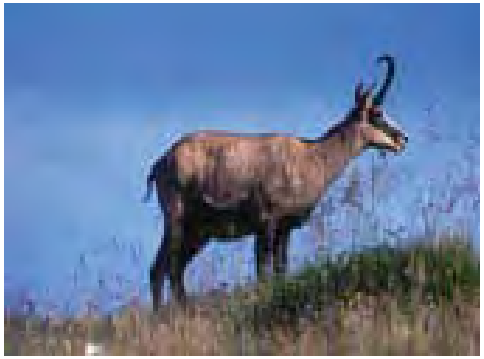
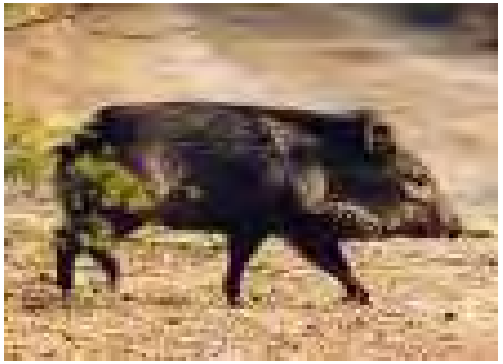
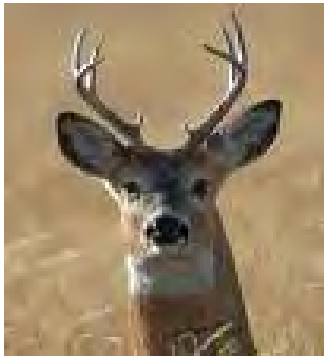
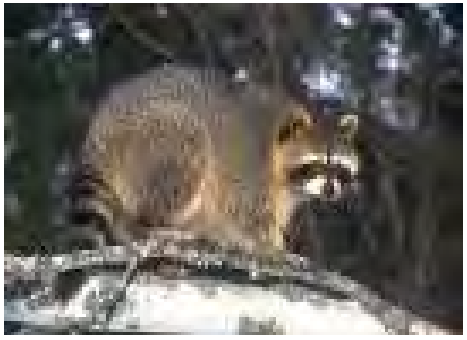


Animal Diseases
Wiesbaden Hunter's Course

CPT Marla Brunell

U.S. Army Veterinarian

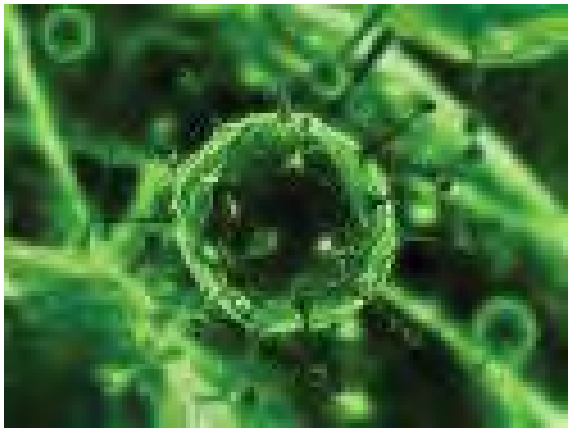


Types of Diseases

- Infectious diseases (can be transmitted)
  - **Parasites** - rely on a “host”
  - **Bacteria** – single celled organism
  - **Viruses** – tiny particles that invade cells
- Non-infectious diseases (can’t be transmitted)
  - nutrition, metabolic, trauma

Parasite

Bacteria



Virus

Outline

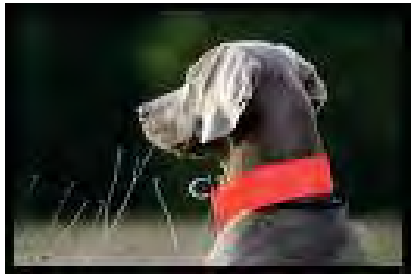
- Types of Diseases
- Dog Diseases
- Signs of Unhealthy Game
- Diseases of Game
  - INTERNAL PARASITES
  - Flukes
  - Tapeworms (rabbit, fox, hydatid cyst, pork)
  - Nematodes (roundworms, hookworms, trichinosis)
  - Coccidia
  - EXTERNAL PARASITES
  - Lice
  - Mites
  - Ticks
  - Flies (small animal bot fly, deer bot fly, warble fly)

Outline

- BACTERIA
- Tuberculosis
- Brucellosis
- Chamois Blindness
- Tularemia
- VIRUSES
- Avian Influenza
- Foot and Mouth Disease
- Rabies
- Classical Swine Fever
- Mxyamatosis

Dog Diseases

- Dog vaccinations should begin at 6-8 weeks of age and follow the schedule by your veterinarian
- Vaccinations protect dogs and people from disease
- American owned dogs are required by USAREUR and USAFE regulation to have valid rabies vaccination
- Check for worms every 6 months



Dog Diseases

- Dog vaccines – 1. Rabies 2. DHLPP (5-in-1)
- **D**istemper **H**epatitis **L**eptospirosis **P**arvovirus **P**arainfluenza (all viruses except Leptospirosis)
- These diseases can be fatal without treatment. Rabies is always fatal.
- Rabies and Leptospirosis are zoonotic (can be transmitted to people)

Dog Diseases

- The use of vaccines has nearly eliminated five diseases in dogs
  1. Rabies
  2. Distemper
  3. Viral Hepatitis
  4. Kidney Leptospirosis
  5. Liver Leptospirosis

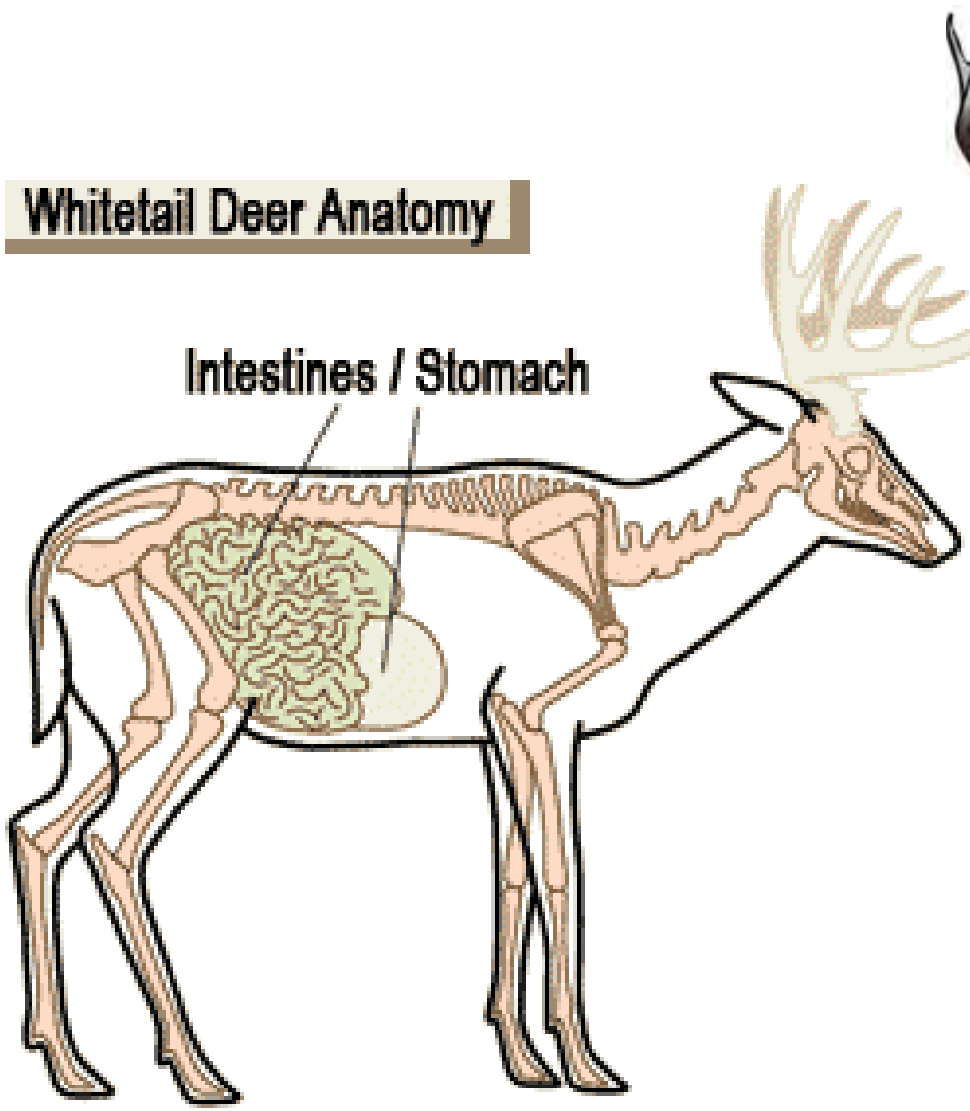
Diseases of game

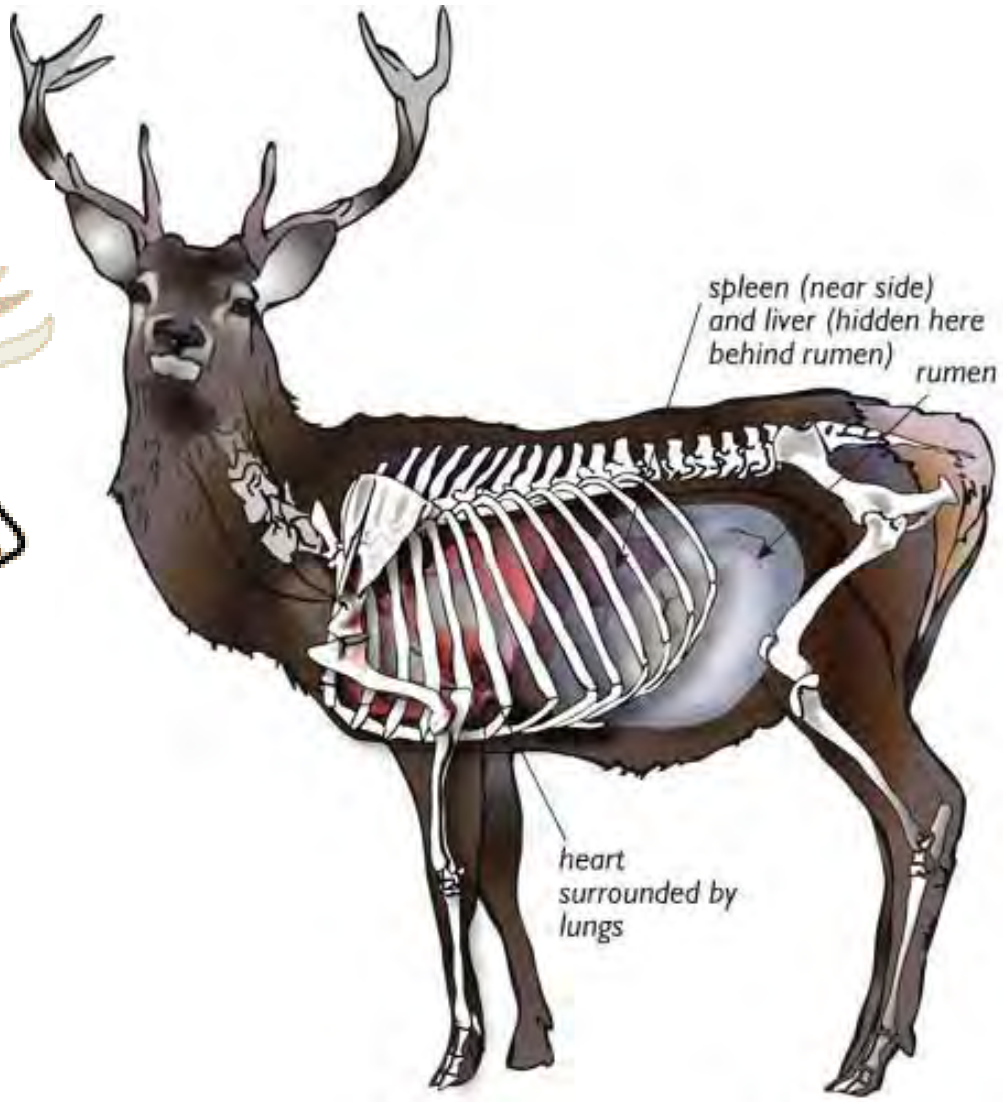
- Important to check game for abnormalities
- Some diseases are zoonotic
- Some diseases must be reported to German authorities

Signs of Unhealthy Game

- Strange behavior
- No apparent cause of death (shot, trauma)
- Weight loss
- Swollen testicles
- Tumor and abscesses on organs/muscles
- Abnormal color of organs
- Bad smell or contents outside of organs (urine, feces, stomach contents)
- Organs stuck together

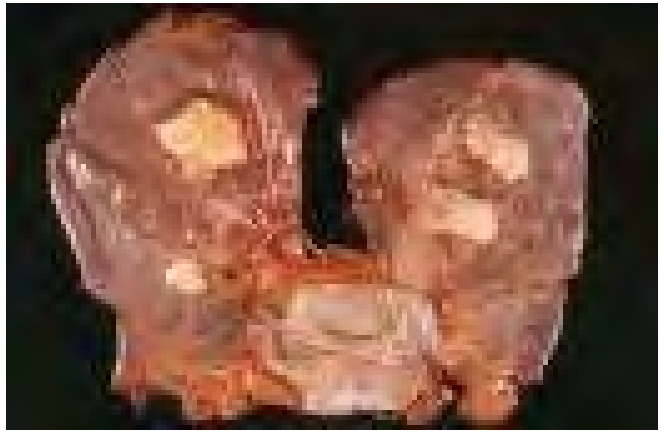
Anatomy

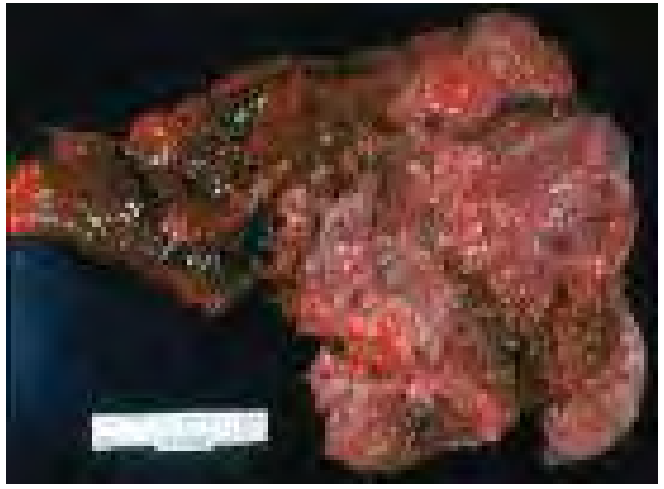

Whitetail Deer Anatomy
Intestines / Stomach


spleen (near side)
and liver (hidden here
behind rumen)
rumen
heart
surrounded by
lungs

LUNGS

Normal

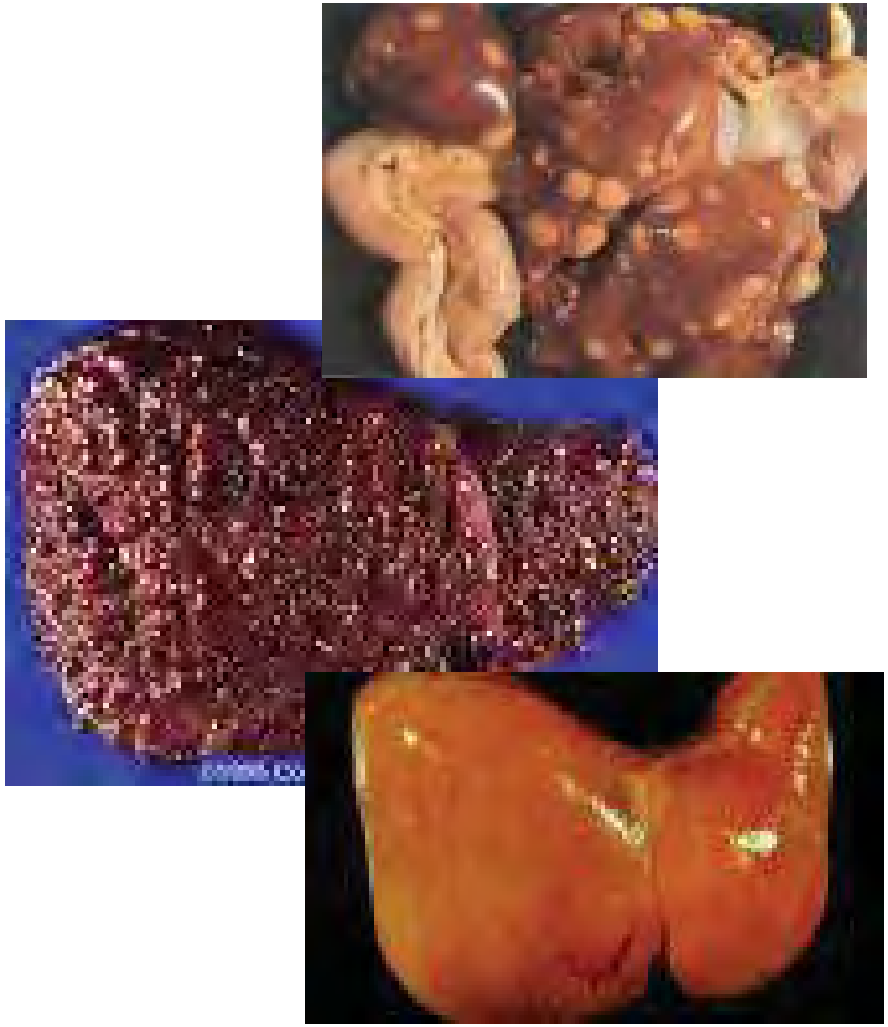




Abnormal

LIVER

Normal



Abnormal

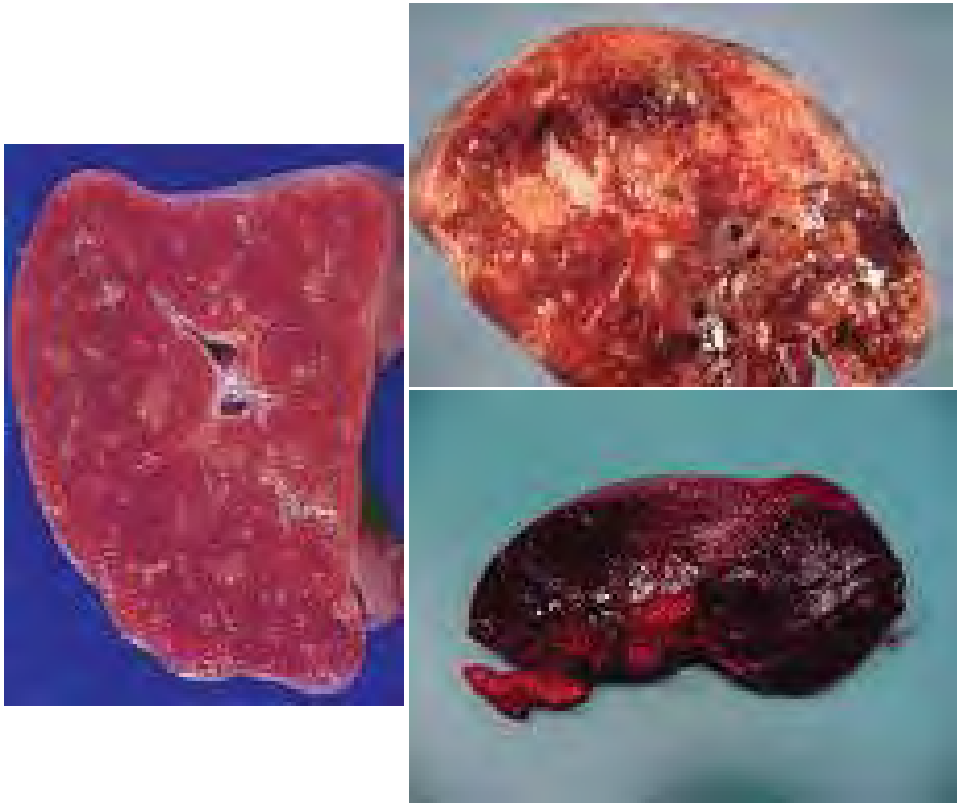
RUMEN

Normal

Abnormal

Spleen

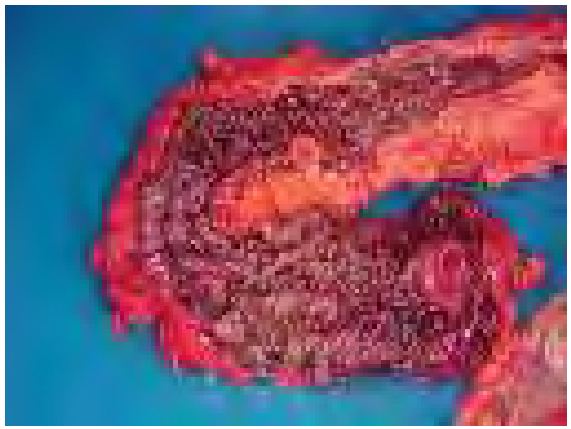
Normal



Abnormal

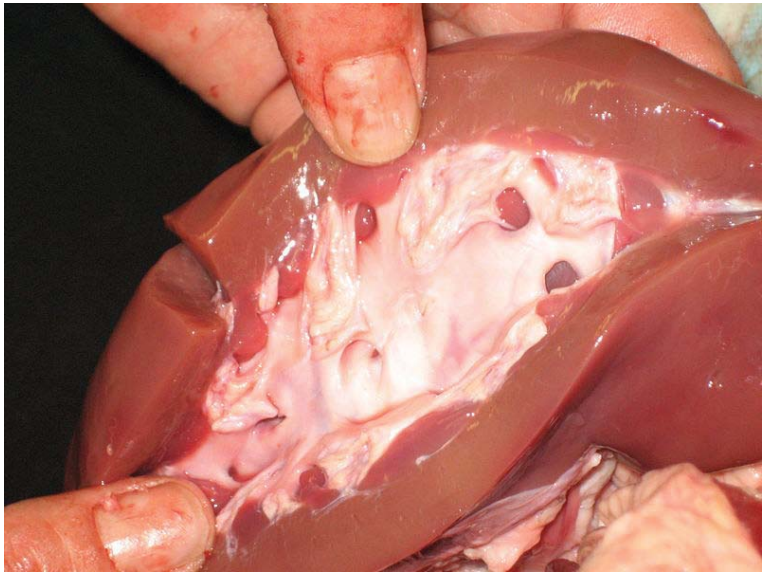
INTESTINES

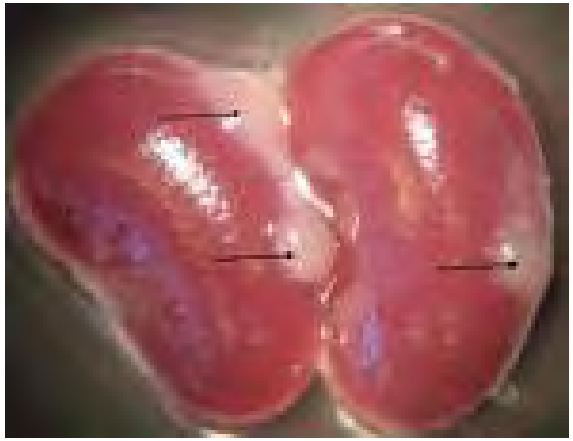
Normal



Abnormal

KIDNEY





Normal

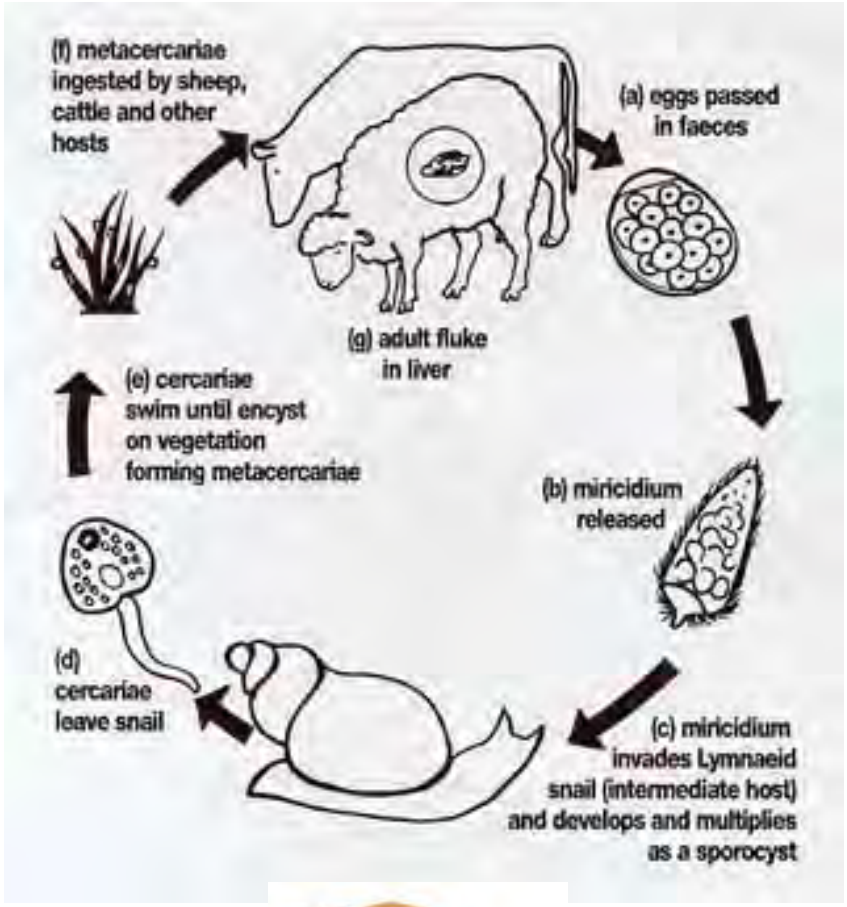
Abnormal

INTERNAL PARASITES

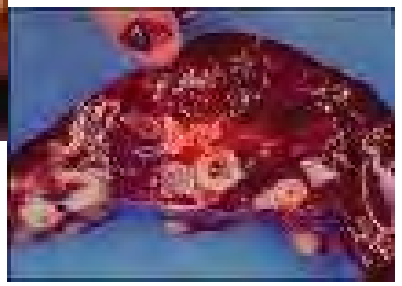
Liver Flukes

- PARASITE (worm)
- Adults live in bile ducts and liver of deer, cattle, sheep and **humans**
- Causes liver damage (which leads to anemia, jaundice, diarrhea, and weight loss)
- Except the infected liver – the meat is OK to eat

Liver Fluke Life Cycle



Liver Flukes



Liver Flukes

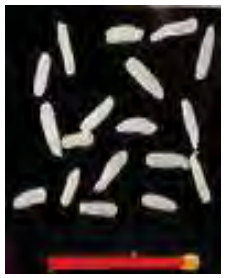
Liver Flukes

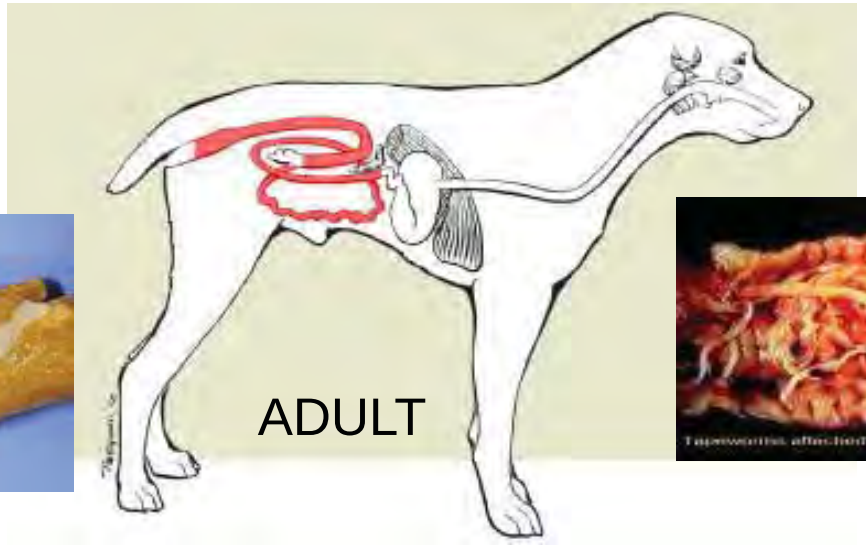
- People become infected by eating raw aquatic vegetables (watercress)
- Prevent human infection by cooking water grown vegetables

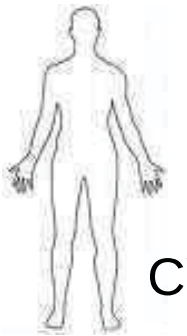
Tapeworms

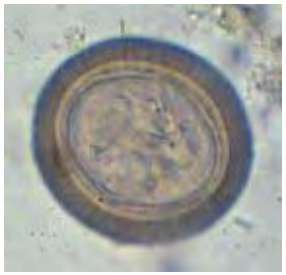
- PARASITE (worm)
- Many species have tapeworms
- Life cycle – 1. Egg 2. Larvae 3. Adult
- Adults live in intestine of Final Host and eat food
- Eggs passed in feces
- Intermediate Host eats eggs (fecal – oral)
- Larvae develop in Intermediate Host – forms cysts
- Final host eats raw/undercooked meat with larval cysts
- Adult worms develop in intestine of Final Host
- Signs in Final Host – diarrhea, weight loss

Basic Tapeworm Life Cycle





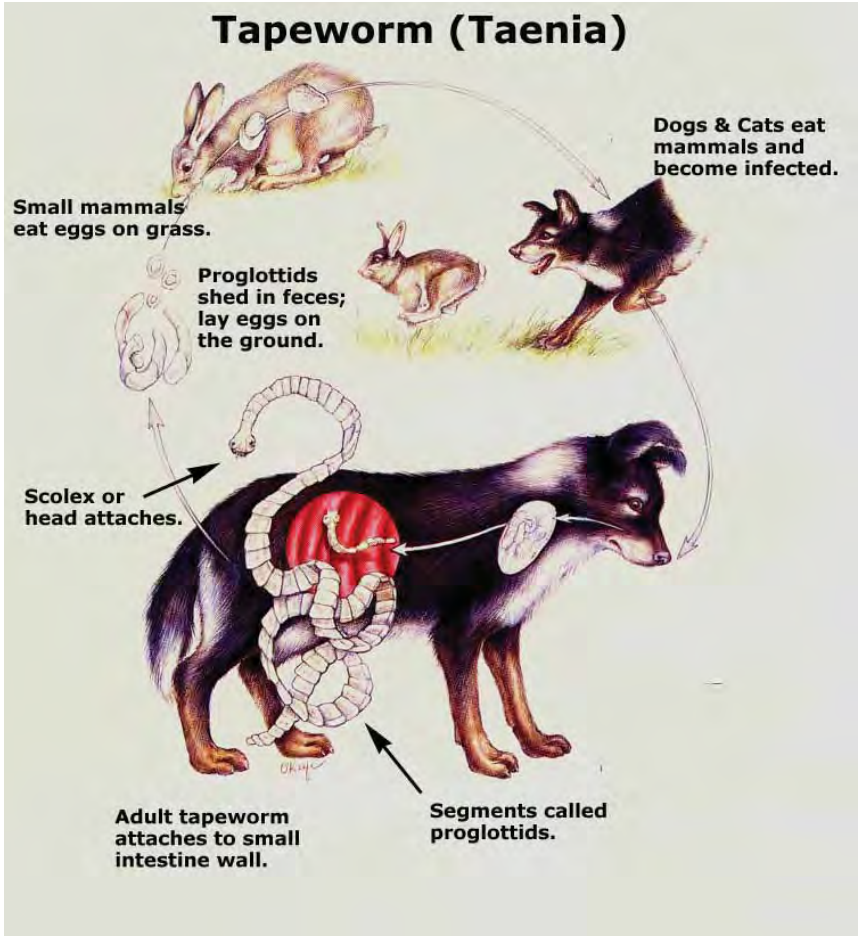




Tapeworms

- Taenia pisiformis
- Echinococcus multilocularis (fox tapeworm)
- Echinococcus granulosa (hydatid cyst tapeworm)
- Taenia solium (pork tapeworm)

Tapeworm
Taenia pisiformis

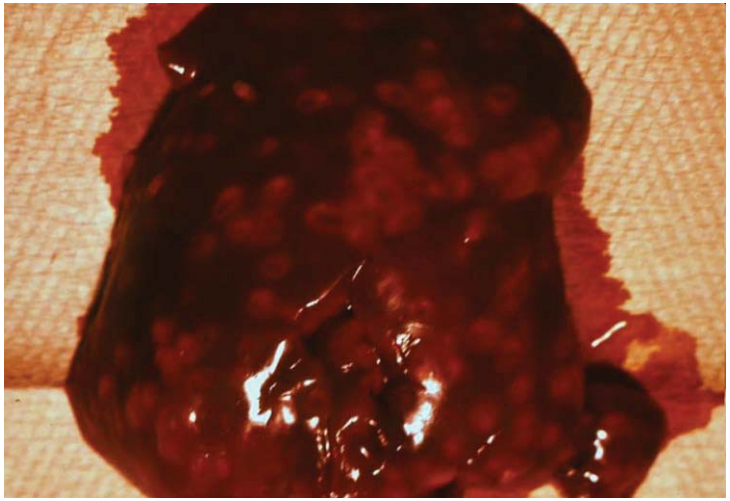


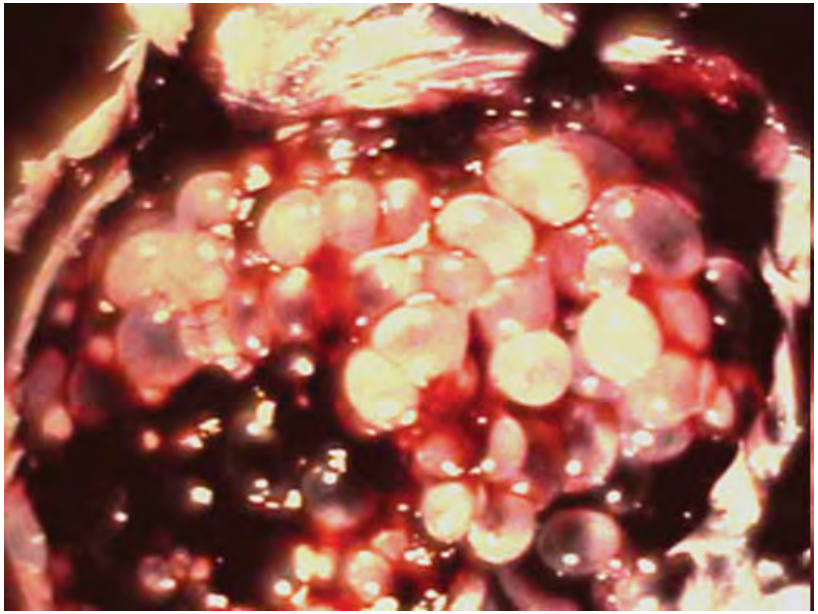
- Final host - dog
- Intermediate host - rabbit

Tapeworms – Taenia pisiformis

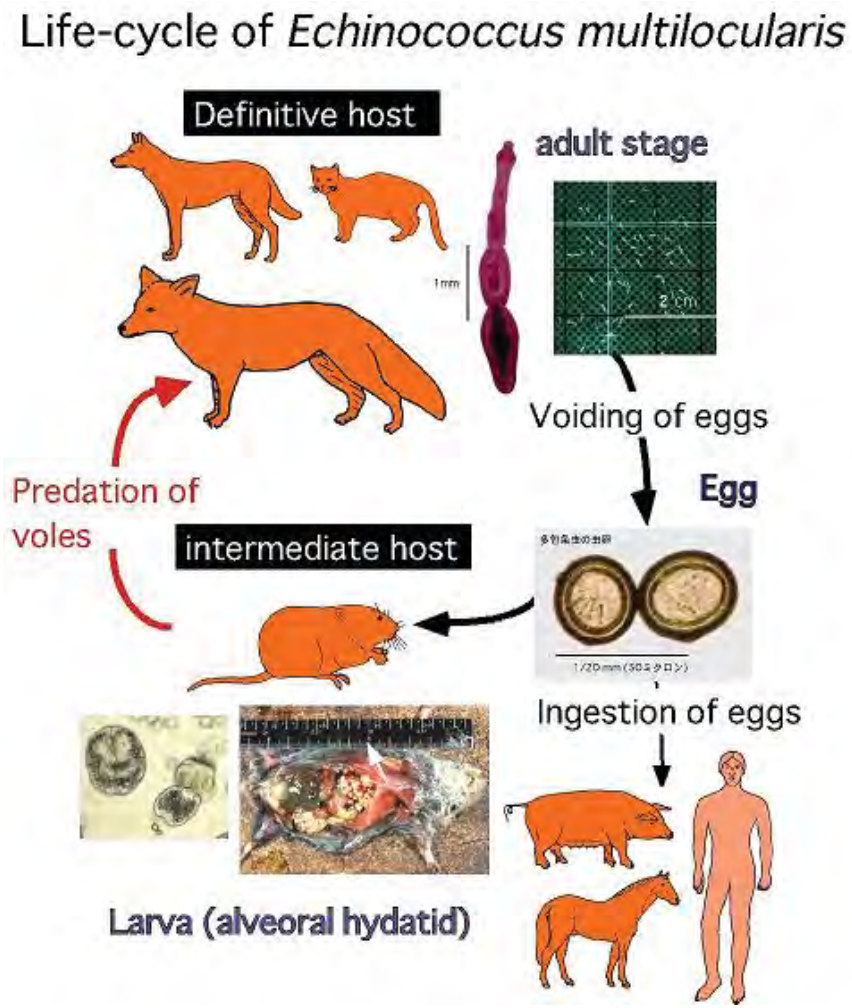
- Rabbits – tapeworm larvae (cysticercus) migrate to liver and mesentery
- Fluid filled cysts

Tapeworms – Taenia pisiformis





Fox Tapeworm
Echinococcus multilocularis

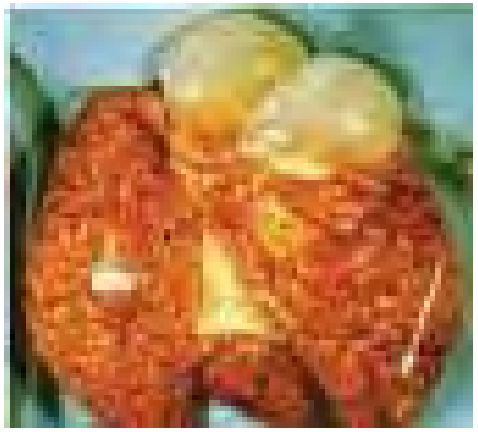


- Final host – fox, dog
- Intermediate host – rodent, but can be **humans**

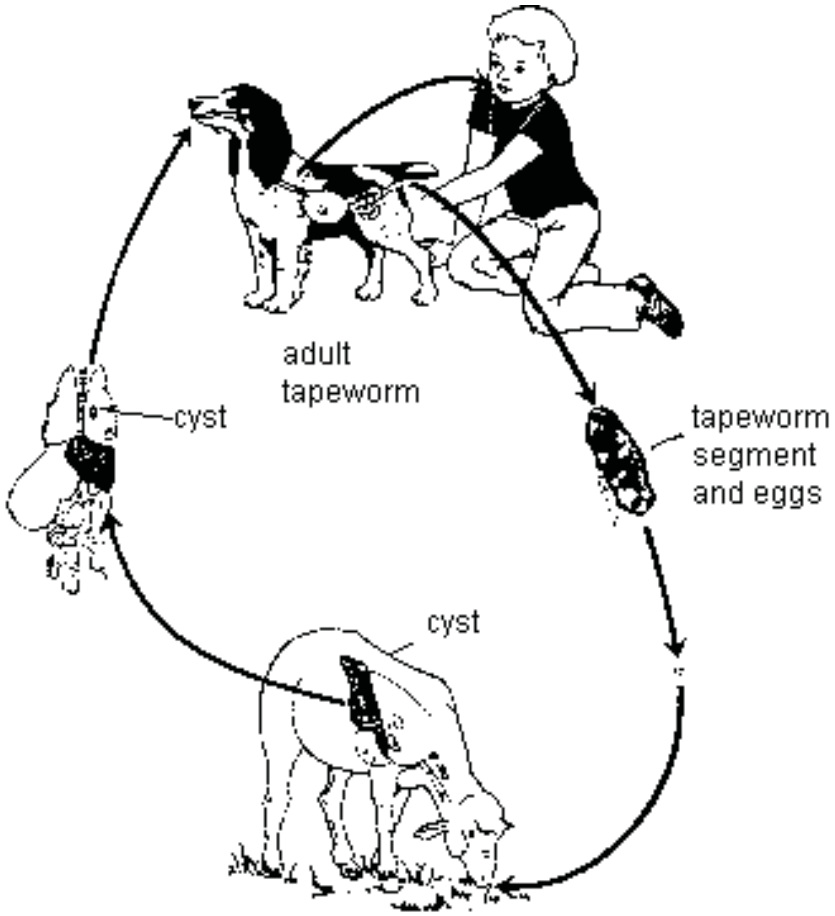
Fox Tapeworm
Echinococcus multilocularis

- aka Fox Tapeworm, alveolar hydatid disease
- In intermediate host - multilocular hydatid cysts in liver
- In humans – very serious liver disease, often inoperable

Fox Tapeworm
Echinococcus multilocularis



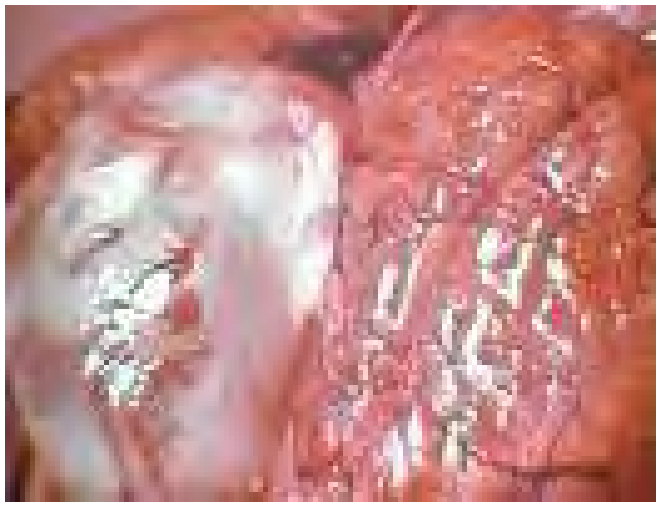
Hydatid Cyst Tapeworm
Echinococcus granulosa



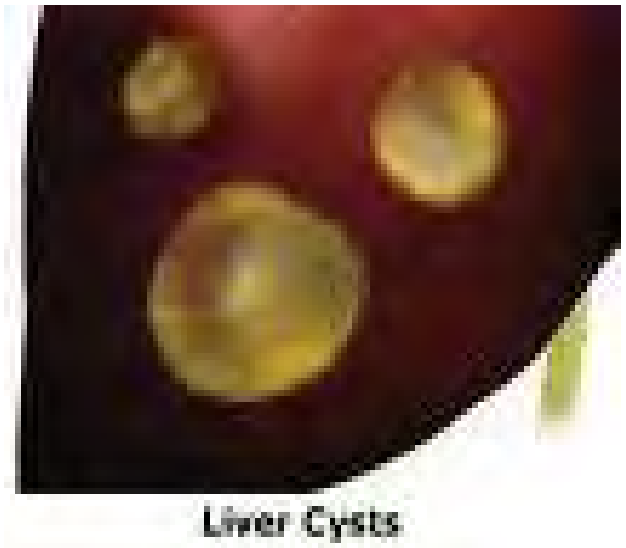
- Final host – Fox, wolf, dog
- Intermediate host – sheep, but can be **humans**

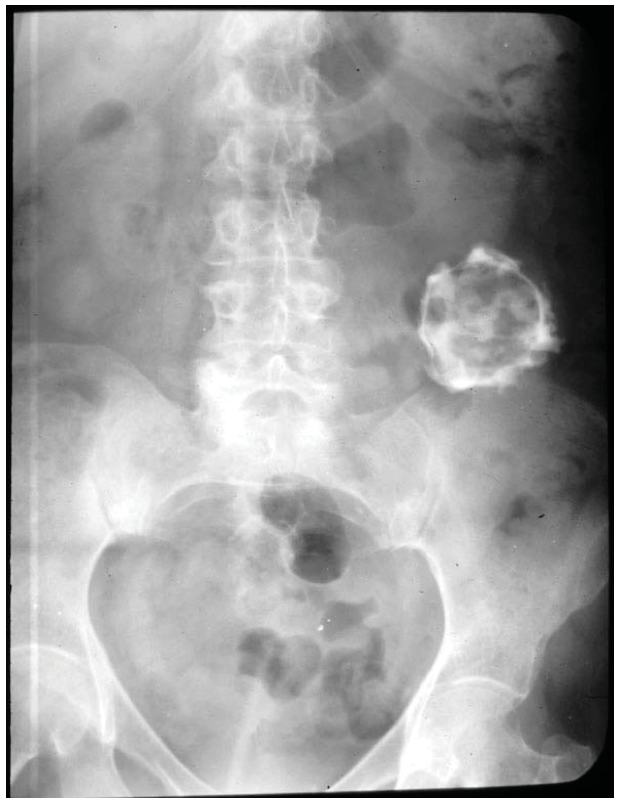
Hydatid Cyst Tapeworm Echinococcus granulosa

- Intermediate host – unilocular hydatid cysts in liver, lung, and brain
- Very serious in humans; treatment is surgery and is very difficult

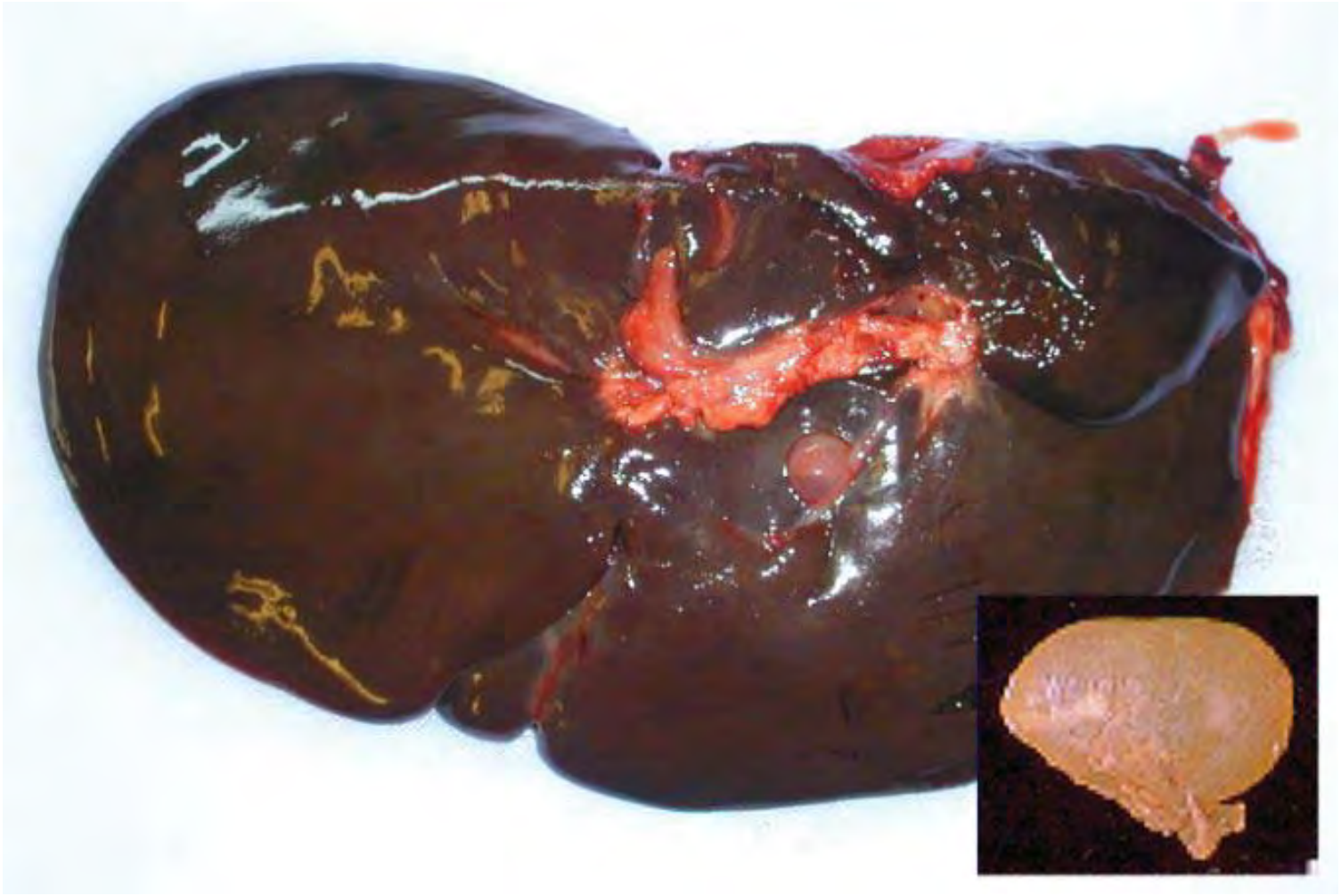


Hydatid Cysts in the liver

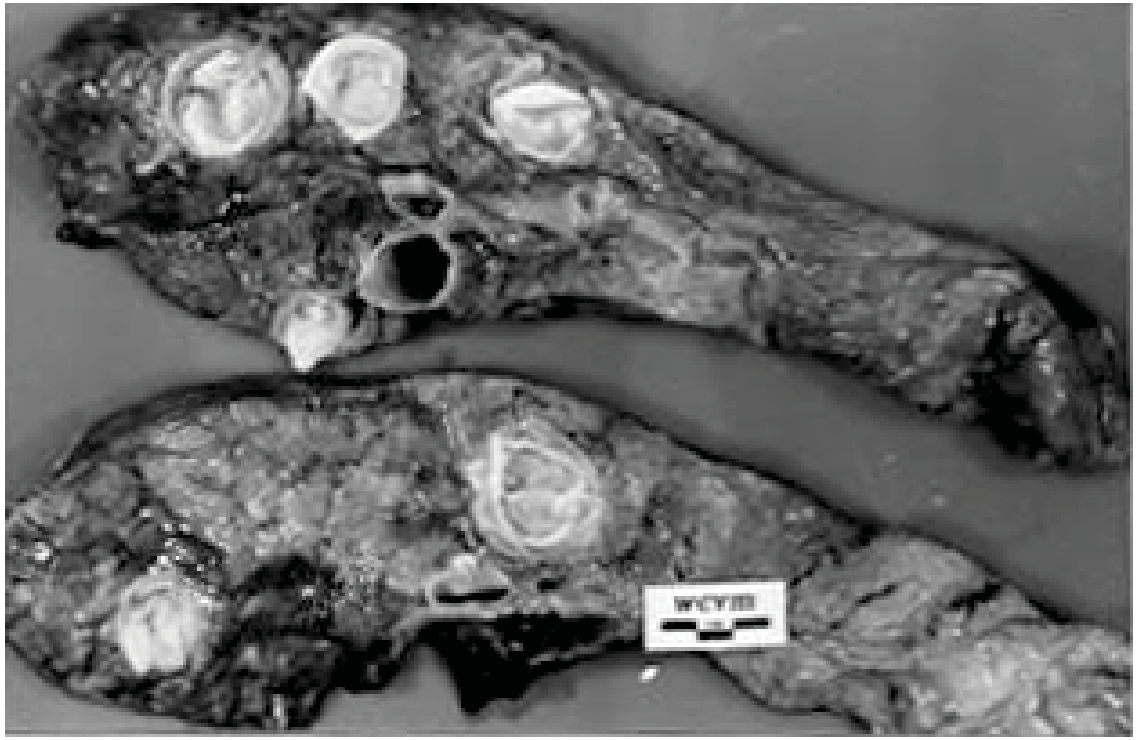

Liver Cysts



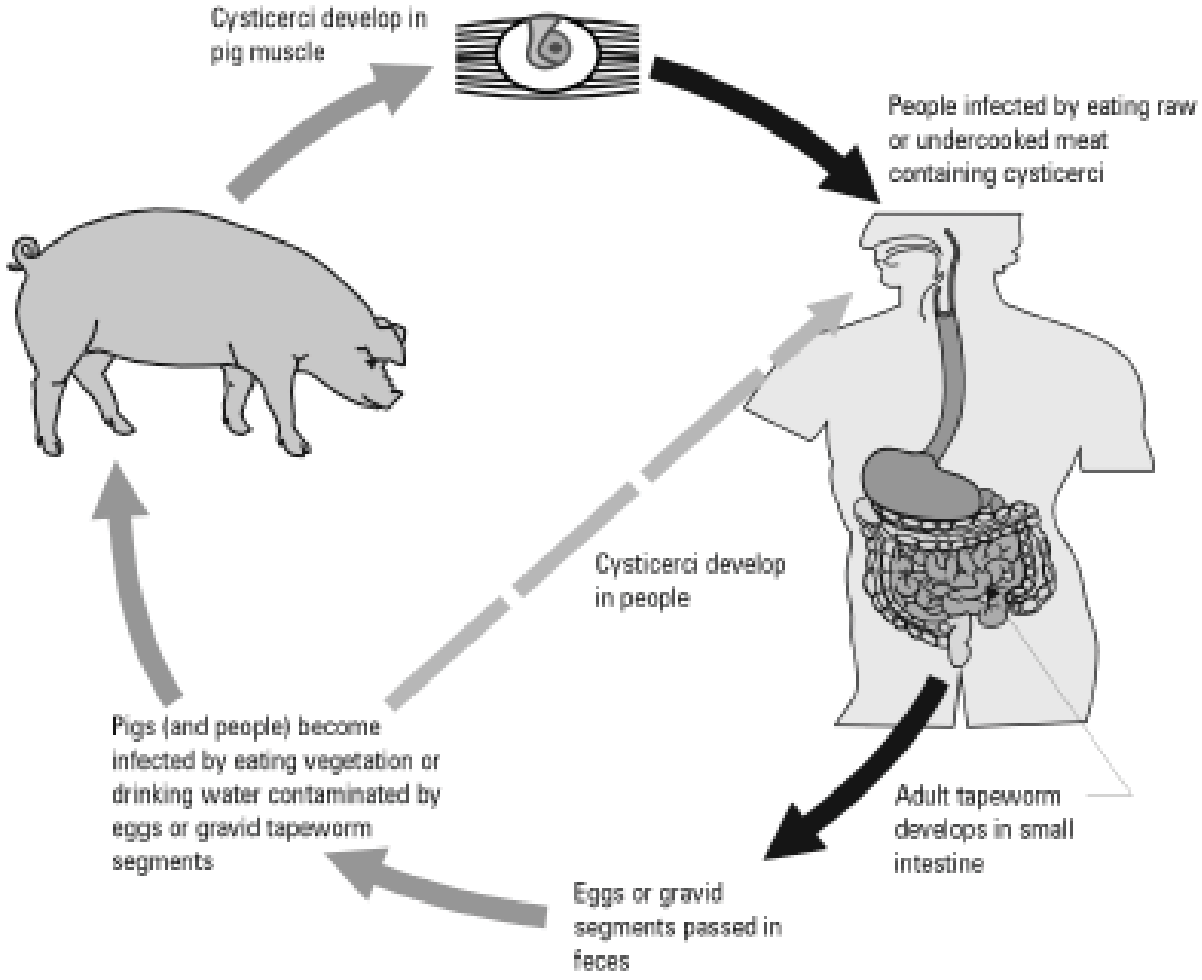
Hydatid Cysts in the liver



Hydatid cysts in the lung



Pork Tapeworm
Taenia solium

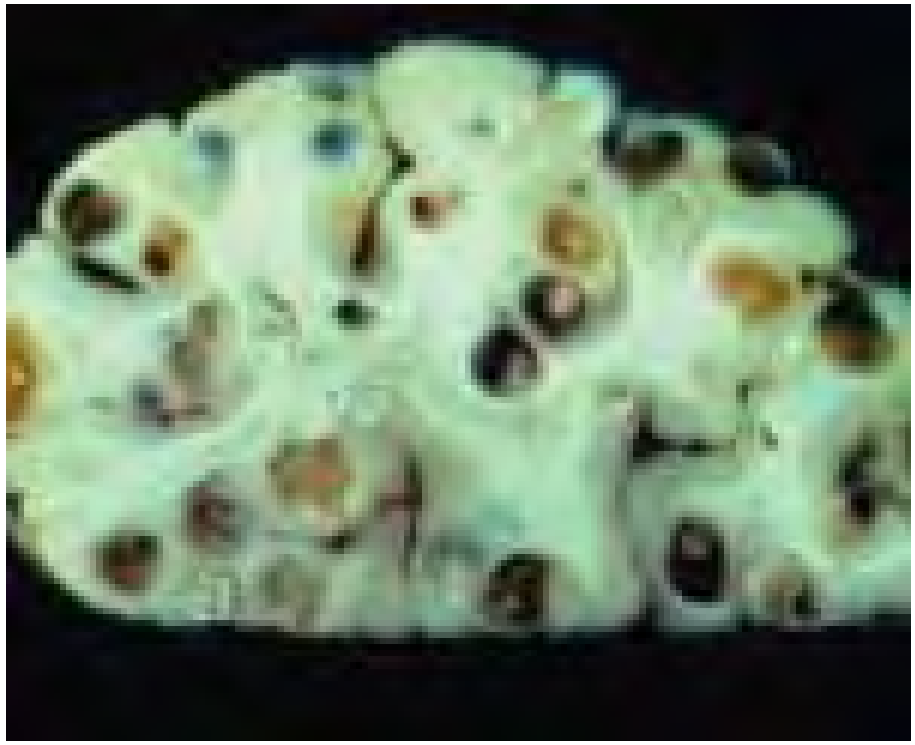


- Final host – human
- Intermediate host – pig or **human**

Pork Tapeworm
Taenia solium

- Intermediate host – cysticercus cellulosae; cysts in muscle, heart, liver or brain
- Can lead to serious clinical signs – epilepsy, stroke, blindness, hydrocephalus or paralysis
- Meat is ok with light infection, but must be heat or freeze treated; condemn meat in heavy infestation
- Prevention of adult worms– don’t eat undercooked meat
- More likely to find in free range pigs because scavengers

Pork Tapeworm
Taenia solium



General Tapeworm Prevention

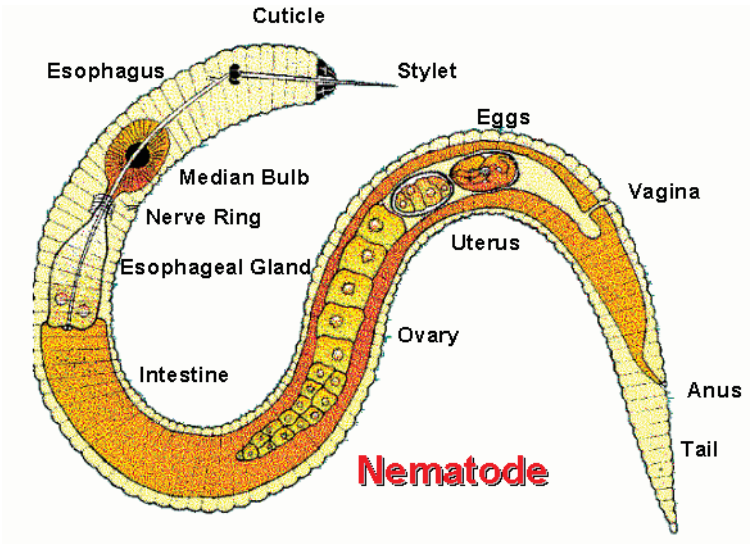
- Careful handling when skinning animals, they could have feces/eggs on them
- Wet fur to prevent eggs going airborne
- Wear gloves when handling dead game
- Don’t eat, drink or smoke while skinning
- Wash hands and clothes after hunting
- Wash or cook wild berries and vegetables

General Tapeworm Prevention

- Meat from infected animals is suitable for human consumption.
- Cooking will kill the parasite
- Dog/fox can be infected with adult tapeworms if they eat the larval cysts.
- Do not feed infected parts, raw meat or rodents to dogs.
- Dispose guts where other game can’t eat

Nematodes - worms

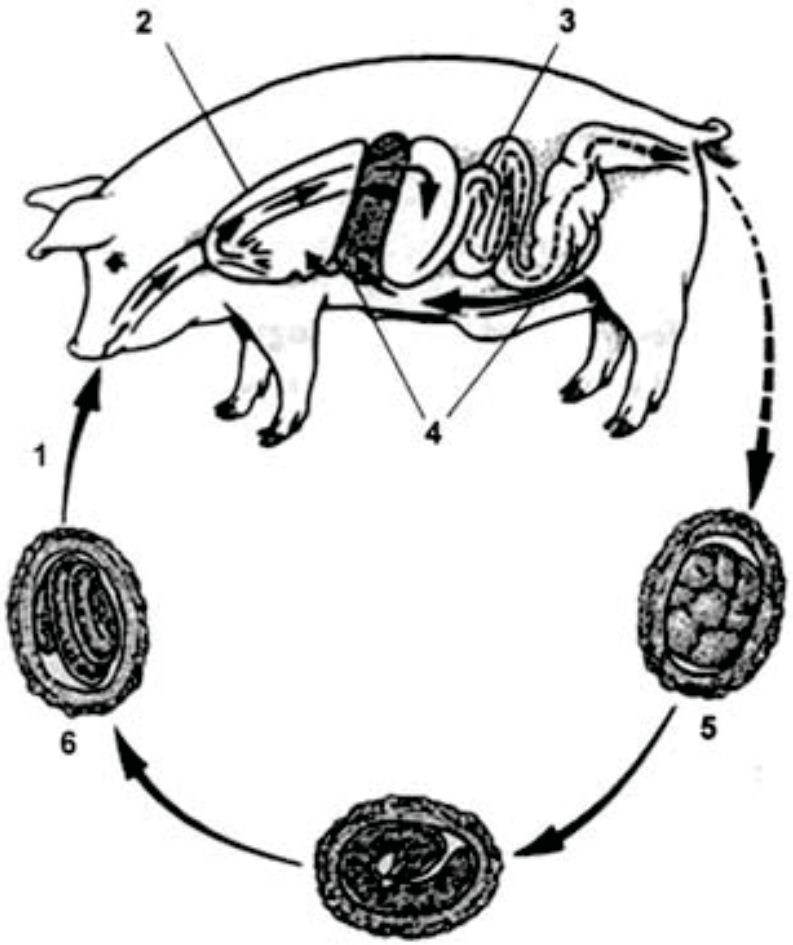
- Roundworms
- Hookworms
- Trichinella spiralis

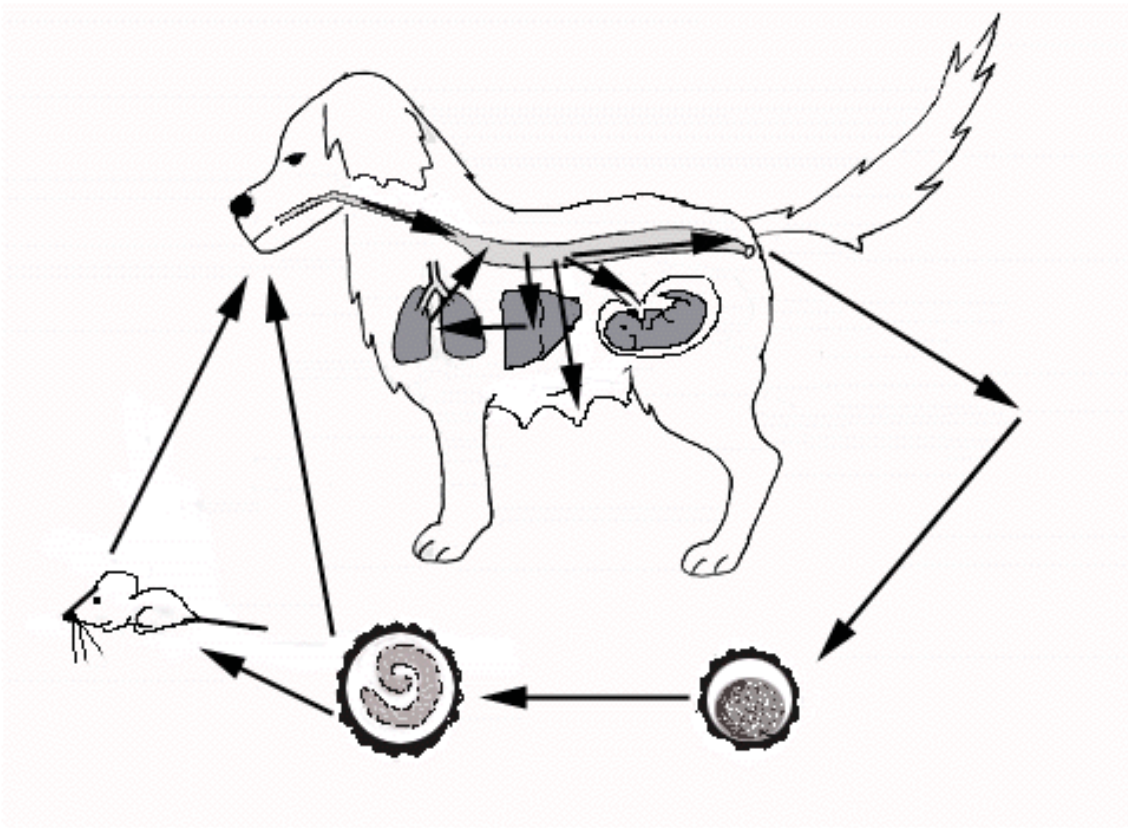


Roundworms

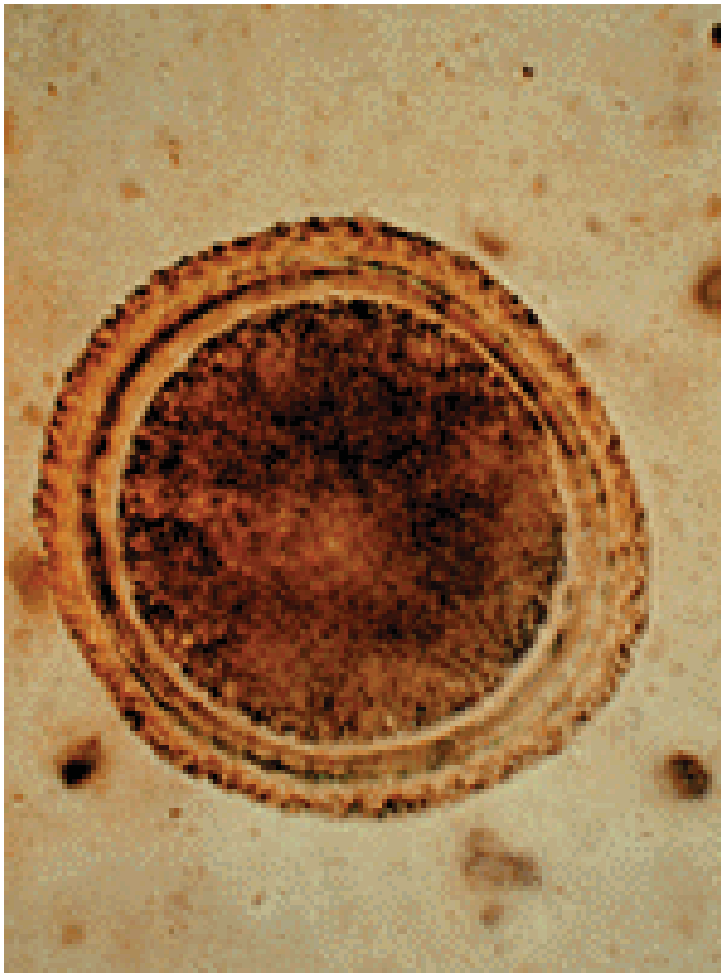
- PARASITE (worm)
- Many species have roundworms
- Large worm – “spaghetti”
- Adult worms in intestine, eating hosts food
- Eggs out in feces
- Host eats eggs in environment, they hatch
- Larvae travel thru intestine, to liver, to lungs, couphed up and swallowed
- Adult worms in intestine

Roundworm Life Cycle





Roundworms



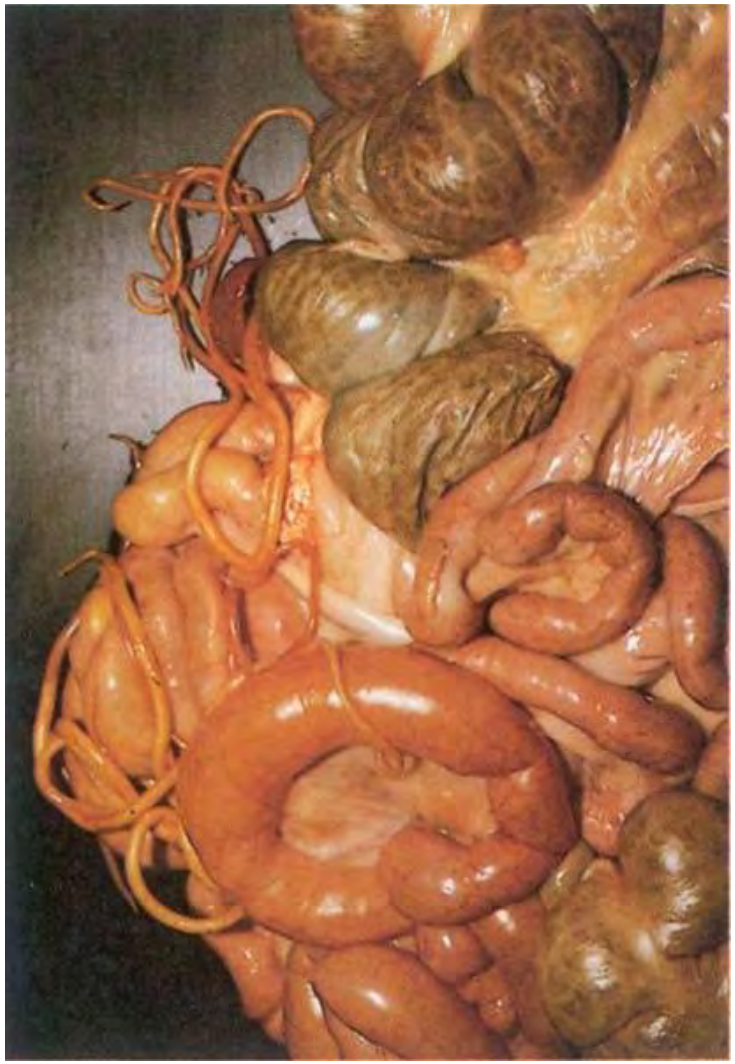
Egg

Adult

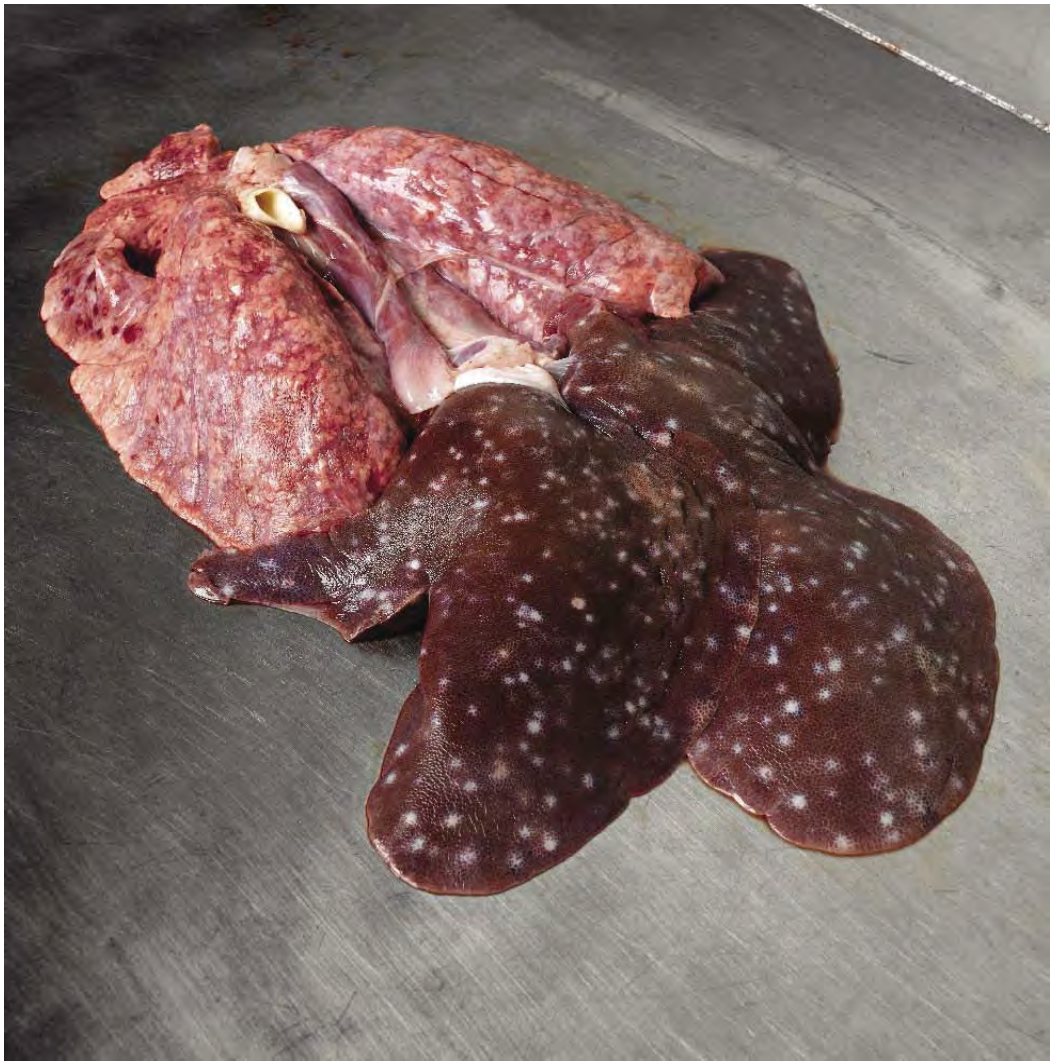
Roundworms

- Signs in host
  - “milk spots” in liver
  - coughing
  - pot belly
  - vomiting and diarrhea
  - failure to grow

Roundworms in game



Adults in intestines



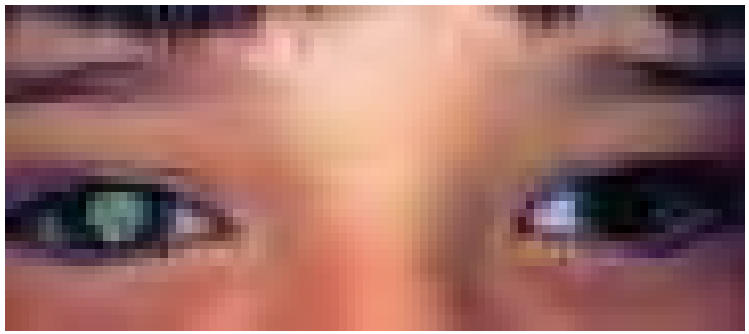
Milk spots in liver

Roundworms in Humans

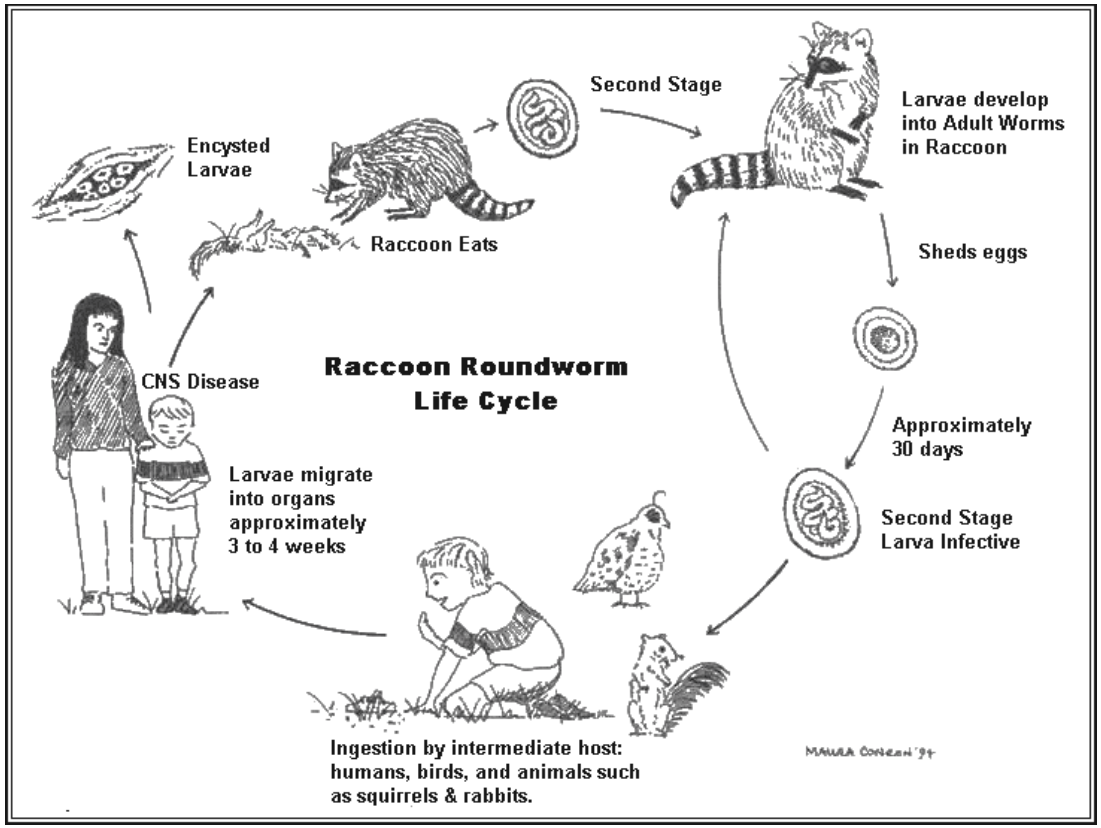
- Zoonotic
- Ingestion of eggs can lead to larval migration

  - visceral larval migrans

  - ocular larval migrans
- Larva can cause damage to liver, lungs, eye, heart and/or brain
- Children especially at risk (eat dirt, play with animals)



Roundworms
Visceral Larval Migrans
Ocular Larval Migrans



- Raccoon larvae – serious neurologic signs in humans

Roundworm Prevention

- Careful handling when skinning animals, they could have feces/eggs on them
- Wet fur to prevent eggs going airborne
- Wear gloves when handling dead game
- Don’t eat, drink or smoke while skinning
- Wash hands and clothes after hunting
- Wash or cook wild berries and vegetables
- Meat from infected animals is suitable for human consumption.

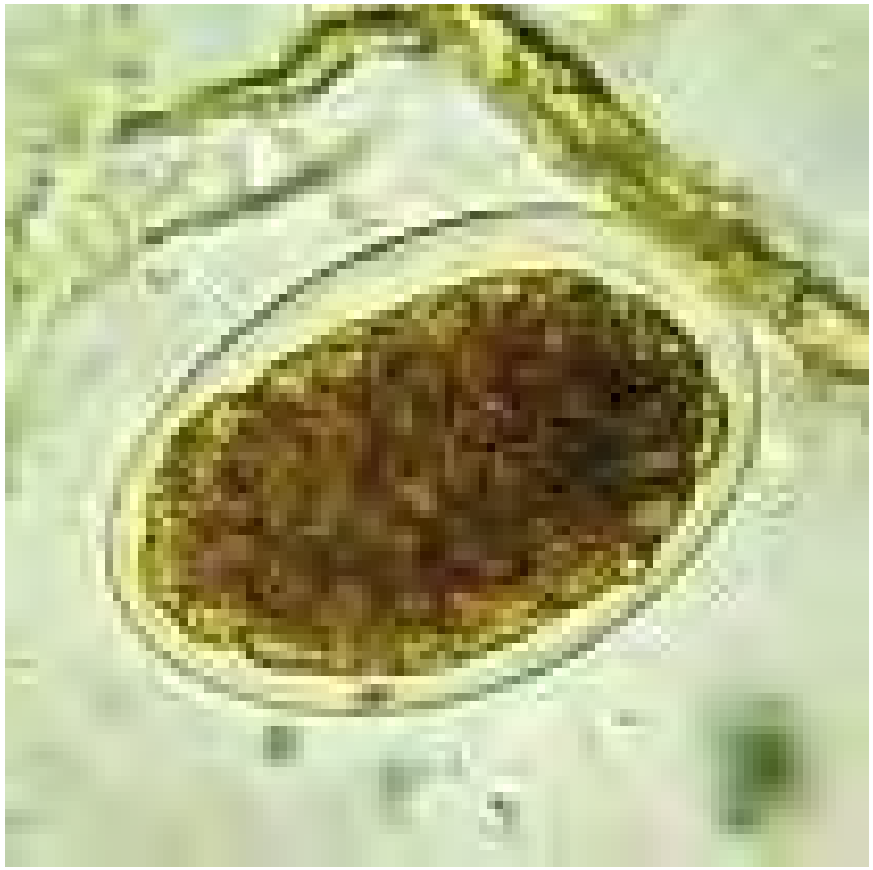
Hookworms

- PARASITE (worm)
- Adults in intestine of host, sucking blood
- Eggs out in feces
- Larvae are ingested or penetrate skin
- Adults in intestine
- Signs in host - anemia
- Zoonotic – penetrate human skin and cause cutaneous larval migrans

  (don’t go barefoot)
- Meat from infected animals is suitable for human consumption

Hookworm Life Cycle

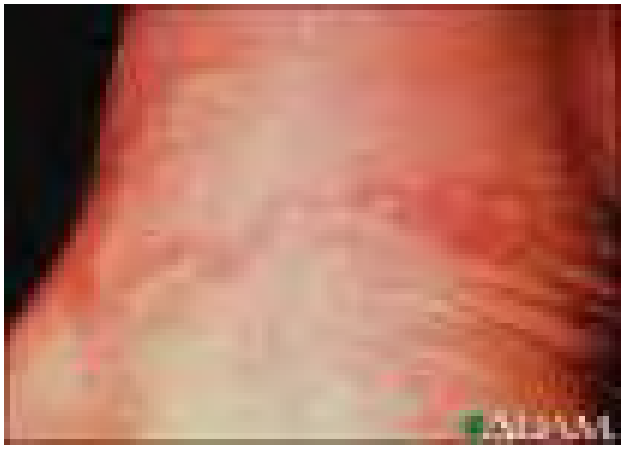
Hookworms



Egg

Adult

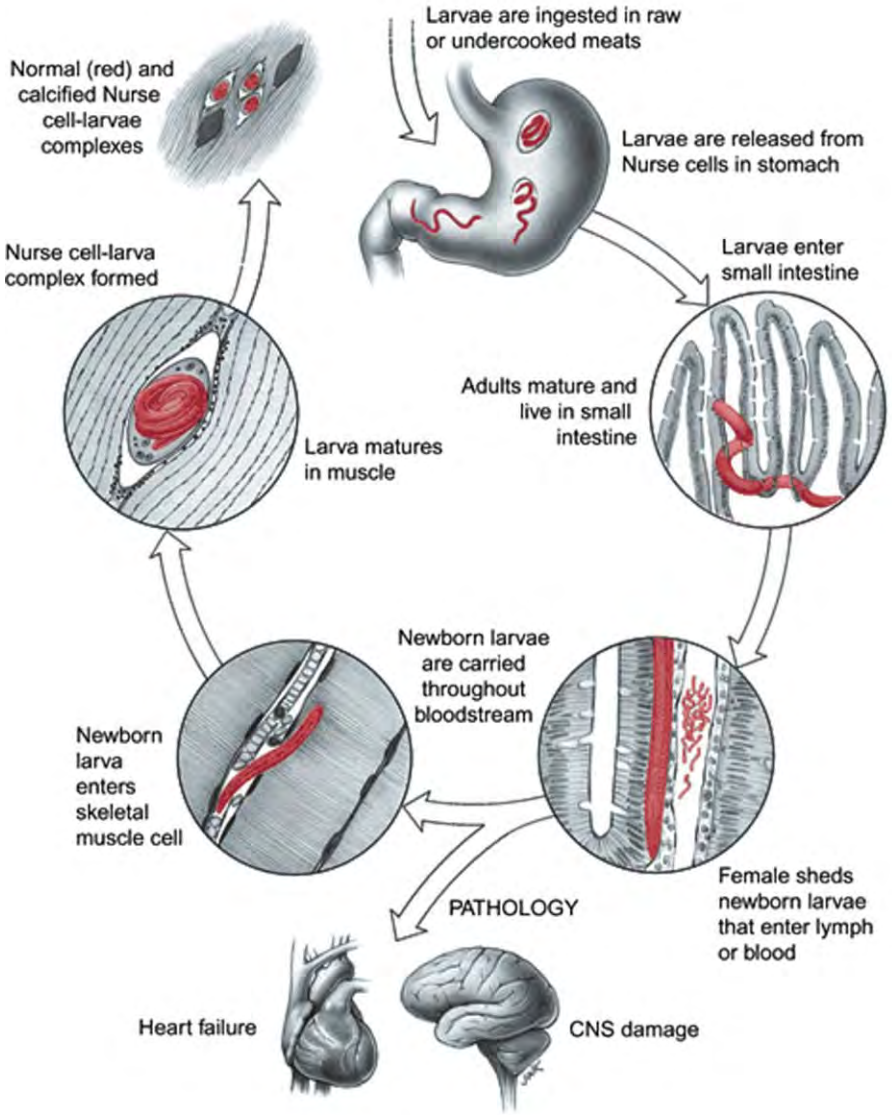
Hookworms
Cutaneous Larval Migrans



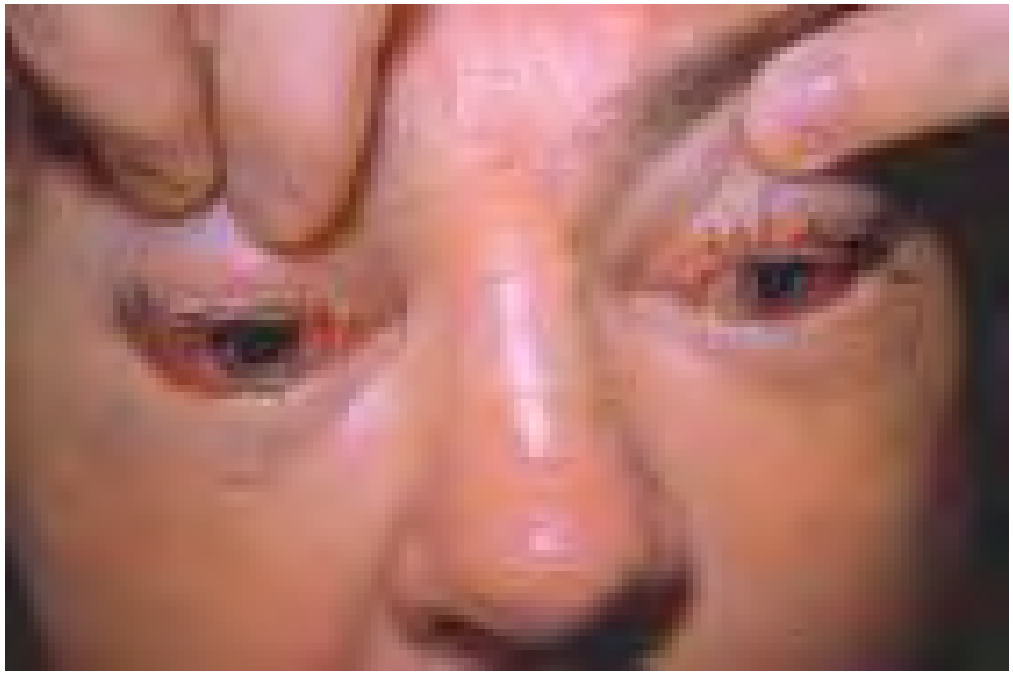
Trichinella spiralis

- PARASITE (worm)
- Each animal infected has adult worms in intestine and larvae in muscle
- Swine is most notorious host
- Zoonotic – causes trichinosis in humans
- Signs in humans – muscle pain, eyelid swelling, fever, weakness, diarrhea, heart problems
- Prevention – cook meat thoroughly

Trichinella Life Cycle



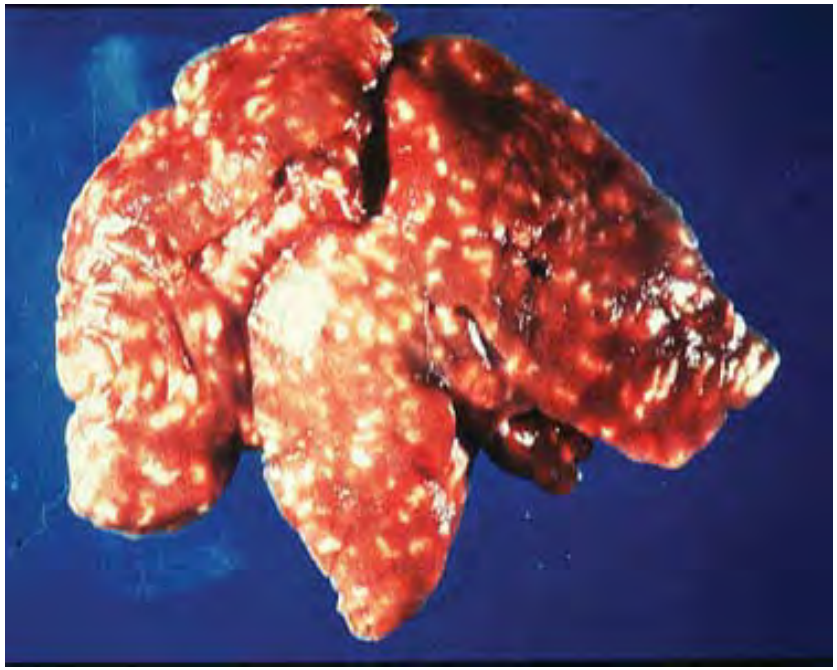
Trichinella

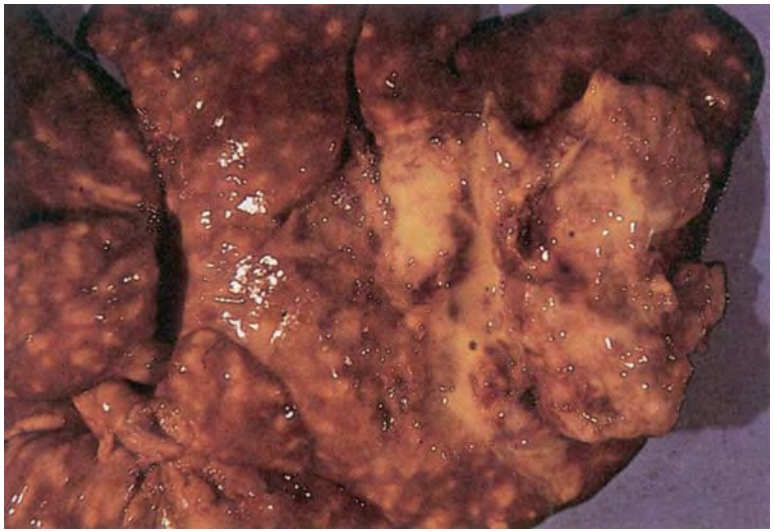


Coccidiosis

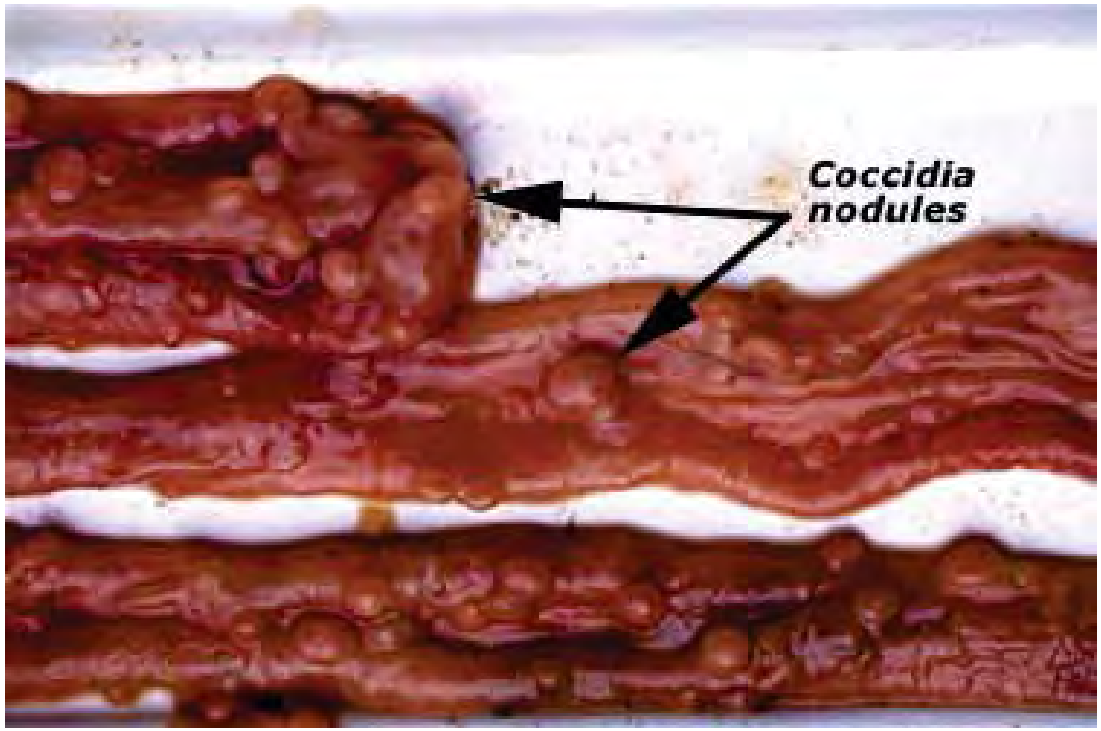
- PARASITE (Protozoa)
- Wide range of hosts (deer, swine, livestock, rabbits, dogs, cats, birds, etc)
- Infect intestinal cells (rabbits get hepatic form also)
- Transmission – ingesting oocysts in fecal contaminated food or water
- Young animals
- Signs in host – chronic diarrhea
- Very species specific
- Meat is suitable for human consumption

Coccidia in rabbit liver





Coccidia



Coccidia in intestines

oocysts

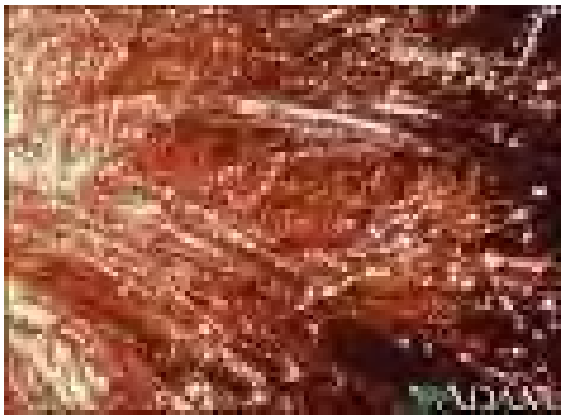
Coccidia - Toxoplasma

- Usually species specific – except Toxoplasma gondii - zoonotic
- Toxoplasma gondii (cat) can infect all mammals including **humans**
- Fetus of pregnant women and immunocompromised may be affected
- Prevention – **cook meat thoroughly**; pregnant women avoid cat feces and wear gloves while gardening

EXTERNAL PARASITES

Lice

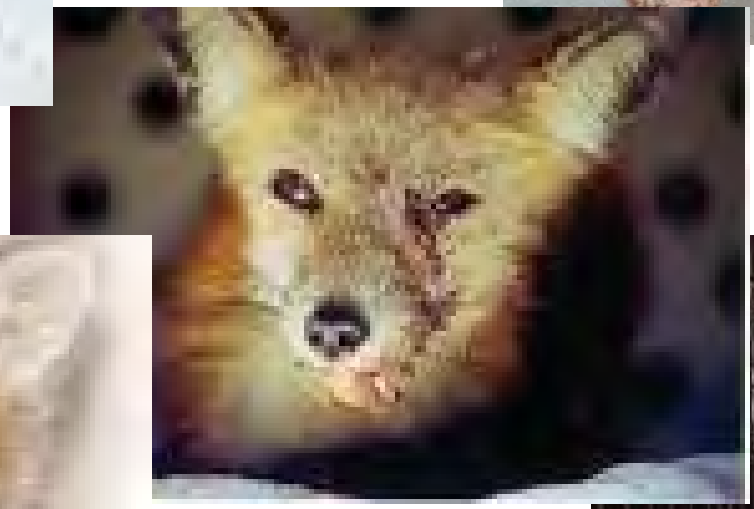
- PARASITE
- Affect most domestic animals and man
- Very host specific
- Spread by direct contact
- Signs – hair loss, red skin, itching
- Meat is safe to eat



Mites

- PARASITE
- Affect most domestic animals and man
- Most are host specific
- Spread by direct contact - very contagious
- Signs – intense itching, hair loss, secondary skin infections
- Sarcoptic mange mites “scabies” “mange” (fox,dog and Chamois)
- Otodectes mites (rabbits, dogs)
- Meat is safe to eat

Mange from mites



Ticks

- PARASITE
- Ticks spread disease to animals and people
  - Lyme disease
  - FSME (FruehSommerMenengialEncyphalitis) aka tick borne encephalitis; a vaccine is available
- Tick protection:
  - Wear long sleeves and pants, tuck in
  - Wear light colored clothes – easier to see ticks
  - Use insect repellent
  - Check yourself every two hours
- Meat is safe to eat

Ticks

- Tick removal – use tweezers to grab head and pull out. Do not squeeze body (may inject disease into yourself)

Ticks