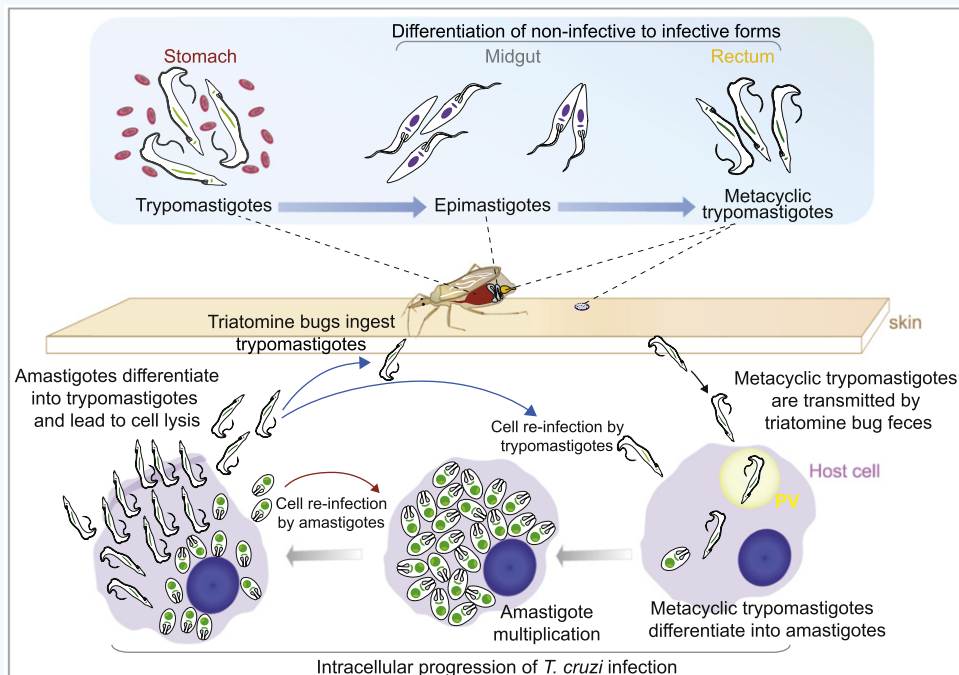


# Trypanosoma cruzi

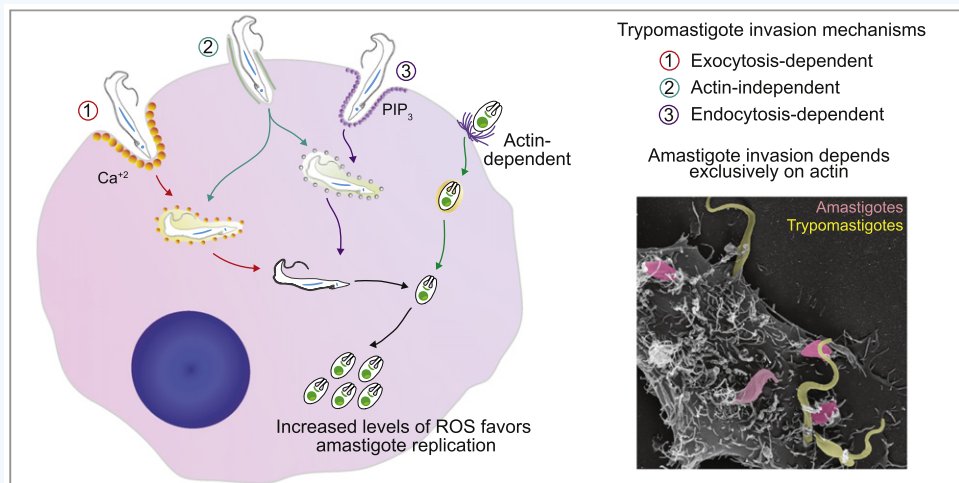
Nilmar Silvio Moretti,<sup>1,\*</sup> Renato Arruda Mortara,<sup>1</sup> and Sergio Schenkman<sup>1</sup>

<sup>1</sup>Departamento de Microbiologia, Imunologia e Parasitologia, Escola Paulista de Medicina, Universidade Federal de São Paulo, São Paulo, Brazil



Trends in Parasitology

*Trypanosoma cruzi* is the etiological agent of American trypanosomiasis, or Chagas disease, and is transmitted mainly by blood-sucking reduviid insects in endemic countries. Metacyclic trypomastigotes released in the feces during the insect blood meal enter a mammalian host through skin wounds or mucosal membranes and invade surrounding cells. After cell invasion, metacyclic trypomastigotes are restrained within a parasitophorous vacuole (PV), from where they escape, transform into amastigotes, and multiply in the cytosol. Later, following binary division, amastigotes differentiate back into highly motile trypomastigotes that are released upon cell lysis. They can infect neighboring cells, migrate to different tissues, or be ingested by an insect vector. The parasites in the tissues, associated with an immune response, contribute to the chronic symptoms of the disease. Reactive oxygen species (ROS), among other factors, play an important role during parasite multiplication and interstage transformation.



Trends in Parasitology

**KEY FACTS:**

The Brazilian physician Carlos Chagas first discovered the parasite and defined its life cycle, vector, and disease symptoms.

*T. cruzi* presents replicating and nonreplicating forms. Transition between these forms relies on environmental signals, including ROS.

*T. cruzi* is classified into seven discrete typing units (DTUs), TcI–TcVI and Tcbat, based on genetic and biological diversity, which show different clinical manifestations and drug sensitivity.

The parasite can invade and replicate within many cell types, including macrophages and smooth and striated muscle cells.

**DISEASE FACTS:**

The disease is endemic in southern USA and 21 countries across Latin America, with ~7 million people infected and 70 million at risk.

Migratory movements are increasing the disease risk in the USA, Europe, and Asia.

*T. cruzi* is also transmitted congenitally, by blood transfusion, by organ transplantation, and by ingestion of contaminated food and drink.

The acute phase happens at any age and is usually asymptomatic. Parasites are found in the peripheral circulation.

The chronic phase manifests ~20 years from the first infection, with low parasite burden, causing cardiomyopathy, megasophagus, and megacolon.

Benznidazole and nifurtimox are available drugs and are effective in the acute phase but less dependable for chronic-phase cure.

**TAXONOMY AND CLASSIFICATION:**

- KINGDOM:** Protozoa
- PHYLUM:** Euglenozoa
- CLASS:** Kinetoplastea
- ORDER:** Kinetoplastida
- FAMILY:** Trypanosomatidae
- GENUS:** *Trypanosoma*
- SPECIES:** *T. cruzi*

\*Correspondence: nilmar.moretti@unifesp.br (N.S. Moretti).



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## Resources

[www.dndi.org/diseases-projects/chagas/](http://www.dndi.org/diseases-projects/chagas/)

[www.cdc.gov/parasites/chagas/](http://www.cdc.gov/parasites/chagas/)

[www.who.int/chagas/en/](http://www.who.int/chagas/en/)

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