

Table S1 - Species, gene name, accession numbers and protein length of DGAT sequences retrieved in this study.

| Family | Specie | Taxa terminologies | Gene ID | Database | Access | Length(aa) |
|----------------|-----------------------------|--------------------|---------------------------|-----------|-----------|------------|
| Simmondsiaceae | <i>Simmondsia chinensis</i> | Sch | WS | NCBI | AAD38041 | 352 |
| Brassicaceae | <i>Arabidopsis thaliana</i> | Ath | DGAT3 | Phytozome | AT1G48300 | 285 |
| | | | WS/DGAT | Phytozome | AT1G72110 | 479 |
| | | | WS/DGAT | Phytozome | AT2G38995 | 488 |
| | | | WS/DGAT | Phytozome | AT3G49190 | 522 |
| | | | WS/DGAT | Phytozome | AT3G49200 | 507 |
| | | | WS/DGAT | Phytozome | AT3G49210 | 518 |
| | | | WS/DGAT | Phytozome | AT5G12420 | 480 |
| | | | WS/DGAT | Phytozome | AT5G16350 | 488 |
| | | | WS/DGAT | Phytozome | AT5G22490 | 482 |
| | | | WS/DGAT (WSD1) | Phytozome | AT5G37300 | 481 |
| | | | WS/DGAT | Phytozome | AT5G53380 | 483 |
| | | | WS/DGAT | Phytozome | AT5G53390 | 486 |
| | | | <i>Arabidopsis lyrata</i> | Aly | DCR | Phytozome |
| DGAT3 | Phytozome | 882344 | | | 360 | |
| WS/DGAT | Phytozome | 330267 | | | 500 | |

| Family | Specie | Taxa terminologies | Gene ID | Database | Access | Length(aa) |
|--------|----------------------|--------------------|---------|-----------|-----------|------------|
| | | | WS/DGAT | Phytozome | 321593 | 474 |
| | | | WS/DGAT | Phytozome | 918418 | 488 |
| | | | WS/DGAT | Phytozome | 906195 | 503 |
| | | | WS/DGAT | Phytozome | 485277 | 521 |
| | | | WS/DGAT | Phytozome | 485279 | 519 |
| | | | WS/DGAT | Phytozome | 476341 | 425 |
| | <i>Brassica rapa</i> | Bra | DGAT3 | Phytozome | Bra014125 | 356 |
| | | | WS/DGAT | Phytozome | Bra000109 | 491 |
| | | | WS/DGAT | Phytozome | Bra000110 | 476 |
| | | | WS/DGAT | Phytozome | Bra008008 | 425 |
| | | | WS/DGAT | Phytozome | Bra008010 | 424 |
| | | | WS/DGAT | Phytozome | Bra018011 | 538 |
| | | | WS/DGAT | Phytozome | Bra018412 | 424 |
| | | | WS/DGAT | Phytozome | Bra022653 | 489 |
| | | | WS/DGAT | Phytozome | Bra029072 | 490 |
| | | | WS/DGAT | Phytozome | Bra029939 | 468 |
| | | | WS/DGAT | Phytozome | Bra029939 | 505 |
| | | | WS/DGAT | Phytozome | Bra023022 | 438 |
| | | | WS/DGAT | Phytozome | Bra037728 | 472 |

| Family | Specie | Taxa terminologies | Gene ID | Database | Access | Length(aa) | | |
|---------------|----------------------------|--------------------|--------------------------|-----------|--------------------|------------|--------------------|-----|
| Malvaceae | <i>Gossypium raimondii</i> | Gra | DGAT3 | Phytozome | Gorai_007G116800 | 401 | | |
| | | | WS/DGAT | Phytozome | Gorai.001G154900 | 512 | | |
| | | | WS/DGAT | Phytozome | Gorai.001G155000 | 510 | | |
| | | | WS/DGAT | Phytozome | Gorai.004G114800 | 482 | | |
| | | | WS/DGAT | Phytozome | Gorai.013G132800 | | | |
| | | | WS/DGAT | Phytozome | Gorai.013G194100 | | | |
| | <i>Theobroma cacao</i> | Tca | DGAT3 | Phytozome | Thecc1EG004941t1 | 401 | | |
| | | | WS/DGAT | Phytozome | Thecc1EG015402t1 | 540 | | |
| | | | WS/DGAT | Phytozome | Thecc1EG005148t1 | 510 | | |
| Euphorbiaceae | <i>Ricinus communis</i> | Rco | DGAT3 | Phytozome | 29889t000177 | 332 | | |
| | | | WS/DGAT | Phytozome | 30024m001745 | 436 | | |
| | | | WS/DGAT | Phytozome | 29742m001420 | 506 | | |
| | | | WS/DGAT | Phytozome | 30024.m001745 | 436 | | |
| | | | <i>Manihot esculenta</i> | Mes | DGAT3 | Phytozome | cassava4_1_010675m | 354 |
| | | | | | DGAT3 | Phytozome | cassava4_1_011887m | 323 |
| WS/DGAT | Phytozome | cassava4.1_006398 | | | 489 | | | |
| WS/DGAT | Phytozome | cassava4.1_029077 | | | 515 | | | |
| WS/DGAT | Phytozome | cassava4.1_008553m | | | 415 | | | |
| | | | WS/DGAT | Phytozome | cassava4.1_026440m | 406 | | |

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|------------|-----------------------------|--------------------|-----------|----------------|----------------------|------------|
| Salicaceae | <i>Populus trichocarpa</i> | Ptr | DGAT3 | Phytozome | Potri.010G003200 | 351 |
| | | | WS/DGAT | Phytozome | Potri.012G014200 | 525 |
| | | | WS/DGAT | Phytozome | Potri.019G070900 | 497 |
| | | | WS/DGAT | Phytozome | Potri.T170200 | 496 |
| | | | WS/DGAT | Phytozome | Potri.T076800 | 492 |
| Fabaceae | <i>Medicago truncatula</i> | Mtr | DGAT3 | Phytozome | Medtr4g124080 | 341 |
| | | | WS/DGAT | Phytozome | Medtr1g008160 | 483 |
| | <i>Glycine max</i> | Gma | DGAT3 | Phytozome | Glyma13g17860 | 327 |
| | | | DGAT3 | Phytozome | Glyma17g04650 | 338 |
| | | | WS/DGAT | Phytozome | Glyma09g32890 | |
| | <i>Arachis hypogaea</i> | Ahy | DGAT3 | NCBI | AAX62735 | 345 |
| Solanaceae | <i>Solanum tuberosum</i> | Stu | DGAT3 | Phytozome | PGSC0003DMP400008124 | 413 |
| | | | WS/DGAT | Phytozome | PGSC0003DMP400065033 | 519 |
| | | | WS/DGAT | Phytozome | PGSC0003DMP400069241 | 506 |
| | | | WS/DGAT | Phytozome | PGSC0003DMP400016066 | 450 |
| | | | WS/DGAT | Phytozome | PGSC0003DMP400000246 | 496 |
| | <i>Solanum lycopersicum</i> | Sly | DGAT3 | Phytozome | Solyc12g098850_1_1 | 409 |
| WS/DGAT | | | Phytozome | Solyc01g011430 | 506 | |
| WS/DGAT | | | Phytozome | Solyc03g083380 | 500 | |

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|---------------|---------------------------|--------------------|---------|-----------|-------------------|------------|
| | | | WS/DGAT | Phytozome | Solyc10g009430 | 515 |
| | | | WS/DGAT | Phytozome | Solyc01g095960 | 505 |
| Ranunculaceae | <i>Aquilegia coerulea</i> | Aco | DGAT3 | Phytozome | Aquca_003_00301_1 | 370 |
| | | | WS/DGAT | Phytozome | Aquca_035_00223 | 499 |
| Poaceae | <i>Sorghum bicolor</i> | Sbi | DGAT3 | Phytozome | Sb09g002950 | 407 |
| | | | WS/DGAT | Phytozome | Sb03g035790 | 519 |
| | | | WS/DGAT | Phytozome | Sb09g027970 | 554 |
| | | | WS/DGAT | Phytozome | Sb02g001860 | 491 |
| | <i>Oryza sativa</i> | Osa | DGAT3 | Phytozome | Loc_Os05g04620 | 409 |
| | | | WS/DGAT | Phytozome | LOC_Os01g56360 | 518 |
| | | | WS/DGAT | Phytozome | LOC_Os05g48260 | 565 |
| | | | WS/DGAT | Phytozome | LOC_Os01g56360 | 518 |
| | <i>Setaria italica</i> | Sti | DGAT3 | Phytozome | Si022184m | 414 |
| | | | WS/DGAT | Phytozome | Si021641m | 558 |
| | | | WS/DGAT | Phytozome | Si001086m | 511 |
| | | | WS/DGAT | Phytozome | Si000956m | 538 |
| | | | WS/DGAT | Phytozome | Si035229m | 515 |
| | | | WS/DGAT | Phytozome | Si029701m | 477 |
| | <i>Zea mays</i> | Zma | DGAT3 | Phytozome | GRMZM2G122943 | 411 |

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|-----------------|-----------------------------------|--------------------|---------|-----------|---------------|------------|
| | | | WS/DGAT | Phytozome | GRMZM2G077375 | 525 |
| | <i>Brachypodium distachyon</i> | Bdi | DGAT3 | Phytozome | Bradi2g36890 | 410 |
| | | | WS/DGAT | Phytozome | Bradi2g17077 | 537 |
| | | | WS/DGAT | Phytozome | Bradi3g18630 | 506 |
| | | | WS/DGAT | Phytozome | Bradi2g51150 | 503 |
| | | | WS/DGAT | Phytozome | Bradi2g46640 | 519 |
| | | | WS/DGAT | Phytozome | Bradi3g18636 | 478 |
| Selaginellaceae | <i>Selaginella moellendorffii</i> | Smo | DGAT3 | Phytozome | 406024 | 229 |
| | | | WS/DGAT | Phytozome | 80096 | 512 |
| | | | WS/DGAT | Phytozome | 235299 | 452 |
| Funariaceae | <i>Physcomitrella patens</i> | Ppa | DGAT3 | Phytozome | Pp1s48149V6 | 461 |
| | | | DGAT3 | Phytozome | Pp1s65_269V6 | 462 |
| | | | WS/DGAT | Phytozome | Pp1s279_34V6 | 515 |
| Mamiellaceae | <i>Ostreococcus lucimarinus</i> | Olu | DGAT3 | Phytozome | | |
| | | | WS/DGAT | Phytozome | 94705 | 365 |
| Volvocaceae | <i>Volvox carteri</i> | Vca | DGAT3 | Phytozome | 103228 | 370 |
| | | | WS/DGAT | Phytozome | - | - |
| | <i>Rhodotorula glutinis</i> | Rgl | DGAT3 | NCBI | ABC41546 | |
| | <i>Acinetobacter</i> sp. | Aci | WS/DGAT | NCBI | YP045555 | 458 |