

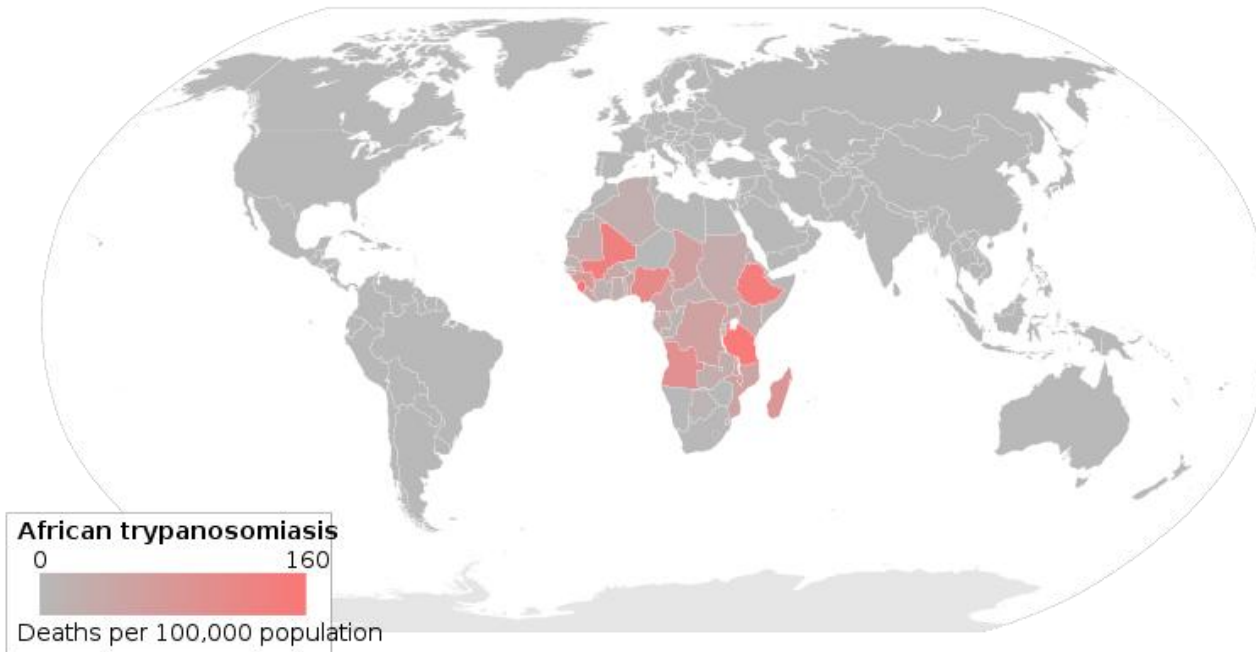


Celgene Global Health

Diseases of the Developing World

Human African Trypanosomiasis (HAT) or Sleeping Sickness

- HAT is caused by *Trypanosoma brucei*, a protozoan parasite and transmitted by the tsetse fly
- Disease progresses from fever and fatigue to severe neurological conditions to death
- Global Burden: 60 million people at risk worldwide; ~50,000 deaths every year
- Current treatments prohibitive to deliver (parenteral) and highly toxic; need for safe oral therapeutic



Chagas Disease

- Caused by *Trypanosoma cruzi*, a protozoan parasite; spread neonatally or by feces of the triatomine bugs (“kissing bugs”)
- Acute phase is asymptomatic and leads to chronic phase that can last over 20 years and lead to organ failure and death
- Global Burden: Confined to South America, 8 to 11 million cases, 20,000 deaths every year
- No treatment available for chronic disease

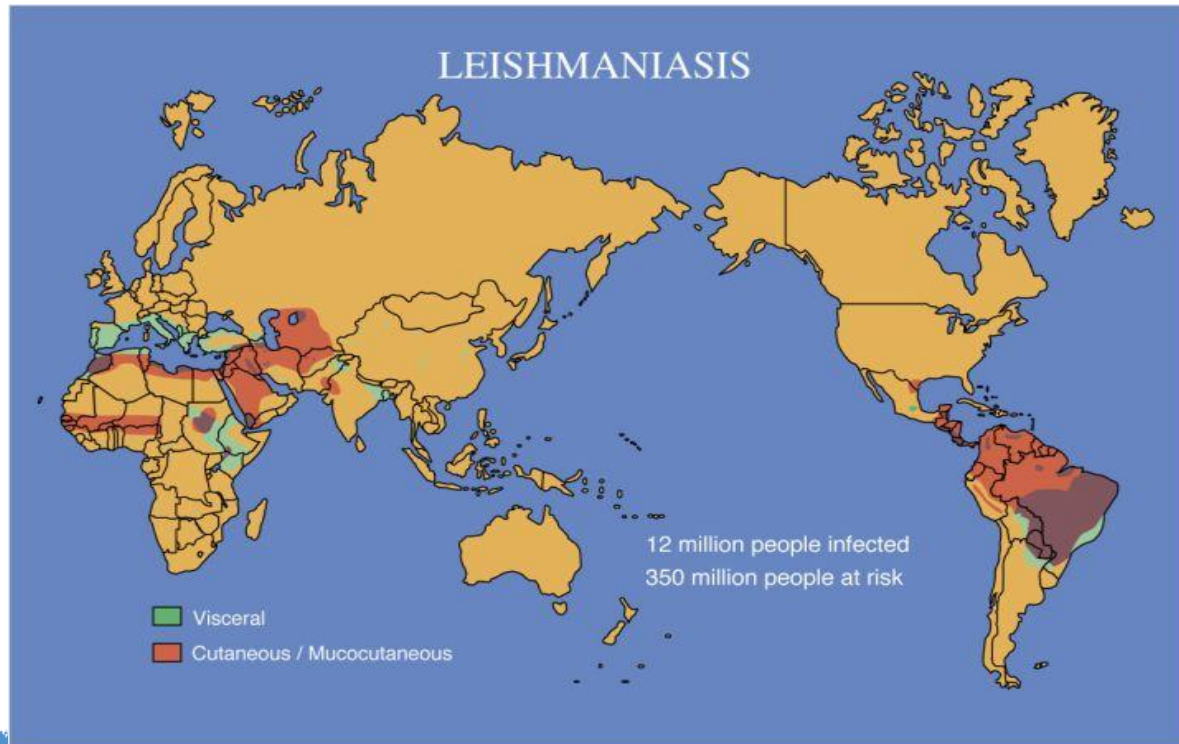


Trypanosomatid* Parasitic Diseases

* flagellate protozoa

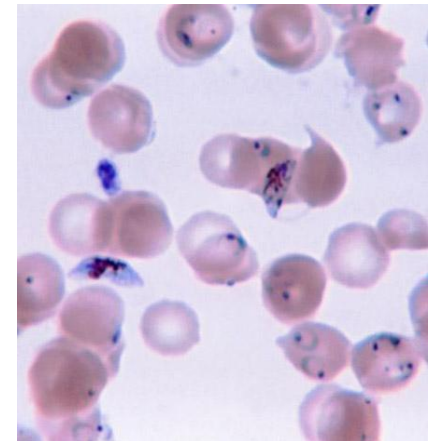
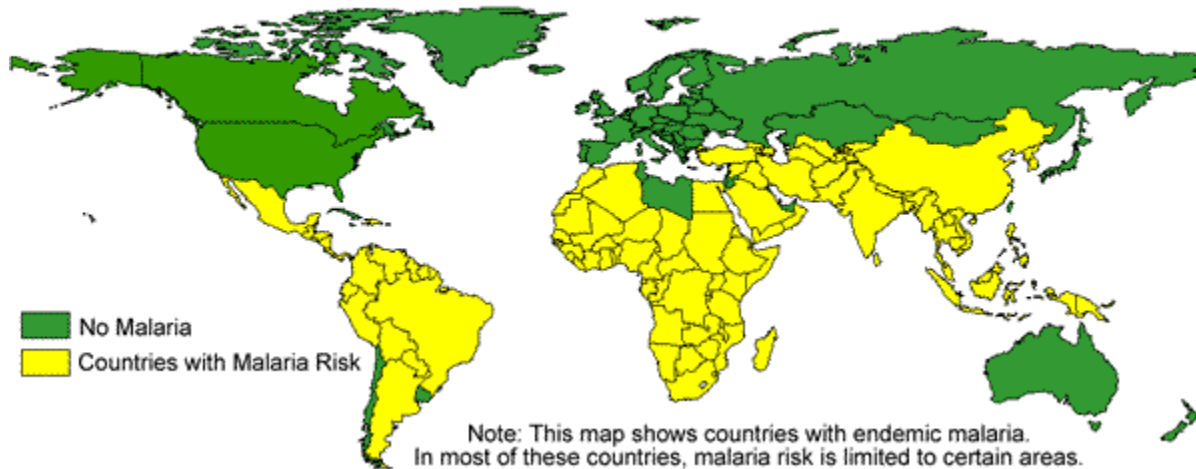
Leishmaniasis:

- Caused by one of 17 species of leishmaniasis; transmitted by sandfly; related to HAT and Chagas disease
- Disease affects skin, mucosa, internal organs; resulting in severe disfigurement, disability, and death
- Global Burden: 350 million people at risk worldwide; ~45,000 deaths every year
- Need for safer oral drug with shorter course of treatment and high efficacy against all leishmania species
- Potential military market; cutaneous leishmaniasis reported in hundreds of troops stationed in Middle East



Malaria:

- Malaria is a parasitic disease transmitted by mosquitoes; severe disease can lead to death
- Global Burden: Half the world's population is at risk; ~250 million cases/year; 1 million deaths/year (85% in Sub-Saharan Africa; 90% of them in children <5 years old)
- Increasing resistance to existing antimalarial therapy

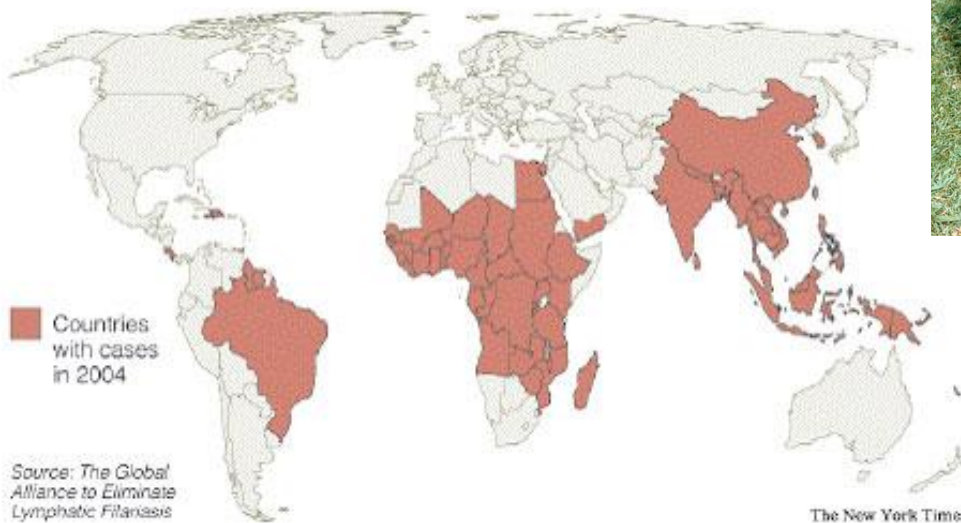


Lymphatic Filariasis

Lymphatic Filariasis (LF):

- Caused by parasitic worms and transmitted to humans via mosquitoes
- Disease leads to severe disfigurement of the extremities; leading cause of permanent disability
- Global Burden: 1.3 billion people at risk; 120 million infected; 40 million seriously disfigured
- Need for drug that kills adult worms (macrofilaricidal) and reduces swelling

The Range of Lymphatic Filariasis



Elephantiasis



River
Blindness

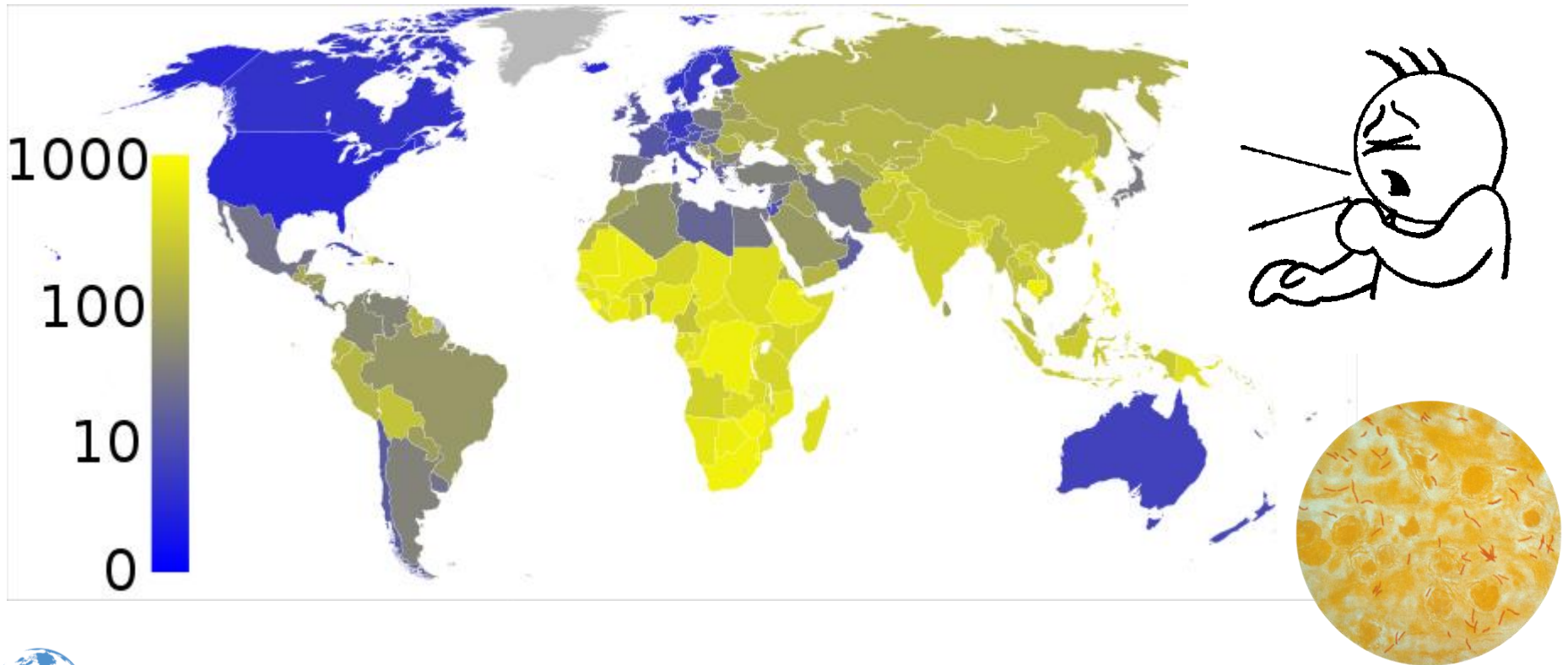


Loa Loa

10% of Haiti is infected and, in some areas, 50%

Tuberculosis (TB):

- TB is a pandemic bacterial disease commonly affecting lungs; spread via aerosol route
- Global Burden: 2 billion people infected; ~1.5 – 2.0 million deaths every year, ~9 M new cases
- MDR-TB (Multidrug-resistant TB) rising at alarming rate; no effective treatment



Influenza:

- Flu is a pandemic viral disease commonly affecting lungs; spread via aerosol or direct contact
- Causes a Grip-like illness with fever, chills, sore throat, muscle aches, cough, fatigue, discomfort
- Can cause secondary pneumonias and acute respiratory insufficiency
- Global Burden: everyone is at risk; 0.25 to 0.5 million deaths every year; millions during pandemics

