

Müosiin-I ja müosiin-II osa eukarüootses rakus.

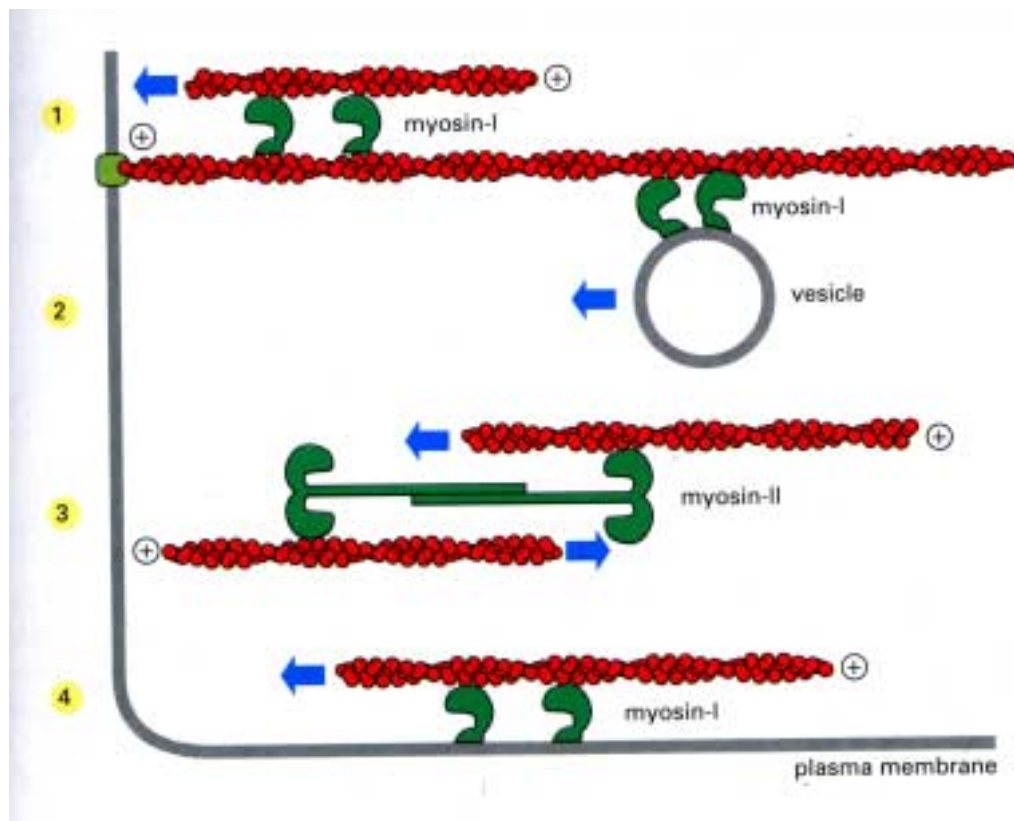
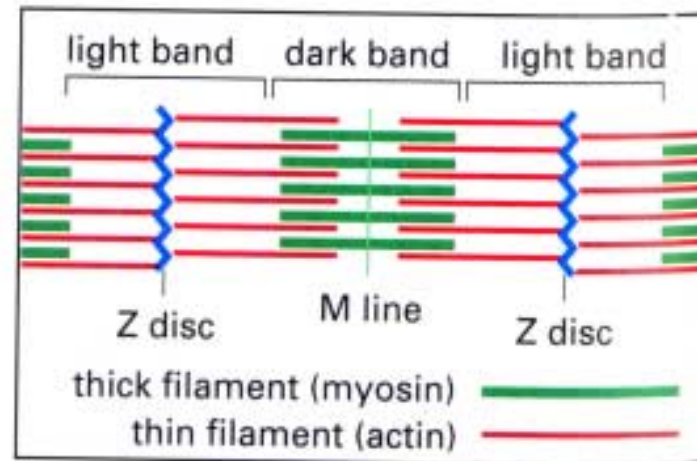
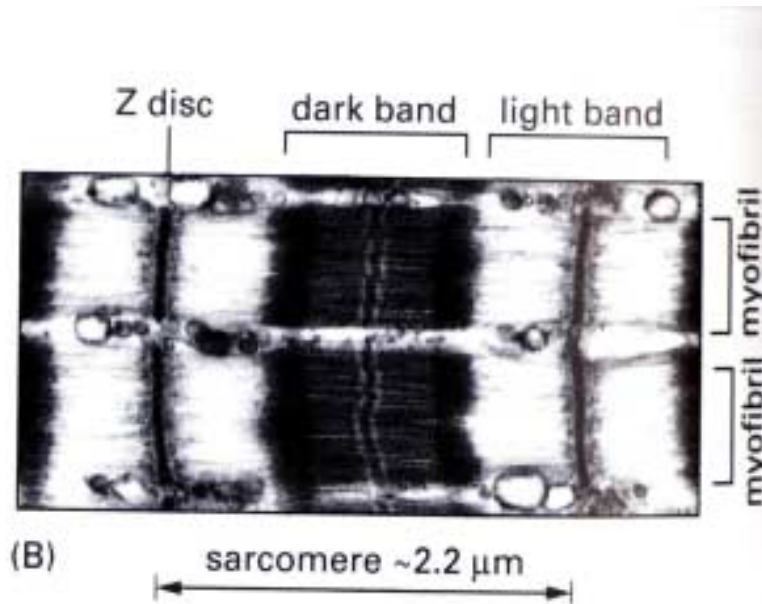


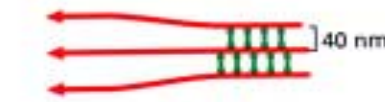
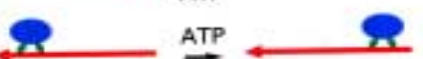
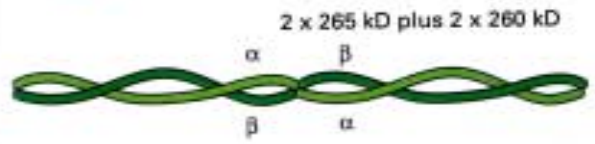
Figure 16-71 Possible roles of myosin-I and myosin-II in a typical eucaryotic cell. The short tail of a myosin-I molecule contains sites that bind either to other actin filaments or to membranes. This allows the head domain to move one actin filament relative to another (1), a vesicle relative to an actin filament (2), or an actin filament and membrane relative to each other (4). In addition, small antiparallel assemblies of myosin-II molecules can slide actin filaments over each other, thus mediating local contractions in an actin filament bundle (3). In all four cases the head group “walks” toward the plus end of the actin filament it contacts.

Skeletilihasraku müofibrillid.

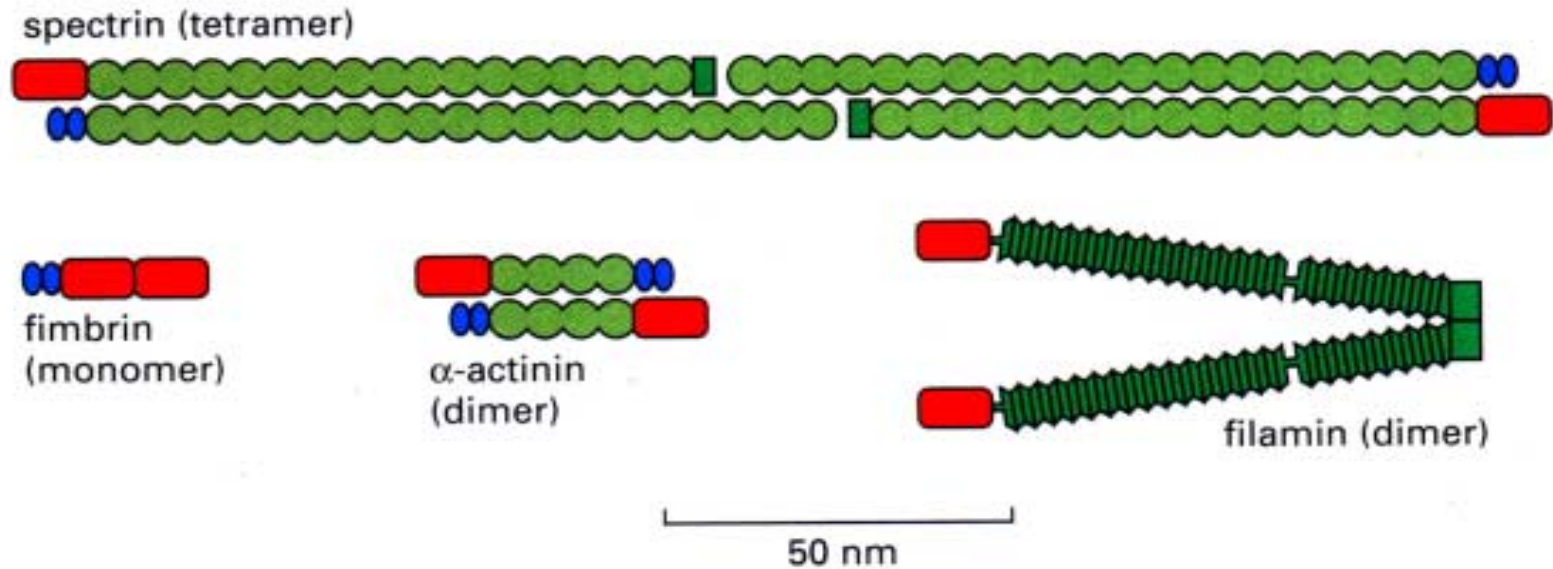


(C)

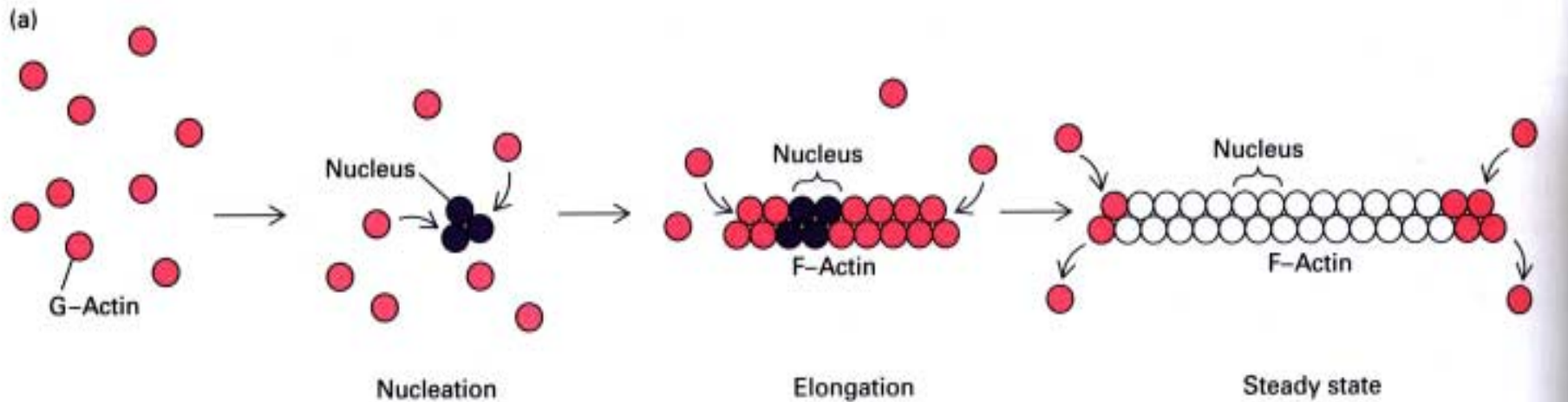
Põhilised aktiiniga seostuvad valgud.

FUNCTION OF PROTEIN	EXAMPLE OF PROTEIN	COMPARATIVE SHAPES, SIZES, AND MOLECULAR MASS	SCHEMATIC OF INTERACTION WITH ACTIN
Form filaments	actin		
Strengthen filaments	tropomyosin		
Bundle filaments	fimbrin		
	α -actinin		
Cross-link filaments into gel	filamin		
Fragment filaments	gelsolin		
Slide filaments	myosin-II		
Move vesicles on filaments	myosin-I		
Attach sides of filaments to plasma membrane	spectrin		
Sequester actin monomers	thymosin		

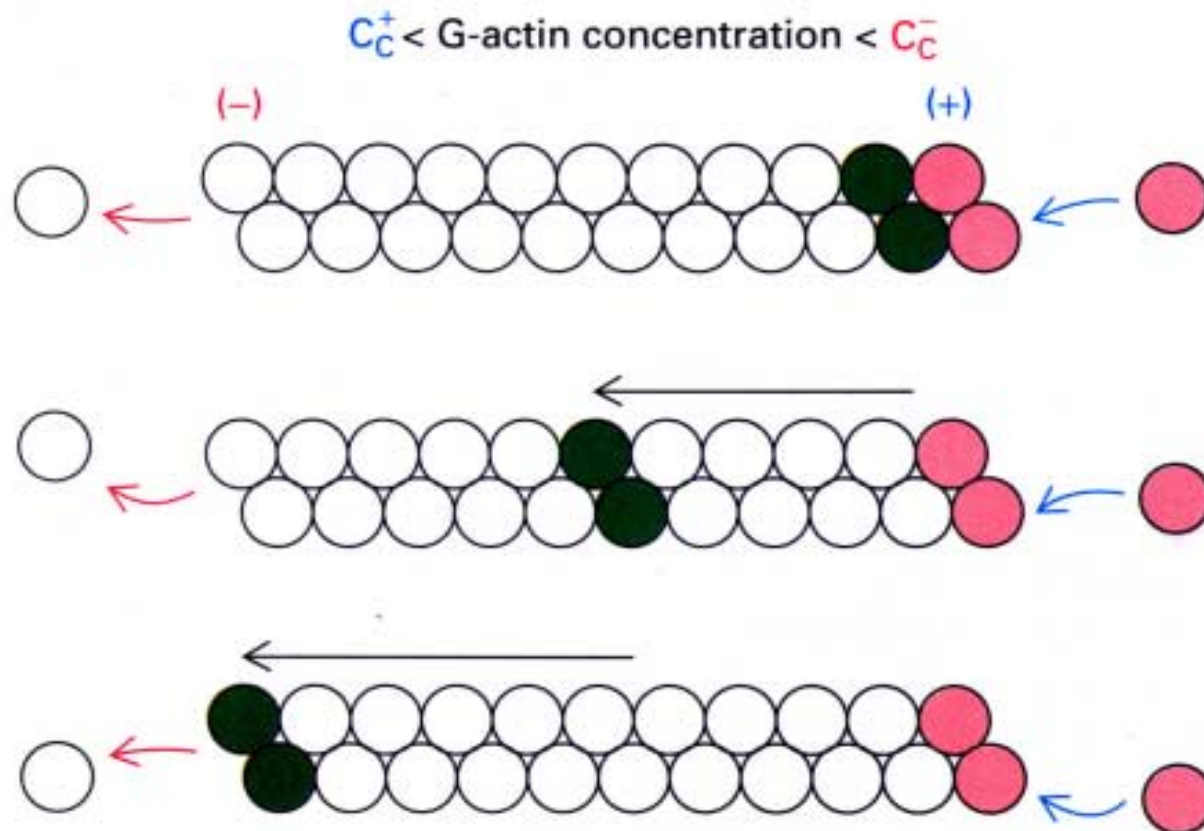
Nelja aktiiniga seostuva valgu struktuur.



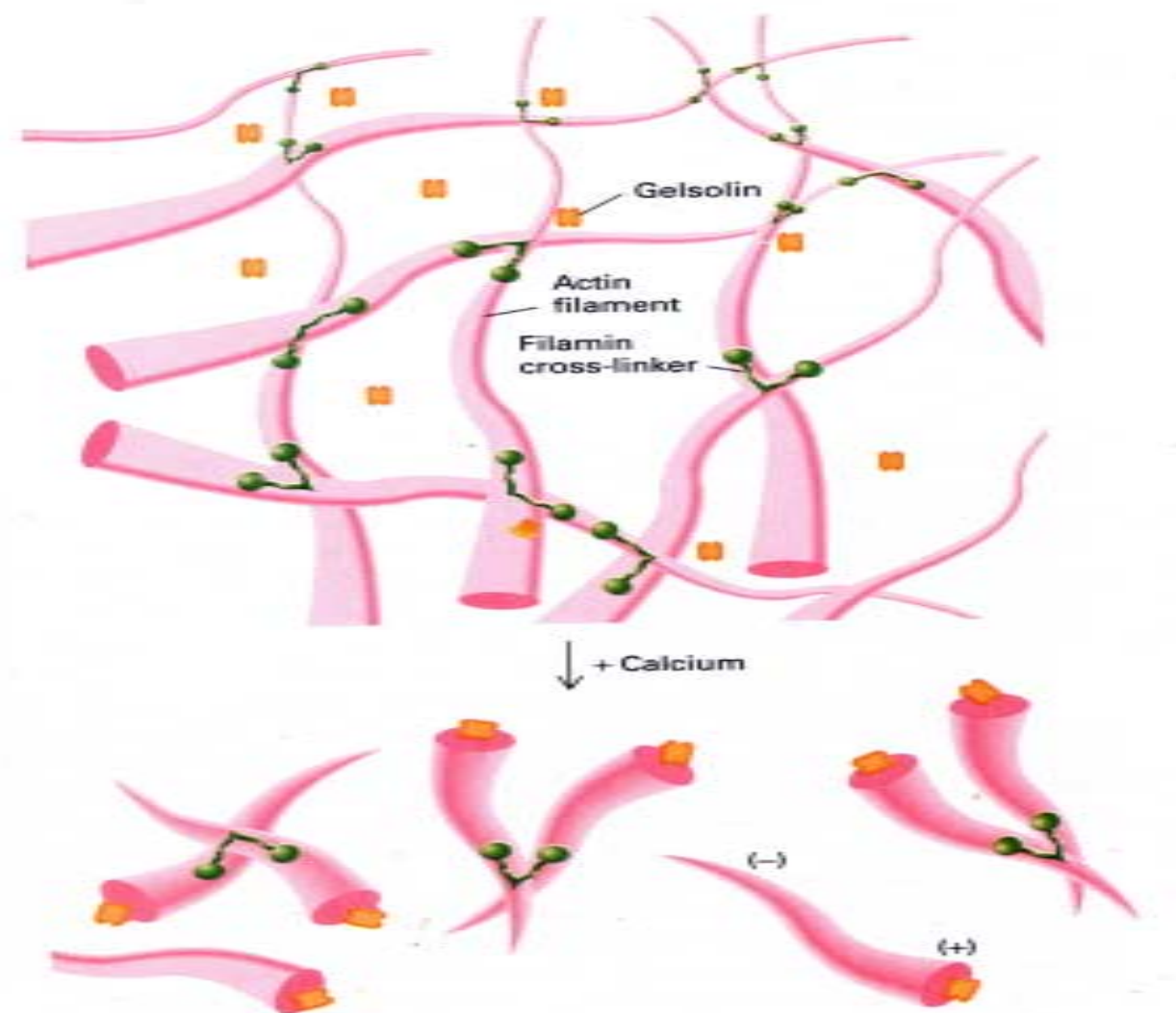
Aktiini molekulide polümeriseerumine.



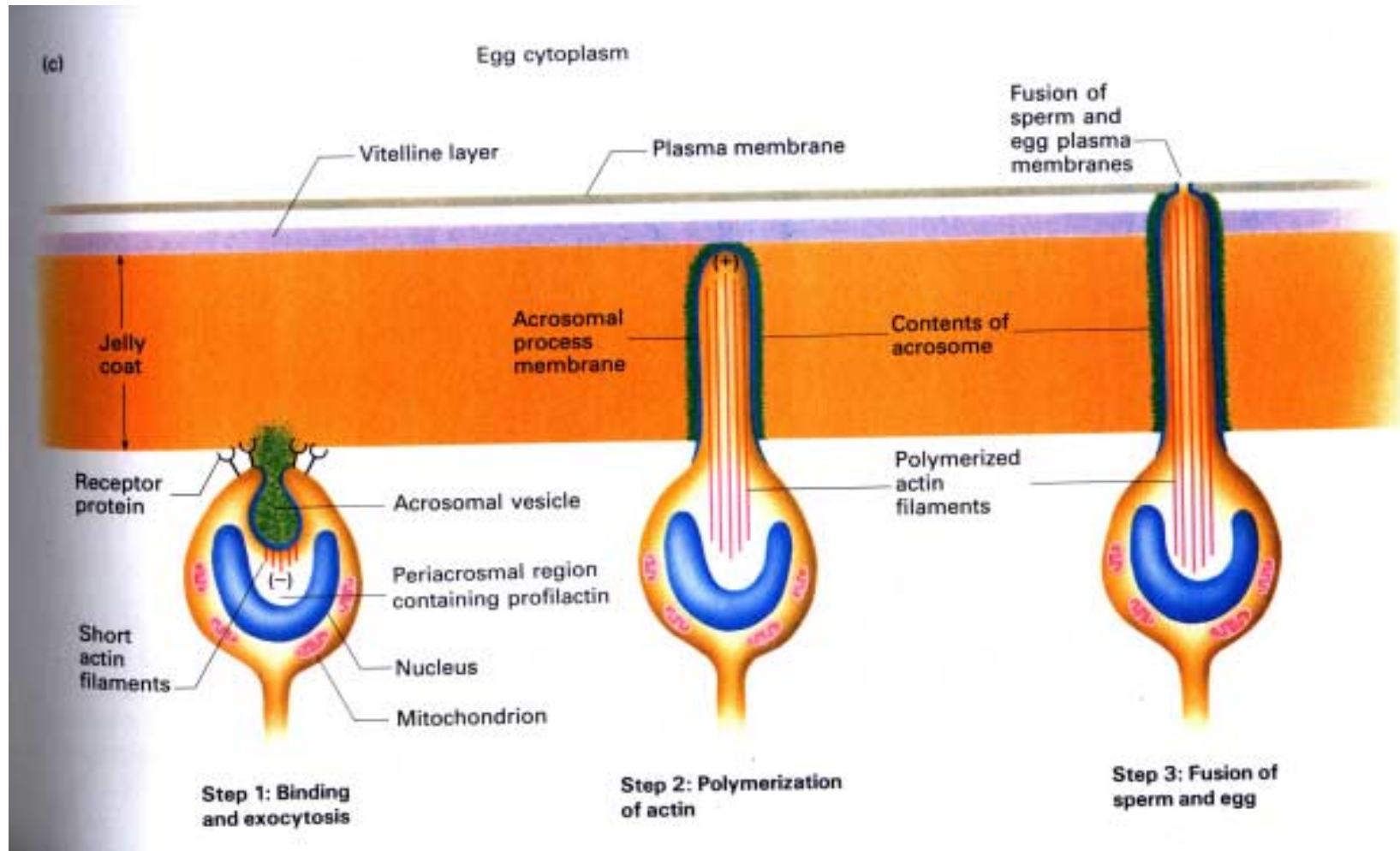
Treadmilling'u nähtus aktiini polümeriseerumisel.



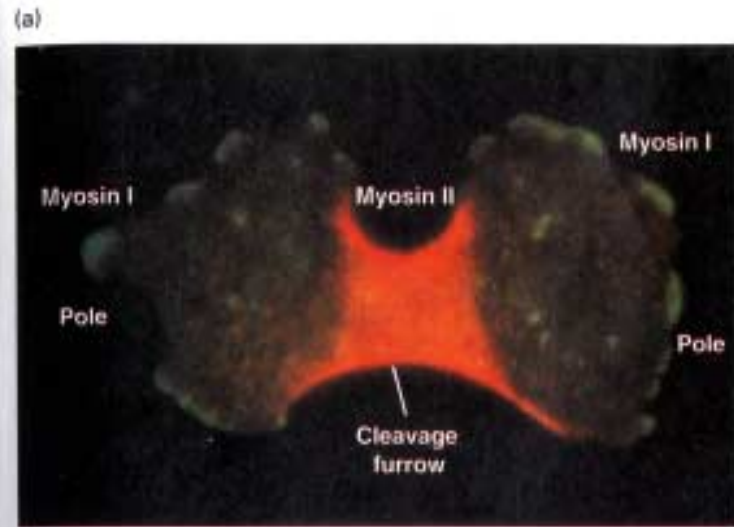
Aktiini ja filamiini seostumine.



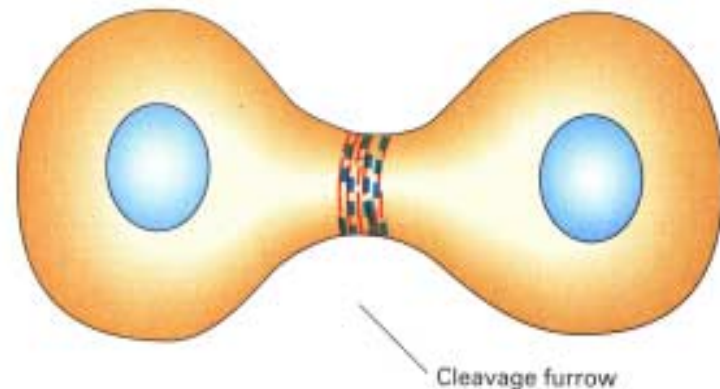
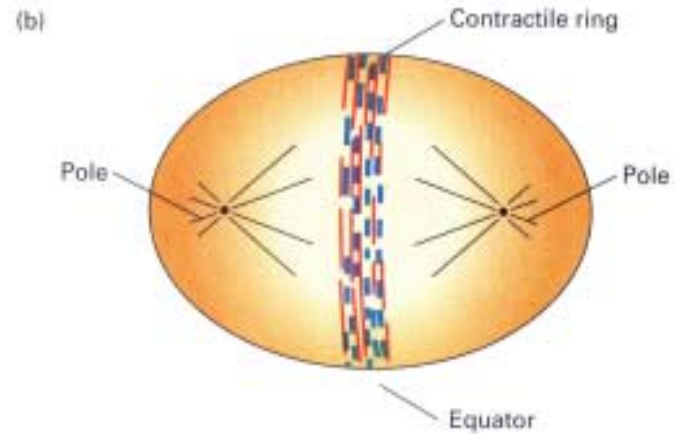
Spermatoosoidi akrosomaalreaktsioon.



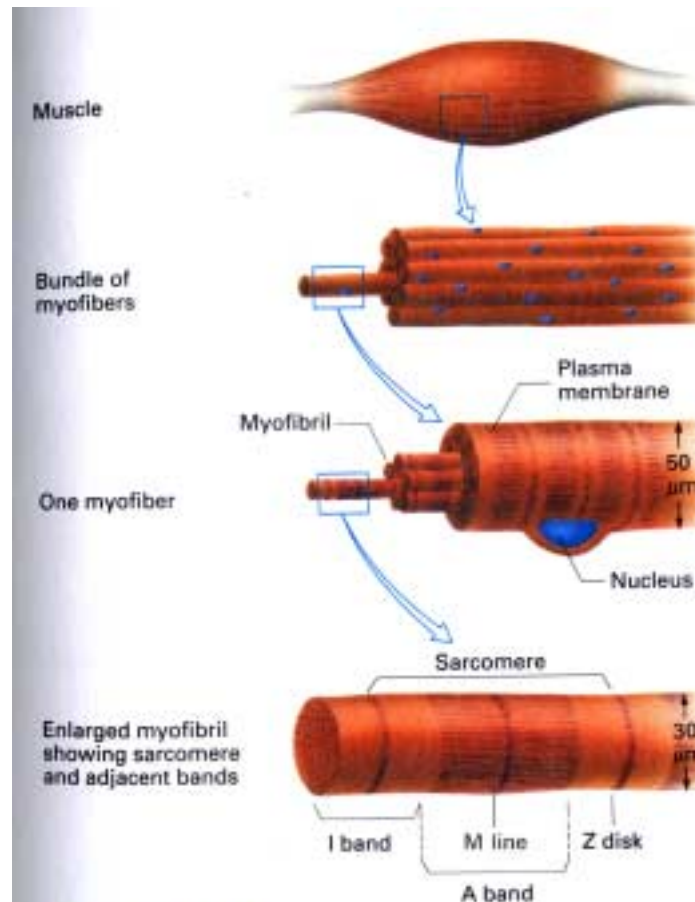
Tsütoplasma jagunemine tsütokineesi käigus kontraktiilse aktiini rõnga abil.



▲ **FIGURE 22-37** The role of myosin II in cytokinesis. (a) During cell division of an *Dictyostelium* ameba, myosin II (red) is concentrated in the cleavage furrow while myosin I (green) is localized at the poles of the cell. (b) During mitosis (see Chapter 23) when the spindle poles and aster microtubules separate, myosin (blue) and actin (red) in the cortex of the cell assemble into an equatorial contractile ring around the cell. As the nuclei in the daughter cells start to reform, the contractile ring constricts, causing the membrane to form a cleavage furrow. In the last step of mitosis, the cell is pinched into two parts. [Part (a) Courtesy of Y. Fukui.]



Skeleti- e. vöötlihase struktuur.



▲ FIGURE 22-24 Structure of muscle. Muscle tissue is composed of bundles of multinucleated muscle cells, or myofibers. Each muscle cell, or fiber, is packed with bundles of actin and myosin filaments, or myofibrils, which extend the length of the cell. Packed end to end in a myofibril is a chain of sarcomeres. The sarcomere is the functional unit of contraction; it is about $2\ \mu\text{m}$ long in resting muscle. Contraction of the sarcomeres shortens the length of a myofibril.

Lihase kokkutõmbe libisevate filamentide mudel.

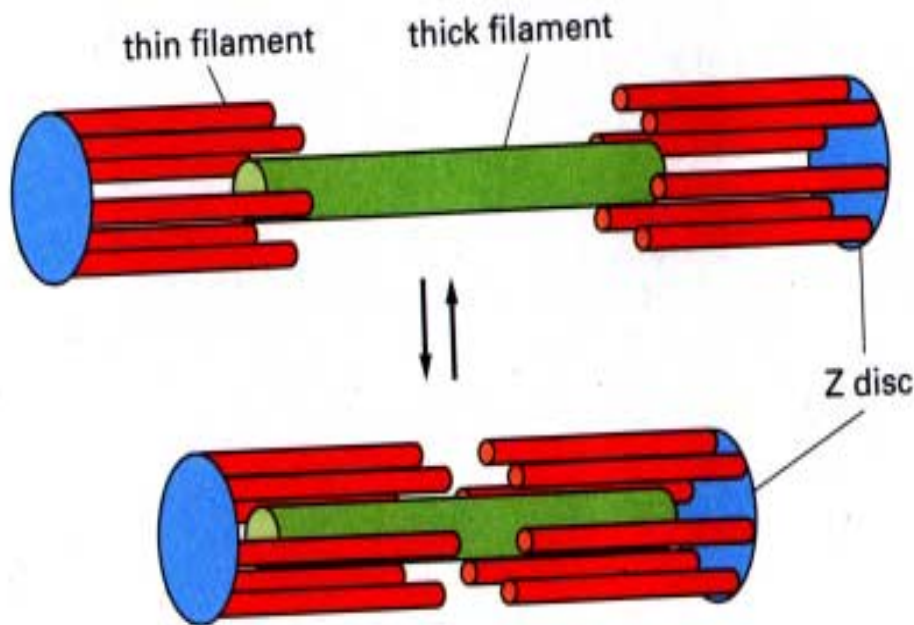
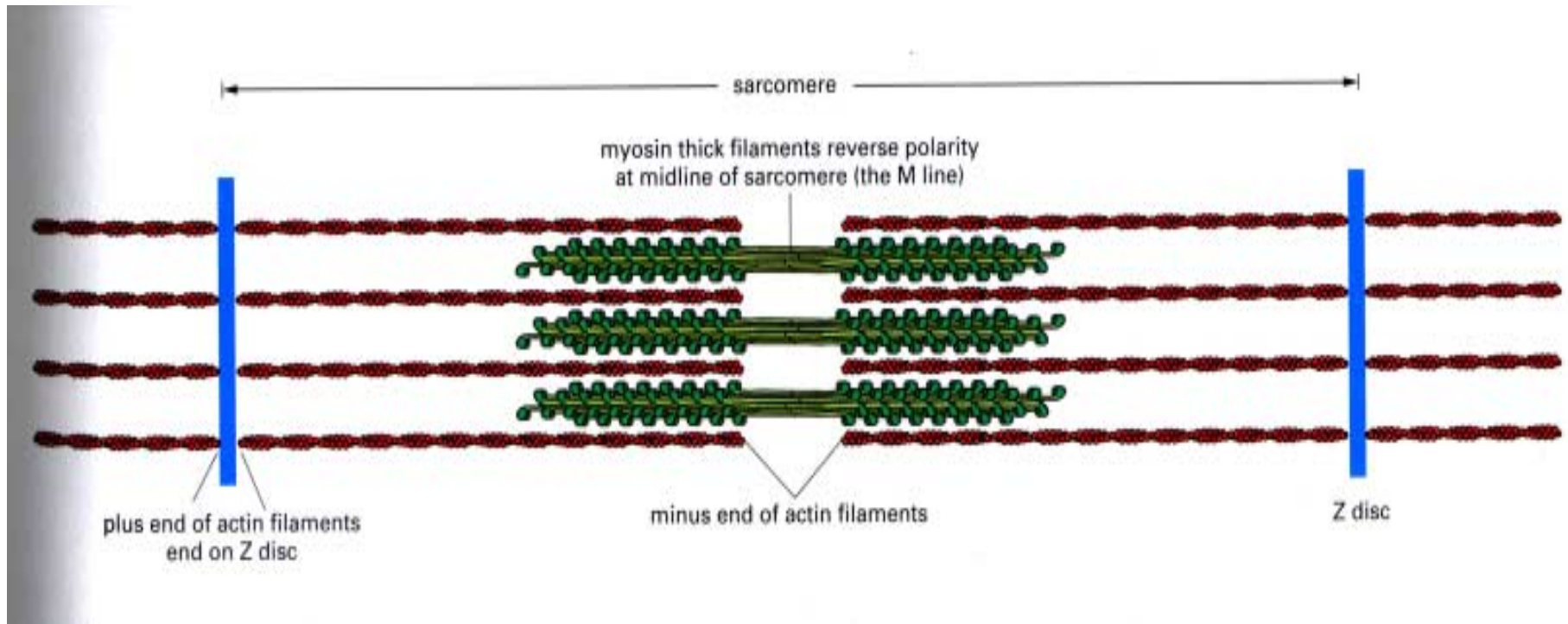
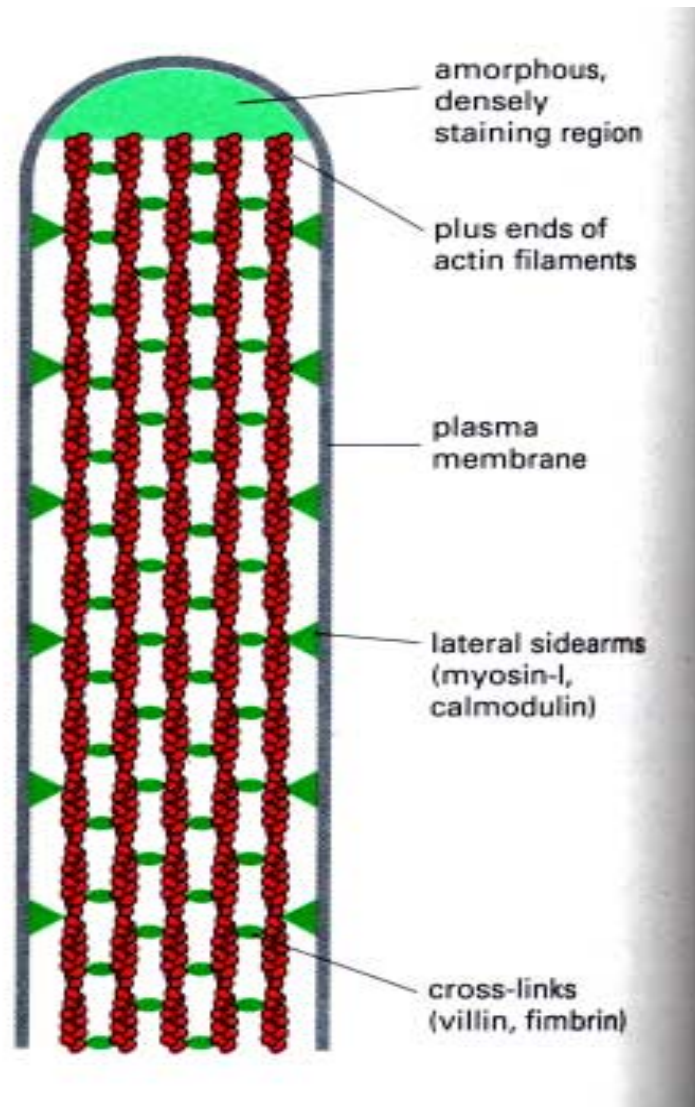


Figure 16–85 The sliding filament model of muscle contraction. The actin and myosin filaments slide past one another without shortening.

Aktiini ja müosiini filamendid sarkomeeris.

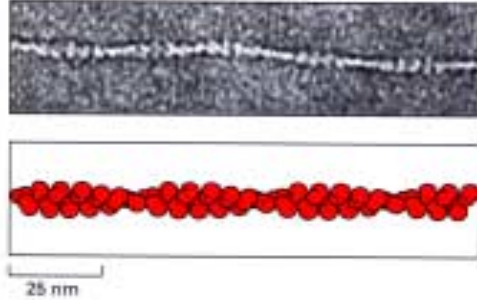


Mikrohatu ehitus.



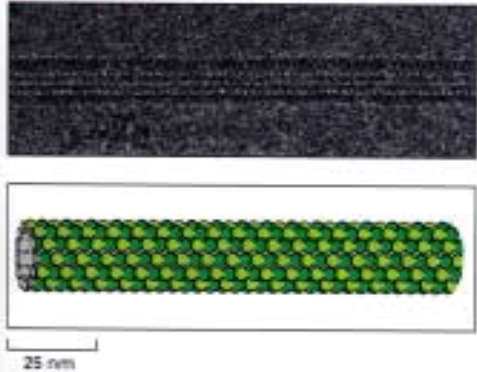
Kolm valgu filamentide tüüpi, mis moodustavad tsütoskeleti.

ACTIN FILAMENTS



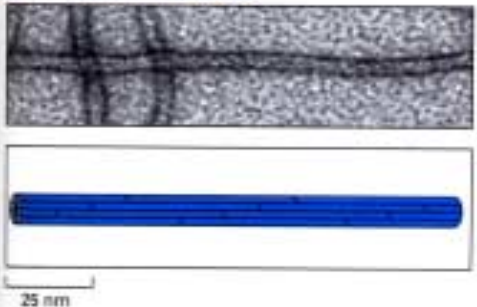
Actin filaments (also known as microfilaments) are two-stranded helical polymers of the protein actin. They appear as flexible structures, with a diameter of 5–8 nm, that are organized into a variety of linear bundles, two-dimensional networks, and three-dimensional gels. Although actin filaments are dispersed throughout the cell, they are most highly concentrated in the cortex, just beneath the plasma membrane.

MICROTUBULES



Microtubules are long, hollow cylinders made of the protein tubulin. With an outer diameter of 25 nm, they are much more rigid than actin filaments. Microtubules are long and straight and typically have one end attached to a single microtubule organizing center (MTOC) called a centrosome, as shown here.

INTERMEDIATE FILAMENTS



Intermediate filaments are ropelike fibers with a diameter of around 10 nm; they are made of intermediate filament proteins, which constitute a large and heterogeneous family. One type of intermediate filament forms a meshwork called the nuclear lamina just beneath the inner nuclear membrane. Other types extend across the cytoplasm, giving cells mechanical strength and carrying the mechanical stresses in an epithelial tissue by spanning the cytoplasm from one cell-cell junction to another.

Aktiini filamentide tüübid substraadil roomavas rakus.

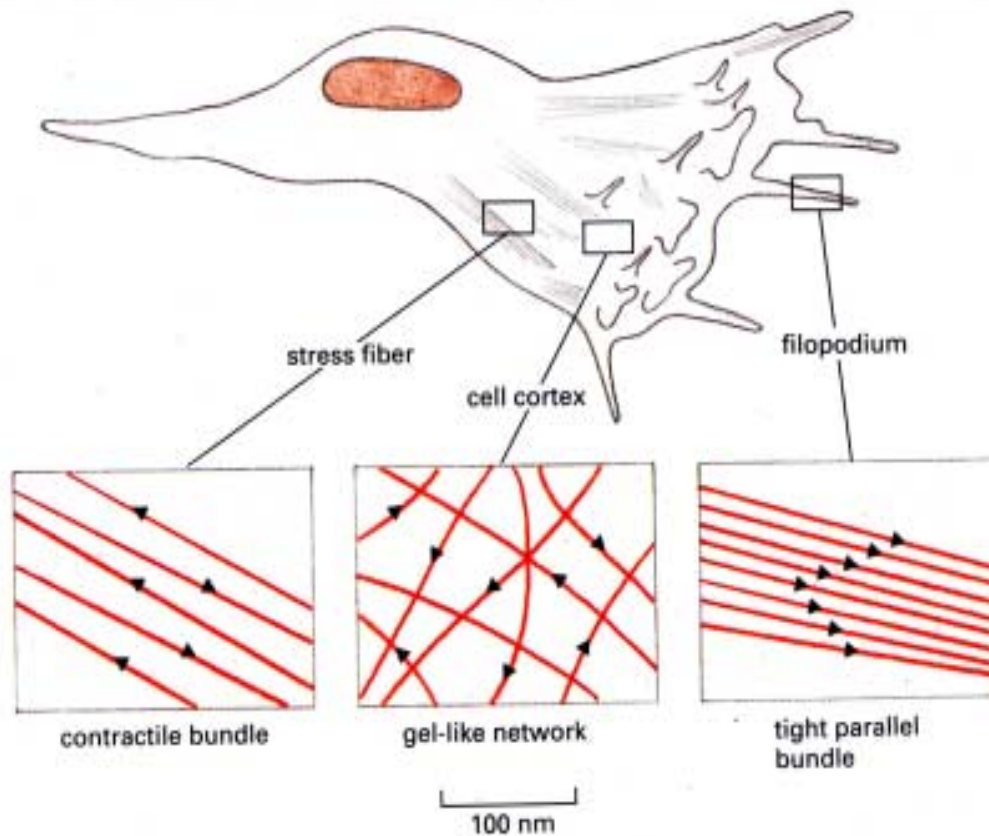
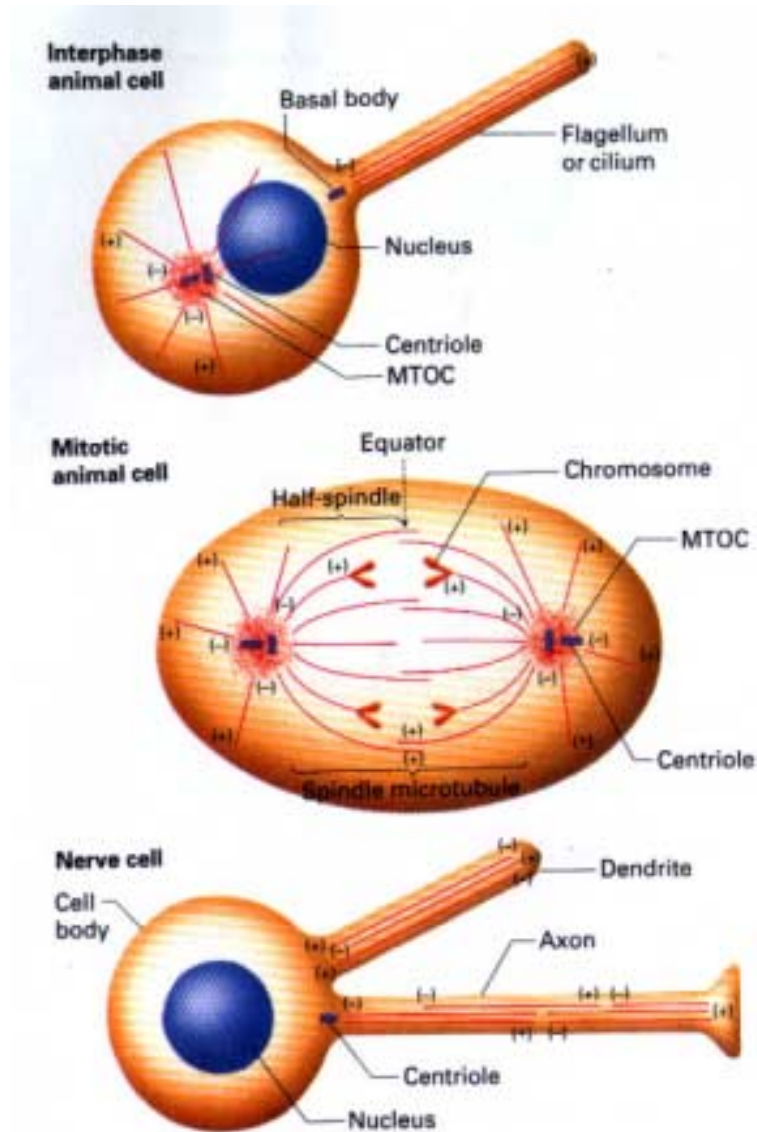
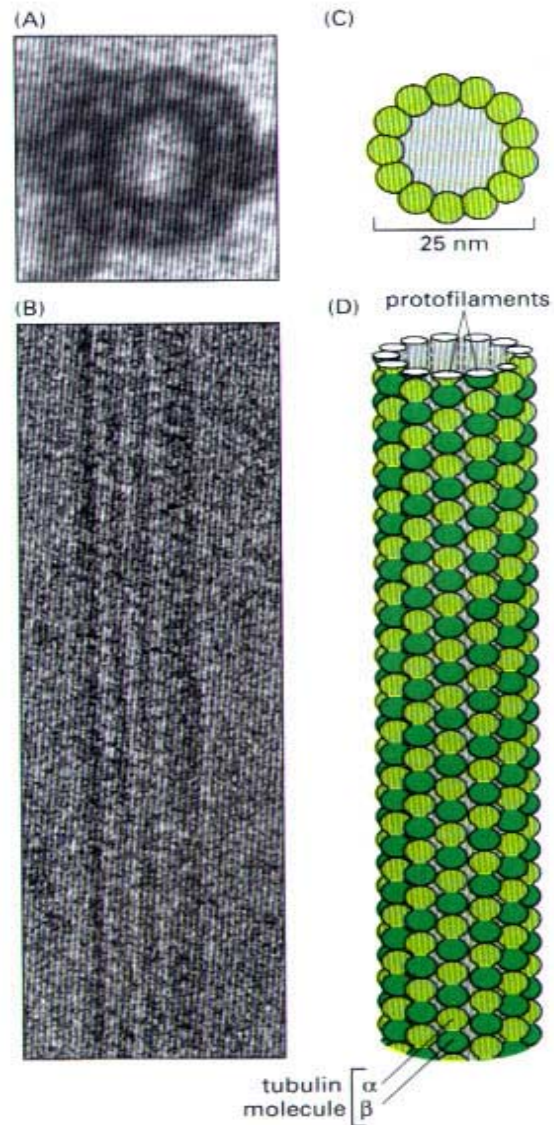


Figure 16-65 Three types of cortical arrays of actin filaments. A crawling cell is shown with three areas enlarged to show the arrangement of actin filaments drawn to scale. Arrowheads point toward the plus end of the filaments.

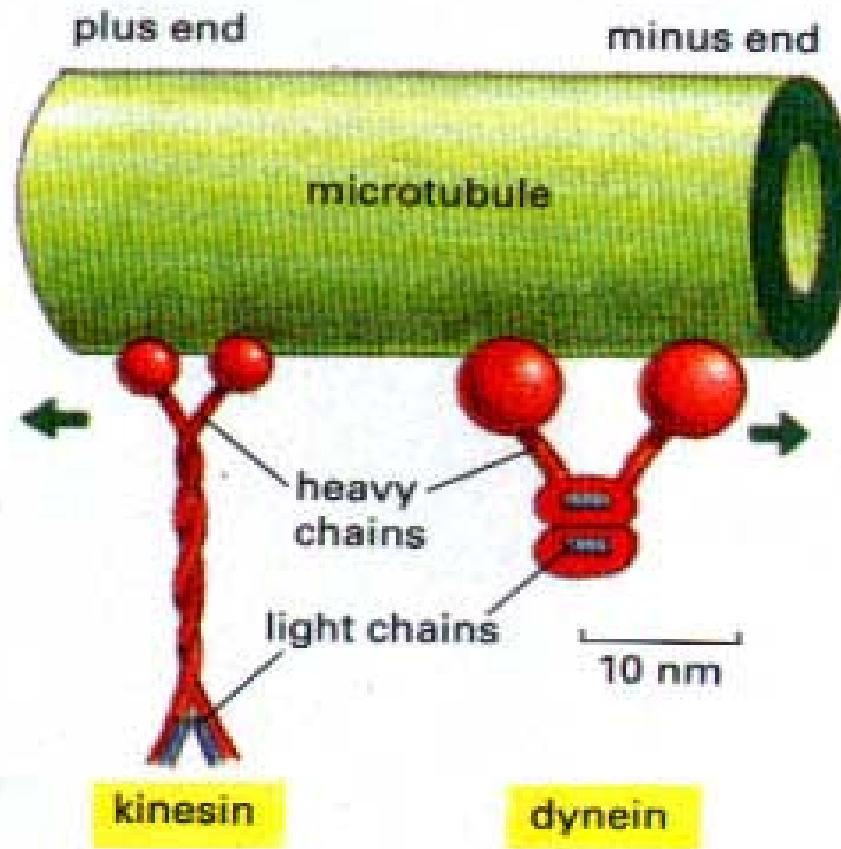
Mikrotuubulite paiknemine rakus.



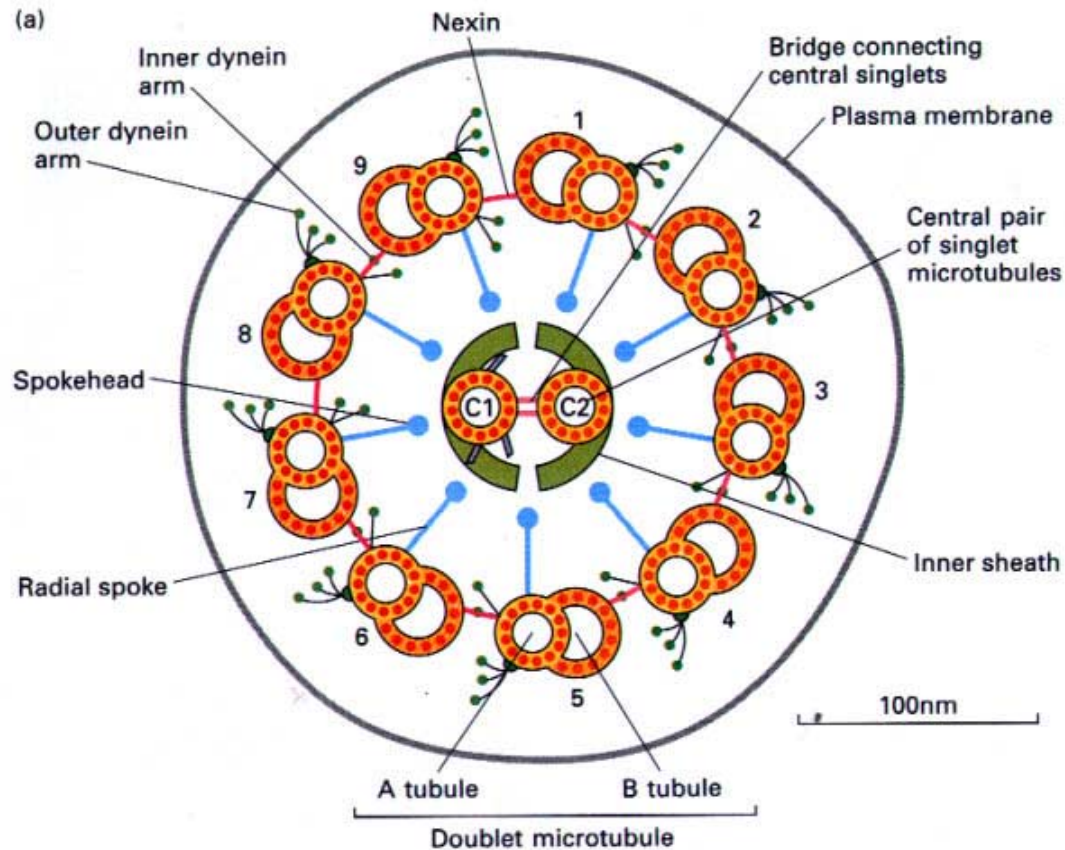
Mikrotuubuli ehitus.



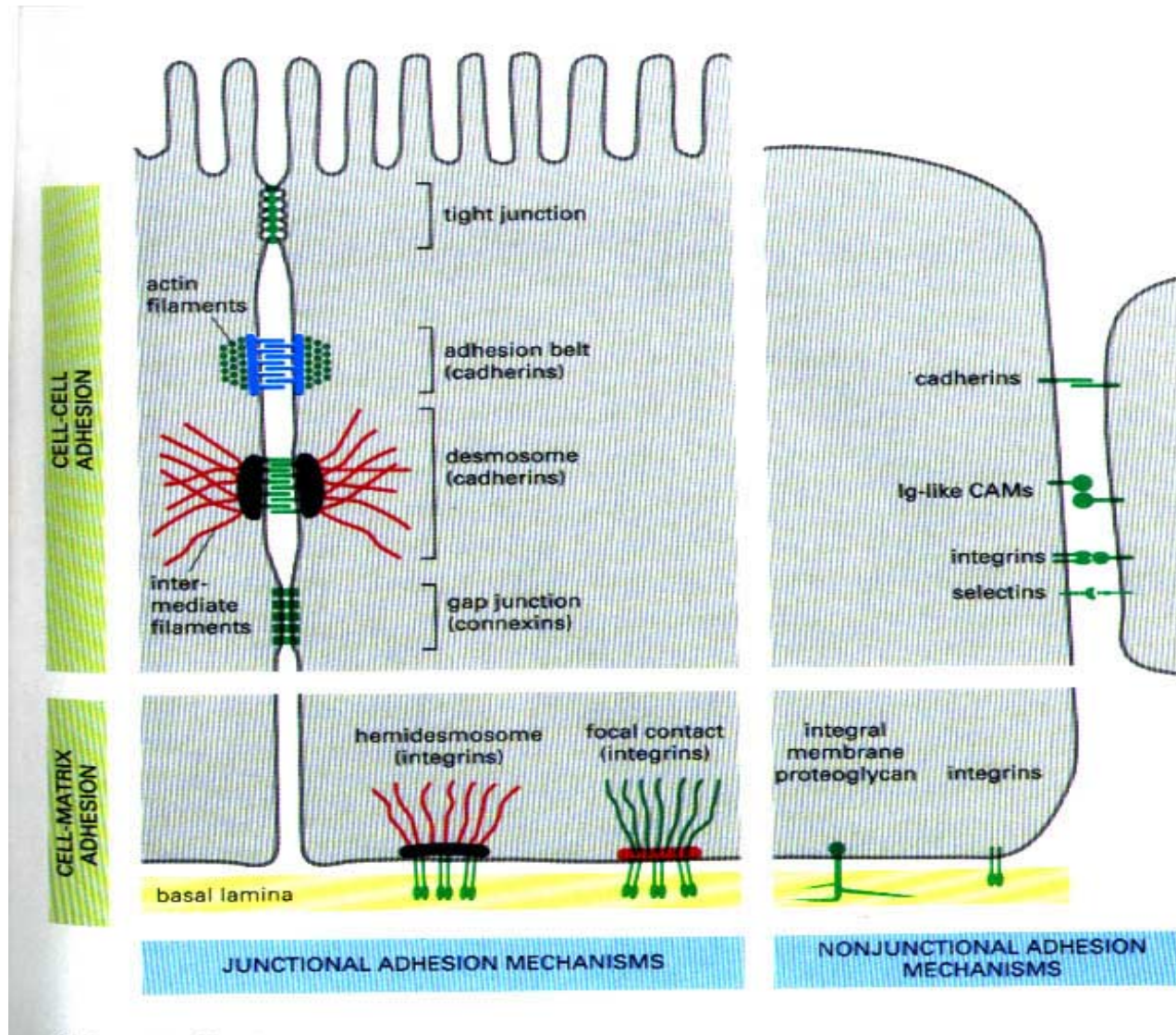
Mikrotuubulite mootorvalgud.



Ripsme v $\ddot{o}$ i viburi ehitus.



Ühendused, mille kaudu loomarakk on seotud teiste rakkudega ja ekstratsellulaarse matriksiga.



Intermediate set of filamentous structures.

