**Bacteria**

1. **Taxonomy**
   1. Belong to the empire \_\_\_\_\_\_\_\_\_\_\_\_ because they do not contain a \_\_\_\_\_\_\_\_\_\_
   2. Previously, in the kingdom \_\_\_\_\_\_\_\_\_\_ with \_\_\_\_\_\_\_\_\_
2. **Structure**
   1. Size\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Lack \_\_\_\_\_\_\_\_\_\_ organelles
   3. Cell wall composed of \_\_\_\_\_\_\_\_\_\_ contains a \_\_\_\_\_\_\_\_\_\_\_
   4. Some have \_\_\_\_\_\_\_\_\_\_ that protrude from cell \_\_\_\_\_\_\_\_\_\_ through the cell \_\_\_\_\_\_\_\_\_\_; these are used for \_\_\_\_\_\_\_\_\_\_
3. **Obtaining energy**
4. Autotrophs:
   1. Phototropic autotrophs:

Example: \_\_\_\_\_\_\_\_\_\_

* 1. Chemotrophic autotrophs:

Example: \_\_\_\_\_\_\_\_\_\_

1. Heterotrophs
   1. Chemotrophic heterotrophs:

Example: \_\_\_\_\_\_\_\_\_\_

* 1. Humans are also \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_
     1. Many bacteria compete with us for \_\_\_\_\_\_\_\_
     2. Example: \_\_\_\_\_\_\_\_\_\_ grows in raw meat, \_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_
     3. If not properly cooked (to kill the bacteria) they will “eat” this food and release \_\_\_\_\_\_\_\_\_\_ into it, causing the illness we call \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

1. **Metabolism**
   1. Aerobic or \_\_\_\_\_\_\_\_\_\_\_\_, requires \_\_\_\_\_\_\_\_\_\_\_\_
      1. Obligate aerobes \_\_\_\_\_\_\_\_\_\_\_ O2 or they \_\_\_\_\_\_\_\_\_
      2. Facultative aerobes do not require, but can use, \_\_\_\_\_\_
   2. Anaerobic or \_\_\_\_\_\_\_\_\_\_, does not require \_\_\_\_\_\_\_\_
      1. Obligate anaerobes\_\_\_\_\_\_\_\_\_\_\_ in the presences of \_\_\_\_\_\_
      2. Example organism:
         1. Found in the \_\_\_\_\_\_\_\_
         2. Produce \_\_\_\_\_\_\_\_\_ that cause botulism that interfere with \_\_\_\_\_\_\_\_\_ activity, causing paralysis and sometimes \_\_\_\_\_\_\_\_\_\_
         3. Botox:
   3. \_\_\_\_\_\_\_\_\_\_ anaerobes:
2. **Growth and Reproduction** 
   1. Bacterial growth is limited by:
   2. Binary fission is an example of \_\_\_\_\_\_\_\_\_\_ reproduction



* 1. Conjugation is an example of \_\_\_\_\_\_\_\_\_\_\_ reproduction, which helps introduce \_\_\_\_\_\_\_\_\_\_\_\_\_\_



* 1. Spore formation
     1. Endospore:
     2. During this phase bacterium are \_\_\_\_\_\_\_\_, they do not \_\_\_\_\_\_\_\_ or reproduce
     3. Can remain in this phase for \_\_\_\_\_\_\_\_\_\_ until conditions because more \_\_\_\_\_\_\_\_\_\_

1. **Uses for bacteria**
   1. Bacteria are used to produce
   2. Industrial uses
   3. Symbiosis, example: humans and \_\_\_\_\_\_\_\_\_\_
      1. Bacteria benefit by being provided with:
      2. Humans benefit by getting:
2. **Bacteria in the Environment**
   1. Nutrient flow, bacteria recycle:
   2. Sewage decomposition: bacteria grow \_\_\_\_\_\_\_\_\_\_ here and as they grow:
   3. Nitrogen fixation:
      1. \_\_\_\_\_\_\_\_\_\_ organisms on Earth are totally \_\_\_\_\_\_\_\_\_\_ on bacteria and archaea for \_\_\_\_\_\_\_\_\_\_
      2. Our atmosphere is \_\_\_\_\_\_\_\_\_\_ % nitrogen gas but living things need it in \_\_\_\_\_\_\_\_\_\_ form.