**Table 3.** A list of 94 FMRP candidate substrates. Entrez gene identification number, official gene symbol and description are provided. Also provided are functional categorization (**F**), subcellular localization (**S**), the total number of spectral counts (**SC**) matching the protein and the number of biological replicates (**BR**) in which protein was identified (n=4).

**F** – Functional categorization: c (cytoskeleton), g (cell growth), m (metabolism), p (protein modification), r (RNA transport), s (signaling), tx (translation), v (vesicle transport), t (ion/amine transport)

**S** – Subcellular categorization: c (cytosol), e (extracellular), m (mitochondrion), p (plasma membrane), v (vesicle)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **GeneID** | **Symbol****(alias)** | **Description** | **F** | **S** | **SC** | **BR** | **NCBI Reference** |
| 395373 | ACLY | ATP citrate lyase | m | c | 29 | 3 | NP\_001025711 |
| 374009 | ACO2 | aconitase 2, mitochondrial | m | m | 246 | 4 | NP\_989519 |
| 396526 | ACTB | actin, beta | c | c | 286 | 3 | NP\_990849 |
| 423298 | ACTC1 | actin, alpha, cardiac muscle 1 | c | c | 213 | 3 | NP\_001072949 |
| 415296 | ACTG1 | Actin, gamma 1, cytoplasmic type 5 | c | c | 418 | 4 | NP\_001007825 |
| 422882 | ADD1 | adducin 1 (alpha) | c | c | 17 | 2 | NP\_001073198 |
| 395492 | ALDOC | aldolase C, fructose-bisphosphate | m | c | 229 | 4 | NP\_001193425 |
| 420761 | AMPH | amphiphysin | v | v | 27 | 4 | NP\_001004398 |
| 423102 | AP2A2 | adaptor-related protein complex 2, alpha 2 subunit | v | p | 20 | 2 | NP\_001012914 |
| 417525 | AP2B1 | adaptor-related protein complex 2, beta 1 subunit | v | p | 21 | 3 | XP\_415772 |
| 420398 | ARF1 | ADP-ribosylation factor 1 | v | v | 25 | 2 | NP\_001006352 |
| 769725 | ARF4 | ADP-ribosylation factor 4 | v | c | 30 | 3 | XP\_001232784 |
| 396530 | ATP1A1 | ATPase, Na+/K+ transporting, alpha 1 polypeptide | t | p | 294 | 4 | NP\_990852 |
| 396468 | ATP1A2 | ATPase, Na+/K+ transporting, alpha 2 polypeptide | t | p | 607 | 4 | NP\_990807 |
| 396467 | ATP1A3 | ATPase, Na+/K+ transporting, alpha 3 polypeptide | t | v | 773 | 4 | NP\_990806 |
| 396529 | ATP1B1 | ATPase, Na+/K+ transporting, beta 1 polypeptide | t | p | 149 | 4 | NP\_990851 |
| 396446 | ATP2A2 (SERCA2) | ATPase, Ca++ transporting, cardiac muscle, slow twitch 2; sarcoplasmic/endoplasmic reticulum calcium ATPase 2 | t | v | 8 | 2 | XP\_003642224 |
| 415958 | ATP2B2 | ATPase, Ca++ transporting, plasma membrane 2 | t | p | 43 | 4 | XP\_001231642 |
| 374159 | ATP5A1 | ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle | t | p | 370 | 4 | NP\_989617 |
| 431564 | ATP5A1W | ATP synthase subunit alpha | t | m | 349 | 4 | XP\_429118 |
| 426673 | ATP5B | ATP synthase subunit beta, mitochondrial | t | m | 366 | 4 | NP\_001026562 |
| 395497 | ATP6V1B2 (VATB) | ATPase, H+ transporting, V-type proton ATPase subunit B | t | v | 56 | 4 | XP\_424534 |
| 425976 | BCAN | brevican | g | e | 15 | 2 | XP\_423655 |
| 395855 | CALM | calmodulin | s | c | 125 | 4 | NP\_990336 |
| 417837 | CAND1 | cullin-associated and neddylation-dissociated 1 | p | c | 6 | 1 | XP\_416078 |
| 396248 | CKB | creatine kinase, brain | m | m | 628 | 4 | NP\_990641 |
| 395272 | CLTC (CHC) | clathrin heavy chain 1 | v | p | 204 | 4 | NP\_001073586 |
| 416765 | CLTCL1 | clathrin, heavy chain-like 1 | v | p | 33 | 1 | XP\_415060 |
| 395921 | CNP | 2',3'-cyclic nucleotide 3' phosphodiesterase | g | p | 639 | 4 | NP\_990381 |
| 427286 | CPLX1 | complexin 1 | v | v | 20 | 2 | XP\_424869 |
| 395156 | CRMP1 (CRMP1B) | collapsin response mediator protein 1 | g | c | 66 | 4 | NP\_989826 |
| 417217 | DNM1 | dynamin 1 | v | p | 14 | 1 | XP\_415501 |
| 395155 | DPYSL2 (CRMP2A) | dihydropyrimidinase-like 2, collapsin response mediator protein-2A | g | c | 169 | 4 | NP\_989825 |
| 423461 | DYNC1H1 | dynein, cytoplasmic 1, heavy chain 1 | v | c | 57 | 3 | XP\_421371 |
| 373963 | EEF1A1 | eukaryotic translation elongation factor 1 alpha 1 | tx | c | 143 | 4 | NP\_989488 |
| 419244 | EEF1A2 | eukaryotic translation elongation factor 1 alpha 2 | tx | c | 98 | 4 | NP\_001027570 |
| 396325 | EEF2 | eukaryotic translation elongation factor 2 | tx | c | 80 | 4 | NP\_990699 |
| 419117 | EPB41L1 | erythrocyte membrane protein band 4.1-like 1 | c | p | 10 | 2 | XP\_417304 |
| 396061 | FASN | fatty acid synthase, thioesterase | m | c | 12 | 2 | NP\_990486 |
| 416485 | FSCN1 | fascin | c | c | 172 | 4 | NP\_001171603 |
| 396489 | GLUL | glutamine synthetase | m | m | 247 | 4 | NP\_990824 |
| 419402 | GNB1 | guanine nucleotide binding protein (G protein), beta polypeptide 1 | s | c | 86 | 4 | NP\_001012853 |
| 424974 | GNB4 | guanine nucleotide binding protein (G protein), beta polypeptide 4 | s | c | 47 | 3 | XP\_003641822 |
| 373889 | HK1 | hexokinase 1 | m | m | 89 | 4 | NP\_989432 |
| 423463 | HSP90AA1 | heat shock protein HSP 90-alpha | p | c | 333 | 4 | NP\_001103255 |
| 396188 | HSP90AB1 (HSPCB) | heat shock cognate protein HSP 90-beta | p | c | 23 | 1 | NP\_996842 |
| 408046 | KIF5C | kinesin family member 5C | r | c | 9 | 1 | XP\_422155 |
| 100857214 | LOC100857214 | tubulin alpha-4A chain-like | c | c | 47 | 1 | XP\_003641691 |
| 100857247 | LOC100857247 | tubulin alpha-5 chain-like | c | c | 254 | 4 | XP\_003641692 |
| 100857345 | LOC100857345 | V-type proton ATPase subunit d 1-like | t | v/p | 3 | 1 | XP\_414041 |
| 100857582 | LOC100857582 | ubiquitin-like modifier-activating enzyme 1-like | p | c | 2 | 1 | XP\_003643588 |
| 100858165 | LOC100858165 | V-type proton ATPase subunit d 1-like | t | v/p | 3 | 1 | XP\_003643353 |
| 425049 | LOC425049 | tubulin alpha-3 chain-like | c | c | 147 | 3 | XP\_422851 |
| 768337 | LOC768337 | tubulin beta-2 chain-like | c | c | 187 | 2 | XP\_001231210 |
| 415588 | MAP1A | microtubule-associated protein 1A | c | c | 54 | 4 | XP\_003641886 |
| 396174 | MAP1B | microtubule-associated protein 1B | c | c | 5 | 1 | XP\_001231729 |
| 396097 | MAP4 | microtubule-associated protein 4 | c | c | 7 | 1 | XP\_418480 |
| 373953 | MAPK1 | mitogen-activated protein kinase 1 | s | c | 6 | 1 | NP\_989481 |
| 396217 | MBP | myelin basic protein | s | p | 726 | 4 | NP\_990611 |
| 396465 | MYH10 | myosin, heavy chain 10, non-muscle | c | c | 8 | 1 | NP\_990805 |
| 428253 | NCAM1 | neural cell adhesion molecule 1 | g | p | 20 | 2 | NP\_001122300 |
| 768618 | NDRG4 | NDRG family member 4 | s | c | 9 | 2 | XP\_001231665 |
| 419972 | NSF | N-ethylmaleimide-sensitive factor, vesicle-fusing ATPase | v | v | 23 | 3 | NP\_001019627 |
| 426429 | OGDH | 2-oxoglutarate dehydrogenase, mitochondrial | m | m | 58 | 4 | NP\_001026553 |
| 396214 | PLP1 | myelin proteolipid protein | g | p | 231 | 4 | NP\_990608 |
| 395602 | PSAP | prosaposin | m | v | 2 | 1 | NP\_990142 |
| 374204 | QKI | QKI, KH domain containing, RNA binding; protein quaking | s | p | 13 | 2 | NP\_989641 |
| 395869 | RHOC | ras homolog gene family, member C | s | c | 29 | 3 | NP\_001025020 |
| 378791 | RTN1 | reticulon 1 | g | v | 13 | 3 | NP\_001001466 |
| 378790 | RTN4 (NOGO) | reticulon 4 | g | v | 74 | 4 | XP\_003640941 |
| 416778 | SEPT5 | septin 5 | g | c | 36 | 4 | NP\_001025825 |
| 422954 | SFXN5 | sideroflexin 5 | t | m | 9 | 2 | XP\_420891 |
| 422971 | SLC17A6 (VGLUT2) | solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6; vesicular glutamate transporter 2 | t | p | 8 | 1 | NP\_001161855 |
| 423156 | SLC1A2 | solute carrier family 1 (glial high affinity glutamate transporter), member 2; excitatory amino acid transporter 2 | t | p | 80 | 4 | NP\_001012917 |
| 422649 | SLC4A4 | solute carrier family 4, sodium bicarbonate cotransporter, member 4 | t | p | 27 | 4 | XP\_420603 |
| 396444 | SNAP25 | synaptosomal-associated protein, 25kDa | v | v | 6 | 1 | NP\_990789 |
| 428635 | SNAP91 | clathrin coat assembly protein AP180, synaptosomal-associated protein 91 | v | p | 13 | 2 | NP\_001012969 |
| 374234 | SPTAN1 (SPECA) | spectrin alpha chain, non-erythrocytic 1 | c | c | 135 | 4 | NP\_001036003 |
| 421216 | SPTBN1 | spectrin beta chain, non-erythrocytic 1 | c | c | 137 | 4 | NP\_001186354 |
| 404293 | STXBP1 | syntaxin binding protein 1, Unc18-1 | v | v | 67 | 4 | NP\_996859 |
| 418015 | SYNGR1 | synaptogyrin 1 | v | v | 11 | 3 | NP\_001239207 |
| 418498 | SYNJ1 | synaptojanin 1 | v | v | 7 | 1 | XP\_416706 |
| 420800 | TPPP | tubulin polymerization promoting protein | c | c | 50 | 4 | XP\_418894 |
| 421169 | TUBA3E | tubulin, alpha 3e | c | c | 44 | 1 | XP\_419249 |
| 396254 | TUBB | tubulin beta-7 chain | c | c | 393 | 4 | NP\_990646 |
| 420883 | TUBB2B (TUBB2) | tubulin beta-2 chain | c | c | 331 | 4 | NP\_001004400 |
| 417255 | TUBB2C (TUBB4) | tubulin, beta 2C; tubulin beta-3 chain | c | c | 354 | 4 | NP\_001074329 |
| 431043 | TUBB3 | tubulin, beta 3 class III; tubulin beta-4 chain | c | c | 303 | 4 | NP\_001026769 |
| 421037 | TUBB6 | tubulin, beta 6 class V; tubulin beta-5 chain | c | c | 118 | 2 | NP\_001026183 |
| 416013 | UQCRC1 | ubiquinol-cytochrome c reductase core protein I | m | m | 120 | 4 | XP\_414356 |
| 418290 | USP5 | ubiquitin specific peptidase 5 (isopeptidase T) | p | c | 4 | 2 | XP\_003640490 |
| 418273 | VAMP1 | vesicle-associated membrane protein 1 (synaptobrevin 1) | v | v | 21 | 3 | NP\_001034575 |
| 419368 | VAMP3 | vesicle-associated membrane protein 3 (cellubrevin) | v | v | 24 | 3 | NP\_001034578 |
| 427820 | YWHAG | 14-3-3 protein gamma, tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, gamma polypeptide | s | c | 164 | 4 | NP\_001026648 |