**Module 2**

**Chapter 4 – Anatomy of the Cell**

**The Prokaryotic and Eukaryotic Cells**

* **Prokaryotic** cells and **eukaryotic** cells \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Composed of carbohydrates, proteins, nucleic acids, lipids
	+ Perform \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of chemical reactions
* Differences are primarily in internal, external *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**Shapes**

* Average size: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Most bacteria are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Maintain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ throughout lifetime
* A few are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Adopt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ More difficult to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ based on shape alone
* Three basic shapes
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Coccus

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bacillus

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bacillus 🡪 \_\_\_\_\_\_\_\_\_\_\_\_
* *Bacillus* 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_

Spiral

* Have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ twists
	+ Vibrio
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Spirilla
		- Helical, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shape
		- Rigid bodies
	+ Spirochetes
		- Helical, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other shapes include:

* Star shaped
* Rectangular, flat

**Structures external to the cell wall**

Glycocalyx

* A “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
	+ \_\_\_\_\_\_\_\_\_\_\_\_ polymer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_ cell wall
* Two general types of glycocalyx
	+ Capsule – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Slime layer – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Can be important in contributing to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ability to cause disease)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allows cell to attach - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Capsules prevent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Flagellum, flagella

* Long appendage(s) that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Allows for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Outside of \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Arrangement of flagella
	+ Peritrichous
	+ Monotrichous
	+ Lophotrichous
	+ Amphitrichous
	+ Atrichous
* Taxis – movement \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from environment
* Positive taxis – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ environment
	+ Environment called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Negative taxis – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from environment
	+ Environment called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Environment includes chemicals, light
	+ Movement towards light – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *\_\_\_\_\_\_\_\_\_\_\_\_*taxis
	+ Movement away from chemical – \_\_\_\_\_\_\_\_\_\_\_\_ *\_\_\_\_\_\_\_\_\_\_\_\_\_*taxis

Axial filaments

* Bundles of \_\_\_\_\_\_\_\_\_\_\_\_\_ that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cell
* AKA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Uniquely in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cause cell to move in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fimbria, fimbriae

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ appendages
	+ Not used \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Fimbriae allow for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ *Neisseria gonorrhoeae* sticks to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ No \_\_\_\_\_\_\_\_\_\_\_\_\_, no \_\_\_\_\_\_\_\_\_\_\_\_\_

Pilus, pili

* Used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between bacteria
	+ Process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Also can be used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Cell Wall**

* Surrounds \_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bacterial cell wall made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Peptidoglycan

* Polymer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (NAM or NAG), forms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ backbone
* Linked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Arrangement of peptidoglycan used to classify bacteria into 2 groups
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bacteria
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bacteria

Gram-positive cell walls

* \_\_\_\_\_\_\_\_\_\_\_\_\_; \_\_\_\_\_\_\_\_\_\_\_ layers of peptidoglycan next to cell membrane
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acids - only in Gram-positive cell wall
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acid links to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_ teichoic acid links to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gram-negative cell walls

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer of peptidoglycan \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ membranes
	+ In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between outer and inner (\_\_\_\_\_\_\_\_\_) membranes
* Outer membrane contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (LPS)
* Protection from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, immune system \_\_\_\_\_\_\_\_\_\_\_\_
* Provides \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an \_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form \_\_\_\_\_\_\_\_\_\_\_\_\_ through outer membrane

Atypical cell walls

* Acid-fast cell walls
	+ Like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bound to peptidoglycan \_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from immune system
	+ Found in *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
* Archaea
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Wall of \_\_\_\_\_\_\_\_\_\_\_\_\_ (lack \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Mycoplasmas
	+ Lack \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in plasma membrane, provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The plasma membrane**

* Thin layer, encloses \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of cell
* Consists primarily of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Arranged in \_\_\_\_\_\_\_ parallel rows called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ “heads” on two \_\_\_\_\_\_\_\_\_\_\_ surfaces of membrane
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ “tails” in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of membrane
* Membrane is as viscous as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within membrane perform various functions
	+ Channels, structure, transport
* Phospholipids and proteins are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Referred to as fluid mosaic model

Functions of membrane:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ barrier for materials into and out of cell
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules can pass barrier
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pass – too big to squeeze through
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pass – \_\_\_\_\_\_\_\_ on phospholipids repel ions
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules (ie oxygen, carbon dioxide,) \_\_\_\_\_\_\_ pass
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ passes through \_\_\_\_\_\_\_\_\_\_\_\_ channels (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proteins allow specific molecules to pass

**The movement of materials across membranes**

* In order to generate energy, food must cross membrane
	+ Most resources are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to cross membrane
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ processes
	+ Molecules move from an area of \_\_\_\_\_\_\_\_ concentration to area of \_\_\_\_\_\_\_\_ concentration
		- *\_\_\_\_\_\_\_\_\_\_\_\_* the concentration gradient
	+ Requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ processes
	+ Molecules move from an area of \_\_\_\_\_\_\_\_ concentration to area of \_\_\_\_\_\_\_\_ concentration
		- *\_\_\_\_\_\_\_\_\_\_\_\_* the concentration gradient
	+ Requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Passive processes – 3 mechanisms:
	+ Simple diffusion
	+ Facilitated diffusion
	+ Osmosis
* Active Processes (1 mechanism)
	+ Active Transport

Simple diffusion

* Net overall movement of molecules from an area of \_\_\_\_\_\_\_\_ concentration to area of \_\_\_\_\_\_\_\_ concentration
* Equilibrium – the point when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Simple diffusion across plasma membrane important for small molecules like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Facilitated diffusion

* Similar to simple diffusion, ie \_\_\_\_\_\_\_\_\_\_\_ the concentration gradient
* Uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to cross the membrane
	+ Molecules cannot cross membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Osmosis

* Movement of \_\_\_\_\_\_\_\_\_\_\_\_ across a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ membrane from an are of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ concentration to and are of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ concentration
* Osmotic pressure – the pressure needed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ across the membrane
	+ Important for cell to balance osmotic pressure
* Tonicity - measure of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ concentration in a solution relative to a membrane
	+ Solute concentration of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) compared to inside of \_\_\_\_\_\_\_\_\_\_\_ (across the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
	+ Measured as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Affects transport of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_ can’t cross membranes)
* Isotonic solution - solute concentration of a solution is \_\_\_\_\_\_\_\_\_\_\_\_\_ to the solute concentration in a cell
* Hypotonic solution - solute concentration of a solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the solute concentration in a cell
* Hypertonic solution - solute concentration of a solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the solute concentration in a cell
* Active Processes
	+ Sometimes cell needs to move molecules \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Cell uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Inside the prokaryotic cell**

* The Cytoplasm is the substance of \_\_\_\_\_\_\_\_\_\_\_\_ the plasma membrane
* Contains:
	+ \_\_\_\_\_\_\_\_\_\_ - fluid and dissolved portion of cytoplasm
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, organic molecules, inorganic ions
	+ Specialized structures
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nucleoid

* The area that contains the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Takes up \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inside the cell

The prokaryotic ribosome

* Responsible for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Ribosomes are composed of proteins and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (rRNA)
* Bacterial ribosomes (\_\_\_\_\_\_) consist of two subunits:
	+ Small subunit; \_\_\_\_\_\_\_ subunit
	+ Large subunit; \_\_\_\_\_\_\_ subunit
	+ “S” a reference to size

Inclusions

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used for various purposes
* Can include stores of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, provide various \_\_\_\_\_\_\_\_\_\_\_\_\_
* Endospores
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells
	+ Resistant to desiccation (\_\_\_\_\_\_\_\_\_\_), heat, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - endospore formation
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - return to vegetative (growing) state

**The Eukaryotic cell**

* Typically \_\_\_\_\_\_\_\_\_\_\_\_\_, structurally more \_\_\_\_\_\_\_\_\_\_\_\_\_\_ than prokaryotic cells

The plasma (cytoplasmic) membrane

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to prokaryotic membrane
	+ Composed of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bilayer
	+ Includes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ embedded in the bilayer
* Eukaryotic plasma membrane contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Not found in prokaryotic cells (exception: Sterols are found in which prokaryote?)

The cell wall and glycocalyx

* Cell wall is generally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than prokaryotic cell walls
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, not peptidoglycan
	+ Plants, algae have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cell wall
	+ Fungi have \_\_\_\_\_\_\_\_\_\_\_\_\_ cell wall
* Many eukaryotes have \_\_\_\_\_\_\_\_\_\_\_\_ cell walls
* Some eukaryotes have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Help strengthen cell surface, attach cells together

Cytoplasm

* Everything \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, outside of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ portion of cytoplasm
* Major differences:
	+ Presence of \_\_\_\_\_\_\_\_\_\_\_
		- Provides support, shape, movement
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ie, metabolism) that are found in \_\_\_\_\_\_\_\_\_\_\_\_\_

Organelles

* Structures with specialized functions
* Not found in prokaryotic cells
* **Nucleus**: Storage of DNA
* **Ribosomes:** 80S (40S + 60S); different size compared to bacteria; same function
* **Endoplasmic Reticulum (ER)**: Synthesis of molecules
* **Golgi complex**: Transport of molecules
* **Lysosome**: Degradation & recycling of molecules
* **Vacuole**: Storage of molecules
* **Mitochondrion**: ATP generation
* **Chloroplast**: Photosynthesis
* **Peroxisome**: Degradation of toxins

Chemotherapy

* Use of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (kill or stop growth of) \_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Antimicrobial drugs display \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - acts within \_\_\_\_\_\_\_\_\_\_ without \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – substance produced by \_\_\_\_\_\_\_\_\_\_\_ that inhibits growth of other microbes
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ spectrum
	+ Affects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ spectrum
	+ Affects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells harder to inhibit
	+ Protected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Drugs must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to pass through \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Penicillins (Beta-lactams)

* \_\_\_\_\_\_\_\_\_\_\_\_ with similar mechanism
	+ Penicillin (ns), ampicillin (bs), oxacillin (bs)
* Prevent synthesis of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Weakens \_\_\_\_\_\_\_\_\_\_\_\_\_\_; cell \_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_)
* Affects only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells

Polypeptide antibiotics

* **Bacitracin**
	+ Inhibits \_\_\_\_\_\_\_\_\_\_\_\_ bacteria
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ only
* **Vancomycin**
	+ Very narrow (*Staphylococcus*)
	+ Last effective antibiotic against \_\_\_\_\_\_\_\_\_\_\_\_\_ – Methicillin resistant *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ Appearance of vancomycin resistant \_\_\_\_\_\_\_\_\_\_\_\_\_ (VRE) a concern

Antimycobacterial antibiotics

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer \_\_\_\_\_\_\_\_\_ most chemicals
* **Isoniazid** inhibits \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of mycolic acid
* Used in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with other drugs

Protein Synthesis Inhibitors

* Prokaryotic ribosome \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from eukaryotic ribosomes
	+ \_\_\_\_\_\_\_\_\_ (30S + 50S) vs \_\_\_\_\_\_\_\_\_\_ (40S + 60S)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ antibacterial target
* **Chloramphenicol** binds to \_\_\_\_\_\_\_\_\_\_\_\_ – inhibits activity
	+ \_\_\_\_\_\_\_\_\_\_\_ (bs), simple to make (cheap)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – used only when necessary
* **Tetracyclines** prevent tRNA binding to \_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_ (very bs)
	+ Can \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and inhibit intracellular pathogens
* **Neomycin** changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Shows serious side effects, so only \_\_\_\_\_\_\_\_\_\_\_\_