

| Gene Cluster ID | Tmem199 |
|------------------------------|---|
| Drosophila melanogaster gene | CG7071 |
| FlyBase ID | FBgn0260467 |
| Predicted function | ATPase, H+ transporting, vacuolar ER assembly factor, Vma12 |
| Comment on Gene model | comparative data suggest that this is a dicistronic gene. Gene with dicistronic mRNA. |

| | | | | | | | | | | | | | | |
|-------------------------------------|----------------|-----------|---------------|--|--|--|--|--|--|--|--|--|--|--|
| Tmem199 CLEAR element conservation: | | | | | | | | | | | | | | |
| 5' / 5'UTR / intron | | | | | | | | | | | | | | |
| Dmel\ | CGCTACGATTTC | TCATGTGA | CAGCTGTGGCG | | | | | | | | | | | |
| Mdom\ | gcaaccctagta | TCATGTGA | caaccattgaca | | | | | | | | | | | |
| Ccap\ | aaatgacaattc | TCATGTGA | caagaaaaatgt | | | | | | | | | | | |
| Gmor\ | ttataaattttc | TCACGTGA | ctttcatctttt | | | | | | | | | | | |
| Llon\ | tggagtgttaaa | TCACGTGA | agaatgacagct | | | | | | | | | | | |
| Ppap\ | ggacgtcacaca | TCACGTGA | gcaatgacagct | | | | | | | | | | | |
| 5' / 5'UTR | | | | | | | | | | | | | | |
| Agam\ | CCCCGCGAGTGGT | CACATGA | GCCCTGATATTA | | | | | | | | | | | |
| Aara\ | CCCCGCGAGTGGT | CACATGA | GCCCTGATACTA | | | | | | | | | | | |
| Aqan\ | CCTCGCTAGTGGT | CACATGA | GCCCTGATACTA | | | | | | | | | | | |
| Achr\ | CTCCGCAAGTGGT | CACATGA | GCCCTTGCTACTT | | | | | | | | | | | |
| Aepi\ | TTTCCGAGTGGT | CACATGA | GCTTTGCTAGCT | | | | | | | | | | | |
| Amin\ | CATCTGATCTGGT | CACATGA | GGTGGTGCACTT | | | | | | | | | | | |
| Afun\ | CATCTGGTTTGGT | CACATGA | GGTGGTTCTTGT | | | | | | | | | | | |
| Aste\ | TGTTGGTGTCTGGT | CACATGA | GCCAGTGATATA | | | | | | | | | | | |
| Adir\ | TCTGCATAGAGAT | CACATGA | GCCGAAACGCAT | | | | | | | | | | | |
| Aalb\ | TCGTACGGTGGT | CACATGA | GCAACTGAGTCG | | | | | | | | | | | |
| Adar\ | GTGGAACGAGG | GTCAATGA | GCAAAATTGATC | | | | | | | | | | | |
| Aaeg\ | AAATTTTGACAA | TCACATGA | TACCCAAACAA | | | | | | | | | | | |
| Cqui\ | AAACTTGACAAT | TCACATGA | TTGAAAATAATG | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Mdes\ | aagcgtatttgg | TCATGTGA | tcatatgcta | | | | | | | | | | | |
| Pxyl\ | cggggctacggg | TCACATGA | taaatgtcagat | | | | | | | | | | | |
| Tcas\ | actacacccga | TCATATGA | tcaaaactgaaaa | | | | | | | | | | | |
| Dpon\ | actgtcacttag | TCAGCTGA | ctgtcatgtggc | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Aech\ | TTGTACAGCCAGT | CACGTGAC | AGGTATGACAT | | | | | | | | | | | |
| Acep\ | TAGTACAGCCAAT | CACGTGAC | AGGTATATTGG | | | | | | | | | | | |
| Sinv\ | TAGTACAGTCGGT | CACGTGAC | GCACACCGTC | | | | | | | | | | | |
| Pbar\ | TGATAAACCAGT | CACGTGAC | GACGATCGCT | | | | | | | | | | | |
| Lhum\ | TGATAAACTTAT | TCATGTGAC | AAAGTGTGCC | | | | | | | | | | | |
| Cflo\ | GGCACAACCTAGT | TCATGTGAC | GACGAAAGGAGT | | | | | | | | | | | |

Tmem199 gene structure comparisons:

(Click on Species for genomic, mRNA and protein sequence informations)

Key: UTR region, CDS region

| Order | Species | Tmem199 orthologs | | | muted (CG34131) | | | | | | Tmem199(CG7071) | | | Extended CLEAR region | | Position | bps from TSS |
|-------------------------|--------------------------------|------------------------------|--------|-----|-----------------|-----|-----|-----|-----|--------|-----------------|--------|-----|-----------------------|----------------------------------|----------|--------------|
| | | | 5'exon | int | exon | | int | ex | | 5'exon | intron | exon3' | | | | | |
| Diptera (Drosophilidae) | <i>Drosophila_melanogaster</i> | Dmel\CG7071 | 28 | 22 | 60 | 281 | | 66 | 171 | 5 | 598 | 69 | 311 | 77 | cgctacgatttcTCATGTGAcagctgtggcg | 5'UTR | 6 |
| Diptera (Muscidae) | <i>Musca_domestica</i> | Mdom\Tmem199 | | 19 | 77 | 272 | | 59 | 168 | 24 | 574 | 461 | 302 | | gcaaccctagtaTCATGTGAcaaccattgaca | 5'UTR? | >-33 |
| Diptera (Tephritidae) | <i>Ceratitis_capitata</i> | Ccap\Tmem199 | | 22 | 54 | 272 | | 54 | 171 | 14 | 574 | 58 | 281 | | aaatgacaattcTCATGTGAcaagaaaaatgt | 5'UTR? | >-9 |
| Diptera (Glossinidae) | <i>Glossina_morsitans</i> | Gmor\Tmem199 | 7 | 22 | 70 | 272 | | 56 | 171 | 9 | 607 | 57 | 284 | 90 | ttataaatttcTCACGTGActttcatctttt | intron1 | 75 |
| Diptera (Psychodidae) | <i>Lutzomyia_longipalpis</i> | Llon\Tmem199 | | 25 | 74 | 83 | 65 | 357 | | 18 | 846 | | | | tggagtgttaaaTCACGTGAagaatgacagct | 5' | >-4 |

| | | | | | | | | | | | | | | | | | |
|----------------------------|----------------------------------|--|---|----|-----|----|-----|-----|----------|------|-------|-----|------|--|-----------------------------------|---------------|------|
| | <i>Phlebotomus_papatasi</i> | Ppap\Tmem199 | | 25 | 62 | 83 | 70 | 357 | 4 | 565 | 65 | 296 | | ggacgtcacacaTCACGTGAgcaatgacagct | 5' | >-4 | |
| Diptera (Culicidae) | <i>Anopheles_gambiae</i> | AGAP013136 | | | | | | | 63+66+29 | 634 | 69 | 296 | 75 | ccccgcgagtggTCACATGAgccctgatatta | 5'UTR? | 224 | |
| | <i>Anopheles_arabiensis</i> | Aara\Tmem199 | | | | | | | | 634 | 69 | 296 | | ccccgcgagtggTCACATGAgccctgatacta | 5'UTR? | >-130 | |
| | <i>Anopheles_quadriannulatus</i> | Aqan\Tmem199 | | | | | | | | 634 | 77 | 296 | | cctcgtagtggTCACATGAgccctgatacta | 5'UTR? | >-128 | |
| | <i>Anopheles_christyi</i> | Achr\Tmem199 | | | | | | | | 634 | 67 | 293 | | ctccgcaagtggTCACATGAgccttgetactt | 5'UTR? | >-121 | |
| | <i>Anopheles_epiroticus</i> | Aepi\Tmem199 | | | | | | | | 628 | 69 | 293 | | ttccccgagtggTCACATGAgctttgctagct | 5'UTR? | >-128 | |
| | <i>Anopheles_minimus</i> | Amin\Tmem199 | | | | | | | | 622 | 69 | 323 | | catctgatctggTCACATGAggtgggacact | 5'UTR? | >-88 | |
| | <i>Anopheles_funestus</i> | Afun\Tmem199 | | | | | | | | 622 | 69 | 329 | | catctggttggTCACATGAggtgttctgt | 5'UTR? | >-91 | |
| | <i>Anopheles_stephensi</i> | Aste\Tmem199 | | | | | | | | 631 | 87 | 338 | | tgttggtgtcggTCACATGAgccagtgatata | 5'UTR? | >-69 | |
| | <i>Anopheles_dirus</i> | Adir\Tmem199 | | | | | | | | 915 | | | | tctgcatagagaTCACATGAgccgaaacgat | 5'UTR? | >-72 | |
| | <i>Anopheles_nili</i> | Anil\Tmem199 | | | | | | | | >146 | 74 | | | | | | |
| | <i>Anopheles_albimanus</i> | Aalb\Tmem199 | | | | | | | | 607 | 76 | 320 | | tcgtacgtgggTCACATGAgcaactgagtcg | 5'UTR? | >-15 | |
| | <i>Anopheles_darlingi</i> | Adar\Tmem199 | | | | | | | | 598 | 68 | 320 | | gtggaacgagggTCACATGAgcaaatgagtc | 5'UTR? | >-16 | |
| | <i>Culex_pipiens_qui.</i> | CPII009433* | | | | | | | | 595 | 63 | 335 | | acatcaaacctcTCATATGAcgaagataggtg aaactctgacaaTCACATGAttgaaaataatg | 5'UTR? | >-202 >-82 | |
| | <i>Aedes_aegypti</i> | AAEL011748 | | | | | | | 91+56+2 | 598 | 19614 | 326 | | aatatttgacaaTCACATGAtaccccaacaa | 5'UTR | -8 | |
| Diptera (Cecidomyiidae) | <i>Mayetiola_destructor</i> | Mdes\Tmem199 | | 22 | 158 | 83 | 86 | 189 | 82 | 168 | 74 | 688 | 77 | 287 | aagcgtatttggTCATGTGAtcatatgtaata | intron2 | >278 |
| Lepidoptera | <i>Bombyx_mori</i> | Bmor\Tmem199 | | 25 | 202 | 83 | 80 | 189 | ND | 177 | 3 | 712 | 80 | 317 | ND | | |
| | <i>Manduca sexta</i> | Msex\Tmem199 | | 19 | 440 | 83 | 321 | 189 | 144 | 177 | 2 | 658 | 1693 | 311 | ND | | |
| | <i>Danaus_plexippus</i> | Dple\Tmem199 | | 19 | 205 | 83 | 138 | 189 | 307 | 177 | 2 | 652 | 68 | 308 | tcttgtaacttgTCAGGTGAttttcttttaa | intron1 | >92 |
| | <i>Heliconius_melpomene</i> | Hmel\Tmem199 | | 19 | 213 | 83 | 209 | 189 | 392 | 177 | 3 | 661 | 531 | 290 | ND | | |
| | <i>Plutella_xylostella</i> | Pxyl\Tmem199 | | 19 | 292 | 83 | 116 | 189 | 392 | 174 | 6 | 685 | 279 | 338 | cggggcctacgggTCACATGAtaaatgtcagat | 5' | >-56 |
| Strepsiptera | <i>Mengenilla_moldrzyki</i> | Mmol\Tmem199 | | | | | | | | | 801 | | | | ND | | |
| Coleoptera | <i>Dendroctonus_ponderosae</i> | Dpon\Tmem199 | | | | | | | | 112 | 813 | | | 151 | actgtcacttagTCAGCTGActgtcatgtgcc | 5' | -7 |
| | <i>Tribolium_castaneum</i> | Tcas\Tmem199 LOC656791* | | 19 | 55 | 83 | 56 | 189 | ND | ND | ND | 550 | 47 | 254 | actacacccgaTCATATGAtcaaaactgaaaa | 5'UTR? | >-11 |
| Hymenoptera | <i>Apis_florea</i> | Aflo\Tmem199 | | 19 | 95 | 83 | 190 | 189 | 92 | 168 | 179 | 418 | ND | 254 | ND | | |
| | <i>Apis_mellifera</i> | Amei\Tmem199 | 7 | 19 | 103 | 83 | 199 | 189 | 90 | 168 | 183 | 418 | 116 | 254 | 196 | ND | |
| | <i>Bombus_impatiens</i> | Bimp\Tmem199 | | 19 | 103 | 83 | 169 | 189 | 87 | 168 | 151 | 418 | 65 | 254 | | ND | |
| | <i>Bombus_terrestris</i> | Bter\Tmem199 | | 19 | 103 | 83 | 169 | 189 | 87 | 168 | 150 | 418 | 65 | 254 | | ND | |
| | <i>Megachile_rotundata</i> | Mrot\Tmem199 | | 19 | 238 | 83 | 238 | 189 | 77 | 168 | 123 | 418 | 64 | 251 | atatltgtagttTCATGTAAgaaaaataata | intron2 | >242 |
| | <i>Acromyrmex_echinatior</i> | Aech\Tmem199 | | 19 | 128 | 83 | 684 | 189 | 77 | 168 | 106 | 430 | 93 | 245 | ttgtacagccagTCACGTGAcaggtatgacat | 5' | >-60 |
| | <i>Atta_cephalotes</i> | Acep\Tmem199 | | 19 | 128 | 83 | 680 | 189 | 76 | 168 | 109 | 430 | 93 | 245 | tagtacagccaaTCACGTGAcaggtatatagg | 5' | >-66 |
| | <i>Solenopsis_invicta</i> | Sinv\Tmem199 | | 19 | 119 | 83 | 453 | 189 | 84 | 168 | 137 | 427 | 283 | 245 | tagtacagtcggTCACGTGAcggcacacgcgc | 5' | >-67 |
| | <i>Pogonomyrmex_barbatus</i> | Pbar\Tmem199 | | 19 | 115 | 83 | 430 | 189 | 82 | 168 | 118 | 427 | 102 | 242 | tgataaaacagTCACGTGAcgacgcatgcct | 5' | >-50 |
| | <i>Harpegnathos_saltator</i> | Hsal\Tmem199 | | ND | ND | 83 | 113 | 189 | 249 | 168 | 101 | 424 | 90 | 251 | ND | | |
| | <i>Linepithema_humile</i> | Lhum\Tmem199 | | 19 | 114 | 83 | 380 | 189 | 87 | 168 | 129 | 427 | 91 | 245 | tgatataacttaTCATGTGAcaaagttgtgcc | 5' | >-46 |

[illegible]