**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 33B  Rho GTPase activating protein 20 Rho GTPase activating protein 26 Rho GTPase activating protein 31 Rho GTPase activating protein 32 Rho GTPase activating protein 5  ATPase, Ca++ transporting, ubiquitous  beta-1,4-N-acetyl-galactosaminyl transferase 3 calcium channel, voltage-dependent, beta 2 subunit calbindin 1  carbonic anhydrase 8  calsequestrin 2 calmin  corin  cellular repressor of E1A-stimulated genes 1 cytohesin 3  diacylglycerol lipase, alpha death-associated protein diacylglycerol kinase, eta  discs large MAGUK scaffold protein 2  delta/notch-like EGF repeat containing double C2, beta  enhancer trap locus 4  family with sequence similarity 107, member B family with sequence similarity 117, member A  family with sequence similarity 78, member B fatty acyl CoA reductase 2  fibroblast growth factor 7  gamma-aminobutyric acid (GABA) B receptor, 1 GTPase activating RANGAP domain-like 3 predicted gene 5083  guanine nucleotide binding protein (G protein), gamma 13 G protein-coupled receptor 63  glutamate receptor, ionotropic, delta 2  glutamate receptor, ionotropic, delta 2 (Grid2) interacting protein 1 5-hydroxytryptamine (serotonin) receptor 1B  isoprenylcysteine carboxyl methyltransferase inhibitor of DNA binding 2  inositol polyphosphate-4-phosphatase, type I inositol polyphosphate-5-phosphatase A inositol 1,4,5-trisphosphate receptor 1  potassium voltage-gated channel, shaker-related, subfamily, member 6  potassium voltage-gated channel, shaker-related subfamily, beta member 1 Kv channel-interacting protein 1  potassium large conductance calcium-activated channel, subfamily M, alpha member 1  potassium channel tetramerisation domain containing 12 metastasis suppressor 1  nexilin  opsin 3  Purkinje cell protein 4 phosphodiesterase 5A, cGMP-specific phosphodiesterase 9A  phospholipase C, beta 3  pleckstrin homology domain containing, family D (with coiled-coil domains) member 1 pogo transposable element with KRAB domain  protein phosphatase 1, regulatory subunit 16B protein phosphatase 1, regulatory subunit 17  protein 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 11  regulator of G-protein signalling 7 binding protein regulator of G-protein signaling 8  ring finger protein 19B  RAR-related orphan receptor alpha regulator of telomere elongation helicase 1 sterile alpha motif domain containing 8  solute carrier family 9 (sodium/hydrogen exchanger), member 3 sarcalumenin  src homology three (SH3) and cysteine rich domain serine/threonine kinase 17b (apoptosis-inducing) striatin interacting protein 2  striatin, calmodulin binding protein 3 transmembrane protein 64  Transient 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  -0.47  ns ns ns  -0.26  -0.79  ns  -0.51  -0.61  -0.73  ns  -0.70  -0.86  -0.78  -0.42  -0.90  -1.09  -1.06  ns  -0.56  -1.01  -0.35  -1.08  ns 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  -0.56  ns  -0.49  -0.51  -0.62  -0.37  -0.87  -0.27  ns  -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  -0.40  ns  -0.97  -0.49  ns  -0.55  -0.43  -0.82  -0.91  -0.92  -0.84  -0.45  -0.42  -0.27  -0.65  -1.75  ns | -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