# Oxidative stress induced dysregulation of excitation-contraction coupling contributes to muscle weakness

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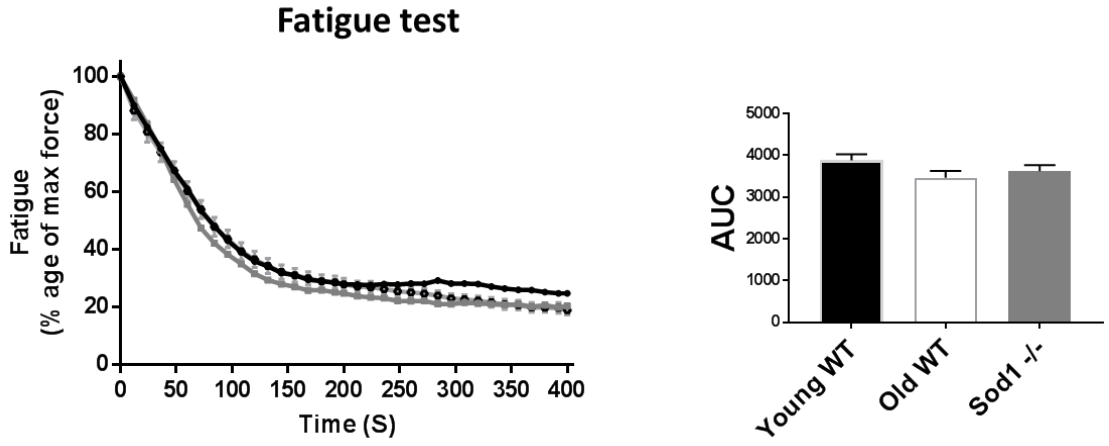
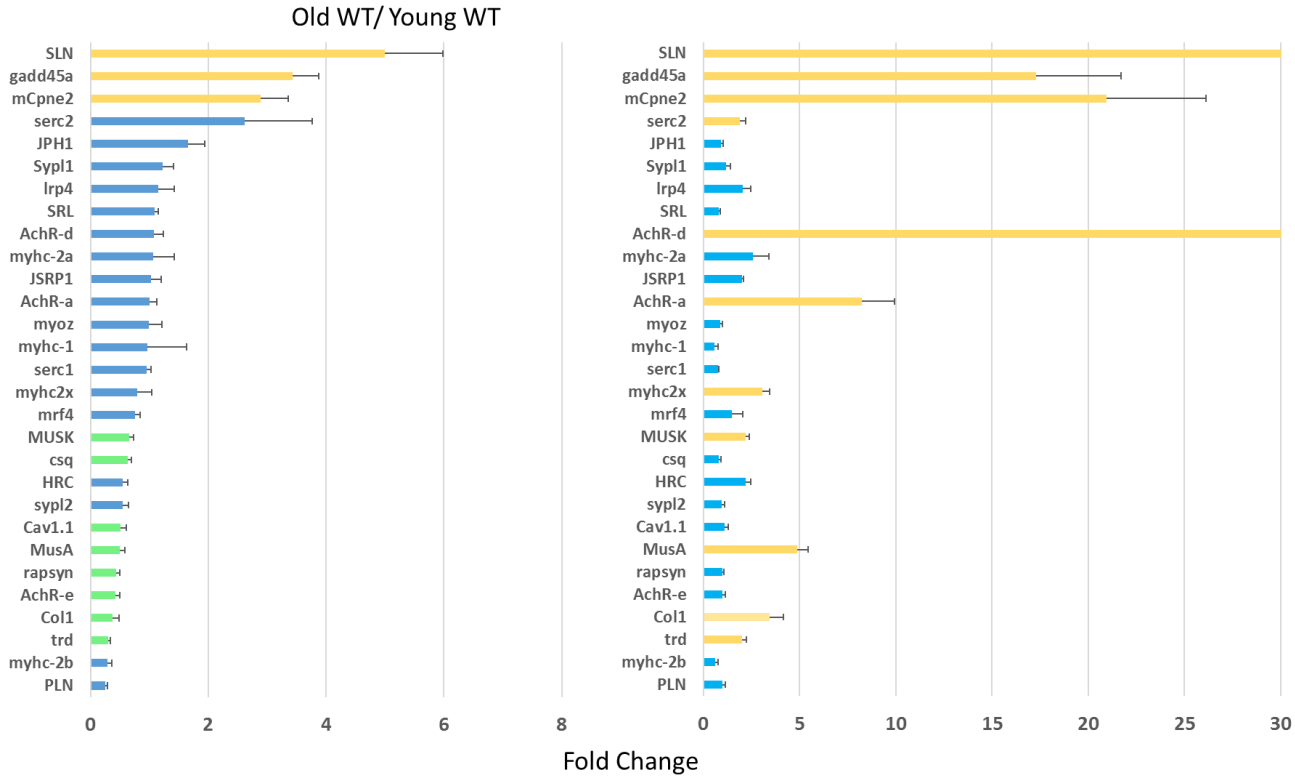
**Supplementary Fig 1. Muscle fatigue**

Time course of contractile force decline in EDL muscles during 400 seconds of fatiguing stimulations. Values are expressed as Mean ± SEM (n = 8-12 per group). ; One-way ANOVA. * $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.001$, **** $P \leq 0.0001$ ANOVA.



**Supplementary Fig 2. Expressions of genes associated with muscle quantity and quality**

mRNA expression of genes associated with muscle functional and structural phenotypes in the gastrocnemius muscles of young and old WT and Sod 1 $^{-/-}$ mice. Values are expressed as Mean ± SEM (n = 8-12 per group). One-way ANOVA. * $P \leq 0.05$,



**Supplementary Table 1. Muscle weights**

Absolute muscle weights and the muscle weights normalized to body weights from the young and old WT and *Sod 1* $^{-/-}$ mice. Values are expressed as Mean ± SEM (n = 8-12 per group). * $P < 0.05$ *vs*. Young WT, € $P < 0.05$ *vs*. Old WT; 1-way ANOVA.

| | Young WT | Old WT | Sod 1 $^{-/-}$ |
|---|---|---|---|
| **Muscle weights (g)** | | | |
| Quadriceps | 0.44 ± 0.01 | 0.35 ± 0.01* | 0.32 ± 0.14* |
| Tibialis Anterior | 0.15 ± 0.01 | 0.10 ± 0.01* | 0.10 ± 0.01* |
| EDL | 0.03 ± 0.003 | 0.02 ± 0.002* | 0.02 ± 0.003* |
| **Muscle Weights / Body Weights (%)** | | | |
| Quadriceps | 1.20 ± 0.048 | 0.92 ± 0.031* | 1.14 ± 0.034€ |
| Tibialis Anterior | 0.40 ± 0.02 | 0.29 ± 0.03* | 0.35 ± 0.015 |
| EDL | 0.08 ± 0.007 | 0.05 ± 0.004* | 0.08 ± 0.008€ |

**Supplementary Table 2. Primers sequences for RT-PCR**

| Gene | | Primer Sequence |
|---|---|---|
| SLN | F | GAGGTGGAGAGACTGAGGTCCTTGG |
| | R | GAAGCTCGGGGCACACAGCAG |
| GADD45a | F | AGACCGAAAGGATGGACACG |
| | R | GTACACGCCGACCGTAATG |
| mCpne2 | F | CATCCCCTTGGGTTCTCAGTG |
| | R | GTTGACGGCTGTTTCTGTTCT |
| SERCA2 | F | GAGAACGCTCACACAAAGACC |
| | R | CAATTCGTTGGAGCCCCAT |
| JPH1 | F | CAGCGGCAACACCTACCAG |
| | R | GTAGCGCCCCTTGAAACCAT |
| Sypl1 | F | AAAGGCCTGTCCGATGTGAAG |
| | R | TCCCTCAGTTCCTTGCATGTG |
| LRP4 | F | TCTGCGCACACGGAATAGC |
| | R | GCGCTCACCGCACATGT |
| SRL | F | GCAGAAGTGCAAGAGGGAAGT |
| | R | TCTAGCTCTGTGGATTGGTGA |
| AChR-d | F | CATCGAGTGGATCATCATTGAC |
| | R | CGGCGGATGATAAGGTAGAA |
| MyHC-2a | F | ATGAGCTCCGACGCCGAG |
| | R | TCTGTTAGCATGAACTGGTAGGCG |
| JSPR1 | F | AGAACGTGGAGGGTCCATCTC |
| | R | TCCCCTTTACTTGGCTTCTCTTT |
| AChR-α | F | ACCTGGACCTATGACGGCTCT |
| | R | AGTTACTCAGGTCGGGCTGGT |
| MyoZ | F | TGAACCAGTCCCTTCGCTG |
| | R | ATGGCCTGCAAACTTTCTGAT |
| MyHC-1 | F | CCTTGGCACCAATGTCCCGGCTC |
| | R | GAAGCGCAATGCAGAGTCGGTG |
| SERCA1 | F | TGTTTGTCCTATTTCGGGGTG |
| | R | AATCCGCACAAGCAGGTCTTC |
| MyHC-2x | F | AAGGAGCAGGACACCAGCGCCCA |
| | R | ATCTCTTTGGTCACTTTCCTGCT |
| MRF4 | F | TGCTAAGGAAGGAGGAGCAA |
| | R | CCTGCTGGGTGAAGAATGTT |
| MUSK | F | TCCTGCGTGCTCCTGAATC |
| | R | TGCAGCGTAGGGTTACAAAGG |
| CSQ | F | CTGGCACTGCTGTTTGTACTG |
| | R | GGGGGCTCATGGTAGAGGAG |
| HRC | F | GGAACACGACCCTTGTGTG |
| | R | GGACTCGGTTTCTCTCCACG |
| Sypl2 | F | CGCACCTCGGACAAGTCTC |
| | R | CCCGAAGGCGAAAATAGC |
| Cav1.1 | F | GTTACATGAGCTGGATCACACAG |
| | R | ATGAGCATTTCGATGGTGAAG |

| | | |
|---|---|---|
| MusA | F<br>R | TCGTGGAATGGTAATCTTGC<br>CCTCCCGTTTCTCTATCACG |
| Rapsyn | F<br>R | GGGACTGGAGGATGCTGACTT<br>TGCGCGCCAGGTTCA |
| AChR-e | F<br>R | GATTGGCATTGACTGGCACG<br>CCACTCCAAACTGCCCATC |
| Col1a1 | F<br>R | CAGTCGATTCACCTACAGCACG<br>GGGATGGAGGGAGTTTACACG |
| Trd | F<br>R | AGAAGACAGCAACTCACAAAGAG<br>GGTGGTGGCATAACTGGGC |
| MyHC-2b | F<br>R | GTGATTTCTCCTGTCACCTCTC<br>GGAGGACCGCAAGAACGTGCTGA |
| PLN | F<br>R | ATGACGACGATTCAAATCTCTTGG<br>TGGGTTTGCAAAGTTAGGCATAA |

Note: SLN: Sarcolipin; GADD45a: Growth arrest and DNA-damage-inducible protein 45a; mCpne2: Copine 2; SERCA2: Sarcoplasmic reticulum calcium ATPase 2; JPH1: Junctophilin 1; Sypl1: Synaptophysin like 1; LRP4: LDL receptor related protein 4; SRL: Sarcalumenin; AChR-d: Acetylcholine receptor delta; MyHC-2a: Myosin heavy chain type 2a; JSPR1: Junctional sarcoplasmic reticulum protein 1; AChR-α: Acetylcholine receptor alpha; MyoZ: Myozenin; MyHC-1: Myosin heavy chain type 1; SERCA1: Sarcoplasmic reticulum calcium ATPase 1; MyHC-2x: Myosin heavy chain type 2x; MRF4: Myogenic regulatory factor 4; MUSK: Muscle associated receptor tyrosine kinase; CSQ: Calsequestrin; HRC: Histidine-rich calcium binding protein; Sypl2: Synaptophysin like 2; Cav1.1: Calcium channel, voltage dependent, L type, alpha 1S subunit; AChR-e: Acetylcholine receptor epsilon; Col1a1: Collagen type 1 alpha 1; trd: triadin; MyHC-2b: Myosin heavy chain type 2b; PLN: Phospholamban