Biota-FAPESP International Symposium on Phylogeography

Comparative phylogeography of Neotropical carnivores:
congruence vs. uniqueness of historical patterns

Eduardo Eizirik

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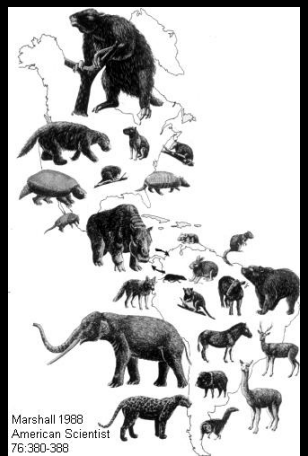
Laboratory of Genomic Diversity, NIH, USA

Neotropical carnivores

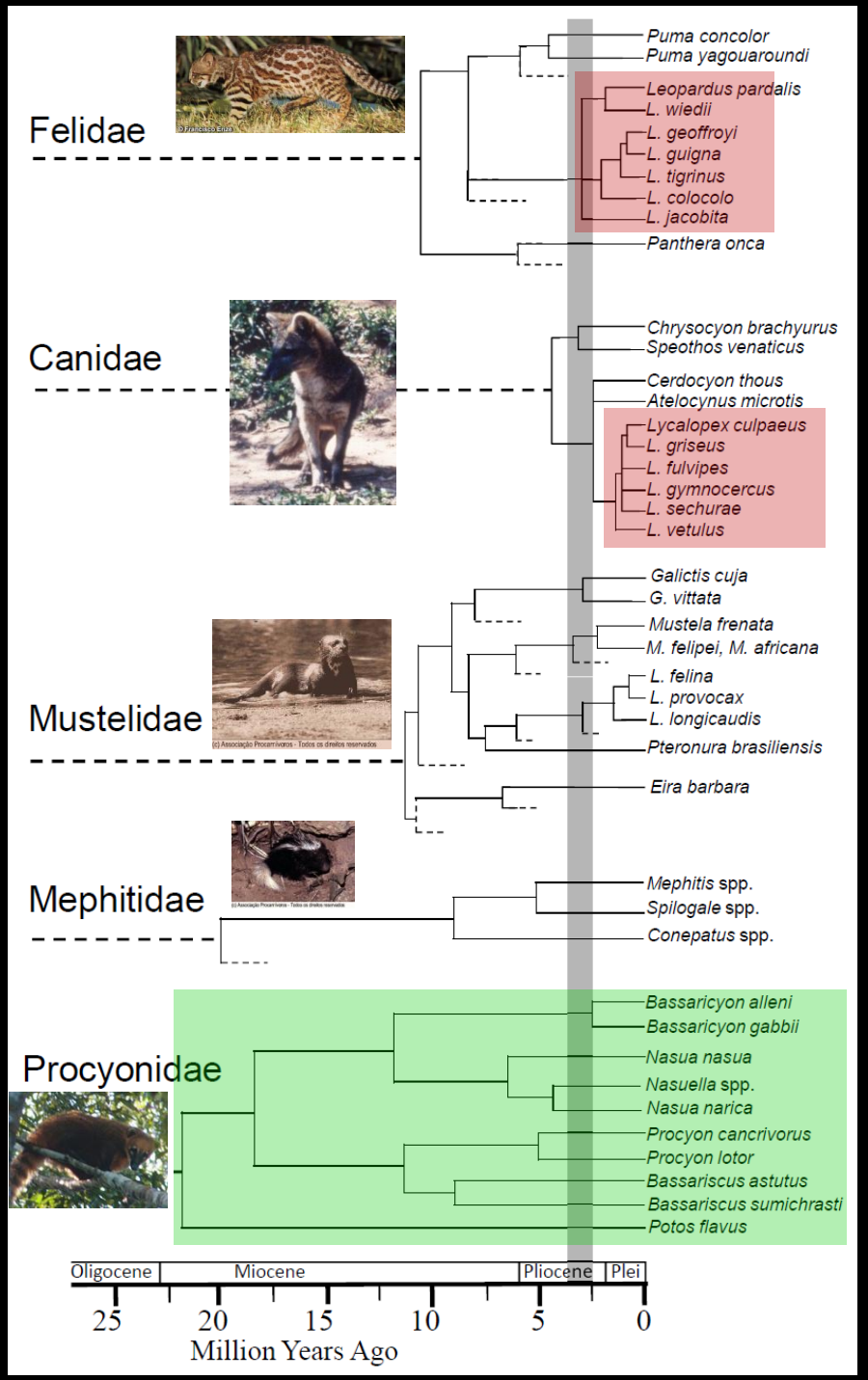
The Great American Biotic Interchange and the diversification of Neotropical carnivores

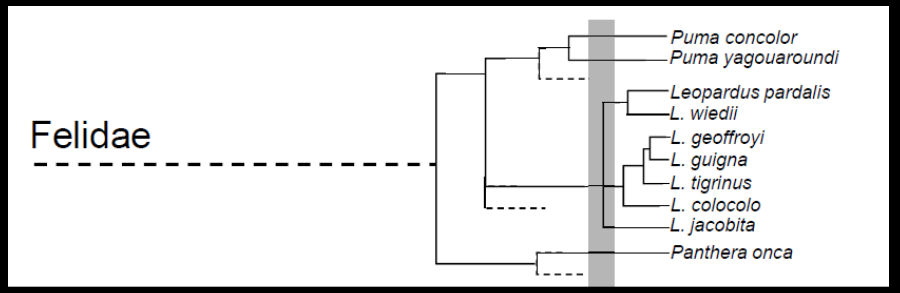
Meta-analysis of molecular phylogenies and divergence dates derived from nuclear gene supermatrices.

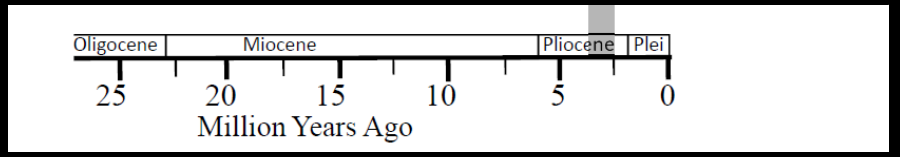
Contrasting patterns of diversification among carnivoran families.



Eizirik (in press)



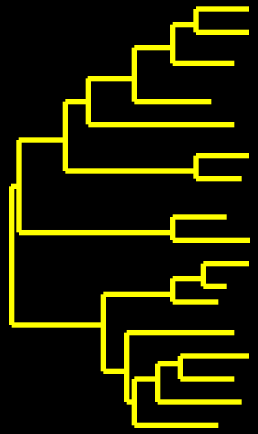




Eizirik (in press)

Margay (*Leopardus wiedii*)

Ocelot (*L. pardalis*)

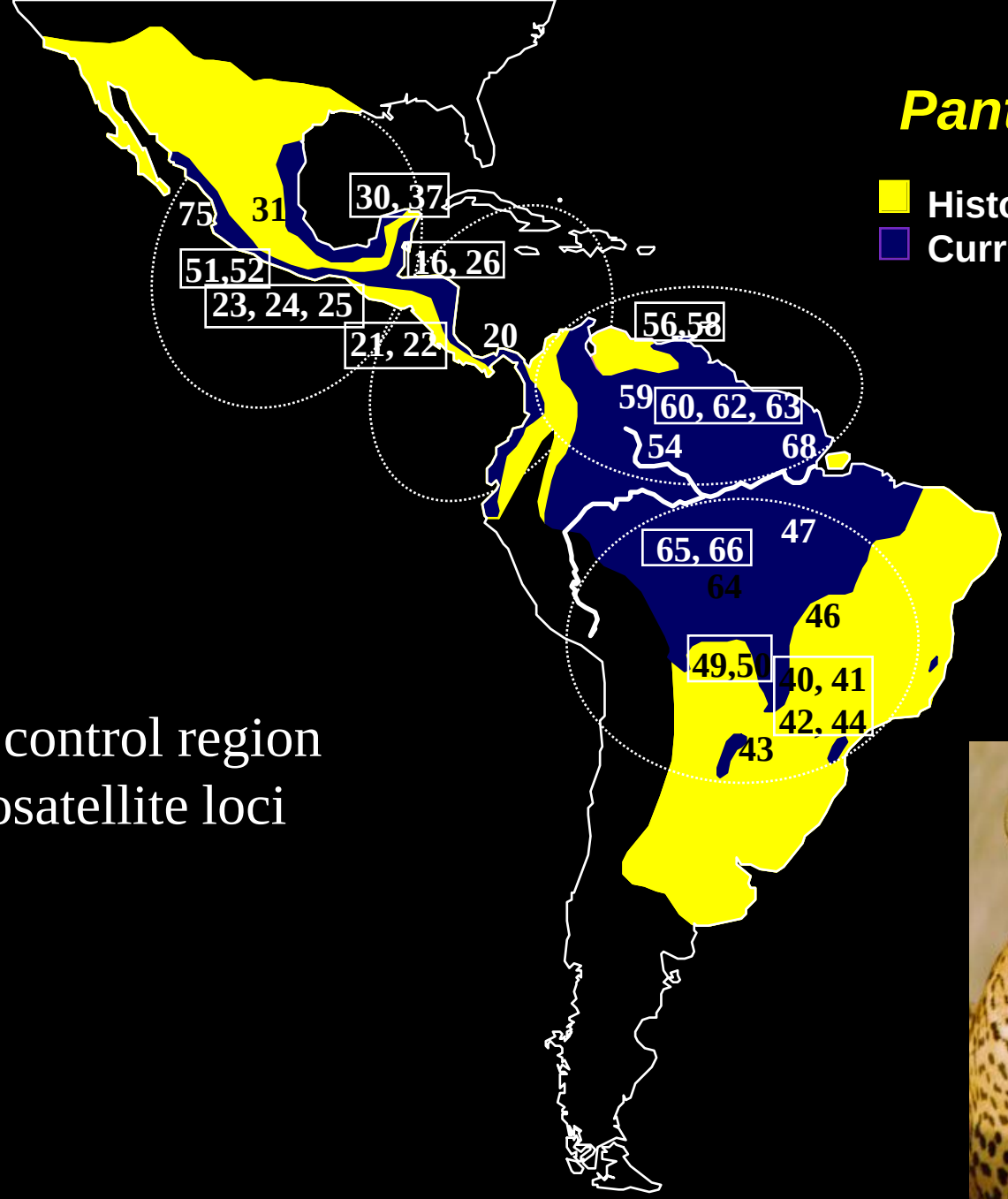


Mexico, Central America

N. northwest SA

N. northeast SA

Brasil, Bolivia, Paraguai

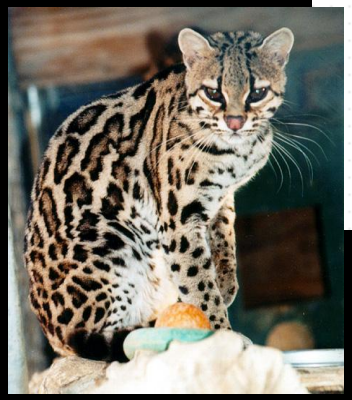


Markers:

- mtDNA control region
- 29 microsatellite loci

Puma yagouaroundi

1142 bp mtDNA
(CR, ATP8, ND5, 16S)
ML



Leopardus wiedii

Puma concolor

Puma yagouaroundi

Leopardus pardalis

Panthera onca

L. tigrinus, *L. geoffroyi*, *L. colocolo* and *L. guigna*

L. colocolo

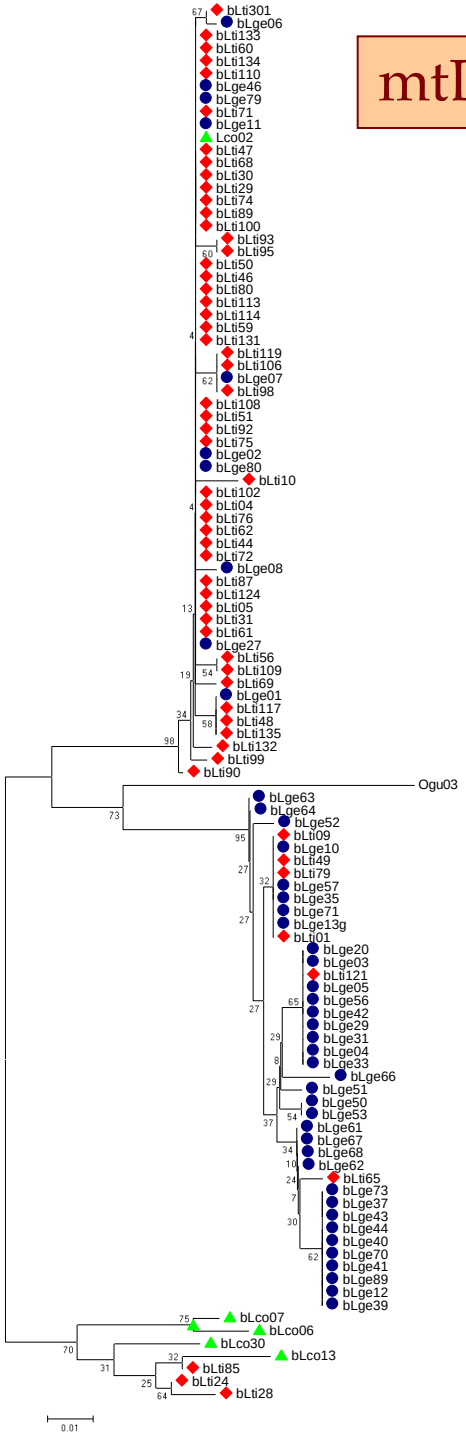
L. guina

L. tigrinus

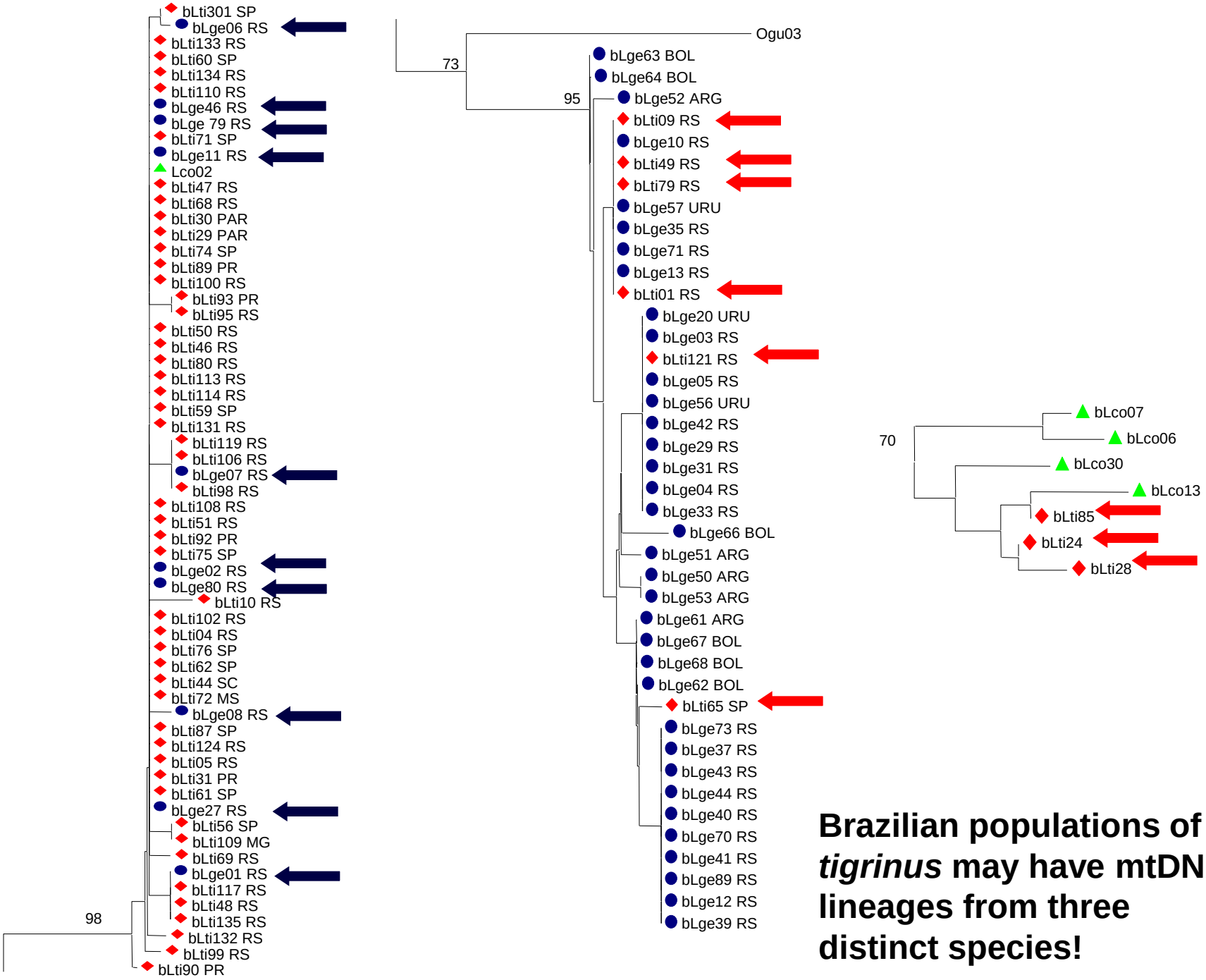
L. geoffroyi

Trigo et al. (in prep.)

mtDNA Control Region

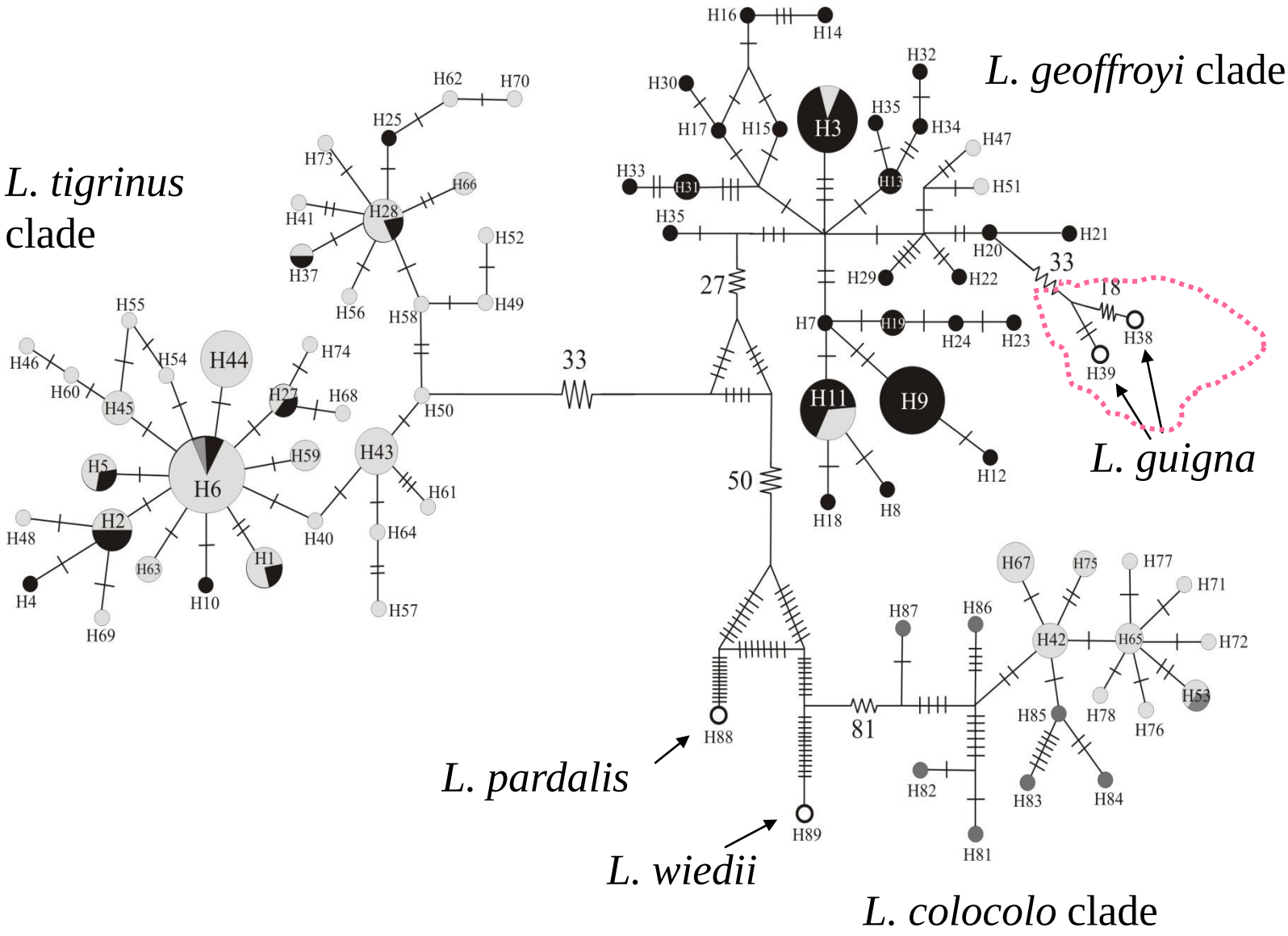


Trigo et al. (2008) Mol. Ecol.



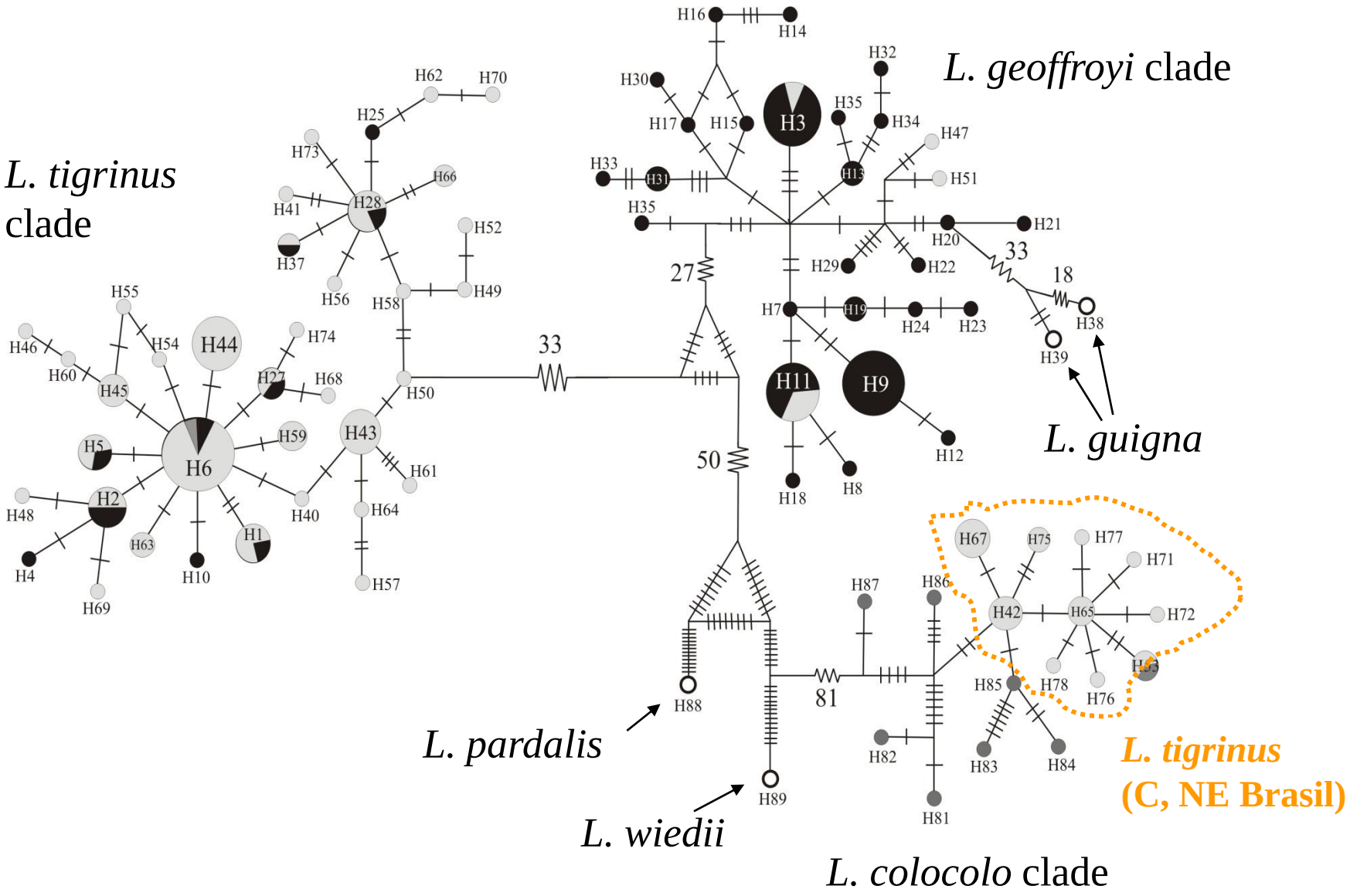
Brazilian populations of *L. tigrinus* may have mtDNA lineages from three distinct species!

mtDNA haplotype network



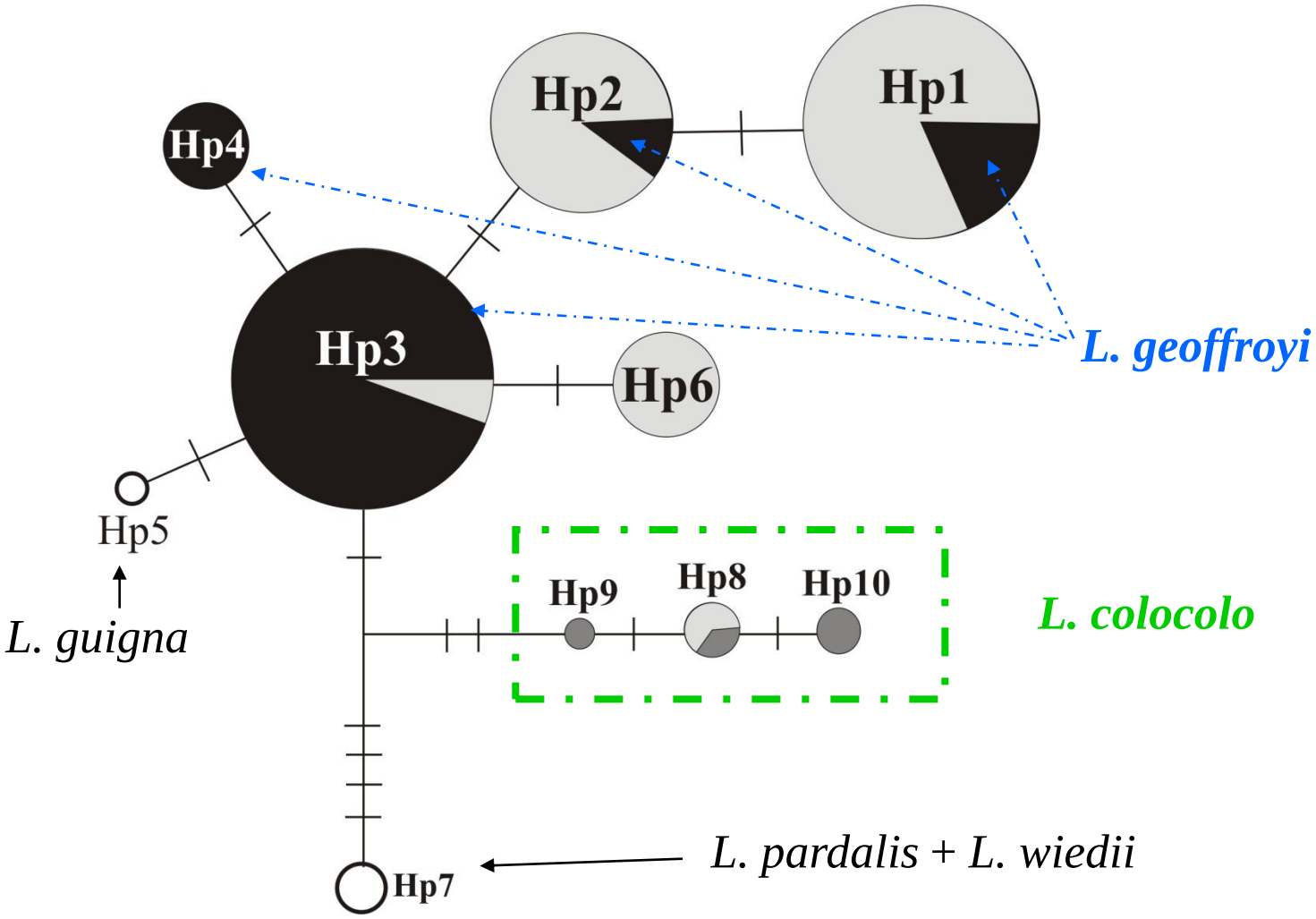
Trigo et al. (in prep.)

mtDNA haplotype network



Trigo et al. (in prep.)

Haplotype network (intron 2, *PLP1* gene, X chromosome)



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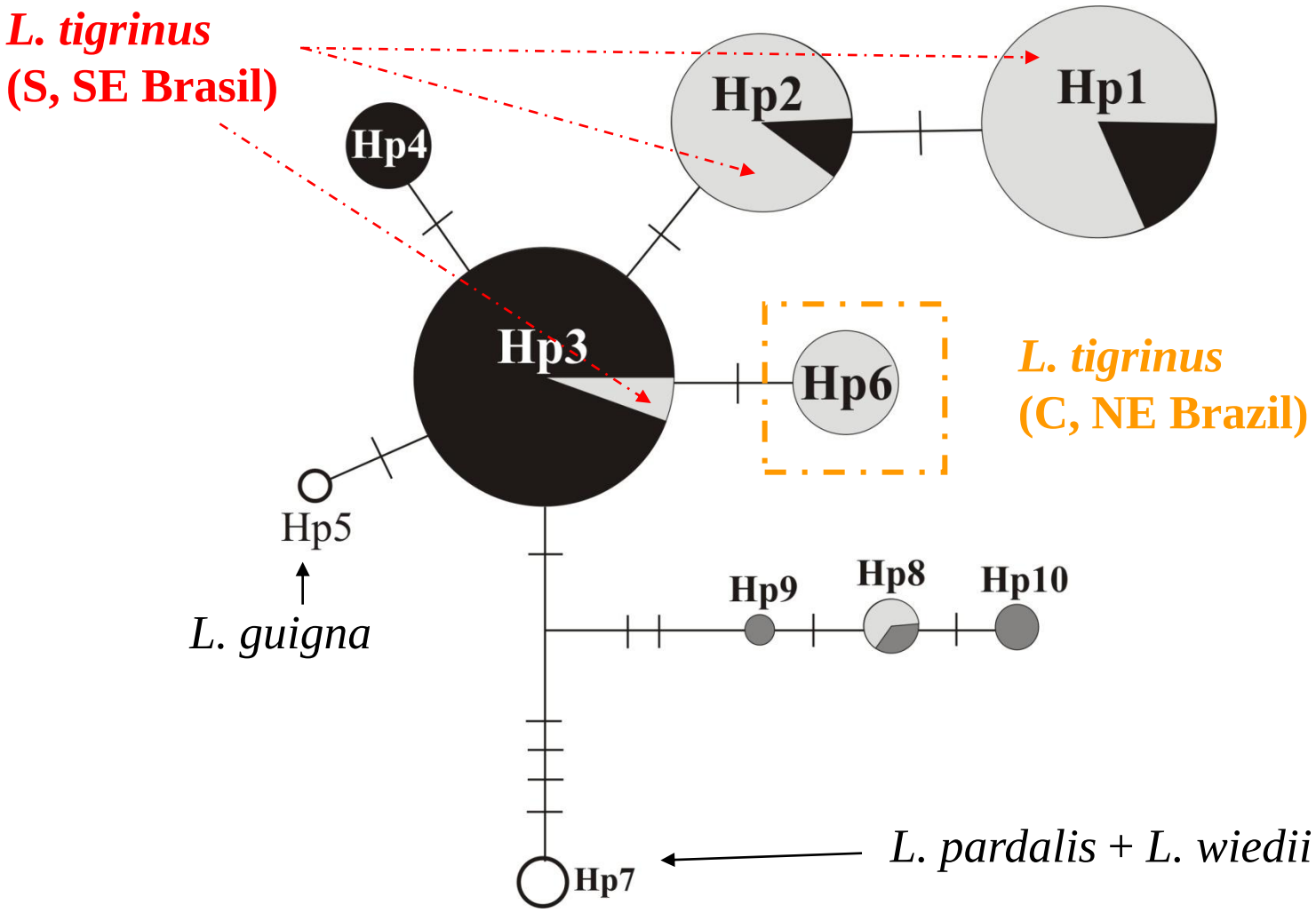
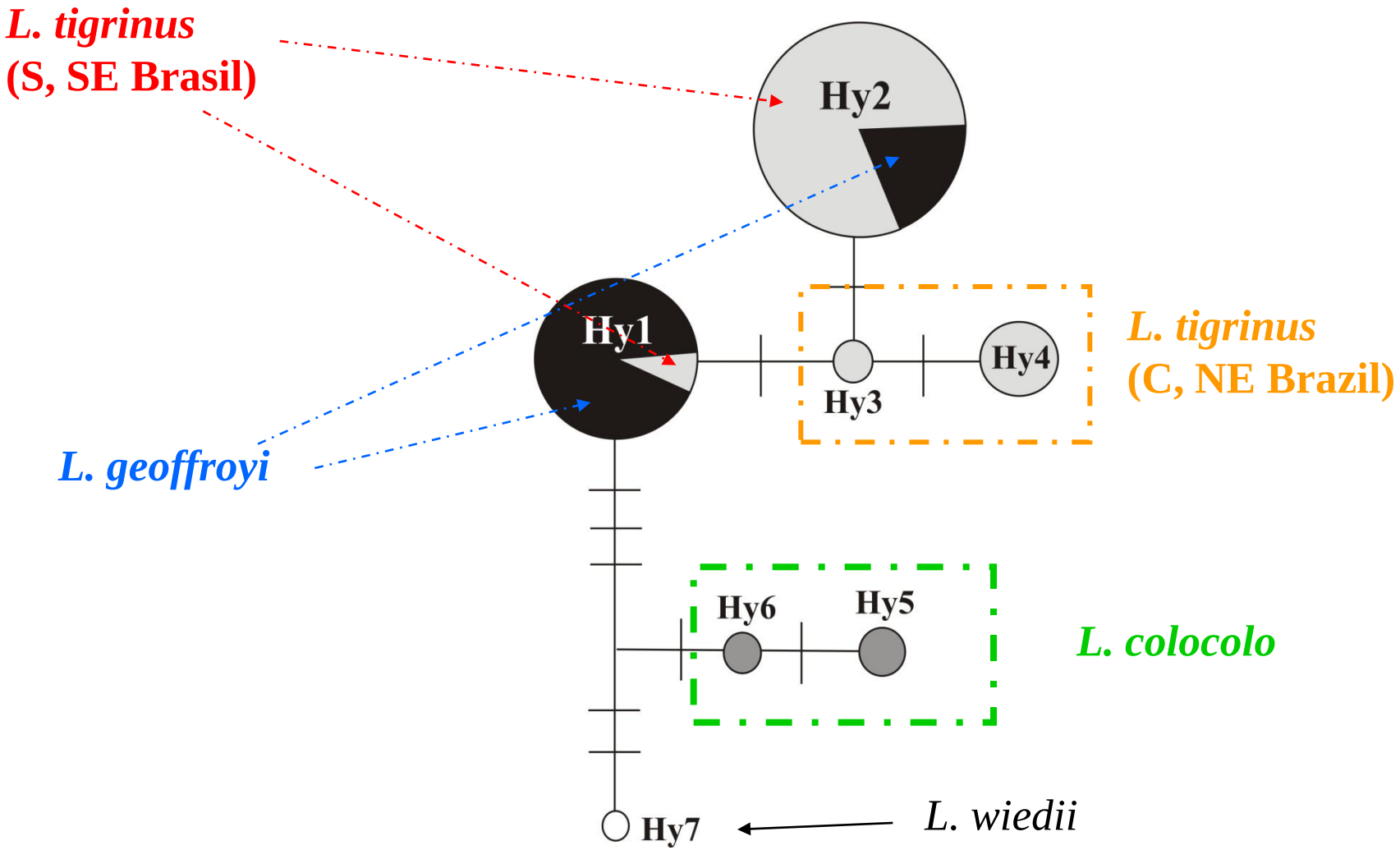
Haplotype network (intron 2, *PLP1* gene, X chromosome)

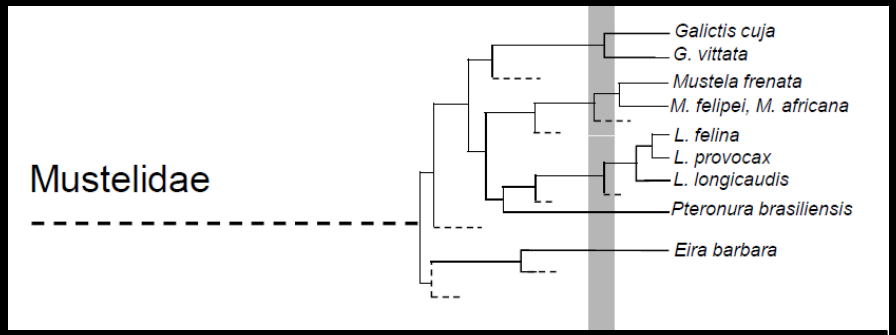


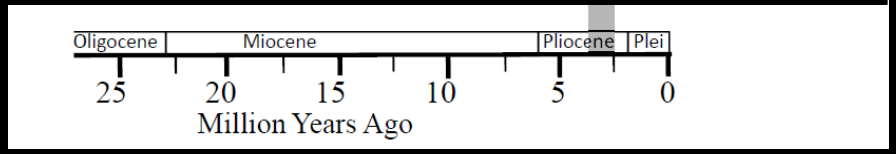
Trigo et al. (in prep.)

Haplotype network (intron 2, ZFY and SMCY3 genes, Y chromosome)



Trigo et al. (in prep.)





Eizirik (in press)

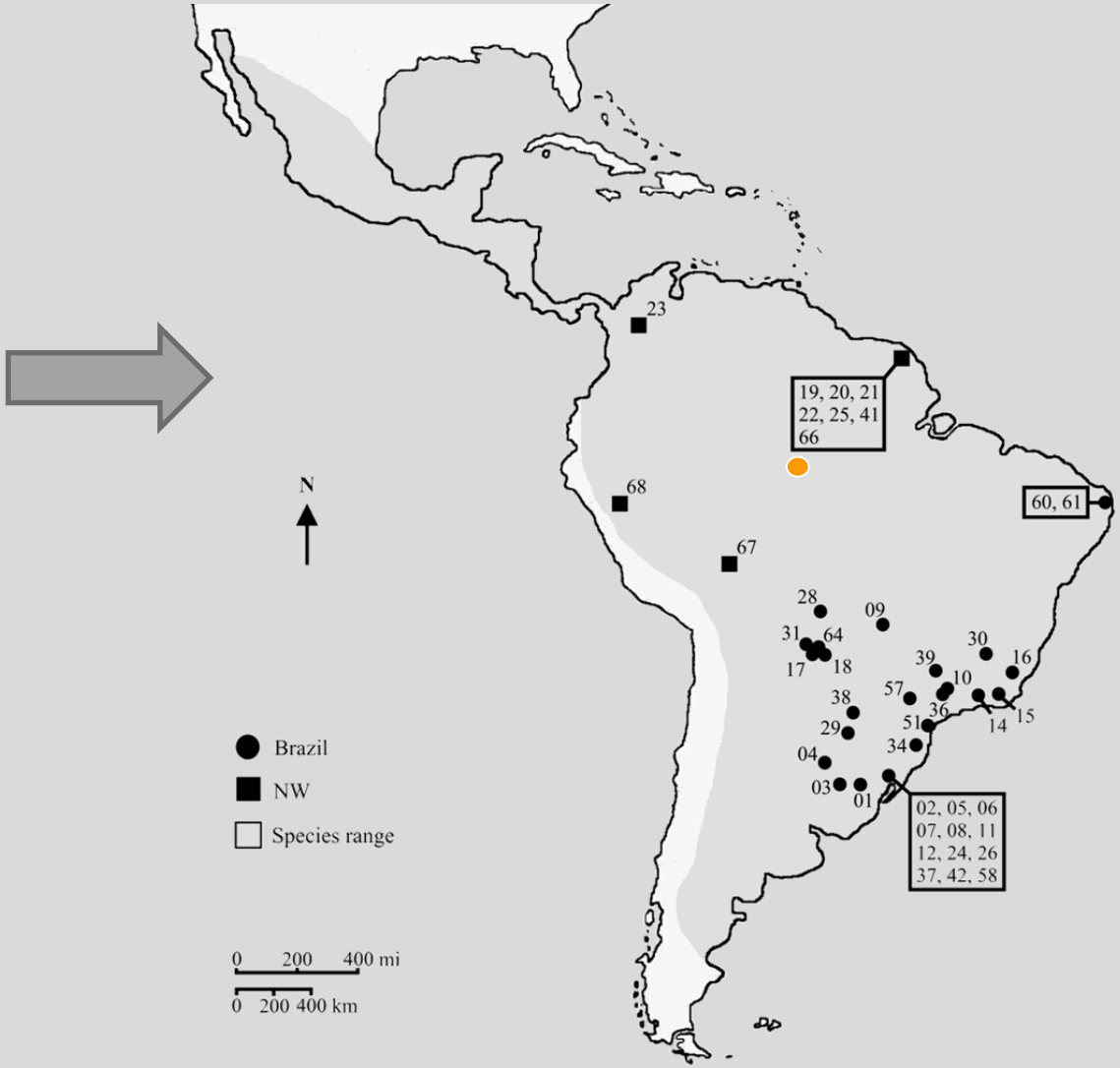
Phylogeographic Patterns and Evolutionary History of the Neotropical otter (*Lontra longicaudis*)

Cristine Silveira Trinca

Molecular markers

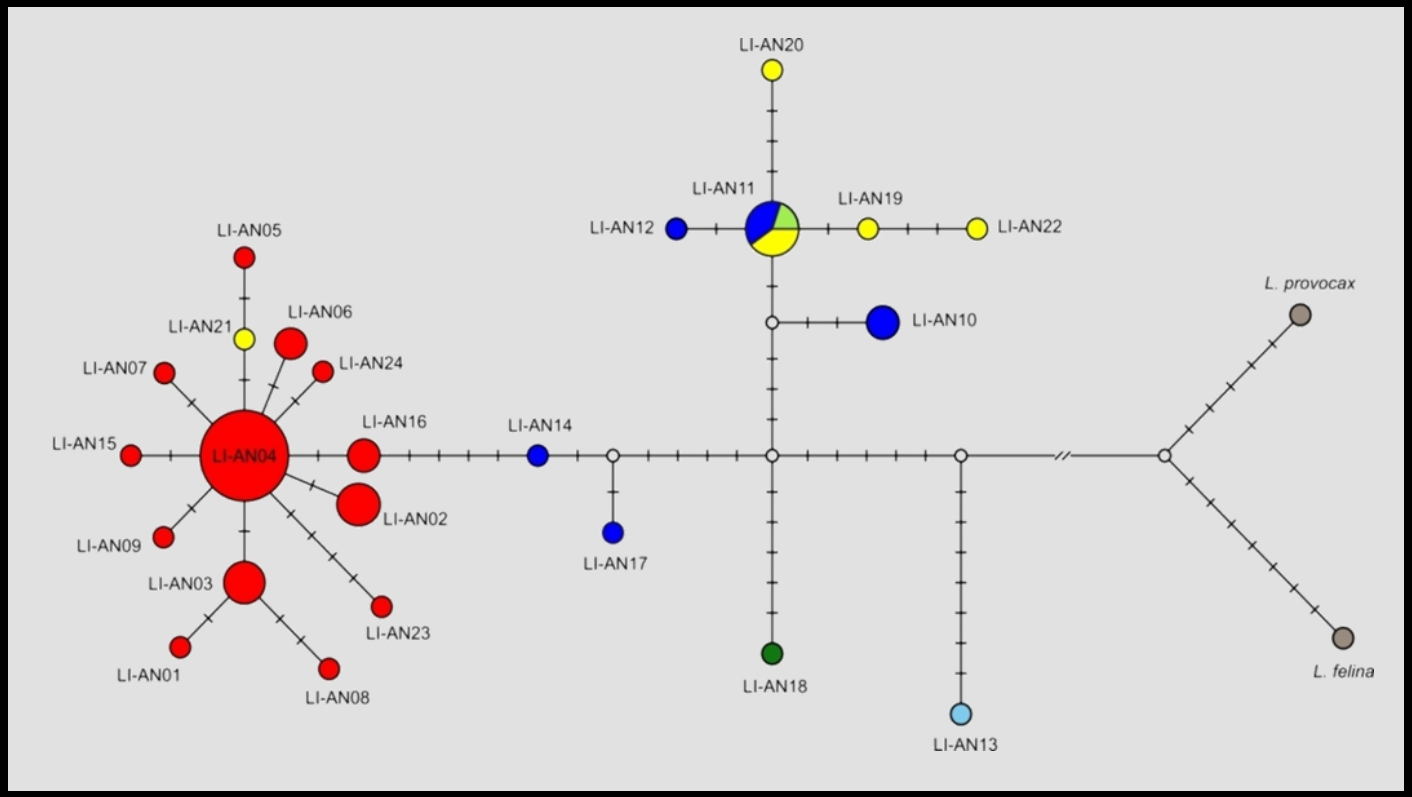
mtDNA sequences
- Control region
- *ND5*
-*ATP8*

10 microsatellite loci



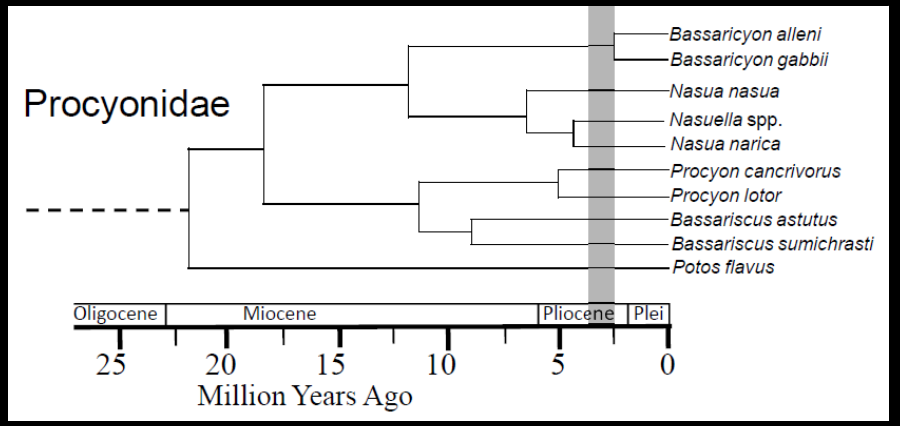
mtDNA haplotype network

- Eastern SA
- French Guiana
- Brazilian Amazon
- Peru
- Bolivia
- Colombia



Signal for a recent demographic expansion in eastern SA

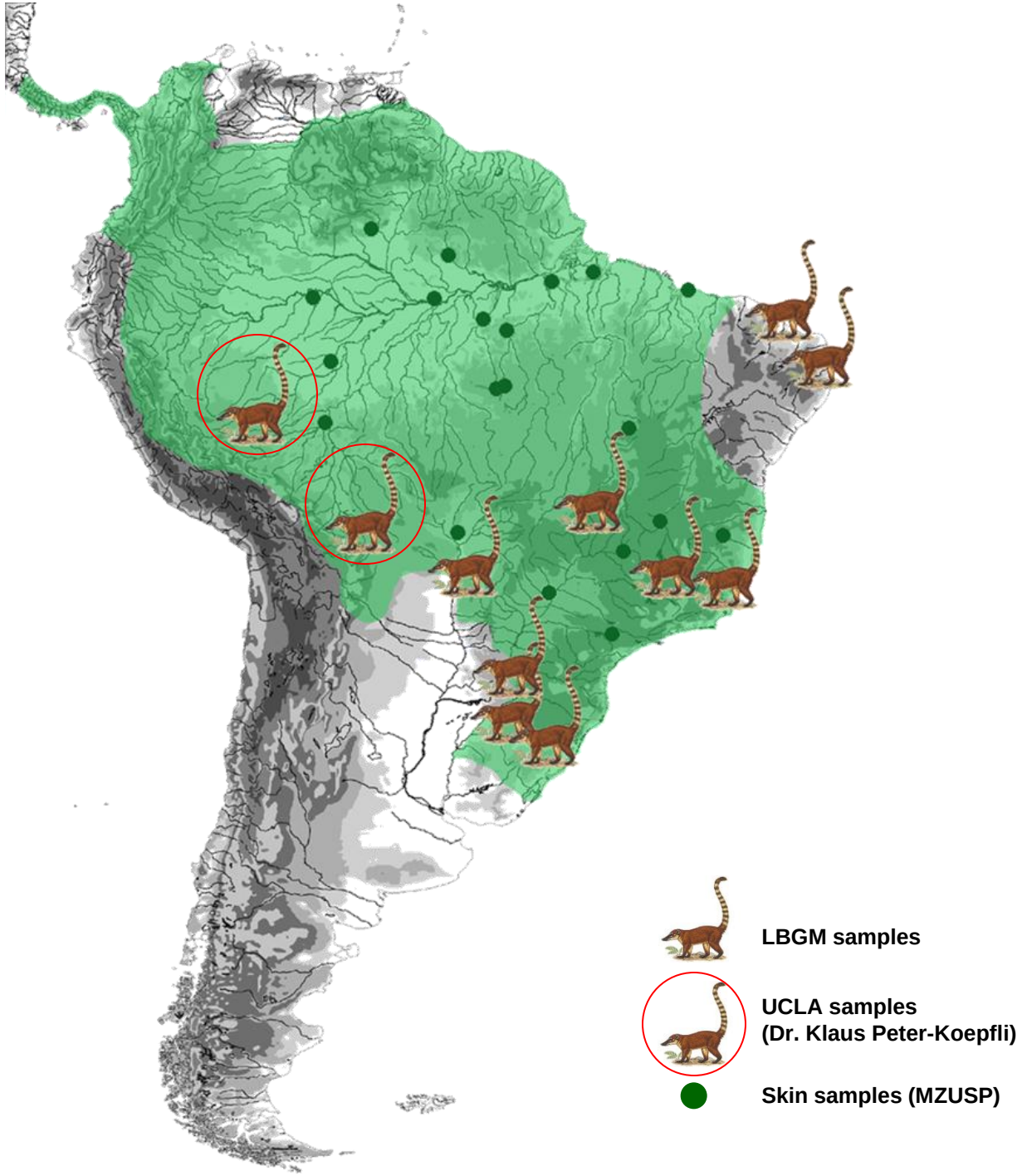
Tajima's D: -2.31891; p = 0.000
Fu's F = -7.96204; p = 0.001


Procyonidae
Bassaricyon alleni
Bassaricyon gabbii
Nasua nasua
Nasuella spp.
Nasua narica
Procyon cancrivorus
Procyon lotor
Bassariscus astutus
Bassariscus sumichrasti
Potos flavus
Oligocene
Miocene
Pliocene
Plei
25
20
15
10
5
0
Million Years Ago

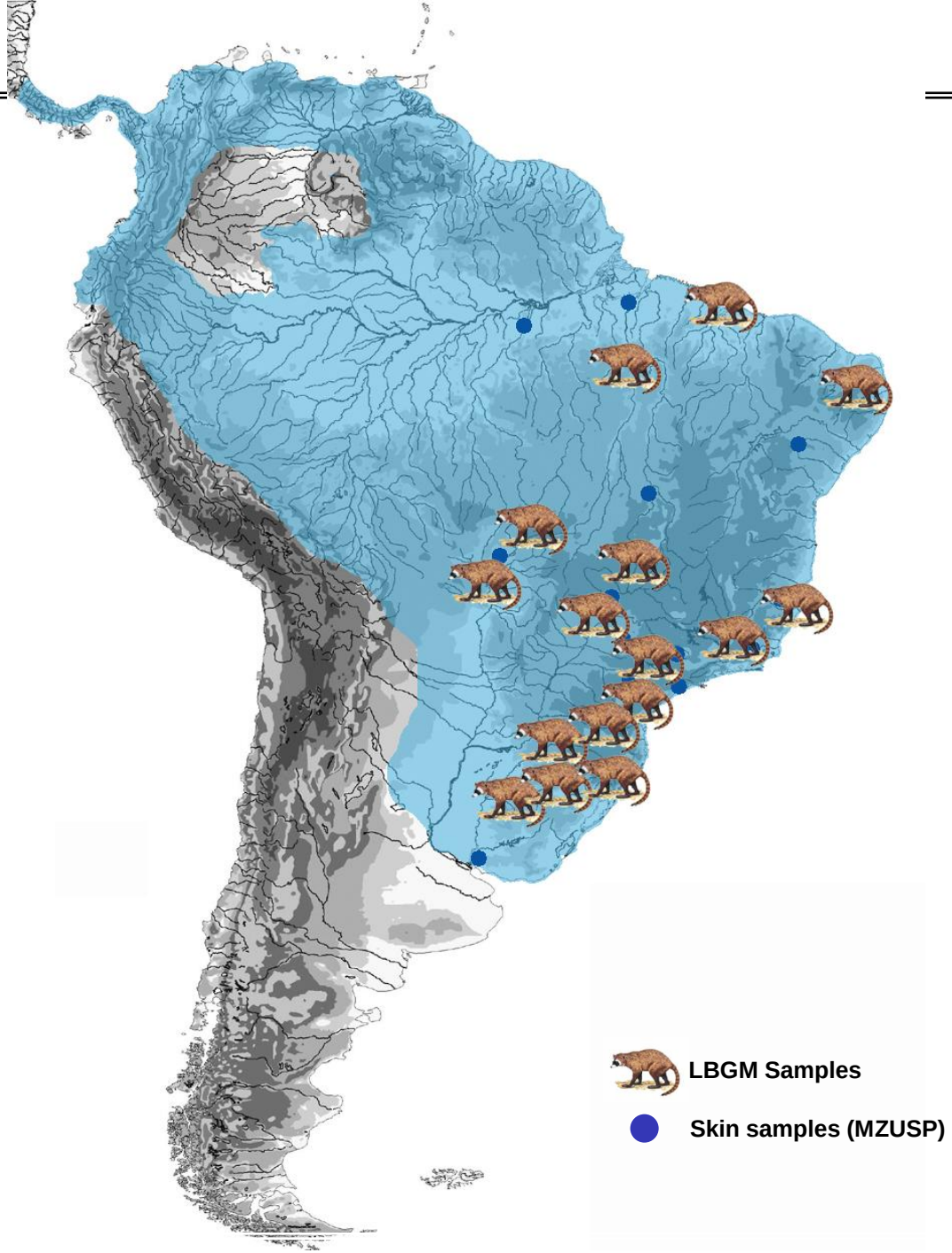
Comparative phylogeography and demographic history of two South American procyonids: N*asua nasua* and *Procyon cancrivorus*

Mirian T. N. Tsuchiya-Jerep

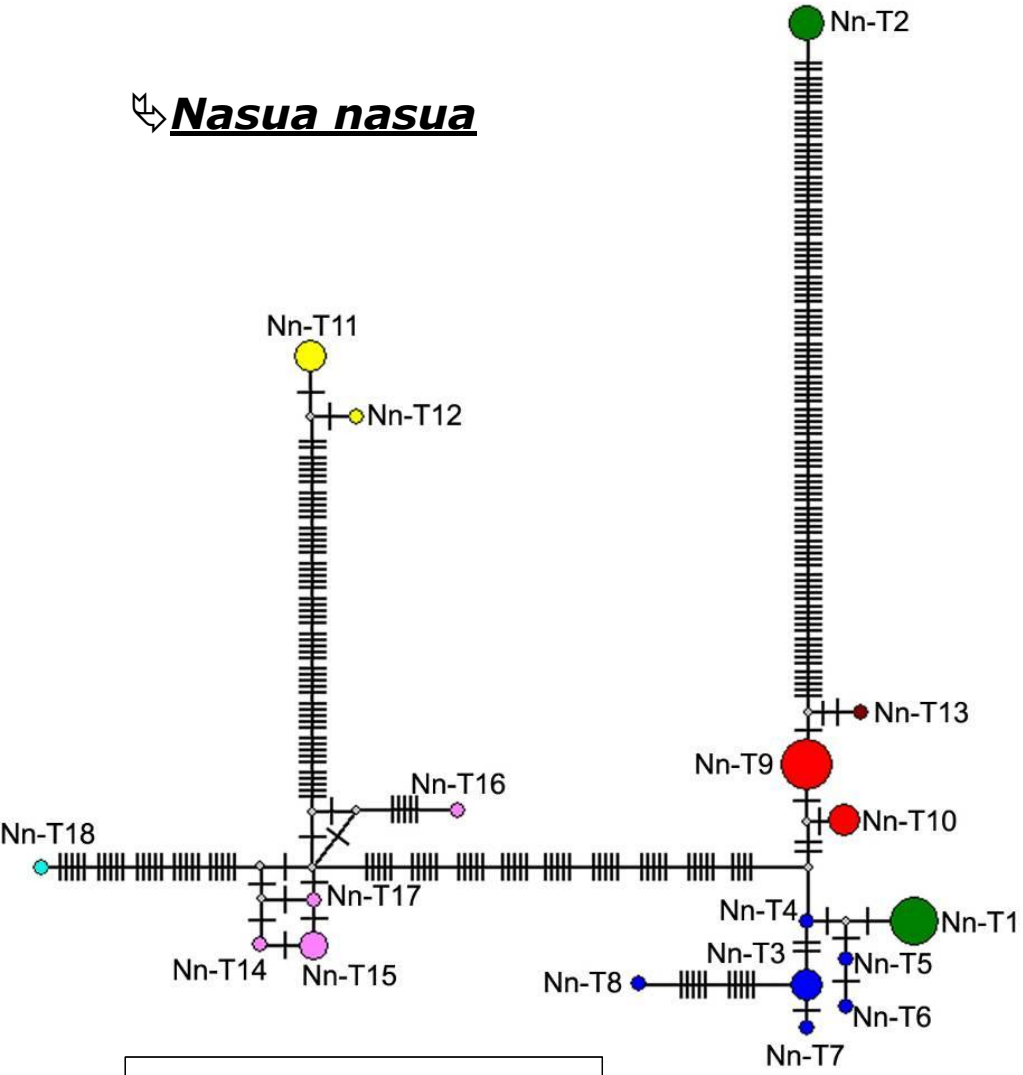
N. nasua

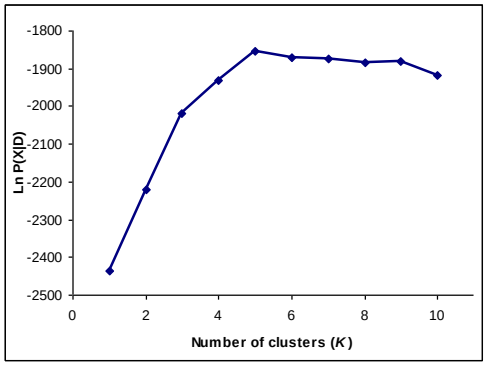

LBGM samples
UCLA samples
(Dr. Klaus Peter-Koepfli)
Skin samples (MZUSP)

P. cancrivorus

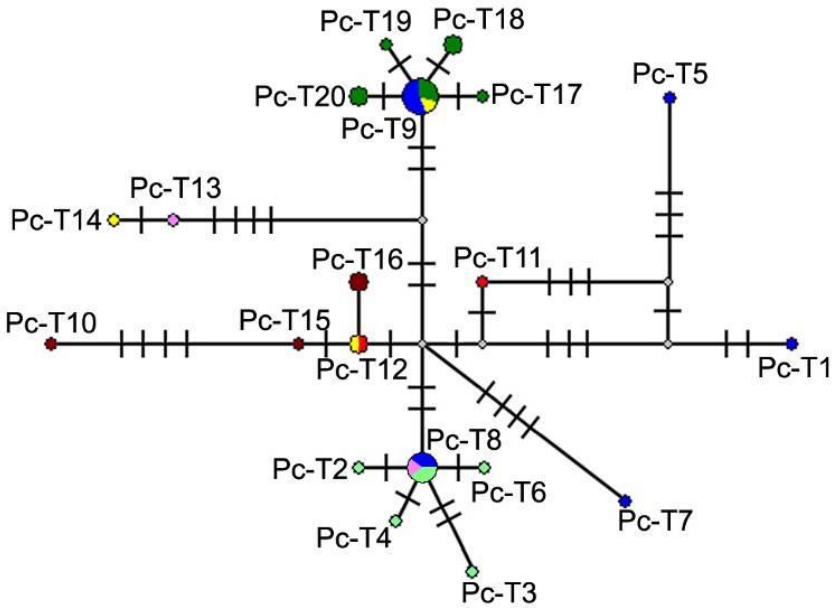


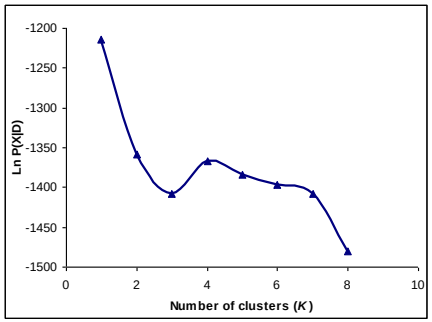
Nasua nasua

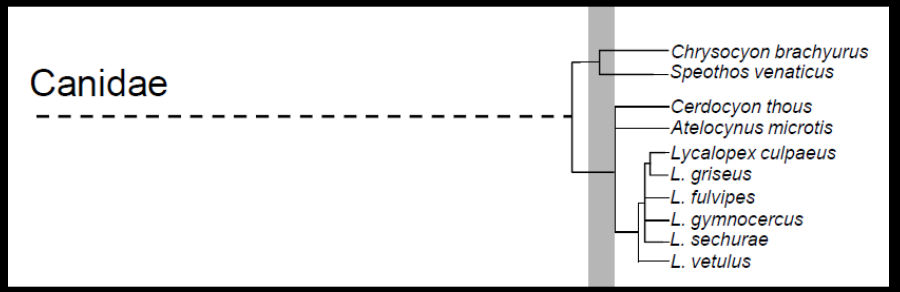


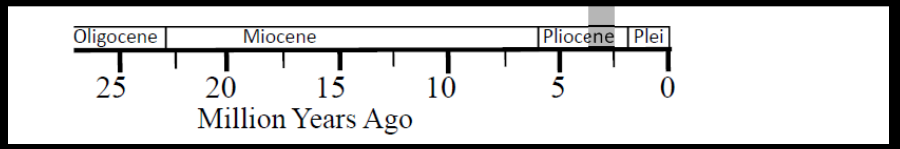


Procyon cancrivorus



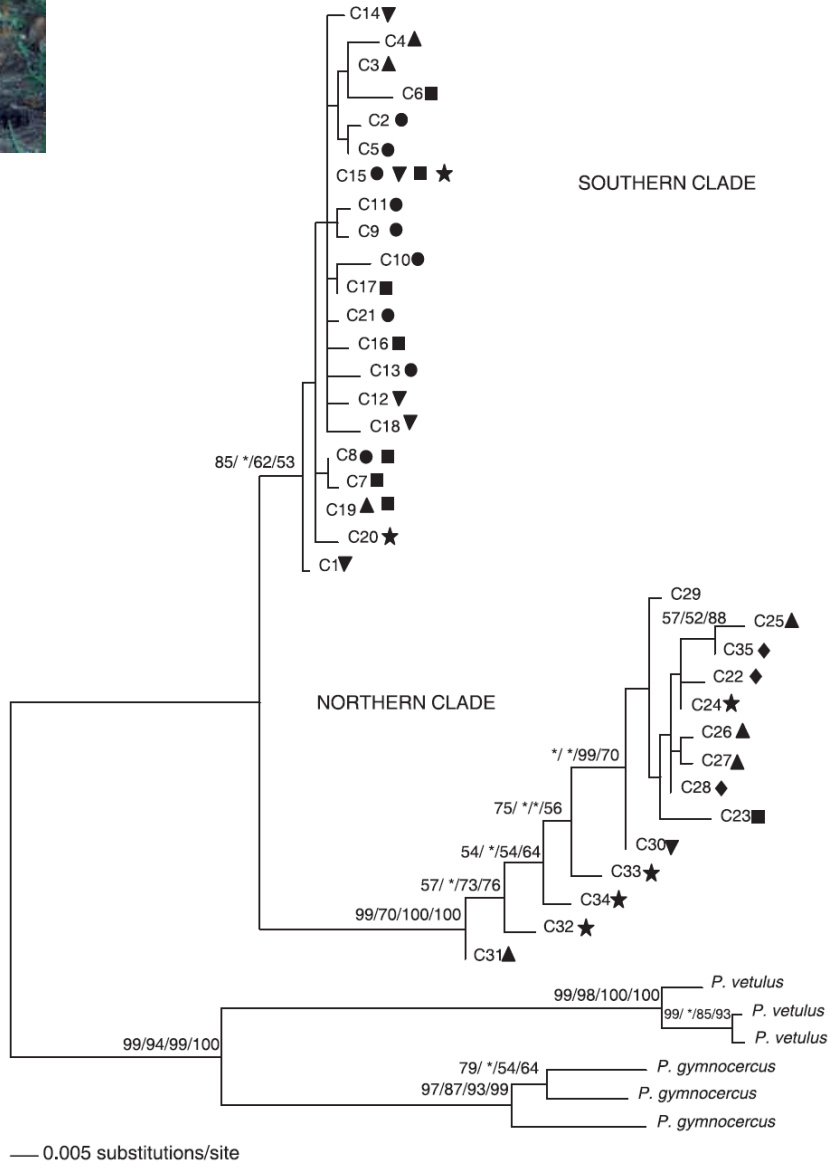


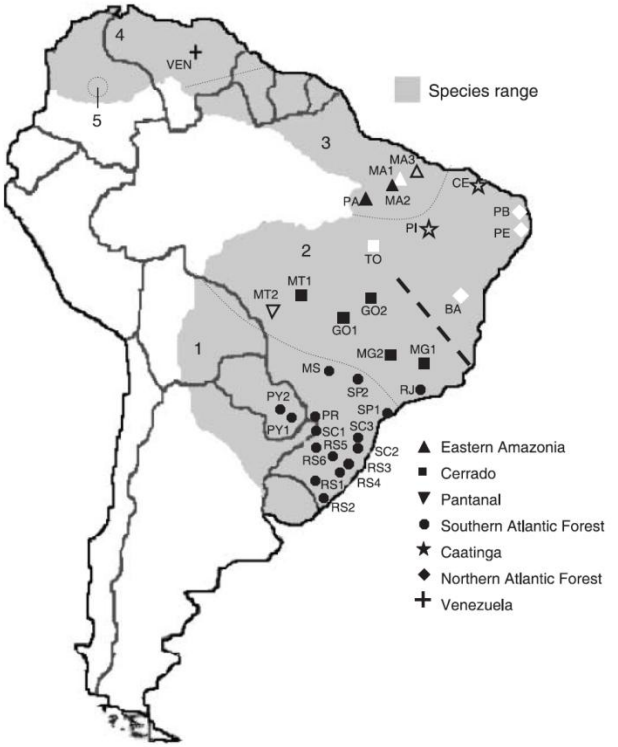




Eizirik (in press)

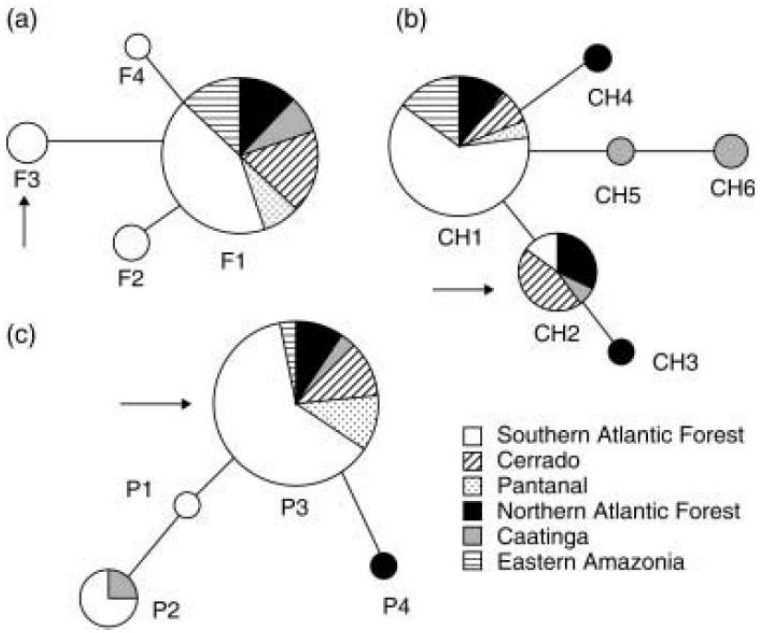
Cerdocyon thous





Tchaicka et al. (2007). Mol. Ecol.

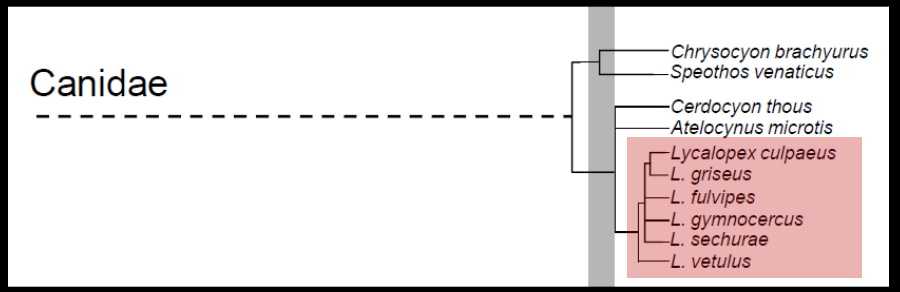
Cerdocyon thous

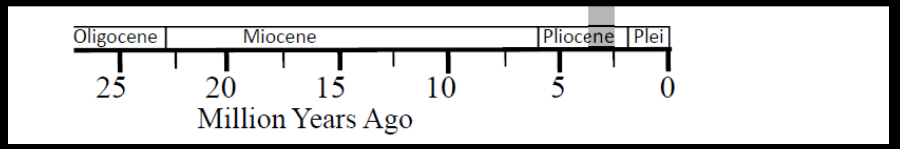


	mtDNA-CR	Nuclear mean†	Overall‡
θ — South	0.025 (0.015–0.044)	0.008 (0.0008–0.883)	0.014 (0.012–0.035)
θ —North	0.126 (0.037–0.395)	0.009 (0.0005–0.553)	0.031 (0.020–0.128)
Nm (South-North)*	1.544 (0.100–12.473)	6.383 (2.146–270.373)	1.556 (0.505–25.777)
Nm (North-South)*	0.394 (0.055–1.670)	1.223 (0.046–212.685)	0.761 (0.248–2.521)

Tchaicka et al. (2007). Mol. Ecol.

Genus *Lycalopex*





Eizirik (no prelo)

Genus *Lycalopex*

L. sechurae

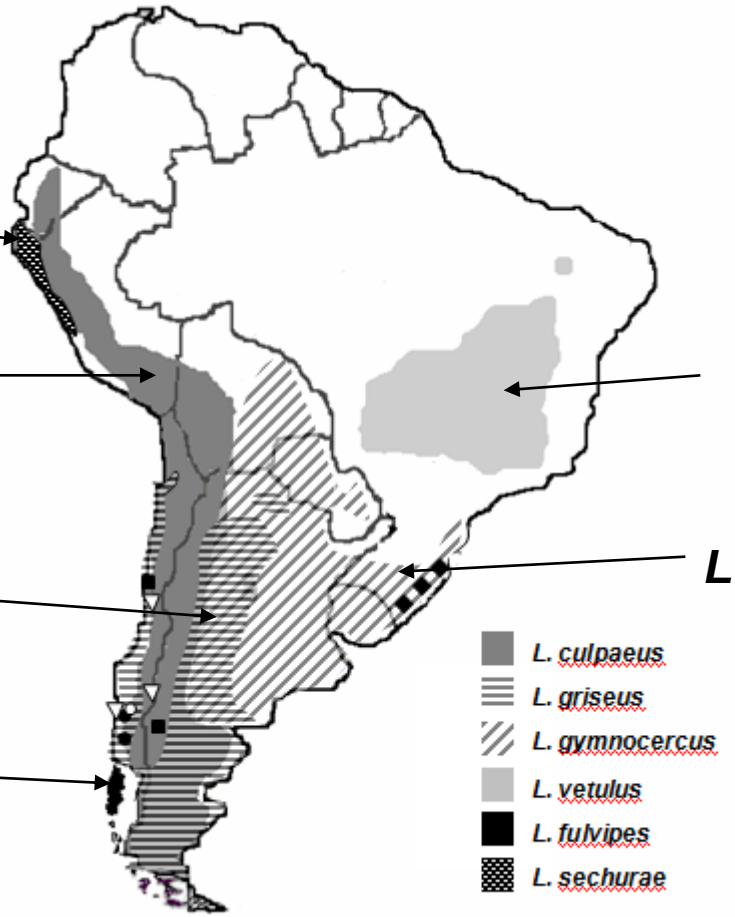
L. culpaeus

L. griseus

L. fulvipes

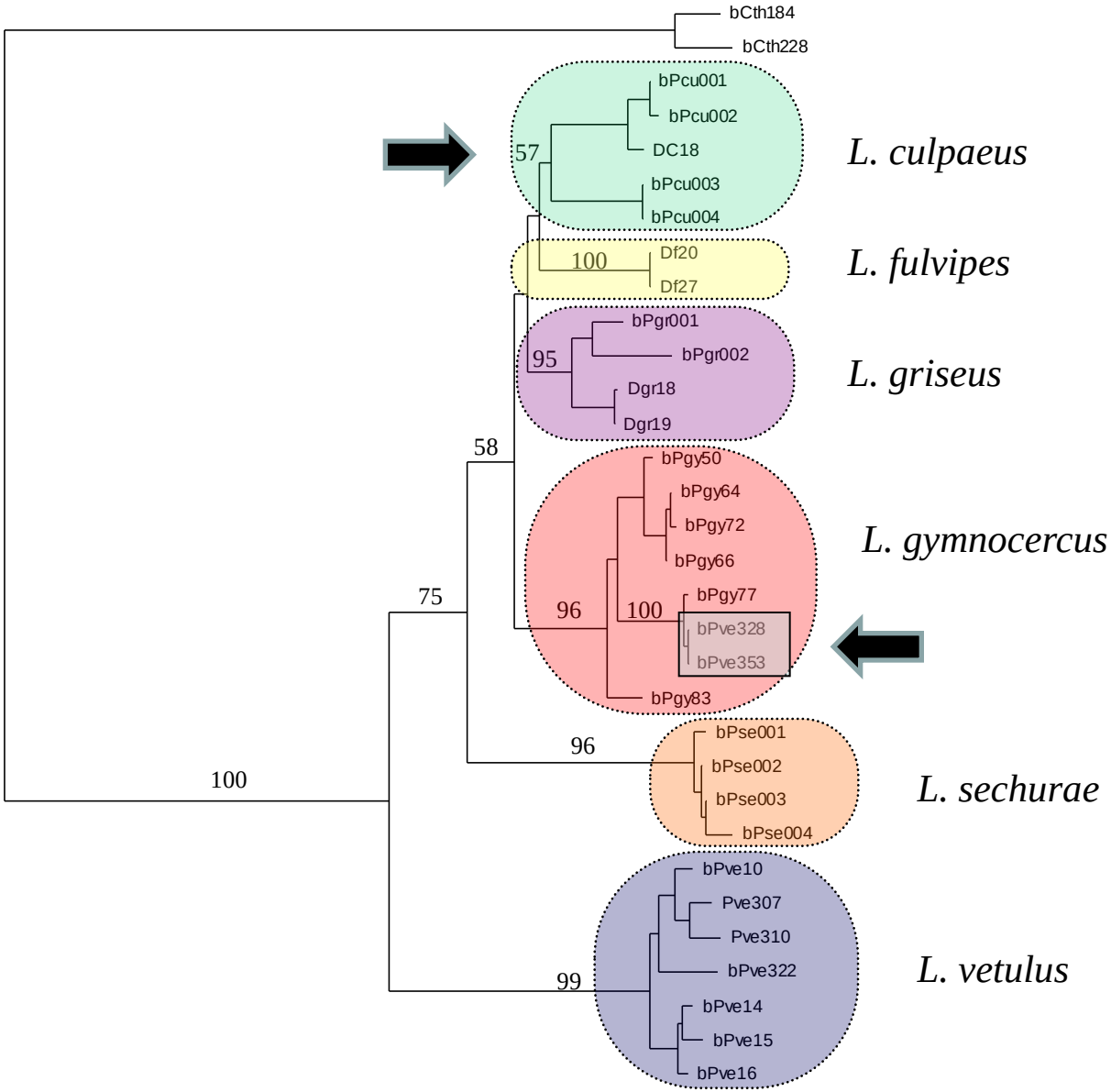
L. vetulus

L. gymnocercus



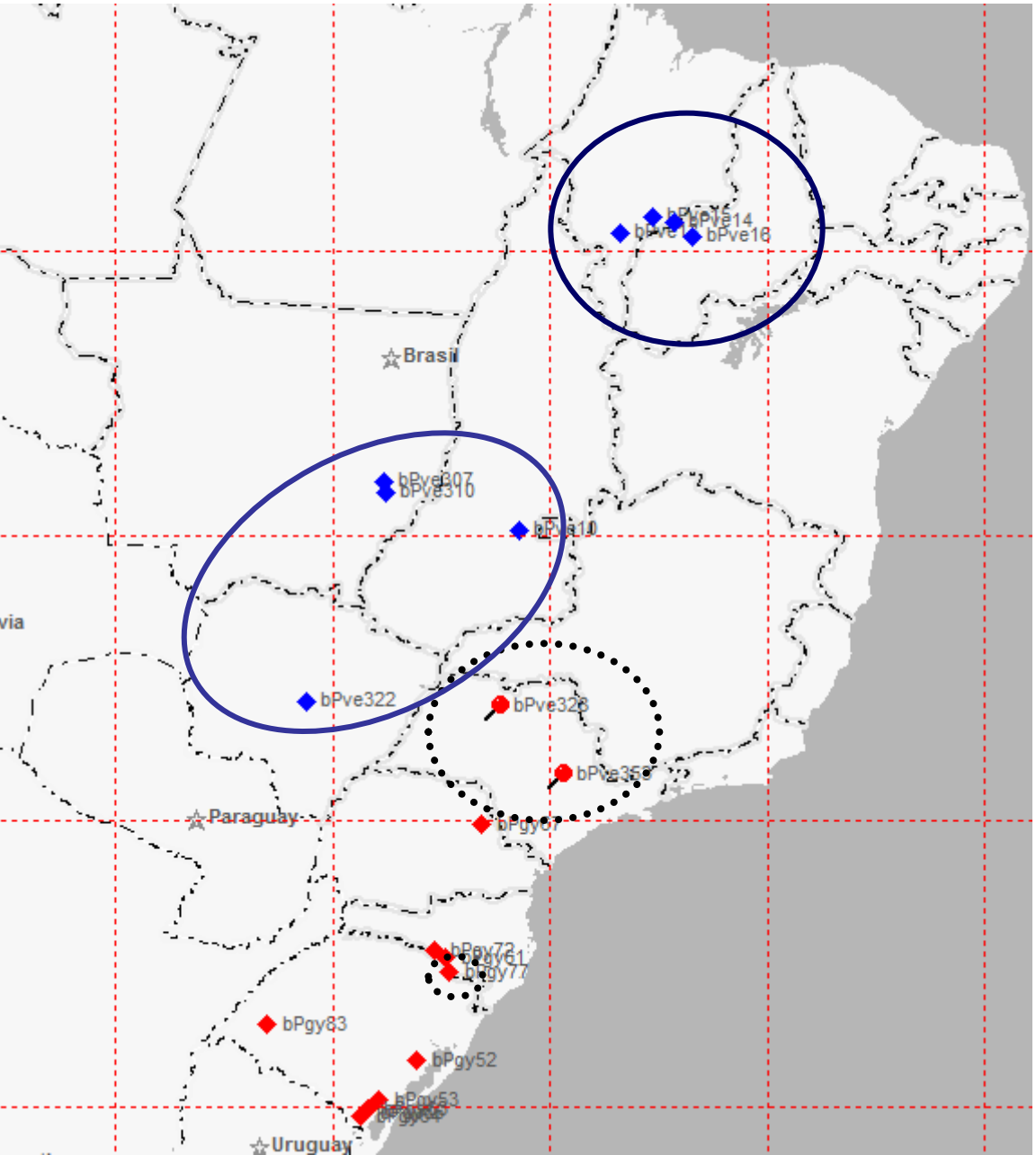
Genus *Lycalopex*

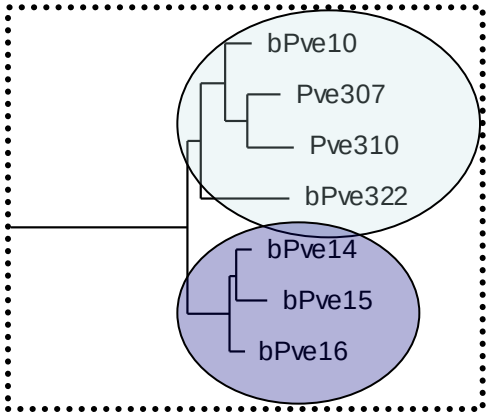
ML phylogeny for 3 concatenated mtDNA segments (2.5 kb)

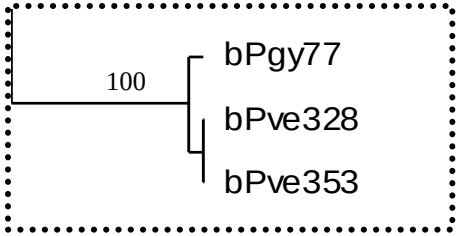


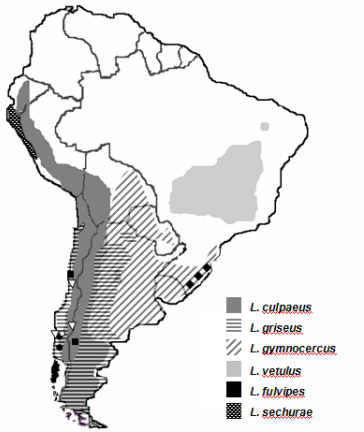
M. Favarini *et al.* (in prep)

L. vetulus and *L. gymnocercus* in Brazil









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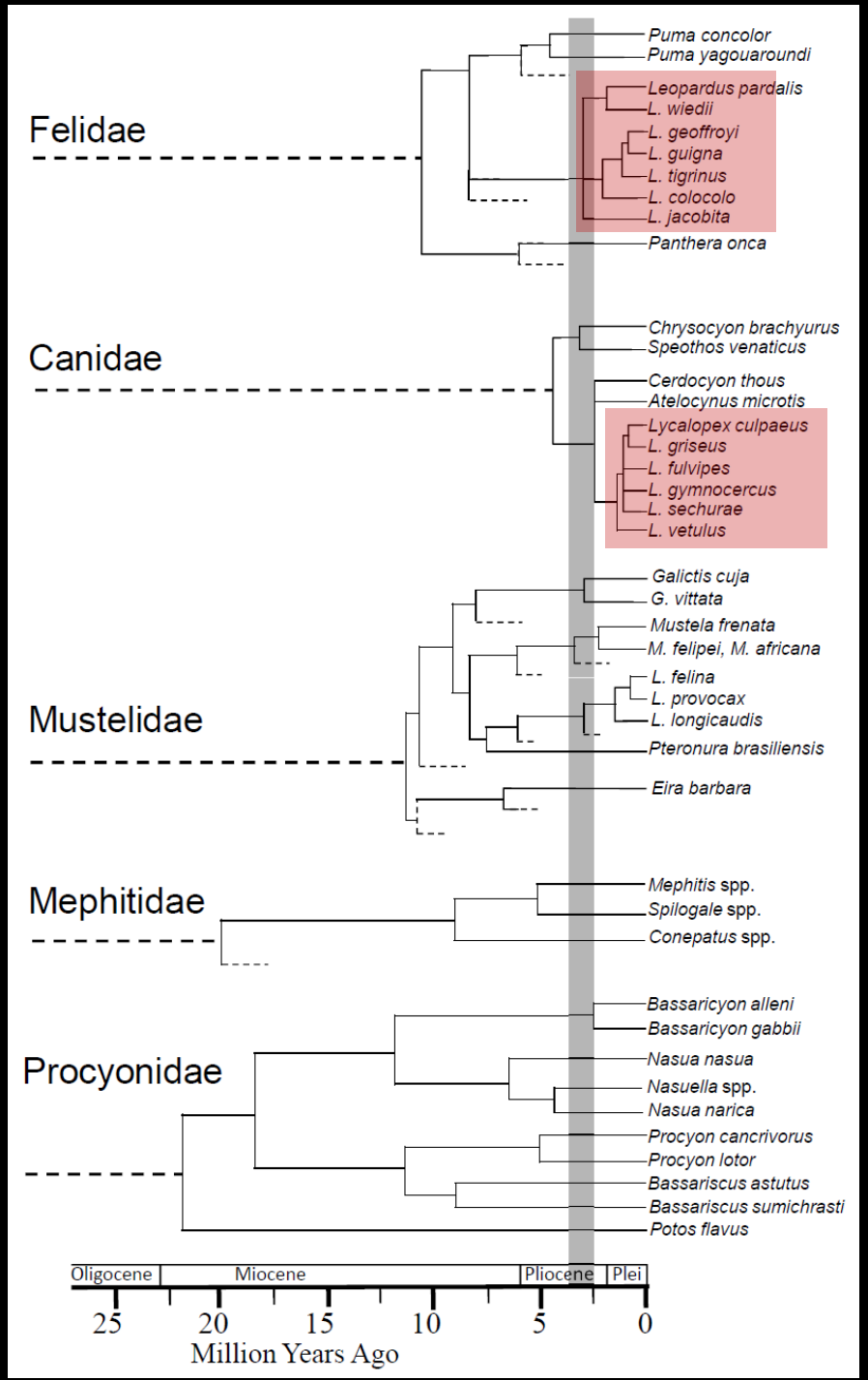
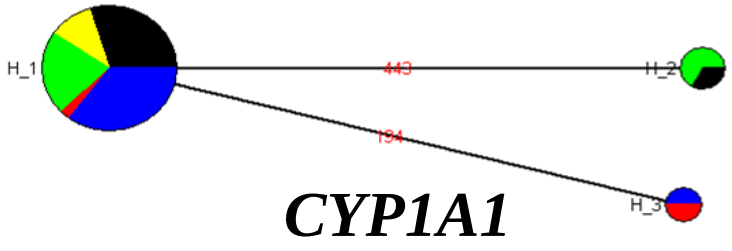
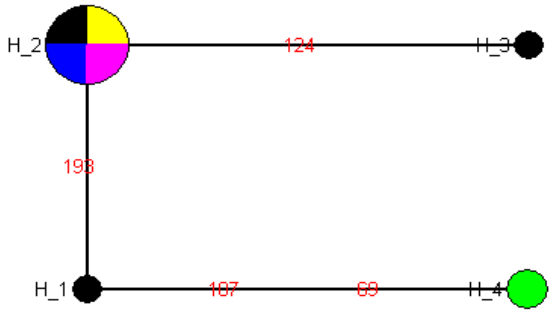


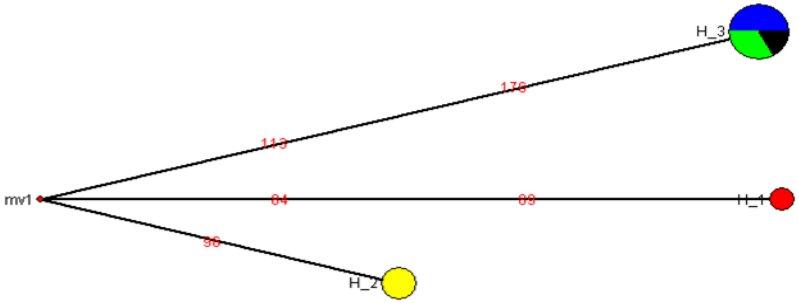
Eizirik (in press)



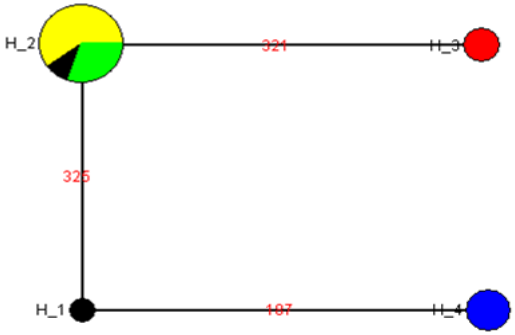
CYP1A1



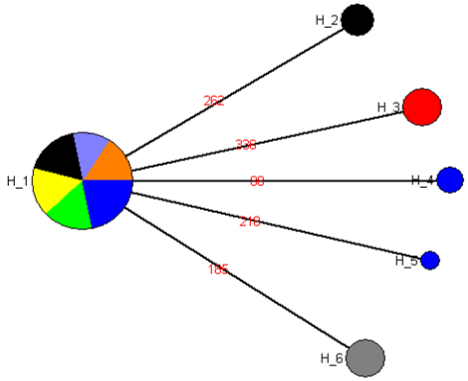
GHR



FES

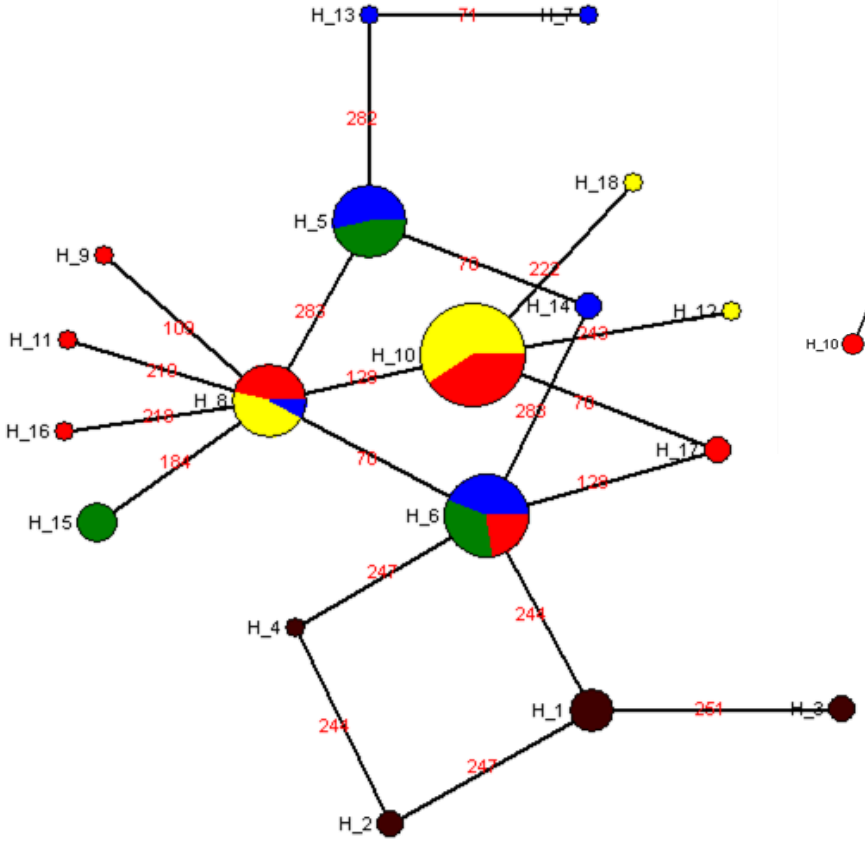


ATP7A E3

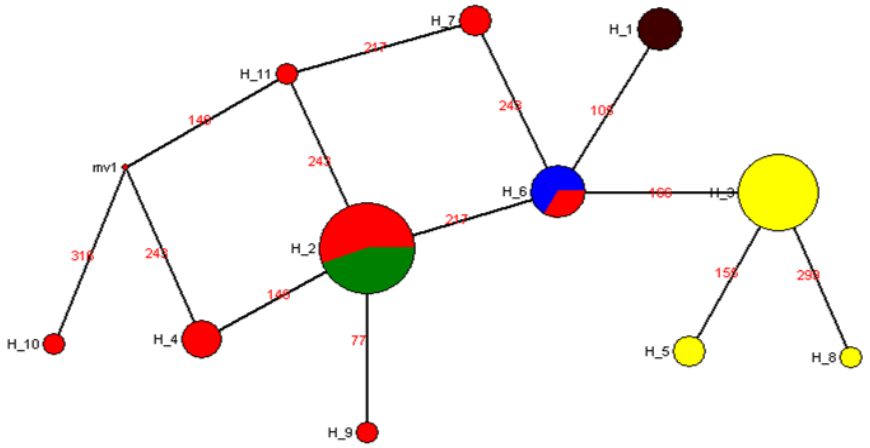


TCP1

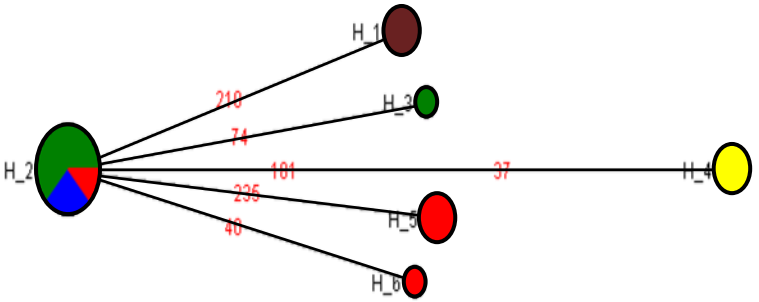
- *Lycalopex culpaeus*
- *Lycalopex vetulus*
- *Lycalopex fulvipes*
- *Lycalopex griseus*
- *Lycalopex gymnocercus*
- *Lycalopex sechurae*
- *Canis latrans*
- *Cerdocyon thous*
- *Chrysocyon brachyurus*



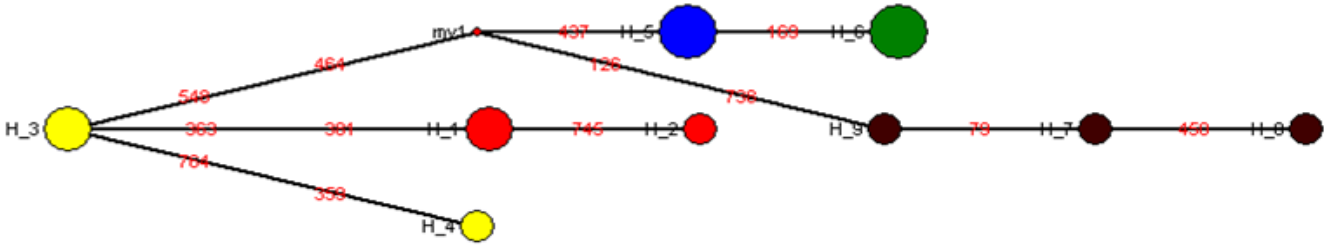
CHRNA1



SILV



DGKG



PLP1I2

Leopardus pardalis
Leopardus wiedii
Leopardus colocolo
Leopardus geoffroyi
Leopardus tigrinus