

**GRAM-POSITIVE vs. GRAM-NEGATIVE BACTERIA:**

	Gram positive	Gram negative
<b>Gram staining</b>	Blue/purple	Red/pink
<b>Peptidoglycan layer</b>	Very thick (excessive cross-linking of amino acids)	Thin (simple cross-linking pattern)
<b>Telcholic acid</b>	Present in many	Absent
<b>Periplasmic space</b>	Absent	Present (b/w cytoplasmic membrane & peptidoglycan layer)
<b>Lipopolysaccharide content</b>	Virtually none	High
<b>Toxins produced</b>	Mostly exotoxins	Mostly endotoxins

**CHLORAMPHENICOL:** bacteria use a complex secretion system to inject proteins (effectors) into target host cells, which allow bacteria to persist and cause diseases

Exotoxins	Endotoxins
<ul style="list-style-type: none"> <li>Released or secreted by bacteria into surrounding environment <ul style="list-style-type: none"> <li>Botulism and tetanus</li> </ul> </li> <li>Predominantly secreted by gram-positive bacteria</li> </ul>	<ul style="list-style-type: none"> <li>Not secreted by bacteria; are a component of bacterial cell wall of gram -ve</li> <li>One of the most injurious and fatal components of gram-negative bacteria <ul style="list-style-type: none"> <li>LPS is the endotoxin</li> </ul> </li> </ul>

**CHARACTERISTICS OF ANTIBIOTICS:**

<b>Broad-spectrum</b>	Kill or inhibit a wide range of gram-positive and gram-negative bacteria
<b>Narrow-spectrum</b>	Effective mainly against gram-positive OR gram-negative bacteria
<b>Limited-spectrum</b>	Effective against single organism or disease

**ANTIBIOTICS FUNCTION:**

<b>Bactericidal</b>	Kill bacteria
<b>Bacteriostatic</b>	Stop growth of bacteria

- Some drugs may be static at low doses and cidal at higher doses (SMX, tetracyclines)

**ANTIBIOTIC EFFECTS:**

<b>Concentration-dependent</b>	<ul style="list-style-type: none"> <li>Rate and extent of bacterial loss is directly related with increasing concentration of drugs</li> <li><b>Post-antibiotic effect</b> : persistent suppression of bacterial growth that persists after brief exposure of organisms to antimicrobials</li> </ul>
<b>Time-dependent</b>	<ul style="list-style-type: none"> <li>If plasma concentration &gt; minimum bactericidal concentration</li> <li>Concentration should be maintained above MIC</li> </ul>