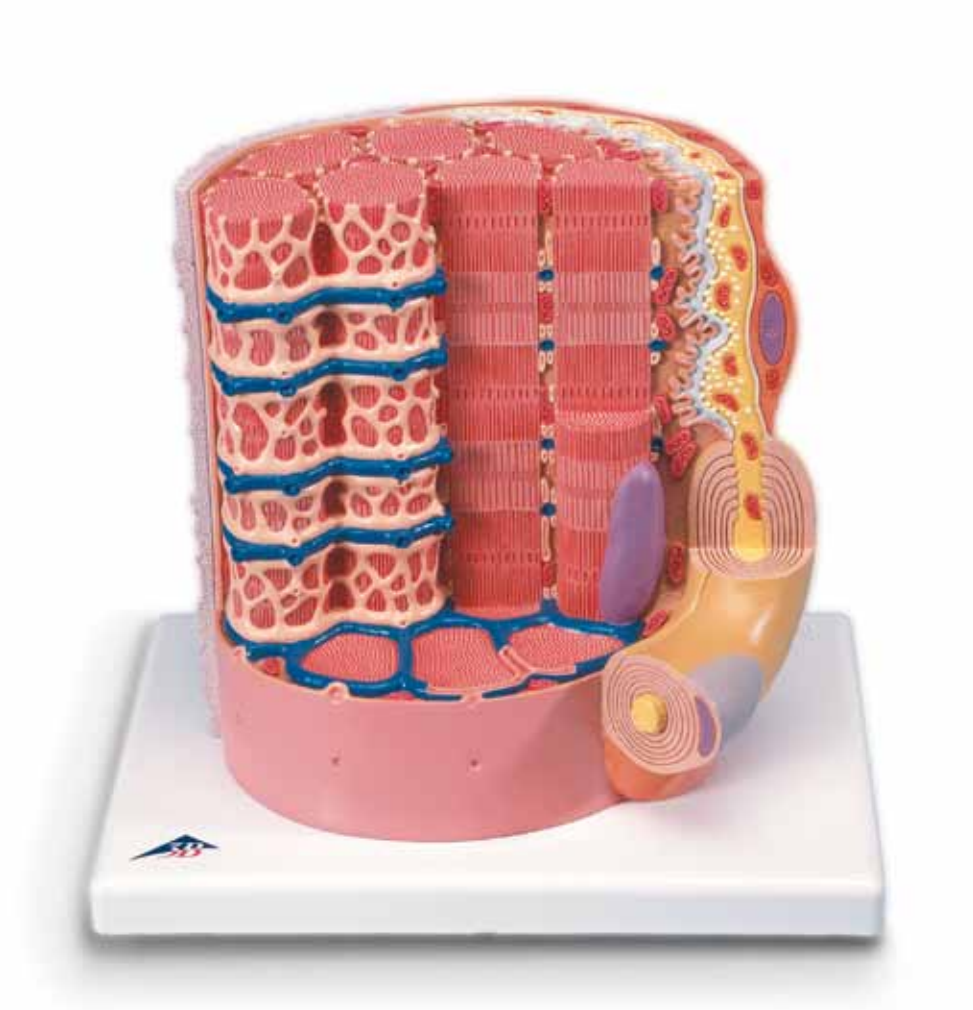
...going one step further



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Latin

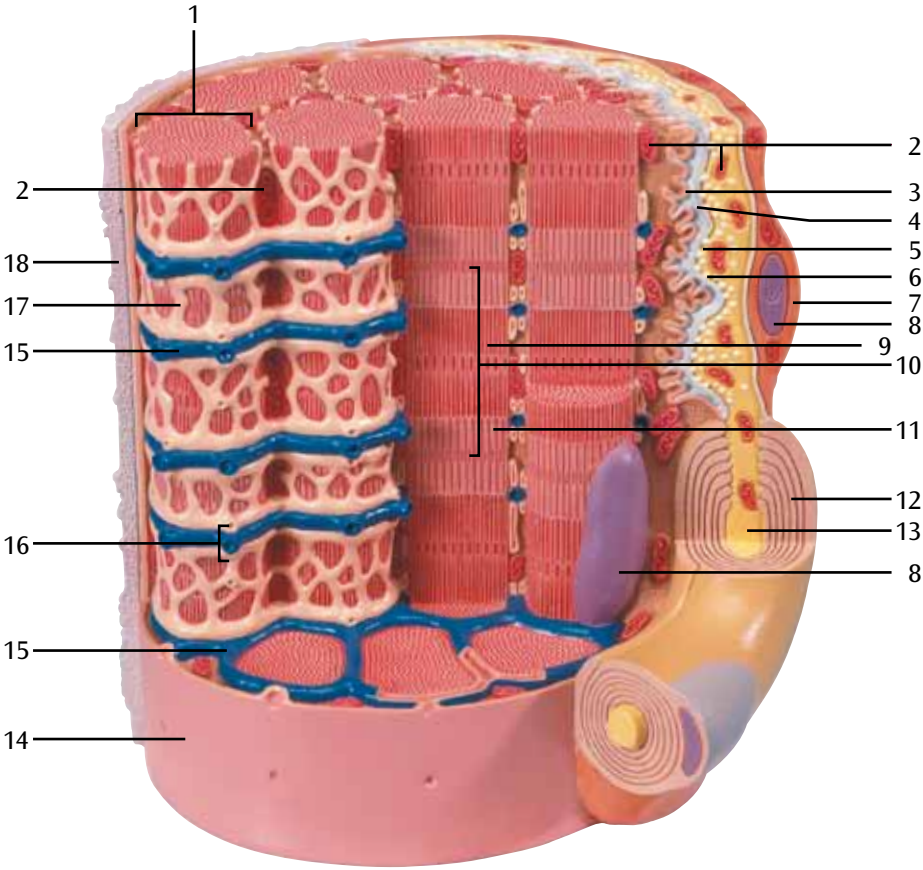
1 Myofibrilla
2 Mitochondrium
3 Membrana postsynaptica
4 Synaptic gap with basal lamina
5 Membrana praesynaptica
6 Vesicula praesynaptica
7 Schwann cell
8 Nucleus
9 Myosin and actin filament
10 Sarkomer
11 Actin filament
12 Stratum myelini
13 Neurofibra
14 Sarkolemma
15 Transversal-Tubulus (T-Tubulus)
16 Trias
17 Reticulum sarkoplasmaticum
18 Lamina basalis
19 Fibrae reticularis

3B MICRO*anatomy*™ Muscle Fiber

English

The model illustrates a section of a skeletal muscle fiber and its neuromuscular end plate magnified approx. 10,000 times.
The muscle fiber is the basic element of the diagonally striped skeletal muscle. It is a giant cell (1 – 10 cm long and up to 0.1 mm thick) with many nuclei. Its chief functional element is formed by myofibrils. The myofibrils are made of the myofilaments myosin and actin and are surrounded by the sarcoplasmic reticulum. The characteristic longitudinal striping of the skeletal muscle is caused by the specific arrangement of the myofilaments. The thick myosin filaments, which are optically bi-refracted, form the A (transverse) band. The thin actin filaments, by contrast, are uni-refracted and form the I (isotropic) band. The Z line (intermediate stripe) runs through its center. The section between two Z lines is called the sarcomere. Starting from the cell membrane, the cytoplasm is run through by membranous tubes, called the transversal tubuli, which together with the terminal cisterns of the sarcoplasmic reticulum form a triad. The nuclei are situated in the cell periphery. Mitochondria, the “power plants of the cells” run parallel to the myofibrils.
The neuromuscular end plate is the name of the area in which a motor nerve ending is in contact with the skeletal muscle cell. The nerve ending is covered by a Schwann cell. The synaptic gap, which is filled by a common basal lamina of the muscle and Schwann cell, lies between the muscle cell and the nerve ending. The nerve ending contains mitochondria as well as presynaptic vesicles that are filled with transmitter substances (usually acetylcholine).

1 Myofibrils
2 Mitochondrium
3 Postsynaptic membrane
4 Synaptic gap with basal lamina
5 Presynaptic membrane
6 Presynaptic vesicle
7 Schwann cell
8 Nucleus
9 Myosin and actin filament
10 Sarcomere
11 Actin filament
12 Myelin sheath
13 Neurofibers
14 Cell membrane (sarcolemma)
15 Transverse membrane tube
16 Triad
17 Sarcoplasmic reticulum
18 Basal lamina
19 Reticular fibers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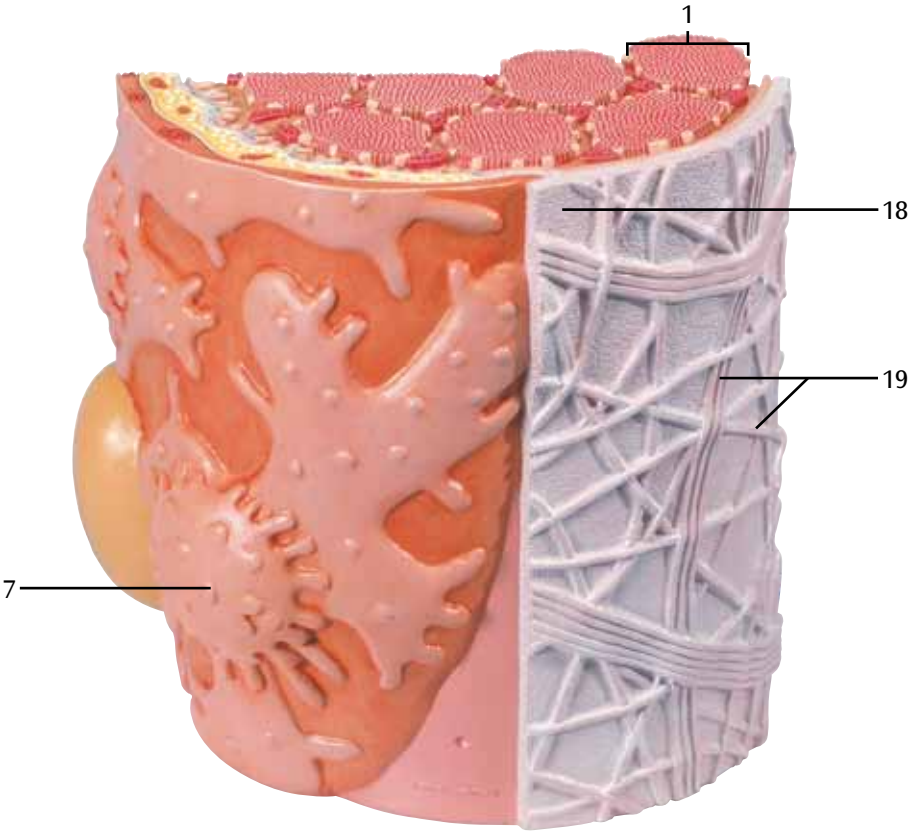
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