Do Now

Why do you think cells weren't discovered until 1665? What invention do you think made their discovery possible? Do you think people can ever see cells with the naked eye? Explain your answer.

¿Por qué crees que las células no fueron descubiertos hasta 1665? ¿Qué invento piensa usted que hizo su descubrimiento posible? ¿Crees que el hombre podrá ver las células a simple vista? Explique su respuesta.

Porque você acha que as células não foram descobertos até 1665? Que invenção você acha que fez sua descoberta possível? Você acha que as pessoas podem sempre ver as células a olho nu? Explique sua resposta.

Mit gondolsz, miért sejteket nem fedezték fel, amíg 1665? Milyen találmány Mit gondolnak, felfedezésük lehetséges? Mit gondolsz, az emberek valaha is látni sejteket a szabad szemmel? Magyarázza meg a választ.

Big Picture

LS1.A: Structure and Function

All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).

LS1.A: Estructura y Función

Todos los seres vivos están formados por células, que es la unidad más pequeña que se puede decir de estar vivo. Un organismo puede constar de una sola célula (unicelulares) o muchos números diferentes y tipos de células (multicelulares).

LS1.A: Estrutura e Função

Todos os seres vivos são constituídos por células, que é a menor unidade que pode ser dito por estar vivo. Um organismo pode consistir de uma única célula (unicelular) ou muitos números diferentes e tipos de células (multicelulares).

LS1.A: Estructura y Función

Todos los seres vivos están formados por células, que es la unidad más pequeña que se puede decir de estar vivo. Un organismo puede constar de una sola célula (unicelulares) o muchos números diferentes y tipos de células (multicelulares).

- Objectives: **State the parts of the cell theory.**
  Describe the parts of a cell.
  Explain the difference between prokaryotic cells and eukaryotic cells.

- **Learning Target**
- **Today I will: Learn about cells and what they are made of.**
- **So that I can: Apply that knowledge to the structure and function of cells**
- **I will know I got it if: I can clearly explain the parts and differences between prokaryotic and eukaryotic cells.**

- Agenda
- Today we will:
  - Watch a video
  - Teacher presentation with notes
  - Reading in teams with questions.
  - Microscope station
  - Exit ticket

- Objetivos: Estado las partes de la teoría celular. Describir las partes de una célula Explique la diferencia entre las células procariotas y células eucariotas

- Objetivo de Aprendizaje
  Hoy voy a: Aprenda acerca de las células y lo que están hechos.
  Para que yo pueda: Aplicar esos conocimientos a la estructura y función de las células
  Sabré lo tengo si: Puedo explicar claramente las partes y las diferencias entre las células procariotas y eucariotas.

- orden del día
  Hoy vamos a:
  Mira un vídeo
  Presentación por la maestra con notas
  La lectura en equipos con preguntas.
  estación Microscopio
  ticket de salida

- vocabulario
  célula
  membrana celular
  orgánulo
  núcleo
  procariota
  eucariota

- Objetivos: Estado as partes da teoria celular. Descrever as partes de uma célula Explicar a diferença entre células procariotas e células eucarióticas

- aprendizagem alvo
  Hoje vou: Saiba mais sobre as células e que eles são feitos.
  Para que eu possa: Aplicar esse conhecimento para a estrutura e função das células
  Eu sei que eu tenho que se: Eu posso explicar claramente as partes e as diferenças entre células procariotas e eucariotas.

- agenda
  Hoje nós iremos:
  Assista a um vídeo
  Apresentação do professor com notas
  Leitura em equipes com perguntas.
  estação microscópio
  bilhete de saída

- vocabulário
  célula
  membrana celular
  organela
  núcleo
  prokaryote
  eukaryote

- Célok: meg kell határozni sejtrészének elmélet.? Mutassa részei a sejt.? Mi a különbség prokarióta sejtek és eukarióta sejtek.

- tanulási cél
  Ma fogok: Ismerje sejtek és mit készülnek.
  Így én is: ezen ismeretek alkalmazásának szerkezetének és funkciójának sejtek
  Én tudom, hogy megvan, ha: tudom jól elmagyarázni az alkatrészeket és különbségeket prokarióta és eukarióta sejtek.

- napirend
  Ma:
  Nézze meg a videót
  Tanár prezentáció jegyzetek
  Olvasás csoportban a kérdésekre.
  mikroszkóp állomás
  Exit jegy

- szókincs
  sejt
  sejt membrán
  organelle
  atommag
  prokariótában
  eukarióta

Video

- https://www.youtube.com/watch?v=ruBAHiij4EA

Cells and the Cell Theory

- In 1665, Robert Hooke was the first person to describe cells when looking at cork with a microscope.

- Hooke observed cells in plants and fungi.

- **Finding Cells in Other Organisms** In 1673, Anton von Leeuwenhoek discovered single-celled organisms (protists) in pond scum. Leeuwenhoek was also the first to see blood cells, bacterial cells, and yeast cells.

Cells and the Cell Theory, *continued*

- In 1838, Matthias Schleiden concluded that all plant parts were made of cells.
- In 1839, Theodor Schwann concluded that all animal tissues were made of cells.
- In 1858, Rudolf Virchow stated that all cells could form only from other cells.
- These three discoveries led to the cell theory.

Cells and the Cell Theory, *continued*

The Cell Theory states:

- All organisms are made of one or more cells.
- The cell is the basic unit of all living things.
- All cells come from existing cells.

- Cell Theory
- 1. All organisms are made of 1 or more cells.
- 2. The cell is the basic unit of all living things.
- 3. All cells come from preexisting cells.

- Teoría celular
  1. Todos los organismos se hacen de 1 o más células.
  2. La célula es la unidad básica de todos los seres vivos.
  3. Todas las células provienen de células preexistentes.

- Teoria celular
  1. Todos os organismos são feitas de uma ou mais células.
  2. A célula é a unidade básica de todas as coisas vivas.
  3. Todas as células provenientes de células preexistentes.

- Cell Theory
  1. Minden organizmusok anyaga 1 vagy több sejt.
  2. A sejt alapegysége az összes élőlény.
  3. Minden sejt származik már létező sejteket.

Cell Size

- Most cells are too small to be seen without a microscope.

- **A Few Large Cells** The yolk of a chicken egg is one big cell. It can be large because it does not need to take in nutrients.

- **Many Small Cells** Most cells are small because food and waste must pass through the cell surface.

Cell Size, continued

- As a cell's volume increases, its surface area grows. But volume increases faster than the surface area.

- The area of a cell's surface–compared with the cell's volume–limits the cell's size.

- The ratio of the cell's outer surface to the cell's volume is called the *surface area-to-volume ratio*:

Parts of a Cell, *continued*

- **The Cell Membrane and Cytoplasm** All cells are surrounded by a cell membrane. The **cell membrane** is a protective layer that covers the cell's surface and acts as a barrier.

- Inside the cell is a fluid. This fluid and almost all of its contents are called *cytoplasm*.

Parts of a Cell, *continued*

- **Organelles** are structures that perform specific functions within the cell.

- **Genetic Material** All cells contain DNA at some point in their life. DNA is genetic material that carries information needed to make new cells and new organisms.

- In some cells, the DNA is enclosed inside an organelle called the **nucleus.**

Two Kinds of Cells

- Cells with no nucleus are prokaryotic.
- Cells that have a nucleus are eukaryotic.

Prokaryotes: Eubacteria and Archaebacteria

- **Prokaryotes** are single-celled organisms that do not have a nucleus or membrane-bound organelles.

- The two types of prokaryotes are eubacteria and archaebacteria.

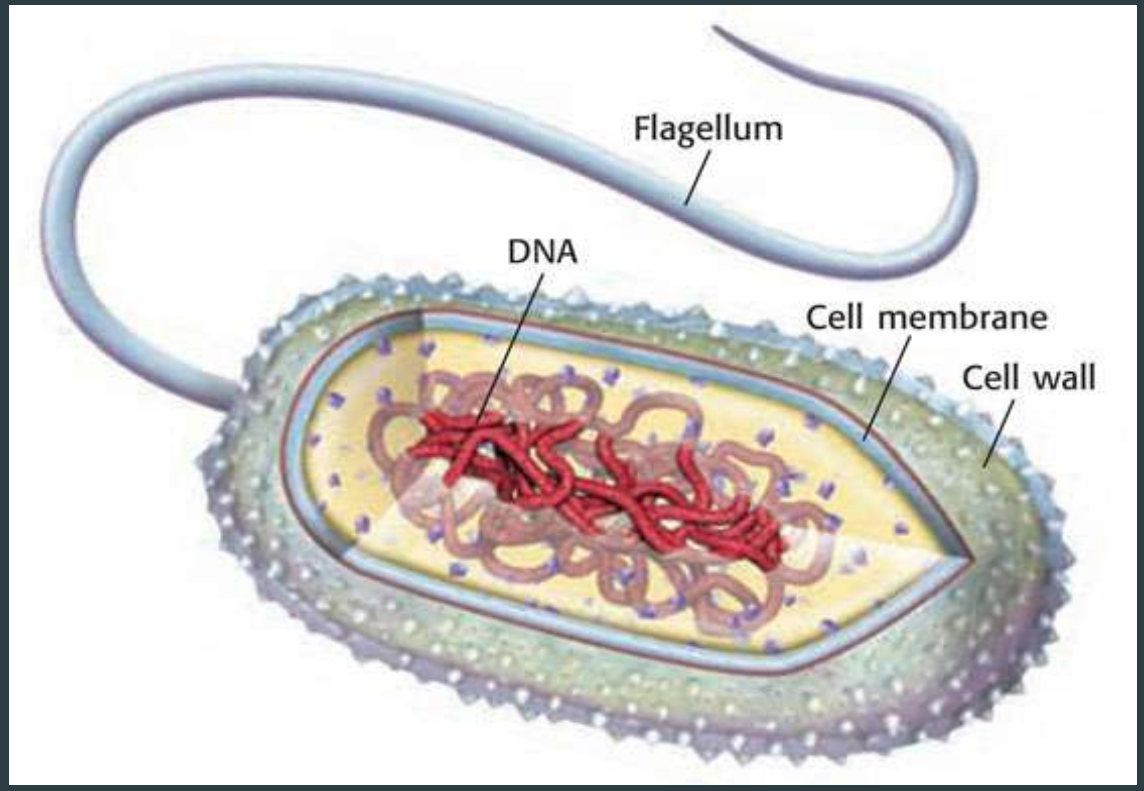
Prokaryotes: Eubacteria and Archaebacteria, *continued*

- **Eubacteria** are also called *bacteria* and are the world's smallest cells. They do not have membrane covered organelles, but they do have tiny, round organelles called *ribosomes*.

- Some bacteria live in soil and water. Others live in, or on, other organisms.

Prokaryotes: Eubacteria and Archaebacteria, *continued*

- The image below shows the DNA, cell membrane, and cell wall of a typical bacterial cell. The flagellum helps the bacterium move.



Prokaryotes: Eubacteria and Archaebacteria, *continued*

- **Archaebacteria** are similar to bacteria in some ways and are similar to eukaryotic cells in other ways.

- Three types of archaebacteria are *heat-loving, salt-loving,* and *methane-making*. Heat-loving and salt-loving archaebacteria live in extreme conditions and are sometimes called *extremophiles*.

Eukaryotic Cells and Eukaryotes

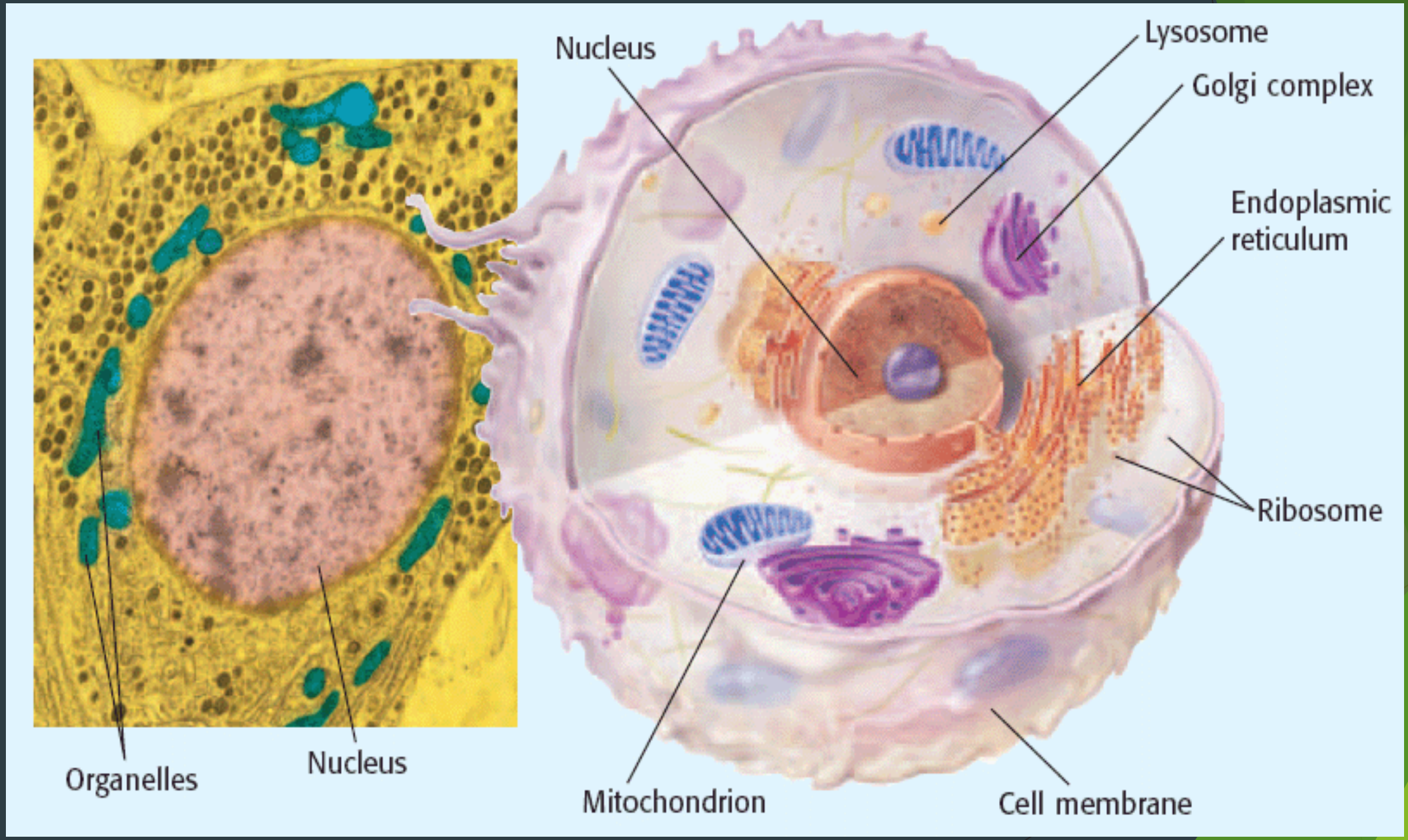
- Eukaryotic cells have a nucleus and other membrane-bound organelles. Most eukaryotic cells are microscopic, but are about 10 times larger than bacterial cells.

- All living things that are not bacteria or archaea are made of one or more eukaryotic cells. Organisms made of eukaryotic cells are called **eukaryotes.**

Eukaryotic Cells and Eukaryotes

- Many eukaryotes are multicellular, which means that they are made of many cells.

- Examples of multicellular eukaryotes are animals (including humans), plants, mushrooms, and algae. Examples of single-celled eukaryotes are amoebas and yeasts.


Organelles
Nucleus
Nucleus
Lysosome
Golgi complex
Endoplasmic reticulum
Ribosome
Mitochondrion
Cell membrane

Exit Ticket

- **What are the two main categories of cells and how do they differ?**