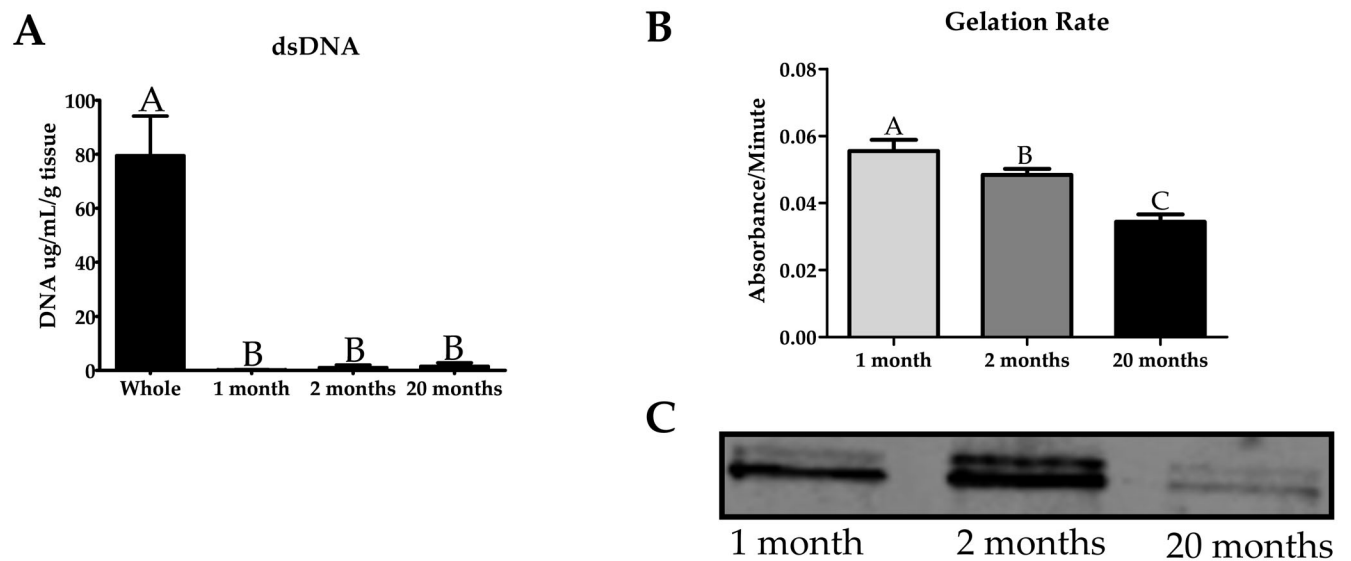
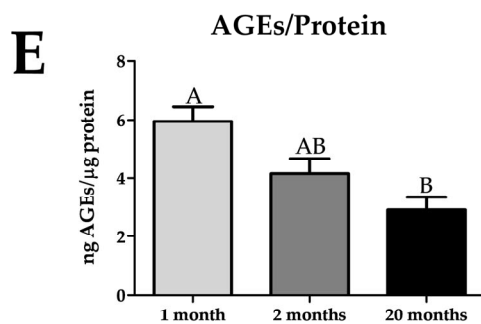
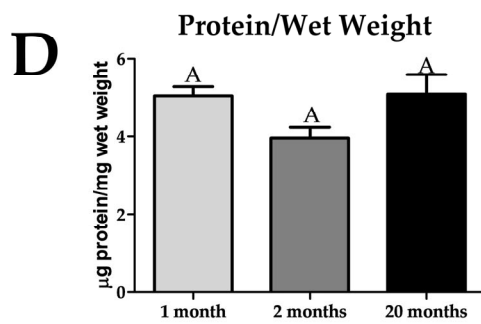
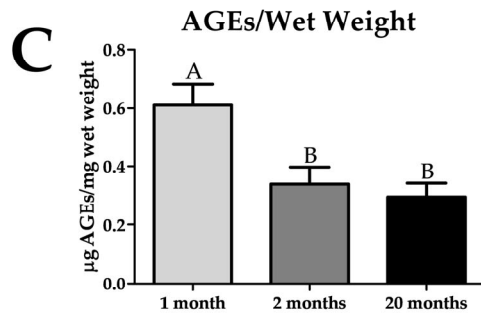
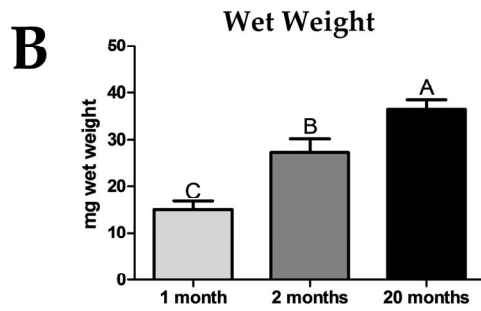
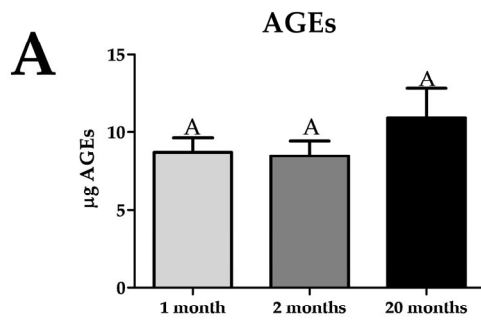


Supplementary Figure S1: Whole histological cross-sections of gastrocnemii of differing ages stained with H&E and Picrosirius Red. (A) H&E stained cross-sections show an increase in muscle size when comparing 2 and 20 months to 1 month. (B) Picrosirius red cross-sections. The scale bar is 1 mm and applies to all images.

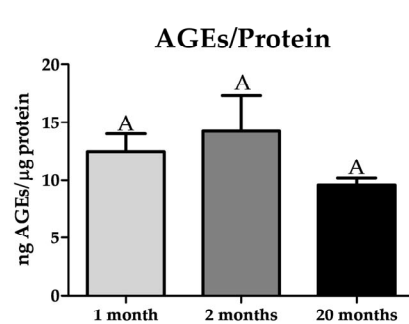
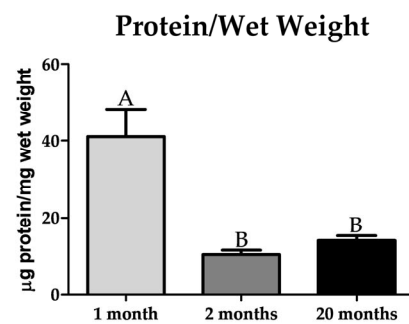
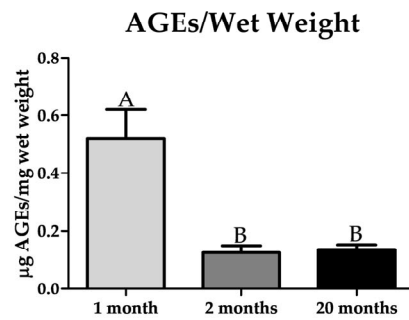
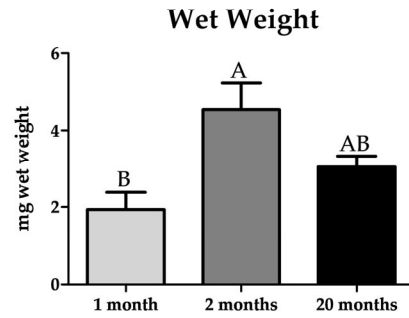
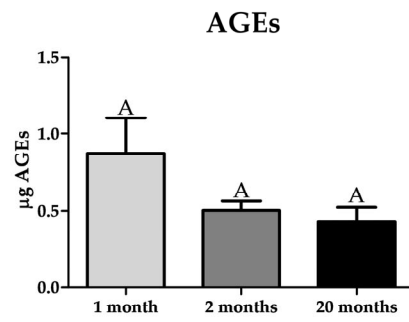


Supplementary Figure S2: Processed DMM gels are successfully decellularized and show age-dependent reductions in gelation rate and soluble procollagen. (A) dsDNA levels in 1-month, 2-month, and 20-month DMM pregels are significantly reduced compared to whole muscle. (B) Gelation rate significantly decreases with increasing age, indicating a reduction in collagen polymerization ability with age. (C) Procollagen was reduced in 20-month DMM pregels compared to 1 and 2-months.

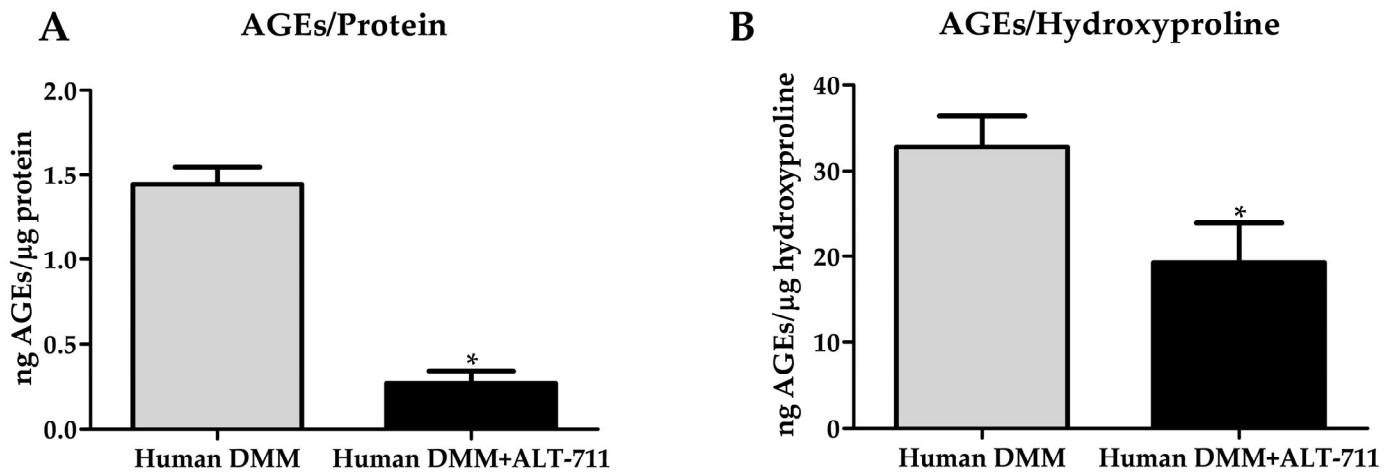
Whole Muscle



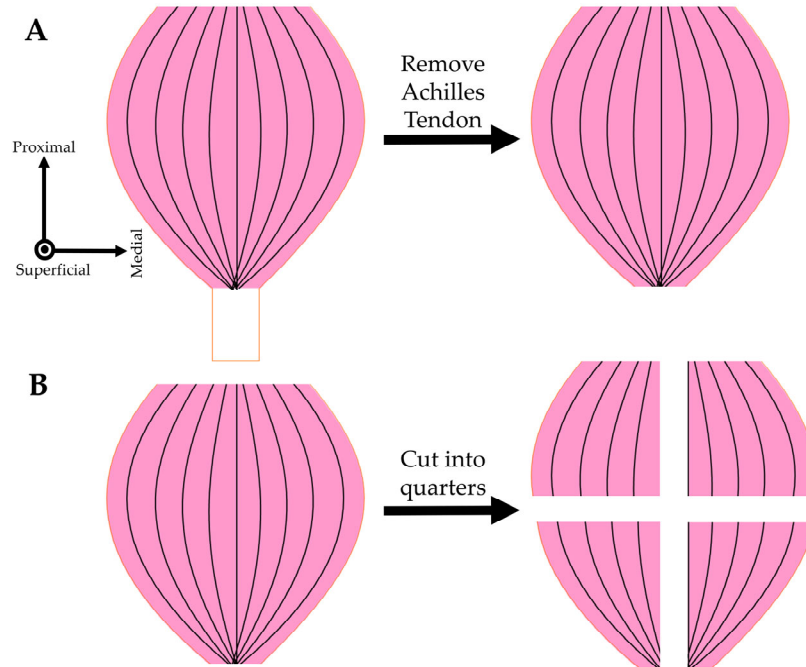
DMM



Supplementary Figure S3: Absolute AGE levels with differing normalization methods in whole muscle and DMM. (A) Absolute AGE levels (no normalization) did not change in whole muscle and DMM between different ages. (B) Wet weight of the samples increases with age in whole muscle, and increases from 1-month to 2-month in DMM. (C) AGEs per wet weight decreased from 1-month levels in the 2-month and 20-month groups for both whole muscle and DMM. (D) Protein extracted per weight was not different for whole muscle, but decreased in the 2-month and 20-month DMM compared to 1-month DMM. (E) AGEs per protein decreased in the 20-month whole muscles compared to 1-month, and there was no change for DMM. Groups that do not share a letter (e.g. A, B, or C) are statistically different according to a one-way ANOVA followed by a two-tailed Tukey's correction.



Supplementary Figure S4: ALT-711 treatment reduces AGEs in human DMM when normalized to protein and hydroxyproline levels. (A) AGEs per protein was reduced in human DMM is treated with ALT-711. (B) AGEs per hydroxyproline was reduced in human DMM treated with ALT-711. * = statistically different to the control group (DMM without ALT-711) according to a two-tailed unpaired t-test ($p < 0.05$).



Supplementary Figure S5: Whole muscle preparation for decellularization. (A) The Achilles tendon was removed. (B) The gastrocnemius was cut into quarters.

Table S1: Number of myofibers, nuclei counted and measurement error for histomorphometry.

Group	# of myofibers (mean \pm SEM)	Myofiber diameter (mean \pm SEM)	# of nuclei (mean \pm SEM)
1 month	25 \pm 5.57	24.25 \pm 0.82 μ m	79.33 \pm 3.84
2 months	11.33 \pm 0.33	34.27 \pm 1.12 μ m	58.67 \pm 7.42
20 months	13.33 \pm 2.03	32.90 \pm 2.84 μ m	36.67 \pm 4.91