**Dual filament regulation of muscle contraction and the role of titin**

Muscle contraction at the level of the sarcomere, the ~2 μm long structural unit of the striated (skeletal and cardiac) muscles, is controlled by activation of both the thick filament, containing the myosin motors, and thin filament, containing the actin support. X-ray diffraction experiments show that titin takes part in thick filament activation by biasing the myosin motor orientation towards the actin.