**6.02 – Diseases and Parasites**

**Disease**- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the structure or function within the body

1. 5 primary disease causing micro-organisms-
	1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- study of microorganisms
	1. Many are beneficial
	2. Pathogens- disease causing microorganisms
3. Contagious diseases- can be spread to other animals or humans
	1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- diseases that are spread by contact with an affected animal or body fluid.
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- spread by ways other than touching. Ex: airborne or through equipment and bedding.
4. Non contagious diseases- do not spread between animals

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- particles that are contagious and spread through the environment

1. Can only live \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a host cell
2. Cannot get nourishment or survive outside a cell
3. Antibiotics are not effective treatments
4. Supportive care is treatment of choice-
	1. Fluid replacement
	2. Pain management
	3. Anti-pyretics (fever reducers)
	4. Medications for vomiting and diarrhea
5. Well known viruses- influenza, West Nile virus, HIV

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- single celled organisms that can cause disease

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ flora- bacteria that normally live in or on an animal that help maintain the health of the animal. Ex: intestinal bacteria that help with digestion
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bacteria- bacteria that cause disease.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bacteria- usually only cause disease when an ‘opportunity’ presents itself (eg: trauma, previous viral infection)
4. Symptoms- depend on location of invasion. Ex: diarrhea, pneumonia, sinusitis, etc

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **disease**- caused by a pathogenic fungus or spore

1. Generally require warm moist environments to grow
2. Usually occurs in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ impaired animals
3. Can be very difficult and expensive to treat. Use antifungal medications

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **diseases**- single celled parasites that may survive in or out of the body. Most feed off of dead or decaying matter and cause disease in animals that ingest them.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **diseases**- spread by biting insects like ticks or fleas. Must be in a host cell to reproduce.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - The study of organisms that live on or in other organisms to survive

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – may invade the internal or external parts of animals
2. Most have one location that they live in, and they feed off the host, or animal that is infected
3. Go through a life cycle: born as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and grow until capable of reproduction
4. Can be controlled and prevented through proper sanitation and disinfection methods
5. Enters the body many different ways. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can invade digestive tract, skin, or muscles of an animal.

**Internal Parasites**

1. Occur in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ animals
2. Include ringworms, whipworms, hookworms, heartworms, coccidian, tapeworms, and strongyles
3. Many internal parasites invade the intestinal system causing vomiting and diarrhea
4. Intestinal Parasites are diagnosed through fecal floatation
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Ascarids – most common intestinal parasite in small and large animals
	1. Often occur in young animals
	2. Live in small intestine
	3. Can lay up to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ eggs a day
	4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ animal symptoms- vomiting, diarrhea, bloated stomach, visible roundworms in feces
	5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ animal symptoms- abdominal pain (common cause of obstruction colic in foals), coughing and diarrhea, visible roundworms in feces
	6. Diagnosed by finding eggs in feces- eggs are circular with dark circular centers
	7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *leonine*
		1. Simplest life cycle
		2. Eggs hatch after it is ingested
		3. Eggs are passed in the feces
		4. After \_\_\_\_\_\_\_\_\_\_ days, they are infective in the environment
		5. Animals become infected if they eat something contaminated with the infected feces
	8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: complicated life cycle
		1. Hardy and resistant
		2. Animal can become infected by ingestion of eggs, transport host, or by larvae entering the animal while in the uterus
		3. Migrate through circulatory system
		4. They can encyst (become walled off or inactive) if enter body tissues
	9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		1. Similar to *T. canis*
		2. Infective eggs are swallowed; larvae hatch; and penetrate the stomach wall
		3. Larvae migrate to liver, other tissues, and lungs
	10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		1. In large animals
			1. Are swallowed in contaminated hay or water
			2. Young worms burrow through the intestinal wall
			3. Mature in intestine and lay eggs that are passed in the feces
		2. In small animals
			1. Infection will show signs of vomiting, diarrhea, and bloated stomach; is visible in feces
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *- Trichuris vulpis* – infect animals through ingesting contaminated food or water
	1. Common intestinal parasite
	2. Whip-like shape
	3. Live in large intestine of infected animals
	4. Symptoms include diarrhea, weight loss, possible blood in the feces, and anemia
	5. Adult whipworms are not visible in the feces
	6. Diagnosed through finding football shaped eggs in the feces
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - *Ancylostoma caninum* – live in the small intestine of host animal; feed off blood
	1. Common intestinal parasite of dogs and occasionally cats
	2. Teeth-like structures or cutting plates – attach to wall of intestine and feed on animals blood
	3. Lay eggs that pass out in the feces
	4. Larvae is released after the eggs are hatched and travel through raindrops or dew on leaves
	5. enters host by being ingested or by burrowing through the hosts skin
	6. Symptoms include vomiting, diarrhea, anemia, weakness, black darkened feces, dull coat appearance, occasional coughing
	7. Diagnosed by finding clear oval eggs in the feces
	8. Zoonotic disease: cause cutaneous larval migrans in humans where larvae burrow through humans skin, most common in young children
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Dirofilaria immitis* – affects the heart and circulatory system of infected animals
	1. Spread by the mosquito
	2. Most concern in dogs, cats, and ferrets
	3. Microfilaria – the very tiny larvae that adult heartworms lay in the heart
		1. Enter mosquito and then enter the animal’s skin
		2. Larvae grow and migrate to the heart
	4. Symptoms in dogs-may have no symptoms with light infections, but with increasing worm loads will display exercise intolerance, difficulty breathing, coughing, decreased appetite, weight loss and lethargy
	5. Symptoms in cats- typically show no signs but may die suddenly or may show signs similar to dogs
	6. Simple snap blood tests are available for diagnosing heartworms
	7. Treatment is a concern as dyeing adults may block blood flow from the heart and lead to sudden death
	8. Prevention with monthly treatments is the better way to manage heartworms
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Common parasite of large animals
	2. Bloodworms or redworms
	3. Eggs in manure hatch into larvae
	4. Larvae mature in the intestinal tract and can cause extensive damage to the lining of blood vessels
	5. Signs of large strongyles: weight loss, anemia, abdominal pain, and sudden death
	6. Small strongyles do not migrate through tissues as large ones do. Encysted larvae require special anthelmintic treatments to kill.
	7. Signs: diarrhea, weight loss, poor growth, poor coat quality, and abdominal pain
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - common protozoan internal parasite
	1. Coccidiosis is the disease name
	2. *Iospora cania* – commonly infects animals
	3. Oocysts will be shed, or the single-celled eggs in the feces
	4. Eggs live in the intestinal tract
	5. May be no illness signs, others include diarrhea, blood and mucous present
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. *Giardia lamblia* is a protozoan or single-celled organism that lives in the intestinal tract of animals
	2. Common occurrence in water sources that are outside or contaminated
	3. Signs: diarrhea, vomiting, weight loss, and poor overall appearance.
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Flat worms that are segmented or have individual parts that grow and shed as the parasite ages
	2. Live within small and large intestine
	3. Proglottids – segments shed in feces that may often be seen near the anus of dogs or cats
	4. Is developed commonly by the ingestion of a flea
		1. 2 common species:
			1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – can be up to 20 inches long; lives in small intestine
			2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species
		2. Signs: poor hair coat, abdominal discomfort, and visible segments in the feces

**External Parasites**

1. Several invade all types of small and large animals; they live in hair coat, on skin, or within the ear canals
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Adults: reddish brown, wingless, and hard shells
	2. Jump
	3. Feed on blood
	4. Lay 15-20 eggs a day
	5. Eggs hatch in fall
	6. Cause itching and scratching
	7. Treatments available include spot ons, environmental control is key
	8. Flea allergy dermatitis – severe skin irritation and itching in some animals, the flea saliva causes an allergic reaction when the animal is bitten. Signs: itching, scratching, biting at skin, hair loss, scabs or bumps.
	9. Anemia – loss of blood, can be caused by fleas. Bartonella – bacteria spread by fleas; common in cats. Hemobartonella or Felina Infectious Anemia – caused by flea bite with bacteria, infects animal’s red blood cells and immune system; common in cats.
	10. Plague – less common condition caused by flea bites
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Arthropods that seek heat and movement
	2. Common species: American Dog Tick, the Deer Tick, the Brown Dog Tick, the Lone Star Tick, and the lxodes species
	3. American Dog Tick – transmits disease known as Rocky Mountain Spotted Fever. Signs: fever, joint pain, depression, and anorexia.
	4. Deer Tick – transmits a common disease called Lyme disease. It causes joint pain, lameness, fever, depression, anorexia, lethargy, and swelling of joints.
	5. Babesia – another disease spread by ticks. Signs: anemia, jaundice, fever, and vomiting.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Wingless; stick to hair coat
	2. Life cycle 3-5 weeks
	3. Adults are visible
	4. Itching and hair loss
	5. Treatment available
	6. Nits – lice eggs
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Very small flying insects; survive on blood
	2. Capable of spreading diseases from animal to animal
	3. West Nile Virus – mosquito-borne disease that causes inflammation or swelling of the brain and spinal cord
	4. Also carry heartworm microfilaria
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Can cause lots of irritation
	2. Equine Infectious Anemia – viral disease; no vaccine and no cure for it. Coggins Test – screens for the EIA virus
	3. Prevention: use of fly sprays and manure, waste control and waste removal are helpful
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Many forms and invade several areas
	2. Ear Mites – common, produces a dry black ear discharge; live about 2 months
	3. Mange Mites – live on skin and hair coat
		1. Two types: sarcoptic mange and demodectic mange
		2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – caused by infection with the *Sarcoptes scabei* mite
			1. Causes condition known as scabies in humans
			2. Highly contagious by direct contact
		3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – another mite that invades the skin and all dogs raised normally by their mothers possess this mite
			1. most dogs recover without any problems
			2. not contagious
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Dermatophytosis
	1. Fungus on skin
	2. Hair loss, with itching in large patches
	3. Circular skin lesions
	4. Contagious to humans and other animals

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Programs**

1. Small and large animals should be on it
2. Large animals wormed every 6-8 weeks
3. Small animals wormed yearly. Most internal parasites are also killed by heartworm prevention.
4. Must be chosen according to the type of parasite that is present

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Commonly called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Some common signs: abnormal swellings that persist or continue to grow, sores that do not heal, weight loss, loss of appetite, offensive odor, depression
3. Many different types
4. Treatment includes chemotherapy, surgical removal, radiation, cryosurgery, medications, or a combination of treatments

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Diseases that are transmitted from animals to humans. Many do not show signs of illness. The large majority of zoonosis are not clinically significant.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. *Toxoplasma gondi* – simple-celled organism that can occur in any mammal but is shed through the feces of cats
	2. Cats that have this shed oocysts in their feces can survive several years
	3. Cats become infected through eating rodents or birds
	4. Recommended that pregnant women do not handle litter boxes as it can cause abortions
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. Reproductive disease that can affect all mammals; concern in dogs and cattle
	2. Contagious; spreads through vaginal discharge
	3. Causes abortions, fertility problems
	4. No treatment available
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. “Sleeping sickness”
	2. Group of viral diseases that affects horses and people
	3. Eastern Equine Encephalitis, Western Equine Encephalitis, and Venezuelan Equine Encephalitis
	4. Spread by mosquitoes
	5. No treatment available but have vaccine to prevent
4. Maintaining Good Animal Health
	1. Vaccination programs
	2. Knowing common diseases
	3. Preconditioning prepared young animals for possible stress factors
	4. Clean and sanitary environment
	5. Maintaining Good Animal Health
	6. Proper nutritional program
	7. Proper space
	8. Yearly physical exam and health program
5. Treating Disease
	1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – drugs used to treat disease
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – group of medications used to kill bacterial and some rickettsial and protozoal organisms
	3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – group of medications used to treat internal parasites
	4. Injectable, oral, or topical