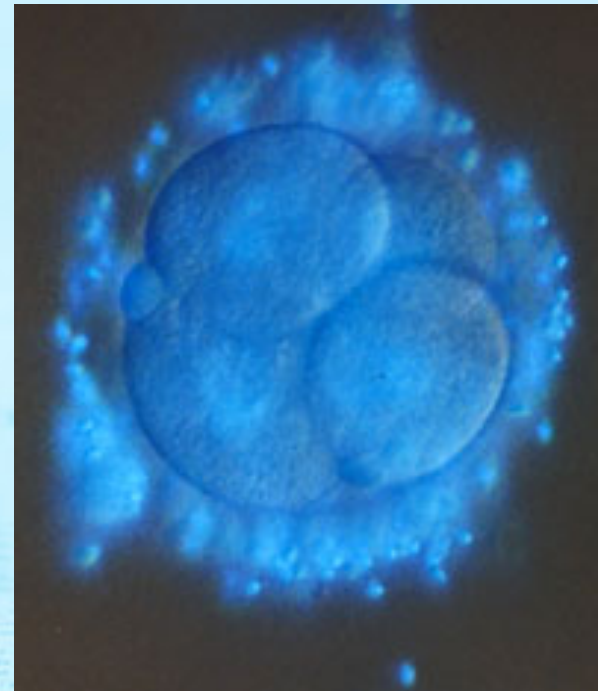


Cell Structure and Function





I. Types of Microscopes and Their Advantages and Limitations

Resolution= the ability of the microscope to show two close objects as separate in the image.

Magnification= the increase in the size of the **image** when compared to its real life size.



Light microscope



*Transmission
Electron
Microscope
(TEM)*



*Scanning
Electron
Microscope
(SEM)*

ALGAE

path of light rays (bottom to top) to eye

Ocular lens enlarges primary image formed by objective lenses.

prism that directs rays to ocular lens

Objective lenses (those closest to specimen) form the primary image. Most compound light microscopes have several.

stage (holds microscope slide in position)

Condenser lenses focus light rays through specimen.

illuminator

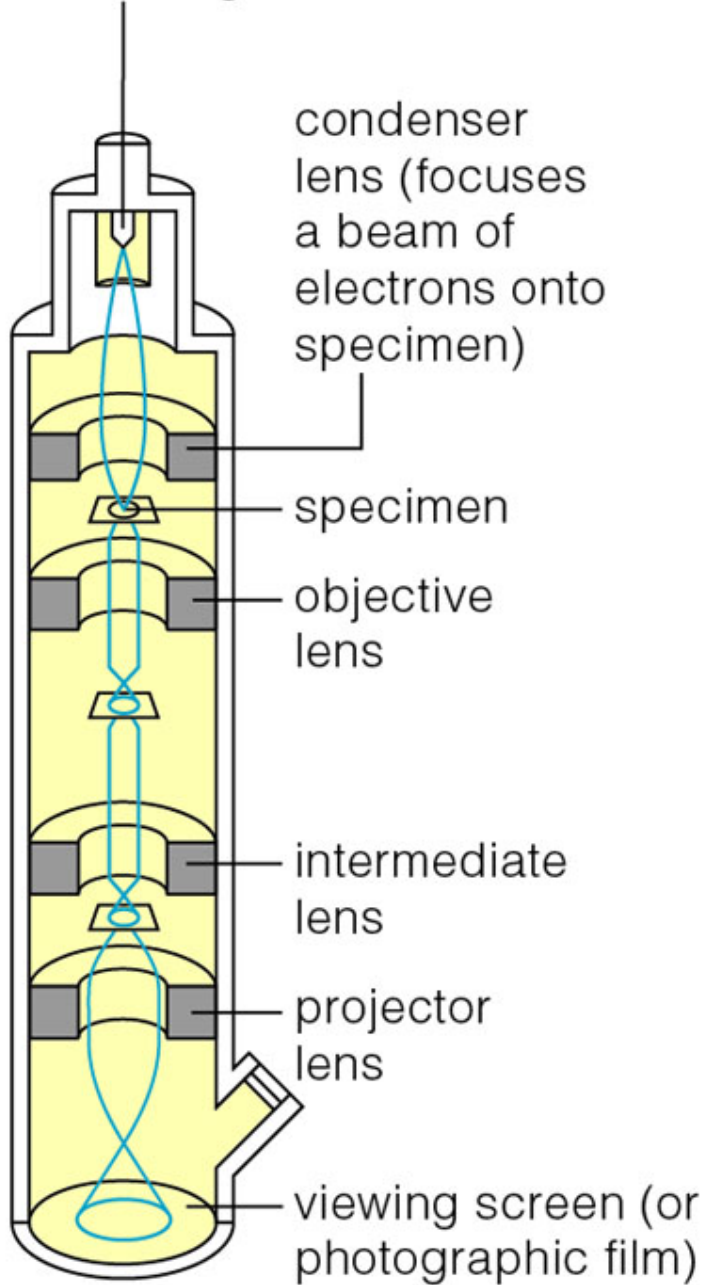
source of illumination (housed in the base of the microscope)



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© 2006 Brooks/Cole - Thomson

incoming electron beam

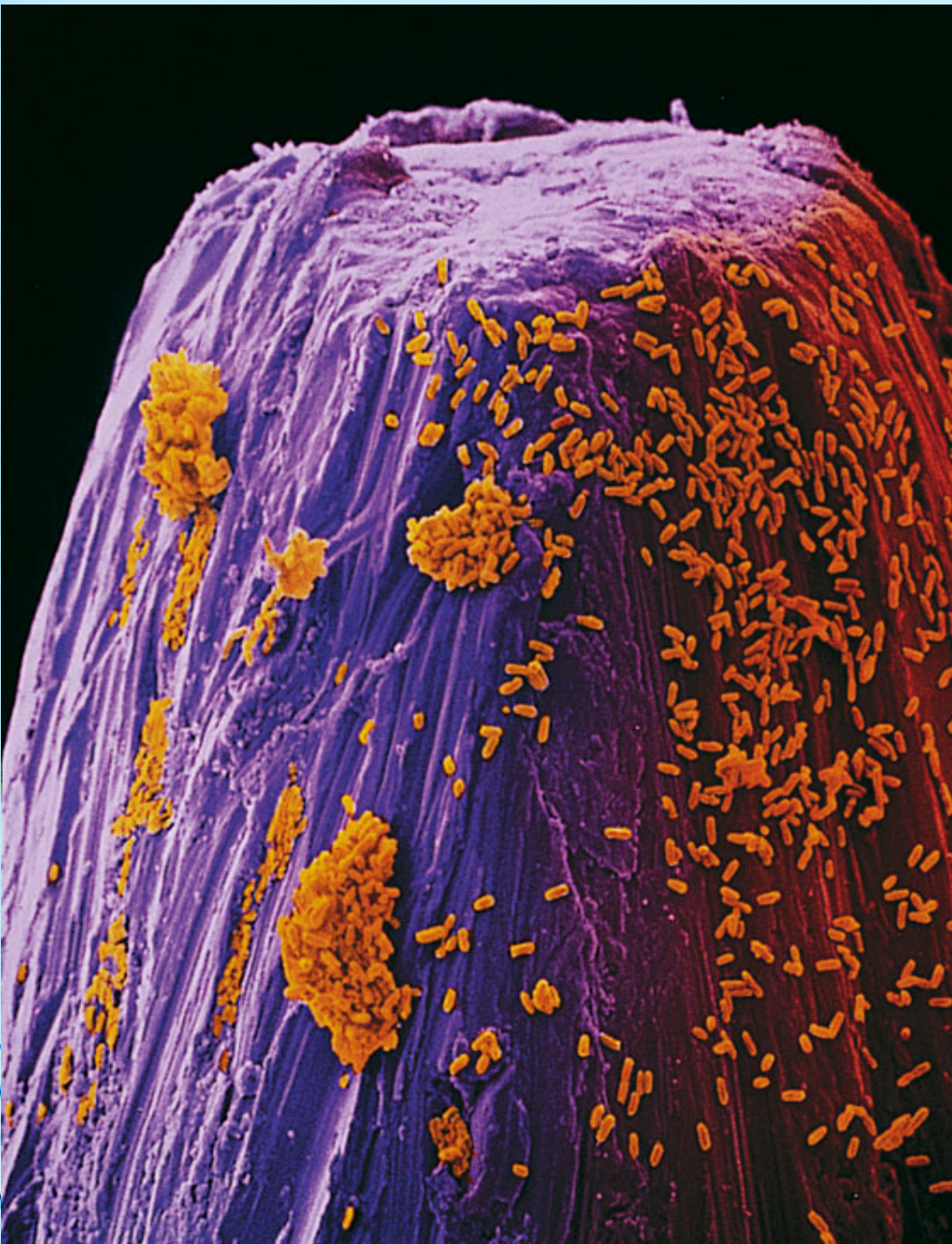


	Light	Transmission Electron Microscope (TEM)	Scanning Electron Microscope (SEM)
Energy Source			
Max. resolution			
Max. magnification			
Type of image			
Limitations	<ol style="list-style-type: none"> 1. 2. 	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 	
Advantages	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 	<ol style="list-style-type: none"> 1. 2. 	



What is this?

*What kind of
microscope was
used?*



,"bookmark," and "hyperlink" are trying to know that there are caches of the future. Surely that Web will

maker or QuarkXPress, which have multimedia sound and user interface that will strip files down to Web-friendly word-processing programs have an image as a GIF (Graphic Interchange Format) driving the 72-dpi resolution.

print publishing and multimedia, has added. The basic HTML tag languages are the browsers of choice. New processes have been developed and times considerably. Hardware is a house, then the design firm can estimate the number of files they expect to produce and pass the costs on to the client.

Audio, Virtual Reality, Modeling and animation professionals produce a static image that usually create shifting sand dunes of change and need easily, a tendency that brings freshness and innovation to

the home page, but on the sublevel of color and shape as well as whether it's Java scripting, GIFs, sounds, and animations small to

and a desire to communicate. It



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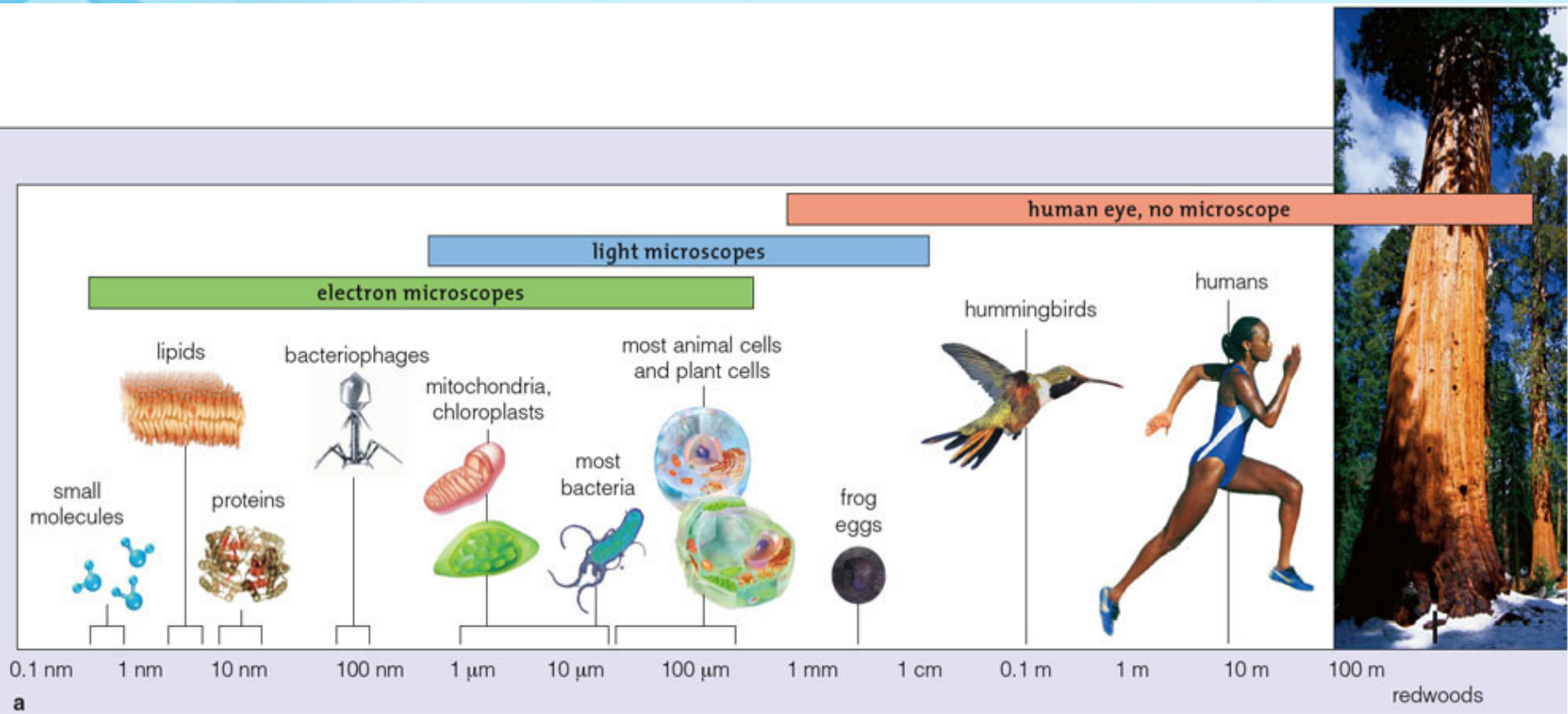
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increases viable, perhaps the terms "zoom" or "close-up" will be used. The terms "link," "hotlink," and "hyperlink" are used to digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cables



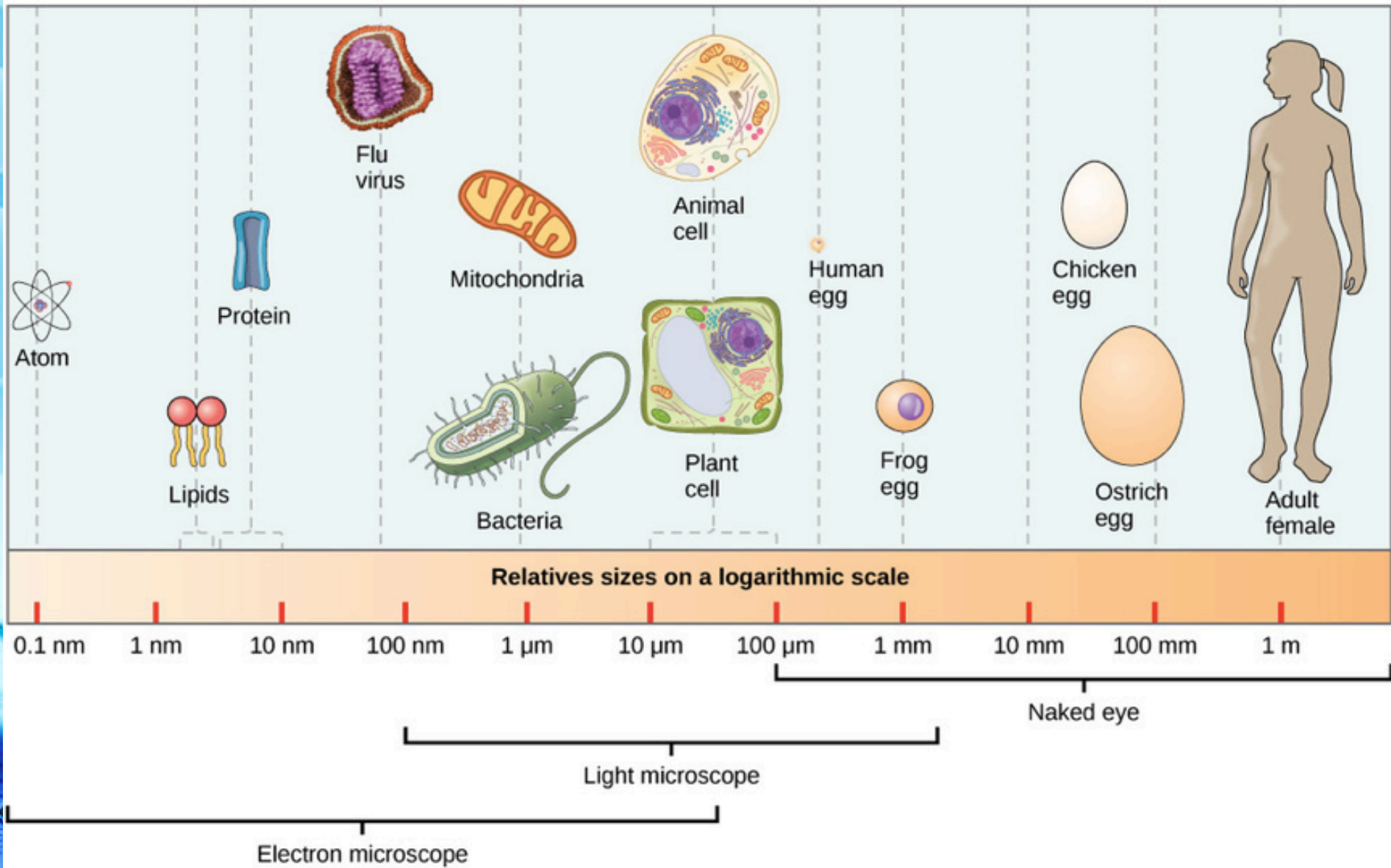
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Relative Sizes of Things!



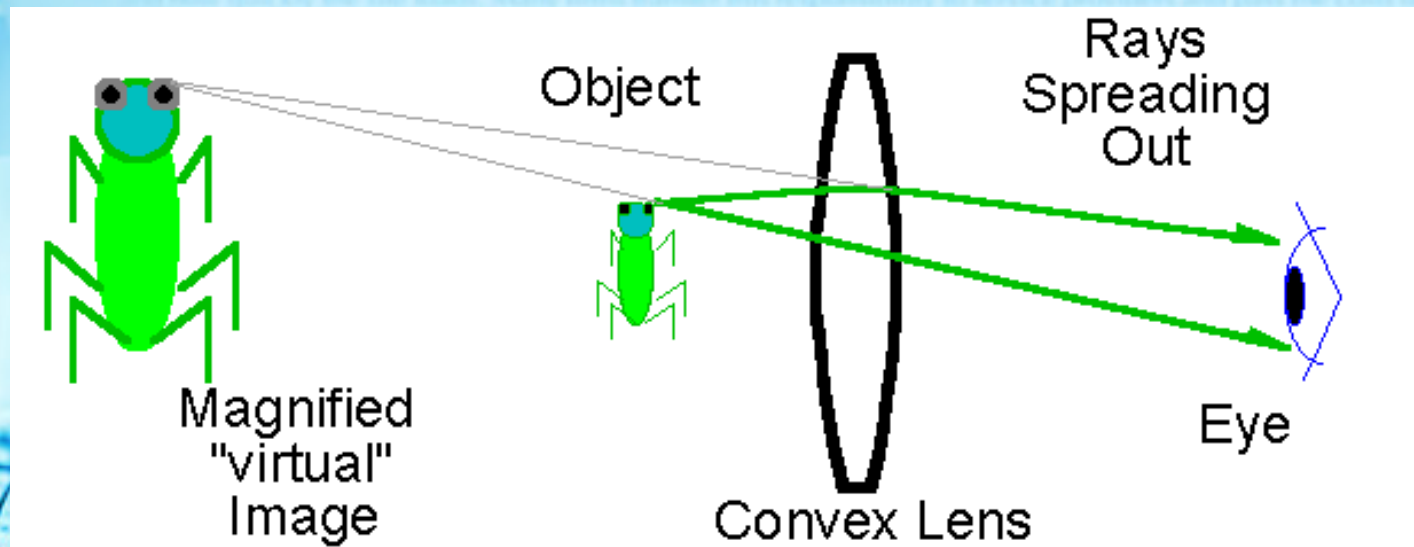
As becomes viable, perhaps the terms "zoom" or "close-up" will be used. The terms "link," "hotlink," and "hypertext" are new to digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cadres of talented individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will be significantly different from today's Web.

Many Web designers derive their tools from print publishing applications such as Adobe PageMaker or QuarkXPress, which have



II. History of Cell Theory

- 1500s- Convex lenses with a magnification of about 5x



1590- Jansen- Dutch, invented the compound microscope- poor quality



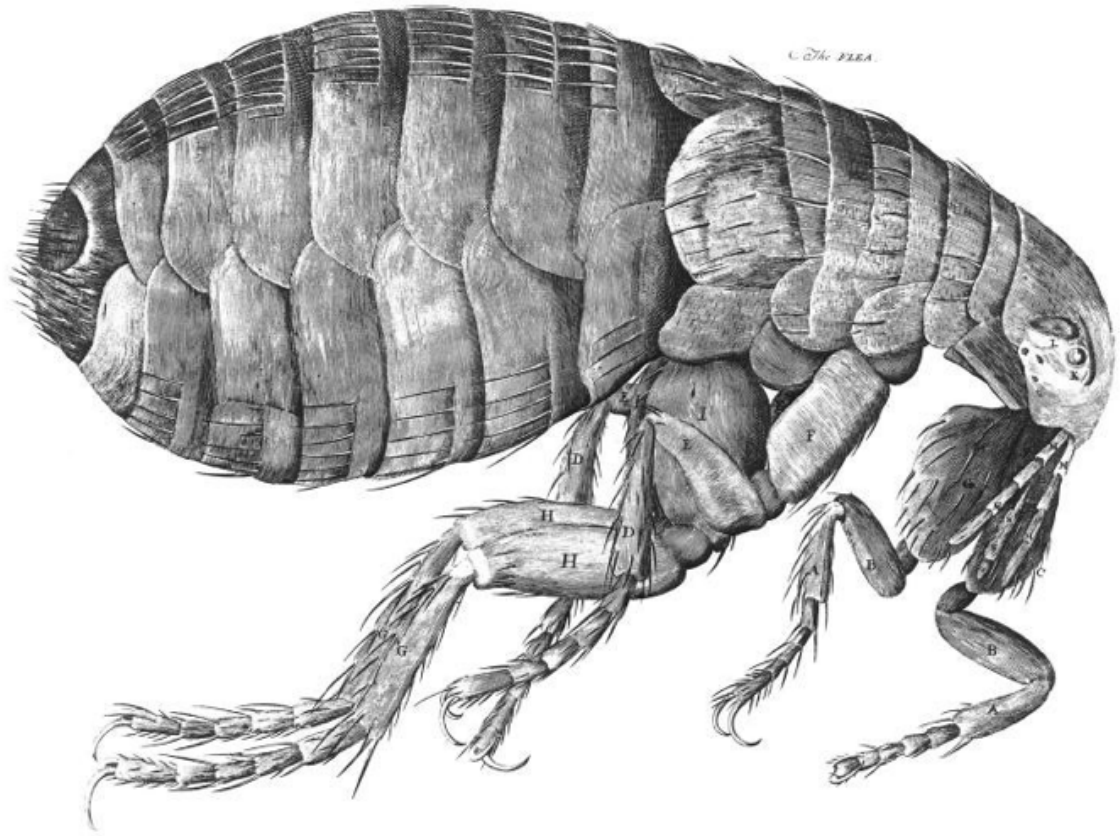
FIG. 1. ZACHARIAS JANSSEN, THE INVENTOR OF THE COMPOUND MICROSCOPE. (FROM "DE VERO TELESCOPII INVENTORE.")



■ 1662- Robert Hooke- English physician, observed “dead” cork cells

■ 1665- Hooke published sketches

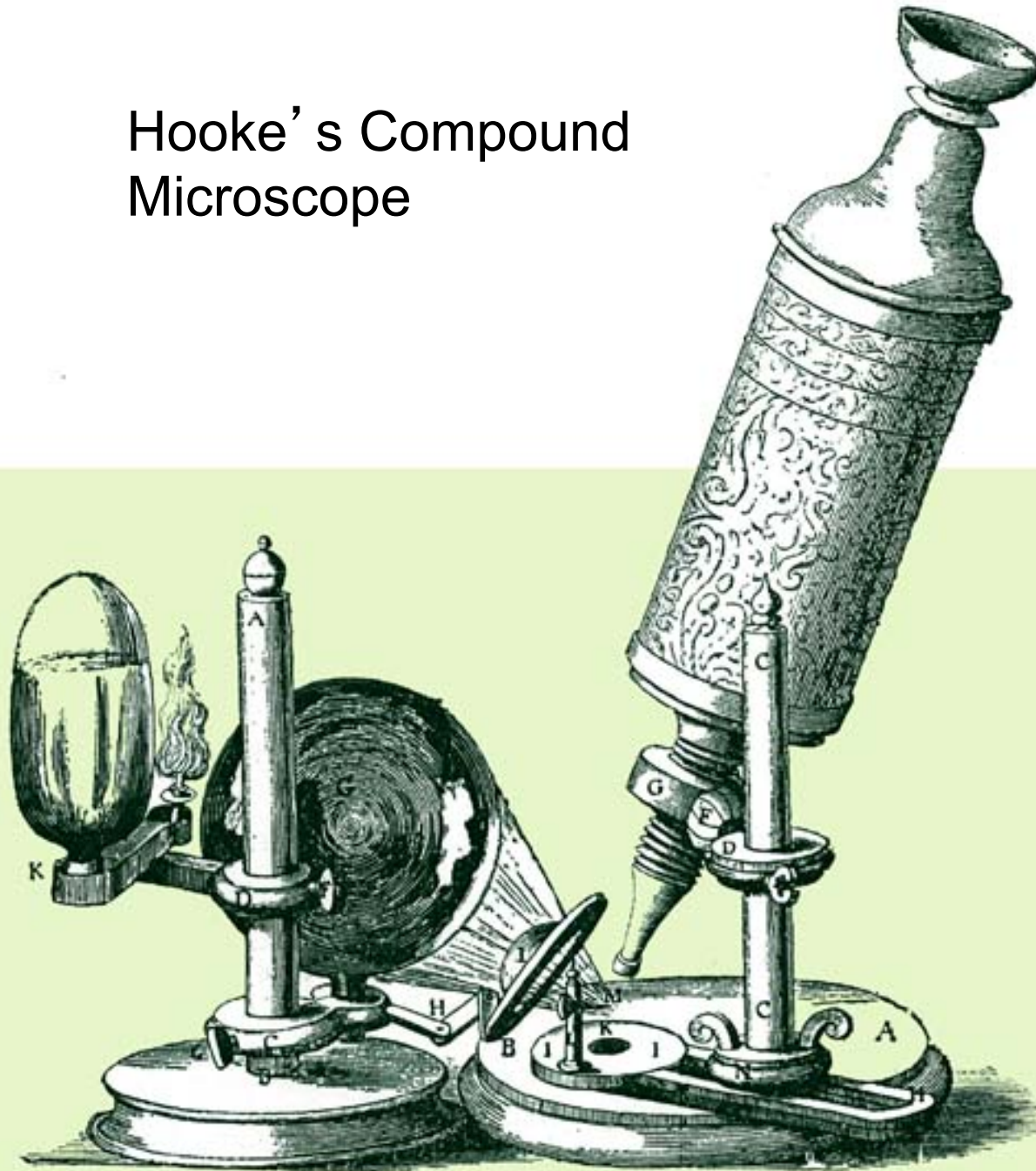




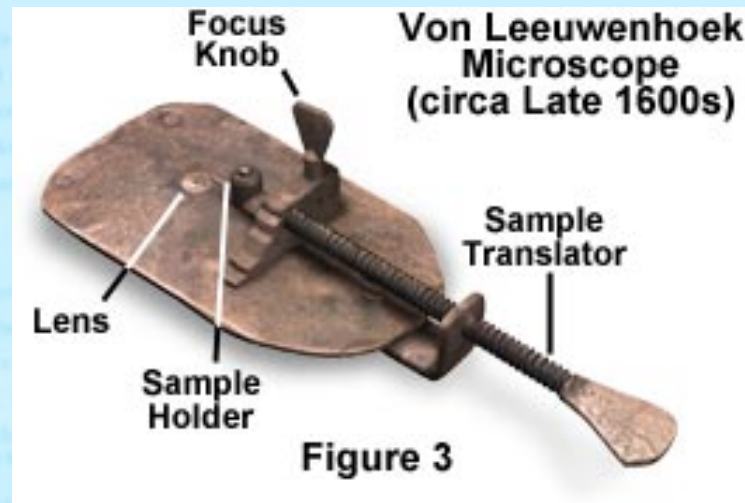
The terms "link," "hotlink," and "hyperlink" are not "new" itself. It is exciting to know that there are cadres shaping the Web of the future. Surely that Web will be as Adobe PageMaker or QuarkXPress, which have the ability to add multimedia sound and user interface applications that will strip files down to Web-ready format. Even basic word-processing programs have the option to save an image as a GIF (Graphic Interchange) resolution is also driving the 72-dpi resolution.



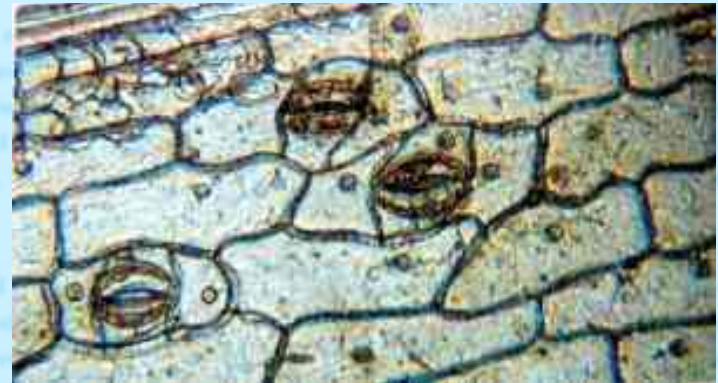
Hooke's Compound Microscope



■ C. 1673- Antony van Leeuwenhoek- Dutch microscope maker and merchant, observed and described *living* microscopic (and many unicellular) organisms

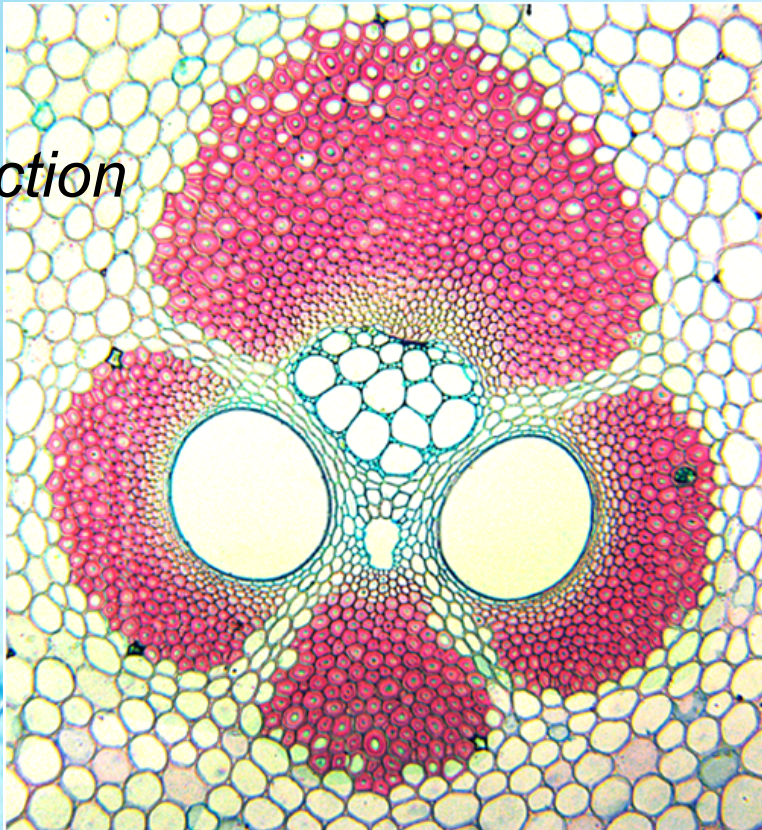


■ 1838- Robert Brown- Scottish physician and botanist, named the *nucleus* and noted its presence in all cells



■ 1838- Matthias Schleiden- German botanist, declared all PLANTS made of cells, 1 of 3 credited with the origination of the cell theory.

*Bamboo
Cross section*



Library of Congress

■ 1839- Theodor Schwann, German zoologist declared all ANIMALS made of cells, 1 of 3 credited with the origination of the cell theory.

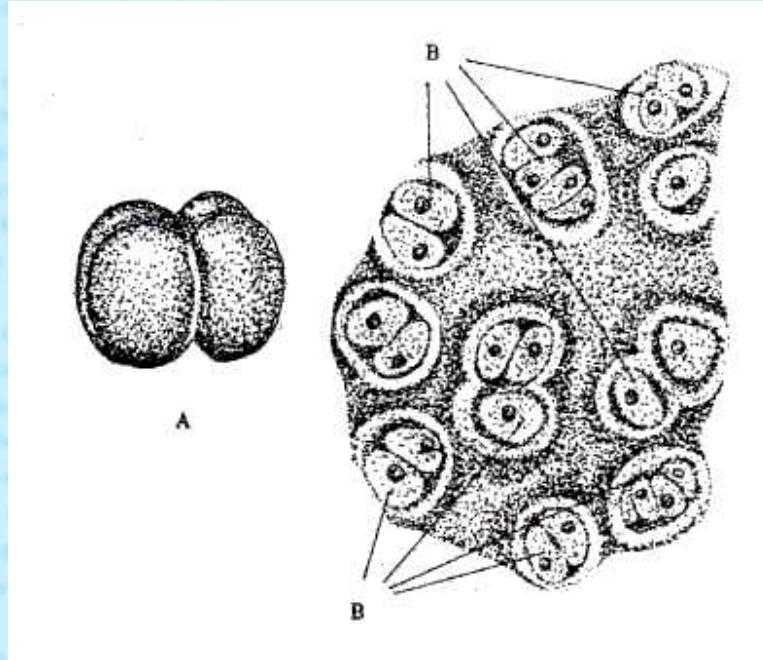


Library of Congress

■ 1855- Rudolph Virchow- German physician and professor, he popularized cell theory and was the 3rd man associated with cell theory.

“Think microscopically.”





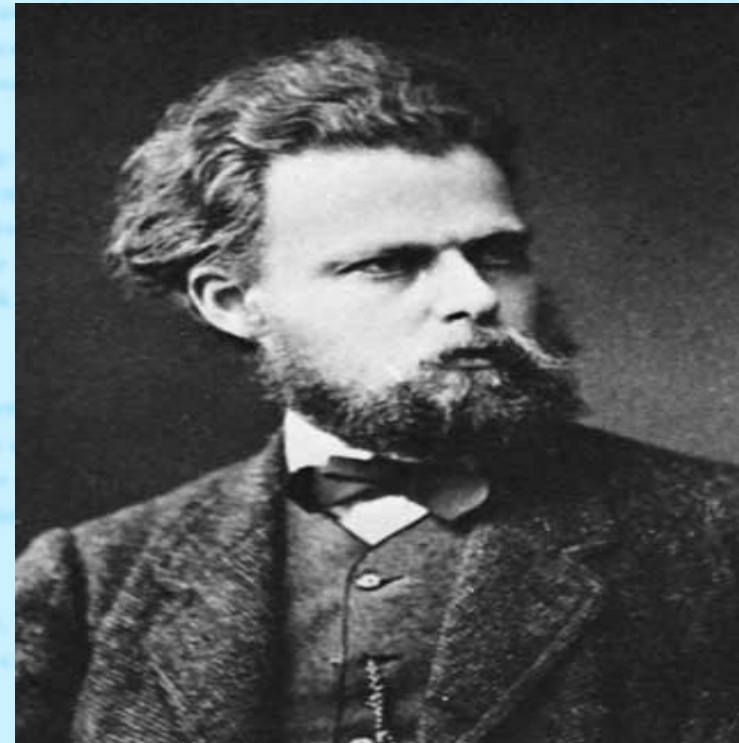
Omnis cellulae e cellulae.

All cells come from pre-existing cells.

■ 1880-August Weismann- German biologist.

■ Germ cells are the root
of all inheritance.

■ All traits of offspring,
are determined at
beginning of life. No
soft inheritance.



■ 1931- Janet Plowe- American scientist,
cell membranes are a physical
structure- NOT an interface between 2
liquids

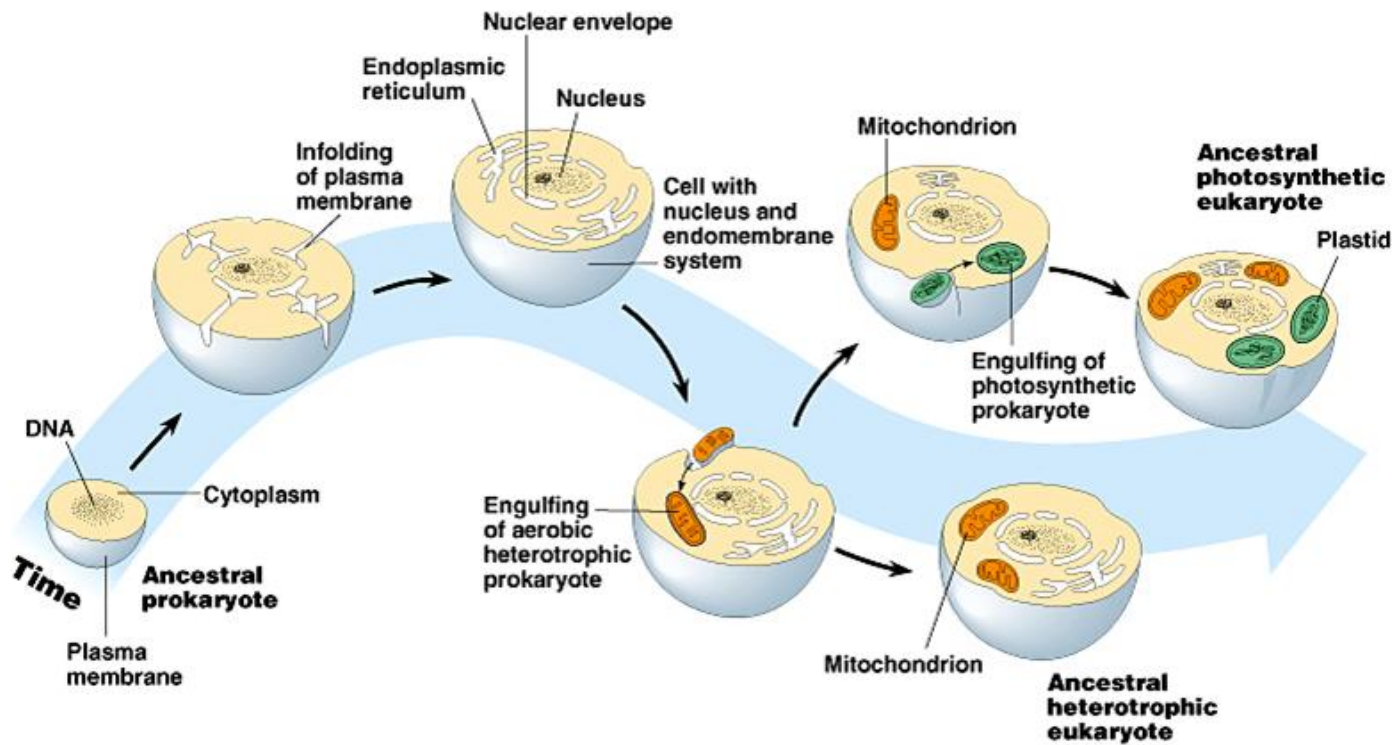
Temperature = 90 C

Here you can see a lens of melted wax
on the bubble surface, the bubble is
about 100 μm across.

Here is a close-up of the lens,
numerous emulsified drops
are visible inside



1970- Lynn Margulis- American scientist, certain organelles were once free-living organisms themselves.



III. Cell Theory

- All living things are composed of cells or cell products.
- Only the division of pre-existing cells forms new cells.
- The cell is the minimal or fundamental unit of life; the chemical reactions of life take place in cells.

IV. Cell Types

■ PROKARYOTIC

■ Pro = before

■ Karyo = nucleus

■ Bacteria

■ EUKARYOTIC

■ Eu = true

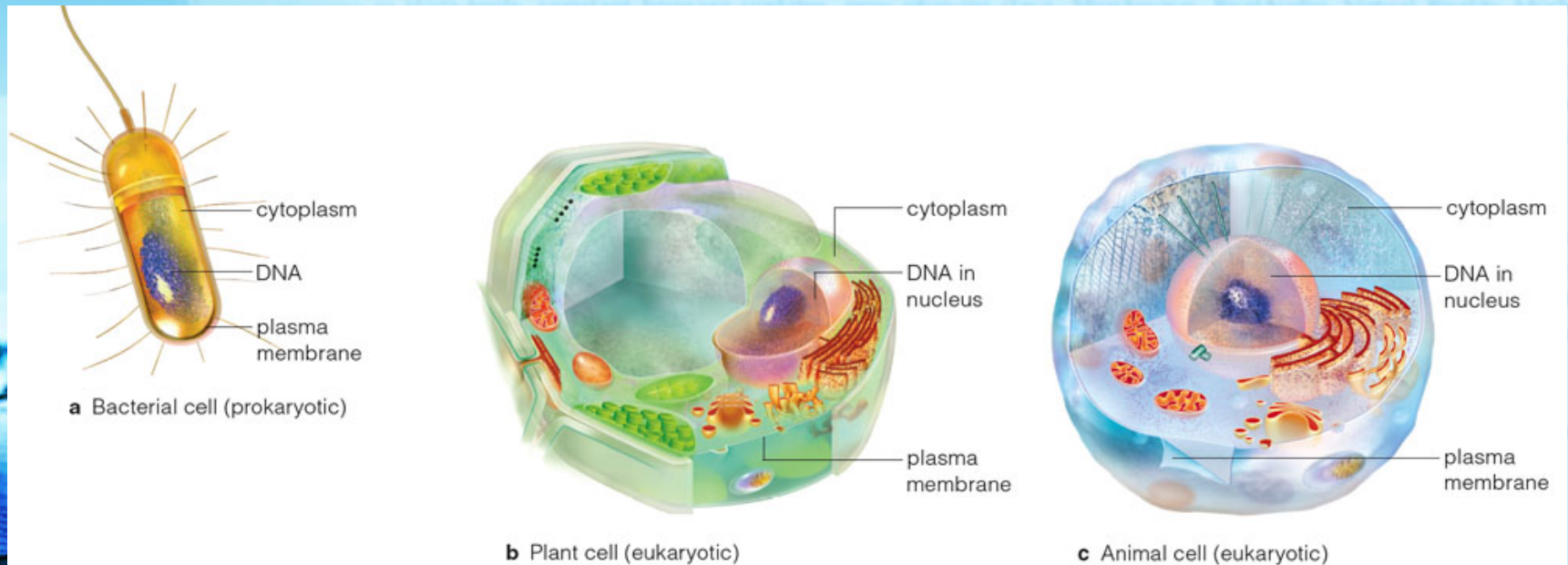
■ Karyo = nucleus

■ Animals, Plants, Fungi, Protists



V. Cell Comparisons

- Excellent table on page 199 in textbook for review.
- Check your illustrations and functions as we complete the table!



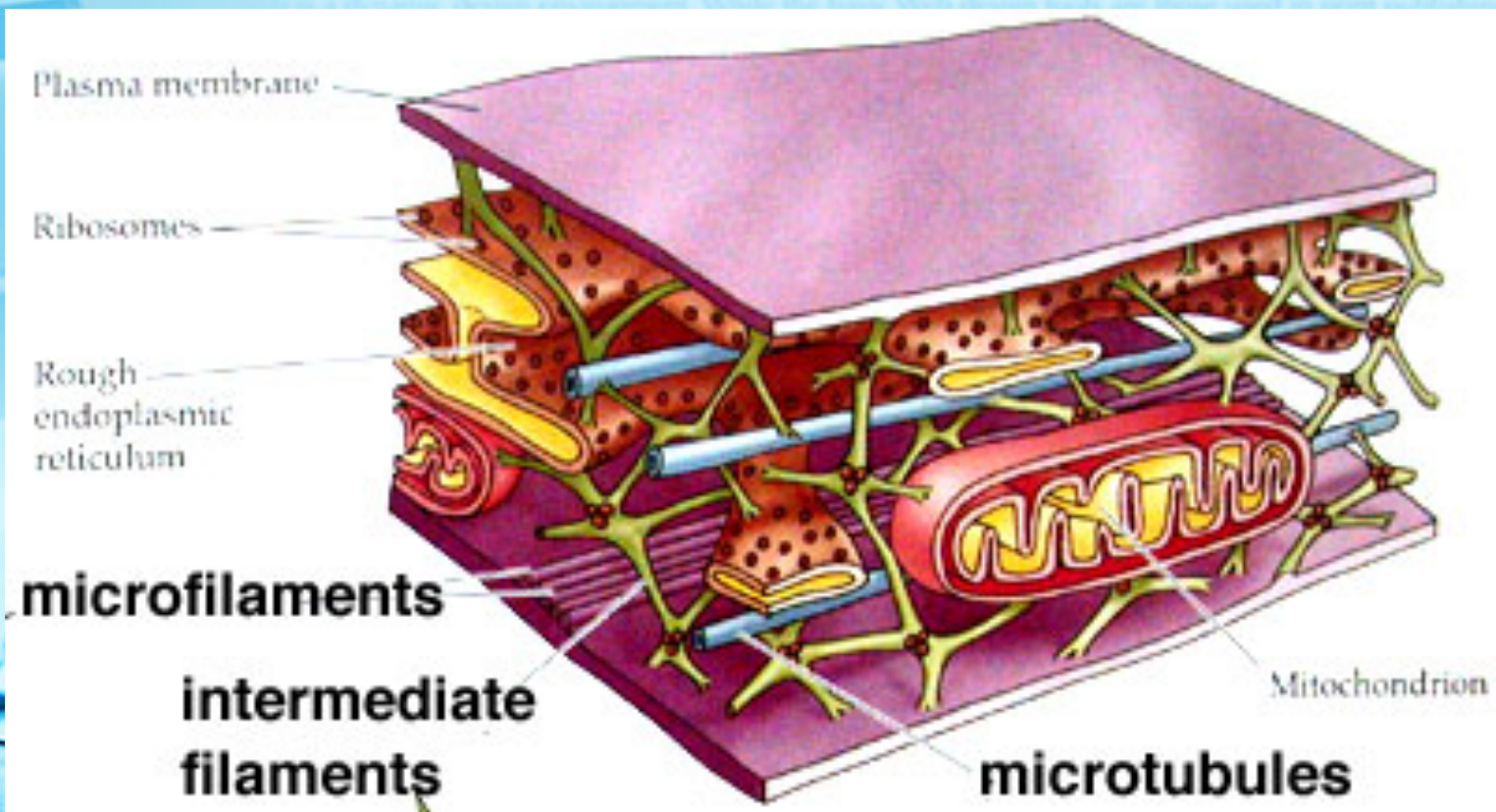
Cell Feature/ Cell Type	Prokaryotic	Eukaryotic	
		Plants	Animals
Typical size			
Type of genetic material			
Location of genetic material		*	*
Cell Membrane			
Cytoplasm			
Ribosomes			
Cell Wall			
Capsule			
			29

Table continued....

Cell Feature/ Cell Type	Prokaryotic	Eukaryotic	
		Plants	Animals
*Mitochondria (pl)			
*Chloroplasts			
Single membrane bound organelles RER SER Golgi app. Lysosome Central vacuole			
Centrioles			

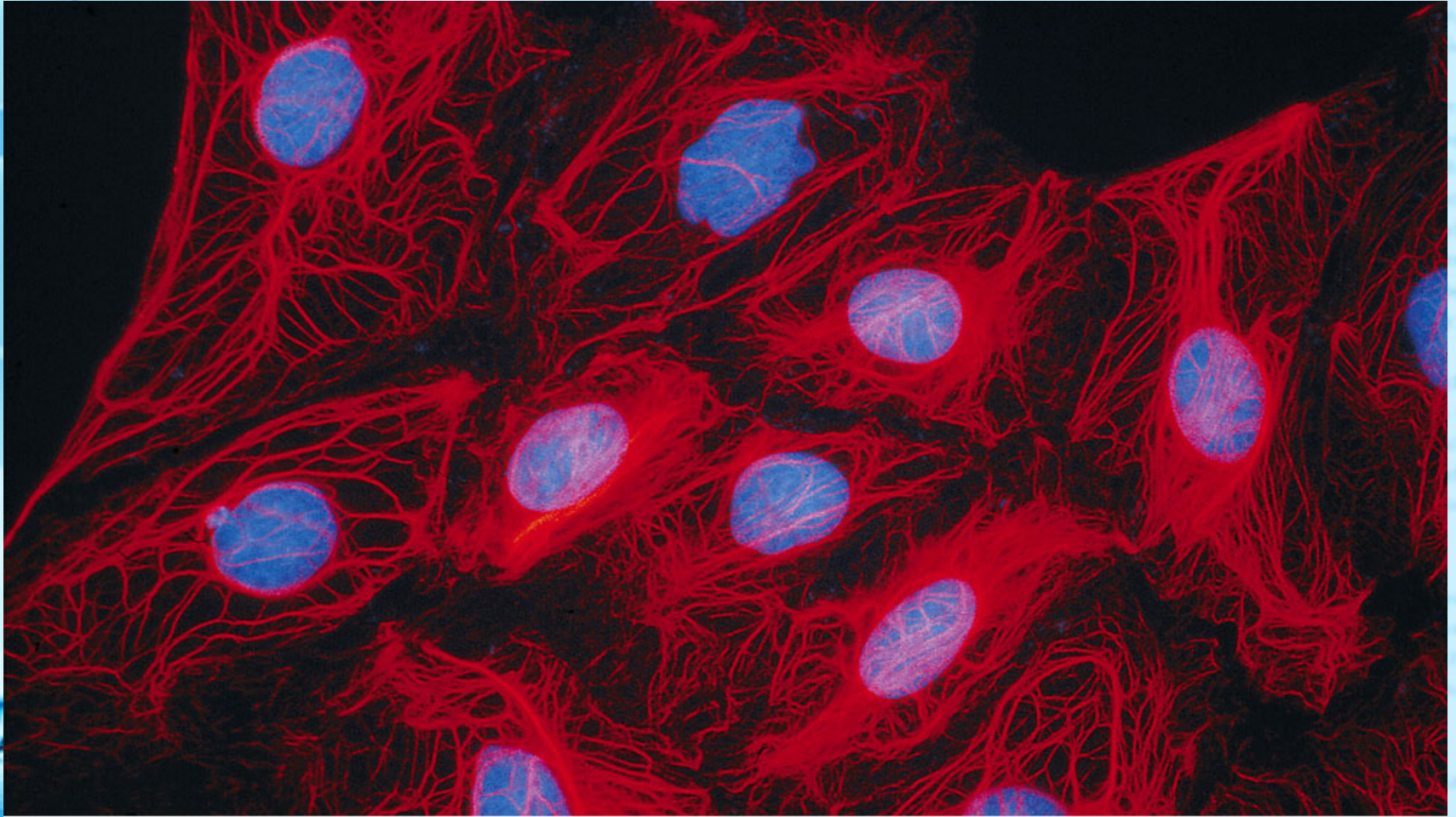
VI. Other Special Features

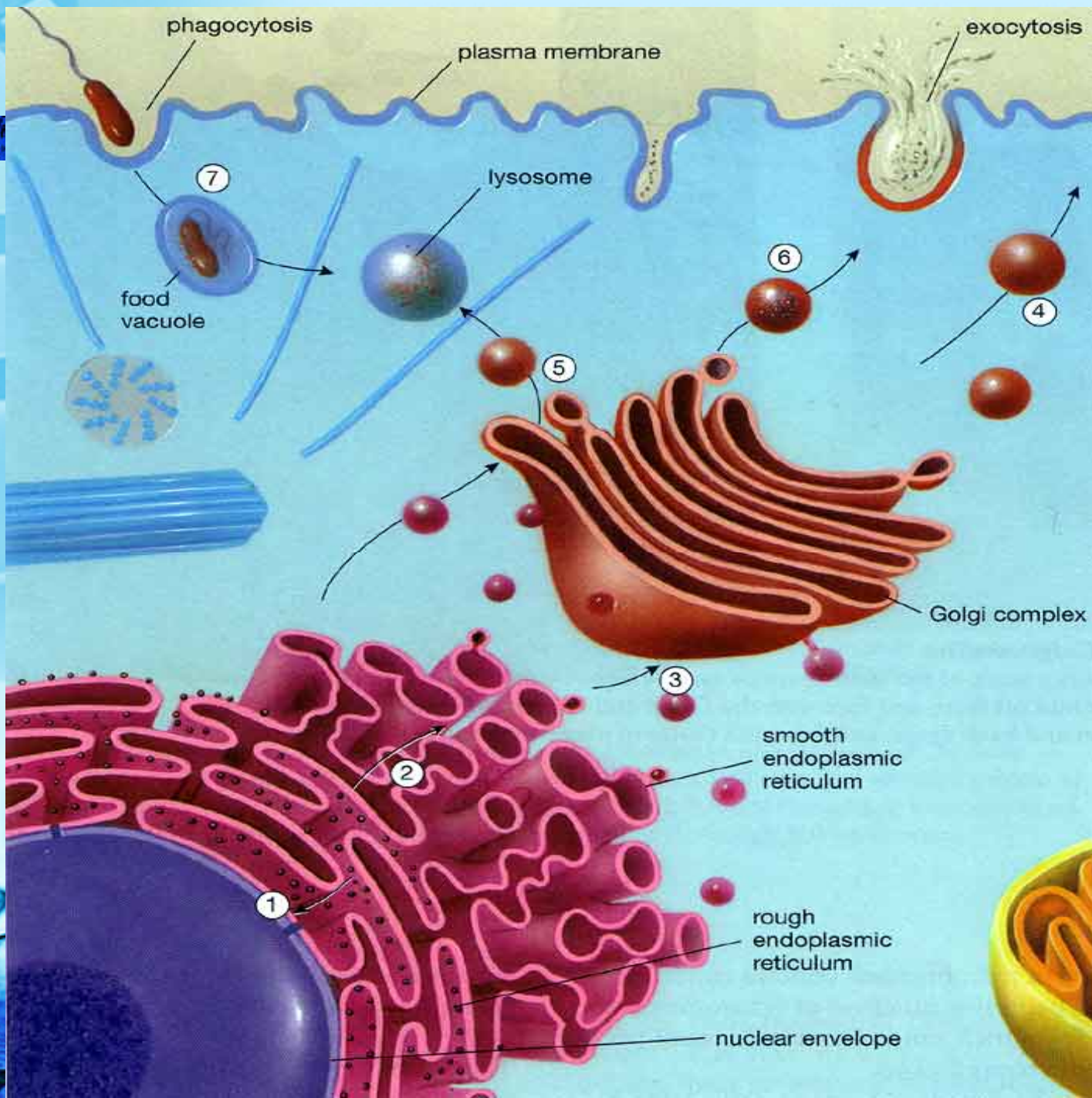
■ Cytoskeleton



... becomes viable, perhaps the terms "scene" or "close-up" will be used. The terms "link," "hotlink," and "hypertext" are new to digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cadres of talented individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will be significantly different from today's Web.

Many Web designers derive their tools from print publishing applications such as Adobe PageMaker or QuarkXPress, which have been modified to add HTML (Hypertext Markup Language) tags for Web publishing, or even to add multimedia sound and user interactivity capability. Multimedia programs such as Macromedia Director have created applications that will strip files down to Web-compatible size; Macromedia's version of this is the Shockwave/Alderborner combination. Even basic word-processing programs have



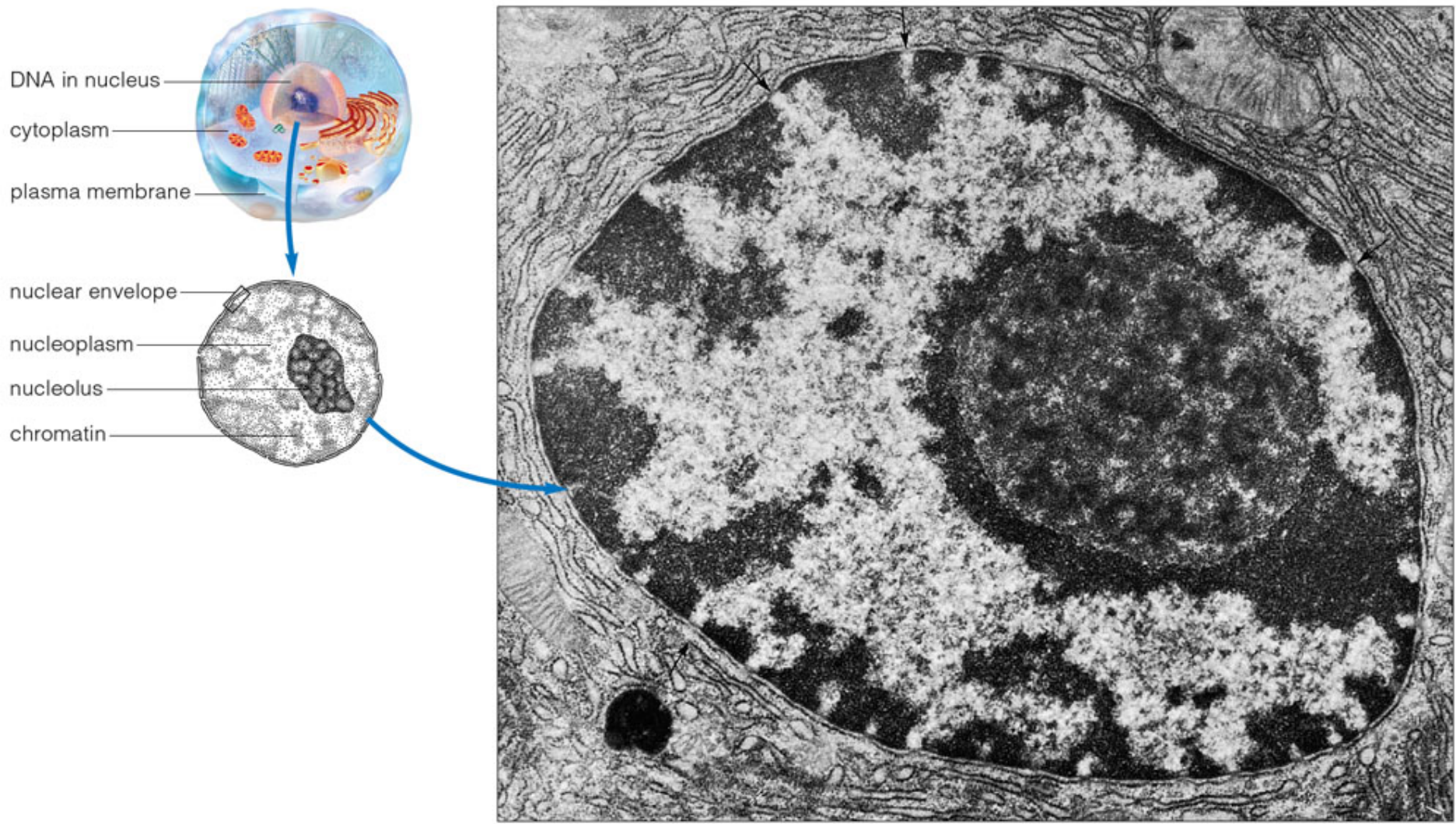


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 ing freshness and innovation to
 home page, but on the subse-
 of color and shape as well as
 ther it's Java scripting, GIFMa-
 ials, and animations small to
 a desire to communicate. It

Cell Related Definitions

- Organelle: specialized structures that carry out specific functions within a cell.
- Tissue: A mass of similar cells within an organism that perform a specific function.

As computers become more viable, perhaps the terms "screen" or "clear-up" will be used. The terms "link," "hyperlink," and "hyperfeed" are terms for digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cybernetic individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will be very different from today's Web.



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Whether Web design will become accepted as a critical form in its own right.

As it becomes viable, perhaps the terms "scene" or "close-up" will be used. The terms "link," "hotlink," and "hyperlink" are terms for digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are creative, forward-thinking individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will be significantly different from today's Web.



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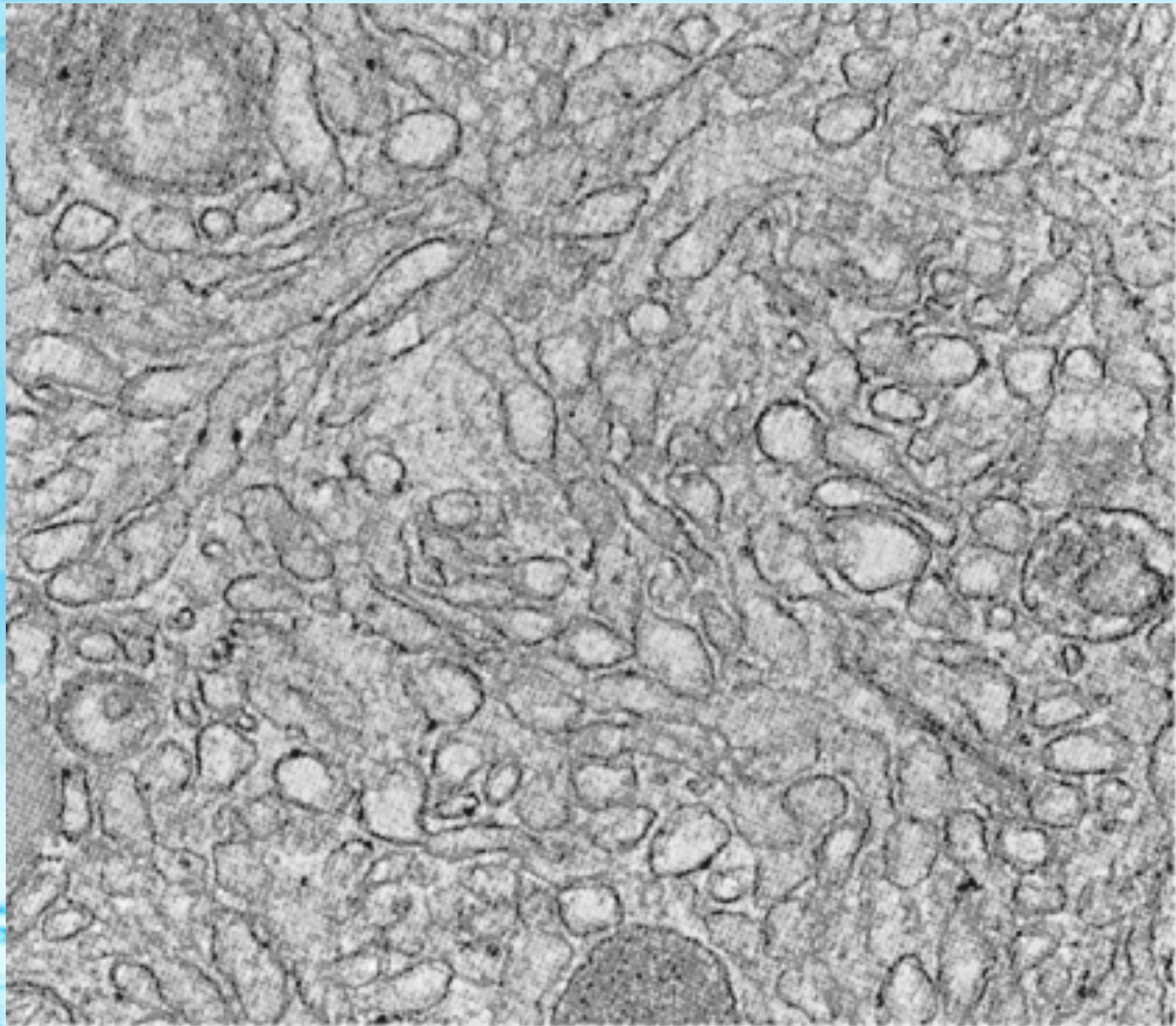
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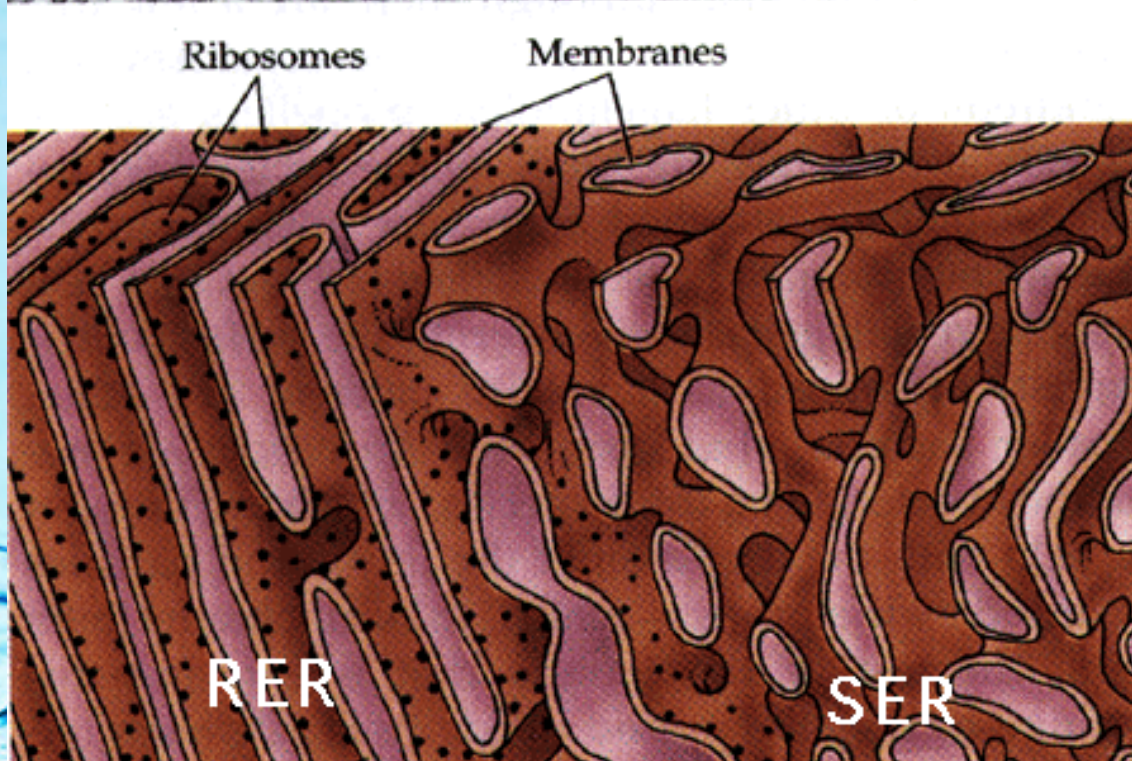
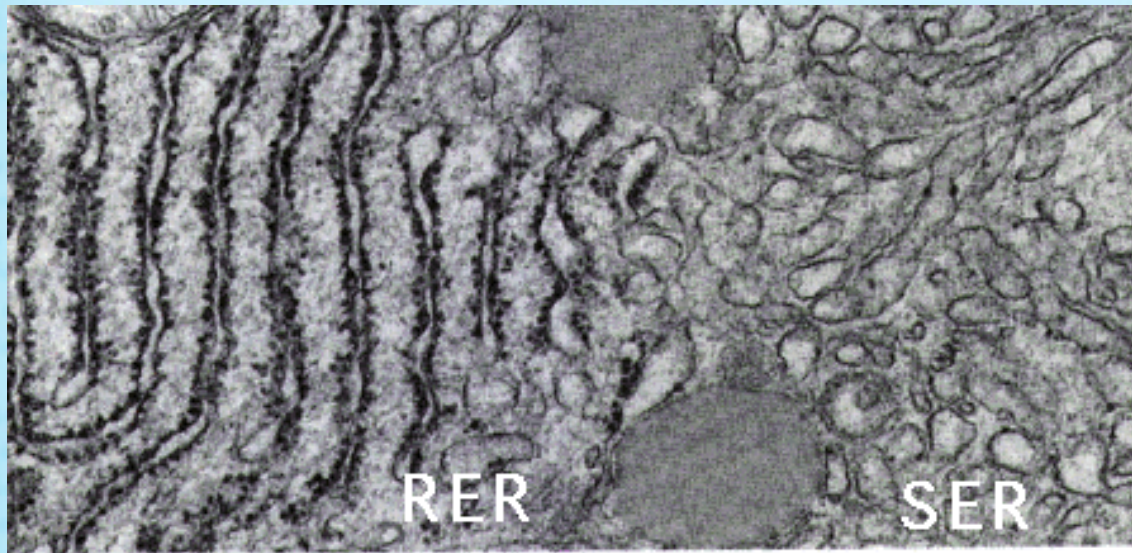
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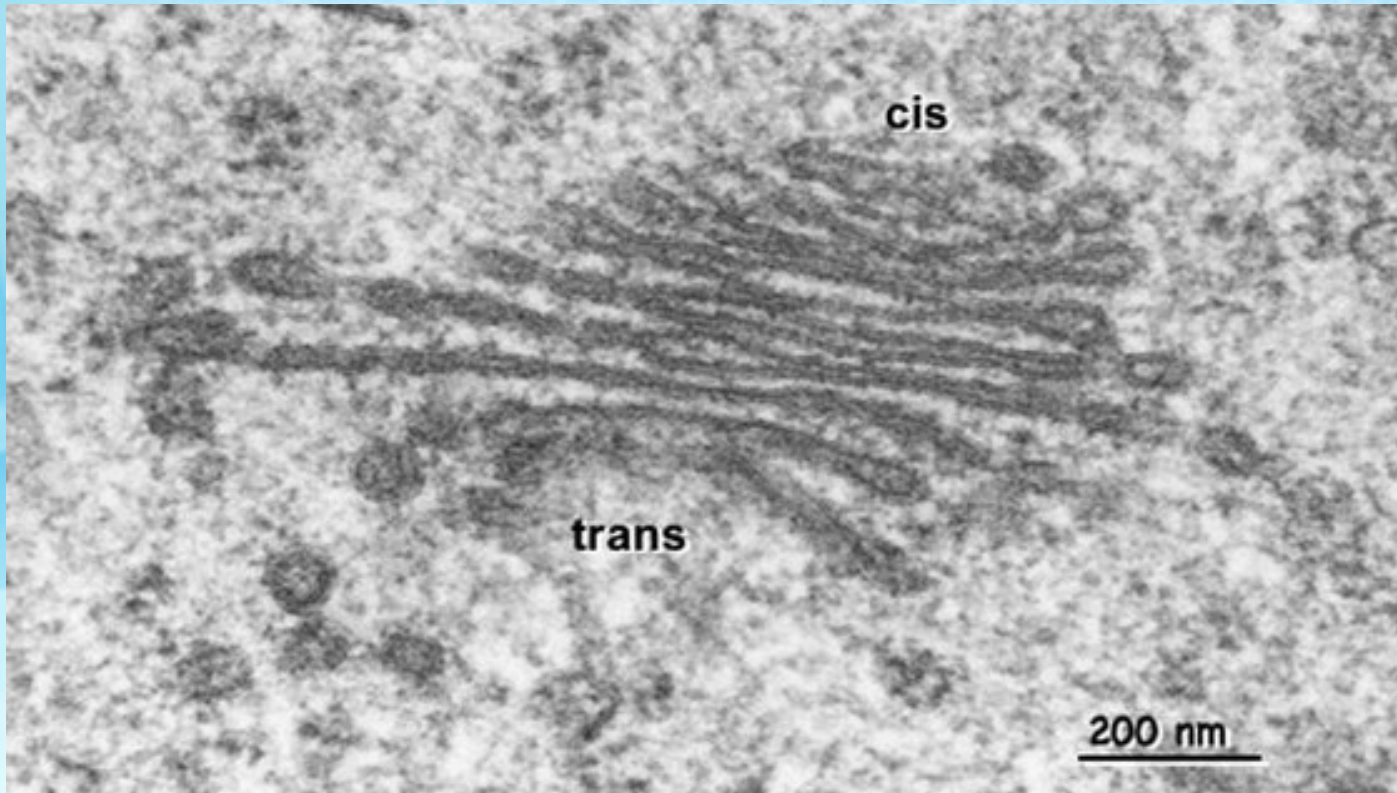
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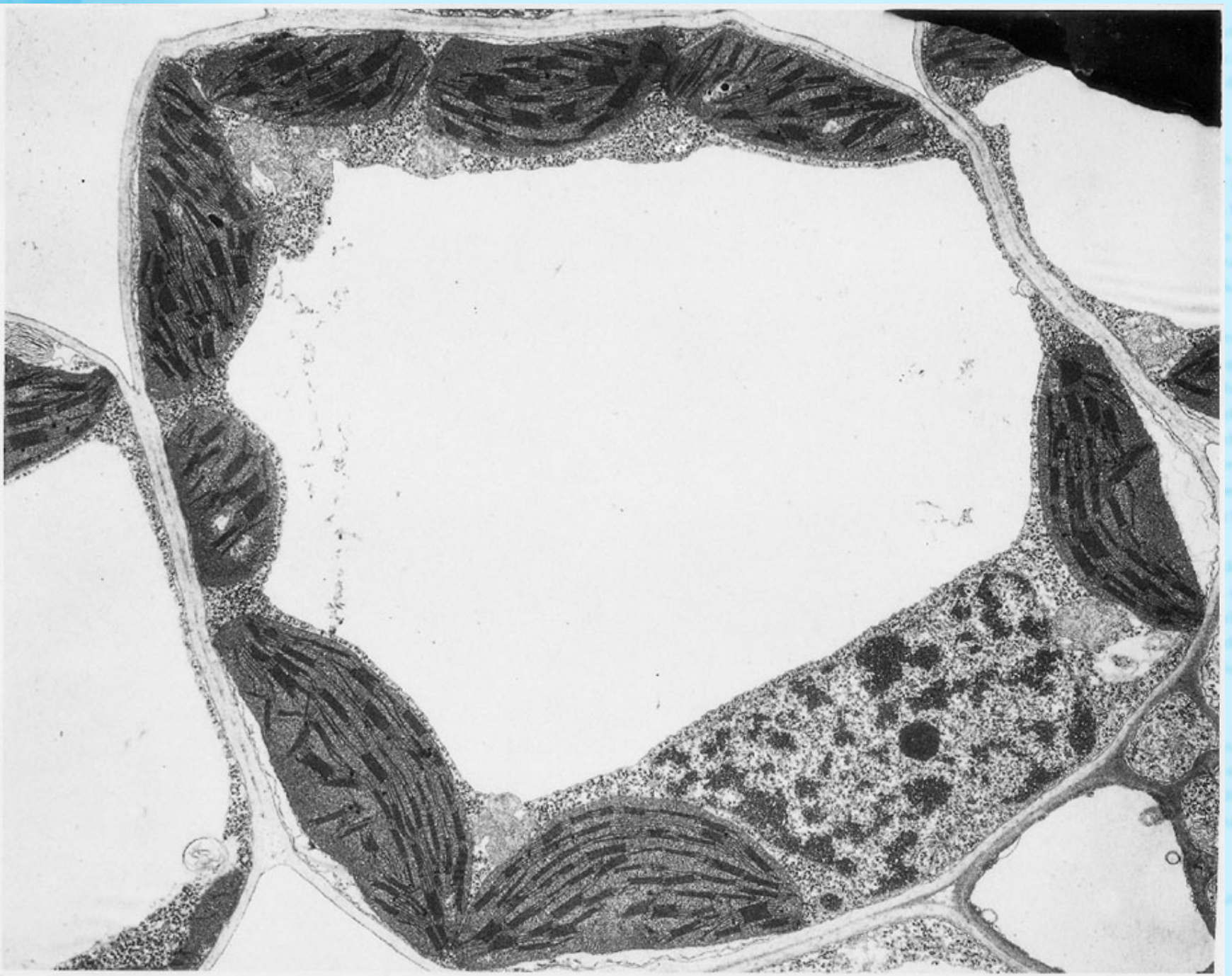
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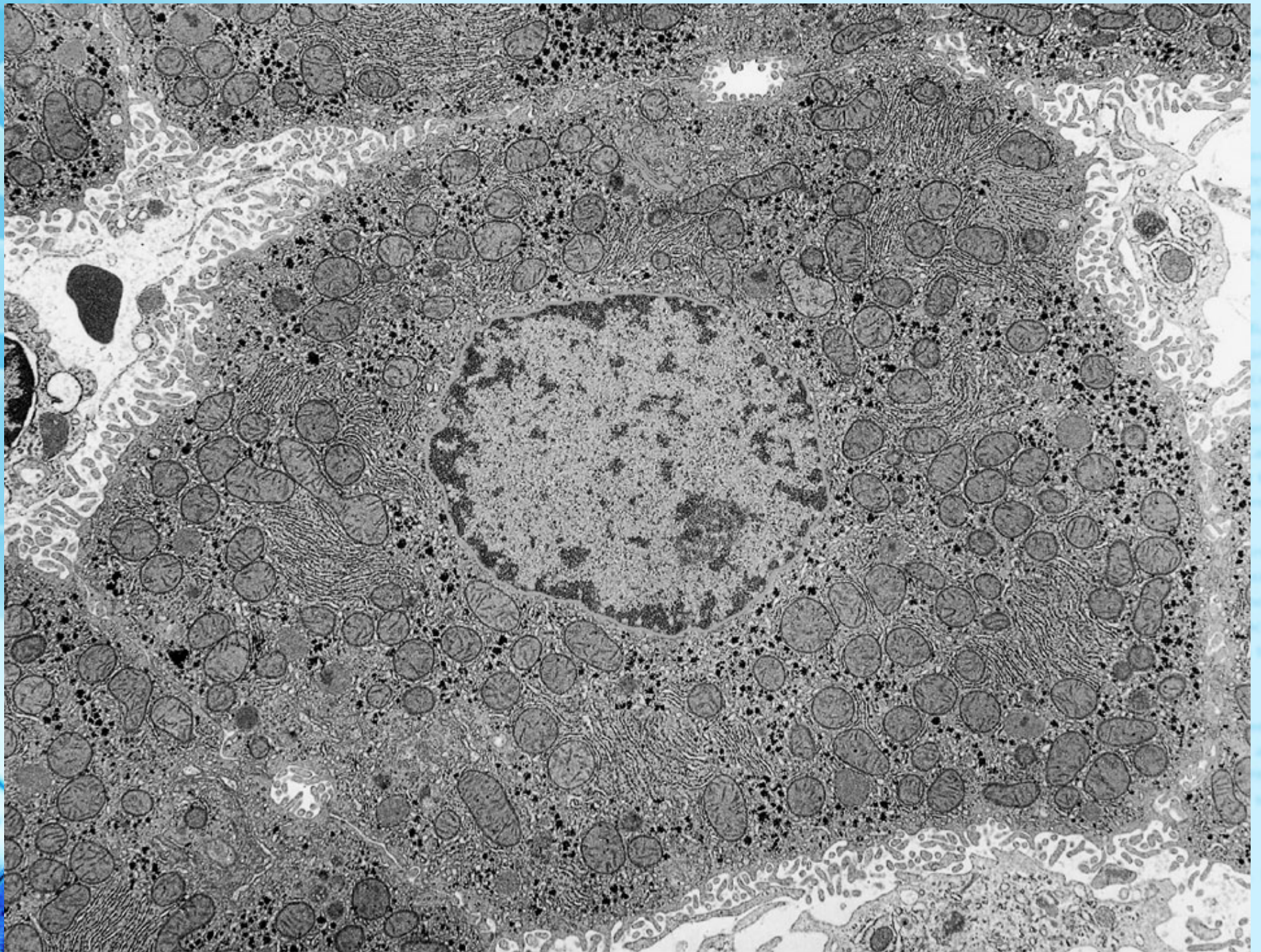


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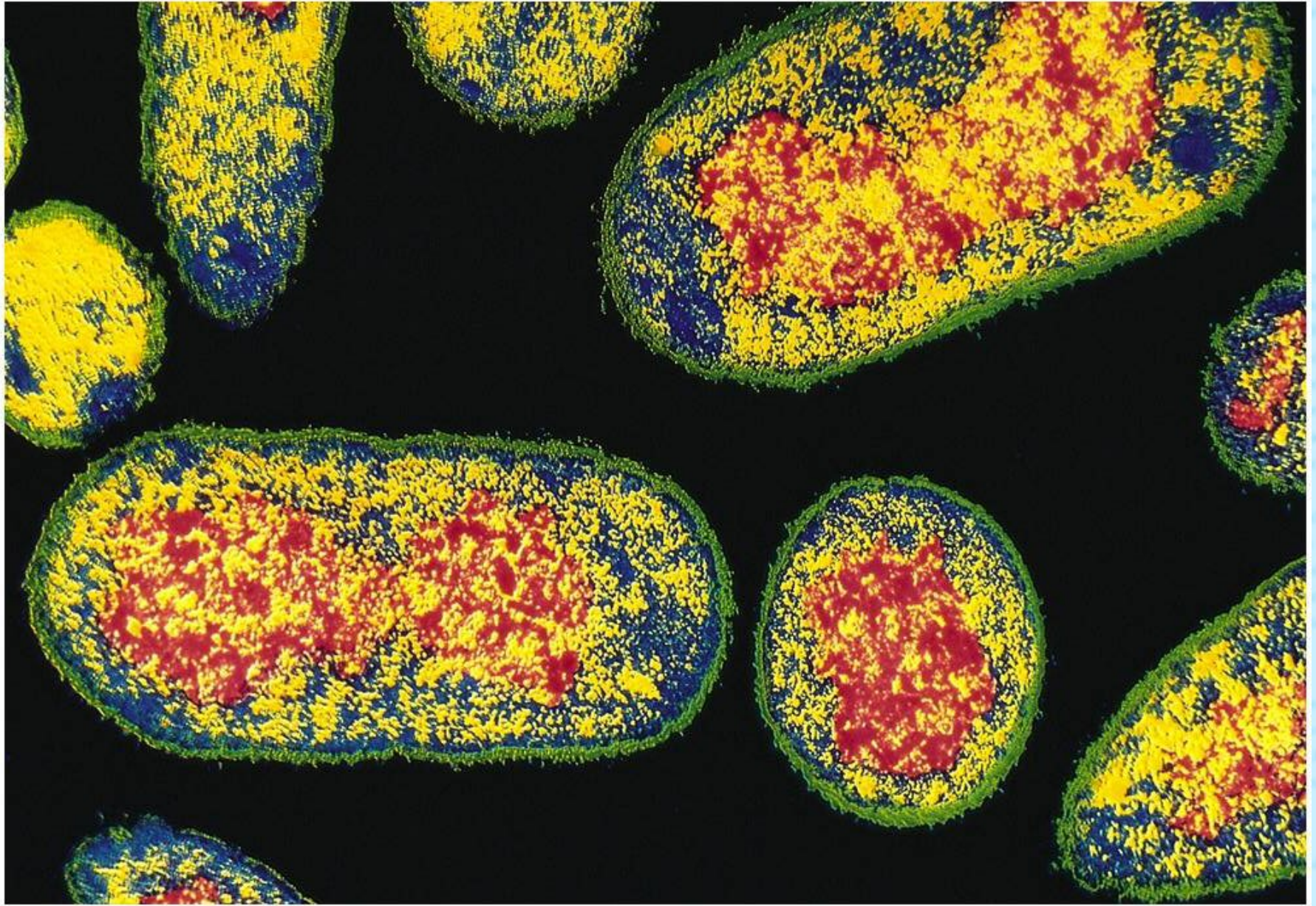
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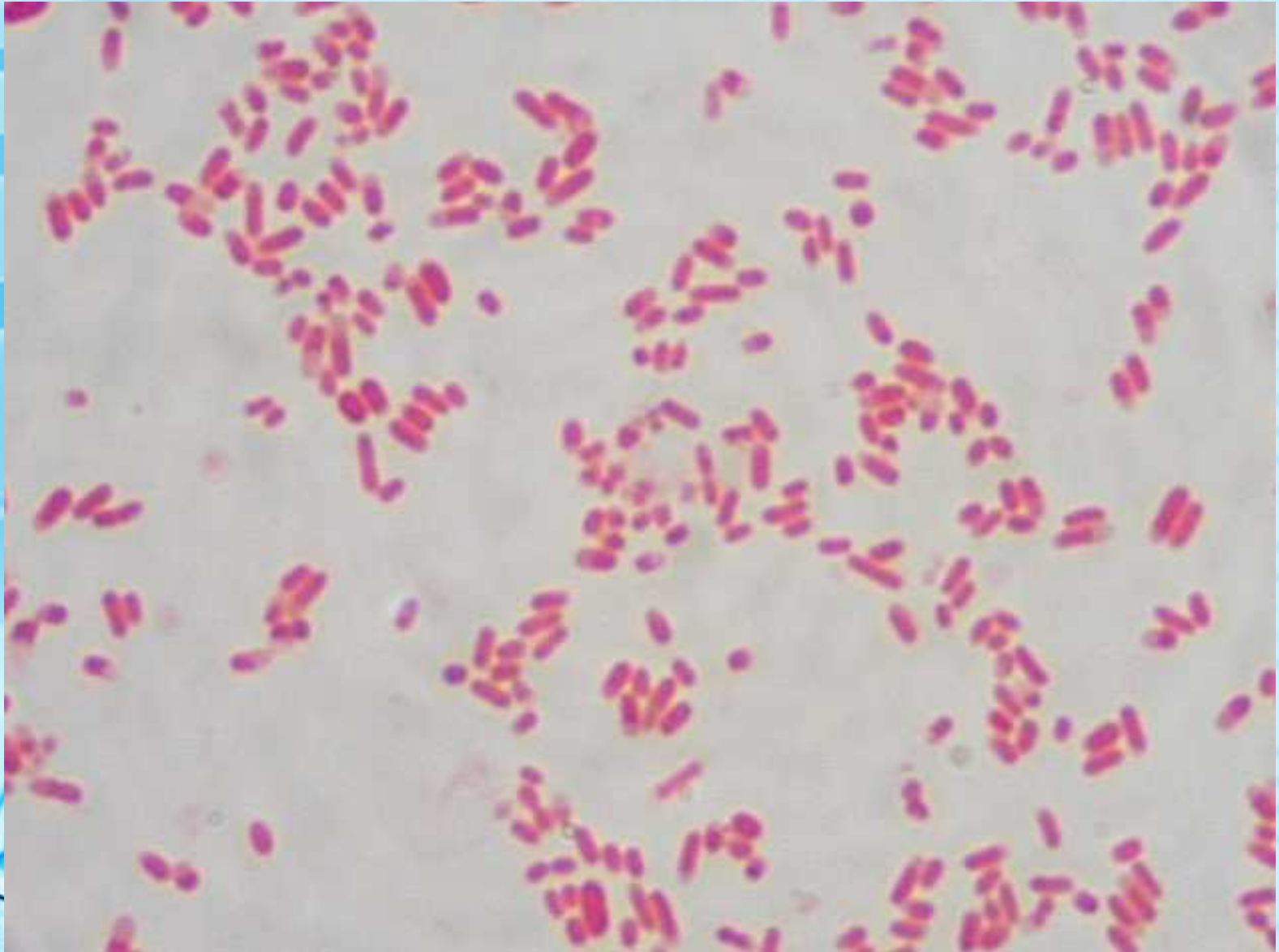




increases visible, perhaps the terms "zoom" and "down-up" will be used. The terms "link," "backlink," and "hyperlink" are
in digital content, making sure digital presentation, as from the term "link" back. It is not hard to know that there are cables



... increases viable, perhaps the terms "scene" or "close-up" will be used. The terms "link," "hotlink," and "hypertext" are used to digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cadres of talented individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will



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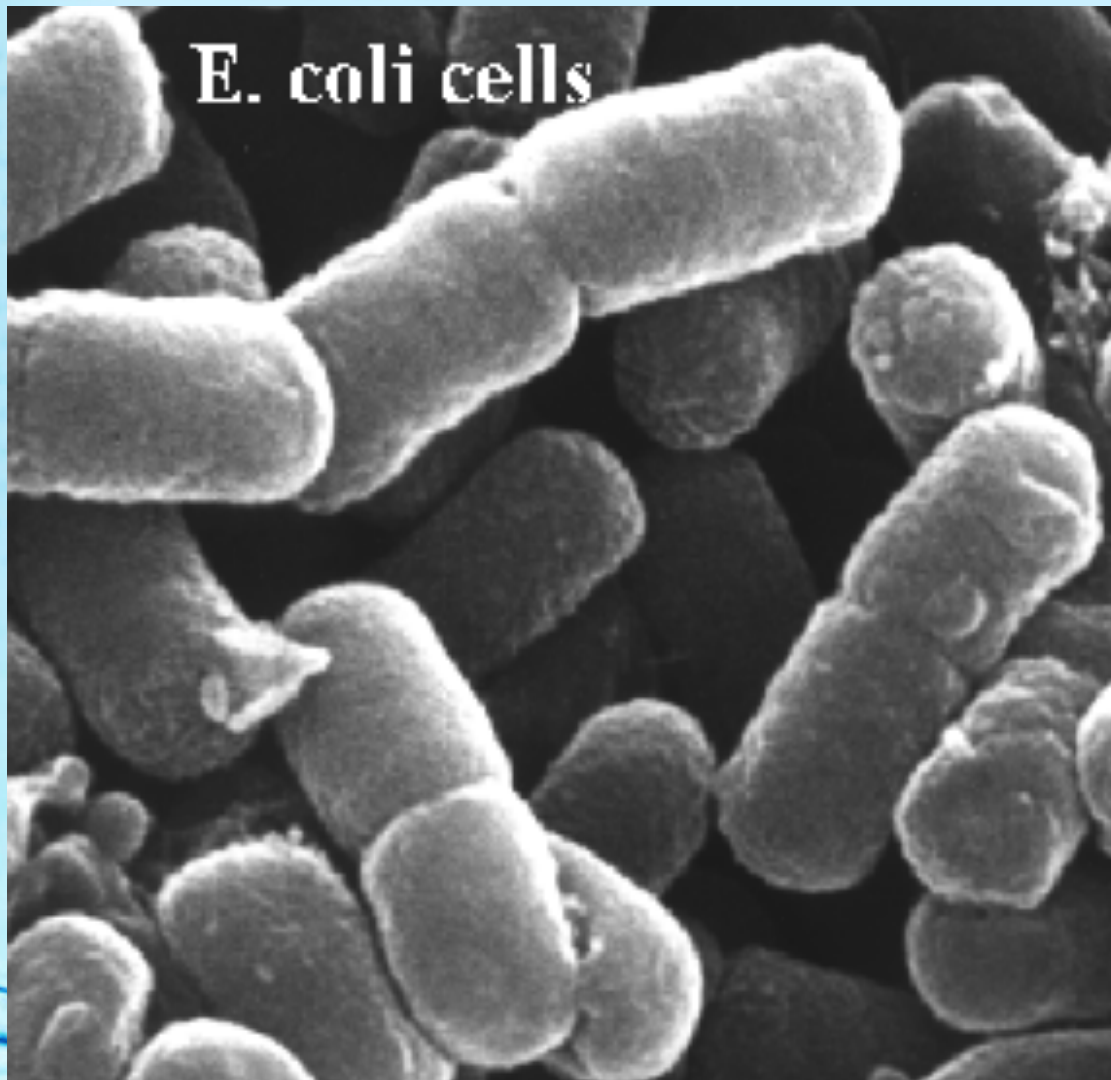
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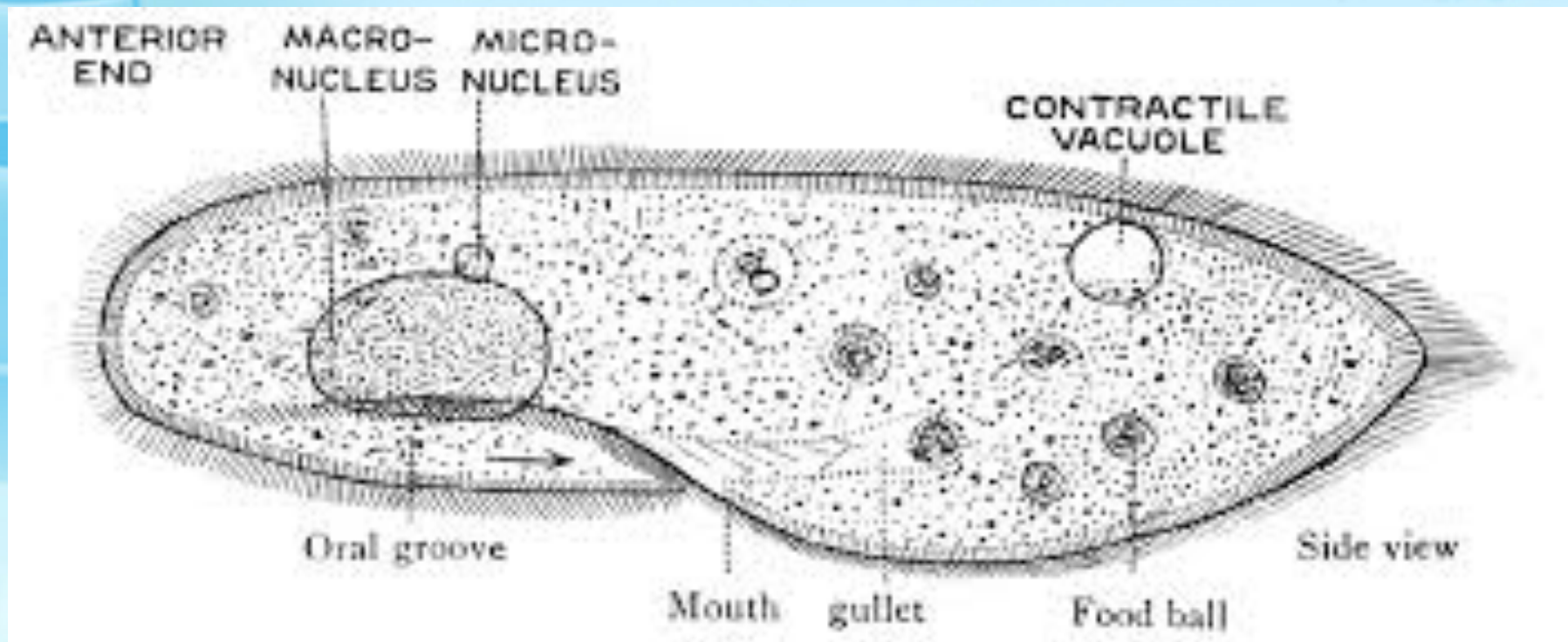
Virtual Reality Modeling Language (VRML) professionals produce a static scene that can be viewed in a browser. They create shifting sand dunes and needlessly, a tendency toward freshness and innovation to create a new scene.

Some pages, but on the subject of color and shape as well as text. It's Java scripting, GIFs, and animations small to

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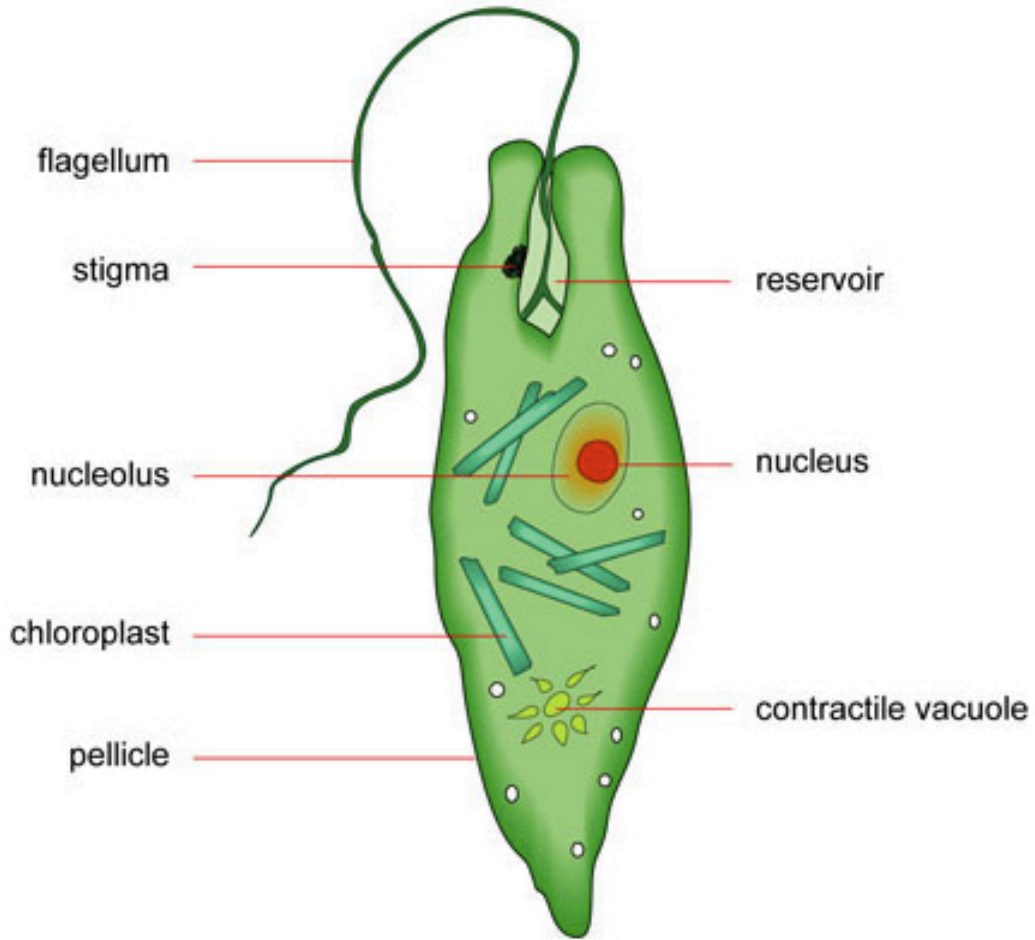


...they require innovative, web-focused design concepts that combine text or image or even an...
...net content. They make efficient and sensible use of available technology—whether it's Java scripting, GIFs,
...or RealAudio—while at the same time keeping the total size of images, sounds, and animations small to
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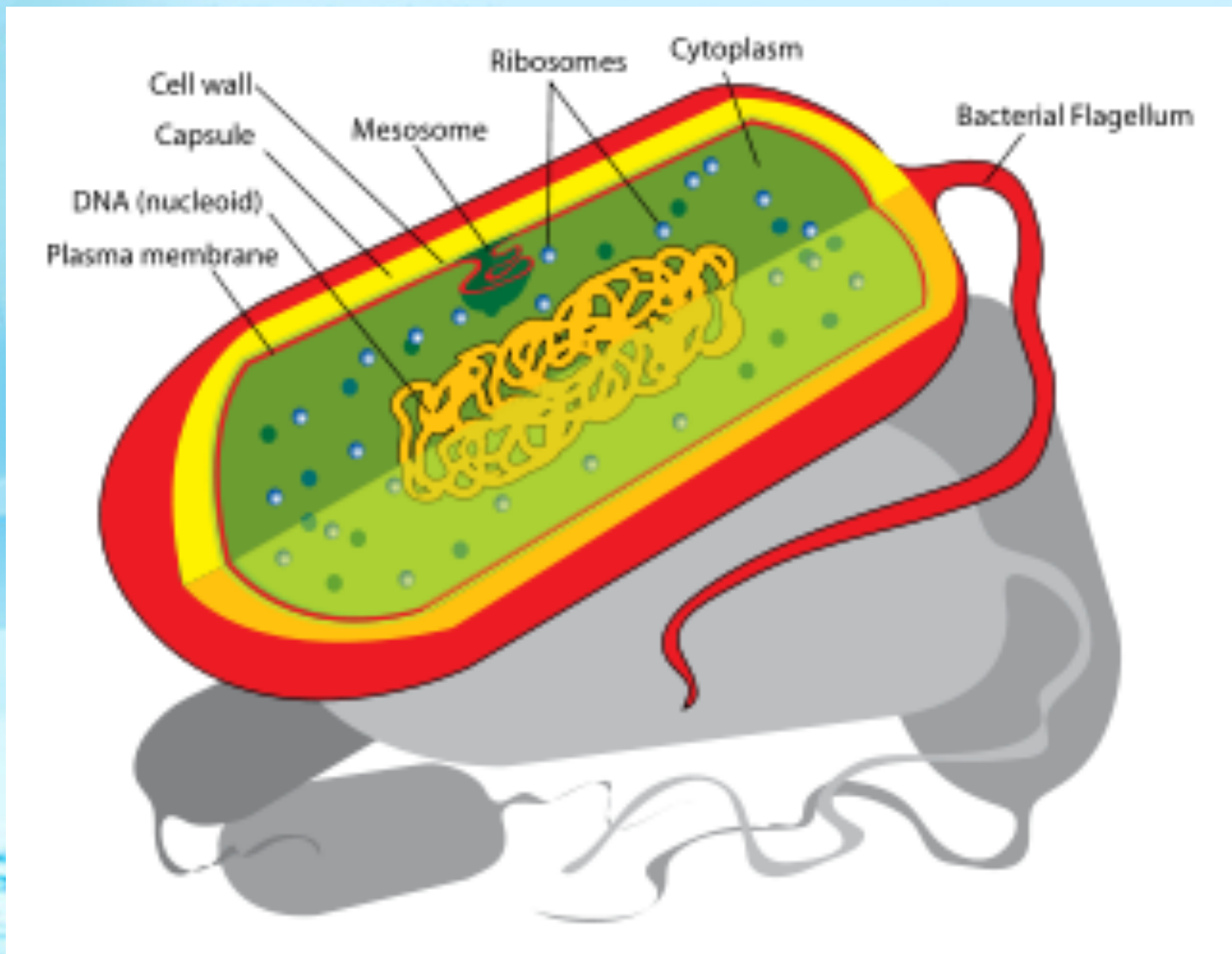


...place of realization. All need not be linguistic, physical—it requires skill and a desire to communicate. If further Web design will become accepted as a critical form in its own right.



Flagella and Cilia

As computers become more powerful, perhaps the terms "zoom" or "close-up" will be used. The terms "link," "hotlink," and "hyperlink" are used to digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are creative individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will



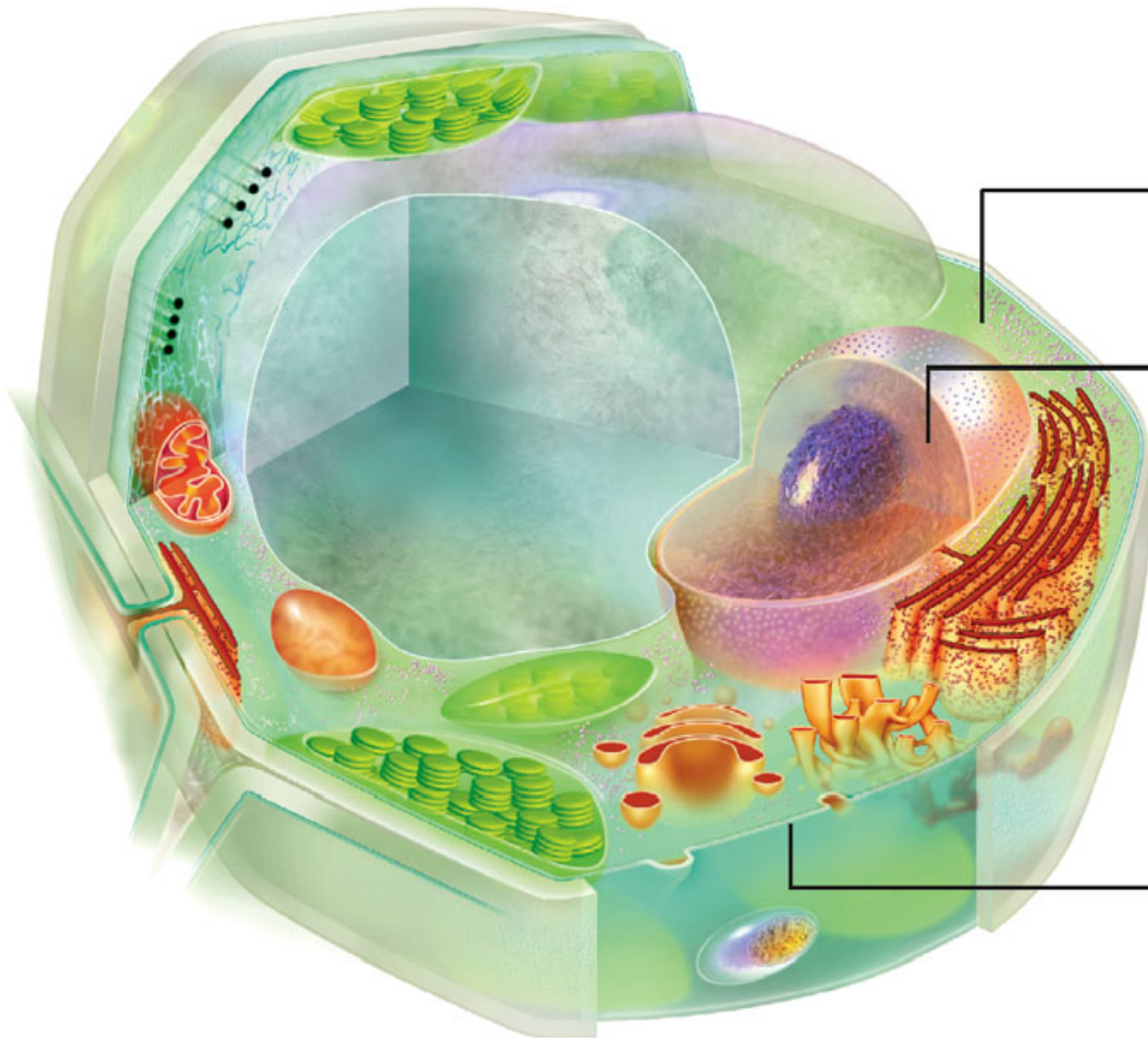
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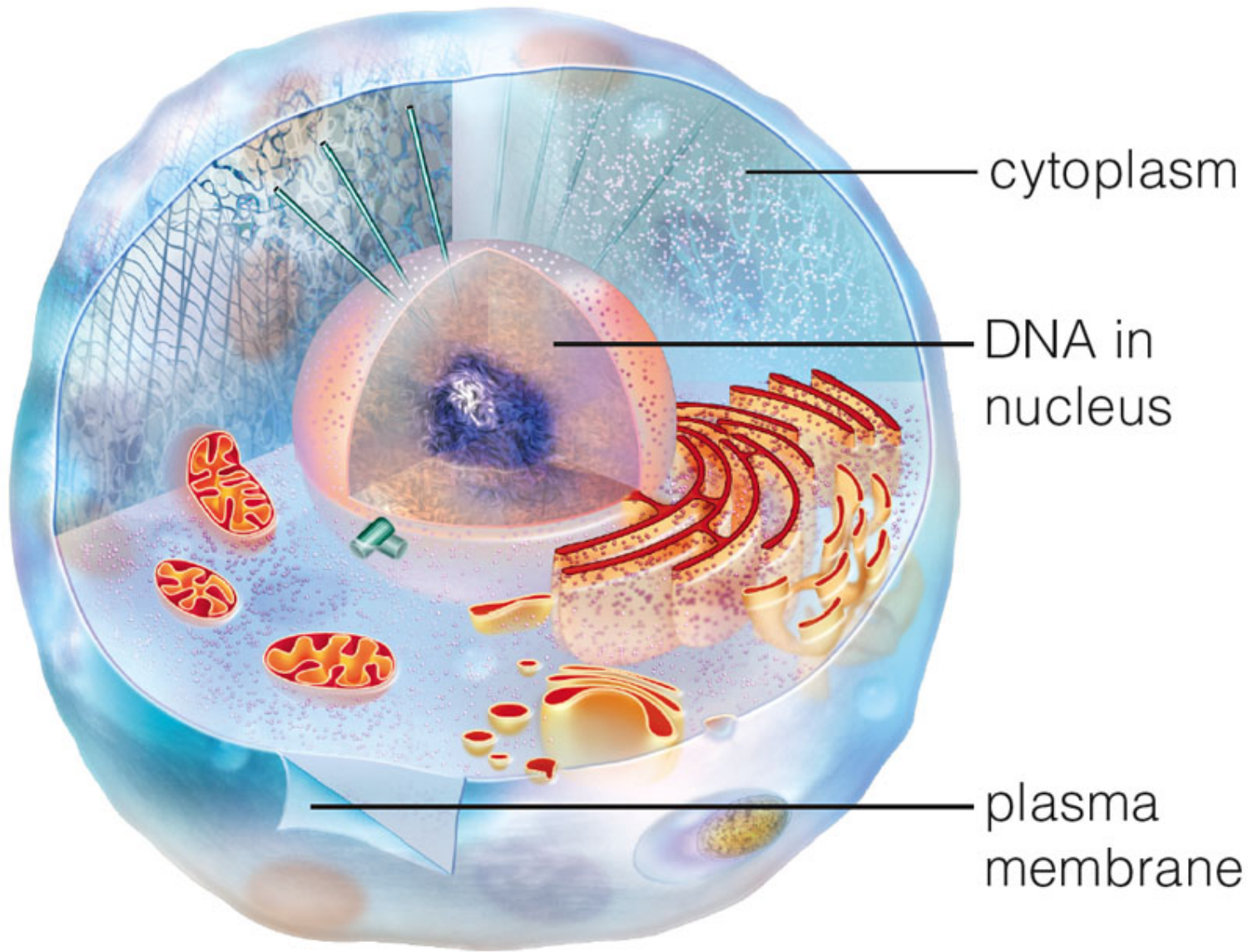
Whether Web design will become accepted as a critical form in its own right.



cytoplasm

DNA in nucleus

plasma membrane



"hypertext" are there are cables by that Web will

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