Why does urine smell?

Name _____

Bacteria (p. 441 – 450)

Bacteria Cell p.446

I. Bacterial Structure

1. Circle the correct characteristics of bacteria (*versus eukaryotes*).

p.442

Found everywhere on Earth.

1 μm = 1 thousandth of a meter

Nucleus :	Present	Not present
Cell Size :	1μ - 5μ	10μ - 100μ
Multicellularity :	Multicellular	Single-celled
Chromosomes :	Single, circular DNA	Linear, multiple pieces of DNA
Reproduction :	Binary Fission — asexual splitting	Mitosis ?
Flagella :	Single, spinning fiber	Whipping, complex microtubules
Metabolism :	Limited	Diverse

2. Identify the three basic shapes of bacteria.

1. Bacillus - rod-shaped
2. Coccus - sphere-shaped
3. Spirillus - spiral-shaped

p.443

3. What does each of the following pre-fixes mean?

Strepto (or Pneumo) = chains of bacteria

Staphylo = clusters of bacteria

Gram positive (Violet) - Thicker cell walls (Higher dose of antibiotics)

Gram negative (Red) - Thinner cell walls

4. Why is Gram staining important in medicine? p.445

Identifies different types of Embacteria (antibiotics)

5. Define the term endospores. (Dormant for long periods)

Endospores – thick internal wall that encloses DNA of bacteria when conditions are harsh (Bacillus anthracis)

6. What occurs in the process of binary fission? *(p. 119)*

Asexual reproduction (produces identical daughter cells)

More common

7. What occurs during conjugation?

Hollow bridge forms between two cells (genetic info. moves between cells)

II. Obtaining Energy

1. Differentiate between anaerobic and aerobic bacteria.

(Clostridium botulinum)

Anaerobic Bacteria : Bacteria living in oxygen-free environment

Aerobic Bacteria : Bacteria living in the presence of oxygen

(Mycobacterium tuberculosis)

Conjugation

Name _____

p. 444-445

2. Match the types of bacteria energy styles with the correct definitions. *(Not in the book.)*

1. D. Photoautotroph — A. Photosynthetic and capable of "eating". (Carnivorous Plants)
2. C. Chemoautotroph — B. "Eats" organic molecules & breaks them down. (Animals)
3. B. Heterotroph — C. Obtains energy directly from organic molecules. (Hydrothermal Vents)
4. A. Photoheterotroph — D. Carries out photosynthesis similar to plants. (Plants)

3. List the four main types of photosynthetic bacteria.

1. Purple Non-sulfur 2. Green Sulfur (anaerobic) 3. Purple Sulfur (anaerobic) 4. Cyanobacteria

4. What kind of relationship does *Rhizobium* have with plants?

p. 445 - Symbiotic (Gains nutrients/water) - (Nitrogen-fixation)

III. Pathogenic Bacteria

1. What does each strain of bacteria cause?

1. *Propionibacterium acnes* : Acne (85% teenagers)
2. *Staphylococcus aureus* : Food poisoning (Most common)
3. *Clostridium botulinum* : Botulism (Double vision + paralysis)
4. *Escherichia coli* : Beneficial + Toxic (Raw Beef)

p. 448

2. Define the term toxins.

Toxins – poisonous, chemical compounds

3. What is the intent of biowarfare?

- Use bacteria or viruses for mass infections (Smallpox Controversy)

IV. Antibiotics

p. 449

1. Define the term antibiotics.

Antibiotics – chemicals that interfere with the life cycle of bacteria

Penicillium notatum →

2. Who discovered the antibiotic, penicillin, in 1928? (Accidental)

Alexander Fleming

"Miracle Drug"
- Treats pneumonia + many other diseases

Stacked bacteria cultures in room → fungus grew

3. Over time, resistant strains of bacteria can evolve.

Circle One : True False

Medicine = Generational

V. Importance Of Bacteria

not in penicillium area

1. List six types of foods produced using bacteria.

p. 450

1. Pickles 2. Buttermilk 3. Cheese
4. Sauerkraut 5. Olives 6. Vinegar