

## Supplemental Figure Legends

Video S1. Beating aggregate at 10 days of incubation under the initial media conditions.

Video S2. Beating tissue at 28 days of incubation under the initial media conditions.

Video S3. Beating myosphere at 28 days of incubation under the modified media conditions.

**Figure S1. Panoramic view of Day 28 myosphere cultures.** Panoramic slice from a 35 mm dish showing a portion of a day 28 culture containing MDSC-derived contractile myospheres, that was imaged following fluorescent-labeling with  $\alpha$ -actinin-specific antibody. This image shows an individual example of the modified culture protocol described in this manuscript, which to date has been repeated 14 times. These cultures begin with an initial plating of  $2 \times 10^6$  MDSCs, most of which either do not survive the initial culture or became attached to the dish. On day 6, floating aggregates are transferred to a fresh 35 mm dish. Cell counting indicated that by day 14, total cells remaining in the cultures after dissociation =  $1.36 \times 10^5$ /dish (std. dev.  $1.12 \times 10^4$ ;  $n = 3$ ). By day 28 the number of myosphere cells/dish =  $6.1 \times 10^5$  (std. dev.  $1.2 \times 10^4$ ). Scale bar = 200  $\mu\text{m}$ .

Video S4. Beating myosphere at 4 months of incubation under the modified media conditions.