

Mustansiriyah University
College of science
Biology Dept.

Zoology

4th class

Zoonoses lab. (8)

TOXOCARIASIS

- ❑ Members of the genus *Toxocara* are zoonotic intestinal *nematodes* (*roundworms*) that mature in various mammals, including some domesticated species. the family Toxocaridae, superfamily Ascaridoidea
- ❑ Parasitized animals can shed large numbers of eggs in the feces, infecting people (*particularly children*) who ingest these eggs in contaminated soil, or on hands or objects.
- ❑ Although *Toxocara* eggs do not complete their maturation in humans, the developing larvae can migrate through the body for a time. In some cases, they cause symptoms ranging from mild, vague discomfort to ocular disturbances, blindness and neurological syndromes

Etiology

- Recognized species include *Toxocara canis*, *T. cati*, *T. malaysiensis* and *T. vitulorum*, which have domesticated animals as their definitive hosts, which mature and shed eggs in wild animals.
- Adult *Toxocara* can cause **intestinal illnesses in their definitive hosts**, while **larvae migrating through the tissues can affect both definitive and paratenic hosts**.
- In paratenic hosts, toxocariasis is often called **larva migrans**.
- **Visceral larva migrans** is a general term used to indicate the presence of larvae in various internal organs, while larvae in the **eye** are **termed ocular larva migrans**.
- Larvae in the brain are sometimes called **cerebral larva migrans**.



Definitive hosts: Dogs, domestic cat, wild canids and hyaenids Cats

Transmission

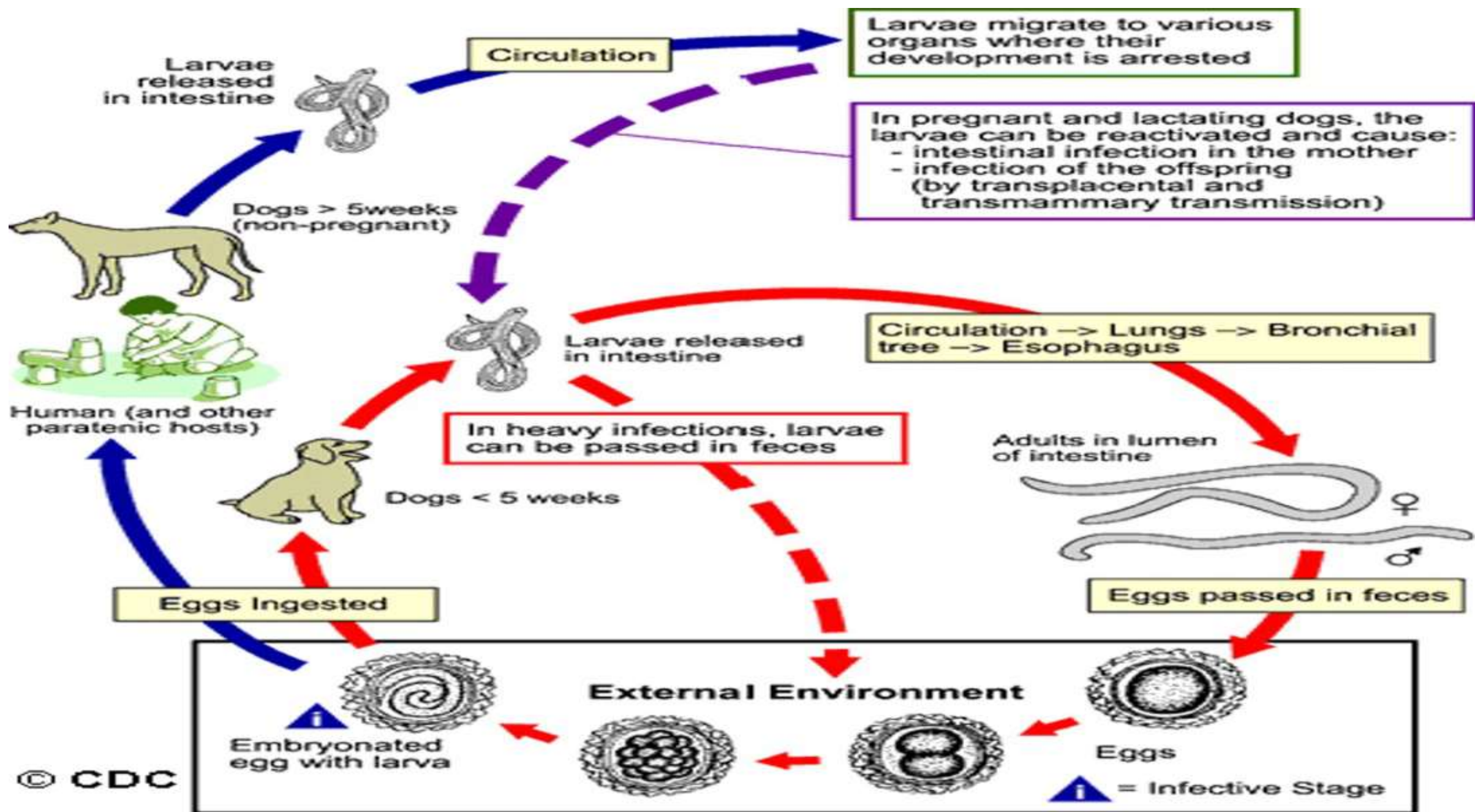
- ❑ Transmission of Toxocara to humans is usually through **ingestion of infective eggs**.
- ❑ T. canis can lay around 200,000 eggs per day, These eggs are passed in **cat or dog feces**, but the defecation habits of dogs cause T. canis transmission to be more common than that of T. cati.
- ❑ Both Toxocara canis and Toxocara cati eggs require a several **week incubation period in moist, humid, weather**, outside a host before becoming infective, **so fresh eggs cannot cause toxocariasis.**

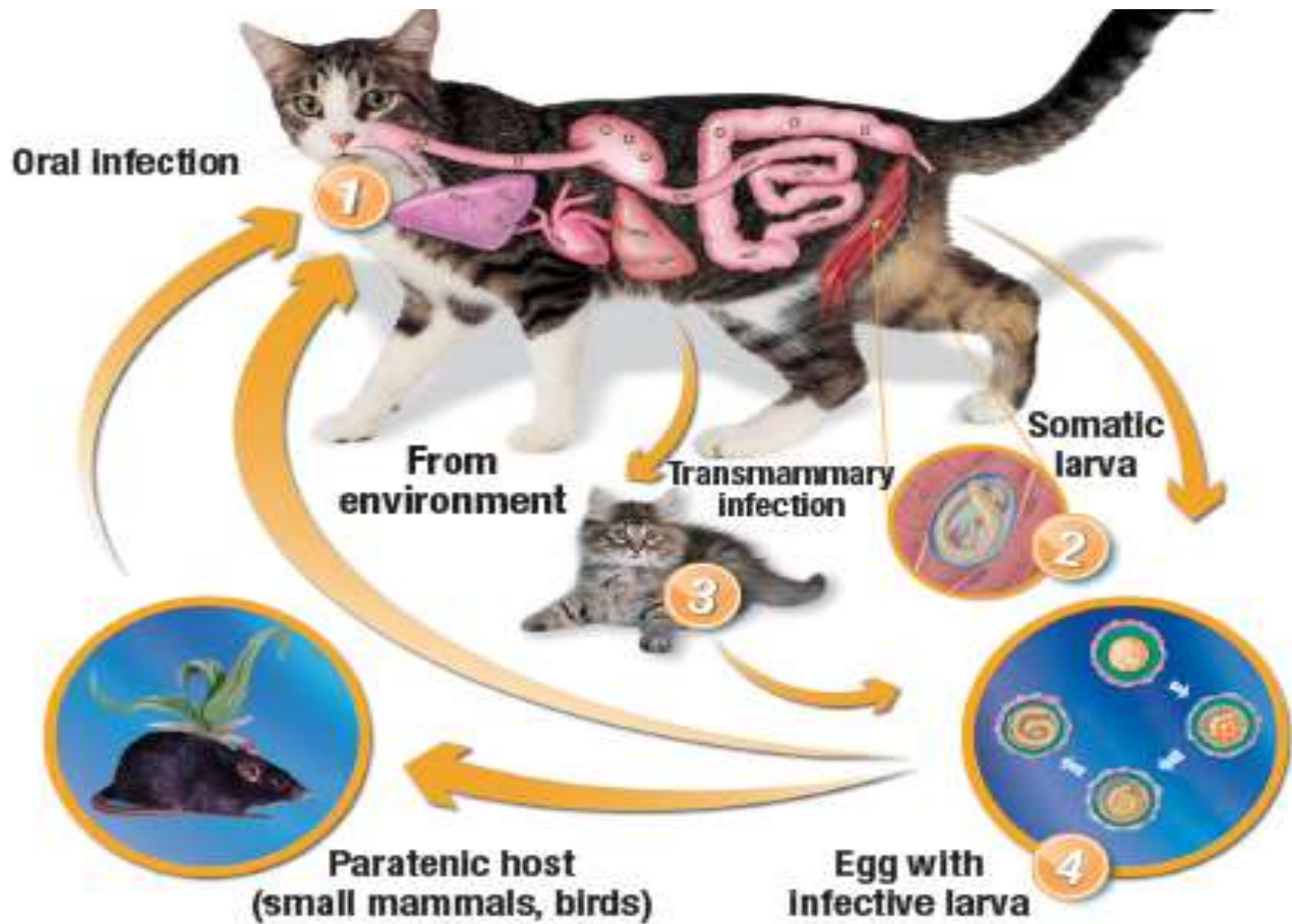
Transmission

- ❑ Many objects & surfaces can become contaminated with infectious eggs. **Flies that feed on feces can spread Toxocara eggs to surfaces or foods.** Young children who put contaminated objects in their mouths or eat dirt are at risk of developing symptoms. Humans can also contaminate foods by not washing their hands before eating.
- ❑ **Humans are not the only accidental hosts of Toxocara. Eating undercooked rabbit, chicken, or sheep can lead to infection;**

Incubation period

- The incubation period for *Toxocara canis* and *cati* eggs depends on **temperature and moisture**.
- ***T. canis* females**, specifically, are capable of producing up to 200,000 eggs a day that require **2-6 weeks minimum up to a couple months before full development into the infectious stage**.
- Under ideal **summer** conditions, eggs can mature to the infective stage after two weeks outside of a host. **Provided sufficient oxygen and moisture availability, *Toxocara* eggs can remain infectious for years**
- However, the second stage of larvae development poses strict vulnerabilities to certain environmental elements. **High temperatures and low moisture levels will quickly degrade the larvae during this stage of growth.**





Diagnostic Tests

- ❑ Finding *Toxocara* larvae within a patient is the only definitive diagnosis for toxocariasis; however, biopsies to look for second stage larvae in humans are generally not very effective.
- ❑ PCR, ELISA, and serological testing are more commonly used to diagnose *Toxocara* infection. Serological tests are dependent on the number of larvae within the patient, and are unfortunately not very specific.

Visceral Larva Migrans Larva



Copyright © 2006 by The McGraw-Hill Companies, Inc.
All rights reserved.

Ocular Larva Migrans



Worms develop to the adult stage in the small intestine about 60 to 90 days after the larvae hatch.



T . Canis



T . Cati

Adult Toxocariasis From Small Intestine

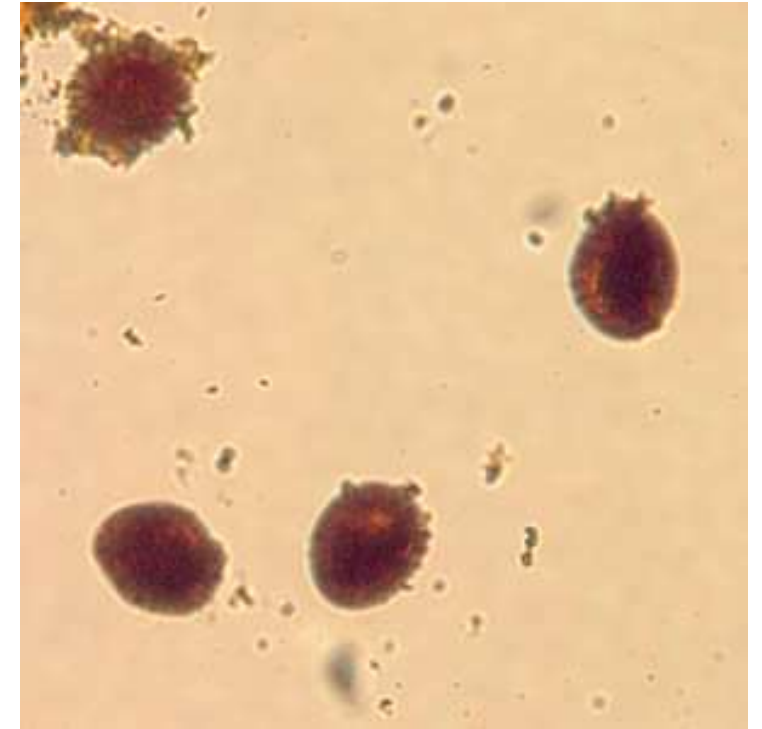




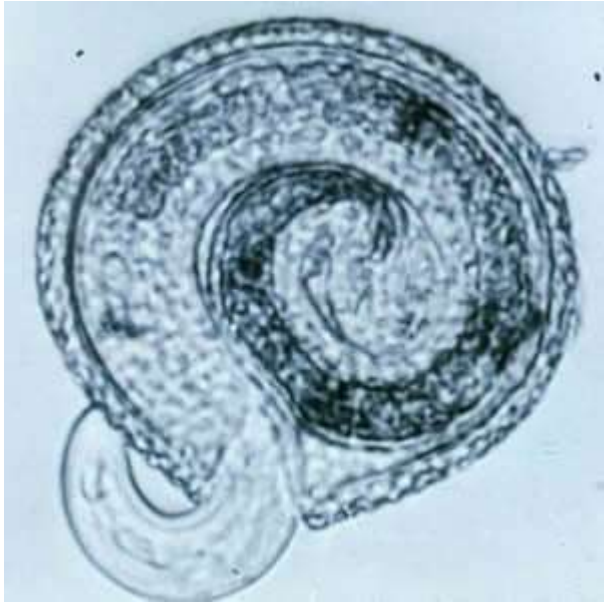
toxocara sp. egg teased from an adult worm. The worm was never identified, but the egg size is most consistent with *T. cati*.



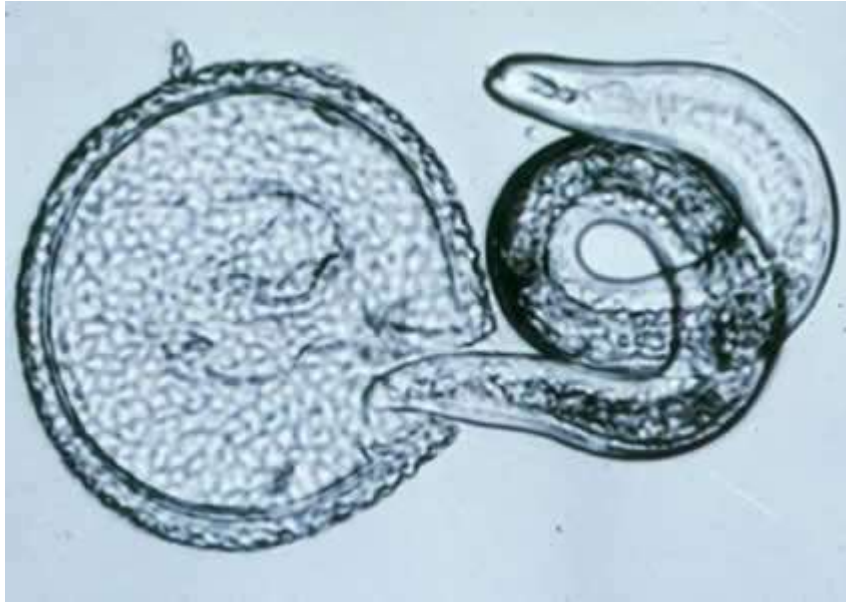
Toxocara sp. egg teased from an adult worm. The worm was never identified, but the egg size is most consistent with *T. cati*.



Toxocara sp. eggs teased from an adult worm and stained with iodine, magnification at 100x..



Toxocara canis larva
beginning to hatch.



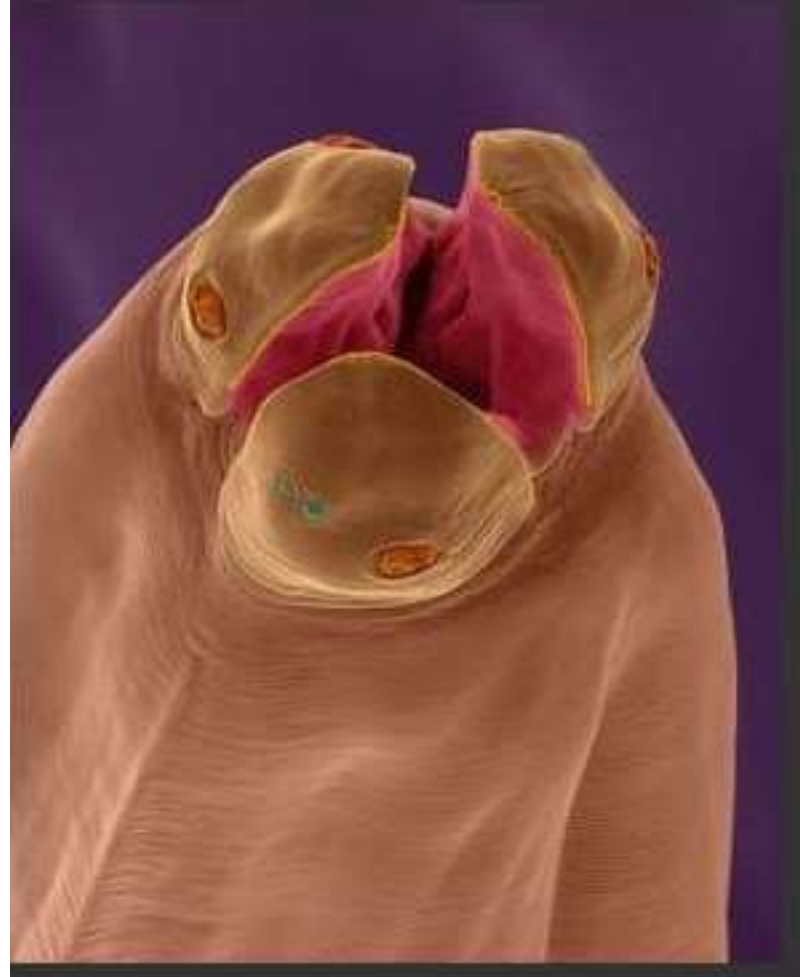
T. canis larva hatching

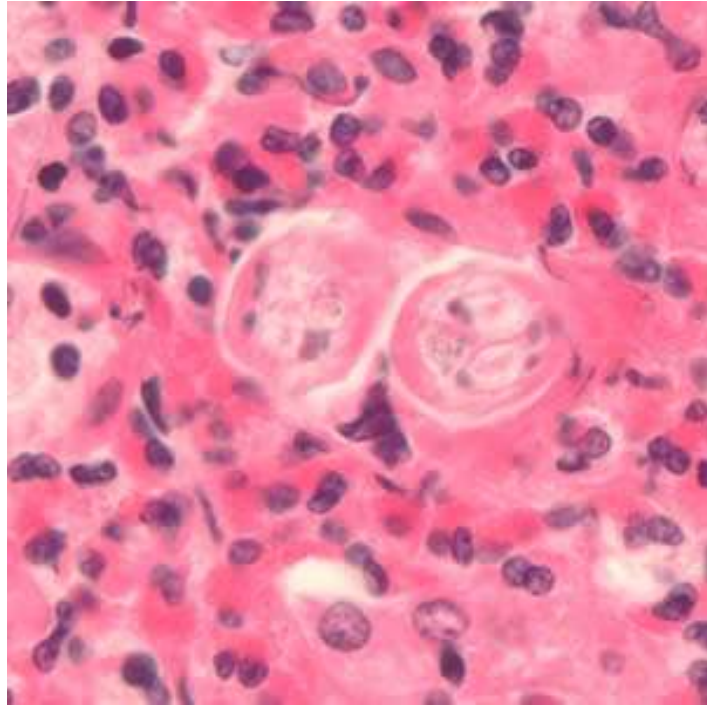


C: T. canis larva.

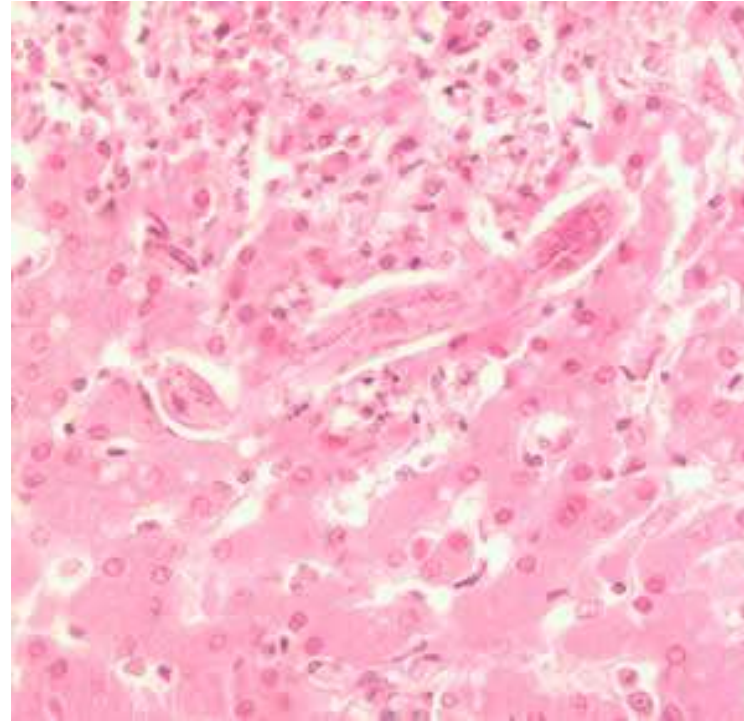


Close-up of the anterior end of *Toxocara* sp., showing the three lips characteristic of a scarid worm

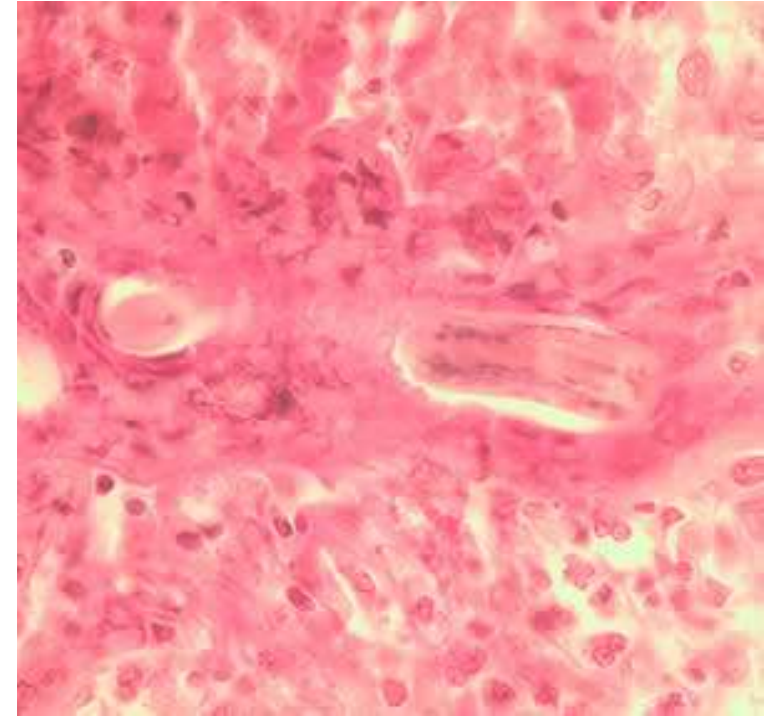




Cross-section of
Toxocara sp. larvae in
liver tissue stained with
hematoxylin and eosin
(H&E).



Longitudinal section
of a Toxocara sp.
larva in liver tissue
stained with H&E.



Longitudinal section
of a Toxocara sp.
larva in lung tissue
stained with H&E.