

Each of the following is a disease found in humans. Read each of the descriptions and decide as a group how you would organize the diseases into 2-5 major groups, and then 2-5 subgroups. Be able to defend your choices to the class.

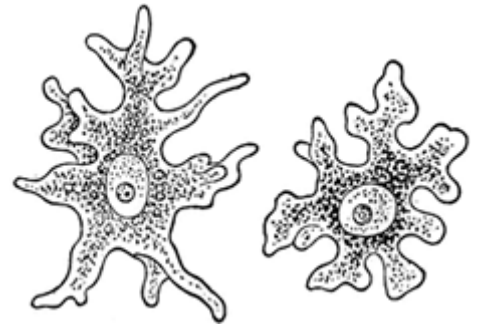
### African Sleeping Sickness

Infectious Agent: Protist, *Trypanosoma*  
Symptoms: headaches, abnormal behavior, uncontrollable sleepiness  
Transmission/Vector: tse tse fly  
Prevention: control insect population  
Additional Notes: some game animals carry trypanosomes which are passed to tse tse flies



### Amebic Dysentery

Infectious Agent: Protist, *Ameba histolytica*  
Symptoms: violent diarrhea, foul smelling flatulence, dehydration  
Transmission/Vector: contaminated water and food  
Prevention: purify / filter water  
Additional Notes: common in developing countries, sometimes called "traveller's diarrhea"



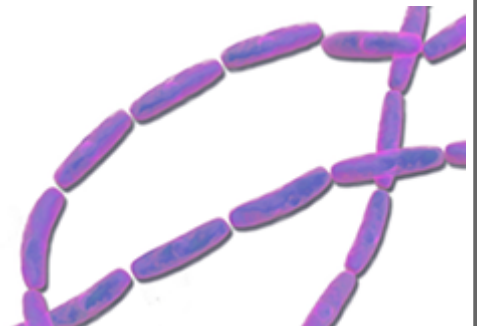
### A.I.D.S (Acquired Immune Deficiency Syndrome)

Infectious Agent: Human Immunodeficiency Virus (H.I.V)  
Symptoms: pneumonia, certain types of cancer, opportunistic infections  
Transmission/Vector: intimate contact, exchange of blood or body fluids  
Prevention/Treatment: blood screening, safer sex; anti-viral drugs  
Additional Notes: Drugs can be used to slow disease progression, there is no cure or vaccine



### Anthrax

Infectious Agent: Bacteria, *Bacillus anthracis*  
Symptoms: respiratory failure, flu-like symptoms,  
Transmission/Vector: infected meat  
Prevention: Vaccines can be given to at-risk populations (military), avoid contact with infected persons or animals  
Additional Notes: Anthrax spores can survive for long periods, making anthrax an possible pathogen for bioterrorism (anthrax can be mailed in envelopes). There are also gastrointestinal and cutaneous forms of infection.



## Black Death

Infectious Agent: Bacteria, *Yersinia pestis*

Symptoms: Appearance of buboes (masses) in the groin and armpits, vomiting, rashes, black spots

Transmission/Vector: Fleas on rats

Prevention/Treatment: Avoid areas where infection is present; antibiotics

Additional Notes: Disease is treatable with antibiotics. The Black Plague is thought to have killed 30-60% of Europe's population in the 14th century.



## Cholera

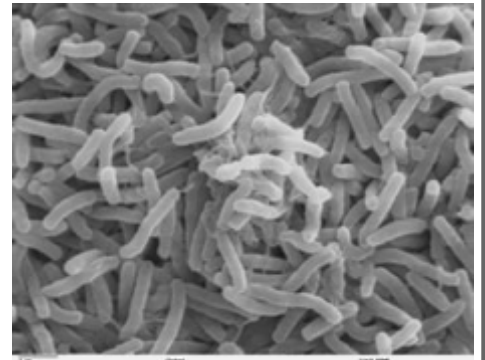
Infectious Agent: Bacteria, *Vibrio cholera*

Symptoms: watery diarrhea, vomiting, dehydration, muscle cramps

Transmission/Vector: contaminated water and food (oysters)

Prevention/Treatment: water filtration, sanitation; antibiotics

Additional Notes: Vaccine is available, but not widely given. Cholera can be fatal if untreated and was devastating before antibiotics and intravenous fluids. John Snow, the father of epidemiology was the first to track this disease and establish its cause.



## Creutzfeldt-Jakob Disease (CJD)

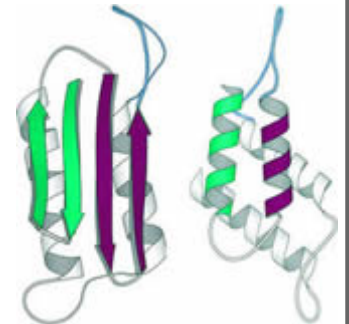
Infectious Agent: scrapie prion

Symptoms: deteriorating mental capacity, confusion, dementia, death

Transmission/Vector: unknown causes, contamination from infected tissue, cannibalism also implicated, possible transmitted from the bovine form (Mad Cow Disease)

Prevention: not applicable, unknown

Additional Notes: Also called spongiform encephalitis, for the spongy appearance of the brain in deceased victims



## Chagas Disease

Infectious Agent: Protist; *Trypanosoma cruzi*

Symptoms: initially flu-like symptoms, swelling of eyelids; heart disorders and digestive problems in chronic phase

Transmission/Vector: Kissing Bug bite

Prevention/Treatment: Control of insects, anti-parasitic drugs

Additional Notes:



## Ebola

Infectious Agent: Ebola Virus

Symptoms: flu-like symptoms, vomiting, bleeding due to decreased blood clotting (hemorrhagic fever)

Transmission/Vector: close contact with infected individuals or handling of corpses, animal reservoir (bats) suspected

Prevention/Treatment: avoid contact with infected, there is no cure, treatment usually involves IV fluids

Additional Notes: High risk of death to those affected (20-90%), usually within 16 days of when symptoms appear



## Giardiasis (Beaver Fever)

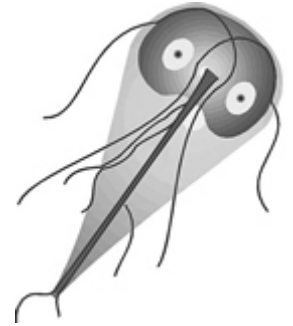
Infectious Agent: Protist, *Giardia lamblia*

Symptoms: weakness, loss of appetite, loose stools, projectile vomiting, excessive gas, weight loss

Transmission/Vector: Drinking water contaminated with the parasite, can infect animals

Prevention: Sanitation, clean water

Additional Notes: This is also called "hiker's diarrhea" because hikers will get this if they drink from what appears to be clean streams. Always filter the water!



## Hookworm

Infectious Agent: parasitic roundworm, *Ancylostoma* and *Necator*

Symptoms: Intestinal inflammation, anemia, can be asymptomatic

Transmission/Vector: larval worms burrow through the skin, adult worms live in the intestine, animals can carry roundworms

Prevention: wear shoes, keep pets de-wormed, sanitation

Additional Notes: The site of infection is often visible on the skin, where the larval worm has burrowed.



## Influenza

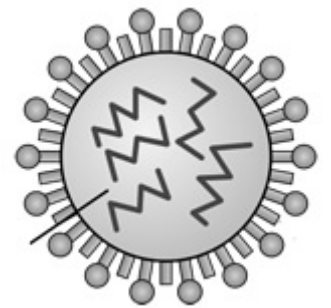
Infectious Agent: virus, Influenza (multiple strains)

Symptoms: high fever, aches, headache, fatigue, sore throat, coughing

Transmission/Vector: air, contact with infected

Prevention: vaccines, handwashing, avoid infected

Additional Notes: the 1918 flu pandemic was described as the "greatest medical holocaust in history" and killed more people than the black death, and more people in 24 weeks than AIDS has killed in 24 years, approximately 50-100 million worldwide



## Leprosy (Hansen's Disease)

Infectious Agent: bacteria, *Mycobacterium leprae*

Symptoms: skin lesions, nerve damage

Transmission/Vector: spread in respiratory droplets

Prevention/Treatment: avoid contact with infected; antibiotics

Additional Notes: Once a feared disease, victims were sometimes assigned to leper colonies, the disease takes its name from the Latin word "lepra" which means scaly - due to the scaly appearance of the skin of those infected



## Malaria

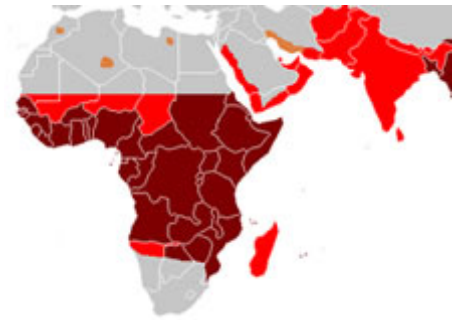
Infectious Agent: protist, Plasmodium

Symptoms: fever, chills, anemia, liver failure

Transmission/Vector: Anopholes mosquito transmits the protist through bites

Prevention/Treatment: Mosquito nets, insecticides; anti-malarial drugs can prevent infection

Additional Notes: Generally a tropical disease, though it has huge effects across the world; in 2010 there were 219 million cases that resulted in 660,000 deaths. Scientists have been researching a vaccine for decades, but have made little progress



## Polio

Infectious Agent: Virus, poliomyelitis

Symptoms: fever, headache, fatigue, muscle pain, paralysis

Transmission/Vector: ingestion in contaminated food or water

Prevention: Vaccines were developed in 1955 (Jonas Salk)

Additional Notes: Some patients were confined to "iron lungs" that would help them breathe because the virus interfered with those muscles. Many children were affected by the disease and lost the ability to walk, a condition called "infantile paralysis."



## Rabies

Infectious Agent: Virus, Rabies

Symptoms: confusion, paranoia, paralysis, disorientation, hydrophobia

Transmission/Vector: Animal bites or scratches

Prevention: Vaccinate dogs, avoid contact with bats or other wild animals

Additional Notes: Rabies is always fatal, there is no cure. There is a vaccine that is given if a person has been exposed to a rabid animal.



## Schistosomiasis (Snail Fever)

Infectious Agent: Roundworm, Schistosome worm  
Symptoms: fever, anemia, organ failure, enlarged liver, blood in urine, bloody stool  
Transmission/Vector: cercariae larva live in snails for part of life cycle, then burrow into skin of humans  
Prevention: Control snail populations with insecticides, sanitation and clean water  
Additional Notes:



## Strep Throat

Infectious Agent: Bacteria, *Streptococcus pyogenes*  
Symptoms: painful throat, swollen tonsils, may be coated with white patches  
Transmission/Vector: Casual contact with infected, respiratory droplets  
Prevention/Treatment: wash hands, disinfect, antibiotics, tonsillectomy may be recommended  
Additional Notes:



## Smallpox

Infectious Agent: Virus, *Variola major* and *Variola minor*  
Symptoms: intense rash with raised fluid-filled blisters, scarring occurs in survivors  
Transmission/Vector: Respiratory droplets, airborne  
Prevention: Avoid infected, vaccination  
Additional Notes: Vaccines for smallpox no longer given as it has been declared eradicated from the human population. The vaccine was created by Edward Jenner from cowpox and is the first known vaccine ever used.



## Syphilis

Infectious Agent: Bacterium, *Treponema pallidum*  
Symptoms: four stages, each with a different set of symptoms ranging from skin ulcerations, rashes, and finally growths that occur under the skin and can cause deformities (growths are called gummas), neurological and cardiac symptoms finally result in death  
Transmission/Vector: Sexual contact, or from mother to fetus  
Prevention/Treatment: Condoms can prevent infection, antibiotics are used to treat it  
Additional Notes: Syphilis can be latent, with person having no symptoms at all. It was a feared disease of Europe in the days before antibiotics. Many historical figures are thought to have had neurological symptoms of stage 4 syphilis (Napoleon, Hitler)



## Tetanus

Infectious Agent: Bacteria, *Clostridium tetani*  
Symptoms: muscle spasms, lockjaw, death  
Transmission/Vector: Enters the skin through cuts or punctures  
Prevention: Vaccine  
Additional Notes: There is no cure or treatment once symptoms occur, it is fatal



## Trichinosis

Infectious Agent: Roundworm, trichinella  
Symptoms: muscle soreness  
Transmission/Vector: eating undercooked food (usually pork)  
Prevention: cook food thoroughly  
Additional Notes: Cysts remain in muscles and cannot be removed



## Whooping Cough (Pertussis)

Infectious Agent: Bacteria, *Bordetella pertussis*  
Symptoms: startw with mild respiratory symptoms, followed by paroxysmal cough, fainting or vomiting due to violent coughing, gasping for breath  
Transmission/Vector: Airborne, person to person  
Prevention: Vaccine developed in the 1930's, completely prevents disease  
Additional Notes: Because some communities are having a high opt-out vaccination rate, pertussis is making a comeback. It can be fatal in young children. Adults are recommended to get boosters if they are around vulnerable children. Pertussis vaccines are packaged with tetanus vaccines.

