**Table 1. PC specific or enriched genes commonly downregulated in the cerebellum of SCA1, SCA2, SCA7 mice models**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene symbol** | **Gene name** | **SCA7** | **SCA1** | **SCA2** |
| **log2FC (SCA7/WT)****40wk** | **log2FC (SCA1/WT)****5wk** | **log2FC (SCA1/WT)****12wk** | **log2FC (SCA1/WT)****28wk** | **log2FC (SCA2/WT)****6wk** |
| ***Abr r Ankrd33b Arhgap20*** *Arhgap26 Arhgap31 Arhgap32* ***Arhgap5 Atp2a3*** *B4galnt3* ***Cacnb2 r Calb1 a r Car8 a r*** *Casq2* ***Clmn Corin Creg1 Cyth3 Dagla a Dap r Dgkh r*** *Dlg2****Dner******Doc2b Etl4 Fam107b r*** *Fam117a Fam78b r* ***Far2******Fgf7******Gabbr1 Garnl3 Gm5083******Gng13 Gpr63 Grid2 a Grid2ip Htr1b Icmt r Id2 r Inpp4a a Inpp5a a*** *Itpr1 a r* ***Kcna6 r Kcnab1 r Kcnip1******Kcnma1 a Kctd12 Mtss1 a r*** *Nexn* ***Opn3 Pcp4 r Pde5a Pde9a Plcb3 r Plekhd1 Pogk Ppp1r16b Ppp1r17 Ppp4r4 Prkg1 Prmt8 Psd2 Ptprr a r Rdh11*** *Rgs7bp* ***Rgs8 Rnf19b*** *Rora a r* ***Rtel1 Samd8 Slc9a3 r Srl******Stac Stk17b Strip2 Strn3 Tmem64 Trpc3 a******2410124H12Rik****3632451O06Rik* | active BCR-related gene ankyrin repeat domain 33BRho GTPase activating protein 20 Rho GTPase activating protein 26 Rho GTPase activating protein 31 Rho GTPase activating protein 32 Rho GTPase activating protein 5ATPase, Ca++ transporting, ubiquitousbeta-1,4-N-acetyl-galactosaminyl transferase 3 calcium channel, voltage-dependent, beta 2 subunit calbindin 1carbonic anhydrase 8calsequestrin 2 calmincorincellular repressor of E1A-stimulated genes 1 cytohesin 3diacylglycerol lipase, alpha death-associated protein diacylglycerol kinase, etadiscs large MAGUK scaffold protein 2delta/notch-like EGF repeat containing double C2, betaenhancer trap locus 4family with sequence similarity 107, member B family with sequence similarity 117, member Afamily with sequence similarity 78, member B fatty acyl CoA reductase 2fibroblast growth factor 7gamma-aminobutyric acid (GABA) B receptor, 1 GTPase activating RANGAP domain-like 3 predicted gene 5083guanine nucleotide binding protein (G protein), gamma 13 G protein-coupled receptor 63glutamate receptor, ionotropic, delta 2glutamate receptor, ionotropic, delta 2 (Grid2) interacting protein 1 5-hydroxytryptamine (serotonin) receptor 1Bisoprenylcysteine carboxyl methyltransferase inhibitor of DNA binding 2inositol polyphosphate-4-phosphatase, type I inositol polyphosphate-5-phosphatase A inositol 1,4,5-trisphosphate receptor 1potassium voltage-gated channel, shaker-related, subfamily, member 6potassium voltage-gated channel, shaker-related subfamily, beta member 1 Kv channel-interacting protein 1potassium large conductance calcium-activated channel, subfamily M, alpha member 1potassium channel tetramerisation domain containing 12 metastasis suppressor 1nexilinopsin 3Purkinje cell protein 4 phosphodiesterase 5A, cGMP-specific phosphodiesterase 9Aphospholipase C, beta 3pleckstrin homology domain containing, family D (with coiled-coil domains) member 1 pogo transposable element with KRAB domainprotein phosphatase 1, regulatory subunit 16B protein phosphatase 1, regulatory subunit 17protein phosphatase 4, regulatory subunit 4 protein kinase, cGMP-dependent, type I protein arginine N-methyltransferase 8 pleckstrin and Sec7 domain containing 2 protein tyrosine phosphatase, receptor type, R retinol dehydrogenase 11regulator of G-protein signalling 7 binding protein regulator of G-protein signaling 8ring finger protein 19BRAR-related orphan receptor alpha regulator of telomere elongation helicase 1 sterile alpha motif domain containing 8solute carrier family 9 (sodium/hydrogen exchanger), member 3 sarcalumeninsrc homology three (SH3) and cysteine rich domain serine/threonine kinase 17b (apoptosis-inducing) striatin interacting protein 2striatin, calmodulin binding protein 3 transmembrane protein 64Transient Receptor Potential Cation Channel Subfamily C Member 3 RIKEN cDNA 2410124H12 gene---- | -0.32-0.52-0.73-0.62-0.37-0.39-0.49-0.38-0.55-0.42-0.47-0.51-0.42-0.65-0.53-0.49-0.37-0.45-0.35-0.77-0.43-0.36-0.64-0.50-1.03-0.68-0.41-0.54-0.51-0.37-0.67-0.47-0.74-0.90-0.50-0.66-0.45-0.54-0.32-0.29-0.41-0.56-0.45-0.34-0.34-0.67-0.95-0.36-0.36-1.03-0.57-0.70-0.46-0.72-0.34-0.45-0.72-0.34-0.49-0.80-0.52-0.31-0.36-0.46-0.32-0.91-0.45-0.39-0.32-0.33-0.60-0.77-0.66-0.71-0.49-0.34-0.33-0.50-0.88-0.40 | -0.27-0.49-0.47ns ns ns-0.26-0.79ns-0.51-0.61-0.73ns-0.70-0.86-0.78-0.42-0.90-1.09-1.06ns-0.56-1.01-0.35-1.08ns ns-0.58-1.55-0.57-0.65-0.68-1.30-1.07-0.42-1.09-0.52-0.63-0.46-0.35-0.56ns-0.49-0.51-0.62-0.37-0.87-0.27ns-1.05-0.85-0.45-0.37-0.91-0.39-0.32-0.74-0.45-0.46-0.48-0.35-0.38-0.36-0.40ns-0.97-0.49ns-0.55-0.43-0.82-0.91-0.92-0.84-0.45-0.42-0.27-0.65-1.75ns | -0.02-1.28-0.79-0.68-0.64-0.49-1.22-1.50-4.15-0.92-1.17-1.59-0.73-1.32-2.11-0.85-0.79-1.12-0.94-1.80-0.93-1.13-1.43-0.51-1.92-0.82-0.45-1.36-3.26-0.69-1.12-0.90-1.92-1.93-1.18-1.66-1.36-1.41-0.59-0.72-0.89-1.43-0.77-1.30-0.97-0.97-1.96-0.59-0.67-1.74-1.14-1.50-0.12-0.92-0.74-0.75-1.31-1.08-0.98-1.05-0.49-0.57-1.14-0.90-0.87-2.06-0.70-0.87-0.79-0.90-1.66-1.24-1.26-1.86-1.37-0.75-0.85-1.57-3.11-0.84 | -0.20-1.58-1.22-0.84-1.12-1.03-1.05-1.84-0.56-1.05-1.42-1.51-1.03-1.84-2.83-0.97-0.65-1.44-1.31-2.37-0.98-1.08-1.87-0.72-1.65-0.60-0.85-1.22-2.59-0.76-1.41-0.98-1.97-2.58-1.32-2.95-1.21-1.56-0.52-0.90-1.07-2.00-0.47-1.07-1.10-1.62-1.44-0.88-0.81-0.76-1.30-1.83-0.47-1.10-0.78-0.67-1.44-0.93-1.26-1.20-0.50-0.38-0.83-0.60-0.64-2.13-0.68-1.25-0.71-0.92-2.00-1.04-1.83-1.74-1.24-0.87-0.58-1.58-3.67-0.53 | -0.46-0.73-0.70-0.94-0.70-0.69-0.56-1.26-1.77-0.49-0.87-1.13-0.58-1.34-1.22-0.31-0.56-1.58-0.64-1.14-0.43-1.20-1.53-0.82-1.87-1.18-0.60-0.70-1.41-0.53-0.96-1.08-1.54-2.17-0.80-1.68-1.16-0.88-0.49-1.00-1.00-1.00-0.70-0.74-0.38-0.83-1.23-0.93-0.62-1.94-0.81-0.89-0.47-0.98-0.61-0.54-1.25-0.65-0.70-0.90-0.70-0.49-0.50-0.45-0.33-1.50-0.90-0.63-0.41-0.60-1.22-0.78-1.22-1.02-0.73-0.37-0.37-1.26-2.08-0.25 |

ns: not significant, no name available, a: genes associated with genetic ataxias, r: RORa genetic targets