

# **Physiology of Muscle Contraction**

And

**THE NEUROMUSCULAR JUNCTION**

- The skeletal muscle cell contracts in response to stimulation from a nerve fibre,
- A synapse between a motor nerve and a skeletal muscle fibre is the neuromuscular junction.
- When the action potential (AP)/stimulation reaches to the sarcoplasm, there is releases of  $\text{Ca}^{++}$  from the intracellular stores.
- Calcium triggers the binding of myosin to the actin filament, forming so-called *cross-bridges*.
- ATP then provides the energy for the two filaments to slide over each other, pulling the Z lines/ Z discs come closer to each other, causing shortening the sarcomere (kn/as *Sliding filament theory*)

The neuromuscular junction: The terminating axons of motor neuron (called synaptic knobs). The space between the synaptic knob and the muscle cell is called the *synaptic cleft*. Stimulation of the motor neurons releases the neurotransmitter acetylcholine (ACh), that binds to ACh receptors on the motor end plate and initiate AP/stimulation for muscle contraction