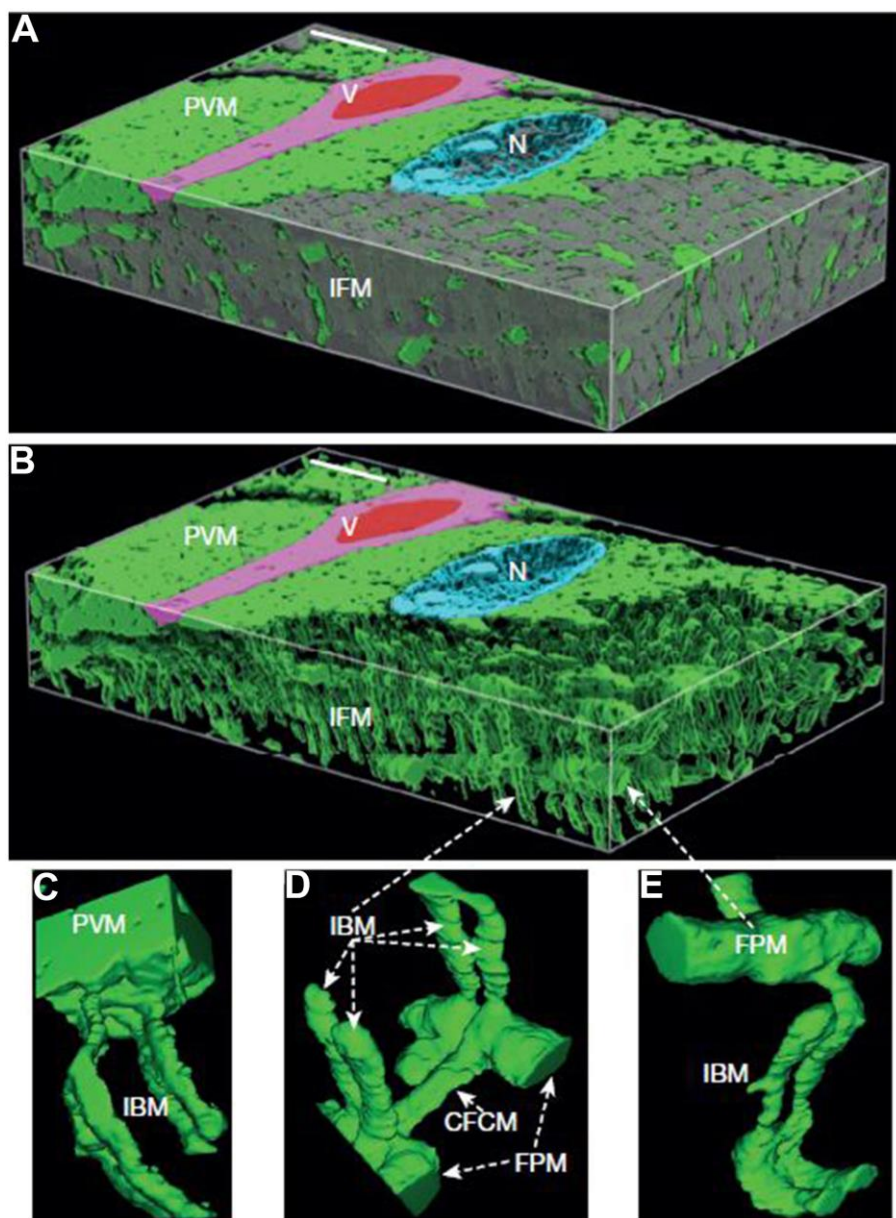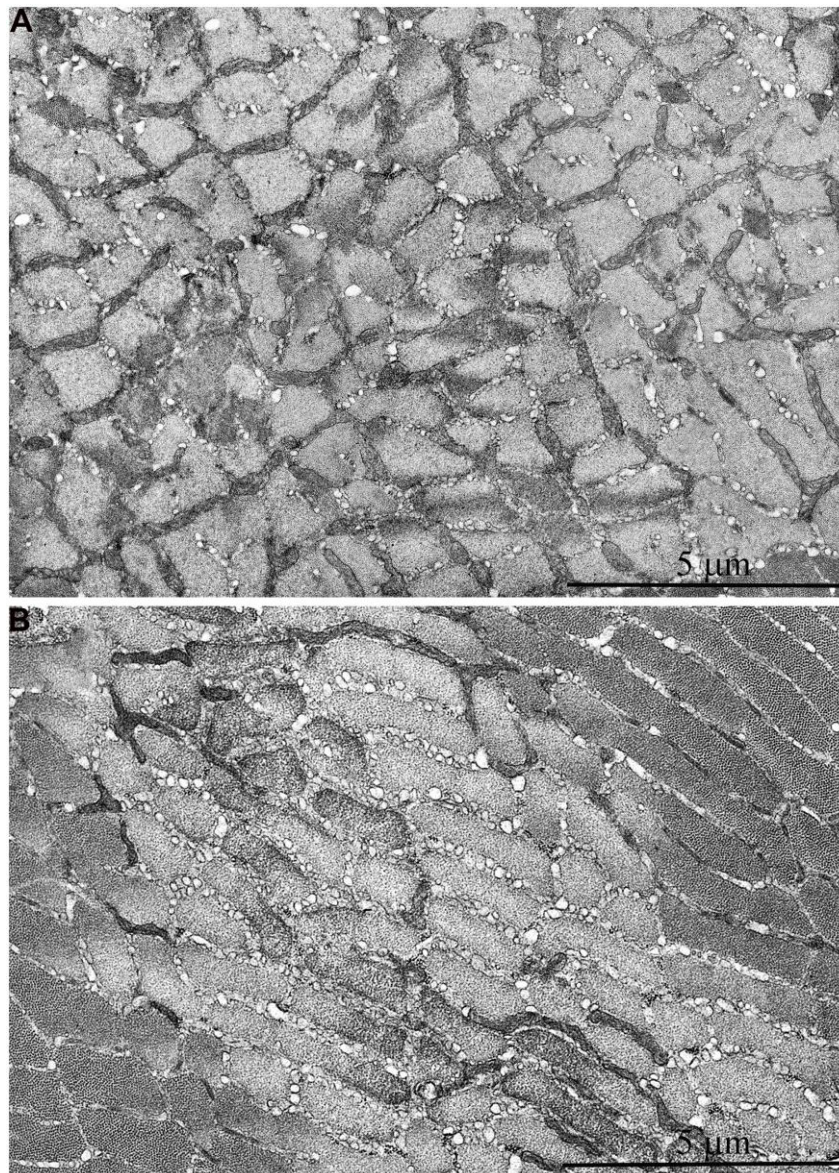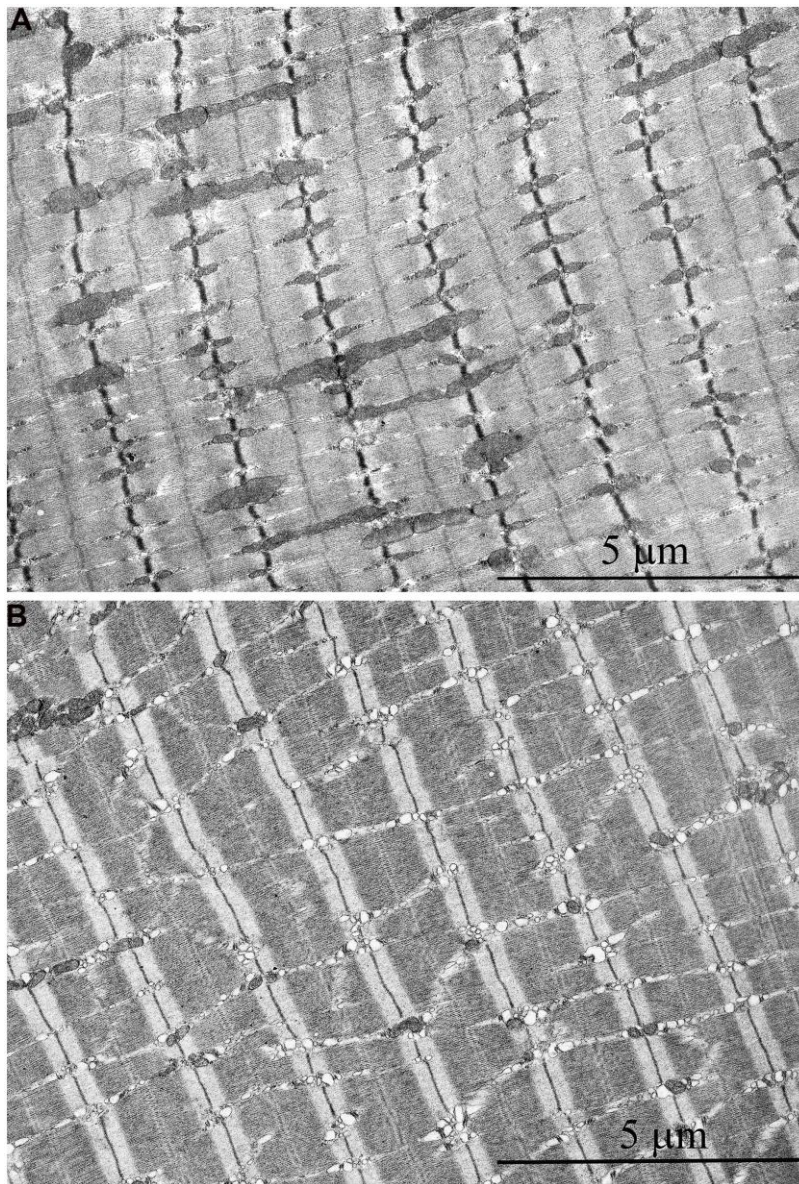**Supplementary Figure 1. Muscle mitochondria form highly connected networks.** (**A**) 3D surface rendering of 25.53*24.06*4.23 μm FIB-SEM volume segmented to show spatial relationships between mitochondria (green) and other structures (nucleus (N), cyan; capillary (V), magenta; erythrocyte, red; myofibrils, grey). (**B**) Removing myofibrils highlights different morphologies within intrafibrillar mitochondrial (IFM) network. (**C–E**) Zooming in reveals projections from paravascular mitochondria (PVM) into I-band mitochondria (IBM) (**C**), and numerous interactions between IBM and cross-fibre connection mitochondria (CFCM) (**D**) and fibre parallel mitochondria (FPM) (**D**, **E**). Scale bars, 3 μm. Representative of eight separate volumes analysed from four animals. (From Glancy et al. [42]).

Supplementary Figure 2. Ultrastructure of the skeletal muscle mitochondria of the C57BL/6 mouse on a cross-section. (**A**) At the age of 2.5 months; (**B**) at the age of 2.5 years.

Supplementary Figure 3. Ultrastructure of the skeletal muscle mitochondria of the C57BL/6 mouse on a longitudinal section. (**A**) At the age of 2.5 months; (**B**) at the age of 2.5 years.