCAAA	FWD: GGAAGAACTGGTTCACACATTC	
		Exon 34	FWD: ACAGGTAGCTGAGGGGAGGA REV: TTGATCGAAGGCGTTAAGCTA	FWD: ACAGGTAGCTGAGGGGAGGA	
		Exon 35	FWD: GGGTTTCTCTTTGGCTTCAA REV: AAAGATCAGGTCAGTATTAGGC	FWD: GGGTTTCTCTTTGGCTTCAA	
		Exon 36	FWD: AGATGCTTGCACTGGGAAGT	FWD: AGATGCTTGCACTGGGAAGT	

			REV: CAGTAGCAAACGTGGGAAAA		
		Exon 37	FWD: GTCCAGGCTGCCTCAAAC REV: AAAACATGTCTTTCCAAATGAGG	FWD: GTCCAGGCTGCCTCAAAC	
		Exon 38	FWD: AGAATACGATACTAAAATGGAGCTG REV: AACTCCATGTATATTCTGGCAAAG	FWD: AGAATACGATACTAAAATGGAGCTG	
		Exon 39	FWD: CCTGGGGTTAGAGGGAAAAA REV: GAACTCATCATTTTTGGAAAGTCA	FWD: CCTGGGGTTAGAGGGAAAAA	
		Exon 40	FWD: TTCCTCTCCTTTTATAATCCAGTGA REV: GGGAAATAAGTTGAATGTCACCA	FWD: TTCCTCTCCTTTTATAATCCAGTGA	
		Exon 41	FWD: CTGCCCACAGTTGCTGATTA REV: CACCAAGAGCCTCAGTGTA	FWD: CTGCCCACAGTTGCTGATTA	
		Exon 42	FWD: ACAAAGTTGCAGTGTGGTAGA REV: TCTTCTGACAAAAGAGACTCAA	FWD: ACAAAGTTGCAGTGTGGTAGA	
		Exon 43	FWD: TCATAACTTGCTGTGGTTTCG REV: GACAGGCCCAAAGTCCATA	FWD: TCATAACTTGCTGTGGTTTCG	
		Exon 44	FWD: TGTTCTCTTTCAGTGCTTCC REV: TTTCTTATTTGGTGAATTGATTTT	FWD: TGTTCTCTTTCAGTGCTTCC	
		Exon 45	FWD: GGACATACCAGGGCCTTTTT REV: CCAAAGGAAATCATGGGTGA	FWD: GGACATACCAGGGCCTTTTT	
		Exon 46	FWD: TTTAATTAGGAGAAAAGCCAAACG REV: TTAAAACAACCCACAGAATGG	FWD: TTTAATTAGGAGAAAAGCCAAACG	
		Exon 47	FWD: GGGCCACTCTAACTTCTTGG REV: TGAGCAGTACTAGAAATTCACAGA	FWD: GGGCCACTCTAACTTCTTGG	
		Exon 48	FWD: TTTCTCTGAACATCATTTCACATT REV: GCTTGAGCCCAAATACAACC	FWD: TTTCTCTGAACATCATTTCACATT	
		Exon 49	FWD: AGCCTCAGGTGCTGCATAGT REV: AGACACGGGGTCTCGTTATG	FWD: AGCCTCAGGTGCTGCATAGT	
		Exon 50	FWD: CACCCTGTTTGGAAAAGCAT REV: CACCTGTAATTGACCCACCA	FWD: CACCCTGTTTGGAAAAGCAT	
		Exon 51	FWD: CTGTGGTTGCTTTAGCGTCA REV: TCAGCCAGTGTGACACCTC	FWD: CTGTGGTTGCTTTAGCGTCA	
		Exon 52	FWD: CCAAGTGAATCCAGAAAAGCAG REV: AGACAGCCGCCATGTTAAAG	FWD: CCAAGTGAATCCAGAAAAGCAG	
		Exon 53	FWD: GGAAAACAGAGCATTTC REV: CAGAGTGAATTCTACAGATGC	FWD: GGAAAACAGAGCATTTC	Fail
		Exon 54	FWD: GAAGTCTCAGTCCCCCTT REV: CAAAAATAACACTATTTGGGAAAAA	FWD: GAAGTCTCAGTCCCCCTT	
		Exon 55	FWD: GGACAAAATAATGCCACCTT REV: AAAGGACACTGTTGAACACAA	FWD: GGACAAAATAATGCCACCTT	
		Exon 56	FWD: GTGGATTGATGTGCTGGAGT REV: TTCGAATTCTCAAATCTACTTCA	FWD: GTGGATTGATGTGCTGGAGT	
		Exon 57	FWD: TCATCTTTGGTTCCCACTC REV: GCTGGCCCGAAGATAGTTAC	FWD: TCATCTTTGGTTCCCACTC	
		Exon 58	FWD: GGTCAATTCAGAGCAAAAATCCA REV: GACCTCGGGGTGATCTGG	FWD: GGTCAATTCAGAGCAAAAATCCA	

		Exon 59	FWD: TCTAAAAATGGAGCCTTCATCA REV: TTGGGACGGATGTTATTGCT	FWD: TCTAAAAATGGAGCCTTCATCA	
		Exon 60	FWD: GACTGAGCCCTGTTTTCTCAA REV: AAAGGAAGAAGGAAACATTCAAGG	FWD: GACTGAGCCCTGTTTTCTCAA	
		Exon 61	FWD: TTGCCAGATCAGTAGCTGGA REV: CAAACCCCTGATCCTCCCTA	FWD: TTGCCAGATCAGTAGCTGGA	
		Exon 62	FWD: GATTTTCTTTAATGAGCATGTGTTT REV: TGCCTAGGAGGCACAACACTAC	FWD: GATTTTCTTTAATGAGCATGTGTTT	
		3'UTR	FWD: GGTGGAGTGCAGTGACGAC REV: AAACAGTGAAGACCCAGCAG	FWD: GGTGGAGTGCAGTGACGAC	
<i>ARL1</i>	6	Exon 1	FWD: CCAGAAAAACACAAGCAGGAG REV: GGATCCACCCTACAGATGA	FWD: CCAGAAAAACACAAGCAGGAG REV: GGATCCACCCTACAGATGA	
		Exon 2	FWD: CACCTACGCATCCAGGAAAT REV: CAGCTTGGACAACATAGTGATGA	FWD: CACCTACGCATCCAGGAAAT REV: CAGCTTGGACAACATAGTGATGA	
		Exon 3	FWD: CCATTTCTTTTAACTCGAATCC REV: CATTTTAAACTAGGTGGCTCCATT	FWD: CCATTTCTTTTAACTCGAATCC REV: CATTTTAAACTAGGTGGCTCCATT	
		Exon 4	FWD: TCCACCAGAAACAGTGAATCAT REV: CCCTCCTCAACTGTATTTTTGG	FWD: TCCACCAGAAACAGTGAATCAT REV: CCCTCCTCAACTGTATTTTTGG	
		Exon 5	FWD: GGAGGTAGGATTATGAGTGAAGC REV: AAACGCTTGAGGAACTTATGAAA	FWD: GGAGGTAGGATTATGAGTGAAGC REV: AAACGCTTGAGGAACTTATGAAA	
		Exon 6	FWD: TCATCTGTGTAGCTGTCATCATT REV: CAAGCTGCAACTACTATTCAAAAA	FWD: TCATCTGTGTAGCTGTCATCATT REV: CAAGCTGCAACTACTATTCAAAAA	
		3'UTR	FWD: TTTGATCGAATCACCTGAATG REV: CTTCACAAAGCTTCCTCTACCG	FWD: TTTGATCGAATCACCTGAATG REV: CTTCACAAAGCTTCCTCTACCG	
<i>SPIC</i>	5	Exon 1	FWD: GAGAATTCAGGAGGTACTCTTGGT REV: TCCAAGACCTAAAAATTGAATTGC	FWD: GAGAATTCAGGAGGTACTCTTGGT REV: TCCAAGACCTAAAAATTGAATTGC	
		Exon 2	FWD: CAGAGACAGCCAACACCAAA REV: TTAAGTGATCTGCCACCTTG	FWD: CAGAGACAGCCAACACCAAA REV: TTAAGTGATCTGCCACCTTG	Fail
		Exon 3	FWD: TGCAAAGTGGCAAGAAAAACA REV: TGCTGTCTTTAAGCTGGGTTT	FWD: TGCAAAGTGGCAAGAAAAACA REV: TGCTGTCTTTAAGCTGGGTTT	
		Exon 4	FWD: TTGGGGGTAATTCCTTTTGC REV: TGGCTTGGACTGTTCAAGA	FWD: TTGGGGGTAATTCCTTTTGC REV: TGGCTTGGACTGTTCAAGA	
		Exon 5_1	FWD: ATGCCATCATGCATTTCGTAA REV: GATCAGGTTGAACACACTGTGAA	FWD: ATGCCATCATGCATTTCGTAA REV: GATCAGGTTGAACACACTGTGAA	
		Exon 5_2	FWD: GCCAGGGCACTCAGAAATTA REV: AACAGTAAGAGCAGAGCAAGGA	FWD: GCCAGGGCACTCAGAAATTA REV: AACAGTAAGAGCAGAGCAAGGA	Fail
<i>MYBPC1</i>	33	Exon 1	FWD: GCAGAGTGCAGACAACAGATG REV: AAGATCGTTTCCTTAAATCATAGTG	FWD: GCAGAGTGCAGACAACAGATG REV: AAGATCGTTTCCTTAAATCATAGTG	
		Exon 2	FWD: CTCCTCCATCCCTCTTGTA REV: GGTCAACATCCAACCTTCTCAG	FWD: CTCCTCCATCCCTCTTGTA REV: GGTCAACATCCAACCTTCTCAG	
		Exon 3	FWD: TCAGTATCATTATGACCTGTTCTG REV: ATGCAAAGGCAGAACGAAAG	FWD: TCAGTATCATTATGACCTGTTCTG REV: ATGCAAAGGCAGAACGAAAG	

		Exon 4	FWD: TGCTTCCATTGGATTACCC REV: AGCCAACATTTCCTTCTTGG	FWD: TGCTTCCATTGGATTACCC REV: AGCCAACATTTCCTTCTTGG	
		Exon 5	FWD: TTTTCCATCCAAGCCAACCTT REV: TGCGTGTGTATCATGCAAAA	FWD: TTTTCCATCCAAGCCAACCTT REV: TGCGTGTGTATCATGCAAAA	
		Exon 6	FWD: TGGGAATCTGTTCCCTCTA REV: AGGTGCTGCCACCATGC	FWD: TGGGAATCTGTTCCCTCTA REV: AGGTGCTGCCACCATGC	
		Exon 7	FWD: AATTCGAGGGCACCAAT REV: CTGCAATGGTAACTTCAGAGGA	FWD: AATTCGAGGGCACCAAT REV: CTGCAATGGTAACTTCAGAGGA	Fail
		Exon 8	FWD: AGGACACATTTGCCCTCCTA REV: CAAGCTTGCTGAGACTACCACA	FWD: AGGACACATTTGCCCTCCTA REV: CAAGCTTGCTGAGACTACCACA	
		Exon 9	FWD: CAGCCATTACAGGAGAAAAGC REV: TGCTTGACTGGGCCTTAAAC	FWD: CAGCCATTACAGGAGAAAAGC REV: TGCTTGACTGGGCCTTAAAC	
		Exon 10	FWD: AGCGTAACACAAGCTCCTCA REV: TCTATAAGCAAAAACACATTTTCAGA	FWD: AGCGTAACACAAGCTCCTCA REV: TCTATAAGCAAAAACACATTTTCAGA	
		Exon 11	FWD: CCATTCCAGCAAGCAAGACT REV: CGTAACCCCTGCACTCCTAC	FWD: CCATTCCAGCAAGCAAGACT REV: CGTAACCCCTGCACTCCTAC	
		Exon 12	FWD: AAGGATAATTTGGAAGGTTTCTGA REV: GCGACACAAAACCATAAATTGG	FWD: AAGGATAATTTGGAAGGTTTCTGA REV: GCGACACAAAACCATAAATTGG	
		Exon 13	FWD: ATGTTTGCACCACTGCACTC REV: TCTCTTCTCCCTCTGCTG	FWD: ATGTTTGCACCACTGCACTC REV: TCTCTTCTCCCTCTGCTG	Fail
		Exon 14	FWD: ACTGTTATCACCATGTCAACCA REV: CACAAATGAGGTGGAGATTGTTT	FWD: ACTGTTATCACCATGTCAACCA REV: CACAAATGAGGTGGAGATTGTTT	
		Exon 15	FWD: TGGATACAGAGATTGATTCGTACA REV: TGACATAGACACTTAGCTGGAATG	FWD: TGGATACAGAGATTGATTCGTACA REV: TGACATAGACACTTAGCTGGAATG	
		Exon 16	FWD: TTGCATTGGTACAGCTTCTCA REV: GTTGAAGCGAAGAATCAGG	FWD: TTGCATTGGTACAGCTTCTCA REV: GTTGAAGCGAAGAATCAGG	
		Exon 17	FWD: TCTCCCTCTCTTCTGTCAC REV: CCAATCTTCTGATTGGTGATTA	FWD: TCTCCCTCTCTTCTGTCAC REV: CCAATCTTCTGATTGGTGATTA	
		Exon 18	FWD: GCCAGGCACCAACTATCTTG REV: TGATGATCAGATTTGCCTGAAA	FWD: GCCAGGCACCAACTATCTTG REV: TGATGATCAGATTTGCCTGAAA	
		Exon 19	FWD: GGGGGAGAATTAAACTGAGAAAA REV: TGATAAGTCTCTAGGCAAGAAAA	FWD: GGGGGAGAATTAAACTGAGAAAA REV: TGATAAGTCTCTAGGCAAGAAAA	
		Exon 20	FWD: CAGCCAAACCATATCATAAGCA REV: CTTTTGAATGCATAAAGTCACAG	FWD: CAGCCAAACCATATCATAAGCA REV: CTTTTGAATGCATAAAGTCACAG	
		Exon 21	FWD: TGCTATGGCTGACTTAACTGTGA REV: CTCCTGCCACCTACAACCTC	FWD: TGCTATGGCTGACTTAACTGTGA REV: CTCCTGCCACCTACAACCTC	
		Exon 22	FWD: CCATGACAGCATTTCACAAA REV: AGGATGACGTTTGGCTTGAT	FWD: CCATGACAGCATTTCACAAA REV: AGGATGACGTTTGGCTTGAT	
		Exon 23	FWD: GAGGACAAATCTCTTGCACAC REV: TGCTTGGTCATTCAATATTCC	FWD: GAGGACAAATCTCTTGCACAC REV: TGCTTGGTCATTCAATATTCC	
		Exon 24	FWD: TCGGAGTCCAGACCAAAGTC REV: ATCTCCACATTGCCTGAAG	FWD: TCGGAGTCCAGACCAAAGTC REV: ATCTCCACATTGCCTGAAG	
		Exon 25	FWD: GGCACATCTCAGAGTTTATTGC REV: TTTTGACAGCAGGAGATTGC	FWD: GGCACATCTCAGAGTTTATTGC REV: TTTTGACAGCAGGAGATTGC	
		Exon 26	FWD: GCTCACCACCAGACTAGAAGG	FWD: GCTCACCACCAGACTAGAAGG	

			REV: CACGCCAGCCTAATTTATC	REV: CACGCCAGCCTAATTTATC	
		Exon 27	FWD: CCCATGGTAGGGTCTAGAAG REV: GCCACATCACTTCTCCATAGC	FWD: CCCATGGTAGGGTCTAGAAG REV: GCCACATCACTTCTCCATAGC	
		Exon 28	FWD: TCAATTGCAAATAAGTTGTGAAA REV: CCACTGCCTAGAACCTGGAA	FWD: TCAATTGCAAATAAGTTGTGAAA REV: CCACTGCCTAGAACCTGGAA	
		Exon 29	FWD: CATGGCATTGCTCATCTTT REV: CCATCCTGGGAAGACACAAG	FWD: CATGGCATTGCTCATCTTT REV: CCATCCTGGGAAGACACAAG	
		Exon 30	FWD: TCCTTCTCAGATGCACTTTCTT REV: TTAATTCCTCCCTGCTTCC	FWD: TCCTTCTCAGATGCACTTTCTT REV: TTAATTCCTCCCTGCTTCC	
		Exon 31	FWD: TTGGTCCTAAAAGTAAAGCTGAAA REV: CCATGAGCTGCTAAGGGGTA	FWD: TTGGTCCTAAAAGTAAAGCTGAAA REV: CCATGAGCTGCTAAGGGGTA	
		Exon 32	FWD: GGATTAATGAAATCACCTCTTCA REV: CTGCATTCAACAACCTTGCTTC	FWD: GGATTAATGAAATCACCTCTTCA REV: CTGCATTCAACAACCTTGCTTC	
		Exon 33	FWD: TCTTTGTAACATAATGGGAACATGA REV: TTCAAGATCCAGTCGTGGTG	FWD: TCTTTGTAACATAATGGGAACATGA REV: TTCAAGATCCAGTCGTGGTG	
<i>CHPT1</i>	8	Exon 1	FWD: AAGGACAGAGGGCAGGAGA REV: CGCTCCTCAACTCAAAGG	FWD: AAGGACAGAGGGCAGGAGA REV: CGCTCCTCAACTCAAAGG	Fail
		Exon 2	FWD: GATGACCAATCTGGGGAAGA REV: TCGGCCATTGGTCGTTATTA	FWD: GATGACCAATCTGGGGAAGA REV: TCGGCCATTGGTCGTTATTA	Fail
		Exon 3	FWD: AGGCGAGGAGGATGCTGAG REV: AAATGGGGACGGGAGAG	FWD: AGGCGAGGAGGATGCTGAG REV: AAATGGGGACGGGAGAG	
		Exon 4	FWD: AAACCCATTTTCTCTTCAGGA REV: TCTTTTCAGCCATAACCCACAG	FWD: AAACCCATTTTCTCTTCAGGA REV: TCTTTTCAGCCATAACCCACAG	
		Exon 5	FWD: TTGATGGATAGTTTGTCTCTC REV: TTTCTGGCAGAATCTGTGTT	FWD: TTGATGGATAGTTTGTCTCTC REV: TTTCTGGCAGAATCTGTGTT	
		Exon 6	FWD: ATATTCCCAAGGGCCATAAT REV: TCAACCAATGACTGCAATGAA	FWD: ATATTCCCAAGGGCCATAAT REV: TCAACCAATGACTGCAATGAA	
		Exon 7	FWD: CCTCATTGTTCTTTCTGTACTTTG REV: TGAAACCCCTCCTTTAAATTG	FWD: CCTCATTGTTCTTTCTGTACTTTG REV: TGAAACCCCTCCTTTAAATTG	
		Exon 8_1	FWD: GGCTCTACACTGGCCACCTA REV: CCATGAAATGTGCTGAGTGG	FWD: GGCTCTACACTGGCCACCTA REV: CCATGAAATGTGCTGAGTGG	
		Exon 8_2	FWD: ACTTTCTGTGGCCACCTACG REV: TGTAGTTGCACATGCCTTCA	FWD: ACTTTCTGTGGCCACCTACG REV: TGTAGTTGCACATGCCTTCA	
		Exon 8_3	FWD: GCTGTAATAATTGGTAAATGGATTC REV: TGCCATGTGTGACTTTAAGTGTT	FWD: GCTGTAATAATTGGTAAATGGATTC REV: TGCCATGTGTGACTTTAAGTGTT	
<i>SYCP3</i>	8	5'UTR	FWD: ACCCTGGGCCAGCTATTT REV: CTCCGTTTCTCGTCAGAGG	FWD: ACCCTGGGCCAGCTATTT	Fail
		Exon 1	FWD: TCCTTGTTTCGATATCTCCTTTGA REV: CCGTGTGACAGGTTCTGTA	FWD: TCCTTGTTTCGATATCTCCTTTGA	
		Exon 2 & 3	FWD: GCCTAAAAATCCCAAATGA REV: TGTGAGAACAAGGCATTAATAACA	FWD: GCCTAAAAATCCCAAATGA	
		Exon 4	FWD: TTGTTGAACCAACCTTACCC REV: CAAGTGATCTGCCTGCCTTG	FWD: TGAACCAACCTTACCCATATT REV: CCGTGCCGATCTAGAATAGTA	

		Exon 5	FWD: TTTTGGTTTCCCATCAGAAGA REV: TTTAAAACACATGGCCAGCA	FWD: TTTTGGTTTCCCATCAGAAGA	
		Exon 6	FWD: GCATTGATTTTAAACACTTTCTTTT REV: TCCCAACAAAACCATTTGAA	FWD: GCATTGATTTTAAACACTTTCTTTT	
		Exon 7	FWD: GTTCAGGAAACCCATTGTGG REV: TCTTGCTGCTGCTTTTCAT	FWD: GTTCAGGAAACCCATTGTGG	Fail
		Exon 8	FWD: GAAATATTTTATTTGCTGAAATAGG REV: ATGTAATAATAGATTTTGTATTCCGT	FWD: GAAATATTTTATTTGCTGAAATAGG	
<i>DRAM</i>	7	5'UTR	FWD: GGCGAACCTCATTGAACACT REV: ATTCCCTCAGGAAGCACAG	FWD: GGCGAACCTCATTGAACACT	Fail
		Exon 1	FWD: CGCTTTGTGACTTCACTCGT REV: GGGTACAGGCAGAAAGTGCTC	FWD: CGCTTTGTGACTTCACTCGT	Fail
		Exon 2	FWD: TGGAATTCAAAGTGCTGAA REV: CTGAGGTGGGAGGACTGCT	FWD: TGGAATTCAAAGTGCTGAA	
		Exon 3	FWD: GATGGAGTCAGGAGGGACAG REV: TGGCTATAATGGCATAAGTGTG	FWD: GATGGAGTCAGGAGGGACAG	
		Exon 4	FWD: GGTGCATCTGTGATGACCAA REV: CCTGCTGTCAGAACTCATTGC	FWD: GGTGCATCTGTGATGACCAA	
		Exon 5	FWD: TCTCATCATTGAATTTGAAGTTTG REV: TGCCATGTTTATTTGACATTTTG	FWD: TCTCATCATTGAATTTGAAGTTTG	
		Exon 6	FWD: CTTTGAATACCTGCCTTCG REV: AGTGCTCTTTTGCAGTGAGC	FWD: CTTTGAATACCTGCCTTCG	
		Exon 7	FWD: CTCAAGCATAGCACAAACCA REV: CAAATAAAAACAAAACGACAGAATC	FWD: CTCAAGCATAGCACAAACCA	
		3'UTR 1	FWD: CAGCCTTATGACACTGTAGTGATG REV: GTGCGACCTCATGAGCAG	FWD: CAGCCTTATGACACTGTAGTGATG	Fail
		3'UTR 2	FWD: GCCGAACTAAACAAAGTGCTTC REV: TGCTTAACACAAAGGGCTTG	FWD: GCCGAACTAAACAAAGTGCTTC	
		3'UTR 3	FWD: CCCAAGAGCGAGACAAGAAG REV: CATTTCCTTTTATTGCCAGA	FWD: CCCAAGAGCGAGACAAGAAG	
<i>CCDC53</i>	7	Exon 1	FWD: CTAAGTGCATCCTTGCACCA REV: CCCATTTCAAGGTGGACTGT	FWD: CTAAGTGCATCCTTGCACCA	Fail
		Exon 2	FWD: AGCAAAGTGCCTCGTGATTA REV: TCACGGTACATGAATAAAGACTGT	FWD: AGCAAAGTGCCTCGTGATTA	
		Exon 3	FWD: TTTTCATATCTGCCCTTAGTTATTG REV: CACTCCCAAATGCAATGAAA	FWD: TTTTCATATCTGCCCTTAGTTATTG	
		Exon 4	FWD: TGACATGGAAAATTAAAGACAAGAT REV: TGTTTTTCCCAAACCTCATTTC	FWD: TGACATGGAAAATTAAAGACAAGAT	Fail
		Exon 5	FWD: AAATTGGGGGAGATGATTTTT REV: TTGGTTACTTGGTTTAGCAGTTTTC	FWD: AAATTGGGGGAGATGATTTTT	
		Exon 6	FWD: TTTTAAATAATGAGGCATCTGAAGG REV: TCCTCAACCATAAAAACACTGTAGG	FWD: TTTTAAATAATGAGGCATCTGAAGG	
		Exon 7	FWD: GACACGGACTTGGCAGATTT	FWD: GACACGGACTTGGCAGATTT	Fail

			REV: CGTGCCTGACTGTAATTGCT		
<i>NUP37</i>	9	Exon 1	FWD: TTTCTTTTGAGCTTTCTGTCTCA REV: CAGGCACATATAACTGGGAACA	FWD: TTTCTTTTGAGCTTTCTGTCTCA	
		Exon 2	FWD: AAAAGCATAAGCATAACCTCCTG REV: TTGGATTGTGGAAAATGGAAA	FWD: AAAAGCATAAGCATAACCTCCTG	
		Exon 3	FWD: TCAGTGATCTGAAGGGAAGGA REV: TGATGACCATAAAAAAGCCATT	FWD: TCAGTGATCTGAAGGGAAGGA	
		Exon 4	FWD: GCTTTTAAGGCAGTGAAGCAA REV: TGAAACTCATGTTTGTGCCATA	FWD: GCTTTTAAGGCAGTGAAGCAA	
		Exon 5	FWD: TGTGTGACTCTTTTGTCCATGA REV: ATCCAAATGCCTTTGTGCTG	FWD: TGTGTGACTCTTTTGTCCATGA	
		Exon 6	FWD: CATTTTACCGTACAACAGTGAATC REV: TGCTTTCGCTTGACAGCATA	FWD: CATTTTACCGTACAACAGTGAATC	
		Exon 7	FWD: TCATCTGTTTTAACTGATTGCTTG REV: AAATCCAGTGCAAAGAAGAGAAC	FWD: TCATCTGTTTTAACTGATTGCTTG	
		Exon 8	FWD: TGTTAGCACTTCTGCACTCCA REV: GAACCACCTTTCTTCAATTT	FWD: TGTTAGCACTTCTGCACTCCA	
		Exon 9	FWD: TGCTACAAAGATAAATCATCAATGC REV: CTGGAGGTGAGCTGCTGAG	FWD: TGCTACAAAGATAAATCATCAATGC	
<i>C12orf48</i>	9	5'UTR 1	FWD: GGCAGGCTGGTCTTCCTT REV: CTGTGAACTCCGCCTACAGC	FWD: GGCAGGCTGGTCTTCCTT	Fail
		5'UTR 2	FWD: CTTGGTAAATATGAAATGACCTCTC REV: CACAGAAGGGCACATAATGTAAG	FWD: CTTGGTAAATATGAAATGACCTCTC	
		5'UTR 3	FWD: GCACAATCTCCGCTCACTGT REV: TCCCACTTAAACAGTTGAGAAAAA	FWD: GCACAATCTCCGCTCACTGT	
		Exon 1	FWD: GGTGTTCTCTTCAAACCCACA REV: TTCACAAAGCAAAAAACATTACCA	FWD: GGTGTTCTCTTCAAACCCACA	
		Exon 2	FWD: CTCTCAACTGAAACATCAATGACA REV: CATTCTCACCAGCTCCAAT	FWD: CTCTCAACTGAAACATCAATGACA	
		Exon 3	FWD: AAGAATTTGGGGAGAGATGGA REV: CCATGGATTTTCAAATACAGAGGT	FWD: AAGAATTTGGGGAGAGATGGA	
		Exon 4	FWD: TGAGCCATAAAATGTGCTTCAC REV: TTTGGTCTGATGCTTGGTCA	FWD: TGAGCCATAAAATGTGCTTCAC	
		Exon 5	FWD: TGGTCCTTATCTTTTCTTAAATGC REV: CACAGGAAACACACTCTTCTGAC	FWD: TGGTCCTTATCTTTTCTTAAATGC	
		Exon 6	FWD: AAATGGTCACATGCCTCACA REV: TTCAAATGTTCAATCCCTTT	FWD: AAATGGTCACATGCCTCACA	
		Exon 7	FWD: TGGGAGGTAACCCCATCATA REV: GGAAAGTCTCTGTACGTCAACTG	FWD: TGGGAGGTAACCCCATCATA	
		Exon 8	FWD: AAAGGTTAGAGAGAGGTTCTCAATG REV: TCAAACGTGTCTTATCTCATCG	FWD: AAAGGTTAGAGAGAGGTTCTCAATG	
		Exon 9	FWD: TTGAATATTCGTTAGCCATTTTTA REV: CATGTCCTTGGTGAATGGTTT	FWD: TTGAATATTCGTTAGCCATTTTTA	

		3'UTR 1	FWD: TTTCTGGCCAGGCAAAGTTA REV: TTTCTTCTTCCTTCAGTGCTCA	FWD: TTTCTGGCCAGGCAAAGTTA	
		3'UTR 2	FWD: TCCTCCCATTGGCAATTA REV: CCCAGCTGAGAAATGGAGTTC	FWD: TCCTCCCATTGGCAATTA	Fail
		3'UTR 3	FWD: TGAGTTTTTCTTCATCCCAAT REV: GCTCCTTCCCTGGAACAATA	FWD: TGAGTTTTTCTTCATCCCAAT	
<i>PMCH</i>	3	Exon 1	FWD: GCTGCATAAAGGTTAGCCTCA REV: ATCGTCAGTCGCTCAATGC	FWD: GCTGCATAAAGGTTAGCCTCA	
		Exon 2	FWD: CATCCCAGCAAACACCTCTT REV: TTGAGCCATGGTCTTATTGA	FWD: CATCCCAGCAAACACCTCTT	
		Exon 3	FWD: AAAATGTGGGATTAATAGCAACAA REV: GCTTAATTTTAAAGAGATCAAGGTG	FWD: AAAATGTGGGATTAATAGCAACAA	
<i>IGF1 isoform 1</i>	5	Exon 1	FWD: ATTTGTCACCATGCCCAAAA REV: CGGTTCCGAAACAATGAAAA	FWD: ATTTGTCACCATGCCCAAAA	
		Exon 2	FWD: GCTTCTGTGCTGGGTAGTCC REV: CAGATACGGGCACTCATTCA	FWD: GCTTCTGTGCTGGGTAGTCC	
		Exon 3	FWD: AAGAGGTTGAGACATTGCAGAA REV: AGGAGACTATGGGGCAGGAT	FWD: AAGAGGTTGAGACATTGCAGAA	
		Exon 4	FWD: GAGTGCTGTCTCCTGCATCA REV: TTTTTCATTTTGCCACTGTC	FWD: GAGTGCTGTCTCCTGCATCA	
		Exon 5	FWD: AAGGCGTAAGACATGGAAGG REV: CATGCATTTGTGGCTTTGA	FWD: AAGGCGTAAGACATGGAAGG	
		3'UTR 1	FWD: AGATTGCTGTTGATCTTTATCAAT REV: ATGATTGGCCTCAAAGTTGC	FWD: AGATTGCTGTTGATCTTTATCAAT	
		3'UTR 2	FWD: AGATTCCATCTGTGGCATTG REV: TCCTCTTGAAGGCATAACTG	FWD: AGATTCCATCTGTGGCATTG	
		3'UTR 3	FWD: GAGTCTGGCCAAAACGGTAA REV: AGAATTCCTTGCATCTCAGCA	FWD: GAGTCTGGCCAAAACGGTAA	
<i>IGF1 isoform 2</i>	5	Exon 1	FWD: GGAAGGGAGTAAGGGAGTGG REV: AAAAAATCATTCAAAACCCAAA	FWD: GGAAGGGAGTAAGGGAGTGG	
		Exon 2	FWD: GCTTCTGTGCTGGGTAGTCC REV: CAGATACGGGCACTCATTCA	FWD: GCTTCTGTGCTGGGTAGTCC	
		Exon 3	FWD: AAGAGGTTGAGACATTGCAGAA REV: AGGAGACTATGGGGCAGGAT	FWD: AAGAGGTTGAGACATTGCAGAA	
		Exon 4	FWD: GAGTGCTGTCTCCTGCATCA REV: TTTTTCATTTTGCCACTGTC	FWD: GAGTGCTGTCTCCTGCATCA	
		Exon 5	FWD: AAGGCGTAAGACATGGAAGG REV: CATGCATTTGTGGCTTTGA	FWD: AAGGCGTAAGACATGGAAGG	
		3'UTR 1	FWD: AGATTGCTGTTGATCTTTATCAAT REV: ATGATTGGCCTCAAAGTTGC	FWD: AGATTGCTGTTGATCTTTATCAAT	
		3'UTR 2	FWD: AGATTCCATCTGTGGCATTG REV: TCCTCTTGAAGGCATAACTG	FWD: AGATTCCATCTGTGGCATTG	

		3'UTR 3	FWD: GAGTCTGGCCAAAACGGTAA REV: AGAATTCCTTGCATCTCAGCA	FWD: GAGTCTGGCCAAAACGGTAA	
<i>PAH</i>	12	5'UTR	FWD: TCACGTGCCCTCTAGCTGTA REV: TCGCACTAGGGAGGAGAAGA	FWD: TCACGTGCCCTCTAGCTGTA	Fail
		Exon 1	FWD: AGCGAAGTGGTGCCTCCT REV: TTCTCATCAGCTTCCAACGA	FWD: AGCGAAGTGGTGCCTCCT	Fail
		Exon 2	FWD: TCATTTAATTGCCCTGGACTT REV: GCCTGTTCCAGATCCTGTGT	FWD: TCATTTAATTGCCCTGGACTT	Fail
		Exon 3	FWD: TCTCCATTTTGTGGCTTAGG REV: AATCCCCAAACAGTCTCC	FWD: TCTCCATTTTGTGGCTTAGG	
		Exon 4	FWD: TTGGGGTTATCTGGAAGC REV: CCCAGCCCTCGTGAAATAG	FWD: TTGGGGTTATCTGGAAGC	
		Exon 5	FWD: ATGCACTGTCATGGCTTGAG REV: GCAGGACTTTCATGCTGGT	FWD: ATGCACTGTCATGGCTTGAG	
		Exon 6	FWD: GATGGCAGCTCACAGTTCT REV: CATACTGCCTCCACATACTTG	FWD: GATGGCAGCTCACAGTTCT	
		Exon 7	FWD: TGCCTAGCGTCAAAGCCTAT REV: CTGTGGACCAGCCAGCAAT	FWD: TGCCTAGCGTCAAAGCCTAT	
		Exon 8	FWD: TCCTGGGAGAGGGATCATAA REV: CTTGCAGAGGGCATGAGG	FWD: TCCTGGGAGAGGGATCATAA	Fail
		Exon 9	FWD: CATCTGGCCACCCATCAC REV: CCTGGCTTCCAGGGGAGT	FWD: CATCTGGCCACCCATCAC	Fail
		Exon 10	FWD: GATCTTCCCCACTCAGTCCA REV: AATGAGTTCCCAGTTGCAT	FWD: GATCTTCCCCACTCAGTCCA	Fail
		Exon 11	FWD: AGAAGGAATCGGGGTGAGAT REV: GGTGGAGAACATGGGAGAGA	FWD: AGAAGGAATCGGGGTGAGAT	
		Exon 12	FWD: GGAGGTGTCCGTGTTCTTAA REV: AACCCATGGCTTACATGGAG	FWD: GGAGGTGTCCGTGTTCTTAA	
		Exon 13	FWD: CTCATCCAAGAAGCCCACTT REV: TGAAGCTTGAATGAAGCAGGT	FWD: CTCATCCAAGAAGCCCACTT	
<i>ASCLI</i>	2	5'UTR 1	FWD: AGACTCGGGACCTTTGTGAA REV: GTGATGATGGTGGGCAGTAA	FWD: AGACTCGGGACCTTTGTGAA REV: GTGATGATGGTGGGCAGTAA	
		5'UTR 2	FWD: GACCTCTGTTGGCACGATTT REV: GTGGGGATTCTGGTTCTTC	FWD: GACCTCTGTTGGCACGATTT REV: GTGGGGATTCTGGTTCTTC	
		5'UTR 3	FWD: CAGACGTCTGAAGCTGGA REV: TCTGCAGCCACAGAATATGG	FWD: CAGACGTCTGAAGCTGGA REV: TCTGCAGCCACAGAATATGG	
		5'UTR 4	FWD: CTGCCATATACACCCACCT REV: GACTCCCAGCTGAATAAACA	FWD: CTGCCATATACACCCACCT REV: GACTCCCAGCTGAATAAACA	
		5'UTR 5	FWD: TTCACCCAAAGTCTTTCCAC REV: ACTAAGGCTGCGCTCTCTTG	FWD: TTCACCCAAAGTCTTTCCAC REV: ACTAAGGCTGCGCTCTCTTG	
		5'UTR 6	FWD: GCCCAGCACTCTCTCACTTC REV: TCTCCATCTTGGCAGAGCTT	FWD: GCCCAGCACTCTCTCACTTC REV: TCTCCATCTTGGCAGAGCTT	
		Exon 1_1	FWD: GTCTCCCGGGGATTTTGTAT	FWD: GTCTCCCGGGGATTTTGTAT	

			REV: CCAGGTTGACCAACTTGACG	REV: CCAGGTTGACCAACTTGACG	
		Exon 1_2	FWD: GAACTGATGCGCTGCAAAAC REV: CACTCAGAGGGAGGACGAAG	FWD: GAACTGATGCGCTGCAAAAC REV: CACTCAGAGGGAGGACGAAG	
		3'UTR 1	FWD: CATCTCCCCAACTACTCCA REV: AACGCCACTGACAAGAAAGC	FWD: CATCTCCCCAACTACTCCA REV: AACGCCACTGACAAGAAAGC	
		3'UTR 2	FWD: CCAGACCTCCATCTCCCTCT REV: GCAGAGTTCAAAGGGCTGA	FWD: CCAGACCTCCATCTCCCTCT REV: GCAGAGTTCAAAGGGCTGA	
		3'UTR 3	FWD: TCACCTCTAACACGCACAGC REV: TACAACCTGGTGGCCTCTGA	FWD: TCACCTCTAACACGCACAGC REV: TACAACCTGGTGGCCTCTGA	
		3'UTR 4	FWD: TCCTAACCAGTTCGGGGATA REV: CATTTTCTTCCATCCACCT	FWD: TCCTAACCAGTTCGGGGATA REV: CATTTTCTTCCATCCACCT	
		3'UTR 5	FWD: TGATAGGTTGCCTTTTGGAGA REV: ATCCCAGAACCACCATCCTC	FWD: TGATAGGTTGCCTTTTGGAGA REV: ATCCCAGAACCACCATCCTC	
<i>C12orf42</i>	5	5'UTR	FWD: CTGTGACTTTGGTGGCAGTC REV: CCGTGCTGCCTCTTCTCAC	FWD: CTGTGACTTTGGTGGCAGTC	Fail
		Exon 1	FWD: TTGAAAGTCACTGGCAAGAAA REV: TGATGTGAGTATGGATAAATATGGA	FWD: TTGAAAGTCACTGGCAAGAAA	
		Exon 2	FWD: TGAATGAACAGCCATTGTTTG REV: AGGAGTTGGCATGACTCTCAA	FWD: TGAATGAACAGCCATTGTTTG	
		Exon 3	FWD: TGATTGTTTTCAGGATTGTTTCA REV: CCTCTTTTGTGTCATTTTGA	FWD: TGATTGTTTTCAGGATTGTTTCA	
		Exon 4_1	FWD: CAGACCCTCCCTCTTCTTC REV: CTGATGTGTATGCCCTGAGC	FWD: CAGACCCTCCCTCTTCTTC REV: CTGATGTGTATGCCCTGAGC	Fail
		Exon 4_2	FWD: GCCAGAGGAGAAACTGAGGAG REV: GGACTGGCCATGAAGTCAAT	FWD: GCCAGAGGAGAAACTGAGGAG	
		Exon 5_1	FWD: TCTGAGCACATTACAAATGTTGA REV: ATTGCCATGGAGGGAGGT	FWD: TCTGAGCACATTACAAATGTTGA	
		Exon 5_2	FWD: CTCCCAAGCATCCTCATA REV: GCGATGTACCCCATCCCTAT	FWD: CTCCCAAGCATCCTCATA	Fail
<i>STAB2</i>	69	5'UTR 1	FWD: AACAAACATGGCCAATCCAT REV: CCCCAGCTCCTTTCAACTTT	FWD: AACAAACATGGCCAATCCAT	
		5'UTR 2	FWD: CCCAGGAAGCTTTGAAAAAT REV: CCCTCTGCTGCTGAAACAAT	FWD: CCCAGGAAGCTTTGAAAAAT	Fail
		5'UTR 3	FWD: GAGACATGCCCTGGTTTGT REV: GATCTAAAGCCACCCCTTCC	FWD: GAGACATGCCCTGGTTTGT	Fail
		5'UTR 4	FWD: GGCATGGGAGACAGACAGAT REV: TCTACTCTGCCCTCCTCT	FWD: GGCATGGGAGACAGACAGAT	
		5'UTR 5	FWD: CAAGCTTGGACCTTGCATT REV: CTCCTTTACCTGCCCTGTG	FWD: CAAGCTTGGACCTTGCATT	
		Exon 1	FWD: TTCTGAAGGCAGGTCTCACC REV: CACACCTTCGAAAGATGGT	FWD: TTCTGAAGGCAGGTCTCACC	
		Exon 2	FWD: TGAAAGGAGCAAACCAGTCA REV: TACAGGCATGAACCACCACA	FWD: TGAAAGGAGCAAACCAGTCA	Fail

		Exon 3	FWD: GAAAGCCAAATGTGTTCCATC REV: TGAAAGCTAACAGGGCAAGA	FWD: GAAAGCCAAATGTGTTCCATC	
		Exon 4	FWD: GACACCAACAGGTTCTGCAA REV: CCCCAGGCTATAAATGGTCA	FWD: GACACCAACAGGTTCTGCAA	
		Exon 5	FWD: AGCTCCAGGATAGGCACAGA REV: TCATTGCCCGATTAACCTCC	FWD: AGCTCCAGGATAGGCACAGA	
		Exon 6	FWD: GGAGCCAAAGTTCAAACAACA REV: CCCCTGCAGAGAACCAGTAA	FWD: GGAGCCAAAGTTCAAACAACA	
		Exon 7	FWD: TGATATCGGTAAATTTGGGAGA REV: CATTTTGCTTGGCACCTTTT	FWD: TGATATCGGTAAATTTGGGAGA	
		Exon 8	FWD: TGCCTTTGAGGTTTTGATCC REV: TGAAAGGGAGAATTGGGATG	FWD: TGCCTTTGAGGTTTTGATCC REV: TGAAAGGGAGAATTGGGATG	Fail
		Exon 9	FWD: CCAGCAGGTGACATGTGTAAA REV: CAAGAACTTACAGCAATGACTGG	FWD: CCAGCAGGTGACATGTGTAAA	
		Exon 10	FWD: GCATCCTTTGCTCCATCTGT REV: CCCTCCAAAAAGGCTGATTC	FWD: GCATCCTTTGCTCCATCTGT	
		Exon 11	FWD: CATAAATGGACCGTTCGTG REV: TGGGGATTCCCACCTTAAATA	FWD: CATAAATGGACCGTTCGTG	
		Exon 12	FWD: TATTTGCAAAAGCCCAAACC REV: TTCACAAACCCCAAACAAA	FWD: TATTTGCAAAAGCCCAAACC	
		Exon 13	FWD: ATCAAAGCCCAAGGACTCAA REV: TCTCTGCTCGGGATCCTA	FWD: ATCAAAGCCCAAGGACTCAA	Fail
		Exon 14	FWD: TTGCAGTTGACCAGGTTTCAT REV: AATATTTAACATAATTCGCCAGAAA	FWD: TTGCAGTTGACCAGGTTTCAT	
		Exon 15	FWD: TGTA AAAATTAGCAGGGGTGTCA REV: ATTAGTGATGCCTGCCTTGG	FWD: TGTA AAAATTAGCAGGGGTGTCA REV: ATTAGTGATGCCTGCCTTGG	
		Exon 16	FWD: TCATTTTCTTGATTGTCTAACGTC REV: AAGGACATTTTCTAGCGTCAAA	FWD: TCATTTTCTTGATTGTCTAACGTC	
		Exon 17	FWD: TTGAGATCAAACTCCCTTACTT REV: TGAGTTAGCATAGAGGCAGGA	FWD: TTGAGATCAAACTCCCTTACTT	
		Exon 18	FWD: TTAGCAAAGTTGCCACCATT REV: GGGGACAAGGTTCTGGAAGT	FWD: TTAGCAAAGTTGCCACCATT	
		Exon 19	FWD: TTTTAGCAAAGTTGCCACCATT REV: GGGGACAAGGTTCTGGAAGT	FWD: TTTTAGCAAAGTTGCCACCATT	
		Exon 20	FWD: GACGTCAGTGGTGAAATGGA REV: ACCACGTGGACCCTAGGAC	FWD: GACGTCAGTGGTGAAATGGA	
		Exon 21	FWD: GGAGAGGCGAATATGGCTTA REV: TGGGAAGAGTAGCTGGCATT	FWD: GGAGAGGCGAATATGGCTTA	
		Exon 22	FWD: CCCAGAGGGTCATGTCAAGT REV: TGATGGTGTAAACCAAGCAA	FWD: CCCAGAGGGTCATGTCAAGT	
		Exon 23	FWD: AGAAGAGGTGGTCCCTGTCC REV: TATGGGTGGCTCCGCTAC	FWD: AGAAGAGGTGGTCCCTGTCC	
		Exon 24	FWD: CTCCACAGGAGCAAAGGATG REV: ACCAGGCAGGGTGAAAT	FWD: CTCCACAGGAGCAAAGGATG	
		Exon 25	FWD: TCCACCTCACTCAATGCAAA	FWD: TCCACCTCACTCAATGCAAA	

			REV: ATGTTCACTGCCACGAATGA		
		Exon 26	FWD: TGTTCTCTGGGACAGCCAAG REV: GAGATTCCTTTTGGGGGTA	FWD: TGTTCTCTGGGACAGCCAAG	
		Exon 27	FWD: TACCATCTTTCAGCCCCAAA REV: AAACGTGACCACAGAGCAT	FWD: TACCATCTTTCAGCCCCAAA	
		Exon 28	FWD: CCAGGACAACGAGCCTAGC REV: TGCTCAGCACAATTGCCTAC	FWD: CCAGGACAACGAGCCTAGC	
		Exon 29	FWD: GGAGACCCTAGGACCCTTCC REV: GGTGGGAGGAAAGGAGAATC	FWD: GGAGACCCTAGGACCCTTCC	Fail
		Exon 30	FWD: GCAGGGGGAACCTTGAATTTT REV: CCCACATGAGGGATTCTGTT	FWD: GCAGGGGGAACCTTGAATTTT	
		Exon 31	FWD: GGGTCTTGGCCAAAAAGTAT REV: GCACAGTACCGTTACTTCCA	FWD: GGGTCTTGGCCAAAAAGTAT	
		Exon 32	FWD: CCAGCCTTGTCATGCTGTAT REV: GGCAGCCTCAATTGCATTC	FWD: CCAGCCTTGTCATGCTGTAT	
		Exon 33	FWD: GCTGGAACAGATGCCTGACT REV: TCTCTGCACCAGTCTACGTCA	FWD: GCTGGAACAGATGCCTGACT	
		Exon 34	FWD: AGCCATCTGTTTCACAACCTCA REV: TTTTCTTCCAGTCTTGGCTATG	FWD: AGCCATCTGTTTCACAACCTCA	
		Exon 35	FWD: GCGCCAGGACTGTTATTTCAG REV: AACCACAGCCTGGTATGCTC	FWD: GCGCCAGGACTGTTATTTCAG	
		Exon 36	FWD: CATTAAAGAGGCTGCCCAGA REV: ATTTTGCCTTGGTCCAAAAA	FWD: CATTAAAGAGGCTGCCCAGA	
		Exon 37	FWD: ACCACCTTCTCTTCCCACAA REV: TGCAGGTAAACAAGGAAGGA	FWD: ACCACCTTCTCTTCCCACAA	
		Exon 38	FWD: CACTCCATGTGAGGTCTGAAG REV: TGCAAATGCAAATGACAACA	FWD: CACTCCATGTGAGGTCTGAAG	
		Exon 39	FWD: CCCTGCCCTTTTTGTGATT REV: GAAAGAATCATGTTTATTGCCAGA	FWD: CCCTGCCCTTTTTGTGATT	
		Exon 40	FWD: CCTCATAGTTTTATATCGCTCACA REV: TTATCCTAAGCCCTCAGAAATG	FWD: CCTCATAGTTTTATATCGCTCACA	
		Exon 41	FWD: CCAAGCCTTAGGCAGGACTT REV: TCAAGGCTGTGAACAGTTGG	FWD: CCAAGCCTTAGGCAGGACTT	
		Exon 42	FWD: AATCCAGTGCCTGCTCAAGT REV: CCCTGGCAAATGGAATACTG	FWD: AATCCAGTGCCTGCTCAAGT	
		Exon 43	FWD: AACTGAATCATGCTTTGACACC REV: CACCTCATTCCCAAAGAAGG	FWD: AACTGAATCATGCTTTGACACC	
		Exon 44	FWD: TCAAGTGAAGTGTGCAAGTGCT REV: CCTCATGGTCAACACACAGC	FWD: TCAAGTGAAGTGTGCAAGTGCT	
		Exon 45	FWD: CAAATGAATCAAAGAGAGTGAGAC REV: CAAAATTTCTTTTCATTGCTGA	FWD: CAAATGAATCAAAGAGAGTGAGAC	
		Exon 46	FWD: AAAGGCCCGGTGTACAGAT REV: TGCCATGTTCCCCAGACT	FWD: AAAGGCCCGGTGTACAGAT	
		Exon 47	FWD: GACGGAGAATCTGGGTTTCA REV: GCTGGTGAGTTCACCTGAT	FWD: GACGGAGAATCTGGGTTTCA	

		Exon 48	FWD: TTTTGTCTGAACAGCCTCCA REV: CCCCTCTATGTGTCCTGAA	FWD: TTTTGTCTGAACAGCCTCCA	
		Exon 49	FWD: GCTGCTTGCTTATTTACATTG REV: GAAAATGTTTCAAAATGATGACTTC	FWD: GCTGCTTGCTTATTTACATTG	
		Exon 50	FWD: AGAATGCAGAAAAGCGTGGT REV: GAAGGGAGTGGCAGAGAATG	FWD: AGAATGCAGAAAAGCGTGGT	
		Exon 51	FWD: GAACCATCCAGAGTCCAGT REV: GGGACACACTGACAGTTCCT	FWD: GAACCATCCAGAGTCCAGT REV: GGGACACACTGACAGTTCCT	
		Exon 52	FWD: CCCCATTATTCTTCCATT REV: AAAAATGAGCCCCTATGAA	FWD: CCCCATTATTCTTCCATT	
		Exon 53	FWD: AAGTTCTTCTGAGTCTTGCAGTT REV: ATTTGGCCCTCAGGTCTTCT	FWD: AAGTTCTTCTGAGTCTTGCAGTT	
		Exon 54	FWD: ATGCCTGGCCTGTTTCATA REV: TTGCCTGGGCTGAGAATATC	FWD: ATGCCTGGCCTGTTTCATA	Fail
		Exon 55	FWD: AAAAGTTGGCTCACACTGGAA REV: CTGGGGTCTGGGAATCATTA	FWD: AAAAGTTGGCTCACACTGGAA	
		Exon 56	FWD: CACTGACACTGAAGGCGATG REV: AGGGGTGTGGCTGAGAGAA	FWD: CACTGACACTGAAGGCGATG	
		Exon 57	FWD: GCCTGTGATAGTCCCTGAATAA REV: CATGGACCTGCTTGTCACT	FWD: GCCTGTGATAGTCCCTGAATAA	
		Exon 58	FWD: CAAATCACCCCATCTTCTCG REV: AGAGGGTAGGTGCTGCTGAA	FWD: CAAATCACCCCATCTTCTCG	
		Exon 59	FWD: GCCCATTTACTCACCCAACA REV: TCCAGGAGATAAGCAGAGTATGG	FWD: GCCCATTTACTCACCCAACA	
		Exon 60	FWD: GACAGGAAAGGCACGTTCTC REV: CAAGTGATCCATCTGCCTTG	FWD: GACAGGAAAGGCACGTTCTC REV: CAAGTGATCCATCTGCCTTG	Fail
		Exon 61	FWD: ACATAACTTGAAGGAAAAGTGG REV: TCCAGGAGCTACCTGCACTC	FWD: ACATAACTTGAAGGAAAAGTGG	
		Exon 62	FWD: ACCCAGTGGCTCAATCAATC REV: ACACAGGGTCCACACAAGT	FWD: ACCCAGTGGCTCAATCAATC	
		Exon 63	FWD: CCCAGCTACACTTCAGGTT REV: GGCTTTAGATTACAGGCAAGG	FWD: CCCAGCTACACTTCAGGTT	
		Exon 64	FWD: AGGAGCAGCAGGCTGAGTT REV: AGGGAGTGGCCAAGTATCT	FWD: AGGAGCAGCAGGCTGAGTT	
		Exon 65	FWD: CCACATGGAGGCAGGAAA REV: TAACACCGTCCCCTATCTGC	FWD: CCACATGGAGGCAGGAAA	
		Exon 66	FWD: GGCTGCCTATCAGTGGAGAC REV: CAGCTACCTTGGAGGTTGGA	FWD: GGCTGCCTATCAGTGGAGAC	
		Exon 67	FWD: TGGCAGTAATAAGGCCAGA REV: AACCACCACTGCTGTTCCCTC	FWD: TGGCAGTAATAAGGCCAGA REV: AACCACCACTGCTGTTCCCTC	Fail
		Exon 68	FWD: AATGGGCAGACATCGGTAAG REV: CACTGGCTTACAGTCAGCTTG	AATGGGCAGACATCGGTAAG	
		Exon 69	FWD: AGGGAGAGTCATGCCTCAGA REV: GGCTGGTGTCTGATTGATG	FWD: AGGGAGAGTCATGCCTCAGA REV: GGCTGGTGTCTGATTGATG	

<i>NT5DC3</i>	14	Exon 1	FWD: CTGAAATTGACCGCAGCAG REV: GCATTTTTCCCGTTTC	FWD: CTGAAATTGACCGCAGCAG	Fail
		Exon 2	FWD: GCATATTTTCAAGGTGAAGCAA REV: CTTCTCTGTGGCAGACTTGG	FWD: GCATATTTTCAAGGTGAAGCAA	
		Exon 3	FWD: CCAACCTCCCACTGGTGTAT REV: AAAACTAATTGCCCCGTCA	FWD: CCAACCTCCCACTGGTGTAT	
		Exon 4	FWD: AACAAAGCAACCCTTTCAGGA REV: ACTGCAGCCCTCTTCATCAT	FWD: AACAAAGCAACCCTTTCAGGA	
		Exon 5	FWD: ACAGTGCCTTGCACCTCAAT REV: CAAATTTCCCTGTCAATTCCA	FWD: ACAGTGCCTTGCACCTCAAT	
		Exon 6	FWD: AGTCACGGAAAAGGCTTCT REV: CCACATATAAGAGTCCCAGCTAA	FWD: AGTCACGGAAAAGGCTTCT	
		Exon 7	FWD: GATTTTGTGTAGGGCCTGGA REV: CCTCTGCTTAGCACCTGGAA	FWD: GATTTTGTGTAGGGCCTGGA	Fail
		Exon 8	FWD: AGGGCCTTTATCCCTTTCC REV: GTCCCTAGGGCAACAAGTCA	FWD: AGGGCCTTTATCCCTTTCC	
		Exon 9	FWD: CCATTTGTTTTAGCAGCTGGA REV: TGCTTATGATTTTGCAACTGG	FWD: CCATTTGTTTTAGCAGCTGGA	
		Exon 10	FWD: GGTTTTTGCAGGGAGCTACT REV: GAACTGTGCCAGGCATACAG	FWD: GGTTTTTGCAGGGAGCTACT	
		Exon 11	FWD: TTTCCCATGAAGGTGCTTTT REV: AAAATGCAGCCTACTTTTAGGTTTT	FWD: TTTCCCATGAAGGTGCTTTT	
		Exon 12	FWD: TTCATTGAATTCAGCTTGGTG REV: TCTACTGAAAACAACCTTAAGCCTCA	FWD: TTCATTGAATTCAGCTTGGTG	
		Exon 13	FWD: GTGCCAGCCTCTGAGATGTA REV: GGATGTTTCAACATTATGCCTCA	FWD: GTGCCAGCCTCTGAGATGTA	
		Exon 14	FWD: GGGCTGCTCTAGGCTAACAT REV: TTTCCAAAAGCAACACTCAGA	FWD: GGGCTGCTCTAGGCTAACAT	
<i>HSP90B1</i>	18	Exon 1	FWD: CCCCTCACGAATCCTCATT REV: ACGTAATTCCTTGCCCTCT	FWD: CCCCTCACGAATCCTCATT	Fail
		Exon 2	FWD: CATCCCCACCTCCCTTAGTT REV: GCACACAACCTACCGGGTAT	FWD: CATCCCCACCTCCCTTAGTT	
		Exon 3	FWD: AACCCCCAAGACAATATTCAGA REV: TCTGGTAGCAATTCTGGACA	FWD: AACCCCCAAGACAATATTCAGA	
		Exon 4	FWD: CTTGCATTGCATACCTGAAGA REV: CCACTGAGACTTGGGGTTT	FWD: CTTGCATTGCATACCTGAAGA	
		Exon 5	FWD: AATTGATGGGACCCAAAGC REV: CAGGAAAATTAAGGCCAGA	FWD: AATTGATGGGACCCAAAGC	
		Exon 6	FWD: AGCTCACAAACCCTTGTGG REV: TGCGGGGATTACAAGCAT	FWD: AGCTCACAAACCCTTGTGG	
		Exon 7	FWD: GAATGAAGGCAAAATGTGGTC REV: GCTCCATGGACTTAGCACCT	FWD: GAATGAAGGCAAAATGTGGTC	
		Exon 8	FWD: CACACCAGTCCTCTGGGTCT REV: TGGGAATGGACCATCTCATATT	FWD: CACACCAGTCCTCTGGGTCT	

<i>NFYB</i>	7	5'UTR	FWD: GAAGACCTCGCGCCTAGAG REV: GGAGACGGACATTTTCATTCG	FWD: GAAGACCTCGCGCCTAGAG	Fail
		Exon 1	FWD: CAAGCCCTCTTTAATTTTATGAGAA REV: TTCTACCAGGCACCTCCAGT	FWD: CAAGCCCTCTTTAATTTTATGAGAA	Fail
		Exon 2	FWD: CTGGGCCACAGAGTAAGACC REV: TTTTCTATAAAGACACAAGTAGCC	FWD: CTGGGCCACAGAGTAAGACC	
		Exon 3	FWD: TGGTTAAGAGGTGAACCAGAATG REV: TTTGCTGAAAAGCCTGAATGA	FWD: TGGTTAAGAGGTGAACCAGAATG	
		Exon 4	FWD: TTGTCAAGGCTTCTCTCACTTG REV: GCAACAGAGCGATACTCCAC	FWD: TTGTCAAGGCTTCTCTCACTTG	Fail
		Exon 5	FWD: GCCTTCTGAAAGCCTTCTTCA REV: CAAATAAAAGGGCATGAACTGA	FWD: GCCTTCTGAAAGCCTTCTTCA	
		Exon 6	FWD: ATGATACCGGGCAGAATTG REV: CCATGACGCCAGCTAAT	FWD: ATGATACCGGGCAGAATTG	Fail
		Exon 7	FWD: CACAAGAAATGGGAATTAGACTTG REV: TTAACCCAGCCGCTTACTTG	FWD: CACAAGAAATGGGAATTAGACTTG	
		3'UTR	FWD: CGAGAGTTTGTGCTCTGTATGA REV: ACATTAACAGGCACGATGAAC	FWD: CGAGAGTTTGTGCTCTGTATGA	

Supplementary Table 2. Primer sequences for PCR and DNA sequencing in the chromosome 12 region.

	rs number	Variation	Amino acid change	Number of alleles observed	
				Affecteds	Unaffecteds
<i>GNPTAB</i>					
Exon1	rs4764655	c.18 G>A	Leu6Leu	82 (E, SA)	60 (E, SA)
Exon1	rs222504	c.27 G>A	Gln9Gln	6 (E)	1 (SA)
Exon2	Unknown	c.136 C>A	Arg46Arg	2 (E, Af)	0
Exon2	Unknown	c.174 C>T	Asp58Asp	0	1 (E)
Exon5	Unknown	c.513 A>G	Ala171Ala	0	3 (SA)
Exon7	Unknown	c.639 A>C	Thr213Thr	1 (E)	0
Exon8	Unknown	c.885 G>A	Leu295Leu	1 (SA)	0
Exon11	Unknown	c.1395 T>G	Gly465Gly	1 (E)	0
Exon12	rs11111008	c.1482 G>A	Gln494Gln	4 (Af)	0
Exon12	Unknown	c.1500 C>T	Asn500Asn	1 (E)	0
Exon13	Unknown	c.1626 A>G	Glu542Glu	1 (Af)	
Exon13	Unknown	c.1862 A>G	Glu622Glu	1 (SA)	0
Exon13	Unknown	c.1929 T>G	Ser643Ser	0	1 (E)
Exon13	rs10778148	c.1932 G>A	Thr644Thr	120 (E, Af, SA)	63 (E, SA)
Exon13	Unknown	c.1986 G>A	Ala662Ala	1 (E)	0
Exon13	Unknown	c.2493 A>G	Thr831Thr	0	1 (E)
Exon13	Unknown	c.2625 G>A	Val875Val	0	1 (E)
Exon13	Unknown	c.2665 T>C	Leu889Leu	0	1 (SA)
Exon14	Unknown	c.2781 A>G	Leu927Leu	1 (E)	0
Exon19	Unknown	c.3597 G>A	Gln1199Gln	1 (E)	0
<i>GNPTG</i>					
Exon5	Unknown	c.255 G>A	Pro85Pro	6 (E, SA)	4 (E)
Exon5	Unknown	c.297 C>T	Asn99Asn	0	1 (E)
Exon6	Unknown	c.375 C>T	Asp125Asp	1 (E)	0
Exon11	Unknown	c.903 G>A	Leu301Leu	1 (E)	0
<i>NAGPA</i>					
Exon2	rs2972272	c.333 G>A	Gly111Gly	229 (E, Af, SA)	220 (E, SA)
Exon2	Unknown	c.381 G>T	Ala127Ala	4 (Af)	1 (E)
Exon5	Unknown	c.870 T>G	Ser290Ser	1 (E)	0
Exon5	Unknown	c.888 C>T	Asn296Asn	1 (E)	0
Exon6	Unknown	c.1122 G>A	Thr374Thr	1 (H)	0
Exon8	Unknown	c.1203 C>G	Gly401Gly	0	3 (E)
Exon9	Unknown	c.1319 A>G	Gly440Gly	0	1 (E)
Exon10	rs887854	c.1484 T>C	Asn495Asn	232 (E, Af, SA)	242 (E, SA)

Table 3a. Synonymous SNPs found in the exons of *GNPTAB*, *GNPTG* and *NAGPA* genes.

rs number	Variation	Number of alleles observed	
		Affecteds	Unaffecteds
GNPTAB			
Unknown	-1661 T>C	22 (E, Af)	5 (E)
Unknown	-1642 C>T	2 (Af)	0
Unknown	-1641 C>T	0	1 (E)
Unknown	-1629 T>C	1 (Af)	0
Unknown	-1538 C>G	0	1 (As)
Unknown	-1432 C>A	0	1 (E)
Unknown	-1412 G>A	2 (E, Af)	0
rs10778152	-1298 T>C	128 (E, Af, SA)	133 (E, SA)
Unknown	-1255 G>C	1 (SA)	0
Unknown	-1252 C>A	3 (E, Af)	0
Unknown	-1175 GG>GGG	1 (SA)	0
Unknown	-1161 G>A	1 (E)	2 (E)
rs4237981	-1158 T>A	346 (E, Af, SA)	340 (E, SA)
Unknown	-1030 T>C	0	2 (E)
Unknown	-961 A>T	3 (E, Af)	0
Unknown	-919 C>A	6 (E, SA)	9 (E)
rs4764826	-868 C>G	350 (E, Af, SA)	334 (E, Af)
Unknown	-820 T>G	0	1 (E)
Unknown	-749 C>G	1 (Af)	0
Unknown	-717 T>C	2 (Af)	0
Unknown	-516 G>A	0	1 (SA)
GNPTG			
Unknown	-1762 C>T	4 (E, SA)	4 (SA)
Unknown	-1727 C>T	0	1 (SA)
Unknown	-1726 G>A	4 (SA)	4 (SA)
Unknown	-1707 C>G	0	1 (SA)
Unknown	-1706 C>A	2 (E)	0
Unknown	-1659 C>T	0	2 (SA)
Unknown	-1649 C>T	0	1 (SA)
Unknown	-1609 C>T	1 (E)	0
Unknown	-1591 C>T	1 (E)	1 (E)
Unknown	-1535 A/G	1 (E)	4 (E, SA)
rs11248873	-1489 C>T	302 (E, Af, SA)	247 (E, SA)
Unknown	-1443 G>C	0	1 (E)
Unknown	-1380 A>G	1 (E)	0
Unknown	-1326 C>G	0	1 (E)
rs34961818	-1274 C>T	338 (E, Af, SA)	275 (E, SA)
Unknown	-1257 T>A	3 (SA)	3 (SA)
Unknown	-1171 C>T	1 (SA)	0
Unknown	-1145 G>A	1 (SA)	0
Unknown	-790 G>A	1 (SA)	0
Unknown	-780 T>C	66 (E, SA)	23 (E, SA)
Unknown	-122 C>G	39 (E, SA)	24 (E, SA)
Unknown	-60 C>T	1 (SA)	2 (SA)
Unknown	16bp del	0	2 (E)
Unknown	-40 C>A	1 (Af)	0
NAGPA			
Unknown	-1715G>A	2 (Af)	0
Unknown	-1656C>-	1 (E)	0
Unknown	-1620C>G	1 (H)	0
Unknown	-1573C>g	2 (Af)	0
Unknown	-1552T>C	1 (H)	0
rs9937510	-1421G>A	211 (E, Af, SA)	245 (E, SA)
Unknown	-1290G>A	7 (E, SA)	8 (E)

Unknown	-1267C>G	0	1 (E)
Unknown	-1150~-1157 AGAGCAAA/gagcgag	2 (SA)	1 (SA)
Unknown	-483T>A	3 (Af)	1 (E)
Unknown	-435A>G	4 (E, SA)	1 (SA)
Unknown	-428G>A	1 (E)	0
Unknown	-424~-423 GC/tt	0	1 (E)
Unknown	-373G>C	2 (Af)	0
Unknown	-284T>C	1 (As)	0
rs2937109	-262C>A	44 (E, Af, SA)	67 (E, SA)
Unknown	-231G>A	1 (E)	0
Unknown	-195G>C	0	1 (E)

Table 3b. SNPs found in the 5' upstream regions of *GNPTAB*, *GNPTG* and *NAGPA* genes.

	rs number	Variation	Amino acid change	Conservation	Plausibility as causative	Number of alleles observed	
						Affecteds	Unaffecteds
GNPTAB							
Exon1	Unknown	c.70 T>G	Phe24Val	Not Conserved	No	1 (E)	0
Exon2	Unknown	c.137 G>A	Arg46Gln	Conserved	No	3 (E)	3 (E)
Exon4	Unknown	c.337 A>G	Lys113Glu	Conserved	No	1 (H)	0
Exon5	Unknown	c.559 G>C	Ser187Thr	Not Conserved	No	1 (E)	0
Exon6	Unknown	c.580 G>A	Ala194Thr	Conserved	Yes	0	1 (E)
Exon9	Unknown	c.961 A>G	Ser321Gly	Conserved	Yes	1 (SA)	0
Exon9	rs7958709	c.1042 A>C	Ile348Leu	Conserved	No	2 (Af)	0
Exon10	Unknown	c.1283 A>G	Lys428Arg	Conserved	No	1 (Af)	0
Exon11	Unknown	c.1363 G>T	Ala455Ser	Conserved	Yes	2 (E)	0
Exon12	Unknown	c.1433 T>C	Ile478Thr	Not Conserved	No	1 (SA)	1 (SA)
Exon13	Unknown	c.1668 A>C	Ile557Leu	Not Conserved	No	1 (H)	0
Exon13	Unknown	c.1804 A>G	Ile601Met	Not Conserved	No	0	1 (E)
Exon13	Unknown	c.1875 C>G	Phe624Leu	Conserved	Yes	1 (SA)	0
Exon13	Unknown	c.1931 C>T	Thr644Ile	Conserved	No	8 (E, Af)	0
Exon13	Unknown	c.1948 G>A	Glu650Lys	Not Conserved	No	1 (E)	0
Exon13	Unknown	c.2081 A>C	Lys694Thr	Not Conserved	No	0	1 (SA)
Exon13	Unknown	c.2582 G>A	Arg861Lys	Not Conserved	No	1 (Af)	0
Exon13	Unknown	c.2610 G>A	Gly871Ser	Not Conserved	No	2 (E, Af)	0
Exon16	rs34083392	c.3197 C>A	Thr1066Met	Conserved	No	1 (Af)	0
Exon19	Unknown	c.3598 G>A	Glu1200Lys	Conserved	Yes	10 (SA)	1 (SA)
GNPTG							
Exon1	Unknown	c.19 C>T	Arg7Trp	Not Conserved	No	0	2 (SA)
Exon1	Unknown	c.11_19 dup	Leu 5 Arg 7 dup	Not Conserved	Yes	1 (E)	0
Exon2	Unknown	c.74 C>A	Ala25Glu	Not Conserved	Yes	2 (E)	0
Exon7	Unknown	c.472 G>A	Val158Ile	Conserved	No	2 (E)	1 (E)
Exon7	Unknown	c.479 C>T	Ala160Val	Not Conserved	No	0	1 (SA)
Exon7	Unknown	c.502 G>A	Val168Ile	Conserved	Yes	0	1 (SA)
Exon9	Unknown	c.688 C>G	Leu230Val	Conserved	Yes	1 (SA)	0
Exon10	rs8062558	c.814 A>G	Arg272Gly	Not Conserved	No	0	1 (E)
NAGPA							
Exon2	Unknown	c.252 C>G	His84Gln	Not Conserved	Yes	2 (E)	0
Exon2	Unknown	c.299 C>T	Pro100Leu	Conserved	No	0	1 (SA)

Exon6	Unknown	c.982 C>T	Arg328Cys	Conserved	Yes	4 (E)	0
Exon8	Unknown	c.1243 G>C	Asp415His	Conserved	Yes	0	1 (E)
Exon9	Unknown	c.1320 G>C	Gly440Ala	Not Conserved	No	1 (SA)	1 (E)
Exon10	Unknown	c.1538_1553del	Phe513SerfsX113	Conserved	Yes	1 (E)	0

Table 3c. Non-synonymous variations found in the exons of *GNPTAB*, *GNPTG* and *NAGPA* genes.

Supplementary Table 3. Cumulative list of all variants observed in *GNPTAB*, *GNPTG* and *NAGPA* genes in unrelated cases and controls. Subject numbers: PKSTR = unrelated Pakistani affected, NA = unrelated North American affected, NAC = unrelated North American control, PKST = Pakistani stuttering family, RNP = unrelated normal Pakistani. Ancestry: SA = South Asian, E = European. H = Hispanic, Af = African American. Reference sequences for numbering the mutation positions in *GNPTAB*, *GNPTG* and *NAGPA* are NM_024312, NM_032520 and NM_016256 respectively.