



**INK2J00034R\_CACNA1A\_R583Q\_C01\_AA**  
 21,083 bp

5'

3'

CCTGGGCAACAAAGCAAGATCCTGTCTCAAAAAAAAAAAAAAAAAAAGATGTATTTTAGAAGGTAAATTCATCTGTCCAAAACTGAG  
GGACCCGTTGTTTCGTTCTAGGACAGAGTTTTTTTTTTTTTTTTTCTACATAAAATCTTCCATTTAAGTTAGACAGGTTTTGACTC

85

CACNA1A

CACNA1A-201

CTCTGACCTTCCCCTAAACCTGTGCCCATTCAGTGGATGAGAGCTCCATCCCTTAAGGGGTTACCAATTCATCCATTCCCTTTGT  
GAGACTGGAAGGGGATTTGGACACGGGTAAGTCACCTACTCTCGAGGTAGGGAATCCCCAAGTGTTAAGTAGGTAAGGAAACA

170

CACNA1A

CACNA1A-201

ATGTACATCATTCAATTCACCTTGGCTCATCCCTCTCTCTTACATCCACACCGTTCCATCAGCAAATGTTGAATCTGTCTTAAATG  
TACATGTAGTAAGTAAGTGAACCGAGTAGGGAGAGAGAATGTAGGTGTGGCAAGGTAGTCGTTTACAACCTTAGACAGAATTTAC

255

CACNA1A

CACNA1A-201

ATTCATCCCAAATCCTCCCCGCTTAACTACCACCCAACCTCCAGCCCCATCCATCATCATCACTTGCCTGGATGGGTTCAAGT  
TAAGTAGGGTTTAGGAGGGGCGAATTGATGGTGGGTTGAGGTCGGGGGTAGGTAGTAGTAGTAGTGAACGGACCTACCCAAGTCA

340

CACNA1A

CACNA1A-201

CACCTCCAGCCTGGTCTCCAGCTCCCGTCCCTCACCTCTCACTGTCTACTCTCCCACTCGGCAGCCAGAGGGTGCCTGTGAACAC  
GTGGAGGTCCGACCAGAGGGTTCGAGGGCAGGAGTGGAGAGTGACAGATGAGAGGGTGAGCCGTCGGTCTCCACGGACACTTGTG

425

CACNA1A

CACNA1A-201

CCAAATCAGGTTCCATCCCTCCTCTACTCAGAACCCTCCACGGCTCCCCCTCACTCAGGGTAAAAGCCAAAGTCTCTCTTGTGG  
GGTTTAGTCCAAGGTAGGGAGGAGATGAGTCTTGGGAGGTGCCGAGGGGGGAGTGAGTCCCATTTTCGGTTTCAGGAGGAACACC

510

CACNA1A

CACNA1A-201

TCCACCAGGCCATGCATGATCTGCCTGTCACCTCCCTGCCTTACCACCTTCCCTCTTTTCCCCTCAACCACTCCACTCCAGCCAC  
AGGTGGTCCGGTACGTACTAGACGGACAGTGGAGGGACGGAAGTGGTGGAAAGGAGAAAAGGGGAGTTGGTGAGGTGAGGTCCGGTG

595

CACNA1A

CACNA1A-201

ACTGACTTCCTTGTGCTCTTCCCCAAAAATGTCGGGCAGACACATTCATGCTTCAGGACCTTAAATTTGCTGTTTTCTCTACCTA  
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680

CACNA1A

CACNA1A-201

AGATACTAAAGTGACAAGTCAACACACTCACCTTGACCATGCAATTTAATGTTGCAGCCTACCCTGTGGACTCTCCAAGGGCTCC  
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765

CACNA1A

CACNA1A-201

CAGTCCCTCTGTGATGCTTTACTTTTTCTCTTAAAAAAAAAATGTTATTTAAAAGAACTTGTCTCGCTGTGTTGCCAGGCTGG  
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850

CACNA1A

CACNA1A-201

TGTCAAAACCTCCTGGCCTCATACAGTCTCCCATTCAGCTTCCCAAAGTACTGGGATTAGAGGCATGTGCCACTGCACCCATCCC  
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935

CACNA1A

CACNA1A-201

AACTTTTTTTTTTCCCATAGCACTTTTCATTTTCCATCCCCTGTTAATTTACTTATTACGTCCACTGTCTGTCTCCTCCCCTTAG  
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1020

CACNA1A

CACNA1A-201

AGGGTCAGACCCCGGAAGTCCAGGCTCTGTTGCCTAATGTATCCTGAGCCCCTGGAACAGAGCCTGGCACAAAATAGGTACTCAA  
TCCAGTCTGGGGCCTTCAGGTCCGAGACAACGGATTACATAGGACTCGGGGACCTTGCTCTCGGACCGTGTTTTATCCATGAGTT

1105

CACNA1A

CACNA1A-201

TAAATGCATAAGAGCAAAACTATATGTAGGCAGAGGACACACCCAGCTTATTCCTCAGTGATCACTTCTAAAGTTAAATGTCCAT  
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1190

CACNA1A

CACNA1A-201

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1275

CACNA1A

CACNA1A-201

TGGAGGCTCTGCTTTATCCTGCCCTGTGGTGTGACTCCCAGAGGCATCAGATGTGGCTGGGAGTGGGAGACATGGAAAATTGGCT  
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1360

CACNA1A

CACNA1A-201

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1445

CACNA1A

CACNA1A-201

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1530

CACNA1A

CACNA1A-201

AAATCTGTGCTTGGGCTGCACATTGGTTAATTTCTTCTGAAGGAACAGCCTGAGCCTGACATTCTCCATCTTTTCCCTGGCAGGT  
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1615

CACNA1A

CACNA1A-201

CACNA1A-201

TCTCCCTTCGCCCCGAGCCAGCATTAAAAAGTGCCAAGCTGGGAGAACTCGACCTTTTTTTCACAAAAAGGAGAGGGAGGATGCGTTTTCT  
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1700

CACNA1A

CACNA1A-201

450 P F A R A S I K S A K L E N S T F F H K K E R R M R F

ENSE00001247111

CACNA1A-201

ACATCCGCCGCATGGTCAAAACTCAGGCCTTCTACTGGACTGTA CT CAGTTTGGTAGCTCTCAACACGCTGTGTGTTGCTATTGT  
TGTAGGCGGGCTACCAAGTTTTGAGTCCGGAAGATGACCTGACATGAGTCAAACCATCGAGAGTTGTGCGACACACAACGATAACA

1785

CACNA1A

CACNA1A-201

480 R M V K T Q A F Y W T V L S L V A L N T L C V A I V

ENSE00001247111

CACNA1A-201

TCACTACAACCAGCCCGAGTGGCTCTCCGACTTCCTTTGTGAGTATCACCCAGCCCCACCCCTGCCAACTCCCTGATCCCTCCCT  
AGTGATGTTGGTCGGGCTCACCGAGAGGCTGAAGGAAACACTCATAGTGGGTCTGGGGTGGGGACGGTTGAGGGACTAGGGAGGGA

1870

CACNA1A

CACNA1A-201

510 N Q P E W L S D F L

ENSE00001247111

CACNA1A-201

CACACCCTTTTTCCA CT TCTCTTTCTCTGGTAGTATGTGTATCTTCTTTGGTCCTCATTGAATCTGCCCTTTCTTTAGCCATTT  
GTGTGGGAAAAAGGTGAAGAGAAAGAGACCATATACACATAGAAGAAACCAGGAGTAACCTTAGACGGGAAAGGAAATCGGTAAA

1955

CACNA1A

CACNA1A-201

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CTATAACTGTC ACT GGGGCCAATGTTACTGTTGCTATGACAATGGAACCCATCTCCCTTAGACCTGAGAGCTGGAAGCTGGAATT  
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2040

CACNA1A

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CAGACCAACAAATGCTCCTGTGATTCTTTCTAAGAGAGAGGGACAGAGGGGTGCTGGTGAAGGGGATGTTGGAAGAGAGACAGA  
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2125

CACNA1A

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GAAAGACGGAGCTCATAAGATAGACAGATAGAAACAGAAACATACATGTATTAATAATTTTTATGTACATCTCTGGAAATGTTCA  
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2210

CACNA1A

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TAACCTTATGGTTAAGAGAGGATGCCTTAGAAATAAGGAGTGGCTTATATGTTGCCCTCATTTTTCTCTACTTATTTCTGACTCTAC  
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2295

CACNA1A

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TTCTCTCTTCTTTCAAACCTTCTGCTTCTTTCTGTTAGGTTGGTGCAAAATTAATTGCGTTTTTTGCCTTTTTTTTTTTTTTTTT  
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2380

CACNA1A

CACNA1A-201

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2465

CACNA1A

CACNA1A-201

CACNA1A-201

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2550

CACNA1A

CACNA1A-201

CACNA1A-201

GTTAGCATGAGATAGTATCAAAATTGAGGGCCAAGTGAGGGTGAGGAAAAGCAGCAAAAGATGGGGAGATGTCTGAGCAGGATTT  
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2635

CACNA1A

CACNA1A-201

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AAAAAGTAAAGAGCTCGAGGAATCAACAAGAGCAGCGACTGGGGCCAGGCATGGTGGCTCACACCTGTAATCCCAGCATTTTTGGG  
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2720

CACNA1A

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AGGCTGAGGTGGGTGGATCACTTGAGGCCAGGAGTTCAAGACCAGCCTGGCCAATATGGTGAAACCCTGTCTTTACAAAAATAC  
TCCGACTCCACCCACCTAGTGA ACTCCGGTCTCAAGTTCTGGTCGGACCGGTTATACCCTTTGGGACAGAAATGTTTTTTATG

2805

CACNA1A

CACNA1A-201

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2890

CACNA1A

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CAGAGGTTGCAGTGAGCCAAGATCATGCCACTGCACTCCAGCCTGAGCAACAGAGAGAGTGTCTGTCTCAAAAAATAAAGTAAAA  
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2975

CACNA1A

CACNA1A-201

CACNA1A-201

TAAAATAAAATAAAATAAAGAGTAGTGATTGGGCAGTGAGGGGGGCGAGGTGGATGCCCTGGCTTTGGCTCACAGGCCCAAGTAA  
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3060

CACNA1A

CACNA1A-201

CACNA1A-201

GGACTTCTCAAAACGTCTTTTGCCTACTGGCTGTCTAATTTATTTCACTGACCTTCTGACCTGGTTCAGAATTGACTTAGGACAGC  
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3145

CACNA1A

CACNA1A-201

CACNA1A-201

AAGAAGAGACAGTCTAGTCTTTGACCTAGAAAAGGCCCGTGAGCCTAGTCCAGGCCATTGTCTTCTTATAACCCTCCTTGTTCCCA  
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3230

CACNA1A

CACNA1A-201

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GTCACGTTGGCTGACCCCCAGGACACCCCTCAGGAACCAAGTTCTCCTTCCCAGGGCCCTGACCTAGTTTCAAACCTTAGTAATTG  
CAGTGCAACCGACTGGGGGGTCTGTGGGGAGTCTTGGTCAAGAGGAAGGGTCCCGGGACTGGATCAAAGTTTGAATCATTAAAC

3315

CACNA1A

CACNA1A-201

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TTTTTAGTCCCTCTGGAGTCTCTTATAAATGAGGACTCTACTTCGTGTTTTAACTTCCCTCTAATACTCTATTTTTAATCTCCTAT  
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3400

CACNA1A

CACNA1A-201

CACNA1A-201

ATTCTCTCTACTAATCATCTTGTACAGTCTGTCCTGGTTCAGGAACAAGGGACTGAGACTTCCTGCCTGGGTCCTCAGTGTCTAT  
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3485

CACNA1A

CACNA1A-201

CACNA1A-201

AAAGGTCCTTTACTCATTCCCACTTTCCCTTTGAGAAAACCTGAGACACAGAGAGGTTAAGTAGATTGCCAGGATCACACATTAG  
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3570

CACNA1A

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CTTGGCATGATGGCGGGCGCCTGTAATCCAGCTACTTGGGAGGCTGAGGCAGGAGAATCGCTTGAACCTGGGAGGCAGAGGTTG  
GAACCGTACTACCGCCCGCGGACATTAGGGTCGATGAACCTCCGACTCCGTCTCTTAGCGAACTTGGACCTCCGTCTCCAAC

3655

CACNA1A

CACNA1A-201

CACNA1A-201

CAGTGAGCCAGATCATGCCACTGCACTCTAGCCTGGGCAACAGAGCTAGACGCCATCTCAAAAAAAAAAAAAAAAAAAAAAGA  
GTCCTCGGGTCTAGTACGGTGACGTGAGATCGGACCCGTTGTCTCGATCTGCGGTAGAGTTTTTTTTTTTTTTTTTTTTTCT

3740

CACNA1A

CACNA1A-201

CACNA1A-201

TACACATTAATTTAGAGATGTCAAAATATAAAACAAAAATGTATATCTTGGCATCAGTGAAGTGAGTTGTTTCTCTGGATCTCA  
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3825

CACNA1A

CACNA1A-201

CACNA1A-201

GACTCCACATCTATGTGGTAGAAACCGGATTTGATGGTCCTGAAAGTTCTTCCAGATGCAACAATGCTAAGGATAAGTAATTCTT  
CTGAGGTGTAGATACACCATCTTTGGCCTAAACTACCAGGACTTTCAAGAAGGTCTACGTTGTTACGATTCTATTCAATTAAGAA

3910

CACNA1A

CACNA1A-201

CACNA1A-201

TCAAGTCTTGTGCATCACCTGCTATCATGTTTCCATGGTAACTGAGGAACAAGATCTCAGAAACTCTTTCAGTCTCTCCAGAGTTA  
AGTTCAGAACACGTAGTGGACGATAGTACAAAGGTACCATTTGACTCCTTGTCTAGAGTCTTTGAGAAGTCAAGGAGGGTCTCAAT

3995

CACNA1A

CACNA1A-201

CACNA1A-201

CTTCTGGTGGGTCTAGGAATGTGTCAGATGTTACAAACAGACTTCTCTGCTGATATTTTGGTCCTAGGAACCCCTAGAGTTCCCC  
GAAGACCACCCAGATCCTTACACAGTCTACAATGTTTGTCTGAAGGAGACGACTATAAAACCAGGATCCTTGGGATCTCAAGGGG

4080

CACNA1A

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CACNA1A-201

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AGTCTGTGATTCTAGAGGAATCGCAGGATATTTATTCCTCTTTAAACCCTATTTATGACACTTCTGAAACTGCCAGTCAAGT

4165

CACNA1A

CACNA1A-201

CACNA1A-201

AAACACCTCTTAAAAGCATGACATAGCAAACACCCCTTGGCAAATATCTTAGTTCATTTGTAAGTCTATAACAAATTACCCGAGAC  
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4250

CACNA1A

CACNA1A-201

CACNA1A-201

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ACCCATTAAACTATTCTTGTCTTTAAATAAAAGAGTGTCAAGACCTCCGACCCCTTCGGGTTCTAGTTCGGTAACCGTCCAAAGGG

4335

CACNA1A

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4420

CACNA1A

CACNA1A-201

CACNA1A-201

GGCAGAAGGTGGAGGAGCAAGAGGGACAAACTTCTCTGTCAACCTCTTTTATAAGGGCACCTAATCCCATTTCATGAGAGCTCTA  
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4505

CACNA1A

CACNA1A-201

CACNA1A-201

CCGTAATGACTTAATCACCTCCTGAAGGCCCCACCTCTTAATACTGTTACATTGGCAATTAAGTTTCAACGTGAATTTTGGAGGG  
GGCATTACTGAATTAGTGGAGGACTTCCGGGGTGGAGAATTATGACAATGTAACCGTTAATTCAAAGTTGCACTTAAACCTCCC

4590

CACNA1A

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GACACAAACATTTAAACCATCACAAACCACCAAAACACAATTAGCTTTGTGGCCTTAATTAGCTATATGAAATTCATGGAAGTTAGT  
CTGTGTTTGTAAATTTGGTAGTGTTGGTGGTTTGTGTTAATCGAAACACCGGAATTAATCGATATACTTTAAGTACCTTCAATCA

4675

CACNA1A

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TTCAGTCCTCTGTCTCTTTCTTTCTGTATGCTTTCTGCTCCTCAGAAACCCTCCTCATCTCTCCTTTCTATCCATTAAGTACCC  
AAGTCAGGAGACAGAGAAAAGGAAAAGACATACGAAAGACGAGGAGTCTTTGGGAGGAGTAGAGAGGAAAAGATAGGTAATTCATGGG

4760

CACNA1A

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ACGCCCTTCCCTAACTCCTCATCTTCCCTACCCCTACCAAGAAAGCCCTCTCAGAAAAGGATCTGATGTCAGCCATTTATTTGCTGGA  
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4845

CACNA1A

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CACNA1A-201

GCAAAATGCATATCCATGTTTTACCCCTCCCTGAGGCATTTGCAATTTTATGCTTGCTCATCAAAGAACAAAAGGCTTTGTCTTAC  
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4930

CACNA1A

CACNA1A-201

CACNA1A-201

TCAAGACTTTTTAGGTCCTCACAAACACAGGATTTCTAGGGGACATAAGACAAGTTTTCTGAGTTAGGAGAAAAGCCATACCTTA  
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5015

CACNA1A

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GGTGGGTTGCCTGTGTCGCTCCAACCTAAGTACTTAACTTCAGGATTACAAATAGGATATCATTATGATTTCTATTTCTTTTATC  
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5100

CACNA1A

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CTTTGGAGCTCAGTCACGTAGAAGTAGATTAATATAATTGTTAGATCACAGCACCCCTGGCATTATGGGGCCGTTATGGTCCATT  
GAAACCTCGAGTCAGTGCATCTTCATCTAATTTATATTAACAATCTAGTGTCGTGGGACCGTAATACCCCGCAATACCAGGTAA

5185

CACNA1A

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CACNA1A-201

GTTATTATGTGAATTATTCAGTTAATTAGTTTATTTTTTAAATGTGATAAACACCCAGGAACCCACCAGTCAACACAAAAAGTCCT  
CAATAATACACTTAATAAGTCAATTAATCAAATAAAAAATTTACACTATTTGTGGGTCCCTTGGGTGGTCAGTTGTGTTTTTCAGGA

5270

CACNA1A

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TGGCAATAATCTATATCCGATCCTTCTCATCGAACCCAGGGCAAAAACACTACAAGATGGAGACCCACTGATATTTTTTCTCATTTCCTT  
ACCGTTATTAGATATAGGCTAGGAAGAGTAGCTTGGTCCCCTTTTTGATGTTCTACCTCTGGGTGACTATAAAAAAGAGTAAGGAA

5355

CACNA1A

CACNA1A-201

CACNA1A-201

TTAAAATCGGCCTAAGGTTGGTTAGCTTGGTTGGTTGGAGGGTAGGGCATAATTGTTGCTTTTTTTTTTTTTTTTTTTTTTTTTAGAC  
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5440

CACNA1A

CACNA1A-201

CACNA1A-201

AAGGTCTTGCTCTGTCACCCAGGCTACAGTAGGGTGGCCCAATCTTGGCTCACTGCAACCTCCACCTCCCAGGTTTAAAGTGATTC  
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5525

CACNA1A

CACNA1A-201

CACNA1A-201

TCATGCCTCAGCCTCCCAAGTAGCTGGGTTTACAGGCATGTGTCACCACACTGGCTAATTTTTGTATTTTTAGTAGAGGCGGGGT  
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5610

CACNA1A

CACNA1A-201

CACNA1A-201

TTGCCATGTTAGCCAGGCTGGTCTCAAACCTCCTGACCTCAGTTGATCTGACCGCCTAGGCCTCCCAAAGTGCTGGGATTACAGAC  
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5695

CACNA1A

CACNA1A-201

CACNA1A-201

GTGAGCCACCATGCCCAGCCAGCTCTTCCTTTTTAACAGAGGGGAAACTGAGGCCCATGGGAAGGACACCTTGGACAGGGCGTG  
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5780

CACNA1A

CACNA1A-201

CACNA1A-201

CCACAGTGGGTCATGTATATAATCCCAGCACTTTGGGAGGCTGTGCTGGGAGGATCACTTGAGGCCAGGAGTTCAAGACCAGCCA  
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5865

CACNA1A

CACNA1A-201

CACNA1A-201

GGGCAACATAGTGAGACCCCATCTCCACATAAAAATTTTAAAAAGAAAAAAGATAAGTCAGAAGTTGGGTGTGGTGACACATGC  
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5950

CACNA1A

CACNA1A-201

CACNA1A-201

CTGTAGTTCTAGCATGTTGGAGGCCAAATCAGGGAAACTGTTTTGAGGCCAGGAGTTTGAACCAGCCTAACAGCATAGCAAGACC  
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6035

CACNA1A

CACNA1A-201

CACNA1A-201

TCATCTCTACAAAAATAAAAAAGTTTAAAAATGATAATAAAAGGAAAGTCAGAGCCACCTGGAACCCCTACCCTCAGCAAGCCTA  
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6120

CACNA1A

CACNA1A-201

CACNA1A-201

ACCTCCTCTCTGTTTCCTCCTTCTCCCTTCTAGACTATGCAGAATTCATTTTCTTAGGACTCTTTATGTCCGAAATGTTTATAAA  
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6205

CACNA1A

CACNA1A-201

Y Y A E F I F L G L F M S E M F I K  
ENSE00001247106

CACNA1A-201

AATGTACGGGCTTGGGACGCGGCCTTACTTCCACTCTTCTTCAACTGCTTTGACTGTGGGGTAAGTGCTCTTGTCTTCTAAGAGT  
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6290

CACNA1A

CACNA1A-201

M Y G L G T R P Y F H S S F N C F D C G  
ENSE00001247106

CACNA1A-201

TCATTTCTCCAGCTCTTGCCTGGAATGACAGATACCTGGACACATTAAGGGGAGAAAGGTAAAGTCACCCCTGAATATGAGAGAC  
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6375

CACNA1A

CACNA1A-201

CACNA1A-201

TCAGATGGATGCAGAAGGAATGAGAAAAACAATCCCAAACACTGGCAAGGATACAGTGTACCCAGAACCCTCAACCACCGCCAGTG  
AGTCTACCTACGTCTTCCTTACTCTTTTGTAGGGTTTGTGACCGTTCTATGTGCACATGGGTCTTGGGAGTTGGTGGCGGTAC

6460

CACNA1A

CACNA1A-201

CACNA1A-201

GGAGGAAAACGTATAGACCCCTTTGGAAAGCTAAGTGGGGGACATAAGACAAGTTTTCCAAGTTGGGAGAAAAGCCATGCCTTA  
CCTCCTTTTGCATATCTGGGGGAAAACCTTTCGATTCACCCCTGTATTCTGTTCAAAAAGTTCAACCCTCTTTTCGGTACGGAAT

6545

CACNA1A

CACNA1A-201

CACNA1A-201

GGTGGGTTGCCTGTGTCGCTCCAACCTAAGTACCCAACCTTCAGGATTACAAACAGGACATCAATATGATTTCATTTCTTCTTTTC  
CCACCCAACGGACACAGCGAGGTTGATTCATGGGTTGAAGTCTAATGTTTGTCTGTAGTTATACTAAAGATAAAGAAGAAAAG

6630

CACNA1A

CACNA1A-201

CACNA1A-201

CTTTGTAGCTCAGTCATGTGGAGGTAGATGAAGTATAATTGTTAGATTACAACACCCTGGCATTATGGAGCCATTATGGTCCTTT  
GAAACATCGAGTCAGTACACCTCCATCTACTTCATATTAACAATCTAATGTTTGTGGGACCGTAATACCTCGGTAATACCAGGAAA

6715

CACNA1A

CACNA1A-201

CACNA1A-201

GTTATTTTGTGAATTACTCAGTTAATTAATTTATTTTTTAAATGTGATTAACACCCAGTAACCCACTAGTCCACACAAAACCTAA  
CAATAAAACACTTAATGAGTCAATTAATTAATAAAAAATTTACACTAATTGTGGGTCAATTGGGTGATCAGGTGTGTTTTGGATT

6800

CACNA1A

CACNA1A-201

CACNA1A-201

GTCCTGGAGAATAATCTACGTCCAATCCTTCTCATCGAACCCAGGGCAAAAACCTACAAGATGGAGATATGACCCAGCATTCCATTG  
CAGGACCTCTTATTAGATGCAGGTTAGGAAGAGTAGCTTGGTCCCCTTTTGTGATGTTCTACCTCTATACTGGGTGTAAGGTAAC

6885

CACNA1A

CACNA1A-201

CACNA1A-201

CTAGGAATTCATCCTAGAAAATCTCACCCAGATACCTAGGAGACACAGGCCAGAATGTCCCTGCAGCTGGAAGTGAAATTAAGGT  
GATCCTTAAGTAGGATCTTTTAGAGTGGGTCTATGGATCCTCTGTGTCCGGTCTTACAGGGACGTCGACCTTCACTTTAATTCCA

6970

CACNA1A

CACNA1A-201

CACNA1A-201

TGTTTCGCAAATAAGTGGAGAATGCCTGGCCAGGGCAGCCCTAATCATTTACCATAGTCCTGTTGGTCTCAGAAAAGGCTTAATAA  
ACAAGCGTTTATTACCTCTTACGGACCGGGTCCCGTCGGGATTAGTAAATGGTATCAGGACAACCAGAGTCTTTCCGAATTATT

7055

CACNA1A

CACNA1A-201

CACNA1A-201

TTTATTTATTTTTTTTTTATTTTTTGTTTTTATTTTTTGTTTTTGAGATGGAGTCTCGTTCTGTACCCAGGCTGGAGTGCGGTGG  
AAATAAATAAAAAAAAAAATAAAAAACAAAAATAAAAAACAAAAACTCTACCTCAGAGCAAGACAGTGGGTCCGACCTCACGCCACC

7140

CACNA1A

CACNA1A-201

CACNA1A-201

CGCCATCTCGGCTCACTGCAAGCTCCGCCTCCAGGTTCACTCCATTCTCCTGCCTCAGCCTCCCGAGTAGCTGGGACTACAGGT  
GCGGTAGAGCCGAGTGACGTTTCGAGGCGGAGGGTCCAAGTGAGGTAAGAGGACGGAGTCGGAGGGCTCATCGACCCTGATGTCCA

7225

CACNA1A

CACNA1A-201

CACNA1A-201

GCCCGCCATCATACTGGCTAATTTTTTGTATTTTTAGTAGAGATGGGGTTTCACCGTGTTAGCCAGGATGGTCTTGATCTCCTG  
CGGGCGGTAGTATGGACCGATTAAAAACATAAAAAATCATCTCTACCCCAAAGTGGCACAATCGGTCTTACCAGAACTAGAGGAC

7310

CACNA1A

CACNA1A-201

CACNA1A-201

ACCTCGTGATCCACCCGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACACCCAGCCAGCTTAATAATTTATA  
TGGAGCACTAGGTGGGCGGAACCGGAGGGTTTCACGACCCTAATGTCCGCACTCGGTGGTGTGGGTCGGTTCGAATTATTAATAT

7395

CACNA1A

CACNA1A-201

CACNA1A-201

ATAACTGAATGTTGTACTGTTTTCTGCCATTATAGAAAATTATGTTGTTGGAGAAAACAAAATACATACAAACAAGCAAACCTTC  
TATTGACTTACAACATGACAAAAGACGGTAATATCTTTTAATACAACAACCTCTTTTGTTTTATGTATGTTTGTTCGTTTGGAAAG

7480

CACNA1A

CACNA1A-201

CACNA1A-201

CCTACATAAATGACCCAAGTAGTTAAAGAATAAAACCAATTTCTTTCCATTAAAAAGAAAAGAAAGCCGGGTGTGATGCCTCATG  
GGATGTATTTACTGGGTTTCATCAATTTCTTATTTTTGGTTAAAGAAAGGTAATTTTTCTTTTCTTTTCGGCCACACTACGGAGTAC

7565

CACNA1A

CACNA1A-201

CACNA1A-201

CCTATAGCCTCAGCTATTCAGGAGGCTGAGGCAGCAGAATTGCTTGAGCCCAGGAGTTGAAAAACCAGCCCAGGCAACATAGCAAG  
GGATATCGGAGTCGATAAGTCCTCCGACTCCGTCGTCTTAACGAACTCGGGTCCTCAACTTTTTGGTCGGGTCCGTTGTATCGTTC

7650

CACNA1A

CACNA1A-201

CACNA1A-201

ACCCTGTCTCTACAAAAATTAATAATAATTAGCCAGGTGTGGTGGTGCACACCTGTAGCCCCAGCTACTCAGAAGGCTAAGGTGG  
TGGGACAGAGATGTTTTTAATTATTATTAATCGGTCCACACCACCACGTGTGGACATCGGGGTCGATGAGTCTTCCGATTCCACC

7735

CACNA1A

CACNA1A-201

CACNA1A-201

GAGGATTGCTTGAGCCCAGCAGTTTTGAGGCTGCAGTGAGCTATGATCACACCACTGCCCTCCAGCCTGGACAAGAGAGTGAGACC  
CTCCTAACGAACTCGGGTCGTCAAACCTCCGACGTCCTCGATACTAGTGTGGTGACGGGAGGTCGGACCTGTTCTCTCACTCTGG

7820

CACNA1A

CACNA1A-201

CACNA1A-201

CCATCTCTAAGAAATAAAAAGTAGGCCAGGCACAGTGGCTCACACCTATAATCCCAGCACTTTGAGAGGCGGAGGCAGGTGGATCA  
GGTAGAGATTCTTTATTTTCATCCGGTCCGTCACCGAGTGTGGATATTAGGGTCGTGAAACTCTCCGCCTCCGTCCACCTAGT

7905

CACNA1A

CACNA1A-201

CACNA1A-201

CCTGAAGTCAGGAGTTCAAGACCAGCCTGGCCAACATGGCGAAACCCGTCATACTAAAAAATACAAAAATTAGCCAGGCGTC  
GGACTTCAGTCCTCAAGTTCTGGTCGGACCGGTTGTACCGCTTTGGGGCAGATATGATTTTTTTATGTTTTTAAATCGGTCCGCAG

7990

CACNA1A

CACNA1A-201

CACNA1A-201

GTGGCACATGCCTGTAATCCCAGCTACTTGGGAGGCTGAGGAAGGAGAATCACTTGAAGTGGGGAGGCAGAGGTTGCAGTAAGCT  
CACCGTGTACGGACATTAGGGTCGATGAACCCTCCGACTCCTTCTCTTAGTGAAGTTGACCCCTCCGTCTCCAACGTCATTCTGA

8075

CACNA1A

CACNA1A-201

CACNA1A-201

GAGATTGCACCACTGCACTCCAGCCTGGGTGACAGAATGAGACTCCGTCTCAAAAAAAAAAAGAAAAATTTTAAAATGTCCTG  
CTCTAACGTGGTGACGTGAGGTCGGACCCACTGTCTTACTCTGAGGCAGAGTTTTTTTTTTTTCTTTTTAAAATTTTACAGGAC

8160

CACNA1A

CACNA1A-201

CACNA1A-201







AGTAGCTGGGACTATAGGCACATGCCACCATGCTTGACTAATTTTTTTTTTTTTTTTTGTAAGTCAGGGTTTCCCTGTGTTACCCAG  
TCATCGACCCTGATATCCGTGTACGGTGGTACGAACTGATTAACAAAAAAAAAAAAACATTTTCAGTCCCAAAGGGACACAATGGGTC

9435

CACNA1A

CACNA1A-201

CACNA1A-201

GCTGGTCTTGAACCTCCTGGGCTCAAGTGATCTGCCACCTCGGCCTCCCAAAGTTCCAGAATTACAGGCATGAGCCACTGCCCTA  
CGACCAGAACTTGAGGACCCGAGTTCCTAGACGGGTGGAGCCGGAGGGTTTCAAGGTCTTAATGTCCGTAICTGGTGACGGGAT

9520

CACNA1A

CACNA1A-201

CACNA1A-201

GCCTTCTCCTAATTGTTGACATAGGTAGTAGTTGCATGACATTCACCTTTGTAATTATGTGTTTTAGGAATTCTCAGGCCTGTGGG  
CGGAAGAGGATTAACAACCTGTATCCATCATCAACGTACTGTAAGTGAAACATTAATACACAAAGTCCCTTAAGAGTCCGGACACCC

9605

CACNA1A

CACNA1A-201

CACNA1A-201

AGCTCTTAATAAATAAAAAAGAGGCCAGGTGTGGTGGCTCACGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGCAGGCCGGATCA  
TCGAGAATTATTTATTTTTCTCCGGTCCACACCACCGAGTGCGGACATTAGGGTCGTGAAACCTCCGGCTCCGTCCGCCTAGT

9690

CACNA1A

CACNA1A-201

CACNA1A-201

CGAGGTCAGGAGTTTCGAGACTAGCCTGGCCAACACAGTGAAACCCCGTCTCTACTAAAAATACAAAAAATTAGCCGGGCGTGGTG  
GCTCCAGTCCTCAAGCTCTGATCGGACCGGTTGTGTCACCTTTGGGGCAGAGATGATTTTTATGTTTTTTAATCGGCCCGCACCCAC

9775

CACNA1A

CACNA1A-201

CACNA1A-201

GCGGGTGCCTGTAATCCCAGTTACTTGGGAGGCTGAGGCAGGAGAATCGCTTGAACCTGGGAGGCCGAGGTTGCAGTAAGCTGAG  
CGCCACGGACATTAGGGTCAATGAACCTCCGACTCCGTCTCTTAGCGAACTTGGACCCTCCGCCTCCAACGTCATTCGACTC

9860

CACNA1A

CACNA1A-201

CACNA1A-201

ATCGCGCCACTGCACACCAGCCTGGGTGATAAGAGCAAGACTCCATCTCAAAATAAATGAATAAATAAAAAATAAATAAATAAATA  
TAGCGCGGTGACGTGTGGTCCGACCCACTATTCTCGTTCTGAGGTAGAGTTTTATTTACTTATTTATTTTTATTTATTTATTTAT

9945

CACNA1A

CACNA1A-201

CACNA1A-201

AGAGGCCGGGTGCAGTGGCTCAATGCTTTGGAAAAGTGGAGGCCAACAGTTGGAGAGACCAAAGCAGGAGGATGGCTTCAGCCCAAG  
TCTCCGGCCACGTCACCGAGTTACGAAACCTTTACCTCCGGTTGTCAACCTCTCTGGTTTCGTCTCTACCGAAGTCGGGTC

10,030

CACNA1A

CACNA1A-201

CACNA1A-201

AAGTTTGAGGCCAGCCTGGGCAATACTAGCGAGACACTATCTCTATAAAAATGTTTTAAAATTAGCCAGATGTGGTGGGGCACAC  
TTCAAACCTCCGGTCGGACCCGTTATGATCGCTCTGTGATAGAGATATTTTTACAAAATTTAATCGGTCTACACCACCCCGTGTG

10,115

CACNA1A

CACNA1A-201

CACNA1A-201

CTGTAATCCCAGCTACTCAAGAGGCTGAGGTGGGAGGATCACTTAAGCCAGGAGGACAGTGCTGCAGTGAGCTATGATTGCGCC  
GACATTAGGGTCGATGAGTTCTCCGACTCCACCCTCCTAGTGAATTCGGGTCTCTGTGCACGACGTCACCTCGATACTAACGCGG

10,200

CACNA1A

CACNA1A-201

CACNA1A-201

PCR Forward

G A A T G G A T G A A T G A G G G G G T C A A G G

ACTGCACTCCAGCCTGGGTGACACAGTGAGACCCGGTCTCTATAGATAAATGAATGGATGAATGAGGGGGTCAAGGATCCTCACC  
TGACGTGAGGTCGGACCCACTGTGTCACTCTGGGCCAGAGATATCTATTTACTTACCTACTTACTCCCCAGTTTCTAGGAGTGG

10,285

CACNA1A

CACNA1A-201

CACNA1A-201

Sanger Sequencing

A A T G C T T G C C A G T T C T G G A G

CGGCTTCATTTGGAGGGAGGAGTTTGGTTGAGTTCTTGCAAGGTTGGTACCTAGGAAATGCTTGCCAGTTCTGGAGCCAGACA  
GCCGAAGGTAAACCTCCCTCCTCAAACCAACTCAAGAACGTTCCAACCATGGATCCTTTACGAACGGTCAAGACCTCGGGTCTGT

10,370

CACNA1A

CACNA1A-201

CACNA1A-201

CTGTCCCTGGACATGAGACCAGGTTCTCTGCCCTAGGTTATCATTGGGAGCATCTTCGAGGTCATCTGGGCTGTCATAAACCTG  
GACAGGGACCTGTA CTCTGGTCCAAGAGACGGGATCCAATAGTAACCCTCGTAGAAGCTCCAGTAGACCCGACAGTATTTTGGAC

10,455

CACNA1A

CACNA1A-201

CACNA1A-201

V I I G S I F E V I W A V I K P

ENSE00001247101

Donor Template SNV -> REV

G A C

Donor Template SNV -> REV

gRNA Protospacer

TCAGCGTGTACAGCCCTC

GCACATCCTTTGGAATCAGCGTGTACAGCCCTCAGGTTATTGCGTATTTTCAAAGTCACAAAGTAAGTCTTTGGGGTTCTGG  
CGTGTAGGAAACCTTAGTCGCACAATGCTCGGGAGTCCAATAACGCATAAAAGTTTCAGTGTTCATTTCAGAAACCCCAAGGACC

10,540

CACNA1A

CACNA1A-201

G T S F G I S V L R A L R L L R I F K V T K

ENSE00001247101

CACNA1A-201

Donor Template SNV -> REV

Protospacer Sequence

PAM

SNV

CGTGTAGGAAACCTTAGTCGCACAATGCTCGGGAGTCCAATAACGCATAAAAGTTTCAGTGTTCATTTCAGAAACCCCAAGGACC

Donor Template SNV -> REV

ACATTTGTACAGGGGGTGGGGATGGGGGACATGGTGGGGCCGCCTCCAGAAAGTTGGGAAAGTGAGCCTCGTGTTCGAGGGCTG  
TGTAACATGTCCCCACCCCTACCCCTGTACCACCCCGGC6GAGGTCTTTCAACCCTTTCACTCGGAGCACAAAGCTCCCGAC

10,625

CACNA1A

CACNA1A-201

CACNA1A-201

Donor Template SNV -> REV

TGTAACATGTC

Donor Template SNV -> REV

ACTCCGGGGCCCTGCCTCCCCGCCTGGCCTGAGTCCTCGCCTGGCCTCTGTGCGGAGGTACTGGGCATCTCTCAGAAACCTGGT  
TGAGGCCCGGGACGGAGGGGGCGGACCGGACTCAGGAGCGGACCGGAGACAGCCGTCCATGACCCGTAGAGAGTCTTTGGACCA

10,710

CACNA1A

CACNA1A-201

CACNA1A-201

Y W A S L R N L V

ENSE00001697204

CGTCTCTCTCCTCAACTCCATGAAGTCCATCATCAGCCTGTTGTTTCTCCTTTTCTGTTTCATTGTCGTCTTCGCCCTTTTGGGA  
GCAGAGAGAGGAGTTGAGGTACTTCAGGTAGTAGTCGGACAACAAAGAGGAAAAGGACAAGTAACAGCAGAAGCGGGAAAACCT

10,795

CACNA1A

CACNA1A-201

V S L L N S M K S I I S L L F L F I V V F A L L G

ENSE00001697204

CACNA1A-201

ATGCAACTCTTCGGCGGCCAGTAAGTCTTCACAGGAATTCAACTCCTGGTTCCCTGGGGTCAGGCTCAGGGAACACACAGTCC  
TACGTTGAGAAGCCGCCGGTCAATTCAGGAAGTGTCTTAAGGTTGAGGACCAAGGGACCCAGTCCGAGTCCCTTGTGTGTCAAG

10,880

CACNA1A

CACNA1A-201

M Q L F G G Q

ENSE00001697204

CACNA1A-201

CCTCCACCGTGACAGGCTGCCTTCCTCGTAGCCACAGACACCCATTGCGGTCACCCAAATGGGCAGGGCCCTGGGTACCACTCAGGG  
GGAGGTGGCACGTCCGACGGAAGGAGCATCGGGTCTGTGGGTAACGCCAGTGGGTTTACCCGTCCCGGGACCCATGGTGAGTCCC

10,965

CACNA1A

CACNA1A-201

CACNA1A-201

TTTCCTGGGGACAGAGATGATGGAGACGTTTCGTTTCCTTGGAGATGAGATACTGAGCCACACCCCTCAGAGCACCCCGGGTGGGGC  
AAAGGACCCCTGTCTCTACTACCTCTGCAAGCAAAGGAACCTCTACTCTATGACTCGGTGTGGGAGTCTCGTGGGGGCCACCCCG

11,050

CACNA1A

CACNA1A-201

CACNA1A-201

CAACGTGAAATGTCTGTGTCTCCCTGCAGGTTTAATTTTCGATGAAGGGACTCCTCCACCAACTTCGATACTTTTCCAGCAGCA  
GTTGCACTTTACAGACACAGGAGGGACGTCCAAATTAAGCTACTTCCCTGAGGAGGGTGGTTGAAGCTATGAAAAGGTCGTCGT

11,135

CACNA1A

CACNA1A-201

F N D E G P P T N F D T F P A A  
ENSE00001247082

CACNA1A-201

ATAATGACGGTGTTCAGGTACAGCCTCCACCTGGCCCCACGGGCCAACACCTCTCAGTGTACAGATGAAAGTGCCTGCTCCAC  
TATTACTGCCACAAAGTCCATGTTCGGAGGTGGACCGGGGTGCCCGGTTGTGGAGAGTACAGTGTCTACTTTACGGACGAGGGTG

11,220

CACNA1A

CACNA1A-201

I M T V F Q  
ENSE00001247082

CACNA1A-201

GCCACAAAGTCCATGTTCGGAGGTGG  
PCR Reverse

ATCCAAGGGGCTTCCCTGAACTCCTCCTTCTCTACCTGGCCTTTTTCACACCACTTTGAAACACAGATTTTATGGTTATCATTATT  
TAGGTTCCCCGAAGGGACTTGAGGAGGAAGAGATGGACCGGAAAAGTGTGGTGAACTTTGTGTCTAAAATACCAATAGTAATAA

11,305

CACNA1A

CACNA1A-201

CACNA1A-201

CAATTATGGTGAGGCCAACAGATCAGGAGATGAATGTCATTGGAAAGATAGTTTGTGGCTGGGCACGGTGGCTCACACCCATAAT  
GTTAATACCACTCCGGTTGTCTAGTCTCTACTTACAGTAACCTTTCTATCAAACACCGACCCGTGCCACCGAGTGTGGGTATTA

11,390

CACNA1A

CACNA1A-201

CACNA1A-201

CCCAGCACTTTGGCCAGGTACGGTGGCTCACACCTGTAATCCCAACGCTTTGGGAAGCCAGGTGGGCGGATCACTTGAGATCAG  
GGGTCGTGAAAACCGGTCCATGCCACCGAGTGTGGACATTAGGGTTGCGAAAACCTTCGGGTCCACCCGCCTAGTGAACCTCTAGTC

11,475

CACNA1A

CACNA1A-201

CACNA1A-201

GAATTCGAGACCAGCCTGGCCAACATGGTGAAACCCCATCTCTACTAAAAATACAAAAATTAGCCGGGCGTGTTAGCACATGCCT  
CTTAAGCTCTGGTCGGACCGGTTGTACCACTTTGGGGTAGAGATGATTTTTTATGTTTTTAATCGGCCCGCACCATCGTGACGGA

11,560

CACNA1A

CACNA1A-201

CACNA1A-201

GTAATCCCAGCTACTCGGGAGATGAGGCACAAGAATTGCTTGAACCTGGGAGGCAGAGGTTGCAGTGAGCCAAGATCGCGCCACT  
CATTAGGGTCGATGAGCCCTCTACTCCGTGTTCTTAACGAACTTGGACCCCTCCGTCTCCAACGTCCTCGGTTCTAGCGCGGTGA

11,645

CACNA1A

CACNA1A-201

CACNA1A-201

GCACTCCAGCCTGGGCAACAGAGTGAGACTCCATCTCAAAAAAGAAAAAGAAAAAACCCTTTGGGAGGTCAAGATGGGAG  
CGTGAGGTCGGACCCGTTGTCTCACTCTGAGGTAGAGTTTTTCTTTTTCTTTTTTTTTTGGTGAAACCCCTCCAGTTCTACCCTC

11,730

CACNA1A

CACNA1A-201

CACNA1A-201

GACTACTTGAGGCCAGGAGTTTGAGACAAGTCTGGGCAACATAGTGAGACTCCGTCTCTGCAAAAAATAATAATAAATTAGC  
CTGATGAACTCCGGTCCTCAAACCTCTGTTTCAGACCCGTTGTATCACTCTGAGGCAGAGACGTTTTTTTATTATTATTAAATCG

11,815

CACNA1A

CACNA1A-201

CACNA1A-201

TGGGCATGGTGATACATACCTCCTAGCTACTAGGGCAGCTGAAGTGGAAGGATTGCTTGAGCCAGGAGGTTGAGGCTGCAGTAA  
ACCCGTACCACTATGTATGGAGGATCGATGATCCCGTCGACTTCACCTTCCTAACGAACTCGGGTCCTCCAACCTCCGACGTCATT

11,900

CACNA1A

CACNA1A-201

CACNA1A-201

GCTACAATCACACCACTATACTCCAGCCTGGGCGAGAGAGCAAAGCCCTGTCTCAAAAACGAAAAGAAAGTTTGTATACTCACA  
CGATGTTAGTGTTGGTGATATGAGGTCGGACCCGCTCTCTCGTTTCGGGACAGAGTTTTTGTCTTTCTTTCAAACAATATGAGTGT

11,985

CACNA1A

CACNA1A-201

CACNA1A-201

GATCCTCAGAGAAGGAGCACACCATGCAGGACCAAGCAGAGAAGCAACAGGGTCAAGCAGGAAGAGAAGGAAAATGTGGGCAAGA  
CTAGGAGTCTTCTCCTCGTGTTGGTACGTCCTGGTTTCGTCTCTTCGTTGTCCAGTTCGTCTTCTCTTCTTTTACACCCGTTCT

12,070

CACNA1A

CACNA1A-201

CACNA1A-201

GGCTTGATTGTGGTTTCCATGGGACGGAATGGGTGAGGCAGAGTAAACAGCTCGAGACTGGCTAGTTTGGATCATTTCAGTGGGC  
CCGAACTAACACCAAAGGTACCCTGCCTTACCCACTCCGTCTCATTTGTGCGAGCTCTGACCGATCAAACCTAGTAAAGTCACCCG

12,155

CACNA1A

CACNA1A-201

CACNA1A-201

TCTGGGGCAGAGGAGCTGTTTCTACTTGTCTAGGACCTGGCCTTGGGGTGATTAGGGCAGGTGGATAGTGCTGGGAAGATAAAGG  
AGACCCCGTCTCCTCGACAAGGATGAACAGATCCTGGACCGGAACCCCACTAATCCCGTCCACCTATCACGACCCCTTCTATTTCC

12,240

CACNA1A

CACNA1A-201

CACNA1A-201

AGGTGGTTGGGATATGGGCTGGTTGGGATATTGTTTGGTTTGTCTTTTAAAAAGCCTGCTCAGGGCTAAATTGTTTACTACCTCTA  
TCCACCAACCCTATACCCGACCAACCCTATAACAAACCAAACGAAAATTTTTCGGACGAGTCCCGATTTAACAAATGATGGAGAT

12,325

CACNA1A

CACNA1A-201

CACNA1A-201

GGGACTGGCTAGTGCTGGACCGGGCAGTCCCTCCAGAGTCAAGCAAGACCCAGATGCATCAGAATAAAGAAAAATAAAATGCGTG  
CCCTGACCGATCACGACCTGGCCCGTCAGGGAGGTCTCAGTCGTTCTGGGGTCTACGTAGTCTTATTTCTTTTATTTTACGCACC

12,410

CACNA1A

CACNA1A-201

CACNA1A-201

CCAGGCCAATGAGGTGGTTCATGCCTGTAATCTCAGCACTTTGGGAGACCAAGGCGGGAGGATTGCTTGAGCCAGGAGTTCAAG  
GGTCCGGTTACTCCACCAAGTACGGACATTAGAGTCGTGAAACCCTCTGGTTCCGCCCTCCTAACGAACTCGGGTCTCTCAAGTTC

12,495

CACNA1A

CACNA1A-201

CACNA1A-201

GCTGCCGTGAGCTCCAGCCTGCACCACAGAGCAAGGCCCTGTCTCTTAAAAAAGGCAGAGAAAAAATGGCTAATACACCCA  
CGACGGCACTCGAGGTCGGACGTGGTGTCTCGTTCCGGGACAGAGAATTTTTTTTCCGTCTCTTTTTTTTACCATTATGTGGGT

12,580

CACNA1A

CACNA1A-201

CACNA1A-201

TCAAATCTGAAGATACCTTGGTCTCATATTCCAGGGTGATCAACCCAAAGCAACTTCTGCACCCATGTGGGCGCATTCCCTGAGG  
AGTTTAGACTTCTATGGAACCAAGAGTATAAGGTCCCACTAGTTGGGTTTCGTTGAAGACGTGGGTACACCCGCGTAAGGGACTCC

12,665

CACNA1A

CACNA1A-201

CACNA1A-201

CTTGGGACTGGCCACGCCGGGACCTTCAGAGCATCTTTGGTGGATTCTTTCTCTTTGAGGGACTGAGAGTGTATAGAAAATGTGA  
GAACCCTGACCGGGTCGGCCCTGGAAGTCTCGTAGAAACCACCTAAGAAAGAGAAACTCCCTGACTCTCACATATCTTTTACACT

12,750

CACNA1A

CACNA1A-201

CACNA1A-201

CTTCACTCTCTCCTTCTCCTGGGGAGGTAGTTTCTAAATGAGACCCCAAGACAGGGAGTTGAAGAGGAAACCTTCCATGAAGGGA  
GAAGTGAGAGAGGAAGAGGACCCCTCCATCAAAGATTTACTCTGGGGTTCTGTCCCTCAACTTCTCCTTTGGAAGGTA

12,835

CACNA1A

CACNA1A-201

CACNA1A-201

AGTTCTGAGCCCCACATAAGCGATTTTTTTTTTTTTTTTTTGGAGATGGAGTCTCGCTCTGTTGCCAGGCTGGAGTGCGACGGCAC  
TCAAGACTCGGGGGTGTATTTCGCTAAAAAAAAAAAAAAAAA

12,920

CACNA1A

CACNA1A-201

CACNA1A-201

GTTCTTGGCTCACTACAACCTCTGCCTCCTGGGTTCAAGCGATTCTCCTGCCTCAGCCTCCCGAGTAGCTGAGACTACAGGTGCA  
CAAGAACCGAGTGATGTTGGAGACGGAGGCCAAGTTTCGCTAAGAGGACGGAGTCGGAGGGCTCATCGACTCTGATGTCCACGT

13,005

CACNA1A

CACNA1A-201

CACNA1A-201

TACTACCATGCCTGGCTAATTTTTGTATTTTTAGTAGAGACAGGGTTTCACTATGTTGGCCAGGCTGGTCTCGAACTCCTGGCCT  
ATGATGGTACGGACCGATTAAAAACATAAAAAATCATCTCTGTCCCAAAGTGATACAACCGGTCCGACCAGAGCTTGAGGACCGGA

13,090

CACNA1A

CACNA1A-201

CACNA1A-201

CGTGATCTGCCTGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCATGAGCCACCACACCTGGCCATAAGCGATTATTAATAGC  
GCACTAGACGGACGGAGCCGGAGGGTTTACGACCCTAATGTCCGTA

13,175

CACNA1A

CACNA1A-201

CACNA1A-201

ACTGATCGCTAGTCATGTATCTTTAGCTCAGAGGTTCTCACCCAAGGACAAGTCTGTCCTCCAAGGACATGTAGCAATGTCTGCA  
TGACTAGCGATCAGTACATAGAAATCGAGTCTCCAAGAGTGGGTTCTGTTTCAGACAGGAGGTTTCTGTACATCGTTACAGACGT

13,260

CACNA1A

CACNA1A-201

CACNA1A-201

AGCATTGTTGGTTGTCACAGCTAGGGAGAGGGGTGCTACTGGCATCTGGTGGGTGGAGACTAGGAATGCTGCTCAATATCCTACAA  
TCGTAACAACCAACAGTGTGATCCCTCTCCACGATGACCGTAGACCACCCACCTCTGATCCTTACGACGAGTTATAGGATGTT

13,345

CACNA1A

CACNA1A-201

CACNA1A-201

TGCACAGGACAGCCCCAAATAGAATAATCTGGCCCCAAATATCAGCAGTGCTGAGGCTTAGAAACCTGTTTTAGCAGATTCATG  
ACGTGTCCTGTGCGGGGTTTATCTTATTAGACCGGGGTTTATAGTCGTACGACTCCGAATCTTTGGGACAAAATCGTCTAAGTAC

13,430

CACNA1A

CACNA1A-201

CACNA1A-201

TTTTTGGAGTTCCTTAACATTTACTTTATCCTCATGGGGATATGGATAGAAGGAAGGAAGTTGGATCTTTTTTAAAGGAGCATGT  
AAAAACCTCAAGAAATTGTAAATGAAATAGGAGTACCCCTATACCTATCTTCTTCTTCAACCTAGAAAAAATTTCTCGTACA

13,515

CACNA1A

CACNA1A-201

CACNA1A-201

AGGTGCTGTTTGAATATCCCCTTGGTTCTTTTCAGTATGCATCAGCACAACCTTGCCTGTGCAACACCTAATCCTTTGCCTTGGTC  
TCCACGACAACTTATAGGGGAACCAAGAAAGTCATACGTAGTCGTGTTGAACGCAGACAGTTGTGGATTAGGAAACGGAACCAG

13,600

CACNA1A

CACNA1A-201

CACNA1A-201

TTTCTCTGGTCCCCTGCTCTGCCCCCAAGGAACTGCAGTCCAGCAGTACTGTGAATTTTTTGTGCCACACCTTAAAAGGAGCAGC  
AAAGAGACCAGGGGACGAGACGGGGGTTTCTTGACGTGAGGTCGTGATGACACTTAAAAAACACGGTGTGGAATTTTCTCGTCG

13,685

CACNA1A

CACNA1A-201

CACNA1A-201

CGTTGGTGGATAAATACCCAGCTCCCTCACCTCAGGTGGGATGACCCCTAGAGCTCCCCAGCAAGACCAAGCCCCGGTTACCT  
GCAACCACCTATTTATGGGGTCGAGGGAGTGGGAGTCCACCCTACTGGGGATCTCGAGGGGTCGTTCTGGTTCCGGGGCCAATGGA

13,770

CACNA1A

CACNA1A-201

CACNA1A-201

ACAGTGGAAACTCGCTTGATCACATACTGTTTACGTTCCACCCTCTTTTCCCTTTTCTCACTTCTCCTCTCCCCTACTGGTGCTT  
TGTCACCTTTGAGCGAACTAGTGTATGACAAATGCAAGGTGGGAGAAAAGGGAAAAGAGTGAAGAGGAGAGGGGATGACCACGAA

13,855

CACNA1A

CACNA1A-201

CACNA1A-201



CCTGAGATCACCTCCCAGACAAACCCTTGCACCCGAACCTTGTTCAGGGTCTGCCTCAGGCAGGGGGACCCCAAACGTGTCC  
GGACTCTAGTGGAGGGTCTGTTTGGTGAACGTGGGCTTGGGAACAAGGTCCCAGACGGAGTCCGTCCCCCTGGGGTTTGCACAGG

13,940

CACNA1A

CACNA1A-201

CACNA1A-201

TTGTGCTACATTTGTGCTATCCACGTAGTAGCTTGTTTAATCATCACCATGACCACATGAGGAACACAGGTAAATATTTAAATCC  
AACACGATGTAAACACGATAGGTGCATCATCGAACAAATTAGTAGTGGTACTGGTGTACTCCTTGTGTCCATTTATAATTTTAGG

14,025

CACNA1A

CACNA1A-201

CACNA1A-201

TGTCTTAGTCTGCTCAGGCAGCCATAACAAAATACCACACACTGGGTGGCTTATACAGGAAACATTTATTCTCTCATAGTTCTGG  
ACAGAATCAGACGAGTCCGTTCGGTATTGTTTTATGGTGTGTGACCCACCGAATATGTCTTTGTAAATAAGAGAGTATCAAGACC

14,110

CACNA1A

CACNA1A-201

CACNA1A-201

AGGCCGGGAAGTCCAAGATCAAAGTGTTAGCAGGGTTAGTTAGTTCTGGTGAGGGCCCTCTTCCTAGCTTGCAGATAGCCACCT  
TCCGGCCCTTCAGGTTCTAGTTTCACAATCGTCCCAATCAATCAAGGACCACTCCCGGGAGAAGGATCGAACGTCTATCGGTGGA

14,195

CACNA1A

CACNA1A-201

CACNA1A-201

TCTTGCTGTGTCTCATATGTCAAAGAGAGAGAGAGAGAGATTGTGATGTTTCTTCTGTTCTTTTTTTTTTTTTTTTTTTGAGAC  
AGAACGACACAGGAGTATACAGTTTCTCTCTCTCTCTCAACACTACAAAGAAGGACAAGAAAAAAAAAAAAAAAAAAAACTCTG

14,280

CACNA1A

CACNA1A-201

CACNA1A-201

AAAAATCTCAAAAAAAAAATCTATTTTTTTTTTAGGCAAATCACATTTTTTTTGTACCCAGCCTGGAGTGCAGTGGCACAATCATA  
TTTTTAGAGTTTTTTTTTTAGATAAAAAAAAAAATCCGTTTAGTGTAACAAAAACAGTGGGTTCGGACCTCACGTACCCTGTTAGTAT

14,365

CACNA1A

CACNA1A-201

CACNA1A-201

GCTCACTGCAGCCTCAAACCTCCTAGGTTCAAACGATCCTCCACCTCAGCCCTTGGAGTAGCTGGGACTACAGATGGGCACCAGC  
CGAGTGACGTTCGGAGTTTGGAGATCCAAGTTTGTAGGAGGGTGGAGTTCGGGGAACCTCATCGACCCTGATGTCTACCCGTGGTTCG

14,450

CACNA1A

CACNA1A-201

CACNA1A-201

TAATTTTTTTTAAATTTTTTGTAAAGATGGGGTCTTGCTATATTGCCAGGCTAATCTTGAACCTCTGGGCTCAAGTGATCCTCCC  
ATTAATAAATTTTAAAAAACATTTCTACCCAGAACGATATAACGGGTCCGATTAGAACTTGAGGACCCGAGTTCACTAGGAGGG

14,535

CACNA1A

CACNA1A-201

CACNA1A-201

ACCTTGCCCTCCCAAAGTGCTGGGATTACAGGCATGAGCCATGGCATGCGGTCTCTTCCTGTTCTTATAAGGGCACTAATACCAT  
TGGAACCGGAGGGTTTCACGACCCTAATGTCCGTA CT CGGTACCGTACGCCAGAGAAGGACAAGAATATTTCCCGTGATTATGGTA

14,620

CACNA1A

CACNA1A-201

CACNA1A-201

CATGAAGTCCCCCATGACCTCATCTAACCCCTAGTTACCTCTTAAAGGCCCCATCTCCAAATACCATCCCATCATAGGTTAGGGCT  
GTACTTCAGGGGGTACTGGAGTAGATTGGGATCAATGGAGAATTTCCGGGGTAGAGGTTTATGGTAGGGTAGTATCCAATCCCGA

14,705

CACNA1A

CACNA1A-201

CACNA1A-201

TCAACTCATGAATTTGGAGGCGGGCACAATTTAGTCCATAACAAATCCCCTTAATCACATCAAGTAAGACAGAGTTACAGGAGGG  
AGTTGAGTACTTAAACCTCCGCCCGTGTAAATCAGGTATTGTTTAGGGGAATTAGTGAGTTTATTCTGTCTCAATGTCTCTCC

14,790

CACNA1A

CACNA1A-201

CACNA1A-201

TCTGTGACTCCTCCAGGGTCCCATTTTCTAGAAAGCCAGGCTAAGAGCCCCACGACGCAGGAACGGCCCTTTCTACTCGCAAACA  
AGACACTGAGGAGGTCCCAGGGTAAAAGGATCTTCGGTCCGATTCTCGGGGTGCTGCGTCTTGCCGGGAAAGATGAGCGTTTTGT

14,875

CACNA1A

CACNA1A-201

CACNA1A-201

AAGAGAAAAGCCAAGGAGAAGCCAACACGGAGTCTGGCTCTGCAAACCGGGCAGGATTGTTAAAGACCTCCTGGGCTCGGGGATG  
TTCTCTTTTCGGTTCTCTTCGGTTGTGCCTCAGACCGAGACGTTTGGCCCGTCTAACAATTTCTGGAGGACCCGAGCCCTAC

14,960

CACNA1A

CACNA1A-201

CACNA1A-201

GGGTGGGCGGATTCCGGCTCCACAGCTGCATCTCCAAGGGGCCCGTGGCTGAGAGGGGGTTGGCTGTGTGTTTCTTCTCCCT  
CCCACCCGCCTAAGGCCGAGGTGTGACGTAGAGGTTCCCGGGCACCGACTCTCCCCCAACCGACACACAAAGAAGGAGGGGA

15,045

CACNA1A

CACNA1A-201

CACNA1A-201

TTCAGATCCTGACGGGGCAAGACTGGAACGAGGTCATGTACGACGGGATCAAGTCTCAGGGGGGCGTGCAGGGCGGCATGGTGTT  
AAGTCTAGGACTGCCCGCTTCTGACCTTGCTCCAGTACATGCTGCCCTAGTTTCAGAGTCCCCCGCACGTCGCCCGTACCACAA

15,130

CACNA1A

CACNA1A-201

I L T G E D W N E V M Y D G I K S Q G G V Q G G M V F  
ENSE00000951011

CACNA1A-201

CTCCATCTATTTTCATTGTA CTGACTGACGCTCTTTGGGAAC TGTATCCTTCATGGAGAGAGAGAAGGGGACAGGCCTGGACCTCTGGCA  
GAGGTAGATAAAGTAACATGACTGCGAGAAACCCCTTGACATAGGAAGTACCTCTCTCTCTTCCCTGTCCGGACCTGGAGACCGT

15,215

CACNA1A

CACNA1A-201

690 S I Y F I V L T L F 700  
ENSE00000951011

CACNA1A-201

GAGGAGAGGTTGCAGGGGCTCAAGGGAGGGTACTGAGAGACCCAGATACCCAGGGCCCAAGTGGTGTCCCACCAAGTGGTTGCTTT  
CTCCTCTCCAACGTCCCCGAGTTCCTCCCATGACTCTCTGGGTCTATGGGTCCC GGTTACCACAGGGTGGTACCAACGAAA

15,300

CACNA1A

CACNA1A-201

CACNA1A-201

TCCTGACTCAGACATTTGCAGACACCCCTCCTGAATGTGTTCTTGGCCATCGCTGTGGACAATCTGGCCAACGCCCAGGAGCTCAC  
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15,385

CACNA1A

CACNA1A-201

Y T L L N V F L A I A V D N L A N A Q E L T  
ENSE00001660630

CACNA1A-201

CAAGGTGGAGGCGGTGGGAGAATGTTTCTCTGGCAAAGTTACCACCTGCCCATGGCAGATCAGGACGGGGGTGGGGGTGGGGGTG  
GTTCCACCTCCGCCACCCTCTTACAAAGAGACCGTTC AATGGTGGACGGGTACCGTCTAGTCCTGCCCCACCCCAACCCCAAC

15,470

CACNA1A

CACNA1A-201

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GGGGTGGGGGTGGGGGCATGGGAACAGGGTTAGAACTTTTGCCGGGGATGCACCATGCAAAGAGAAGGCGCCTCTCCCCCACTC  
CCCCACCCCAACCCCGTACCCTTGTCCTCAATCTTGAAAACGGCCCTACGTGGTACGTTTCTCTTCCGCGGAGAGGGGGGTGAG

15,555

CACNA1A

CACNA1A-201

CACNA1A-201

CCAGAAACAGACTGTCCCTCATCAAGCAAATTCTACAGCCAAGAGGGTGGGAAGGGGGAAGGCAGTGAGGTCGCTGCAGGAAACG  
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15,640

CACNA1A

CACNA1A-201

CACNA1A-201

GATGGCAAACCTCAACCAAAAAGGCCGTTTACAGGGGAGTAAGCAGGGTTCCTCAAGGAATGGTGTAGCCCCCAGGCTAGTGGATGGGA  
CTACCGTTTGGATTGGTTTTCCGGCAAATGTCCCTCATTTCGTCCCAAAGGTTCTTACCACATCGGGGGTCCGATCACCTACCCT

15,725

CACNA1A

CACNA1A-201

CACNA1A-201

GAGGGAGTGCTGTTATGGGGACCCAGTCAGAGCTGGGGCCAAGGAAAAAGGGCTGCCACCAGCCCTGGGACCTTAGAGAACCCAG  
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15,810

CACNA1A

CACNA1A-201

CACNA1A-201

AACCATGGCAAGGCACAGATGGAGTGGCCAATAAATGTCCCCACCTTCTCTCTTCCCTCTGGCTTCCCGCTGGAGCCTCCCTTAG  
TTGGTACCGTTCCGTGTCTACCTCACCGGTTATTTACAGGGGTGGAAGAGAGAAGGAGACCGAAGGGCGACCTCGGAGGGGAATC

15,895

CACNA1A

CACNA1A-201

CACNA1A-201

CCAAACGCAGCATGTTAAGAGCTAGCCTCCGTCCAGCCTAAGCCTCTCCCCAAGGACCCTATTAAGTTAAGATTACATGTAACAG  
GGTTTGCCTCGTACAATTCTCGATCGGAGGCAGGTCGGATTTCGGAGAGGGGTTCTGGGATAATTCAATTCTAATGTACATTGTC

15,980

CACNA1A

CACNA1A-201

CACNA1A-201

GTACAGGGTCTTCCCTCTCAGCCCTGGGGTCTCCCTCAGCATTGCAGCCCCACCTCCAGTGCCTCGAGGTATTCAGGACATGTTTG  
CATGTCCCAGAAGGAGAGTCCGGGACCCAGAGGGAGTTCGTAACGTTCGGGGTGGAGGTCACGGAGCTCCATAAGTCTGTACAAAC

16,065

CACNA1A

CACNA1A-201

CACNA1A-201

TGAAATTGAACCAAAACCAAGCAGACGTTGCCAACGCTCCATCTGCCGGCCCTGGCAGGAGGGAGAGAGATTTCCCGGCCCCAGC  
ACTTTAACTTGGTTTGGTTCGTCTGCAACGGTTGCGAGGTAGACGGCCGGGACCGTCCTCCCTCTCTCTCAAAGGGCCGGGGTTCG

16,150

CACNA1A

CACNA1A-201

CACNA1A-201

TCCCAGTGGAGGGAAGCGGAAGTCTCTGCCATCCCAAGCACACGGCCACAAGCCTGGCCACTGTGGAGCTGGCTGGCATGGCTGA  
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16,235

CACNA1A

CACNA1A-201

CACNA1A-201

GCCGAGGGGCTGATCCAGCCATGAGCTCATCCAAGTTCCAAGAGTCCATCCTTAGGGGGCTGGTGCAGGAGGGGTAGCAGAAGGGGGAG  
CGGCTCCCGACTAGGTCGGTACTCGAGTAGGTTCAAGGTTTCTCAGGTAGGAATCCCCGACCACGTCTCTCCCATCGTCTTCCCCTC

16,320

CACNA1A

CACNA1A-201

CACNA1A-201

GGAGAAAAGGCCAGTTCGTTTTATCTCCTGGGAGGTGTGGACATTCTCTCCAGATCCACATTCTTTCTTTTCATTGATCCTACAAGC  
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16,405

CACNA1A

CACNA1A-201

CACNA1A-201

ATTTCTTGGTCATTTAATACGTGTTTTAATCCTATTTCAGTCTCATGGAAACCTTAGGAGCCAAGTTCTCTGAGCCCCATTTTA  
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16,490

CACNA1A

CACNA1A-201

CACNA1A-201

CAGATTTTCATCATTTCAGTAAGCACTTAATGAGCACCTACTGTGTGACCAAGGCCCTGGTCTAGGACTTAGGGATTAAGCAGTGAA  
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16,575

CACNA1A

CACNA1A-201

CACNA1A-201

CAAAAAAAGGCCAAAAATCCCTGCCTCCGTGGAGCAGGGATTCAAGAGGGGAGACAGACAAGAAAACAAGATAAATTTGTAAACATA  
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16,660

CACNA1A

CACNA1A-201

CACNA1A-201

CGTAGCTTGTTCAGTTGGTGATAAACACAACAGAGAAAAATTCAGTAGGGAAAGTCAGGGAGAGTTGGAATTTTAGATGAGATGTG  
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16,745

CACNA1A

CACNA1A-201

CACNA1A-201

TGTCGCACAGAGAGGTTGAGAGACTTGCCCAAGGCCACACAGCAGTAAGTTGTGGAGCTGGGATTTGAACCCAGGCCGTCTGGGT  
ACAGCGTGTCTCTCCAACCTCTCTGAACGGGTTCCGGTGTGTCTCGTCACTCAACACCTCGACCCTAAACTTGGGTCCGGCAGACCCA

16,830

CACNA1A

CACNA1A-201

CACNA1A-201

CTGCAGCTTGTGCTCTTAACTGCTGTGTACCAAGTTGCTTGAATTTGGGCATGTTTTATGCTCACTTGGGAACCTGTGGGAAATGC  
GACGTCGAACACGAGAATTGACGACACATGGTCAACGAACTTAAACCCGTACAAAATACGAGTGAACCCCTTGGACACCCCTTTACG

16,915

CACNA1A

CACNA1A-201

CACNA1A-201

AGATTCCAGGGCCCAGCACTGGTTCTATAGATTATTTGGGGAGCCTGAGGATCTGCATTTTAGGTGTTTCTGAGGCAGATGGTCC  
TCTAAGGTCCCAGGTCGTGACCAAGATATCTAATAAACCCCTCGGACTCCTAGACGTAAAATCCACAAAGACTCCGTCTACCAGG

17,000

CACNA1A

CACNA1A-201

CACNA1A-201

AGAGACCTAGCTCTGAAAAATGCTGGGAATGGTGCCAGGAGGGGTGGGGGTGGCCCTATGAGAGCAGGGTGGCCAGCCAGATCCC  
TCTCTGGATCGAGACTTTTTACGACCCTTACCACGGTCTCCCCACCCACCACGGGATACTCTCGTCCCACCGGTCGGTCTAGGG

17,085

CACNA1A

CACNA1A-201

CACNA1A-201

ATCTCCATGTTGTCTCTGACAGTGTCTGATCTGACCATTTCCAAGGTGGTAAGGTTGCTCCCCGTTCCAGTGATTCCGGAGCACA  
TAGAGGTACAACAGAGACTGTACAGGACTAGACTGGTAAAGGTTCCACCATTCCAACGAGGGGCAAGGTCACTAAGCCTCGTGT

17,170

CACNA1A

CACNA1A-201

CACNA1A-201

GCGGGAGAGCTGCCTGCAATGGCATGACTTTTCTTATGGGCGGGTTCATTTCTGGCCATTTCTTTCTCGTTGCCTTTTCTTTGCT  
CGCCCTCTCGACGGACGTTACCGTACTGAAAAGAATACCCGCCAAGTAAAGACCGGTAAAGAAAGAGCAACGGAAAAAGAAACGA

17,255

CACNA1A

CACNA1A-201

CACNA1A-201

TTTTCTTTGTTGGCTTTTCTGTTTTACGAATGAGGCCCTGCATGAAGGCTGAAGAAGGATTTAAAGTCCAAAAACGTCTTTTTCT  
AAAAGAAACAACCGAAAAAGACAAAATGCTTACTCCGGGACGTACTTCCGACTTCTTCTTAAATTTTCAGGTTTTTGCAGAAAAAGA

17,340

CACNA1A

CACNA1A-201

CACNA1A-201

GTATGTATTTTTAAACCTCTTCCCCCATTCTCCTCCTCTCTGAACCTAACCCACAGTGAGCAGCAGCACCCCTGGGCAGTTGGCT  
CATACATAAAAAATTTGGAGAAGGGGGTAAGAGGAGGAGAGACTTGGATTGGTGGTCACTCGTCTCGTGGGACCCGTCAACCGA

17,425

CACNA1A

CACNA1A-201

CACNA1A-201

GTAGCCCAAGTGCCCTGCTCTCCTCTCCCCACCGCCTTCTGTGTCATGGGGGCTGGGAATATAAAATTCCTCTCCTCATTCTCCTTC  
CATCGGGTTCACGGGACGAGAGGAGAGGGGTGGCGGAAGGACAGTACCCCCGACCCTTATATTTAAGGAGAGGAGTAAGAGGAAG 17,510

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

TGGGGGCTGTTGACAGTGCATGGCAGGGGCCATCGGATGCCAGGCTCTTCTGTGTGTGAGGGTAGTTGGTGTTTTTTGAAGTTG  
ACCCCCGACAACACTGTCACGTACCGTCCCCGGTAGCCTACGGTCCGAGAAGACACACACTCCCATCAACCACAAAAAACTTTCAAC 17,595

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

GTTTCAGAGAGTTTCACATGGCTCAGAAAGCCTAGTGAGAGGAAAATCTTTGCACTGCTTTCCAGCTCATTAAAGACAGGATGCAGGG  
CAAGTCTCTCAAGTGTACCGAGTCTTTTCGGATCACTCTCCTTTTAGAAAACGTGACGAAAAGGTCGAGTAATTCTGTCTACGTCCC 17,680

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

GCCAGGCATGGTGGCACATGCCTGGAATCCCAGCACTTTGGGAGGCCGAAATGGGAGGATCATTGAGGCCAGAAGTTCAAGACC  
CGGTCCGTACCACCGTGTACGGACCTTAGGGTCGTGAAACCTCCGGCTTTACCCTCCTAGTAAACTCCGGTCTTCAAGTTCTGG 17,765

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

AGCCTGGGCAACATAGTGAGACCCTGTCTCTACAAAAAAAAAAAAAAAAAATTAATGTATACAGGCATAGTGGCATGCACCTGTAG  
TCGGACCCGTTGTATCACTCTGGGACAGAGATGTTTTTTTTTTTTTTTTTAATTTACATATGTCCGTATCACCGTACGTGGACATC 17,850

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

TCCCAGTTGCTTGGGAGGCTGAGGTGGGAGGATTGCTTGAGCCCAGGAGTTCAAGGTTACAGTGAGCTATGATTGTGCCACTGCA  
AGGGTCAACGAACCCTCCGACTCCACCCTCCTAACGAACTCGGGTCTCAAGTTCCAATGTCACTCGATACTAACACGGTGACGT 17,935

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

CTCCAGGCTGGGCAACCAAGGGGAGACTCTGTCTCTGAAAACAAACAAAAGAAAAAAAAAATAGGCTGCAGGAAAGTCTTCATTGTA  
GAGGTCCGACCCGTTGGTTCCTCTGAGACAGAGACTTTGTTGTTTTCTTTTTTTATCCGACGTCTTTTCAGAAGTAACAT 18,020

CACNA1A >

CACNA1A-201 >

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CACNA1A-201

GGAAGAGAAGGGACATTTTTATTTTTTGTATCTGGCTGTGTGTTAAAAATAGGCTTCATAATGAGTTAGATGTCAAACCTTATACA  
CCTTCTCTTCCCTGTAAAAATAAAAAACAATAGACCGACACACAATTTTATCCGAAGTATTACTCAATCTACAGTTTGAATATGT

18,105

CACNA1A

CACNA1A-201

CACNA1A-201

CAGAGGGGATAGCAATACACTTAACCAATAGCAGGTACCCATTCCAATTGGGGAGCCTTGGTTCTGATTGGTTCGAAATATTTCAA  
GTCTCCCCTATCGTTATGTGAATTGGTTATCGTCCATGGGTAAGGTTAACCCCTCGGAACCAAGACTAACCCAGCTTTATAAAGTT

18,190

CACNA1A

CACNA1A-201

CACNA1A-201

ATGTTGCCCTGGTCAGCAACAGGGTCAGAAGTGAGTCCCAAGGCCTAGTTTCATGTTTTGTGAACAAAGATTCCACGTGCCTTT  
TACAACGGGGACCAGTCGTTGTCCCAGTCTTCACTCAGGGGTTCCGGATCAAGTACAAAACACTTGTTCCTAAGGTGCACGGAAA

18,275

CACNA1A

CACNA1A-201

CACNA1A-201

TAGGACGAGCAAGAGGAAGAAGAAGCAGCGAACCCAGAACTTGCCCTACAGAAAGCCAAGGAGGTGGCAGAAGTGAGTCCTCTGT  
ATCCTGCTCGTTCTCCTTCTTCTTTCGTCGCTTGGTCTTTGAACGGGATGTCCTTTCGGTTCCTCCACCGTCTTCACTCAGGAGACA

18,360

CACNA1A

CACNA1A-201

ENSE00000951013  
CACNA1A-201

725 730 735 740 745 750  
D E Q E E E A A N Q K L A L Q K A K E V A E V S P L

CCGCGGCCAACATGTCTATAGCTGTGTAAGTGCCCTAATCCCTGGGATGCTACCCTGGCTCCTGAACGTCCACACTATCCCAAG  
GGCGCCGGTTGTACAGATATCGACACATTCACGGGGATTAGGGACCTACGATGGGACCGAGGACTTGCAGGTGTGATAGGGTCC

18,445

CACNA1A

CACNA1A-201

ENSE00000951013  
CACNA1A-201

755 760  
S A A N M S I A V

CACAGATTTGGGAAGCAGTGGGGGTGGTCTTGACAGAAGTGGCTTTAGGAAGAGACACTTCTTGTCTTCCACCCACTTTTAC  
GTGTCTAAACCCTTCGTCAACCCACCAGGAAGTGTCTTGAAGTTCGAAATCCTTCTCTGTGAAGAACAGGAAGGTGGGTGAAAGTG

18,530

CACNA1A

CACNA1A-201

CACNA1A-201

TCAATAAATATTTGGTTAGCAGCTGTTATGTACCCAGCACTGTTCTAACTTCTGGGGATACAGCATTAAACAAGGAGGAAAAAAA  
AGTTATTTATAAACCAATCGTCGACAATACATGGGTGCTGACAAGATTGAAGACCCCTATGTCGTAATTGTTCTCTCTTTTTTTT

18,615

CACNA1A

CACNA1A-201

CACNA1A-201



AATCCCACCTGTGTGTAGCCATTCTAGCAAGGGAAGGAGTCAATAAATTAGATAAATAAGTAAATTATATATTGTGTTAGAAGGC  
TTAGGGTGGACACACATCGGTAAGATCGTTCCCTTCCTCAGTTATTTAATCTATTTTATTCATTTAATATATAACACAATCTTCCG

18,700

CACNA1A

CACNA1A-201

CACNA1A-201

GATGGAACACTACAGAGAAAGTAGGGGAGGGAAATAGCAAATGCTGGGAGTGAAGAGAGTTGTGATTTTTAAACGAAGTTGTCAGGGA  
CTACCTTGATGTCTCTTTCATCCCCTCCCTTTATCGTTTACGACCCTCACTTCTCTCAACACTAAAATTTGCTTCAACAGTCCCT

18,785

CACNA1A

CACNA1A-201

CACNA1A-201

AGGCATCACCTAGAAATAGGGGTCCCCAGTCCCAGGGGCTGTGGACTGGTACCAGGCCGAGGCCTATTAGGAACGGGGCTGCACAGC  
TCCGTAGTGGATCTTATCCCCAGGGGTCAGGGCCCCGACACCTGACCATGGTCCGGCTCCGGATAATCCTTGCCCCGACGTGTCG

18,870

CACNA1A

CACNA1A-201

CACNA1A-201

AGGAGGTGAACAGTGAGCAAGCAAGCATTACCGCCTGAGCTCCACCTGCCGTGATCAGATCAGCAGGCAGCATTAGATTCTCATAGGA  
TCCTCCACTTGTCACTCGTTCGTTTCGTAATGGCGGACTCGAGGTGGACGGCAGTCTAGTCCGTCGTAATCTAAGAGTATCCT

18,955

CACNA1A

CACNA1A-201

CACNA1A-201

ACACAAACACTATTGTGAACGGTGCATCTGAGGGATCTAGGTTGCGTGCTCCTTTAAGAATCGAATGCCTGATGATCTCAGGTG  
TGTGTTTGTGATAACACTTGCCACGTAGACTCCCTAGATCCAACGCACGAGGAAAATTCTTAGCTTACGGACTACTAGAGTCCAC

19,040

CACNA1A

CACNA1A-201

CACNA1A-201

AAACAGTTTCATCCCAAACACCCCCACACCTAGGTCTGTGGAAAACTGTCTTCCACAAAACCTGGCCCTGGTGCCAAAAAG  
TTTGTCAAAGTAGGGTTTTGGTGGGGGGTGTGGATCCAGACACCTTTTTGACAGAAGGTGTTTTGACCGGGGACCACGGTTTTTC

19,125

CACNA1A

CACNA1A-201

CACNA1A-201

GTTGGGGACTGCTCACCTAGAAGGTTACATGGCCTGAAGGAGGTGAGGGAGGAGCCACTGGGGGGCCTGGGGAAGGGCATCCCAG  
CAACCCCTGACGAGTGGATCTTCCAATGTACCGGACTTCCCTCCACTCCCTCCTCGGTGACCCCCGGACCCCTTCCCGTAGGGTC

19,210

CACNA1A

CACNA1A-201

CACNA1A-201

GCAGAGGGGAACAGCATAGGCAATGGCCCTGAGGCAGGAACATGCCTGATGTGAAGGAGGCCTGTGTGACTAGAATCGAATAGTAA  
CGTCTCCCTTGTCTGATCCGTTACCGGGACTCCGTCTTGTACGGACTACACTTCCCTCCGGACACACTGATCTTAGCTTATCATT

19,295

CACNA1A

CACNA1A-201

CACNA1A-201

GTGTGAGGAGGTGAAGGCAAGGAGGTGACAAGCAGATTACACAGGGCCTTCTGGGTCAGGGGGGAGGACTTGGGCTTTTGGCCCT  
CACACTCCTCCACTTCCGTTCCCTCCACTGTTTCGTCTAATGTGTCCCGAAGACCCAGTCCCCCTCCTGAACCCGAAAACGGGGA

19,380

CACNA1A

CACNA1A-201

CACNA1A-201

AGCCAGGTGGGAGCCATGGAGGGTCTTGAGCAGAGGAGGCTGGGACCTGACTCAGATGCTCACAGACTCCTAGCATTCAAGTGGG  
TCGGTCCACCCTCGGTACCTCCCAAGAAGTTCGTCTCCTCCGACCTGGACTGAGTCTACGAGTGTCTGAGGATCGTAAGTCACCC

19,465

CACNA1A

CACNA1A-201

CACNA1A-201

GAGTAGAGGGTGGAGAGCAGGAGTGGGAGGCTGAGATGTGGGTTGGTTCGCCTGGGTCATCCATCCAAGCTACAGTGCCTAGCAA  
CTCATCTCCACCTCTCGTCTCACCTCCGACTCTACACCCAACCAAGCGGACCCAGTAGGTAGGTTTCGATGTCACGGATCGTT

19,550

CACNA1A

CACNA1A-201

CACNA1A-201

TGCTCTAAGTCTGTGACCATGCCACTGCAGGAAAGAGCAACAGAAGAATCAAAAAGCCAGCCAAGTCCGTGTGGGAGCAGCGGAC  
ACGAGATTCAGGACACTGGTACGGTGACGTCCTTTCTCGTTGTCTTCTTAGTTTTTCGGTTCGGTTCAGGCACACCCTCGTCGCCTG

19,635

CACNA1A

CACNA1A-201

K E Q Q 765 K N Q K P A 770 K S V W 775 E Q R T  
ENSE00001247059

CACNA1A-201

CAGTGAGATGCGAAAAGCAGAACTTGCTGGCCAGCCGGGAGGCCCTGTATAACGAAATGGACCCGGACGAGCGCTGGAAGGCTGCC  
GTCACTCTACGCTTTCGTCTTGAACGACCGGTCGGCCCTCCGGGACATATTGCTTTACCTGGGCTGCTCGCGACCTTCCGACGG

19,720

CACNA1A

CACNA1A-201

S E M R K Q 780 N L L A S 785 R E A L Y 790 N E M D P 800 D E R W K A A 805  
ENSE00001247059

CACNA1A-201

TACACGGGCACCTGCGGCCAGACATGAAGACGCACTTGGACCGGCCGCTGGTGGTGGACCCGAGGAGAACC GCAACAACA  
ATGTGCGCCGTGGACGCGGTCTGTACTTCTGCGTGAACCTGGCCGGCGACCACCACCTGGGCGTCTCTTGGCGTTGTTGTTGT

19,805

CACNA1A

CACNA1A-201

Y T R H L R P D 810 M K T H L 815 D R P L V 820 V D P Q E 830 N R N N N  
ENSE00001247059

CACNA1A-201

CCAACAAGAGCCGGGCGGCCGAGCCACCGTGGACACAGCGCCTCGGCCAGCAGCGCGCCGAGGACTTCTCAGGAAACAGGCCCG  
GGTTGTTCTCGGCCCGCCGGCTCGGGTGGCACCTGGTCGCGGAGCCGGTCTGTCGCGCGGCTCCTGAAGGAGTCTTTGTCCGGGC

19,890

CACNA1A

CACNA1A-201

835 T N K S R A A E P T V D Q R L G Q Q R A E D F L R K Q A R 860

ENSE00001247059

CACNA1A-201

CTACCACGATCGGGCCCGGGACCCAGCGGCTCGGCGGGCCTGGACGCACGGAGGCCCTGGGCGGGAAGCCAGGAGGCCGAGCTG  
GATGGTGCTAGCCCGGGCCCTGGGGTCGCCGAGCCGCCCGGACCTGCGTGCCCTCCGGGACCCGCCCTTCGGTCTCCGGCTCGAC

19,975

CACNA1A

CACNA1A-201

865 Y H D R A R D P S G S 870 875 A G L D A 880 R R P W A G S Q E A E L 890

ENSE00001247059

CACNA1A-201

AGCCGGGAGGGACCCCTACGGCCGCGAGTCGGACCACCACGCCCGGGAGGGCAGCCTGGAGCAACCCGGGTTCTGGGAGGGCGAGG  
TCGGCCCTCCCTGGGATGCCGGCGCTCAGCCTGGTGGTGCGGGCCCTCCCGTCGGACCTCGTTGGGCCCAAGACCCCTCCCGCTCC

20,060

CACNA1A

CACNA1A-201

895 S R E G P Y G R E S D H H A R E G S L E Q P G F W E G E 915

ENSE00001247059

CACNA1A-201

CCGAGCGAGGCAAGGCCGGGGACCCACCGGAGGCACGTGCACCGGCAGGGGGGCGAGCGGGAGAGCCGCAGCGGGTCCCCGCG  
GGCTCGCTCCGTTCCGGCCCTGGGGGTGGCCTCCGTGCACGTGGCCGTCCCCCGTCTCGTCCCTCTCGGCGTCGCCCAAGGGGCGC

20,145

CACNA1A

CACNA1A-201

920 A E R G K A G D P H R R H V H R Q G G S R E S R S G S P R 945

ENSE00001247059

CACNA1A-201

CACGGGCGCGGACGGGGAGCATCGACGTCATCGCGCGCACCCGCAGGCCCGGGGAGGAGGGTCCGGAGGACAAGGCCGAGCGGAGG  
GTGCCCGCGCCTGCCCTCGTAGCTGCAGTAGCGCGCGTGGCGTCCGGGCCCTCCTCCAGGCCTCCTGTTCCGCCCTCGCCTCC

20,230

CACNA1A

CACNA1A-201

950 T G A D G E H R R H R A H R R P 965 G E E G P E D K A E R R 975

ENSE00001247059

CACNA1A-201

CGCGCCGACCGGAGGGCAGCCGGCCGGCCCGGGGCGGCGAGGGCGAGGGCGAGGGCCCGACGGGGGCGAGCGCAGGAGAAGGC  
CGCGCCGTGGCGCTCCCGTCCGGCCGGCCCGGGCCCGCCGCTCCCGCTCCCGCTCCCGGGGCTGCCCCCGCTCGCGTCTCTCCG

20,315

CACNA1A

CACNA1A-201

980 A R H R E G S R P A R G G E G E G E G P D G G 1000 E R R R R

ENSE00001247059

CACNA1A-201

ACCGGCATGGCGCTCCAGCCACGTACGAGGGGGACGCGCGGAGGGAGGACAAGGAGCGGAGGCATCGGAGGAGGAAGTAAGTGGA  
TGGCCGTACCGCGAGGTCGGTGCATGCTCCCCCTGCGCGCCTCCCTCCTGTTCTCGCCTCCGTTAGCCTCCTCCTTCAATCACCT

20,400

CACNA1A

CACNA1A-201

1005 H R H G A P A T Y E G D A R R E D K E R R H R R R K

ENSE00001247059

CACNA1A-201

GGTGACCTCGAATCCGCGAGAATGACGGTAACATTAATAATGACAACAGCCAAAAGTAGCACGTGCTGTGTATTTGTTTATAAAAAAT  
CCACTGGAGCTTAGGGCGTCTTACTGCCATTGTAATTACTGTTGTGCGGTTTCATCGTGCACGACACATAAACAAATATTTTTTA

20,485

CACNA1A

CACNA1A-201

ATATTATAAAATGCTGTATTTGGCCAGGCGCAGTGGCTCACGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGGCGGATGGATCAC  
TATAATATTTTACGACATAAACCGGTCCGCGTCACCGAGTGCGGACATTAGGGTTCGTGAAACCCCTCCGGCTCCGCCTACCTAGTG

20,570

CACNA1A

CACNA1A-201

GAGGTCAGGAGTTCAAGACCAGCCTGGCCAAGATGGTGAAACCCACCTCTAATAAAAAATACAAAAATTAGCCGGGCACGGTGCC  
CTCCAGTCTCAAGTTCTGGTCCGACCGGTTCTACCACTTTGGGGTGGAGATTATTTTTATGTTTTTAATCGGCCCGTGCCACCG

20,655

CACNA1A

CACNA1A-201

AGGCGCCTGTAGCCCCAGTACTCAAGGAGGCTGAGGCAGGAGAATCGCCTGAAAAACAGGGGGCGGAGGTTGCAATGAGCCGAGAT  
TCCGCGGACATCGGGGTCGATGAGTCTCCGACTCCGTCCTCTTAGCGGACTTTTGTCCCCGCTCCAACGTTACTCGGCTCTA

20,740

CACNA1A

CACNA1A-201

CACACCACCGCACTCCAGCCTGGGCGACAGAGTGAGACTCTGTCTCAAAAAAAAAAAAAAAAAAGTGCTGTATTTGGCCAGGAGCAGT  
GTGTGGTGGCGTGAGGTCGGACCCGCTGTCTCACTCTGAGACAGAGTTTTTTTTTTTTTTTTCACGACATAAACCGGTCTCTGTC

20,825

CACNA1A

CACNA1A-201

GGCTCATGCCTGTAATCCCAGCACTTTGAGAGGCCGAGGGCGGGCGGATCACTTGAGGTCAGGAGTTGGAGAACAGGCTGGCCAAC  
CCGAGTACGGACATTAGGGTTCGTGAAACTCTCCGGCTCCGCCCGCCTAGTGAACCTCCAGTCTCAACCTCTTGTCCGACCGGTTG

20,910

CACNA1A

CACNA1A-201

ATAGTGAAACCCCGTCTCTACTAAAAATACAAAAATTAGTGGTGGTGCCACCTGTATTCCCACTACTCAGGAGGCTGAGGCGGG  
TATCACTTTGGGGCAGAGATGATTTTTATGTTTTTAATCACCACCACGGGTGGACATAAGGGTGATGAGTCTCCGACTCCGCC

20,995

CACNA1A

CACNA1A-201

AGAATCAGTTGAACCTGGGAGGTTGGAGGTAGGTTGCAGTGAGCTGAGATCGTGCCATCACACTCCAGCCTGGGCAACAGAGCAAG  
TCTTAGTCAACTTGGACCCCTCCACCTCCATCCAACGTCACTCGACTCTAGCACGGTAGTGTGAGGTCGGACCCGTTGTCTCGTTC

21,080

CACNA1A

CACNA1A-201

ACT 3'  
TGA 5'

21,083



CACNA1A



CACNA1A-201

Feature	Location	Size	Color	Symbol	Type
✓ <b>CACNA1A</b>	1 .. 21,083	21,083 bp	Grey	→	gene
/note	= gene <a href="#">ENSG00000141837</a>				Protein coding
✓ <b>CACNA1A-201</b>	1 .. 21,083	21,083 bp	Yellow	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000360228</a>				
<b>CACNA1A-202</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000573710</a>				
<b>CACNA1A-214</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000635727</a>				
<b>CACNA1A-217</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000635895</a>				
<b>CACNA1A-220</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000636012</a>				
<b>CACNA1A-224</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000636389</a>				
<b>CACNA1A-226</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000636549</a>				
<b>CACNA1A-237</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637276</a>				
<b>CACNA1A-239</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637432</a>				
<b>CACNA1A-245</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637736</a>				
<b>CACNA1A-246</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637769</a>				
<b>CACNA1A-252</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637927</a>				
<b>CACNA1A-256</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000638009</a>				
<b>CACNA1A-257</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000638029</a>				
<b>CACNA1A-259</b>	1 .. 21,083	21,083 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000664864</a>				
<b>CACNA1A-254</b>	1 .. 12,371	12,371 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637966</a>				protein_coding_CDS_not_defined
<b>CACNA1A-232</b>	1 .. 11,588	11,588 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000636974</a>				Retained intron
<b>CACNA1A-221</b>	1 .. 6283	6283 bp	Grey	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000636022</a>				Retained intron
✓ <b>CACNA1A-201</b>	1614 .. 20,391	18,778 bp	Red	→	CDS
▶ 9 segments	= 1744 bp				
/codon_start	= 1				
/note	= coding sequence <a href="#">ENSP00000353362</a>				
/translation	= SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNLTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIMKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRLALLRIFKVTK,,YWASLRNLVV SLLNSMKSII SLLFLLFLFIVVFALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVAEV SPLSAANMSIAV,,KEQ QKNQ KPAKSVWEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPDMKTHLDRPL VVDPQENRNNNTNKSRAAEPTVDQRLGQRAEDFLRKQARYHDRADPSGSAGLDARRPWAGSQEA ELSREGPYGREGSDHHAREGSLEQPG FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGHEHRRHRAHRRPGEEGPEDKAERRA RHREGSRPARGGEGEGEGPDGGERRRRHR SGAATYEGDA REEDKERRR 561 amino acids x 66.4 kDa				

Feature	Location	Size	Type
<b>CACNA1A-202</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000460092</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		
<b>CACNA1A-214</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000490001</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		
<b>CACNA1A-217</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000490323</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		
<b>CACNA1A-220</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000490223</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		
<b>CACNA1A-224</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000489992</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		
<b>CACNA1A-226</b>	1614 .. 20,391	18,778 bp	CDS
▶ 9 segments = 1744 bp			
/codon_start = 1			
/note = coding sequence <a href="#">ENSP00000490578</a>			
/translation =	<pre> SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEV MYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA ANQKLA LQ KAKEVA EV SPLSAA NMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLA SREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVD PQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP S G S A G L D A R R P W A G S Q E A E L S R E G P Y G R E S D H H A R E G S L E Q P G FWEGEAERGKA G D P H R R H V H R Q G G S R E S R S G S P R T G A D G E H R R H R A H R R P G E E G P E D K A E R R A R H R E G S R P A R G G E G E G E G P D G G E R R R R H R H G A P A T Y E G D A R R E E D K E R R H R R </pre>		

Feature Location Size Type

**CACNA1A-237** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1744 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000489777](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA  
ANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
VVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLEQPG  
FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERRRRHR  
HGATATYEGDARRBEQKRRHRR

**CACNA1A-239** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1753 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000490617](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTKVEA,,DEQEE  
EEAANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
RPLVVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLE  
QPGFWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERR  
HGATATYEGDARRBEQKRRHRR

**CACNA1A-245** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1744 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000489861](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA  
ANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
VVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLEQPG  
FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERRRRHR  
HGATATYEGDARRBEQKRRHRR

**CACNA1A-246** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1744 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000489778](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA  
ANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
VVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLEQPG  
FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERRRRHR  
HGATATYEGDARRBEQKRRHRR

**CACNA1A-252** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1744 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000489715](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA  
ANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
VVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLEQPG  
FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERRRRHR  
HGATATYEGDARRBEQKRRHRR

**CACNA1A-256** 1614 .. 20,391 18,778 bp CDS  
▶ 9 segments = 1744 bp  
/codon\_start = 1  
/note = coding sequence [ENSP00000489913](#)  
/translation = SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP  
YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLLNSMKSIISLLFLLFLFIVV FALLGMQLFGGQ,,FN  
FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEEEA  
ANQKLA LQ KAKEVA EV SPLSAANMSIAV,,KEQ QKNQ KPAKSV WEQRTSEMRKQ NLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL  
VVDPQENRNNNTNKSRAAEPTVDQRLGQ QRAEDFLRKQARYHDRA RDP SGSA GLDARRP WAGSQ EA ELSREGPYGRESDDHHA REGSLEQPG  
FWEGEA ERGKA GDPHRRHVHRQ GGSRESRSGSPRTGADGEHRRHRAHRRP GEEGPEDKAERRARHREGSRPARGGEGEGEGPDGGERRRRHR  
HGATATYEGDARRBEQKRRHRR



Feature	Location	Size	Color	Symbol	Type
<b>CACNA1A-257</b>	1614 .. 20,391	18,778 bp	■	→	CDS
▶ 9 segments = 1753 bp					
/codon_start	= 1				
/note	= coding sequence <a href="#">ENSP00000489829</a>				
/translation	= SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLNLSMKSIIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTKVEA,,DEQEE EEAANQKALQKAKEVAEVSPLSAANMSIAV,,KEQQKNQKPAKSVWEQRTSEMRQNLLASREALYNEMDPDERWKAAYTRHLRPMKTHLD RPLVVDPQENRNNNTNKSRAAEPTVDQRLGQQRAEDFLRKQARYHDRARDPSGSAGLDARRPWAGSQEAELSREGPYGRESDDHAREGSLE QPGFWEGEAERGKAGDPHRRHVHRQGGRESRSRSGSPRTGADGEHRRHRAHRRPGEEGPEDKAERRARHREGSRPARGGEGEGEGPDDGGERR RHHHHPATYEGDARRRERRRRR				
<b>CACNA1A-259</b>	1614 .. 20,391	18,778 bp	■	→	CDS
▶ 9 segments = 1744 bp					
/codon_start	= 1				
/note	= coding sequence <a href="#">ENSP00000499449</a>				
/translation	= SPFARASIKSAKLENSTFFHKERRMRFYIRRMVKTQAFYWTVLSLVALNTLCVAIVHYNQPEWLSDFL,,YYAEFIFLGLFMSEMFIKMYGLGTRP YFHSSFNCFDCG,,VIIGSIFEVIWAVIKPGTSFGISVLRALRLLRIFKVTK,,YWASLRNLVVSLNLSMKSIIISLLFLLFLFIVV FALLGMQLFGGQ,,FN FDEGTPPTNFDTFPAAIMTVFQ,,ILTGEDWNEVMYDGIKSQGGVQGGMVFSIYFIVLTLFGN,,YTLLNVFLAIAVDNLANAQELTK,,DEQEEEA ANQKALQKAKEVAEVSPLSAANMSIAV,,KEQQKNQKPAKSVWEQRTSEMRQNLLASREALYNEMDPDERWKAAYTRHLRPMKTHLDRPL VVDPQENRNNNTNKSRAAEPTVDQRLGQQRAEDFLRKQARYHDRARDPSGSAGLDARRPWAGSQEAELSREGPYGRESDDHAREGSLEQPG FWEGEAERGKAGDPHRRHVHRQGGRESRSRSGSPRTGADGEHRRHRAHRRPGEEGPEDKAERRARHREGSRPARGGEGEGEGPDDGGERRRRR HCAATYEGDARRRERRRRR				
<b>CACNA1A-243</b>	1808 .. 3697	1890 bp	■	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637625</a> Retained intron				
<b>CACNA1A-235</b>	10,104 .. 11,656	1553 bp	■	→	prim_transcript
/note	= primary transcript <a href="#">ENST00000637117</a> Retained intron				
✓ <b>Donor Template SNV -&gt; REV</b>	10,453 .. 10,552	100 bp	■	⇌	misc_feature
✓ <b>Protospacer Sequence</b>	10,471 .. 10,490	20 bp	■	⇌	misc_feature
✓ <b>SNV</b>	10,483 .. 10,483	1 bp	■	⇌	misc_feature
/note	= REV = G SNV = A				
✓ <b>PAM</b>	10,491 .. 10,492	2 bp	■	⇌	misc_feature

Primer	Length	Binding Sites	Tm	Date Added
✓ <b>PCR Forward</b> /sequence = GAATGGATGAATGAGGGGGTCAAGG 52% GC / 7900.2 Da	25-mer	10,252 .. 10,276	62°C	Jan 18, 2023
✓ <b>Sanger Sequencing</b> /sequence = AATGCTTGCCAGTTCTGGAG 50% GC / 6148.1 Da	20-mer	10,343 .. 10,362	58°C	Jan 18, 2023
✓ <b>Donor Template SNV -&gt; REV</b> /sequence = CTGTACAAATGTCCAGGAACCCCAAAGACTTACTTTGTGACTTTGAAAATACGCAATAACCTGAGGGCTCGTAACACGCTGATTCCAAA 55% GC / 6111.1 Da	100-mer	10,453 .. 10,552	75°C	Jan 18, 2023
✓ <b>gRNA Protospacer</b> /sequence = TCAGCGTGTTACAAGCCCTC 55% GC / 6053.0 Da	20-mer	10,471 .. 10,490	52°C	Jan 18, 2023
✓ <b>PCR Reverse</b> /sequence = GGTGGAGGCTGTACCTGAAACACCG 60% GC / 7732.1 Da	25-mer	11,143 .. 11,167	64°C	Jan 18, 2023