

PARASITE KIT DESCRIPTION

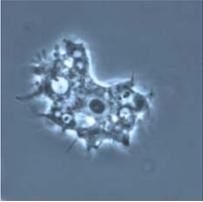
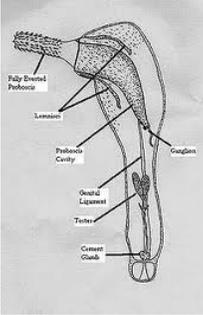
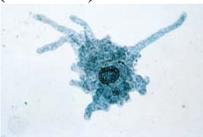
PARASITES

1. Acanthamoeba	39. Diphyllbothrium	77. Isospora	115. Pneumocystis
2. Acanthocephala	40. Dipylidium	78. Isthmiophora	116. Procerovum
3. Acanthoparyphium	41. Dirofilaria	79. Leishmania	117. Prosthodendrium
4. Amoeba	42. Dracunculus	80. Linguatula	118. Pseudoterranova
5. Ancylostoma	43. Echinochasmus	81. Loa Loa	119. Pygidiopsis
6. Angiostrongylus	44. Echinococcus	82. Mansonella	120. Raillietina
7. Anisakis	45. Echinoparyphium	83. Mesocestoides	121. Retortamonas
8. Armillifer	46. Echinostoma	84. Metagonimus	122. Sappinia
9. Artyfechinostomum	47. Eimeria	85. Metastrongylus	123. Sarcocystis
10. Ascaris	48. Encephalitozoon	86. Microphallus	124. Schistosoma
11. Babesia	49. Endolimax	87. Microsporidia 1	125. Spirometra
12. Balamuthia	50. Entamoeba	88. Microsporidia 2	126. Stellantchasmus
13. Balantidium	51. Enterobius	89. Multiceps	127. Stephanurus
14. Baylisascaris	52. Enteromonas	90. Naegleria	128. Stictodora
15. Bertiella	53. Episthmium	91. Nanophyetus	129. Strongyloides
16. Besnoitia	54. Euparyphium	92. Necator	130. Syngamus
17. Blastocystis	55. Eustrongylides	93. Neodiplostomum	131. Taenia
18. Brugia.M	56. Fasciola	94. Neoparamoeba	132. Ternidens
19. Brugia.T	57. Fascioloides	95. Neospora	133. Theileria
20. Capillaria	58. Fasciolopsis	96. Nosema	134. Thelazia
21. Centrocestus	59. Fischoederius	97. Oesophagostmum	135. Toxocara
22. Chilomastix	60. Gastrodiscoides	98. Onchocerca	136. Toxoplasma
23. Clinostomum	61. Gastrothylax	99. Opisthorchis	137. Trachipleistophora
24. Clonorchis	62. Giardia	100. Orientobilharzia	138. Trichinella
25. Cochliopodium	63. Gnathostoma	101. Paragonimus	139. Trichobilharzia
26. Contraecum	64. Gongylonema	102. Passalurus	140. Trichomonas
27. Cotylurus	65. Gryodactylus	103. Pentatrichomonas	141. Trichostrongylus
28. Cryptosporidium	66. Gymnophalloides	104. Pfiesteria	142. Trichuris
29. Cutaneous L.migrans	67. Haemochus	105. Phagicola	143. Tritrichomonas
30. Cyclocoelinae	68. Haemoproteus	106. Phanerocephalus	144. Trypanosoma
31. Cyclospora	69. Hammondia	107. Phocanema	145. Uncinaria
32. Cystoisospora	70. Haplorchis	108. Physaloptera	146. Visceral L.migrans
33. Dactylogyus	71. Hartmannella	109. Plagiorchis	147. Wuchereria
34. Dicrocoelium	72. Hepatozoon	110. Plasmodium 1	148. PARA-GONE #1
35. Dictyostelium	73. Heterakis	111. Plasmodium 2	149. PARA-GONE #2
36. Dientamoeba	74. Heterophyes	112. Plasmodium 3	150. PARA-GONE #3
37. Diectophyme	75. Hymenolepis	113. Plasmodium 4	
38. Dipetalanema	76. Hypoderaeum	114. Platynosmum	

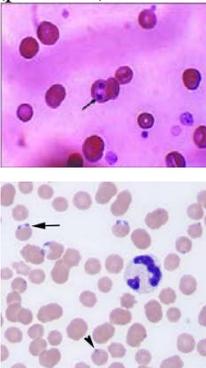
PLEASE NOTE that you will not find Coccidia as an independent vial because the name represents a variety of genre. I have put the many individual genre that make up the group known as coccidia in the list above.

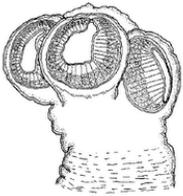
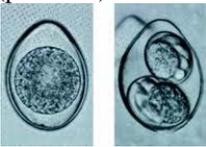
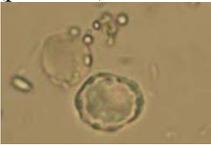
Also know that all known species in a genre have been placed in the respective vial. Just because a person tests for a vial does not mean they have the most contagious species in that genre. This has been done because many species are said to be of no pathogenic issue to humans but I am not so sure that is true. Additionally, some amoeba and parasites known to be of issue only when there is severely immune compromise have not been included because if the system is balanced, these will correct themselves (not the real causative issue).

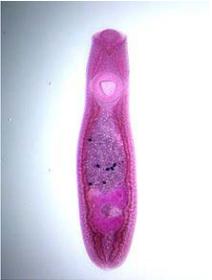
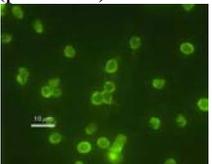
Keep in mind that the symptoms listed for said parasite are those documented by medical science. We have found that many of the parasites classified to be “intestinal” for example, may find their way to an organ or gland that is not the intestine and symptoms may be radically different. We have found that there is no organ or gland or tissue that is safe from parasitic invasion and disruption of normal function.

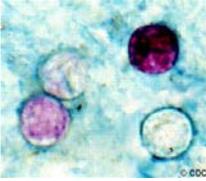
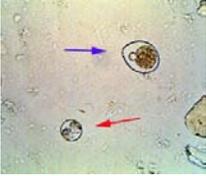
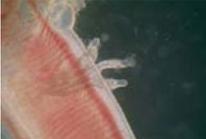
<p>Acanthamoeba (amoeba)</p>  <p><i>Non-fatal forms of this are often found in contact lenses if not disinfected.</i></p>	<p>Acanthamoeba is a genus of amoebae, one of the most common protozoa in soil, and also frequently found in fresh water and other habitats. It preys on bacteria, but also fungi and other protozoa. This species is able to lyse bacteria and produce a wide range of enzymes such as cellulases or chitinases and probably contributes to the breakdown of organic matter in soil, contributing to the microbial loop. This is an opportunistic protozoan pathogen that rarely causes disease in humans. Non-fatal forms of this amoeba are often found in contact lenses if not disinfected properly. Approximately 400 cases of fatal strains have been reported worldwide with a survival rate of only two to three percent! The parasite's portal of entry is via lesions in the skin or the upper respiratory tract or via inhalation of airborne cysts. The parasite then spreads hematogenously (moves through the blood stream) into the central nervous system. Acanthamoeba is able to cross the blood brain barrier. Subsequent invasion of the connective tissue and induction of pro-inflammatory responses leads to neuronal damage which can be fatal within days, depending on the strain. A post-mortem biopsy reveals severe edema and hemorrhagic necrosis. A person that has contracted this illness usually displays subacute symptoms including altered mental status, headaches, fever, neck stiffness, seizures, focal neurological signs such as cranial nerve palsies and coma all leading to death within one week to several months. Infection usually mimics that of bacterial leptomenigitis, tuberculous meningitis, or viral encephalitis.</p>
<p>Acanthocephala (thorny-headed worm)</p>  <p>GENRE INCLUDE: Apororhynchus Echinorhynchus Gigantorhynchus Macracanthorhynchus Mediorhynchus Moniliformis Neonicola Nephridiorhynchus Oligacanthorhynchus Oncicola Pachysentis Promoniliformis Prosthenorchis Tchadorhynchus</p>  <p>Macracanthorhynchus</p>  <p>Moniliformis</p>	<p>A phylum of parasitic worms known as thorny-headed worms, or spiny-headed worms, armed with spines, which it uses to pierce and hold the gut wall of its host. Thorny-headed worms begin their life cycle inside invertebrates that reside in marine or freshwater systems. A small crustacean that feeds near ponds and rivers, is one invertebrate that the thorny-headed worm may occupy. This crustacean is preyed on by ducks and hides by avoiding light and staying away from the surface. However, when infected by a thorny-headed worm it becomes attracted toward light and swims to the surface. The crustacean will even go so far as to find a rock or a plant on the surface, clamp its mouth down, and latch on, making it easy prey for the duck, indicating that the presence of the worms causes definite psychosomatic tendencies (suicide in this case). The duck is the definitive host for the acanthocephalan parasite. It is thought that when the crustacean is infected with a thorny-headed worm, the parasite causes serotonin to be massively expressed. Serotonin is a neurotransmitter involved in emotions and mood. <u>The following three genre have been best studied and known to cause human infection.</u> Macracanthorhynchus is a parasite which lives in the intestines of pigs and other suids, and very occasionally in humans or dogs. Adults attach to the intestinal wall of the host. Eggs with acanthors (embryonated larvae) are found in the soil near domestic swine and can survive up to three and a half years and withstand subzero temperatures. Acanthors are also found in the gut of the intermediate host (beetles and certain white grubs). It causes enteritis, gastritis or peritonitis. Its life cycle includes beetles of the genus Melolontha as intermediate hosts. It is known as, "Giant Thorny-Headed Worm of swine". <u>Moniliformis</u> has been observed in the United States and Iran. Infection is known as acanthocephaliasis, acquired by eating infected beetles or cockroaches. Infected rats have been found world-wide. Cases of human infection by Moniliformis moniliformis have been reported in the United States, Iran, Iraq, and Nigeria. In what is commonly known as "brain-jacking," the parasite induces a behavioral change in its intermediate host that increases the risk of predation for the host. It is thought that this behavioral change holds an evolutionary advantage for the parasite by increasing its chances of getting to its definitive host. When Moniliformis infects its intermediate host, the cockroach species, it changes the cockroach's escape response. In one study, it was concluded that cockroaches infected by Moniliformis took longer to respond to wind stimuli simulating the approach of a potential predator and displayed fewer escape responses implying that the parasite infection renders its intermediate host more vulnerable to predation by hindering its ability to detect and escape from its predator. It is thought that serotonin plays a role in upending the communication between giant interneurons and the thoracic interneurons and in turn hampers the escape response of the cockroach. When the patients exhibited symptoms, they normally experienced abdominal pain, diarrhea, dizziness, edema, and anorexia. In some patients, giddiness has also been reported. <u>Oncicola</u> found in the intestine of dogs, coyotes, cats, lynx and bobcats which infect approximately 5% of stray throughout tropical and temperate countries worldwide.. Chance infections can occur in young turkeys and cause cysts in the esophageal wall. This acanthocephalan utilizes first and second intermediate hosts for transmission, including arthropods and rodents. Few clinical signs are associated with this parasite, although concurrent parasitism with other worms may cause diarrhea, vomiting, anorexia and weight loss.</p>
<p>Acanthoparyphium (Fluke)</p>	<p>Originally considered an avian intestinal parasite, cases in Asia have been discovered in humans after eating brackish water mollusks, causing infection in humans.</p>
<p>Amoeba (amoeba)</p> 	<p>This vial lists the amoeba forms considered to be of non-threat to humans. More infectious amoeba such as entamoeba histolica and naegleria fowleri have their own vial. An amoeba is a prototypical genus of unicellular organism found in decaying vegetation, wet soil, and animals such as humans. The amoeba is a popular organism for testing and observation by scientists, called a "model organism." Other model organisms include fruit flies and lab mice. The amoeba is a relatively advanced form of unicellular organism. Some amoebas are pathogenic to humans, causing diseases including amoebic meningitis, but most are benign, living in our digestive systems and stealing some food or living on the surface and consuming our dead skin cells. If this vial come up consider an infestation because of an opportunistic environment in the body.</p>

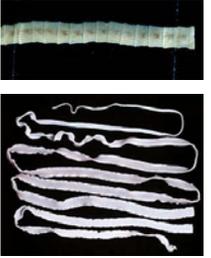
<p>Ancylostoma (hookworm)</p> 	<p>Hookworm, an intestinal parasite that usually causes diarrhea or cramps. Heavy infestation with hookworm can be serious for newborns, children, pregnant women, and persons who are malnourished. Hookworm infections occur mainly in tropical and subtropical climates and affect about 1 billion people. One of the most common species of hookworm, <i>Ancylostoma duodenale</i>, is found in southern Europe, northern Africa, northern Asia, and parts of South America. Hookworms have a complex life cycle that begins and ends in the small intestine. Hookworm eggs require warm, moist, shaded soil to hatch into larvae. These barely visible larvae penetrate the skin (often through bare feet), are carried to the lungs, go through the respiratory tract to the mouth, are swallowed, and eventually reach the small intestine. This journey takes about a week. In the small intestine, the larvae develop into half-inch-long worms, attach themselves to the intestinal wall, and suck blood. The adult worms produce thousands of eggs. These eggs are passed in the feces. If the eggs contaminate soil and conditions are right, they will hatch, molt, and develop into infective larvae again after 5 to 10 days. Hookworm infection is contracted from contact with soil contaminated by hookworm, by walking barefoot or accidentally swallowing contaminated soil. Since transmission of hookworm infection requires development of the larvae in soil, hookworm cannot be spread person to person. Chronic heavy hookworm infection can damage the growth and development of children. The loss of iron and protein retards growth and mental development. The first signs of hookworm infection are itching and a rash at the site where the larvae penetrate the skin. These signs may be followed by abdominal pain, diarrhea, loss of appetite and weight loss, and anemia. Hookworm can also cause difficulty breathing, enlargement of the heart, and irregular heartbeat. Hookworm infections have been known to be fatal, particularly in infants. To prevent hookworm, do not walk barefoot or contact the soil with bare hands in areas where hookworm is common (there is likely to be feces in the soil or sand).</p>
<p>Angiostrongylus (roundworm)</p> 	<p><i>Angiostrongylus</i> is a parasitic nematode (roundworm) which causes Angiostrongyliasis, the most common cause of eosinophilic meningitis in Southeast Asia and the Pacific Basin. The nematode commonly resides in the pulmonary arteries of rats, giving it the nickname the rat lungworm. Snails are the primary intermediate hosts, where larvae develop until they are infective. Humans are incidental hosts of this roundworm, and may become infected through ingestion of larvae in raw or undercooked snails or other vectors (freshwater prawns, crabs, etc.) or from contaminated water and vegetables. The larvae are then transported via the blood to the central nervous system (CNS), where they are the most common cause of eosinophilic meningitis, a serious condition that can lead to death or permanent brain and nerve damage. Most often infecting the kidney, intestinal tract and central nervous system (most dangerous area) it is also known to infect the eye and possibly other parts of the body.</p>
<p>Anisakis (roundworm)</p>  <p>A scanning electron micrograph of the mouthparts of <i>Anisakis simplex</i></p>	<p><i>Anisakis</i> have a life cycle involving fish and marine mammals. They are infective to humans and cause anisakiasis, and fish that have been infected with <i>Anisakis</i> can produce an anaphylactic reaction in people who have become sensitized to Immunoglobulin E (IgE). <i>Anisakis</i> have a complex life cycle which passes through a number of hosts through the course of its life. Eggs hatch in sea water and larvae are eaten by crustaceans, usually Euphausiids. The infected crustacean is subsequently eaten by a fish or squid and the nematode burrows into the wall of the gut and encysts in a protective coat, usually on the outside of the visceral organs, but occasionally in the muscle or beneath the skin. The life cycle is completed when an infected fish is eaten by a marine mammal, such as a whale, seal, or dolphin. The nematode excysts in the intestine, feeds, grows, mates and releases eggs into the sea water in the host's feces. As the gut of a marine mammal is functionally very similar to that of a human, <i>Anisakis</i> are able to infect humans who eat raw or undercooked fish. The areas of highest prevalence are Scandinavia (from cod livers), Japan (after eating sushi and sashimi), the Netherlands (by eating infected fermented herrings (Maatjes), and along the Pacific coast of South America (from eating ceviche). Within hours after ingestion of infective larvae, violent abdominal pain, nausea, and vomiting may occur. Occasionally the larvae are regurgitated. If the larvae pass into the bowel, a severe eosinophilic granulomatous response may also occur 1 to 2 weeks following infection, causing symptoms mimicking Crohn's disease. The FDA recommends that all shellfish and fish intended for raw consumption be blast frozen to -35°C or below for fifteen hours or be regularly frozen to -20°C or below for seven days before ingestion.</p>
<p>Armillifer (tongue worm)</p> 	<p>Is a larvae that lives in the respiratory system of snakes. It is prevalent in parts of Africa and Asia where eating snake meat is common. Humans are only even an accidental intermediate host for <i>Armillifer</i>, i.e. the larvae establish themselves in the visceral organs causing human visceral pentastomiasis (lesions appear, generally in the lymph nodes of the digestive tract often resembling tuberculosis), but adults do not occur in the human respiratory system. After a while the larvae die within the host and sometimes calcify, leaving characteristic crescent-shaped structures seen in X-ray. In extreme cases a heavy parasite burden can have serious medical consequences and can even be fatal. Infection can be prevented by washing the hands after touching snake secretions or meat and cooking snake meat thoroughly prior to consumption.</p>
<p>Artyfechinostomum (intestinal fluke)</p> 	<p><i>Artyfechinostomum</i> are an intestinal fluke of cats in south-east Asian countries. Eggs hatch into miracidia which infect frogs, snails and tadpoles, cercariae infect fish and develop into metacercariae. Infective metacercariae are then consumed by the cat. Pigs and wild rats appear to serve as the primary definitive hosts with cats being only incidentally infected. Concurrent infections with other intestinal parasites is common. Very few infections have been reported in humans to date.</p>

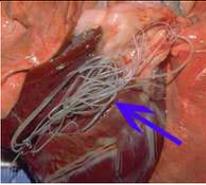
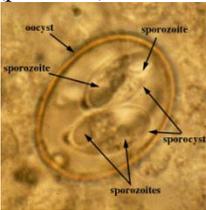
<p>Ascaris (giant roundworm)</p> 	<p>Ascaris is a genus of parasitic nematode worms known as the "giant intestinal roundworms". Common in humans and pigs. <i>A. lumbricoides</i> is the largest intestinal roundworm and is the most common helminth infection of humans worldwide, an infection known as ascariasis. Infestation can cause morbidity, and sometimes death, by compromising nutritional status, affecting cognitive processes, inducing tissue reactions, such as granuloma, and provoking intestinal obstruction or rectal prolapse. <i>A. lumbricoides</i> will actually move around in the body in response to chemotherapy or fever. In the lung it causes hemorrhage, inflammation, bacterial infection. It also causes allergy in areas with seasonal transmission. Typically occurs at 6–15 days after initial exposure. The intestinal phase causes malnourishment, intestinal blockage, verminous intoxication. The spread or infection of <i>Ascaris</i> can be controlled by proper disposal of feces and proper washing of food.</p>
<p>Babesia (protozoa)</p> 	<p><i>Babesia</i> is a protozoan parasite of the blood that causes a hemolytic disease known as Babesiosis. <i>Babesia</i> is spread through the saliva of a tick when it bites. However, as of 2003 the Centers for Disease Control and Prevention (CDC) acknowledged more than 40 cases of Babesiosis contracted from packed red blood cell (PRBC) transfusions and 2 infections documented from organ transplantation. In the United States, <i>Babesia microti</i> is the most common strain associated with humans with other species infecting cattle, livestock and occasionally domestic animals. People who contract Babesiosis suffer from malaria-like symptoms. As a result malaria is a common misdiagnosis for the disease. The severity of <i>B. microti</i> infection varies. For 25% of cases in adults and half of cases in children, the disease is asymptomatic or mild with flu-like symptoms. In cases of symptomatic infection, symptoms are characterized by irregular fevers, chills, headaches, general lethargy, pain and malaise. In severe cases, hemolytic anemia, jaundice, shortness of breath, and hemoglobinuria are documented due to the lytic effects of parasitic multiplication. Immunocompetent individuals with healthy spleens often recover without treatment. People without a spleen are more susceptible to contracting the disease and the course of infection often ends fatally within 5 to 8 days of symptom onset. Complications that arise from <i>B. microti</i> infections include acute respiratory failure, congestive heart failure, and renal failure. <i>B. divergens</i> infections have a much higher fatality rate (42%) and present with the most severe symptoms. Infected individuals suffer from hemoglobinuria followed by jaundice, a persistently high fever, chills and sweats. If left untreated, <i>B. divergens</i> infections can develop into shock-like symptoms with pulmonary edema and renal failure. Signs of infection usually arise 1 to 8 weeks after a bite from an infectious tick.</p>
<p>Balamuthia (amoeba)</p> 	<p><i>Balamuthia mandrillaris</i> is a free-living leptomyxid amoeba which is known to cause amoebiasis in humans, especially the deadly neurological condition known as granulomatous amoebic encephalitis (GAE). <i>Balamuthia</i> has not been definitively isolated in nature, but it is believed to be distributed throughout the temperate regions of the world. <i>Balamuthia mandrillaris</i> may enter the body through the lower respiratory tract or through open wounds. Upon introduction, the amoebas may form a skin lesion, or migrate to the brain. Once in the brain, <i>Balamuthia</i> causes a condition known as granulomatous amoebic encephalitis, which is usually fatal. The symptoms of infection by <i>Balamuthia</i> are unclear, as only a few definitive cases of <i>Balamuthia</i> infection have been described thus far. <i>Balamuthia</i>-induced GAE can cause focal paralysis, seizures, and brainstem symptoms such as facial paralysis, difficulty swallowing, and double vision. <i>Balamuthia</i> is also known to cause a variety of non-neurological symptoms, and often causes skin lesions, through which the amoeba may enter the bloodstream and migrate to the brain. Many patients experiencing this particular syndrome report a skin lesion (sometimes similar to those caused by <i>Staphylococcus aureus</i> or other bacteria), which does not respond well to dermatologic treatment. The lesion is usually localized and very slow to heal, or fails to heal altogether. In some presentations, the lesion may be mistaken for certain forms of skin cancer. <i>Balamuthia</i> lesions on the face may also lead to amoebic keratitis, and usually results in facial swelling.</p>
<p>Balantidium (protozoa)</p> 	<p><i>Balantidium coli</i> is a parasitic species of ciliate protozoan that causes the disease Balantidiasis. Balantidiasis in humans is common in the Philippines, but it can be found anywhere in the world, especially among those that are in close contact with swine. The disease is considered to be rare and occurs in less than 1% of the human population. The disease poses a problem mostly in developing countries, where water sources may be contaminated with swine or human feces. <i>Balantidium coli</i> lives in the cecum and colon of humans, pigs, rats and other mammals. It is not readily transmissible from one species of host to another because it requires a period of time to adjust to the symbiotic flora of the new host. Once the cyst is ingested, it passes through the host's digestive system. While the cyst receives some protection from degradation by the acidic environment of the stomach through the use of its outer wall, it is likely to be destroyed at a pH lower than 5, allowing it to survive easier in the stomachs of malnourished individuals who have less stomach acid. Once the cyst reaches the small intestine, trophozoites are produced. The trophozoites then colonize the large intestine, where they live in the lumen and feed on the intestinal flora. Once it has adapted to a host species, the protozoan can become a serious pathogen, especially in humans. In acute disease, explosive diarrhea may occur as often as every twenty minutes. Perforation of the colon may also occur in acute infections which can lead to life-threatening situations.</p>

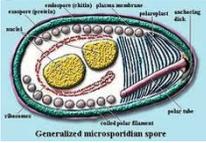
<p>Baylisascaris (roundworm)</p> 	<p>Baylisascaris is a genus of roundworms that infest more than fifty animal species. Baylisascaris eggs are passed in feces and become active within a month. They can remain viable in the environment for years, withstanding heat and cold. People and animals become infested either by swallowing the eggs, or eating another animal infested with Baylisascaris. After the eggs are swallowed, the microscopic larvae hatch in the intestine and invade the intestinal wall. If they are in their definitive host (the host they are designed to mature in) they develop for several weeks, then enter the intestinal lumen, mature, mate, and produce eggs, which are carried out in the fecal stream. If the larvae are in a paratenic host (not original host species), they break into the bloodstream and enter various organs, particularly the central nervous system. A great deal of damage occurs wherever the larva tries to make a home. In response to the attack, the body attempts to destroy it by walling it off or killing it. The larva moves rapidly to escape, seeking out the liver, eyes, spinal cord or brain. Occasionally they can be found in the heart, lungs, and other organs. Eventually the larva dies and is reabsorbed by the body. In very small species such as mice, it might take only one or two larvae in the brain to be fatal. If the larva does not cause significant damage in vital organs then the victim will show no signs of disease. Symptoms may include: Skin irritations from larvae migrating within the skin, Respiratory discomfort, liver enlargement, and fever due to reaction to larvae migration. Eye and brain tissue damage due to the random migration of the larvae, nausea, a lethargic feeling, incoordination and loss of eyesight. Severe neurological signs including imbalance, circling and abnormal behavior, caused by extensive tissue damage due to larval migration through the brain, eventually seizures and coma.</p>
<p>Bertiella (tapeworm)</p>  <p>Generic tapeworm photo</p>	<p>Bertielliasis is the infection of Bertiella - a cestode tapeworm parasite that primarily infects nonhuman primates, rodents and Australian marsupials. Occasionally, human infections have been documented by one of two species: Bertiella studeri, or Bertiella mucronata. Many other species exist, like 'esculenta' species (which literally means "good to eat" in Latin). These are found to thrive only in the intestines of possum and were literally eaten in Papua New Guinea. The species that infect humans present with symptoms similar to most tapeworm cases (intermittent epigastric pain after meals accompanied by nausea, diarrhea, anorexia, no fever and loss of weight and, generally, a tender abdomen), and are frequently misdiagnosed. Bertiella transmission is through consumption of oribatid mites that are present in the soil of problem areas, and can be easily prevented by avoiding contact with nonhuman primates, rodents and soil in these areas (or food, specifically fruit, which fell to the ground in an area with this contamination).</p>
<p>Besnoitia (protozoa)</p> 	<p>Infection with these parasites causes pedunculated lesions in the skin, nasal cavity and larynx of domestic animals. The lesions consist of exophytic nodules protruding from mucosal surfaces. A genus of sporozoan parasites and they are relatively host specific. There are a number of species that are found only in wild animals. Horses and cattle are affected by disease in their role as intermediate hosts. In many of the species the definitive host is the cat. In the others the definitive host has not been identified. B. bennetti, causes besnoitiosis of horses and donkeys. B. besnoiti, causes besnoitiosis of cattle. B. caprae, found in goats. B. darling, found in opossums, possibly lizards. B. wallacei, found in cats.</p>
<p>Blastocystis (protozoa)</p> 	<p>Blastocystis is a highly prevalent single-celled parasite that infects the gastrointestinal tract of humans and animals. Many different types of Blastocystis exist, and they can infect humans, farm animals, birds, rodents, amphibians, reptiles, fish, and even cockroaches. Infection in immunocompetent and immunocompromised mice has produced intestinal inflammation, altered bowel habits, lethargy and death. Chronic diarrhea has been reported in non-human higher primates. The most commonly reported symptoms are: abdominal pain, constipation, diarrhea, weight loss, fatigue, flatulence. Less commonly reported symptoms are: skin rash, headache, depression, arthritic symptoms and joint pain.</p>
<p>Brugia.M (roundworm)</p> 	<p>Brugia malayi is a nematode (roundworm), one of the three causative agents of lymphatic filariasis in humans. The other two being Wuchereria bancrofti and Brugia Timori). It is transmitted by mosquitoes and is restricted to South and South East Asia. Lymphatic filariasis is a condition marked by infection and swelling of the lymphatic system, generally of the lower limbs causing what is often referred to as elephantiasis. The disease is primarily caused by the presence of worms in the lymphatic vessels and the resulting host response. Signs of infection are typically consistent with those seen in bancroftian filariasis: fever, lymphadenitis (swelling of lymph nodes, more frequently occurs in the inguinal area), lymphangitis (inflammation of lymph vessels because of infection), lymphedema (swelling of lymph vessels can cause enlargement of the limbs), and secondary bacterial infection.</p>
<p>Brugia.T (roundworm)</p>	<p>So far Brugia timori has only been found in the Lesser Sunda Islands of Indonesia. It is locally confined to areas inhabited by its mosquito vector, which breeds in rice fields. Like other human filariasis infections, Brugia timori filariasis causes acute fever and chronic lymphedema (see Brugia M).</p>
<p>Capillaria (roundworm)</p> 	<p><u>Capillaria aerophila</u> is a nematode parasite found in the respiratory tract of foxes, dogs, and various other carnivorous mammals. <u>Capillaria gastrica</u>: among the known host species are the marsh rice rat and deer mouse. <u>Capillaria hepatica</u> is a parasitic nematode which causes hepatic capillariasis in rodents and numerous other mammal species, including man. Humans acquire <u>Capillaria philippinensis</u> by eating small species of infested fish whole and raw. Symptoms include watery diarrhea, abdominal pain, edema, weight loss, borborygmus (stomach growling), and depressed levels of potassium and albumin in the blood. In humans, the parasites damage the cells of the intestinal wall. This damage interferes with the absorption of nutrients and the maintenance of a proper electrolyte balance. <u>Capillaria plica</u> (dog bladder worm) is a parasitic nematode which</p>

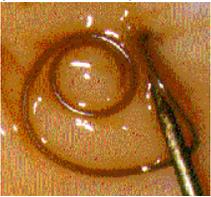
	is most often found in the urinary bladder, and occasionally in the kidneys, of dogs and foxes. It has also been found in the domestic cat, and various wild mammals. Its presence usually produces no clinical symptoms, but in some cases, it leads to hematuria (blood in the urine), cystitis (inflammation of the urinary bladder), or difficulty in urination.
<p>Centrocestus (fluke)</p> 	Centrocestus is a trematode parasite of Asian origin that has found its way in to North American streams and rivers. Infection may produce intestinal lesions similar to those caused by Heterophyes heterophyes. Centrocestus has been reported from man in Taiwan. It not only affects the fountain darter but many species of commercially important fishes. The parasite is transmitted via a freshwater snail Red-rimmed melania <i>Melanoides tuberculata</i> that was introduced in the US and Mexico in the 1960s. The parasite is believed to have been introduced from shipments of black carp to fish farms in Mexico. The definitive hosts of Centrocestus appear to be piscivorous birds that migrate along the central flyway from S. America to N. America.
<p>Chilomastix (protozoa)</p> 	Chilomastix infects about 3.5% of the population in the United States. It lives in the cecum and colon and is found in humans and most species of animals (even leeches). The mesnili species, the one that causes most human infection, is found in chimpanzees, orangutans, monkeys, and pigs. <i>C. mesnili</i> has a similar life style to <i>Giardia lamblia</i> and is spread through the fecal-oral route. Although Chilomastix is considered non-pathogenic, it often occurs with other parasite infections. It may be confused with other pathogenic species during diagnosis and create a false positive. This vial simply means the person has come into contact with fecal material of some animal that had this microbe, which may have been in its natural habitat there, but not in you.
<p>Clinostomum (fluke)</p> 	<i>Clinostomum marginatum</i> is a species of parasitic fluke (class Trematoda). It is commonly called the "yellow grub". It is found in many freshwater fish in North America, and no fish, so far is immune to this parasite. This type of fluke can be found in the mouth of aquatic birds such as herons and egrets. They are also found commonly in the esophagus of fish-eating birds, and reptiles. Eggs of these trematodes are shed in the feces, hopefully into the water. Many aquatic birds become infected by ingesting freshwater fish that are infected. The metacercariae are found right beneath the skin or in the muscles. Life cycle of this "yellow grub" consists of two intermediate hosts and one definitive host. The parasite's eggs hatch in the water and the miracidium invades the foot of the snails. The cercaria leaves the snail and encysts in the muscle of the connective tissue of fresh-water species. The metacercarial stage is that is formed is then referred to as the "yellow grub". The encysted metacercaria appears yellow, slightly oval spot, about 3 to 6 mm long. Metacercariae are common in the caudal, dorsal, and pectoral fins; on the inside surface of the operculum, and in the flesh. The adult trematode is found in the mouth and esophagus of herons and other fish-eating birds. These parasites may feed on the mucus of organs, food content ingested by the host, blood and tissue from eroding epithelial surfaces.
<p>Clonorchis (fluke, liver)</p> 	<i>Clonorchis sinensis</i> , the Chinese liver fluke, is a human liver fluke. This parasite lives in the liver of humans, and is found mainly in the common bile duct and gall bladder, feeding on bile. These animals, which are believed to be the third most prevalent worm parasite in the world, are endemic to Japan, China, Taiwan, and Southeast Asia, currently infecting an estimated 30,000,000 humans. One adverse effect of <i>Clonorchis</i> is the possibility for the adult worm to consume all bile created in the liver, which would inhibit the host human from digesting, especially fats. Another possibility is obstruction of the bile duct by the parasite or its eggs, leading to biliary obstruction and inflammation of bile ducts. Dwelling in the bile ducts, <i>Clonorchis</i> induces an inflammatory reaction, epithelial hyperplasia (a cutaneous condition characterized by white to pinkish papules that occur diffusely in the oral cavity) and sometimes even cholangiocarcinoma (cancer in the bile ducts), the incidence of which is raised in fluke-infested areas. In order for everything to come together for the worm infestation, an infected person has to defecate in fresh water where the correct species of snail is resident. If the snail eats the worm eggs in the feces it, in turn, is infected. After multiplying in the snail, the parasite leaves of its own accord and burrows into the flesh of a fish. The fish must then be caught and eaten raw by a human in order for the parasite to infect another person.
<p>Cochliopodium (protozoa)</p>	A protozoa often found in eye wash stations, little else documented on this one. <i>Cochliopodium bilimbosum</i> , <i>Cochliopodium minus</i> , <i>Cochliopodium gallicum</i> .
<p>Contraecaecum (roundworm)</p>	Often found in wild birds of Brazil although they were also found in contaminated tilapia ponds in Africa. Includes <i>C. microcephalum</i> , <i>C. spiculigerum</i> (wild birds), <i>C. osculatum</i> (seals, other fish eaters).
<p>Cotylurus (fluke)</p>	The life cycles of most members of this genus are similar. The adult worms are found in the gut of the definitive host, often a bird, and eggs are passed in the feces. It is considered a worm that infests birds but has also been noted to cause human infection, generally intestinal. The first intermediate host is a snail, and a variety of animals can serve as the second intermediate host.
<p>Cryptosporidium (protozoa)</p> 	This causes a diarrheal illness called cryptosporidiosis. It affects the intestines of mammals and is typically an acute short-term infection. Infection is through contaminated material such as earth, water, uncooked or cross-contaminated food that has been in contact with the feces of an infected individual or animal. Contact must then be transferred to the mouth and swallowed. It is especially prevalent amongst those in regular contact with bodies of fresh water including recreational water such as swimming pools. Other potential sources include insufficiently treated water supplies, contaminated food, or exposure to feces. It is one of the most common waterborne diseases, found worldwide. The main symptom is self-limiting diarrhea in people with intact immune systems. In immunocompromised individuals, such as AIDS patients, the symptoms are particularly severe and often fatal.

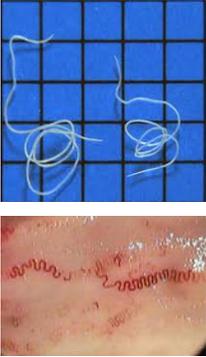
<p>Cutaneous larva migrans (hookworms)</p> 	<p>Larvae from animal roundworms (generally hookworms) usually causes CLM. The normal hosts for these hookworms are cats and dogs, in which the roundworm eggs pass through the feces. The eggs optimally hatch in warm, shady, moist, sandy soil found in tropical and subtropical areas. Humans are infected with the larvae by walking barefoot on the sand. The larvae quickly penetrate the skin upon contact. Beaches are the most common reservoir for the larvae that cause CLM; however, infection can occur from sandboxes and soil under houses or at construction sites. Sometimes referred to as "sandworms" or "creeping eruption" as once infected, the larvae migrate under the skins surface and cause itchy red lines or tracks. Although the parasites are able to infect the deeper tissues of cats and dogs (through to the lungs and then the intestinal tract), in humans they are only able to penetrate the outer layers of the skin and thus create the typical wormlike burrows visible underneath the skin. The parasites apparently lack the collagenase enzymes required to penetrate through the basement membrane deeper into the skin. The infection causes a red, intense itching eruption. The itching can become very painful and if scratched may allow a secondary bacterial infection to develop. The itching will not stop, even after the parasites are dead. The most common location for penetration is the feet (39%), from walking barefoot in the sand, followed by the buttocks (18%) and the abdomen (16%). If this vial comes up, it should track back to <i>Toxocara</i> (hookworm).</p>
<p>Cyclocoelinae (flatworm)</p>	<p>Little is documented about this family of flatworms though there are definitely known human infections caused by them. Their definite hosts are waterfowl and other (mostly aquatic) birds such as waders, where the worms are mainly found in the airways.</p>
<p>Cyclospora (protozoa)</p> 	<p><i>Cyclospora cayentanensis</i> is a protozoan. The protozoan lives out its lifecycle intracellularly within the host's epithelial cells and gastrointestinal tract. Infection is transmitted through the oral-fecal route, and begins when a person ingests oocysts in fecally contaminated food or water. <i>C. cayentanensis</i> causes gastroenteritis, with the extent of the illness varying based on age, condition of the host, and size of the infectious dose. Symptoms include watery diarrhea, loss of appetite, weight loss, abdominal bloating and cramping, increased flatulence, nausea, fatigue, and low-grade fever, though this can be augmented in more severe cases by vomiting, substantial weight loss, explosive diarrhea, and muscle aches. Typically, patients who come in with a persistent watery diarrhea lasting over several days may be suspected of harboring this parasite, especially if they have traveled to a region where the protozoan is endemic. The incubation period in the host is typically around a week, and illness can last six weeks before self-limiting.</p>
<p>Cystoisospora (protozoa)</p> 	<p><i>Cystoisospora</i> spp are a enteric protozoan parasite which has been recorded in cats worldwide. <i>Cystoisospora canis</i> is a coccidial parasite of the intestinal tract that can cause severe disease in dogs. Clinical signs include watery diarrhea, vomiting, fever, and weight loss. Extraintestinal stages of <i>Cystoisospora</i> spp. have been demonstrated in the mesenteric lymph nodes of paratenic hosts. Related genetically to <i>Isoospora</i> spp, <i>C. felis</i> and <i>C. rivolta</i> occur in up to 40% of cats in some tropical countries. Like most enteric protozoans, concurrent infections with other enteric parasites is extremely common. The life cycle involves oocysts excreted unsporulated by the definitive host. An intermediate host may facultatively be involved in addition to the typical development inside the intestine of the final host. Rodents and/or cats are infected by oral ingestion of sporulated oocysts. The sporozoites enter numerous types of host cells, but remain there unchanged in a parasitophorous vacuole until this cell is eaten by the final host. Since there is no parasitic development inside the intermediate host, it must be considered as a transport or paratenic host. Hygiene on the premises is important in prevention. Good litter tray hygiene is also critical in multi-cat households. Utensils, runs, cages and other implements should be steam-cleaned or washed in boiling water. Because of the importance of paratenic hosts such as cockroaches, insect control is critical.</p>
<p>Dactylogyrus (fluke, gill)</p> 	<p>Commonly known as the gill fluke, they infect fish but are primarily drawn to Carp. Cyprinidae that are infected by <i>Dactylogyrus</i> may have symptoms that include inflamed gills, excessive mucous secretions and accelerated respiration. The infected fish also becomes lethargic, swims near the surface, and its appetite decreases. Additionally the infected fish may hold its gill covers open and scratch its gills on rocks. In severe infections, <i>Dactylogyrus</i> can cause hemorrhaging and metaplasia of the gills which can lead to secondary bacterial infections and death. Heavily infected fish are also anorexic and can be found gasping for air and exhibiting abnormal behavior such as jumping out of the water.</p>
<p>Dicrocoelium (fluke, liver)</p> 	<p>The Lancet liver fluke is a parasite fluke. The main reservoirs for <i>Dicrocoelium dendriticum</i> are sheep, cows, land snails and ants. However, <i>Dicrocoelium dendriticum</i> has also been found in goats, pigs and even llamas and alpacas. Due to the highly specific nature of this parasite's life cycle, human infections are generally rare. Ruminants such as cows and sheep are usually the definitive host, but humans and other herbivorous mammals can also serve as definitive hosts through ingestion of infected ants. One definitive case involved a man who ingested bottled water contaminated by infected ants. <i>Dicrocoelium</i> can infect the bile ducts of humans. Because the bodies of these parasites are long and narrow, infections are generally confined to the more distal parts of the bile ducts. As a result most <i>Dicrocoelium dendriticum</i> infections of the biliary tree produce only mild symptoms. These symptoms can include biliary colic and general digestive disturbances, including bloating and diarrhea. However, in heavier infections, bile ducts and the biliary epithelium may become enlarged in addition to the generation of fibrous tissue surrounding the ducts, and as a result, causing an enlarged liver (hepatomegaly) or inflammation of the liver (cirrhosis) and often skin rashes.</p>

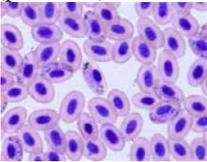
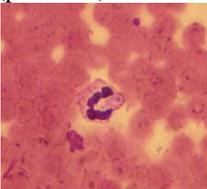
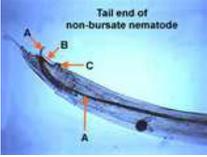
<p>Dictyostelium (amoeba)</p> 	<p>Dictyostelium is a species of soil-living amoeba commonly referred to as slime mold. In the wild it can be found in soil and moist leaf litter. Their primary diet consists of bacteria, such as Escherichia coli, that are found in the soil and decaying organic matter. Several D. genes are homologous to human genes making them a useful model organism. The entire genome was sequenced in a model organism database called dictyBase. Using these sequences scientists are now able to run more complex experiments especially on human-diseases. These slime molds are used to test anti-cancer drugs, immune-cell diseases, and bacterial intracellular pathogenesis. Because it is used this way, there is no telling where all you might get exposed to this one!</p>
<p>Dientamoeba (amoeba)</p> 	<p>Dientamoeba fragilis is a single celled amoeba parasite found in the gastrointestinal tract of some humans, pigs and gorillas. In some people it causes gastrointestinal upset while in others it does not. It is an important cause of travelers diarrhea, chronic diarrhea, fatigue and in children, failure to thrive. Infection with Dientamoeba fragilis is called Dientamoebiasis and is associated variously with symptoms of abdominal pain, diarrhea, weight loss, and fever. Like other intestinal parasites, D. fragilis is probably transmitted by the fecal-oral route although it is thought that it may be passed in the feces of certain helminthes (worms).</p>
<p>Diocotophyme (helminth)</p> 	<p>Diocotophyme renale is commonly referred to as “giant kidney worm” because it is the largest helminth to parasitize humans and has the propensity to affect the kidneys. Adult male worms are 20–40 cm long and 5–6 mm wide; females can grow to 103 cm in length with a width of 10–12 mm. D. renale is distributed worldwide, but is less common in Africa and Oceania. It affects fish eating mammals, particularly mink and dogs, but also includes wolves, coyotes, foxes, raccoons, and weasels. Transmission to humans typically occurs upon ingestion of raw or undercooked freshwater fish or frog. Human infestation is rare, but results in destruction of the kidneys. Individuals with Diocotophyme renalis infection typically present with unspecific symptoms including hematuria (blood in urine), nephritis, loin pain, renal enlargement, and/or renal colic (intermittent pain in the kidney area), which may result from the rare migration of worms through ureters. The kidney is destroyed because of fibrosis, the development of excess fibrous connective tissue. Renal function is typically limited because the non-infected kidney is usually capable of assuming the increased work. However, parenchymal inflammation (i.e., inflammation of the functional parts of an organ) can lead to death in extreme circumstances. Adult Diocotophyme renale inhabit the kidney. Females produce eggs which are passed in urine. These eggs are ingested by an aquatic oligochaete, hatch, penetrate blood vessels, and develop into a stage three larvae. A paratenic host may then ingest the oligochaete. The oligochaete or paratenic host is then eaten by a definitive host, wherein juveniles penetrate intestinal lining and migrate to the liver. After maturing for approximately 50 days, the juveniles then migrate to the kidneys (typically the right kidney). Upon maturation, D. renale can survive for five years.</p>
<p>Dipetalonema (roundworm)</p> 	<p>Dipetalonema reconditum is a parasite you will not hear much about since it rarely causes significant disease. Its importance lies in the fact that its immature form (slender larvae called microfilariae) can be easily confused with those of Dirofilaria (heartworm). D. reconditum lives in the body cavity and subcutaneous (just below the skin) tissues of dogs and is found throughout the United States. The life cycle of D. reconditum includes an intermediate host like that of heartworm. Only in this case the intermediate host is a flea, tick, or louse instead of the mosquito. The adult worms which are ½ to 1-inch long may be found on necropsy or as an incidental finding during surgery for some other reason. The microfilaria can be found in the bloodstream.</p>
<p>Diphyllobothrium (tapeworm)</p> 	<p>Diphyllobothrium is a genus of tapeworm which can cause Diphyllobothriasis in humans through consumption of raw or undercooked fish. In the 1970s, most of the known cases came from Europe (5 million cases), and Asia (4 million cases). After ingestion of the infected fish, the plerocercoids develop into immature adults and then into mature adult tapeworms which will reside in the small intestine. The adults can reach more than 10m (up to 30 ft) in length in some species, with more than 3,000 proglottids (sections, see top photo). One or several of the tape-like proglottid segments regularly detach from the main body of the worm and release immature eggs in fresh water to start the cycle over again. Symptoms of diphyllobothriasis are generally mild, and can include diarrhea, abdominal pain, vomiting, weight loss, fatigue, constipation and discomfort. Approximately four out of five cases are asymptomatic and may go many years without being detected. In a small number of cases, this leads to severe vitamin B¹² deficiency due to the parasite absorbing 80% or more of the host's B¹² intake causing anemia. The anemia can also lead to subtle demyelinating neurological symptoms.</p>
<p>Dipylidium (tapeworm)</p> 	<p>Dipylidium caninum, also called the cucumber tapeworm or the double-pore tapeworm, is a cyclophyllid cestode that infects organisms afflicted with fleas, including canids, felids, and pet-owners, especially children. Adult worms are about 18 inches long. Eggs are passed in the host's feces and ingested by fleas, which are in turn ingested by another mammal after the tapeworm larvae partially develop. Inside fleas, eggs hatch and form oncosphere larvae that move through the wall of the flea intestine into the body cavity where they become cysticercoid larvae, which are infective to mammal hosts. In children, infection causes diarrhea and restlessness. The best way to prevent human infection is to treat infected animals and to kill fleas.</p>
<p>Dirofilaria (roundworm)</p> 	<p>Heartworm is a parasitic roundworm that is spread from host to host through the bites of mosquitoes. The heartworm is a type of filaria, a small thread-like worm. The definitive host is the dog but it can also infect cats, wolves, coyotes, foxes, bear and other animals, such as ferrets, sea lions and even humans. The parasite is commonly called "heartworm"; however, that is a misnomer because the adult actually resides in the pulmonary arterial system (lung arteries) for the most part, and the primary insult to health is a manifestation of damage to the lung vessels and tissue. Occasionally, adult heartworms migrate to the right heart and even the great veins</p>

	<p>in heavy infections. Rarely, migrating heartworm larvae get "lost" and end up in unusual sites such as the eye, brain, or an artery in the leg, genitals, etc, which results in unusual symptoms such as blindness, seizures and lameness. But normally, until the larvae mature and congregate inside the heart, they produce no symptoms or signs of illness. If it is in the lung/heart area, early signs include a cough, especially on exercise and early exhaustion upon exercise. In the most advanced cases where many adult worms have built up in the heart without treatment, signs progress to severe weight loss, fainting, coughing up blood and, finally, congestive heart failure.</p>
<p>Dracunculus (roundworm)</p> 	<p>Dracunculus, a thread-like worm widely distributed in North America, Africa, the Near East, East Indies and India; frequently found in the subcutaneous and intermuscular tissues of humans and also in dogs, sometimes horses and cattle. The medical name for this condition is dracunculiasis. The disease causes cutaneous nodules and subsequent ulcers, causing severe pain and a sensation of heat. The human, soothing this by soaking it in water, causes the blister to burst. When the worm feels the presence of cold water, muscle contractions in its body cause its uterus (which fills the whole body cavity) to burst, releasing hundreds of thousands of first-stage larvae into the water, where they can find new hosts. The anterior end of the adult female worm protrudes from the host animal's body, most commonly on a lower limb, through an ulcer. The worms can reach a meter in length, burrowing from the foot up the leg. If one simply pulls off the protruding tail of the worm, the burst worm will release larvae into the tissue causing further infection. Hence it is important to remove the worm slowly (over a period of weeks) by winding the tail of the worm onto a stick (say, a matchstick), by a few centimeters each day.</p>
<p>Echinochasmus (flake)</p>	<p>Echinochasmus schwartzi is a fluke that infects dogs, muskrats, and marsh rice rats. It uses Fundulus fish as its intermediate host. Echinochasmus perfoliatus var. Japonicus is reported as a rare intestinal parasite of humans in Japan. It is a genus of digenetic flukes, particularly common in wading and fish-eating birds.</p>
<p>Echinococcus (tapeworm cyst)</p> 	<p>Infection with Echinococcus results in hydatid disease, also known as echinococcosis. The adult tapeworm lives in the intestine of predators (dogs, wolves, foxes, lions, etc.) and delivers eggs that are excreted with the stool. Sheep, wild herbivores and rodents are the usual intermediate hosts (ingest eggs), but humans can also be infected. The egg hatches in the digestive system of the intermediate host, producing oncosphere larva. It penetrates the intestinal wall and is carried by bloodstream to liver, brain, lung or another organ. It settles there and turns into a bladder-like structure called hydatid cyst, which is like a slow growing mass in the body but the cyst is filled with water. In humans, the cysts persist and grow for years. They are regularly found in the liver (and every possible organ: spleen, kidney, bone, brain, tongue and skin) and are asymptomatic until their growing size produces symptoms or are accidentally discovered. Disruption of the cysts (spontaneous or iatrogenic eg. liver biopsy) can be life threatening due to anaphylactic shock.</p>
<p>Echinoparyphium (flake, intestinal)</p> 	<p>Echinoparyphium are a parasitic intestinal fluke of cats, in south-east Asia. Eggs hatch into miracidia which infect snails, cercariae infect tadpoles or frogs and develop into metacercariae. Infective metacercariae are then consumed by the cat. Rodents appear to serve as the primary definitive host with cats being only incidentally infected. Echinoparyphium have been isolated from the small intestine of cats feeding on snails, insects, lizards, birds, rodents and frogs and found in pigeons, dove and domesticated birds.</p>
<p>Echinostoma (flake)</p> 	<p>Echinostoma is an important genus that includes many parasites. Human echinostomiasis is an intestinal parasitic disease caused by one of at least sixteen trematode flukes from the genus Echinostoma. Found largely in southeast Asia and the Far East, mainly in cosmopolitan areas. Echinostomiasis is transmitted through the ingestion of one of several possible intermediate hosts, which could include snails or other mollusks, certain freshwater fish, crustaceans or amphibians. Upon infection of the human host, the worms aggregate in the small intestine where they may cause no symptoms, mild symptoms, or severe symptoms in rare cases, depending on the number of worms present. Diarrhea is a result of heavy infections. Diarrhea is a result of heavy infections although case studies in humans have shown that manifestations of severe ulcerative lesions in the duodenum, urinary incontinence, and hematemesis (vomiting blood) are also possible.</p>
<p>Eimeria (protozoa)</p> 	<p>Eimeria is a genus of coccidial protozoa that is highly pathogenic, especially in young domesticated mammals and birds. It includes various species responsible for the poultry disease coccidiosis. Hosts are infected by oocyst ingestion. Most species infect the intestine, but E.stiedae infects the bile duct epithelium in rabbits. There are close to 250 species in this vial, many of which infect birds, reptiles, fish and every kind of mammal. Symptoms of Eimeria infection include bloody diarrhea due to intestinal epithelium dying off since a large number of oocysts and merozoites burst out of the cells. Necrotic tissue clogs the cecum causing the organ to die. All mammalian coccidia are considered to be host specific but a limited number of exceptions to this rule have been identified. 31 species are known to occur in bats and 2 in turtles. 130 named species infect fish. Two species infect seals. Five species infect llamas and alpacas and a number of species infect rodents. Others infect, rabbits and cattle, birds, reptiles, goats and many other mammals.</p>

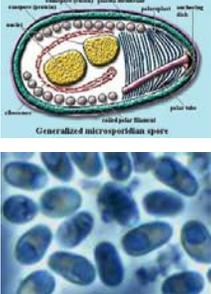
<p>Encephalitozoon (protozoa)</p> 	<p>A genus of protozoa that causes microsporidiosis. Most commonly infects the small intestine of immunocompromised people, in particular those with AIDS (in HIV infected individuals, microsporidiosis generally occurs when CD4+ T cell counts fall below 100); in most, the infection is confined to the small intestine and accompanied by diarrhea; in others, it can cause disseminated disease & may be present in macrophages & epithelial cells. Particularly an issue for rabbits recently. Although it is classified as a protozoal disease in ICD-10, their phylogenetic placement has been resolved to be within the Fungi; however, they are highly divergent and rapidly evolving. As unicellular eukaryotes they are still generally considered to be Protists, and some sources classify microsporidiosis as a mycosis.</p>
<p>Endolimax (amoeba)</p>	<p>A genus of amebas found in the colon of humans, other mammals, birds, amphibians and cockroaches. Thought to be non-pathogenic, but it can cause intermittent or chronic diarrhea. It is very significant in medicine because it can provide false positives for other tests, notably the similar species <i>Entamoeba histolytica</i>, the pathogen responsible for amoebic dysentery, and because its presence indicates the host has consumed fecal material.</p>
<p>Entamoeba (amoeba)</p>   <p>This is what an amoebic ulcer looks like in submucosa tissue.</p>	<p>Several amoeba species are found in humans but the only one considered pathogenic is <i>Entamoeba histolytica</i> responsible for 'amoebiasis' (which includes amoebic dysentery and amoebic liver abscesses), infecting about 50 million people worldwide. The active (trophozoite) stage exists only in the host and in fresh loose feces; cysts survive outside the host in water, soils and on foods, especially under moist conditions on the latter. The cysts are readily killed by heat and by freezing temperatures, and survive for only a few months outside of the host. When cysts are swallowed they cause infections by excysting (releasing the trophozoite stage) in the digestive tract. Symptoms can include fulminating dysentery, bloody diarrhea, weight loss, fatigue, abdominal pain, and amoeboma. The amoeba can actually 'bore' into the intestinal wall, causing lesions and intestinal symptoms, and it may reach the blood stream. From there, it can reach different vital organs of the human body, usually the liver, but sometimes the lungs, brain, spleen, etc. A common outcome of this invasion of tissues is a liver abscess, which can be fatal if untreated. <i>Entamoeba gingivalis</i>, which lives in the mouth (found in 95% of people with gum disease and in 50% of people with healthy gums (undecided if this is a good or bad thing). Transmission is direct from one person to another by kissing, or by sharing eating utensils. While the other species are not considered pathogenic, if this vial comes up and the person clearly does not have amoebiasis it may just be that one of the "harmless" species has gotten to an area of the body it does not belong.</p>
<p>Enterobius (pinworm)</p>    <p>Pinworm in colon</p>	<p>The pinworm, also known as threadworm or seatworm, is a nematode (roundworm) which has a worldwide distribution, and is the most common helminth (parasitic worm) infection in the United States and Western Europe. The medical condition associated with pinworm infestation is known as enterobiasis and causes a crawling sensation and pruritis (anal itching). Pinworms spread through human-to-human transmission, by ingesting infectious pinworm eggs. Pinworms are common among people living in close contact, and tends to occur in all people within a household (meaning if one person has it likely all in the house have it). The life cycle begins with eggs being ingested. The eggs hatch in the duodenum (small intestine). The emerging pinworm larvae grow rapidly to a size of 140 to 150 micrometers in size, and migrate through the small intestine towards the colon. During this migration they moult twice and become adults. Females survive for 5 to 13 weeks, and males about 7 weeks. The male and female pinworms mate in the ileum (last part of the small intestine), where after the male pinworms usually die, and are passed out with stool. The gravid female pinworms settle in the ileum, cecum (beginning of the large intestine), appendix and ascending colon, where they attach themselves to the mucosa and ingest colonic contents. Almost the entire body of a gravid female becomes filled with eggs. The estimations of the number of eggs in a gravid female pinworm ranges from about 11,000 to 16,000. The egg-laying process begins approximately five weeks after initial ingestion of pinworm eggs by the human host. The gravid female pinworms migrate through the colon towards the rectum at a rate of 12 to 14 centimeters per hour. They emerge from the anus, and while moving on the skin near the anus, the female pinworms deposit eggs either through contracting and expelling the eggs, dying and then disintegrating, or bodily rupture due to the host scratching the worm. After depositing the eggs, the female becomes opaque and dies. The reason the female emerges from the anus is to obtain the oxygen necessary for the maturation of the eggs.</p>
<p>Enteromonas (protozoa)</p>	<p>Naturally found in the cecum of guinea pig, primates, rodents, pigs and humans, said not to be pathogenic, but presence of this indicates at the least that contact was made with fecal material.</p>
<p>Episthmium (flake)</p> 	<p><i>Episthmium</i> spp are a parasitic intestinal fluke of cats, but it has been found in a number of bird species around the world as well. There is no real data relating to this fluke and human infection but it is on the list of "12 intestinal flukes found in Southeast Asia." Eggs hatch into miracidia which infect snails, cercariae infect tadpoles of frogs and develop into metacercariae. Infective metacercariae are then consumed by the cat. Rodents appear to serve as the primary definitive host with cats being only incidentally infected. <i>Episthmium caninum</i> has been isolated from the small intestine of feral cats feeding on raw fish. Concurrent infections with other intestinal parasites is common.</p>
<p>Euparyphium (flake)</p>	<p>Considered a family if nonpathogenic fluke (I didn't know any such family existed), these are considered parasites that naturally infect the mollusk (<i>Gyraulus chinensis</i>). If a person tests for this, it seems likely they may have eaten a raw or undercooked mollusk, .. assuming this parasite is species specific to that mollusk only.</p>

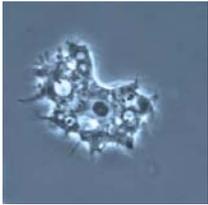
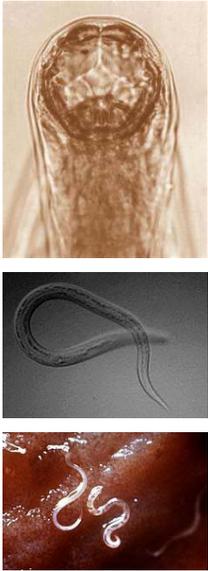
<p>Eustrongylides (roundworm)</p> 	<p>Nematode (roundworm) found in fish, amphibians, birds and reptiles. The eggs must fall in water to continue their life cycle. Once in water, aquatic worms (cousins of earthworms, called "oligochaetes") eat the bird poop, along with the eggs of the worm. Birds generally eat the worm, most of the time it is wading birds (herons and egrets). As soon as the bird eats the worm, or fish that ate the worm, it burrows into its stomach. In the bird's stomach, the larva becomes an adult. The nematode grows for about 10 days. Then it mates and lays eggs, which pass out of the bird's stomach and end up in poop. There is a case where three fishermen became infected after eating their bait (minnows). They had to have surgery to remove the nematodes. Human infection is manifested by gastrointestinal symptoms and related to consumption of raw fish. Larvae are pinkish red and can perforate the intestinal lining and cause severe infection. Symptoms are not clear at this point as most cases with this worm have been misdiagnosed.</p>
<p>Fasciola (fluke, liver)</p> 	<p>Fasciola (hepatica, gigantic, jacksoni), also known as the common liver fluke or sheep liver fluke, is a parasitic flatworm that infects the liver of various mammals, including humans. It is distributed worldwide and causes great economic losses in sheep and cattle. When the spores are ingested (uncooked foods and water-cress), the contact with low pH in the stomach causes the early immature juvenile to begin the process of excystment. In the duodenum, the parasite breaks free of the metacercariae and burrows through the intestinal lining into the peritoneal cavity. The newly excysted juvenile does not feed at this stage, but once it finds the liver parenchyma after a period of days, feeding will start. This immature stage in the liver tissue is the pathogenic stage. The parasite browses on liver tissue for a period of up to 5–6 weeks and eventually finds its way to the bile duct where it matures into an adult and begins to produce eggs. Up to 25,000 eggs per day per fluke can be produced!</p>
<p>Fascioloides (fluke)</p>  <p>The fibrous capsule in the liver parenchyma of red deer infected with <i>F. magna</i></p>	<p>Fascioloides magna, also known as giant liver fluke, large American liver fluke but primarily known as the deer fluke, is an important parasite of a variety of wild and domestic ruminants in North America and Europe. Adult flukes occur in the liver of the definitive host and feed on blood. When juvenile flukes enter the body (infected water source or on vegetation) they penetrate the wall of the intestine and migrate in the abdominal cavity. Juvenile flukes penetrate the Glisson's capsule of the liver and continue migrating in the liver tissue. Flukes migrate within the parenchyma to search another fluke. If the fluke meet another one, they stop moving, and the fibrous capsule is formed around them. In the capsule, the parasite completes its development and starts egg-laying. Prepatent period varies 3–7 months and is dependent on host species. Adult <i>F. magna</i> can survive in the liver of the host up to 7 years. Hosts may show no symptoms, but at times they can show severe symptoms like lethargy, weight loss, decreased quality antlers and even paralysis from flukes that migrated to the spinal cord. A decrease of haemoglobin, elevation of γ-globulins, and increase of eosinophils in serum was observed in experimentally infected white-tailed deer.</p>
<p>Fasciolopsis (fluke, intestinal)</p> 	<p>Fasciolopsis is commonly called the giant intestinal fluke, being the largest known parasitic fluke in humans. It is a common parasite of humans and pigs and is most prevalent in Asia, mainly central and southeast Asia. The worm inhabits the upper region of the small intestine and, when abundant, can also be found in the lower areas of the intestine and the stomach. Fasciolopsis buski is the cause of the disease fasciolopsiasis. The cercariae encyst as metacercariae on aquatic plants such as water chestnut, water caltrop, lotus, bamboo, and other edible plants. The mammalian host, or the final host, becomes infected by ingesting metacercariae on the aquatic plants. After ingestion, the metacercariae excyst in the duodenum in about three months and attach to the intestinal wall. There they develop into adult flukes (20 to 75 mm by 8 to 20 mm) in approximately 3 months, attached to the intestinal wall of the mammalian hosts (humans and pigs). The adults have a life span of about one year. Most infections are light and asymptomatic. In heavy infections, symptoms can include abdominal pain, chronic diarrhea, anemia, ascites, toxemia, allergic responses, sensitization caused by the absorption of the worms allergenic metabolites (may eventually cause death), and intestinal obstruction.</p>
<p>Fischoederius (fluke)</p>	<p>A trematode found in the rumen of cattle and other bovids. It is infected by ingesting aquatic plants having the metacercariae (tiny spore), little else is known about it.</p>
<p>Gastrodiscoides (fluke)</p> 	<p>Gastrodiscoides hominis is a large fluke of pig and human and constitutes an important parasite of humans in Assam, Indian, the Philippines and Southeast Asia. Gastrodiscoides Hominis is passed through the feces of animals (generally pigs) in egg form where it can come into direct contact with the water supply or vegetation. This parasite is then usually transmitted through the ingestion of vegetation found in contaminated water such as water caltrop where the parasite tends to reside after leaving its intermediate host (the snail). It can also be transmitted after eating infected fish that has not been cooked properly or at all. Usually the infection is asymptomatic but occasionally it can cause intestinal problems such as diarrhea, fever, abdominal pain, colic, and an increase in mucous production. In severe cases, where there may be large amounts of eggs present, tissue reactions can occur in the heart or mesenteric lymphatics.</p>
<p>Gastrothylax (fluke)</p>	<p>A genus of stomach fluke often found in the rumen and reticulum in sheep, cattle, zebu and buffalo. There is no real documentation about this fluke infecting humans.</p>

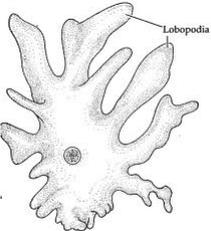
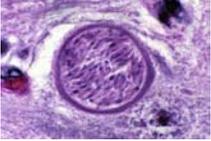
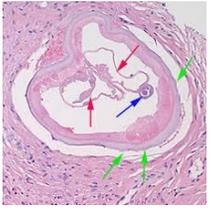
<p>Giardia (protozoa)</p> 	<p>Giardia is a protozoa that colonize and reproduce in the small intestines of several vertebrates, causing giardiasis. Individuals become infected through ingesting or coming into contact with contaminated food, soil, or water. The Giardia parasite spreads when a person accidentally swallows it, which can originate from contaminated items and surfaces that have been tainted by the feces of an infected human or animal. Person-to-person transmission accounts for a majority of Giardia infections and is usually associated with poor hygiene and sanitation. Water-borne transmission is associated with the ingestion of contaminated water. In the U.S. outbreaks typically occur in small water systems using inadequately treated surface water. Venereal transmission happens through fecal-oral contamination. Additionally, diaper changing and inadequate hand washing are risk factors for transmission from infected children. Lastly, food-borne epidemics of Giardia have developed through the contamination of food by infected food-handlers. The symptoms of Giardia, which may begin to appear 1–2 weeks after infection, include diarrhea, excess gas, stomach or abdominal cramps, upset stomach, and nausea. Resulting dehydration and nutritional loss may need immediate treatment. The typical infection within an individual can be slight, resolves without treatment, and lasts between 2–6 weeks.</p>
<p>Gnathostoma (roundworm)</p> 	<p>Gnathostoma (particularly the spinigerum species) is a parasitic nematode that causes gnathostomiasis in humans, also known as its clinical manifestations are creeping eruption, larva migrans, Yangtze edema, Choko-Fuschu Tua chid and wandering swelling. Gnathostomiasis in animals can be serious, and even fatal. The larval nematode is acquired by eating raw or undercooked fish and meat. The eggs hatch in fresh water and the larvae are eaten by water fleas. The water fleas are in turn eaten by small fish. Eventually, the larvae end up in the stomachs of carnivores, usually cats and dogs. The larva bores through the stomach wall and migrates around in the host's body for about three months before returning to the stomach and attaching itself in the gastric mucosa. It then takes another six months to mature. The eggs are carried in the host's feces, and if they reach fresh water the cycle begins again. As humans are not a normal host for the larva, they do not mature in humans, but can cause various degrees of damage, depending on where the larva wanders in the body.</p>
<p>Gongylonema (roundworm)</p> 	<p>Several species are significant parasites of domestic animals, causing gongylonemiasis. Human infection by these nematodes is very rare; since its discovery there were less than 100 people reported to be infected with these parasites, always with the species <i>G. pulchrum</i>, although this vial represents at least 35 species. There are 25 species found in mammals and 10 species found in birds. Transmission to humans is due mostly to unsanitary conditions and the ingestion of infected coprophagous insects, mostly dung beetles and cockroaches. Beyond direct ingestion of infected intermediate hosts (insects), foods can become contaminated if unsanitary conditions pervade in the production of the food- coprophagous insects are found in the food, or in the production chain. Also, contaminated water sources, again with the intermediate hosts or the infective third stage larva, can lead to transmission to humans. The infection usually occurs when someone drinks contaminated water, or consumes an infected beetle. In humans, there can be up to six week incubation period for worm development and symptoms may not appear until the second molting of the worm, in which the young adult worms begin migration from the esophagus to the buccal and oral palate tissue. It is this movement through the mucosa of the mouth and lips that causes patients to complain of symptoms. <i>Gongylonema pulchrum</i> burrows in the mucosal lining of the esophagus and other parts of the buccal cavity. There the 14 cm (5.5 in) females lay their thick shelled eggs containing first stage larvae. The larvae all possess a cephalic hook and rows of tiny spines around a blunt anterior end, so when they hatch they may further infest their hosts.</p>
<p>Gyrodactylus (fluke, skin)</p> 	<p><i>Gyrodactylus salaris</i> is a small ectoparasite (about 0.5 mm long) which mainly lives on the skin of freshwater fish, especially Atlantic salmon. It's common name is Salmon Fluke. Other species that can be parasitized include rainbow trout, Arctic char, North American brook trout, grayling, North American lake trout and brown trout. The parasite attaches to the fish by a large specialized posterior attachment organ, the (haptor) which has sixteen sharp hooks located around its margin. The parasite cannot be seen with the naked eye, but it can be seen with a hand held lens. When feeding, the parasite attaches its anterior end to the fish with cephalic glands. It everts its pharynx through the mouth and releases a digestive solution with proteolytic enzymes which dissolves the salmon skin. Mucus and dissolved skin are then sucked into the gut. Attachment of many parasites can cause large wounds and the epidermis of the host fish can be damaged which allows in secondary infections. The parasites give birth to live young nearly as big as themselves and at this time, a further generation is already growing inside the neonates.</p>
<p>Gymnophalloides (fluke)</p>	<p><i>Gymnophalloides</i> is a parasitic intestinal trematode fluke of cats throughout Asia and marsh rice rats in Florida. The cat is the definitive host for this fluke, although raccoon and dogs also play a role in transmission of the parasite, whose lifecycle involves intermediary snail/oyster and then bird hosts. Although pancreatitis has been reported in human hosts (only human infections reported were in Korea).</p>
<p>Haemonchus (roundworm)</p> 	<p><i>Haemonchus contortus</i>, also known as red stomach worm, wire worm or Barber's pole worm, is very common parasite and one the most pathogenic nematode of ruminants. Adult worms are attached to abomasal mucosa and feed on the blood. This parasite is responsible for anemia, bottle jaw, and death of infected sheep and goats, mainly during summer months in warm, humid climates. They can take up these larvae when eating grass leaves. The infection, called Haemonchosis, causes large economic losses for farmers around the world. Females may lay over 10,000 eggs a day, which are secreted from the animal via the feces.</p>

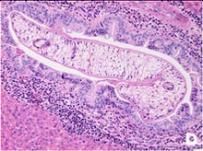
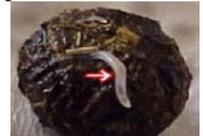
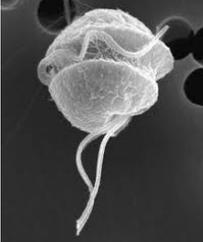
<p>Haemoproteus (protozoa)</p> 	<p>Haemoproteus is a genus of protozoa that are parasitic in birds, reptiles and amphibians. Infections with most Haemoproteus species appear to produce subclinical infections. Post-mortem findings include enlargement of the spleen, liver and kidneys. These organs may appear chocolate-brown due to hemozoin deposition (disposal byproduct formed from the digestion of blood). Some species of Haemoproteus will also form large, cyst-like bodies within the skeletal muscles resembling those seen with Sarcocystis species infections. Infected birds may suffer from enlarged gizzards, reluctance to move, ruffled appearance, prostration and death. The average cumulative mortality for flocks experiencing outbreaks may be over 20%. Experimental infection of turkeys with Haemoproteus resulted in lameness, diarrhea, depression, emaciation, anorexia and occasionally anemia.</p>
<p>Hammondia (protozoa)</p> 	<p>Hammondia hammondi is a protozoan parasite that, until 1975, was misidentified as Toxoplasma gondii. It is found in the intestine of cats and considered rarely pathogenic to cats unless they are immunocompromised, as occurs in FeLV or FIV infections. Hammondia pardalis is a rare feline protozoan parasite in the same family as Hammondia hammondi. It can cause coccidiosis in cats worldwide. It has been isolated in cats fed raw meat from cattle that had aborted. The definitive host is the cat and rodents act as the intermediate host in the transmission of disease from one cat to another. Hammondia heydorni, also considered nonpathogenic, found in dogs, sheep and goats so far ...</p>
<p>Haplorchis (flake)</p>  <p>Adult Haplorchis spp fluke. A - Haplorchis taichui; B - H. pumilio; C - H. yokogawai</p>	<p>Haplorchis are a parasitic intestinal fluke of cats, worldwide. Eggs hatch into miracidia which infect snails, cercariae infect fish. Histopathological examination showed that the most significant pathological effect was focal haemorrhages in skeletal muscles in heavily infected fish. Migration of cercariae was through connective tissue and the final location of the metacercariae was connective tissue associated with skeletal structures. Clusters of cysts occurred at the bases of fins and in the loose connective tissue of the head. Infective metacercariae are also consumed by birds, and sometimes cats. Rodents appear to serve as the primary definitive host with cats being only incidentally infected. Haplorchis pumilio, H. yokogawai, H. taichui, H. sprenti and H. parataichui have been isolated from the small intestine of cats feeding on raw fish. Concurrent infections with other intestinal parasites is common. Diagnosis is based on isolation of eggs in the stools of affected cats. In reported cases, infections with this parasite caused no clinical signs in cats. It is considered among the most common minute intestinal fluke in the human species.</p>
<p>Hartmannella (amoeba)</p>  <p>Amoeba at 400x</p>	<p>Free-living amoebae (FLA), such as Hartmannella are an important component of soil and water ecosystems, acting as important predators controlling bacterial populations. They are cosmopolitan in distribution, and can be found in fresh water, in marine waters, in soil, on plants and animals, and inside vertebrates, feeding on bacteria, fungi, yeasts, algae and other protozoa. In addition to their environmental significance, some FLA have been identified as human pathogens, causing the diseases amoebic keratitis and meningoencephalitis, and systemic infections. Known to invade invertebrates such as snails and oysters, H. vermiformis is also a host for a number of human bacterial pathogens. Most famously Hartmannella are infectable with the pathogenic bacteria Legionella pneumophila. This is significant for human health as the bacteria may multiply to threatening numbers within the amoeba and then come into contact with people through inhalation. The passage of the bacteria through Hartmannella seems to increase the pathogenicity of the bacteria for humans.</p>
<p>Hepatozoon (protozoa)</p> 	<p>This species is part of the coccidia family. While particularly prevalent in amphibians and reptiles, the protozoa is well known in veterinary circles for causing a tick-borne disease called hepatozoonosis. Signs of disease include fever, loss of weight, loss of appetite, nasal discharge, and weakness of the rear limbs. A mild anemia and bloody diarrhea may also be seen. As the disease progresses, lameness, severe muscle pain, and an inability to rise are often observed. These signs may occur on and off for years. Generally infects mice and dogs, some birds but can affect other animals. This simplified life cycle is, of course, insufficient for species which infect vertebrate and invertebrate hosts which do not directly feed on one another, necessitating an even more complex cycle. For instance, Hepatozoon sipedon infects mosquitoes and snakes, but since snakes do not typically feed on mosquitoes, a third, intermediate host is required, in this case a frog. The frog ingests the infected mosquito, and the snake (or whoever eats the snake) acquires the infection by feeding on the now infected frog.</p>
<p>Heterakis (roundworm)</p> 	<p>Heterakis gallinarum is a parasite (pinworm) that lives in the cecum of domestic fowl, particularly in ground feeders such as domestic chickens and turkeys (at least one species in cecum of rat). It causes infection that is mildly pathogenic. However it often carries a protozoan parasite Histomonas meleagridis which causes histomoniasis, blackhead disease. Transmission of H. meleagridis is through the H. gallinarum egg. H. gallinarum has a direct life cycle involving birds such as chickens, turkeys, ducks, geese, grouse, guineafowl, partridges, pheasants and quails as definitive hosts. Eggs of H. gallinarum are passed in feces by the host. At optimal temperature (22°C), they become infective in 12–14 days and remain infective for years in soil. Upon ingestion by a host, the embryonated eggs hatch into second-stage juveniles in the gizzard or duodenum and are passed to the ceca. Their development is completed in the lumen, however, some may enter the mucosa and remain for years without further development. Earthworms and houseflies are considered a paratenic host as they can ingest the egg in feces and a juvenile may hatch in tissues, which stays dormant until eaten by birds.</p>

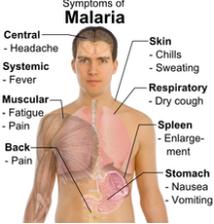
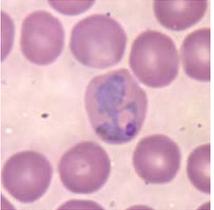
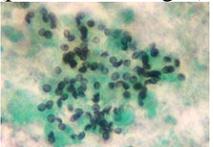
<p>Heterophyes (fluke)</p> 	<p>It is a tear drop shaped fluke found in the small intestine of fish-eating birds and mammals. Acquired by eating undercooked fish. Each worm causes a mild inflammatory reaction at its site of contact with the intestine. Heavy infections commonly cause damage to the mucosa and produce intestinal pain and mucosa diarrhea. Sometimes eggs can enter the blood and lymph vascular systems through mucosa go into the ectopic sites in the body. The heart can be affected with tissue reaction in the valves and myocardium that cause heart failure. Eggs can also get into the brain or spinal cord and cause neurological disorders and sometimes fatalities.</p>
<p>Hymenolepis (tapeworm)</p> 	<p>Hymenolepis is a genus of tapeworm responsible for hymenolepiasis. Hymenolepiasis is the most common cestode parasite in the human body. Infections are seen more often among children. It is most widespread in warm climates and around unsanitary areas where eggs can be passed through fecal matter from an infected host to an uninfected person. Prevalence in endemic areas can reach from 5-20%. The prevalence of <i>H. nana</i> in remote communities in northwest Australia is remarkably high, 55%. Results of case studies completed on each continent suggest that <i>H. nana</i> is a difficult parasite to eliminate. Patients with more than 15,000 eggs per gram of stool may experience cramps, diarrhea, irritability, anorexia, or enteritis caused by cystercoids destroying the intestinal villi in which they develop.</p>
<p>Hypoderaeum (fluke)</p>	<p>A fluke known to use the snail as an intermediate host. Not much is known but there are reported cases of infection in certain parts of Asia.</p>
<p>Isospora (protozoa)</p> 	<p>Found worldwide in fecal contaminated ground (or feces contaminated food or water), this is one of three common parasites to infect the epithelial cells of the small intestine in coccidian infection. This is the species responsible for most of the coccidian cases in dogs and cats. It is responsible for a condition known as Isosporiasis. Infection causes acute, non-bloody diarrhea with crampy abdominal pain, which can last for weeks and result in malabsorption and weight loss. In immunodepressed patients, and in infants and children (and puppies), the diarrhea can be severe and can become bloody if left untreated.</p>
<p>Isthmiophora (fluke)</p>	<p>Isthmiophora (particularly the melis species) found in the intestine of cat, fox and many other small wild mammals, including mink. It is nonpathogenic except in mink, in which it causes severe hemorrhagic enteritis. The first intermediate hosts are the pulmonate freshwater snail <i>Lymnaea stagnalis</i>. The second intermediate hosts are many amphibians and freshwater fishes. The list of definitive hosts includes more than 30 species of vertebrates including humans. <i>I. melis</i> occurs in Europe, Asia and North America.</p>
<p>Leishmania (protozoa)</p> 	<p>Leishmania is the parasite responsible for the disease leishmaniasis. It is spread through sandflies. Their primary hosts are vertebrates. Leishmania commonly infects hyraxes, canids, rodents, and humans. Leishmania currently affects 12 million people in 88 countries. Infections are regarded as cutaneous, mucocutaneous, or visceral. Cutaneous leishmaniasis (localized and diffuse) infections appear as obvious skin reactions. Mucocutaneous leishmaniasis infections will start off as a reaction at the bite, and can go via metastasis into the mucous membrane and become fatal. Visceral leishmaniasis infections are often recognized by fever, swelling of the liver and spleen, and anemia. They are known by many local names, of which the most common is probably Kala azar.</p>
<p>Linguatula</p>  	<p>Linguatula is a carnivore, like a dog or a jackal, and can be found worldwide but especially in warm subtropical and temperate regions. They are wormlike parasites of the respiratory systems of vertebrates, often called the dog tongue worm, they are responsible for Linguatulosis. They live in the nasopharyngeal region of mammals. Cats, dogs, foxes, and other carnivores are normal hosts of this parasite. Adult worms embed their forebody into the nasopharyngeal mucosa, feeding on blood and fluids. Eggs exit the host in nasal secretion or, if swallowed, with feces. When swallowed by an intermediate host, the four-legged larvae (resembling a mite) hatch in the small intestine, penetrate the intestinal wall, and lodge in tissues, particularly in lungs, liver, and lymph nodes. The nymphal stage develops. When eaten by a definitive host, infective nymphs either attach in the upper digestive tract or quickly travel there from the stomach, reaching the nasopharynx. It is usually asymptomatic unless the complication and infection is severe. Human liver autopsies in Berlin from the early part of the 20th century revealed an infection rate of nearly 12% (20% in Sudan).</p>
<p>Loa Loa (roundworm)</p> 	<p>Humans contract this roundworm (often called the African eye worm) through the bite of a Deer fly, horsefly or Mango fly, the vectors for Loa loa. Primarily found in Africa and India, it is one of the causes of filariasis. Adult worms may occasionally be seen moving slowly across the surface of the eyes or the bridge of the nose. When the migrating adult worms appear on the surface of skin, the worms often appear around the eye where they can damage the conjunctiva migrating through the conjunctiva and cornea with swelling of the orbit and psychosomatic results to the host. These worms have a tendency to wander through the subcutaneous connective tissues, provoking inflammatory responses as they go. The migrating worms can cause the calabar swelling in the arms and legs. This swelling is extremely painful. There is also intense itching, joint pain and fatigue. When they remain in one spot for a short time, the host reaction results in localized Calabar swellings, especially in the wrist and ankles, which disappear when the worm moves on. The dying worm can also cause chronic abscesses followed by granulomatous reactions and fibrosis.</p>
<p>Mansonella (roundworm)</p> 	<p>Mansonella is a vector-borne human filarial nematode, transmitted by tiny blood-sucking flies called midges. It is one of two filarial nematodes that cause Serous Cavity Filariasis in humans. Mansonella is widespread in many parts of Sub-Saharan Africa, parts of Central and South America, and the Caribbean. Compared to infections with other filarial parasites such as <i>Wuchereria bancrofti</i>, <i>Brugia malayi</i>, and <i>Loa loa</i>, Mansonella infections are relatively mild. However, the pathogenicity of Mansonella infection has been recently</p>

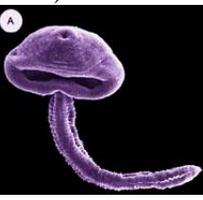
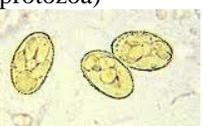
	<p>reconsidered in various studies. These studies have demonstrated that <i>Mansonella</i>, particularly <i>M. perstans</i> has the ability to induce a variety of clinical features, including angioedema Calabar-like swellings, pruritus, fever, headache, high eosinophilia, and abdominal pain. The overall disability among populations in regions where filariae are endemic has been difficult to determine because of high rates of co-infection with other filariae. <i>M. perstans</i> may also present with a condition known as Kampala, or Ugandan eye worm. This occurs when adult worms of <i>M. perstans</i> invade the conjunctiva or periorbital connective tissues in the eye.</p>
<p>Mesocestoides (tapeworm)</p> 	<p>Cats and Dogs can act as both intermediate and final host to this parasite. Cats and dogs can become secondary hosts by ingesting infected oribatid mites, or final hosts, by ingesting an infected secondary host which can be from a wide range of vertebrates i.e., reptiles, mammals, birds, etc. Infection as a final host is usually harmless. Infection as secondary host can cause severe abdominal problems including peritonitis and ascites. Humans can experience severe diarrhea with intestinal infections.</p>
<p>Metagonimus (flake)</p> 	<p>Metagonimiasis is a disease caused by an intestinal trematode (commonly called the Japanese fluke), most commonly <i>Metagonimus yokagawai</i>, but sometimes by <i>M. takashii</i> or <i>M. miyatai</i>. The metagonimiasis causing flukes are one of two minute flukes called the heterophyids. The main symptoms are diarrhea and colicky abdominal pain. Because symptoms are often mild, infections can often be easily overlooked but diagnosis is important. Flukes attach to the wall of the small intestine, but are often asymptomatic unless in large numbers. Infection can occur from eating a single infected fish source. Peripheral eosinophilia is associated especially in early phase. When present in large numbers, can cause chronic intermittent diarrhea, nausea, and vague abdominal pains. Clinical complaints can also include lethargy and anorexia. In acute metagonimiasis, clinical manifestations are developed only 5–7 days after infection. Heavy infection has also been associated with epigastric distress, fatigue, and malaise. Occasionally, flukes invade the mucosa and eggs deposited in tissue may gain access to circulation. This can then lead to eggs embolizing in the brain, spinal cord, or heart. Granulomas may form around eggs and can cause seizures, neurologic deficits, or cardiac insufficiency.</p>
<p>Metastrongylus (roundworm)</p> 	<p><i>Metastrongylus</i> is a genus of roundworm usually found as lungworms in pigs and sometimes causing verminous bronchitis. It causes a disease called metastrongylosis. The life cycle is indirect. The eggs are laid by the adult worm in the bronchi. They are coughed up, swallowed and passed out via the feces. The eggs are then eaten by earthworms in which they develop through three larval stages over ten days to become infective. The cycle is completed by the pig eating the earthworm. Infection therefore only occurs where pigs have access to earthworms. The larvae from the earth worm penetrate the intestine and migrate via the lymph nodes and blood vessels to the lungs undergoing two more larval stages in the process. The larvae invading swine lungs irritate the air passages, rupture tissues, and cause inflammation. This damage predisposes the pigs to secondary bacterial infections, causing pneumonia. The viruses of hog cholera and swine influenza can be carried by a pig lung worm larvae. Pigs infected with lungworm usually have a persistent cough, with loss of condition and retarded growth.</p>
<p>Microphallus (flake)</p> 	<p>They are parasitic (flake) in a variety of molluscs, crustaceans, birds, and mammals. <i>Microphallus</i> is a widespread and locally common undescribed parasite in New Zealand lakes and streams although at least one strain was found in Florida and California in the marsh rice rat and sea otter. Most is known about the <i>M. piriformes</i> species, also known as the sea gull fluke. In mature flukes live in the snail, which is eaten by Herring Gulls. The fluke matures and lays eggs which pass through the feces and is again eaten by snails. Periwinkle fish are also known to host <i>Microphallus</i> and the parasite has a neurotoxic effect on the fish and snails making them act in an unusual way that in short, makes them get caught and eaten by animals in the higher food chain.</p>
<p>Microsporidia 1 (protozoa)</p> 	<p>Recent molecular biology research has clarified their taxonomic classification. These studies support the hypothesis that microsporidia are true fungi (not protozoa) descended from a zygomycete ancestor. Microsporidia have a cosmopolitan distribution and many species can infect man. Many different animal species can probably act as reservoirs for infection. Human infection occurs through inhalation or ingestion of infectious spores from contaminated food and drink or by contact with infected animals. Effects on the host include reduced longevity, fertility, weight, and general vigor. Microsporidiosis is an opportunistic infection that may become serious as it can cause chronic malabsorption, diarrhea and wasting in immunocompromised individuals, especially those with HIV infection and full-blown AIDS. The microsporidia often cause chronic, debilitating diseases rather than lethal infections. There are at least 14 microsporidian species that have been identified as human pathogens: <i>Brachiola algerae</i>, <i>B. connori</i>, <i>B. vesicularum</i>, <i>Encephalitozoon cuniculi</i>, <i>E. hellem</i>, <i>E. intestinalis</i>, <i>Enterocytozoon bienewisi</i> <i>Microsporidium ceylonensis</i>, <i>M. africanum</i>, <i>Nosema oculorum</i>, <i>Pleistophora</i> sp., <i>Trachipleistophora hominis</i>, <i>T. anthropophthera</i>, <i>Vittaforma corneae</i>. This vial represents those 14 species thought to be the only ones that infect humans.</p>
<p>Microsporidia 2 (protozoa)</p>	<p>This vial represents all the genera of Microsporidia known (163 genera) but thought to be of no harm to humans. This includes Microsporidia species that live in domestic birds, hamsters, rivers, ditch water, etc. These have all been included in this vial; if it comes up, you just found something that medicine has yet to discover.</p>

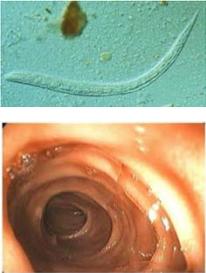
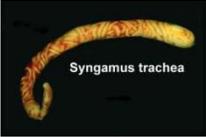
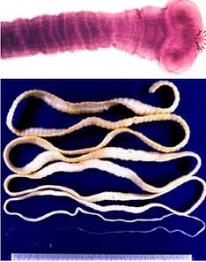
<p>Multiceps (tapeworm)</p> 	<p><i>Multiceps multiceps</i> is a cestode of cosmopolitan distribution and causes coenuriasis in man. The dog is the common definitive host in the USA and UK. With the intermediate stages developing in many ungulates, especially sheep. The adult worm is found in dogs and other canidae. The intermediate hosts comprise of a number of herbivorous animals, where the cysts develop in the brain and spinal cord causing a disease called 'staggers', which affects the balancing powers of the animals. Man becomes infected by the accidental ingestion of eggs. The oncosphere hatches and penetrates the intestinal wall and the embryo is carried by the blood stream to various parts of the body including the central nervous system where it lodges and the cyst or coenurus develops. In humans, coenuri are most frequently found in the brain and spinal cord but also in the subcutaneous tissue. Symptoms include headache, vomiting, paraplegia seizures and eye problems. The coenurus may cause serious damage or even death, but only a few have ever been reported.</p>
<p>Naegleria (amoeba)</p> 	<p><i>Naegleria</i> is a free-living excavate form of protist typically found in warm bodies of fresh water, such as ponds, lakes, rivers, and hot springs. It is also found in soil, near warm water discharges of industrial plants, and minimally chlorinated swimming pools, (there is no evidence of this amoeba living in ocean water). In humans, <i>N. fowleri</i> is known as "the brain-eating amoeba" as it can invade the central nervous system via the nose, more specifically the olfactory mucosa and cribriform plate of the nasal tissues. The penetration initially results in significant necrosis of and hemorrhaging in the olfactory bulbs. From there, amoebae climb along nerve fibers through the floor of the cranium via the cribriform plate and into the brain. The amoebae begin to consume the cells of the brain piecemeal by means of a unique sucker apparatus extended from their cell surface. It then becomes pathogenic, causing primary amoebic meningoencephalitis (PAM or PAME). Onset symptoms of infection start 1 to 14 days after exposure. The initial symptoms include, but are not limited to changes in taste and smell, also headache, fever, nausea, vomiting, and stiff neck. Secondary symptoms include confusion, hallucinations, lack of attention, ataxia, and seizures. After the start of symptoms, the disease progresses rapidly 3 to 7 days, with death occurring from 7 to 14 days. Of course, this vial contains all species of <i>Naegleria</i>, not just the brain eater so if this vial comes up, don't assume the worst.</p>
<p>Nanophyetus (flake) photo of egg</p> 	<p><i>Nanophyetus salmincola</i> may be the most common trematode endemic to the United States. In particular, the parasite is a food-borne intestinal trematode prevalent in the coast of the Pacific Northwest. Transmission is most commonly by the ingestion of raw, undercooked, or smoked salmon or steelhead trout. Usually this is meant to be ingestion of the muscle of the fish but there have been cases reported in which the suspected agent of transmission was Steelhead roe. The parasite is most known for its association with "salmon poisoning disease", which, left untreated, proves to be fatal to dogs and other canids. However, canids are affected by the <i>Neorickettsia helminthoeca</i> bacteria, for which <i>N. salmincola</i> acts as a vector (host), and not by the parasite itself. Very few known cases of naturally acquired human infection with <i>N. salmincola</i> are found in the literature, though it is likely that many cases are unreported, since most people are asymptomatic, or symptomatic with non-specific symptoms like gastrointestinal discomfort. Symptoms include "diarrhea, unexplained peripheral blood eosinophilia, abdominal discomfort, nausea and vomiting, weight loss, and fatigue. Disease caused by <i>N. salmincola</i>, or nanophyetiasis, is easily preventable by thoroughly cooking fish before consumption.</p>
<p>Necator (hookworm)</p> 	<p>The hookworm is a parasitic nematode that lives in the small intestine of its host, which may be a mammal such as a dog, cat, or human. Two species of hookworms commonly infect humans, <i>Ancylostoma duodenale</i> and <i>Necator americanus</i>. <i>A. duodenale</i> predominates in the Middle East, North Africa, India and (formerly) in southern Europe, while <i>N. americanus</i> predominates in the Americas, Sub-Saharan Africa, Southeast Asia, China, and Indonesia. The most significant risk of hookworm infection is anemia, secondary to loss of iron (and protein) in the gut. The worms suck blood voraciously and damage the mucosa. However, the blood loss in the stools is not visibly apparent. Hookworm is a leading cause of maternal and child morbidity in the developing countries of the tropics and subtropics. In susceptible children hookworms cause intellectual, cognitive and growth retardation, intrauterine growth retardation, prematurity, and low birth weight among newborns born to infected mothers. In developed countries, hookworm infection is rarely fatal, but anemia can be significant in a heavily infected individual. The usual method of infection is through the skin; this is commonly caused by walking barefoot through areas contaminated with fecal matter. The larvae are able to penetrate the skin of the foot, and once inside the body, they migrate through the vascular system to the lungs, and from there up the trachea, and are swallowed. They then pass down the esophagus and enter the digestive system, finishing their journey in the intestine, where the larvae mature into adult worms. Larval invasion of the skin might give rise to intense, local itching, usually on the foot or lower leg, which can be followed by lesions that look like insect bites, can blister ("ground itch"), and last for a week or more. Animal hookworm larvae on penetrating humans may produce a creeping eruption called cutaneous larva migrans. The larvae migrate in tortuous tunnels in between stratum germinativum and stratum corneum of the skin, causing serpiginous vesicular lesions. With advancing movement of the larvae, the rear portions of the lesions become dry and crusty. The lesions are typically intensely pruritic. Coughing, chest pain, wheezing, and fever will sometimes be experienced by people who have been exposed to very large numbers of larvae. Epigastric pains, indigestion, nausea, vomiting, constipation, and diarrhea can occur early or in later stages as well, although gastrointestinal symptoms tend to improve with time. Signs of advanced severe infection are those of anemia and protein deficiency, including emaciation, cardiac failure and abdominal distension with ascites.</p>

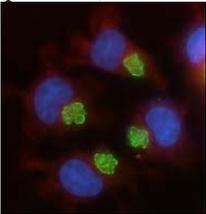
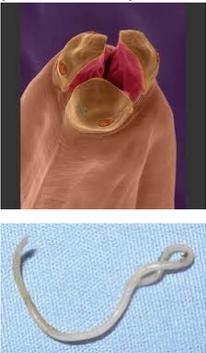
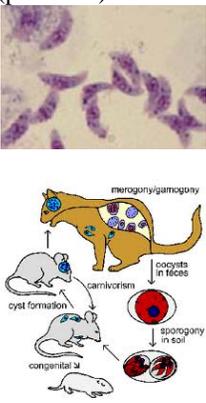
<p>Neodiplostomum (fluke)</p> 	<p>Neodiplostomum are a parasitic intestinal fluke of cats throughout Asia. Cats have been reportedly infected with <i>P. muris</i> from eating fish infected with metacercariae. The life cycle of this parasite involves intermediary hosts (snails, fish) and the definitive hosts include cats, rats and humans. Most infected cats are asymptomatic of disease, and adult parasites can be found in the duodenum and jejunum. However, experimental studies have shown that some of this species of flukes penetrate the intestinal wall, enter the peritoneal cavity, and orient to the liver without passing through any other organs. This fluke can be avoided by assuring that meat eaten (including snake meat) is thoroughly cooked.</p>
<p>Neoparamoeba (protozoa)</p> 	<p>Neoparamoeba protozoa have been linked to diseases and death in fish and invertebrates. In blue crabs, <i>P. perniciosus</i> is localized in hemal spaces and connective tissues and spreads to blood vessels and eventually to the heart during the terminal stage of infection. This parasite also invades muscle tissue and rarely, hepatopancreas, and in heavy infection can be found in central nervous system. Paramoeba invaders has been linked to massive mortality of sea urchin in Nova Scotia, in which the parasite is widespread in all tissues but it is consistently localized in the radial nerve/water vascular canal tissue. More recently, <i>N. pemaquidensis</i> was also recognized as a pathogen of salmon and rainbow trout. <i>N. pemaquidensis</i> mostly infects the gills of salmon and other fish. <i>N. aestuarina</i> has also been suggested as a potential agent of amoebic gill disease. Protozoa have been implicated in the massive mortality of the American lobster. In diseased and dead lobsters, paramoebid parasites have been identified most frequently in ganglia of the central nervous system.</p>
<p>Neospora (protozoa)</p> 	<p>Neospora is an important coccidian pathogen in cattle and dogs. It is highly transmissible and some herds can have up to a 90% prevalence. Neospora causes abortions in cattle and up to 33% of pregnancies can result in aborted fetuses on one dairy farm. Dogs are often the definitive host but can act as an intermediate host as well. Cows are usually the intermediate host. The life cycle is similar to Toxoplasma. An infected dog will pass the oocysts through its feces and infect food or water. A cow or other animal will then up take the parasite. The parasite will undergo asexual reproduction in the animal's muscle until it is eaten by a dog. There, sexual reproduction will occur and oocysts will be created and passed through the feces.</p>
<p>Nosema (protozoa, > Microsporidia)</p>	<p>Until recently <i>Nosema apis</i> had been considered to be a single-celled protozoan pathogen, though it is now considered a microsporidian. It causes nosemosis, also called nosema, which is the most widespread of adult honey bee diseases resistant to temperature extremes and dehydration and cannot be killed by freezing the contaminated comb. Spores must be swallowed and the epithelial cells of the host are infected. This vial includes all species of <i>Nosema</i>, infecting mosquitoes, silkworms, crustaceans, wasps, etc.</p>
<p>Oesophagostomum (roundworm)</p> 	<p>These worms occur in Africa, Brazil, China, Indonesia and the Philippines. The majority of human infection with <i>Oesophagostomum</i> is localized to northern Togo and Ghana. Because the eggs may be indistinguishable from those of the hookworms (which are widely distributed and can also rarely cause helminthomas), the species causing human helminthomas are rarely identified with accuracy. <i>Oesophagostomum</i>, especially <i>O. bifurcum</i>, are common parasites of livestock and animals like goats, pigs and non-human primates, although it seems that humans are increasingly becoming favorable hosts as well. The disease they cause, oesophagostomiasis, is known for the nodule formation it causes in the intestines of its infected hosts, which can lead to more serious problems such as dysentery. Although the routes of human infection have yet to be elucidated sufficiently, it is believed that transmission occurs through oral-fecal means, with infected humans unknowingly ingesting soil containing the infectious filariform larvae.</p>
<p>Onchocerca (roundworm)</p>   <p>Bacteria wolbachia</p>	<p><i>Onchocerca</i> is a genus of roundworm. It contains one human parasite - <i>Onchocerca volvulus</i> - which is responsible for the neglected disease Onchocerciasis, also known as "River Blindness" because the infected humans tend to live near rivers where host black flies live. Onchocerciasis is the world's second-leading infectious cause of blindness. The death of microfilariae is very toxic to the skin and the eye, producing terrible itching and various eye manifestations (lesions). After repeated years of exposure, these lesions may lead to irreversible blindness and disfigurative skin diseases sometimes named "leopard" skin and "lizard" skin. The parasite is transmitted to humans through the bite of a black fly of the genus <i>Simulium</i>. The larval nematodes spread throughout the body. When the worms die, their <i>Wolbachia</i> symbionts are released, triggering a host immune system response that can cause severe itching, and can destroy optical tissue in the eye. Thus it is not the worm that causes the blindness but the <i>wolbachia</i> (a bacteria common in as much as 70% of all insects). The vast majority of infections occur in sub-Saharan Africa, although cases have also been reported in Yemen and isolated areas of Central and South America. An estimated 18 million people suffer from onchocerciasis, with approximately 270,000 cases of blindness related to the infection.</p>
<p>Opisthorchis (fluke)</p> 	<p><i>Opisthorchis</i>, common name Southeast Asian liver fluke, is a trematode parasite that attacks the area of the bile duct. Infection is acquired when people ingest raw or undercooked fish. It causes the disease opisthorchiasis. <i>Opisthorchis viverrini</i> is endemic throughout Thailand, the Lao People's Democratic Republic, Vietnam and Cambodia. The prevalence of human infection can be as high as 70% in some regions, for example in Khon Kaen Province in Thailand. The metacercarial stage is infective to humans and other fish-eating mammals including dogs and cats. The natural definitive host is the Leopard Cat. The parasite establishes in the bile ducts of the liver as well as extrahepatic ducts and the gall bladder of the host. Symptoms are indistinguishable from clonorchiasis. About 80% of infected people have no symptoms if they have a light infection. Symptoms of heavier infections may include: diarrhea, pain in epigastric and pain in the upper right quadrant, lack of appetite (anorexia), fatigue, yellowing of the eyes and skin (jaundice) and mild fever. Heavy chronic infections may</p>

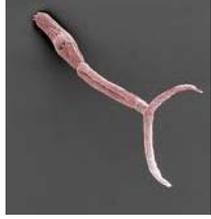
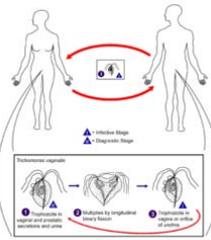
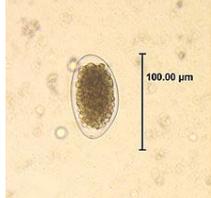
 <p>adult <i>Opisthorchis viverrini</i> in bile ducts of infected hamster.</p>	<p>lead to accumulation of fluid in legs (edema) and in the peritoneal cavity (ascites), enlarged non-functional gall-bladder and also cholangitis, which can lead to periductal fibrosis, cholecystitis and cholelithiasis, obstructive jaundice, hepatomegaly and/or fibrosis of the periportal system and even malignant cancer of the bile ducts (cholangiocarcinoma). In regions where <i>Opisthorchis viverrini</i> is highly endemic, the incidence of cholangiocarcinoma is unprecedented. For instance, cholangiocarcinomas represents 15% of primary liver cancer worldwide, but in Thailand's Khon Kaen region, this figure escalates to 90%, the highest recorded incidence of this cancer in the world. Of all cancers worldwide from 2002, 0.02% were cholangiocarcinoma caused by <i>Opisthorchis viverrini</i>.</p>
<p>Orientobilharzia (tapeworm)</p> 	<p>Adult worms of <i>Orientobilharzia</i> species live in the portal veins or intestinal veins of cattle, sheep and other mammals, and often cause orientobilharziasis in China, India, Mongolia, Pakistan, Iraq, Iran, Asia, Russia, Turkey and Europe. More importantly, the cercariae of <i>Orientobilharzia</i> species can infect humans and often cause cercarial dermatitis. Though <i>Orientobilharzia</i> species have been confirmed as zoonotic agents, they have been largely neglected, compared with other pathogens causing cercarial dermatitis, such as <i>Trichobilharzia</i> spp., <i>Schistosoma spindale</i> and <i>Bilharziella</i> sp., which have attracted considerable attention.</p>
<p>Paragonimus (flake)</p> 	<p><i>Paragonimus</i> is most prominent in Asia and South America. Paragonimiasis is a food-borne parasitic infection caused by the lung fluke which can cause a sub-acute to chronic inflammatory disease of the lung. It's one of the more recognized lung flukes with the widest geographical range. More than 30 species of trematodes (flukes) of the genus <i>Paragonimus</i> have been reported to infect animals and humans. Among the more than 10 species reported to infect humans, the most common is <i>P. westermani</i>, the oriental lung fluke. Humans or felines eat infected raw or undercooked crustaceans. Once eaten, the metacercaria excysts and penetrates the gut, diaphragm and lung where it becomes an adult worm in pairs.</p>
<p>Passalurus (pinworm)</p> 	<p><i>Passalurus</i> a chronic helminthiasis of rabbits and hares that is caused by the nematode <i>Passalurus ambiguus</i>, which parasitizes the large intestine. The infestation occurs throughout the world and is especially common on rabbit farms. The pinworms that infest rabbits are small nematodes 3.8–12 mm in size with spindle-shaped bodies; they are transferred through feed and water. Most susceptible are young rabbits three to seven months old. Infested rabbits are retarded in growth and development, are unable to be fattened, and yield a low-quality hide. Eggs and occasionally live adult worms can be observed in freshly excreted feces (see photo). Once out of the rabbit body, the worms will dry quickly and cannot be seen anymore after 5 minutes.</p>
<p>Pentatrichomonas (protozoa)</p>	<p>This is a trichomonad parasite that may produce chronic diarrhea in humans, and can be isolated from the large intestines of cats, dogs, non-human primates and guinea pigs (said to be non-pathogenic).</p>
<p>Pfiesteria (plankton)</p> 	<p><i>Pfiesteria</i> has been associated with harmful algal blooms and fish kills. <i>Pfiesteria</i> complex organisms (PCOs) were claimed to be responsible for large fish kills in the 1980s and 1990s on the coast of North Carolina and in tributaries of the Chesapeake Bay. Early research suggests it is harmful by releasing a toxin that paralyzes the respiratory systems of susceptible fish, such as menhaden, thus causing death by suffocation. It then consumes the tissue sloughed off its dead prey. In reaction to the toxic outbreaks, six states along the US east coast have initiated a monitoring program to allow for rapid response in the case of new outbreaks and to better understand the factors involved in <i>Pfiesteria</i> toxicity and outbreaks. New molecular detection methods have revealed that <i>Pfiesteria</i> has a worldwide distribution. The effects of PCOs on humans have been questioned, leading to the "<i>Pfiesteria</i> hysteria hypothesis." A critical review of this hypothesis in the late 1990s concluded that <i>Pfiesteria</i>-related illness was unlikely to be caused by mass hysteria. This was corroborated by a later evaluation concluding that PCOs can cause human illness.</p>
<p>Phagicola (flake)</p>	<p>An intestinal fluke found in dogs and fish eating birds and mammals. Only one reported case in humans: in a 31 year-old woman who, in 1987, travelled and stayed several months in the municipality of Cananéia (Brazil), where she ingested, in various occasions, raw mullet. The patient referred mild intestinal pain and laboratory examinations showed eggs of <i>Phagicola</i> in the stools and a slight increase in eosinophil blood levels (8%).</p>
<p>Phaneropsolus (flake)</p>	<p>Intestinal flukes, mainly of reptiles, birds and mammals. Cases in humans have been reported but little is documented about it.</p>
<p>Phocanema (roundworm)</p>	<p>A genus of nematodes (roundworm) that parasitizes codfish and may be transmitted to humans who eat the fish without cooking it thoroughly, found in the South American sealion and fur seals as well.</p>
<p>Physaloptera (roundworm)</p> 	<p><i>Physaloptera</i> species are found worldwide and infect such varied animals as hedgehogs, doves, and monkeys. The adult <i>Physaloptera</i> looks like a short version of the roundworm, and that is where it causes some confusion. If found in a dog or cat's vomit, it may easily be mistaken for a roundworm. The eggs of <i>Physaloptera</i> and roundworms are both found in the feces, but differ in appearance. The adult worm attaches itself to the stomach wall of dogs and cats, and its eggs are passed in the feces. The eggs, which contain larvae, are ingested by beetles. A dog or cat eating the insect then becomes infected. <i>Physaloptera</i> is found in most of the United States, and is generally not felt to be an important cause of disease, however, it may cause bleeding in the stomach. In severe infections, vomiting, loss of appetite, and black, tarry feces may be seen. Undescribed or unidentified species have been found on the hispid cotton rat in the southern United States, the marsh rice rat in Florida, and <i>Leontopithecus rosalia</i>, <i>Physalaemus soaresi</i>, <i>Cacajao calvus</i>, and <i>Lagothrix lagotricha</i> in Brazil.</p>

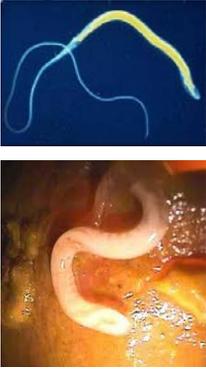
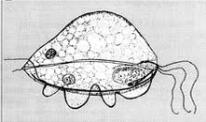
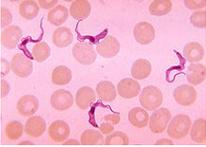
<p>Plagiorchis (flake)</p> 	<p>Plagiorchis are parasitic intestinal flukes of cats throughout Asia. Cats have been reportedly infected with <i>P. muris</i> and <i>P. massino</i> from eating fish infected with metacercariae. The life cycle of this parasite involves intermediary hosts (snails, fish) and the definitive hosts include cats, raccoon dogs and humans. Most infected cats are asymptomatic of disease, and adult parasites can be found in the duodenum and jejunum. Plagiorchis species have also been reported in birds and otters.</p>
<p>Plasmodium.1 (protist)</p>    <p>Red blood cell infected with malaria</p>	<p>. Of the over 200 known species of Plasmodium, at least 11 species infect humans. Other species infect other animals, including monkeys, rodents, birds, and reptiles (thus vials 1&2). Malaria is a mosquito-borne infectious disease It is widespread in tropical and subtropical regions, including parts of the Americas (22 countries), Asia, and Africa. Each year, there are more than 250 million cases of malaria, killing between one and three million people, the majority of whom are young children in sub-Saharan Africa. Symptoms of malaria include fever, shivering, arthralgia (joint pain), vomiting, anemia (caused by hemolysis), hemoglobinuria, retinal damage, and convulsions. The classic symptom of malaria is cyclical occurrence of sudden coldness followed by rigor and then fever and sweating lasting four to six hours, occurring every two days in <i>P. vivax</i> and <i>P. ovale</i> infections, while every three days for <i>P. malariae</i>. <i>P. falciparum</i> can have recurrent fever every 36–48 hours or a less pronounced and almost continuous fever. For reasons that are poorly understood, but that may be related to high intracranial pressure, children with malaria frequently exhibit abnormal posturing, a sign indicating severe brain damage. Malaria has been found to cause cognitive impairments, especially in children. It causes widespread anemia during a period of rapid brain development and also direct brain damage. This neurologic damage results from cerebral malaria to which children are more vulnerable. Cerebral malaria is associated with retinal whitening, which may be a useful clinical sign in distinguishing malaria from other causes of fever. Severe malaria is almost exclusively caused by <i>P. falciparum</i> infection, and usually arises 6–14 days after infection. Consequences of severe malaria include coma and death if untreated—young children and pregnant women are especially vulnerable. Splenomegaly (enlarged spleen), severe headache, cerebral ischemia, hepatomegaly (enlarged liver), hypoglycemia, and hemoglobinuria with renal failure may occur. Renal failure is a feature of blackwater fever, where hemoglobin from lysed red blood cells leaks into the urine. Chronic malaria is seen in both <i>P. vivax</i> and <i>P. ovale</i>, but not in <i>P. falciparum</i>. Here, the disease can relapse months or years after exposure, due to the presence of latent parasites in the liver. Describing a case of malaria as cured by observing the disappearance of parasites from the bloodstream can, therefore, be deceptive. The longest incubation period reported for a <i>P. vivax</i> infection is 30 years. This vial contains the 14 species of parasite known to infect humans and cause malaria.</p>
<p>Plasmodium.2 -mammals</p>	<p>This vial contains all the species of Plasmodium known to cause malaria in mammals other than humans, like rats, bats, squirrel, buffalo, goat, deer, primates, etc. These are not supposed to cause infection in humans, so if this vial comes up, you may have discovered something.</p>
<p>Plasmodium.3 -birds</p>	<p>This vial contains all the species of Plasmodium known to cause malaria in birds These are not supposed to cause infection in humans, so if this vial comes up, you may have discovered something.</p>
<p>Plasmodium.4 -reptiles</p>	<p>This vial contains all the species of Plasmodium known to cause malaria in reptiles These are not supposed to cause infection in humans, so if this vial comes up, you may have discovered something.</p>
<p>Platynosmum (flake)</p> 	<p>Not found to harm humans in any way (ah huh), found in the gut of lizards, some are found in the intestine of sheep and others in the bile ducts of cats causing a feline inflammatory liver disease presenting with no symptoms in some cases, or a mild disease characterized by vomiting diarrhea and jaundice. In severe cases obstruction of bile duct and hepatic insufficiency caused death. Infection usually occurs by eating infected lizards, often called lizard poisoning. Reports of birds dying from the same obstructions have been reported.</p>
<p>Pneumocystis (protozoa,> fungus)</p> 	<p>Pneumocystis pneumonia (PCP) or pneumocystosis is a form of pneumonia, caused by the yeast-like fungus (which had previously been erroneously classified as a protozoan) <i>Pneumocystis jirovecii</i>. <i>Pneumocystis</i> is commonly found in the lungs of healthy people, but being a source of opportunistic infection it can cause a lung infection in people with a weak immune system. <i>Pneumocystis pneumonia</i> is especially seen in people with cancer, HIV/AIDS and the use of medications that affect the immune system. Symptoms of PCP include fever, non-productive cough (because sputum is too viscous to become productive), shortness of breath (especially on exertion), weight loss and night sweats. There is usually not a large amount of sputum with PCP unless the patient has an additional bacterial infection. The fungus can invade other visceral organs, such as the liver, spleen and kidney, but only in a minority of cases. Pneumothorax is a well-known complication of PCP. An acute history of chest pain with breathlessness and diminished breath sounds is typical of pneumothorax.</p>
<p>Procerovum (flake)</p>	<p>Procerovum are parasitic intestinal fluke of cats throughout Asia. Cats and waterfowl have been reportedly infected with <i>P. varium</i> and <i>P. calderoni</i> from eating fish infected with metacercariae. The life cycle of this parasite involves intermediary hosts (snails, fish) and the definitive hosts include cats, raccoon dogs and humans. Most infected cats are asymptomatic of disease, and adult parasites can be found in the duodenum and jejunum.</p>
<p>Prosthodendrium (flake)</p>	<p>An intestinal fluke generally found in bats but human infections have been reported from eating fish that was not fully cooked.</p>

<p>Pseudoterranova (roundworm)</p> 	<p>Members of the Pseudoterranova species complex (often referred to as a Sealworm) are the second most common nematodes found in humans (most common are nematodes of the Anisakis simplex complex). In northern Japan, human infection with Pseudoterranova is not rare; by the mid-1990s, as many as 769 cases had been reported. Pseudoterranovosis has also been encountered in North and South America and Europe. In 2009, a woman in Japan coughed up a nematode and expelled it through her mouth. Her medical history was unremarkable, and she had not traveled abroad for the past few years. This parasite can be avoided by avoiding raw and undercooked marine fish.</p>
<p>Pygidiopsis (flake)</p> 	<p>Pygidiopsis spp are parasitic intestinal trematode of cats found throughout Asia, Europe and Egypt. Like most other digenean trematodes, it has a three-host life-cycle. It asexually multiplies in its first intermediate host, the snail, producing cercariae (pictured) which are released into the surrounding water. The cercaria swims in a series of small, stepped leaps, and then spins rapidly on its own axis once it sinks to the substrate, almost like a tiny aquatic ballerina. All this dance-like motion attracts the attention of guppies, the parasite's second intermediate hosts, which ingest the parasite and become infected. The parasites burrow into the mesentery tissue of the fish, where they form a cyst and await ingestion by the definitive host where the worm will mature into its adult stage. While the adult specimen were first described from a rat, a subsequent study found it in the piscivorous bat which. There have been no reported cases of clinical symptoms associated with infection in cats, although in humans, enteritis and pancreatitis have occurred. Cats become infected with <i>P. genata</i> and <i>P. spindalis</i> by eating raw fish.</p>
<p>Raillietina (tapeworm)</p> 	<p>Raillietina are the most important species in terms of prevalence and pathogenicity among wild and domestic birds. It is a hermaphrodite worm having both the male and female reproductive organs in its body. The adult parasite infects the small intestine of fowl, from where it obtains nutrition from the digested food of the host. The tapeworm is responsible for stunted growth of young chicken, emaciation of adult and decreased egg production of hen. In general the tapeworm does not cause gross pathological damages on well nourished chicken, but do compete for food when they grow to excessive numbers. In such situations, severe lesions on the intestinal walls and diarrhea could arise, or even complete intestinal blockage. Under heavy infestation, <i>R. echinobothrida</i> is listed as one of the most pathogenic tapeworms, causing conspicuous intestinal nodules in chickens, with characteristic hyperplastic enteritis associated with the formation of granuloma. The symptom is termed "nodular tapeworm disease" in poultry. Intestinal nodules often result in degeneration and necrosis of intestinal villi, accompanied by anaemia with a significant increase of total leukocyte counts and decrease of total serum protein.</p>
<p>Retortamonas (protozoa)</p>	<p>A protozoa found in the intestines of animals from insects, snakes, sloths, turtles, humans, etc. Considered non-pathogenic, so if a person tests for this vial they probably have a species that belongs to a different host.</p>
<p>Sappinia (amoeba)</p> 	<p>A species of amoeba capable of causing infectious disease in humans, specifically, amebic encephalitis. Sappinia can be found around the world. It is usually found in elk and buffalo feces, places where farm animals are known to eat, soil containing rotting plants and fresh water sources. It is believed that the person in Texas who became ill with amebic encephalitis due to Sappinia was infected through contact with animal feces on his farm in Texas. It is thought that Sappinia may enter the body through the nose or via cuts and bruises on the body. In the only known case, the patient had signs of a sinus infection before developing symptoms of amebic encephalitis.</p>
<p>Sarcocystis (protozoa)</p> 	<p>Sarcocystis is a genus of protozoa. Species in this genus infect reptiles, birds and mammals. While the majority of the species in this genus infect mammals, about a dozen are known to infect snakes. Infection with this parasite is known as sarcosporidiosis. Stool examinations in Thai laborers showed that sarcocystis infection had a prevalence of ~23%. Virtually all cases appeared to be asymptomatic which probably explains the lack of recognition. In those that present symptoms, the pathology is of two types: a rare invasive form with vasculitis and myositis and an intestinal form that presents with nausea, abdominal pain, and diarrhea. While normally mild and lasting under 48 hours, the intestinal form may occasionally be severe or even life threatening. The invasive form may involve a wide variety of tissues including lymph nodes, muscles and the larynx.</p>
<p>Schistosoma (blood fluke)</p> 	<p>Commonly known as blood-flukes, these flatworms are responsible for a highly significant parasitic infection of humans by causing the disease schistosomiasis, and are considered by the World Health Organization as the second most important parasitic disease, next only to malaria, with hundreds of millions infected worldwide. This disease is most commonly found in Asia, Africa, and South America, especially in areas where the water contains numerous freshwater snails, which may carry the parasite. The infectious form of the parasite, known as cercariae, emerge from the snail, hence contaminating water. You can become infected when your skin comes in contact with contaminated freshwater. Adult worms parasitize mesenteric blood vessels. At the start of infection, mild itching and a papular dermatitis of the feet and other parts after swimming in polluted streams containing cercariae. Occasionally central nervous system lesions occur: cerebral granulomatous disease may be caused by ectopic eggs in the brain, and granulomatous lesions around ectopic eggs in the spinal cord; infections may result in a transverse myelitis with flaccid paraplegia. Many infections are subclinically symptomatic, with mild anemia and malnutrition being common in endemic areas. Acute schistosomiasis (Katayama's fever) may occur weeks after the initial infection. Manifestations include Abdominal pain, Cough, Diarrhea, Eosinophilia (high white blood cell), Fever, Fatigue, Hepatosplenomegaly (the enlargement of both the liver and the spleen) and Genital sores. Continuing infection may cause granulomatous reactions and</p>

	fibrosis in the affected organs, which may result in manifestations that include: Colonic polyposis with bloody diarrhea (see photo); Portal hypertension with hematemesis and splenomegaly; Cystitis and ureteritis with hematuria, which can progress to bladder cancer; Pulmonary hypertension; Glomerulonephritis; and central nervous system lesions.
<p>Spirometra (tapeworm)</p> 	The adult tapeworm is present in the small intestine of cats and dogs where it may grow as long as 1.5 meters. Eggs from the worm are passed with the host feces, when they develop into a proceroid larva. This larva may be directly ingested by humans or may enter an intermediate host which include frogs, birds, snakes, rats and mice and become a plerocercoid larva. When cats, dogs, foxes or wolves eat the intermediate host the worm completes its life cycle becoming an egg producing adult. This worm can live in any part of the body. Discrete subcutaneous nodules develop that may appear and disappear over a period of time. The nodules usually itch, swell, turn red, and migrate, and are often accompanied by painful edema. Symptoms vary depending where the worm has migrated to. The infection caused by this worm is Sparganosis and is most prevalent in Eastern Asia, although cases have been described in countries throughout the world, including the US. Infection of humans may be prevented by avoiding uncooked meat, infected water, and poultices made with infected contents.
<p>Stellantchasmus (fluke)</p>	This is an intestinal fluke of fish-eating mammals such as cats, dogs and other mammals. Not well documented but known to cause a few infections in humans, primarily in Asia.
<p>Stephanurus (roundworm)</p> 	An important parasite found in North America known as the Kidney Worm of Swine, although it can be found in other organs and is also found in horses and cattle at times. The adult females form cysts in the kidney fat and pass eggs out into the urine which develops to infective larvae in 2-7 days. The cycle can be a direct one through the intake of infected larvae by mouth or penetration through the skin, or indirectly through infected earth worms. The larvae migrate from the intestine throughout the body over a period of 4-6 months before they finally arrive at the kidneys to mature. The cycle from egg to adult is a long one (up to a year) and the females lay very large numbers of eggs each day. Stephanurus dentatus is found only in warm wet countries because the larva dies out very quickly in cold conditions. The larvae cause severe damage, particularly in the liver, as they migrate throughout the body and they cause loss of appetite and body condition. Blood is often passed out in the urine. There is considerable wasting of muscles. Most common mode of infection is ingestion of infected earth worms and contaminated feces.
<p>Stictodora (fluke)</p>	Stictodora are intestinal flukes of cats throughout northern Africa, the Middle East and Asia. Cats have been reportedly infected eating fish infected with metacercariae. The life cycle of this parasite involves intermediary hosts (snails, mollusks, freshwater fish) and the definitive hosts include cats, raccoon dogs & humans. Most infected cats are asymptomatic of disease, and adult parasites can be found in the duodenum and jejunum.
<p>Strongyloides (threadworm)</p>  <p>Intestine full of them, look closely ...</p>	Strongyloides, also known as the threadworm, is a human parasitic roundworm causing the disease of strongyloidiasis. In developing countries it is less prevalent in urban areas than in rural areas (where sanitation standards are poor). These threadworms are acquired from contaminated soil that penetrate the human skin, and are transported to the lungs where they penetrate the alveolar spaces; they are carried through the bronchial tree to the pharynx, are swallowed and then reach the small intestine. The adult parasitic stage lives in tunnels in the mucosa of the small intestine. The females live threaded in the epithelium of the small intestine and by parthenogenesis produce eggs. Many people infected are usually asymptomatic at first. Symptoms include dermatitis: swelling, itching, larva currens, and mild hemorrhage at the site where the skin has been penetrated. If the parasite reaches the lungs, the chest may feel as if it is burning, and wheezing and coughing may result, along with pneumonia-like symptoms (Löffler's syndrome). Eventually, the intestines could be invaded, leading to burning pain, tissue damage, sepsis, and ulcers. In severe cases, edema may result in obstruction of the intestinal tract as well as loss of peristaltic contractions. If you have this, get your pets tested as you may have acquired it from them.
<p>Syngamus (roundworm)</p> 	A gapeworm is a parasitic nematode worm infecting the tracheas of certain birds. The resulting disease, known as gape or the gapes, occurs when the worms clog and obstruct the airway. The worms are also known as red worms or forked worms due to their red color and the permanent procreative conjunction of males and females. Gapeworm is common in young, domesticated chickens, turkeys and pheasant farms, although it can infect any type of bird. When the female gapeworm lays her eggs in the trachea of an infected bird, the eggs are coughed up, swallowed, then defecated. When birds consume the eggs found in the feces or an intermediate host such as earthworms, snails, or slugs, they become infected with the parasite. A few human cases have been reported.
<p>Taenia (tapeworm)</p> 	Taenia is a genus of tapeworm that includes some important parasites of livestock. Members of the genus are responsible for taeniasis and cysticercosis in humans. There are more than 100 species recorded. They are morphologically characterized by a ribbon-like body composed of a series of segments called proglottid. The life cycle begins with either the eggs or the gravid proglottids being passed in the feces, which can last for days to months in the environment. Most commonly, cattle or pigs ingest the contaminated vegetation with eggs or proglottids. The oncospheres hatch in the small intestine of the cattle or pig and invade the intestinal wall to travel to the striated muscles to develop into cysticerci. Humans become infected when eating raw beef or pork meat. In the human, the cysticercus develop into adults in two months in the intestines. Using their scolex, they attach to the small intestine where they reside. The two primary species in humans are: Taenia saginata, which are about 1,000-2,000 proglottids long with each gravid proglottid containing 100,000 eggs, and Taenia solium, which contain about 1,000 proglottids with each gravid proglottid containing 50,000 eggs.

<p>Ternidens (roundworm)</p> 	<p>The parasite usually is found in the intestine of primates in Africa and Asia. Human infection occurs when food contaminated with infective filariform larvae is ingested. The larvae molt in the intestinal wall and become adults. They pass eggs in feces. Eggs in contaminated soil hatch and become rhabditiform larvae and then infective filariform larvae. This is a report of <i>Ternidens deminutus</i> infection in a 33 year old Thai female who was admitted to the hospital because of abdominal pain and a right lower quadrant mass. Exploratory laparotomy revealed an omental mass with attached terminal ileum. Resection of the mass together with the terminal ileum and the right sided colon was performed. Pathologically, the omental mass was an abscess with an immature male <i>Ternidens deminutus</i> identified.</p>
<p>Theileria (protozoa)</p> 	<p>Bovine theileriosis is a tick-borne protozoal disease caused by six species of <i>Theileria</i>. Two of these species are pathogenic and responsible for significant economic and production losses in affected ungulates. It can infect cattle, buffalo and waterbucks. Initial signs include anorexia, pyrexia (up to 106° F), and enlargement of the draining lymph nodes. The tick vector commonly feeds around the host's ears, thus the parotid node is most commonly involved. Later, a generalized lymphadenopathy occurs and the affected animal continues to lose body condition. Other signs that may be seen include lacrimation, nasal discharge, diarrhea, corneal opacity, and dyspnea. Although East Coast fever can cause a chronic wasting disease, most infections are fatal within 18-30 days. Anemia and leukopenia may also be present. Dyspnea intensifies and a frothy nasal discharge due to pulmonary edema may be observed. Some animals also develop neurologic disease just before death. This condition is called "turning sickness" and occurs when affected cells block capillaries within the central nervous system causing ischemia. <i>Theileria equi</i> is a known cause of equine piroplasmosis.</p>
<p>Thelazia (roundworm)</p> 	<p><i>Thelazia</i> parasitize the eyes and associated tissues of various bird and mammal hosts, including humans. They are often called "eyeworms." Adult worms are usually found in the eyelids, tear glands, tear ducts, or the nictitating membrane. Occasionally, they are found in the eyeball itself, either under the conjunctiva (the membrane that covers the white part of the eye) or in the vitreous cavity of the eyeball. In animal and human hosts, infestation by <i>Thelazia</i> may be asymptomatic, though it frequently causes watery eyes (epiphora), conjunctivitis, corneal opacity, or corneal ulcers (ulcerative keratitis). All species of <i>Thelazia</i> for which the life cycle has been studied are transmitted by species of <i>Diptera</i> (flies) which do not bite, but which feed on tears.</p>
<p>Toxocara (roundworm)</p> 	<p><i>Toxocaridae</i> is a zoonotic family of parasitic nematodes that infect canids and felids and which cause toxocarasis in humans. The worms are unable to reproduce in humans. Three important species include: <i>Toxocara canis</i>, which infects dogs, <i>Toxocara cati</i>, which infects cats and which lacks intermediate hosts, <i>Toxocara vitulorum</i>, which infects buffalo and cattle. Infection by <i>T. canis</i> or <i>T. cati</i> can cause various clinical manifestations. One of these is visceral larva migrans, wherein the larvae are unable to develop in humans as they do in cats and dogs, their natural hosts. Arrested development leaves the larvae to wander aimlessly in the body, causing inflammation, most commonly in the liver and lungs. Eggs are introduced into the body through ingestion. This can occur when eggs are deposited on the hands or face, after handling infected dogs or cats. In children without exposure to animals, eggs can be introduced by directly ingesting egg-contaminated soil while playing in a yard or on a playground. Usually, the scenario involves a young child with a new puppy. Unfortunately, many young children who have been infected with these larvae, causing ocular larva migrans in the eye, have been misdiagnosed to have retinoblastoma and have had their eyes erroneously removed. Treatment for ocular larva migrans is to kill the larvae with a laser to prevent further damage, although some loss of vision in the affected eye is irreversible.</p>
<p>Toxoplasma (protozoa)</p> 	<p>The parasite infects most genera of warm-blooded animals, including humans, but the primary host is the felid (cat) family. Animals are infected by eating infected meat, by ingestion of feces of a cat that has itself recently been infected, or by transmission from mother to fetus. Cats are the primary source of infection to human hosts although contact with raw meat, especially pork, is a more significant source of human infections in France. Fecal contamination of hands is a significant risk factor. Up to one third of the world's human population is estimated to carry a <i>Toxoplasma</i> infection. During the first few weeks post-exposure, the infection typically causes a mild flu-like illness: swollen lymph nodes, or muscle aches and pains that last for a month or more. Contamination may cause no illness at all. However, those with a weakened immune system, such as AIDS patients or pregnant women, may become seriously ill, and it can occasionally be fatal. The parasite can cause encephalitis (inflammation of the brain) and neurologic diseases, and can affect the heart, liver, inner ears, and eyes (chorioretinitis). While rare, skin lesions may occur in the acquired form of the disease, including roseola and erythema multiforme-like eruptions, prurigo-like nodules, urticaria, and maculopapular lesions. Newborns may have punctate macules, ecchymoses, or "blueberry muffin" lesions. Diagnosis of cutaneous toxoplasmosis is based on the tachyzoite form of <i>T. gondii</i> being found in the epidermis. Studies have been conducted that show the toxoplasmosis parasite may affect behavior and may present as or be a causative or contributory factor in various psychiatric disorders such as depression, anxiety and schizophrenia.</p>
<p>Trachipleistophora (see Microsporidia)</p>	<p>A genus of microsporidia that can infect humans and cause myositis, keratoconjunctivitis, and sinusitis in the immunocompromised person.</p>

<p>Trichinella (roundworm)</p>  <p>Face view of worm</p>	<p>Trichinella is the genus of parasitic roundworms that cause trichinosis (also known as trichinellosis). The adult worms occupy a membrane-bound portion of columnar epithelium, living as intramulticellular parasites. It has been shown to have a worldwide distribution in domestic and/or sylvatic animals. Trichinella species can infect swine, horses, wild animals (foxes, wolves, bears, skunk, raccoons, rats, and other small mammals) and humans. In swine, the prevalence varies from country to country, and regionally. Domestic swine can be exposed to the parasite by the following three ways: Feeding of animal waste products or other feed contaminated with Trichinella, Exposure to infected rodents or other infected wildlife, Cannibalism within an infected herd. In wild animals, Trichinella infection rates vary from region to region and seem to increase in colder climates. Foxes, wolves and bears have the highest infection rates, but small mammals, such as skunks, raccoons and rats, provide the highest risk to infecting the domestic pig. In horses, natural infections are rare; however, infected horses from Mexico and Romania have been identified. Human infection caused by the domestic pig varies from country to country. While some countries do not report any human infection, other countries in Eastern Europe and Asia report hundreds or thousands of cases annually. The United States reported 25 cases per year from 1991-1996, with few implicating raw or undercooked pork. Documented sources of human infection have also included game meats, such as wild boar, bear, walrus, fox and cougar. Trichinosis is often diagnosed in humans once the larvae invade the muscle tissue. Some symptoms include fever, myalgia, malaise and edema. Cooking pork meat properly or by freezing pork (or any meat source given the prevalence of wild game and infection), Trichinella infection can be prevented.</p>
<p>Trichobilharzia (protozoa)</p> 	<p>Cercarial dermatitis, or Swimmers' Itch, is a skin rash caused by the larval stage of a schistosome flatworm like <i>T. ocellata</i> mistaking a human for their primary host and burrowing into their skin. In humans, small blisters form around the larvae, which soon die because they cannot continue developing. The infected person's immune response leads to tingling, burning, and itching of the skin. Here's what the <i>T. ocellata</i> was supposed to do: The adult schistosomes live in the blood of infected waterfowl, such as ducks and geese. Eggs produced by the adults are passed through the host's feces and, if the eggs land in water, they hatch and release small, free-swimming larvae called miracidia. These larvae then find, and infect their intermediate hosts, freshwater snails. Once inside a snail the larvae multiply and continue to develop, eventually become cercariae. Cercariae are released through the snail's feces, and this larval stage is the one that will infect the parasite's primary host and become an adult. If the cercariae infect you instead, they won't become adults but you will have an itchy few days.</p>
<p>Trichomonas (protozoa)</p> 	<p>This is the parasite responsible for Trichomoniasis, the most common curable STD in young, sexually active women. An estimated 7.4 million new cases occur each year in women and men. It can be spread when bodily fluids from one partner come in contact with the other's genitals. Unlike most STDs, <i>Trichomonas vaginalis</i> can survive for some hours outside the body on infected objects and can be transmitted by sharing: contaminated bedding, damp towels, sheets and toilet seats Typically, only women experience symptoms associated with <i>Trichomonas</i> infection including inflammation of the cervix, urethra (urethritis), and vagina (vaginitis) which produce an itching or burning sensation. Discomfort may increase during intercourse and urination. There may also be a yellow-green, itchy, frothy foul-smelling vaginal discharge. In rare cases, lower abdominal pain can occur. Symptoms usually appear in women within 5 to 28 days of exposure. Men may hold the parasite for some years without any symptoms. While symptoms are most common in women, some men may temporarily exhibit symptoms such as an irritation inside the penis, mild discharge, or slight burning after urination or ejaculation. <i>Trichomonas gallinae</i> is a cosmopolitan parasite of pigeons and doves. Other birds such as domestic and wild turkeys, chickens, raptors (hawks, golden eagle, etc.) may also become infected. The disease in pigeons is commonly called "canter". A similar condition in falcons is called "frounce." This vial addresses both strains.</p>
<p>Trichostrongylus (roundworm)</p>  <p>Egg of Trichostrongylus</p>	<p>Trichostrongylus species are nematodes, which are ubiquitous among herbivores worldwide, including cattle, sheep, donkeys, goats, deer, and rabbits. At least 10 <i>Trichostrongylus</i> species have been associated with human infections. Infections occur via ingestion of infective larvae from contaminated vegetables or water who mature into adults and tend to live in the Small Intestine. Epidemiological studies indicate a worldwide distribution of <i>Trichostrongylus</i> infections in humans, with the highest prevalence rates observed in individuals from regions with poor sanitary conditions, in rural areas, or who are farmers/herders. Human infections are most prevalent in the Middle East and Asia, with a worldwide estimated prevalence of 5.5 million. The majority of human infections are asymptomatic or associated with mild symptoms. Symptomatic individuals may experience abdominal pain, nausea, diarrhea, flatulence, dizziness, generalized fatigue, and malaise. Eosinophilia is frequently observed. Infections with a heavy worm burden can lead to anemia, cholecystitis, and emaciation. Since the use of herbivore manure as fertilizer is a common practice preceding infection, thorough cleaning and cooking of vegetables is required for prevention of infection.</p>

<p>Trichuris (whipworms)</p> 	<p>The genus <i>Trichuris</i> includes several species which infect the large intestine of their host, including: <i>Trichuris campanula</i> (cat whipworm), <i>Trichuris suis</i> (pig whipworm), <i>Trichuris muris</i> (mouse whipworm), <i>Trichuris trichiura</i> (sometimes <i>Trichocephalus trichiuris</i>) - causes trichuriasis, and <i>Trichuris vulpis</i> (dog whipworm). Eggs are deposited from human feces to soil where, after two to three weeks, they become embryonated and enter the “infective” stage. These embryonated infective eggs are ingested and hatch in the human small intestine. This is the location of growth and molting. The infective larvae penetrate the villi and continue to develop in the small intestine. The young worms move to the cecum and penetrate the mucosa and there they complete development to adult worms in the large intestine. The life cycle from time of ingestion of eggs to development of mature worms takes approximately three months. During this time, there may be limited signs of infection in stool samples due to lack of egg production and shedding. The female <i>T. trichiura</i> begin to lay eggs after three months of maturity. Worms can live up to five years, during which time females can lay up to 20,000 eggs per day. Light infestations (<100 worms) are frequently asymptomatic. Heavy infestations may have bloody diarrhea. Long-standing blood loss may lead to iron-deficiency anemia. Rectal prolapse is possible in severe cases. Vitamin A deficiency may also result due to infection. Mechanical damage to the mucosa may occur as well as toxic or inflammatory damage to the intestines of the host. Whipworm commonly infects patients also infected with <i>Giardia</i>, <i>Entamoeba histolytica</i>, <i>Ascaris lumbricoides</i>, and hookworms.</p>
<p>Tritrichomonas (protozoa)</p> 	<p><i>Tritrichomonas</i> is a protozoan parasite that is known to be a pathogen of the bovine reproductive tract as well as the intestinal tract of cats. In cattle, the organism is transmitted to the female vagina and uterus from the foreskin of the bull where the parasite is known to reside. It causes infertility, and at times, has caused spontaneous abortions in the first trimester. <i>Tritrichomonas</i> in cats is characterized by diarrhea that comes and goes and may contain blood and mucus at times. Close and direct contact appears to be the mode in which the parasite is transmitted. One easy way <i>Tritrichomonas foetus</i> can be differentiated from other common diarrhea is that it is extremely malodorous...the smell is so awful it can trigger a gag reflex in people.</p>
<p>Trypanosoma (protozoa)</p> 	<p>All trypanosomes are transmitted via a vector. The majority of species are transmitted by blood-feeding invertebrates, but there are different mechanisms among the varying species. Then in the invertebrate host they are generally found in the intestine and normally occupy the bloodstream or an intracellular environment in the mammalian host. Trypanosomes infect a variety of hosts and cause various diseases, including the fatal human diseases sleeping sickness, caused by <i>Trypanosoma brucei</i>, and Chagas disease, caused by <i>Trypanosoma cruzi</i>. There are many species believed to be nonpathogenic to people that are found in birds, rats, cattle, horses, amphibians, fish, etc., so don't assume that if you test for this vial the person has a fatal species.</p>
<p>Uncinaria (hookworm)</p> 	<p><i>Uncinaria</i> is one of the most common nematode parasites targeting dogs, cats, and foxes as well as humans. Common name: The Northern hookworm of dogs. Their life cycle has an unusual twist – animals can be infected by ingestion of larvae either from contaminated soil or water; by eating an infected transport host; through larvae penetrating their skin, and by larvae infecting fetuses or the young via the uterus or mammary glands. The adult worms live in the small intestine where they attach themselves and feed on the host's blood (with teeth like structures). The adult worms live in the small intestine where they attach themselves and feed on the host's blood. The adults lay eggs that pass out in the feces. In 1-3 weeks, the eggs have hatched and the larvae are released. These larvae are excellent swimmers that travel through raindrops or dew on leaves and vegetation and wait for a cat to come along. The larvae enter a host either by being ingested or by burrowing through the host's skin. The adults lay eggs that pass out in the feces. In 1-3 weeks, the eggs have hatched and the larvae are released. These larvae are excellent swimmers that travel through raindrops or dew on leaves and vegetation and wait for a cat to come along. The larvae enter a host either by being ingested or by burrowing through the host's skin. Light infections are asymptomatic. Diarrhea and hypoproteinemia occur in heavier infections and may include some depression and a rougher coat in animals.</p>
<p>Visceral larva migrans</p> 	<p>Visceral larva migrans is a condition in humans caused by the migratory larvae of certain nematodes, humans being a terminal host. Nematodes causing such zoonotic infections are <i>Baylisascaris procyonis</i>, <i>Toxocara canis</i>, <i>Toxocara cati</i>, and <i>Ascaris suum</i>. Eggs produced by these worms are in the feces of the infected animals. The feces mix with soil, allowing the infection to spread to humans. Humans may get sick if they eat food that grew in the infected soil. People can also become infected by eating raw liver. Young children with pica (a disorder involving eating inedible things such as dirt and paint) are at highest risk, but this infection can also occur in adults. Outbreaks have occurred in the U.S. in children who play in areas with soil contaminated by dog or cat feces. After a person swallows the contaminated soil, the worm eggs break open in the gastrointestinal tract and are carried throughout the body to various organs causing inflammation and damage. Affected organs can include the liver, heart (causing myocarditis) and the CNS (causing dysfunction, seizures, and coma). Mild infections may not cause symptoms. More serious infections may cause the following symptoms: Abdominal pain, Cough, Fever, Irritability, Itchy skin (hives), Shortness of breath and Wheezing. A special variant is ocular larva migrans where usually <i>T. canis</i> larvae travel to the eye. If the eyes are infected (called ocular larva migrans), loss of vision and crossed eyes (strabismus) may occur. A list of causative agents of larva migrans syndromes is not agreed upon and varies with the author, so if this vial comes up, track it back to <i>Ascaris</i>, <i>Baylisascaris</i> and <i>Toxocara</i>. If none of these give you a high TL, track it to the rest of the Parasites and see what you get.</p>

<p>Wuchereria (roundworm)</p>  	<p>Filaria, is a parasitic filarial nematode (roundworm) spread by a mosquito vector. It is one of the three parasites (Wuchereria bancrofti, Brugia malayi, and Brugia timori) that cause lymphatic filariasis, an infection of the lymphatic system by filarial worms. It affects over 120 million people, primarily in Africa, South America, and other tropical and sub-tropical countries. Greek and Roman writers noted the similarities between the enlarged limbs and cracked skin of an infected individual to that of an elephant. Since Greek and Roman times, this condition has been commonly known as elephantiasis. W. bancrofti carry out their life cycle in two hosts. Human beings serve as the definitive host and mosquitoes as their intermediate hosts. The adult parasites reside in the lymphatics of the human host. The first stage larvae are known as microfilariae. The microfilariae are present in the circulation. The microfilariae migrate between the deep and the peripheral circulation. Next, the microfilariae are transferred into a vector; the most common vectors are the mosquito species. Inside the mosquito vector, also known as the intermediate host, the microfilariae mature into motile larvae called juveniles. When the mosquito vector has its next blood meal, W. bancrofti is egested via the mosquito's proboscis into the blood stream of the new human host. The larvae move through the Lymphatic system to regional lymph nodes, predominantly in the legs and genital area. The larvae develop into adult worms over the course of a year and reach sexual maturity in the afferent lymphatic vessels. After mating, the adult female worm can produce thousands of microfilariae that migrate into the bloodstream. A mosquito vector can bite the infected human host, ingest the microfilariae, and thus repeat the life cycle of W. bancrofti. Because the parasites responsible for elephantiasis have a population of symbiotic bacteria, make sure you track this vial to the Bacteria kit and add those to the remedy.</p>
<p>PARA-GONE 1</p>	<p>These three remedies are made of traditional Classical Homeopathics at various potencies known to help the body fight against parasites. They can be used along with any of the parasite vials in the previous list, or they can be used alone. Also consider that a person may test for one of these three PARA-GONE remedies and nothing else in this kit because the body is calling for a parasite detox of a species that is not on the list or has never been considered pathogenic to humans, and so was not included in the contents of this kit.</p>
<p>PARA-GONE 2</p>	<p>See above.</p>
<p>PARA-GONE 3</p>	<p>See above.</p>