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| Mouse Model | Model Type | Predominant Phenotype | Quantified Motor Behavior | Anatomy |
| *Pcp2Cre;Slc32a1fl/fl* | Cre-loxP constitutive genetic knockout | Ataxia | **Impaired****↓ Hind stride:**Footprint analysis**↓ Latency to fall:**Rotarod**↓ Tremor amplitude:**Tremor monitor(Brown et al., 2020; White et al., 2014) | **↓ PC SLC32A1:** IHC and in situ**Abnormal cerebellar zones:** IHC and WGA tracing**↑ Ectopic TH expression:** IHC(White et al., 2014) |
| *Ptf1aCre;Slc17a6fl/fl* | Cre-loxP constitutive genetic knockout | Dystonia | **Impaired****↓ Distance traveled:**Open field**↓ Latency to fall:**Rotarod**↑ Tremor amplitude:**Tremor monitor**↑ Dystonia rating:**Dystonia rating scale**↑ EMG power:**EMG**↑ Antagonist muscle co-contraction and over-contraction:** EMG(Brown et al., 2022, 2023; Salazar Leon & Sillitoe, 2023; White & Sillitoe, 2017) | **↓ IO SLC17A6:** IHC and in situ**Transiently thinner molecular layer:** IHC(Salazar Leon & Sillitoe, 2023; White & Sillitoe, 2017) |
| Harmaline injection (control genotype) | Intraperitoneal injection(pharmacological) | Tremor | **Impaired****↑ Tremor amplitude:**Tremor monitor**↑ EMG power:**EMG(Brown et al., 2020, 2023) | **↑ CN and IO cFos expression:** IHC(Brown et al., 2020) |
| *Atxn1154Q/+* | SCA1 genetic knockin | Ataxia | **Impaired****↓ Latency to fall:**Rotarod**↓ Distance traveled:**Open field**↑ Slips**Dowel Assay(Coffin et al., 2023; Fryer et al., 2011; Watase et al., 2002) | **↓ Brain weight****↑ Nuclear inclusions:** IHC**↓ Calbindin immunofluorescence:** IHC**Thinner molecular layer:** IHC**↓ PC count:** IHC**↑ Abnormal morphology and degeneration of motor neurons:** H&E**↑ Reactive astrocytosis:** IHC(Coffin et al., 2023; Fryer et al., 2011; Orengo et al., 2018; Watase et al., 2002) |
| *Pdx1Cre;Slc17a6fl/fl* | Cre-loxP constitutive genetic knockout | Dystonia | **Impaired****↑ Hind sway:**Footprint analysis**↓ Latency to fall:**Rotarod**↑ Dystonia rating:**Dystonia rating scale**↑ High stepping gait:**Horizontal ladder(Lackey, 2021) | **↓ CF and MF SLC17A6:** IHC**↓ LH *Slc17a6*:** in situ(Lackey, 2021)(Mangieri et al., 2018) |
| *Pcp2Cre;Ank1fl/fl* | Cre-loxP constitutive genetic knockout | Ataxia | **Impaired****↓ Hind stride,****↓ Hind stance,****↑ Hind sway:**Footprint analysis(Stevens et al., 2021) | **↓ PC Ank1:** IHC**PC progressive abnormal morphology and degeneration in anterior and central zones:** IHC**Thinner molecular layer in anterior and central zones:** IHC(Stevens et al., 2021) |
| Ouabain infusion (control genotype) | Application to the surface of the cerebellum (pharmacological) | Dystonia | **Impaired****↑ Dystonia rating:**Dystonia rating scale(Fremont et al., 2014) | NA |
| *Car8wdl/wdl* | Spontaneous deletion mutation | Ataxia + Dystonia + Tremor | **Impaired****↓ Latency to fall:**Rotarod **↓ Print width,****↓ Print area:** CatWalk**↑ Hind and fore base-width,****↑ Hind sway:**Footprint analysis**↑ Slips**Raised beam**↓ Ambulatory activity:**Open field**↑ Tremor amplitude:**Tremor monitor**↑ Antagonist muscle co-contraction and over-contraction:** EMG**Unimpaired**Righting time, vertical rope climbing, limb clasping(Jiao et al., 2005; Miterko et al., 2019, 2021; White et al., 2016; Zhou et al., 2022) | **↓ PC Car8:** IHC**Delayed and abnormal cerebellar zones:** IHC and WGA tracing**Thinner molecular layer:** IHC**Transiently smaller cerebellum:** H&E**Delayed GC proliferation:** IHC**Transiently abnormal PC morphology:** IHC**↑ Ectopic TH expression:** IHC(Miterko et al., 2019; White et al., 2016) |
| *Car8wdl/wdl +* propranolol injection | Spontaneous deletion mutation + intraperitoneal injection(genetic + pharmacological) | Ataxia + Dystonia | **Impaired****↑ Hind sway:**Footprint analysis**Unimpaired**Tremor, open field (movement time, movement episodes, ambulatory activity)(Zhou et al., 2022) | NA |