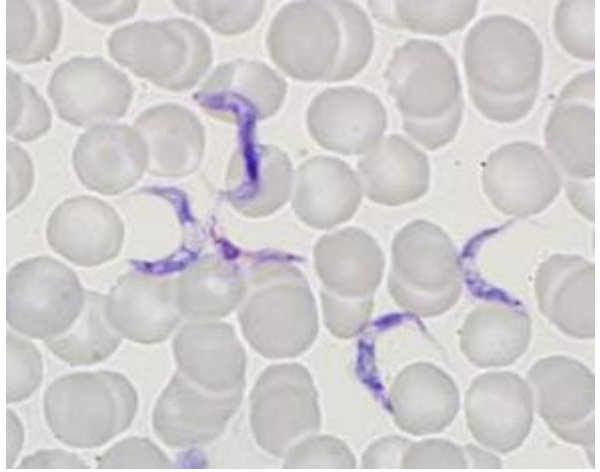
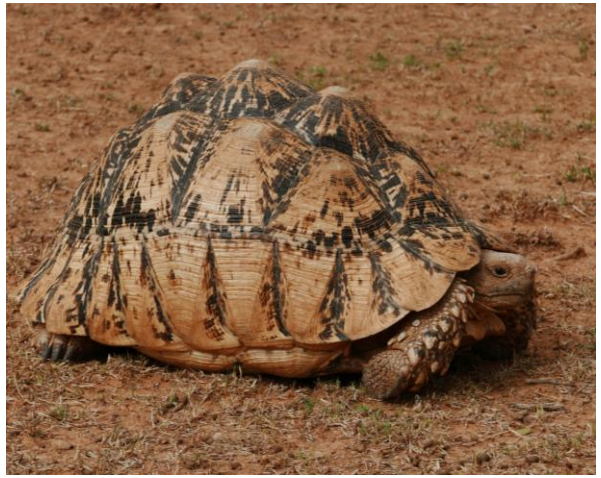



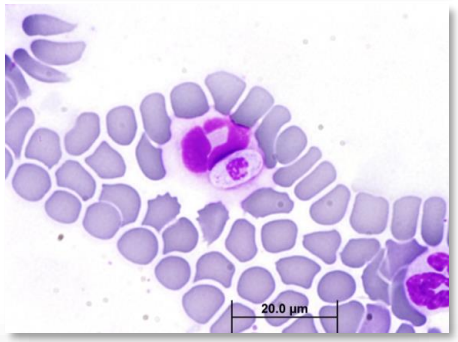




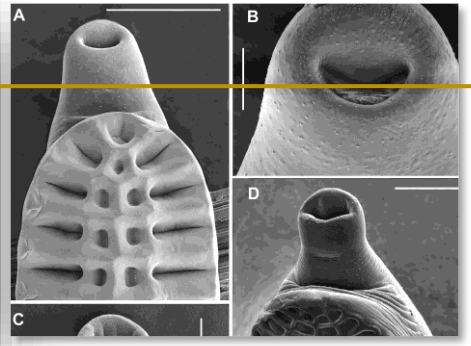








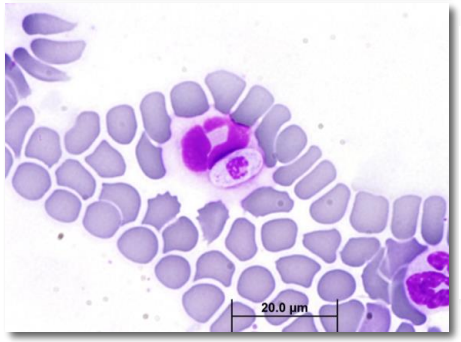


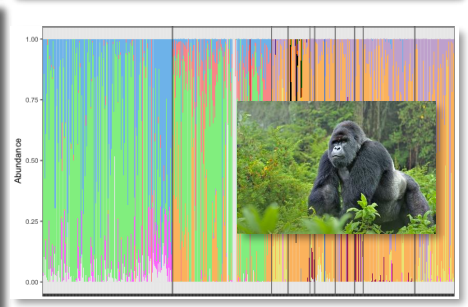


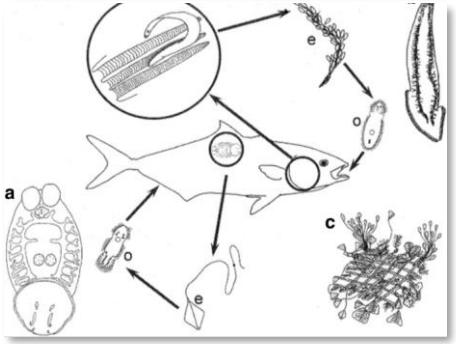
Ústav botaniky a zoologie

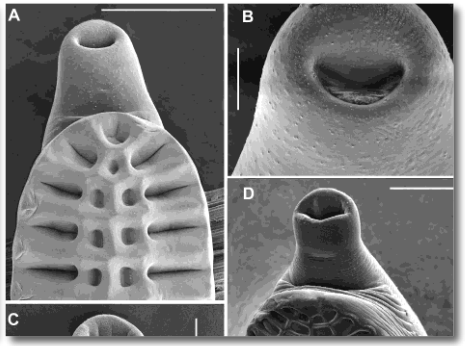
Parazitologie

Prof. MVDr. David Modrý, Ph.D.









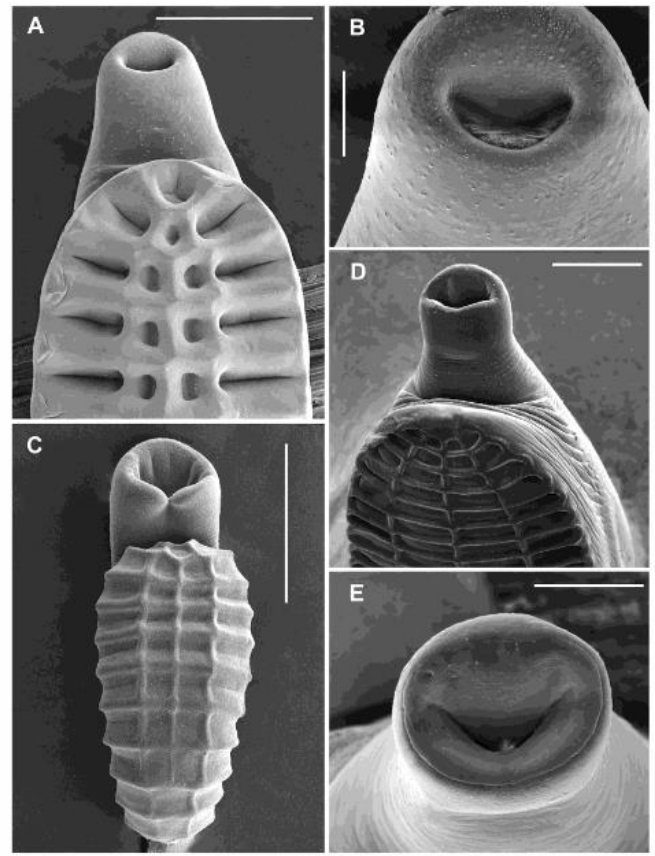
Parazitologie

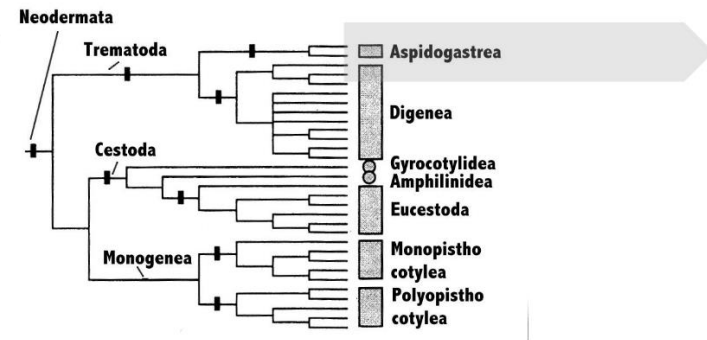
- „Parazitologie je věda, která se zabývá parazity, jejich hostiteli a vztahy mezi nimi. Při svém bádání využívá poznatků zejména cytologie, imunologie, biochemie, farmakologie, molekulární biologie, genetiky a ekologie, její vlastní poznatky jsou pak často využívány v lékařství, veterinárním lékařství, ekologii a evoluční biologii.
- Rozlišujeme parazitologii v „užším slova smyslu“, která se zabývá pouze parazitujícími prvoky, helminty, pavoukovci a hmyzem, a parazitologii v „širším slova smyslu“, která zahrnuje pod pojem parazity i bakterie a viry a další parazitující organismy„
- Parazitologie v „nejširším slova smyslu“?

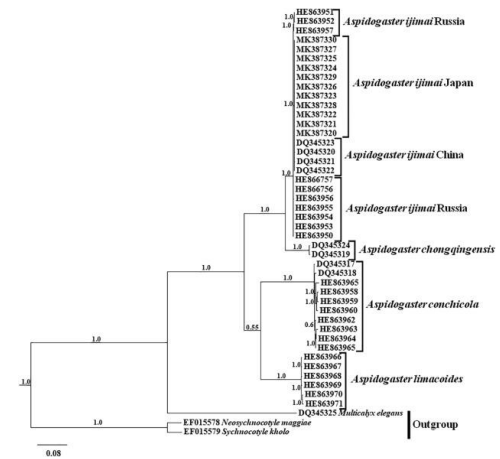
J. Parasitol., 93(2), 2007, pp. 399–403
© American Society of Parasitologists 2007

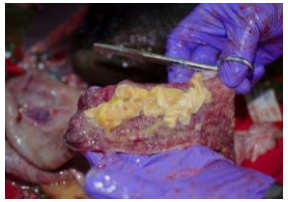
NEOSYCHNOCOTYLE MAGGIAE, N. GEN., N. SP. (PLATYHELMINTHES: ASPIDOGASTREA) FROM FRESHWATER TURTLES IN NORTHERN AUSTRALIA

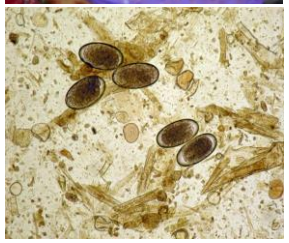
Scott D. Snyder and Vasyl V. Tkach*
Department of Biology, University of Nebraska at Omaha, Omaha, Nebraska 68182. e-mail: sdsnyder@mail.unomaha.edu.











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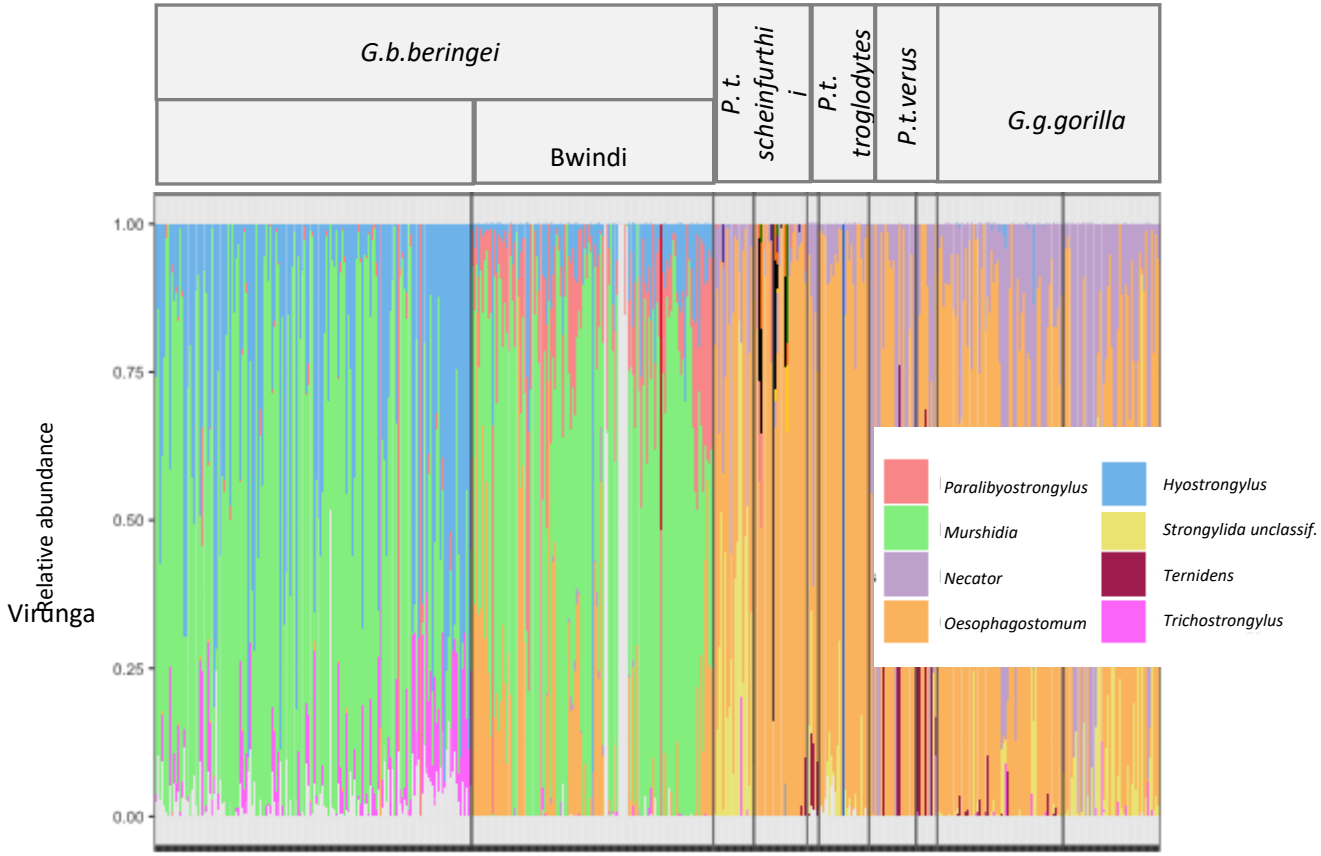
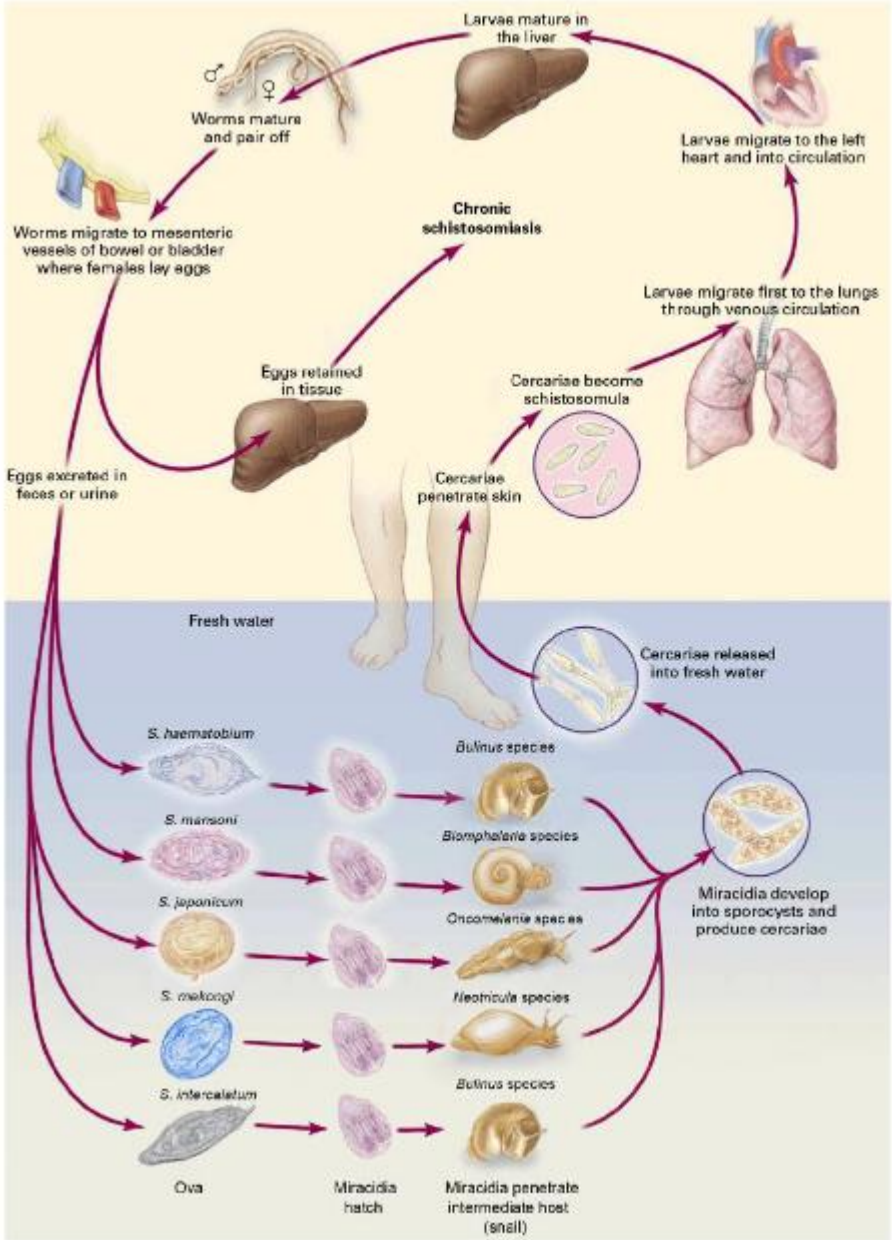
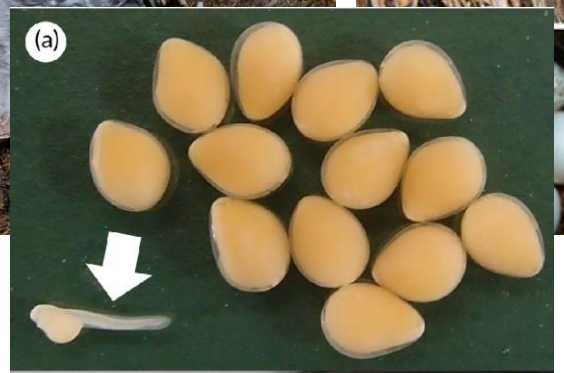
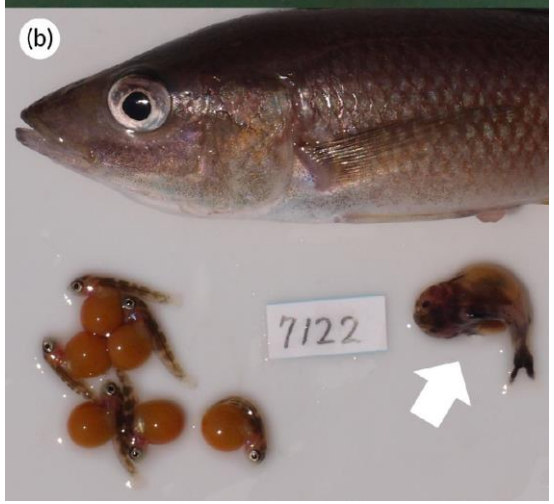

G.b.beringei
Bwindi
P. t. scheinfurthi i
P.t. troglodytes
P.t.verus
G.g.gorilla
1.00
0.75
0.50
0.25
0.00
Relative abundance
Virunga
Paralibyostrongylus
Murshidia
Necator
Oesophagostomum
Hyostrongylus
Strongylida unclassif.
Ternidens
Trichostrongylus

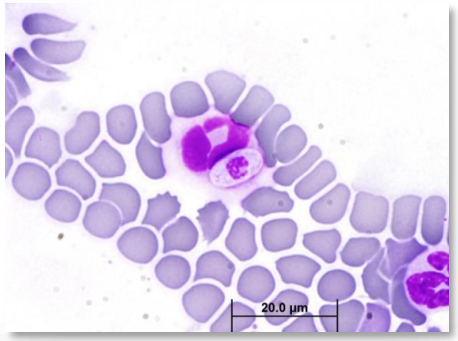

Larvae mature in the liver
Worms mature and pair off
Larvae migrate to the left heart and into circulation
Worms migrate to mesenteric vessels of bowel or bladder where females lay eggs
Chronic schistosomiasis
Larvae migrate first to the lungs through venous circulation
Eggs retained in tissue
Cercariae become schistosomula
Eggs excreted in feces or urine
Cercariae penetrate skin
Fresh water
Cercariae released into fresh water
S. haematobium
Bulinus species
S. mansoni
Biomphalaria species
S. japonicum
Oncomelania species
Miracidia develop into sporocysts and produce cercariae
S. mekongi
Neotricula species
Bulinus species
S. intercalatum
Ova
Miracidia hatch
Miracidia penetrate intermediate host (snail)


(a)

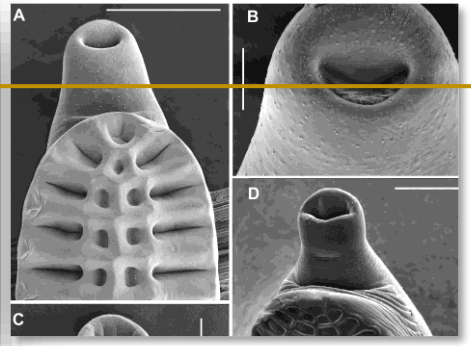

(b)
7122

Existuje vůbec parazitologie ?

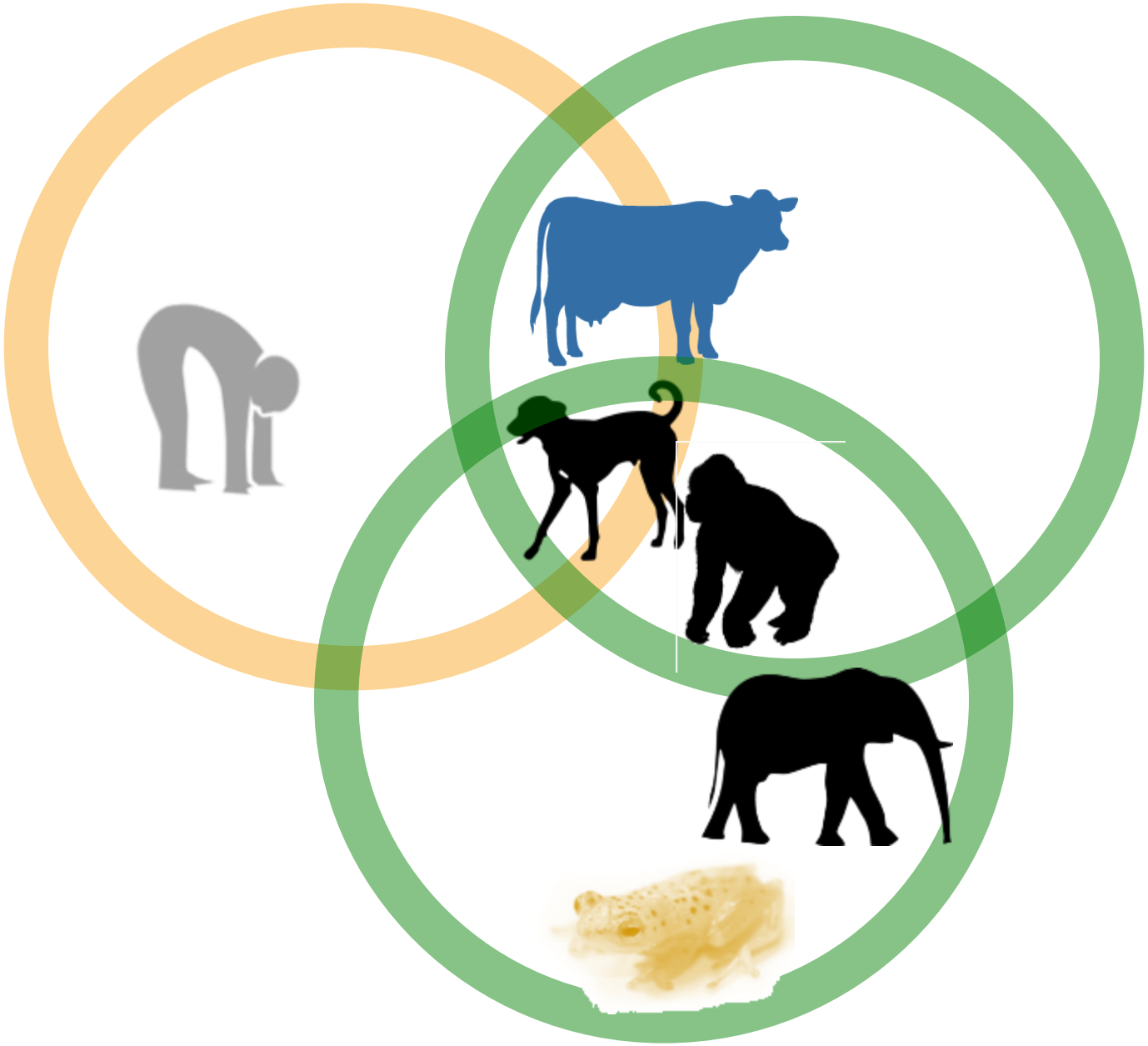








Ústav botaniky a zoologie - Parazitologie

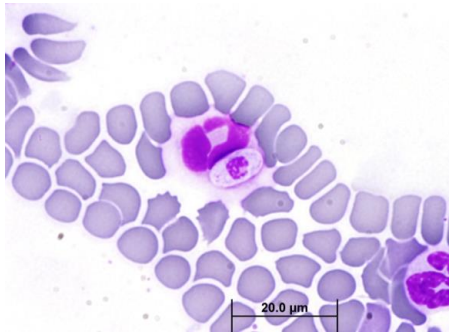


Emerging Infectious Diseases

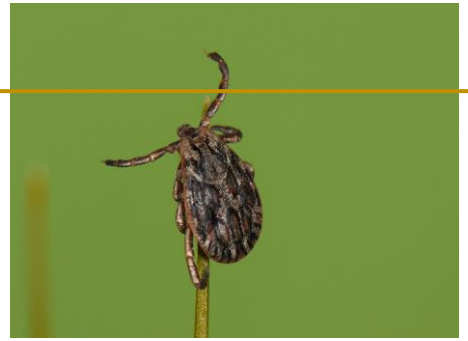
One Health

Conservation Medicine



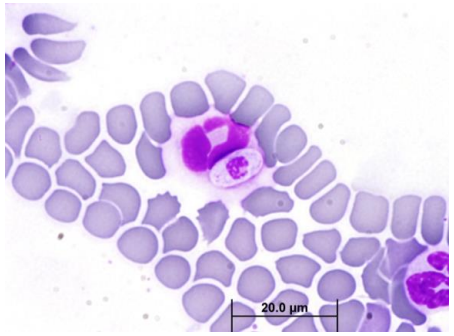


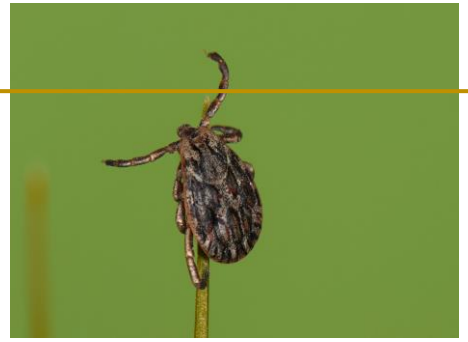




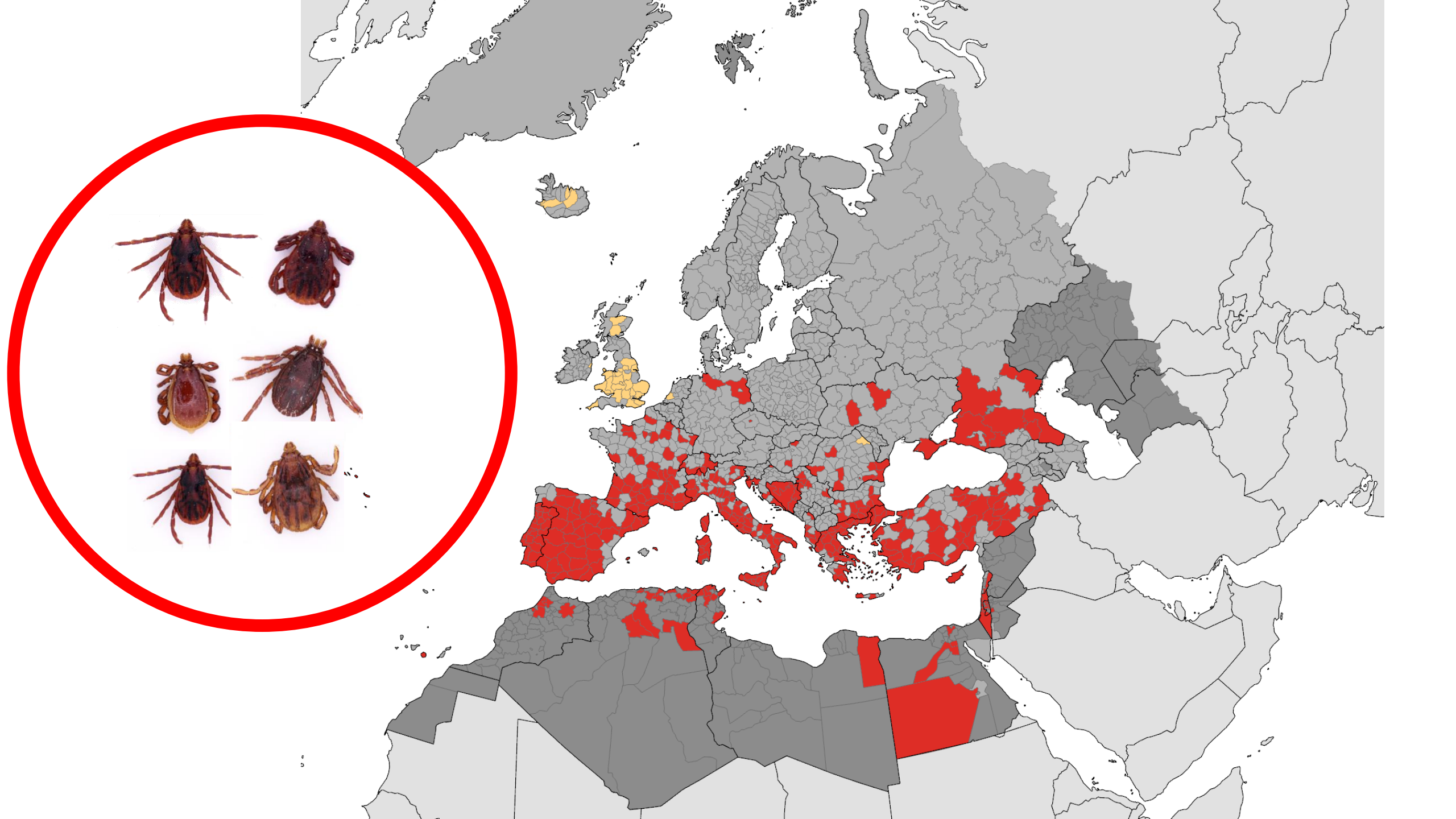
Klíšťaty přenášené infekce

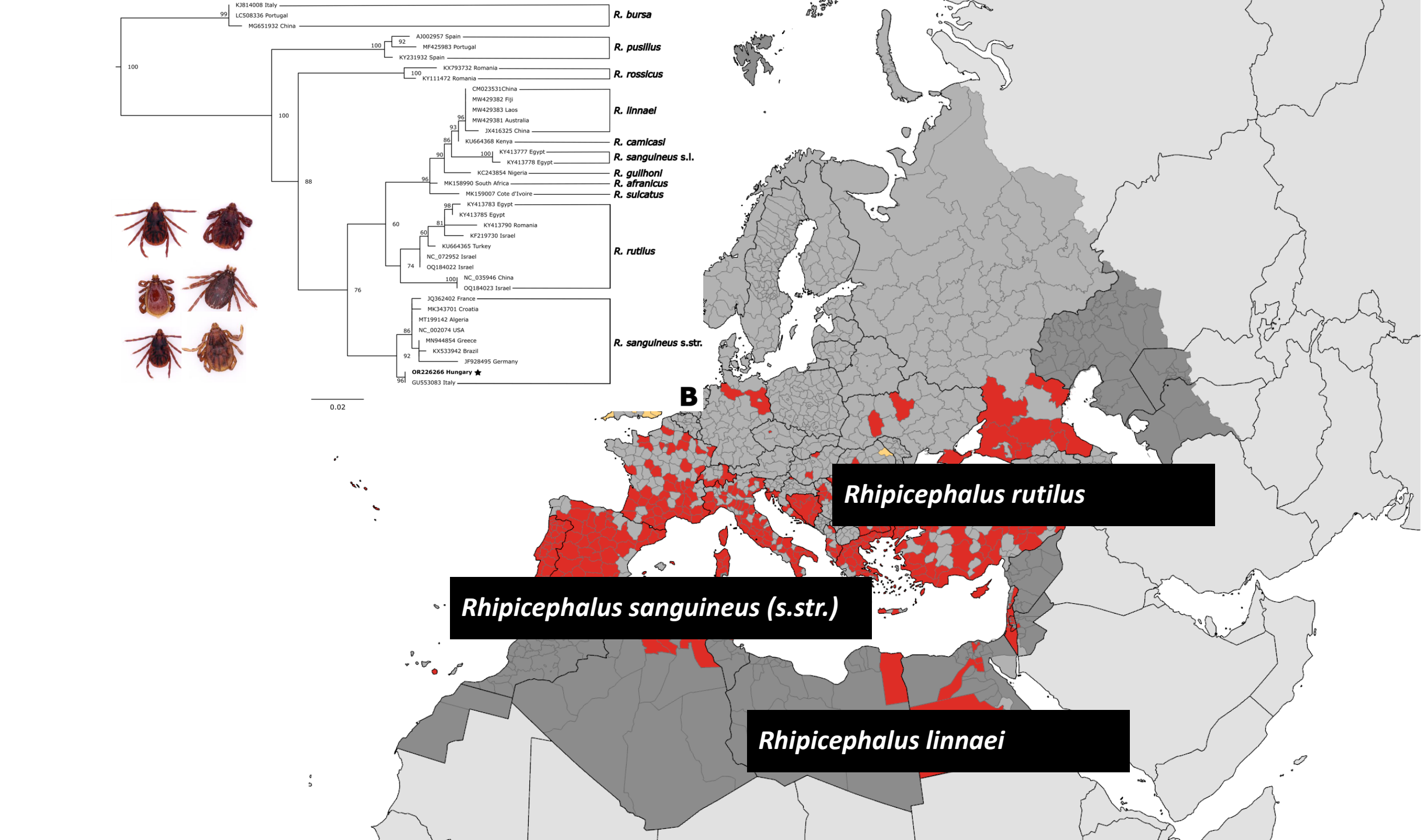
Prof. MVDr. David Modrý, Ph.D.



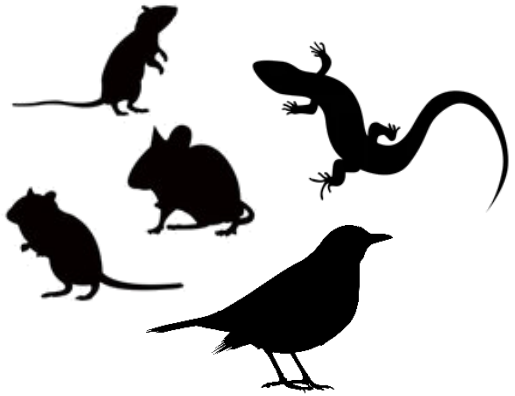


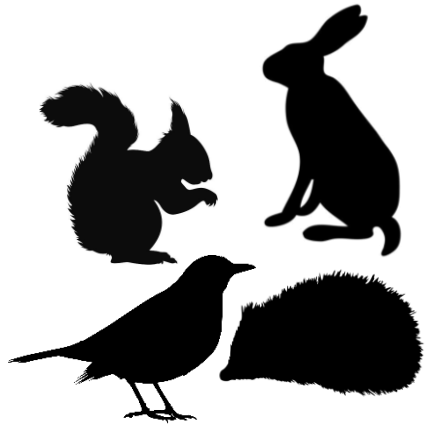
- **diverzita klíšťat napříč Evropou**
- **„skrytá“ diverzita v určitých skupinách**
- **změny areálů – invazní druhy**
- **občanská věda - citizen science**
- **přenášené patogeny u zvířat i u člověka**

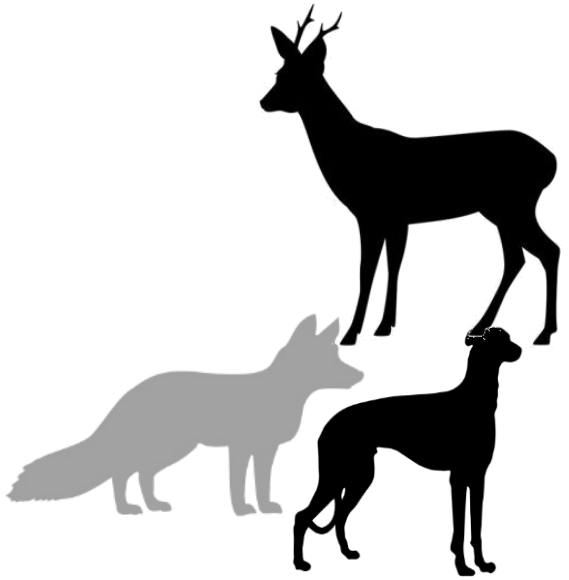



KJ814008 Italy
LC508336 Portugal
MG651932 China
R. bursa
AJ002957 Spain
MF425983 Portugal
KY231932 Spain
R. pusillus
KX793732 Romania
KY111472 Romania
R. rossicus
CM023531China
MW429382 Fiji
MW429383 Laos
MW429381 Australia
JX416325 China
R. linnaei
KU664368 Kenya
R. camicasi
KY413777 Egypt
KY413778 Egypt
R. sanguineus s.l.
KC243854 Nigeria
R. guilhoni
MK158990 South Africa
R. afranicus
MK159007 Cote d'Ivoire
R. sulcatus
KY413783 Egypt
KY413785 Egypt
KY413790 Romania
KF219730 Israel
KU664365 Turkey
NC_072952 Israel
OQ184022 Israel
NC_035946 China
OQ184023 Israel
R. rutilus
JQ362402 France
MK343701 Croatia
MT199142 Algeria
NC_002074 USA
MN944854 Greece
KX533942 Brazil
JF928495 Germany
OR226266 Hungary
GU553083 Italy
R. sanguineus s.str.
0.02
B
Rhipicephalus rutilus
Rhipicephalus sanguineus (s.str.)
Rhipicephalus linnaei

- ***Anaplasma phagocytophilum***
- ***Borrelia burgdorferi***
- ***Babesia divergens***
- ***TBE***







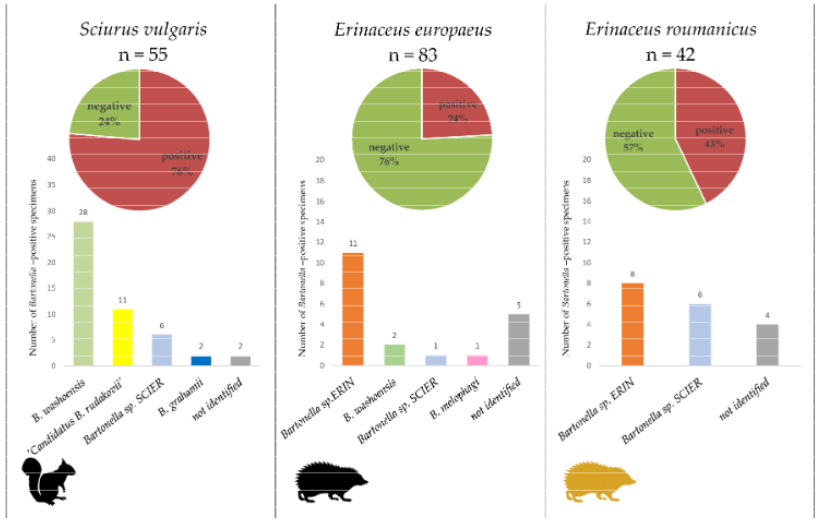
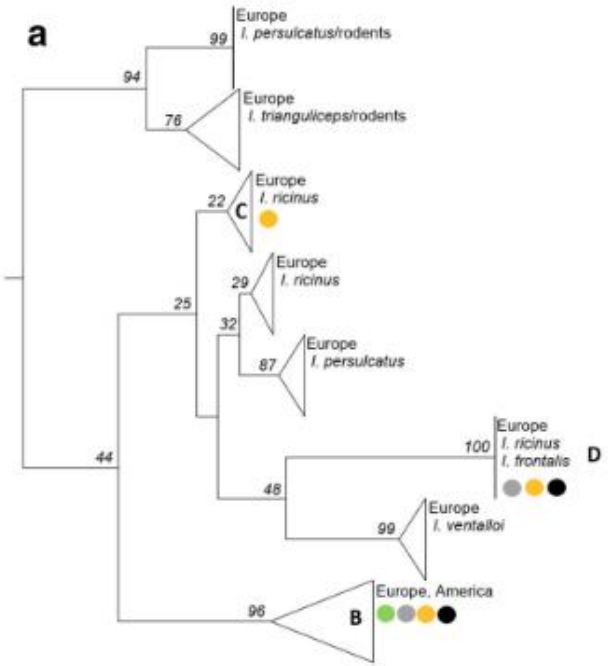
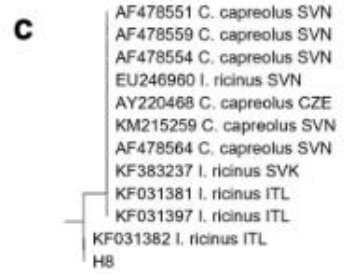
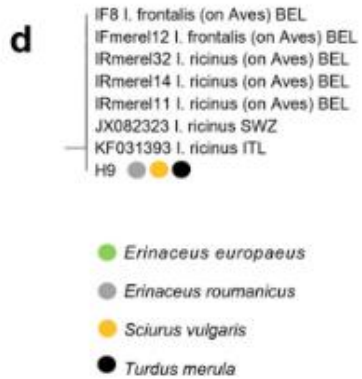
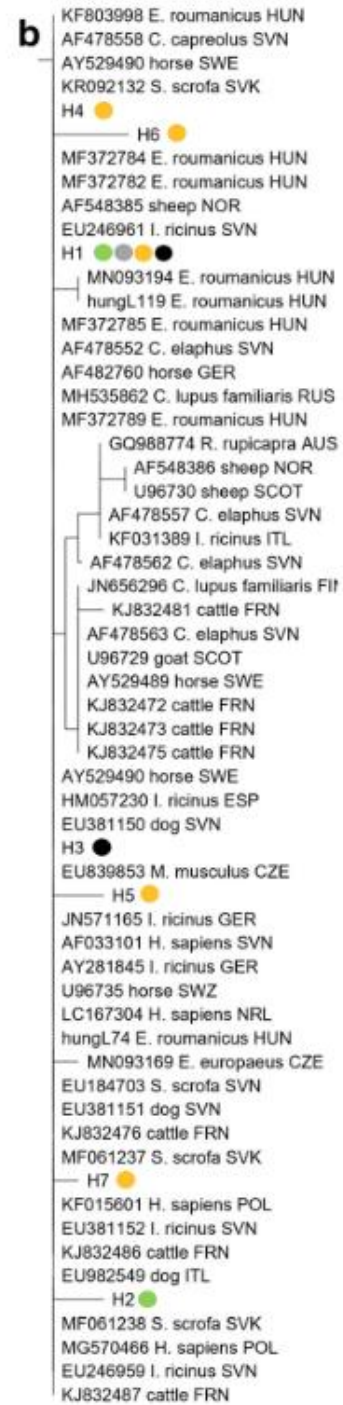


Figure 4. Overall infection rate of *Bartonella* spp. (pie charts) in the three tested host species as assessed by real-time PCR and verified by a set of conventional PCRs. The proportion of six detected *Bartonella* species (bar charts) based on sequencing data (summed for single and multiple infections).









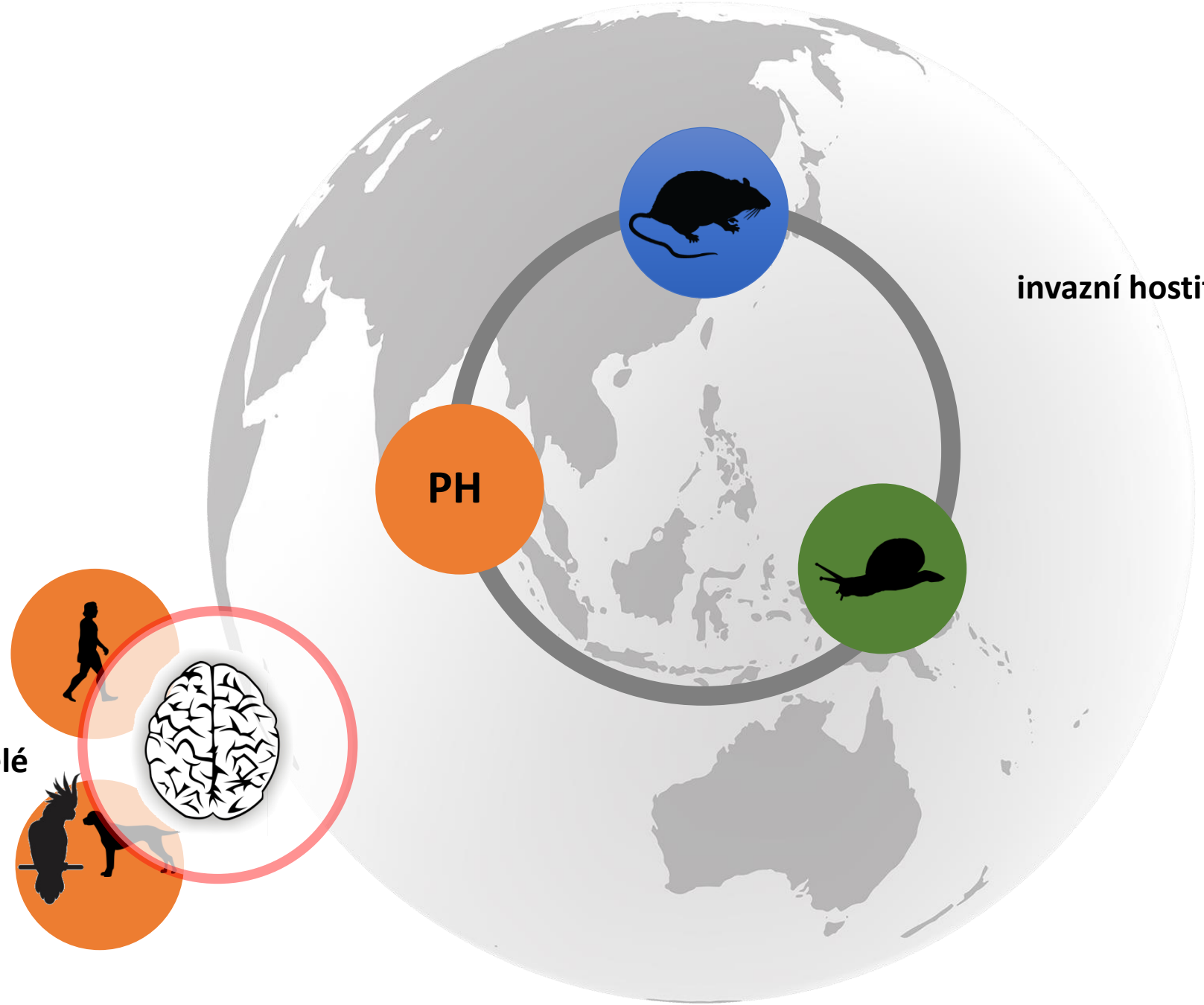





Parazitický nematod *Angiostrongylus cantonensis*

a jeho cirkulace v ekosystémech

Prof. MVDr. David Modrý, Ph.D.


invazní hostitelé
PH
aberantní hostitelé

Tenerife, Canary Islands


2000 µm

paratenic hosts

Parasitology

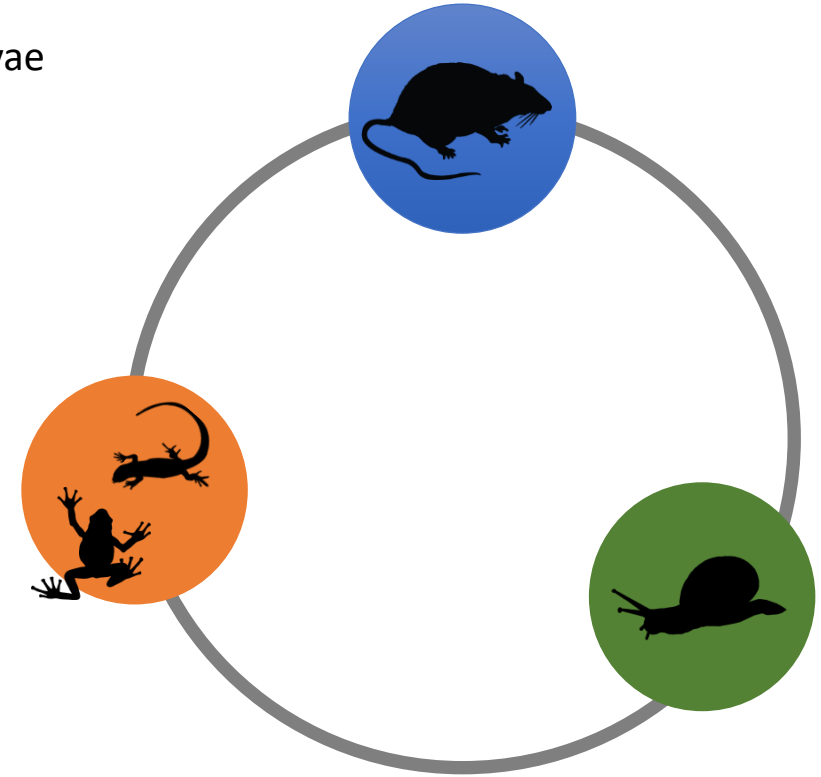
cambridge.org/par

Research Article

Endemic lizard *Gallotia galloti* is a paratenic host of invasive *Angiostrongylus cantonensis* in Tenerife, Spain

Lucia Anettová[1,*], Elena Izquierdo-Rodriguez[2,3,*], Pilar Foronda[2,3], Vojtech Baláž[4,5], Ladislav Novotný[6,7] and David Modrý[1,5,8]

- granulomas with metastrongylid larvae
- 25 % of liver samples
- DNA also in tails musculature

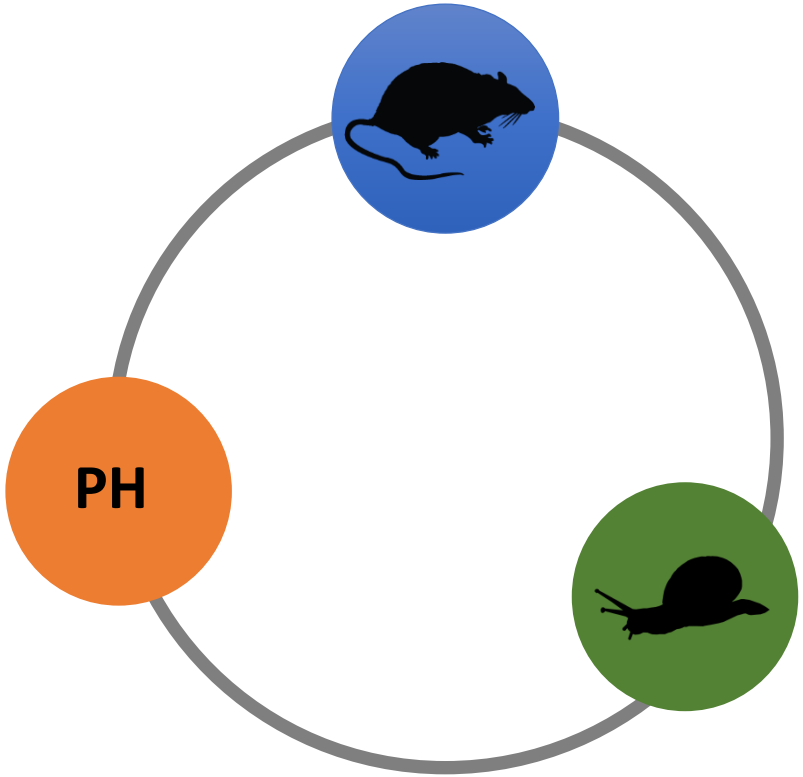


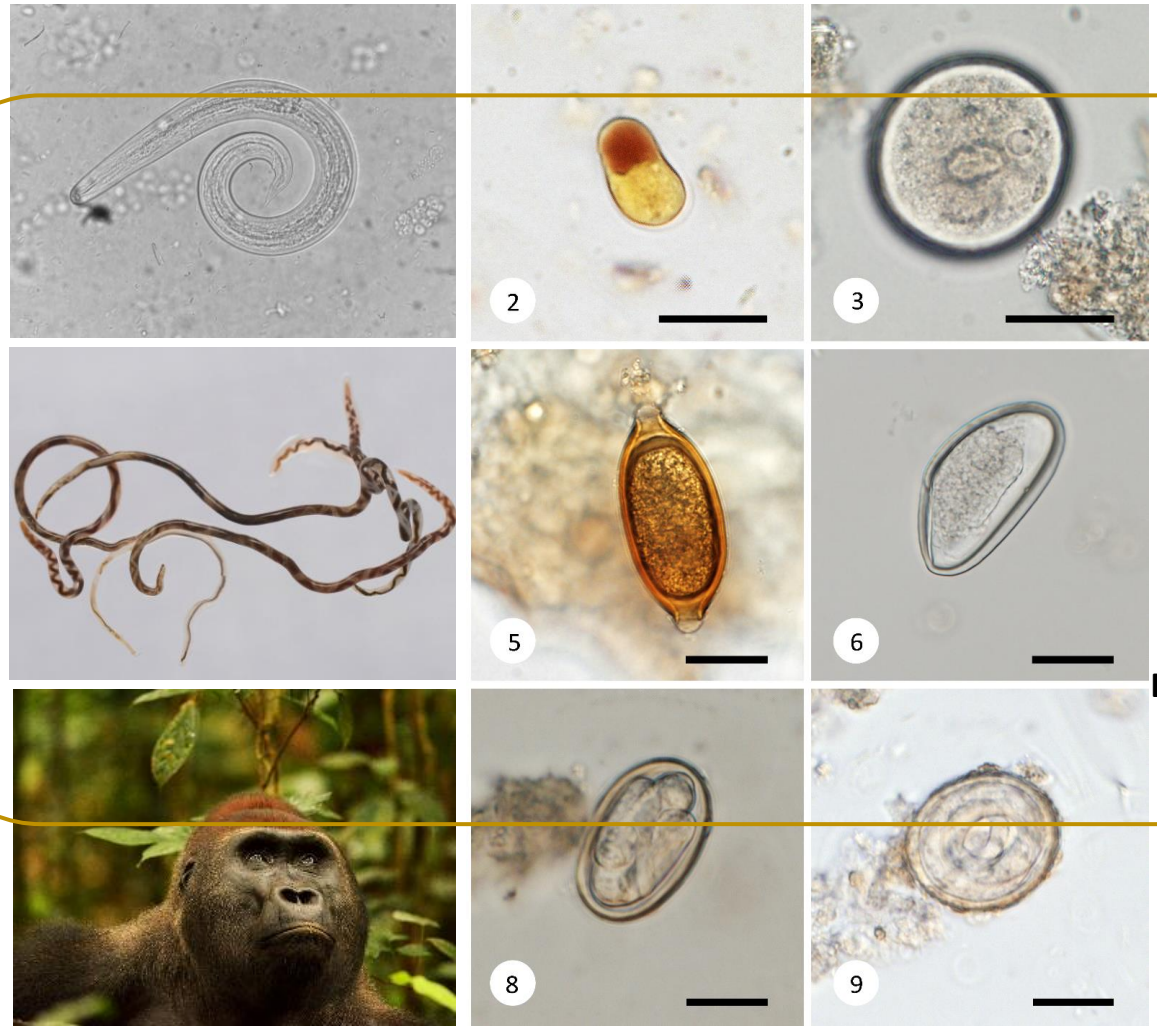
intermediate hosts




terrestrial

aquatic





Ekologie a evoluce parazitických helmintů primátů

Dr. Barbora Pafčo Ph.D., IVB, (Prof. MVDr. David Modrý, Ph.D.)

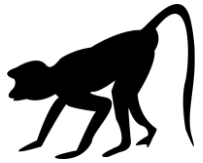
Epidemiology and diversity of *Strongyloides spp.*

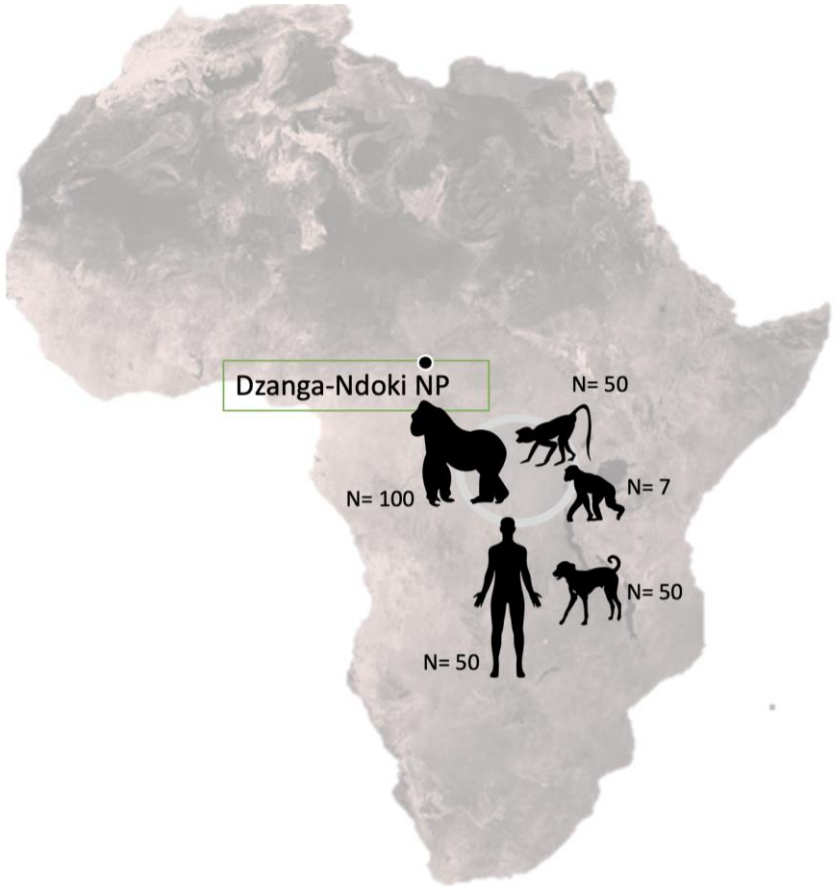

76%


58%


57%


43%

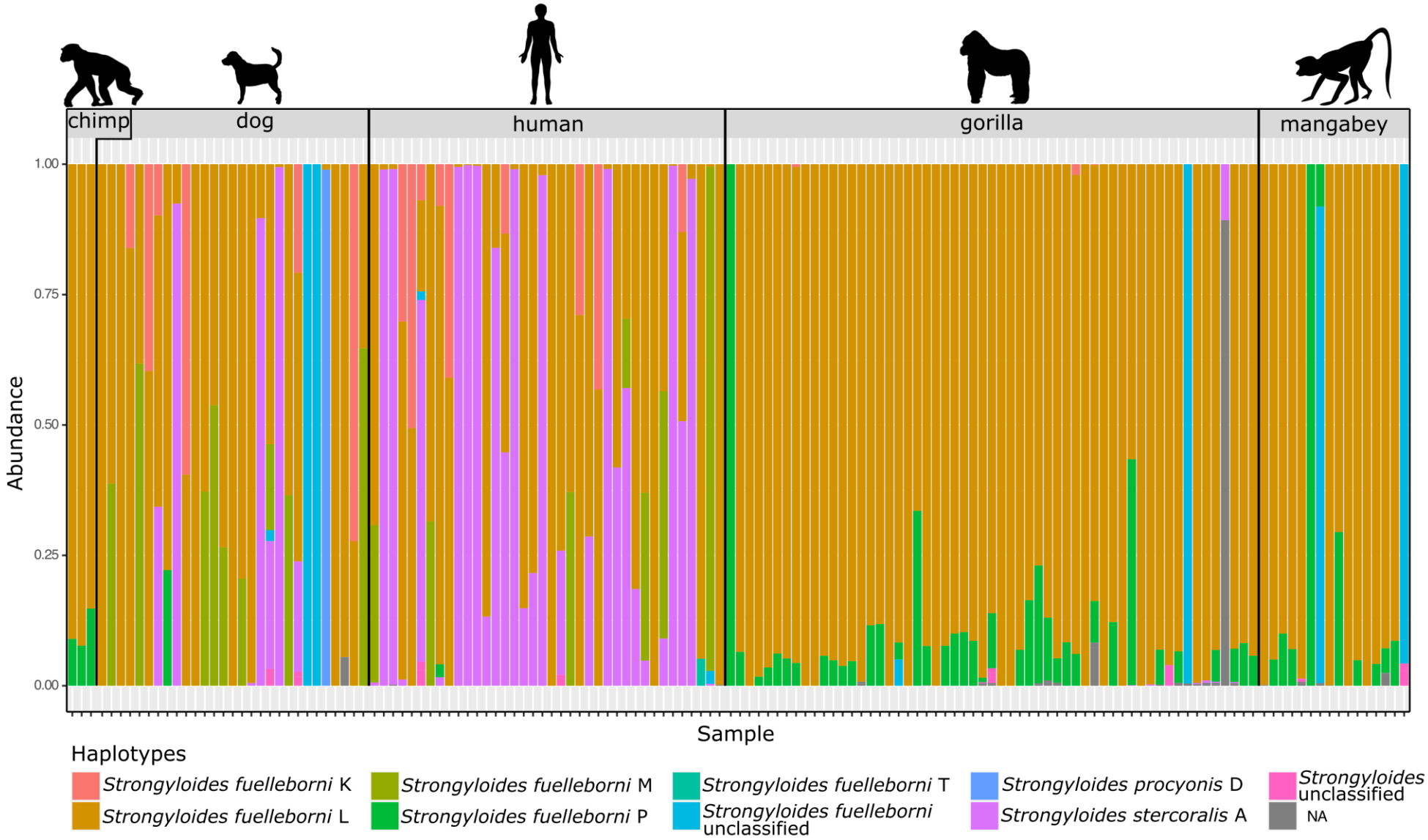

32%



S. stercoralis A

S. fuelleborni
African clade

HVRIV of 18S



Haplotypes based on Barratt et al. 2019:

haplotype **A**

haplotype **K**

haplotype **L**

haplotype **M**

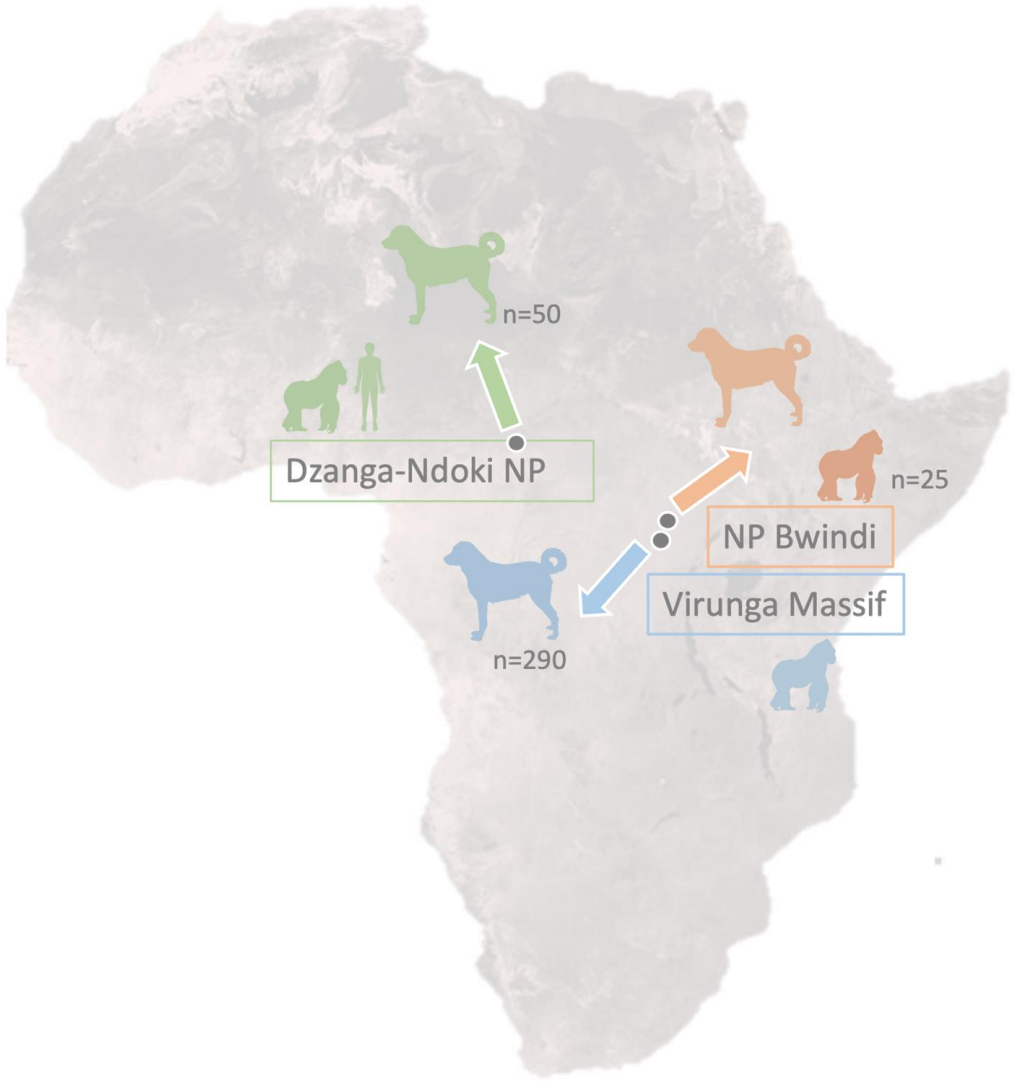
haplotype **T**

haplotype **P**

S. procyonis

Unpublished data

Diversity of *S. stercoralis* HVRIV of 18S rDNA



Virunga Massif (Rwanda, DRC)

S. stercoralis, haplotype A

S. stercoralis, haplotype A

S. stercoralis, haplotype E

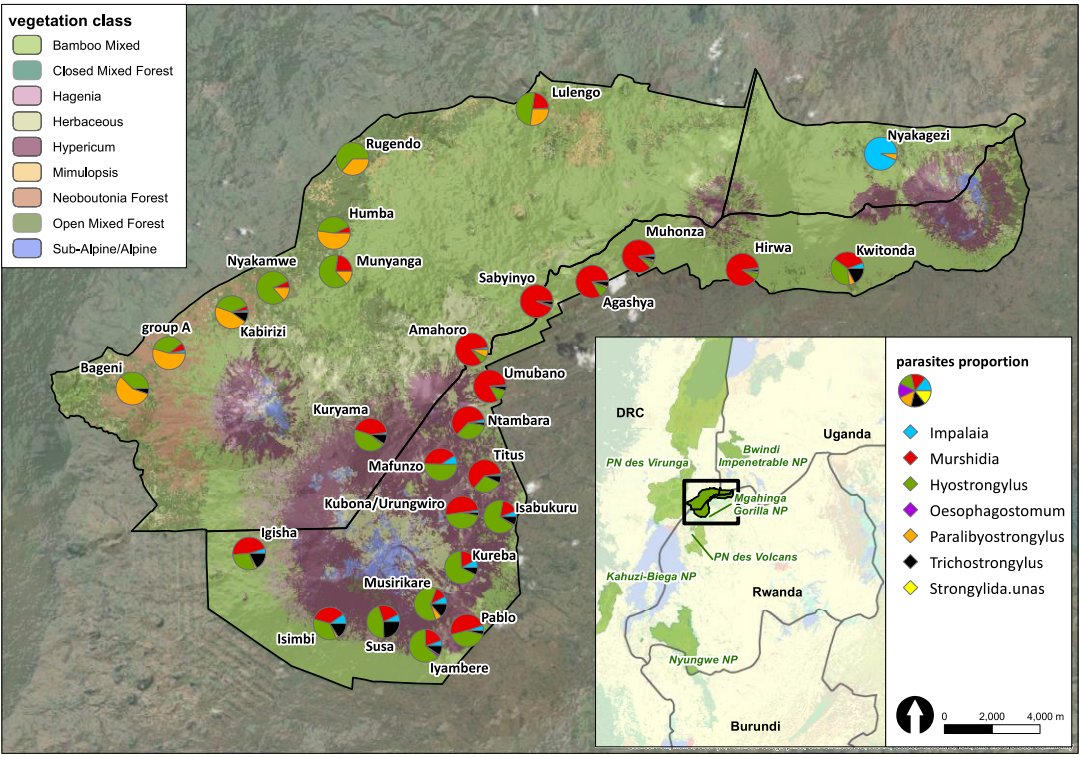
NP Bwindi (Uganda)

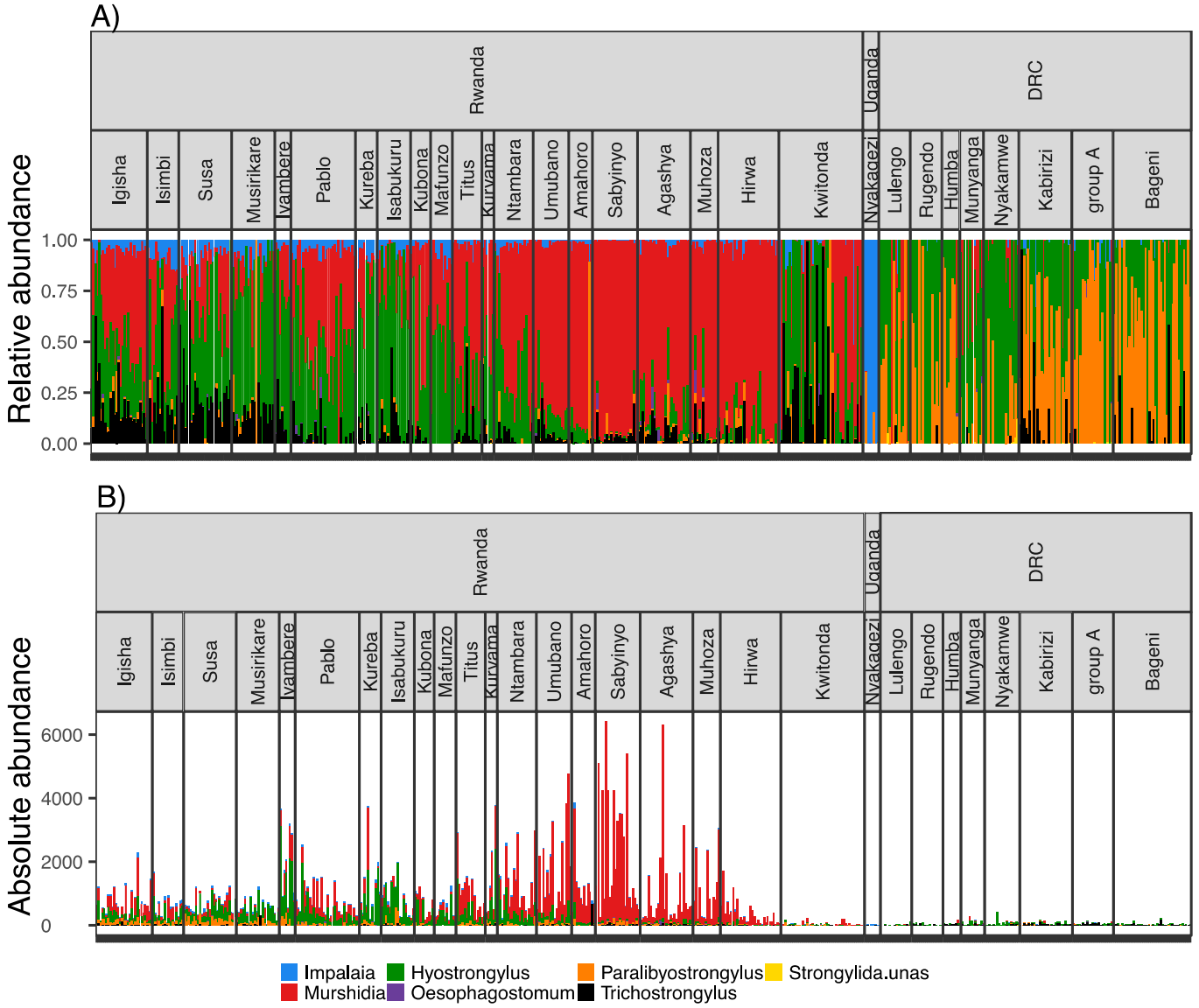
S. stercoralis, haplotype A

Dzanga-Ndoki NP (CAR)

S. stercoralis, haplotype A

S. stercoralis, haplotype A


vegetation class
Bamboo Mixed
Closed Mixed Forest
Hagenia
Herbaceous
Hypericum
Mimulopsis
Neoboutonia Forest
Open Mixed Forest
Sub-Alpine/Alpine
Lulengo
Rugendo
Nyakagezi
Humba
Muhonza
Hirwa
Kwitonda
Nyakamwe
Munyanga
Sabyinyo
Agashya
group A
Kabirizi
Amahoro
Bageni
Umubano
Kuryama
Ntambara
Titus
Mafunzo
Kubona/Urungwiro
Isabukuru
Igisha
Kureba
Musirikare
Pablo
Isimbi
Susa
Iyambere
DRC
Uganda
Rwanda
Burundi
Bwindi Impenetrable NP
PN des Virunga
Mgahinga Gorilla NP
PN des Volcans
Kahuzi-Biega NP
Nyungwe NP
parasites proportion
Impalaia
Murshidia
Hyostrongylus
Oesophagostomum
Paralibyostrongylus
Trichostrongylus
Strongylida.unas
0
2,000
4,000 m


A)
Relative abundance
1.00
0.75
0.50
0.25
0.00
Rwanda
Uganda
DRC
Igisha
Isimbi
Susa
Musirikare
Iyambere
Pablo
Kureba
Isabukuru
Kubona
Mafunzo
Titus
Kuryama
Ntambara
Umubano
Amahoro
Sabyinyo
Agashya
Muhoza
Hirwa
Kwitonda
Nyakageezi
Lulengo
Rugendo
Humba
Munyanga
Nyakamwe
Kabirizi
group A
Bageni
B)
Absolute abundance
6000
4000
2000
0
Impalaia
Murshidia
Hyostrongylus
Oesophagostomum
Paralibyostrongylus
Trichostrongylus
Strongylida.unas