In *Drosophila melanogaster*, mitochondrial (mito-) network organization in muscles differs depending on muscle fiber type, as seen in vertebrate muscles. Using *Drosophila* muscles as a model system, Dr. Katti and the Muscle Energetics Lab demonstrate that muscle type-specific mito-network organization is controlled by spalt major (*salm*), a muscle fiber type specification factor. Further, transcription factors, *cut* and *H15*, acting upstream and downstream of *salm*, respectively, regulate mito-network organization independent of muscle contractile fiber type. *Drosophila* muscles also exhibit sarcomere branching (myofibrillar matrix), and *salm* and *H15* regulate myofibrillar matrix formation through cell-type transformation, while *Neurochondrin* mediates sarcomere branching without changing the cell type by altering the actin-myosin ratio in muscles. In addition, we show that mitochondrial position influences sarcomere structure.