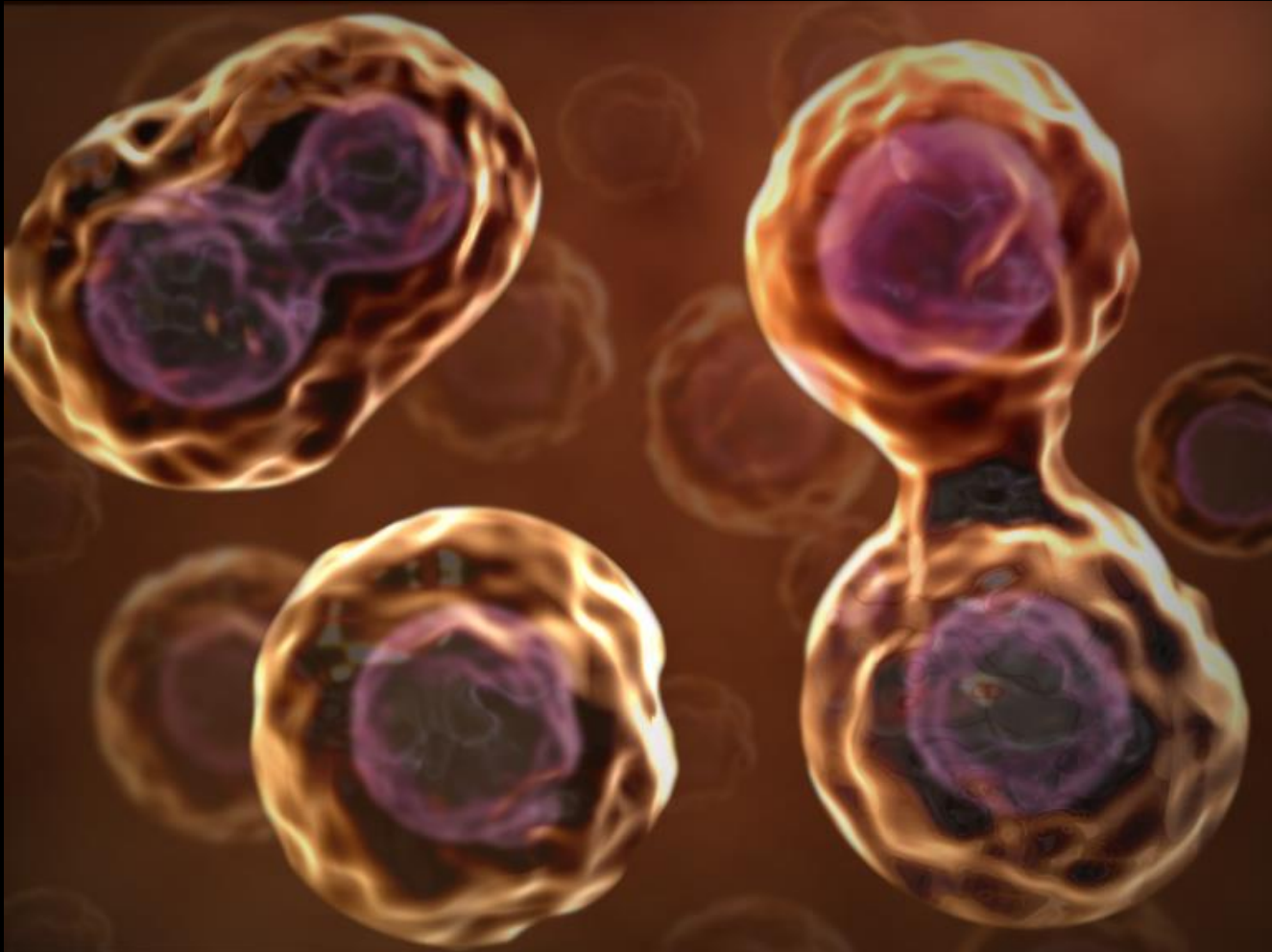


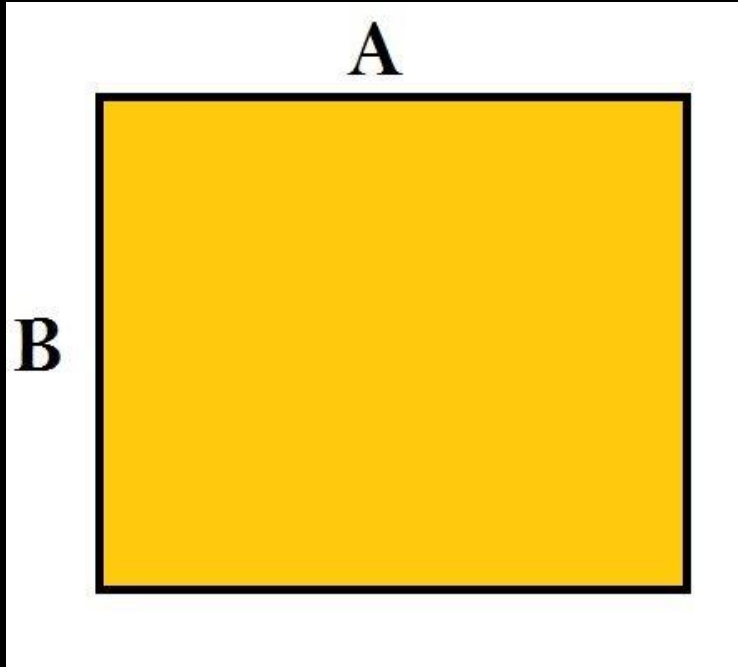
Cell Growth



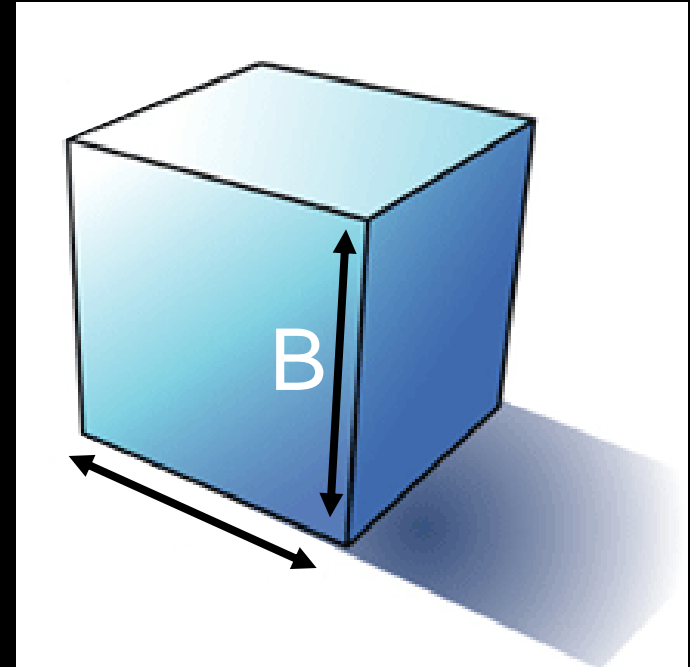
Learning Objectives

- Explain how cell division solves the problem of cell growth

Calculating Surface Area

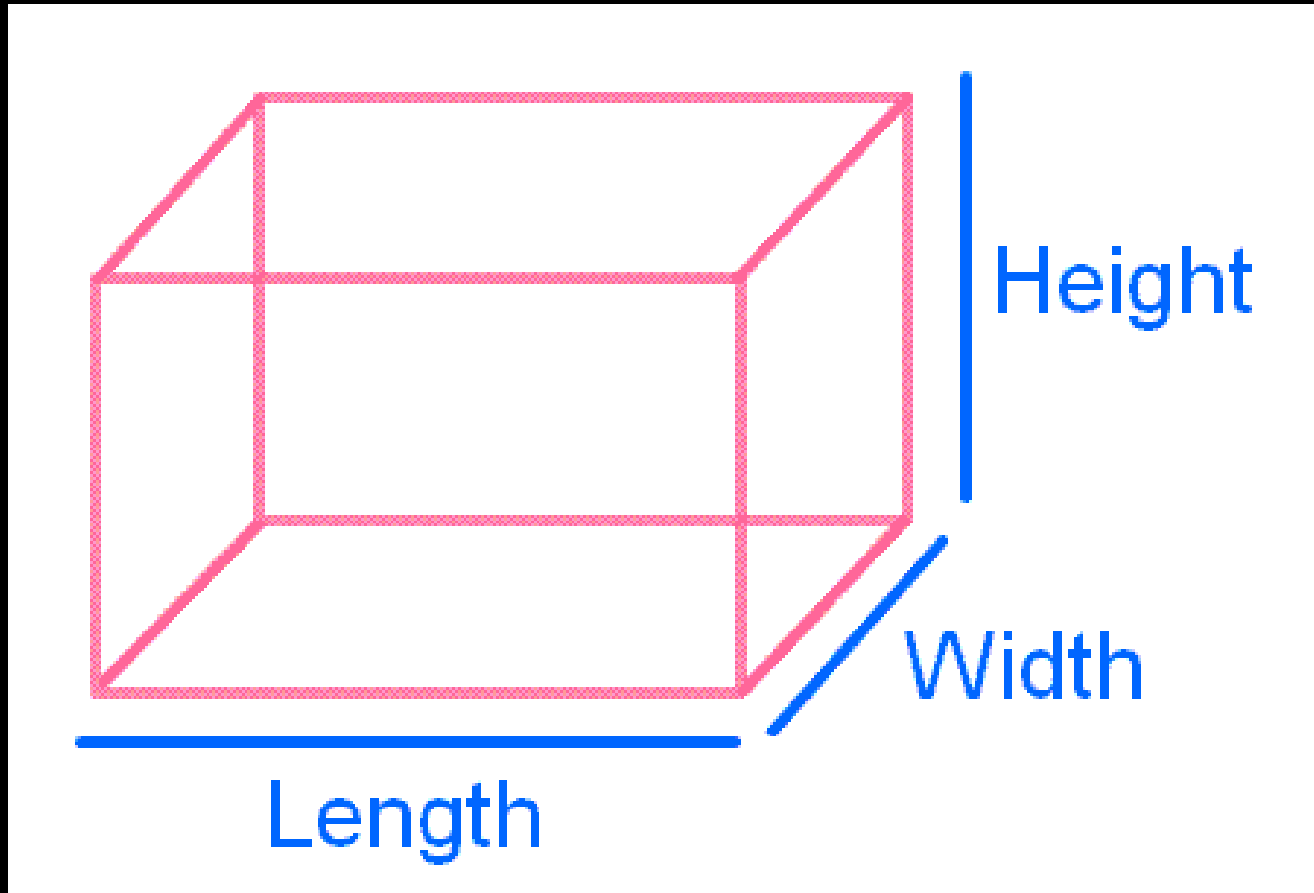


$$\text{Area} = A \times B$$



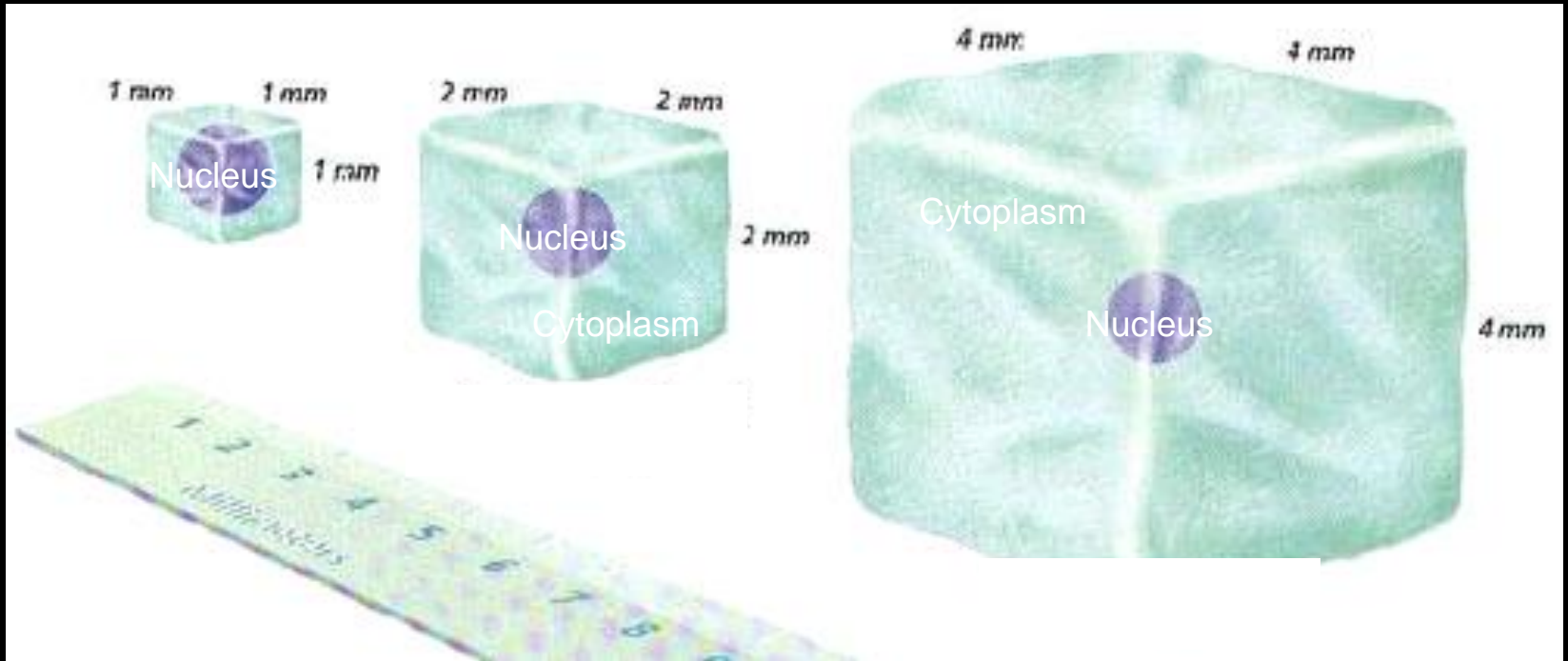
$$\text{Surface Area} = \text{Area} \times \# \text{ of sides}$$

Calculating Volume



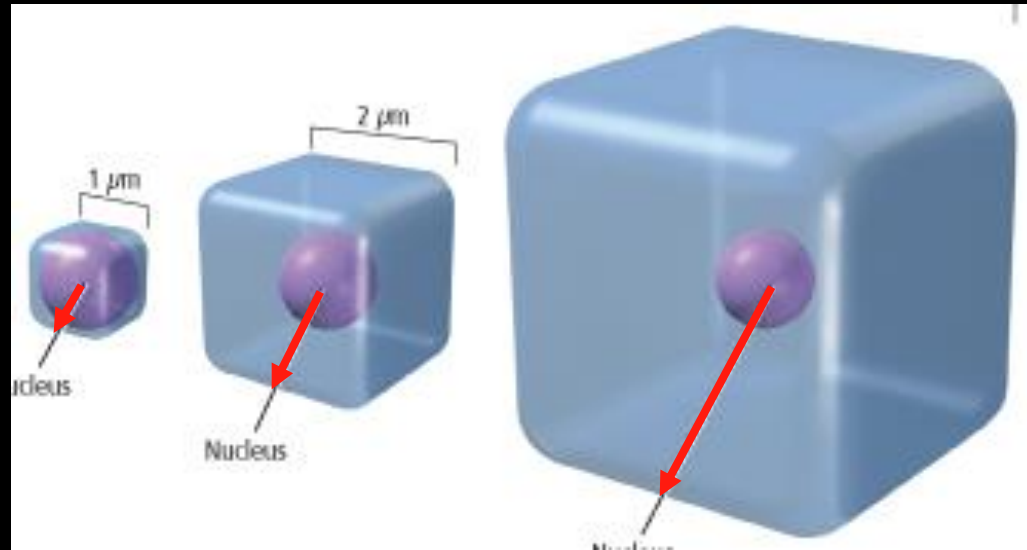
$$\text{Volume} = \text{Length} \times \text{Height} \times \text{Width}$$

Surface Area to Volume



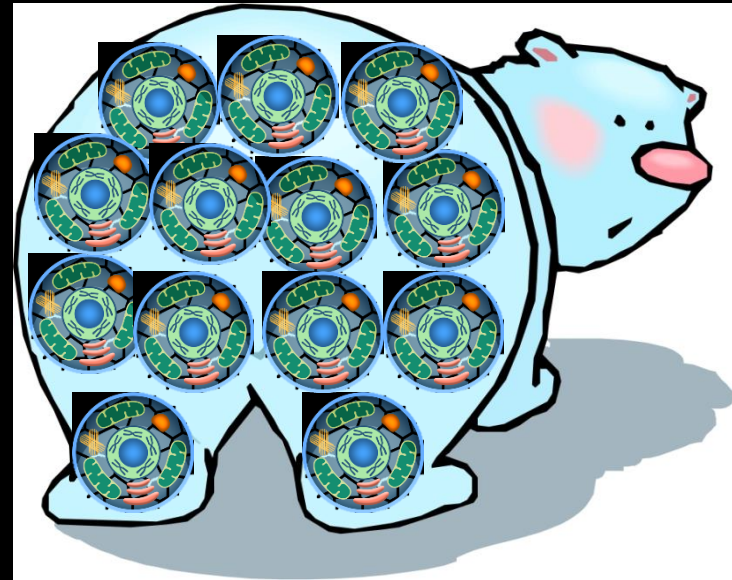
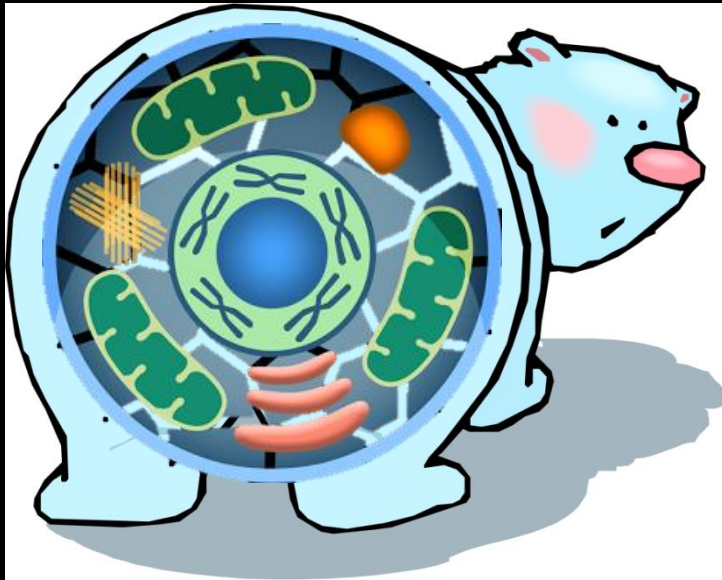
As the cell grows larger, the cell's volume increases faster than the surface area, causing problems for the cell.

Limits to Cell Growth



1. Larger cells have more trouble moving nutrients and wastes across the membrane

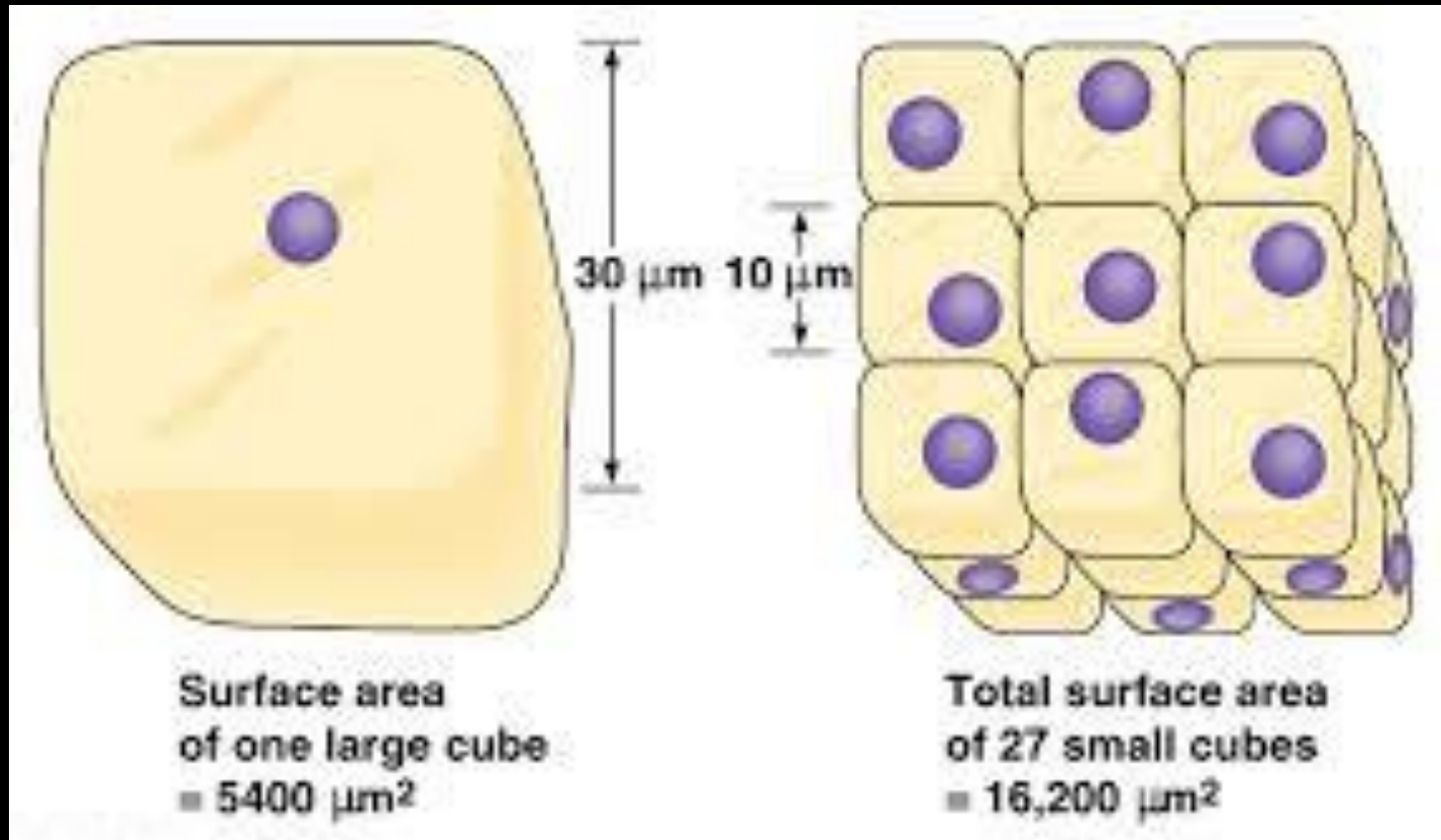
2. DNA overload - large cells cannot make enough DNA to meet it's needs



When animals grow larger, do their cells increase in size or do they produce more cells?

Produce more cells!

Cell Division



Before a cell becomes too large, it divides forming two “daughter” cells - **Cell Division**

Functions of Cell Division

1. **Reproduction** - formation of an organism, increasing the population.
2. **Growth** - development of multicellular organisms.
3. **Repair** - repair and renew cells that die (apoptosis) from normal wear or damage.

YouTube Video

Surface Area to
Volume Ratio

Agar Cube Experiment

YouTube Video

Why are cells small?

Mr. Anderson

Stop Here

