

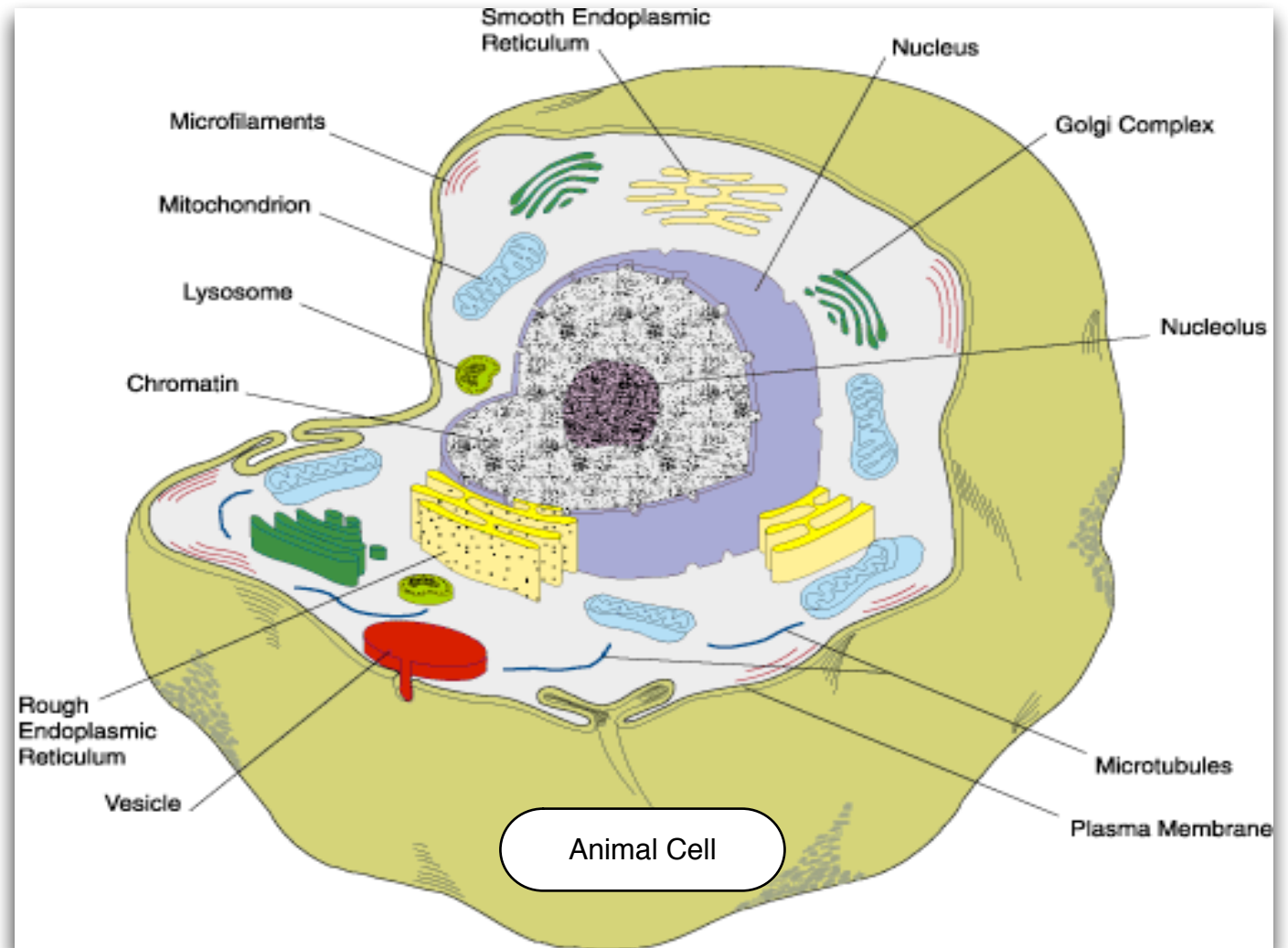
A Typical Animal Cell
(Eukaryotic)

What is a
Eukaryotic Cell?

Eukaryotic cells are cells *with* a *nucleus*. **Prokaryotic** cells are cells *without* a *nucleus*. **Prokaryotes** are the simplest types of cells (ex. bacteria). Eukaryotes came later in earth's history and are more complex. **Plants** and **Animals** are made **Eukaryotic** cells

Are there other
categories of
cells?
yes

curious about
prokaryotes
[click here](#)

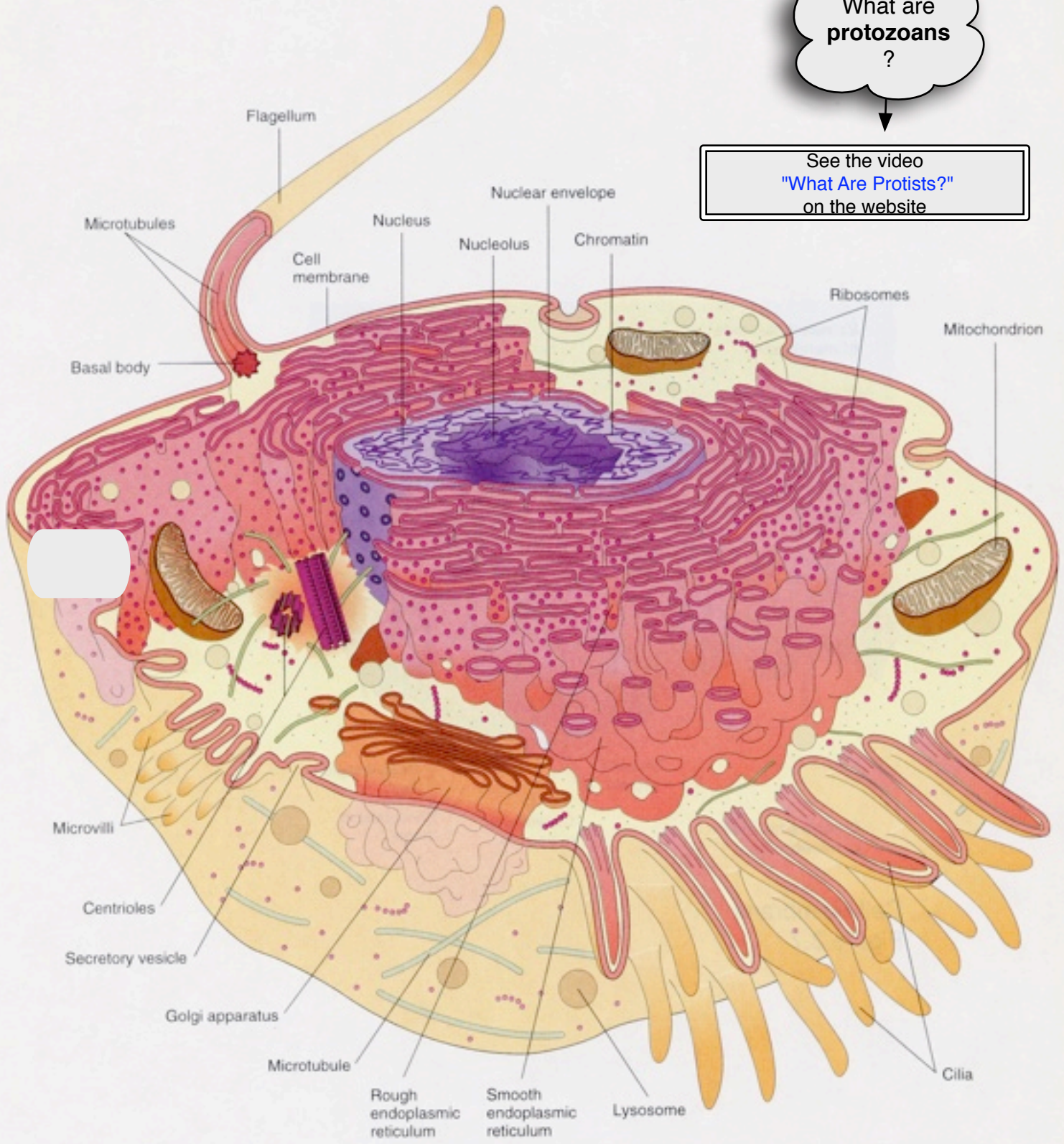


Organelles - the tiny structures within a cell that perform a function in a cell.

**A Typical Protist Cell
(Eukaryotic)**

What are
protozoans
?

See the video
["What Are Protists?"](#)
on the website



Composite Cell
Figure 3.3

A Typical Plant Cell
(Eukaryotic)

Chloroplast

Where photosynthesis takes place

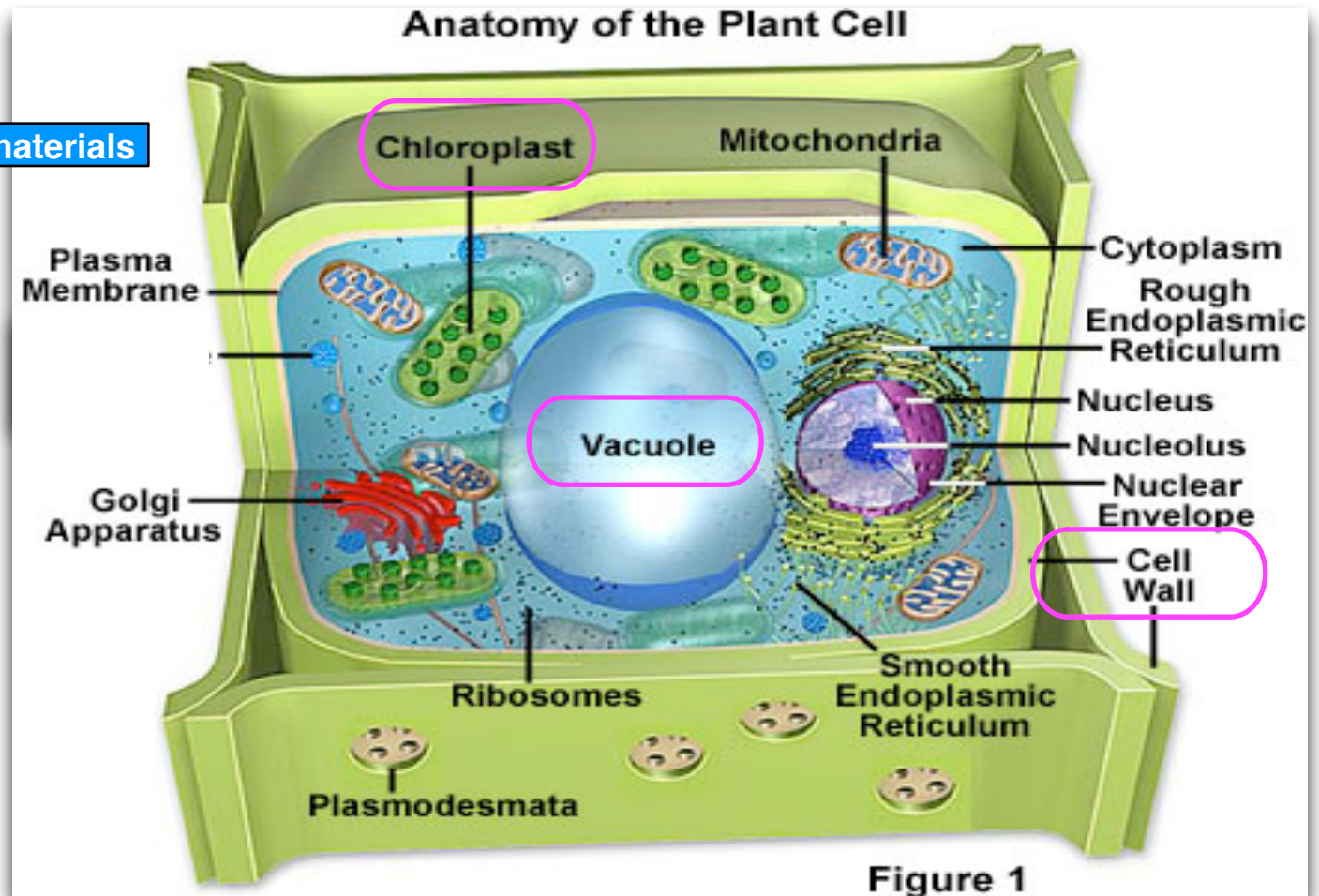
Organelles not found in
Animal cells

Cell Wall

A rigid structure made of the carbohydrate cellulose

**Large
Vacuoles**

Storage of materials



A Typical Plant Cell
(Up Close and Personal)

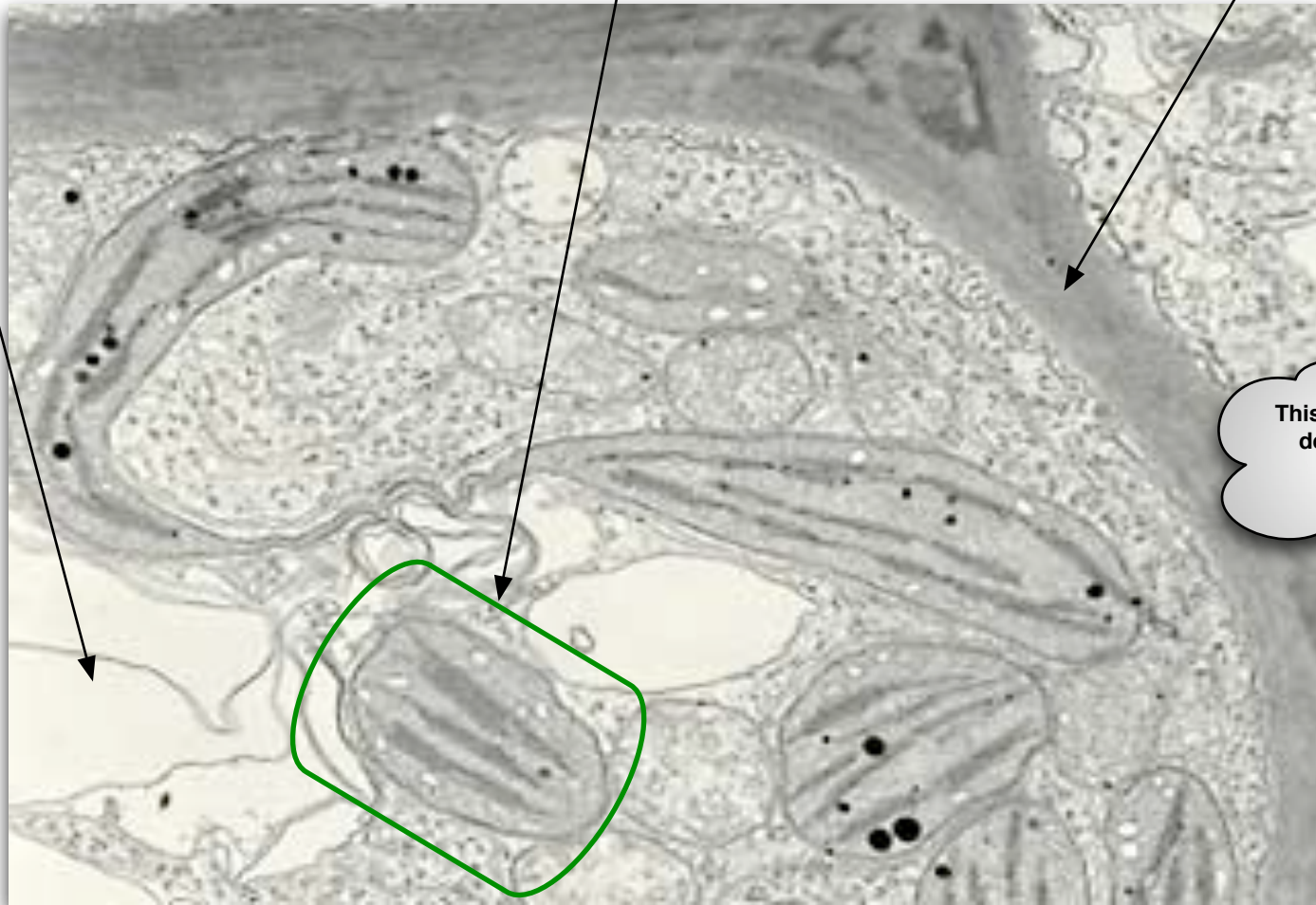
**Large
Vacuoles**

Cell Wall

Chloroplast

Where **photosynthesis** takes place

This is the "real
deal" folks.
No joke.

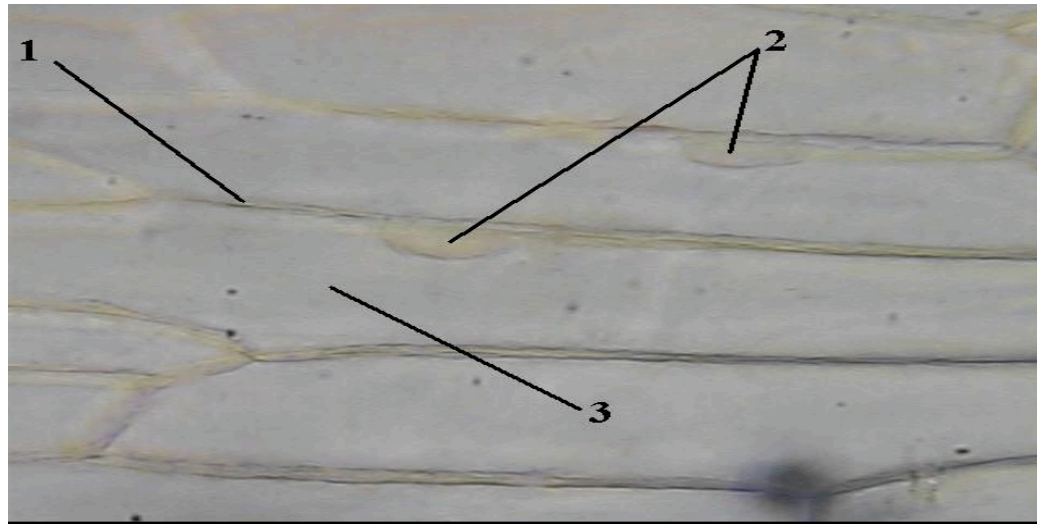


Onion cells

1. Cell Wall

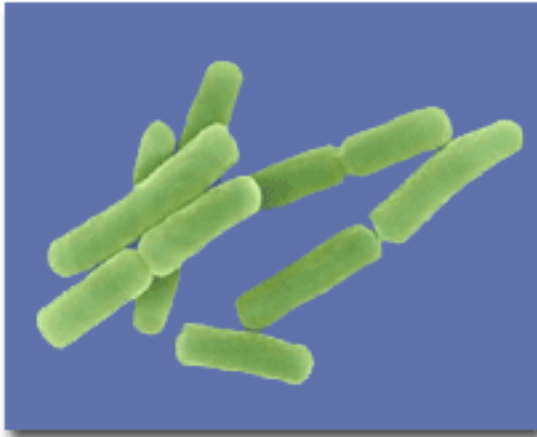
2. Nucleus

3. Cytoplasm



Note: Remember the cell membrane is on the inside of the cell wall

Examples of Prokaryotic Cells



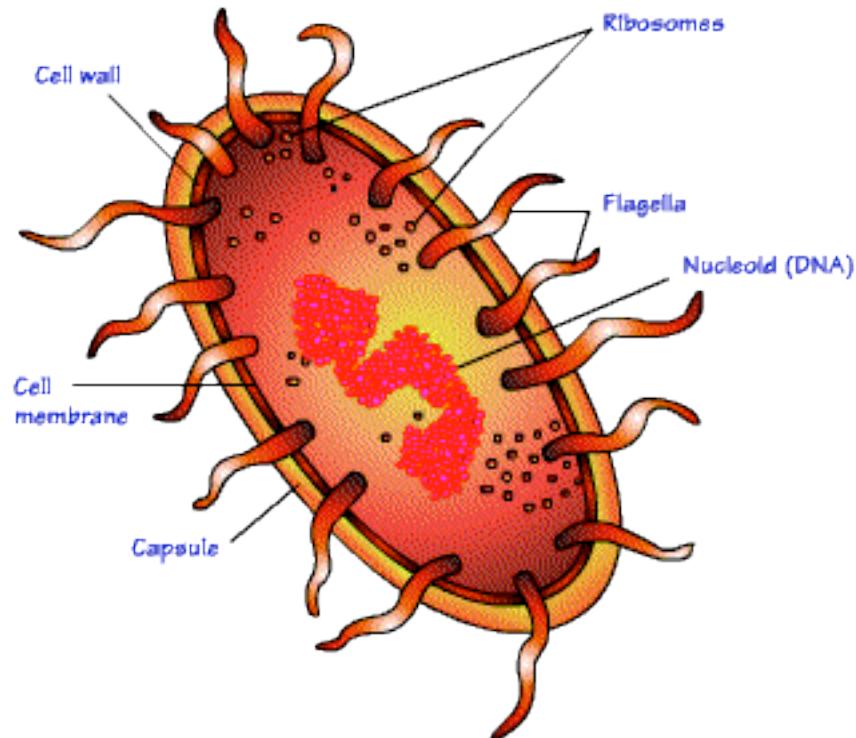
Bacillus Bacteria



E. coli Bacterium



Salmonella Bacterium



The above are
computer enhanced
images of actual
bacteria

Cells that **lack** a *membrane-bound nucleus* are called **prokaryotes** (from the Greek meaning before nuclei)

A Typical Cell Membrane

The **cell membrane** is a **selectively permeable membrane**. It is composed from two layers of **lipids** (*lipid bi-layer*), and **proteins** that are fixed or float around in the lipid bi-layer.

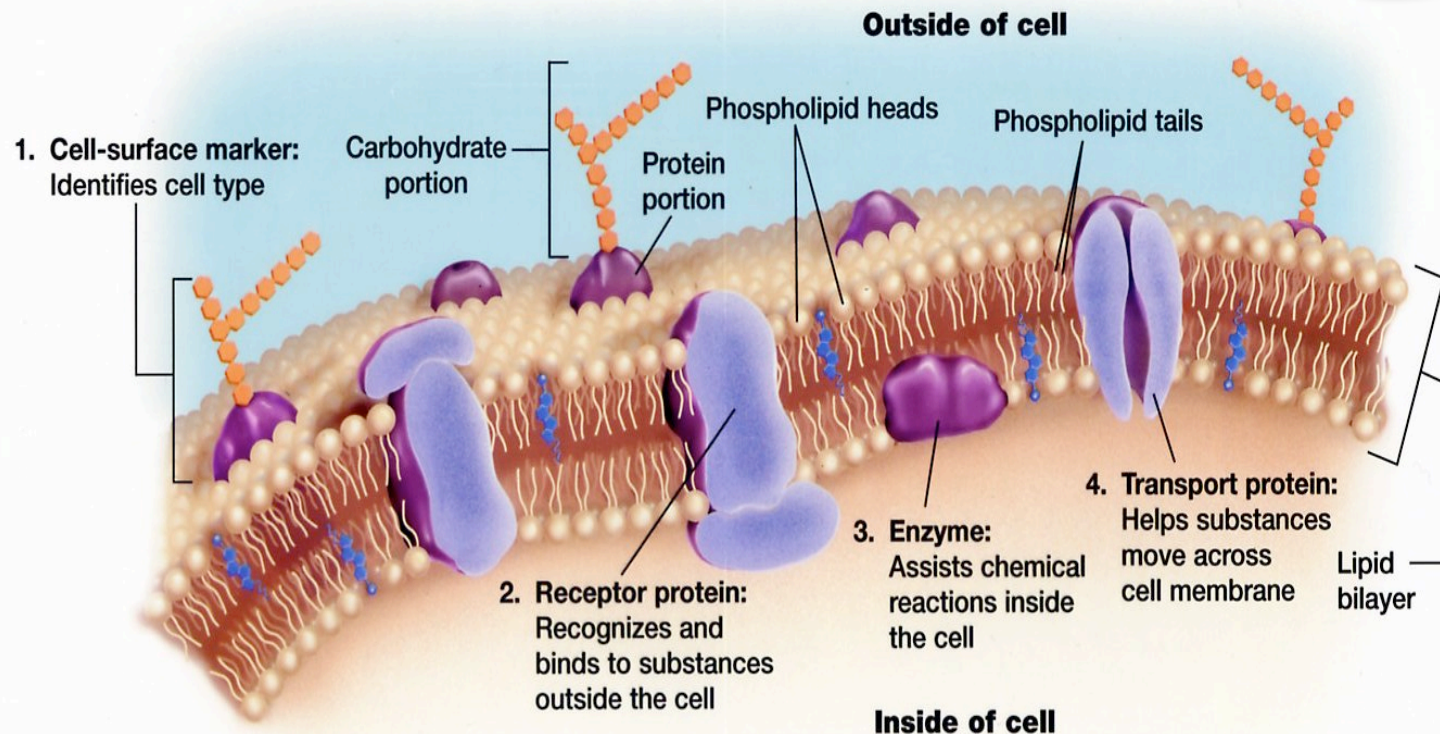
Cell Structure

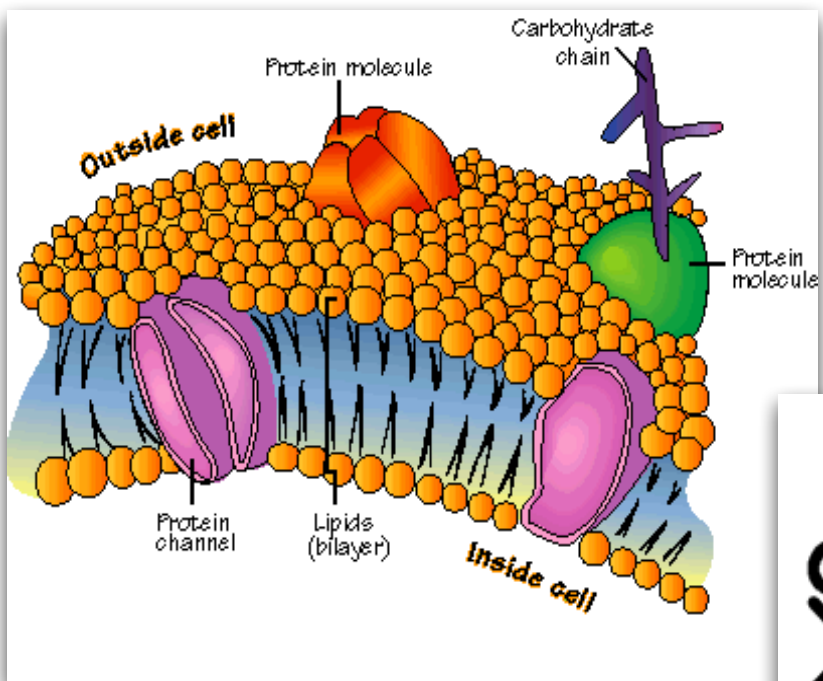
TEACHING TRANSPARENCY

Membrane Proteins

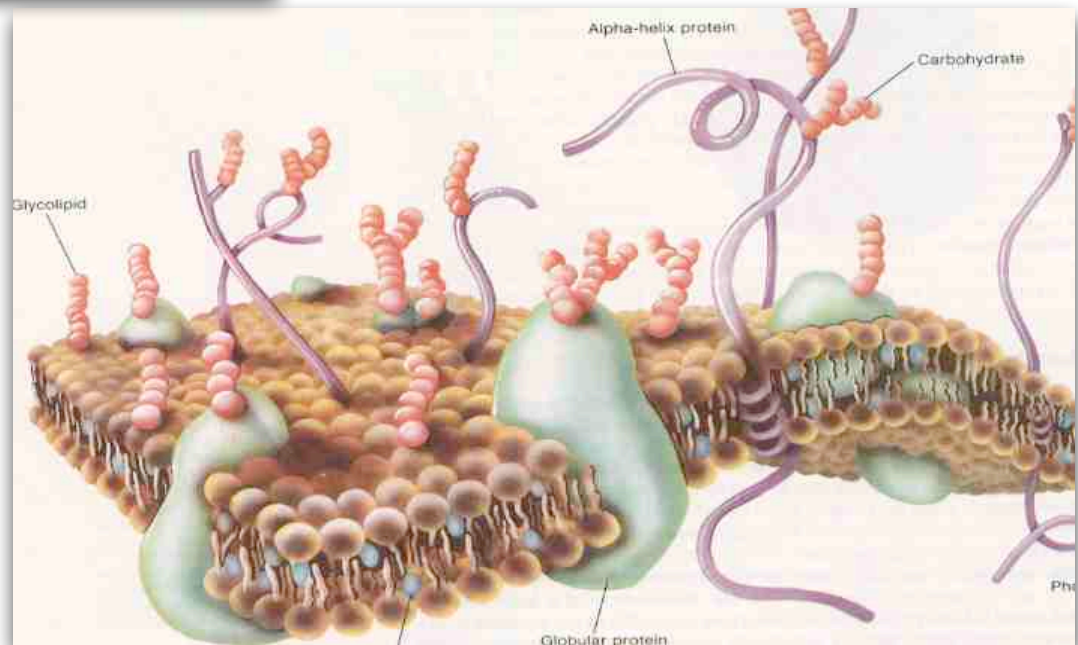
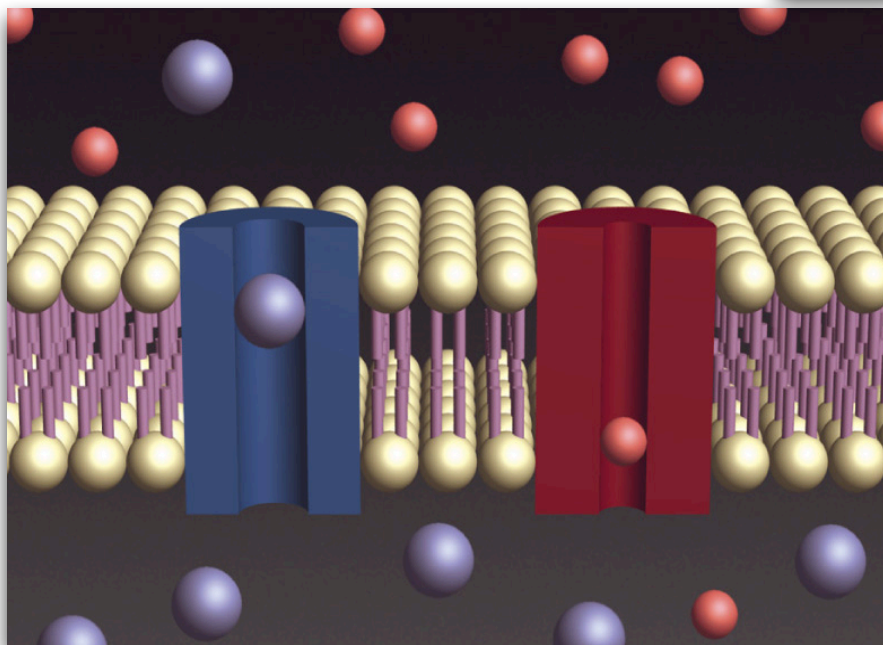
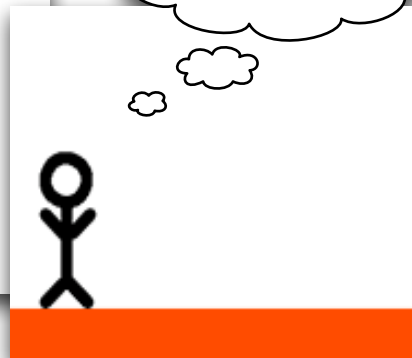
The cell membrane contains various proteins with specialized functions.

Why can some things go through the membrane and others cannot?



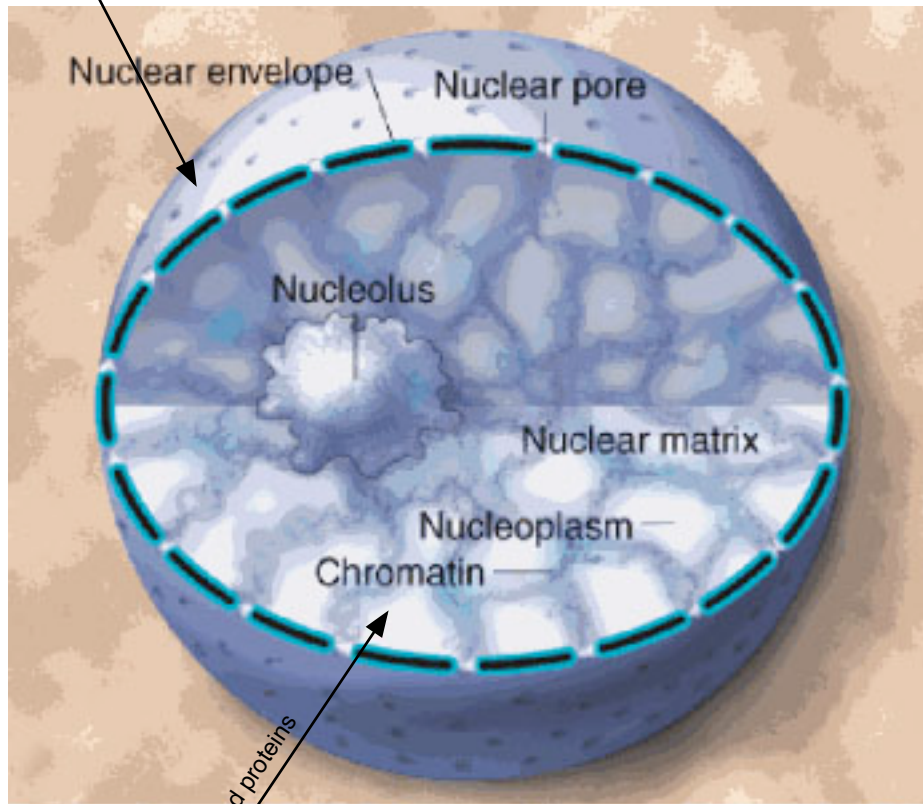


Which one is real?



The **Nucleus** is said to be the "*Control Center*" of the cell. It helps regulate cellular activities.

Nuclear envelope (membrane)



DNA = Chromatin wrapped around proteins

DNA can be found in the Nucleus



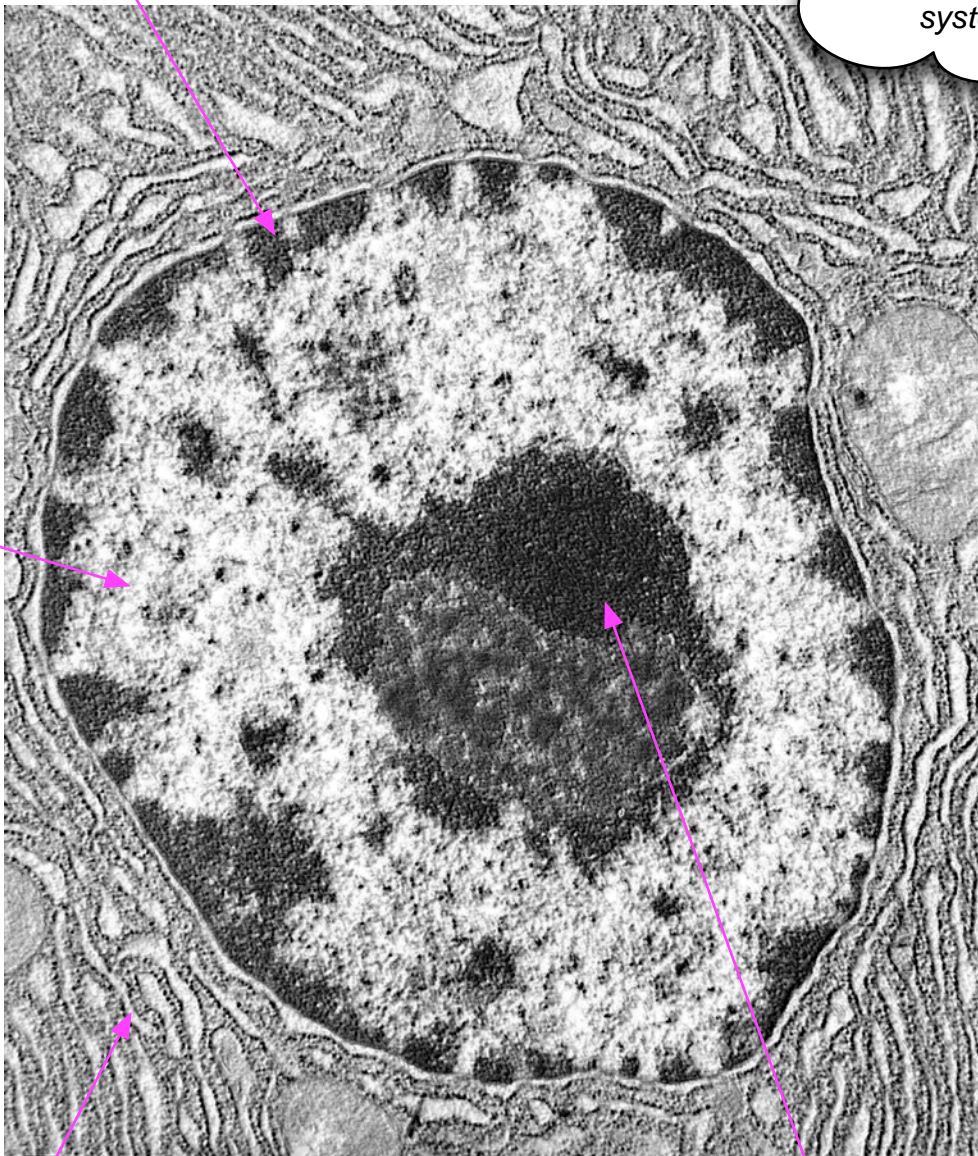
LOOK

This is an image of an actual nucleus magnified using an electron microscope

Nuclear envelope (membrane)

Notice the
surrounding **ER**.
*Boy... that's
some subway
system.*

DNA

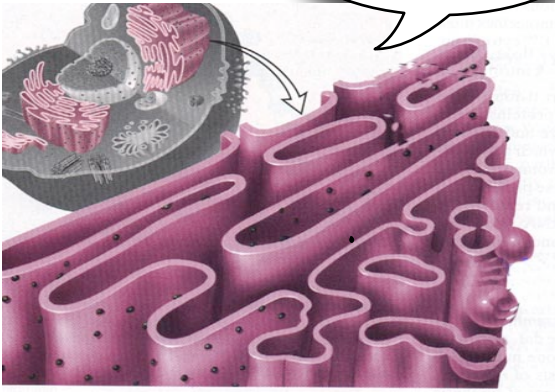


Endoplasmic Reticulum

Nucleolus

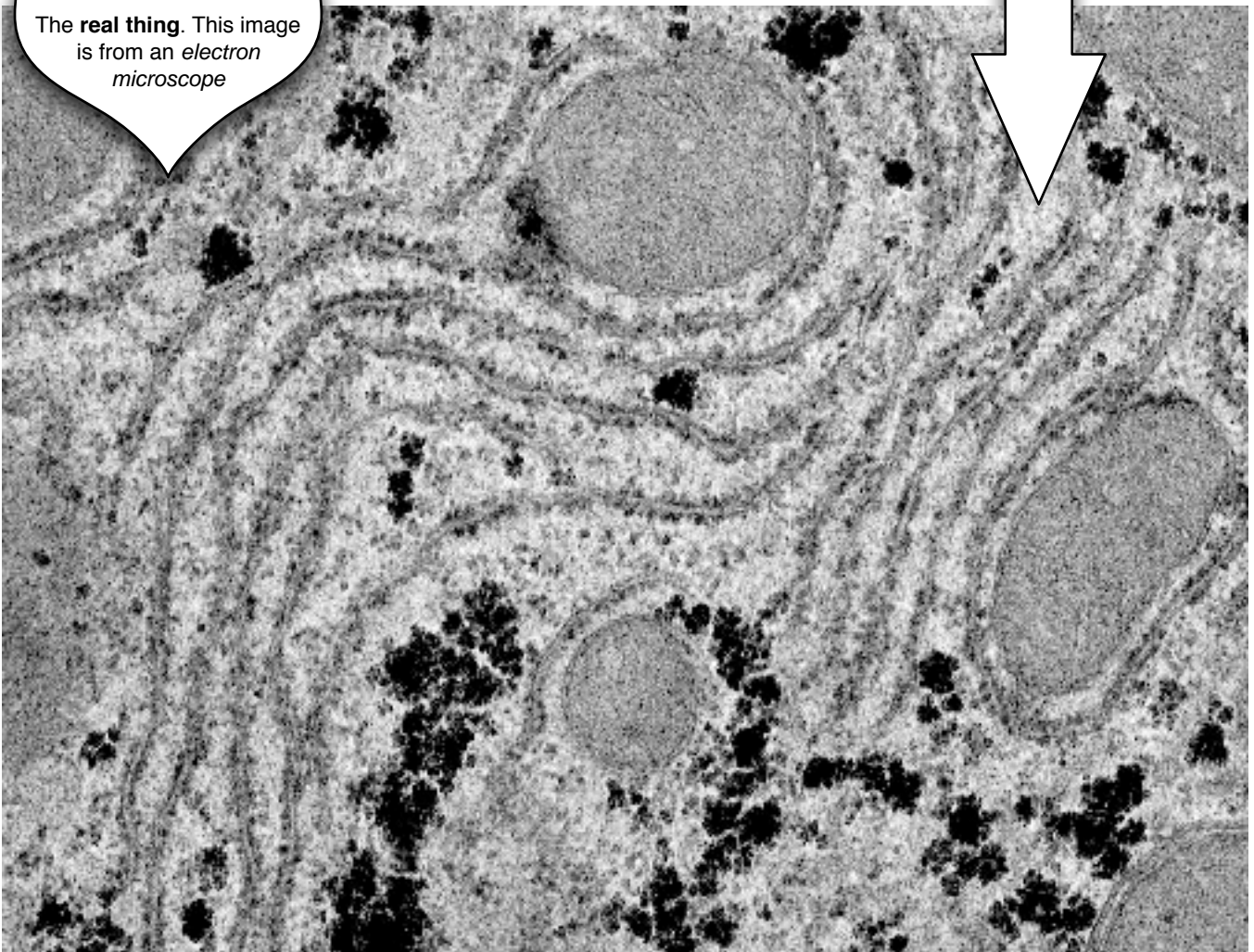
The Endoplasmic Reticulum

I'm not the real thing



The **Endoplasmic Reticulum** is a series of channels usually connected to the nucleus. On the surface of some ER's there are **ribosomes**. The ribosomes are where **proteins** are made. Once made the **ER** can help **transport** them **through** the **cell**.

The **real thing**. This image is from an *electron microscope*



The Golgi
Body

=

The Golgi
Apparatus

=

The Golgi
Complex

Packages things for the cell. These things may be move to the edge of the cell and released out of the cell (**secreted**)

Notice the **blue** and **red** items being packaged & released

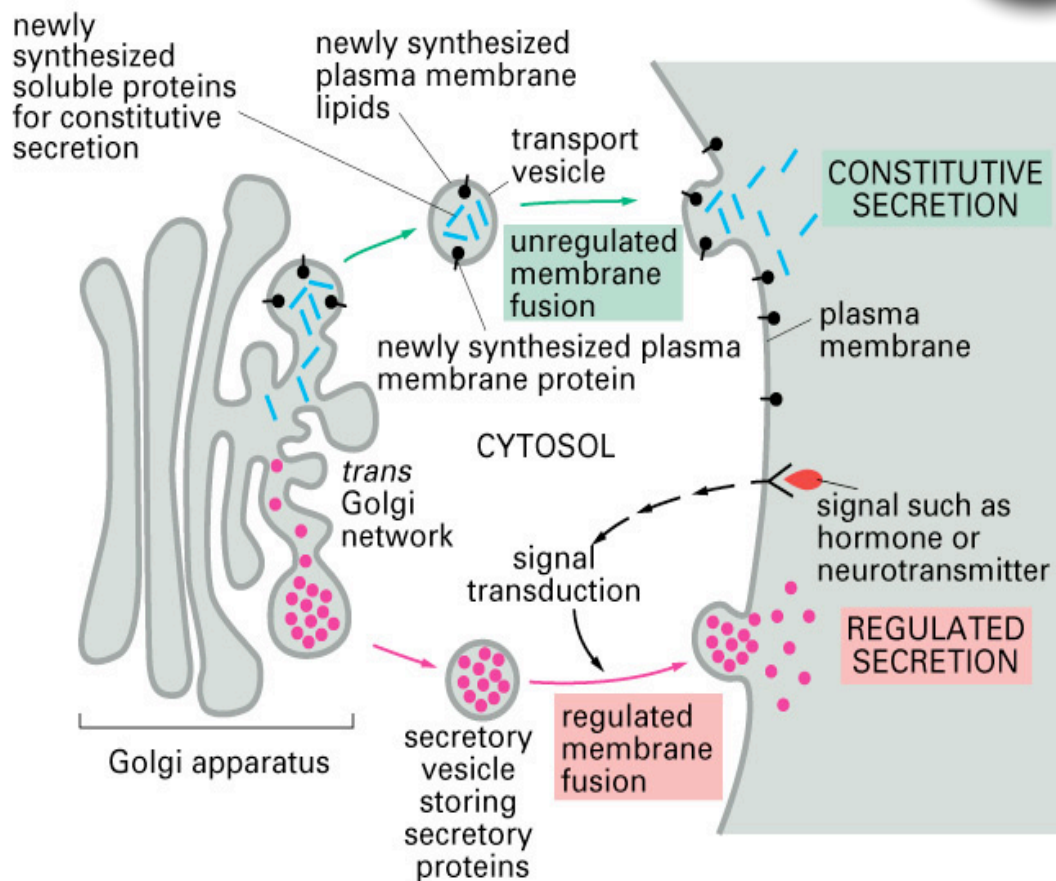
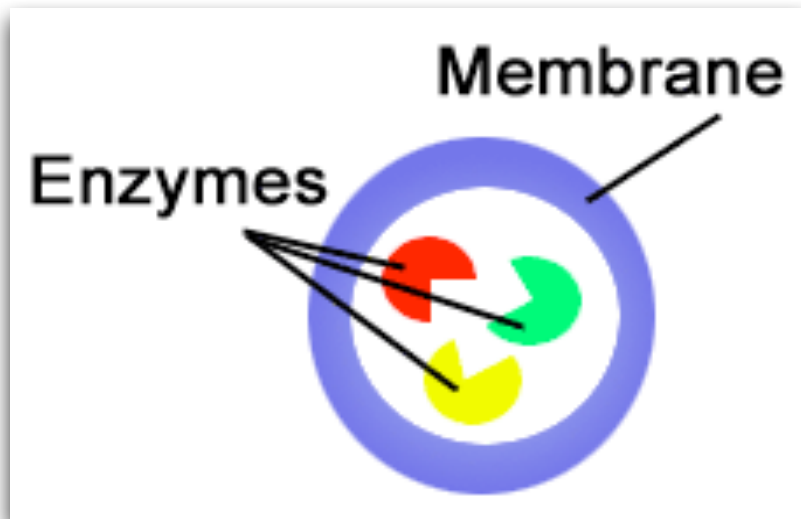


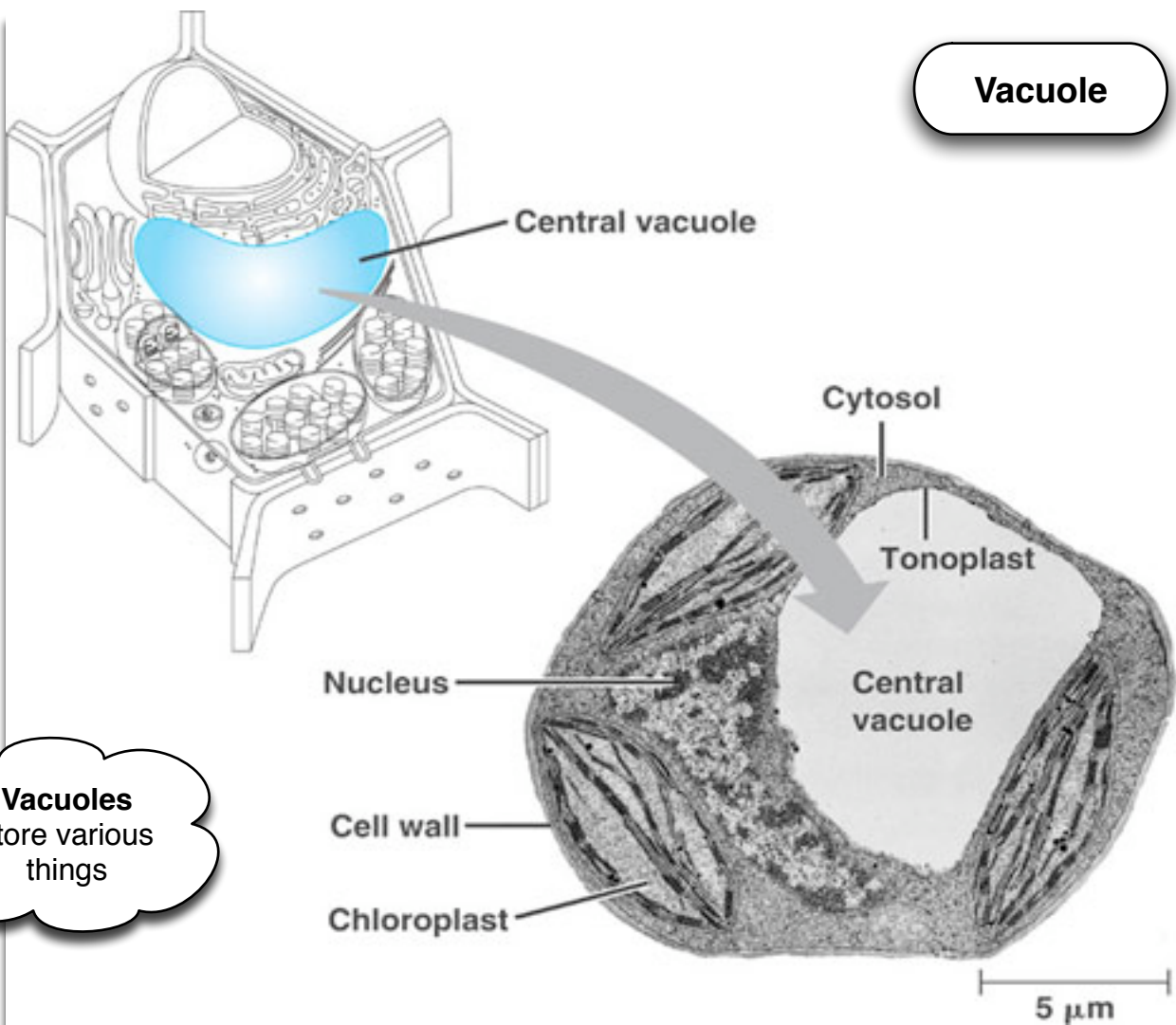
Figure 15-28 Essential Cell Biology, 2/e. (© 2004 Garland Science)

Lysosomes often combine with food vacuoles and digest the foods that the cell has taken in

Lysosome



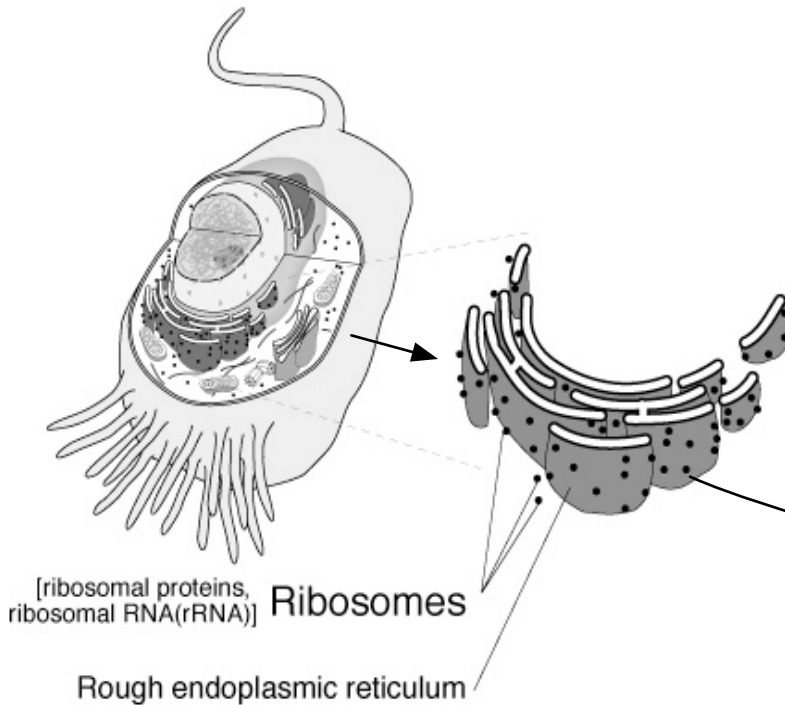
Vacuole



Vacuoles store various things

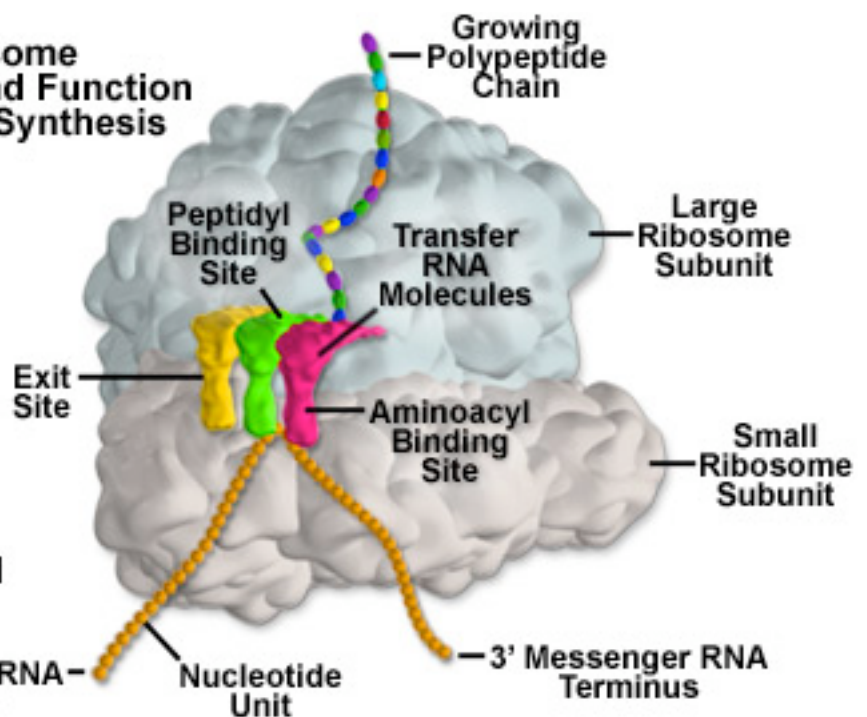
Ribosomes

Where **proteins** are made. The "**synthesis**" of proteins



One dot **Magnified** many times

Ribosome Structure and Function in Protein Synthesis



Don't worry...
you don't need to
know this

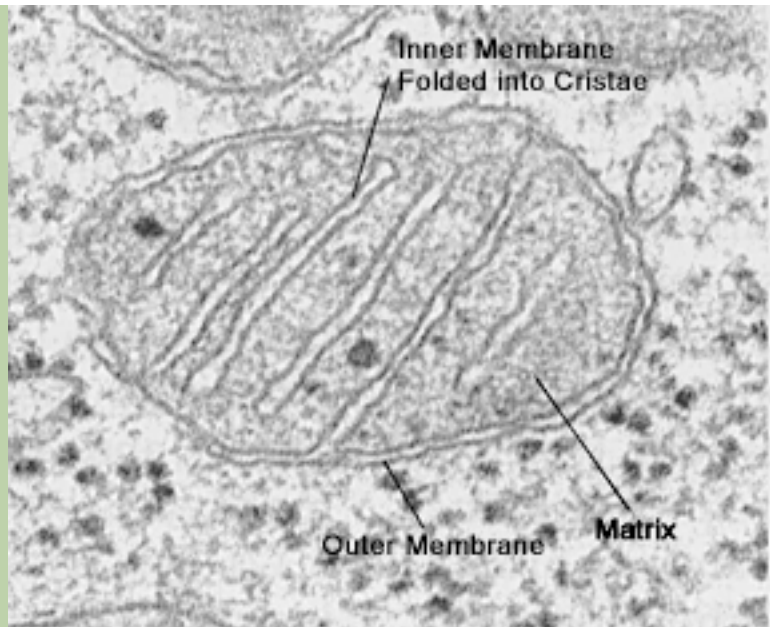
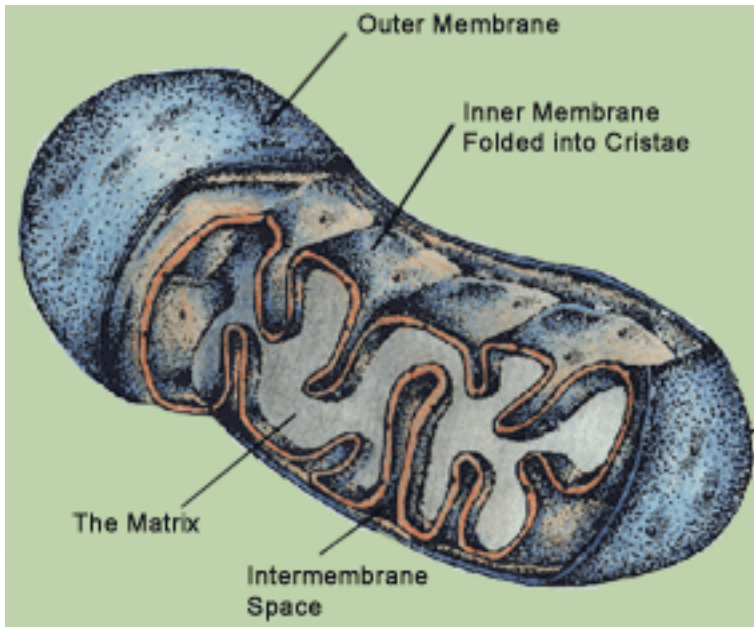
The "Mighty" Mitochondria

The "**Power
House**" of the cell

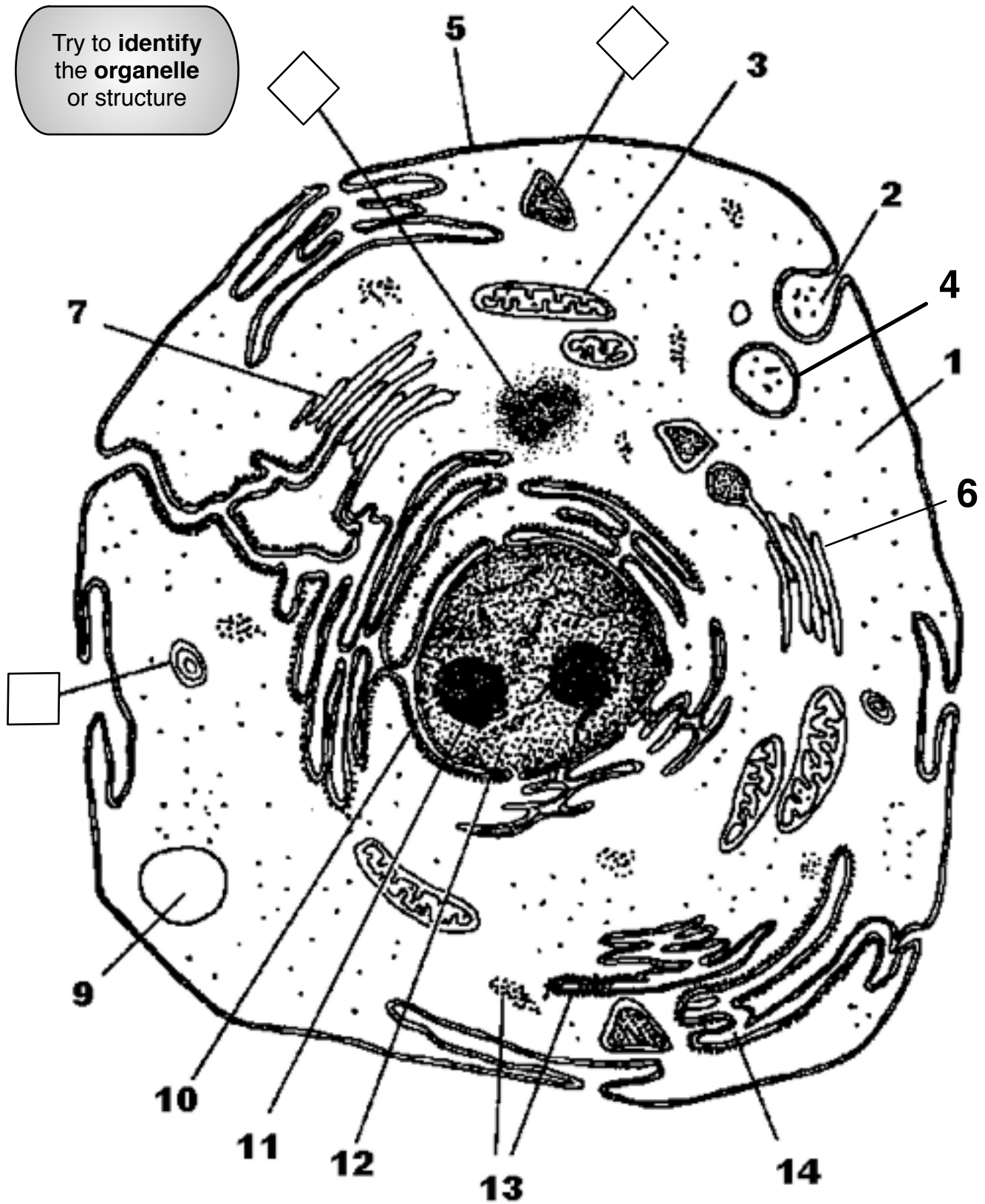
The **mitochondria** is extremely important for the cell. It is responsible for getting the energy out of food (mainly glucose) and using that energy to build **ATP**. This process is called **cellular respiration**.

Not
Real

Real



Try to **identify**
the **organelle**
or structure



TYPICAL ANIMAL CELL

**The ones we
definitely need to
know**

