Supplementary Table S3: transmembrane domains in MATE protein identified from diploid cotton, *G.arboreum* and *G.raimondii*

|  |  |
| --- | --- |
| SOSUI | TMHMM |
| Gene ID | Length | Subcellular Localization site | First 60 | EXP AA | Pre Hel | Protein type |
| *GaMATE1* | 448a.a. | IM (inner membrane) | 24.05382 | 205.68691 | 9 | membrane protein |
| *GaMATE2* | 520a.a. | IM (inner membrane) | 5.99354 | 206.92707 | 10 | membrane protein |
| *GaMATE3* | 478a.a. | IM (inner membrane) | 22.02478 | 239.53087 | 11 | membrane protein |
| *GaMATE4* | 477a.a. | IM (inner membrane) | 21.69891 | 262.85671 | 11 | membrane protein |
| *GaMATE5* | 518a.a. | IM (inner membrane) | 0.01297 | 251.98221 | 12 | membrane protein |
| *GaMATE6* | 514a.a. | IM (inner membrane) | 4.10557 | 264.38717 | 12 | membrane protein |
| *GaMATE7* | 471a.a. | IM (inner membrane) | 19.12099 | 263.28669 | 12 | membrane protein |
| *GaMATE8* | 450a.a. | C (cytoplasmic) | 0 | 116.25164 | 3 | membrane protein |
| *GaMATE9* | 472a.a. | IM (inner membrane) | 30.34347 | 264.55668 | 12 | membrane protein |
| *GaMATE10* | 481a.a. | IM (inner membrane) | 14.01094 | 251.15773 | 10 | membrane protein |
| *GaMATE11* | 480a.a. | IM (inner membrane) | 17.47753 | 262.15519 | 10 | membrane protein |
| *GaMATE12* | 499a.a. | IM (inner membrane) | 11.37595 | 249.57688 | 11 | membrane protein |
| *GaMATE13* | 490a.a. | IM (inner membrane) | 8.13155 | 251.31313 | 8 | membrane protein |
| *GaMATE14* | 470a.a. | IM (inner membrane) | 40.13621 | 259.14941 | 11 | membrane protein |
| *GaMATE15* | 510a.a. | IM (inner membrane) | 23.45409 | 232.85028 | 11 | membrane protein |
| *GaMATE16* | 484a.a. | IM (inner membrane) | 17.7446 | 259.5696 | 12 | membrane protein |
| *GaMATE17* | 472a.a. | IM (inner membrane) | 19.89985 | 262.83413 | 12 | membrane protein |
| *GaMATE18* | 499a.a. | IM (inner membrane) | 12.81375 | 239.03424 | 10 | membrane protein |
| *GaMATE19* | 493a.a. | IM (inner membrane) | 12.94947 | 239.71356 | 10 | membrane protein |
| *GaMATE20* | 722a.a. | IM (inner membrane) | 0.03386 | 255.3214 | 12 | membrane protein |
| *GaMATE21* | 444a.a. | IM (inner membrane) | 19.97575 | 236.13996 | 11 | membrane protein |
| *GaMATE22* | 470a.a. | IM (inner membrane) | 21.80891 | 252.3161 | 11 | membrane protein |
| *GaMATE23* | 484a.a. | IM (inner membrane) | 14.43643 | 238.84385 | 12 | membrane protein |
| *GaMATE24* | 494a.a. | IM (inner membrane) | 11.30436 | 217.64453 | 9 | membrane protein |
| *GaMATE25* | 518a.a. | IM (inner membrane) | 0.2939 | 258.84996 | 11 | membrane protein |
| *GaMATE26* | 554a.a. | IM (inner membrane) | 0.77003 | 253.68641 | 12 | membrane protein |
| *GaMATE27* | 471a.a. | IM (inner membrane) | 20.68791 | 235.31899 | 10 | membrane protein |
| *GaMATE28* | 461a.a. | IM (inner membrane) | 35.85923 | 243.10535 | 11 | membrane protein |
| *GaMATE29* | 405a.a. | IM (inner membrane) | 21.65435 | 201.18449 | 9 | membrane protein |
| *GaMATE30* | 535a.a. | IM (inner membrane) | 6.19919 | 235.15801 | 11 | membrane protein |
| *GaMATE31* | 509a.a. | IM (inner membrane) | 17.38611 | 230.17892 | 10 | membrane protein |
| *GaMATE32* | 504a.a. | IM (inner membrane) | 8.60769 | 220.05174 | 9 | membrane protein |
| *GaMATE33* | 489a.a. | IM (inner membrane) | 21.00876 | 243.30418 | 11 | membrane protein |
| *GaMATE34* | 489a.a. | IM (inner membrane) | 18.34109 | 250.6795 | 11 | membrane protein |
| *GaMATE35* | 529a.a. | IM (inner membrane) | 5.40358 | 191.90164 | 8 | membrane protein |
| *GaMATE36* | 435a.a. | IM (inner membrane) | 25.88039 | 204.04388 | 9 | membrane protein |
| *GaMATE37* | 474a.a. | IM (inner membrane) | 21.72288 | 198.65397 | 8 | membrane protein |
| *GaMATE38* | 341a.a. | IM (inner membrane) | 0.00036 | 133.81114 | 7 | membrane protein |
| *GaMATE39* | 514a.a. | IM (inner membrane) | 2.60261 | 230.15755 | 10 | membrane protein |
| *GaMATE40* | 455a.a. | IM (inner membrane) | 2.49759 | 179.23069 | 7 | membrane protein |
| *GaMATE41* | 506a.a. | IM (inner membrane) | 5.76849 | 264.83068 | 12 | membrane protein |
| *GaMATE42* | 485a.a. | IM (inner membrane) | 6.61653 | 238.00626 | 10 | membrane protein |
| *GaMATE43* | 469a.a. | IM (inner membrane) | 25.66057 | 207.69925 | 10 | membrane protein |
| *GaMATE44* | 445a.a. | IM (inner membrane) | 17.46902 | 239.89315 | 11 | membrane protein |
| *GaMATE45* | 547a.a. | IM (inner membrane) | 1.04117 | 236.35155 | 11 | membrane protein |
| *GaMATE46* | 536a.a. | IM (inner membrane) | 4.02777 | 236.34973 | 11 | membrane protein |
| *GaMATE47* | 436a.a. | IM (inner membrane) | 19.7701 | 205.39706 | 9 | membrane protein |
| *GaMATE48* | 153a.a. | IM (inner membrane) | 28.06393 | 79.18388 | 3 | membrane protein |
| *GaMATE49* | 480a.a. | IM (inner membrane) | 18.14971 | 259.08385 | 11 | membrane protein |
| *GaMATE50* | 488a.a. | IM (inner membrane) | 20.00801 | 263.1187 | 12 | membrane protein |
| *GaMATE51* | 520a.a. | IM (inner membrane) | 20.02243 | 255.36244 | 12 | membrane protein |
| *GaMATE52* | 508a.a. | IM (inner membrane) | 13.99563 | 241.67167 | 11 | membrane protein |
| *GaMATE53* | 497a.a. | IM (inner membrane) | 10.79672 | 263.86722 | 12 | membrane protein |
| *GaMATE54* | 503a.a. | IM (inner membrane) | 21.90541 | 239.29261 | 11 | membrane protein |
| *GaMATE55* | 491a.a. | IM (inner membrane) | 9.20475 | 250.69675 | 11 | membrane protein |
| *GaMATE56* | 521a.a. | IM (inner membrane) | 17.74592 | 202.62121 | 7 | membrane protein |
| *GaMATE57* | 502a.a. | IM (inner membrane) | 24.27397 | 235.80653 | 11 | membrane protein |
| *GaMATE58* | 498a.a. | IM (inner membrane) | 14.00023 | 244.73269 | 10 | membrane protein |
| *GaMATE59* | 524a.a. | IM (inner membrane) | 4.28555 | 230.22146 | 10 | membrane protein |
| *GaMATE60* | 447a.a. | IM (inner membrane) | 27.95893 | 206.05832 | 9 | membrane protein |
| *GaMATE61* | 492a.a. | IM (inner membrane) | 9.11167 | 257.72816 | 10 | membrane protein |
| *GaMATE62* | 508a.a. | IM (inner membrane) | 9.40653 | 228.79555 | 10 | membrane protein |
| *GaMATE63* | 557a.a. | IM (inner membrane) | 0 | 225.08619 | 9 | membrane protein |
| *GaMATE64* | 570a.a. | IM (inner membrane) | 0.1926 | 206.79111 | 9 | membrane protein |
| *GaMATE65* | 489a.a. | IM (inner membrane) | 0.04395 | 148.23063 | 7 | membrane protein |
| *GaMATE66* | 560a.a. | IM (inner membrane) | 0.00057 | 196.98102 | 8 | membrane protein |
| *GaMATE67* | 487a.a. | IM (inner membrane) | 16.62231 | 239.75986 | 11 | membrane protein |
| *GaMATE68* | 491a.a. | IM (inner membrane) | 11.04444 | 266.92761 | 12 | membrane protein |
| *GrMATE1* | 503a.a. | IM (inner membrane) | 22.03608 | 221.43586 | 10 | membrane protein |
| *GrMATE2* | 474a.a. | IM (inner membrane) | 21.6744 | 252.64196 | 10 | membrane protein |
| *GrMATE3* | 229a.a. | IM (inner membrane) | 18.89373 | 104.36542 | 5 | membrane protein |
| *GrMATE4* | 481a.a. | IM (inner membrane) | 24.15625 | 248.06724 | 11 | membrane protein |
| *GrMATE5* | 484a.a. | IM (inner membrane) | 17.60844 | 255.85059 | 12 | membrane protein |
| *GrMATE6* | 483a.a. | IM (inner membrane) | 19.76868 | 263.01728 | 12 | membrane protein |
| *GrMATE7* | 502a.a. | IM (inner membrane) | 8.92531 | 229.438 | 10 | membrane protein |
| *GrMATE8* | 489a.a. | IM (inner membrane) | 0 | 210.95367 | 10 | membrane protein |
| *GrMATE9* | 520a.a. | IM (inner membrane) | 6.19392 | 207.88903 | 10 | membrane protein |
| *GrMATE10* | 499a.a. | IM (inner membrane) | 12.66296 | 234.43148 | 10 | membrane protein |
| *GrMATE11* | 487a.a. | IM (inner membrane) | 19.81166 | 231.68438 | 9 | membrane protein |
| *GrMATE12* | 550a.a. | IM (inner membrane) | 3.98398 | 213.23758 | 9 | membrane protein |
| *GrMATE13* | 601a.a. | IM (inner membrane) | 22.12814 | 244.05321 | 11 | membrane protein |
| *GrMATE14* | 495a.a. | IM (inner membrane) | 20.87087 | 250.02185 | 11 | membrane protein |
| *GrMATE15* | 308a.a. | IM (inner membrane) | 24.12683 | 155.51207 | 7 | membrane protein |
| *GrMATE16* | 509a.a. | IM (inner membrane) | 15.9763 | 238.04356 | 11 | membrane protein |
| *GrMATE17* | 510a.a. | IM (inner membrane) | 23.78856 | 232.03687 | 11 | membrane protein |
| *GrMATE18* | 505a.a. | IM (inner membrane) | 5.78017 | 265.16612 | 12 | membrane protein |
| *GrMATE19* | 505a.a. | IM (inner membrane) | 0.01103 | 250.4995 | 12 | membrane protein |
| *GrMATE20* | 554a.a. | IM (inner membrane) | 3.0814 | 267.98989 | 12 | membrane protein |
| *GrMATE21* | 489a.a. | IM (inner membrane) | 18.87441 | 257.66746 | 12 | membrane protein |
| *GrMATE22* | 490a.a. | IM (inner membrane) | 19.29244 | 263.26589 | 12 | membrane protein |
| *GrMATE23* | 471a.a. | IM (inner membrane) | 0.06528 | 170.67115 | 8 | membrane protein |
| *GrMATE24* | 541a.a. | IM (inner membrane) | 0.23932 | 183.76031 | 7 | membrane protein |
| *GrMATE25* | 546a.a. | IM (inner membrane) | 0.00321 | 194.70785 | 8 | membrane protein |
| *GrMATE26* | 498a.a. | IM (inner membrane) | 14.05452 | 244.17961 | 10 | membrane protein |
| *GrMATE27* | 536a.a. | IM (inner membrane) | 4.0362 | 236.61938 | 11 | membrane protein |
| *GrMATE28* | 491a.a. | IM (inner membrane) | 8.82642 | 250.26537 | 11 | membrane protein |
| *GrMATE29* | 442a.a. | IM (inner membrane) | 18.65418 | 213.98873 | 10 | membrane protein |
| *GrMATE30* | 545a.a. | IM (inner membrane) | 0.76986 | 201.58814 | 8 | membrane protein |
| *GrMATE31* | 502a.a. | IM (inner membrane) | 23.89532 | 236.83951 | 11 | membrane protein |
| *GrMATE32* | 467a.a. | IM (inner membrane) | 33.998 | 230.58064 | 10 | membrane protein |
| *GrMATE33* | 545a.a. | IM (inner membrane) | 10.69672 | 230.68321 | 10 | membrane protein |
| *GrMATE34* | 533a.a. | IM (inner membrane) | 0.69269 | 241.11604 | 11 | membrane protein |
| *GrMATE35* | 522a.a. | IM (inner membrane) | 0.04023 | 251.89096 | 12 | membrane protein |
| *GrMATE36* | 490a.a. | IM (inner membrane) | 10.18212 | 255.74088 | 10 | membrane protein |
| *GrMATE37* | 483a.a. | IM (inner membrane) | 17.05092 | 260.47309 | 10 | membrane protein |
| *GrMATE38* | 491a.a. | IM (inner membrane) | 18.37512 | 260.03852 | 10 | membrane protein |
| *GrMATE39* | 496a.a. | IM (inner membrane) | 13.55653 | 248.38266 | 10 | membrane protein |
| *GrMATE40* | 487a.a. | IM (inner membrane) | 19.98402 | 245.92117 | 11 | membrane protein |
| *GrMATE41* | 459a.a. | IM (inner membrane) | 24.49799 | 222.16285 | 10 | membrane protein |
| *GrMATE42* | 506a.a. | IM (inner membrane) | 6.62719 | 236.3447 | 10 | membrane protein |
| *GrMATE43* | 509a.a. | IM (inner membrane) | 2.76432 | 236.60955 | 10 | membrane protein |
| *GrMATE44* | 543a.a. | IM (inner membrane) | 0.99342 | 237.63195 | 11 | membrane protein |
| *GrMATE45* | 475a.a. | IM (inner membrane) | 17.47674 | 265.06518 | 12 | membrane protein |
| *GrMATE46* | 537a.a. | IM (inner membrane) | 0.00053 | 224.86081 | 10 | membrane protein |
| *GrMATE47* | 518a.a. | IM (inner membrane) | 0.28446 | 259.40713 | 11 | membrane protein |
| *GrMATE48* | 553a.a. | IM (inner membrane) | 0.71984 | 253.356 | 12 | membrane protein |
| *GrMATE49* | 491a.a. | IM (inner membrane) | 11.00551 | 263.13562 | 10 | membrane protein |
| *GrMATE50* | 461a.a. | IM (inner membrane) | 34.43492 | 245.8758 | 11 | membrane protein |
| *GrMATE51* | 473a.a. | IM (inner membrane) | 11.57499 | 215.39619 | 9 | membrane protein |
| *GrMATE52* | 467a.a. | IM (inner membrane) | 14.6493 | 242.59387 | 12 | membrane protein |
| *GrMATE53* | 471a.a. | IM (inner membrane) | 17.84597 | 265.8843 | 12 | membrane protein |
| *GrMATE54* | 472a.a. | IM (inner membrane) | 18.36071 | 236.36814 | 11 | membrane protein |
| *GrMATE55* | 471a.a. | IM (inner membrane) | 18.0508 | 258.48353 | 12 | membrane protein |
| *GrMATE56* | 259a.a. | IM (inner membrane) | 27.37709 | 113.52836 | 4 | membrane protein |
| *GrMATE57* | 468a.a. | IM (inner membrane) | 22.54282 | 256.06222 | 12 | membrane protein |
| *GrMATE58* | 536a.a. | IM (inner membrane) | 11.88394 | 256.99939 | 12 | membrane protein |
| *GrMATE59* | 492a.a. | IM (inner membrane) | 9.09724 | 254.81405 | 10 | membrane protein |
| *GrMATE60* | 524a.a. | IM (inner membrane) | 4.23668 | 230.34597 | 10 | membrane protein |
| *GrMATE61* | 522a.a. | IM (inner membrane) | 0.00011 | 262.11037 | 12 | membrane protein |
| *GrMATE62* | 492a.a. | IM (inner membrane) | 10.18046 | 254.72112 | 12 | membrane protein |
| *GrMATE63* | 466a.a. | IM (inner membrane) | 37.61869 | 235.90835 | 10 | membrane protein |
| *GrMATE64* | 509a.a. | IM (inner membrane) | 17.34894 | 210.84003 | 8 | membrane protein |
| *GrMATE65* | 588a.a. | IM (inner membrane) | 5.00E-05 | 216.62811 | 9 | membrane protein |
| *GrMATE66* | 486a.a. | IM (inner membrane) | 16.59194 | 237.19949 | 11 | membrane protein |
| *GrMATE67* | 478a.a. | IM (inner membrane) | 20.58999 | 261.72624 | 12 | membrane protein |
| *GrMATE68* | 449a.a. | IM (inner membrane) | 20.90289 | 221.80904 | 10 | membrane protein |
| *GrMATE69* | 486a.a. | IM (inner membrane) | 12.48768 | 237.6369 | 12 | membrane protein |
| *GrMATE70* | 486a.a. | IM (inner membrane) | 20.46902 | 254.96441 | 11 | membrane protein |