

شرح درس اكتشاف الخلية ونظرية الخلية



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف العاشر ← أحياء ← الفصل الأول ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 22:21:55 2026-10-19

ملفات اكتب للمعلم اكتب للطالب | اختبارات الكترونية | اختبارات | حلول | عروض بوربوينت | أوراق عمل
منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي | للمدرس

المزيد من مادة
أحياء:

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التواصل الاجتماعي بحسب الصف العاشر



صفحة المناهج
الإماراتية على
فيسبوك

المزيد من الملفات بحسب الصف العاشر والمادة أحياء في الفصل الأول

تحميل تطبيق المناهج للهواتف الذكية

تطبيق المناهج على Play Google (أندرويد)

تطبيق المناهج على Store App (آبل)

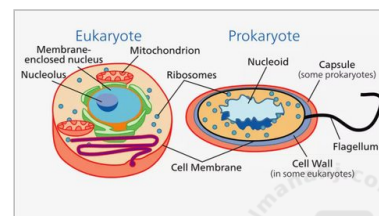


Unit 2 – Lesson 1

Cell Discovery and Theory

History of the Cell Theory

- The invention of microscopes, improvements to the instruments, and new microscope techniques have led to the development of the cell theory and a better understanding of cells.
- 1590 Dutch lens grinders Hans and Zacharias Janssen invent the first compound microscope by placing two lenses in a tube.
- 1665 Robert Hooke observes cork and names the tiny chambers that he sees cells. He publishes drawings of cells, fleas, and other minute bodies in his book *Micrographia*.
- 1683 Dutch biologist Anton van Leeuwenhoek discovers single-celled, animal-like organisms, now called protozoans.
- 1830–1855 Scientists discover the cell nucleus (1833) and propose that both plants and animals are composed of cells (1839). In 1838, German scientist Matthias Schleiden carefully studied plant tissues and concluded that all plants are composed of cells.
- A year later, another German scientist, Theodor Schwann, reported that animal tissues also consisted of individual cells.
- Prussian physician Rudolph Virchow proposed in 1855 that all cells are produced from the division of existing cells.
- 1939 Ernest Everett Just writes the textbook *Biology of the Cell Surface* after years of studying the structure and function of cells.
- 1981 The scanning tunneling microscope (STM) allows scientists to see individual atoms.
- 2008 Three-dimensional structured illumination microscopy (3-D SIM) combines a 3-D view, high resolution, and multiple colors.
- A cell is the basic structural and functional unit of all living organisms.
- Cells are so small that their existence was unknown before the invention of microscopes.





Unit 2 – Lesson 1

Cell Discovery and Theory

Cell Theory

- The **cell theory** is one of the fundamental ideas of modern biology. It includes the following three principles:
- All living organisms are composed of one or more cells.
- Cells are the basic unit of structure and organization of all living organisms.
- Cells arise only from previously existing cells, with cells passing copies of their genetic material on to their daughter cells.

Microscope Technology

- Development of microscope give scientists the ability to study cells in greater detail.

Optical microscopes

Compound Light Microscopes

- Use a series of glass lenses and visible light to magnify images
- Magnify images up to $\sim 1\,000\times$ actual size

Non-optical microscopes

Electron Microscopes

- Create an image by illuminating a sample with a beam of electrons and collecting the electrons that are reflected back from the sample
- Magnify images up to $500,000\times$ actual size





Unit 2 – Lesson 1

Cell Discovery and Theory

Optical microscopes

A compound light microscope

- can be used to see living objects.
- low resolution.
- Cells are tiny, thin, and translucent. When seen under light microscopes, cells need to be colored with special stains.
- uses light and more than one lens to magnify objects.
- Resolution: the ability of microscope to make individual component visible.
- Magnification=lens1 *lens2*.....



Electron Microscopes

- uses electrons to produce a magnified image.
- have a maximum magnification of 500,000X.
- high resolution.
- developed in the 1940s, during the second World War.
- A-Transmission electron microscope (TEM): passes electrons through a specimen to a fluorescent screen.
- forms a black-and-white shaded image, because the thick parts of the specimen absorb more electrons than the light parts.
- can magnify up to 500,000X
- the specimen used must be:
 - ▶ dead
 - ▶ sliced very thin
 - ▶ stained with heavy metals
- B-Scanning Electron Microscope (SEM): used to study the surface of objects





Unit 2 – Lesson 1

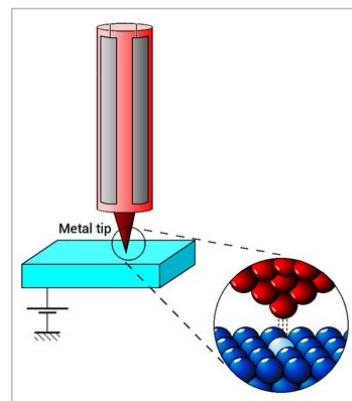
Cell Discovery and Theory

Electron Microscopes

- produces a three-dimensional image

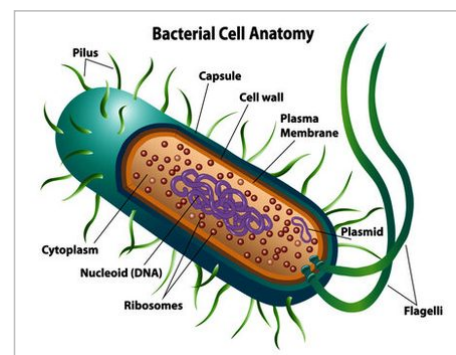
C-Scanning Tunneling Electron Microscope

- uses a charged tip of a metal that is brought close to the surface of the specimen where electrons can flow or tunnel through the gap between the tip of the metal and the object.
- used to view objects as small as atoms and DNA.
- can be used to view living specimen.
- produces three-dimensional computer images.



Basic Cell Types

- There are two basic kinds of cells: eukaryotic and prokaryotic.
- All cells have a plasma membrane – a special boundary that helps control what enters and leaves the cell.
- Most cells contain genetic material in some form.
- Most cells break down molecules to generate energy.
- Most cells have ribosomes.
- Prokaryotic cells do not have a nucleus or other membrane-bound organelles.
- They are smaller and simpler than eukaryotic cells.
- Most unicellular organisms, such as bacteria.
- Prokaryotic organisms are probably similar to the first organisms that lived on Earth.





Unit 2 – Lesson 1

Cell Discovery and Theory

Basic Cell Types

- Eukaryotic cells contain a nucleus and other organelles.
- Organelles are specialized structures that perform specific cell functions.
- The nucleus is the distinct central organelle that contains the cell's genetic material.
- Eukaryotic cells are generally much larger than prokaryotic cells.
- Unicellular or multicellular
- The endosymbiont theory proposes that a symbiotic relationship formed between two prokaryotic cells, one of which lived inside the other.
- Eventually the symbiotic relationship led to the two cells becoming one.
- Because eukaryotic cells are larger and more complex, they developed specific functions.
- These specific functions led to cell diversity, and thus, to organismal diversity.

