



**STANFORD**  
SCHOOL OF MEDICINE

<b>Title:</b>	<b>Behavioral Phenotyping of SOD1 ALS Mice</b>
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<b>Procedure</b>	<b>Grip Strength</b>
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## Grip Strength

The grip strength test is a simple test designed to assess motor function and control of the fore and hind paws. Mice are allowed to grab the bar(s) on the Chatillon (Largo, Florida USA) DFIS-10 digital force gauge while being gently pulled parallel away from the bar by the tail. The maximum force prior to release of the mouse's paw from the bar is recorded. After each trial, the apparatus is cleaned with a Virkon solution or alcohol. Either hind, fore, or both hind and fore paws can be tested. Here we will test both hind and forepaws by letting all four paws grip to the bar and gently pulling the tail until release. Maximum force exerted should be noted (in Newtons (N)) this should be divided by the body weight to get force/body weight (N/g).

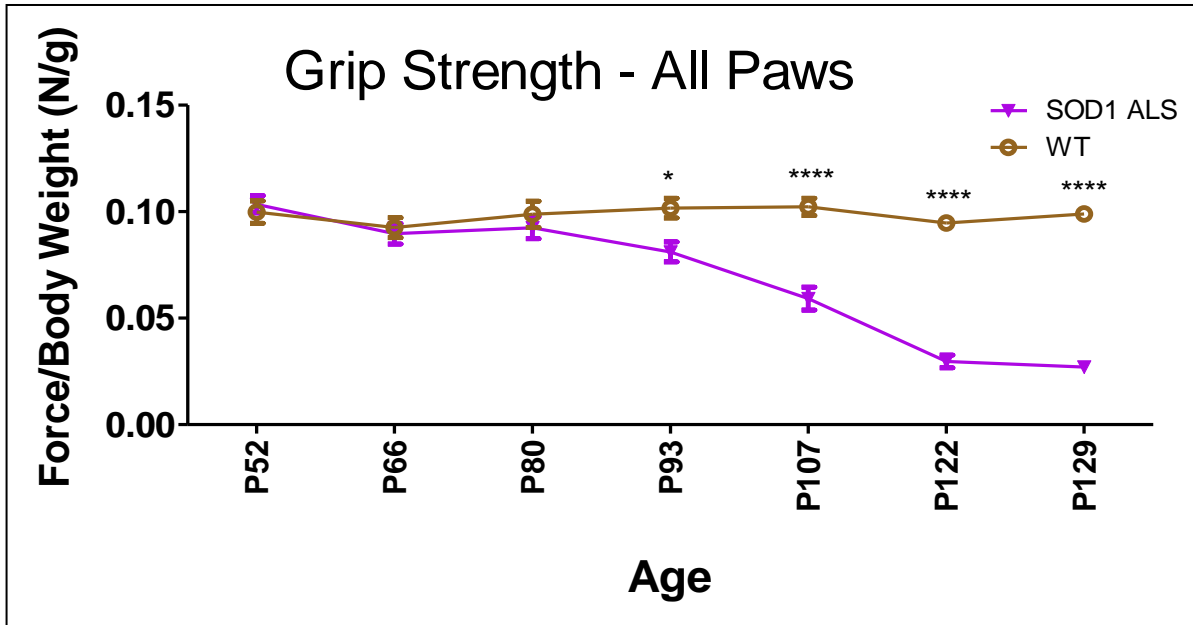
Project Title	Behavioral Phenotyping of SOD1 ALS Mice
Species	Mouse
Strain	B6SJL-Tg(SOD1*G93A)1Gur/J
Sex	Male
Age	p52 at start of testing

Subjects		
Group	# of mice	Treatment
ALS	15	none
WT	10	none

**Grip Strength force/weight (Newtons/gram)**

Age	SOD1 ALS														
	ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7	ID 8	ID 9	ID 10	ID 11	ID 12	ID 13	ID 14	ID 15
P52	0.086	0.104	0.104	0.122	0.098	0.128	0.08	0.111	0.129	0.105	0.112	0.106	0.09	0.099	0.078
P66	0.086	0.107	0.13	0.067	0.109	0.111	0.063	0.088	0.098	0.084	0.087	0.068	0.083	0.091	0.073
P80	0.075	0.11	0.108	0.053	0.096	0.079	0.055	0.111	0.112	0.102	0.114	0.099	0.102	0.077	0.094
P93	0.073	0.086	0.096	0.034	0.078	0.073	0.058	0.095	0.097	0.098	0.102	0.089	0.067	0.083	0.087
P107	0.064	0.023	0.108	0.039	0.065	0.067	0.05	0.07	0.038		0.062	0.065	0.062	0.07	0.046
P122	0.024		0.032	0.027	0.019	0.043	0.027						0.036		
P129						0.026	0.024						0.031		

Age	WT									
	ID 16	ID 17	ID 18	ID 19	ID 20	ID 21	ID 22	ID 23	ID 24	ID 25
P52	0.082	0.085	0.091	0.1	0.075	0.115	0.121	0.099	0.109	0.121
P66	0.082	0.061	0.1	0.098	0.083	0.092	0.091	0.115	0.101	0.102
P80	0.081	0.067	0.101	0.089	0.074	0.115	0.118	0.12	0.112	0.111
P93	0.103	0.075	0.12	0.089	0.087	0.104	0.107	0.107	0.123	0.102
P107	0.096	0.083	0.123	0.089	0.104	0.107	0.118	0.097	0.112	0.094
P122	0.086	0.087	0.097	0.11	0.091	0.092	0.093	0.088	0.093	0.11
P129	0.103	0.095	0.107	0.104	0.092	0.086	0.093	0.103	0.102	0.104



A two-way RM ANOVA confirms that SOD1 mice show significant deficit in grip strength (Source of Variation: Interaction\*\*\*\*; Treatment \*\*\*\*; Age\*\*\*\*). Post hoc bonferroni multiple comparisons show that this difference is significant starting a age P93 and increases during disease progression (at timepoints p107\*\*\*\*, p122 \*\*\*\*, and p129 \*\*\*\*).

Conclusion:

The SOD1 mouse model for ALS shows significant deficits in grip strength starting at P93. The assay window for testing therapeutics is large, thus making it a good parameter for drug discovery.