Shimabukuro, P.H.F., de Andrade, A.J. and Galati, E.A.B., 2017. Checklist of American sand flies (Diptera, Psychodidae, Phlebotominae): genera, species, and their distribution. ZooKeys, 660, p.67.

WEEK 3-a,b

Paper of the week: https://zookeys.pensoft.net/articles.php?id=10508 --

Continuing with the Phylum Protozoa or Protista

Class Kinetoplastida – have kinetoplast – a large darkly staining body in the mitochondrion. This is comprised of numerous small rings of interlocking DNA.

Leishmania spp.

General Life Cycle.

Mammal---------→ Sand Fly (*Phlebotomus*)----------→Promastigotes-→Move into foregut (amastigotes)

Pump promastigotes into skin of mammal. ------→convert to amastigotes-→phagocytes take up→

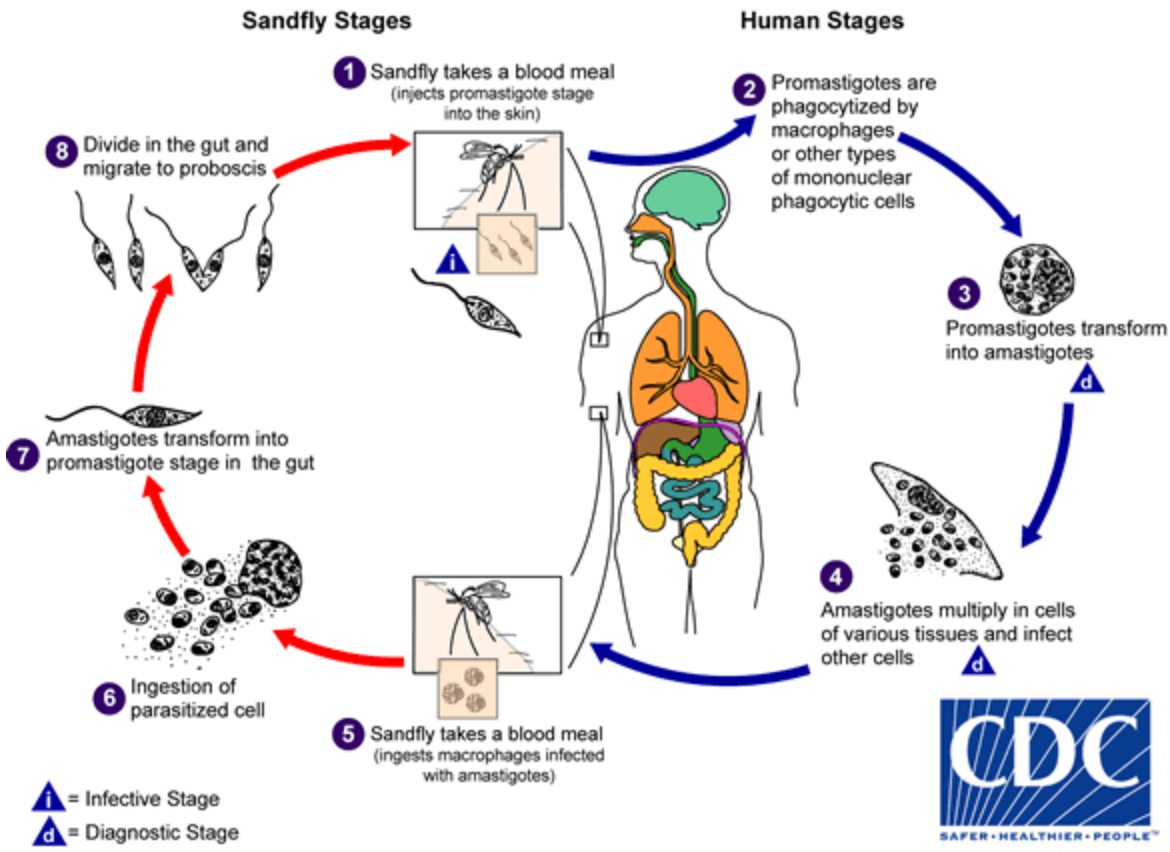
Amastigotes multiply within cell phagosomes.----→ cell ruptures-→ continued cycles of phagocytosis and rupture.

Amastigotes free in blood or in blood cells (leucocytes).

Cutaneous, Mucocutaneous, Visceral.

Leishmania species	Vertebrate hosts	Disease	Insect vector	Distribution
CUTANEOUS LEISHMANIASIS				
L. aethiopica	humans, hyraxes	diffuse or dry cutaneous	*Phlebotomus*	Ethiopia, Kenya
L. tropica minor	humans, dogs, rodents	dry cutaneous	*Phlebotomus*	Mediterranean
L. tropica major	humans, dogs, rodents	wet cutaneous, oriental sore	*Phlebotomus*	Mediterranean
L. peruviana	humans, dogs	uta, cutaneous	*Lutzomyia*	Peru
L. mexicana mexicana	humans, rodents	chicleros ulcer, cutaneous	*Lutzomyia*	Central America, Mexico
L. mexicana amazonensis	humans, rodents	diffuse, cutaneous	*Lutzomyia*	South America
L. mexicana pifanoi	humans, rodents	cutaneous, mucocutaneous	*Lutzomyia*	Venezuela
L. braziliensis	humans, rodents, sloths	espundia, mucocutaneous	*Lutzomyia*	Mexico-Brazil
VISCERAL LEISHMANIASIS				
L. donovani donovani	humans, dogs, foxes	kala azar, dum-dum fever, Old World visceral	*Phlebotomus*	Mediterranean, South America

L. donovani infantum	humans, dogs	infantile, visceral	*Phlebotomus*	Mediterranean
L. donovani chagasi	humans, foxes, cats	New World visceral	*Lutzomyia*	South America



Major species of concern:
Old World -

1. ***Leishmania tropica*** **(occurs in more populated areas)**
2. ***L. major*** **(occurs in more rural areas)**

--Both produce cutaneous ulcers. Cutaneous leishmaniasis.
--Without infection by other organisms, sore heals in two to 12 months.
--Even though the host shows immunity to new lesions, the parasite maintains low numerical density in the human host.

Distribution: West Central Africa, Middle East, SW Asia, and India.

Diagnosis: Discovery of amastigotes in smear of ulcer. Injection into hamsters that are completely susceptible is also a potential method for ID.

3. ***Leishmania braziliensis***

--Produces mucocutaneous leishmaniasis.

--A sylvatic disease that occurs in wild mammals and is transmitted by sandflies of the genus *Lutzomyia*

Distribution: Central Mexico south to northern Argentina on the east slopes of the Andes mountains.

Diagnosis: Discovery of L-D bodies (amastigotes) in connective tissues of the host. Culturing and in vivo-infection in hamsters is also a good method of identification.

-Delay in mucocutaneous lesion formation from occult infection can occur as late as 24 years after initial infection.

4. ***Leishmania mexicana***

--Mostly a cutaneous form preoduces skin lesions but with three versions: **mucocutaneous, nasopharyngeal mucosal, and visceral.**

Distribution: Texas, Dominican Republic, Mexico, and Central America.

Diagnosis: LD bodies in the affected tissues.

4. Leishmania donovani

--Visceral leishmaniasis or Dum-Dum fever or Kala-azar.

Distribution: Both old and new world. Mostly tropical areas

Diagnosis: LD Bodies, ELISA and IFA (immune-fluorescent antibody). Cross reactivity occurs.

Pathology: Post-kalazar dermal leishmanoid form. Splenomegaly.

Hosts:

Work done by Donald Heyneman in defining the hosts, epidemiology, and transmission dynamics of Leishmania in the Sudan is a classic paper that we can read in class.

Problems in Control of these parasites.

-zoonotic, with reservoir hosts.

-rodents, sand flies, widely distributed.

-wars and poverty in the areas that these species cause the most problems.

Other Flagellates?