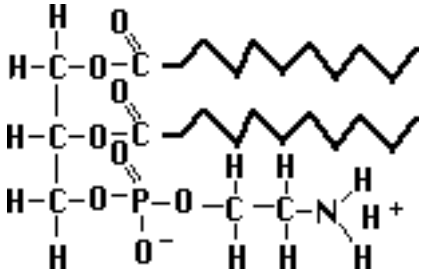
Review 07

Biologically Important macromolecules (large molecules)

❶ Carbohydrates $C(H_2O)_n$

❷ Proteins

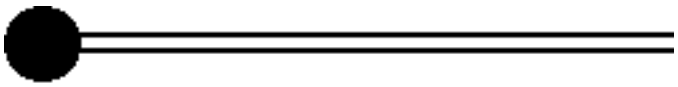
❸ Nucleic Acids



phospholipid

phospholipids: diglyceride with very polar, phosphate-containing group attached to third bonding site on glycerol

result is molecule very polar at "head" and very non-polar along "tail"



Phospholipids form

- ☆ monolayers
- ☆ micelles
- ☆ micelle bilayers

effectively isolate polar inside from polar outside by creating hydrophobic barrier between the two

model for cell membrane, which separates living inside from non-living outside

Cells

1665 Robert Hooke--coined term "cell"

1838 Matthias Schleiden--all plant tissues composed of cells

1839 Theodor Schwann--all life composed of cells

1858 Rudolf Virchow--all life comes from pre-existing life

Cell Theory

1. The cell is the smallest unit of life.
2. All cells come from pre-existing cells.

General types of cellular construction:

Eukaryotic	Prokaryotic
• complex in organization • organelles • several chromosomes w/in a nucleus • tiny Examples: plants, animals, fungi, protists	• simple in organization • no organelles • one chromosome within "nuclear region" cytoplasm • tinier Examples: bacteria, blue-green bacteria (cyanobacteria)

Review 07, con't

We'll be looking primarily at EUKARYOTIC cells this term.

Sizes measured in microns (μ) = micrometers = 10^{-6} meters

IF STRETCH A METER FROM HERE TO PORTLAND,

smallest prokaryote ≈ 0.5μ to 1.1μ (THE GREEN POSTERBOARD)

typical eukaryote ≈10μ to 30μ in diam. (ROUGHLY THIS LECTURE HALL)

Microscopes

light: up to 1500X mag; 200 nm (0.2 μ) resolving power

look at live or dead; stained or not; inside or outside; whole or sections

scanning e.m.: up to 500,000X mag; 0.4 nm (0.004μ) resolving power

look at surfaces of dead, dried, treated specimens; small whole or broken open