Supplementary Table S2: conserved domain analysis of MATE proteins identified from diploid cotton, *G.arboreum* and *G.raimondii* using CDD tool from NCBI

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gene ID | Hit type | PSSM-ID | From | To | E-Value | Bit score | Accession | Short name | Superfamily |
| *GaMATE1* | specific | 240537 | 1 | 411 | 5.82E-160 | 458.575 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE2* | specific | 240537 | 45 | 481 | 0 | 527.141 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE3* | specific | 240537 | 25 | 461 | 6.94E-164 | 469.746 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE4* | specific | 240537 | 22 | 456 | 6.92E-164 | 469.746 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE5* | specific | 240537 | 58 | 492 | 1.57E-163 | 470.517 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE6* | specific | 240537 | 52 | 486 | 4.24E-164 | 471.672 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE7* | specific | 240537 | 35 | 467 | 1.16E-151 | 438.545 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE8* | superfamily | 324356 | 131 | 446 | 3.13E-67 | 220.51 | cl09326 | MATE\_like superfamily | - |
| *GaMATE9* | specific | 240537 | 16 | 457 | 9.43E-117 | 349.564 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE10* | specific | 240537 | 29 | 463 | 8.61E-133 | 390.78 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE11* | specific | 240537 | 25 | 460 | 4.79E-149 | 431.997 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE12* | specific | 240537 | 37 | 472 | 2.47E-149 | 433.537 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE13* | specific | 240537 | 42 | 478 | 4.42E-161 | 463.198 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE14* | specific | 240537 | 1 | 437 | 2.98E-133 | 391.551 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE15* | specific | 240537 | 20 | 472 | 2.67E-156 | 451.642 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE16* | specific | 240537 | 37 | 469 | 2.29E-153 | 443.167 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE17* | specific | 240537 | 33 | 467 | 4.81E-157 | 452.027 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE18* | specific | 240537 | 41 | 478 | 4.62E-126 | 374.217 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE19* | specific | 240537 | 41 | 478 | 2.78E-123 | 366.898 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE20* | specific | 240537 | 58 | 494 | 3.64E-161 | 472.057 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE20* | specific | 227455 | 580 | 716 | 1.84E-33 | 125.884 | COG5126 | FRQ1 | cl25352 |
| *GaMATE21* | specific | 240537 | 31 | 429 | 5.14E-139 | 405.033 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE22* | specific | 240537 | 28 | 456 | 1.78E-148 | 430.456 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE23* | specific | 240537 | 38 | 470 | 4.20E-149 | 432.382 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE24* | specific | 240537 | 39 | 475 | 1.63E-173 | 494.784 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE25* | specific | 240537 | 64 | 499 | 3.31E-178 | 507.881 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE26* | specific | 240537 | 49 | 485 | 5.68E-178 | 508.651 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE27* | specific | 240537 | 31 | 467 | 2.59E-176 | 500.947 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE28* | specific | 240537 | 3 | 440 | 1.65E-143 | 417.359 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE29* | specific | 240537 | 23 | 392 | 5.02E-130 | 380.765 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE30* | specific | 240537 | 61 | 491 | 4.35E-179 | 510.577 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE31* | specific | 240537 | 38 | 474 | 3.78E-158 | 456.264 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE32* | specific | 240541 | 47 | 496 | 1.90E-99 | 305.639 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE33* | specific | 240537 | 30 | 463 | 3.32E-153 | 443.167 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE34* | specific | 240537 | 30 | 463 | 3.25E-148 | 430.456 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE35* | specific | 240541 | 59 | 515 | 2.97E-89 | 280.216 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE36* | specific | 240537 | 1 | 412 | 1.06E-141 | 411.581 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE37* | specific | 240537 | 1 | 440 | 6.33E-151 | 436.619 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE38* | superfamily | 324356 | 68 | 320 | 7.61E-67 | 216.285 | cl09326 | MATE\_like superfamily | - |
| *GaMATE39* | specific | 240537 | 38 | 477 | 4.60E-156 | 451.257 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE40* | specific | 240537 | 51 | 414 | 5.15E-118 | 351.875 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE41* | specific | 240537 | 52 | 488 | 1.36E-177 | 505.955 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE42* | specific | 240537 | 50 | 484 | 1.26E-155 | 448.945 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE43* | specific | 240537 | 1 | 375 | 1.38E-144 | 420.441 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE44* | specific | 240537 | 33 | 437 | 1.16E-159 | 457.805 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE45* | specific | 240537 | 61 | 497 | 3.50E-179 | 511.348 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE46* | specific | 240537 | 53 | 489 | 3.76E-169 | 485.539 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE47* | specific | 240537 | 1 | 412 | 2.48E-139 | 405.803 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE48* | superfamily | 324356 | 1 | 143 | 2.63E-44 | 150.416 | cl09326 | MATE\_like superfamily | - |
| *GaMATE49* | specific | 240537 | 27 | 461 | 3.30E-174 | 495.94 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE50* | specific | 240537 | 35 | 471 | 1.77E-174 | 497.095 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE51* | specific | 240537 | 19 | 455 | 3.93E-173 | 495.169 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE52* | specific | 240537 | 41 | 474 | 0 | 529.067 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE53* | specific | 240537 | 45 | 481 | 0 | 537.926 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE54* | specific | 240537 | 31 | 467 | 4.04E-175 | 499.406 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE55* | specific | 240537 | 35 | 469 | 8.71E-148 | 429.3 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE56* | specific | 240541 | 29 | 441 | 7.36E-95 | 294.469 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE57* | specific | 240537 | 21 | 458 | 6.08E-164 | 470.902 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE58* | specific | 240537 | 43 | 479 | 1.45E-155 | 449.331 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE59* | specific | 240537 | 50 | 486 | 1.88E-169 | 485.924 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE60* | specific | 240537 | 1 | 411 | 2.19E-159 | 457.035 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE61* | specific | 240537 | 46 | 482 | 5.45E-163 | 468.205 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE62* | specific | 240541 | 37 | 498 | 5.98E-102 | 312.188 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE63* | specific | 240541 | 119 | 516 | 4.40E-95 | 296.395 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE64* | specific | 240541 | 98 | 509 | 1.55E-83 | 266.734 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE65* | superfamily | 324356 | 98 | 468 | 3.52E-51 | 179.294 | cl09326 | MATE\_like superfamily | - |
| *GaMATE66* | specific | 240541 | 102 | 539 | 3.31E-86 | 273.283 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GaMATE67* | specific | 240537 | 30 | 463 | 1.48E-152 | 441.241 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GaMATE68* | specific | 240537 | 44 | 478 | 4.21E-144 | 420.055 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE1* | specific | 240537 | 30 | 466 | 2.37E-175 | 500.177 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE2* | specific | 240537 | 22 | 458 | 1.27E-163 | 468.976 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE3* | superfamily | 324356 | 1 | 212 | 3.05E-73 | 228.611 | cl09326 | MATE\_like superfamily | - |
| *GrMATE4* | specific | 240537 | 21 | 454 | 2.71E-153 | 443.167 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE5* | specific | 240537 | 37 | 467 | 1.73E-149 | 433.537 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE6* | specific | 240537 | 33 | 466 | 1.17E-160 | 461.657 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE7* | specific | 240541 | 37 | 492 | 2.96E-104 | 317.966 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE8* | superfamily | 324356 | 119 | 472 | 3.33E-74 | 239.77 | cl09326 | MATE\_like superfamily | - |
| *GrMATE9* | specific | 240537 | 45 | 481 | 0 | 524.444 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE10* | specific | 240537 | 41 | 478 | 5.24E-125 | 371.52 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE11* | specific | 240541 | 56 | 475 | 1.85E-82 | 261.341 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE12* | specific | 240541 | 62 | 536 | 5.05E-103 | 316.425 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE13* | specific | 240537 | 127 | 557 | 0 | 519.052 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE14* | specific | 240537 | 30 | 463 | 5.52E-136 | 399.64 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE15* | superfamily | 324356 | 1 | 304 | 9.84E-86 | 263.664 | cl09326 | MATE\_like superfamily | - |
| *GrMATE16* | specific | 240537 | 38 | 472 | 8.68E-166 | 475.909 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE17* | specific | 240537 | 20 | 472 | 2.14E-153 | 444.323 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE18* | specific | 240537 | 52 | 488 | 7.29E-178 | 506.34 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE19* | specific | 240537 | 58 | 492 | 6.85E-161 | 463.198 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE20* | specific | 240537 | 92 | 526 | 3.03E-167 | 481.302 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE21* | specific | 240537 | 36 | 472 | 2.75E-175 | 499.406 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE22* | specific | 240537 | 36 | 473 | 1.06E-173 | 495.169 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE23* | superfamily | 324356 | 98 | 465 | 3.37E-77 | 247.089 | cl09326 | MATE\_like superfamily | - |
| *GrMATE24* | specific | 240541 | 98 | 520 | 4.90E-95 | 295.624 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE25* | specific | 240541 | 101 | 525 | 7.34E-90 | 282.527 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE26* | specific | 240537 | 43 | 479 | 3.81E-154 | 445.864 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE27* | specific | 240537 | 53 | 489 | 6.29E-169 | 484.769 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE28* | specific | 240537 | 35 | 469 | 5.57E-146 | 424.678 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE29* | superfamily | 324356 | 13 | 374 | 5.61E-67 | 219.74 | cl09326 | MATE\_like superfamily | - |
| *GrMATE30* | specific | 240541 | 53 | 465 | 4.05E-96 | 298.706 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE31* | specific | 240537 | 21 | 458 | 6.89E-165 | 473.213 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE32* | specific | 240537 | 6 | 443 | 1.22E-147 | 428.145 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE33* | specific | 240537 | 45 | 529 | 6.22E-175 | 500.562 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE34* | specific | 240537 | 61 | 497 | 4.51E-177 | 505.57 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE35* | specific | 240537 | 58 | 494 | 1.47E-155 | 450.486 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE36* | specific | 240537 | 42 | 478 | 5.42E-162 | 465.509 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE37* | specific | 240537 | 25 | 460 | 4.09E-150 | 435.078 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE38* | specific | 240537 | 28 | 463 | 6.57E-130 | 383.847 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE39* | specific | 240537 | 28 | 462 | 7.24E-125 | 371.135 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE40* | specific | 240537 | 25 | 460 | 1.49E-150 | 436.234 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE41* | specific | 240537 | 20 | 423 | 2.70E-150 | 434.693 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE42* | specific | 240537 | 50 | 486 | 4.77E-160 | 461.272 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE43* | specific | 240537 | 51 | 485 | 5.07E-152 | 440.856 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE44* | specific | 240537 | 61 | 497 | 1.31E-176 | 504.799 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE45* | specific | 240537 | 33 | 469 | 1.62E-170 | 486.695 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE46* | specific | 240537 | 65 | 501 | 1.81E-173 | 496.71 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE47* | specific | 240537 | 64 | 499 | 1.33E-178 | 509.036 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE48* | specific | 240537 | 49 | 485 | 3.47E-177 | 506.725 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE49* | specific | 240537 | 44 | 478 | 1.83E-144 | 420.826 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE50* | specific | 240537 | 3 | 440 | 1.41E-143 | 417.359 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE51* | specific | 240537 | 39 | 473 | 3.40E-168 | 480.532 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE52* | specific | 240541 | 54 | 467 | 3.41E-82 | 260.186 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE53* | specific | 240537 | 35 | 467 | 3.65E-153 | 442.397 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE54* | specific | 240537 | 35 | 440 | 5.00E-150 | 434.308 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE55* | specific | 240537 | 35 | 467 | 2.24E-151 | 437.775 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE56* | superfamily | 324356 | 12 | 255 | 6.43E-75 | 234.004 | cl09326 | MATE\_like superfamily | - |
| *GrMATE57* | specific | 240537 | 23 | 459 | 6.26E-166 | 474.754 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE58* | specific | 240537 | 35 | 471 | 4.94E-175 | 500.562 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE59* | specific | 240537 | 46 | 482 | 1.68E-162 | 467.05 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE60* | specific | 240537 | 50 | 486 | 3.54E-169 | 485.154 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE61* | specific | 240537 | 68 | 503 | 1.29E-173 | 496.325 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE62* | specific | 240537 | 38 | 474 | 2.67E-161 | 463.968 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE63* | specific | 240537 | 6 | 443 | 6.56E-149 | 431.226 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE64* | specific | 240537 | 22 | 475 | 1.58E-157 | 454.723 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE65* | specific | 240541 | 131 | 564 | 1.27E-102 | 316.81 | cd13136 | MATE\_DinF\_like | cl09326 |
| *GrMATE66* | specific | 240537 | 30 | 463 | 6.55E-153 | 442.397 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE67* | specific | 240537 | 31 | 463 | 4.10E-155 | 447.405 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE68* | specific | 240537 | 31 | 432 | 1.37E-137 | 401.951 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE69* | specific | 240537 | 40 | 472 | 1.52E-149 | 433.537 | cd13132 | MATE\_eukaryotic | cl09326 |
| *GrMATE70* | specific | 240537 | 31 | 467 | 8.76E-176 | 500.562 | cd13132 | MATE\_eukaryotic | cl09326 |