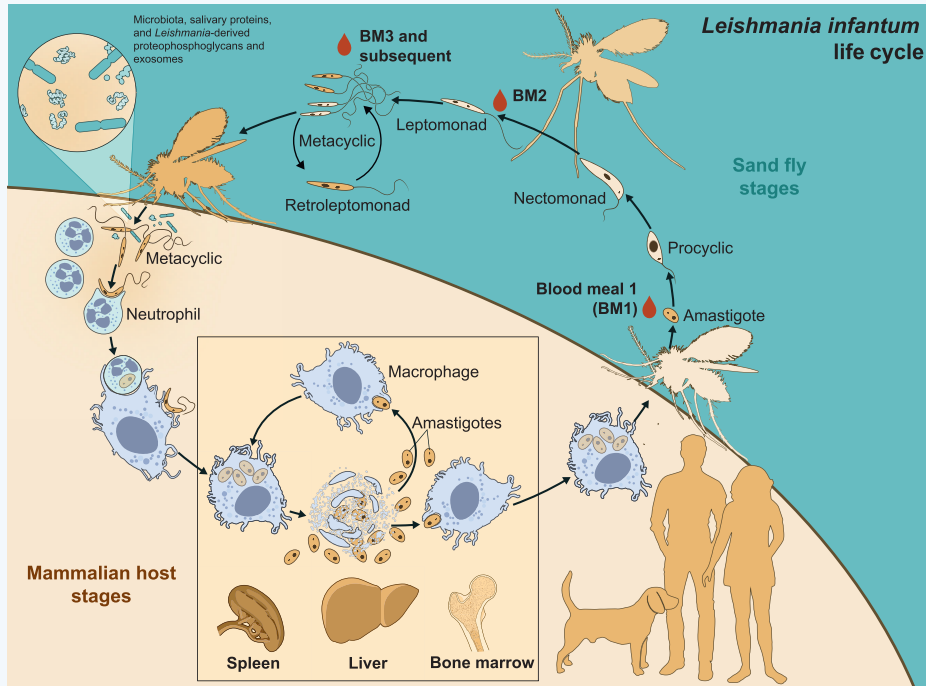


# Leishmania infantum

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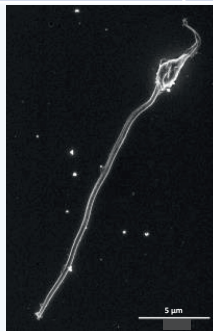
Trends in Parasitology

*Leishmania infantum* is the etiological agent of visceral leishmaniasis (VL) in South America, the Mediterranean basin, and West and Central Asia. It can also cause cutaneous lesions, particularly in the Mediterranean. The most affected country, Brazil, reported 4297 VL cases in 2017. *L. infantum* is transmitted by female phlebotomine sand flies during successive blood meals. After being picked up by the insect vector during a bite on a reservoir host, the parasites become extracellular and undergo a series of morphological changes culminating in the rise of the metacyclic infective stage, which is then inoculated into the host skin during a blood meal. Metacyclic parasites will infect multi- and mononuclear cells in the host and become intracellular amastigotes. Parasite visceralization results in impaired function of the liver, spleen, and bone marrow with fatal consequences in many cases. To date, no human vaccine is available, and therapeutic drugs, some with severe side effects, are used to achieve a clinical curative response.

Human immune responses to <i>Leishmania infantum</i> infection			
Asymptomatic	Presence of specific anti- <i>Leishmania</i> antibodies	Positive in skin test	Respond to <i>Leishmania</i> antigen <i>in vitro</i> (II-2, IFN $\gamma$ , and II-12)
Diseased	Hypergammaglobulinemia	Negative in skin test	Lack of response to <i>Leishmania</i> antigens <i>in vitro</i>
Cured	Long-term specific anti- <i>Leishmania</i> antibodies	Positive in skin test	Recovery of cellular immunity to <i>Leishmania</i> antigens <i>in vitro</i>



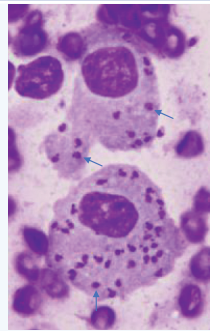
Blood fed sand fly vector *Lutzomyia longipalpis*



Scanning electron micrograph of *L. infantum* metacyclic promastigote



Chronic case of visceral leishmaniasis in infant in Northeast Brazil - rare occurrence nowadays



Giemsa staining of macrophages harboring several *L. infantum* amastigotes (arrows)

Trends in Parasitology

**KEY FACTS:**

*L. infantum* was introduced into the New World during Portuguese and Spanish colonization; it was formerly named *Leishmania chagasi*.

The primary hosts are humans and canids. Domestic dogs are the main parasite reservoir. Wild hares serve as sylvatic reservoirs in southern Europe. It is controversial whether humans act as reservoirs.

The main vectors are: *Lutzomyia longipalpis* in Brazil; *Phlebotomus perniciosus* in Spain, Portugal, and Italy; and *Phlebotomus ariasi* in France and Portugal.

During a blood meal, parasites are inoculated into the host skin together with sand fly gut microbiota and salivary proteins, as well as *Leishmania*-derived proteophosphoglycans and exosomes.

Multiple blood meals (also uninfected) are critical for successful sand fly infection and parasite development to the infective stage.

Genetic markers are associated with drug resistance.

The genome consists of 36 chromosomes, ~32 Mb.

**DISEASE FACTS:**

Disease is caused by amastigote forms of the parasite living in macrophages.

It mainly affects children under 10 years of age and immunocompromised adults.

The most severe cases occur in South America.

Symptoms include persistent fever and hepatosplenomegaly. Cutaneous lesions are an uncommon manifestation of infection.

Poor nutritional status is associated with disease progression.

**TAXONOMY AND CLASSIFICATION:**

- KINGDOM:** Protozoa
- PHYLUM:** Euglenozoa
- CLASS:** Kinetoplastea
- ORDER:** Kinetoplastida
- FAMILY:** Trypanosomatidae
- GENUS:** *Leishmania*
- SUBGENUS:** *Leishmania*
- SPECIES:** *L. infantum*

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## Resources

[www.who.int/leishmaniasis/en/](http://www.who.int/leishmaniasis/en/)  
[www.cdc.gov/parasites/leishmaniasis/](http://www.cdc.gov/parasites/leishmaniasis/)  
[www.paho.org/hq/index.php?option=com\\_topics&view=article&id=29&Itemid=40754&lang=en](http://www.paho.org/hq/index.php?option=com_topics&view=article&id=29&Itemid=40754&lang=en)  
[www.dndi.org/diseases-projects/leishmaniasis/](http://www.dndi.org/diseases-projects/leishmaniasis/)  
<https://tritrypdb.org/tritrypdb/>

## Literature

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