



MEDICAL ACADEMY NAMED AFTER S. I. GEORGIEVSKY OF VERNADSKY UNIVERSITY

- NAME : M. NITHYA SHREE
- GROUP : LA2;203(2)
- TOPIC : PARAGONIMUS WESTERMANI

HISTORY

- Most discoveries made between 1874-1918
- Discovered in Brazil in 1850 by Diesing
- First described in Bengal tigers housed in zoos in Hamburg and Amsterdam in 1877
- Coenraad Kerbert named the parasite after the manager of the zoo G.F Westerman

EPIDEMIOLOGY

- It is estimated that 20 million are infected with *Paragonimus westermani*
- It is endemic in China, Korea, Japan, the Philippines, and Taiwan
- Japan, Korea, Formosa, China, Manchuria, the Philippine Islands and India
- Infection is also found in parts of tropical West Africa, from the Congo and Nigeria, especially from Southern Cameroon
- Rare in the US but it is found in Missouri

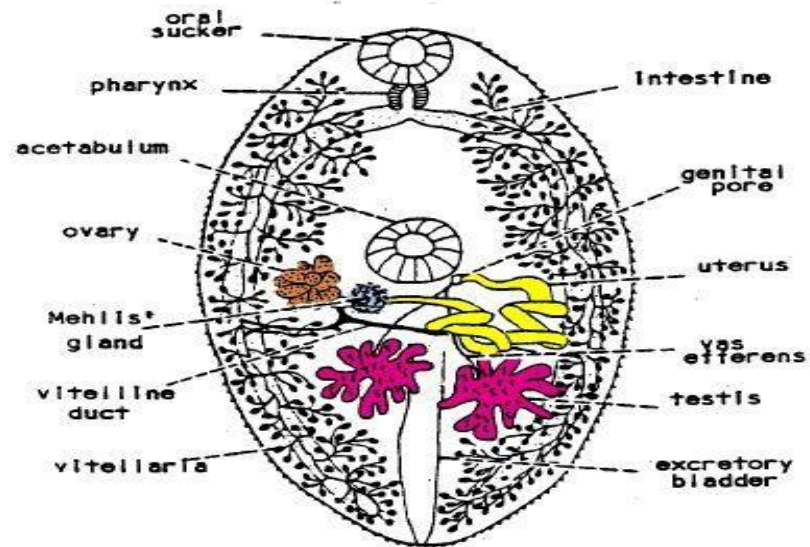
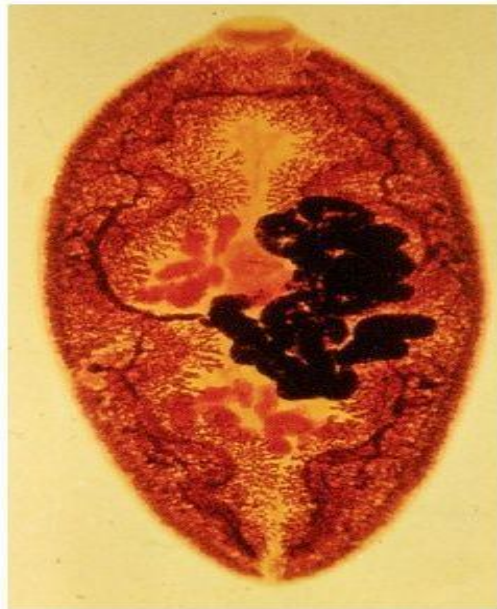
DEFINITIVE HOST

- The last stage of the parasites development is fulfilled when a mammalian host ingests an infected crab.
- Specifically humans, pigs, dogs, and a variety of feline species.
- Infections of *P. westermani* can persist in humans for up to 20 years!

NAME OF THE HELMINTH:

- Paragonimus Westermani

Morphology of Adult *Paragonimus westermani*



SYSTEMIC POSITION

Taxonomy

Kingdom: Animalia

Phylum: Platyhelminthes

Class: Trematoda

Order: Plagiorchiida

Family: Troglotrematidae

Genus: *Paragonimus*

Species: ***P. westermani***

THE GEOGRAPHIC LOCATION:

GEOGRAPHIC DISTRIBUTION

- *P. westermani* infections occur in limited areas where local people eat improperly cooked crustaceans.
- *P. westermani* occurs in the Far East specifically in the countries of Korea, Japan, China, Taiwan, far-east Russia, Malaysia, India, the Philippines, and Indonesia.
- Other species of *Paragonimus* are encountered in Asia, the Americas, and Africa.

SINGAPORE

MORPHOLOGY OF PARAGONIMUS WESTERMANI

MORPHOLOGY

- The living adult worms are a pinkish-brown colour and bean shaped (7 to 15 mm in length to 8 mm in width, and 3 to 5 mm in thickness). It contains a characteristic ovary in the middle of the worm.
- The golden brown colored immature eggs are approximately 45-60 μm by 80-100 μm .
- The metacercariae in the second intermediate host are spherical in shape measuring 220-450 μm .

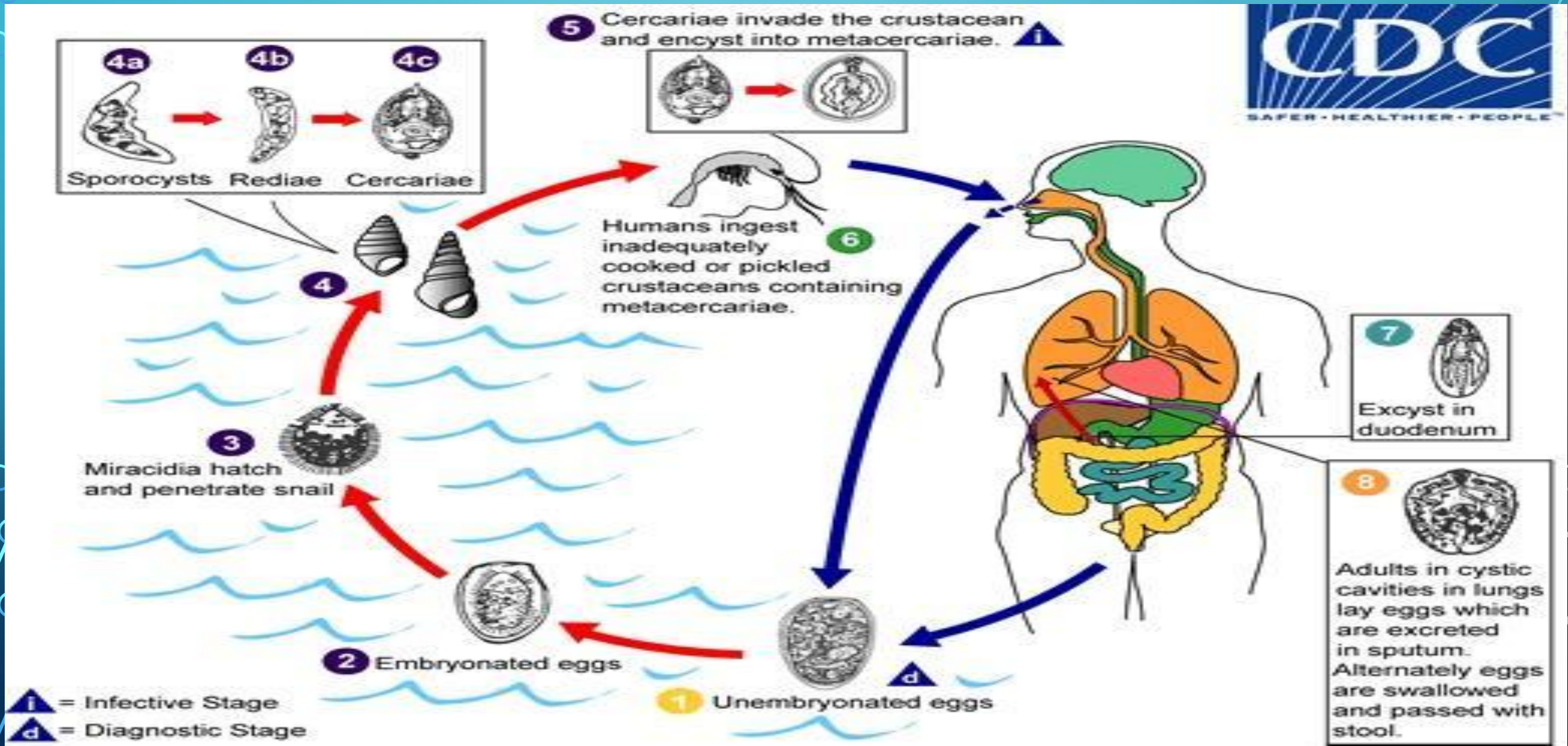
EGGS OF PARAGONIMUS WESTERMANI

HOW THE EGGS APPEAR



- The oval ova have an operculum and are 80-110 by 48-80 μm . It is golden yellow in color. The shell is uneven in thickness. The content is an ovum and more than 10 yolk cells.

LIFE CYCLE OF PARAGONIMUS WESTERMANI

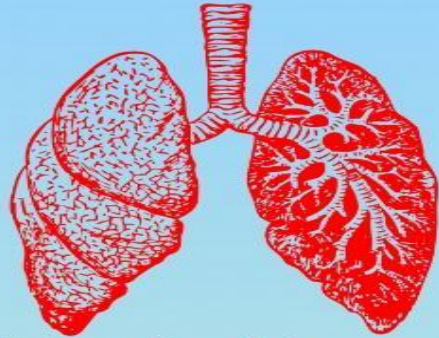


DISEASE CAUSED BY PARAGONIMUS WESTERMANI

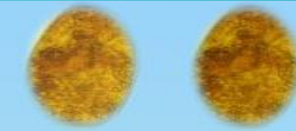
- Paragonimiasis is **infection** with the lung fluke *Paragonimus westermani* and related species. Humans are infected by eating raw, pickled, or poorly cooked freshwater crustaceans. Symptoms include chronic cough, chest pain, dyspnea, and hemoptysis.

DISEASE LIFE CYCLE

Paragonimiasis



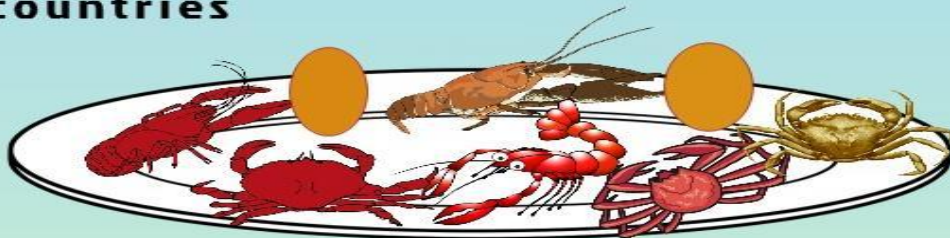
Parasitic lung infection caused by Lung Flukes of the genus *Paragonimus*



Eggs of *Paragonimus westermani*



It is a food-borne disease that is endemic in Asian, African, North and South American countries



Human Paragonimiasis is usually caused by ingestion of raw or undercooked crustaceans that contain infective metacercariae



In America - *P. kellyi* is endemic

1st intermediate hosts - Freshwater snails



2nd intermediate host - Freshwater Crayfish



In Asia and other tropical areas -

P. westermani is endemic
1st intermediate hosts - Freshwater snails



2nd intermediate hosts - Freshwater crabs



SYMPTOMS OF PARAGONIMIASIS

- **the first month or so after someone is infected, paragonimiasis worms spread through the abdomen, sometimes causing symptoms that can include:**
 - **Fever.**
 - **Ill-feeling (malaise)**
 - **Diarrhea.**
 - **Belly pain.**
 - **Itching and hives.**

THE LABORATORY DIAGNOSIS

- The infection is usually diagnosed by identification of *Paragonimus* eggs in sputum. The eggs are sometimes found in stool samples (coughed-up eggs are swallowed). A tissue biopsy is sometimes performed to look for eggs in a tissue specimen.

DIAGNOSIS

1. Sputum examination: (1) Alkali digestive method (10%NaOH), (2) Direct sputum smear
2. Stool examination: (1) Alkali digestion , (2) Water sedimentation method, (3) Direct fecal smear
3. Biopsy for Subcutaneous type
4. CT for brain type
5. Immunological tests for reference.

PREVENTION

- Fully cook shellfish
 - Heat water to 55⁰C for 5 minutes
- Freeze Fish
 - -20 C for 7 days
 - -35 C for 15 hours
- Make spitting illegal
- Use Moluskicide to control snail population

PATHOPHYSIOLOGY

- When humans ingest raw infected crustaceans, larval flukes develop in the small intestine, penetrate the intestinal wall into the peritoneal cavity 30 minutes to 48 hours after excysting. They then migrate into the abdominal wall or liver, where they undergo further development. Approximately 1 week later, adult flukes reenter from the abdominal cavity and penetrate the diaphragm to reach the pleural space and lungs. Flukes mature, a fibrous cyst wall develops around them, and then egg deposition starts 5-6 weeks after infection.
- The symptoms of the early stages of this disease appear to be few with some people being

TREATMENT

- Extrapulmonary lesions may need to be surgically excised.
- Intraventricular shunts may also be needed to manage hydrocephalus.
- Therapy may also be required for seizures caused by an inflammatory reaction to dying worms in the brain.

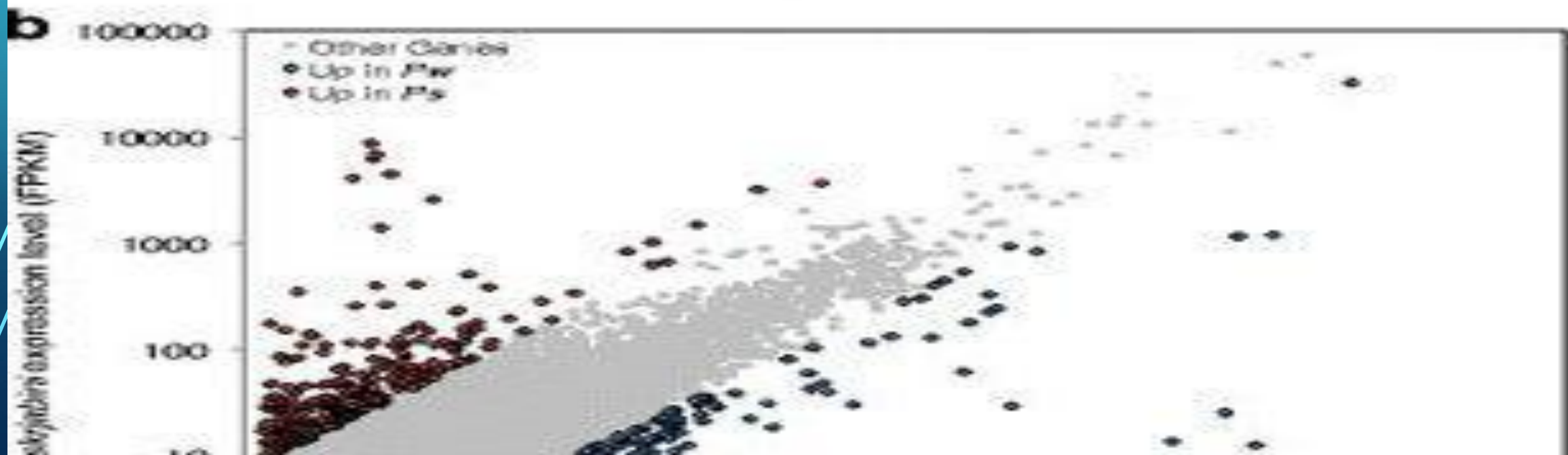
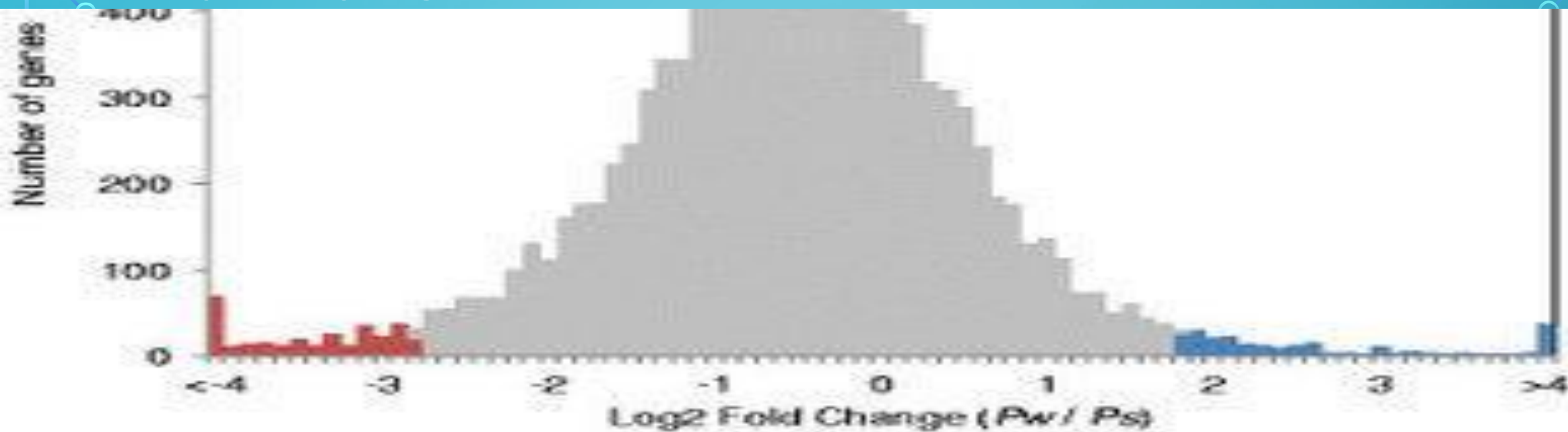
CONTROL

- Never eat raw freshwater crabs or crayfish. Cook crabs and crayfish for to at least 145°F (~63°C). Travelers should be advised to avoid traditional meals containing undercooked freshwater crustaceans
- **Lung fluke** infections are treated with praziquantel, a drug used to **eliminate flukes** from the body (called an anthelmintic drug). An alternative is triclabendazole. If the brain is infected, corticosteroids may also be given. They help control the inflammation that develops when the drug kills the **flukes**.

ECONOMIC IMPORTANCE OF PARAGONIMUS WESTERMANI

- **Economic Importance** for Humans: Positive
- **Paragonimus westermani** is a common parasite of humans, and it has been used for research purposes to help better understand trematode infections.

STATISTICAL DATA



The background is a solid teal color with a subtle gradient. In the four corners, there are decorative white line-art patterns resembling circuit traces or a stylized tree structure. These patterns consist of thin lines connecting small circles, creating a network-like appearance. The patterns are most prominent in the top-left and bottom-left corners, and less dense in the top-right and bottom-right corners.

THANK YOU.

QUESTIONS:

Samson chacko , nageshwari, sushant kumar mauriya;

1. How is paragonimus Westermani transmitted?
2. What disease does paragonimus Westermani cause?
3. Why is P Westermani often confused with tuberculosis?



• Manan namdeo, udhaya kumar, Ankush singh

• 1 What is the intermediate host of paragonimus Westermani?

• 2 What is the infective stage of paragonimus Westermani?

• 3 What are the infection ways of Paragonimiasis?





• Tushar kaundal, senthilkumar saivishnu, vedant waghaye

• 1 What are the infection ways of Paragonimiasis?

• How do you prevent Paragonimiasis?

• What is the infective stage of paragonimus Westermani?



- Somya Ayush koushal and dronadula srinivasalureddy;
- What causes Paragonimiasis?
- What are the infection ways of Paragonimiasis?
- What is economic importance of paragonimus Westermani?