Supplementary Table 5. Proteins differentially expressed in the whole hippocampus or the dentate gyrus of Shn-2 KO mice.

| | | Hippocampus | | Dentate gyrus | |
|---|---|---|---|---|---|
| Symbol | Description | Fold Change | P value | Fold Change | P value |
| GFAP | grial fibrillary acidic protein | 3.60 | 0.0007 | 2.05 | 0.0007 |
| ATP5K | ATP synthase e chain, mitochondrial | −1.66 | 0.0017 | −1.99 | 0.0042 |
| ATP5F1 | ATP synthase, H+ transporting, mitochondrial F0 complex, subunit b, isoform 1 | | | −1.10 | 0.0073 |
| ATP6V1A | ATPase, H+ transporting, lysosomal 70kDa, V1 subunit A | | | 1.46 | 0.0004 |
| ATP6V1B2 | vacuolar H+ ATPase B2 isoform 2 | | | 1.42 | 0.0014 |
| UB | 1d8 ubiquitin mutant | −1.60 | 0.0054 | | |
| UBB | ubiquitin B | −1.60 | 0.0054 | | |
| CALB2 | calbindin 2 | | | 1.45 | 0.0010 |
| HPCA | hippocalcin | | | 1.44 | 0.0190 |
| INPP1 | inositol polyphosphate-1-phosphatase | 1.43 | 0.0480 | −1.25 | 0.0450 |
| EG628438 | CPN10-like protein | −1.42 | 0.0120 | | |
| HSPE1 | heat shock protein 1 (chaperonin 10) | −1.42 | 0.0120 | −1.99 | 0.0042 |
| UQCRFS1 | ubiquinol-cytochrome C reductase, Rieskeiron-sulfer polypeptide 1 | −1.41 | 0.0180 | −1.12 | 0.0200 |
| ARPC5 | actin related protein 2/3 complex, subunit 5 | | | −1.41 | 0.0006 |
| GPD1 | glycerol-3-phosphate dehydrogenase 1 | | | 1.40 | 0.0057 |
| COX5B | cytochrome C oxidase, subunit V6 | | | 1.40 | 0.0004 |
| CKMT1 | Creatin kinase, mitochondrial 1 | −1.37 | 0.0170 | −1.26 | 0.0013 |
| PPP3CA | calcineurin A alpha | 1.37 | 0.0230 | 1.27 | 0.0031 |
| STMN1 | stathmin 1 | −1.35 | 0.0310 | −1.23 | 0.0270 |
| ADAM5 | a disintegrin and metallopeptidase domain 5 | −1.33 | 0.0082 | | |
| KLHL10 | kelch-like 10 | −1.33 | 0.0490 | | |
| VDAC2 | voltage-dependent anion chanel 2 | −1.32 | 0.0300 | | |
| ATP5D | ATP-synthase, H+ transporting mitcondrial F1 complex, delta subunit precursor | −1.31 | 0.0200 | −1.15 | 0.0320 |
| MYL6 | myosin, light chain 6, allcali, smooth muscle and non-muscle isoform 1 | −1.31 | 0.0200 | | |
| SNCB | synuclein, beta | −1.31 | 0.0200 | −1.15 | 0.0320 |
| SEPT2 | septin 2 | −1.29 | 0.0015 | | |
| NAPB | N-ethylmaleimide sensitive fusion protein attachment protein beta | | | 1.29 | 0.0002 |
| FIS1 | fission 1 (mitochondrial outer membrane) homolog | | | −1.28 | 0.0150 |

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|---|---|---|---|---|---|
| PHGDH | D-3-phosphoglycerate dehydrogenase | 1.27 | 0.0320 | | |
| SEPT5 | septin 5 | -1.27 | 0.0003 | -1.08 | 0.0480 |
| DBF4 | activator of S phase kinase | -1.26 | 0.0270 | | |
| GSTM5 | glutathione S-transferase, mu5 | -1.25 | 0.0120 | -1.21 | 0.0002 |
| HPRT1 | hypoxanthine phosphoribosyl transferase 1 | -1.25 | 0.0120 | -1.21 | 0.0002 |
| MED6 | Mediator of RNA polymerase II transcription, subunit 6 homolog | -1.25 | 0.0150 | | |
| UCHL3 | ubiquitin carboxyl-terminal hydrolase isozyme L3 | -1.25 | 0.0120 | | |
| YWHAH | tyrosine 3-monooxygenase/ tryptophan 5-monooxygenase activation protein | -1.25 | 0.0120 | 1.26 | 0.0006 |
| ACTR3 | ARP3 actin-related protein 3 homolog | | | -1.25 | 0.0033 |
| BDNF | brain-derived neurotrophic factor | -1.24 | 0.0360 | | |
| GLOD4 | glyoxalase domain-containing protein 4 | 1.24 | 0.0380 | 1.25 | 0.0012 |
| LOC574157 | similar to sperm surface protein Sp17 | -1.24 | 0.0360 | | |
| NAPA | N-etylmaleimide sensitive fusion protein attachment protein alpha | 1.24 | 0.0380 | 1.25 | 0.0012 |
| SPA17 | sperm surface protein Sp17 (sperm autoantigenic protein 17) | -1.24 | 0.0360 | | |
| GON4L | gon-4 like isoform a | -1.23 | 0.0240 | | |
| STX18 | syntaxin-18 | | | 1.23 | 0.0031 |
| ARBP | acidic ribosomal phosphoprotein | -1.22 | 0.0480 | | |
| RPLP0 | ribosomal protein P0 | -1.22 | 0.0480 | | |
| PCBP1 | poly (rc) binding protein 1 | | | 1.22 | 0.0063 |
| AKR1 | aldose reductase (aldo-keto reductase family 1) | -1.21 | 0.0370 | | |
| AKR1B3 | aldo-keto reductase family 1, member B3 (aldose reductase) | | | 1.40 | 0.0057 |
| CORO1A | Coronin-1A | -1.21 | 0.0061 | -1.18 | 0.0001 |
| ACO2 | mitochondrial aconitase 2 | | | -1.21 | 0.0002 |
| GRIA2 | glutamate receptor, ionotropic, AMPA2 isoform 3 | | | -1.21 | 0.0002 |
| YWHAG | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, gamma polypeptide | | | 1.21 | 0.0012 |
| CAPZB | capping protein (actin filament) muscle Z-like, beta | | | -1.20 | 0.0001 |
| DLD | dihydrolipoamide dehydrogenase | | | -1.19 | 0.0140 |
| MAPK1 | mitogen activated protein kinase 1 | | | 1.19 | 0.0180 |
| GBAS | protein NipSnap homolog 2 (Glioblastoma-amplified sequence) | | | -1.19 | 0.0057 |
| GSTM1 | glutathione S-transferase, mu1 | | | -1.19 | 0.0110 |
| UQCRC1 | ubiquinol-cytocrome C reductase core protein 1 | -1.18 | 0.0200 | | |

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|---|---|---|---|---|---|
| DLAT | dihydrolipoamide S-acetyltransferase (E2 component of pyruvate dehydrogenase complex) | | | 1.18 | 0.0044 |
| PRDX1 | peroxiredoxin-1 | | | 1.18 | 0.0260 |
| ALDOA | aldolase 1, A isoform | 1.17 | 0.0100 | -1.22 | 0.0010 |
| CAR2 | carbonic anhydrase 2 | -1.17 | 0.0030 | | |
| ETFA | Electron transfer flavoprotein subunit alpha, mitcondrial precursor | -1.17 | 0.0340 | -1.10 | 0.0004 |
| FABP5 | fatty acid-binding protein 5 | -1.17 | 0.0021 | | |
| NDUFS1 | NADH dehydrogenase (ubiquinone) Fe-S protein 1 | -1.17 | 0.0350 | | |
| NDUFA10 | NADH dehydrogenase (ubiquinone) 1, alpha subunit 10 | | | -1.15 | 0.0003 |
| PGAM1 | phosphoglycerate mutase | -1.17 | 0.0030 | | |
| UBCRC2 | ubiquinol cytochrome c reductase core protein 2 | | | -1.17 | 0.0080 |
| UQCRB | ubiquinol-cytochrome C reductase binding protein | | | 1.17 | 0.0100 |
| ALDH2 | aldehyde dehydrogenase 2, mitcondrial | -1.16 | 0.0130 | | |
| CS | Citrate synthase | -1.16 | 0.0450 | -1.09 | 0.0085 |
| HSP60 | heat shock protein 60 | 1.16 | 0.0280 | | |
| HSP90AB1 | heat shock 90kDa protein 1 beta | | | 1.19 | 0.0190 |
| HSPA8 | heat shock 70kDa protein 8 isoform 1 | | | 1.17 | 0.0220 |
| SNTG2 | syntrophin, gammma 2 | 1.16 | 0.0280 | | |
| VDAC1 | voltage-dependent anion chanel 2 | -1.16 | 0.0026 | -1.17 | 0.0006 |
| CFL1 | cofilin-1 | -1.15 | 0.0380 | -1.11 | 0.0310 |
| DOK7 | downstream of tyrosine kinase 7 (docking protein 7) | -1.15 | 0.0058 | -1.15 | 0.0003 |
| HNRPK | heterogeneous nuclear ribonucleoprotein K | -1.15 | 0.0480 | | |
| HNRNPH1 | heterogeneous nuclear ribonucleoprotein H1 | | | -1.07 | 0.0480 |
| MDH1 | cytosolic malate dehydrogenase | 1.15 | 0.0088 | | |
| PITPNA | phosphatidylinositol transfer protein, alpha | 1.15 | 0.0088 | | |
| FREQ | Neuronal calcium sensor 1 (Frequenin homolog) | 1.14 | 0.0280 | | |
| GSN | gelsolin | 1.14 | 0.0340 | | |
| PLG | Plasminogen | 1.14 | 0.0340 | | |
| ATP5A1 | ATP synthase, H+-transporting, mitochondrial F1 complex, alpha subunit | 1.13 | 0.0260 | -1.17 | 0.0026 |
| CD40 | tumor necrosis factor receptor surperfamily, member 5 isoform 1 (CD40 antigen) | -1.13 | 0.0300 | 1.24 | 0.0370 |
| CT75 | cancer/ testis antigen 75 | -1.13 | 0.0026 | | |
| DNAH7 | dynein, axonemal, heavy chain 7 | 1.13 | 0.0037 | | |

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|---|---|---|---|---|---|
| LDHA | L-lactate dehydrogenase A | -1.13 | 0.0120 | | |
| UCHL1 | ubiquitin carboxyl-terminal hydrolase isozyme L1 | 1.12 | 0.0480 | 1.40 | 0.0007 |
| AK1 | adenylate kinase 1 | -1.11 | 0.0110 | | |
| AK3 | adenylate kinase 3 | | | -1.19 | 0.0057 |
| PVALB | parvalbumin | -1.11 | 0.0170 | | |
| SH3BGRL | SH3-binding domain glutamic acid-rich protein like | -1.11 | 0.0170 | | |
| TXN1 | thioredoxin | -1.11 | 0.0170 | | |
| GPI1 | glucose phosphate isonerase 1 | | | -1.10 | 0.0130 |
| CDCREL-1 | CDCrel-1AI | -1.09 | 0.0420 | | |
| NDUFS8 | NADH dehydrogenase (ubiquinone) Fe-5 protein 8 | -1.09 | 0.0420 | | |
| PEBP1 | phosphatidylethanolamine binding protein 1 | -1.09 | 0.0420 | | |
| PGK1 | phosphoglycerate kinase 1 | -1.06 | 0.0330 | | |
| PSMA6 | proteasome subunit, alpha type 6 | | | -1.05 | 0.0400 |
| PSMB5 | proteasome subunit, beta type 5 | | | -1.16 | 0.0000 |
| PSMB1 | proteasome subunit, beta type 1 | | | -1.10 | 0.0073 |