Supplemental Data

Identification of a 2 Mb Human Ortholog of *Drosophila eyes shut/spacemaker* that Is Mutated in Patients with Retinitis Pigmentosa

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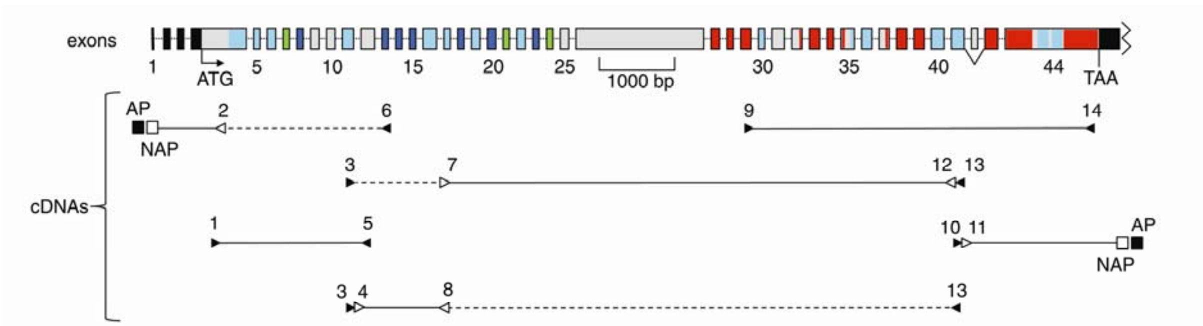
Figure S1. Cloning Strategy of Human *EYS* cDNA



Primer sequences are listed in Table S1. AP (filled square) and NAP (open square) denote RACE adaptor and nested adaptor primers, respectively. Filled and open arrowheads represent regular and nested RT-PCR primers. Dashed lines denote primary RT-PCR products.

Figure S2. cDNA Sequence of Human *EYS*

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                                                              Exon 2, 5' UTR
                         Exon 1, 5' UTR
  1  AGAAGCCTCC TAGGGTTGCA AGCCTCCTTG GCTAATGGTT GGGCTTTGTG CCTCACTCTT CTCTTACACC TGGGGAGTCA
     TCTTCGGAGG ATCCCAACGT TCGGAGGAAC CGATTACCAA CCCGAAACAC GGAGTGAGAA GAGAATGTGG ACCCCTCAGT

                                                                             Exon 3, 5' UT
                                        Exon 2, 5' UTR
 81  AGTCTGGATC CTCTGCTCCA TATTTATTTA GCAAATAAAA CACTGATCTC AAACAGCAAC GGAACCTGTG TACTTGAGGT
     TCAGACCTAG GAGACGAGGT ATAAATAAAT CGTTTATTTT GTGACTAGAG TTTGTCGTTG CCTTGGACAC ATGAACTCCA

                                        Exon 3, 5' UTR
161  GTTTTTTGAA AACTAATCAG AAGAGGAATG CTTATCTCCC AAGAAAATTG AAACCATCTG TAAAAGAATC TTGGCTGTGC
     CAAAAAACTT TTGATTAGTC TTCTCCTTAC GAATAGAGGG TTCTTTTAAC TTTGGTAGAC ATTTTCTTAG AACCGACACG

                                                                   Exon 4, 5' UTR
                           Exon 3, 5' UTR
241  TGTGTTTTGA TTAGATTGAA GCTTGGTGTA AAGAGAAAAC ACAAAAGACC GCAGAATATT TACAACATTT GAATTCCTGT
     ACACAAAACT AATCTAACTT CGAACCACAT TTCTCTTTTG TGTTTTCTGG CGTCTTATAA ATGTTGTAAA CTTAAGGACA

                                        Exon 4, 5' UTR
321  TTCTCCATCA AAGCACATTG TCATCAAAGC TACTTTGGGT ATAGAAAAAA GGTCAATTCC AATTCCCAGG AATCCTTAAC
     AAGAGGTAGT TTCGTGTAAC AGTAGTTTCG ATGAAACCCA TATCTTTTTT CCAGTTAAGG TTAAGGGTCC TTAGGAATTG

                                        Exon 4, 5' UTR
401  CACAACTTTA CTTGGAAATT TCCGGTAATA CTTAAAACAC CATTTTGCAG CAATTCTTTA TGATAAACTG TAAAATACAG
     GTGTTGAAAT GAACCTTTAA AGGCCATTAT GAATTTTGTG GTAAAACGTC GTTAAGAAAT ACTATTTGAC ATTTTATGTC

                                               Exon 4
       Exon 4, 5' UTR
481  CTACCCGAAA ATGACTGACA AATCAATCGT CATTCTGAGC CTGATGGTTT TTCACAGCTC TTTCATAAAT GGAAAAACAT
     GATGGGCTTT TACTGACTGT TTAGTTAGCA GTAAGACTCG GACTACCAAA AAGTGTCGAG AAAGTATTTA CCTTTTTGTA

                                          Exon 4
561  GTAGACGGCA ATTGGTGGAA GAATGGCATC CACAACCCTC ATCATATGTG GTAAATTGGA CACTAACAGA AAACATCTGC
     CATCTGCCGT TAACCACCTT CTTACCGTAG GTGTTGGGAG TAGTATACAC CATTTAACCT GTGATTGTCT TTTGTAGACG

                                          Exon 4
641  TTGGACTTCT ACAGAGATTG CTGGTTTTTG GGTGTAAACA CTAAAATAGA TACTTCAGGC AATCAAGCTG TTCCCCAGAT
     AACCTGAAGA TGTCTCTAAC GACCAAAAAC CCACATTTGT GATTTTATCT ATGAAGTCCG TTAGTTCGAC AAGGGGTCTA

                                          Exon 4
721  TTGCCCTTTG CAAATTCAAT TAGGAGATAT CCTTGTAATT TCTTCTGAAC CATCTCTTCA ATTTCCAGAA ATAAATTTGA
     AACGGGAAAC GTTTAAGTTA ATCCTCTATA GGAACATTAA AGAAGACTTG GTAGAGAAGT TAAAGGTCTT TATTTAAACT
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                                       Exon 4
801   TGAATGTTTC TGAAACATCT TTCGTTGGCT GTGTGCAAAA TACCACAACG GAAGATCAGT TACTTTTTGG CTGCAGACTA
      ACTTACAAAG ACTTTGTAGA AAGCAACCGA CACACGTTTT ATGGTGTTGC CTTCTAGTCA ATGAAAAACC GACGTCTGAT

                                       Exon 4
881   AAAGGAATGC ACACTGTTAA TTCTAAGTGG CTGAGTGTTG GGACACATTA TTTTATCACA GTTATGGCAA GTGGTCCATC
      TTTCCTTACG TGTGACAATT AAGATTCACC GACTCACAAC CCTGTGTAAT AAAATAGTGT CAATACCGTT CACCAGGTAG

                                       Exon 4
961   ACCTTGTCCA CTGGGACTTC GACTAAATGT GACAGTGAAA CAGCAGTTCT GCCAGGAATC TCTGAGTTCA GAATTTTGCT
      TGGAACAGGT GACCCTGAAG CTGATTTACA CTGTCACTTT GTCGTCAAGA CGGTCCTTAG AGACTCAAGT CTTAAAACGA

                                       Exon 4
1041  CTGGTCATGG TAAATGTCTT AGTGAAGCTT GGAGCAAGAC ATATAGCTGC CATTGCCAGC CTCCATTTTC TGGAAAATAC
      GACCAGTACC ATTTACAGAA TCACTTCGAA CCTCGTTCTG TATATCGACG GTAACGGTCG GAGGTAAAAG ACCTTTTATG

                                       Exon 4
1121  TGCCAGGAAC TTGATGCATG TTCTTTTAAA CCATGTAAAA ATAATGGCAG TTGCATTAAT AAAAGAGAAA ATTGGGATGA
      ACGGTCCTTG AACTACGTAC AAGAAAATTT GGTACATTTT TATTACCGTC AACGTAATTA TTTTCTCTTT TAACCCTACT

                     Exon 4
                                                             Exon 5
1201  GCAAGCATAT GAATGTGTCT GTCACCCACC ATTTACAGGA AAGAATTGCT CAGAAATAAT TGGCCAGTGT CAACCACATG
      CGTTCGTATA CTTACACAGA CAGTGGGTGG TAAATGTCCT TTCTTAACGA GTCTTTATTA ACCGGTCACA GTTGGTGTAC

                                                                                  Exon 6
                                   Exon 5
1281  TCTGTTTCCA TGGAAACTGC AGCAATATTA CTTCAAATAG TTTCATTTGT GAATGTGATG AGCAATTTTC AGGTCCATTC
      AGACAAAGGT ACCTTTGACG TCGTTATAAT GAAGTTTATC AAAGTAAACA CTTACACTAC TCGTTAAAAG TCCAGGTAAG

                                       Exon 6
1361  TGTGAGGTGT CAGCAAAACC TTGTGTTTCT CTGCTTTTTT GGAAAAGAGG AATTTGCCCA AATAGCAGTT CTGCTTATAC
      ACACTCCACA GTCGTTTTGG AACACAAAGA GACGAAAAAA CCTTTTCTCC TTAAACGGGT TTATCGTCAA GACGAATATG

                                       Exon 6
1441  TTATGAATGC CCAAAAGGAT CTTCCAGCCA AAATGGTGAA ACTGATGTCA GTGAGTTTTC ATTAGTACCA TGTCAGAATG
      AATACTTACG GGTTTTCCTA GAAGGTCGGT TTTACCACTT TGACTACAGT CACTCAAAAG TAATCATGGT ACAGTCTTAC

                                                       Exon 7
                Exon 6
1521  GTACTGACTG CATCAAAATA TCAAATGATG TTATGTGCAT CTGTTCACCA ATATTTACAG ATTTGCTTTG TAAGAGCATT
      CATGACTGAC GTAGTTTTAT AGTTTACTAC AATACACGTA GACAAGTGGT TATAAATGTC TAAACGAAAC ATTCTCGTAA
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                                                                          Exon 8
                                   Exon 7
1601  CAAACATCAT GTGAGTCATT TCCTTTGAGG AATAATGCTA CATGTAAGAA ATGTGAGAAA GATTATCCTT GCAGCTGTAT
      GTTTGTAGTA CACTCAGTAA AGGAAACTCC TTATTACGAT GTACATTCTT TACACTCTTT CTAATAGGAA CGTCGACATA

                                      Exon 8
1681  ATCAGGATTT ACTGAAAAAA ACTGTGAGAA AGCAATTGAC CACTGTAAAC TGCTCAGCAT CAACTGTCTG AATGAAGAAT
      TAGTCCTAAA TGACTTTTTT TGACACTCTT TCGTTAACTG GTGACATTTG ACGAGTCGTA GTTGACAGAC TTACTTCTTA

                                                         Exon 9
                Exon 8
1761  GGTGTTTCAA TATAATTGGA AGATTCAAAT ATGTATGCAT TCCAGGGTGC ACAAAAAATC CATGTTGGTT TTTGAAGAAT
      CCACAAAGTT ATATTAACCT TCTAAGTTTA TACATACGTA AGGTCCCACG TGTTTTTTAG GTACAACCAA AAACTTCTTA

                                      Exon 9
1841  GTTTACCTAA TTCATCAACA CCTCTGCTAC TGTGGAGTCA CCTTCCATGG TATTTGCCAA GATAAAGGTC CTGCTCAATT
      CAAATGGATT AAGTAGTTGT GGAGACGATG ACACCTCAGT GGAAGGTACC ATAAACGGTT CTATTTCCAG GACGAGTTAA

                                                         Exon 10
                Exon 9
1921  TGAATATGTG TGGCAATTGG GATTTGCAGG ATCTGAAGGC GAAAAGTGCC AAGGGGTTAT TGATGCCTAT TTCTTTCTGG
      ACTTATACAC ACCGTTAACC CTAAACGTCC TAGACTTCCG CTTTTCACGG TTCCCCAATA ACTACGGATA AAGAAAGACC

                                      Exon 10
2001  CTGCAAACTG CACTGAAGAT GCAACCTATG TGAACGATCC TGAAGATAAT AATTCTTCAT GTTGGTTCCC ACATGAAGGC
      GACGTTTGAC GTGACTTCTA CGTTGGATAC ACTTGCTAGG ACTTCTATTA TTAAGAAGTA CAACCAAGGG TGTACTTCCG

                                           Exon 11
       Exon 10
2081  ACAAAAGAGA TTTGTGCAAA TGGATGCAGT TGTTTGAGTG AAGAAGACAG TCAGGAATAT CGGTATCTAT GTTTTCTCAG
      TGTTTTCTCT AAACACGTTT ACCTACGTCA ACAAACTCAC TTCTTCTGTC AGTCCTTATA GCCATAGATA CAAAAGAGTC

                                      Exon 11
2161  ATGGGCTGGC AACATGTATC TGGAAAATAC AACTGATGAT CAAGAAAATG AGTGTCAACA TGAAGCTGTT TGTAAAGATG
      TACCCGACCG TTGTACATAG ACCTTTTATG TTGACTACTA GTTCTTTTAC TCACAGTTGT ACTTCGACAA ACATTTCTAC

           Exon 11
                                              Exon 12
2241  AAATTAATAG ACCCAGATGC AGCTGTTCTC TTAGTTACAT TGGCAGATTG TGTGTTGTCA ATGTTGACTA TTGCTTAGGG
      TTTAATTATC TGGGTCTACG TCGACAAGAG AATCAATGTA ACCGTCTAAC ACACAACAGT TACAACTGAT AACGAATCCC

                                      Exon 12
2321  AACCACAGTA TATCAGTGCA TGGCCTCTGC CTGGCCCTTT CGCACAATTG TAACTGTAGC GGTCTGCAAA GATATGAAAG
      TTGGTGTCAT ATAGTCACGT ACCGGAGACG GACCGGGAAA GCGTGTTAAC ATTGACATCG CCAGACGTTT CTATACTTTC
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Exon 12

2401 GAACATCTGT GAGATAGATA CTGAAGACTG CAAATCTGCG TCCCGCAAAA ATGGAACAAC TAGTACACAT TTAAGGGGAT
CTTGTAGACA CTCTATCTAT GACTTCTGAC GTTTAGACGC AGGGCGTTTT TACCTTGTTG ATCATGTGTA AATTCCCCTA

Exon 12

Exon 13

2481 ATTTCTTCCG CAAGTGTGTC CCAGGATTTA AAGGTACGCA ATGTGAAATT GATATAGATG AGTGTGCTTC ACATCCCTGC
TAAAGAAGGC GTTCACACAG GGTCCTAAAT TTCCATGCGT TACACTTTAA CTATATCTAC TCACACGAAG TGTAGGGACG

Exon 13

Exon 14

2561 AAAAATGGAG CCACCTGCAT TGACCAACCT GGTAATTACT TCTGCCAGTG TGTGCCTCCA TTTAAAGTGG TTGATGGCTT
TTTTTACCTC GGTGGACGTA ACTGGTTGGA CCATTAATGA AGACGGTCAC ACACGGAGGT AAATTTCACC AACTACCGAA

Exon 14

2641 TTCCTGCTTA TGCAATCCAG GCTATGTTGG GATAAGATGT GAACAGGACA TTGATGACTG CATCCTGAAT GCCTGTGAGC
AAGGACGAAT ACGTTAGGTC CGATACAACC CTATTCTACA CTTGTCCTGT AACTACTGAC GTAGGACTTA CGGACACTCG

Exon 14

Exon 15

2721 ACAATTCTAC CTGCAAAGAC CTGCATCTCA GCTACCAGTG TGTGTGCCTA TCTGATTGGG AAGGAAATTT TTGTGAACAA
TGTTAAGATG GACGTTTCTG GACGTAGAGT CGATGGTCAC ACACACGGAT AGACTAACCC TTCCTTTAAA AACACTTGTT

Exon 15

Exon 16

2801 GAATCCAATG AGTGTAAAAT GAATCCTTGC AAGAACAATT CCACCTGTAC TGACCTTTAC AAAAGCTATC GATGTGAGTG
CTTAGGTTAC TCACATTTTA CTTAGGAACG TTCTTGTTAA GGTGGACATG ACTGGAAATG TTTTCGATAG CTACACTCAC

Exon 16

2881 TACATCTGGA TGGACTGGAC AGAACTGTAG TGAAGAAATA AATGAATGCG ACTCTGATCC ATGCATGAAT GGAGGTCTTT
ATGTAGACCT ACCTGACCTG TCTTGACATC ACTTCTTTAT TTACTTACGC TGAGACTAGG TACGTACTTA CCTCCAGAAA

Exon 16

2961 GTCATGAATC TACCATCCCT GGACAATTTG TATGTCTGTG CCCACCCCTT TATACTGGAC AATTTTGCCA CCAACGCTAT
CAGTACTTAG ATGGTAGGGA CCTGTTAAAC ATACAGACAC GGGTGGGGAA ATATGACCTG TTAAAACGGT GGTTGCGATA

Exon 16

3041 AACCTTTGTG ACCTACTTCA TAACCCTTGC AGAAACAACT CAACATGCTT AGCTTTGGTA GACGCAAATC AGCATTGTAT
TTGGAAACAC TGGATGAAGT ATTGGGAACG TCTTTGTTGA GTTGTACGAA TCGAAACCAT CTGCGTTTAG TCGTAACATA

Exon 17

Exon 16

3121 TTGTAGAGAA GAATTTGAAG GAAAAAACTG TGAAATTGAT GTGAAAGACT GCCTCTTCCT TTCCTGCCAG GATTATGGTG
AACATCTCTT CTTAAACTTC CTTTTTTGAC ACTTTAACTA CACTTTCTGA CGGAGAAGGA AAGGACGGTC CTAATACCAC

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                 Exon 17                          Exon 18
3201  ACTGTGAAGA TATGGTCAAC AATTTCAGGT GTATTTGCAG ACCTGGGTTT TCTGGATCTC TGTGTGAAAT TGAAATTAAT
      TGACACTTCT ATACCAGTTG TTAAAGTCCA CATAAACGTC TGGACCCAAA AGACCTAGAG ACACACTTTA ACTTTAATTA

                                 Exon 18                                  Exon 19
3281  GAATGTTCCT CTGAACCTTG CAAAAATAAT GGAACATGTG TGGATCTGAC AAACAGATTT TTTTGTAATT GTGAACCTGA
      CTTACAAGGA GACTTGGAAC GTTTTTATTA CCTTGTACAC ACCTAGACTG TTTGTCTAAA AAAACATTAA CACTTGGACT

                                        Exon 19
3361  GTACCATGGG CCCTTCTGTG AACTTGATGT AAATAAATGT AAAATCTCAC CTTGTCTAGA TGAAGAAAAT TGTGTCTACA
      CATGGTACCC GGGAAGACAC TTGAACTACA TTTATTTACA TTTTAGAGTG GAACAGATCT ACTTCTTTTA ACACAGATGT

                         Exon 19                          Exon 20
3441  GGACTGATGG ATACAACTGC CTCTGTGCCC CTGGTTATAC AGGCATCAAC TGTGAAATAA ATCTAGATGA ATGCCTATCA
      CCTGACTACC TATGTTGACG GAGACACGGG GACCAATATG TCCGTAGTTG ACACTTTATT TAGATCTACT TACGGATAGT

                                        Exon 20
3521  GAGCCCTGTC TCCATGATGG AGTTTGTATC GATGGCATCA ATCATTATAC CTGTGACTGC AAGAGTGGGT TTTTTGGAAC
      CTCGGGACAG AGGTACTACC TCAAACATAG CTACCGTAGT TAGTAATATG GACACTGACG TTCTCACCCA AAAAACCTTG

                                Exon 20                                   Exon 21
3601  ACACTGTGAA ACAAACGCCA ATGATTGCCT TTCAAATCCT TGTCTACATG GAAGGTACAC AGAACTTATT AATGAATATC
      TGTGACACTT TGTTTGCGGT TACTAACGGA AAGTTTAGGA ACAGATGTAC CTTCCATGTG TCTTGAATAA TTACTTATAG

                                Exon 21                                   Exon 22
3681  CATGTTCATG TGATGCAGAT GGGACTAGCA CACAATGTAA GATCAAAATT AATGACTGCA CATCAATCCC TTGTATGAAT
      GTACAAGTAC ACTACGTCTA CCCTGATCGT GTGTTACATT CTAGTTTTAA TTACTGACGT GTAGTTAGGG AACATACTTA

                                        Exon 22
3761  GAAGGCTTCT GTCAGAAGTC AGCACATGGA TTTACTTGCA TTTGCCCACG TGGATACACT GGTGCATACT GTGAAAAAAG
      CTTCCGAAGA CAGTCTTCAG TCGTGTACCT AAATGAACGT AAACGGGTGC ACCTATGTGA CCACGTATGA CACTTTTTTC

                                        Exon 22
3841  CATTGATAAT TGTGCTGAGC CTGAACTTAA TTCAGTCATC TGTCTTAATG GAGGGATCTG TGTTGATGGG CCTGGACATA
      GTAACTATTA ACACGACTCG GACTTGAATT AAGTCAGTAG ACAGAATTAC CTCCCTAGAC ACAACTACCC GGACCTGTAT
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                                                     Exon 23
        Exon 22
3921    CTTTTGACTG CAGATGTCTT CCTGGATTTT CTGGTCAATT TTGTGAAATT AATATAAATG AATGCTCTTC ATCACCATGT
        GAAAACTGAC GTCTACAGAA GGACCTAAAA GACCAGTTAA AACACTTTAA TTATATTTAC TTACGAGAAG TAGTGGTACA

                                       Exon 23
                                                                               Exon 24
4001    CTACATGGTG CAGACTGTGA AGATCACATC AATGGACATG TTTGCAAATG CCAACCAGGA TGGTCTGGAC ACCACTGTGA
        GATGTACCAC GTCTGACACT TCTAGTGTAG TTACCTGTAC AAACGTTTAC GGTTGGTCCT ACCAGACCTG TGGTGACACT

                                                Exon 24
4081    GAATGAGCTT GAGTGCATTC CCAACTCATG TGTTCATGAA CTCTGCATGG AGAATGAACC TGGCTCGACA TGTTTATGCA
        CTTACTCGAA CTCACGTAAG GGTTGAGTAC ACAAGTACTT GAGACGTACC TCTTACTTGG ACCGAGCTGT ACAAATACGT

        Exon 24
                                                     Exon 25
4161    CACCTGGATT TATGACCTGC TCCATTGGGC TTCTTTGTGG TGATGAAATA AGGAGAATTA CCTGTTTAAC TCCCATCTTT
        GTGGACCTAA ATACTGGACG AGGTAACCCG AAGAAACACC ACTACTTTAT TCCTCTTAAT GGACAAATTG AGGGTAGAAA

                                                Exon 25
4241    CAAAGAACAG ATCCCATTTC CACACAGACA TATACAATTC CCCCTTCTGA GACTTTGGTC AGCAGCTTTC CATCTATAAA
        GTTTCTTGTC TAGGGTAAAG GTGTGTCTGT ATATGTTAAG GGGGAAGACT CTGAAACCAG TCGTCGAAAG GTAGATATTT

                              Exon 25
                                                                        Exon 26
4321    GGCTACTAGA ATACCAGCCA TAATGGACAC TTACCCAGTT GATCAAGGTC CAAAACAGAC AGGCATTGTC AAGCACGACA
        CCGATGATCT TATGGTCGGT ATTACCTGTG AATGGGTCAA CTAGTTCCAG GTTTTGTCTG TCCGTAACAG TTCGTGCTGT

                                                Exon 26
4401    TTCTCCCAAC CACTGGTTTG GCAACATTAA GAATTAGCAC ACCCTTGGAA AGCTACTTAC TCCAAGAACT GATTGTCACT
        AAGAGGGTTG GTGACCAAAC CGTTGTAATT CTTAATCGTG TGGGAACCTT TCGATGAATG AGGTTCTTGA CTAACAGTGA

                                                Exon 26
4481    AGAGAGCTTT CAGCAAAACA CAGTCTTCTT TCTTCCGCAG ATGTTTCCTC TTCTCGATTC CTGAATTTTG GTATTCGTGA
        TCTCTCGAAA GTCGTTTTGT GTCAGAAGAA AGAAGGCGTC TACAAAGGAG AAGAGCTAAG GACTTAAAAC CATAAGCACT

                                                Exon 26
4561    CCCAGCACAA ATTGTCCAGG ACAAAACATC GGTATCACAT ATGCCTATTC GAACTTCTGC AGCCACACTA GGTTTCTTTT
        GGGTCGTGTT TAACAGGTCC TGTTTTGTAG CCATAGTGTA TACGGATAAG CTTGAAGACG TCGGTGTGAT CCAAAGAAAA

                                                Exon 26
4641    TTCCTGATAG GAGAGCAAGG ACCCCATTTA TCATGTCTTC CTTAATGTCA GATTTTATTT TTCCTACACA ATCTTTATTA
        AAGGACTATC CTCTCGTTCC TGGGGTAAAT AGTACAGAAG GAATTACAGT CTAAAATAAA AAGGATGTGT TAGAAATAAT
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Exon 26

4721 TTTGAGAACT GTCAGACTGT TGCTTTATCT GCTACCCCAA CGACTTCAGT AATTAGAAGC ATTCCAGGGG CTGATATTGA
AAACTCTTGA CAGTCTGACA ACGAAATAGA CGATGGGGTT GCTGAAGTCA TTAATCTTCG TAAGGTCCCC GACTATAACT

Exon 26

4801 GCTAAACAGG CAGTCATTAC TCTCCCGTGG ATTCCTGCTT ATAGCTGCCT CCATAAGTGC AACTCCAGTT GTCTCTAGGG
CGATTTGTCC GTCAGTAATG AGAGGGCACC TAAGGACGAA TATCGACGGA GGTATTCACG TTGAGGTCAA CAGAGATCCC

Exon 26

4881 GGGCTCAAGA GGATATTGAA GAATATTCAG CTGATTCTTT AATTTCAAGA AGAGAGCACT GGAGATTGCT CAGCCCCTCG
CCCGAGTTCT CCTATAACTT CTTATAAGTC GACTAAGAAA TTAAAGTTCT TCTCTCGTGA CCTCTAACGA GTCGGGGAGC

Exon 26

4961 ATGTCTCCCA TTTTTCCTGC TAAGGTAATT ATATCTAAAC AGGTAACCAT CTTAAACTCA TCAGCTCTGC ACCGGTTCAG
TACAGAGGGT AAAAAGGACG ATTCCATTAA TATAGATTTG TCCATTGGTA GAATTTGAGT AGTCGAGACG TGGCCAAGTC

Exon 26

5041 TACAAAAGCC TTCAATCCCA GTGAATATCA GGCTATTACT GAGGCTTCAA GCAACCAGAG ACTCACAAAC ATCAAATCAC
ATGTTTTCGG AAGTTAGGGT CACTTATAGT CCGATAATGA CTCCGAAGTT CGTTGGTCTC TGAGTGTTTG TAGTTTAGTG

Exon 26

5121 AGGCTGCTGA TTCTTTAAGA GAATTAAGCC AAACATGTGC AACATGTTCT ATGACTGAAA TAAAATCCTC TCGTGAATTC
TCCGACGACT AAGAAATTCT CTTAATTCGG TTTGTACACG TTGTACAAGA TACTGACTTT ATTTTAGGAG AGCACTTAAG

Exon 26

5201 TCAGATCAAG TTTTGCATAG CAAACAGTCC CACTTTTATG AGACATTCTG GATGAACTCA GCGATATTAG CCAGCTGGTA
AGTCTAGTTC AAAACGTATC GTTTGTCAGG GTGAAAATAC TCTGTAAGAC CTACTTGAGT CGCTATAATC GGTCGACCAT

Exon 26

5281 TGCACTAATG GGAGCTCAAA CTATCACTTC TGGGCATTCA TTTTCTTCTG CTACTGAAAT AACACCATCA GTGGCATTCA
ACGTGATTAC CCTCGAGTTT GATAGTGAAG ACCCGTAAGT AAAAGAAGAC GATGACTTTA TTGTGGTAGT CACCGTAAGT

Exon 26

5361 CAGAAGTGCC ATCTTTATTT CCTTCTAAAA AGAGTGCAAA AAGAACAATT TTATCCTCAT CCTTGGAAGA ATCCATTACC
GTCTTCACGG TAGAAATAAA GGAAGATTTT TCTCACGTTT TTCTTGTTAA AATAGGAGTA GGAACCTTCT TAGGTAATGG

Exon 26

5441 CTATCAAGTA ATTTGGATGT TAATTTATGT TTGGATAAGA CTTGTTTATC CATTGTCCCT TCACAAACTA TCTCTTCAGA
GATAGTTCAT TAAACCTACA ATTAAATACA AACCTATTCT GAACAAATAG GTAACAGGGA AGTGTTTGAT AGAGAAGTCT

Exon 26

5521 CTTGATGAAT TCTGATTTGA CTTCAAAAAT GACTACTGAT GAACTGTCAG TATCAGAAAA CATTTTAAAA CTATTGAAAA
GAACTACTTA AGACTAAACT GAAGTTTTTA CTGATGACTA CTTGACAGTC ATAGTCTTTT GTAAAATTTT GATAACTTTT

Exon 26

5601 TAAGACAATA TGGCATAACT ATGGGACCCA CTGAGGTACT AAATCAAGAG AGCTTATTGG ACATGGAAAA AAGTAAAGGA
ATTCTGTTAT ACCGTATTGA TACCCTGGGT GACTCCATGA TTTAGTTCTC TCGAATAACC TGTACCTTTT TTCATTTCCT

Exon 26

5681 TCTCATACAC TGTTCAAACT TCACCCAAGT GATAGTTCTC TGGATTTTGA GTTAAACTTA CAAATTTATC CGGATGTTAC
AGAGTATGTG ACAAGTTTGA AGTGGGTTCA CTATCAAGAG ACCTAAAACT CAATTTGAAT GTTTAAATAG GCCTACAATG

Exon 26

5761 TTTAAAGACA TATTCAGAAA TTACACATGC AAATGACTTC AAAAATAATC TGCCACCATT GACAGGCTCA GTGCCTGATT
AAATTTCTGT ATAAGTCTTT AATGTGTACG TTTACTGAAG TTTTTATTAG ACGGTGGTAA CTGTCCGAGT CACGGACTAA

Exon 26

5841 TTTCAGAAGT CACCACCAAT GTTGCATTTT ATACAGTTTC AGCAACTCCA GCACTTTCAA TACAGACGTC TTCCTCCATG
AAAGTCTTCA GTGGTGGTTA CAACGTAAAA TATGTCAAAG TCGTTGAGGT CGTGAAAGTT ATGTCTGCAG AAGGAGGTAC

Exon 26

5921 TCTGTAATTA GGCCAGATTG GCCATATTTT ACAGATTATA TGACCTCTCT TAAAAAAGAG GTCAAGACTT CTTCAGAATG
AGACATTAAT CCGGTCTAAC CGGTATAAAA TGTCTAATAT ACTGGAGAGA ATTTTTTCTC CAGTTCTGAA GAAGTCTTAC

Exon 26

6001 GTCCAAATGG GAACTTCAGC CTAGTGTGCA ATATCAGGAA TTTCCCACTG CAAGCCGGCA TCTTCCCTTC ACTAGATCTC
CAGGTTTACC CTTGAAGTCG GATCACACGT TATAGTCCTT AAAGGGTGAC GTTCGGCCGT AGAAGGGAAG TGATCTAGAG

Exon 27

Exon 26

6081 TTACTTTGTC TTCACTGGAA TCCATTCTGG CACCTCAACG GCTGATGATT TCTGATTTCA GTTGTGTTCG TTATTATGGA
AATGAAACAG AAGTGACCTT AGGTAAGACC GTGGAGTTGC CGACTACTAA AGACTAAAGT CAACACAAGC AATAATACCT

Exon 27

6161 GATTCTTATC TAGAATTTCA GAATGTGGCT TTAAATCCAC AAAATAACAT CTCCCTAGAA TTTCAGACCT TCAGCTCCTA
CTAAGAATAG ATCTTAAAGT CTTACACCGA AATTTAGGTG TTTTATTGTA GAGGGATCTT AAAGTCTGGA AGTCGAGGAT

Exon 27

6241 TGGACTTCTG CTGCATGTCA AGCAAGACTC AAATTTAGTA GATGGATTTT TTATTCAATT GTTTATTGAA AATGGTACTT
ACCTGAAGAC GACGTACAGT TCGTTCTGAG TTTAAATCAT CTACCTAAAA AATAAGTTAA CAAATAACTT TTACCATGAA

Exon 28

Exon 27

6321 TAAAGTACCA CTTTTACTGT CCTGGTGAAG CAAAATTTAA AAGCATTAAT ACTACTGTTA GAGTGGACAA CGGGCAAAAG
ATTTCATGGT GAAAATGACA GGACCACTTC GTTTTAAATT TTCGTAATTA TGATGACAAT CTCACCTGTT GCCCGTTTTC

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                                          Exon 29
           Exon 28
6401  TATACACTGC TTATCAGGCA AGAATTGGAT CCATGTAACG CTGAGCTGAC TATTTTAGGG AGGAATACAC AAATATGCGA
      ATATGTGACG AATAGTCCGT TCTTAACCTA GGTACATTGC GACTCGACTG ATAAAATCCC TCCTTATGTG TTTATACGCT

                                   Exon 29
6481  ATCTATCAAT CATGTACTCG GAAAACCCCT GCCAAAATCA GGATCTGTCT TCATTGGTGG ATTTCCAGAC CTTCATGGGA
      TAGATAGTTA GTACATGAGC CTTTTGGGGA CGGTTTTAGT CCTAGACAGA AGTAACCACC TAAAGGTCTG GAAGTACCCT

                                       Exon 30
        Exon 29
6561  AAATCCAGAT GCCTGTACCA GTCAAGAATT TTACTGGCTG CATAGAAGTT ATAGAAATAA ATAACTGGAG ATCTTTCATT
      TTTAGGTCTA CGGACATGGT CAGTTCTTAA AATGACCGAC GTATCTTCAA TATCTTTATT TATTGACCTC TAGAAAGTAA

                                                         Exon 31
                    Exon 30
6641  CCATCCAAGG CAGTGAAAAA CTATCACATT AACAATTGCA GATCCCAGGG ATTTATGCTG TCTCCAACAG CCTCCTTTGT
      GGTAGGTTCC GTCACTTTTT GATAGTGTAA TTGTTAACGT CTAGGGTCCC TAAATACGAC AGAGGTTGTC GGAGGAAACA

                                   Exon 31
6721  TGATGCTTCT GATGTGACAC AAGGGGTTGA TACCATGTGG ACTTCTGTCA GCCCCTCTGT TGCAGCACCC TCTGTGTGCC
      ACTACGAAGA CTACACTGTG TTCCCCAACT ATGGTACACC TGAAGACAGT CGGGGAGACA ACGTCGTGGG AGACACACGG

                                   Exon 31
6801  AGCAGGATGT ATGCCACAAT GGAGGCACAT GCCATGCCAT CTTCCTCTCC AGTGGCATAG TGTCATTCCA ATGTGACTGT
      TCGTCCTACA TACGGTGTTA CCTCCGTGTA CGGTACGGTA GAAGGAGAGG TCACCGTATC ACAGTAAGGT TACACTGACA

                                                     Exon 32
                  Exon 31
6881  CCACTACATT TCACTGGCCG CTTCTGTGAA AAAGATGCAG GTTTATTCTT TCCATCTTTC AATGGGAATT CCTATTTAGA
      GGTGATGTAA AGTGACCGGC GAAGACACTT TTTCTACGTC CAAATAAGAA AGGTAGAAAG TTACCCTTAA GGATAAATCT

                                   Exon 32
6961  ACTGCCCTTT TTGAAGTTTG TCCTGGAGAA GGAACATAAC AGAACTGTTA CCATCTACTT GACTATAAAA ACAAACAGTT
      TGACGGGAAA AACTTCAAAC AGGACCTCTT CCTTGTATTG TCTTGACAAT GGTAGATGAA CTGATATTTT TGTTTGTCAA

                                              Exon 33
           Exon 32
7041  TAAATGGAAC TATTCTTTAC AGTAATGGGA ATAATTGTGG AAAGCAGTTT CTTCATTTAT TTCTTGTGGA AGGAAGGCCA
      ATTTACCTTG ATAAGAAATG TCATTACCCT TATTAACACC TTTCGTCAAA GAAGTAAATA AAGAACACCT TCCTTCCGGT

                                   Exon 33
7121  TCAGTTAAAT ATGGGTGTGG AAATTCTCAA AATATTTTGA CTGTTTCTGC TAATTACAGC ATTAACACAA ATGCATTCAC
      AGTCAATTTA TACCCACACC TTTAAGAGTT TTATAAAACT GACAAAGACG ATTAATGTCG TAATTGTGTT TACGTAAGTG
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                       Exon 33
                                                      Exon 34
7201   CCCTATCACA ATACGCTACA CAACGCCTGT TGGCAGCCCT GGAGTTGTTT GTATGATTGA AATGACTGCA GATGGAAAAC
       GGGATAGTGT TATGCGATGT GTTGCGGACA ACCGTCGGGA CCTCAACAAA CATACTAACT TTACTGACGT CTACCTTTTG

                                                                        Exon 35
                                  Exon 34
7281   CTCCAGTACA GAAGAAAGAC ACAGAGATTT CCCATGCCTC TCAGGCATAT TTTGAATCAA TGTTCCTTGG CCATATTCCT
       GAGGTCATGT CTTCTTTCTG TGTCTCTAAA GGGTACGGAG AGTCCGTATA AAACTTAGTT ACAAGGAACC GGTATAAGGA

                                                 Exon 35
7361   GCAAATGTTC AAATTCATAA GAAAGCAGGT CCTGTTTATG GGTTCAGGGG CTGCATTCTA GACCTTCAAG TAAACAACAA
       CGTTTACAAG TTTAAGTATT CTTTCGTCCA GGACAAATAC CCAAGTCCCC GACGTAAGAT CTGGAAGTTC ATTTGTTGTT

                                                 Exon 35
7441   AGAATTCTTC ATCATCGATG AAGCACGACA TGGAAAGAAT ATTGAGAACT GCCACGTCCC TTGGTGTGCT CATCATCTGT
       TCTTAAGAAG TAGTAGCTAC TTCGTGCTGT ACCTTTCTTA TAACTCTTGA CGGTGCAGGG AACCACACGA GTAGTAGACA

                                                            Exon 36
                         Exon 35
7521   GCCGCAACAA TGGCACCTGC ATCAGTGATA ATGAAAATCT GTTTTGTGAG TGTCCAAGGC TGTATTCAGG CAAGCTGTGC
       CGGCGTTGTT ACCGTGGACG TAGTCACTAT TACTTTTAGA CAAAACACTC ACAGGTTCCG ACATAAGTCC GTTCGACACG

                                                 Exon 36
7601   CAGTTTGCAA GTTGTGAAAA CAACCCATGT GGAAATGGTG CCACCTGTGT TCCAAAATCC GGAACAGATA TTGTCTGCCT
       GTCAAACGTT CAACACTTTT GTTGGGTACA CCTTTACCAC GGTGGACACA AGGTTTTAGG CCTTGTCTAT AACAGACGGA

                             Exon 36
                                                                       exon 37
7681   CTGCCCATAT GGGAGGTCTG GACCCCTCTG CACTGATGCT ATTAATATTA CTCAGCCAAG GTTCAGTGGC ACAGATGCCT
       GACGGGTATA CCCTCCAGAC CTGGGGAGAC GTGACTACGA TAATTATAAT GAGTCGGTTC CAAGTCACCG TGTCTACGGA

                                                 exon 37
7761   TTGGATACAC CTCATTCCTG GCTTATTCAC GGATCTCAGA CATCAGCTTC CGTTATGAAT TCCACCTGAA GTTTCAGCTG
       AACCTATGTG GAGTAAGGAC CGAATAAGTG CCTAGAGTCT GTAGTCGAAG GCAATACTTA AGGTGGACTT CAAAGTCGAC

                                         exon 37
                                                                                 Exon 38
7841   GCAAACAACC ACTCAGCACT GCAAAATAAC TTGATATTTT TTACTGAACA GAAAGGCCAT GGGTTGAATG GCGATGACTT
       CGTTTGTTGG TGAGTCGTGA CGTTTTATTG AACTATAAAA AATGACTTGT CTTTCCGGTA CCCAACTTAC CGCTACTGAA

                                                 Exon 38
7921   CCTGGCTGTG GGCCTGCTCA ATGGCAGTGT GGTTTATAGT TATAACCTGG GGTCTGGCAT AGCAAGCATC AGGAGCGAGC
       GGACCGACAC CCGGACGAGT TACCGTCACA CCAAATATCA ATATTGGACC CCAGACCGTA TCGTTCGTAG TCCTCGCTCG
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                                   Exon 38
                                                                      Exon 39
8001  CCCTCAATCT GAGCCTTGGA GTCCACACTG TTCATCTGGG CAAGTTCTTC CAAGAGGGCT GGCTGAAGGT AGATGATCAT
      GGGAGTTAGA CTCGGAACCT CAGGTGTGAC AAGTAGACCC GTTCAAGAAG GTTCTCCCGA CCGACTTCCA TCTACTAGTA

                                          Exon 39
8081  AAAAATAAAT CCATTATCGC CCCAGGAAGA CTGGTTGGTC TCAATGTCTT CAGTCAGTTT TATGTAGGTG GCTACAGTGA
      TTTTTATTTA GGTAATAGCG GGGTCCTTCT GACCAACCAG AGTTACAGAA GTCAGTCAAA ATACATCCAC CGATGTCACT

                              Exon 39
                                                                  Exon 40
8161  ATACACTCCA GATCTCTTAC CAAATGGAGC AGATTTTAAA AATGGTTTTC AAGGCTGTAT TTTCACTCTT CAAGTTCGCA
      TATGTGAGGT CTAGAGAATG GTTTACCTCG TCTAAAATTT TTACCAAAAG TTCCGACATA AAAGTGAGAA GTTCAAGCGT

                                          Exon 40
8241  CTGAGAAGGA TGGCCATTTC AGAGGACTGG GAAATCCTGA GGGCCACCCA AATGCTGGAC GCAGTGTTGG CCAGTGTCAT
      GACTCTTCCT ACCGGTAAAG TCTCCTGACC CTTTAGGACT CCCGGTGGGT TTACGACCTG CGTCACAACC GGTCACAGTA

                                                                      Exon 41
                                   Exon 40
8321  GCTTCTCCCT GCAGTTTAAT GAAATGTGGC AATGGTGGGA CATGCATAGA GAGTGGAACT AGTGTTTACT GCAATTGTAC
      CGAAGAGGGA CGTCAAATTA CTTTACACCG TTACCACCCT GTACGTATCT CTCACCTTGA TCACAAATGA CGTTAACATG

                                          Exon 41
8401  CACTGGGTGG AAAGGATCAT TCTGCACAGA GACAGTTTCT ACCTGTGATC CTGAACATGA CCCTCCACAC CACTGTAGCA
      GTGACCCACC TTTCCTAGTA AGACGTGTCT CTGTCAAAGA TGGACACTAG GACTTGTACT GGGAGGTGTG GTGACATCGT

                                          Exon 41
8481  GAGGAGCAAC CTGCATTTCA TTACCTCATG GATACACCTG TTTCTGTCCT CTAGGAACCA CTGGAATCTA CTGTGAACAA
      CTCCTCGTTG GACGTAAAGT AATGGAGTAC CTATGTGGAC AAAGACAGGA GATCCTTGGT GACCTTAGAT GACACTTGTT

                                  Exon 42
      Exon 4                                                            Exon 43
8561  GCACTTATCC TCATTGTGAT CTTGGAAAAG CCAAAACCAG CAGAACGGAA AGTGAAGAAG GAGGCTTTAT CCATAAGTGA
      CGTGAATAGG AGTAACACTA GAACCTTTTC GGTTTTGGTC GTCTTGCCTT TCACTTCTTC CTCCGAAATA GGTATTCACT

                                          Exon 43
8641  TCCATCTTTC AGAAGCAATG AGTTATCCTG GATGTCTTTT GCTTCCTTTC ATGTTCGAAA AAAGACACAT ATTCAATTGC
      AGGTAGAAAG TCTTCGTTAC TCAATAGGAC CTACAGAAAA CGAAGGAAAG TACAAGCTTT TTTCTGTGTA TAAGTTAACG

                                                                       Exon 44
                                  Exon 43
8721  AGTTTCAGCC TCTCGCTGCA GATGGTATCC TATTTTATGC TGCACAACAC TTAAAAGCCC AATCAGGTGA TTTTTTATGC
      TCAAAGTCGG AGAGCGACGT CTACCATAGG ATAAAATACG ACGTGTTGTG AATTTTCGGG TTAGTCCACT AAAAAATACG
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Exon 44

8801 ATCTCTTTAG TAAATAGTTC CGTTCAACTT CGCTACAACC TTGGCGACAG AACTATCATT CTAGAAACTC TCCAAAAAGT
TAGAGAAATC ATTTATCAAG GCAAGTTGAA GCGATGTTGG AACCGCTGTC TTGATAGTAA GATCTTTGAG AGGTTTTTCA

Exon 44

8881 AACTATAAAC GGAAGTACTT GGCATATAAT AAAAGCAGGA AGAGTTGGTG CAGAAGGCTA CCTGGATCTA GATGGGATAA
TTGATATTTG CCTTCATGAA CCGTATATTA TTTTCGTCCT TCTCAACCAC GTCTTCCGAT GGACCTAGAT CTACCCTATT

Exon 44

8961 ATGTAACAGA AAAGGCCTCC ACTAAAATGA GTTCTCTGGA CACAAATACA GACTTCTATA TTGGAGGAGT ATCTTCTTTA
TACATTGTCT TTTCCGGAGG TGATTTTACT CAAGAGACCT GTGTTTATGT CTGAAGATAT AACCTCCTCA TAGAAGAAAT

Exon 44

9041 AATCTTGTAA ATCCCATGGC AATAGAAAAT GAACCTGTAG GTTTTCAAGG CTGTATCCGA CAAGTTATCA TAAATAATCA
TTAGAACATT TAGGGTACCG TTATCTTTTA CTTGGACATC CAAAAGTTCC GACATAGGCT GTTCAATAGT ATTTATTAGT

Exon 44

9121 AGAATTACAA TTAACTGAAT TTGGAGCAAA AGGTGGCTCA AATGTAGGTG ACTGTGATGG GACAGCCTGT GGGTACAACA
TCTTAATGTT AATTGACTTA AACCTCGTTT TCCACCGAGT TTACATCCAC TGACACTACC CTGTCGGACA CCCATGTTGT

Exon 44

9201 CATGCAGAAA TGGAGGTGAA TGTACAGTAA ATGGCACAAC TTTTTCTTGC AGATGTTTGC CAGATTGGGC TGGAAATACA
GTACGTCTTT ACCTCCACTT ACATGTCATT TACCGTGTTG AAAAAGAACG TCTACAAACG GTCTAACCCG ACCTTTATGT

Exon 44

9281 TGTAACCAGT CTGTGTCCTG TTTGAATAAT CTTTGCCTCC ACCAATCTTT ATGTATACCT GACCAATCAT TTTCTTACAG
ACATTGGTCA GACACAGGAC AAACTTATTA GAAACGGAGG TGGTTAGAAA TACATATGGA CTGGTTAGTA AAAGAATGTC

Exon 44

9361 TTGCCTGTGT ACTTTGGGTT GGGTGGGAAG GTATTGTGAA AACAAAACTT CATTTTCAAC TGCAAAATTT ATGGGTAATT
AACGGACACA TGAAACCCAA CCCACCCTTC CATAACACTT TTGTTTTGAA GTAAAAGTTG ACGTTTTAAA TACCCATTAA

Exon 44

9441 CTTACATTAA ATACATTGAT CCAAATTATA GAATGAGAAA CCTCCAGTTC ACTACTATAT CCTTAAATTT CAGTACCACT
GAATGTAATT TATGTAACTA GGTTTAATAT CTTACTCTTT GGAGGTCAAG TGATGATATA GGAATTTAAA GTCATGGTGA

Exon 44

9521 AAAACAGAAG GTCTAATTGT ATGGATGGGA ATAGCTCAAA ATGAAGAAAA TGATTTTCTG GCAATTGGTC TCCATAATCA
TTTTGTCTTC CAGATTAACA TACCTACCCT TATCGAGTTT TACTTCTTTT ACTAAAAGAC CGTTAACCAG AGGTATTAGT

Exon 44

9601 GACCTTGAAA ATAGCAGTTA ACTTGGGAGA AAGAATCTCT GTGCCTATGA GCTATAACAA TGGCACATTC TGTTGTAATA
CTGGAACTTT TATCGTCAAT TGAACCCTCT TTCTTAGAGA CACGGATACT CGATATTGTT ACCGTGTAAG ACAACATTAT

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                                    Exon 44
 9681  AATGGCACCA TGTAGTTGTA ATTCAAAATC AGACTCTTAT CAAGGCCTAC ATAAATAACA GTCTAATTCT TTCCGAGGAT
       TTACCGTGGT ACATCAACAT TAAGTTTTAG TCTGAGAATA GTTCCGGATG TATTTATTGT CAGATTAAGA AAGGCTCCTA

                                    Exon 44
 9761  ATTGATCCAC ATAAAAACTT TGTGGCTCTA AACTATGATG GCATTTGTTA TCTAGGGGGC TTTGAATATG GTAGAAAGGT
       TAACTAGGTG TATTTTTGAA ACACCGAGAT TTGATACTAC CGTAAACAAT AGATCCCCCG AAACTTATAC CATCTTTCCA

                                    Exon 44
 9841  AAATATCGTT ACTCAAGAGA TTTTTAAAAC CAATTTTGTT GGCAAAATTA AAGATGTTGT ATTTTTTCAG GAACCAAAAA
       TTTATAGCAA TGAGTTCTCT AAAAATTTTG GTTAAAACAA CCGTTTTAAT TTCTACAACA TAAAAAAGTC CTTGGTTTTT

                                                                               Exon 44, 3' UTR
                               Exon 44
 9921  ACATTGAACT AATTAAATTA GAAGGATACA ATGTTTATGA TGGAGATGAA CAAAATGAGG TTACATAAGT TAACACTAGA
       TGTAACTTGA TTAATTTAAT CTTCCTATGT TACAAATACT ACCTCTACTT GTTTTACTCC AATGTATTCA ATTGTGATCT

                                 Exon 44, 3' UTR
10001  GATTTTAGTA CACACTATAC ATAAATGCAG TTATTTTGAT AGTTATTTCT TTGATACATT GCTTACGGGG AATCAACTGT
       CTAAAATCAT GTGTGATATG TATTTACGTC AATAAAACTA TCAATAAAGA AACTATGTAA CGAATGCCCC TTAGTTGACA

                                 Exon 44, 3' UTR
10081  TTACTATATT ACCTGAAATA GTCTAAATGC TAACATATCT TTTTGATAAG ATTGTAAAAT GTCACTGAAG GTTCTGATTG
       AATGATATAA TGGACTTTAT CAGATTTACG ATTGTATAGA AAAACTATTC TAACATTTTA CAGTGACTTC CAAGACTAAC

                                 Exon 44, 3' UTR
10161  TTTTTCCTAC ATCTAATTTA TCTGTATATA TTTTGATTCA TGTTTTAACT CCATTAGTTC AGTGCTTATT CACAGAATGT
       AAAAAGGATG TAGATTAAAT AGACATATAT AAAACTAAGT ACAAAATTGA GGTAATCAAG TCACGAATAA GTGTCTTACA

                                 Exon 44, 3' UTR
10241  GCTTATTCAC TTTGCTTATT CACTTTTTAC CTATCCCTAA TGCTTACATT TTAAAATCAA CGTGTAAACA CAATTTTAAA
       CGAATAAGTG AAACGAATAA GTGAAAAATG GATAGGGATT ACGAATGTAA AATTTTAGTT GCACATTTGT GTTAAAATTT

                                 Exon 44, 3' UTR
10321  AATCAATGTG TAAGCTGAAC TTTAAAATGT TTAAAATTCA GTTGGGAATG AATTAGGGAT AGGTACAAAT AAGAAAAAAA
       TTAGTTACAC ATTCGACTTG AAATTTTACA AATTTTAAGT CAACCCTTAC TTAATCCCTA TCCATGTTTA TTCTTTTTTT

                               Exon 44, 3' UTR
10401  TCAAGTTATT AATCAAAGGA AAAATAAAAA TTATACAAAG CTAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAA
       AGTTCAATAA TTAGTTTCCT TTTTATTTTT AATATGTTTC GATTTTTTTT TTTTTTTTTT TTTTTTTTTT TTTTTT
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Figure S3. Amino Acid Sequence and Domain Organization of EYS Protein

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   1  MTDKSIVILS LMVFHSSFIN GKTCRRQLVE EWHPQPSSYV VNWTLTENIC
  51  LDFYRDCWFL GVNTKIDTSG NQAVPQICPL QIQLGDILVI SSEPSLQFPE
 101  INLMNVSETS FVGCVQNTTT EDQLLFGCRL KGMHTVNSKW LSVGTHYFIT
 151  VMASGPSPCP LGLRLNVTVK QQFCQESLSS EFCSGHGKCL SEAWSKTYSC
 201  HCQPPFSGKY CQELDACSFK PCKNNGSCIN KRENWDEQAY ECVCHPPFTG
 251  KNCSEIIGQC QPHVCFHGNC SNITSNSFIC ECDEQFSGPF CEVSAKPCVS
 301  LLFWKRGICP NSSSAYTYEC PKGSSSQNGE TDVSEFSLVP CQNGTDCIKI
 351  SNDVMCICSP IFTDLLCKSI QTSCESFPLR NNATCKKCEK DYPCSCISGF
 401  TEKNCEKAID HCKLLSINCL NEEWCFNIIG RFKYVCIPGC TKNPCWFLKN
 451  VYLIHQHLCY CGVTFHGICQ DKGPAQFEYV WQLGFAGSEG EKCQGVIDAY
 501  FFLAANCTED ATYVNDPEDN NSSCWFPHEG TKEICANGCS CLSEEDSQEY
 551  RYLCFLRWAG NMYLENTTDD QENECQHEAV CKDEINRPRC SCSLSYIGRL
 601  CVVNVDYCLG NHSISVHGLC LALSHNCNCS GLQRYERNIC EIDTEDCKSA
 651  SRKNGTTSTH LRGYFFRKCV PGFKGTQCEI DIDECASHPC KNGATCIDQP
 701  GNYFCQCVPP FKVVDGFSCL CNPGYVGIRC EQDIDDCILN ACEHNSTCKD
 751  LHLSYQCVCL SDWEGNFCEQ ESNECKMNPC KNNSTCTDLY KSYRCECTSG
 801  WTGQNCSEEI NECDSDPCMN GGLCHESTIP GQFVCLCPPL YTGQFCHQRY
 851  NLCDLLHNPC RNNSTCLALV DANQHCICRE EFEGKNCEID VKDCLFLSCQ
 901  DYGDCEDMVN NFRCICRPGF SGSLCEIEIN ECSSEPCKNN GTCVDLTNRF
 951  FCNCEPEYHG PFCELDVNKC KISPCLDEEN CVYRTDGYNC LCAPGYTGIN
1001  CEINLDECLS EPCLHDGVCI DGINHYTCDC KSGFFGTHCE TNANDCLSNP
1051  CLHGRYTELI NEYPCSCDAD GTSTQCKIKI NDCTSIPCMN EGFCQKSAHG
1101  FTCICPRGYT GAYCEKSIDN CAEPELNSVI CLNGGICVDG PGHTFDCRCL
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1151  PGFSGQFCEI NINECSSSPC LHGADCEDHI NGHVCKCQPG WSGHHCENEL
1201  ECIPNSCVHE LCMENEPGST CLCTPGFMTC SIGLLCGDEI RRITCLTPIF
1251  QRTDPISTQT YTIPPSETLV SSFPSIKATR IPAIMDTYPV DQGPKQTGIV
1301  KHDILPTTGL ATLRISTPLE SYLLQELIVT RELSAKHSLL SSADVSSSRF
1351  LNFGIRDPAQ IVQDKTSVSH MPIRTSAATL GFFFPDRRAR TPFIMSSLMS
1401  DFIFPTQSLL FENCQTVALS ATPTTSVIRS IPGADIELNR QSLLSRGFLL
1451  IAASISATPV VSRGAQEDIE EYSADSLISR REHWRLLSPS MSPIFPAKVI
1501  ISKQVTILNS SALHRFSTKA FNPSEYQAIT EASSNQRLTN IKSQAADSLR
1551  ELSQTCATCS MTEIKSSREF SDQVLHSKQS HFYETFWMNS AILASWYALM
1601  GAQTITSGHS FSSATEITPS VAFTEVPSLF PSKKSAKRTI LSSSLEESIT
1651  LSSNLDVNLC LDKTCLSIVP SQTISSDLMN SDLTSKMTTD ELSVSENILK
1701  LLKIRQYGIT MGPTEVLNQE SLLDMEKSKG SHTLFKLHPS DSSLDFELNL
1751  QIYPDVTLKT YSEITHANDF KNNLPPLTGS VPDFSEVTTN VAFYTVSATP
1801  ALSIQTSSSM SVIRPDWPYF TDYMTSLKKE VKTSSEWSKW ELQPSVQYQE
1851  FPTASRHLPF TRSLTLSSLE SILAPQRLMI SDFSCVRYYG DSYLEFQNVA
1901  LNPQNNISLE FQTFSSYGLL LHVKQDSNLV DGFFIQLFIE NGTLKYHFYC
1951  PGEAKFKSIN TTVRVDNGQK YTLLIRQELD PCNAELTILG RNTQICESIN
2001  HVLGKPLPKS GSVFIGGFPD LHGKIQMPVP VKNFTGCIEV IEINNWRSFI
2051  PSKAVKNYHI NNCRSQGFML SPTASFVDAS DVTQGVDTMW TSVSPSVAAP
2101  SVCQQDVCHN GGTCHAIFLS SGIVSFQCDC PLHFTGRFCE KDAGLFFPSF
2151  NGNSYLELPF LKFVLEKEHN RTVTIYLTIK TNSLNGTILY SNGNNCGKQF
2201  LHLFLVEGRP SVKYGCGNSQ NILTVSANYS INTNAFTPIT IRYTTPVGSP
2251  GVVCMIEMTA DGKPPVQKKD TEISHASQAY FESMFLGHIP ANVQIHKKAG
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2301 PVYGFRGCIL DLQVNNKEFF IIDEARHGKN IENCHVPWCA HHLCRNNGTC

2351 ISDNENLFCE CPRLYSGKLC QFASCENNPC GNGATCVPKS GTDIVCLCPY

2401 GRSGPLCTDA INITQPRFSG TDAFGYTSFL AYSRISDISF RYEFHLKFQL

2451 ANNHSALQNN LIFFTEQKGH GLNGDDFLAV GLLNGSVVYS YNLGSGIASI

2501 RSEPLNLSLG VHTVHLGKFF QEGWLKVDDH KNKSIIAPGR LVGLNVFSQF

2551 YVGGYSEYTP DLLPNGADFK NGFQGCIFTL QVRTEKDGHF RGLGNPEGHP

2601 NAGRSVGQCH ASPCSLMKCG NGGTCIESGT SVYCNCTTGW KGSFCTETVS

2651 TCDPEHDPPH HCSRGATCIS LPHGYTCFCP LGTTGIYCEQ ALILIVILEK

2701 PKPAERKVKK EALSISDPSF RSNELSWMSF ASFHVRKKTH IQLQFQPLAA

2751 DGILFYAAQH LKAQSGDFLC ISLVNSSVQL RYNLGDRTII LETLQKVTIN

2801 GSTWHIIKAG RVGAEGYLDL DGINVTEKAS TKMSSLDTNT DFYIGGVSSL

2851 NLVNPMAIEN EPVGFQGCIR QVIINNQELQ LTEFGAKGGS NVGDCDGTAC

2901 GYNTCRNGGE CTVNGTTFSC RCLPDWAGNT CNQSVSCLNN LCLHQSLCIP

2951 DQSFSYSCLC TLGWVGRYCE NKTSFSTAKF MGNSYIKYID PNYRMRNLQF

3001 TTISLNFSTT KTEGLIVWMG IAQNEENDFL AIGLHNQTLK IAVNLGERIS

3051 VPMSYNNGTF CCNKWHHVVV IQNQTLIKAY INNSLILSED IDPHKNFVAL

3101 NYDGICYLGG FEYGRKVNIV TQEIFKTNFV GKIKDVVFFQ EPKNIELIKL

3151 EGYNVYDGDE QNEVT

Protein motifs are as follows:

Signal peptide; EGF-domains; Calcium-binding EGF-domains; EGF-like domains; O-linked glycosylation; Laminin A G-like domains

Table S1. Primers Used for Genomic Sequence Analysis of Human *EYS*

Exon	Forward (5'>3')	Reverse (5'>3')	Amplicon Length (bp)
1	TTATGTCAGCCTGCACATGG	GTAGTTGTGTTCAGCTAGGC	286
2	AGCTAAAGGCAGGATACTGG	ATGGAAAGCAGGGAATGAGG	315
3	GAAGACTCATTCTAGGTTAGTC	CACTGCAAAGATAGTGTCACC	472
4A	CTTAAAACACCATTTTGCAGC	ATGTGTCCCAACACTCAGCC	498
4B	ACTTCTACAGAGATTGCTGG	AGATTCCTGGCAGAACTGC	376
4C	GTGGTCCATCACCTTGTCC	TAGAGACGGGGTTTCACCG	486
5	AGAATTGAGGGAAAACTGATGG	CATAAAAGAGTTCAGTATATATACC	322
6	TCTATGCTCATTTCTTCTTTCCTTC	AAAATAAGTAGACCGTTCTTGTTCG	403
7	TTCTCCAGGTAAGAACCCATTC	TTAAGTAAAAGTTAGGGTTAAAACCAG	311
8	TTGGAATAATGTTAATAGGCTTTTC	TGGCTAAGATTAATAAGAGCATTTG	285
9	GGCTTTTGAACATGGATATGAC	AGATTTCCTAGGATGTAGTTGGTG	559
10	GGAACTTATTTTGTGGCAGATG	GACTGTTGAGAATTTGTTTACGAAG	427
11	GGTTTCATCTTAGTAGACAGAGAGGC	CATTGTTACCATGAAACAGTTCG	368
12	TGCACCCCACAACTATCTTC	AATTGCCCAAAGAAGCAATC	570
13	TTCAGATGTCATCCTAAGTGG	CAGACAAGAGACAGAAGTGC	293
14	GGATATTTTCATTGTTGCTTTGC	TGAATCCAATAAGTGAACAGTTTG	655
15	GAGATATCAAAATGGCCAGGAG	ATCCCAAGGACACTGAGCAC	273
16	CACCACATACTATTAGTTCAAG	ATTTTAGGAGGCCATCATCC	447
17–18	ATTCTTTAGACTACCACTGATTC	ACATAATGAGCACATGTGTGC	551
19	AGCAGAACAAAATTTTGCAAGG	CATCTGGCAGATTATTTCAGG	425
20	AGAGAGGTCTTCATTTCTTGG	AGCTCTTGTTTTATGAAAGAGC	395
21	AAACCCAGGAATAAACTCTGC	GGAAGAAATGACTCTGAAACC	322
22	GTCAAACAAGTTTGCACATCAG	GAAAGCAAAACATGGGAGTG	531
23	AACTCATTGTCACCCCAAGG	TCCTGATGAAAGCCTAAGTGC	486
24	AATGGCACCACGGATAAGAG	GAGGAATGCCGAGAAAAGTG	572
25	GAGCTATCCAATATGTCTATGG	GCAGAAAATATGCTTTTACCAC	378
26A	TTATCCCAGTGCCAAAGTGG	AGTAATGACTGCCTGTTTAGC	525
26B	ACTGTTGCTTTATCTGCTACC	GAACATGTTGCACATGTTTGG	434
26C	TACTGAGGCTTCAAGCAACC	GTGGGTCCCATAGTTATGCC	555
26D	ATCCATTGTCCCTTCACAAAC	TACAGACATGGAGGAAGACG	439
26E	GATTTTTCAGAAGTCACCACC	CTGATTACAATGAGGCTGTTC	410
27	AAAGAGGCAGGAAAGAGACG	AGGAAGAGACATCCTGGTGG	443
28	ACTTCATGTCTCTCCAAAGTG	ATTGTTAGGGATAGCCTTTGC	273
29	TGCTTCTGGCTTTGTTTTATTG	TGGAAAAACAGACTGACATTGG	521
30	TGCATACCCTGACCAGTTTG	CGTAGGAATGTGAAGCAAAAAC	335
31	GTTAAACCTTGATCAGTATTGG	ACAGCTGTTTCTTGTTTGTGC	475
32	TGCTTCATGCACTGGTCTGG	GTGTTACCTTTTCAAATGAATGC	552
33	CTAATAGCACTCCTACCAACC	TCTGTAGTCCCAACTACTTGG	465
34	CTTGAAAATGTCCACACTTGG	TTTCTGGTGCTTTGTTGAGAG	405
35	AACTAGCCAACAATAGCAACC	CTCTCAGAGGACAATACTGC	447
36	AGTGGAAAGCACACAGCTAC	TTGATCAGTCAAGTGCTATCC	458
37	TTAGTTGCTCAATGCTGAAGG	CAATTAGAGTGTCCCTGAGG	410
38	CAGCCAGTTGCACATATACC	GTGAACTTCGTGGATGTAGG	438
39	AGCAGAGAATTGAGTGGTATC	GAAAGCAATCCATATAGCTGG	410
40	TCTCTGCGCATTTCTGTATTC	ATGTGCATCTGTTTGTGTTCC	438
41	AAATTGACAAGTTAGCATCAGG	AAGTACTAGTCTATCTGTGAAG	432
42	GAACTGCAGGACAGATGTAC	CCTAATTCTAAGCTCCAATCC	323
43	TTGATGTACTCACCTACAAGC	ACGCATACACTTGCAGTGAC	444
44A	CACAATTGTGCTCAAGATCTG	TACATTTGAGCCACCTTTTGC	511
44B	TGAACCTGTAGGTTTTCAAGG	TGAACTGGAGGTTTCTCATTC	422
44C	TTCTTACAGTTGCCTGTGTAC	TTTATGTGGATCAATATCCTCG	424
44D	TTCTGTTGTAATAAATGGCACC	ACAATCAGAACCTTCAGTGAC	394

Table S2. ARMS Primers Used to Screen for c.9468T>A

	Forward (5' > 3')	Reverse (5' > 3')	Amplicon Length (bp)
wild-type combination	CAGTCTAATTCTTTCCGAGGATATTGATCC	TATGTAACCTCATTTTGTTCATCTCCATAA	249
mutant combination	TGAACTAATTAAATTAGAAGGATACAATGTTTAA	GGTAATATAGTAAACAGTTGATTCCCCGTA	169

Table S3. Primers Used for cDNA Sequence Analysis of Human *EYS*

AP		CCATCCTAATACGACTCACTATAGGGC		RACE adaptor primer
NAP		ACTCACTATAGGGCTCGAGCGGC		RACE nested adaptor primer
No.*	**Exon**	**Forward (5' > 3')**	**Reverse (5' > 3')**	**Comment**
1	4	GTGGTCCATCACCTTGTCC		
2	4		TGAGGGTTGTGGATGCCATTCTTCCAC	5' RACE nested PCR
3	11	GAGTGAAGAAGACAGTCAGGAATATCGG		
4	11	GTTTTCTCAGATGGGCTGGCAACATG		Nested PCR
5	12		GCTACAGTTACAATTGTGCG	
6	13		TGCAGGGATGTGAAGCACACTCATC	5' RACE PCR
7	17	CCTTTCCTGCCAGGATTATGGTGACTG		Nested PCR
8	17		GCAGGAAAGGAAGAGGCAGTCTTTCAC	Nested PCR
9	29	AGGATCTGTCTTCATTGGTG		
10	41	CACCACTGTAGCAGAGGAGCAACCTG		3' RACE PCR
11	41	GGAACCACTGGAATCTACTGTGAAC		3' RACE nested PCR
12	41		GAAATGCAGGTTGCTCCTCTGCTACAG	
13	41		ACAGTGGTGTGGAGGGTCATGTTCAG	Nested PCR
14	44		TACATTTGAGCCACCTTTTGC	

* Numbers corresponding to primers in Figure S1.

Table S4. Primers Used for RT-PCR of Human *EYS*

Exon	Forward (5' > 3')	Reverse (5' > 3')
9–12	CTAATTCATCAACACCTCTGC	GCTACAGTTACAATTGTGCG
16–19	TGTACATCTGGATGGACTGG	GCAGTTGTATCCATCAGTCC
21–26	GTTCATGTGATGCAGATGGG	AGTAATGACTGCCTGTTTAGC
29–37	AGGATCTGTCTTCATTGGTG	CAGTGCTGAGTGGTTGTTTG
41–44	ACCCTCCACACCACTGTAGC	GCCTTCTGCACCAACTCTTC
ACTB	GGGACGACATGGAGAAAATC	CAGAGGCGTACAGGGATAGC

Table S5. Exon and Intron Sizes of Human *EYS*

Exon/Intron	Exon Size (nt)	Intron Size (nt)
1	43	67.243
2	115	143.785
3	135	252
4	945	3.956
5	114	85.227
6	194	2.569
7	128	17.978
8	115	30.769
9	160	9.281
10	140	8.892
11	167	38.861
12	257	238.136
13	114	59.911
14	122	51.668
15	122	33.050
16	260	9.984
17	97	184
18	108	15.271
19	146	63.875
20	172	934
21	79	8.068
22	200	187.133
23	125	8.588
24	116	24.109
25	193	1.128
26	1.767	150.871
27	191	2.897
28	92	47.334
29	151	80.403
30	113	76.146
31	233	148.590
32	147	15.365
33	154	67.155
34	109	14.472
35	221	120.025
36	173	57.814
37	183	16.966
38	167	809
39	145	9.925
40	175	15.373
41	173	20.486
42	63	15.233
43	162	4.719
44	1.689	
Subtotals	**10.475**	**1.975.435**
Human *EYS* total size:		**1.985.910**