

Table S1. Size comparison of α -MNs and γ -MNs between SOD1^{G93A} and WT mice:.

Group	Statistical test	N	P Values
SOD1 ^{G93A} v WT (α -MNs v γ -MNs)	Two-Way ANOVA, Tukey's multiple comparison test	SOD1 ^{G93A} : α -MNs (4) γ -MNs (4) WT: α -MNs (4) γ -MNs (4)	Genotype: 0.0015 MN classification: <0.001 Interaction: 0.0087
Distribution analysis: α -MNs: SOD1 ^{G93A} v WT	Mann Whitney U Test.	SOD1 ^{G93A} +: α -MNs (60) WT: α -MNs (60)	P <0.001 (Two tailed)
Distribution analysis: γ -MNs: SOD1 ^{G93A} v WT	Mann Whitney U Test.	SOD1 ^{G93A} : γ -MNs (4) WT: γ -MNs (4)	P <0.001 (Two tailed)
Distribution analysis: α p-MNs v WT α -MNs	Mann Whitney U Test.	α p-MNs (22) WT: α -MNs (38)	P 0.912 (Two tailed)

Table S2. MNs loss in between 3- and 4- months in SOD1^{G93A} and WT mice: (* Indicates significance.).

Group	Statistical test	N	P Values
α-MNs Lumbar SOD1 ^{G93A} v WT (3-Months v 4-Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: WT (5), SOD1 ^{G93A} (3), 4- Month: WT (3), SOD1 ^{G93A} (5).	*Genotype: 0.0009 Age: 0.8368 Interaction: 0.8929
γ-MNs Lumbar SOD1 ^{G93A} v WT (3-Months v 4-Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: WT (5), SOD1 ^{G93A} (3), 4- Month: WT (3), SOD1 ^{G93A} (5).	Genotype: 0.508 Age: 0.705 Interaction: 0.07
α-MNs Cervical SOD1 ^{G93A} v WT (3-Months v 4-Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: WT (5), SOD1 ^{G93A} (3), 4- Month: WT (3), SOD1 ^{G93A} (5).	*Genotype: 0.0002 Age: 0.2472 Interaction: 0.6382
γ-MNs Cervical SOD1 ^{G93A} v WT (3-Months v 4-Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: WT (5), SOD1 ^{G93A} (3), 4- Month: WT (3), SOD1 ^{G93A} (5).	Genotype: 0.9457 Age: 0.5898 Interaction: 0.7307
WT α-MNs Lumbar v Cervical (3-Months v 4- Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: Lumbar (5), Cervical (5), 4- Month: Lumbar (3), Cervical (3).	Spinal level: 0.2139 Age: 0.3193 Interaction: 0.9633
SOD1^{G93A} α-MNs Lumbar v Cervical (3-Months v 4- Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: Lumbar (5), Cervical (5), 4- Month: Lumbar (3), Cervical (3).	*Spinal level: 0.002 Age: 0.205 *Interaction: 0.0415
WT γ-MNs Lumbar v Cervical (3-Months v 4- Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: Lumbar (5), Cervical (5), 4- Month: Lumbar (3), Cervical (3).	Spinal level: 0.0022 Age: 0.9420 Interaction: 0.2664
SOD1^{G93A} γ-MNs Lumbar v Cervical (3-Months v 4- Months)	Two-Way ANOVA, Tukey's multiple comparison test	3- Month: Lumbar (5), Cervical (5), 4- Month: Lumbar (3), Cervical (3).	Spinal level: 0.2764 Age: 0.4078 Interaction: 0.2807

Table S3. α -MNs counts in the phrenic nucleus between 3 and 4 months.

Group	Statistical test	N	P Values
α-MNs Phrenic nucleus			
SOD1 ^{G93A} v WT	Two-Way ANOVA,	3- Month: WT (5), SOD1 ^{G93A} (3).	*Genotype: 0.001
3-Months v 4-Months	Tukey's multiple comparison test	4- Month: WT (3), SOD1 ^{G93A} (5).	Age: 0.0312
			Interaction: 0.8269

Table S4. PKC- γ intensity between 3 and 4 months in SOD1 and WT mice:.

Group	Statistical test	N	P Values
Lumbar			
SOD1 ^{G93A} v WT	Two-Way ANOVA,	3-Month: WT (5), SOD1 ^{G93A} (4),	Genotype: 0.0521
(3-Months v 4-Months)	Tukey's multiple comparison test	4-Month: WT (3), SOD1 ^{G93A} (3).	Age: 0.0786
			Interaction: 0.6485
Cervical			
SOD1 ^{G93A} v WT	Two-Way ANOVA,	3-Month: WT (5), SOD1 ^{G93A} (3),	Genotype: 0.3866
(3-Months v 4-Months)	Tukey's multiple comparison test	4-Month: WT (3), SOD1 ^{G93A} (3).	Age: 0.7955
			Interaction: 0.4244