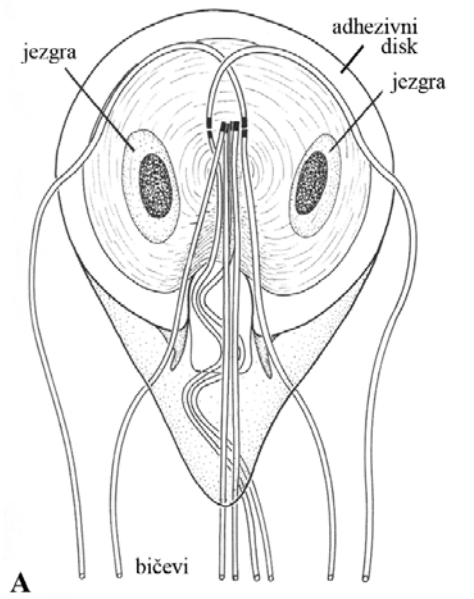
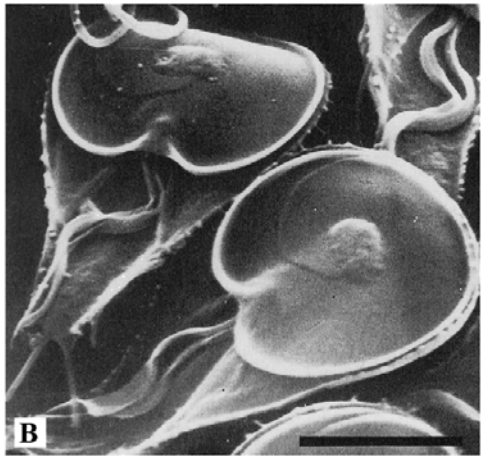
Nametničke praživotinje 1

Nametnički Diplomonadea

- giardijaza
- Postotak zaraženih može biti i 30% ljudske populacije u nekim područjima.
- zoonoza





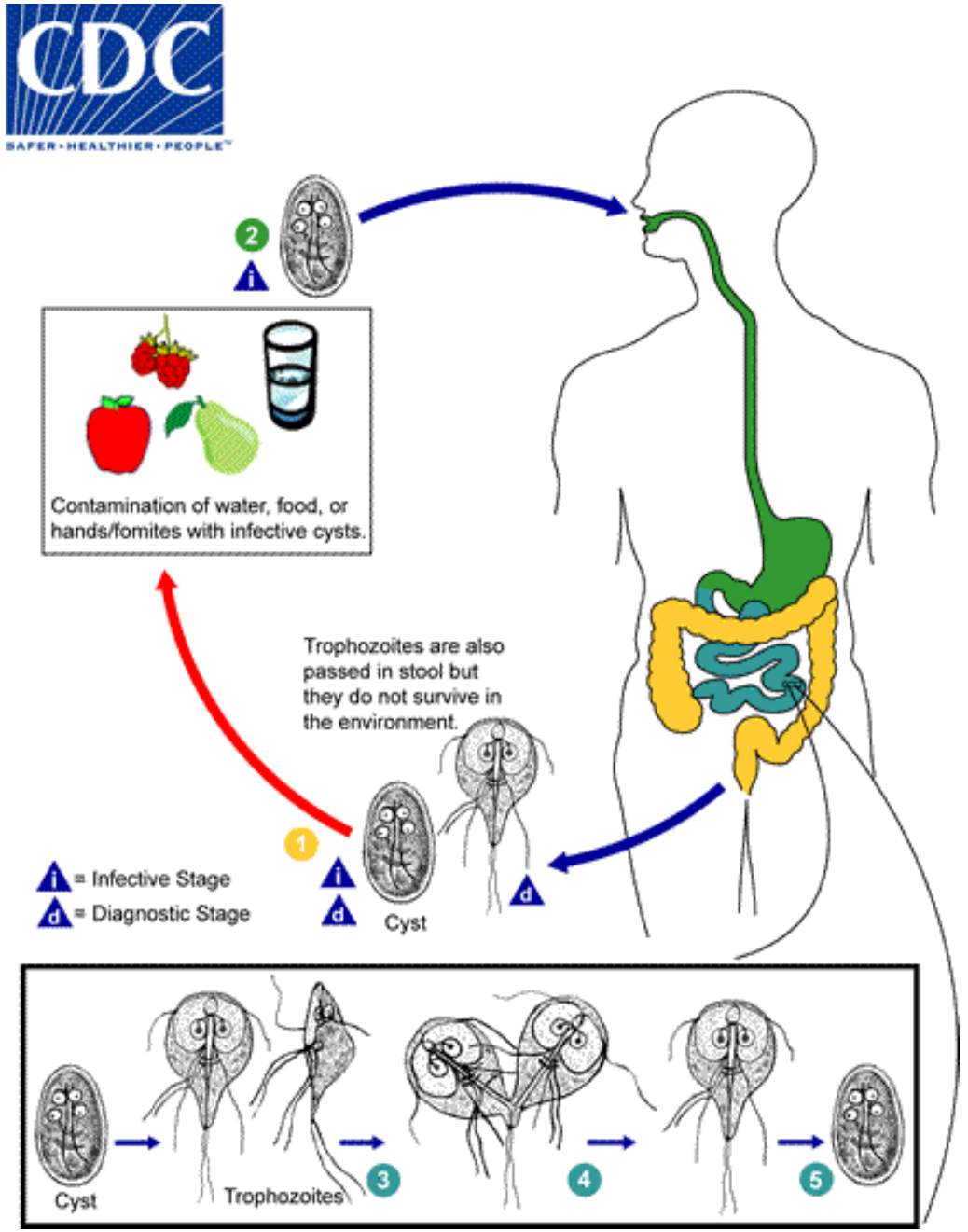
Giardia duodenalis

Nametnički Diplomonadea





Giardia duodenalis



https://www.cdc.gov

Nametnički Diplomonadea

Soj *G. intestinalis*	Primarni domadar	Infektivan za ljude
A	Ljudi, kućni ljubimci, životinje	Da
B	Ljudi, neke životinje	Da
C	Psi	Rijetko
D	Psi	Ne
E	Ovce, koze	Rijetko
F	Mačke	Ne
G	Glodavci	Ne
H	Morske životinje	Ne

Nametnički Diplomonadea

TABLE 2 *G. duodenalis* genotypes

Genotype[a]	Hosts	Proposed species name[b]
AI	Primarily animals, but also in humans	*Giardia duodenalis*
AII	Humans, numerous other mammals	*Giardia duodenalis*
B	Humans, numerous other mammals	*Giardia enterica*
C	Dogs	*Giardia canis*
D	Dogs	*Giardia canis*
E	Cows, sheep, alpacas, goats, pigs	*Giardia bovis*
F	Cats	*Giardia cati*
G	Rats and mice	*Giardia simondi*
H	Seals (marine vertebrates)	NA

Adam, 2021.

Nametnički Diplomonadea

Dijagnoza

- mikroskopijski pregled uzoraka stolice
- test izravne imunofluorescencije
- enzimski imunotest
- brzi imunokromatografski test



Unstained cyst. Cyst stained with iodine. Cyst stained with iodine.

https://www.cdc.gov

Liječenje: metronidazol, tinidazol, nitazoksanid, paromomicin

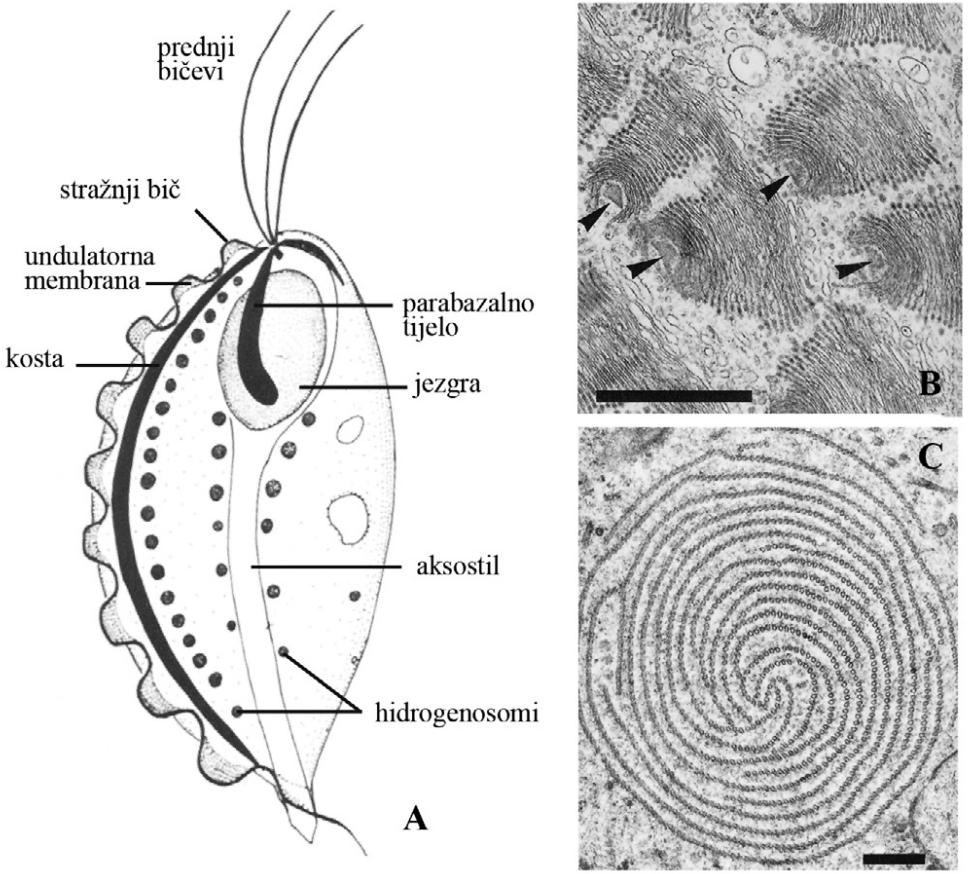
Nametnički Diplomonadea

TABLE 1 *Giardia* species

		Morphology determined by:	
Species name	**Hosts**	**Light microscopy**	**Electron microscopy**
G. duodenalis	Humans, numerous mammals	Pear-shaped trophozoite; claw-shaped median body	
G. muris	Rodents	Short and rounded; small, rounded median body	
G. agilis	Amphibians	Long and slender; teardrop-shaped median body	
G. psittaci	Psittacine birds	Same as *G. duodenalis*	Incomplete ventrolateral flange, no marginal groove
G. microti	Rodents	Same as *G. duodenalis*	Cysts contain two trophozoites with mature ventral disks
G. ardeae	Herons	Same as *G. duodenalis*	Ventral disk and caudal flagellum similar to *G. muris*
G. peramelis	Quenda (small marsupial)	Same as *G. duodenalis*	
G. cricetidarum	Hamsters	Short and rounded; closer to *G. muris* than other species	

Nametnički Parabasalea

Trichomonas vaginalis



Habdija i sur. 2021.

Nametnički Parabasalea

Trichomonas vaginalis

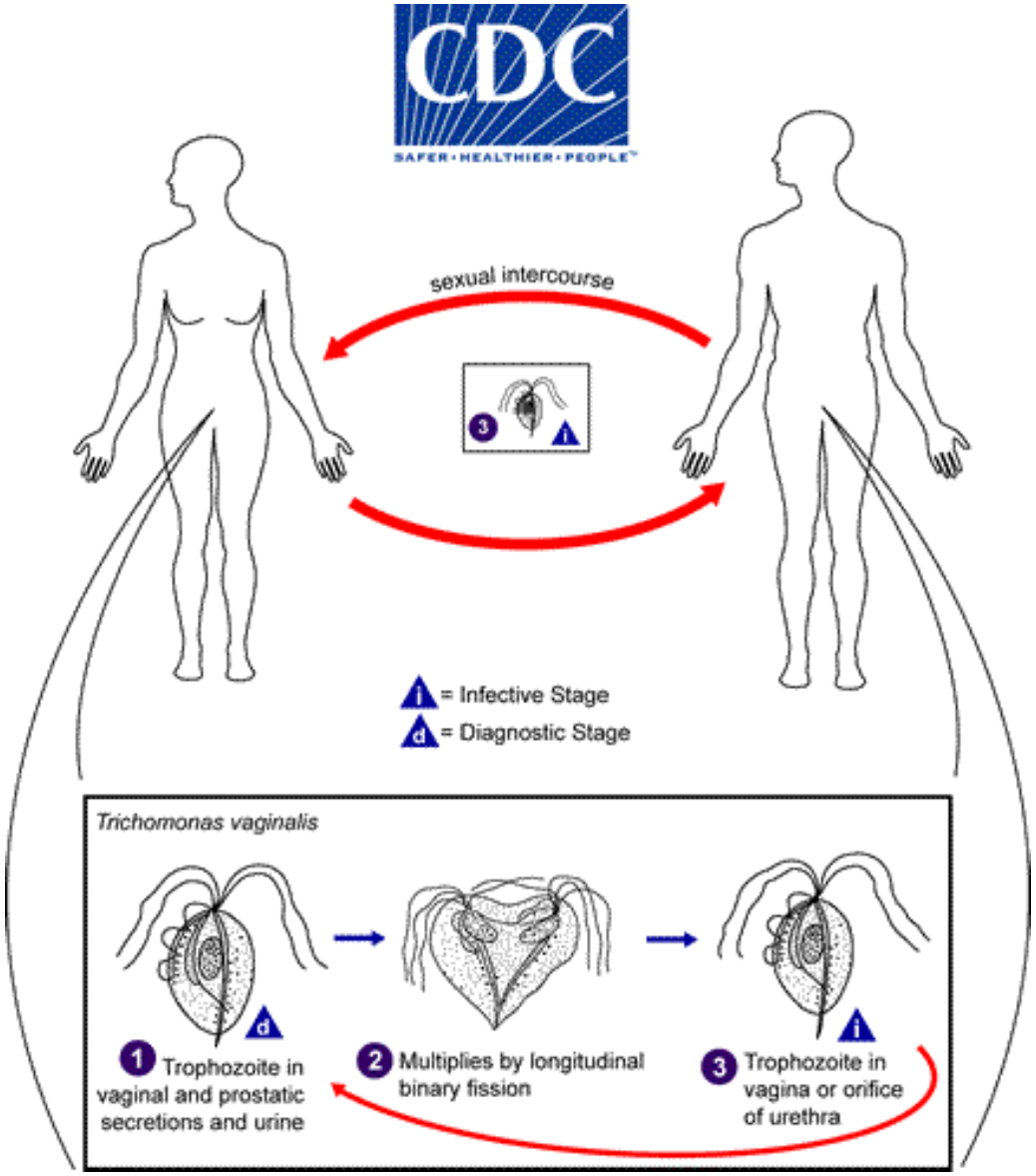
- Procjenjuje se da se svake godine nađe 220 milijuna novih slučajeva.

Dijagnoza:

- bris i mikroskopski pregled
- PCR test
- kultura

Liječenje:

- antibiotici (metronidazol, tinidazol)

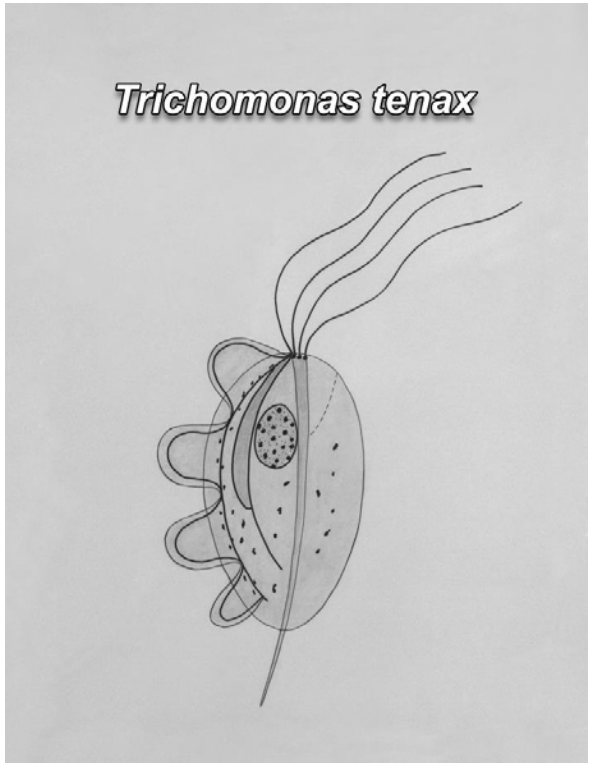


https://www.cdc.gov

Nametnički Parabasalea

Trichomonas tenax

- smatra se komenzalom, ali potencijalno nametnik
- možda zoonotski potencijal
- prisutan kod prosječno 17% populacije (Eslahi i sur. 2021.)
- vjerojatno povezan s oralnim oboljenjima gingivitisom i paradontozom

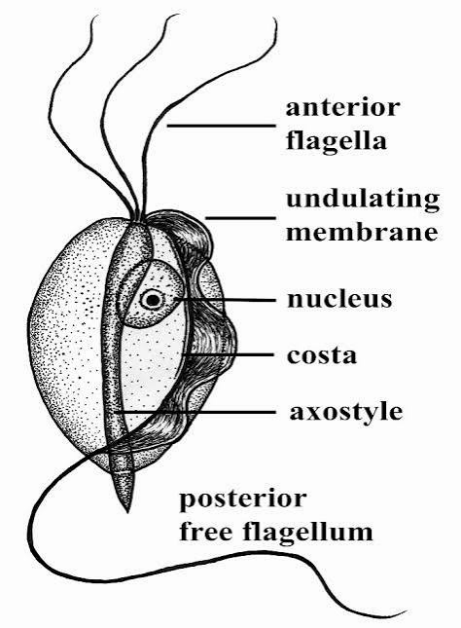


https://wwwn.cdc.gov

Nametnički Parabasalea

Tritrichomonas foetus

- obligatni nametnik reproduktivnog sustava goveda (može dovesti do pobačaja)
- obligatni nametnik probavnog sustava mačaka
- komenzal u svinja (Dąbrowska i sur. 2019.)



https://www.bioguardlabs.com/

Nametnički Kinetoplastidea

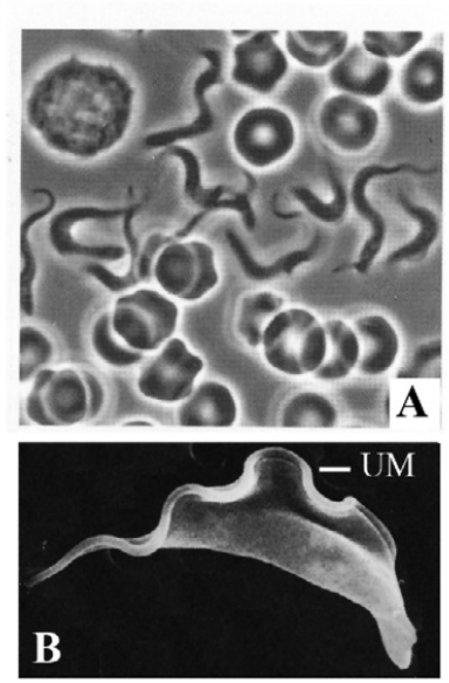
Trypanosoma

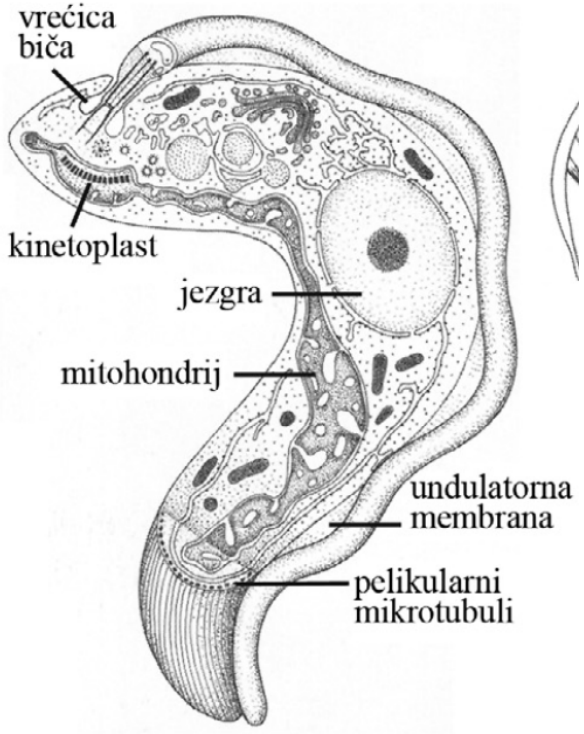
Leishmania

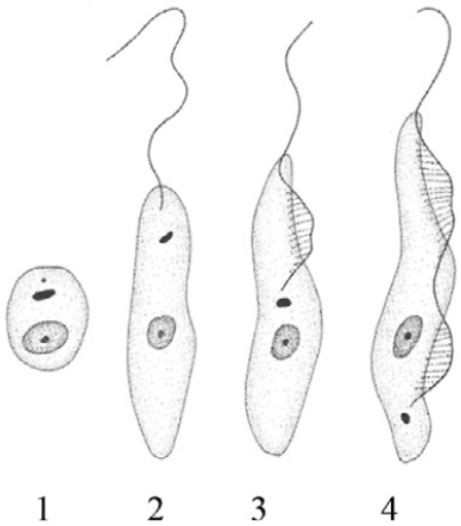
- kinetoplast
  - mini-cirkuli (0,5-2,5 kb) - gRNA
  - maksi-cirkuli (20-40 kb)

- minikromosomi
  - uz 11 parova kromosoma oko 100 minikromosoma
  - sadrže gene za VSG (varijabilni površinski glikoprotein)

- programirana stanična smrt







Habdija i sur. 2021.

Nametnički Kinetoplastidea

Trypanosoma brucei gambiense

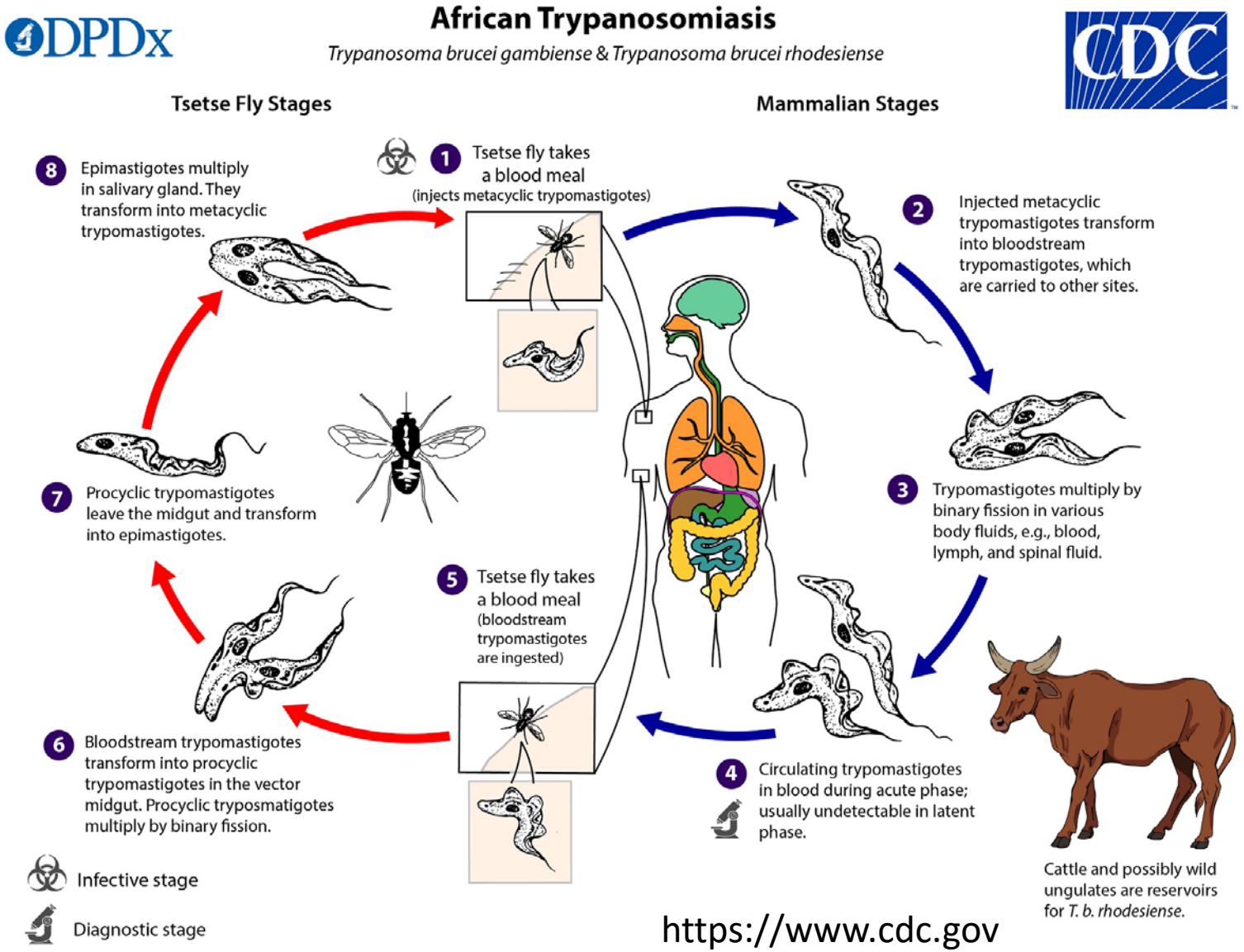
Trypanosoma brucei rhodesiense

- uzrokuju bolest spavanja u ljudi



Figure 5: **Winterbottom's sign**

https://www.semanticscholar.org/

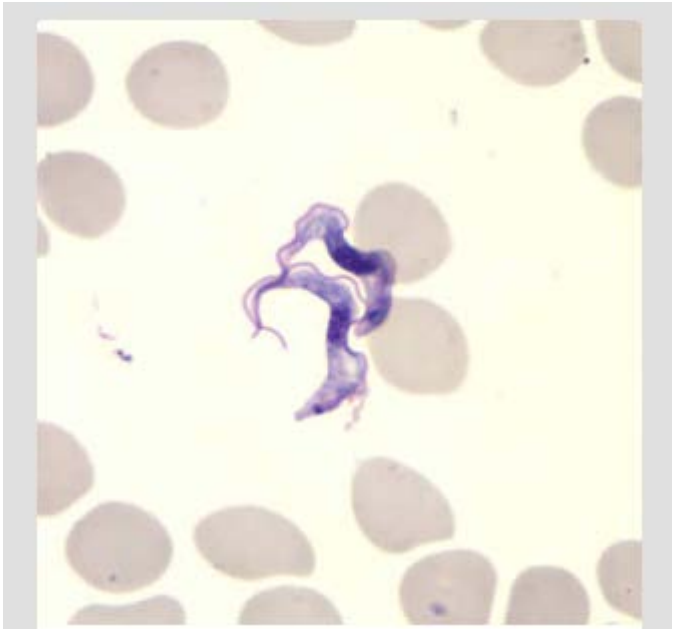


https://www.cdc.gov

Nametnički Kinetoplastidea

Trypanosoma brucei gambiense

Trypanosoma brucei rhodesiense



https://www.cdc.gov

Dijagnoza:

- mikroskopski (krv, koštana srž, cerebrospinalni likvor)
- brzi antigenski dijagnostički testovi
- serološki test na antitijela
- PCR

Liječenje:

- melarsoprol (za kasnu fazu) – do 1990-ih jedini izbor
- feksinidazol

Nametnički Kinetoplastidea

Trypanosoma brucei brucei

- uzrokuje bolest naganu

- tripanotolerancija

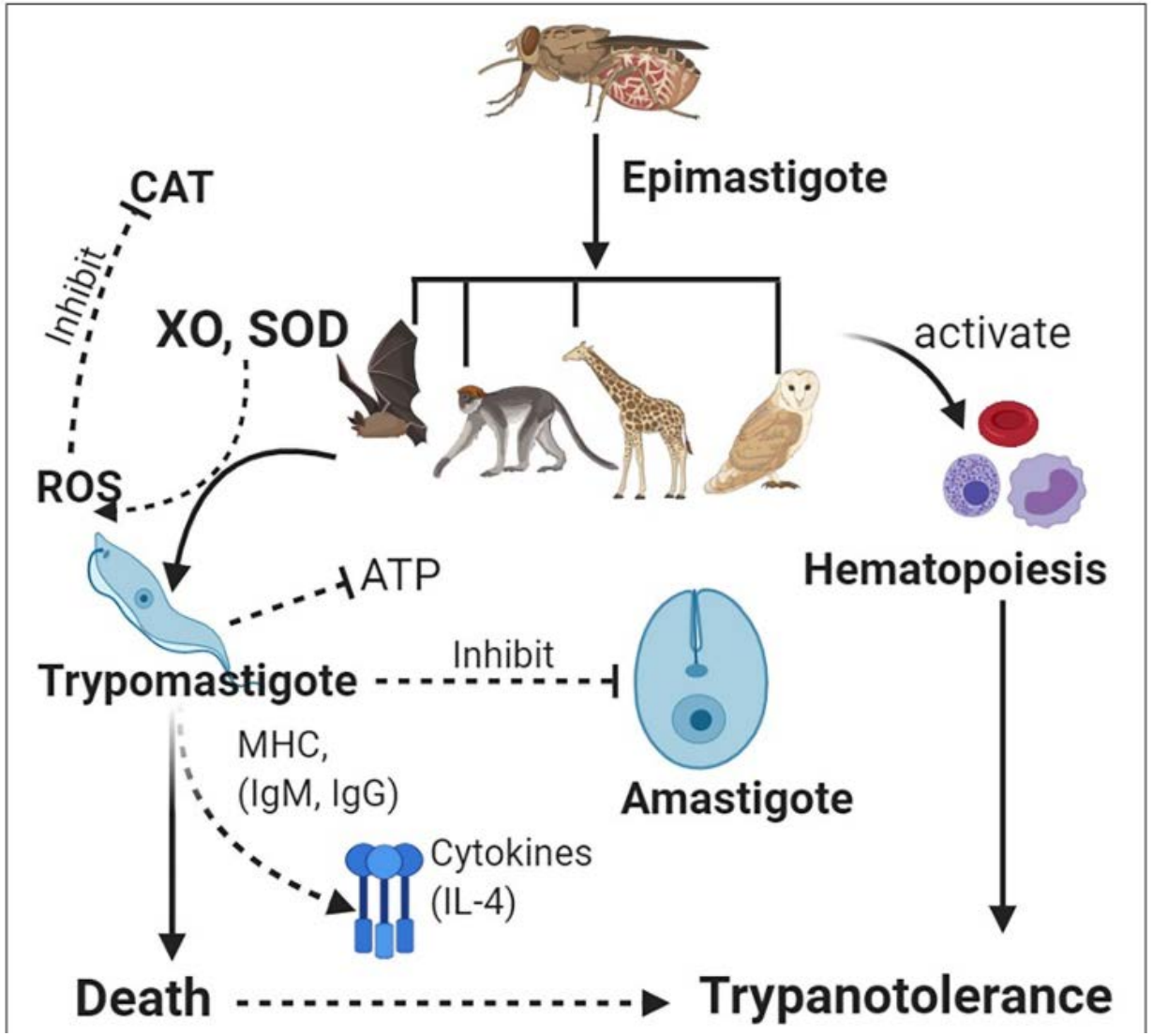
TABLE 1 | Trypanosome species and taxonomy of wildlife hosts.

Taxonomic group	Wildlife host (scientific name)	Trypanosome species
Bovidae	Waterbuck (*Kobus ellipsiprymnus*)	*T. vivax*, *T. congolense*, *T. brucei*, *T. evansi*
Girrafidae	Girraffe (*Giraffa camelopardalis*)	*T. vivax*, *T. evansi*, *T. brucei*
Bovidae	African buffalo (*Syncerus caffer*)	*T. b. rhodesiense*, *T. congolense*, *T. brucei*
	Bushbuck (*Tragelaphus scriptus*)	*T. b. rhodesiense*, *T. congolense*, *T. vivax*, *T. evansi*
	Greater kudu (*Tragelaphus strepsiceros*)	*T. congolense*, *T. vivax*
	Red lechwe (*Kobus leche*)	*T. theileri*
	Hartebeest (*Alcelaphus buselaphus*)	*T. godfreyi*, *T. brucei*, *T. godfreyi*
	Sable antelope (*Hippotragus niger*)	*T. brucei*, *T. theileri*
	African buffalo (*Syncerus caffer*)	*T. theileri*, *T. godfreyi*
	Eland (*Taurotragus derbianus*)	*T. vivax*, *T. congolense*, *T. brucei*
	Impala (*Impala impala*)	*T. godfreyi*, *T. brucei*
Elephantidae	Elephant (*Loxodanta africana*)	*T. vivax*, *T. congolense*, *T. evansi*, *T. elephantis*
Hippopotamidae	Hippopotamus (*Hippopotamus amphibius*)	*T. vivax*, *T. brucei*, *T. evansi*, *T. congolense*
Suidae	Warthog (*Phacocoerus africanus*)	*T. b. rhodesiense*, *T. vivax*, *T. congolense*, *T. evansi*
	Warthog (*Phacochoerus africanus*)	*T. godfreyi*, *T. brucei*, *T. simiae*
	Feral pig (*Sus scrofa*)	*T. evansi and T. cruzi*
Pantherinae	Lion (*Panthera leo*)	*T. brucei*, *T. evansi*, *T. congolense*, *T. congolense*
	Leopard (*Panthera pardus*)	*T. brucei*, *T. congolense*, *T. evansi*
Equidae	Zebra (*Equus quagga boehma*)	*T. b. rhodesiense*

Kasozi i sur. 2021.

Nametnički Kinetoplastidea

- mehanizmi uključeni u tripanotoleranciju

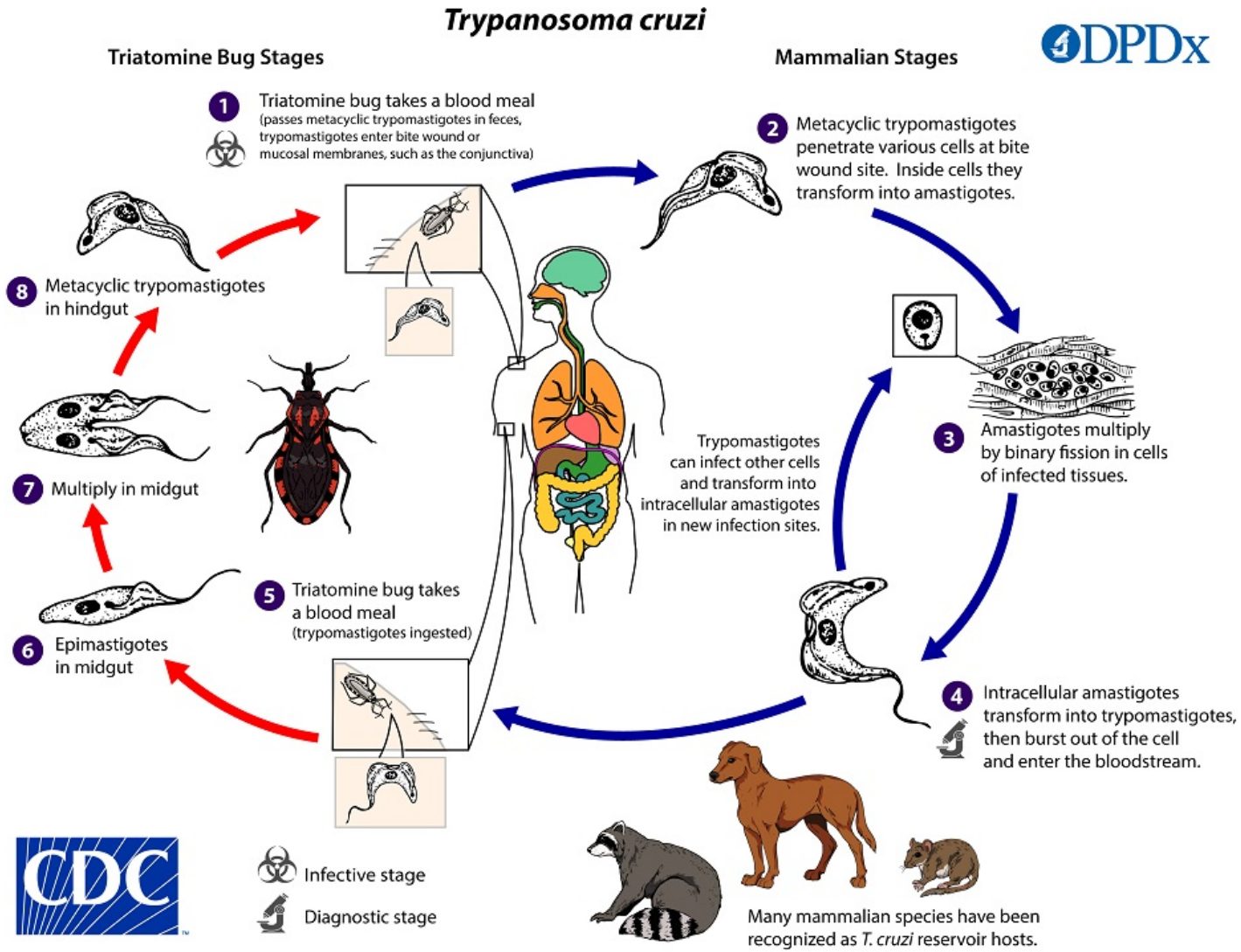


Kasozi i sur. 2021.

Nametnički Kinetoplastidea

Trypanosoma cruzi

- uzročnik
Chagasove bolesti



https://www.cdc.gov

Nametnički Kinetoplastidea

Trypanosoma cruzi

Dijagnoza:
- Mikroskopski (krv)
- Brzi dijagnostički testovi
- ELISA test

Liječenje:
- benznidazol
- nifurtimoks

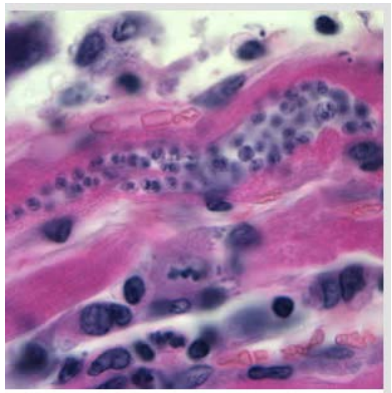


Figure A: *Trypanosoma cruzi* amastigotes in heart tissue. The section is stained with hematoxylin and eosin (H&E).

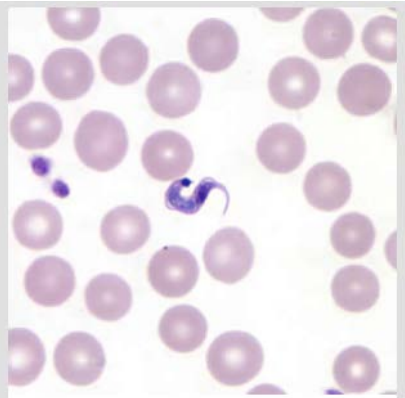


Figure E: *T. cruzi* trypomastigote in a thin blood smear stained with Giemsa.

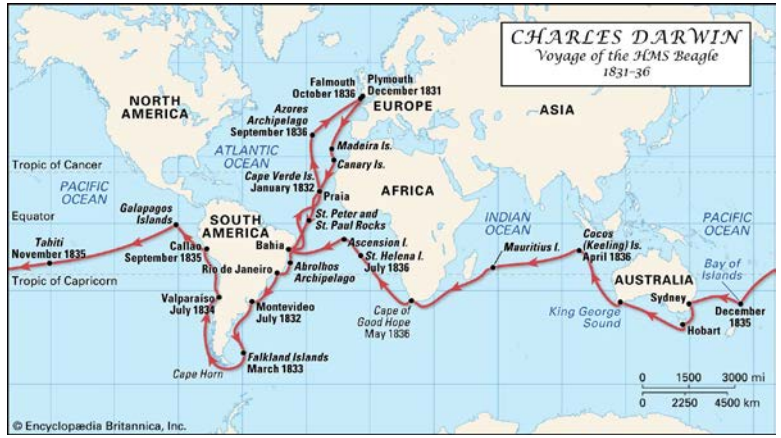
https://www.cdc.gov

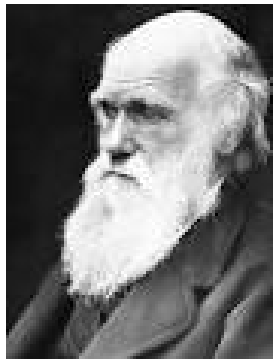
Nametnički Kinetoplastidea

Trypanosoma cruzi

"We slept at the village of Luxan, which is a small place surrounded by gardens... At night I experienced an attack (for it deserves no less a name) of the Benchuca, a species of *Reduvius*, the great black bug of the Pampas. It is most disgusting to feel soft wingless insects, about an inch long, crawling over one's body. Before sucking they are quite thin, but afterwards they become round and bloated with blood, and in this state are easily crushed.„

(26. ožujka 1835.; Charles Darwin: The Voyage of the Beagle)





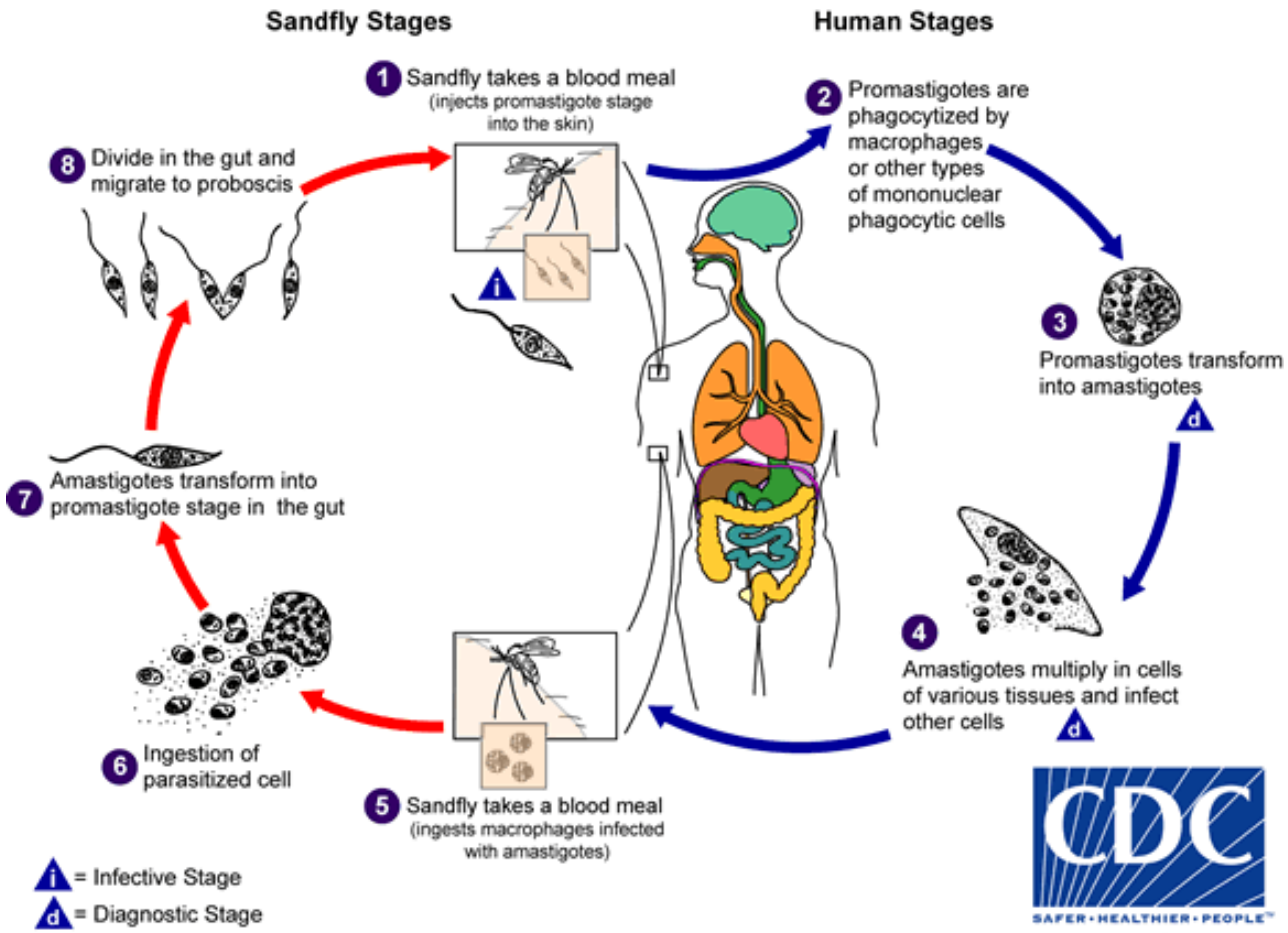
Nametnički Kinetoplastidea

Leishmania donovani complex

- uzročnik bolesti kala-azar

Leishmania tropica

- uzročnik kožne lišmenijaze

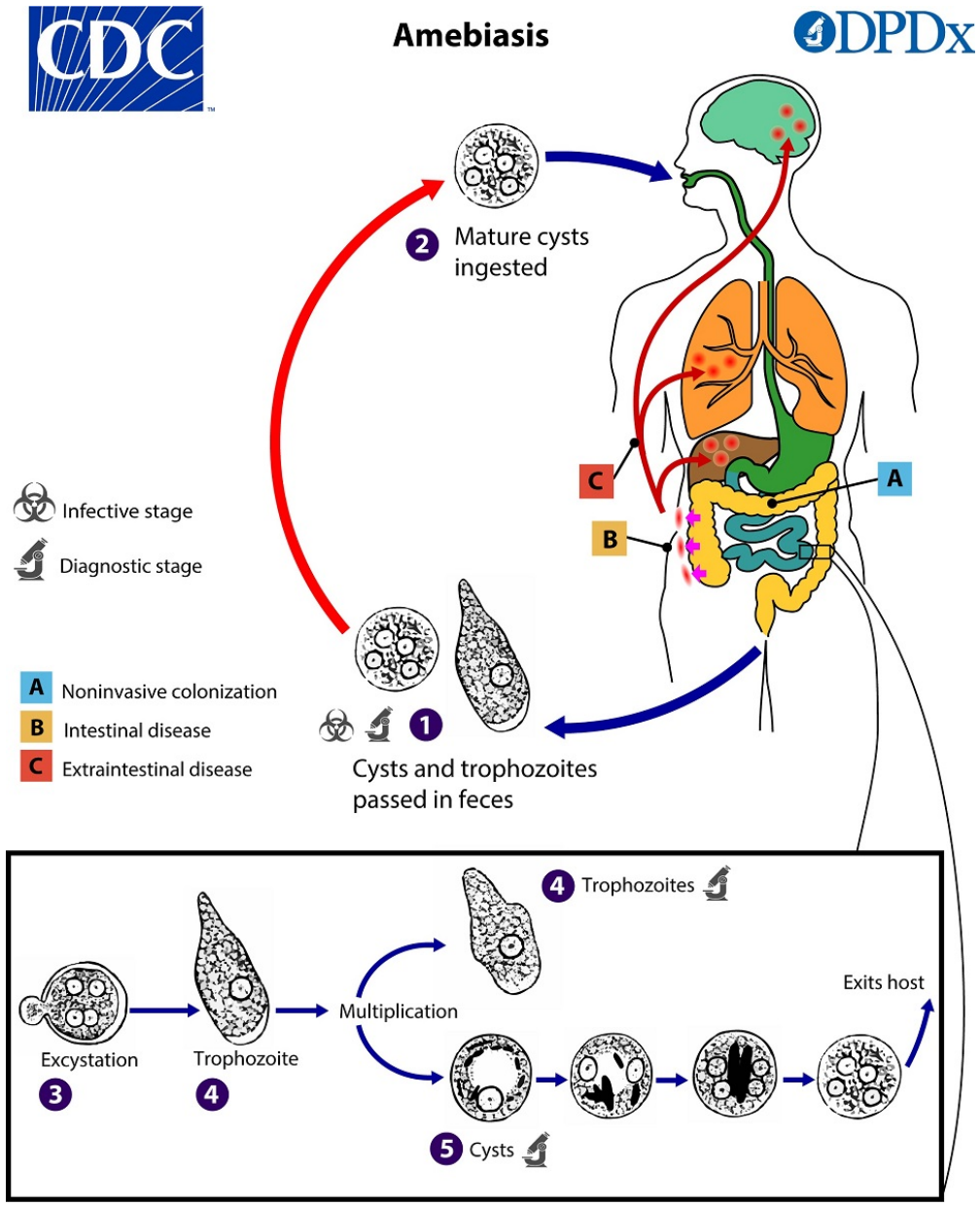


https://www.cdc.gov

Nametničke amebe

Entamoeba hystolitica

- uzročnik amebne dizenterije



https://www.cdc.gov

Nametničke amebe

Entamoeba hystolitica

Dijagnostika:

- mikroskopski pregled stolice
- PCR

Liječenje:

- metronidazol

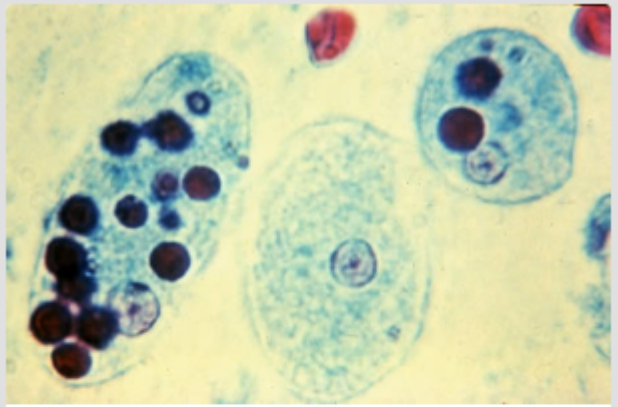


Figure B: Trophozoites of *E. histolytica* with ingested erythrocytes stained with trichrome. The ingested erythrocytes appear as dark inclusions. The parasites above show nuclei that have the typical small, centrally located karyosome, and thin, uniform peripheral chromatin.

https://www.cdc.gov

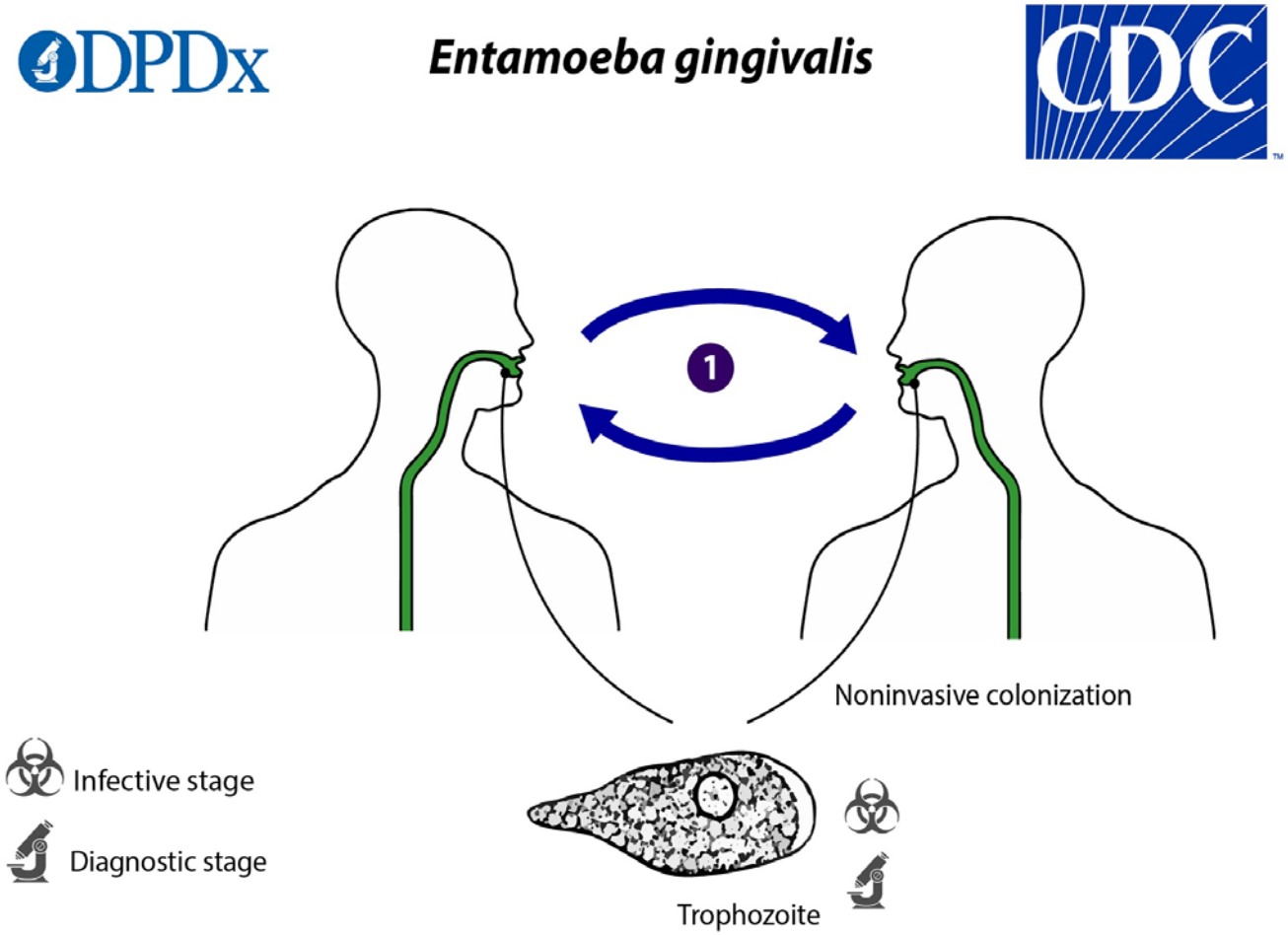
Entamoeba dispar

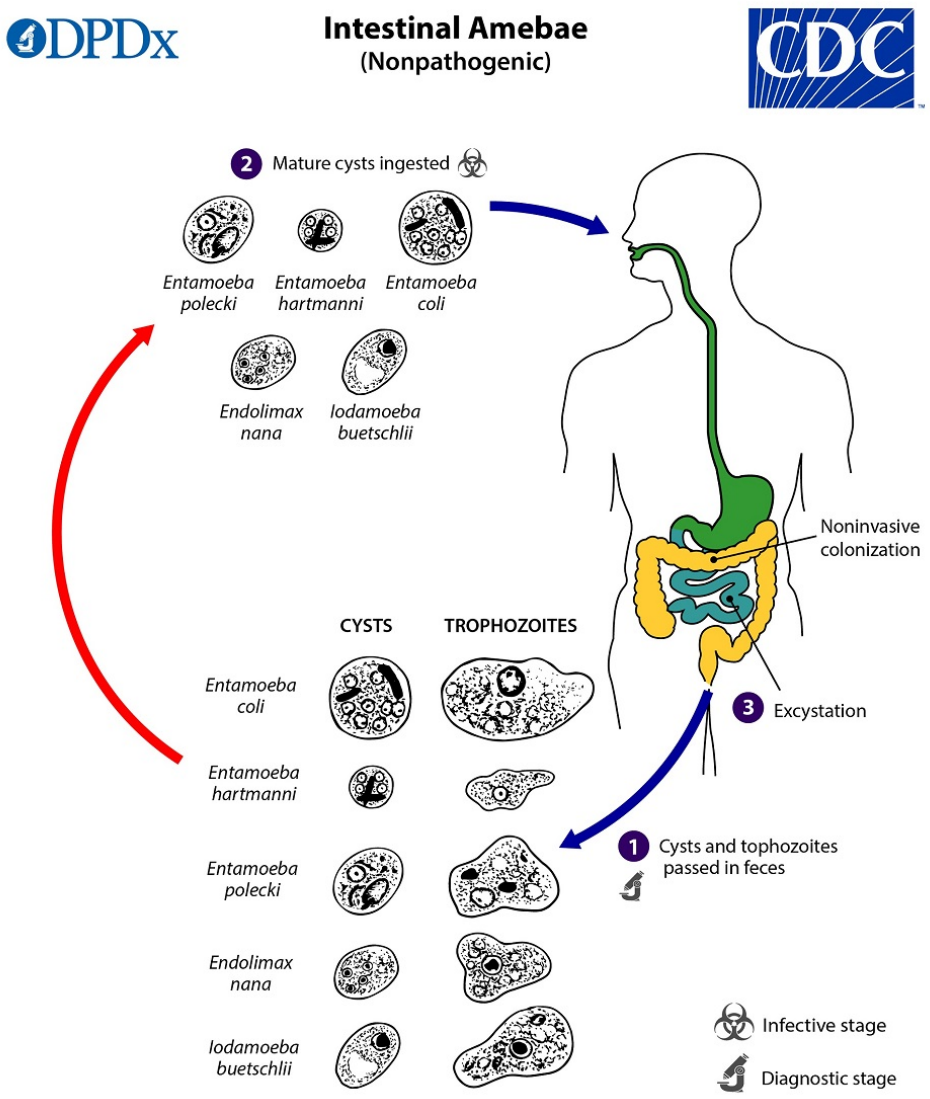
- morfološki nerazlučiva
- bezopasna

- Smatralo se da je *E. hystolitica* – krive procjene zaraženosti (500 milijuna *vs.* 50 milijuna)

Entamoeba gingivalis

- nepatogena
- moguće uključena u nastanak upalnih bolesti usne šupljine; povećava rizik 4x (Badri i sur. 2021.)





https://www.cdc.gov

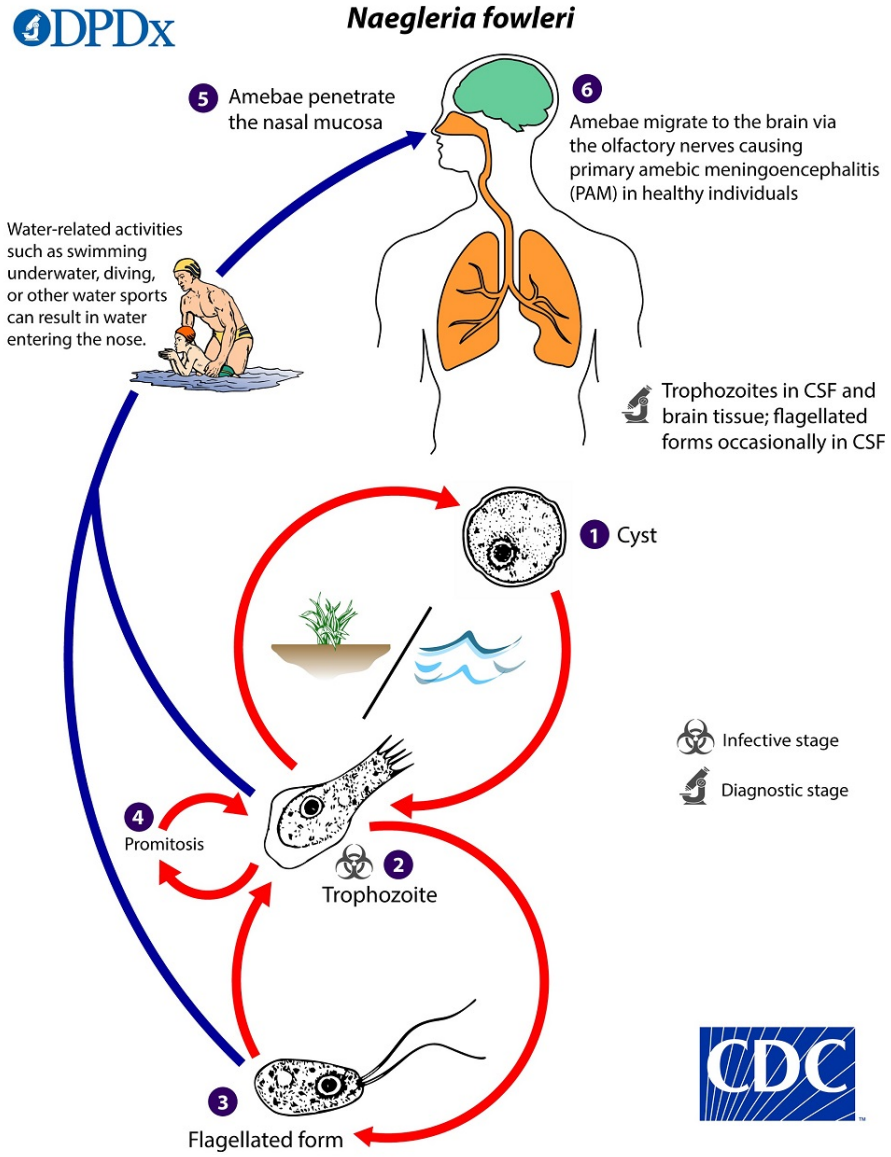
Slobodnoživuće patogene amebe

- kozmopolitski rasprostranjene u vodi i tlu
- nema klasičnog rezervoara

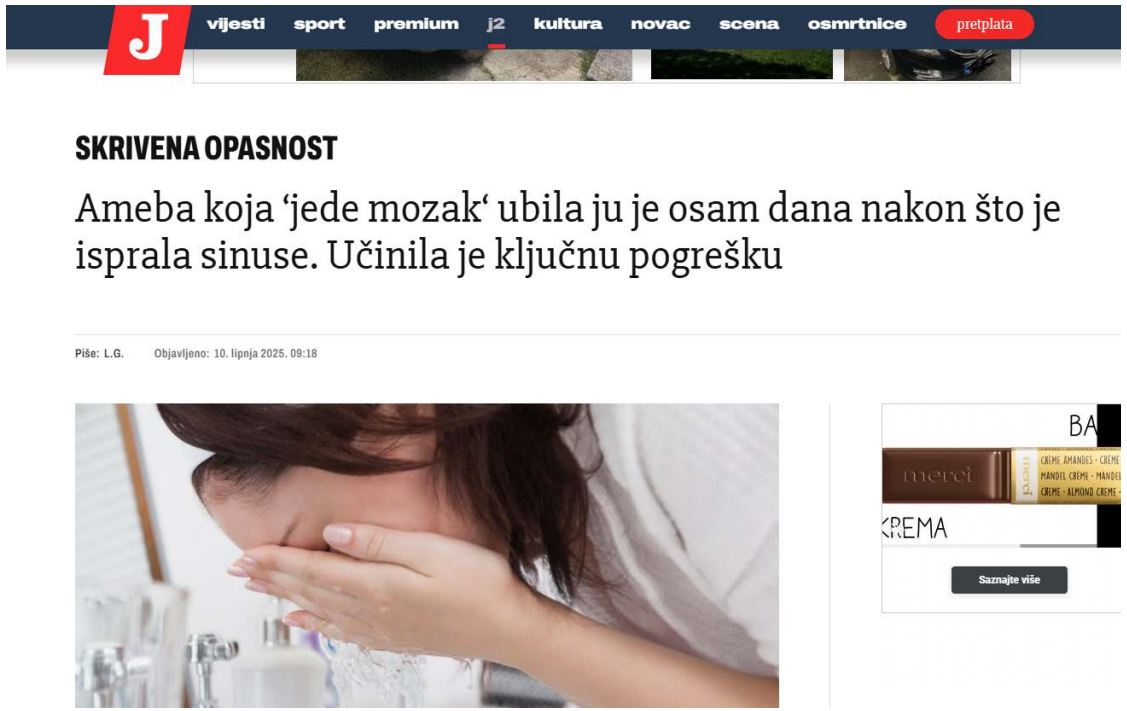
Naegleria fowleri

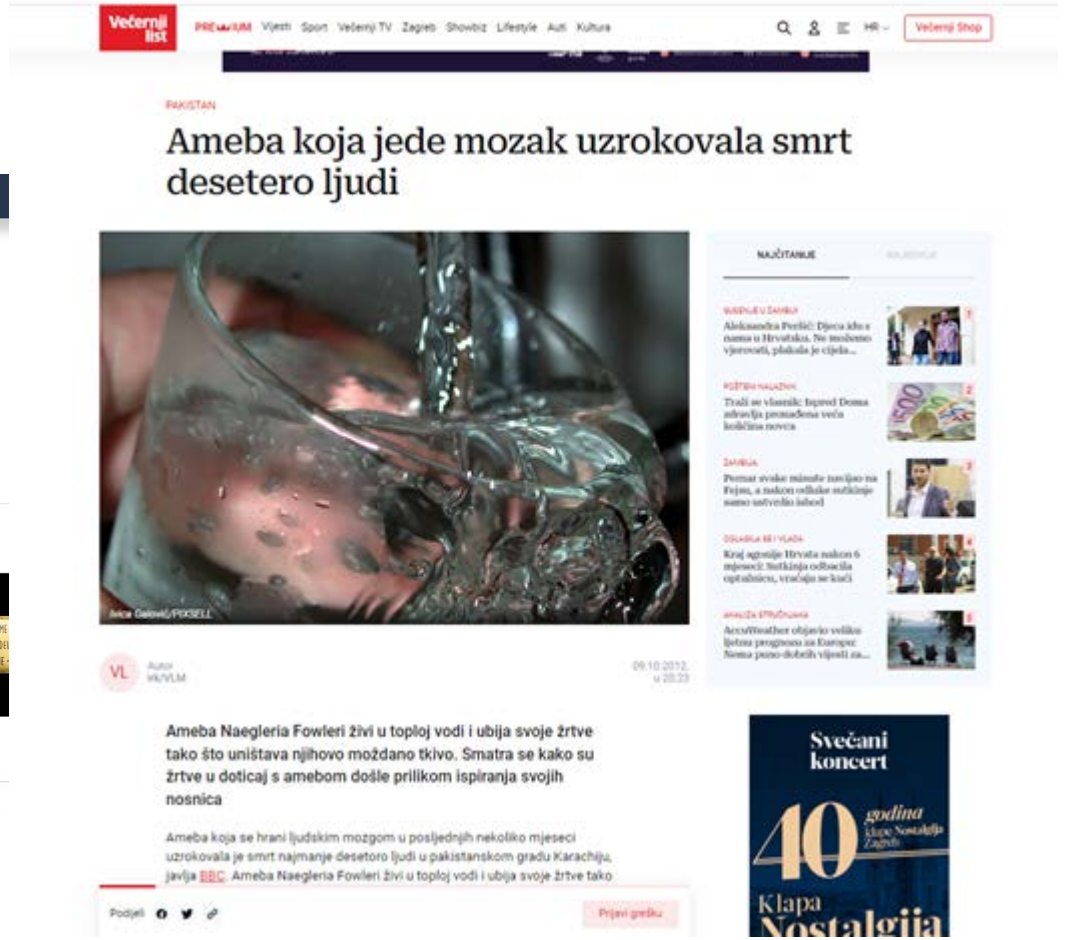
- može izazvati primarni amebni meningoencefalitis

- teško se dijagnosticira



Slobodnoživuće patogene amebe

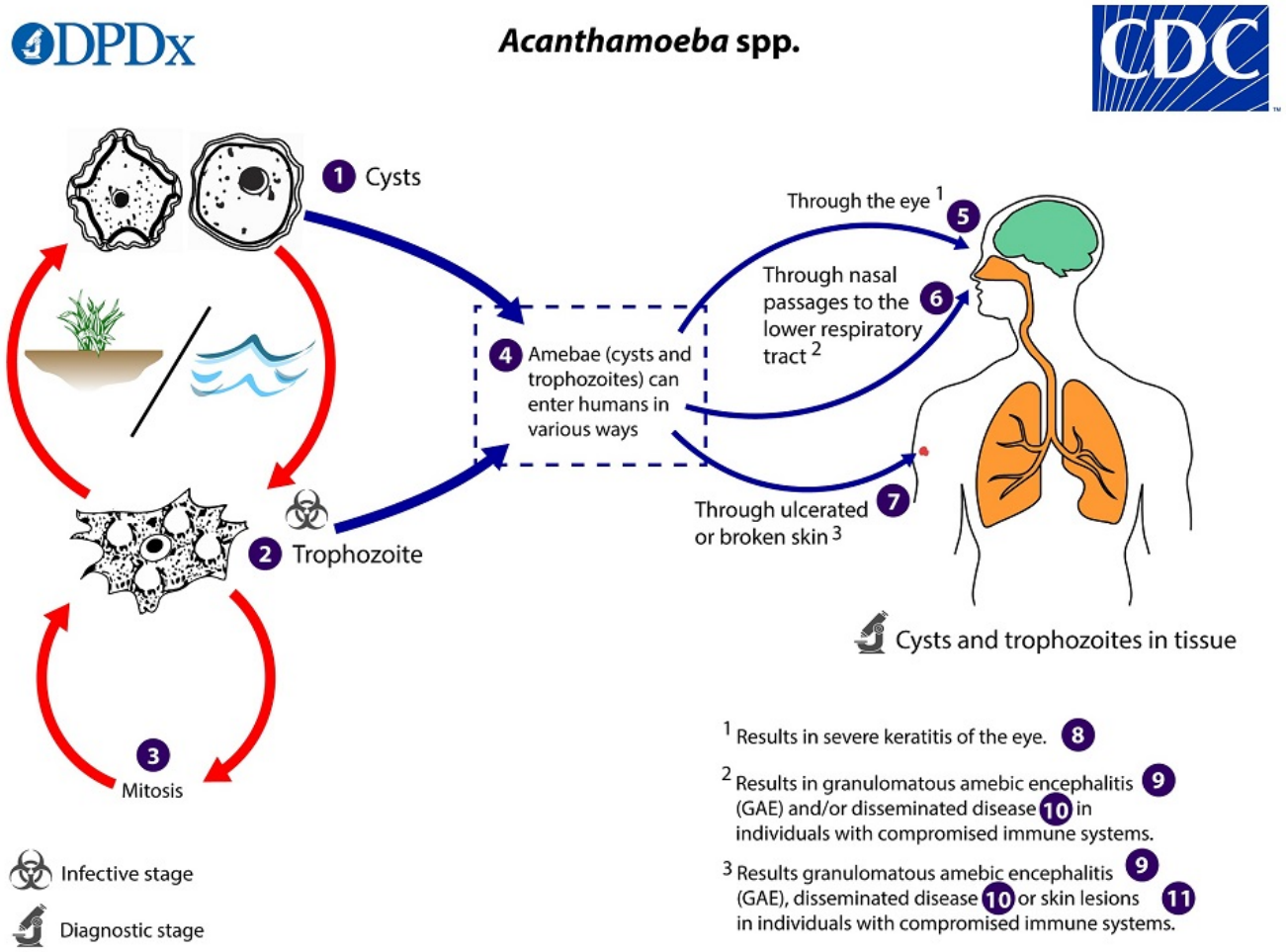




Slobodnoživuće patogene amebe

Acanthamoeba spp.

- može izazvati:
  - lezije na koži
  - amebni keratitis
  - granulomatozni amebni encefalitis
- većina ljudi ima antitijela na *Acanthamoeba* (IgA) (Brindley i sur. 2009)

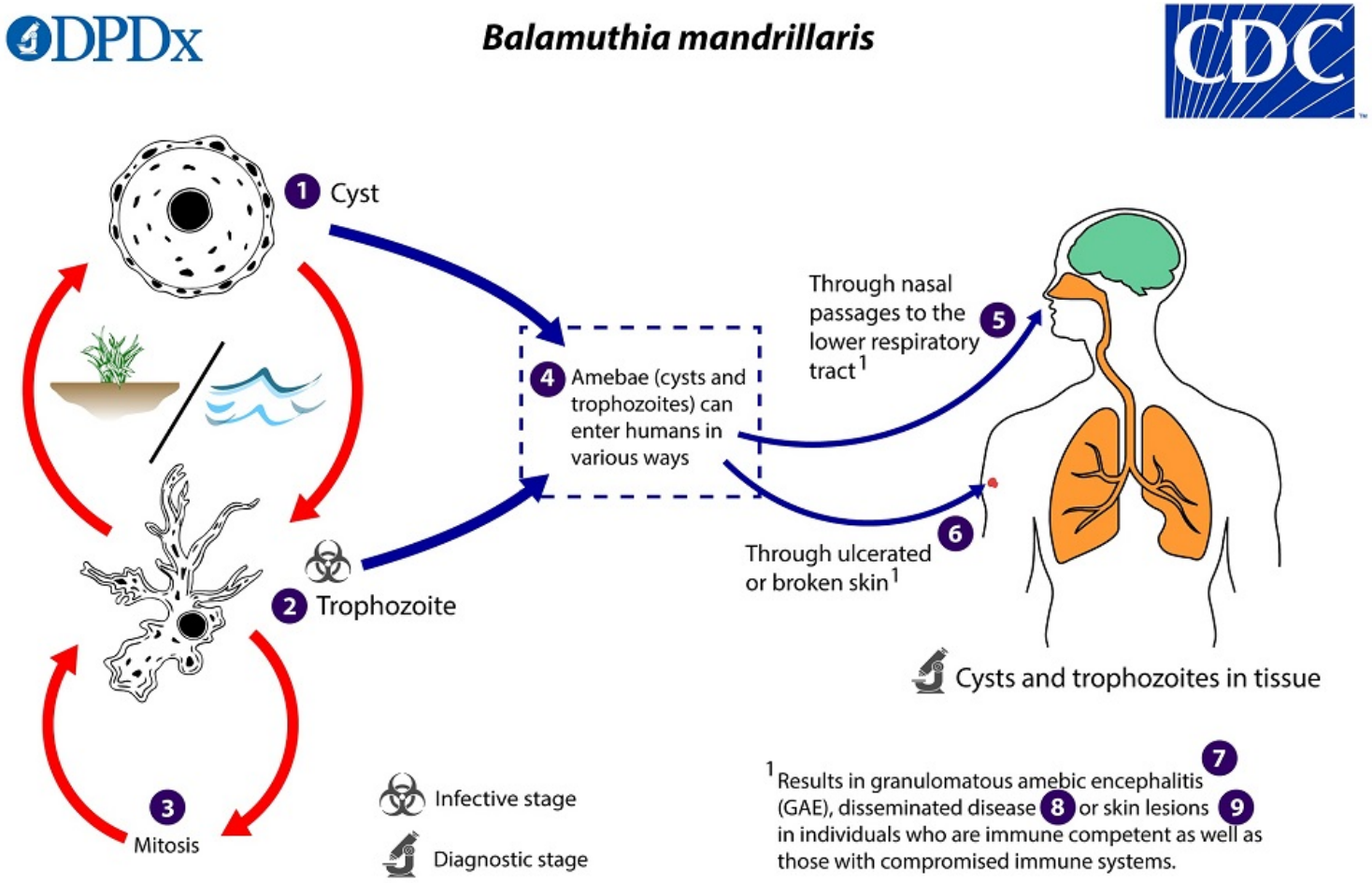


https://www.cdc.gov

Slobodnoživuće patogene amebe

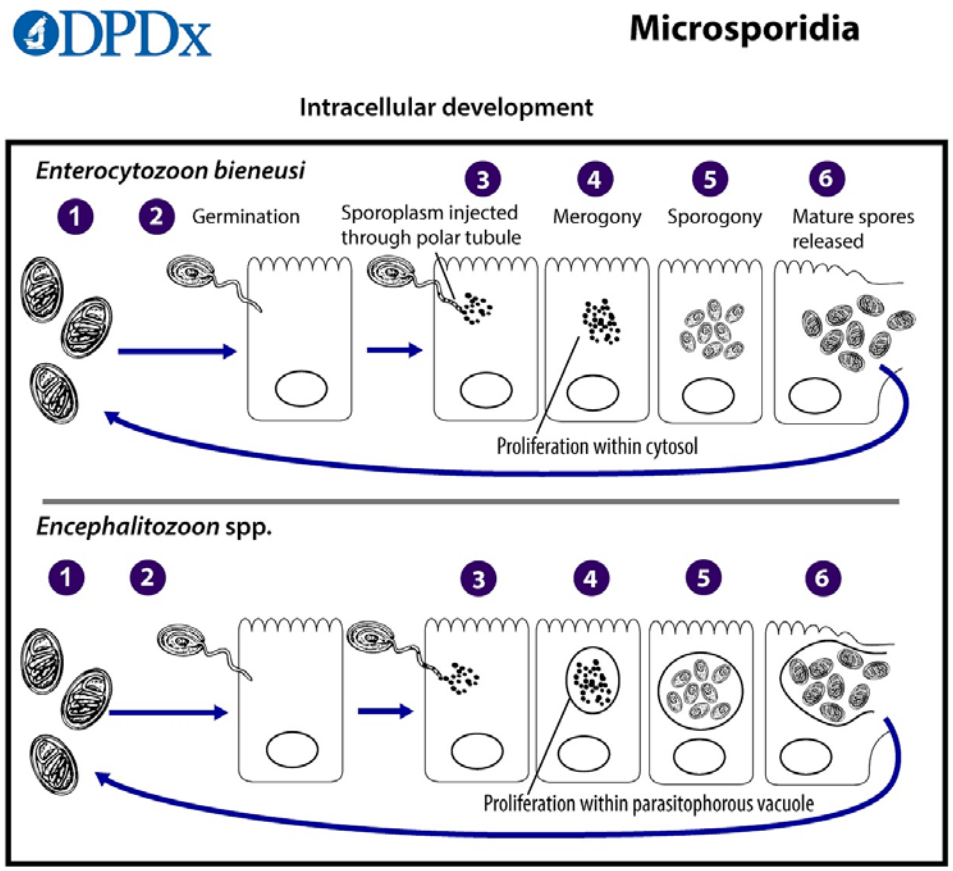
Balamuthia mandrillaris

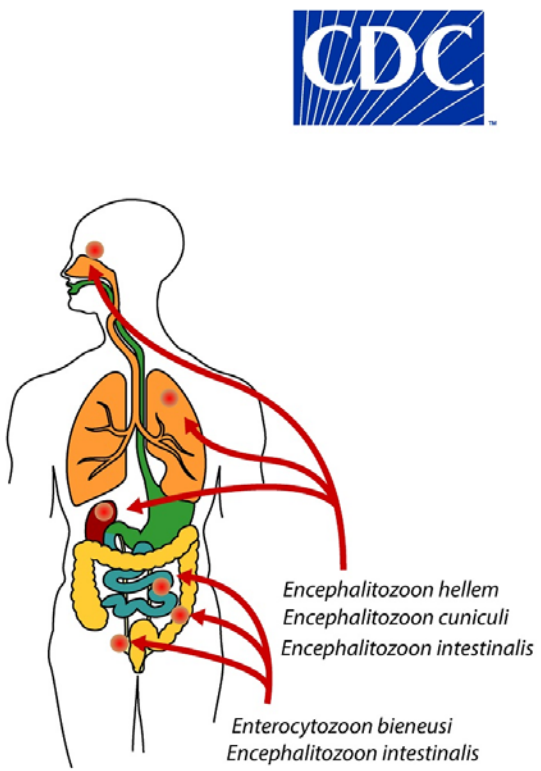
- može izazvati granulomatozni amebni encefalitis



Patogene mikrosporidije

- srodne s gljivama
- često zoonoze
- kozmopolitski prisutne





Patogene mikrosporidije

Nosema bombycis

- bolest pebrina u dudovog svilca
- Pasteurova metoda

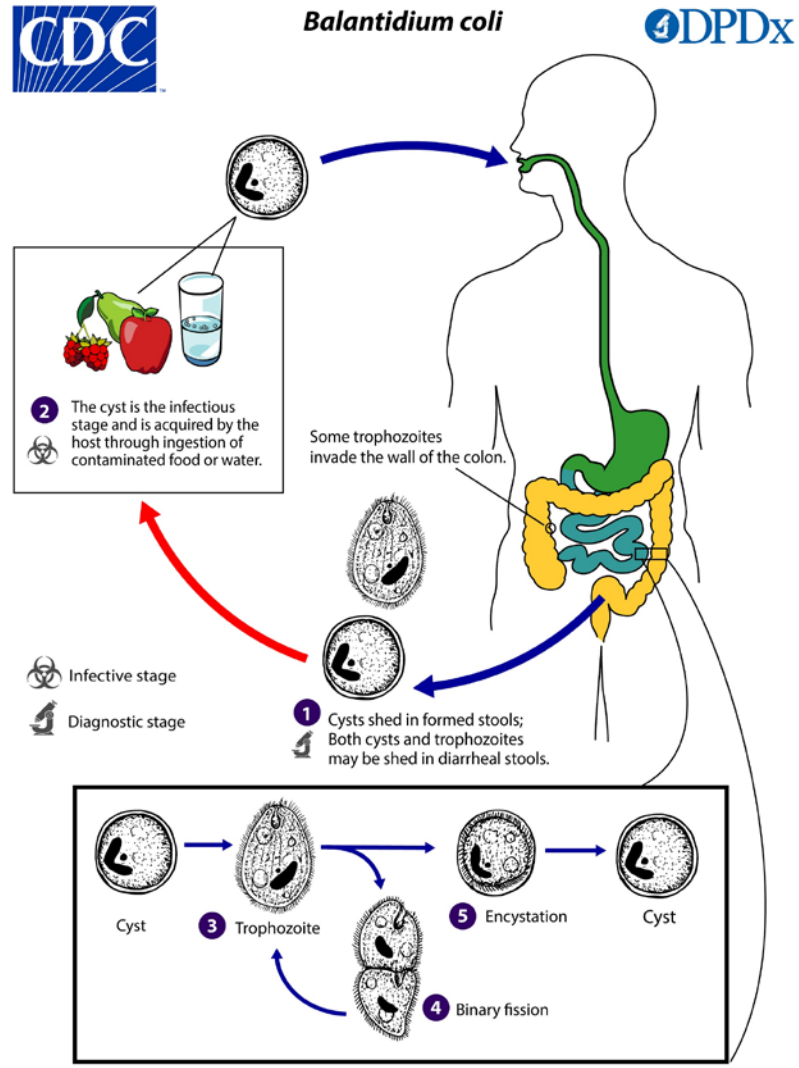


Liu i sur. 2016.

I jedan trepetljikaš patogen za ljude….

Balantidium coli

- često asimptomatski
- glavni rezervoar: svinje



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