

# Cestodes

# Taenia Saginata

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# Geographic Distribution

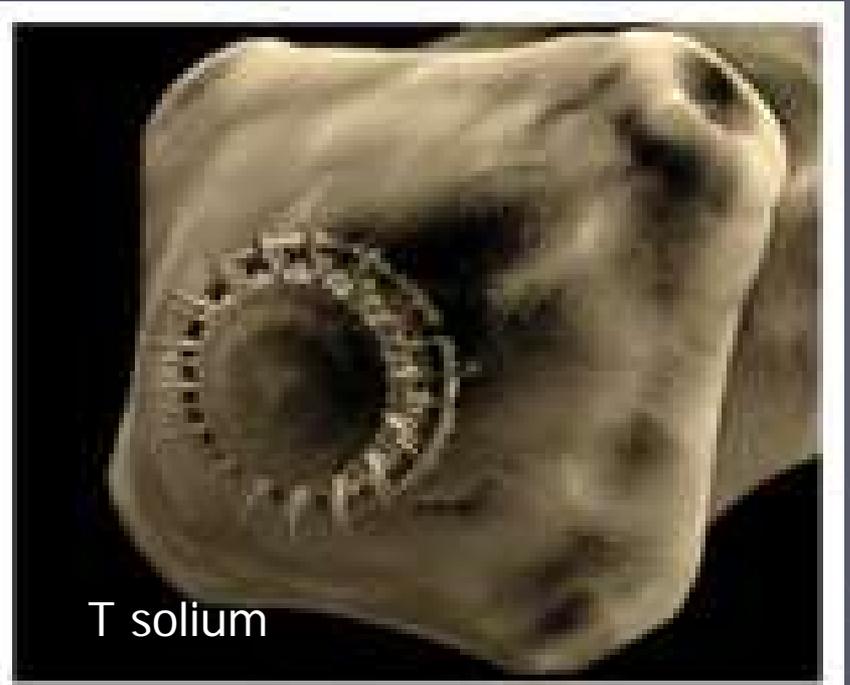
- ▶ *T.saginata* is prevalent in regions where cattle are raised: Africa, Middle-East, Central and South America, Europe and Asia
- ▶ *T.saginata* is the most highly endemic *Taenia* in the USA

# General Recognition Features

- ▶ Can be 10 meters long though usually 2-5 meters
- ▶ 1000-2000 proglottids (1 cm long) with 1/3 – 1/2 being gravid
- ▶ Proglottids have 15-20 lateral branches from the uterus and a lateral genital pore
- ▶ Scolex has 4 suckers with a slight apical depression and no hooklets



T sagninata



T solium

*Fremati Nuti (Econia solium)*

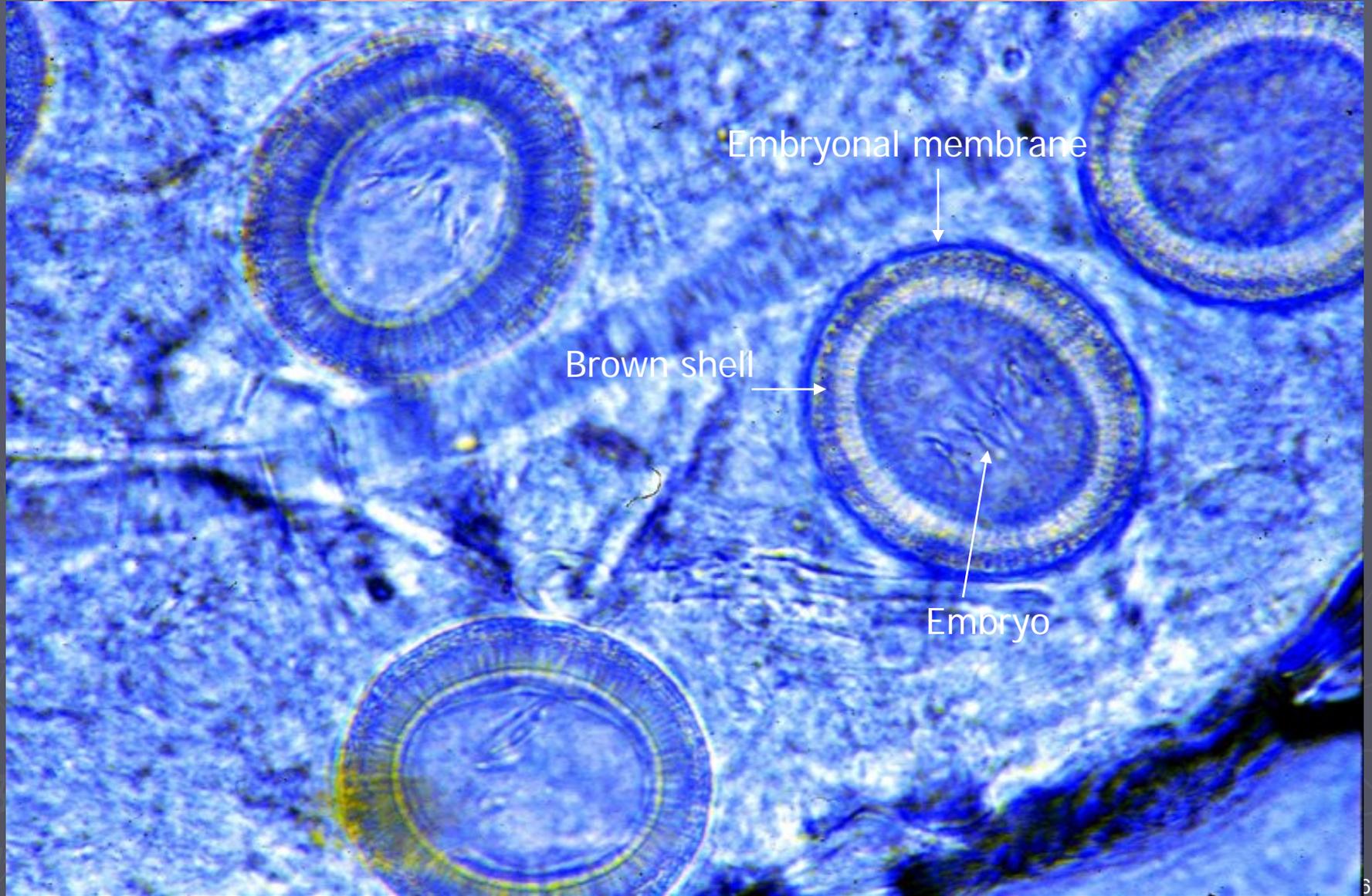


# General Recognition Features

## ► Eggs

- 31-43 um
- Outer embryonal membrane
- Brown shell
- Hexacanth embryo with 3 pair of lancet shaped hooklets





Embryonal membrane

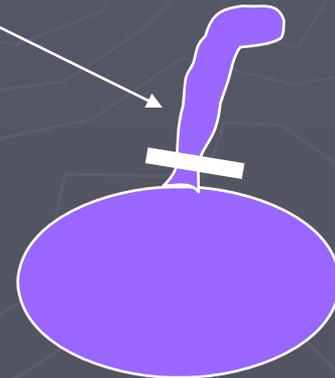
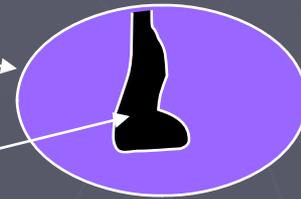
Brown shell

Embryo

# General Recognition Features

## ► Cysticercus

- 4-6 mm X 7-10 mm
- In muscle of beef
- Invaginated scolex
- Scolex exvaginates and breaks off when digested out of the muscle

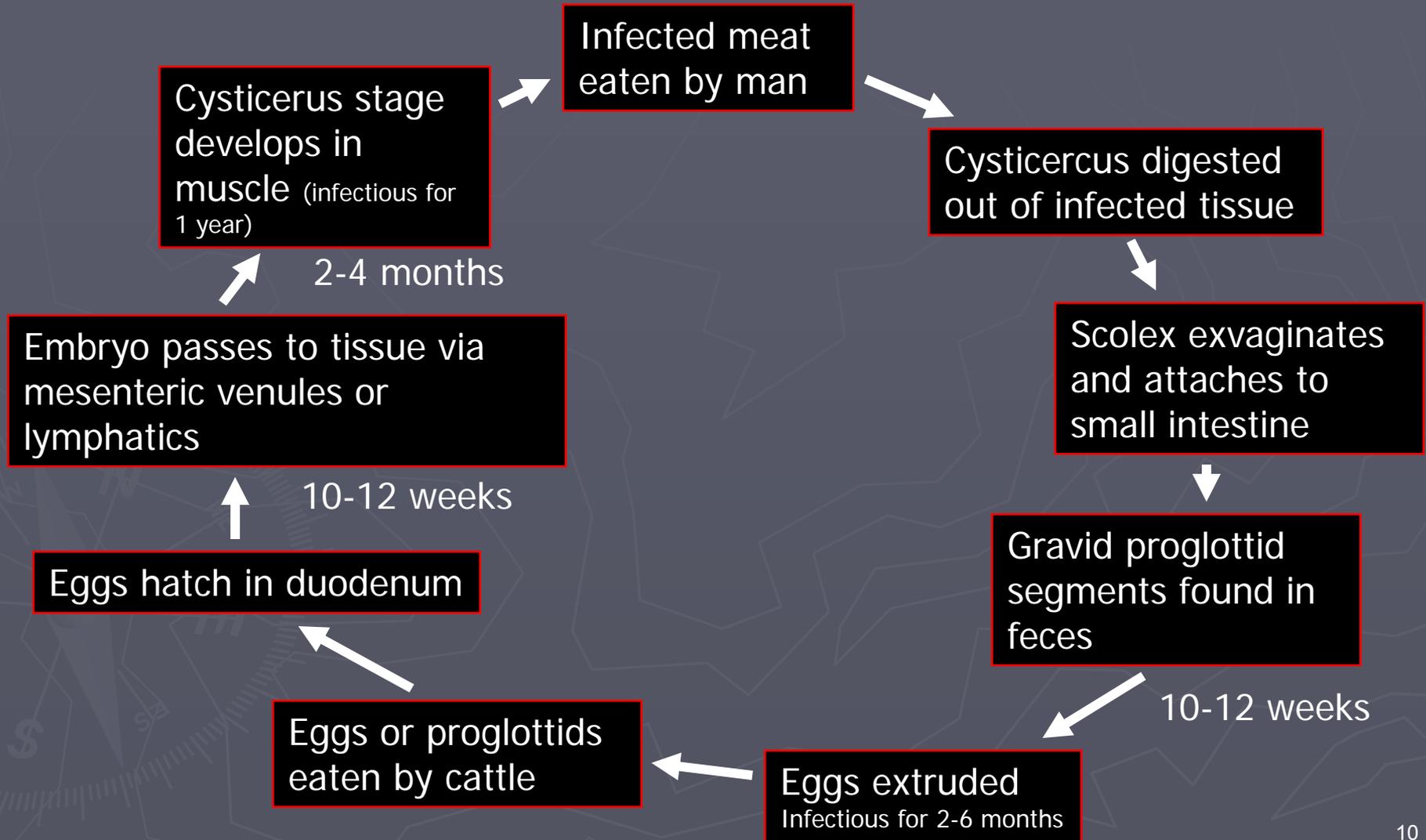




# Life Cycle

- ▶ Definitive host - man
- ▶ Adults found - attached to the middle third of the small intestine
- ▶ Stage leaving the body – gravid proglottid that actively migrate and pass embryonated eggs
- ▶ Intermediate host – cattle
- ▶ Infectious stage for the definitive host – cysticercus infected meat

# Life Cycle



# Life Cycle

- ▶ Prepatent period – 10-12 weeks
- ▶ Patent period - decades

# Transmission

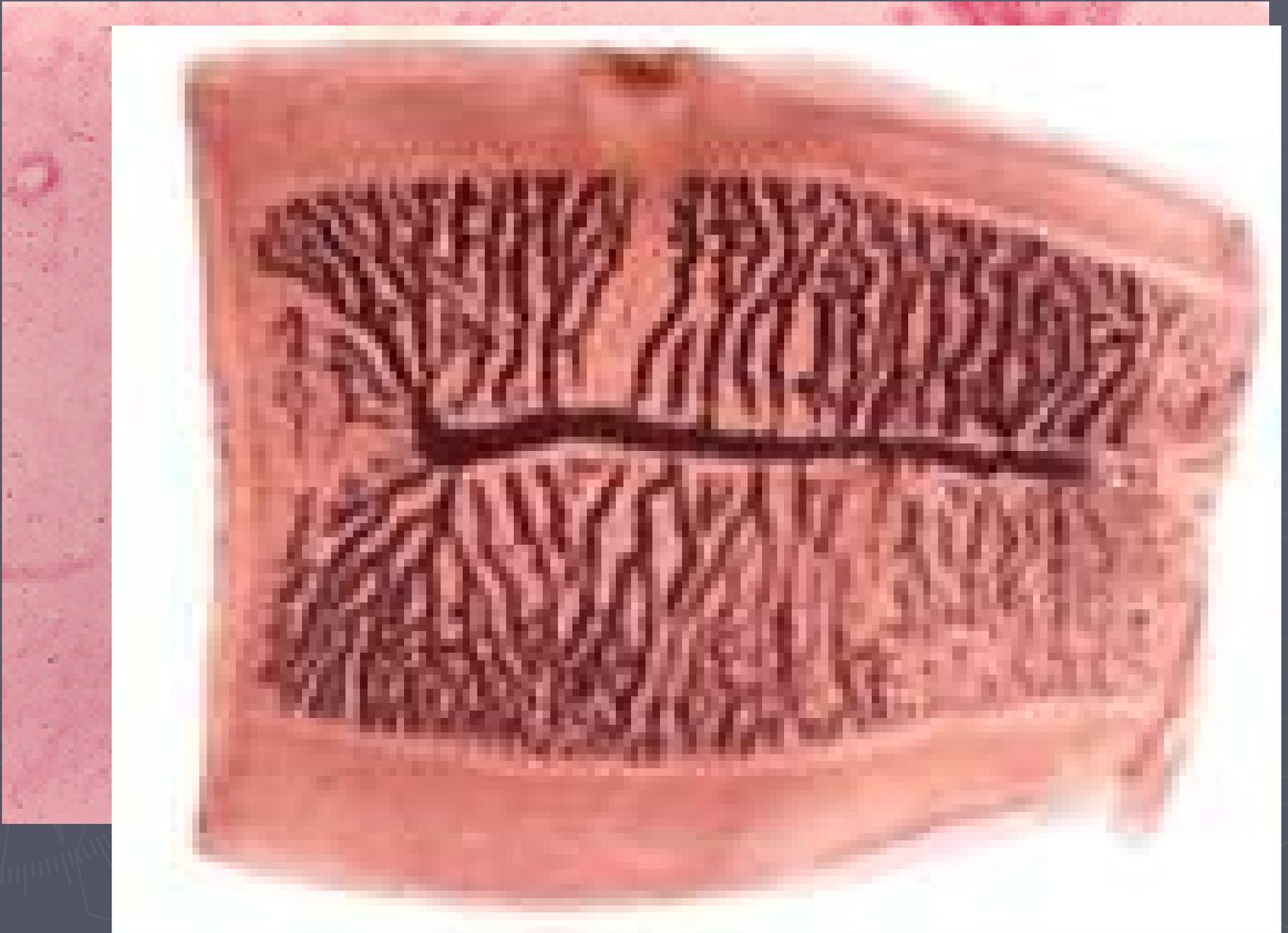
- ▶ Eating of inadequately cooked beef
- ▶ Inadequate meat regulation
- ▶ Use of raw human sewage for fertilizer
- ▶ Inadequate human fecal sanitation

# Disease Characteristics

- ▶ Generally asymptomatic
- ▶ Diarrhea and abdominal cramps toward the end of the prepatent period (10-12 weeks)
- ▶ Rare – intestinal obstruction with a mass of entangled worms

# Diagnosis

- ▶ Proglottids in the stool
- ▶ Eggs in the stool
- ▶ Scotch tape test for eggs on the perineum
- ▶ Fecal concentration techniques (Kato thick smear, Formyl ether)
- ▶ Taenia antigens in the stool



# Treatment

Medication	Adult	Pediatric
Praziquantel	5-10 mg/kg once	5-10 mg/kg once
Niclosamide	2 gm once	50 mg/kg once

# Adverse Medication Reactions

- ▶ Praziquantel (Biltricide – Bayer)
  - Frequent: abdominal pain, diarrhea, malaise, headache, dizziness
  - Occasional: neutropenia, GI disturbance, methemoglobinemia
  - Rare: CNS symptoms, hypertension, arrhythmias

# Adverse Medication Reactions

## ► Niclosamide

- Occasional – abdominal pain, anorexia, diarrhea, emesis
- Rare – dizziness, skin rash, drowsiness, perianal itching, unpleasant taste

# Control Measures

- ▶ Sanitary disposal of human feces
- ▶ Adequate meat inspection
- ▶ Cooking beef to  $>65^{\circ}\text{C}$  or freezing at  $-20^{\circ}\text{C}$  for 24 hours
- ▶ Stool examination of food handlers from endemic countries
- ▶ Avoid eating uncooked vegetables and fruits that cannot be peeled while traveling in developing countries