

LESSON 2:

THE CELL

STANDARDS

- **7.LS1.1**
 - **DEVELOP AND CONSTRUCT MODELS THAT IDENTIFY AND EXPLAIN THE STRUCTURE AND FUNCTION OF MAJOR CELL ORGANELLES AS THEY CONTRIBUTE TO THE LIFE ACTIVITIES OF THE CELL AND ORGANISM.**
- **7.LS1.3**
 - **EVALUATE EVIDENCE THAT CELLS HAVE STRUCTURAL SIMILARITIES AND DIFFERENCES ACROSS KINGDOMS.**

I CAN...

- **MODEL A CELL.**
- **EXPLAIN THE FUNCTION OF THE PARTS OF A CELL.**
- **EVALUATE CELLS FOR DIFFERENCES AND SIMILARITIES AND MAKE INFERENCES ABOUT THE CELL.**

ESSENTIAL QUESTIONS

- **HOW ARE PROKARYOTIC CELLS AND EUKARYOTIC CELLS SIMILAR, AND HOW ARE THEY DIFFERENT?**
- **WHAT DO THE STRUCTURES IN A CELL DO?**

PHENOMENON



- **A STUDENT DEVELOPS A MICROSCOPE SLIDE TO OBSERVE AN UNKNOWN SUBSTANCE. THEY NOTICE THAT THERE'S A PATTERN TO HOW IT'S ARRANGED AND WHAT IT'S MADE UP OF.**

PHENOMENON



- **THE STUDENT STUDIES A SECOND SLIDE AND NOTICES THAT WHILE THERE IS STILL A PATTERN TO WHAT THEY'RE SEEING, WHAT THEY'RE OBSERVING LOOKS DIFFERENT THAN THE OTHER SLIDE.**

CELL SHAPE AND MOVEMENT



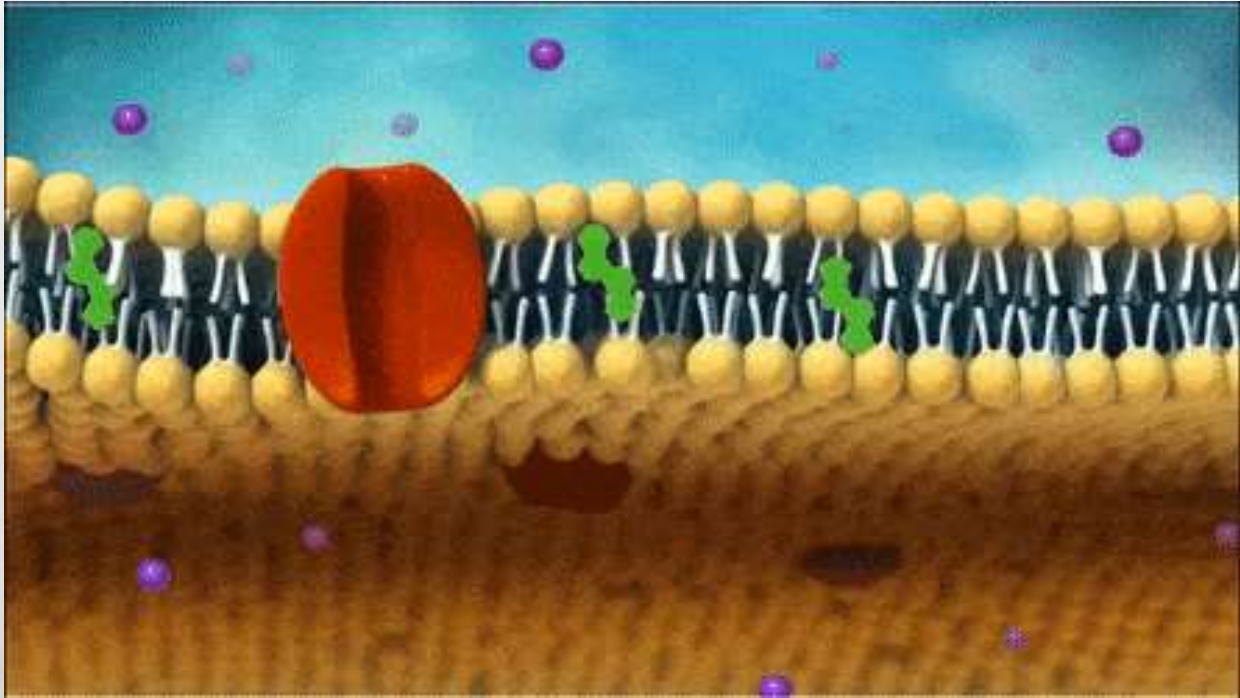
- **A CELL IS MADE OF DIFFERENT STRUCTURES THAT WORK TOGETHER AND KEEP A CELL ALIVE.**

CELL SHAPE AND MOVEMENT



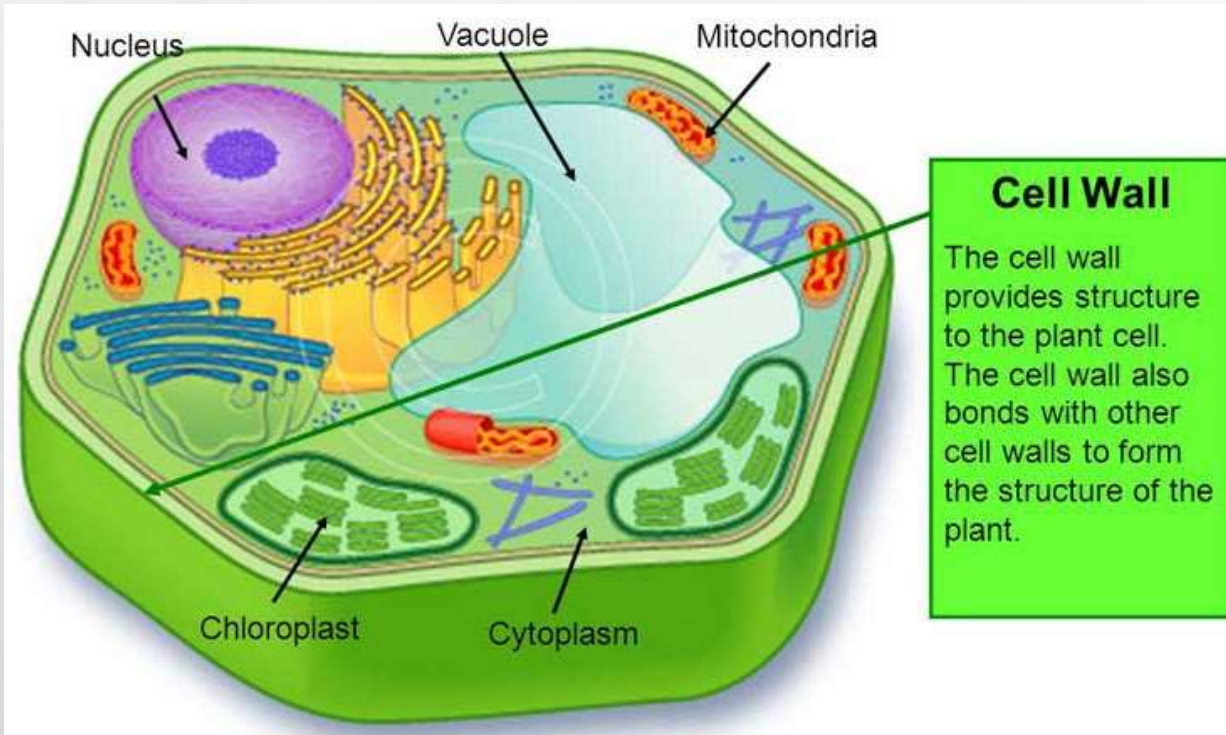
- **THE CELL MEMBRANE IS A FLEXIBLE COVERING THAT PROTECTS THE INSIDE OF A CELL FROM THE ENVIRONMENT OUTSIDE.**

CELL SHAPE AND MOVEMENT



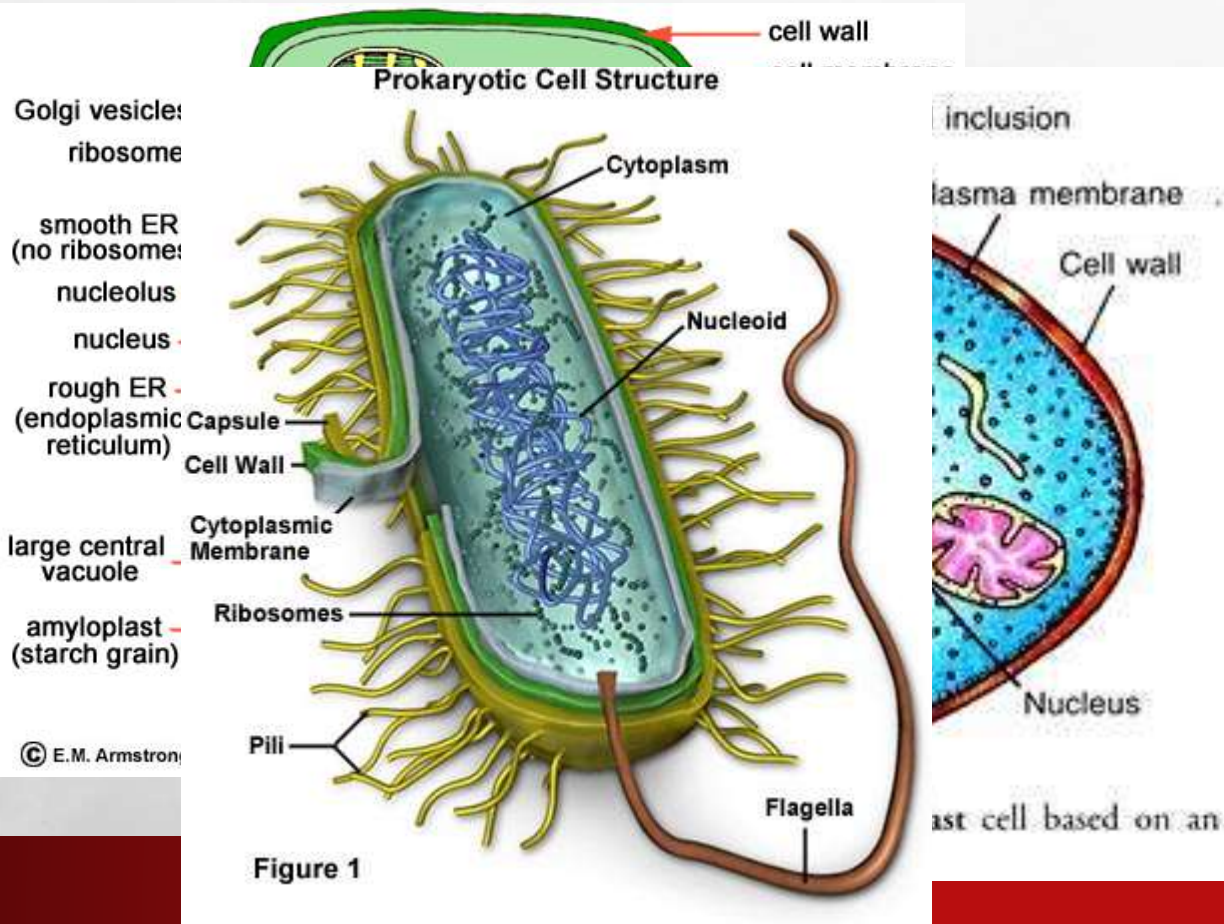
- **A CELL MEMBRANE IS MOSTLY MADE OF PHOSPHOLIPIDS AND PROTEINS.**

CELL SHAPE AND MOVEMENT



- **A(N) CELL WALL IS A STIFF STRUCTURE OUTSIDE THE CELL MEMBRANE.**

CELL SHAPE AND MOVEMENT



- **PLANT CELLS, FUNGAL CELLS, AND SOME TYPES OF BACTERIA HAVE CELL WALLS.**

CELL SHAPE AND MOVEMENT



- **CELL APPENDAGES ARE OFTEN USED FOR MOVEMENT.**

CELL SHAPE AND MOVEMENT



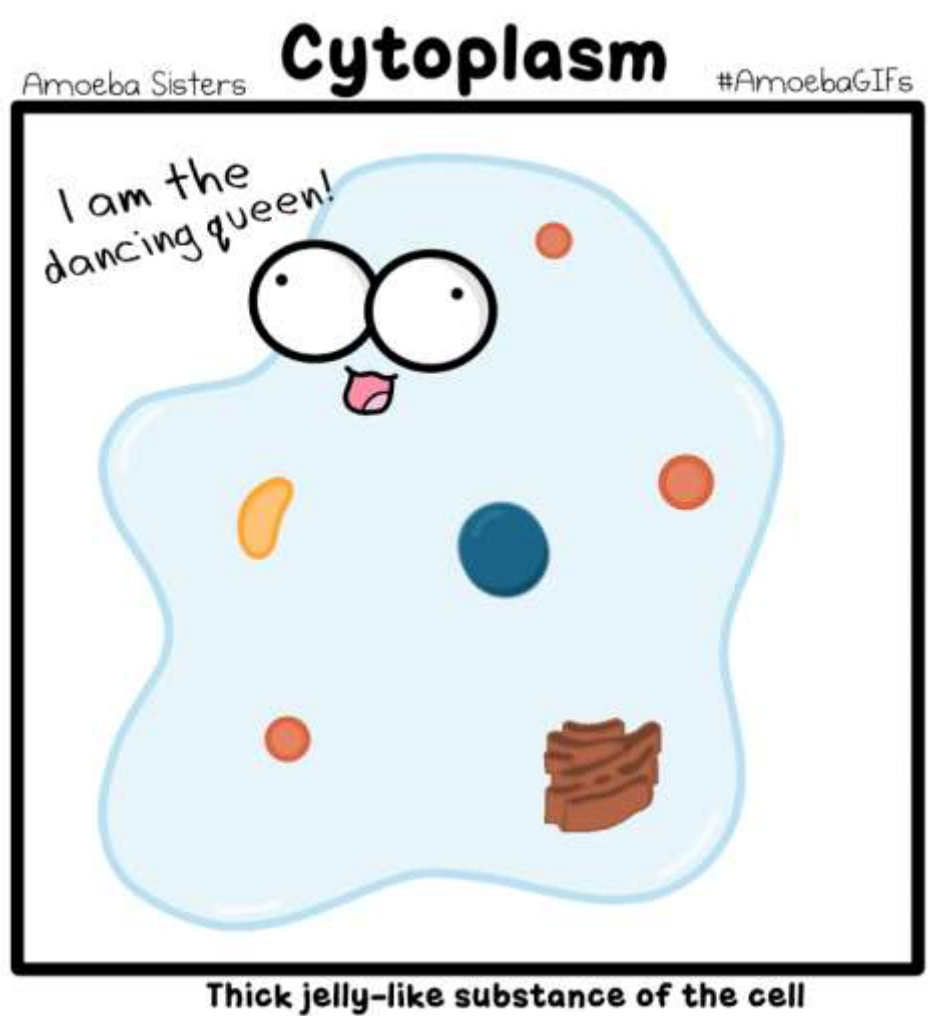
- **LONG, TAIL-LIKE APPENDAGES CALLED FLAGELLA WHIP BACK AND FORTH AND MOVE A CELL.**

CELL SHAPE AND MOVEMENT



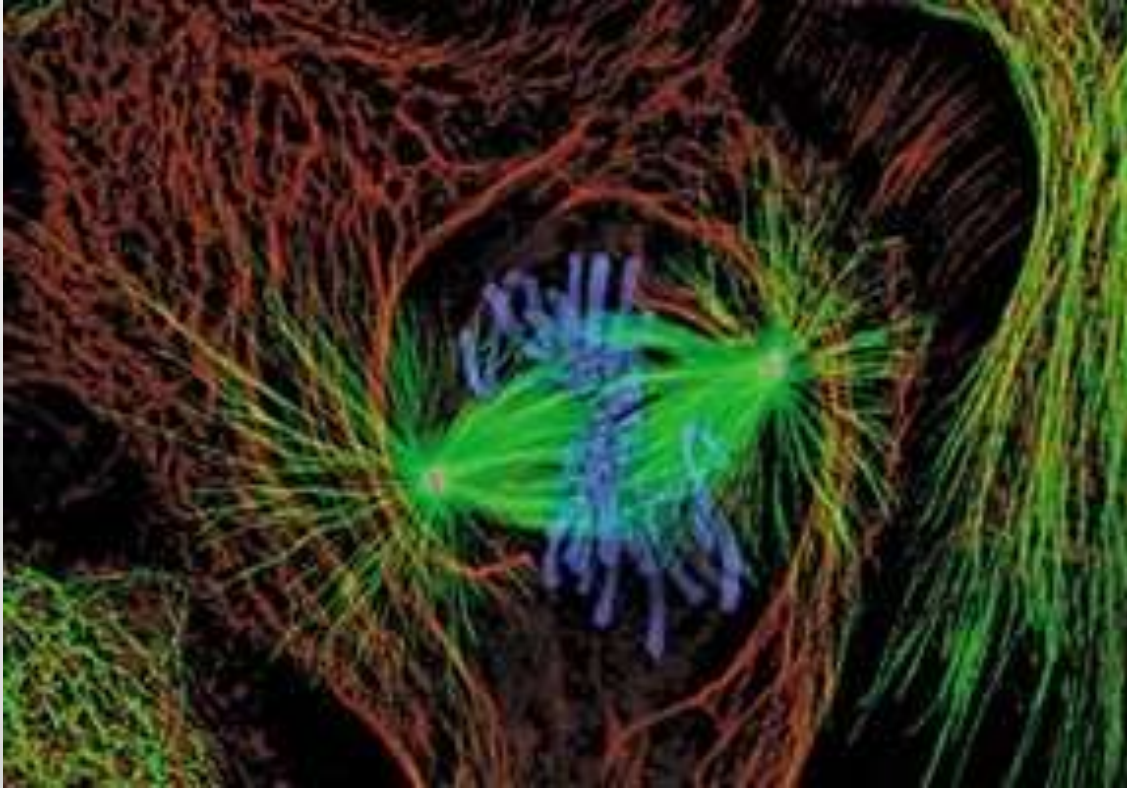
**CILIA ARE SHORT,
HAIRLIKE STRUCTURES
THAT CAN MOVE A CELL
OR MOVE MOLECULES
AWAY FROM A CELL.**

CELL SHAPE AND MOVEMENT



- **MOST WATER IN A CELL IS IN THE CYTOPLASM, A FLUID THAT CONTAINS SALTS AND OTHER MOLECULES.**

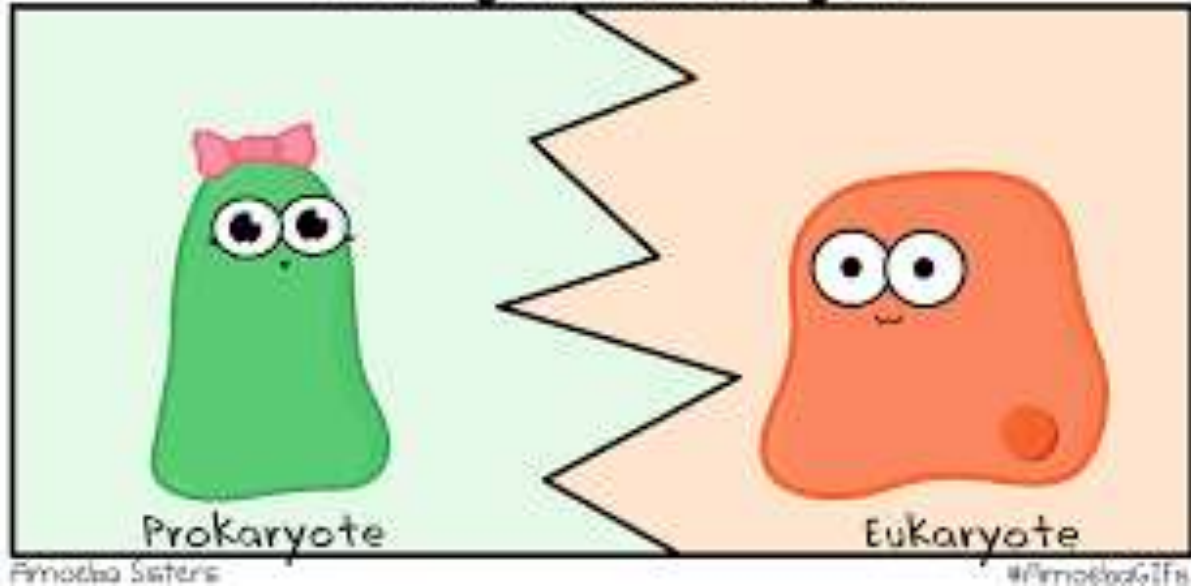
CELL SHAPE AND MOVEMENT



- **THE CYTOSKELETON IS MADE OF A NETWORK OF THREADLIKE PROTEINS THAT ARE JOINED TO FORM A FRAMEWORK INSIDE A CELL.**

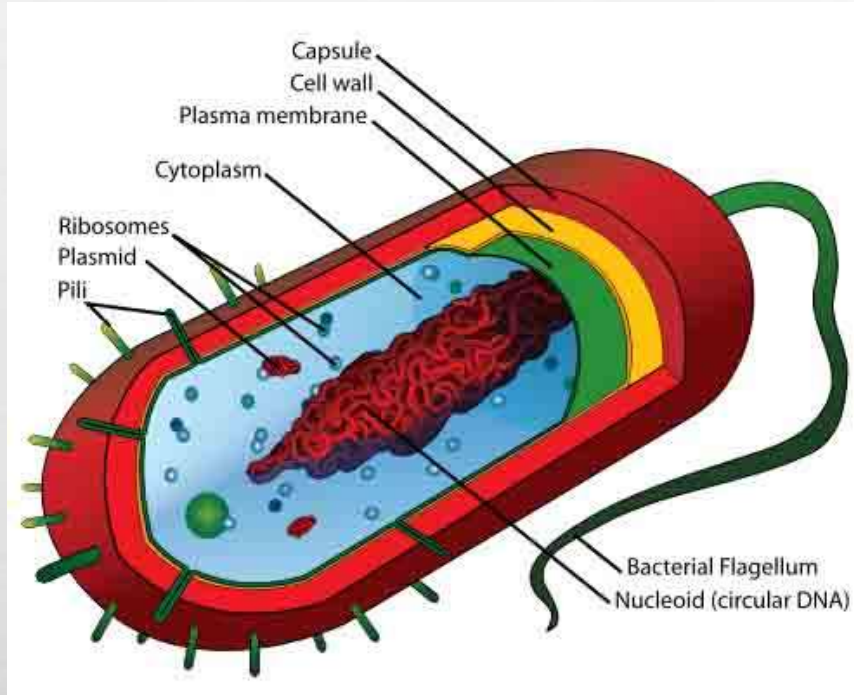
CELL TYPES

Prokaryote vs. Eukaryote



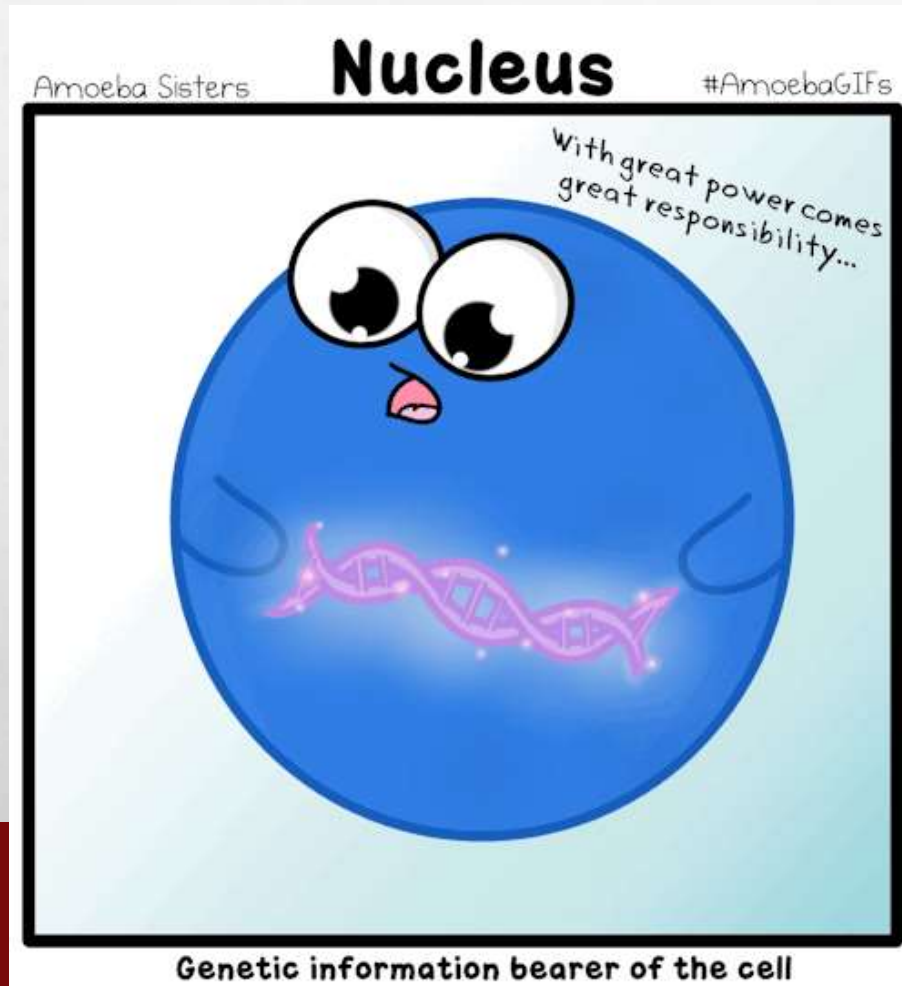
- **WITH ADVANCED MICROSCOPES, SCIENTISTS DISCOVERED THAT ALL CELLS CAN BE GROUPED INTO TWO TYPES—PROKARYOTIC AND EUKARYOTIC.**

CELL TYPES



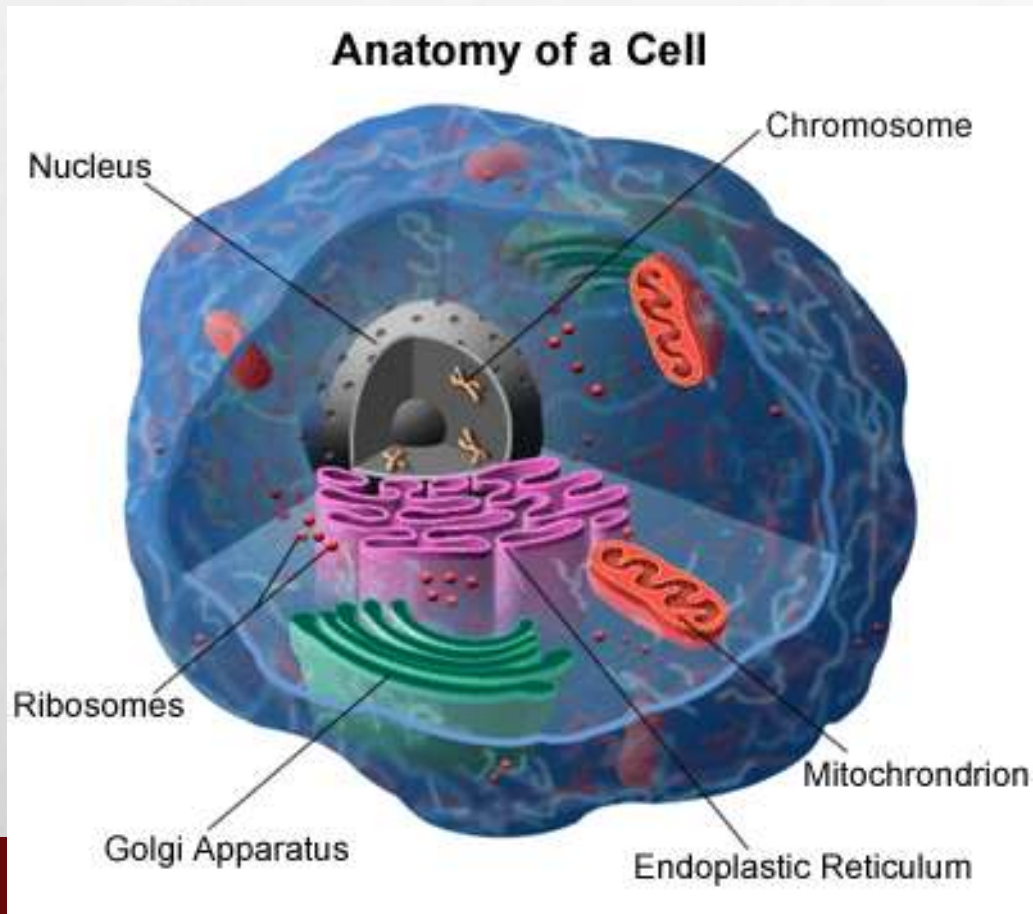
- **THE MOST IMPORTANT FEATURE OF A (N) PROKARYOTIC CELL IS THAT THE GENETIC MATERIAL IS NOT SURROUNDED BY A MEMBRANE.**

CELL TYPES

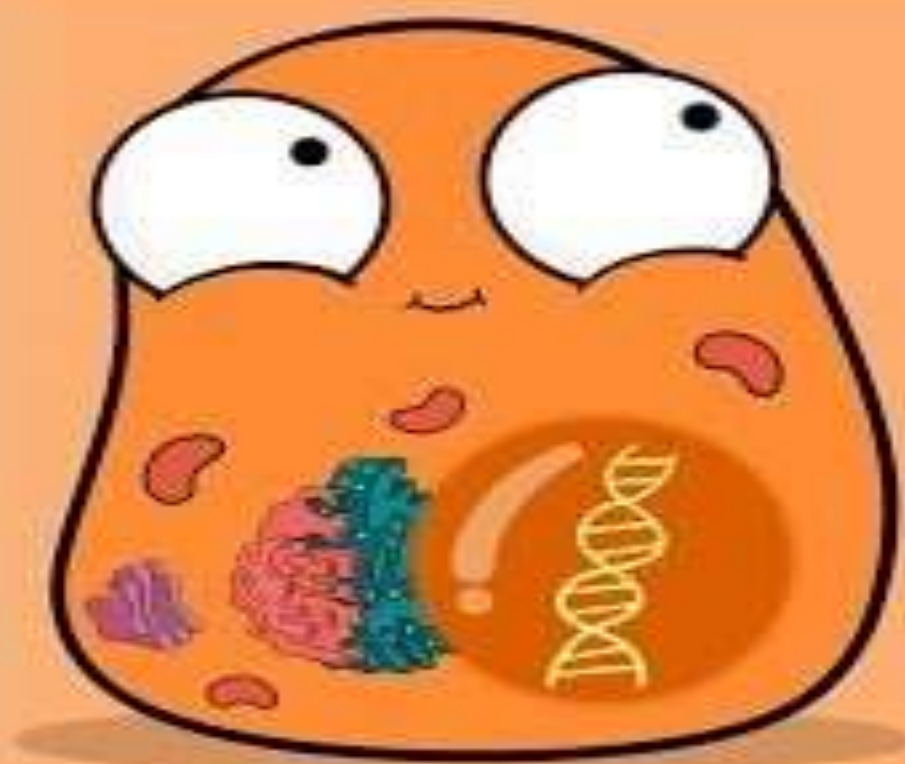


- **PLANTS, ANIMALS, FUNGI, AND PROTISTS ARE MADE OF ONE OR MORE EUKARYOTIC CELLS.**

CELL TYPES



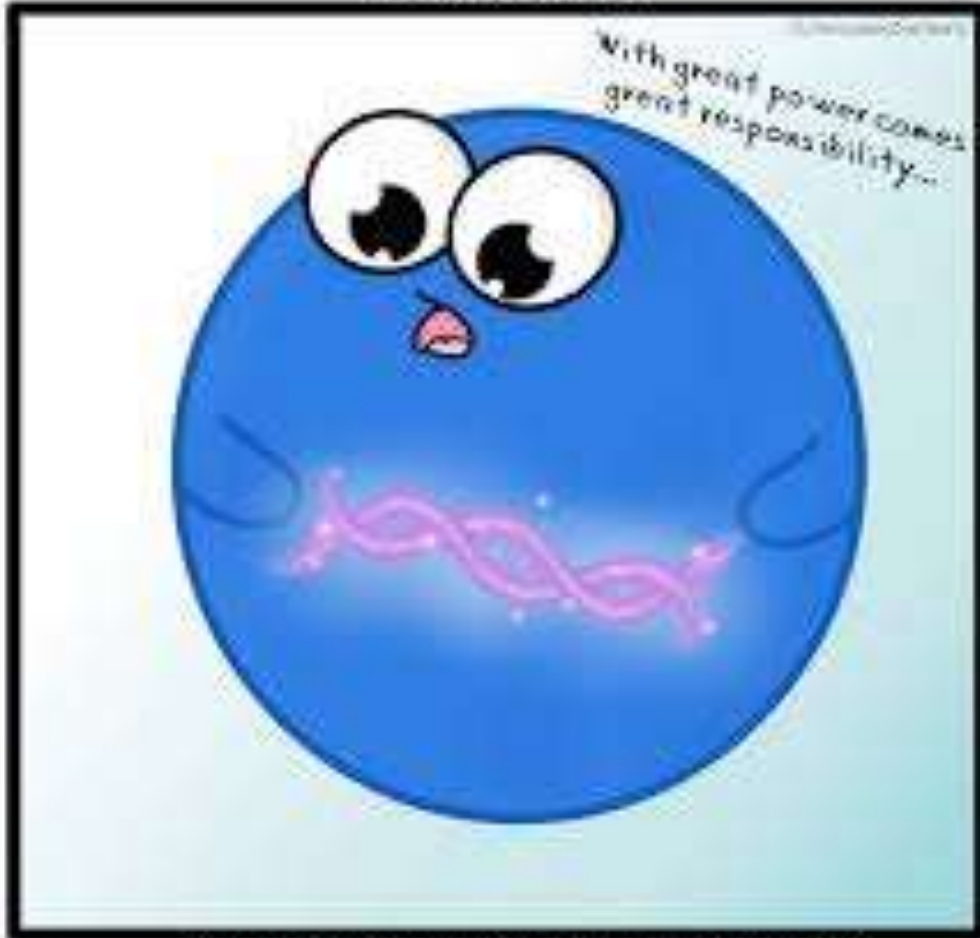
- **EVERY EUKARYOTIC CELL HAS MEMBRANE-SURROUNDED COMPONENTS, CALLED ORGANELLES, WHICH HAVE SPECIALIZED FUNCTIONS.**



Prokaryotic vs. Eukaryotic Cells
with the Amoeba Sisters

CELL ORGANELLES

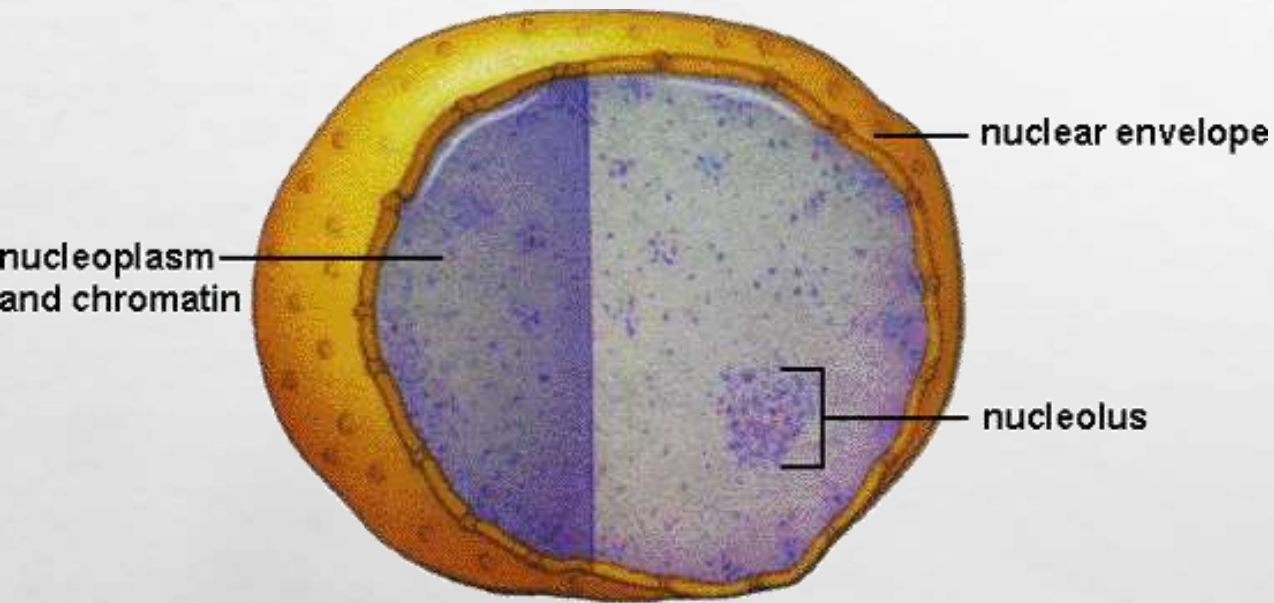
Nucleus



Genetic information bearer of the cell

- **THE NUCLEUS IS THE PART OF A EUKARYOTIC CELL THAT DIRECTS CELL ACTIVITIES AND CONTAINS GENETIC INFORMATION STORED IN DNA.**

CELL ORGANELLES



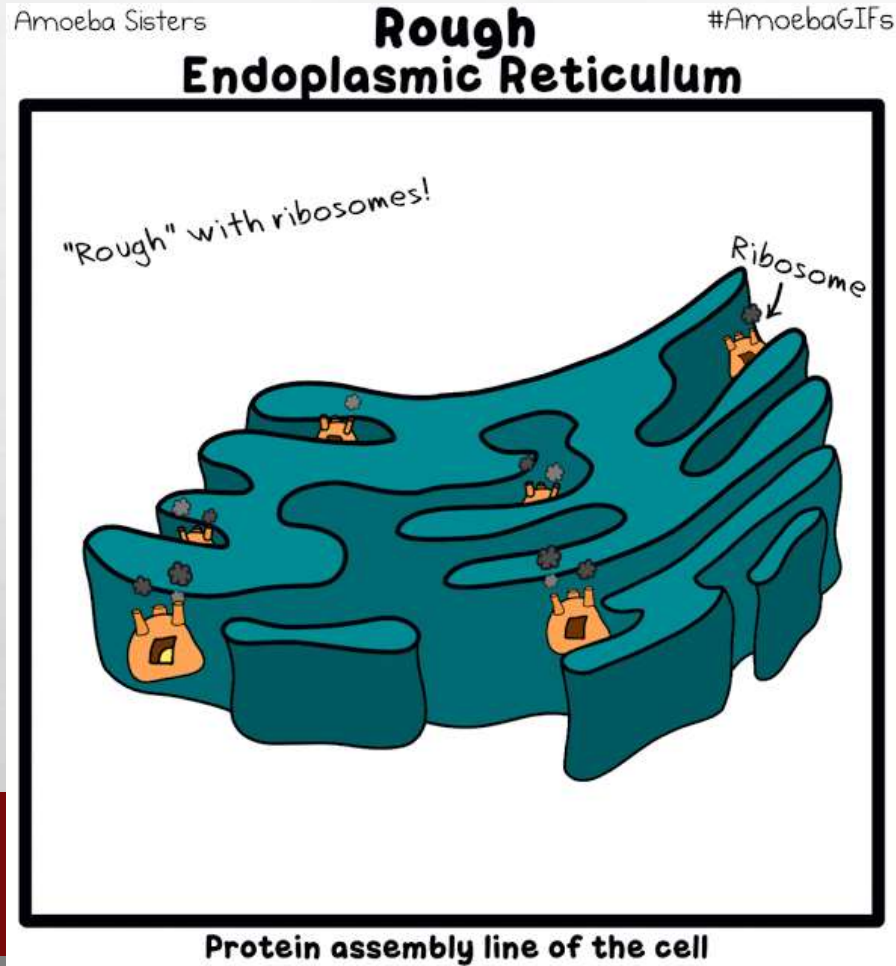
- **SURROUNDING THE NUCLEUS ARE TWO MEMBRANES THAT FORM A STRUCTURE CALLED THE NUCLEAR ENVELOPE.**

CELL ORGANELLES



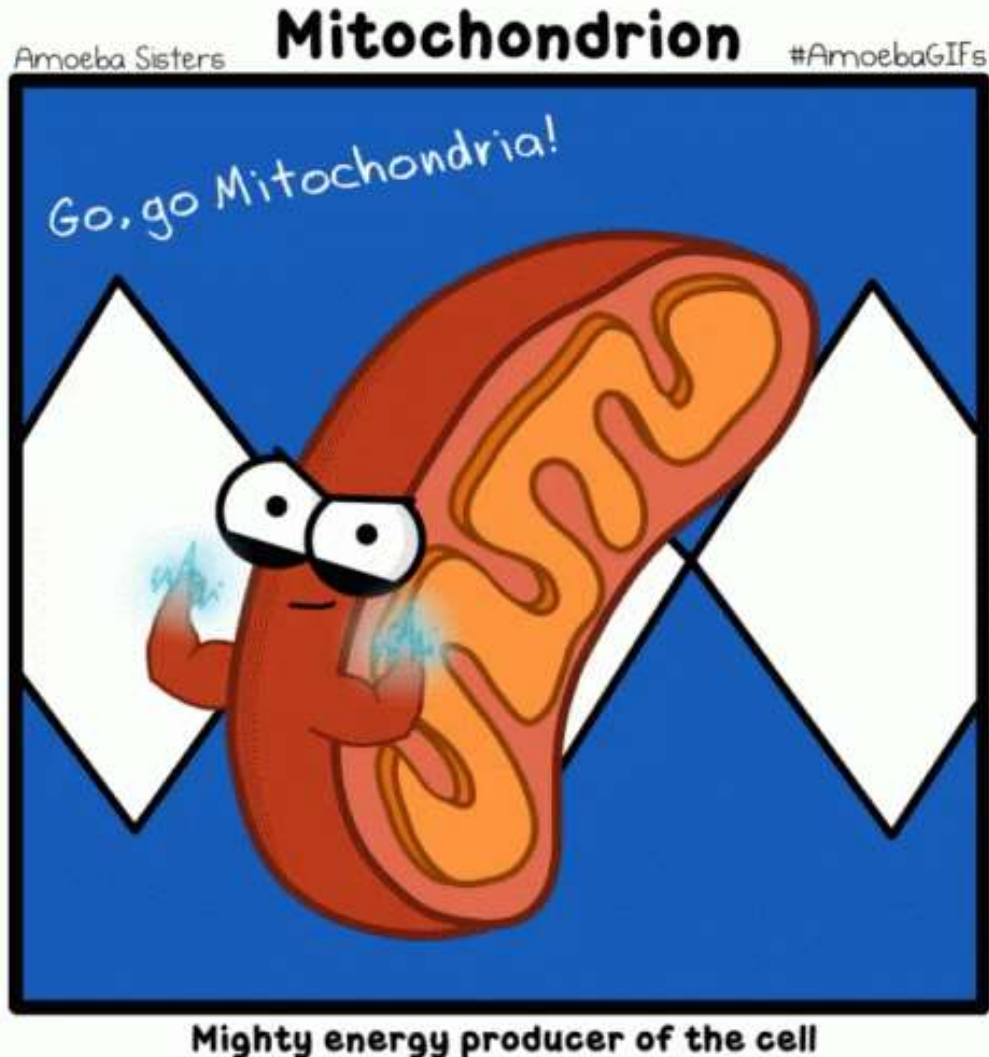
- **PROTEINS ARE MADE IN SMALL STRUCTURES CALLED RIBOSOMES.**

CELL ORGANELLES



- **RIBOSOMES CAN BE FOUND IN A CELL'S CYTOPLASM OR ATTACHED TO A WEBLIKE ORGANELLE CALLED THE ENDOPLASMIC RETICULUM.**

CELL ORGANELLES



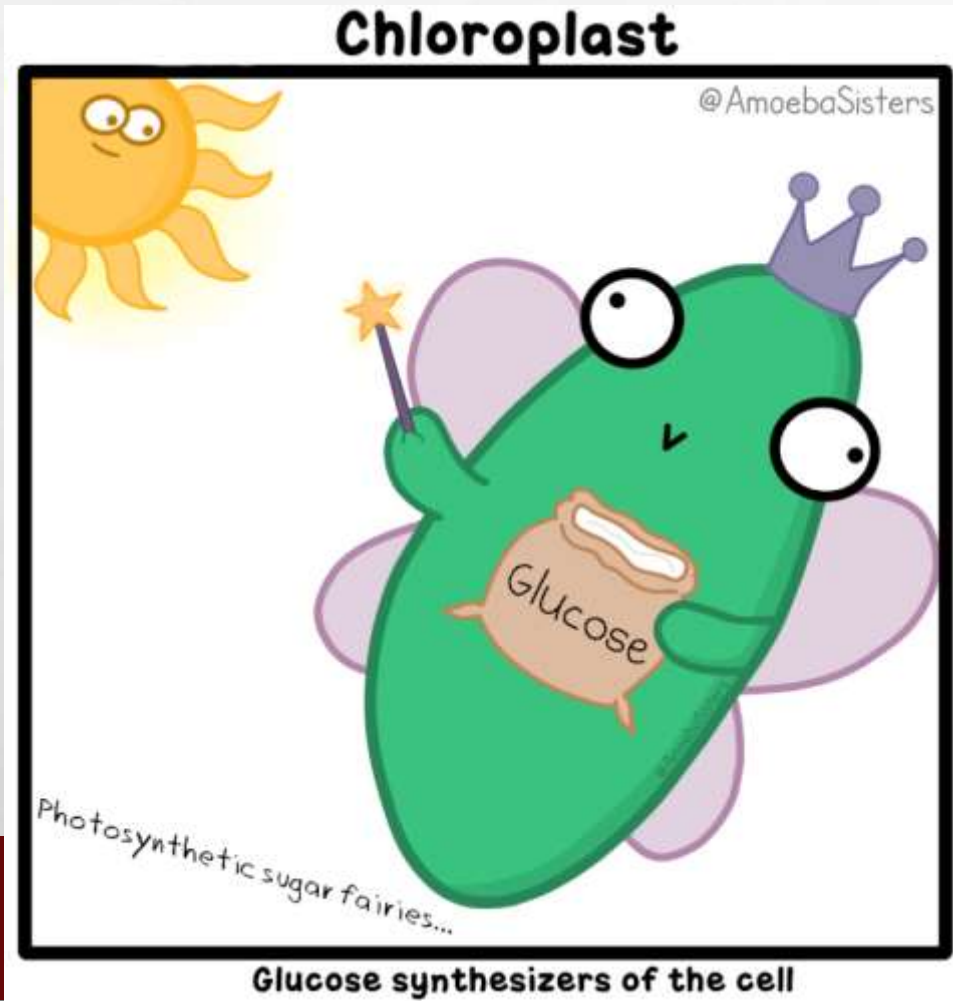
- **ENERGY IS RELEASED DURING CHEMICAL REACTIONS THAT OCCUR IN THE MITOCHONDRIA.**

CELL ORGANELLES



- **ATP IS THE FUEL FOR CELLULAR PROCESSES SUCH AS GROWTH, CELL DIVISION, AND MATERIAL TRANSPORT.**

CELL ORGANELLES



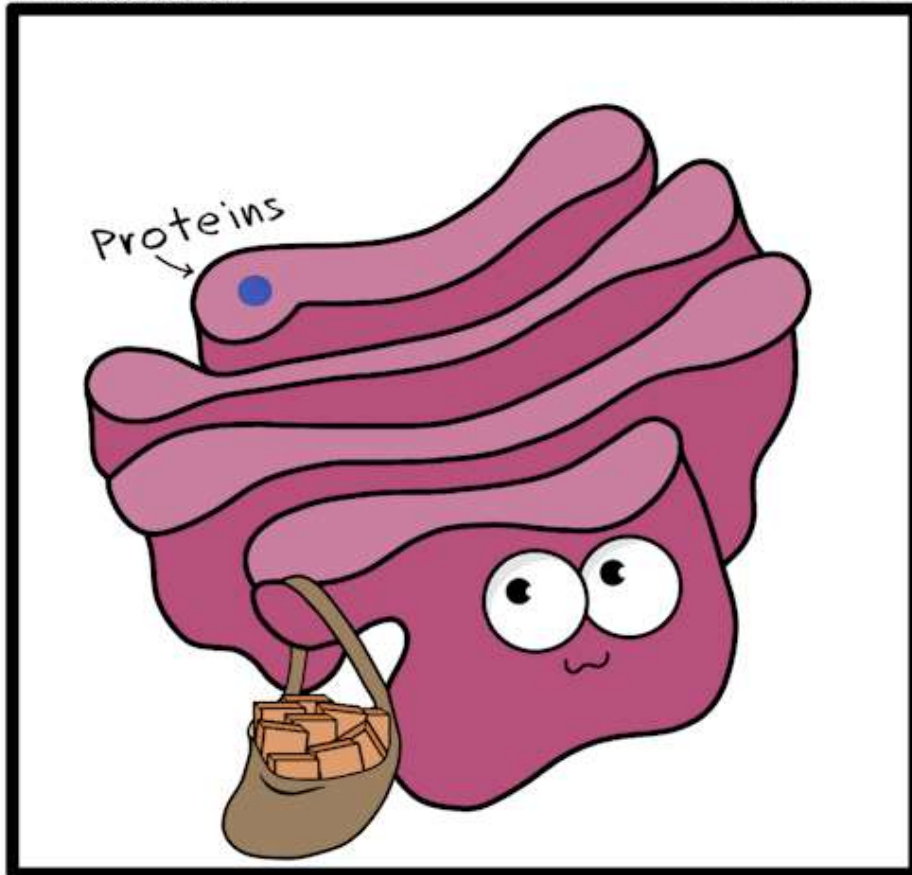
- **CHLOROPLASTS ARE MEMBRANE-BOUND ORGANELLES THAT USE LIGHT ENERGY TO MAKE GLUCOSE FROM WATER AND CARBON DIOXIDE. THIS ENERGY DRIVES A PROCESS KNOWN AS PHOTOSYNTHESIS.**

CELL ORGANELLES

Golgi Apparatus

Amoeba Sisters

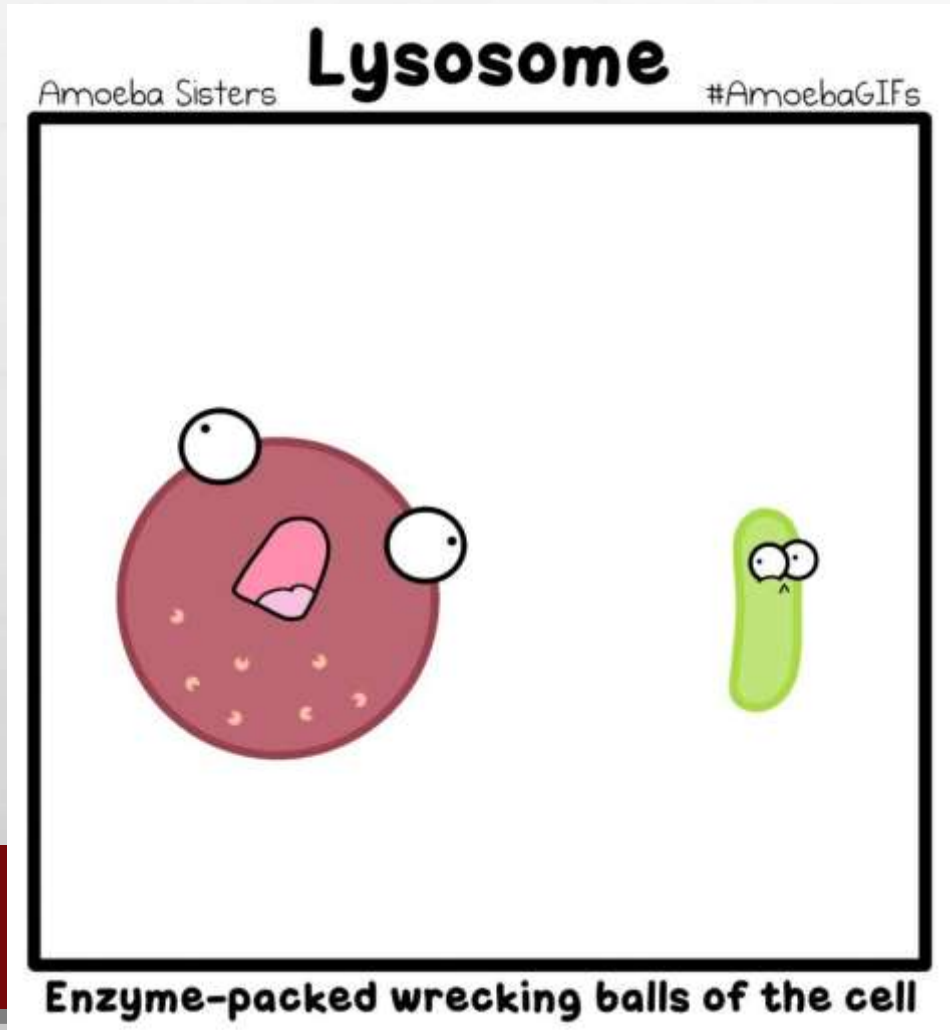
#AmoebaGIFs



Post office of the cell

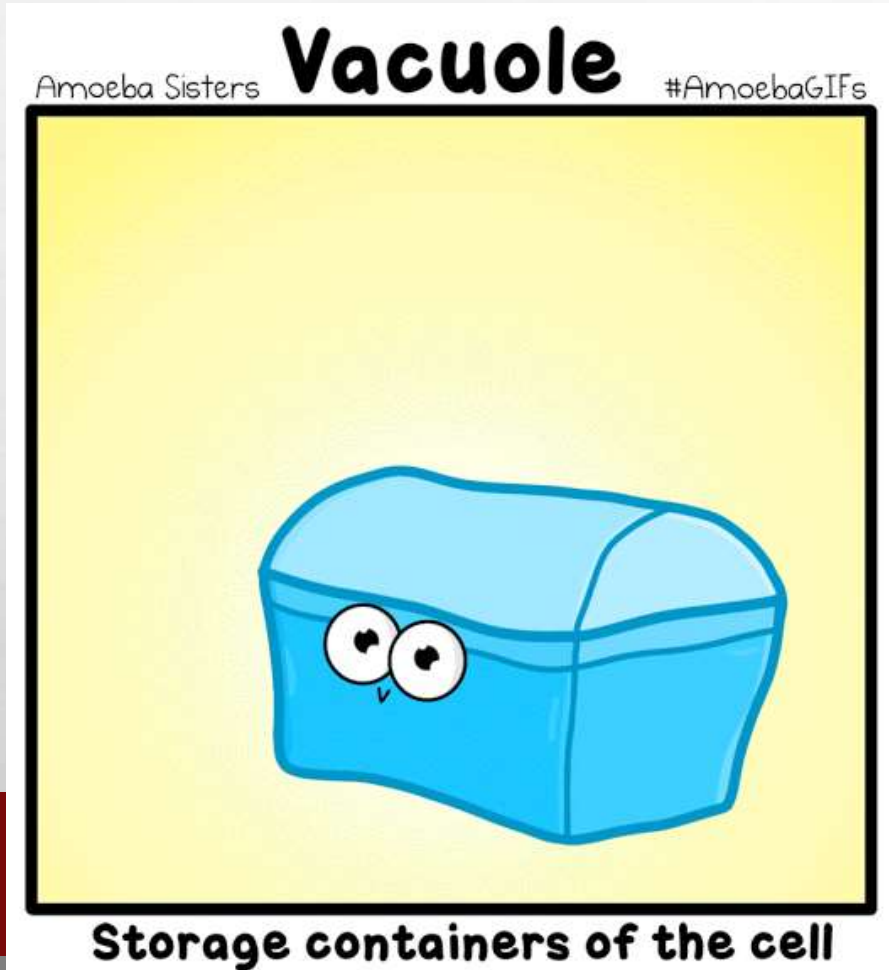
- **THE GOLGI APPARATUS PREPARES PROTEINS AND PACKAGES THEM INTO BALL-LIKE STRUCTURES CALLED VESICLES.**

CELL ORGANELLES



- **LYSOSOMES ARE ORGANELLES THAT HELP RECYCLE CELLULAR COMPONENTS.**

CELL ORGANELLES



- **VACUOLES ARE ORGANELLES THAT STORE FOOD, WATER, AND WASTE MATERIAL.**



Introduction to Cells

with the Amoeba Sisters

First things first, there's two different types



ESSENTIAL QUESTIONS

- **HOW ARE PROKARYOTIC CELLS AND EUKARYOTIC CELLS SIMILAR, AND HOW ARE THEY DIFFERENT?**
- **WHAT DO THE STRUCTURES IN A CELL DO?**