

An underwater night scene with a dark blue background and numerous out-of-focus light sources (bokeh) in shades of yellow, white, and blue, creating a shimmering, ethereal atmosphere. The lights appear to be reflections on water or distant underwater structures.

Jennifer Riser
Research Scientist

**Cell Biology 101
Simpson Middle School**

November 2017

kemira



About Me:

- Degree in Biological Sciences from Clemson University (1995)
- Research Scientist at Kemira Chemicals
- Have been working as a chemist for 19 years
- Filed for my first patent this year
- Student internship prepared me for job as chemist
- Married with two daughters

What do Chemists do?

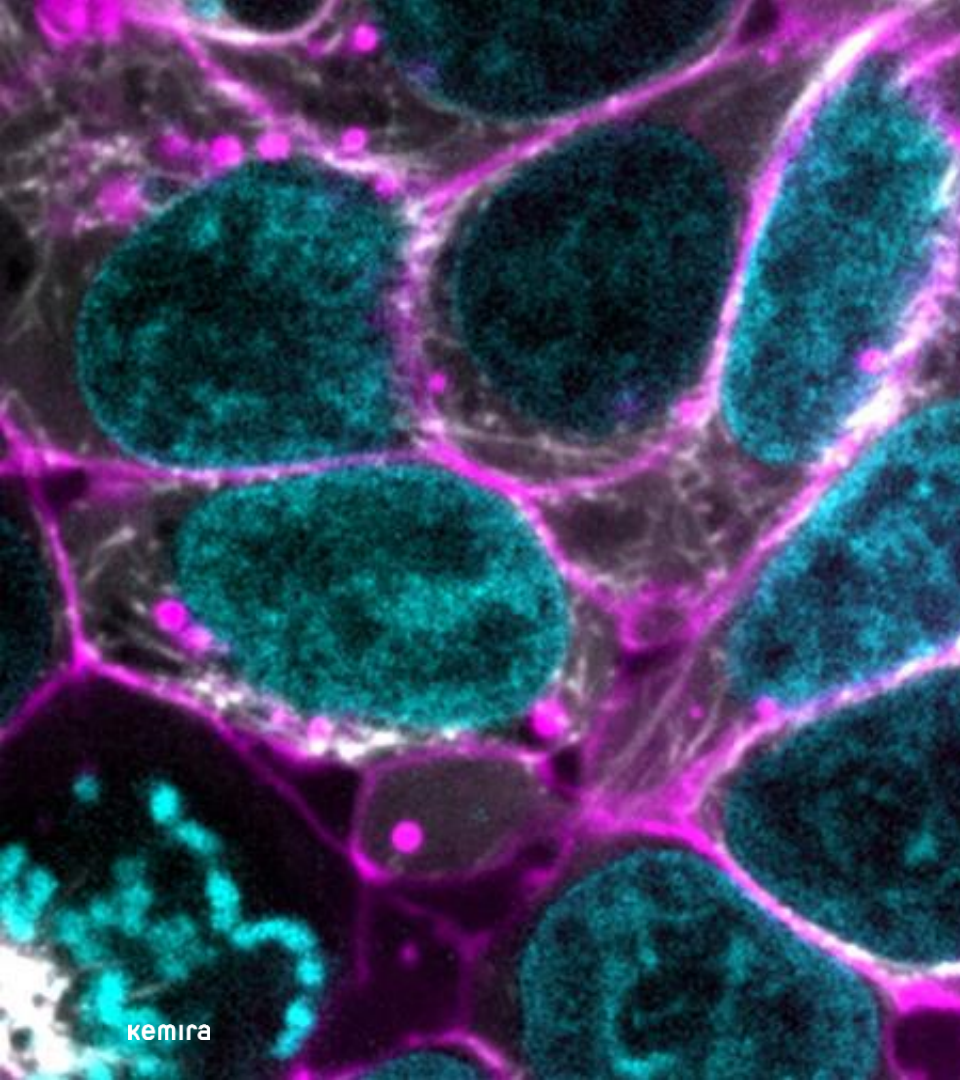
- Chemistry touches everything in your life
- Develop new chemistries to make life better for people, plants and animals
- Product formulation
- Application testing
- Pharmaceutical research
- Water purification
- Research on safety
- Research on biosystems (how your body works right and wrong)



Industry Statistics



- National median salary - \$59,250
- 34.9% of workers are female
- 32.9% minority persons in the industry
- 86% of chemists hold a Bachelor's degree, 7% have Master's degree, 3% have Ph.D



Cell Biology

Two classes of organisms?

- Prokaryote and Eukaryote

Within the Eukaryotic classification there are two divisions:

- Unicellular (Protists)
- Multicellular (with/without cell wall) – all plants and animals fall here

Plant vs. Animal Cells

Plants

- Cell wall
- Chloroplasts (make their own food)
- One large central vacuole

Animals

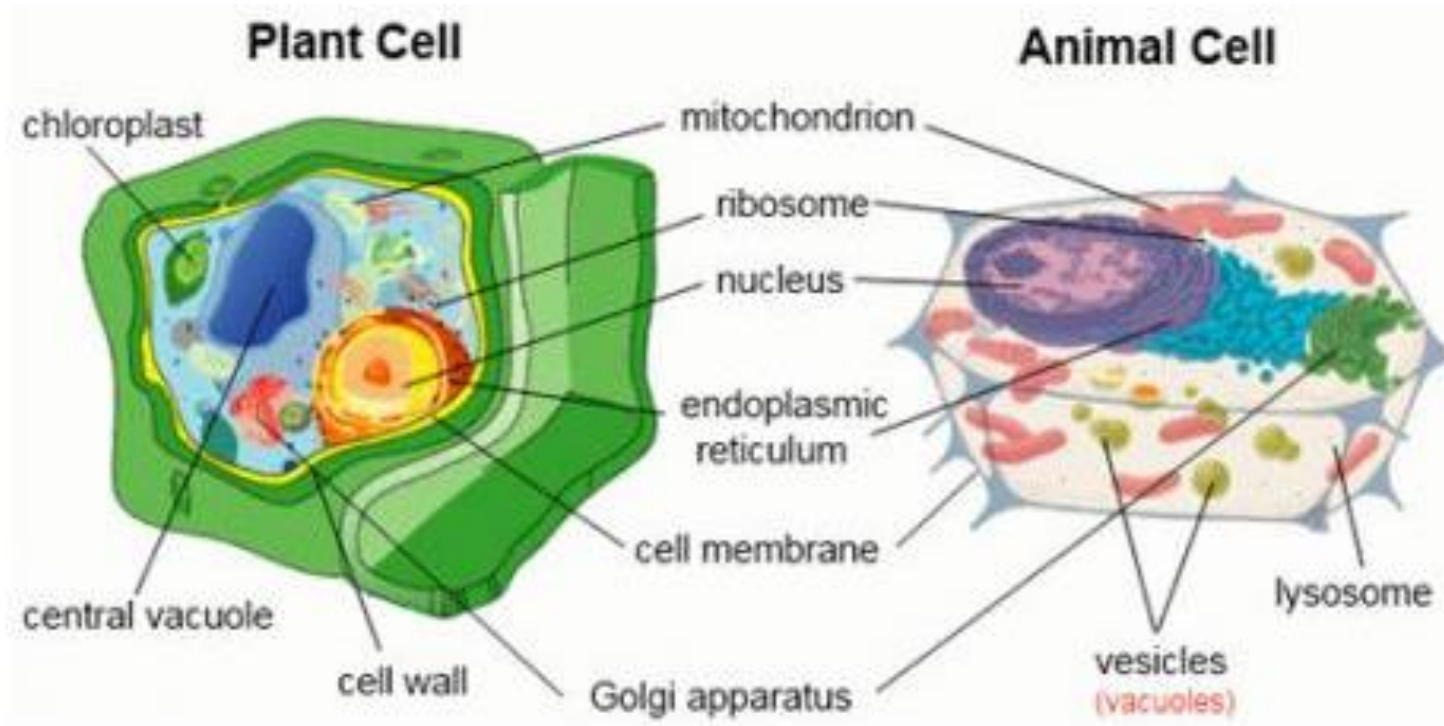
- Cell membrane only
- Can have cilia or flagella on outside of cell (mobility)
- Lysosomes (contain enzymes for cellular digestion)
- Multiple small vacuoles
- Have centrioles (play a role in cellular division)

Size of Organisms

All cells provide limitations on the size of the organism – plants can grow much larger than animals



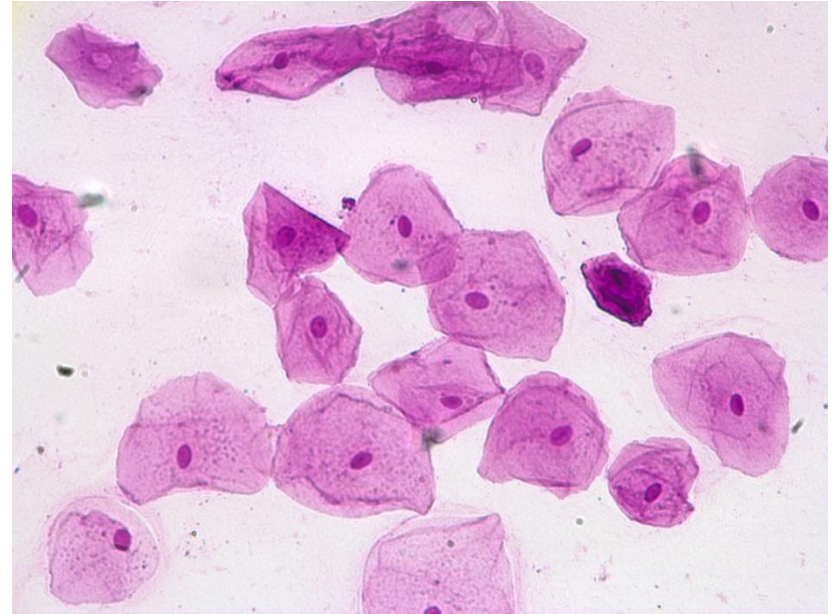
Plants vs. Animals



Experiment #1 – animal cells

We'll be looking at cheek epithelial cells

1. Place 1 drop of water on slide
2. Rub flat side of toothpick against the inside of your cheek.
3. Swirl toothpick in the water on the slide
4. Place cover slip on slide at an angle
5. Place 1 drop of methylene blue on side of cover slip.
6. Place paper towel on other side of cover slip (this will draw the dye across the gradient).
7. Observe.



Experiment #2 – plant cells

We'll be looking at red onion cells

1. Place 1 drop of water on slide.
2. Peel one thin layer of onion from the cutting.
3. Place with the red side up on the slide.
4. Observe.
5. Place 1 drop of saline on top of the onion.
6. Observe again.
7. What happened? Why?

