**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 \_\_\_\_\_\_\_\_\_\_\_\_