

1  **Chapter 3**

Cells

2  **3.1**

- Cell
 - Smallest unit of life
 - Robert Hooke 1600s
- Cell theory
 - All living things made of one or more cells
 - Cells arise from other pre-existing cells

3  **Why Are Cells So Small?**

- Surface-to-volume ratio

4  **Microscopes**

- Light microscopes
 - Simple or compound
 - Limitations - structure less than $\frac{1}{2}$ wavelength long not visible
- Electron microscopes
 - Transmission EM or Scanning EM

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6  **3.2**

- Prokaryotic
 - Plasma membrane
 - Cytoplasm
 - Ribosomes
 - DNA
 - Cell wall
 - Flagellum
- Eukaryotic
 - Membrane bound internal compartments
 - Nucleus & organelles

7  **Animal & Plant Cells**

8  **3.4**

- Plasma membrane
 - Phospholipids
 - Head – polar
 - Tail – non polar
 - Phospholipid bilayer

9  **3.5**

- Fluid Mosaic model
- Membrane molecules
 - Transmembrane proteins
 - Surface proteins
 - Carbohydrates
 - Cholesterol

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- Types of membrane proteins
 - Receptor
 - Recognition
 - Transport
 - Enzymatic

- 11 **3.8**
- Types of transport
 - Passive
 - Molecules move down their concentration gradient
 - Simple diffusion
 - Facilitated diffusion
 - Osmosis
 -
- 12
- Types of transport cont.
 - Active
 - Molecules move against the concentration gradient
 - Requires energy
 -
- 13 **3.11**
- Movement of large molecules
 - Endocytosis
 - Engulf particles
 - Exocytosis
 - Move particles to the outside
- 14 **3.13**
- Nucleus
 - Chromatin
 - DNA & Proteins
- 15 **3.14**
- Cytoskeleton
 - Shape & support
 - Intracellular traffic
 - Movement
 - Cilia
 - flagella
- 16 **3.15**
- Mitochondria
 - Energy conversion
 - DNA
- 17 **3.16**
- Lysosomes
 - Recycle
 - Powerful digestive enzymes
- 18 **3.17**
- Endomembrane system
 - Rough endoplasmic reticulum
 - Smooth ER
 - Golgi apparatus
- 19
- Rough ER
 - Protein production & folding
 - Smooth ER
 - Lipids & toxin breakdown

- Alcohol, antibiotics, barbiturates
- Amphetamines
- Etc.
- Golgi apparatus
 - Carbohydrates
 - Modifications
 - Export
 -
 -
- 20 **3.19**
 - Plants
 - Cell Wall
 - cellulose
- 21 **3.20**
 - Vacuoles
 - Storage
 - Waste
 - Defense
 - Reproduction
 - Support
 -
- 22 **3.21**
 - Chloroplasts
 - Energy production
 - DNA
 -
- 23 **Assignment**
 1. Make a diagram a plant and an animal cell.
 2. Describe (in your own words) the following organelles:
 - Nucleus
 - Rough ER
 - Smooth ER
 - Golgi bodies
 - Lysosomes
 - Mitochondria
 - *Central vacuole
 - *Chloroplasts
 - *Cell wall
 - At the end of the activity I will randomly call on groups to explain each of the organelles
 - - * structures found in plant cells