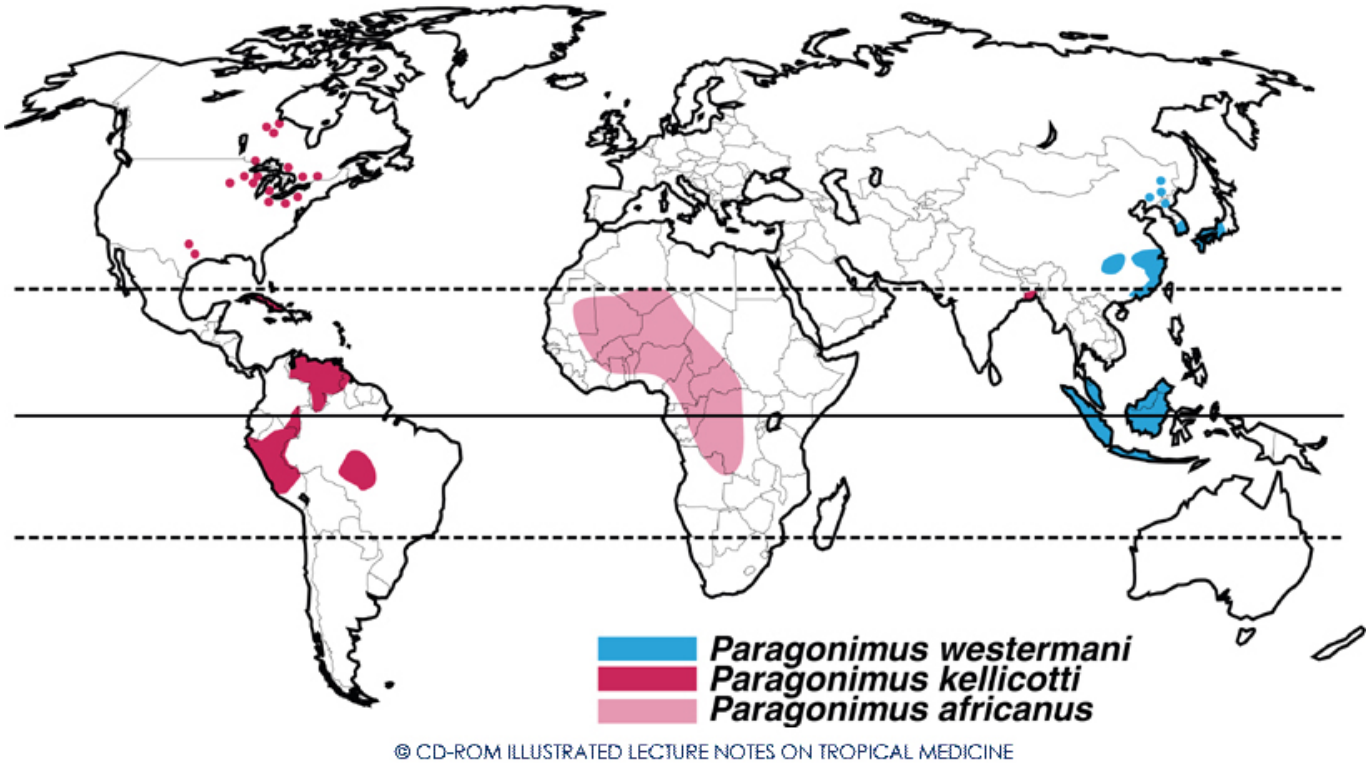
# Paragonimus sp.

## Summary


- Transmission via eating infected crabs and crayfish
- Symptoms resembling pulmonary tuberculosis or chronic bronchitis
- Sometimes ectopic localization
- Diagnosis via detection of eggs in sputum

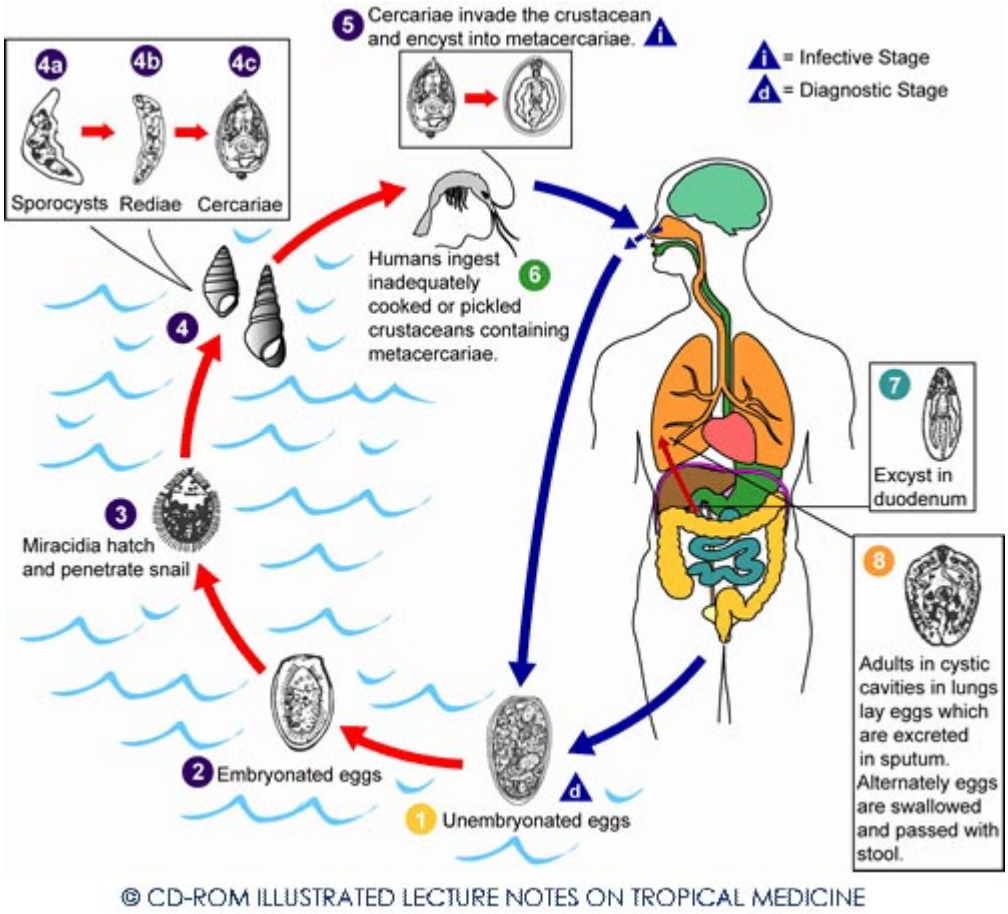

## General

The parasite occurs in Southeast Asia and the Far East, in Central and West Africa. In America its distribution is limited to Central America and the north of South America. Usually *P. westermani* is reported, but there are a number of other species which can cause infection in humans (*Paragonimus africanus, P. bangkokensis, P. heterotremus, P. hueitungensis, P. kellicotti, P. mexicanus, P. miyazakii, P. ohirae, P. philippinensis, P. sadoensis, P. skrjabini, P. uterobilateralis*).




Map showing areas endemic for Paragonimus westermani, P.kellicotti and P.africanus. Copyright ITM

## Life cycle




Paragonimus westermani, life cycle. Courtesy of CDC, Division of Parasitic Diseases.

*Paragonimus westermani*, life cycle. Courtesy of CDC, Division of Parasitic Diseases.

Adult worms live in the lungs. Eggs pass to the outside with the sputum. If sputum is swallowed, eggs may also be found in faeces. Once in the outside world and in water, miracidia (first-stage larvae) emerge from the eggs. They penetrate snails, where they undergo a transformation. After 3 to 5 months cercariae (second-stage larvae) leave the snail and penetrate crabs. Here the cercariae develop into metacercariae (third-stage larvae). It is this form which is infectious for the definitive host.

Paragonomiasis is a zoonosis of carnivorous animals. Humans are only an exceptional host. They become infected by eating raw fresh-water crabs and river crayfish which contain infectious metacercariae. Excystation occurs in the duodenum. The larvae bore through the intestinal wall and migrate via the abdominal cavity and diaphragm to the lungs. There they

develop into adult worms. The worms form a cavity 1 to 4 cm in diameter. Egg-laying begins 8 to 10 weeks after infection. The worms may also migrate to ectopic sites. An individual generally carries ≤20 worms, which can persist within humans for 20 years. Paragonimus got its name from the shape with ‘gonads at the side’.

## Clinical aspects

Mild infections are asymptomatic. In the acute stage (invasion and migration of the larvae) there may be diarrhoea, abdominal pain, urticaria and eosinophilia. This is followed by fever, thoracic pain, cough, dyspnoea and malaise. The chronic illness resembles chronic bronchitis and TB. There is spasmodic cough (especially after exertion) with expectoration of blood stained sputum, as well as dyspnoea sometimes with wheezing and pleural pain. When the parasite is located in an ectopic site (brain, peritoneal cavity, liver, subcutaneous region, etc.), causing an eosinophilic abscess, the symptoms depend on the place where the worms are**.**

## Diagnosis

Diagnosis is by detecting the eggs. The eggs often need to be concentrated (e.g. mix sputum + water + potassium hydroxide, then centrifuge and examine the sediment). Differential diagnosis includes tuberculosis of the lungs, Loeffler’s syndrome, pulmonary abscess, chronic bronchitis, melioidosis, histoplasmosis, coccidioidomycosis, lung carcinoma and lung metastases. If sputum is swallowed, eggs may also be found in the faeces. Serology has a sensitivity and specificity > 90 percent.

## Treatment

Praziquantel 75 mg/day for 3 days is very effective. Triclabendazole is an alternative. In cases of cerebral localization higher doses must be given but only under the protection of steroids due to the risk of epileptic fits secondary to perilesional oedema.