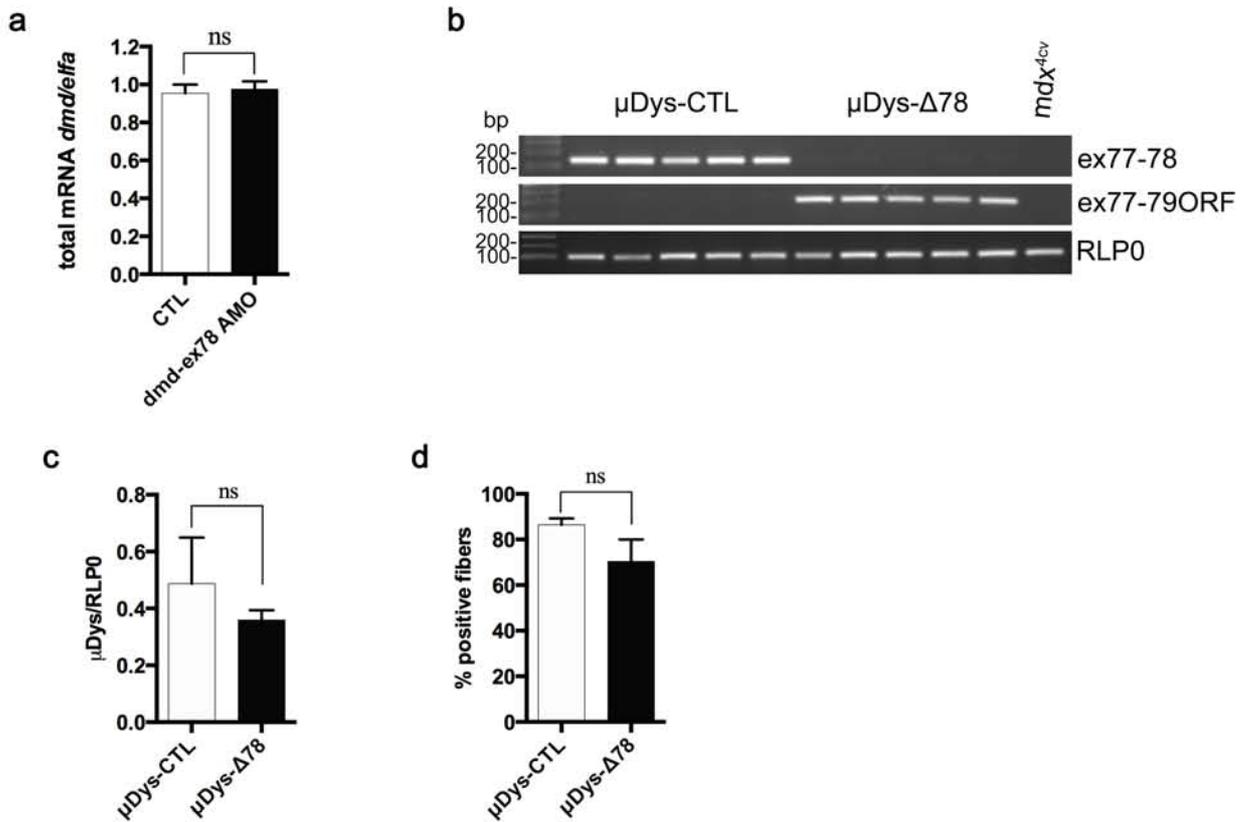
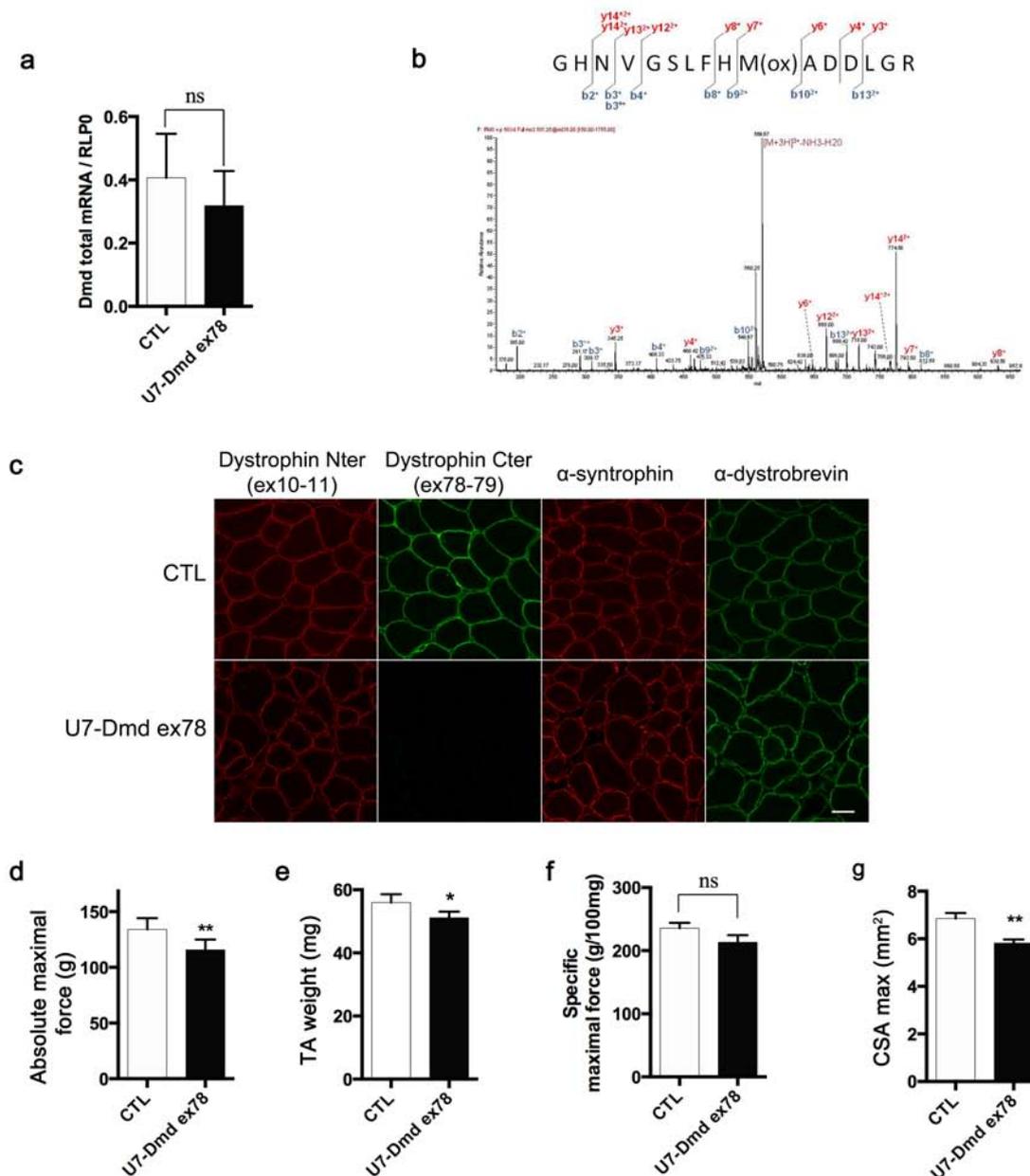


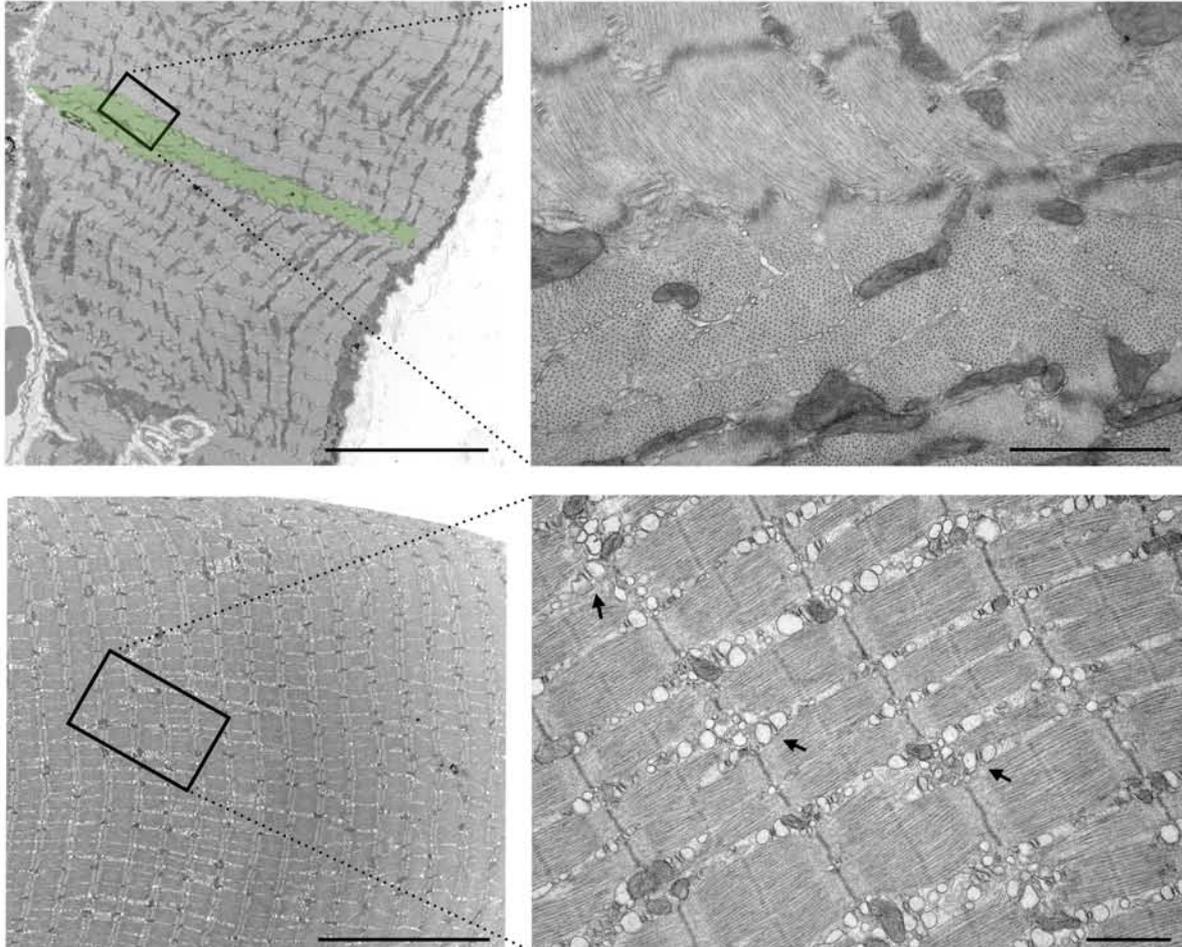
Supplementary Figure 1: **a)** Schematic representation of *DMD* exon 78 splicing and C-ter tail amino acid sequence in absence or presence of exon 78. **b)** Five models provided by PEP-fold program for the structure of dystrophin +78 and dystrophin Δ 78 Cter tails. **c)** Molecular surface hydrophobicity of all PEP-fold models.



Supplementary Figure 2: **a)** qRT-PCR analysis of *dmd* mRNA levels in control embryos and *dmd*-exon 78 morphants at 48 hpf (from 3 independent experiments). **b)** RT-PCR analysis of μ Dys-CTL and μ Dys- Δ ex78 mRNA levels in TA injected muscles (n=5). **c)** qRT-PCR analysis of μ Dys-CTL and μ Dys- Δ ex78 mRNA level in TA injected muscles (n=8). **d)** Percentage of dystrophin positive fibers in μ Dys-CTL and μ Dys- Δ ex78 injected muscles (n=5). Bars indicate s.e.m and “ns” indicates not significant; Student *t*-test.



Supplementary Figure 3: **a**) qRT-PCR analysis of total *Dmd* mRNA level in U7-Dmd exon 78 injected muscles compared to saline-injected muscles, 6 months after injection (n=10). **b**) Tandem mass Spectrometry (MS/MS) of the precursor ion at m/z 581.25 determining oxidized peptide ³⁶⁶⁵GHNVGSLFHMoxADDLGR³⁶⁸⁰. The fragmentation Spectrum shown is a trypsin-derived peptide. The inset show the peptide sequence and the observed ions obtained in the MS/MS Spectrum labeled to show singly and doubly charged *b* and *y* ions, as well as ion corresponding to neutral losses of water (circles) and NH₃ (asterisks); M, parent ion mass. **c**) Dystrophin N-terminal domain (ex10-11; Manex1011B antibody), Dystrophin C-terminus domain (ex78-79; Dys2 antibody), α -syntrophin and α -dystrobrevin immunostaining of TA muscles injected with U7-Dmd exon 78 compared to saline-injected TA muscles (scale bar, 50 μ m). **d**) Absolute maximal muscle force (P0) of U7-Dmd exon 78 TA injected muscles compared to saline-injected muscles (n=10). **e**) TA muscle weight of U7-Dmd exon 78 injected muscles compared to saline-injected muscles (n=10). **f**) Specific maximal force (sP0) of U7-Dmd exon 78 TA injected muscles compared to saline-injected muscles (n=10). **g**) Maximal cross-section area of U7-Dmd exon 78-injected TA muscles compared to saline injected TA muscles (n=10). Bars indicate s.e.m and "ns" indicates not significant; * indicates p < 0.05; ** indicates p < 0.01; paired *t*-test.



Supplementary Figure 4: Upper panel: Another example of disorientated myofibrils (pseudo-colored in green) within an oxidative myofiber: a band of myofibrils running at right angle to the fiber major direction traverse the whole fiber. **Lower panel:** Dilated sarcoplasmic reticulum in a fast twitch fiber. Arrows point triads with swollen reticular terminal cisternae Scale bar, 10 μ m in the right panels and scale bar, 1 μ m in the left panels.

<u>Primers for splicing</u>		
	<u>primer FW</u>	<u>primer Rev</u>
human <i>DMD</i> ex78	TTAGAGGAGGTGATGGAGCA	GATACTAAGGACTCCATCGC
mouse <i>Dmd</i> ex 78	TGGTTGGCAGTCAAACCTCA	TCATCTGCCATGTGGAAAAG
zebrafish <i>dmd</i> ex78	CCCAGGATGCAAGCACTGGATTAG	TTACATGAACCAGCGACTCC
<u>Primers for RT-PCR</u>		
	<u>primer FW</u>	<u>primer Rev</u>
mouse μ Dys-CTL	CTCTCAGACCAGCGAGAGCA	CTCCCGCATGGGCTTGCCGG
mouse μ Dys- Δ 78	CTCTCAGACCAGCGAGAGCA	ACTCCATCGCTCTGCCCAA
<u>Primers for qRT-PCR</u>		
	<u>primer FW</u>	<u>primer Rev</u>
zebrafish <i>elfa</i>	CTTCTCAGGCTGACTGTGC	CCGCTAGCATTACCCTCC
zebrafish <i>dmd</i>	GGAGCTGACGTCTCACCAG	TGCTCTGTCGCTCCATACTG
mouse <i>Rlp0</i>	GAGGACCTCACTGAGATTCGG	TTCTGAGCTGGCACAGTGAC
mouse <i>Dmd</i>	TGGATCTGACATCTCATCAAGGAC	CCATGCTAGCTACCCTGAGAC
mouse μ Dys	AGGCAGAGCACCAGAAACTACC	CTGGCACTTGCGATGTTGAAG
mouse <i>Myh1</i>	GCGAGGTTACACCAAAATCA	TGGTCACTTTCCTGCTTTGGA
mouse <i>Myh2</i>	AAGCGAAGAGTAAGGCTGTC	GTGATTGCTTGCAAAGGAAC
mouse <i>Myh4</i>	ACAAGCTGCGGGTGAAGAGC	CAGGACAGTGACAAAGAACG

Supplementary Table S1: Primer sequences used for RT-PCR and qRT-PCR analysis.

Figure 1c

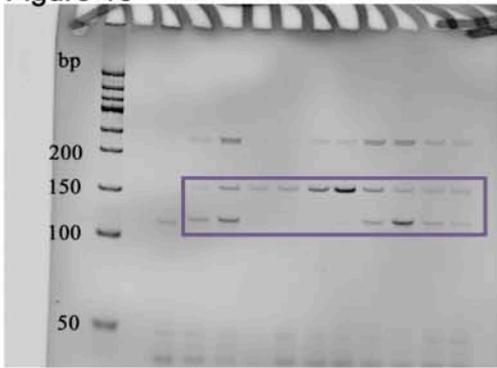


Figure 1e (left panel)

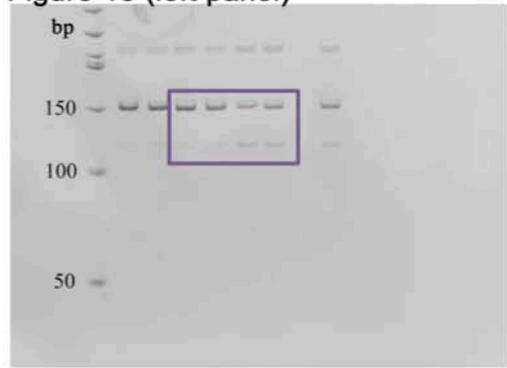


Figure 1e (right panel)

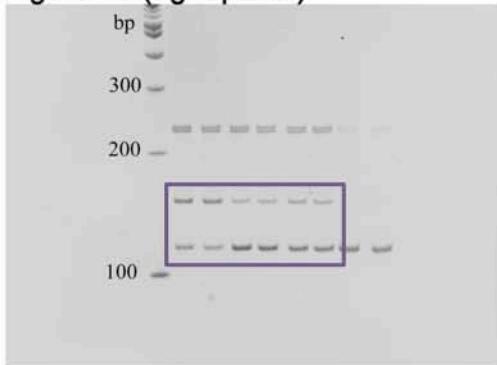


Figure 1f



Figure 2a

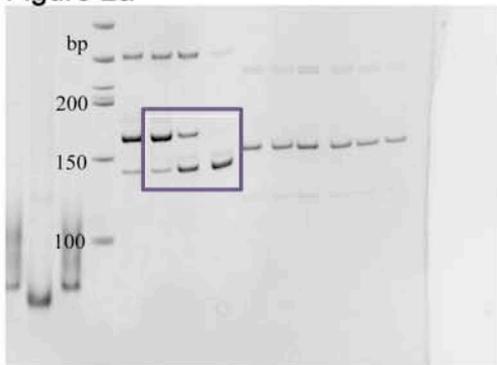
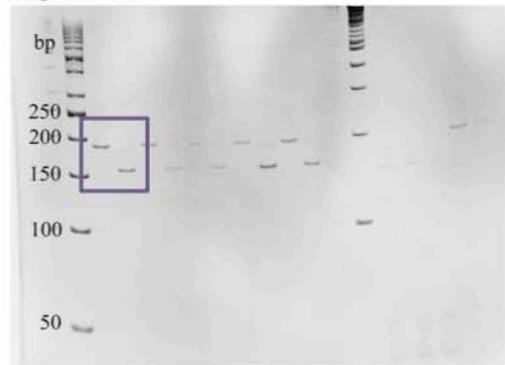
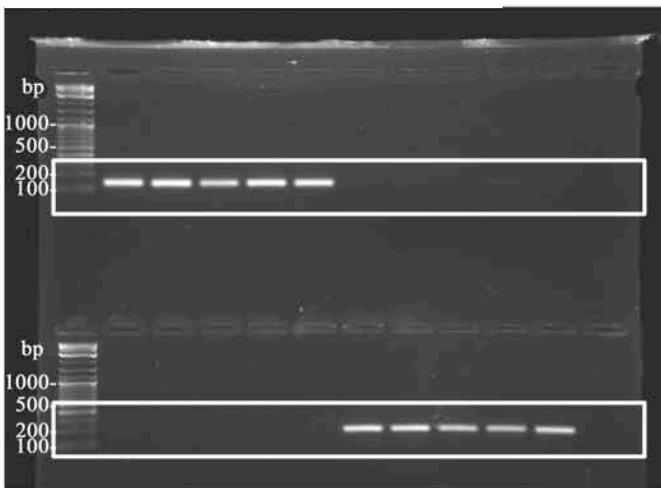


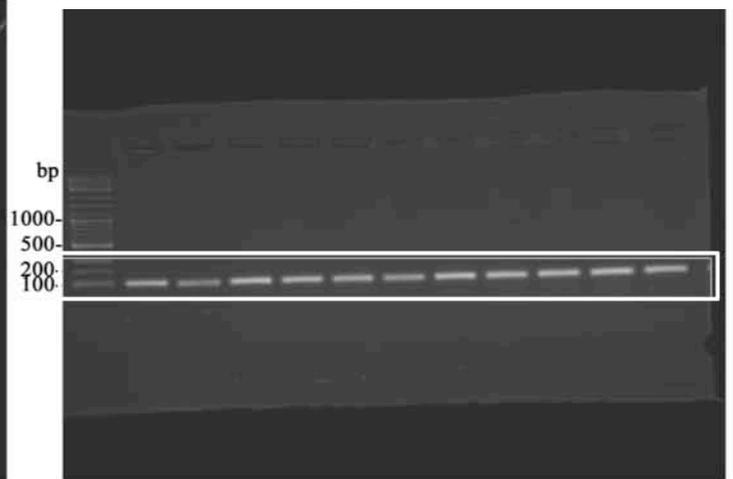
Figure 4a



Supplementary Figure 2b



Supplementary Figure 2b



Supplementary Figure 5: Uncropped PCR gels