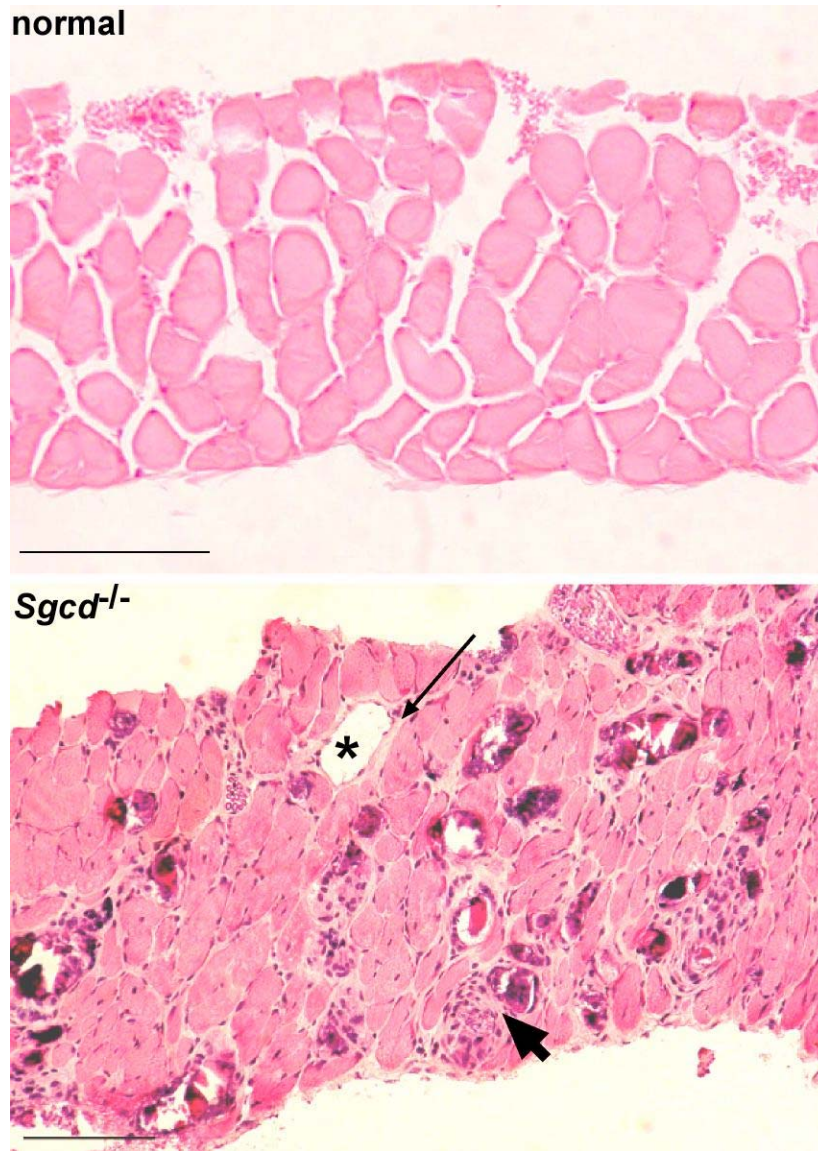


SUPPLEMENTAL LEGENDS AND FIGURES

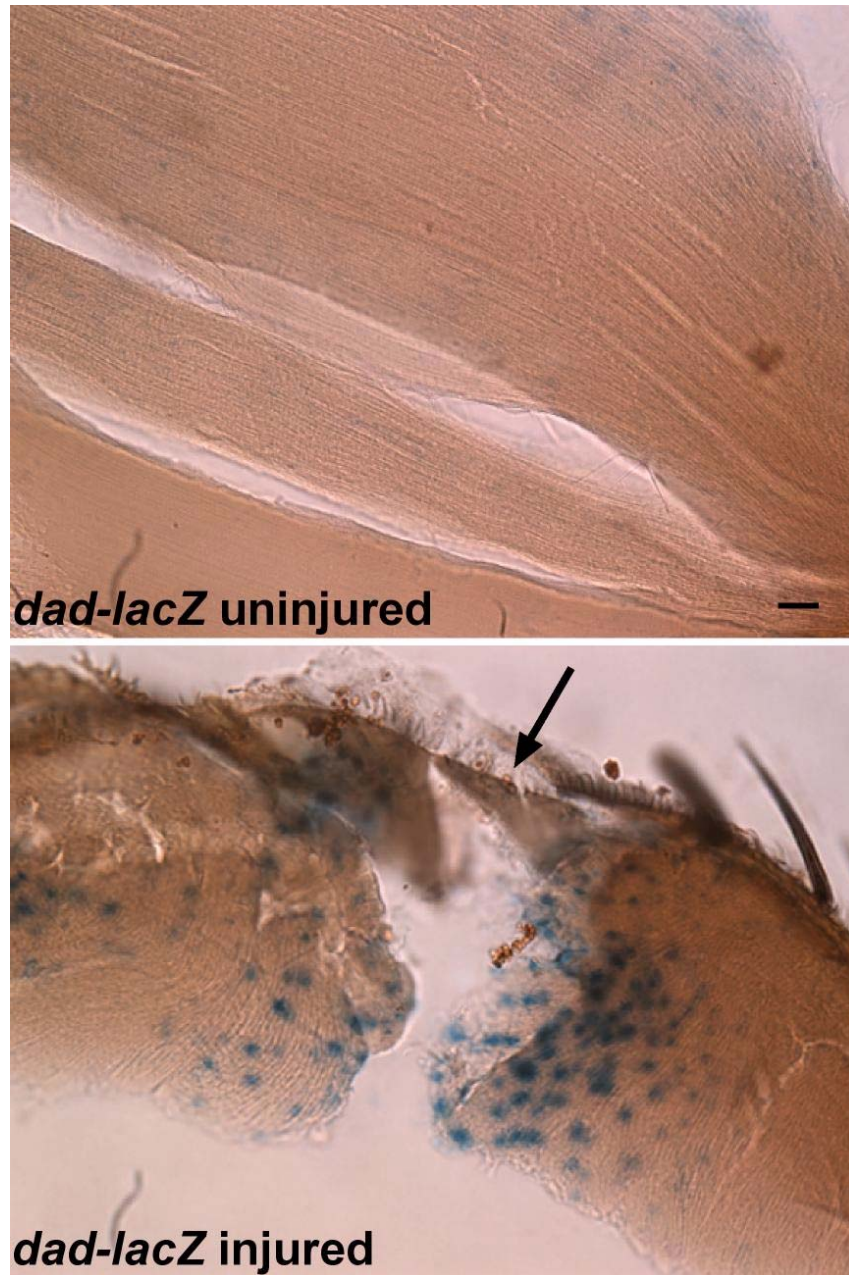
Supplemental Movie 1. Shown is a negative geotaxis assay for *Sgcd[840] Drosophila* and controls. The movie shows an assay where flies are ambulating upwards against gravity. Lanes 1-4 are Or-R wildtype controls. Lanes 5-8 are *Sgcd[840]*. Lanes 9-12 are MAD12/+.

Supplemental Movie 2. *Sgcd[840] Drosophila* in the flight box.

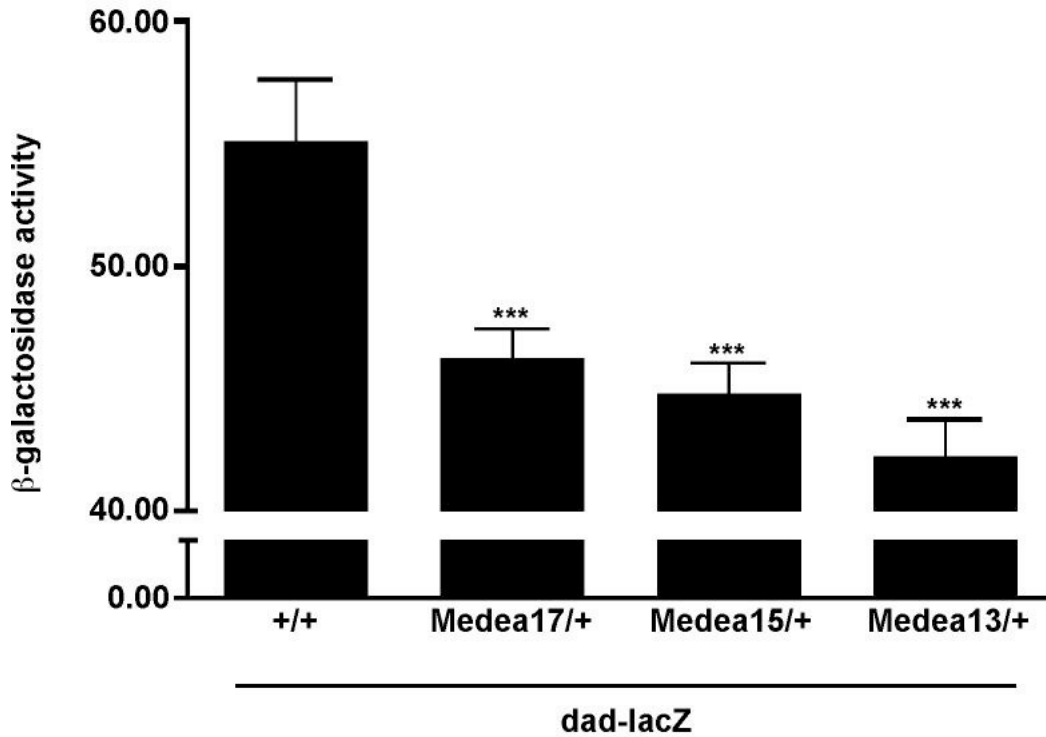
Supplemental Movie 3. *Wildtype Drosophila* in the flight box.



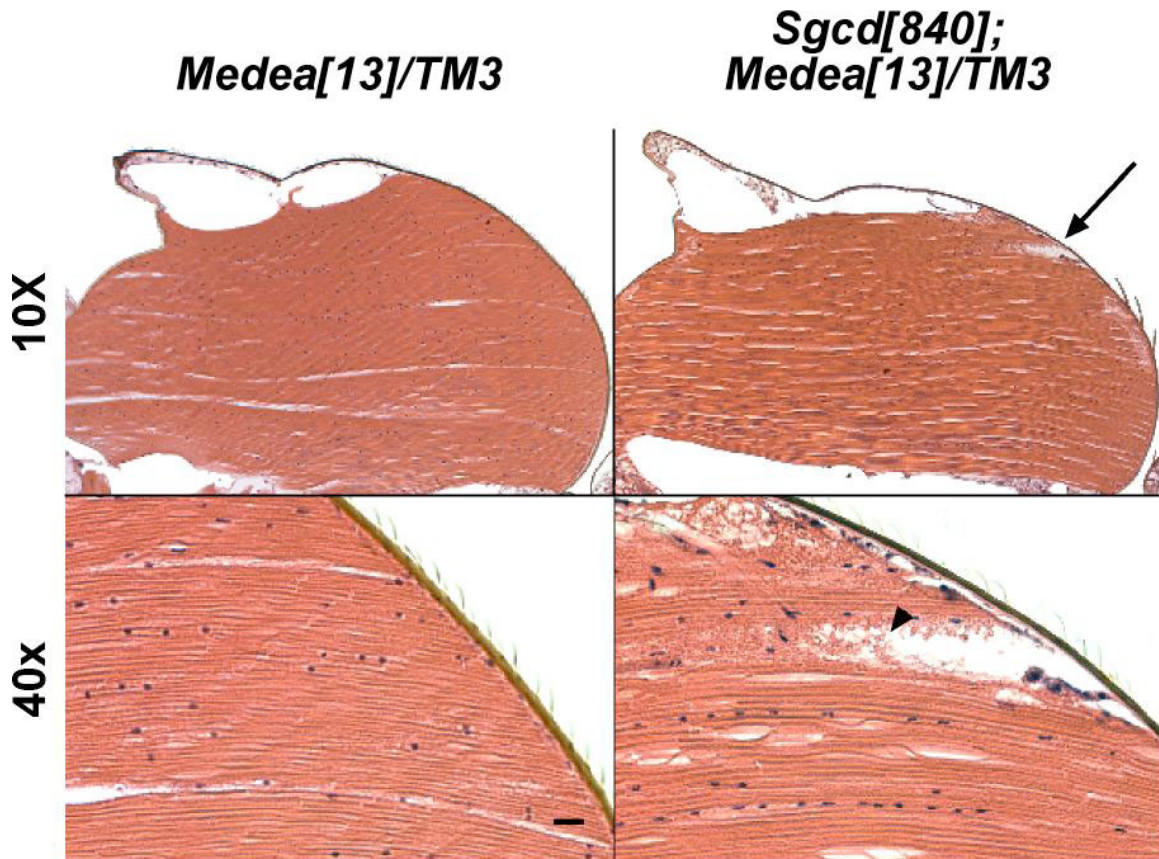
Supplementary Figure 1. Pathology in murine muscular dystrophy. Normal diaphragm muscle is shown above and below is shown a diaphragm muscle from *Sgcd null* mice. There is an increase in interstitial fibrosis (pale pink areas between myofibers, arrow). There is also fatty infiltration (*). The arrowhead indicates an area of inflammatory infiltrate to the left of the arrowhead and to the right is an area of calcification. With disease progression, more myofibers are lost and replaced by nonmuscle elements. Size bar is 100 μ m.



Supplementary Figure 2. Penetrating injury in wildtype *Drosophila* elicits β -gal activity from the *dad-lacZ* indicator allele. Wildtype *dad-lacZ* *Drosophila* were speared with a 0.22 mm dissecting pin and β -gal activity was examined. Those myonuclei adjacent immediately adjacent to the injury had the most intense β -gal activity. Arrow indicates site of penetrating injury. Sale bar = 10 μ m.



Supplementary Figure 3. SMAD mutants decrease TGF β and *dad-lacZ* activity. The *dad-lacZ* reporter was crossed into lines with heterozygous mutations of *Medea* (SMAD4). The *Medea*[13], *Medea*[15] and *Medea*[17] mutations caused significant decreases in TGF β activity compared to flies with a wild type *Medea* genotype. Difference between the *Medea* alleles were not statistically significant. ***: $p < 0.001$ vs. +/+.



Supplementary Figure 4: The *Medea[13]* mutation does not prevent muscle tears. *Sgcd[840]; Medea[13]/TM3* and *Medea[13]/TM3* males were aged for 14 days in a 20 x 20 x 20 cm flight box. Flies were fixed and processed as in **Figure 1**. As in WT flies, *Medea[13]/TM3* flies did not show muscle tears. Tears were apparent in *Sgcd[840]; Medea[13]/TM3* flies (arrow), indicating that SMAD mutations do not abolish the appearance of muscle tears. The smaller size of the tear and reduced amount of acellular material (arrowhead) suggest less extensive degeneration after injury, however the nature of this assay does not permit quantification. Scale bar, 10 μ m.