



**Figure S1.** Low magnification image illustrating the standard quality of preservation and orientation of the images that were used to collect the data. Each cross sectional view had excellent presentations of I- and A- band areas and only images that covered entire fiber cross sections were employed for counts. The I-band areas were used for obtaining counts of the frequency of mitochondria with constrictions of the type illustrated in Figs. 2-4. A large sample (> 40 fibers each for rest and fatigued muscles) assured sufficient statistical reliability.