

# Structured-Function

Yuni Wibowo

# Biomes

- Characterized of
  - Tropical Rain Forest
  - Sabana
  - Padang pasir

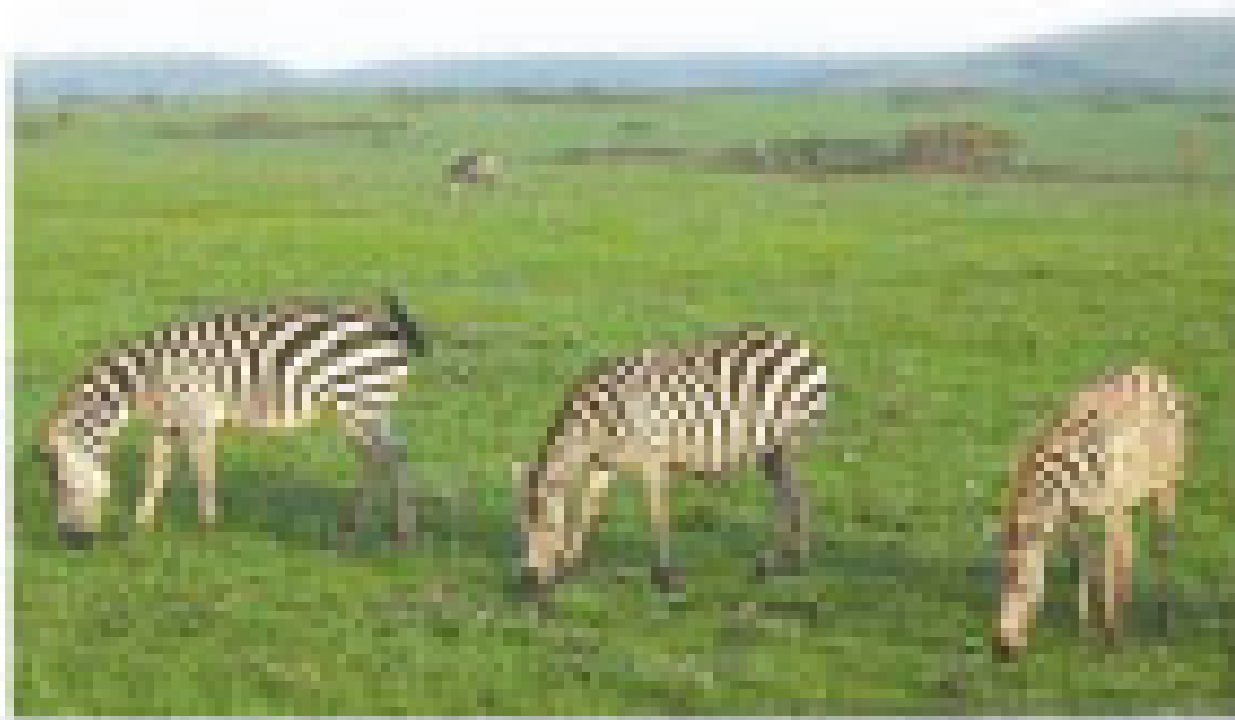
# Tropical rain forest



# Components

- Abiotik:
- Biotik:
  - Produser:
  - Consumer

# Savana



# Components

- Abiotik:
- Biotik:
  - Produser:
  - Consumer

# Gurun



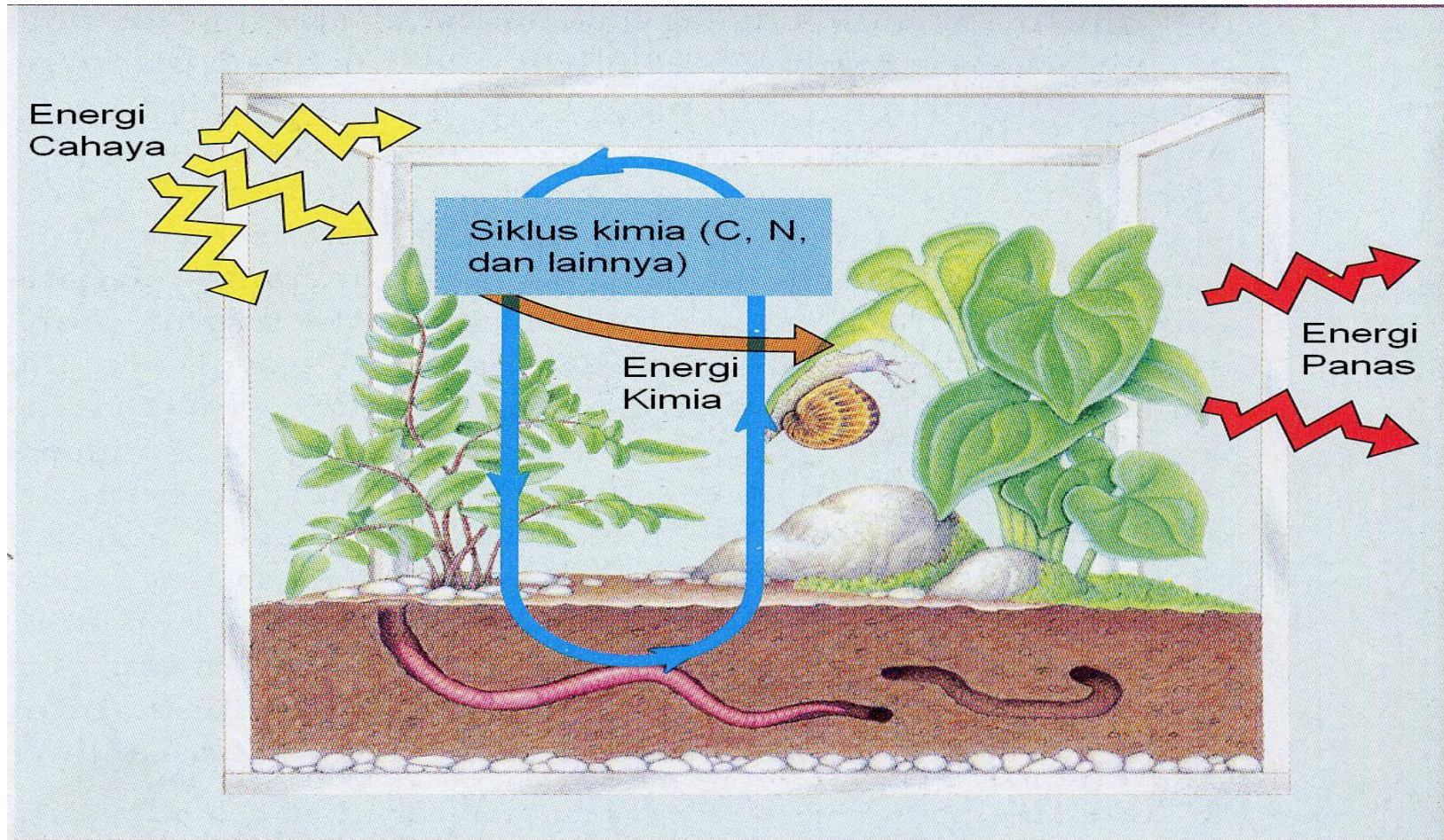
# Components

- Abiotik:
- Biotik:
  - Produser:
  - Consumer



# Community

- Garden



# Sawah



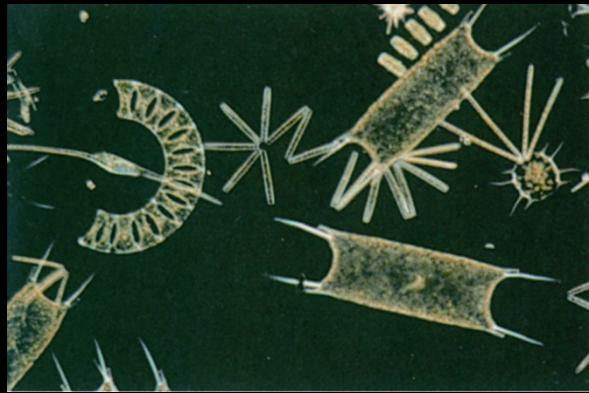
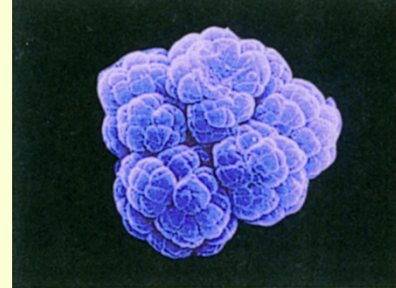
# Tingkat individu

- Bakteri
- Protista
- Jamur
- hewan (Manusia)
- Tumbuhan (biji)

## Domain Bakteri



## Domain Archaea



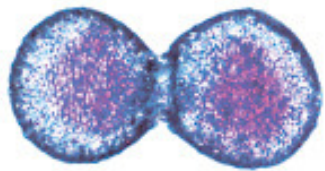
# PROTISTA

## Protista is like animal

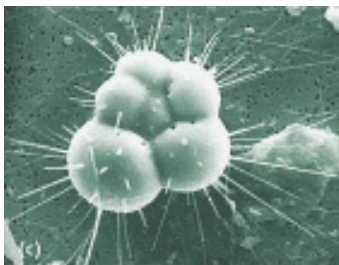
### Rhizopoda



*Amoeba*



*Difflugia*

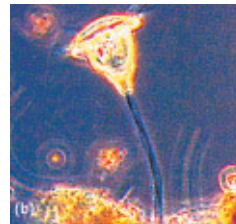


*Globogerina*

### Ciliata



*Balantidium*



*Globogerina*

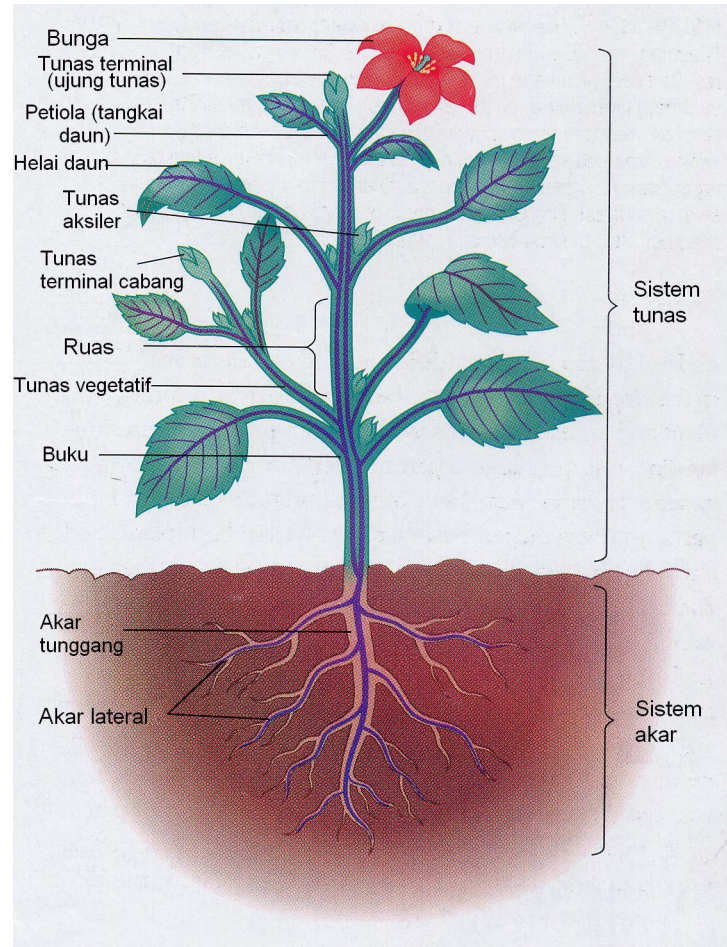
### Zooflagelata



*Trypanosoma*



*Trichomonas*



# Tingkat individu

- Bakteri: uniseluler
- Ganggang: metazoa
- Jamur: miselium
- Protozoa
- Struktur penyusun tubuh hewan (manusia)
  - 9 sistem: sistem pencernaan, pernafasan, transportasi, ekskresi, gerak, koordinasi, reproduksi, urinary,
- Struktur penyusun tubuh tumbuhan (tumbuhan biji)

# Tingkat organ



- Tingkat organ



- The thick fleshy leaves of succulent plants swell in damp conditions to store fresh water. Adaptations such as the white coloration and waxy, water-sealing coating of some leaves reduce evaporation. The leaves wrinkle as water is used.



Dorling Kindersley

The eucalyptus tree has two totally different shapes of leaves on the same stem. The young leaves are small, circular, and completely encircle the branch, while older leaves are long, bladelike, and borne at the ends of short stalks.

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Dorling Kindersley

Pine needles are actually highly modified leaves that are not shed each year and can remain on the tree for long periods. Each needle has a tough outer layer called the cuticle, which in turn has a waxy coating that helps prevent water loss.

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**Encarta Encyclopedia, Dorling  
Kindersley**

The rhododendron is an evergreen—that is, it does not replace all of its leaves each year. In order to survive the effects of wind, rain, sun, and insect predation, the leaves of the rhododendron have a tough, waxy upper surface. They also sometimes have a feltlike lower surface to help retain water and repel insects.

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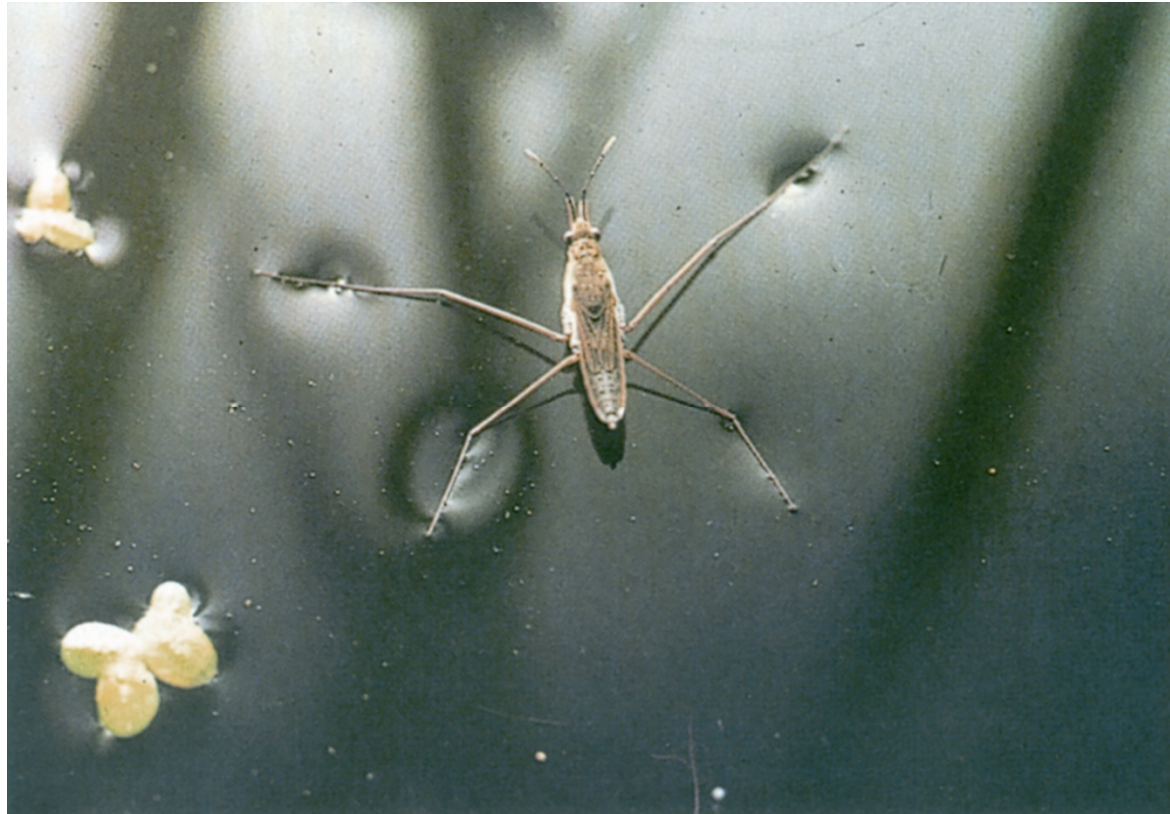


Encarta Encyclopedia, Dorling Kindersley

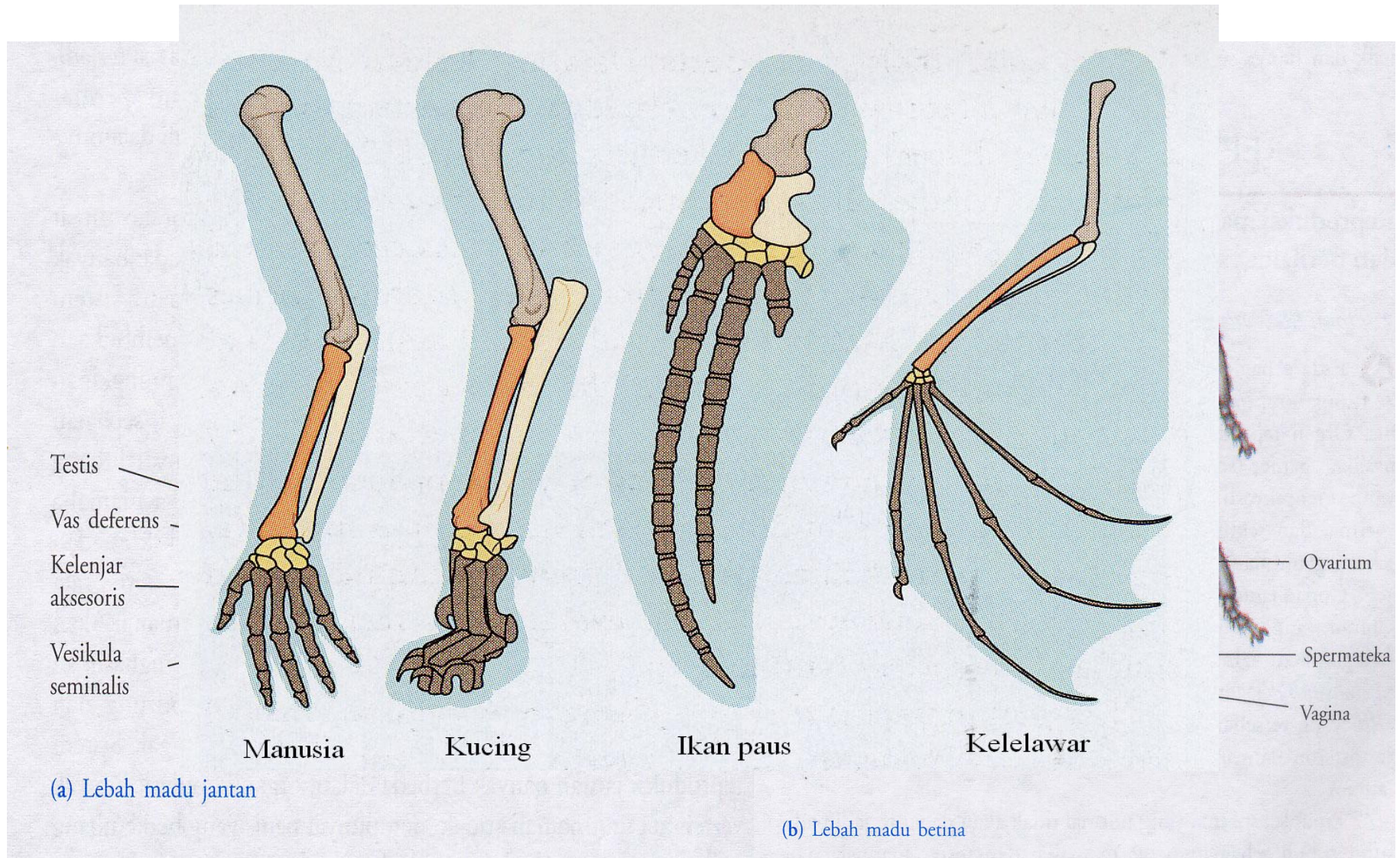
The two lobes of a Venus's-flytrap leaf form a deceptively safe and attractive landing place for insects and other animals. Less than a second after the frog trips the trigger bristles on the inside surface of the leaf, the lobes close enough to trap the intruder below interlocking spines. If sensory organs determine that the prisoner contains protein, the leaf closes further and the plant's digestive enzymes start to flow.

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# Berjalan di atas air



Tegangan permukaan air yang tinggi akibat kekuatan gabungan dari ikatan-ikatan hidrogennya, membuat serangga ini mampu berjalan di permukaan kolam tanpa memecahkan lapisan permukaan air yang dipijaknya.

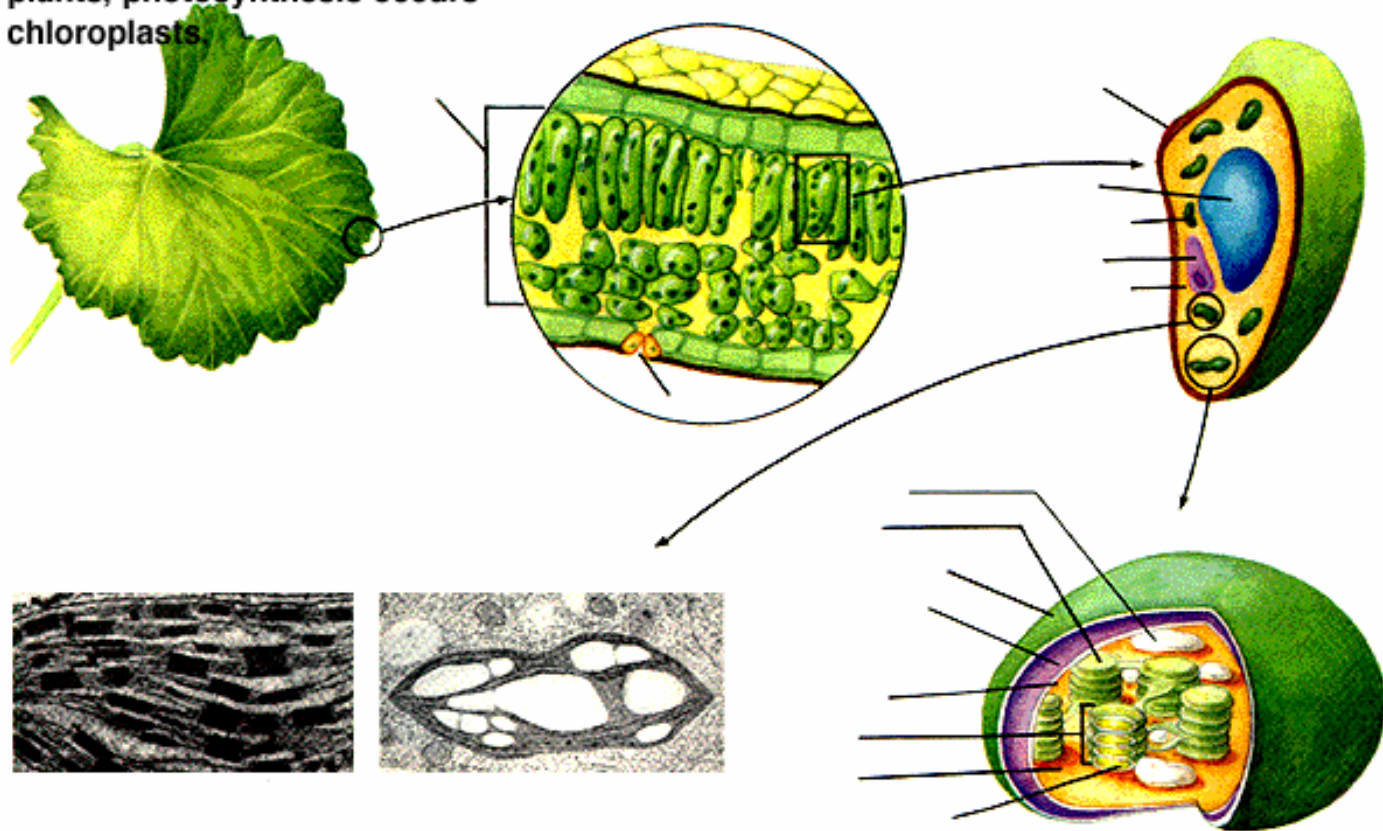


## ANATOMI REPRODUKSI SERANGGA

# Tissue

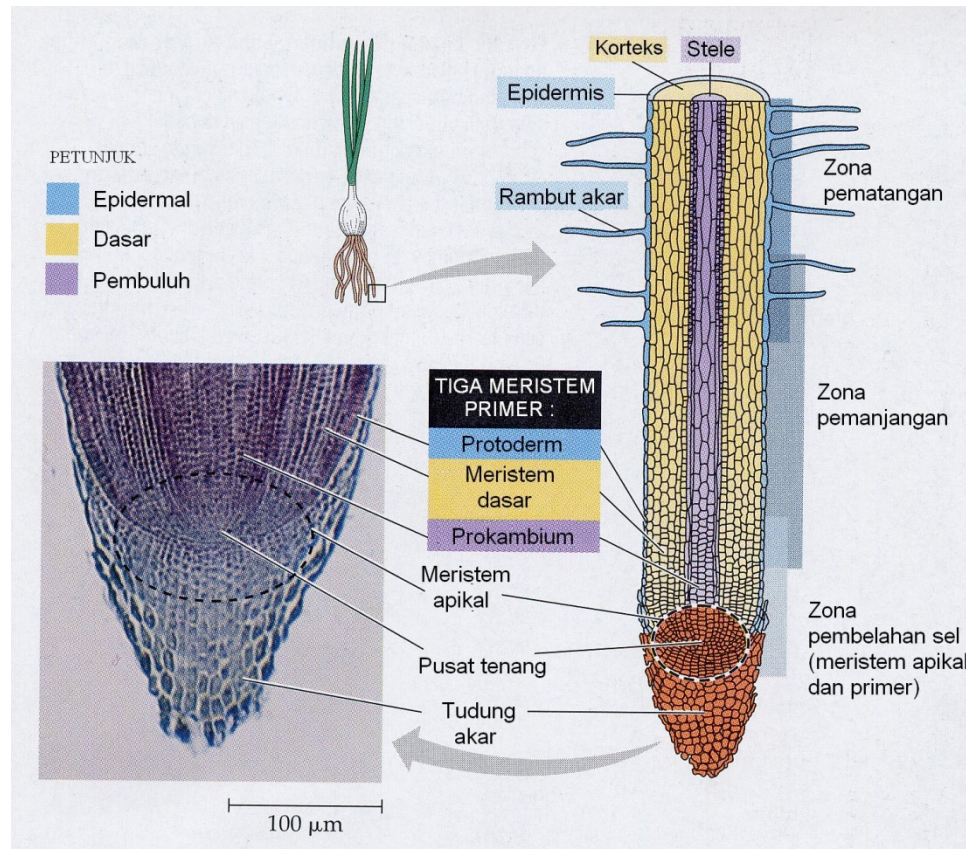
## Leaves

Figure 15  
In plants, photosynthesis occurs  
in chloroplasts.

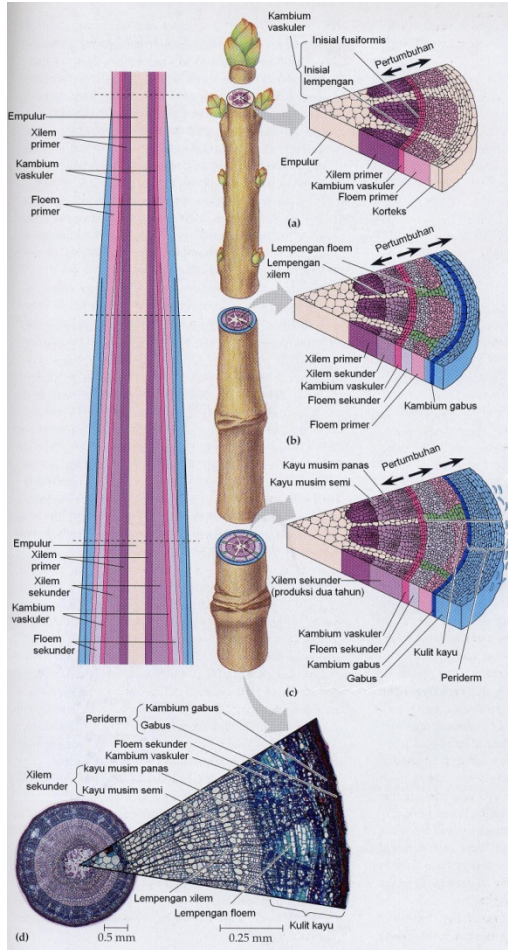




# Radix

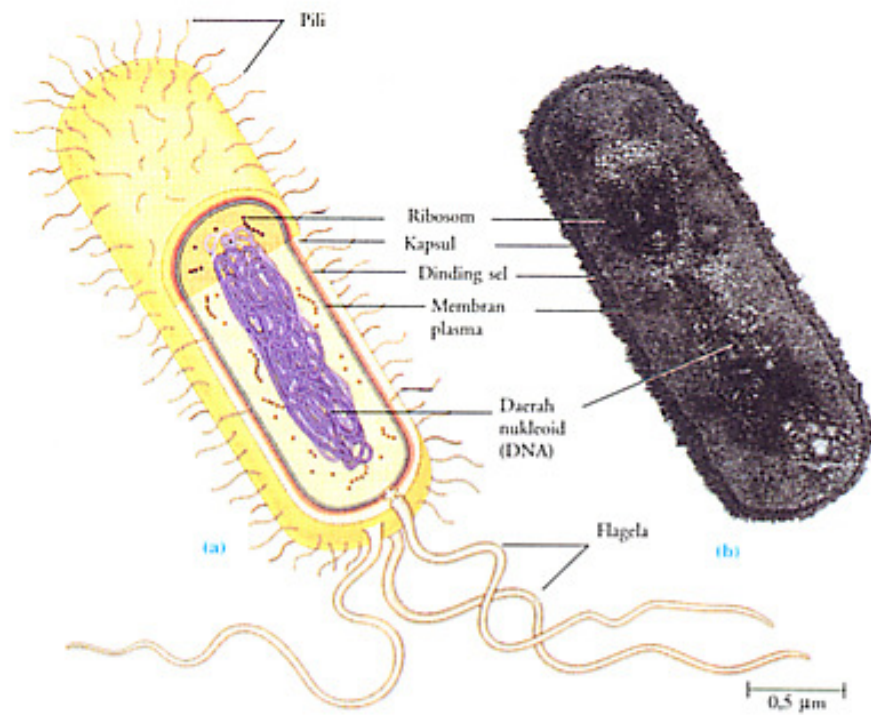


# Stem

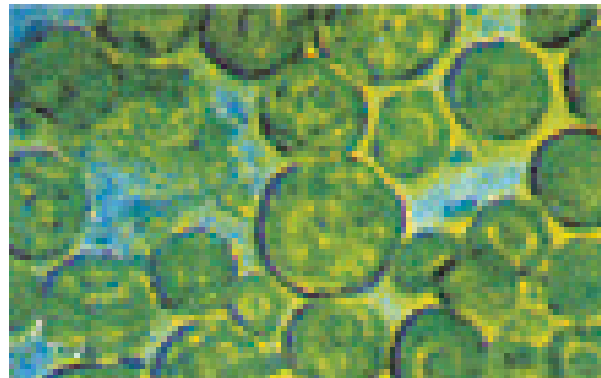
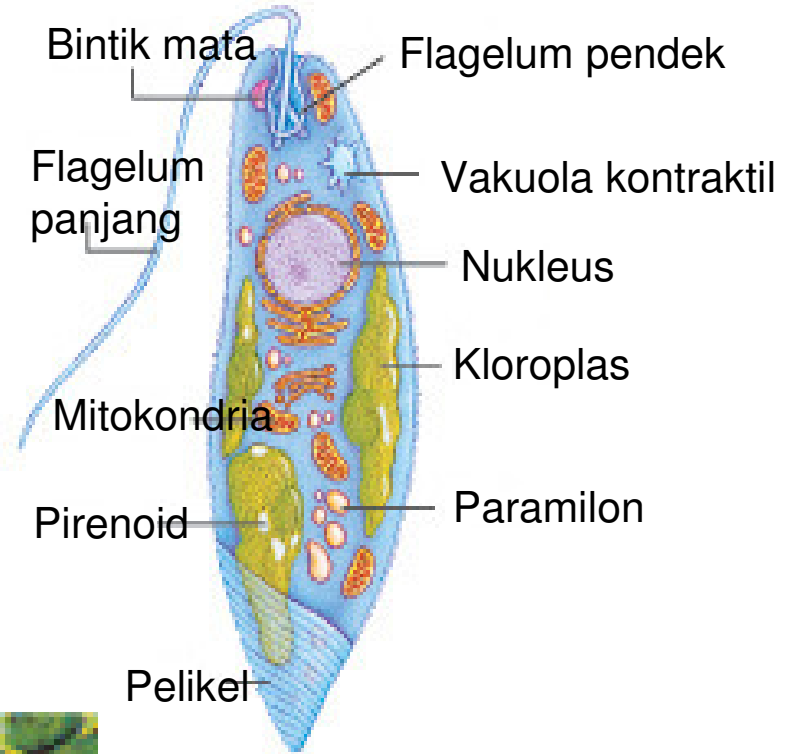
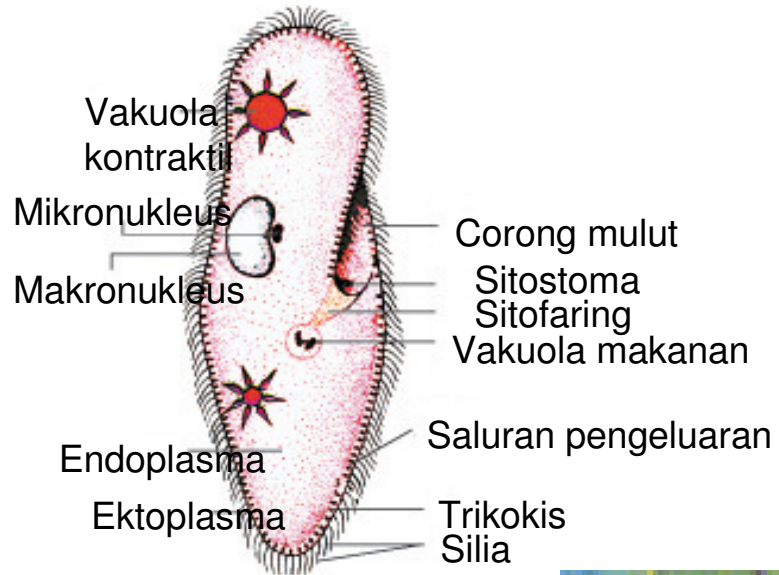


# Celluler

- Monera
- Protista
- Sel hewan
- Sel tumbuhan

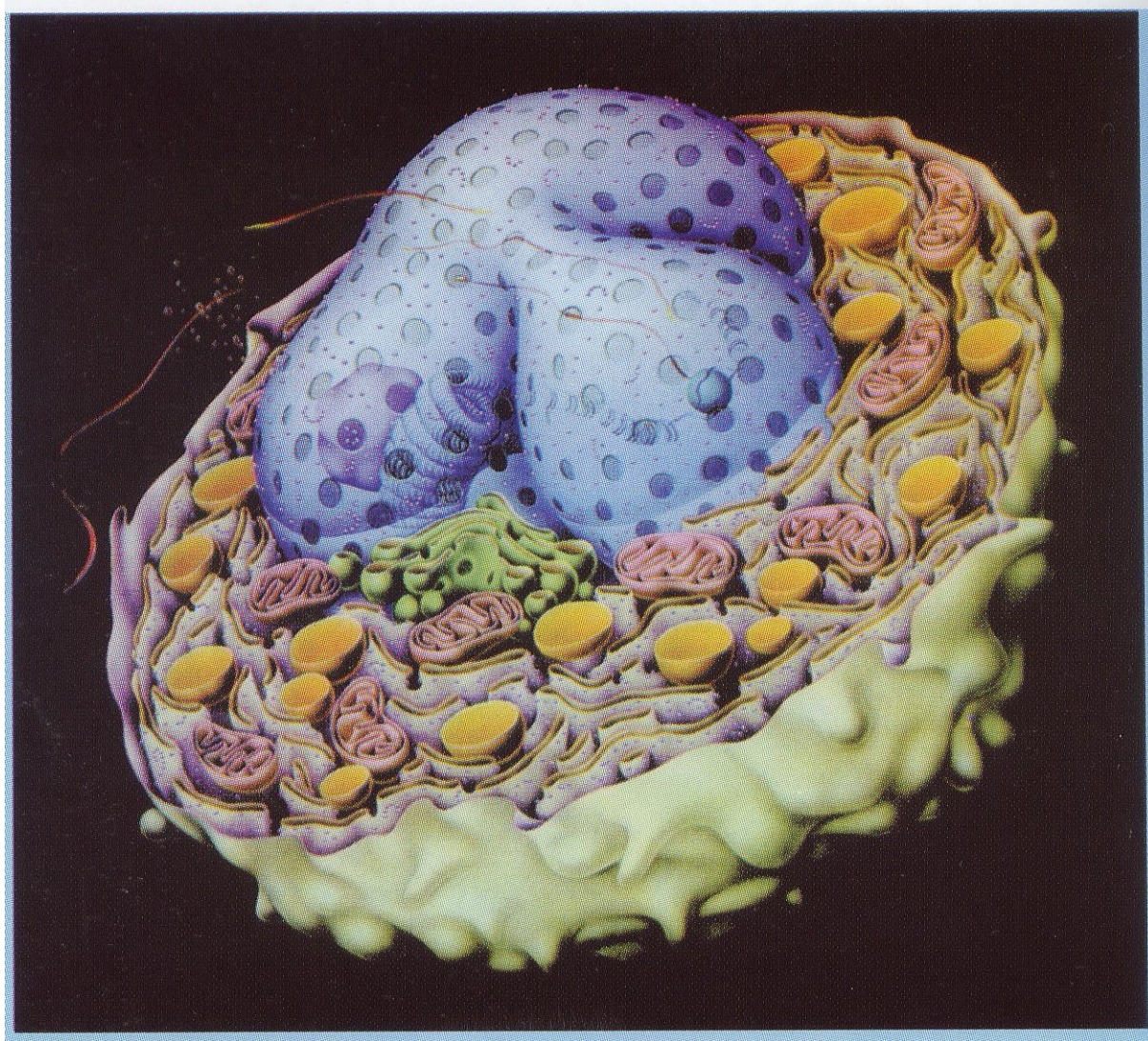


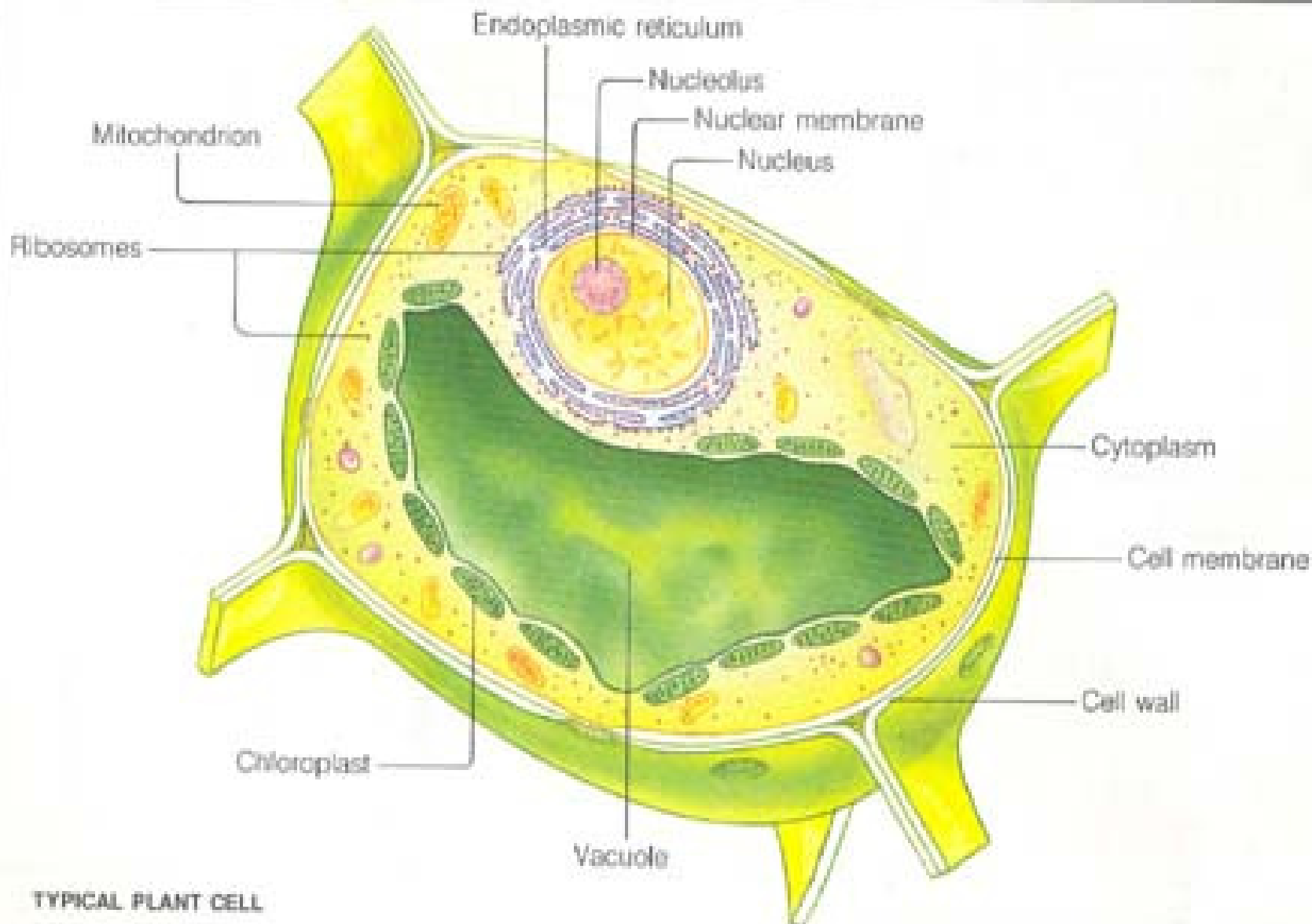
# Protista



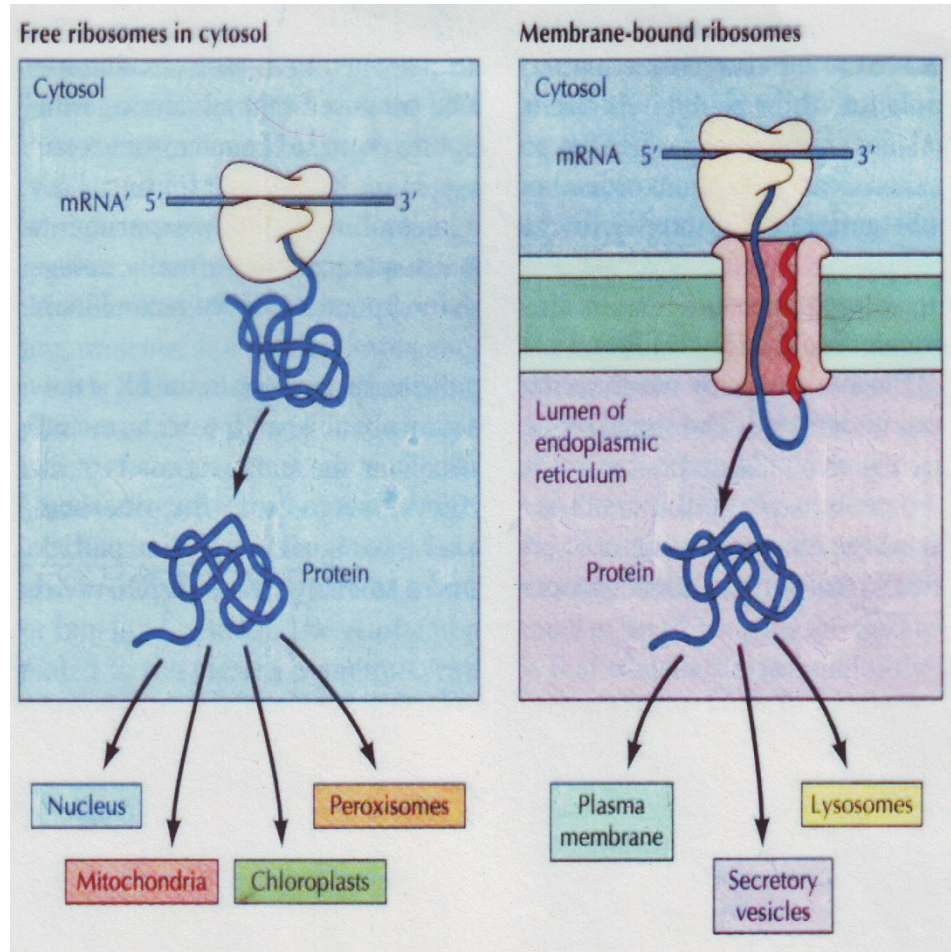
*Chlorella*

# Tingkat Sel





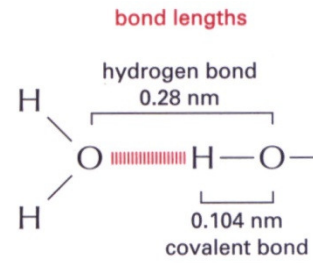
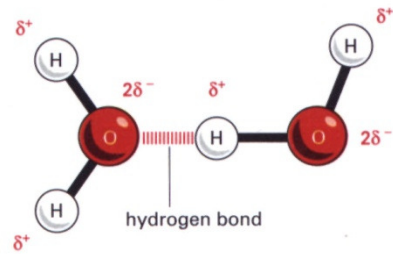
# Tingkat Molekul



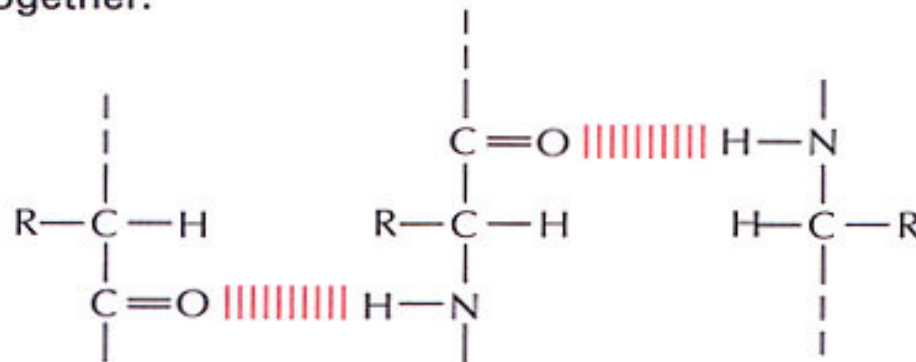


# Tingkat molekul

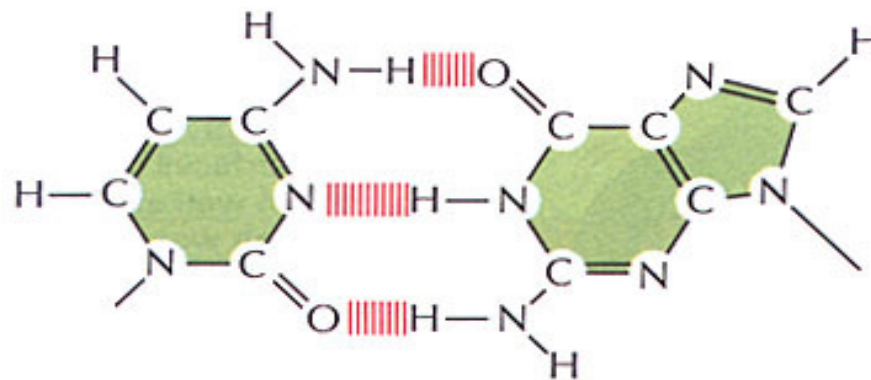
| 1 <sup>st</sup> position<br>(5' end) | 2 <sup>nd</sup> position |     |      |      | 3 <sup>rd</sup> position<br>(3' end) |
|--------------------------------------|--------------------------|-----|------|------|--------------------------------------|
|                                      | U                        | C   | A    | G    |                                      |
| U                                    | Phe                      | Ser | Tyr  | Cys  | U                                    |
|                                      | Phe                      | Ser | Tyr  | Cys  | C                                    |
|                                      | Leu                      | Ser | STOP | STOP | A                                    |
|                                      | Leu                      | Ser | STOP | Trp  | G                                    |
| C                                    | Leu                      | Pro | His  | Arg  | U                                    |
|                                      | Leu                      | Pro | His  | Arg  | C                                    |
|                                      | Leu                      | Pro | Gin  | Arg  | A                                    |
|                                      | Leu                      | Pro | Gin  | Arg  | G                                    |
| A                                    | Ile                      | Thr | Asn  | Ser  | U                                    |
|                                      | Ile                      | Thr | Asn  | Ser  | C                                    |
|                                      | Ile                      | Thr | Lys  | Arg  | A                                    |
|                                      | Met                      | Thr | Lys  | Arg  | G                                    |
| G                                    | Val                      | Ala | Asp  | Gly  | U                                    |
|                                      | Val                      | Ala | Asp  | Gly  | C                                    |
|                                      | Val                      | Ala | Glu  | Gly  | A                                    |
|                                      | Val                      | Ala | Glu  | Gly  | G                                    |



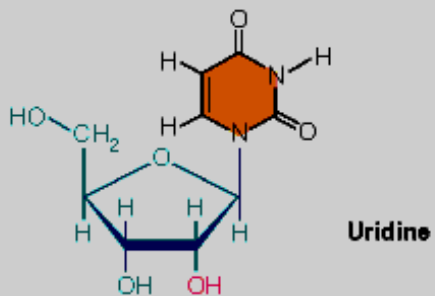
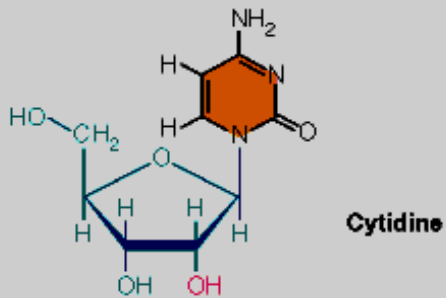
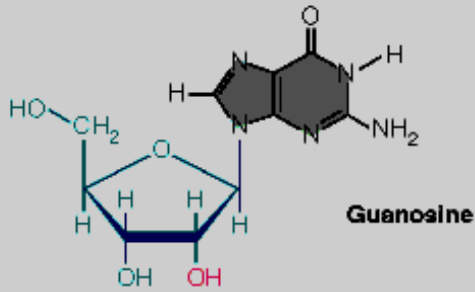
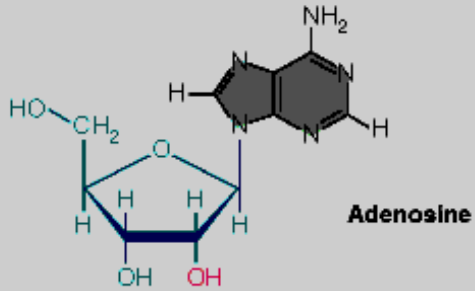
Amino acids in polypeptide chains hydrogen-bonded together.



Two bases, G and C, hydrogen-bonded in DNA or RNA.

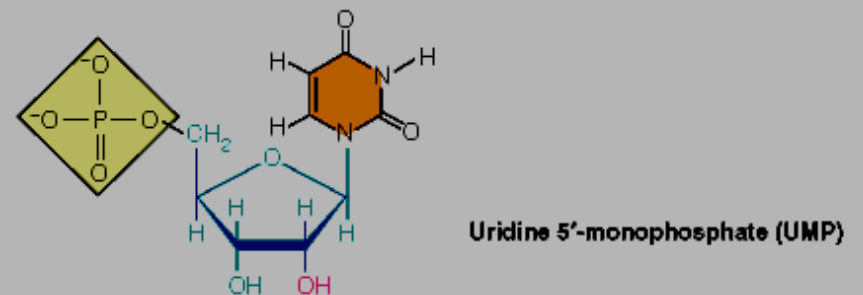
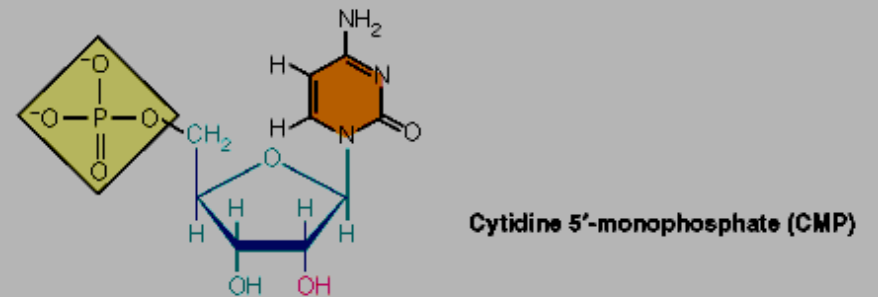
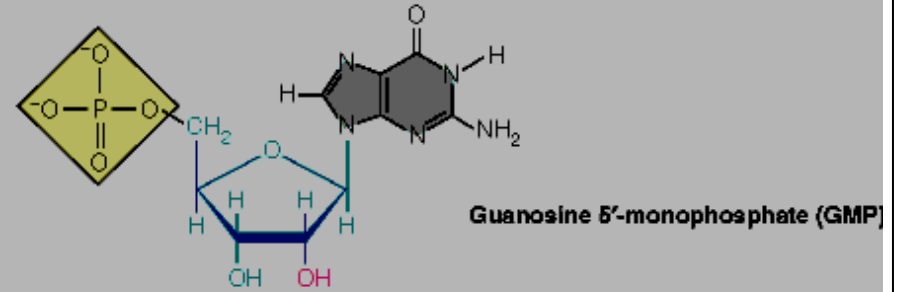
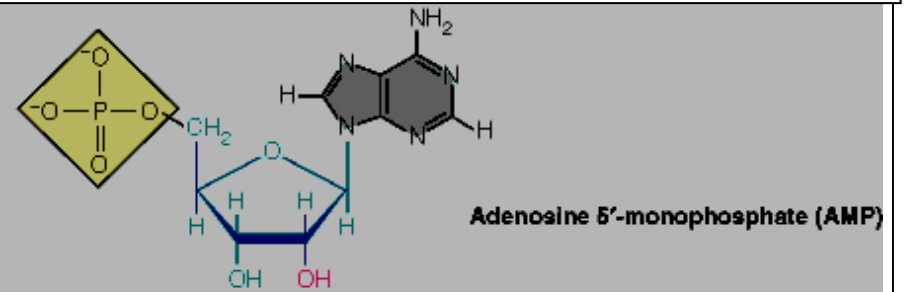


## Nukleosida

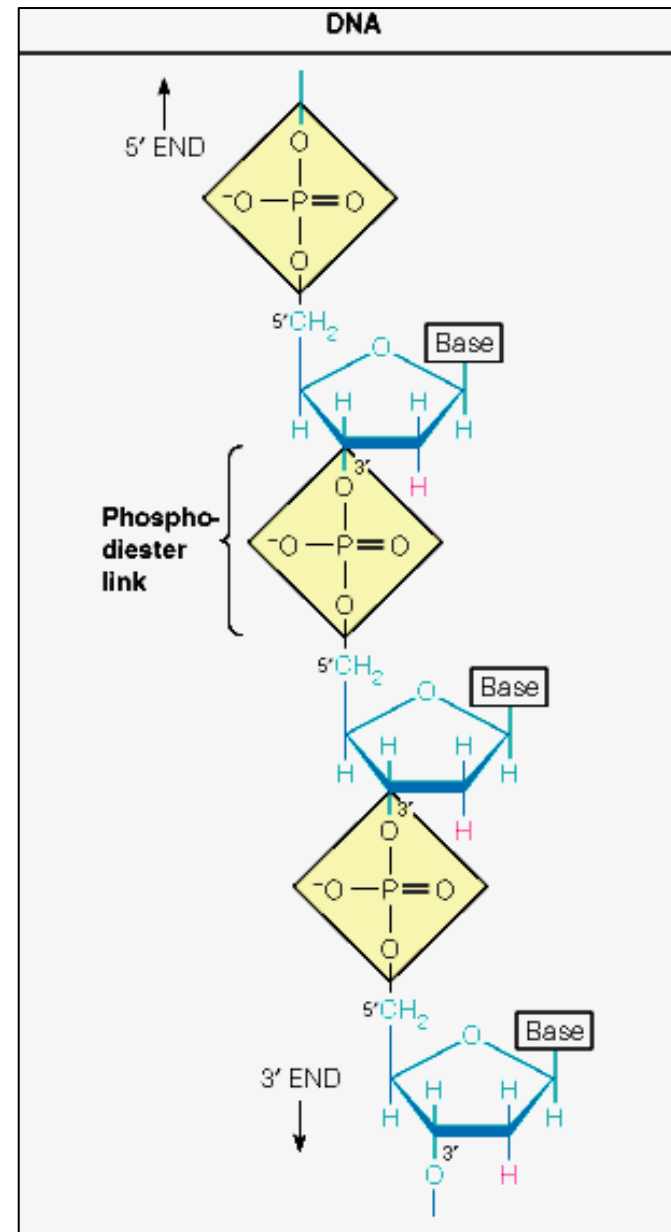
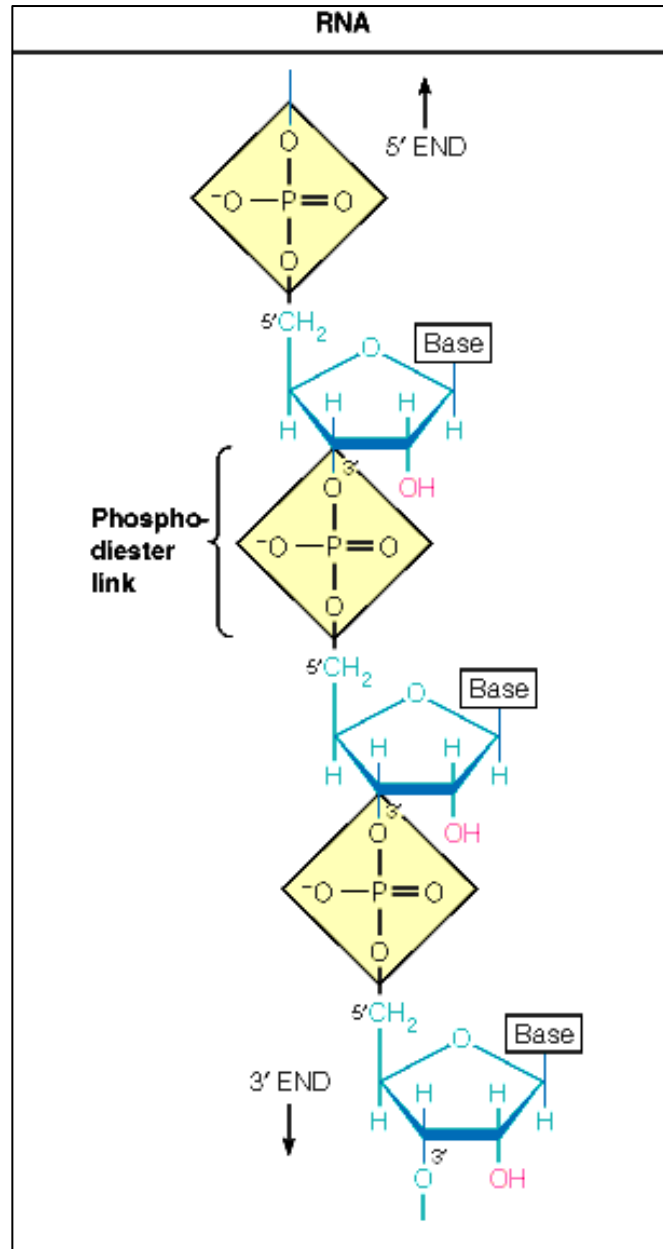


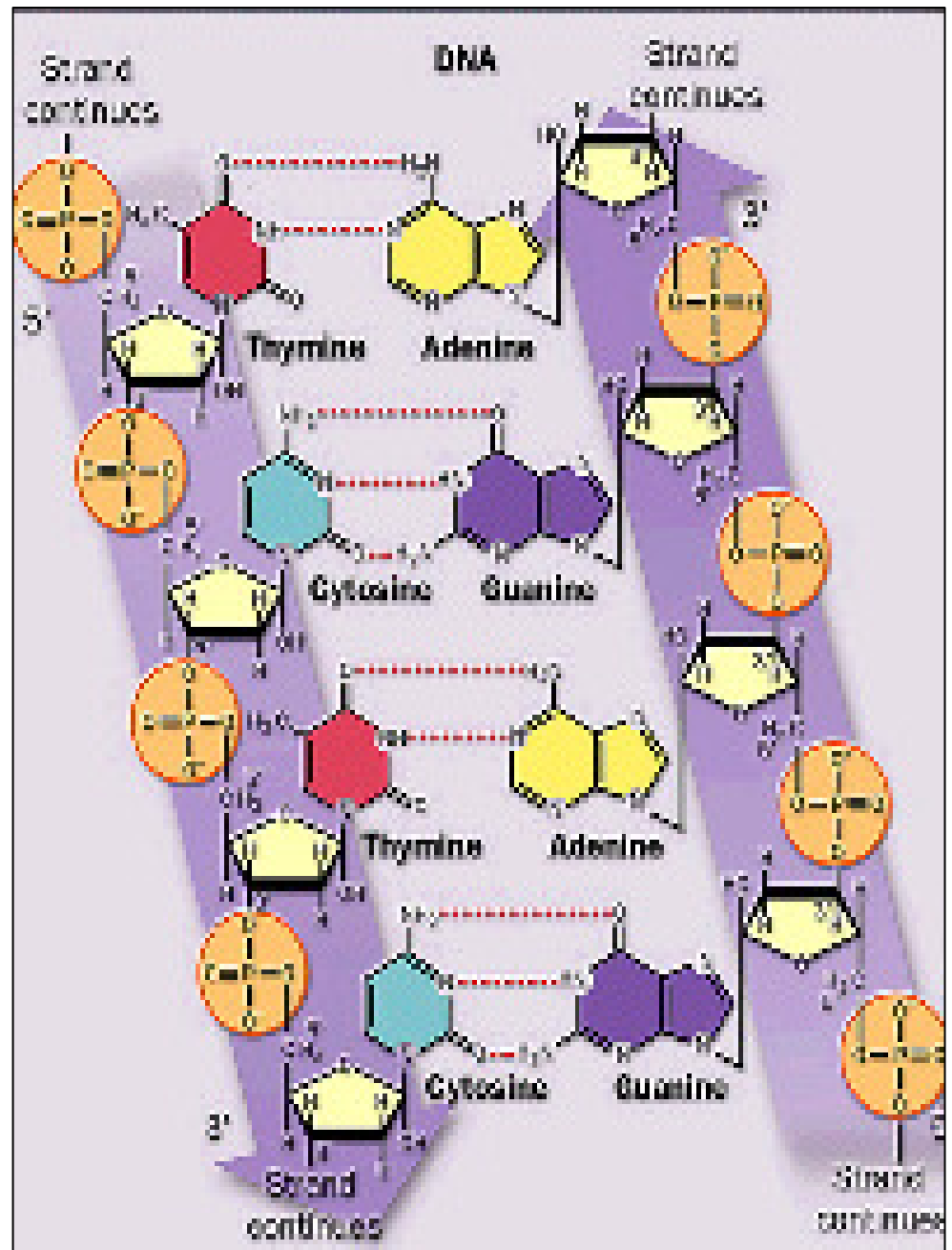
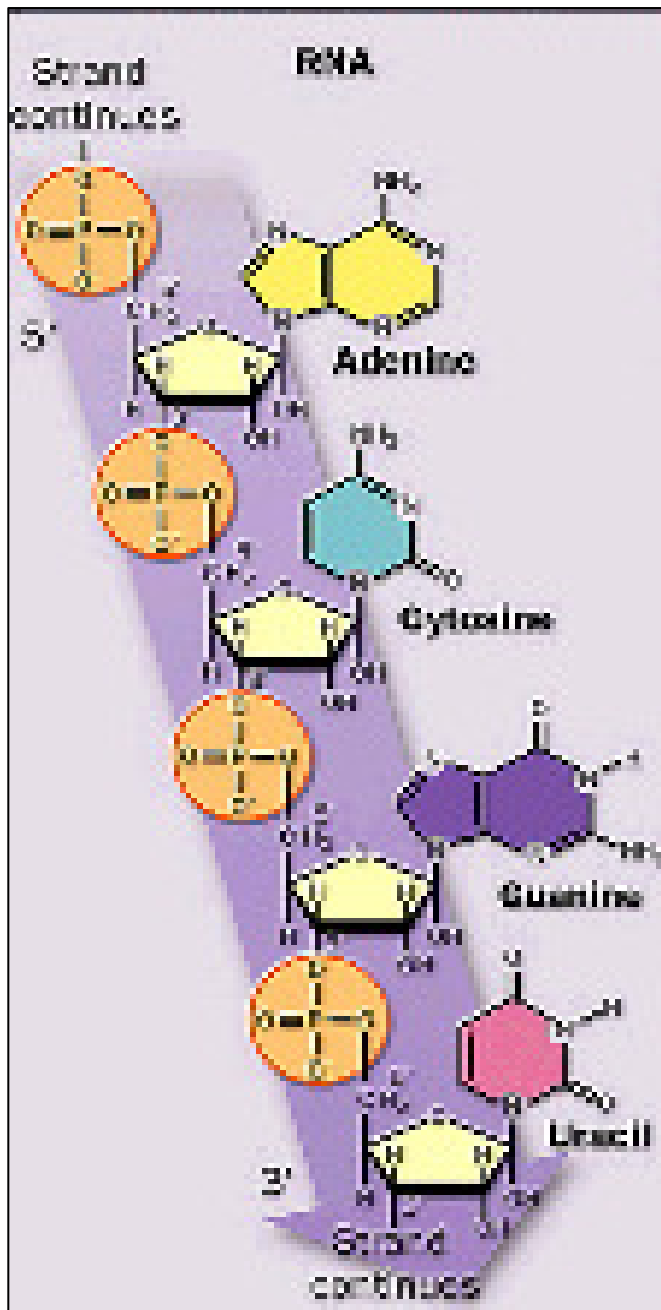
## Nukleosida dan Nukleotida

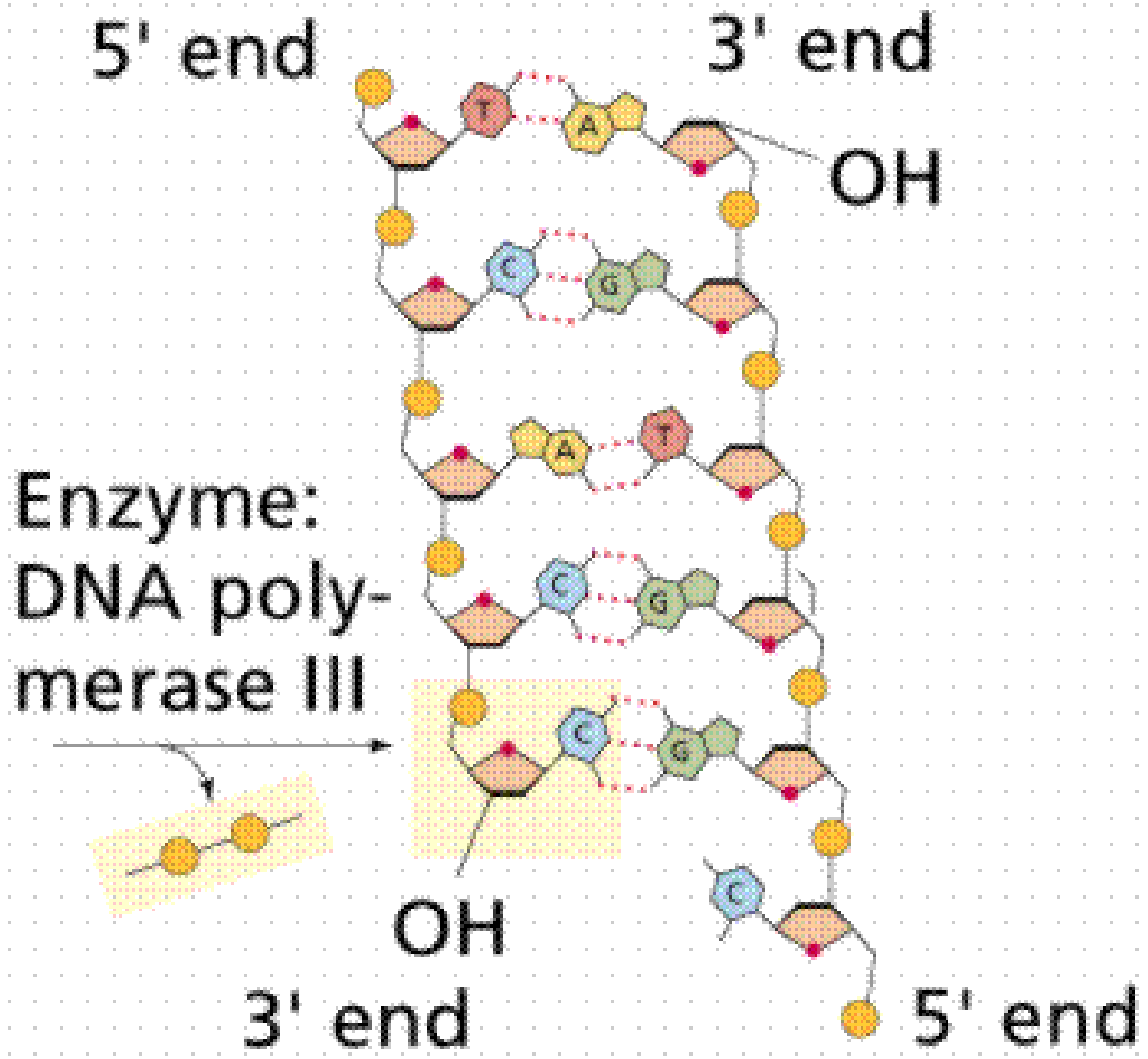
## Nukleotida



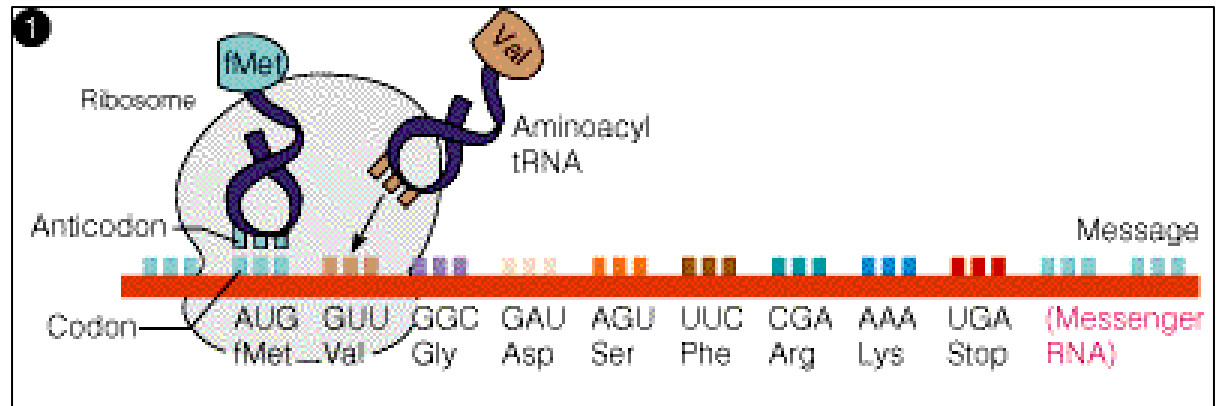
# Struktur Primer RNA dan DNA



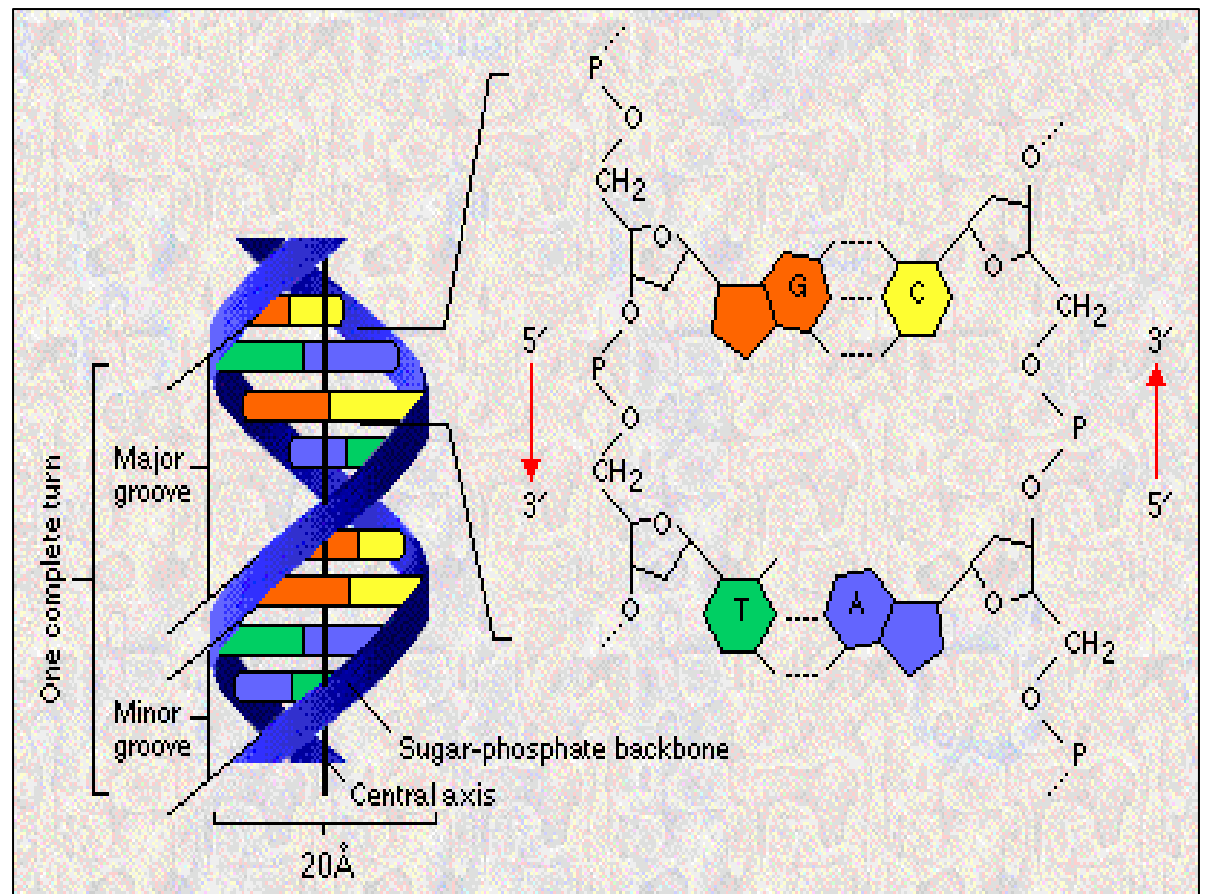




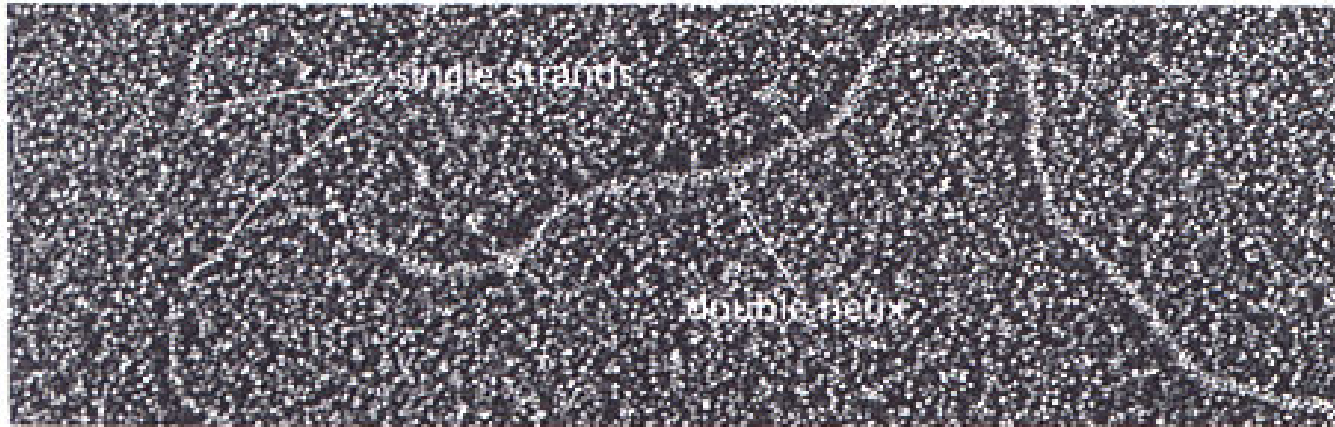
**Struktur Sekunder RNA**  
 ss: mRNA, tRNA, rRNA



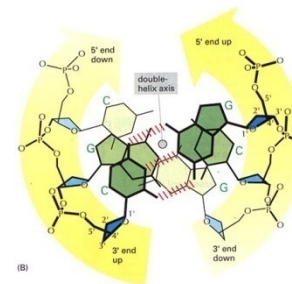
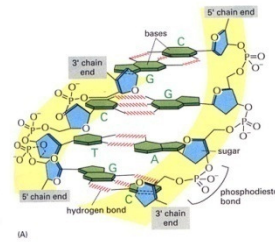
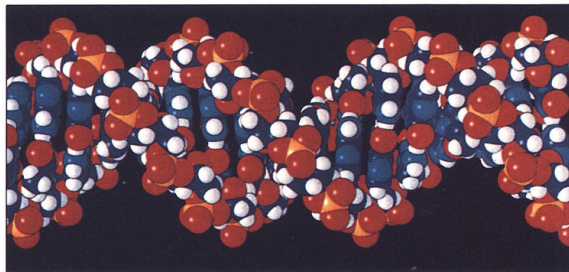
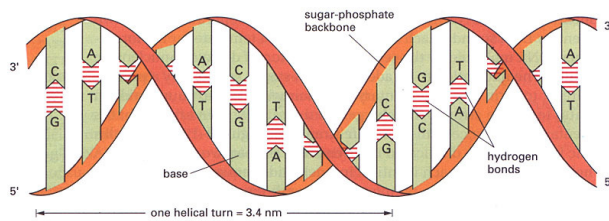
**Struktur Sekunder DNA**



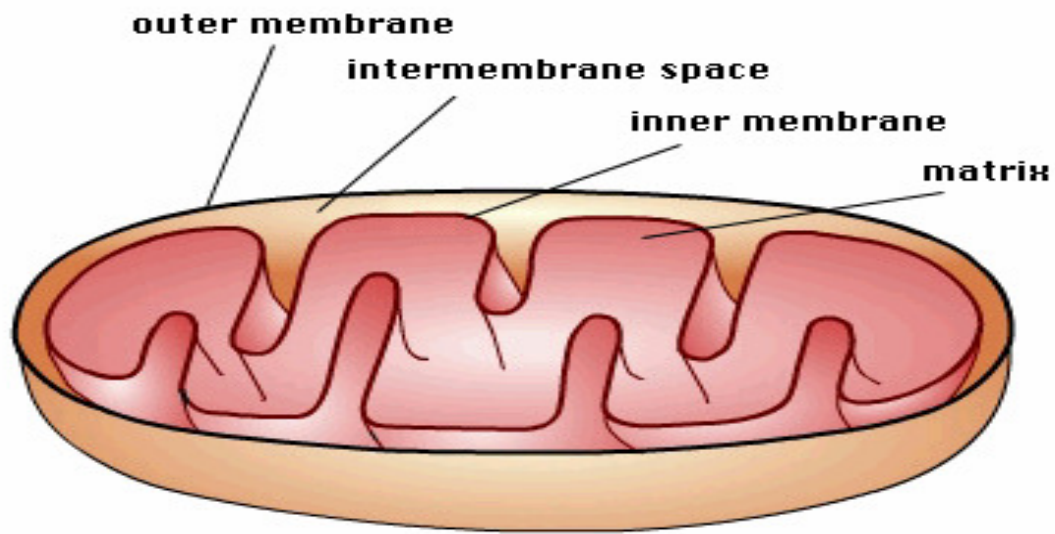
# ELECTRON MICROGRAPH OF DNA



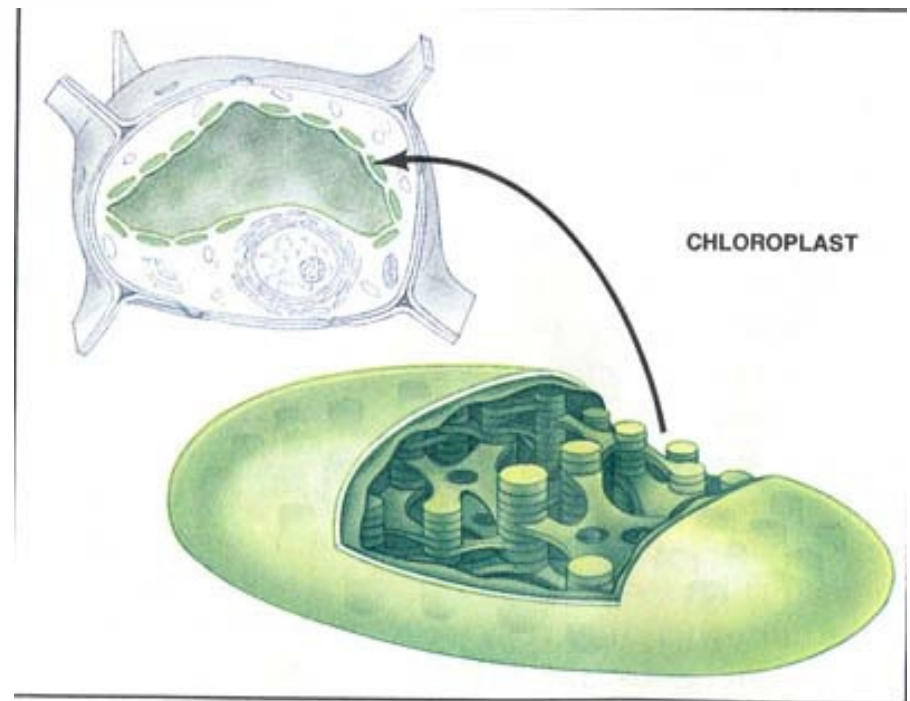
(Courtesy of Mei Lie Wong.)



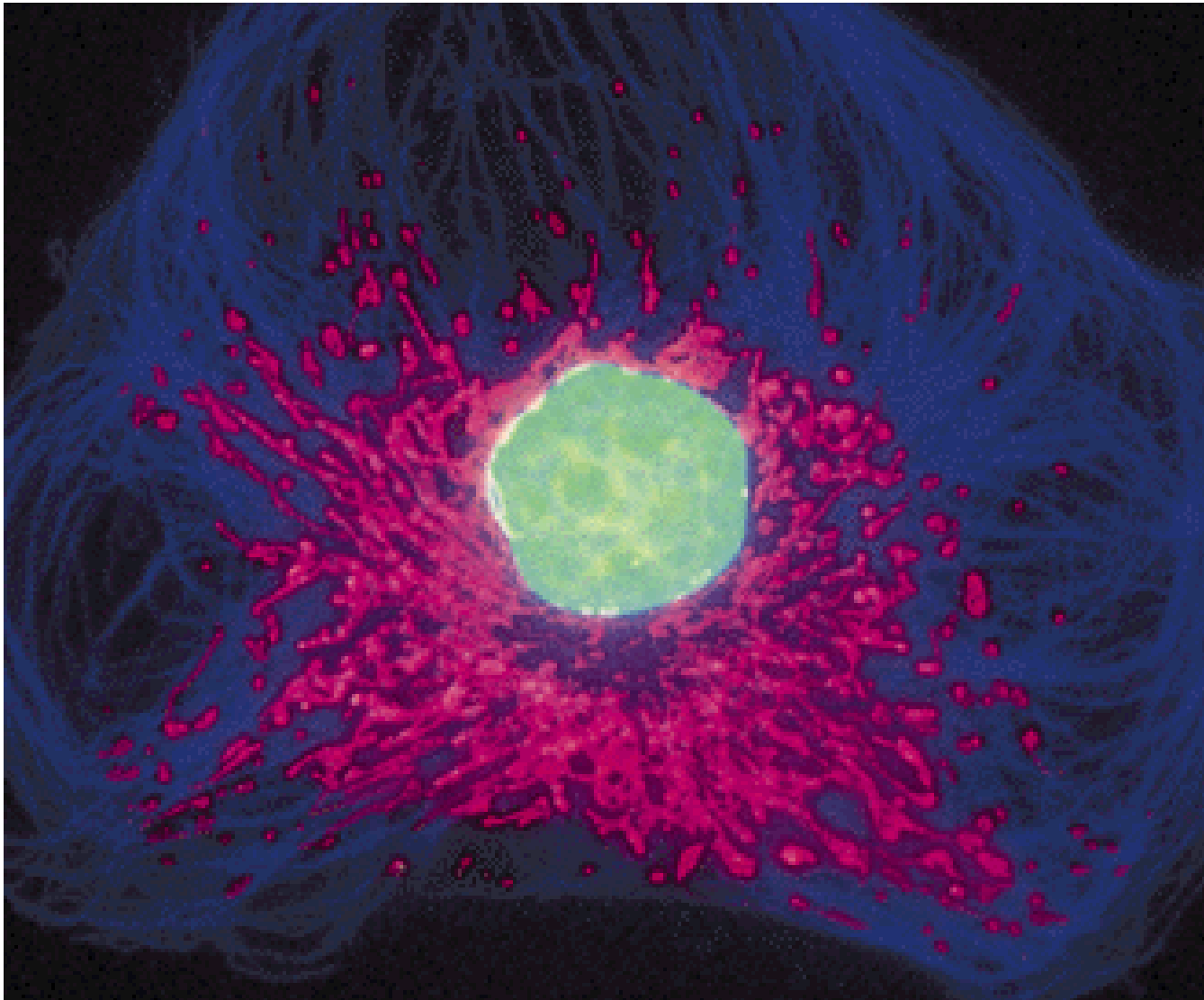




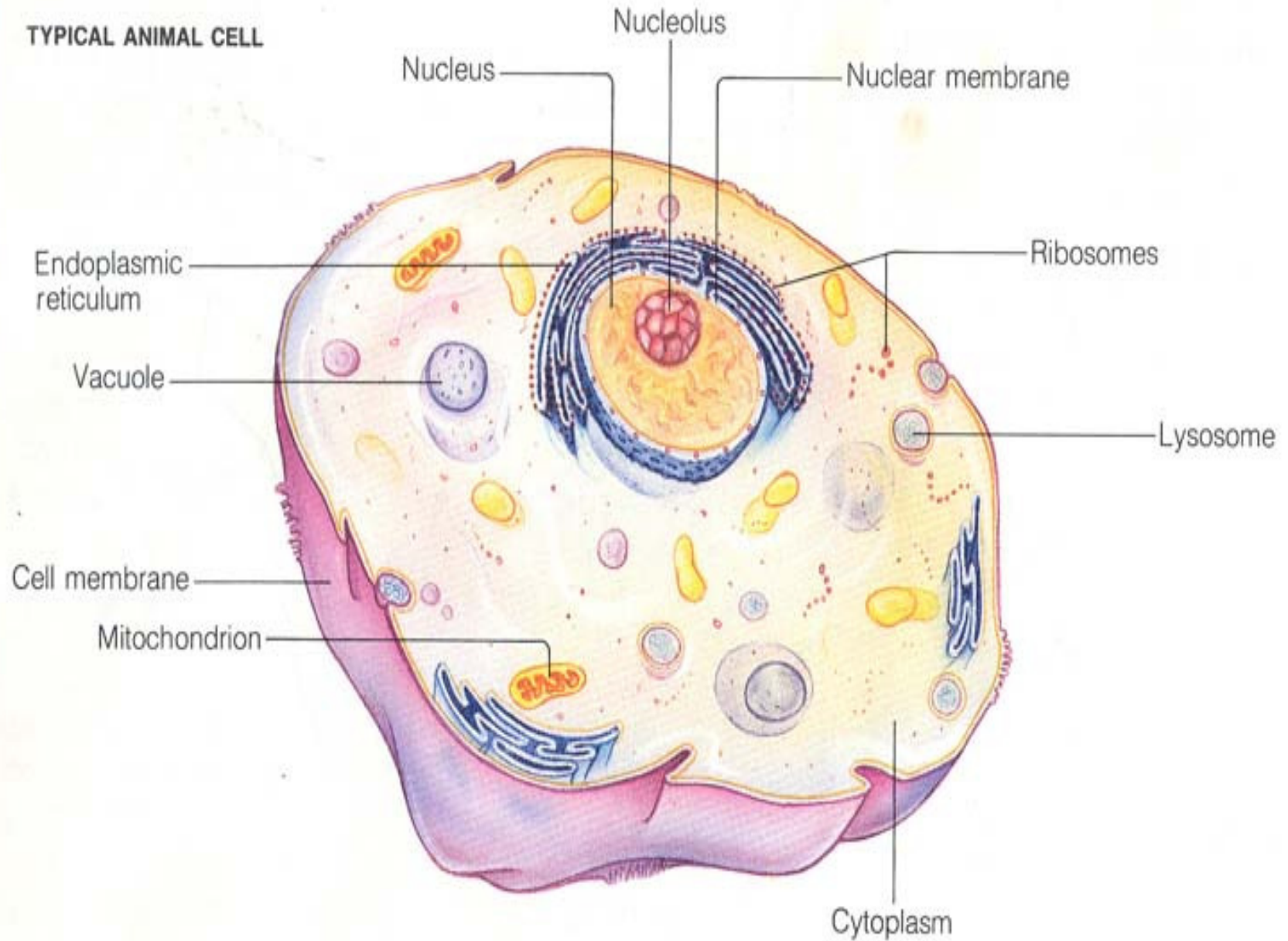
**mitochondrion**

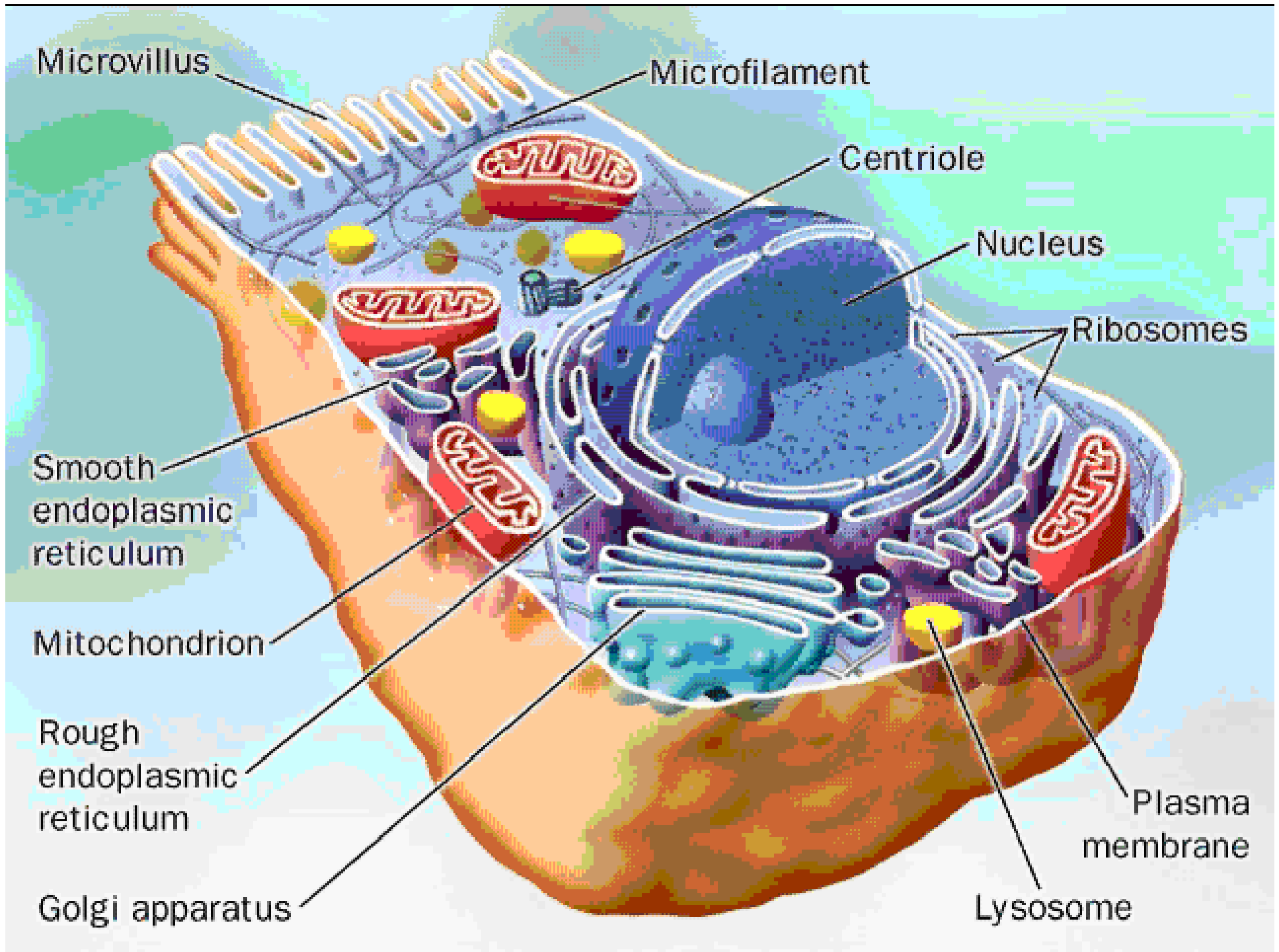


Human Umbilical Vein Endothelial Cell  
Confocal Laser Image  
Microtubules (blue), Mitochondria (red) and Nucleus (green)

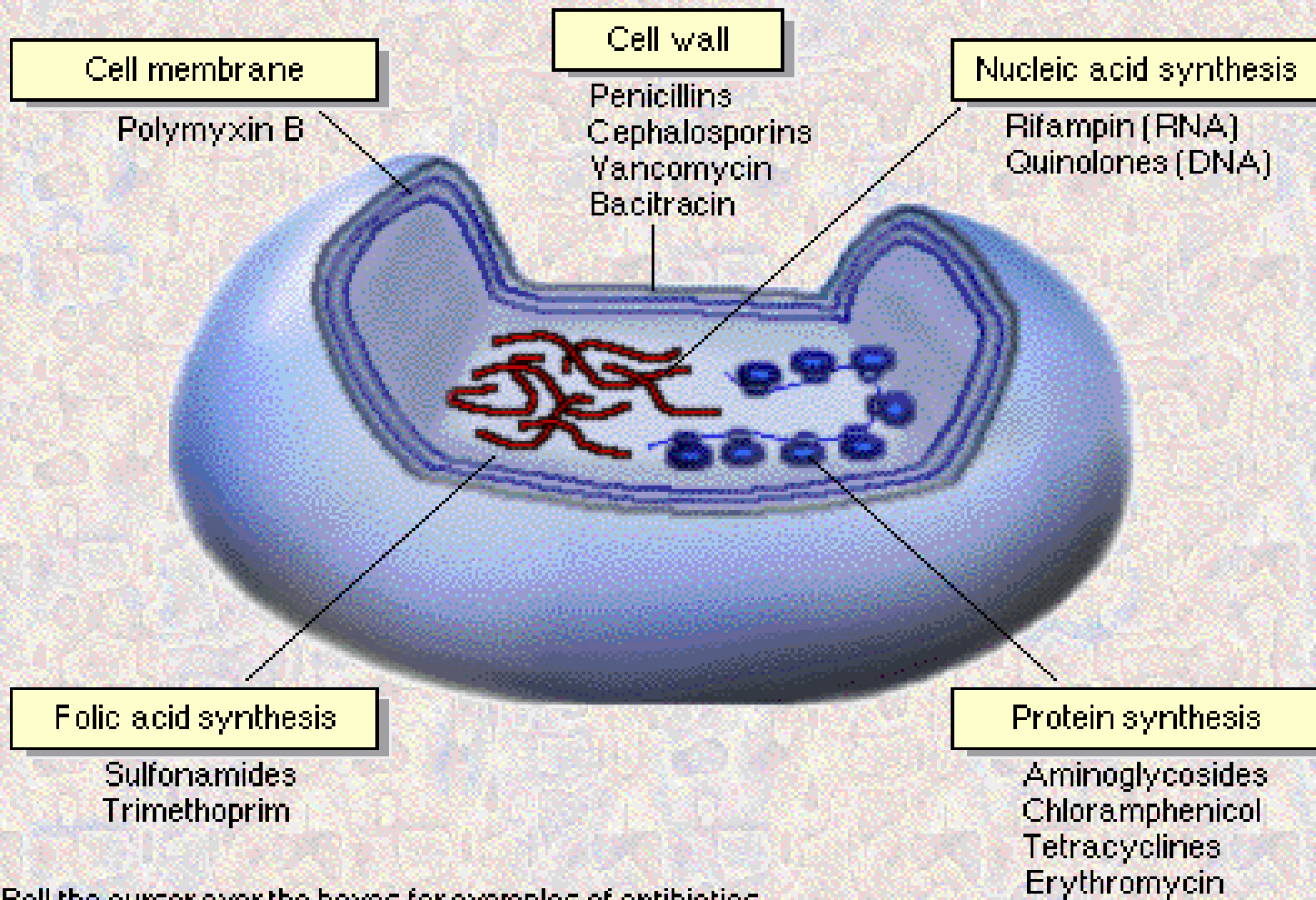


**TYPICAL ANIMAL CELL**

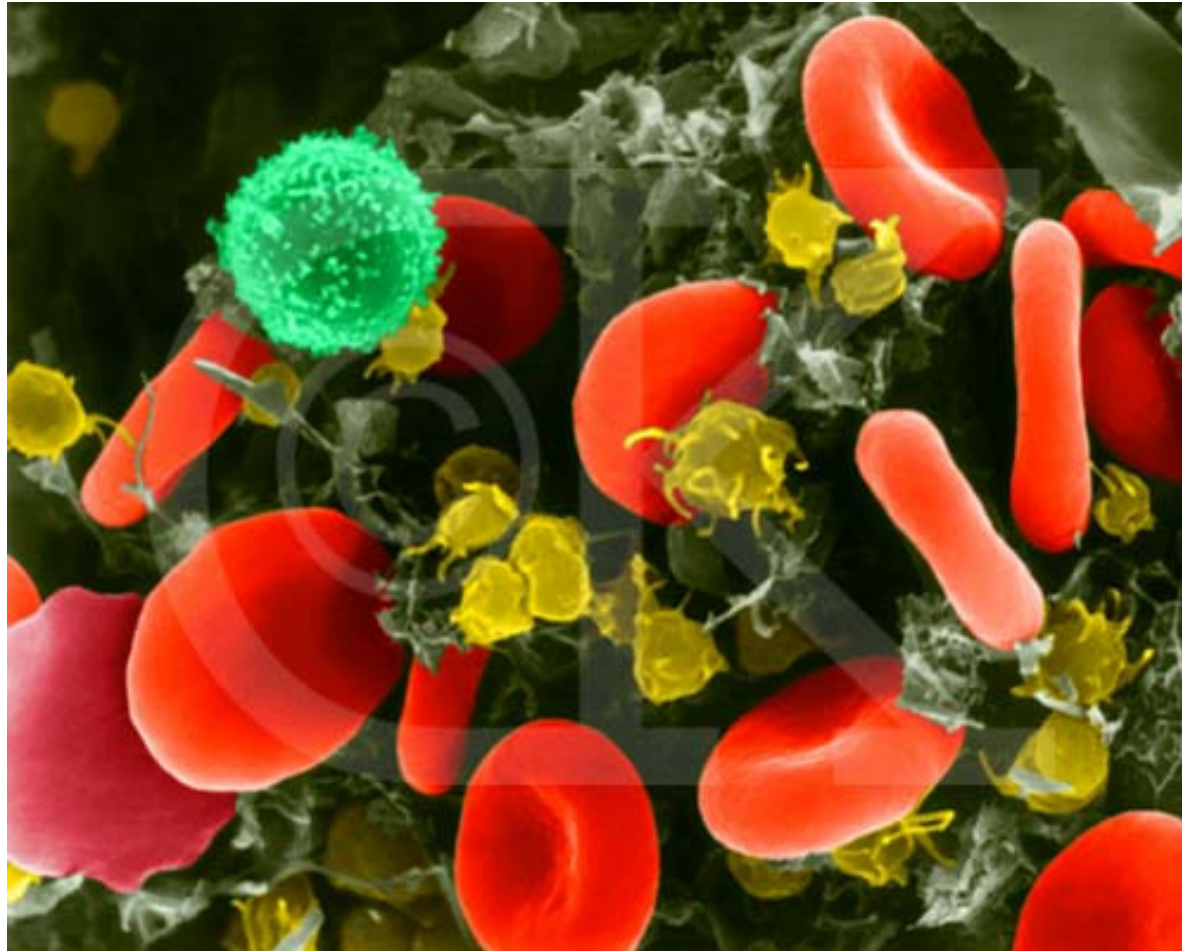




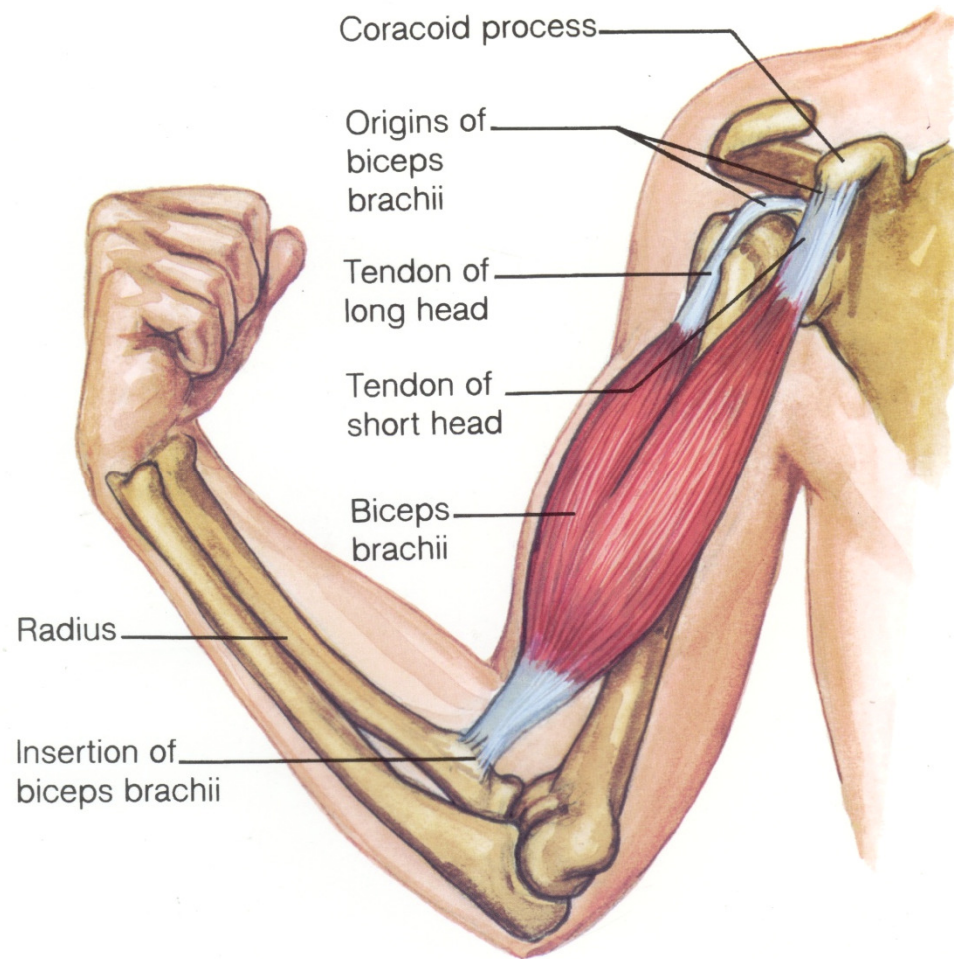
## Antibiotic Targets in the Prokaryotic Cell



Human Red Blood Cells, Platelets and T-lymphocyte (erythrocytes = red; platelets = yellow; T-lymphocyte = light green)

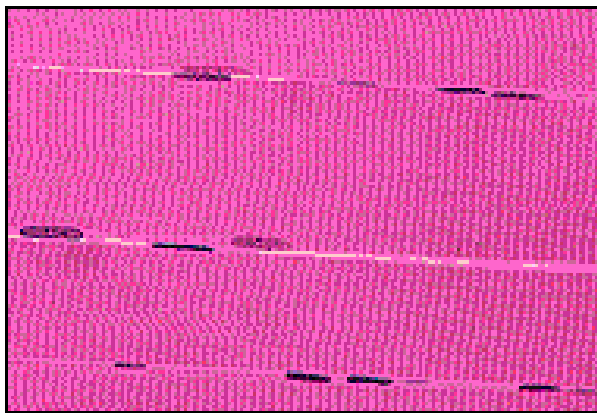


# Tingkat Jaringan



# COMPARISON OF SKELETAL, CARDIAC, AND SMOOTH MUSCLE CELLS

The contractile cells of the body can be classified into three major groups based on their shape, number and position of nuclei, presence of **striations**, and whether they are under **voluntary** or **involuntary** control.



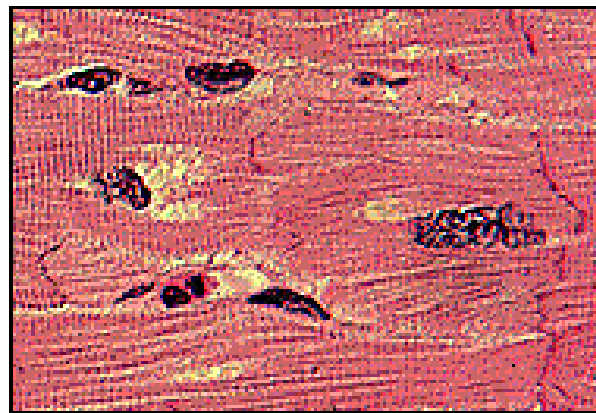
Skeletal Muscle

300 x



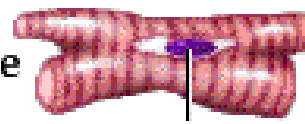
Nuclei

- Elongated cell
- Multiple peripheral nuclei
- Visible striations
- Voluntary



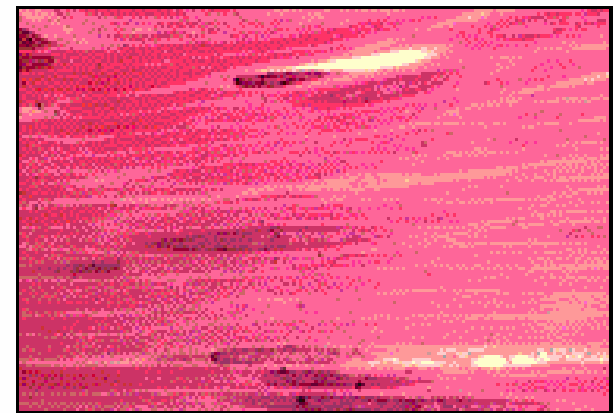
Cardiac Muscle

400 x



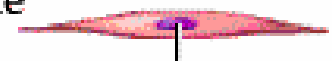
Nucleus

- Branching cell
- Single central nucleus
- Visible striations
- Involuntary



Smooth Muscle

1200 x



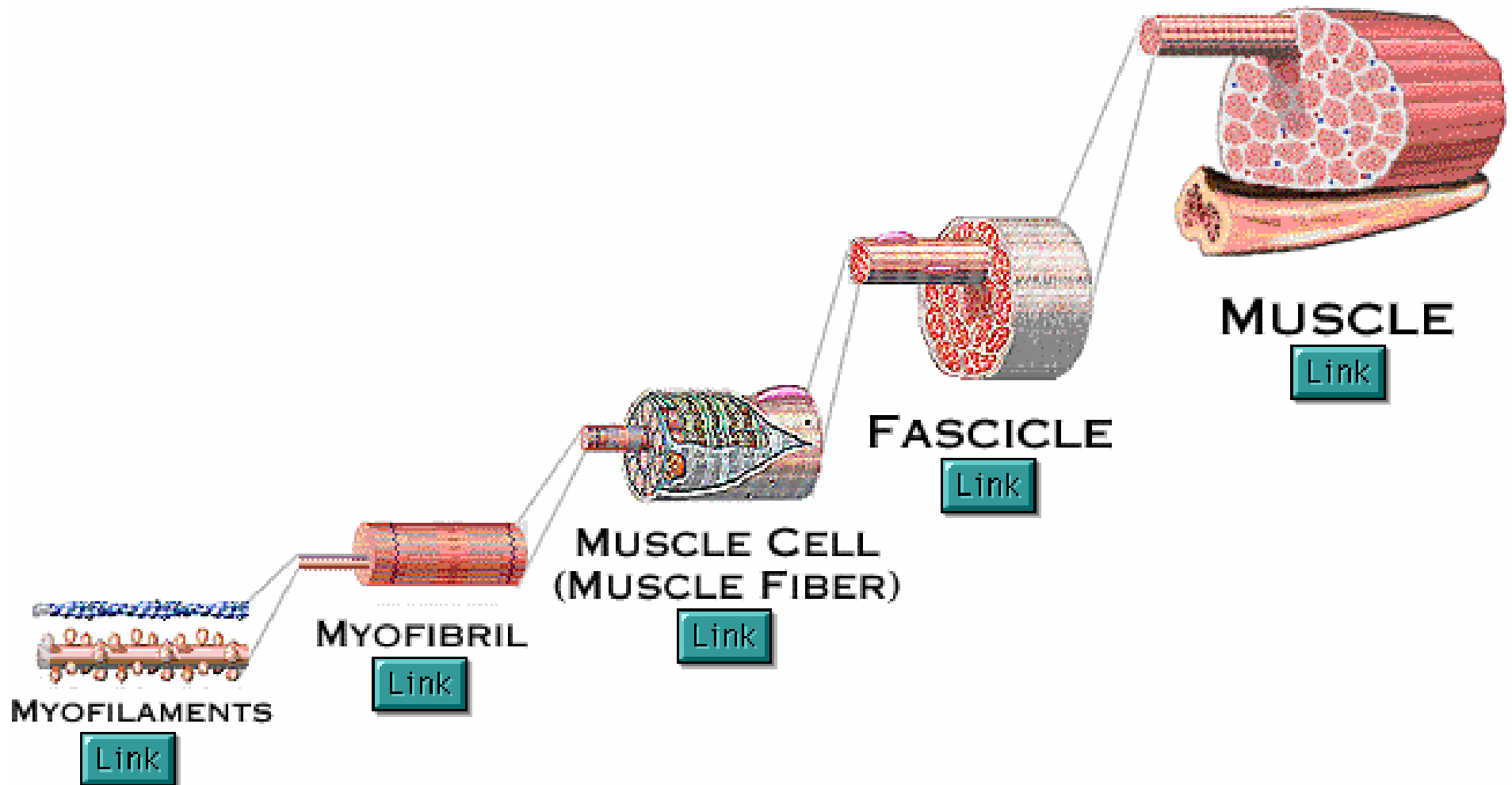
Nucleus

- Spindle-shaped cell
- Single central nucleus
- Lack visible striations
- Involuntary



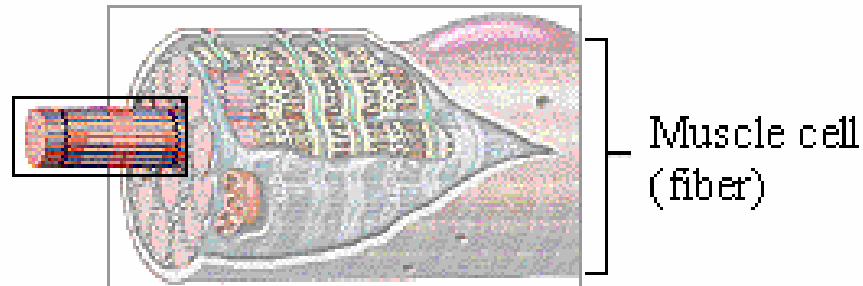
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# REVIEW: ORGANIZATIONAL LEVELS OF SKELETAL MUSCLE



Click a link button to review a structure in more detail.

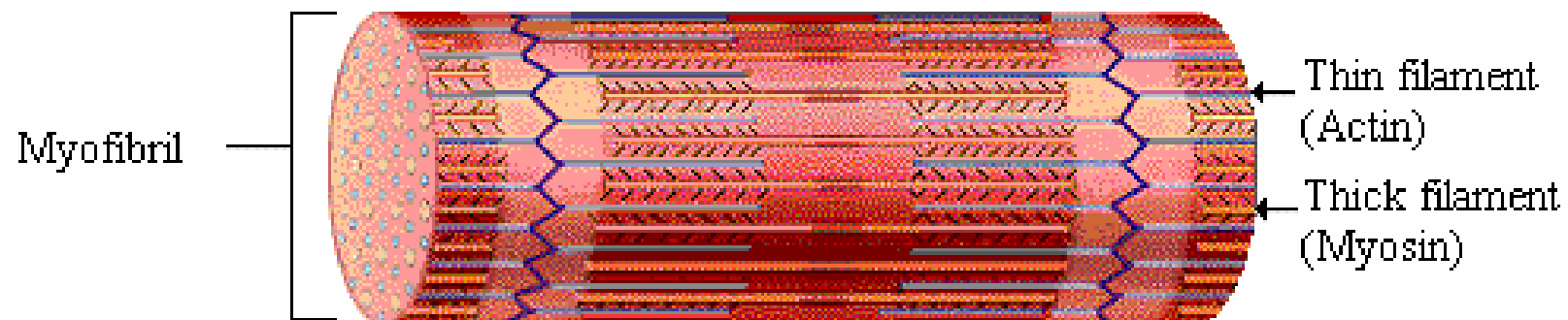
# STRUCTURE OF A MYOFIBRIL



The **myofibrils** are composed of individual contractile proteins called **myofilaments**.

There are two types of myofilaments:

- The thin filament is composed mainly of the protein actin.
- The thick filament is made up chiefly of the protein myosin.

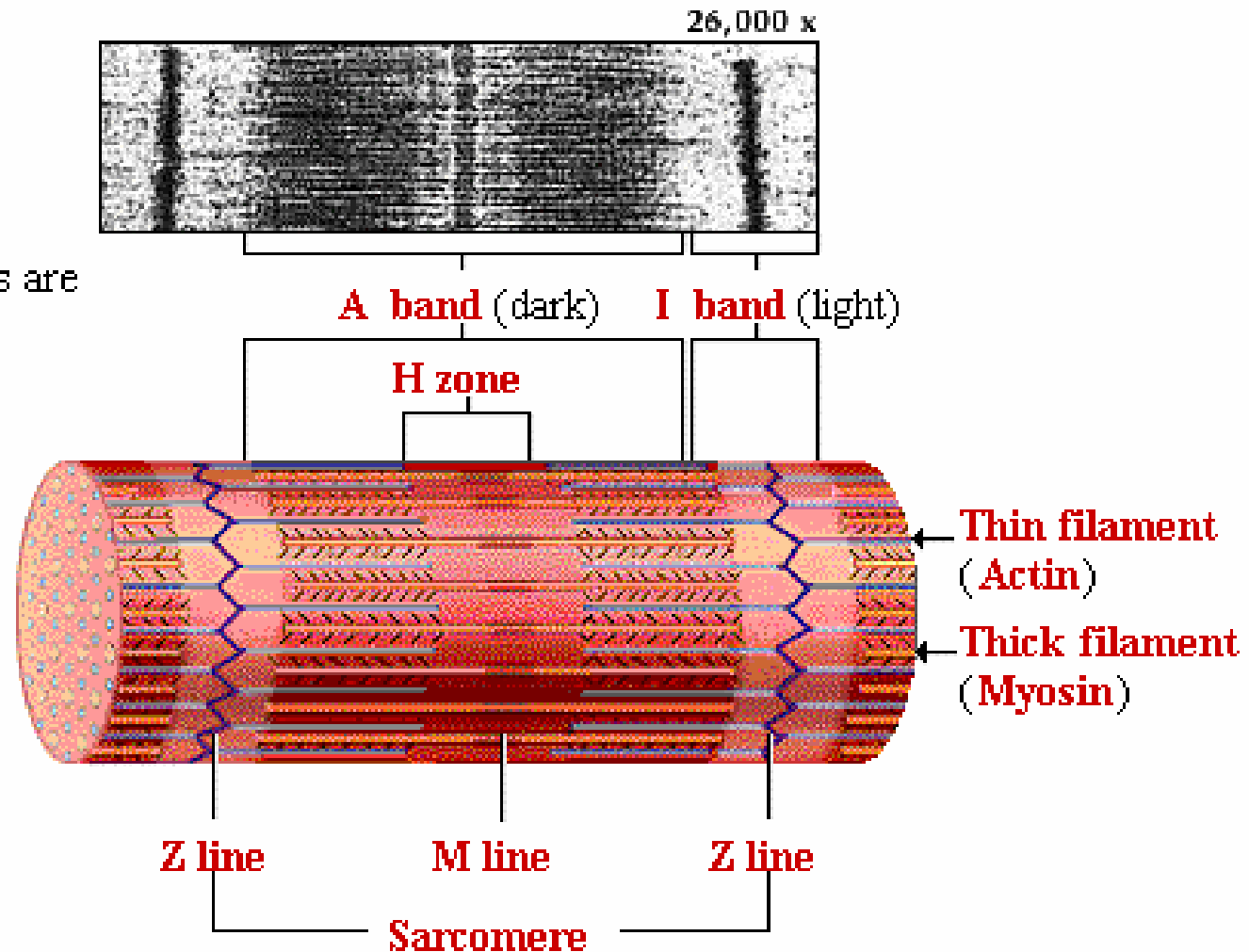


To examine the arrangement of myofilaments, click the myofibril.

# ARRANGEMENT OF MYOFILAMENTS

The arrangement of thick and thin myofilaments forms light and dark alternating bands (striations) along the myofibril.

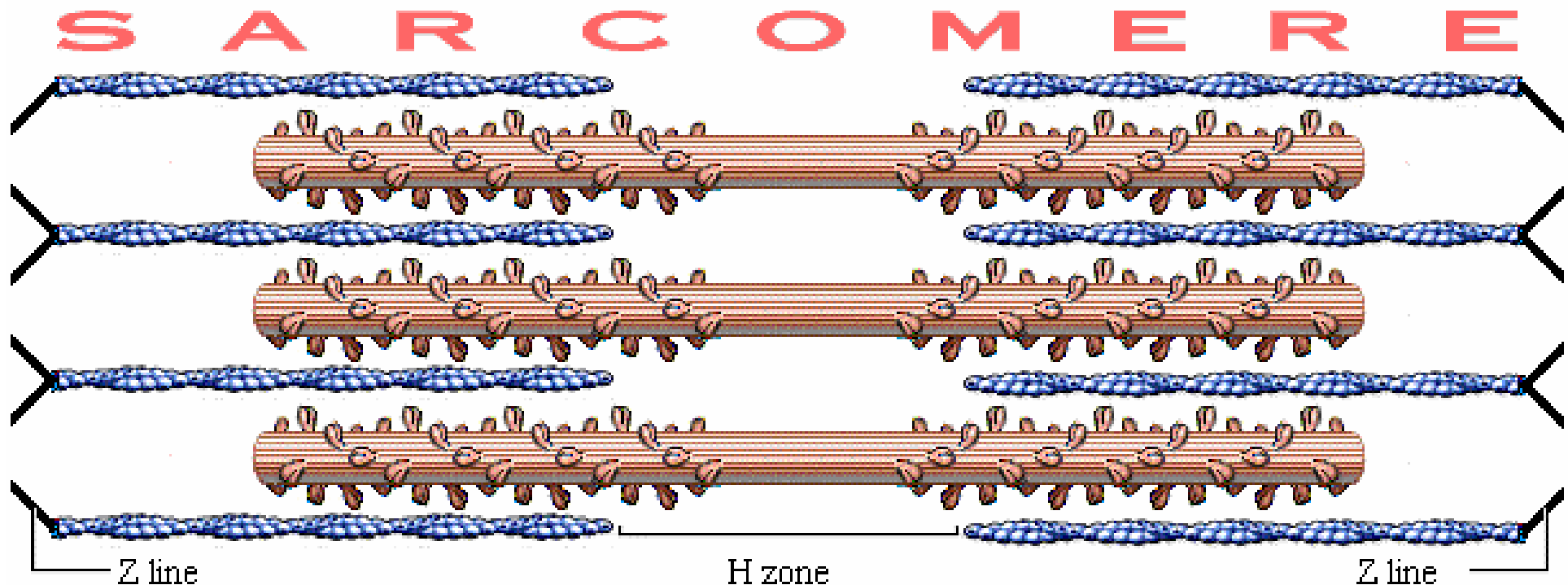
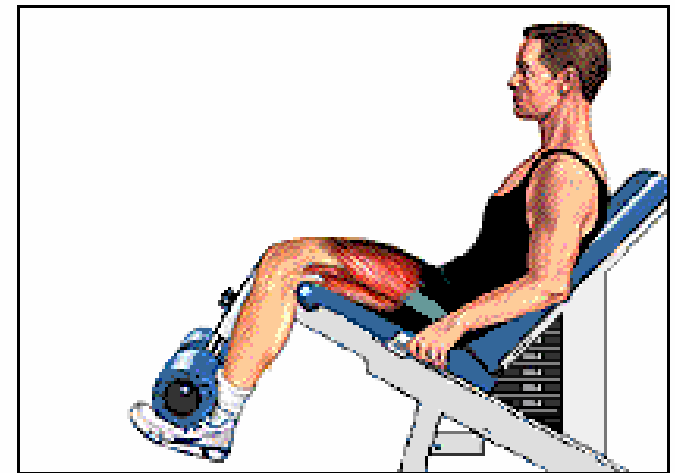
Features of these bands are identified by letters.



## MULTIPLE MYOFILAMENTS

- In this view several myosin and actin filaments are interacting to demonstrate the **sliding filament theory** of muscle contraction.
- Notice that although the **sarcomere** shortens, the length of each **myofilament** does not change. However, the width of the **H zone** changes.

Click a thin filament to start the contraction.



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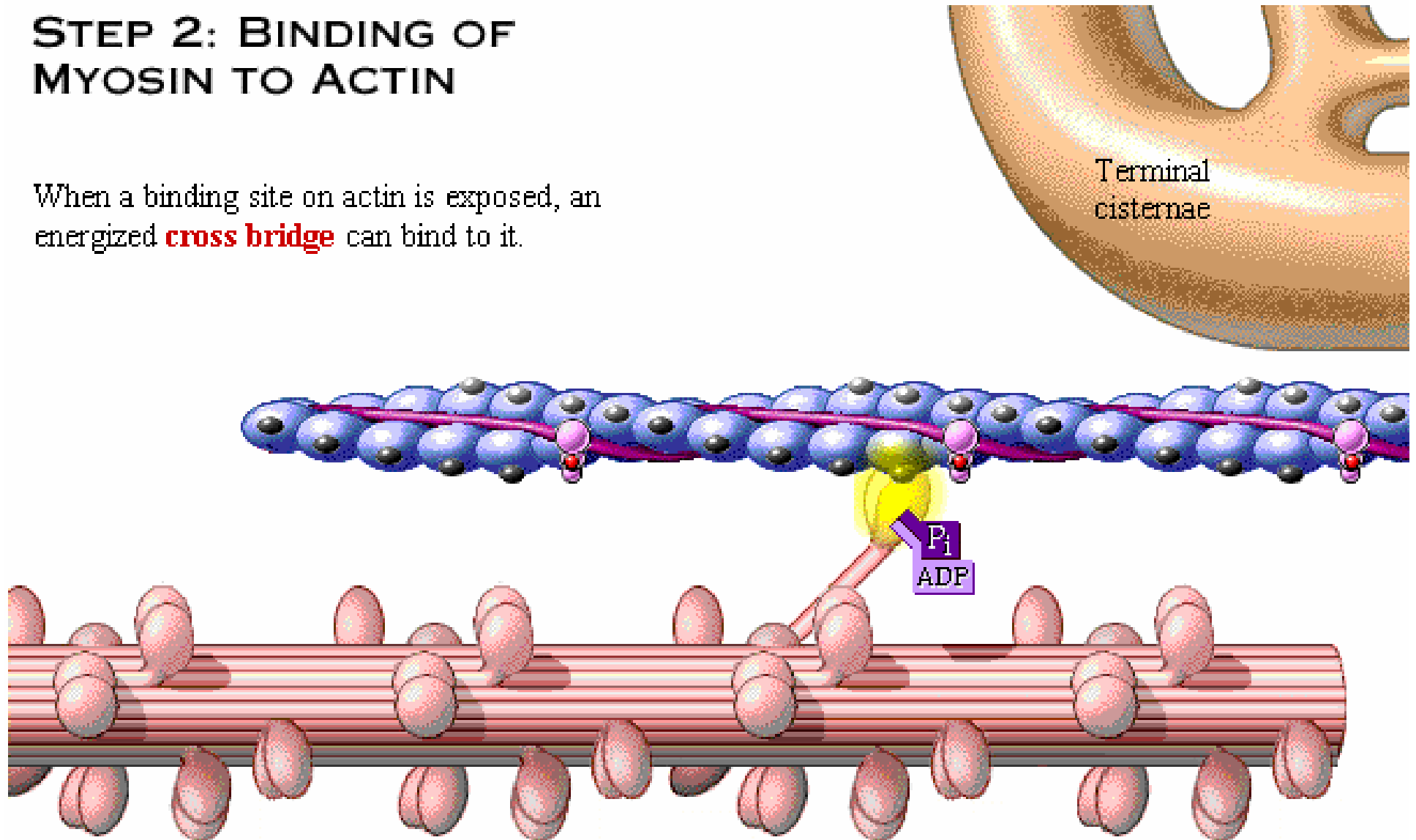
# MOLECULAR PARTICIPANTS

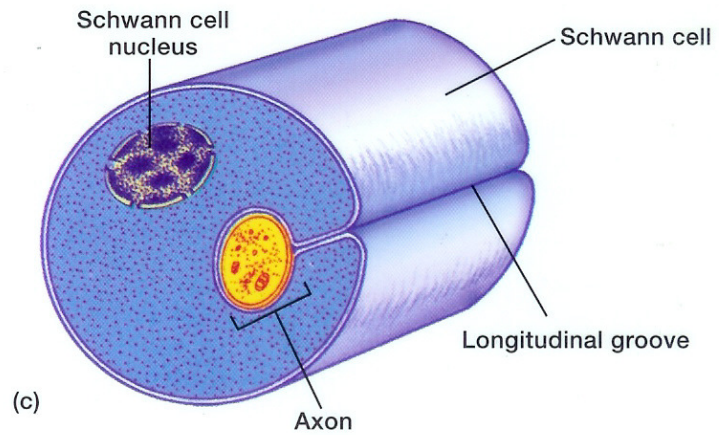
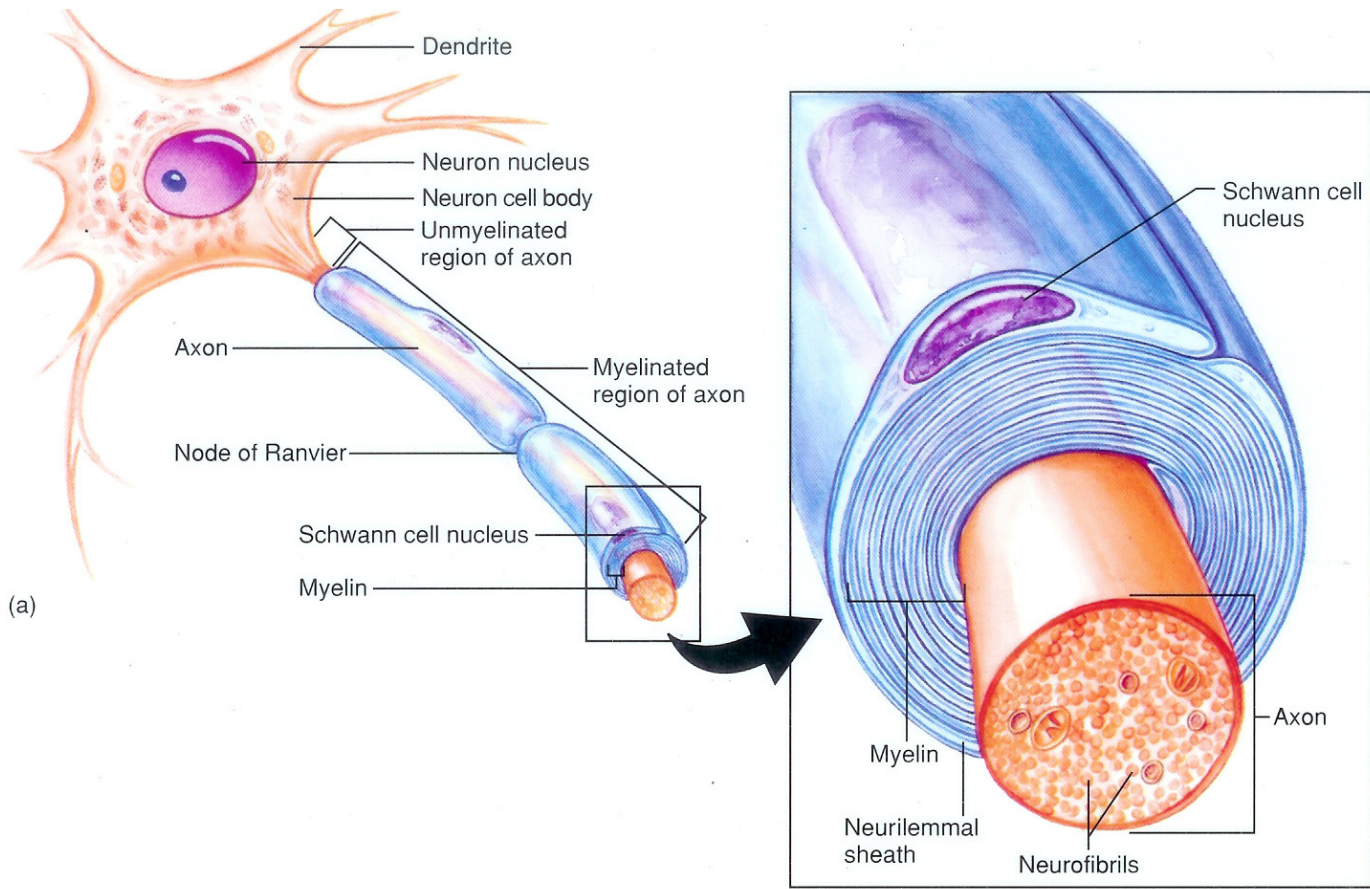
The **sliding filament theory** of how a skeletal muscle contracts involves the activities of five different molecules plus calcium ions:



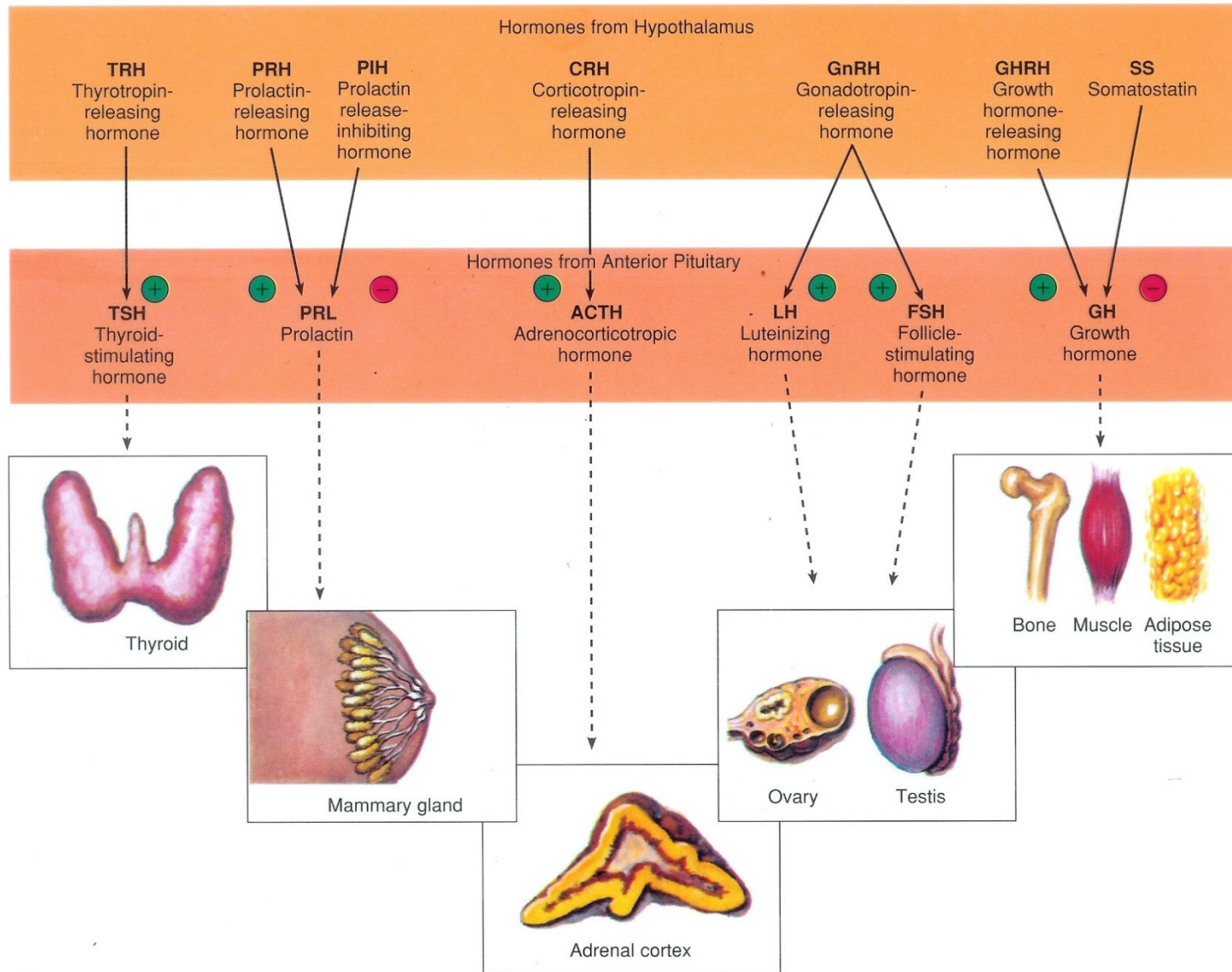
## STEP 2: BINDING OF MYOSIN TO ACTIN

When a binding site on actin is exposed, an energized **cross bridge** can bind to it.



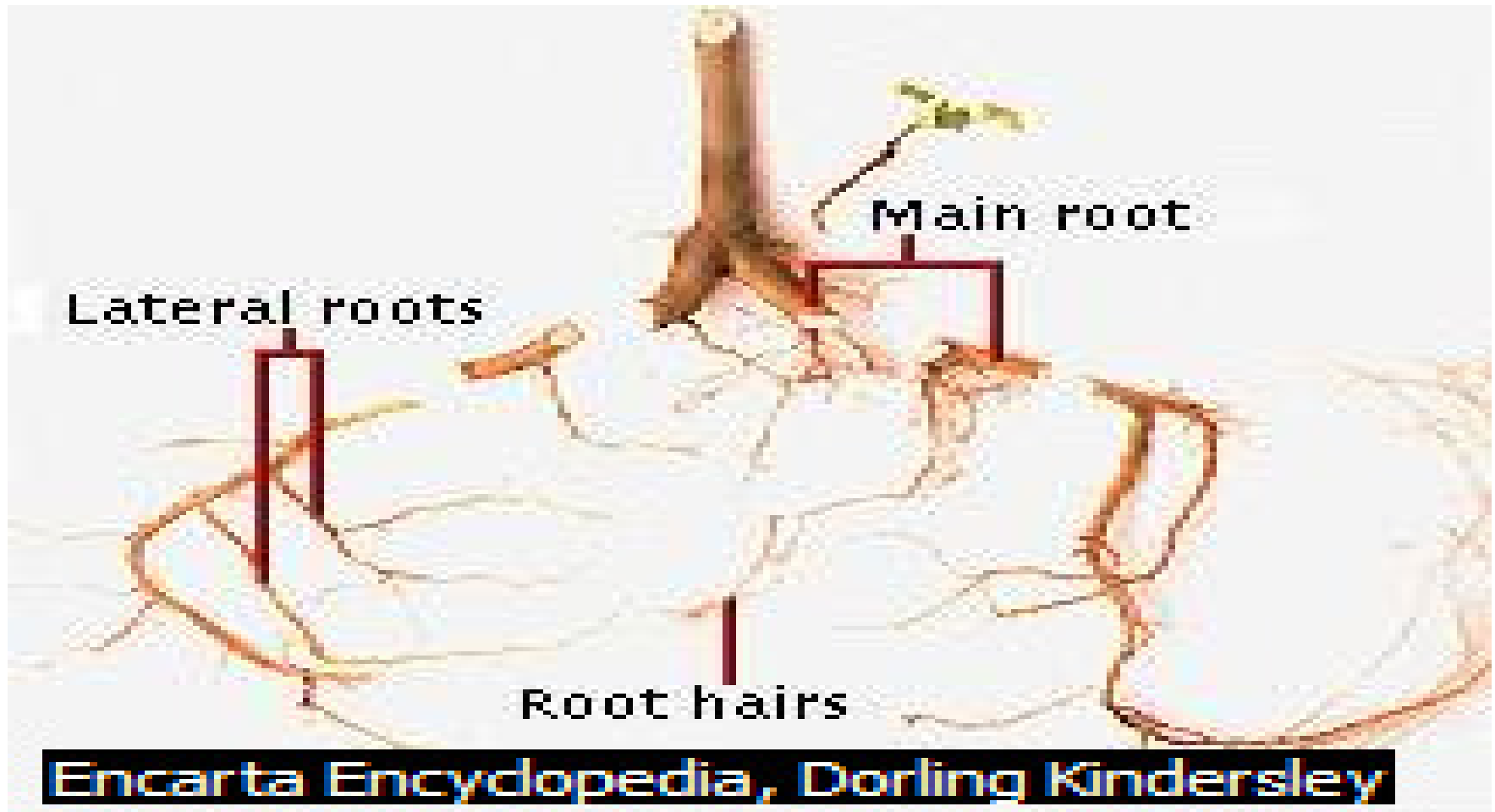


# Tingkat Organ





# Akar





Oxford Scientific Films/Partridge Prod. Ltd.



Dorling Kindersley

# Tingkat Populasi

- produsen: plantae
- konsumen ; 1, 2, 3.: animalia
- detritivora: insekta.
- dekomposer: bakteri dan jamur.
  - rantai makanan
  - tumbuhan: shelter