Communicable Disease

Pathogens are disease-causing organisms which be classified into several main categories. The five categorical names and descriptions used by the text are viruses, bacteria, fungi, protozoa, and parasitic worms.

**Viruses**

A virus is the smallest and most simple of all pathogens. Their lack of elaborate structure makes them very difficult to control. As a result, most viral infections are not curable, although they can be treatable. Additionally, there are vaccines available for some viruses. Often, an inactive form of a specific virus is used for a vaccine; after it is injected, the body responds by forming temporary, semi-permanent, or permanent immunity against the particular virus. The common cold, influenza, herpes, genital warts, and AIDS are caused by viruses.

A SENSITIVE photo of a child with the measles--caused by a virus--is available through the Immunization Action Coalition (O). The Immunization Action Coalition also shows a sensitive photo of a child afflicted with polio (O--SENSITIVE photo). Web Path shows a magnified view of human immunodeficiency virus (HIV) under an electron micrograph (O).

The Public Health Image Library (PHIL) shows magnified images of a variety of viral pathogens, as well as photos of those infected with the viral conditions at their website (O). To find photos of infected patients as well as images of microscopic pathogens, travel to PHIL's search page, checkmark "photos" and type in the below examples (O):

- **polio** - type in "polio" to see microscopic images and photos (including a 1960's photo of two children wearing braces as a result of polio) on pages 9-11
- **rubella** - type in "rubella" to see a microscopic image and some SENSITIVE photos of rubella infections
- **West Nile Virus** - type in "West Nile" to see some electron micrographs of the virus, as well as photos of mosquitoes thought to be vectors for the virus
- **herpes simplex** - type in "herpes simplex" to view images and SENSITIVE photos
- **ebola virus** - type in "ebola" to view a variety of images and a few photos

**Bacteria**

A bacterium is a single-celled microscopic organism, although larger than a virus. Examples of bacterial infections include chlamydia, strep throat, diptheria, and tetanus. Merck.com shows shapes of bacteria (R). Many bacterial infections are curable with antibiotics or sulfa drugs, although some individuals are allergic to such medications. Unfortunately, some bacteria have become resistant to current drug treatments, due to the development of new bacterial strains. The
reasons for resistance can be multifactorial, such as incomplete therapy, coexisting illness, poor living conditions, etc. An example of this problem is tuberculosis, seen in the United States. If interested, travel to the American Lung Association for general information about tuberculosis (O).

PHIL shows a variety of magnified bacteria images, including those listed below (O). To access the images, go to PHIL’s search page, checkmark "photos," and search for the items listed (O):

E. coli

*strep*tococcus pneumoniae

tuberculosis and an x-ray of someone with advanced tuberculosis

leptospirosis, kidney

MRSA

**Fungi**

A fungus is a plantlike organism and is not a large contributor of human diseases. Examples of fungi-related human afflictions include athlete's foot, "jock itch," and vaginal yeast infections. Such fungal infections can be treated and controlled. The American Academy of Dermatology site shows an image of athlete's foot, but be warned: it's not pretty (O). Doctorfungus.org ("Dr. Fungus") provides a list and descriptions of human fungal infections (O-you may need to agree to a statement, then select "In People" under the "Think You Have a Fungal Infection" section).

PHIL shows a variety of magnified fungi images, including those listed below (O). To access the images, go to PHIL’s search page, checkmark "photos," and search for the items listed (O):

*candida*

ringworm

**Protozoa**

Protozoa are very small single-celled organisms with wall structure different from bacteria and fungi. Examples of protozoan infections include malaria, giardiasis (O--DPDx image library), (O--DPDx image library), cryptosporidium (O--US Environmental Protection Agency's Microbiology pages) trichomoniasis(O--DPDx parasite image library, Centers for Disease Control). DPDx shows a video clip of trichomoniasis (a sexually transmitted disease) infection, caused by a protozoan infection (R--if you cannot access the video clip, be sure to look at a couple protozoan images through Queensland University of Technology).

The Cells Alive! features a cryptosporidium movie (O); look for link in paragraph of content beneath images)
Parasitic Worms

The term "parasitic worms" refers to multi-celled animals, some of them microscopic in size, others very large. Tapeworms, which reside in the gastrointestinal tract, and trichinosis are examples of parasitic worm infections. For a little more information, read the tapeworm description provided by Merck (R).

The University of California--Davis Department of Nematology shows an adult hookworm feeding (R).

If interested, look for parasitic infections by searching PHIL:

dirofilaria worm - type in "dirofilaria"
adult tapeworm - type in "tapeworm"

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