



# Клетка – структурно- функциональная единица

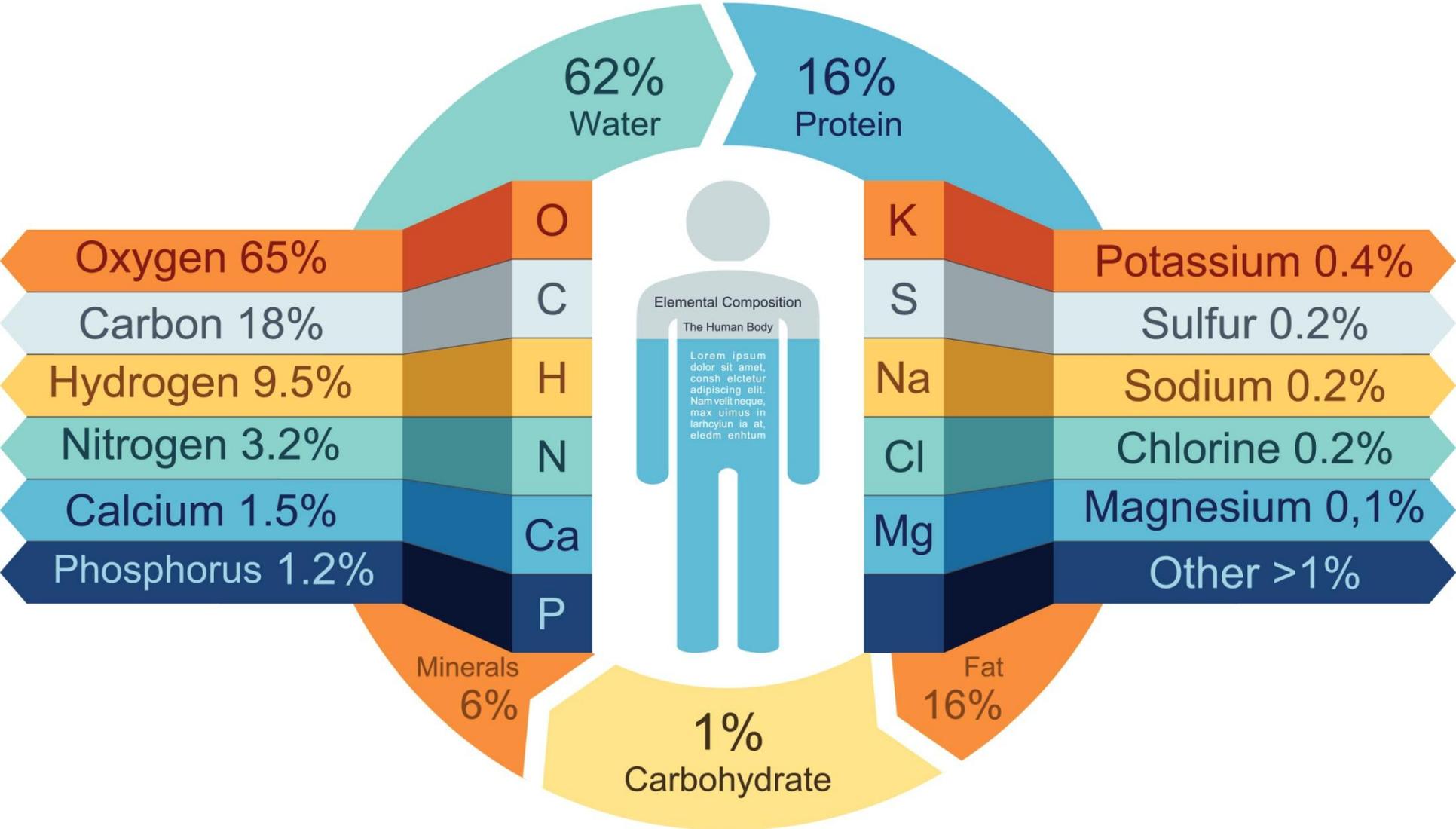
Раздел «Биология человека»

Прохоров Артём, 2019 г.

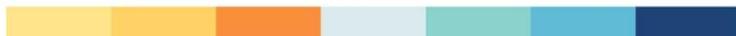


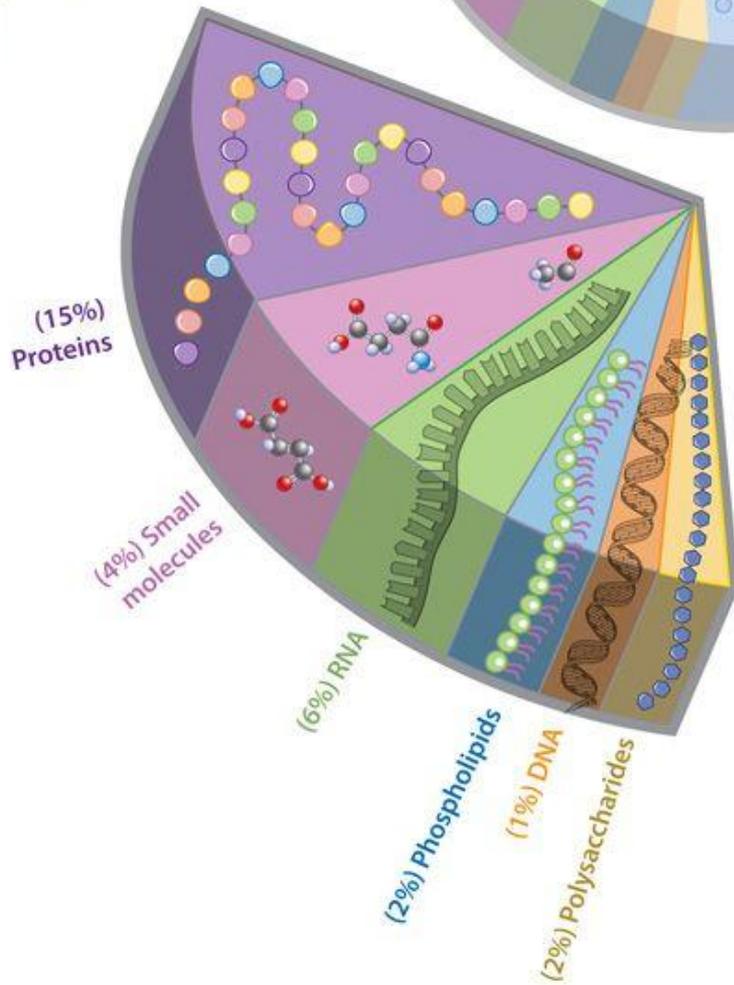
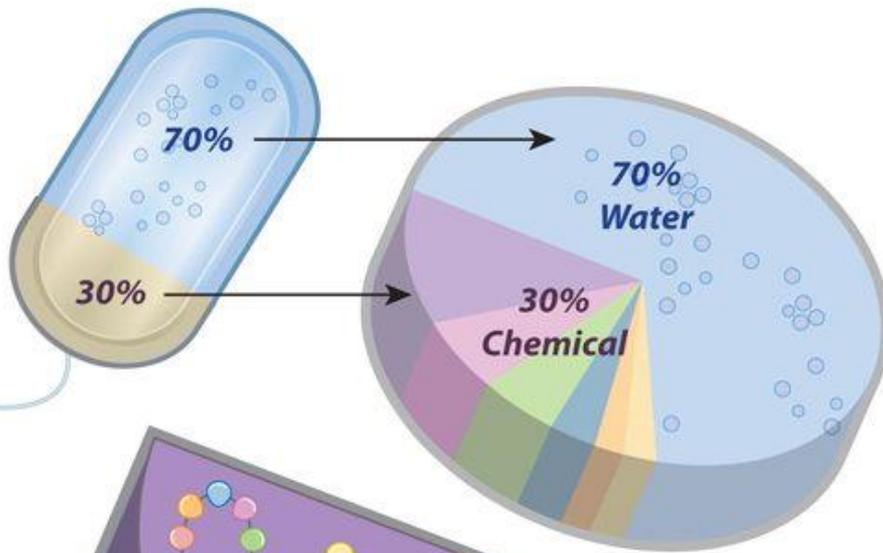
# ХИМИЧЕСКИЙ СОСТАВ ТЕЛА

Человек



ELEMENTAL COMPOSITION





## Вещества

### Неорганические

вещества

- Вода
- Минеральные соли

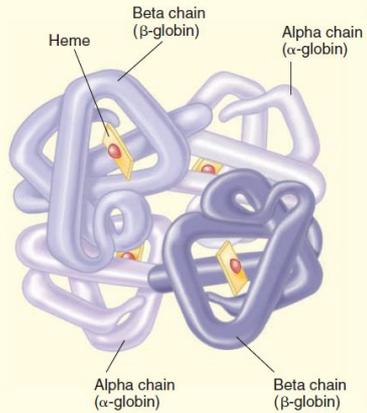
### Органические

вещества

- Белки
- Углеводы
- Липиды
- Нуклеиновые кислоты

**KEY POINT**

Proteins with two or more polypeptide chains have quaternary structure.



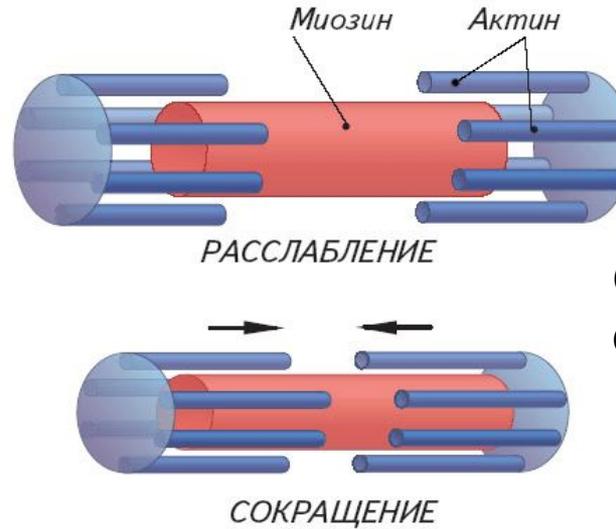
(a) Hemoglobin, a globular protein, consists of four polypeptide chains, each joined to an iron-containing molecule, a heme.



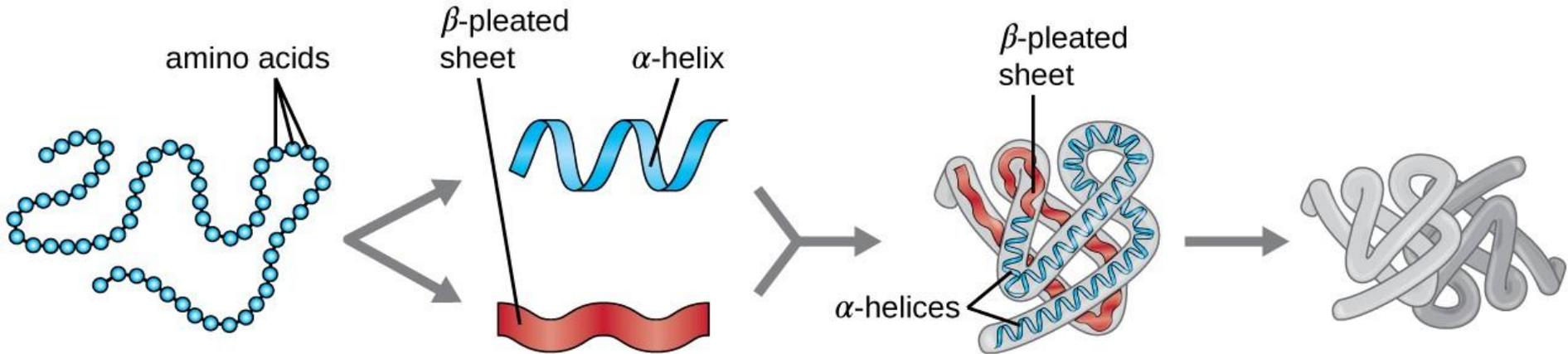
(b) Collagen, a fibrous protein, is a triple helix consisting of three long polypeptide chains.

**FIGURE 3-22** Quaternary structure of a protein

# Белки



Очень много функций



## Primary Protein Structure

Sequence of a chain of amino acids

## Secondary Protein Structure

Local folding of the polypeptide chain into helices or sheets

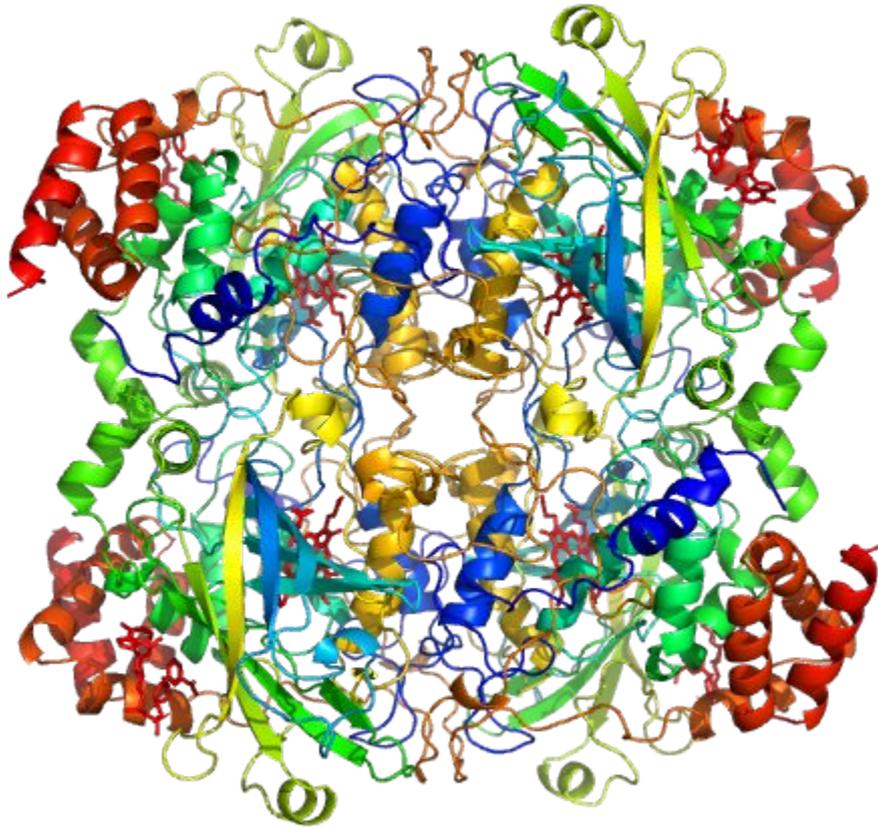
## Tertiary Protein Structure

three-dimensional folding pattern of a protein due to side chain interactions

## Quaternary Protein Structure

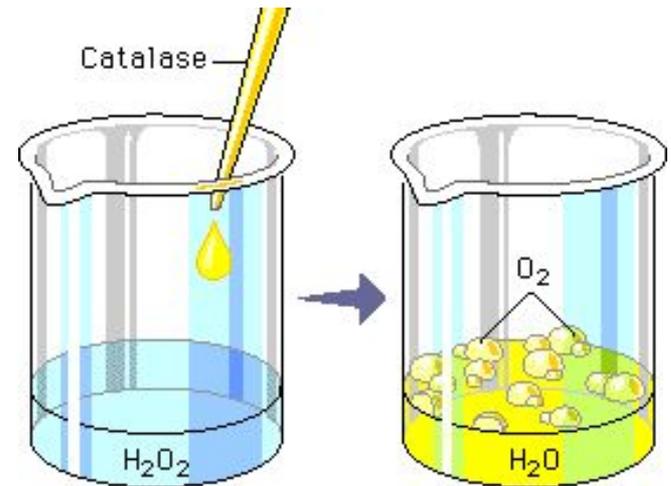
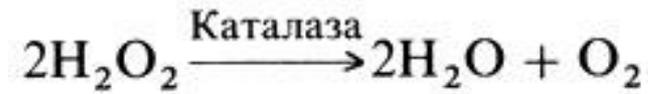
protein consisting of more than one amino acid chain

# Ферменты



## Каталаз

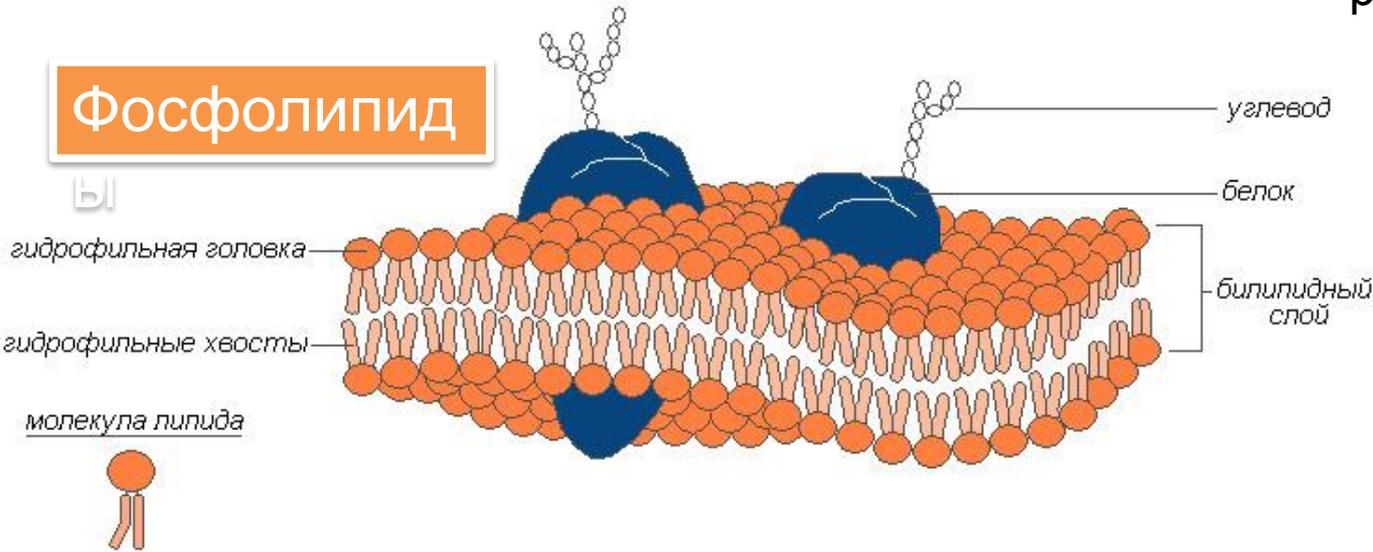
**a**



# Липиды

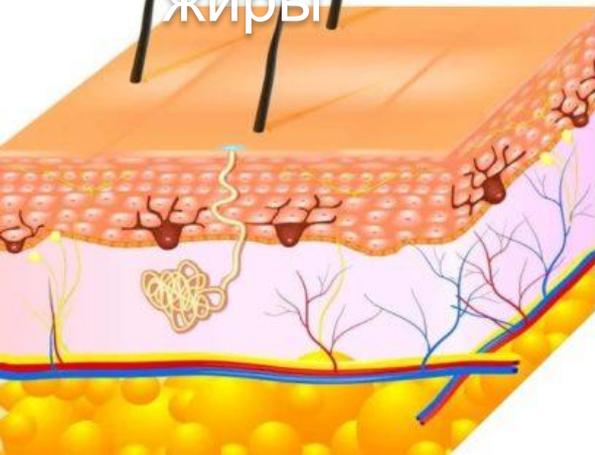
Энергетическая,  
строительная и  
регуляторная роль

Строение клеточной мембраны

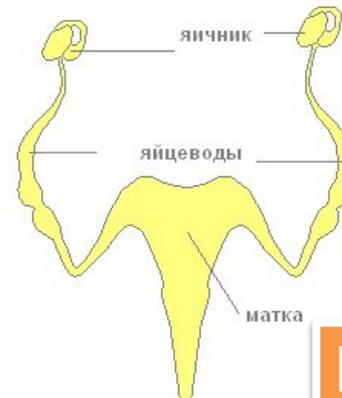


## Нейтральные

## жиры



Половая система млекопитающих (самка)



Половая система млекопитающих (самца)

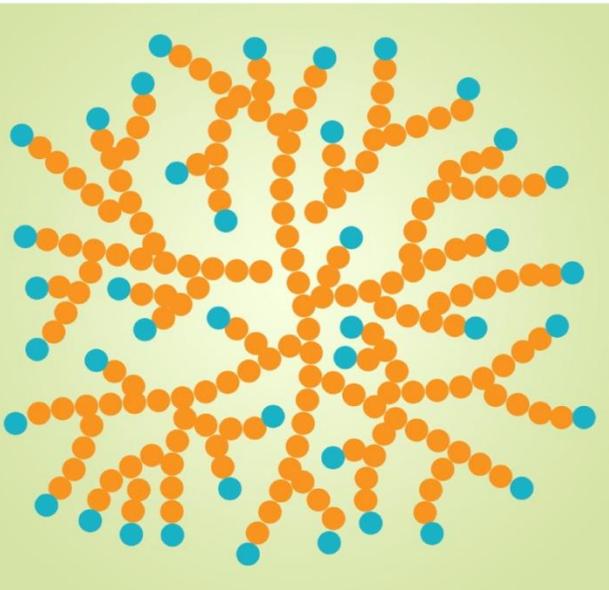
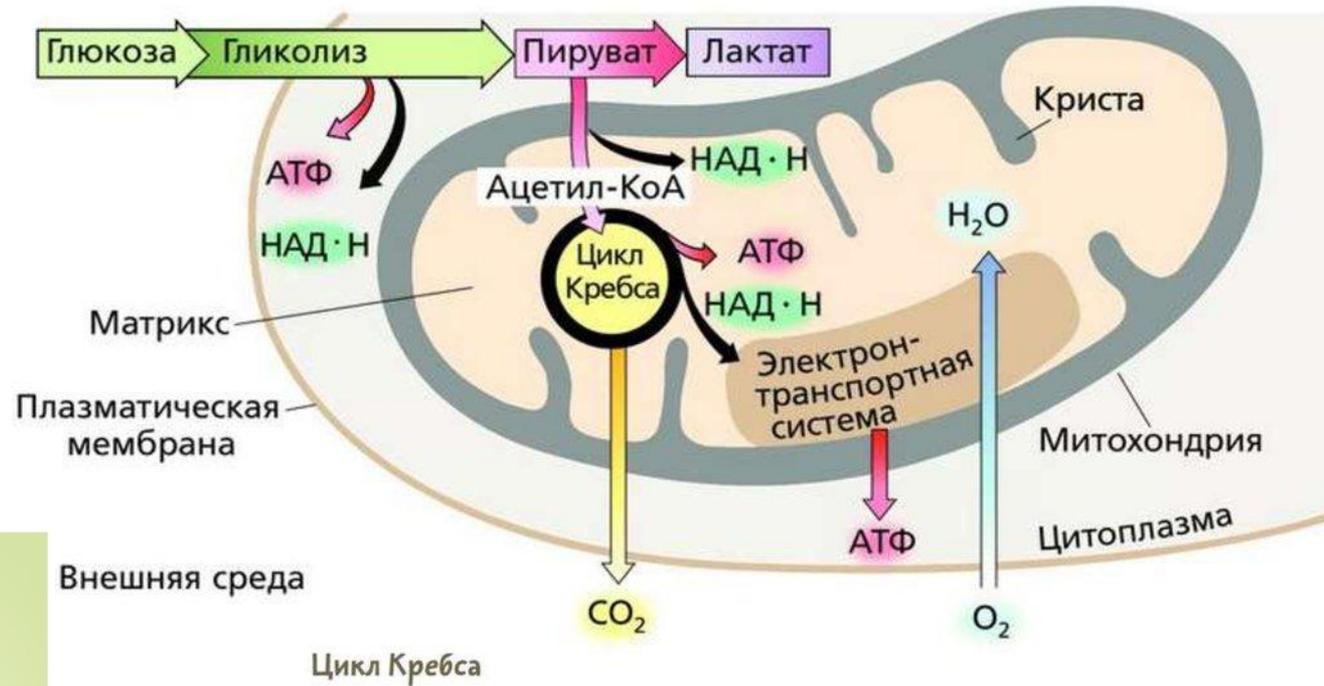


## Половые

## гормоны

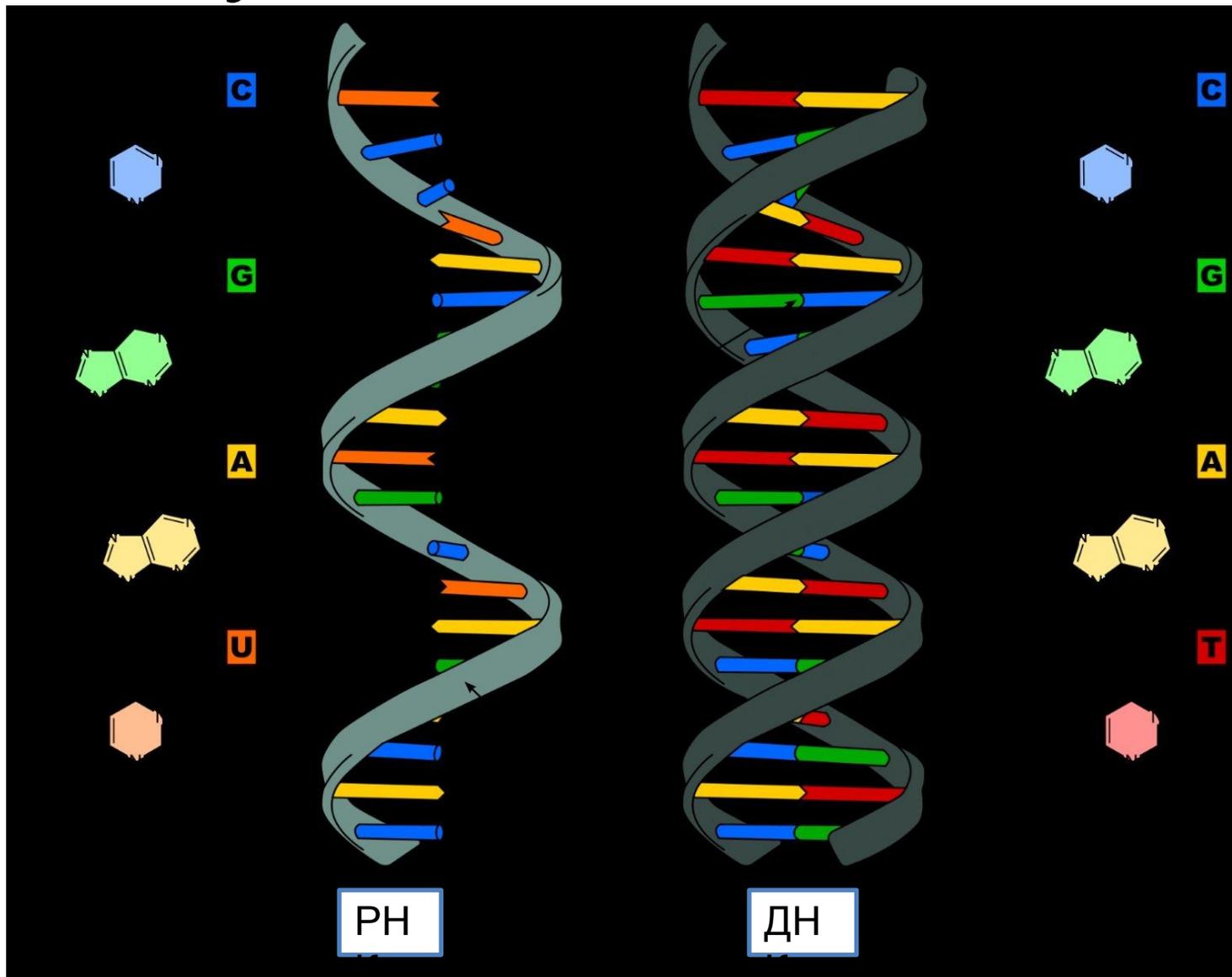
# Углеводы

Энергетическая  
роль



Glycogen

# Нуклеиновые кислоты



# Общее у всего живого

## РАЗЛИЧИЯ

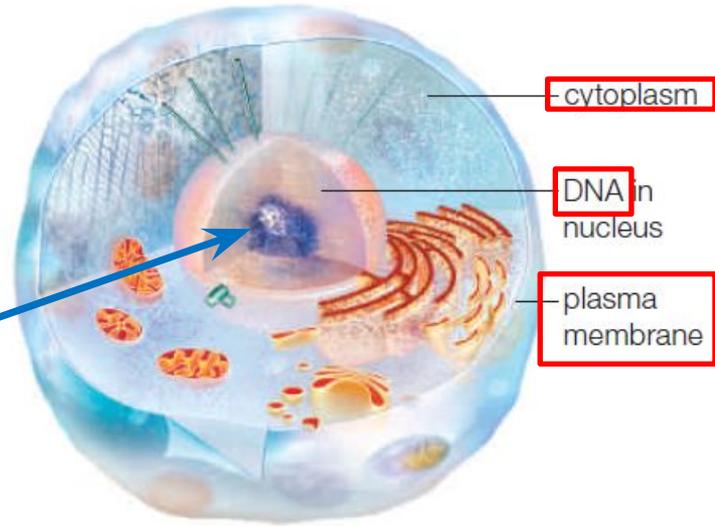
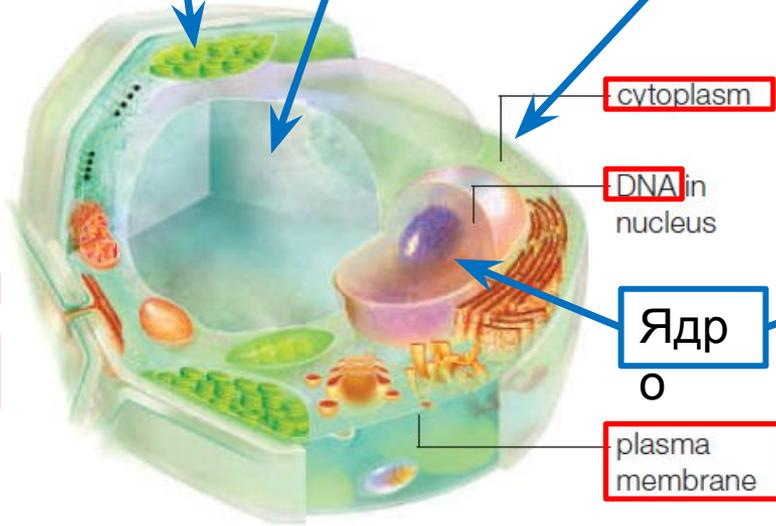
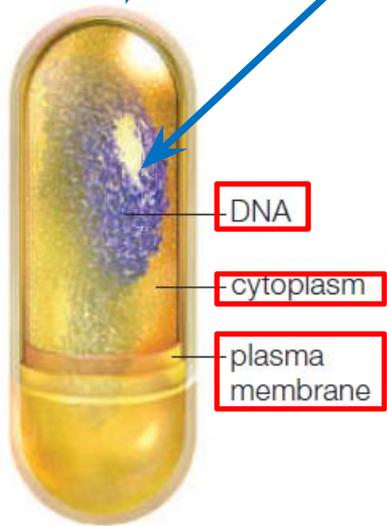
Клеточная стенка из муреина

Пластиды

Вакуоль

Клеточная стенка из целлюлозы

Нуклеоид



A bacterial cell

A plant cell

An animal cell

## ОБЩЕ

Е

# Как увидеть клетку?

Методы  
ЦИТОЛОГИИ

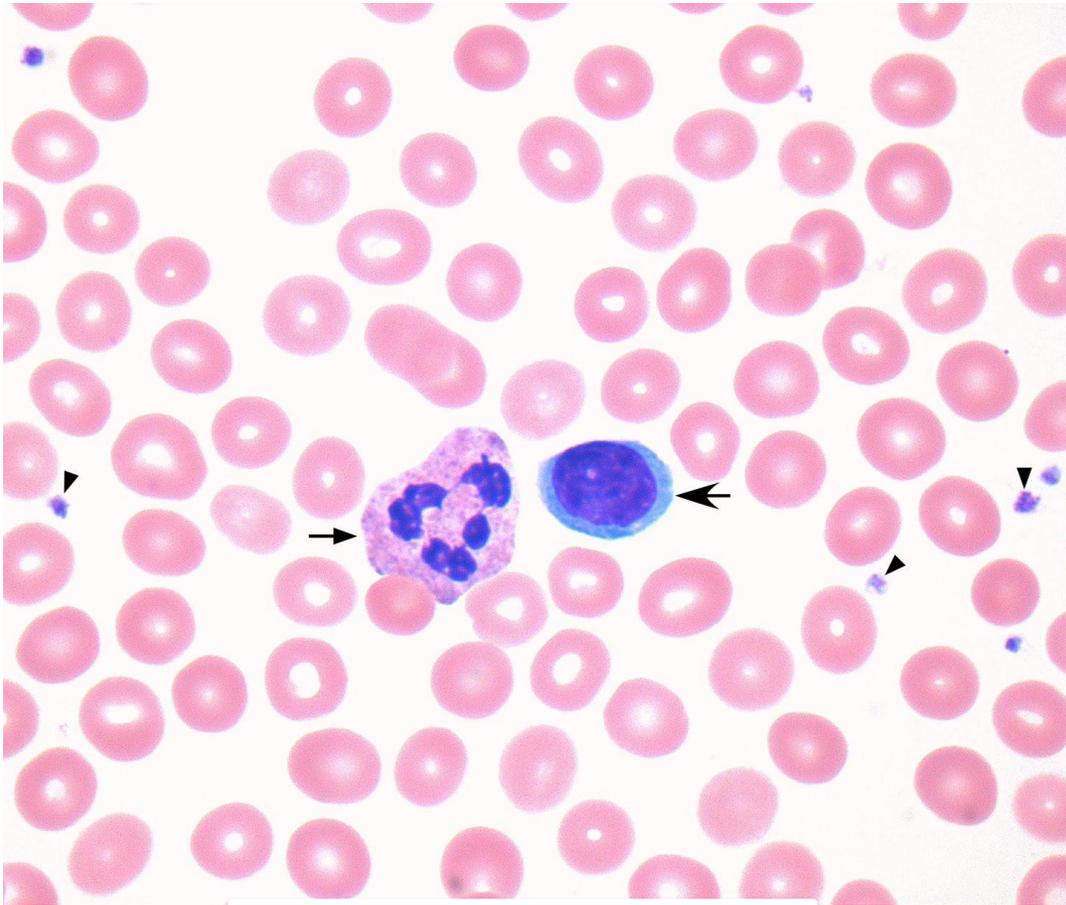


Световая  
МИКРОСКОПИЯ

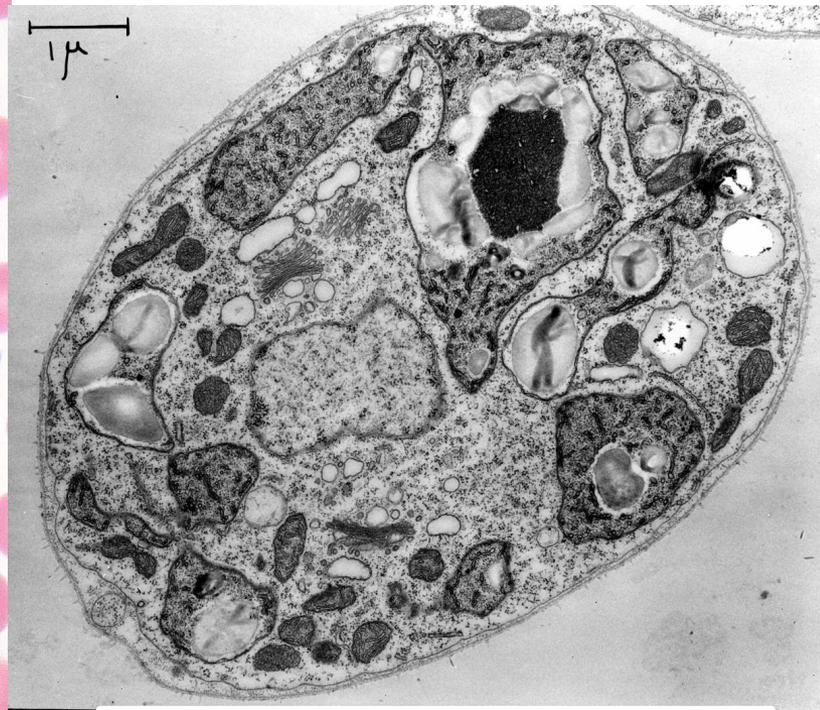
Электронная  
МИКРОСКОПИЯ



# Результаты микроскопии

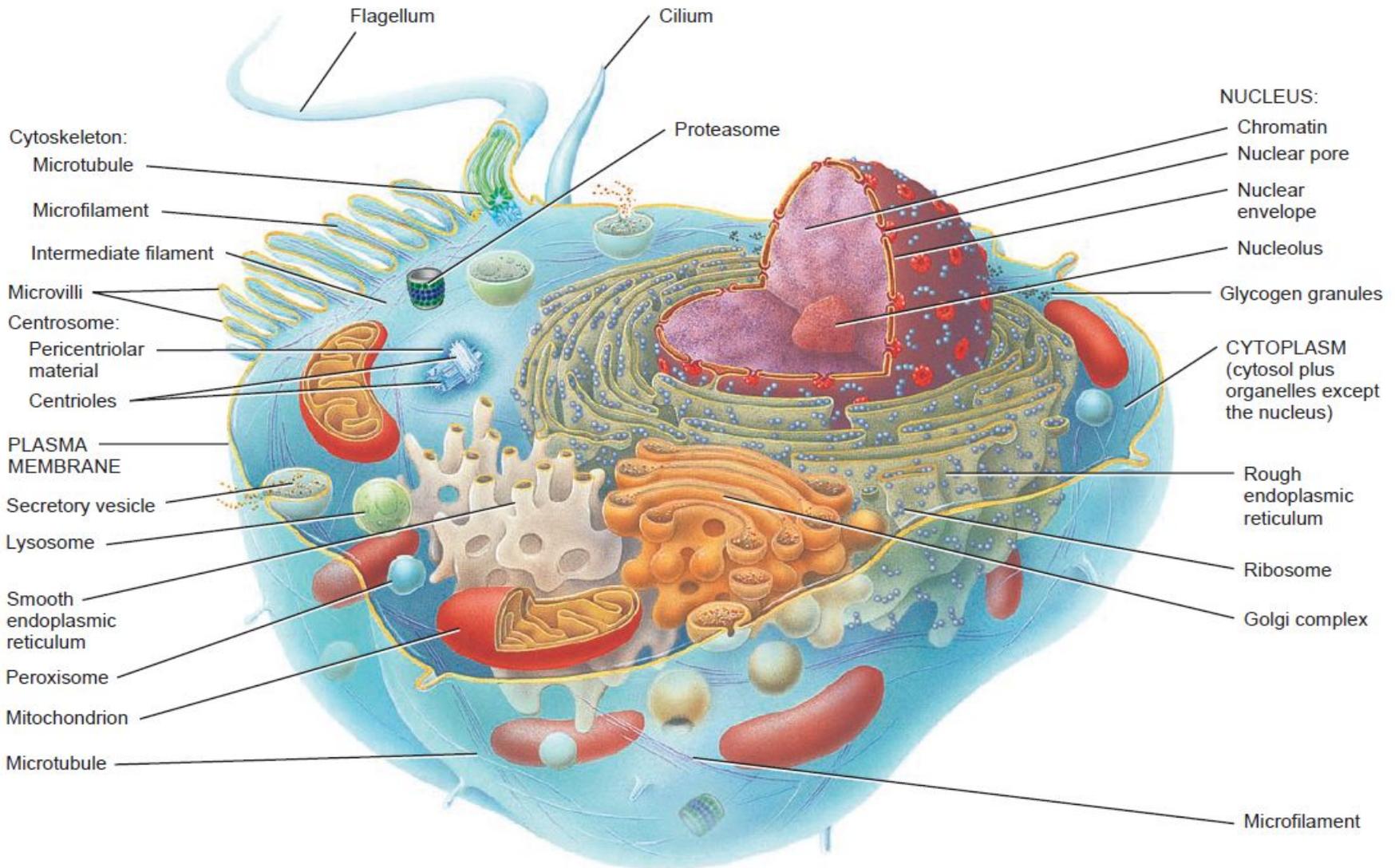


Световая  
микроскопия



Электронная  
микроскопия

# Строение клетки животных



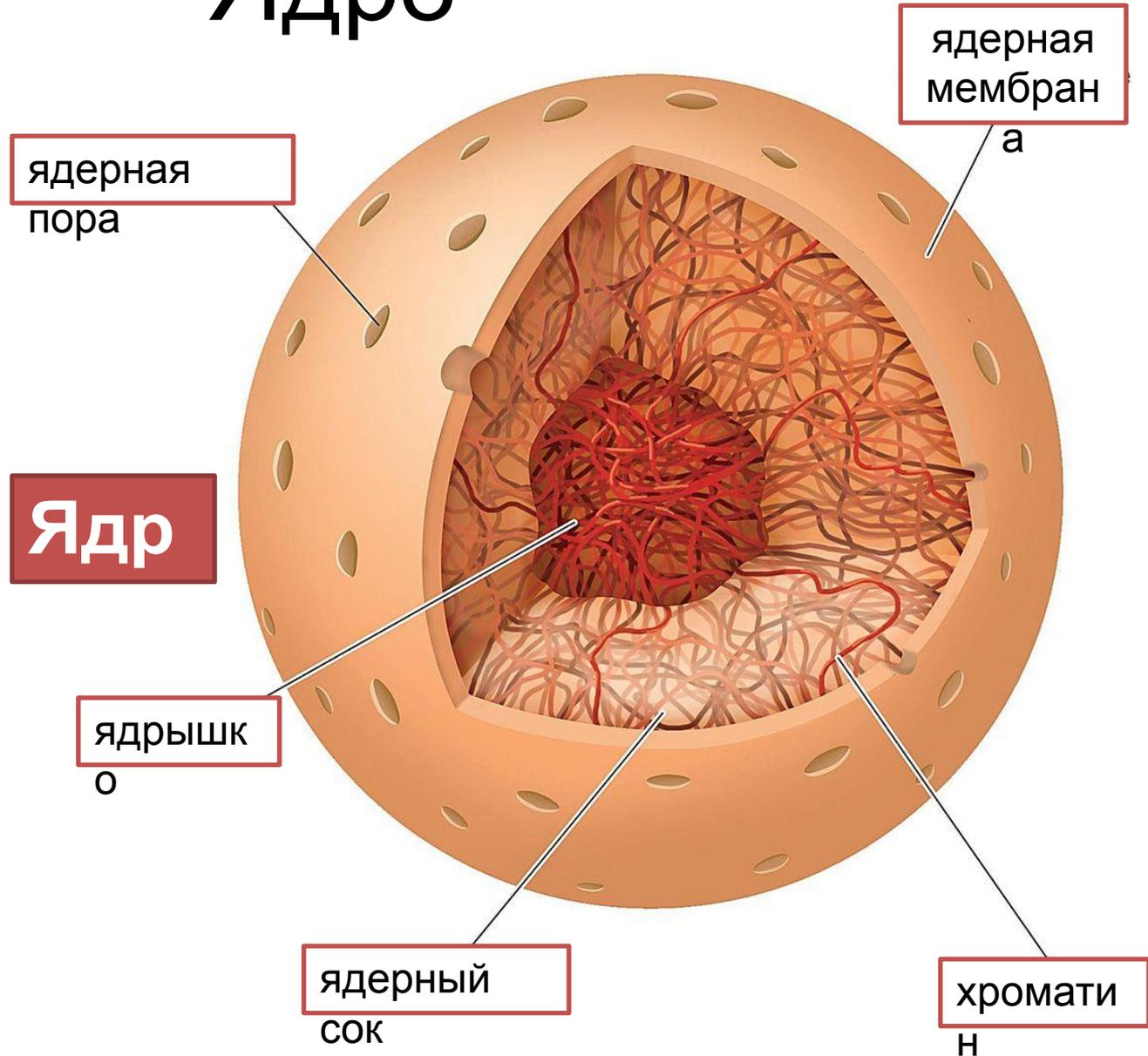
Sectional view

? What are the three principal parts of a cell?

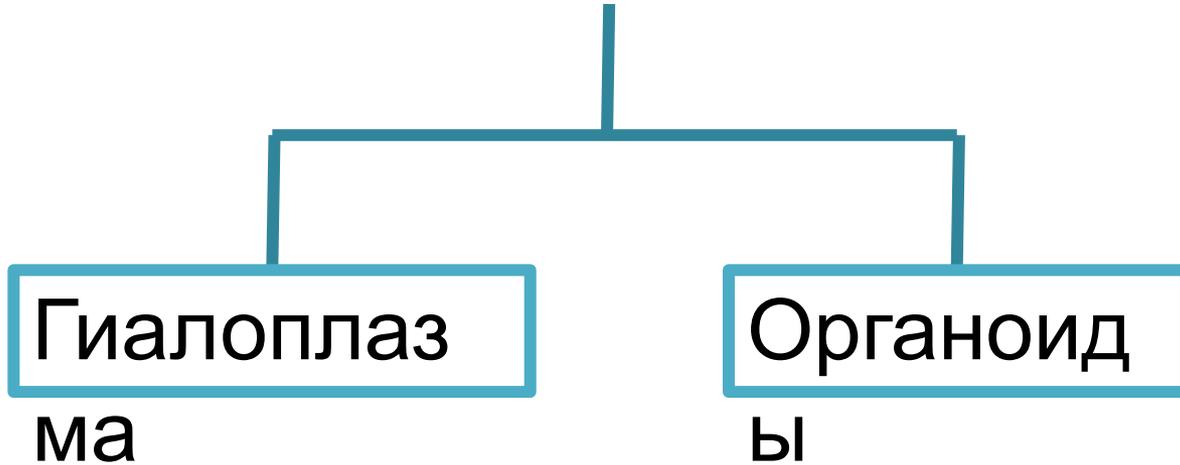
# Ядро

Главная часть эукариотической клетки, которая:

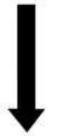
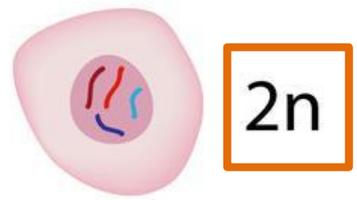
- хранит, передаёт и реализует наследственную информацию;
- управляет процессами обмена веществ;
- регулирует размножение клеток.



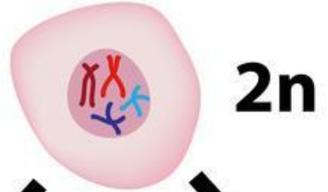
# Цитоплазма



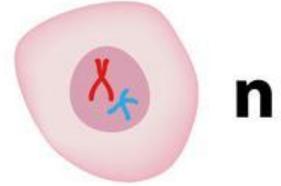
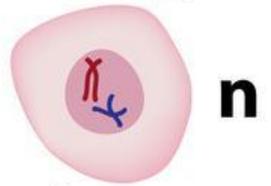
# Meiosis



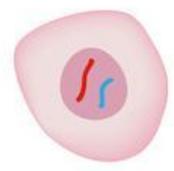
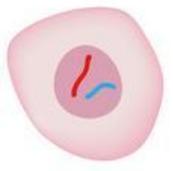
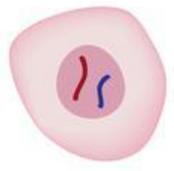
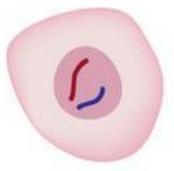
Образование половых  
клеток



I



II



# Mitosis

