Gene: COL4A5 - Sequence: NG_011977.1 Transcript: NM_033380.1 - Protein: NP_203699.1 Date : March 2, 2015

| 1^{st} line: Base nu 2^{nd} line: Base se 3^{rd} line: Amino 4^{th} line: Amino | equence. lowe acid sequence | er case Intro e. Printed o | ons, upper cas on FIRST bas | se Exons se of codon | of 10 |
|---|--------------------------------|-------------------------------|--------------------------------|------------------------------|----------------------|
| Exon 1 Sta | rt: 5001 | End: 52 | 283 Leng | th: 282 | |
| · · · · · tatcaacggaag | · · gtgcaaatg | aacgaataq | · · · gaaaagcttc | ccggttggact | tcatggtgctc |
| agtcaactagtc | tggaagttt | ccctcccc | · · caaataactg | · · agcgtcactco | · · cctcgcaggtt |
| gccggtgcagtc | taaaactgt | • ggcggagto | gatactcaaa | ttcccttgtg | ctggtgaggag |
| ggggggccttgca | cggggaaga | • gagggagga | aaagtagatc | tgtaggaatto | gagtgaagaaa |
| aagtttgcaagt | | | | gagaccggctt | |
| -199 AGGGGGGAAGGA | | | -169 FTCTTCTTT | | ∣−149 CACTCTTAAAA |
| -139 AGCTTCTTTCTC | | | -109 GTCCCTCTCC | | -89 CTCTCCATATA |
| -79 AACCCTCAAGAT | | | -49 GCCAGCCGGG | | -29 GGGTGCTGAAG |
| -19 GAGCTGCGGGAG | -9 CCGGAGAAG | 1 AATGAAACT M K L 1 | | 21 CAGCCTGGCTC S L A A | |
| 41 CTTACTGGCCCT L L A L | 51 GAGTCTTTG S L W | | | | cettectecee |

| | • | | | | | | | | | | |
|-------------|-------------|--------|-------|-------|-------|-------|---------------|---------------|--------|---------|-------|
| tccccc | gegeed | catcac | cgctc | tttca | cgctg | aaatt | acctt | ttttt | tgggg | 199999 | gtc |
| ccttta | tcttcc | | | | | | | | | | |
| oocca | | 20009 | 90900 | gaoca | gggaa | cccaa | accc <u>-</u> | , , , , , , , | Jeogeg | , cccag | , gaa |
| · gaaacg | • ++a+++ | | | | | | | | | | |
| gaaacg | ccacc | -gcaac | accyy | caacc | caage | | gaagi | ccaac | -ggage | iggeee | aug |
| | | | | | | | | | | | |
| tgctta | aaaata | agggct | gcttg | CTTCC | ctgca | gctag | ctcct | ccggg | gggcaa | igagca | laag |
| | | • | | | • | • | • | • | | | |
| tcagaa | gtgggg | ggacgc | taatt | aaagg | ctcac | taggc | tgtgg | gt | | | |

| Exon | 2 | Start | : 1048 | 323 | End: | 1048 | 882 | Lengt | .h: 5 | 9 | | |
|-------|-------|------------------------------|--------|-------------|--------|-------|--------|-------------|-------------|--------|-----------|---------|
| ccat | cttta | agccttt | tattga | • agagat | tatcto | cattt | :ttaat | .gtctt | gtaa | aatgat | attt | tt |
| | | aattata | | | | | | | | | | ta |
| taata | | ggtgcaa | | | | | | | | | cttt | tc |
| agata | attt | :tctggt | tatcta | atctt | caagt | tttgg | gattgt | itgatt | tcagt | ttgagc | tgta | ag |
| tcaga | agtct | :gattt | ttgggt | tcata | atttaa | atgat | ttttt | ccctc | · :tttc1 | tcttcc | ttat | ag |
| | | 91 GGGTGT G C 31 | TTCTC | | ГСААА | | GACTGO | | | | | |
| gtga | | tagatt | | | | | | | | | | |
| aata | tttt | Ettaaaa | | | | | | · nagtaa | | | tcct | • at |
| tgca | ttgct | ctatttt | tagaga | agctta | ataag | gatta | ıgatta | ıtatct | taag | gtcagc | • aaag | • at |
| tttc | tgtaa | · aaaggco | catata | • agcaaa | acatt | ttagg | gattta | utggga | · icacat | tcagtt | tctg | · tc |
| acat: | attct | · -tattta | atata: | aataq | aacttt | - | | rtaaaa | aatai | · | · actc | ++ |

| Exon 3 | Start | : 12 | 4141 | End: | : 124 | 230 | Leng | th: 8 | 39 | | |
|--------------------|-------------|------------|-------|--------|-------|--------|--------|-------|--------|------|-----------|
| attgctate | | | | | | | | | | | |
| atatgctt | | | | | | | | | | tcca | ıgac |
| ggtttgtg | | | | | | | | | | | gaa |
| tttacataa | | | | | | | | | | | tca |
| accatgcc | | | | | | | | | | | |
| GGAGAGAGA G E R | AGGGTT | TCCA | GGTTT | | SACAC | CCAG | GATTGC | CTGGA | ATTTCC | AGGT | |
| GAAGGGCC E G P | TCCGGG | GCCT | CGGGG | | | | | | | | |
| • agatgaat | taagtc | | | | | | | | | | |
| attatage | • aagaaa | | | | | | | | | tact | · .tta |
| ttgtattt | tgttaa | | | | | | | | | | |
| ttgattgt | ttgtag | · ttati | tggct | gcctto | cacaa | ıaaatt | aagtt | ctgtd | caagag | ctta | · igct |
| gagctgga | gagagc | tgaat | ttacc | agttgt | · | | | | | | |

| Exo | n · | 4 | | Sta | art | : | 12 | 89 | 59 | | Ε | nd | : 1 | 29 | 00 |)3 | | Le | ng | th | : | 44 | | | | | |
|----------|---------|-----|-----------------|-----|----------|----------|-------|---------|-----|----|----|------|----------|-----|-----|-------------|-------------|-----|---------|----|----|----|----|-------------|----------|------|---|
| tat | | | | | | | | | | | | | | | | | | | | | | | | | | | Э |
| gtt | | | | | | | | | | | | | | | | | | | | | | | | att | | | Ξ |
| cat | | | | | | | | | | | | | | | | | | | | | | | | 3 39 | | tata | a |
| | | | | | | | | | | | | | | | | | | | | | | | | | | ttga | Э |
| • aaa | tg | agt | tt. | att | tç | , Jac | gga | ıct | .tt | tt | tg | ac | gga | aca | ıaa | ıa <i>a</i> | acc | cta | ıaa | aa | ta | tt | gc | att | tt | tca | 3 |
| GGT G | | | ТА | GGI | TAA I | ТС | CCA | .GG | GC | СА | СС | | GAC | CCA | AA | AAG | GG <i>P</i> | ΑĀΊ | CA R | GΑ | gt | aa | gt | | | ttt | |
| tct | ata | ato | | | | | | | | | | | | | | | | | | | | | | | | gaca | |
| att | | | | | | | | | | | | | | | | | | | | | | | | | | aati | |
| taa | ga | gti | tg | gta | ata | | | | | | | gca | | | | | | | | | | | | att | ac | atat | • |
| att | tti | tat | ta [.] | tat | tat | gt | cct | at | tt | aa | ta | taa | aaa | ıgg | rat | tt | ta | naa | ıgt | ag | ct | ta | tg | gtt | • .ga | gaat | • |
| tat | · ca | aad | rt. | · | aa | · nat | - + c | · ta | ıaa | a† | ++ | at i | · cat | ++ | | . + + | - a a | | at | · | | | | | | | |

| Exon 5 Start: 133706 End: 133750 Length: 44 BE AWARE: Flanking intron is shared with the following exon |
|---|
| |
| |
| |
| |
| ggatattattttattttatgggttgtcatttagtttaaggattttatttcttcttatag |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| ctttttactttgaaatctcttgaaaag |



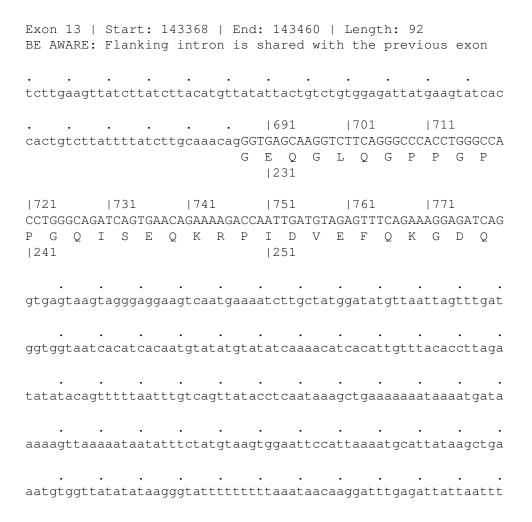
| Exon 7 Start: 136490 End: 136543 Length: 53 | |
|--|---------|
| | aa |
| | gt |
| | :t |
| | ig |
| | 1g |
| 391 401 411 421 431 . GGAGAACGTGGATTTCCAGGCAGTCCCGGTTTTCCTGGTTTACAGGGTCCTCCAgtaag G E R G F P G S P G F P G L Q G P P 131 141 | gt |
| tataaaaatttgggattatgatgaacacaggaattaacaaaagaagcagaaatgtagtga | ag |
| | • aa |
| | • :a |
| tgtatataaatgtcacctctaagtatcctaaggtatatcctattcagaaatgacgcta | • ca |
| | |

| Exon 8 Start: 136888 End: 136914 Length: 26 |
|--|
| |
| ttaaagtaataaactagaggaaaatgtttcaaaaagaagttggtaatatagctttctcct |
| |
| |
| |
| 441 451 461 |
| |
| |
| |
| |
| ccacttactctgtagaattactttt |

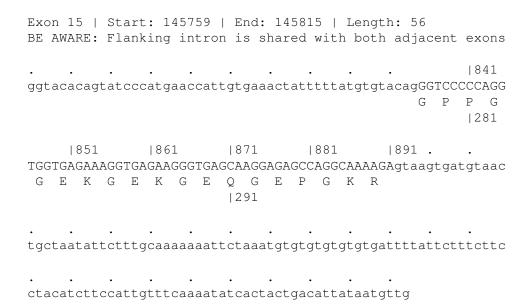
| Exon | 9 | : | Sta | ırt | : 1 | 386 | 551 | | Er | nd: | 13 | 887 | 31 | : | Ler | ngt: | h: | 80 | | | | |
|--------------|-----|-----|-----|------|-----|----------|-----------|-----|-------------|------------------|-------------|------------------|-------------|------------------|-----|------------------|-------------|------|------|-----|------------------|-----|
| tctc | cat | ta | cto | gati | tac | cca | • agaa | aco | ct <i>a</i> | ıcc. | aca | ıat [.] | tgt | .tg | gca | aaa [.] | tac | etta | aata | att | tact | ta |
| cata | ttt | tti | taa | atga | agt | aac | ctga | aaq | ggt | ac | tac | ac [.] | tct | ta | ata | aaa | tct | act | igtt | ct | tcaq | уt |
| gtac | tct | gg, | cca | acti | tcc | tca | att | tto | cct | tt | aaa | ıagı | gt <i>a</i> | ıaa | ctt | tat | cat | ttt | ctat | ta | ctga | эg |
| · atgg | | | | | | | | | | | | | | | | | | | | | ctg | gt |
| tttg | ctg | gti | ttt | cat | tgt | ata | nata | aad | ctg | ŋtg [.] | tct | ta | ga <i>a</i> | ıct [.] | tco | cat | tga | ıtgç | gctt | ct | ttta | зg |
| GGTGZ G E | | CA | GG1 | 'AG' | ГАТ | AAT I | TA | TG: | ГСZ | ATC | ACI | GC | CAC | GA | CCI | AAA | GGG G | STA | | CAG | 521 GATA Y | AΤ |
| CCAG(P G | GTC | СТ | CCI | | I | ACA | AAgt | taa | agt | | | | | | | | | | ctat | | | :t |
| aaac | cag | aa | gat | ta | caa | caa | atco | cct | · | ac | | | | | | | | | gtca | | • aaaa | аt |
| tatca | atc | ag | atç | gtti | tac | taç | gaca | att | cac | cat | gt <i>a</i> | ıct [.] | ttc | cta | cct | :ga | aa <i>a</i> | ıtaa | aaag | gca | atct | z g |
| · gacca | | | | | | | | | | | | | | | | | | | ccaç | | | :g |
| gggat | ttg | gc | ago | caga | aaa | tag | gggt | tto | ct <i>a</i> | ıta [.] | ttc | tt. | att | .ct | tgt | cac | tgt | gga | agag | gca | gtaq | 39 |
| gtct | ttt | gt | aca | atti | tac | aaa | · | | | | | | | | | | | | | | | |

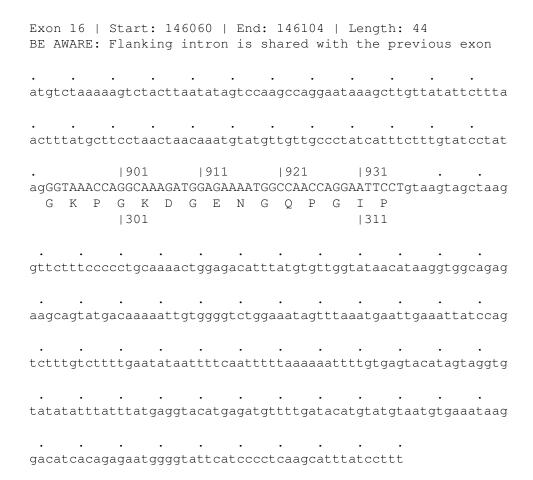
| Exon | 10 | 1 | Sta | rt: | 14 | 0987 | 7 | End | d: | 141 | 104 | 9 | L | eng | th: | 62 | 2 | | |
|------------|------|-----|----------|------|-----|--------------|---------|-----------|-----|------|-----|----------|-----|-----|-----------|-----------|------|----------|--------------------------|
| cttt | ggga | ıgg | · cca | .agt | cat | gaga | atc | aaga | acc | cago | cct | ggc | cca | aca | .tgg | rtga | aaad | ccc | cgtct |
| ctact | caaa | ıaa | tac | gat | aat | tago | ccg | gac | ctç | gt | ggc | agg | gtg | cct | gta | ato | ctca | agc | tactc |
| • aggaq | ggct | ga | ggc | agg | aga | atto | gct | tgaa | acc | cca | gga | ggo | egg | agg | · rtcg | rcaç | gtga | agt | tgaga |
| tcato | gcca | ıtt | • gca | .ctc | cag | cct <u>c</u> | idd | cga | cac | caaq | gtg | aga | act | ttg | tgt | aaa | aaaa | aag | aaaaa |
| ataca | aata | ıag | | | | tttc | | | | | | | | | | | | | aacag |
| | | CTG | | CCA | | GTAI | AC P | | GGC | CCAZ | ATT | GGI | CC | CCC | AGG | ;AC | | CAG G | 601 GTTTG L 201 |
| ATGgt M | caag | ſct | ctc | ttc | ttt | aatt | ta | · atti | tcc | | ccc | ttt | cc | ttt | ctg | ract | tct | ctt | • cagga |
| atatt | caat | at | tat | tta | taa | tact | tg | aaaa | aca | ıtaa | atg | cat | tc | tca | .aca | · itto | cata | aat | ttata |
| attt | cctt | at | gta | | | actt | | | | | | | | | | | | | gtaat |
| ggct | ccat | tt | tat | aga | tgg | aaaa | at | gag | gta | ıtat | taa | • aac | gga | aag | att | tad | caat | :ga | aatat |
| tttgt | Etgg | ŗtt | gct | ctt | gat | gtat | ca | gtgt | ttg | Jaaq | gtc | aat | tc | tgg | сса | ıttt | cag | gaa | agtct |
| ttt | | | | | | | | | | | | | | | | | | | |

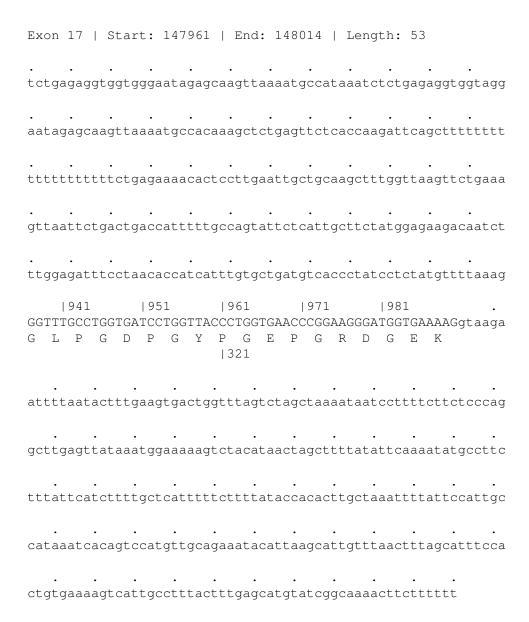
| Exon 11 Start: 143029 End: 143064 Length: 35 |
|--|
| BE AWARE: Flanking intron is shared with the following exon |
| |
| aatttgatgggtctgttgagattaacttttgaattgatttttgacaatggggctacctct |
| |
| $\verb ctacctctgcccatcccagcttttttctcttgcccatttctattttgtcatcagaggtac $ |
| |
| ${\tt tcacattcatctagctcattttaatcaattaaaatgtgtgtctctgactaaaatgaaaac}$ |
| |
| ${\tt aaacaagaaaatactattttgatgggctttttcacaccttactctttctgaaactaaata}$ |
| acttttaaaattaacttattaatataacattttatttt |
| |
| 611 621 631 641 |
| $\tt GGCCCTCCTGGTCCACCAGGACTTCCAGGACCTAAGgtaattttctttttctttatatct$ |
| G P P G P P G L P G P K |
| 211 |
| |
| tttatttggtgtggattcct |
| |



| Exon 14 Start: 145610 End: 145663 Length: 53 BE AWARE: Flanking intron is shared with the following exon | |
|---|---|
| | t |
| | g |
| | t |
| | t |
| | g |
| 781 791 801 811 821 831 . GGACTTCCTGGTGACCGAGGGCCTCCTGGACCTCCAGGGATACGTGGTCCTCCAgtaag G L P G D R G P P G P P G I R G P P 261 271 | t |
| acctaaagtgctttagcatcatttaatgtaaattggtatt | |



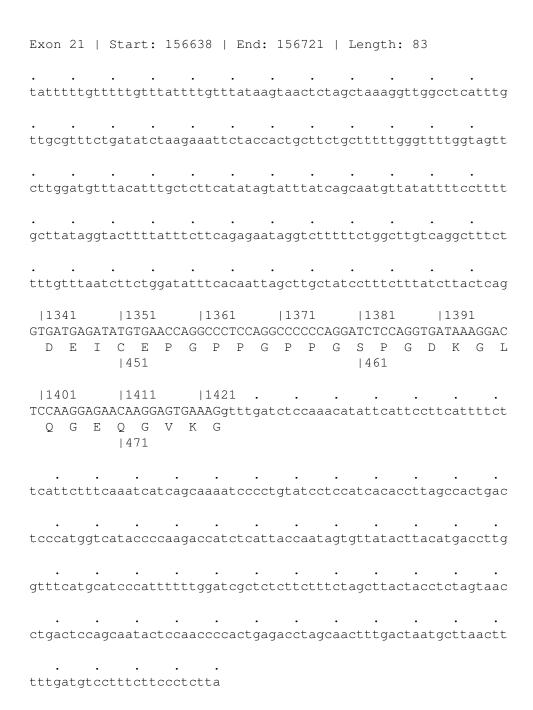


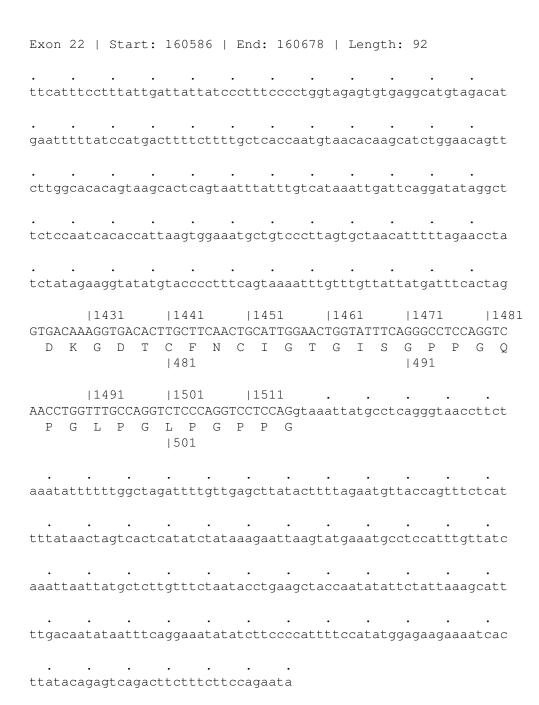


| Exon | 18 | Star | t: 14 | 19561 | Enc | l: 149 | 602 | Leng | rth: | 41 | |
|-------|-------|-------|-------|-------|--------|--------|--------------------|--------|------|---------|--------------|
| | | | | | | | | | | | ctttatt |
| | | | | | | | | | | Igctagt | taaatct |
| | | | | | | | | | | | gcatttc |
| | | | | | | | | | | | atattct |
| | | | | | | | | | | | • :gaacag |
| | AAAA | GGTGA | CACTO | GCCCZ | | SACCTO | CTGG <i>I</i> G | ACTTgt | | tttttt | Ettttta |
| | | | | | | | | | | tcgcat | tactccc |
| | | | | | | | | | | | ctaaaag |
| | | | | | | | | | | | tgcctat |
| | | | | | | | | | | | catgat |
| tgcca | Igato | atttc | tcaaq | gcaac | cagcag | ıgtggt | • gcaaq | gtgt | | | |

| Ex | on | 1 | 9 | | St | tai | rt: | : : | 15 | 16 | 92 | | E | Enc | d: | 1 | . 5 | 18 | 24 | | | Le | nç | gth | 1: | 13 | 32 | | | | | |
|---------|----------|----|-----|----|-----|-------------|-----|-----|---------|----|----------|----|----|-----|----|-----|-----|----|----|---|----|----|----|-----|-----|----------|----|---------|-----|-----|---------------|--|
| | gti | | | | | | | | | | | | | | | | | | | | | | | | | | | tg | aat | Eta | ata | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ato | | taa | |
| | tt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | aat | tgt | |
| | ct | | | | | | | | | | | | | | | | | | | | | | | | | | | | | gtt | ttt | |
| | gg: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | caa | aag | |
| | AA' I | | | TP | \GZ | ACC | СТС | GG(| GA T | | GG' G | TΑ | ΤZ | AAC | CT | 'ΑΊ | Ά | GG | AG | A | AΑ | AΑ | GG | SAZ | | CA: | | GG G | GT1 | | 1 CCT | |
| | GT' L | | | ТС | G | AG <i>I</i> | λAZ | λA | AG G | GΑ | GA: E | GC | GΡ | \G(| ξA | ГТ | T | CC | TG | G | AΑ | TΑ | CA | AGC | GG: | rco P | CA | CC P | | GC(| 1 CTT L | |
| CC P | | | CC | TC | CCZ | | | | | | | | | | | | | | | | | | | | | | | | ctt | | cta | |
| at | | | | | | | | | | | | | | | | | | | | | | | | | | | | | aca | | • aag | |
| tc | · cti | tt | tt. | aa | ıt1 | | aca | | | | | | | | | | | | | | | | | | | ca | CC | at | att | cao | ctc | |
| ac | | | | | | | | | | | | | | | | | | | | | | | | | | | | | tat | | tct | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | tat | | tta | |
| | ac | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Exon | 20 | Sta | rt: | 15 | 613 | 5 | En | d: | 156 | 308 | | Len | gth | : 1 | 73 | | | |
|------------|-------------------------------|-------|----------|-----|-----|-----|-----------------|----------|-----|------------------|----------|------|------|-----|-----|----------|------|----|
| cttg | ctaat | | | | | | | | | | | | | | | gat | ggg | gt |
| tacta | • agtaa | | | | | | | | | | | | | | | | | ct |
| · gtta | cttac | | | | | | | | | | | | | | | | | aa |
| · aaaa | · ataac | ataa | | | | | .gtt | | | | | | | | | | | ca |
| atga | gaact | | | | | | Igat | | | | | | | | | | | ag |
| GGGC' | 117 TGCAG | TTAT | GGG | TCC | TCC | TGG | | TCC | TGG | ATT' | TCC | TGG. | AGA. | AAG | GGG | TCA | | |
| A | A V 391 | М | G | Р | Р | G | Ρ | Р | G | F 4 | | G | Ε | R | G | Q | K | G |
| | 123 TGAAG | GACC. | ACC | TGG | AAT | TTC | CAT | TCC | TGG | ACC' | TCC | TGG. | ACT' | TGA | CGG | ACA | .GCC | ΤG |
| D | E G 411 | Р | Р | G | 1 | 5 | Ι | Р | G | 4: | P 21 | G | L | D | G | Q | Р | G |
| GGGC' A | 129 TCCTG P G 431 | GGCT | TCC | AGG | GCC | TCC | 13 ETGG G | CCC | TGC | TGG | CCC P | | CAT | | TCC | TAg S | taa | gc |
| tata | ttttt | ctcc | tat | taa | gtt | cta | | | | ttg | | | ttg | ttt | ata | agt | aac | tc |
| tagc | taaag | gttg | • gcc | tca | ttt | gtt | .gcg | • ttt | ctg | ata [.] | tct | aag | aaa | ttc | tac | cac | tgc | tt |
| | ttttt | | | | | | | | | | | | | | | | | |
| | aatgt | | | | | | | | | | | | | | | | | |
| | ctggc | | | | | | | | | | | | | | | | | |







| Exc | n i | 24 | 5 | Sta | ırt | :: | 162 | 454 | | Enc | d: 1 | 626 | 45 | L | eng | rth: | 19 | 1 | | |
|----------|------|-----|-----|----------|-----|-----------------|-----|----------|------|-----------|-----------|------|----------|-----|----------|------------------|------|----------|-----------------|-----------------|
| tga | ıgt | ata | tta | ata | ıaa | aac | aaa | .aag | aaq | gtag | gaag | gaa | ggc | att | tta | · cac | att | gat | ttt | caat |
| tat | .tc | ata | tat | tat | ac | cac | aca | tat | aca | aatt | taa | ttt | · ttc | cat | taa | ıgtt | gta | ctt | tgt | ttga |
| · ttc | cti | tga | ct | ctt | cc | ctg | act | cac | ato | gcct | cac | | att | cag | ccc | ttt | gta | cat | taa | atgt |
| tat | .tg | gat | gg | • gtt | ga | • nag | ggg | · taa | .act | gga | agag | aag | • aaa | atg | tta | • Igaa | .aaa | • aag | aaa | ctga |
| ttt | tc | ttt | tt | ctc | ctt | · | ttc | ttt | tto | ccac | ctct | ttt: | ttc | ttt | ttt | tcc | tta | ctc | att | tcag |
| GGC G | • | Ρ | | | | | AGG | TGC A | | | GCTT F | | TGG G | | | 163 AGG G | | ACC P | 16 TGG G | 41 TGAT D |
| ATC I | | Т | | ITC F | CCP | -66 AGG G | | GAA K | | GTGA | ACAA K | | AGA E | | | 169 STTC S | | TGG G | 17 SAGC A | 01 TCCA P |
| GGG | • | | | GTI | | | TGG | CAC T | | CTG | GACA O | GGA | | ATT | GCC | 175 AGG G | GCT | TCC P | 17 TGG | 61 CCCG P |
| J | 5 | 71 | | - | 1 | - | J | _ | - | J | V | 5 | | 1 | - | J | | - | J | ı |
| AAA K | | Ε | | СТс | ŋtg | · gag | ttg | · gtt | tga | • atat | Ettt | tgg | ttt | tgt | • gat | • .gtt | aaa | ttt | tca | • ctta |
| gaa | ıatı | gtt | tt | cta | ıaç | gtt | aat | tca | aaq | ggat | ggg | act | gat | gct | • gag | rata | .aac | acc | caa | tcaa |
| tgc | :tt | aaa | aca | aat | gt | :ga | сса | tac | agt | caat | ggc | aca | ttg | tta | ctg | ract | acg | tag | iggt: | ttct |

tccccatctctt

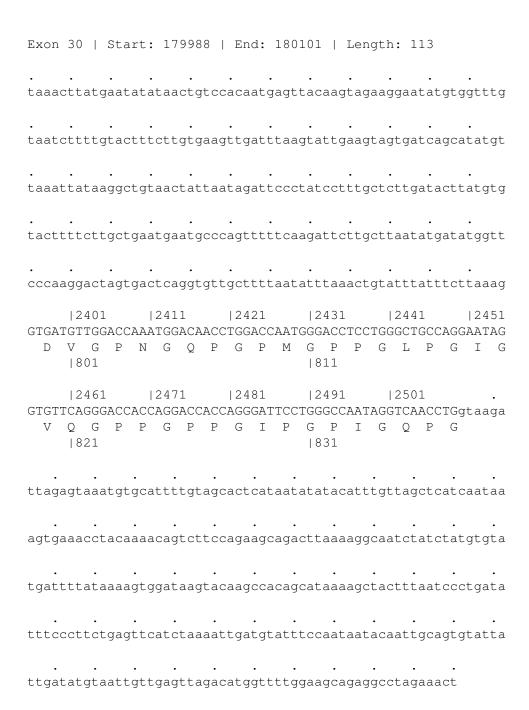
| Exon 25 Start: 163779 End: 163947 Length: 168 |
|--|
| |
| |
| |
| |
| |
| 1781 1791 1801 1811 1821 1831 GGTGGAATTACTTTTAAGGGTGAAAGAGGTCCCCCTGGGAACCCAGGTTTACCAGGCCTC G G I T F K G E R G P P G N P G L P G L 601 611 |
| 1841 1851 1861 1871 1881 1891 CCAGGGAATATAGGGCCCTATGGGTCCCCCTGGTTTCGGCCCTCCAGGCCCAGTAGGTGAA P G N I G P M G P P G F G P P G P V G E 631 |
| 1901 1911 1921 1931 1941 AAAGGCATACAAGGTGTGGCAGGAAATCCAGGCCAGCAGAATACCAGgtaagtttact K G I Q G V A G N P G Q P G I P G 641 |
| gtgttttgttttaaacttggtgcttaaaaacagaaatttattatgttttggctactcatg |
| |
| ttagcaagggatcacaatggttttataagggggtttctttttaaatcttttctaactgt |
| ttcattgttactgttaattttgctctttttaagtacatgatacataatgcaaagtttaat |
| |

| Exon | 26 | I | Sta | art: | 10 | 664 | 70 | : | Enc | d: | 166 | 562 | 2 | Lei | ngt | h: | 92 | | | | |
|-------|----------|-----|----------|------------------|------|------------------|----------|-----------------|-----|-----|----------|-----|-----------|------|-----|-----|-----|---------|-----|----------|---------|
| atgct | ctta | acc | ago | cgat | cto | cag | tat | ct | ctt | · | tct | agt | cat | :gt | cga | aac | cct | ааа | aat | taa | cc |
| attat | · | atc | ttg | gaat | cat | Egg | aag | tc | ctt | taa | ggc | tgt | cat | tato | cct | ttt | tc | ttt | tt | • gaa | at |
| tctat | cct | tc | • tgt | ttt | ata | ata | ttt | ct | tga | nat | ata | tag | ıtg | gaaq | gat | tgt | tt | · tt | ctt | gtg | aa |
| ttttt | igtt | ag | • ttt | caca | | tc | | | | | | | | | | | | | | att | aa |
| aaaga | • aga | cct | tta | agtt | gaq | gta | aat | · ac | tto | ctc | att | tac | cat | Etga | att | tad | ctc | · tt | gct | ttc | ag |
| GTCCT | K | | GGI | 196 ATCC P | CAG | GTC | AGA | CT. | ATA | AAC | Q | GCC | CGGC | GAZ | AGC | СТО | GC | TT | | TGG | TA N |
| ACCC | G | CAG | AGA | 202 ATG0 G | STG | ATG' | TAG | GΤ | CTI | CC. | AGg G | | | gago | gaa | ttt | tat | tto | caa | agt | aa |
| cttca | aaca | acc | gat | ggd | cttt | ttt. | ttt | tt [.] | ttt | tt | ttt | gac | • caga | agtt | ctc | gct | tct | gto | cac | cca | tg |
| ctgga | agta | aca | gto | ggcg | gtga | atg [.] | ttg | gc [.] | ttg | gct | gca | gca | · | ctc | cta | ctt | ct | gg | gtt | caa | gc |
| agtto | ctc | cct | gco | | | ctc | | | | | | | | | | cca | acc | aco | cac | gcc | ca |
| gttaa | attt | :tt | gta | attt | tta | agt | • aga | ga | cgc | gag | ttt | ctc | ccac | cgtt | Egg | cca | agg | ct | ggt | ctc | ga |
| actco | ctga | acc | tca | aggt | gad | ccc | att | gc | ctc | cag | cc | | | | | | | | | | |

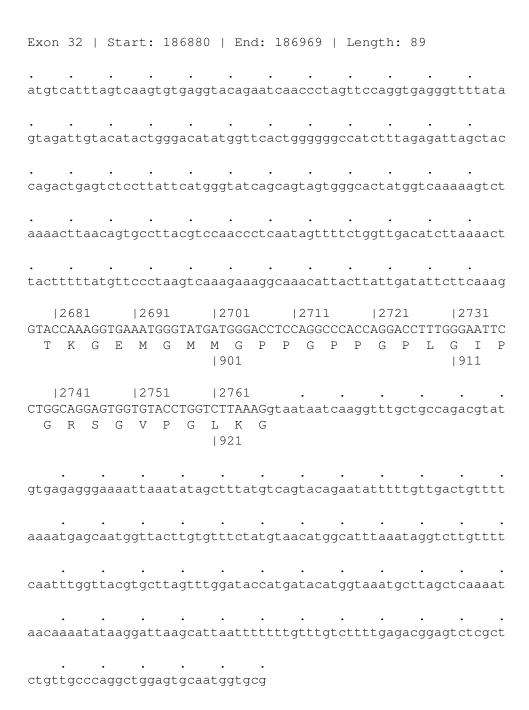
| Exon | 27 | I | Sta | rt: | 16 | 696 | 2 | En | d: 1 | L67 | 066 | | Len | gth | : 1 | 04 | | | |
|-----------|------|-------------|------|----------|------|----------|-----|------|--------------------------------|-----------|----------|-------------|------|----------|-----|----------|----------|-----|--------------------------|
| ggcg | ıtga | tgt | .tgg | ctt | gct | gca | gca | lacc | tcct | ac | · ttc | tgg | ıgtt | caa | gca | gtt | ctc | cct | gc |
| ctca | igcc | tcc | caa | • gta | .gct | ggg • | att | aca | ggcg | JCC: | cac | cac | cac | gcc | cag | tta | att | ttt | gt |
| attt | .tta | gta | ıgag | acg | gag | ttt | ctc | ccac | gtto | ggc. | cag | gct | .ggt | ctc | gaa | ctc | ctg | acc | tc |
| aggt | | | | | | | | | gtgc | | | | | | | | | gca | CC |
| tggc | :cct | gat | ggc | ttc | ttt | ctt | tga | lacg | tttt | :cc | ttt | caa | ıtaa | ctg | ctg | ttt | ctc | cat | ag |
| GTGA D | | TGG | SACT | TCC | AGG | GCA | ACC | CAGG | | GCC. P | AGG | GAI | ACC | TGG | TAG | CAA | AGG | | 2101 AC P 701 |
| CAGG G | | CCC | | AAT | TGG | GCT | TCC | TGG | 21 ACC <i>I</i> P 71 | P ACC' | TGG | TCC | | AGg | tat | gtt | • gga | atg | gg |
| tago | agg | caç | ſagt | agg | tta | • gaa | gtt | tag | cato | jat: | gtt | att | ctc | · tca | taa | aat | tca | ttc | • aa |
| caaa | ıtaa | aat | ata | tta | att. | gca | cct | ttt | ttct | :ct | gtg | ct <i>a</i> | ıtaa | • aga | atg | taa | ata | aaa | • aa |
| tcac | agt | gt <i>a</i> | ıttt | | | | | | tato | | | | | | | | | gaa | • aa |
| tato | tac | att | tta | gat | atg | · caa | aag | ŗtga | tata | ıta | agc | tta | ıaaa | atc | aca | • gga | att | att | • gt |
| gttt | .tgt | gtt | cac | cat | agt | att | ttc | agg | gttt | ag | aac | agt | tcc | ta | | | | | |

| Exon | 28 | 3 | S | taı | ct: | 16 | 804 | 1 | I | End | : | 168 | 313 | 8 | Le | eng | th | : 9 | 7 | | | |
|-----------|------|----------|---------|-----|------------------|----------|----------|---------|-----|-----|---------|-----|------------------|----------|------|-----|------|-----------|-----|----------|-----|-------------|
| ttct | tg | ggc | at | ttt | .tg | tgt | ggg | gati | tca | att | cc | tta | · | att | tag | gtt | cta | atc | tta | ntta | ata | ıtaa |
| tago | | | | | | | | | | | | | | | | | | | | | | ıata |
| aaag | Igaa | atg | · ta | aga | · atg | att | • gaç | gag | gat | ttg | · ta | agg | · gct | taa | tco | cta | .agt | ag | tag | jaa† | tgt | cat |
| tgtg | | | | | | | | | | | | | | | | | | | | | | ıttt |
| gaat | ato | ctt | tc | tta | aaa | gtg | cct | tt | cct | ttt | gg • | tgç | · gtt | aaa | aaa | atg | ·act | ta | tca | ıtt! | tta | ıcag |
| GCTT F | TC | CTG | GA. | AT] | CC | AGG G | ACC | CTC | CA | GGA | .GC | ACC | CTG | GGA | .CAC | CCT | GGZ | AAG. R | AAI | TG | GTC | :01 :TAG |
| AAGG G | CCC | СТС | СТ | GGC | GCC | ACC P | CGG | GCT' | TT | CCA | .GG | ACC | CAA. | | | | | | | | | |
| cctt | cto | cat | tt | tct | :ta | tct | ttc | · | aco | ctt | CC | tta | att [.] | tct | ago | ctc | tct | tat | ttt | • :ga | ctc | • :aga |
| tato | ato | | aa | gcd | ccc | aag | tct | itt | act | tat | aa | ata | ata | cag | ata | aac | tta | att | ata | itt | tcc | att |
| • aaaa | aaa | | | | | | | | | | | | | caa | | | | | | | | |
| aaaa | aaa | • aaa | .aa | aaa | acc [.] | taa | ttt | · ct | gta | acc | ta | ctt | tt | • gaa | tgo | ccc | agt | tc | ttt | • .ga | tta | Igag |
| aata | caq | ggc • | at | acc | ctt | gga | gat | · | tgo | cag | gt | tta | ıgt: | tc | | | | | | | | |

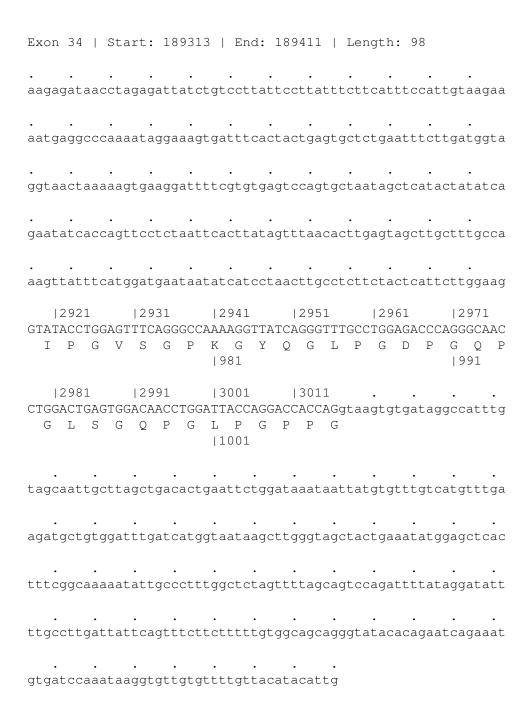
| Exc | n | 29 | | S | tar | t: | 17 | 181 | 9 | Ε | ind | : 1 | 719 | 69 | L | eng | th: | 15 | 0 | | |
|----------|-----|---------|----|-----------|-----|-----|----------|------|----------|----|----------|----------|------|-----|---------|------------------|-----|-----|----------|-----|--------------|
| gcc | | | | | | | | | | | | | | | | .atc | | | | | agtt |
| ttt | | | | | | | | | | | | | | | | ttt | | | | | tttc |
| caa | ıtc | ct | tc | | | | | | | | | | | | | tat [.] | | | | | tcct |
| ctc | | | | | | | | | | | | | | | | att | | | | | gcaa |
| aca | ıat | aa | gg | | | | | | | | | | | | | tgt | | | | | caag |
| GGI | 'GA | | | 51 .GG | | TGO | CAT | TAC | CTG | GG | CCZ | ACC | TGG | GCC | | | | | | | 2301 CAAA |
| G | Ε | | 75 | G 1 | F | А | L | Р | G | , | Ρ | Ρ | G | | P 61 | G | L | Р | G | F | K |
| | | AC | ТΊ | 'GG' | ГСС | AAZ | AAG | GTG. | ATC | GT | 'GG | ГТТ | 'CCC | AGG | ACC | TCC | GGG | TCC | TCC. | AGG | 2361 ACGC |
| G | A | | 77 | | P | K | G | D | K | | G | r | Р | | P 81 | Р | G | Р | Р | G | R |
| ACI T | | CT L | | .GA' D | | GC1 | rcc P | G | GAC P | CA | AAA K | AGg G | tat | gga | ggc | | cac | tgc | | | actt |
| • gct | .tt | ta | ac | · :tt: | tta | tag | | | | | | | | | | atg | | | • aag | ccc | aatt |
| • aac | tg | ga | aa | .cc | cta | tga | ctg | | | | | | | | | ttt | | caa | tcc | ttc | attg |
| | | | | | | | | | | | | | | | | atg | | | | | ggct |
| | | | | | | | | | | | | | | | | gat | | | | | ggaa |
| · ttc | | | | | | | | aca | | | | | | | | | | | | | |

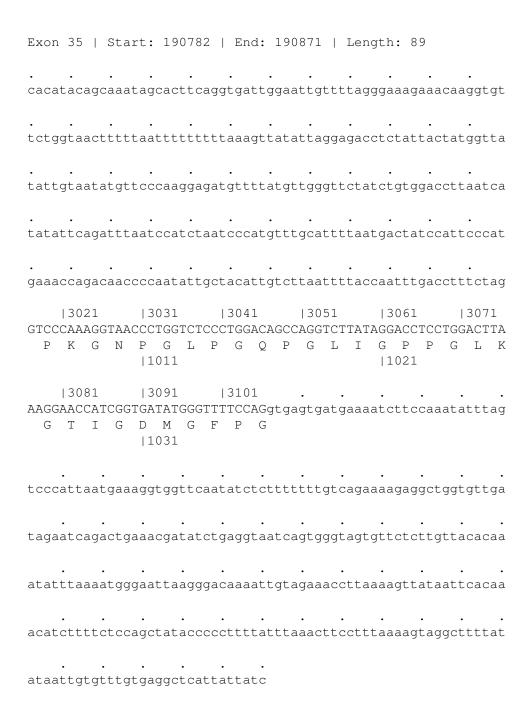


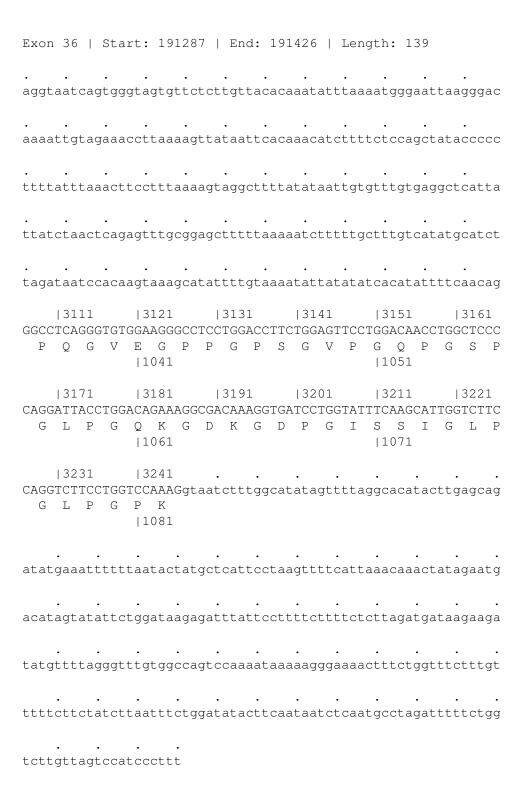
| 2511 2521 2531 2541 2551 2561 |
|---|
| GTTTACATGGAATACCAGGAGAGAGAGGGGGATCCAGGACCTCCTGGACTTGATGTTCCAG L H G I P G E K G D P G P P G L D V P G [841] [851] |
| 2571 2581 2591 2601 2611 2621 |
| GACCCCCAGGTGAAAGAGGCAGTCCAGGGGATCCCCGGAGCACCTGGTCCTATAGGACCTC PPGERGSPGIPGAPGPIGPP |
| 861 871 |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGgtaatttgttta |
| 2631 2641 2651 2661 2671 |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGgtaatttgttta |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGgtaatttgttta G S P G L P G K A G A S G F P G 881 891 |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGGtaatttgttta G S P G L P G K A G A S G F P G 881 891 |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGgtaatttgttta G S P G L P G K A G A S G F P G 881 891 |
| 2631 2641 2651 2661 2671 CAGGATCACCAGGGCTTCCAGGAAAAGCAGGTGCCTCTGGATTTCCAGgtaatttgttta G S P G L P G K A G A S G F P G 881 891 |



| Exon 33 Start: 187753 End: 187902 Length: 149 |
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| |
| |
| 2771 2781 2791 2801 2811 2821 GTGATGATGGCTTGCAGGGTCAGCCAGGACTTCCTGGCCCTACAGGAGAAAAAGGTAGTA |
| DDGLQGQPGLPGPTGEKGSK 931 |
| 2831 2841 2851 2861 2871 2881 AAGGAGAGCCTGGCCTTCCAGGCCCTCCTGGACCAATGGATCCAAATCTTCTGGGCTCAA |
| GEPGLPGPPGPMDPNLLGSK 951 |
| 2891 2901 2911 |
| |
| ttcctgatatatctgaagtttaatttttaaatagcatgaaaagtgacttataatacagaa |
| |
| ttcctgatatatctgaagtttaatttttaaatagcatgaaaagtgacttataatacagaa |
| ttcctgatatatctgaagtttaatttttaaatagcatgaaaagtgacttataatacagaa |

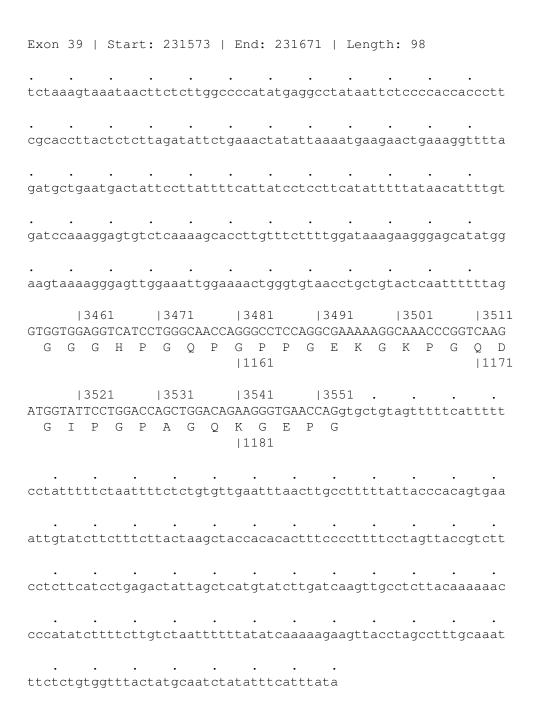


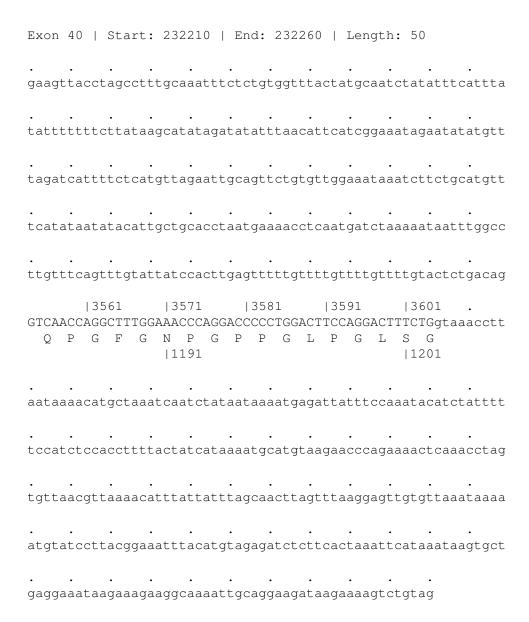




| Exon 37 Start: 220408 End: 220534 Length: 126 |
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| |
| |
| |
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| |
| 3251 |
| 3311 |
| 3371 |
| |
| gactagcaacataatctcaaactatctctttaccttttctttgcccaaatttattt |
| |
| |
| attttg |

| Exon | 38 | 1 | Sta | rt: | 230 | 584 | E1 | nd: | 230 | 664 | | Len | gth: | 80 | | | |
|------------|----------|-----|------|------|--------------------------------|-------------|------|------|-----------|-----------|-----|-----------|------|------|-----------|------|-----|
| gcaa | | | | | | | | | | | | | | | | | cct |
| acca | | | | | | | | | | | | | | | | | ttc |
| aggat | taa | .at | ggtt | aaaa | aaca [.] | taaa | atta | atta | atta | · .aaa | ata | · agcc | aaca | aac | · | agca | tct |
| tttg | | | | | | | | | | | | | | | | | gaa |
| ttgta | • agc | tc | ttaa | agca | aatg | cagt | ttt! | tcti | ttca | · .ttt | tta | naat | tgag | gctc | · :ttt | actc | tag |
| GAAC(| | AG | GCCC | TCC | | CCAA P K | AAG | GTA: | ГТАG | TGG | CCC | CTCC | TGGG | SAAC | CCC P | GGCC | |
| CAGGA G | | AC | CTGG | TCC | 34 IGTA V 0 11 | Ggta G | | | • aaaa | | | | | | | | act |
| aatgt | | | | | | | | | | | | | | | | | aac |
| acaa | gga | .aa | tata | gtgt | tca [.] | ttca | ctt | aaca | actg | ·cat | gto | gagg | taca | ıgaa | tga | ataa | ctt |
| ttaat | | | | | aaaa [.] | | | | | | | | | | | | att |
| ttgg | gag | gc | cgag | | ggag | | | | | | | | | ctag | · | ggtc | aac |
| atggt | tga | .ta | egcc | attt | cta [.] | t | | | | | | | | | | | |





| Exon 41 Start: 233396 End: 233581 Length: 185 |
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| |
| |
| |
| |
| |
| 3611 3621 3631 3641 3651 3661 GCCAAAAGGGTGATGGAGGATTACCTGGGATTCCAGGAAATCCTGGCCTTCCAGGTCCAA |
| Q K G D G G L P G I P G N P G L P G P K 1221 |
| 3671 |
| 3731 3741 3751 3761 3771 3781 CTCCGGGTCCAGCTCTGGAAGGACCTAAAGGCAACCCTGGGCCCCAAGGTCCTCCTGGGA P G P A L E G P K G N P G P Q G P P G R 1251 1261 |
| |
| |
| |
| |

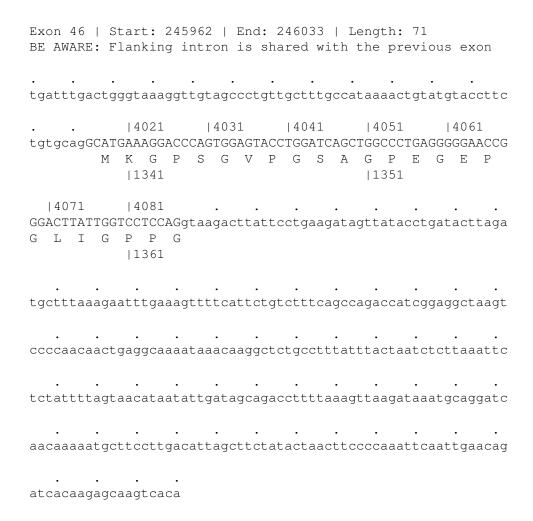
. . tactaa

| Exon 42 Start: 235305 End: 235313 Length: 8 | |
|--|---------------------|
| gaattgattgttcttagtctgagctcatagtaatgattatgatagcaatga | |
| tttaaaaatacgccacagtgtgctgttttcattttagttttgtcactaagt | |
| ttggtttatatacagatgcatggatatgaactttcagagtattctttatt | |
| tttaacttgaaagtatttagtgtaatgctttttagtttcttgatatttcta | · · · aacagttttg |
| | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | |
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| | |
| cettett | |

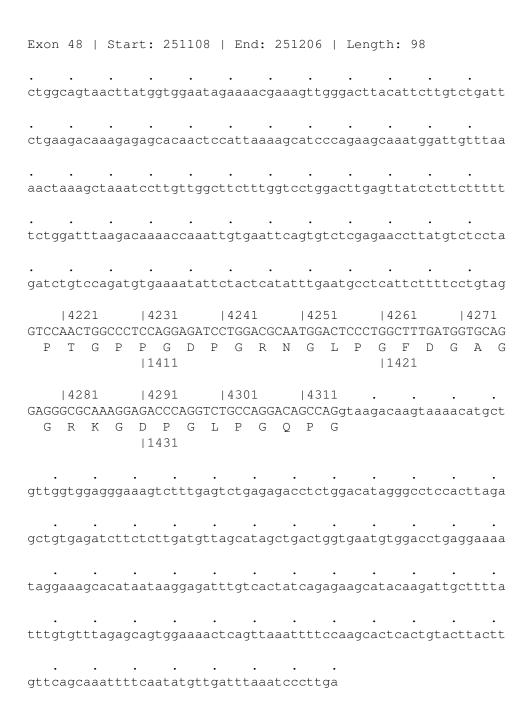
| Exon 43 | 3 | Star | t: 2 | 23982 | 2 | End: | 239 | 830 | Le | engt | h: 8 | } | | |
|------------------------|------|-------|------|------------|--------------|-------|------|------|-------|------|------|-------|-------|------|
| cagtago | | | | igatg | | | | | | | | | | aaga |
| · · · ccaaca | gctt | atcc | ttta | | | ctcta | | | | | | | | ctg |
| · · · tatggtt | tctg | ıtttg | cata | actga | | gctg | | | | | | | Igaad | catt |
| attgttt | ttaa | ıcttg | tact | tataa | tgtg | jaacc | actt | ctaa | actca | ataa | tctt | attt | itgta | actg |
| tgtgato | gtct | .gata | ctg | ctaac | atc <u>c</u> | gatct | ttgg | gctt | tggt | tgaa | ctct | gato | ette | ccag |
| 3801 GTTTTCA F Q | _ | | | cttca | | | | | | | | | | |
| tgtgtgt | tgat | .aaga | gaaa | atgca | attt | :tttg | ctat | aatt | .caga | aagt | catt | ggag | Jagto | gctg |
| ttatcct | tcaa | ıgctg | gggt | cttta | acat | :tttg | atga | aggt | :aatq | gtga | cttg | gatta | ıtaat | taa |
| gtttcaa | aatg | gacgt | tag | ggtct | ttgt | :gttt | gcaa | ttgt | :ttat | taat | aagt | aato | caata | acat |
| · aaagaca | atgt | tgaa | tttt | · caaac | • ggaa | natac | actt | attt | :ttad | cctt | caaç | jacto | gcatt | caaa |
| atattta | agg | | | | | | | | | | | | | |

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Exon 44 | Start: 242577 | End: 242710 | Length: 133
{\tt tgttaagaattacagagccacacattgttaagccatgagtctttttctttagatgttatt}
\verb|ttattgaatttaatatataataaaatgtaaactaaaagagtctgcaaatcagtgttcata|\\
acaaaaaaagaatccagttcaatttatattagaaagggaatcagcataggtctagatatttt
aatgttgtgtgggttttattctgcaaactaataggaagatgactgatattttaaaagcct
\tt gacttttatgctactcttaacactatactgaaatgtcgtcatttgctgtggattattaag
                  |3831
                           |3841
                                    |3851
         |3821
GTCTACCAGGTCCAGAAGGTCCTCCAGGTCTCCCTGGAAATGGAGGTATTAAAGGAGAGA
 L P G P E G P P G L P G N G G I K G E K
 11271
                            11281
 |3871
        |3881 |3891
                           |3901 |3911 |3921
AGGGAAATCCAGGCCAACCTGGGCTACCTGGCTTGCCTGGTTTGAAAGGAGATCAAGGAC
 G N P G Q P G L P G L P G L K G D Q G P
 |1291
                            |1301
 |3931 |3941 . . . . . .
{\tt CACCAGGACTCCAGgtaggaaatggaagtagatatctgatgagagaagaatgtgggtgtt}
 P G L Q
 |1311
\verb|ctatgtgtggctcactggcgaattaaaaagacagtagaaggcaagtttcctatagtctcc|\\
taaagggactttgttgtattatagtcagagttcctgaaaagatacttcacctggagtctt
tggtatgcatatttggatttgagtagccttcatttcagtgaaagcaaatttatgcaaagg
agacatgcatatta
```

| | | 45 ARE | | | | | | | | | | | | _ | | | | g e: | xon | |
|---------|-----|-----------|-----|-----|-----|----------|------|----------|-----|------|------|-----|------|------|-----|----------|------|------|----------------|-----|
| | | ctg | | | | | | | | | | | | | | | | | acca | |
| | | cta | | | | | | | | | | | | .ggt | | | | | aatc | |
| • aa | gga | • .ggt | taa | ata | | | | | | | | | | aag | | | | | ttac | |
| | | tgg: | | | | | | | | | | | | | | | | | ccct | |
| ca | atc | · | ttc | ctc | ccc | tcg | rctg | caa | ttt | .ttt | tgt | aac | att | aat | gat | ttt | att | tat | tcag | |
| | | | ГGG | CCG | GCC | GGG G | TCT | CAA N | TGG | SAAT | 'GAA | AGG | SAGA | TCC | TGG | TCT L | CCC' | TGG' | 4 IGTT V | 001 |
| | | | | AGg | | ttg | | | | | | | | ttt | | | | | tctg | |
| gg | aca | aga | tag | cca | ttt | tc | | | | | | | | | | | | | | |

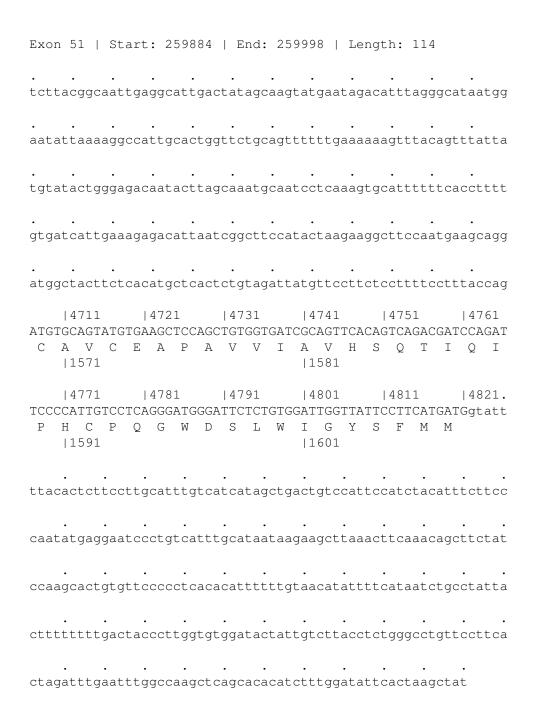


| Exo | n 4 | 17 | : | Sta | rt: | 24 | 683 | 7 | En | d: | 246 | 5965 | 5 | Ler | ngth | n: 1 | 128 | | | |
|------------------|-----|------------|-----------|----------|----------|-----|-----------|----------|-----|----------|------|--------------|------|-----------|-----------|------|--------------|-----------|-----------|---------|
| gac | aco | caç | ıtgı | ttc | aca | gat | ttga | aac | aca | gat | gga | atga | agad | cttt | :gta | agta | aact | gag | · rtaa | ga |
| ttc | aaq | ggt | tt | • gaa | aat | aga | gat | gat | atg | ctt | aat | ttt | tac | cact | gad | ccct | caaq | gaaa | · .ctt | at |
| ttt | tca | aat | tga | aaa | att | att | ttt | caa | ttt | taa | igtt | ttc | ccta | aaac | caga | attt | ccto | gtta | .gat | at |
| ggc | ago | caa | ıttı | caa | aaa | ctg | • gtti | tct | ctc | aca | ıcca | aatt | ttt | :gtc | cct | gaad | ctta | ıggt | cac | tt |
| tgg | ctt | :cc | ati | ttc | ttg | taa | .cct1 | ttc | tct | ttc | cct | tca | aaat | · :ttg | , gtgt | :gtt | ttç | gtct | cat | ag |
| GTC | СТ | | GGZ | ATT | ACC | TGG | TCC P | TTC S | AGG | ACA Q | AGA(| FAT | [CA] | CAAT | | AAG | GAG <i>I</i> | ATGC A | | TC P |
| CTC | CAC | GGA | AT | CCC | TGG | CCA | .GCC' | IGG G | GCT | AAA K | AGGC | STCI | TACC | CAGO | SACC | CCC | AAGO | GACC P | | AG G |
| GCT | TAC | 211 CCA | .Gg1 | tac | • caa | tgc | agat | tca | tct | tta | ıtta | atca | atta | atta | atao | cttt | ctaa | attt | ctg | |
| ata | cat | tgt | · .gca | aga | atg | tac | aggt | ttt | gtt | aca | ntag | ggt <i>a</i> | atac | cact | .tgc | ccat | Eggt | .ggt | ttg | ct |
| gca | cct | tat | .ca | acc | cat | cat | cta | cgt | tag | ata | ıttt | ccto | ccta | aato | gcta | atco | cct | cctc | tag | cc |
| CCC | cta | acc | · ccct | ttg | • aca | ggc | cct | ggt | gtg | tga | itgo | ggcd | ccct | ccc | ctgt | gto | ccat | • .gtg | ttc | tc |
| att | gtt | cca | iact | tcc | cac | tta | tga | gtg | aaa | aca | itgt | .ggt | gtt | tgg | gttt | tct | igtt | cct | gta | • tt |
| agt [.] | tt | gct | · | | | | | | | | | | | | | | | | | |



| Exon | 49 | Star | ct: | 252 | 559 | E | Ind: | 252 | 771 | L | engt | h: 2 | 212 | | | |
|------------|--------------------------------|------------|-----------|------|-------------|------------|------|---------------|------------------------|----------|------|------|------|------|-------------------|------|
| ctgg | cagatt | gato | ggca | aacc | acad | ccct | tcc | · tttc | • tcat | tga | tgaa | caaa | ıaca | gca | ggct | -g |
| • aaaa | ttgaco | catgo | gggt | tca | gatt | ctt | tta | · gtac | aaca | • aga | gact | aaat | aac | ata | caga | ac |
| tctc | caaata | nagca | atat | | | | | tagc | | | | | ıatg | cct | ttat | a |
| · gaca | ctctat | :aaat | tato | caaa | taaa | atta | act | agtc | aaat | • gag | gtca | taat | .gtt | ttg | tcaa | at |
| | ataaga | · | · rato | anar | · | act | + aa | • + c+ + : | · ntat | · act | ratt | | | സ്മ | • aat: | a (1 |
| acco | acaage | igugg | jacc | Jaga | gee | acc | caa | | gcac | acc | gacc | accc | .cgc | gga | Jacc | 19 |
| GTAC(| 4321 CCGTG(R G 1441 | GTTT(L | GGA1 | TGGT | CCC(P E | CCTC | GTC | CAGA' | 43 TGGA G 14 | TTG L | CAAG | GTCC | CCC | | 437 CC0 P | |
| CTGG/ G | 4381 AACCTO T S 1461 | CCTC1 S | [GT] | IGCA | | GAI | | | TACA | CGC R | CACA | | | | 443 GGAT D | |
| | 4441 | | | | | | | | 44 | | | | | | 449 | |
| | ACAATO | | | | | | | | | | | | | | | |
| P | Q C 1481 | | Q | G | Т 1 | . <u>(</u> |) V | Y | E (| | F S | L | L | Y | V | Q |
| | 4501 | L | 4 | 1511 | | 4 | 521 | | | | | | | | | |
| AAGG | AAATAA | AAAGA | AGCC | CCAC | GGT | CAAG | SACT | TGGg | tgag | ata | atca | atat | cta | att | tcct | a |
| G | N K 1501 | | A | Н | G Ç |) [|) L | G | | | | | | | | |
| ctgt | gccttt | tgtt | ttt | .gtt | tcag | gaaa | atcc | tgtt | • gggt | tct | agag | tago | ctt | ggc: | caaa | ag |
| | | | | | | | | | | | | | | | | |
| tgcc | tctctc | ctatt | ctt | ttg | gggd | cttc | cga | attg | aaaa | cca | tgtc | aaag | gca | act | gaat | a |

| Exon | 50 | 1 | Sta | rt: | 25 | 782 | 5 | En | d: | 258 | 002 | | Len | gth | : 1 | 77 | | | |
|-----------|----------|----------|-----------|------------------|----------|-----|-----------|----------|----------|-----------------|-----------------|----------|----------|----------|----------|-----------|-----------|------|----|
| atga | att | act | · | ıtat | | | | | | | gtt | | | | | cac | tag | ttt | aa |
| aaac | • agc | att | • agg | Jgaa | | | | | | | aat | | | | cat | act | .tta | tta | aa |
| · caca | tcc | taa | · ittt | tat | | | | | | | • aaa | | | | taa | • .gaa | ata | tag | ta |
| · tatt | tat | tac | ccta | ıtga | aag | | | | | cct | | aag | · gct | gtt | tgc | • tat | .tgt | ttt | ag |
| • aaga | aac | caa | • lagt | atc | att | | | | | | act | | | | сса | .aat | ctt | tct | ag |
| GGAC T | GGC | TG0 G | CAG | 454 GCTG C | CCT | TCG | TCG | СТТ | TAG | GTAC T | CAT | GCC P | TTT | CAT | GTT | CTG | CAA | .CAT | |
| ATAA | TGT | TTG | CAA | 460 ACTT F | TGC | TTC | AAG | AAA | TGA | ACTA | TTC | TTA | CTG | GCT | CTC | TAC | CCC | AGA | |
| 1 | 531 | | | 466 | | | | | | 1 | 541 | | | | | | | | - |
| CCAT M | GCC | AAT M | 'GAG | | GCA | ACC | CCT | AAA | GGG G | GCCA Q 1 | GAG S 561 | CAT I | CCA Q | GCC P | ATT F | 'CAT I | 'TAG S | TCG | gt |
| • aagg | cat | • tga | ittt | agc | • tgt | gac | · :ttt | · tac | | | cca | | | | | | | ttt | ga |
| • gtcc | aaa | • gct | aac | caat | ctg | atg | ata | · ttc | cto | ccta | ıggt | • tag | gta | gaa | cag | agg | · rtac | ctc | tt |
| · aata | ttc | aat | taa | igta | ttt | agt | ttg | act | cat | att | tat | tgg | ggg • | tct | gct | ttt | • gac | cag | gc |
| cccc | | | | cata | | | | | | | | | | | | | | | |
| · taaa | ttt | gto | ctaa | ıtat | ata | tca | .gat | ttg | ggc | ctaa | ıgtt | cta | taa | tag | ata | taa | itaa | aaa | |



| Exc | on | 52 | St | art | t: | 260 | 344 | I | End | d: 2 | 2605 | 516 | : | Leng | th: | 17 | 2 | | | |
|----------|----------|-----------|-------------------|------|-----|----------|-----------------|-----|------|------|------------------|------|-----------|------|----------|------|-----------------|------|---------------|-----------|
| att | ccc | atc | taca | attt | tct | tcc | ccaa | tat | gaq | ggaa | atco | cct | gtc | attt | • gca | taa | ntaa | ıgaa | gctt | - |
| · aaa | act | · tca | aaca | agct | ttc | tat | cca | ago | cact | igt | gtto | · | cct | caca | .cat | ttt | :ttg | ŗtaa | cata | ì |
| tt! | tc | ata | atct | gco | cta | tta | actt | ttt | :ttt | Ega | ctad | ccct | tg | gtgt | • gga | .tac | ctat | .tgt | ctta | ì |
| cct | ct | ggg. | ccto | gtto | cct | tca | acta | gat | :ttç | gaat | ttt | ggc | caa | gctc | • agc | aca | ıcat | .ctt | tgga | ì |
| tat | tc | act | aago | ctat | tta | tgç | gcac | ato | gggt | tati | tgc | ggca | acat | tttt | tcc | ttç | gtct | .ttt | atag | J |
| CA' H | ΓAC Τ | AAG' S | TGC <i>I</i> A | | | AGA | | СТС | CAG | GTC | 851 AAG(A | CCCI | TAG(A | | CCC P | | STTC | CTG | CTTG L | 4881 3 |
| GAZ E | AGA E | GTT' F | rcgi R | | AGC | | | CAI | CGZ | AAT(| | ATGO | GGA(| | TAC T | | STAA | | CTAT Y | 4941 |
| GC(| CAA N | CTC S | CTAC Y | | CTT | | 496 GCT L | | CAAC | CTG | | ATG | GT(| | CAT M | | 499 CAG S | | • aagt | : |
| gct | cta | tag | cttt | caat | ttc | • agg | gtcc | aaa | agct | ctc | cttd | caga | aga† | tgct | agg | gaa | ıga <i>a</i> | ıaga | gaca | ì |
| att | cta | tgg: | atgo | gtt | tat | cct | caa | caa | aatq | gtta | • agga | aatt | cta | ttgg | att | gtc | gtac | ttt | atto | 2 |
| | | | | | | | | | | | | | | caga | | | | | tatt | |
| | | | | | | | | | | | | | | | | | | | aaag | |
| | | | | | | | | | | | | | | acta | | | | | | |

| LXO | 11 3 | 2 | SL | .art | . : | 013 | /4 | | illa: | 20 | 0202 | <u> </u> | те | engt | -11: | 12 | 40 | | |
|----------|------|-----|-----|------|------------|----------|------|-----|-------|-----|------|----------|------|------|-----------|-----|-----------|--------------|------------------|
| ctc | | | | | | • gaa | | | | | | | | | | tag | · aaa | atga | gag |
| gga | aac | aca | aat | ata | ıcaa | | | | tgg | | | | | | | | | | gac |
| cac | | | | | | cata | | | | | | | | | | ctg | aaa | agta | aac |
| | | | | | | gct | | | | | | | | | | | | | acc |
| | | | | | | cca | | | | | | | | | | | | | cag |
| TAA K | | | GTC | CAGA | AAC T | | GAA. | AGC | AGG | AGA | CTI | ΓGA | GGA(| CACC | GAA' I | ГТА | GCC(R | GATG | 5051 TCA Q |
| AGT V | | CAT | GAA | GAG | GAC T | | | | | | | | | | | | | ∗31 ΓGTG | ATA |
| | | | | | | CTA | | | | | | | | | | | | | CTG |
| | | | | | | | | | | | | | | | | | | *151 GAAG | |
| | | | | | | | | | | | | | | | | | | *211 AGAA | |
| | | | | | | | | | | | | | | | | | | *271 ATGA | |
| | | | | | | | | | | | | | | | | | | *331 AGAG | TCA |
| | | | | | | | | | | | | | | | | | | *391 | ΤΔΔ |

```
| * 4 4 1 | * 4 5 1
| *461
      | * 471 | * 481 | * 491
                         | *501
                                | *511
AGAATGTGTATATTGTGAACAGCCTTTTAGCTCAAAATGTTGAGTCATTTACATATGACA
      | * 561
 | *521
                               | *571
{\tt TATATTCATGTTTATCAAAGTGAGAGGACTTATATTCCTACATCAAGTTACTACTGAGAG}
 | * 711
             | *721
                   | *731
                         | *741
\tt CTTTTAGTCACTTTAATCAGAATTTTAAATGTTCATGTTACATACCAAATTATAATATCT
      |*771 |*781 |*791
                         | *801
 | *761
                                | *811
{\tt AATGGAGCAATTTGTCTTTTGCTATATTCTCCAAGATTATCTCTTAAGACCATATGCCCC}
 | *821
      I * 871
\tt CTGTTTTAATGTTTCTTACATCTTGTTTTTACTCATTTCTGACTGGACAAAGTTCTTCCA
 I *881
      | *891 | *901 | *911 | *921 | *931
AACAATTCTGAGAAACAAAAACACACGCAGAATTAACAATTCTTTTCCCTGTGCTTCT
 TATGTAAGAATCCTCCTGTGGCCTCTGCTTGTACAGAACTGGGAAACAACACTTGGTTAG
 | *1001
      | *1011 | *1021
                   | *1031
                         | *1041
                                | *1051
{\tt TCTCTTTTAAGTTACAAAAAGCCAATTGATGTTTCTTATTCTTTTTAAATTTTAAATTT}
 | *1111
\tt TTGTTATAAATACTCACAGGATACCTTATTTCCCTAGCTATCATCTCCTGACTTAATGTT
| *1121 | *1131 | *1141 | *1151
                         | *1161
\verb|TTTTAAACCCACCAATATAAATTTAATTAAAGATATATGTTGTAAGGATggtctgttgtg|\\
. . . . .
acatcaacaagtcatctcttcccagggaatcagtttctccacgctttgatcactctgtta
```

LRG Parser: Version: 1.1, Version Date: 11/02/2015

Reader: Version: 1, Version Date: 11/02/2015 Writer: Version: 1, Version Date: 11/02/2015 Control: Version: 1, Version Date: 11/02/2015