

Useful Background Information

The procedure of gram-staining is not introduced in the students' handout, but you may want to present the information to the class while presenting the Bacteria PowerPoint. Gram-staining is a method of distinguishing between different types of bacteria based on how they respond to the staining process. The method is named after the scientist (J.M.C. Gram) who devised a method for staining bacteria using a dye called crystal violet. Gram-staining divides bacteria up into two groups, gram-negative and gram-positive. Gram-positive bacteria retain the violet color of the dye. These bacteria have a cell wall with a thick layer of a particular substance. Gram-negative bacteria lose the violet stain and take the red color of the counter stain. These bacteria have a thin outer layer of a particular substance on their cell walls.

Examples of gram-positive bacteria include staphylococci ("staph"), streptococci ("strep"), pneumococci, and the bacterium responsible for diphtheria (*Corynebacterium diphtheriae*) and anthrax (*Bacillus anthracis*).

Examples of gram-negative bacteria include gonococci (venereal disease), meningococci (bacterial meningitis), the organisms responsible for cholera and bubonic plague, and much of the bacteria in the gastrointestinal tract of the stomach that are responsible for illness.

The Veterinary Black Bag Program

Project Goals:

- Develop Veterinarian's Black Bags (VBBs) of instructional items and pamphlets for middle school teachers to support classroom visits by local veterinarians.
- Provide professional development for veterinarians and teachers on how to use items in the VBBs
- Promote inquiry-based thinking about health-related subjects while emphasizing the value of biomedical research and promoting careers in science.



PEER

PARTNERSHIP FOR ENVIRONMENTAL
EDUCATION AND RURAL HEALTH

Dr. Larry Johnson
Principal Investigator, PEER
979-845-9279
ljohnson@cvm.tamu.edu

Dr. William Klemm
Director, Peer
979-845-4201
wklemm@cvm.tamu.edu

Department of Veterinary Integrative Biosciences
College of Veterinary Medicine & Biomedical Sciences
Texas A&M University, College Station, Tx 77843
MS#4458



<http://peer.tamu.edu/VBB/Summary.asp>

Bacteria and Dental Health

Follow Up Lesson



The instruction in this module includes:

Presentation on *Dental Health*

Follow-up lessons on:

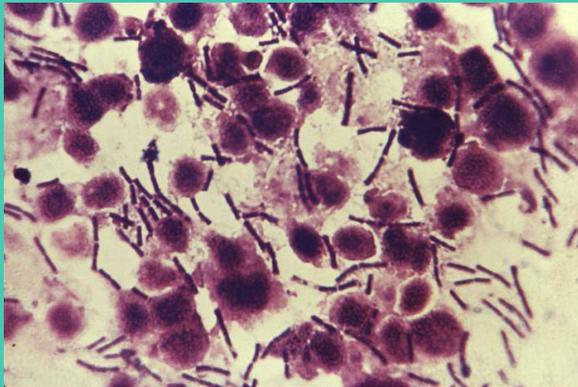
Animal Teeth

FDA and Your Teeth

Bacteria and Dental Health

Summary of Lesson Content

In this lesson, students will learn about bacteria and their role in dental health. Students will read about bacteria and dental diseases and view different bacteria in the PowerPoint. After studying the pathogens that cause periodontal diseases and tooth decay, the students will research a different pathogen and make a “Most Wanted Poster” of a disease-causing bacterium (not necessarily limited to dental bacteria).

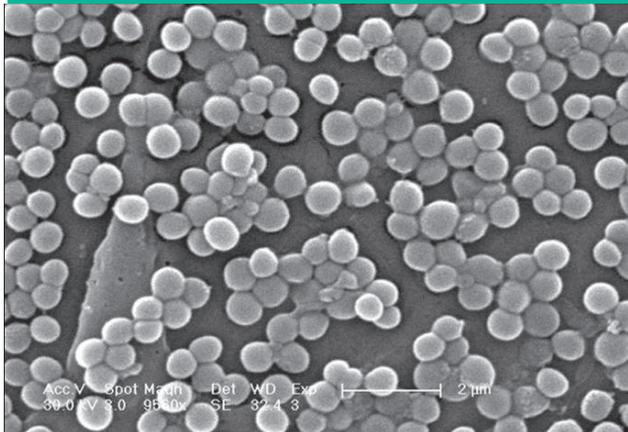


Anthrax



Objectives

1. Describe the pathogenesis of periodontal disease.
2. Describe growth conditions and properties of bacteria.
3. Describe bacterial oxygen preference and enzymes that relate to dental disease.



E Coli

Vocabulary

Microorganisms: Organisms that are microscopic, that is, too small to be seen by the human eye.

Prokaryote: A cell that contains no nucleus.

Morphology: The study of the outward appearance of an organism (shape, color, structure, pattern) shape and form of things in general

Bacilli: (singular, bacillus) rod shaped bacteria

Cocci: (singular, coccus) spherically shaped bacteria

Spirilla: (singular, spirillum) helical or corkscrew shaped bacteria

Flagella: (singular, flagellum) Hair-like tails that propel bacteria through liquid

Binary Fission: The reproductive process of one bacteria splitting into two

Pathogens: microbes that cause disease; typically viruses and bacteria

Periodontal Disease: A bacterial disease of the structures supporting the teeth that can range from gum inflammation to the loss of teeth.

Plaque: A sticky, cream-colored substance on your teeth that consists largely of bacteria.

Gram-staining: A method of dividing bacteria into two groups, gram negative and gram positive, based on the properties of the cell wall.