

# Origem e evolução

- Quem são os mamíferos?
- Quem são os primeiros?
- Linhagens
- Características dos atuais

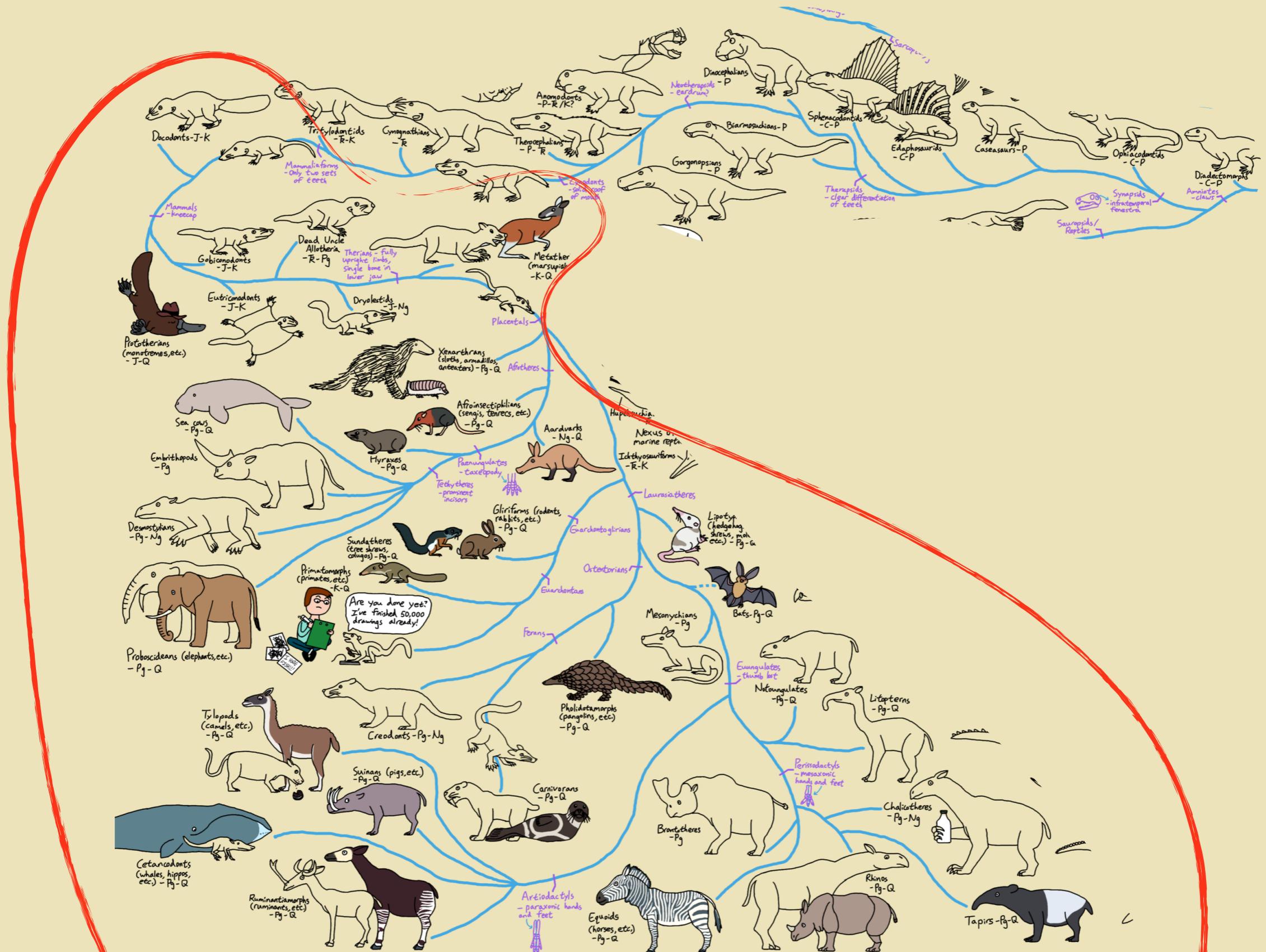




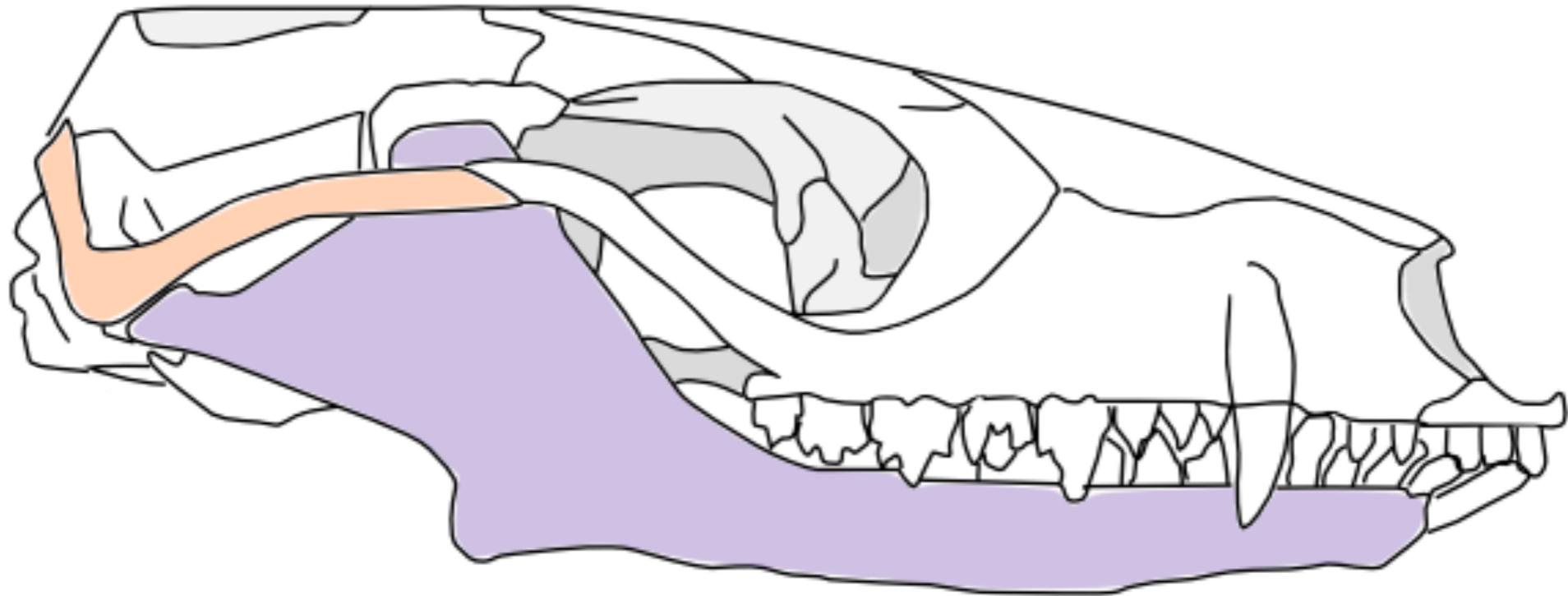
# Quem são os mamíferos?



# Quem são os mamíferos?

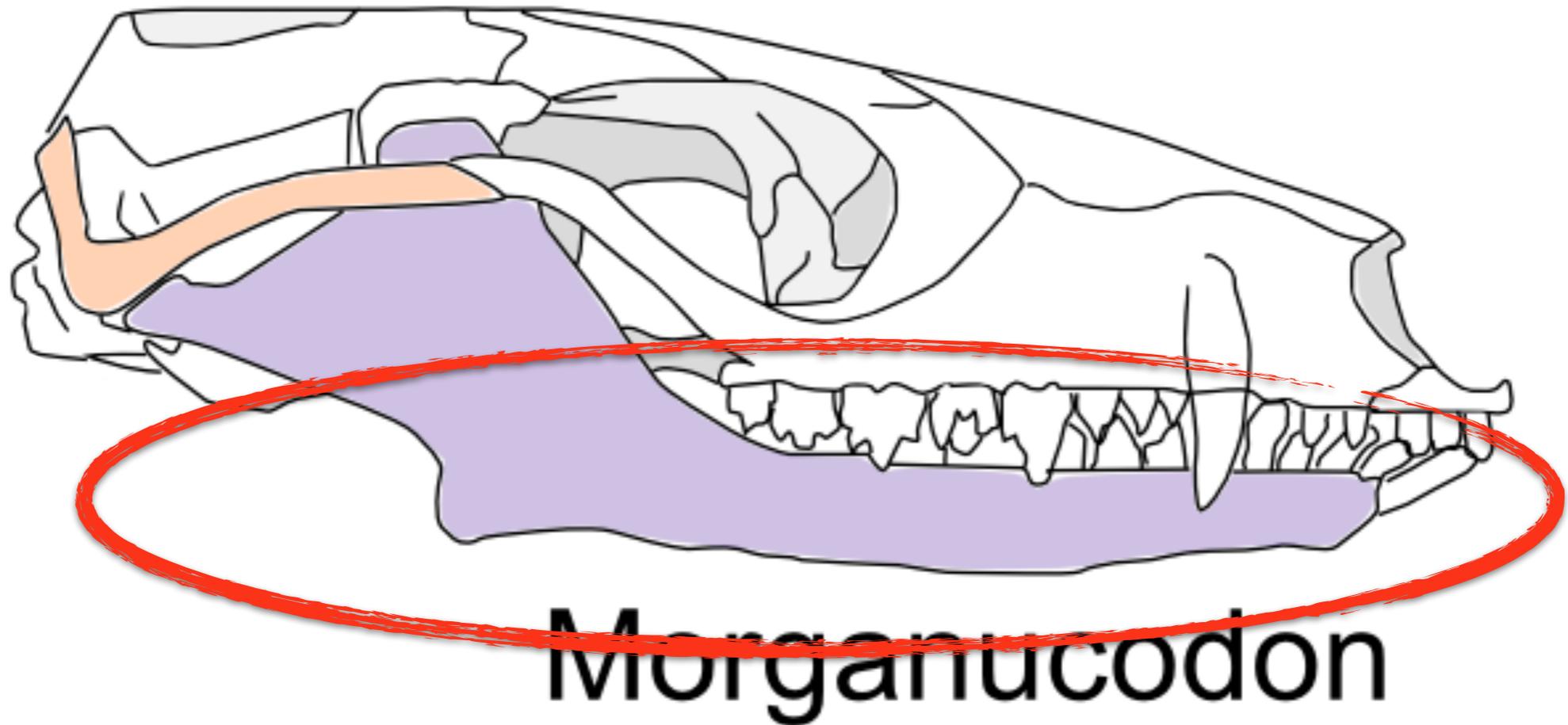


O que caracteriza um mamífero?

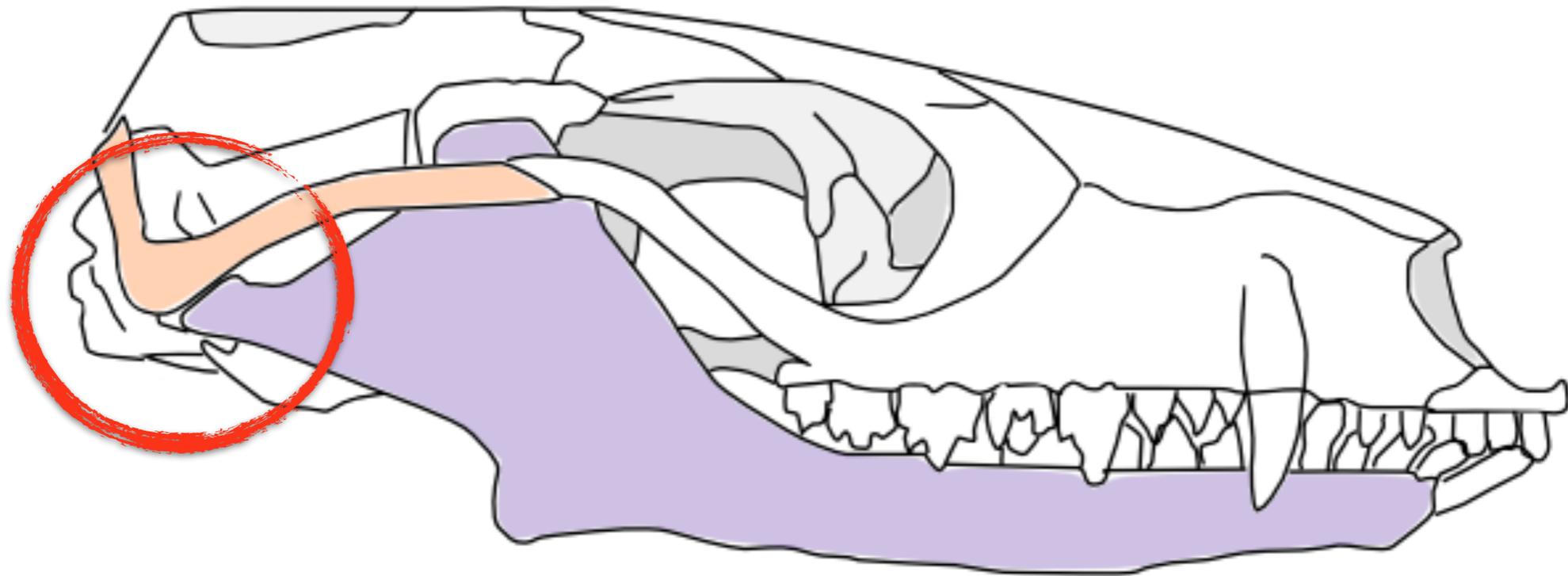


**Morganucodon**

O que caracteriza um mamífero?

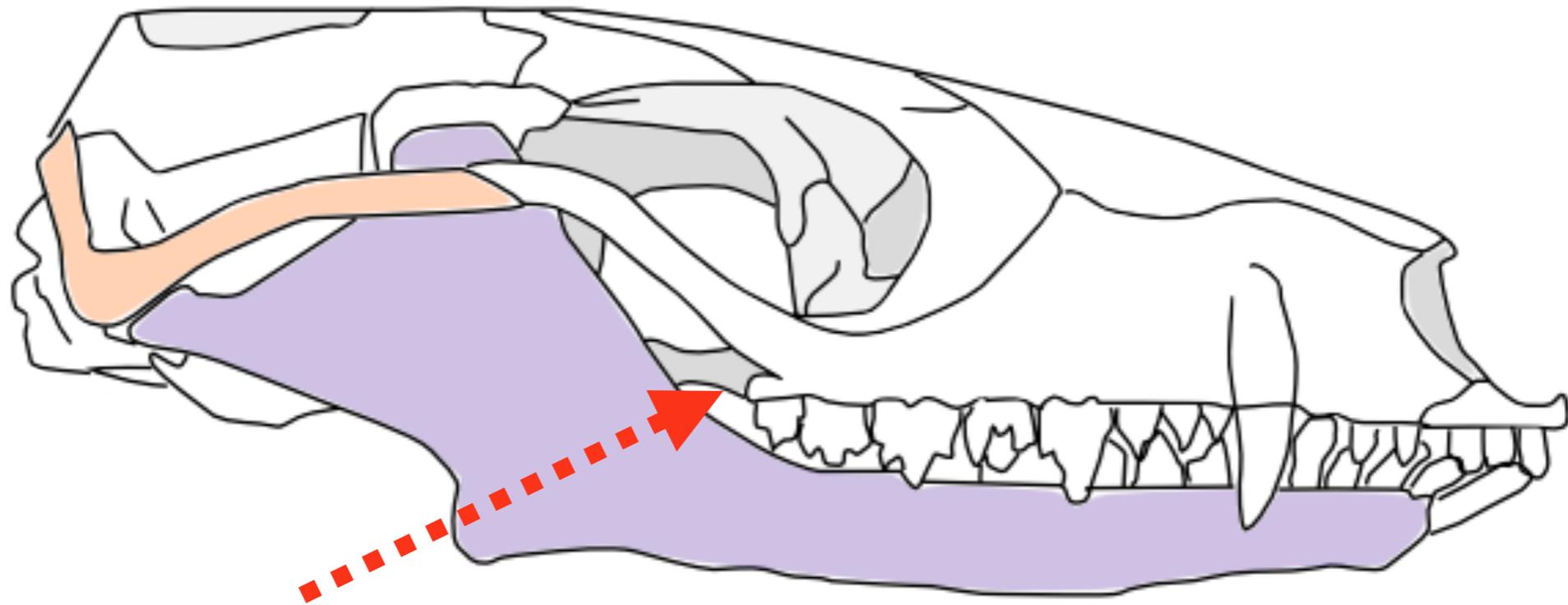


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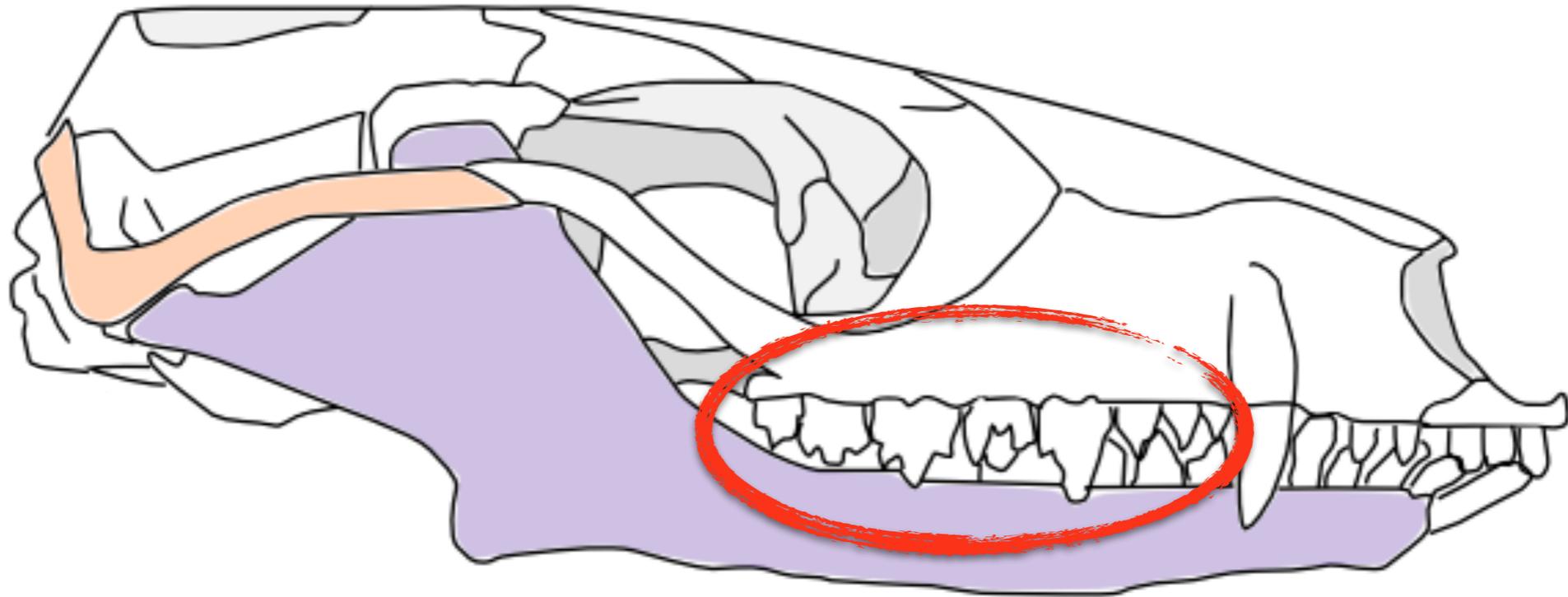
Morganucodon

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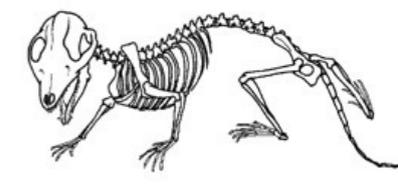
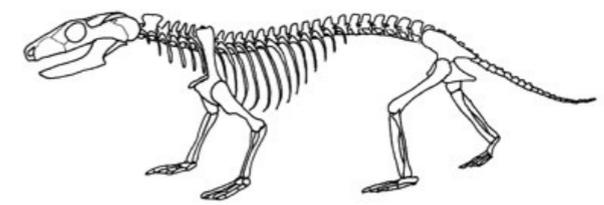
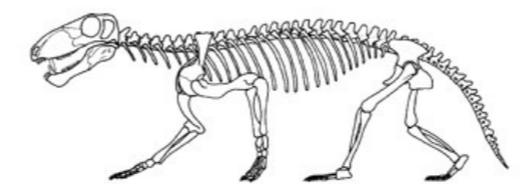
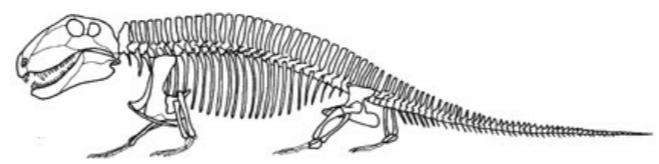
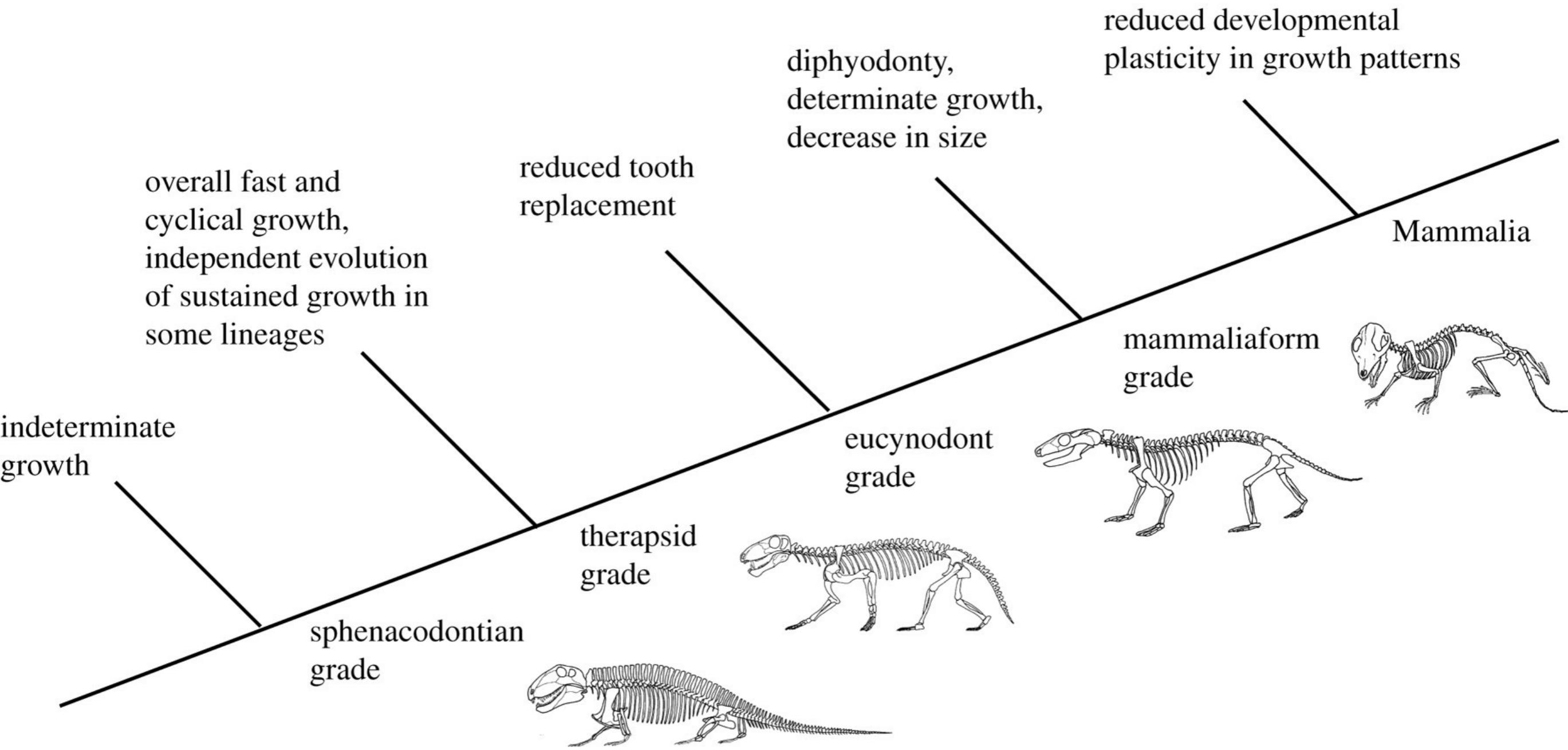


**Morganucodon**

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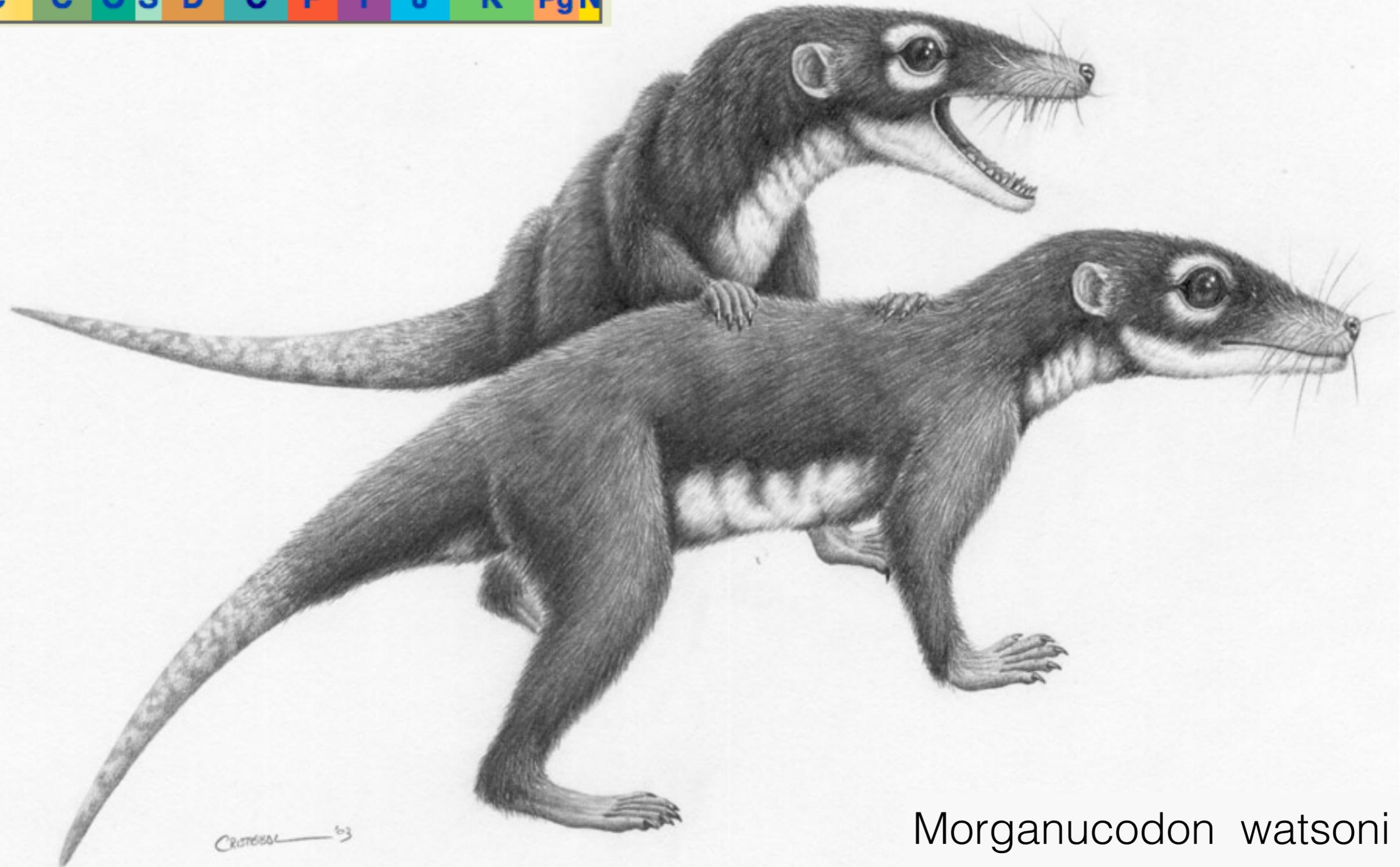


Morganucodon



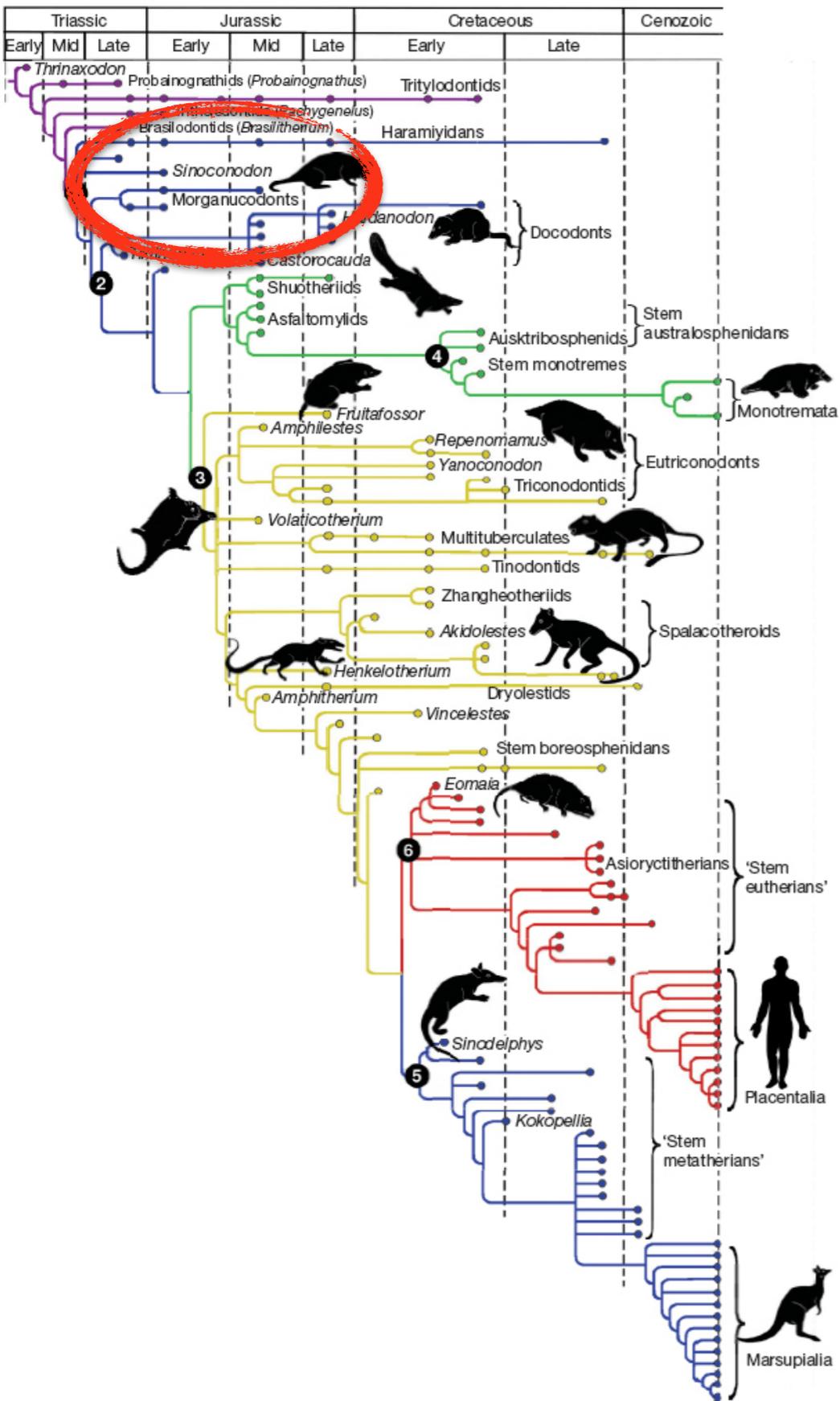
# Primeiros mamíferos

PreЄ Є O S D C P T J K PgN



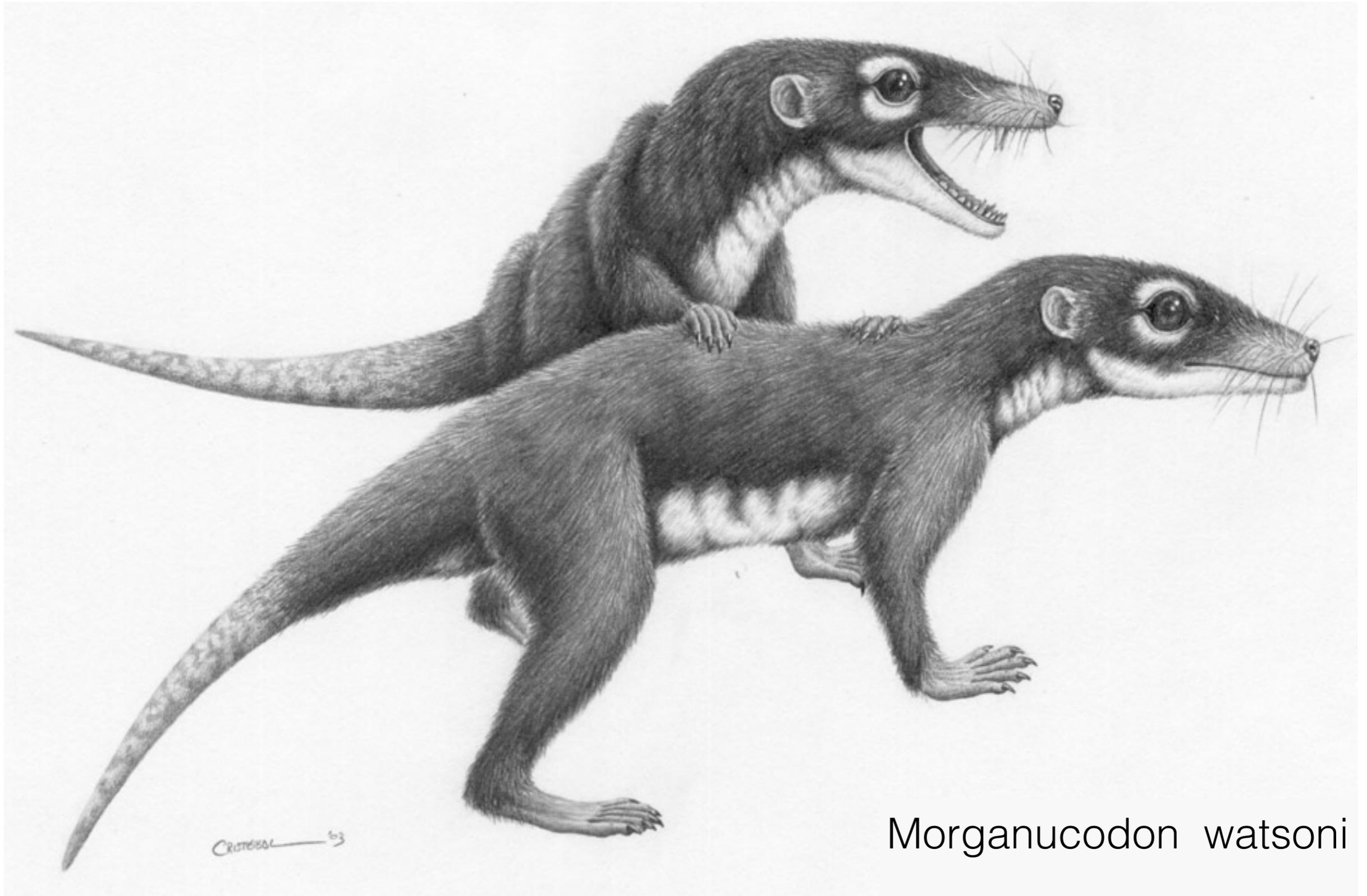
Morganucodon watsoni

# Primeiros mamíferos



Morganucodon watsoni

# O que podemos aprender com Morganucodon?

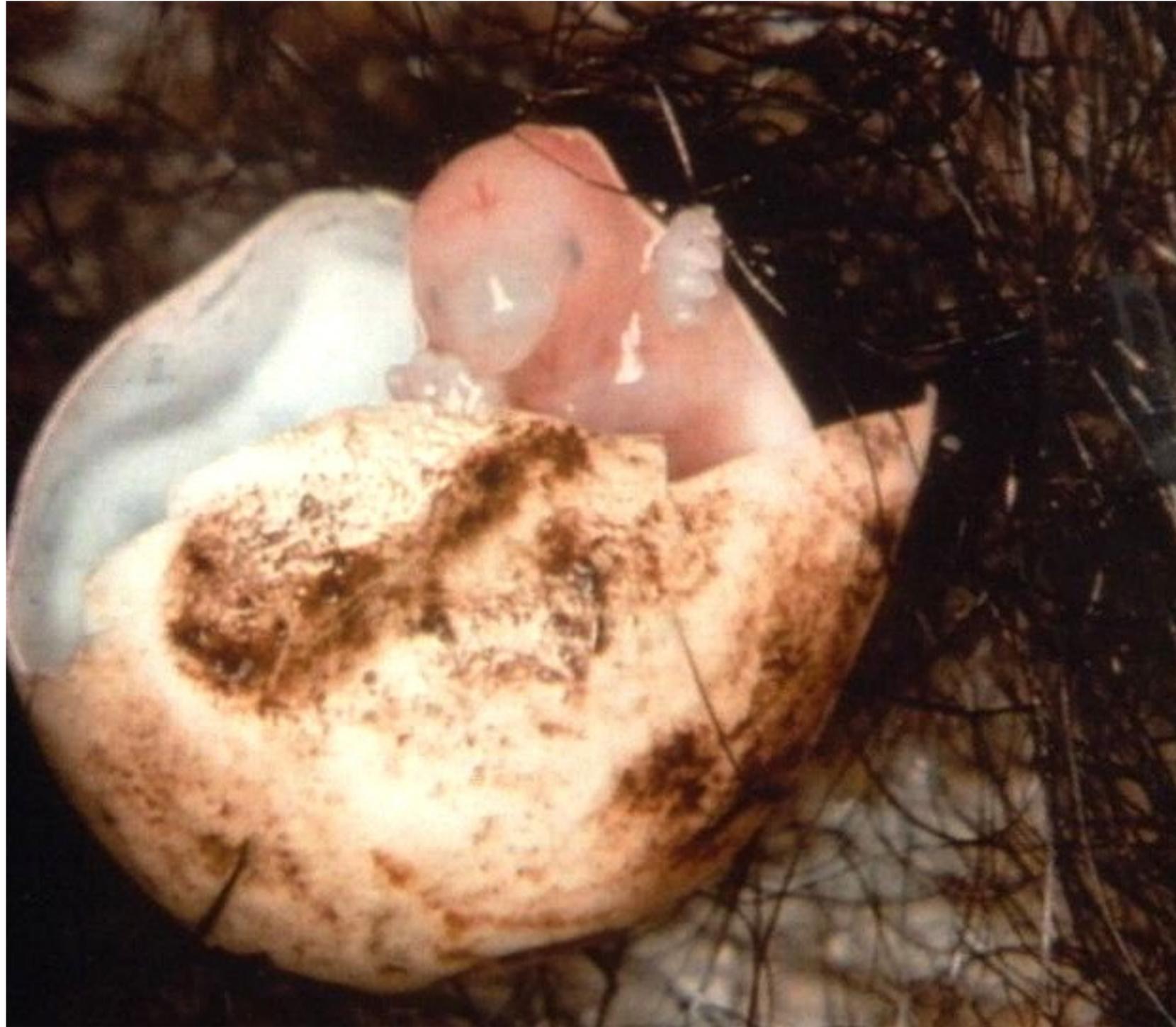


Morganucodon watsoni

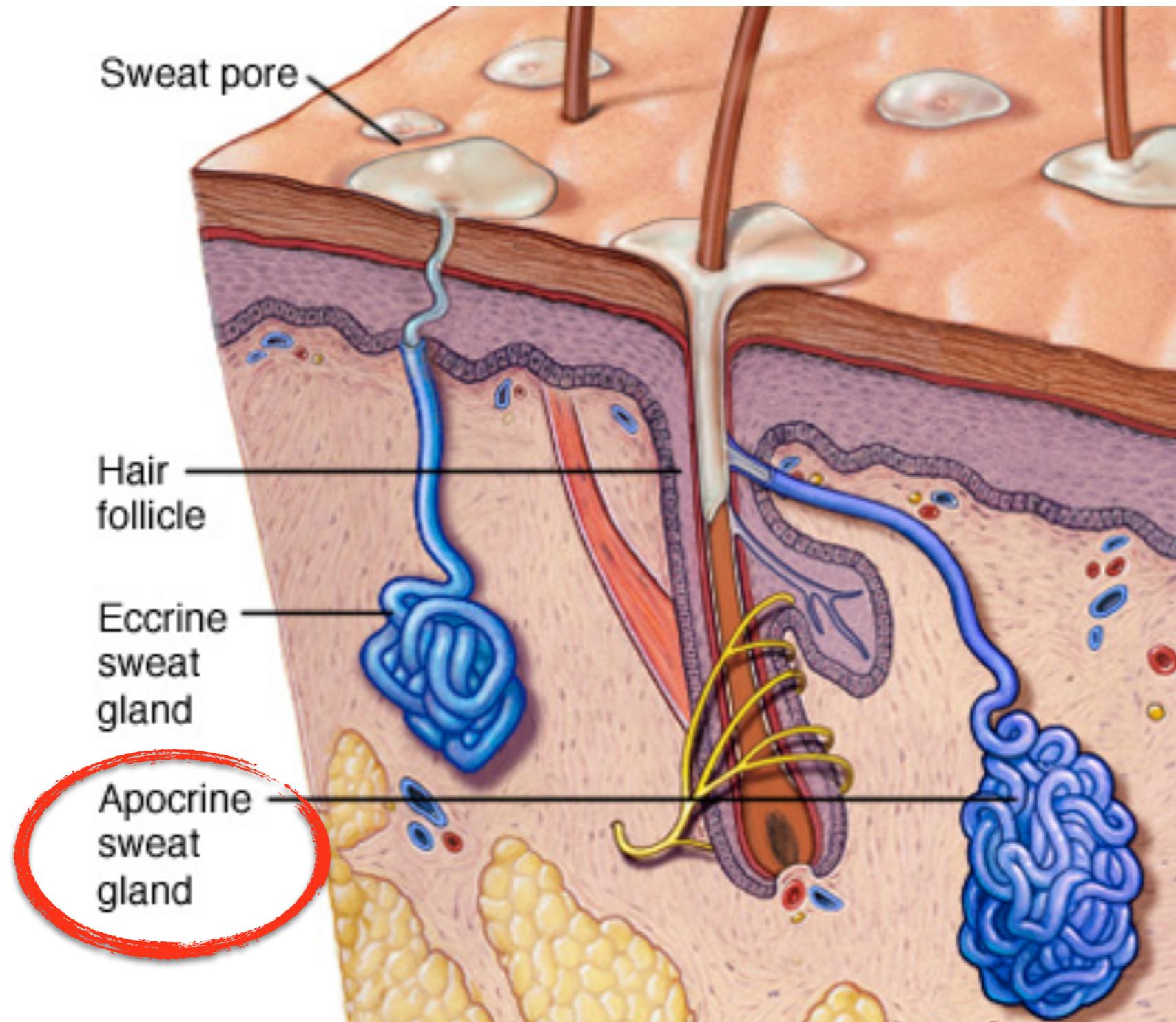
# Lactação e amamentação



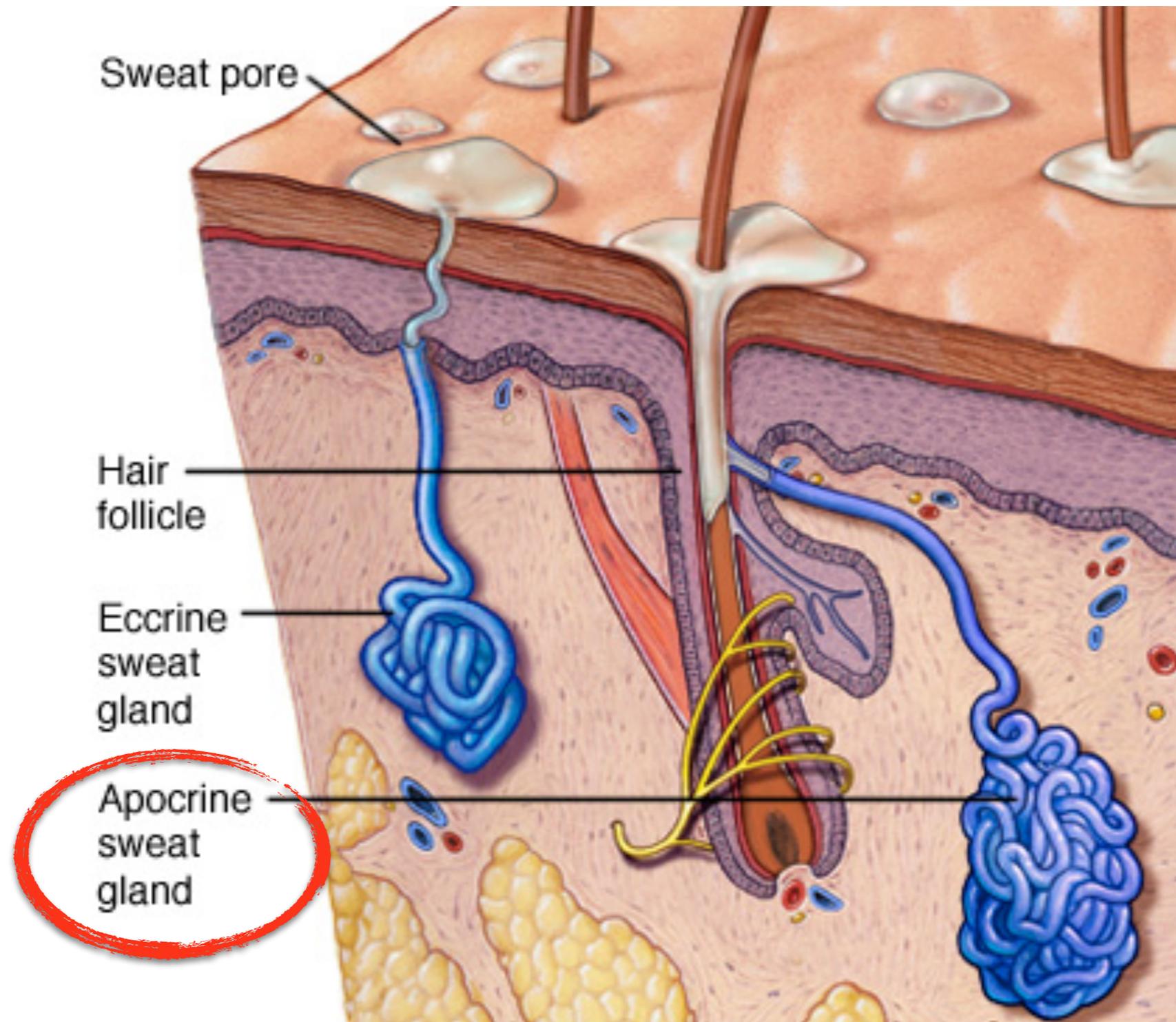
Antes de mais nada:



# Origem de glândulas proto-mamárias

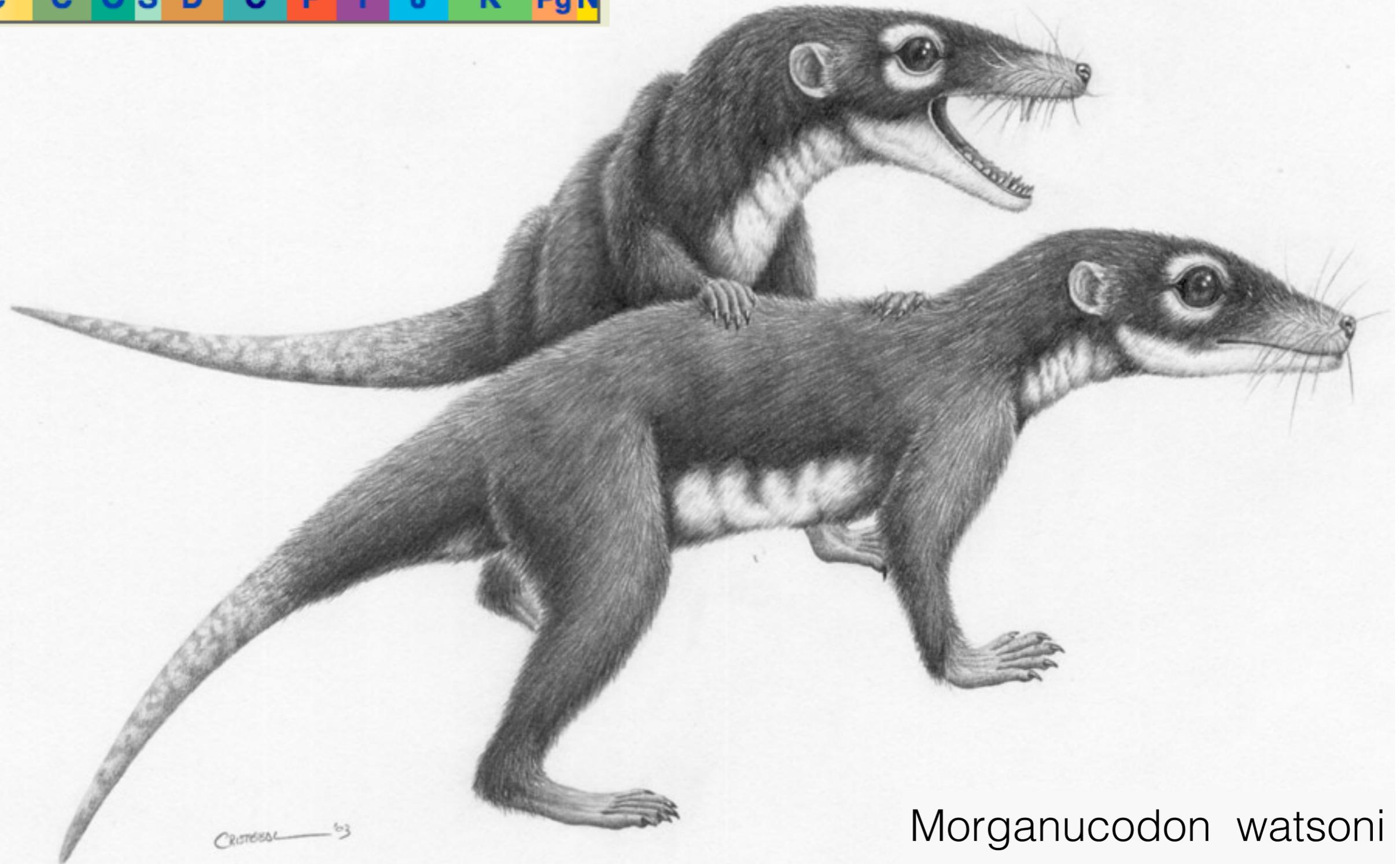


# Quando essas secreções se tornaram essenciais?



# Provavelmente por aqui:

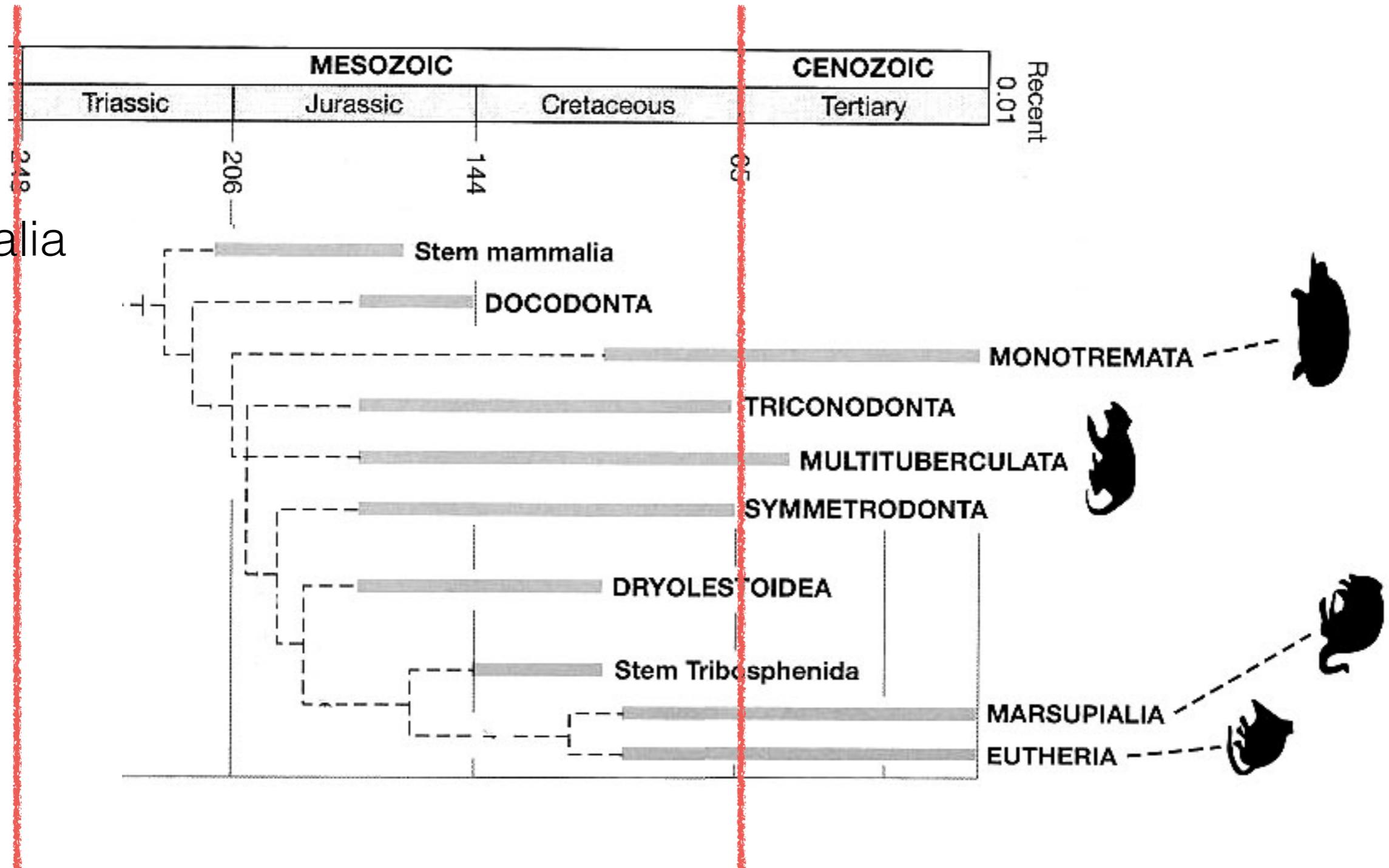
PreЄ Є O S D C P T J K PgN



Morganucodon watsoni

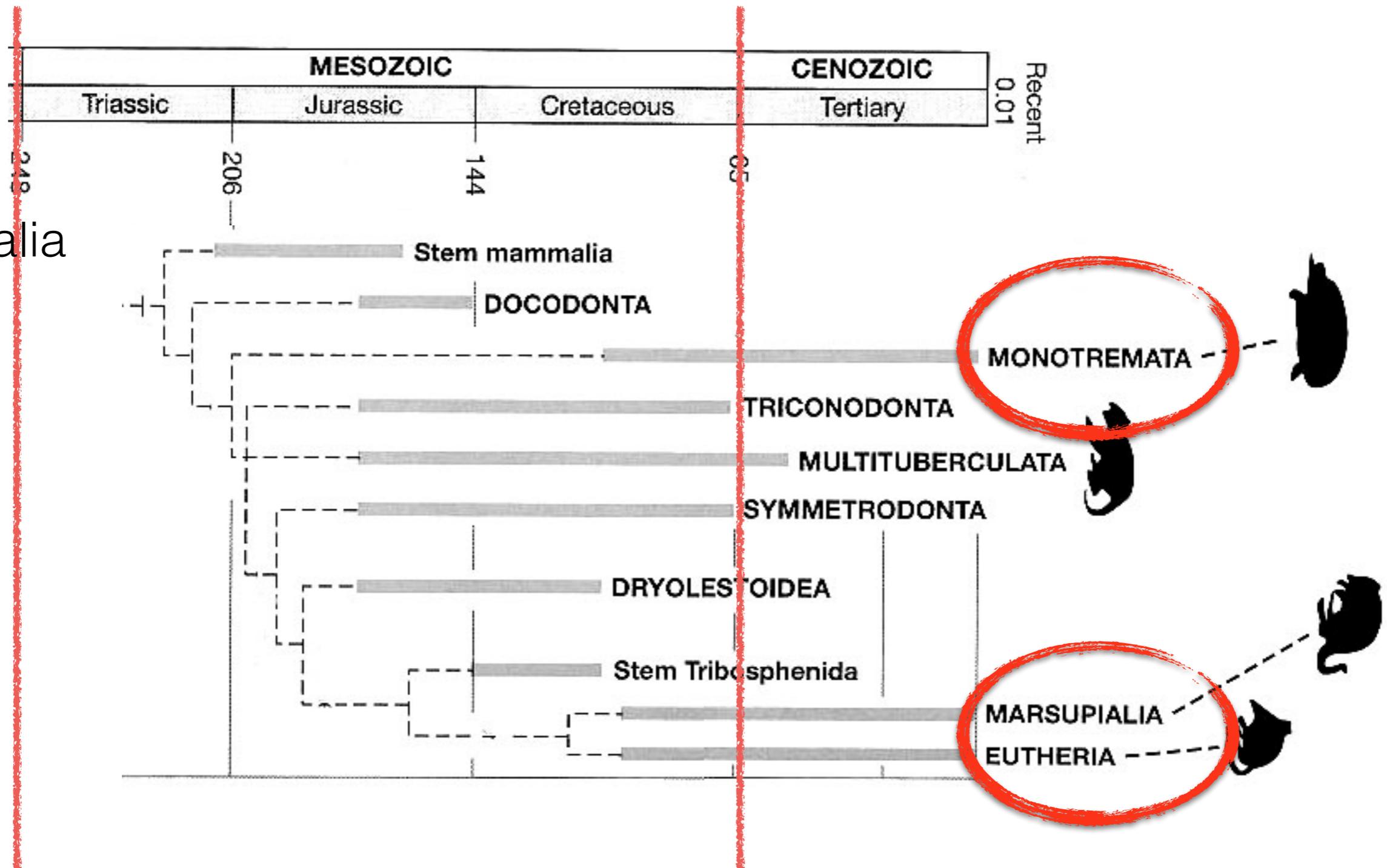
# Linhagens de mamíferos:

Mammalia

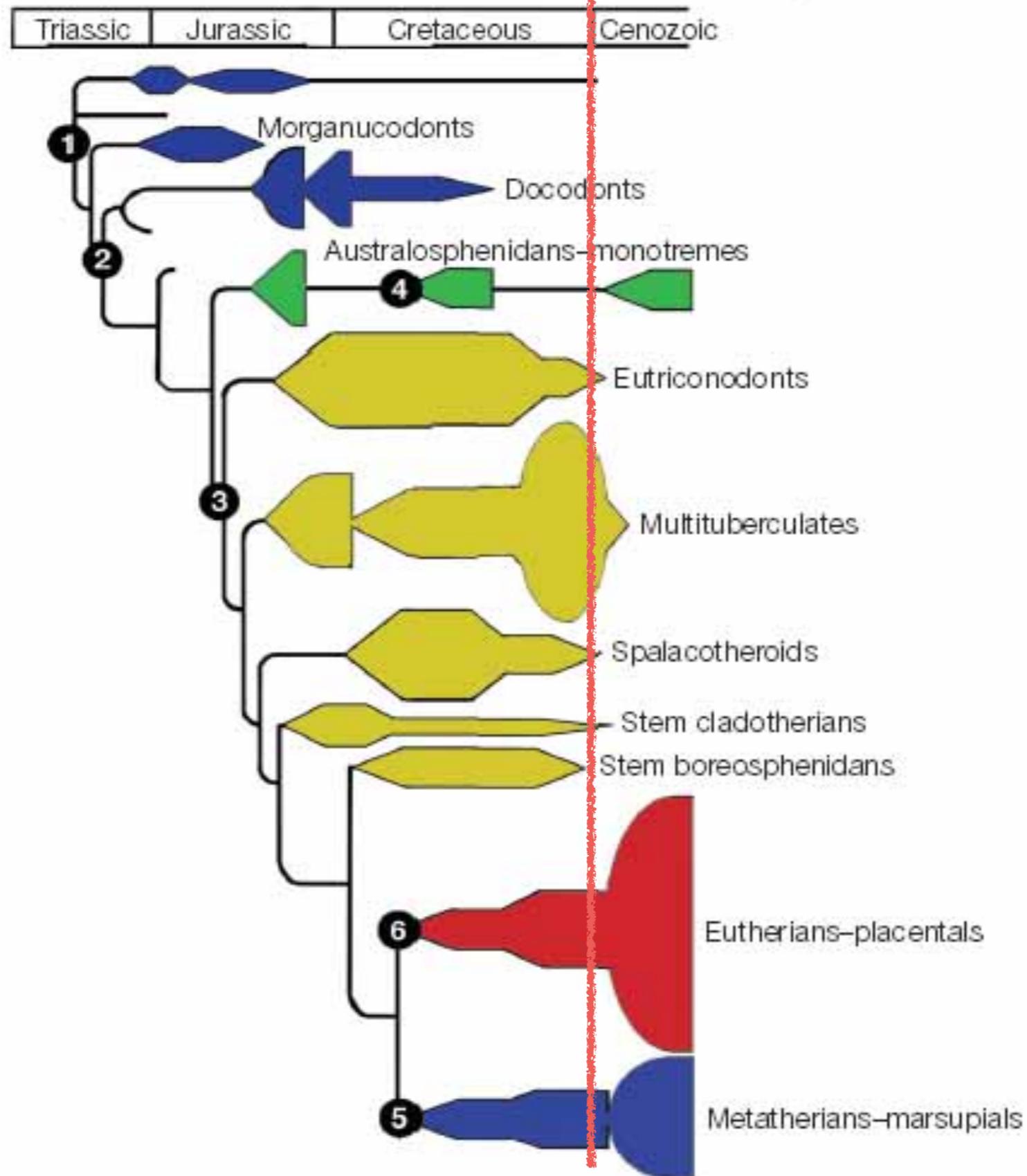


# Linhagens de mamíferos:

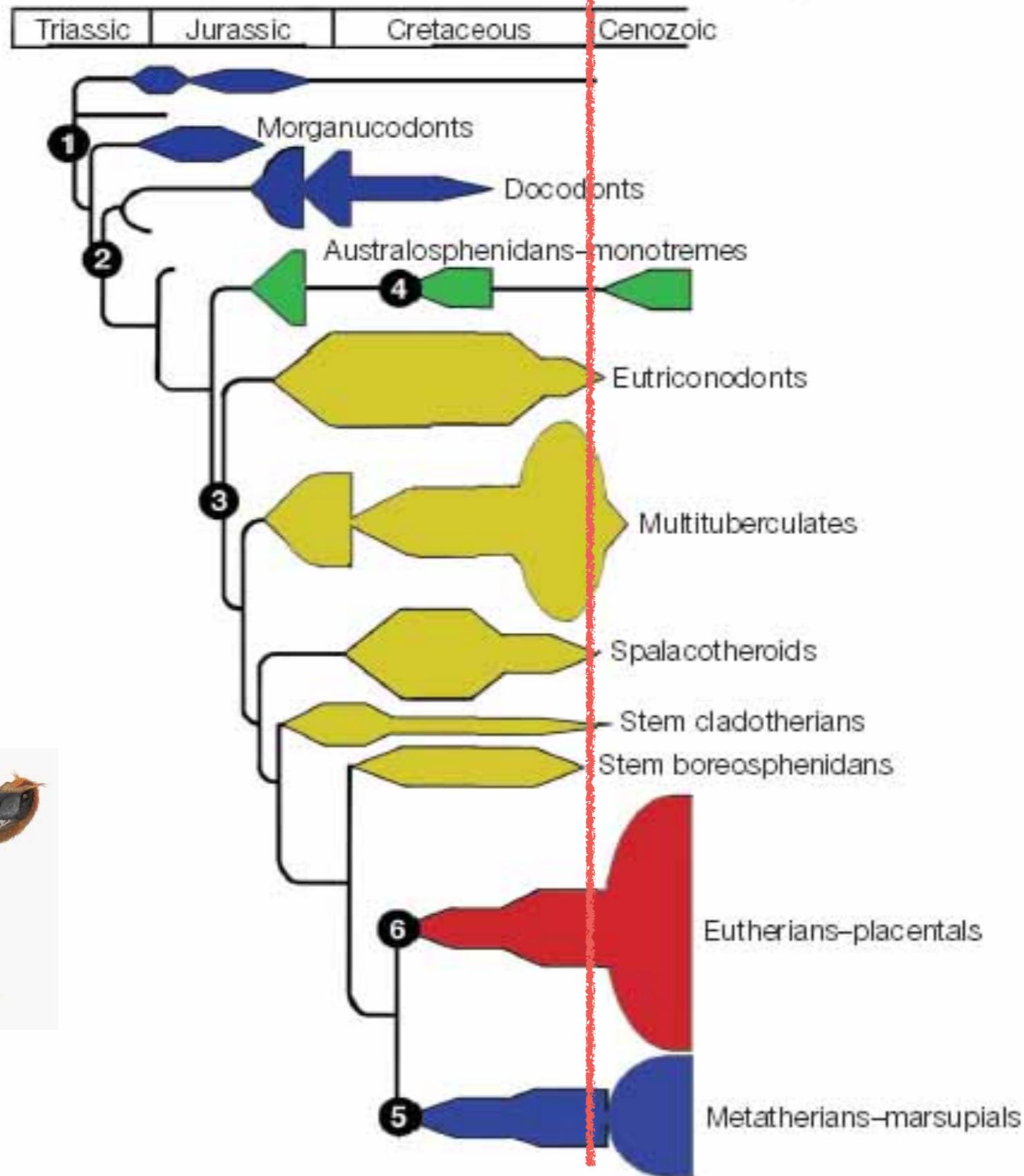
Mammalia



# Linhagens extintas



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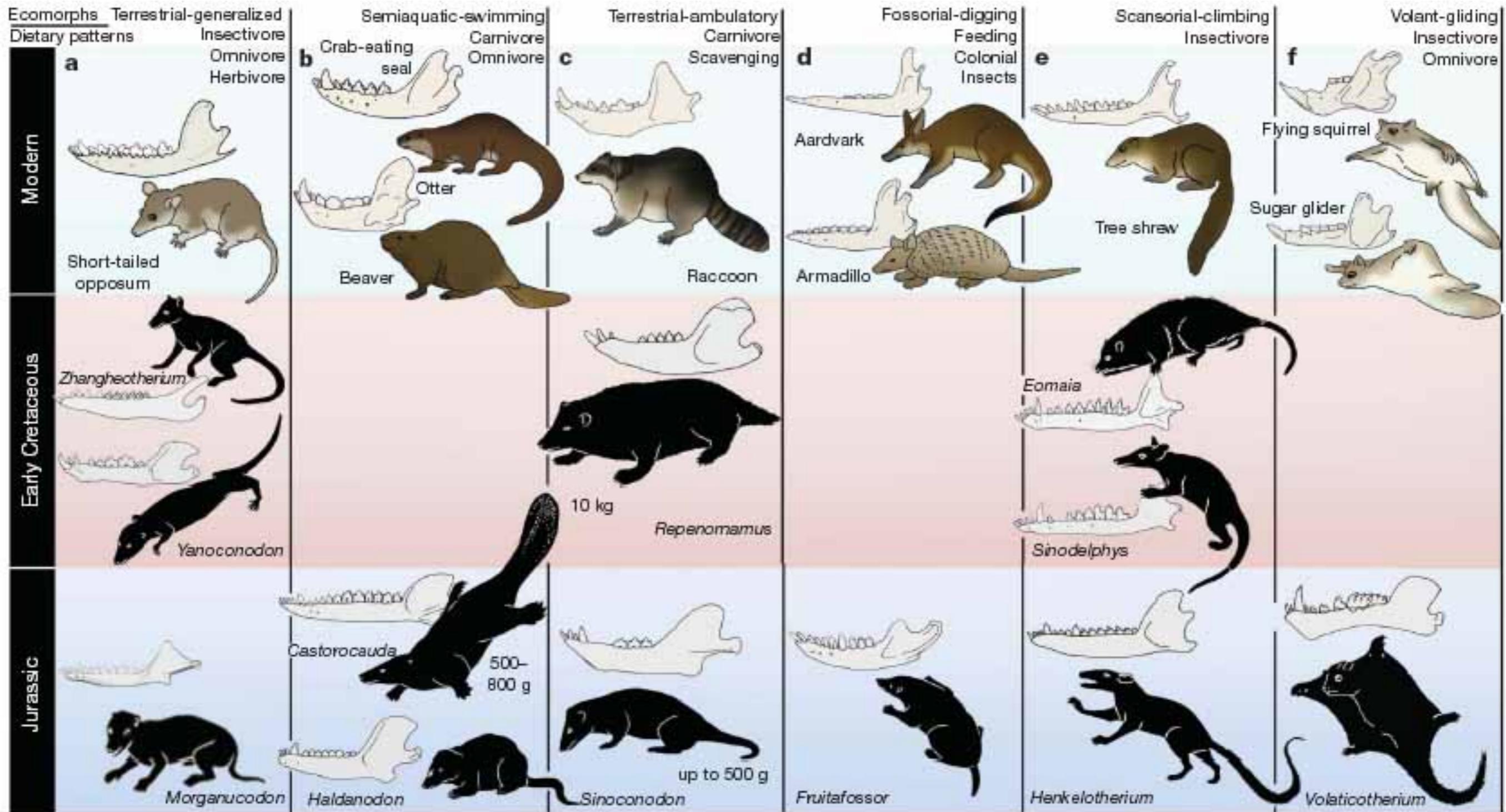


547 gêneros

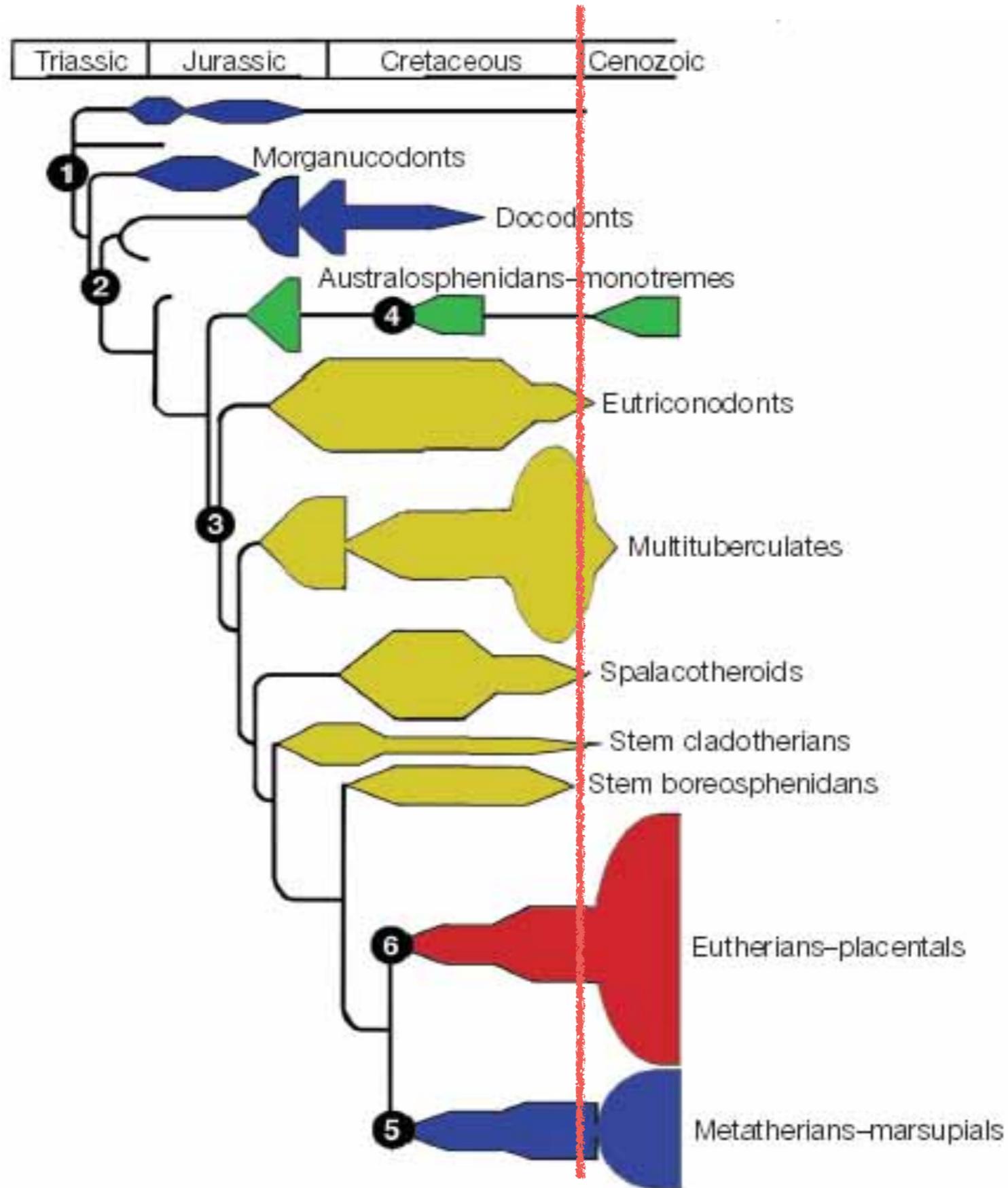


310 gêneros

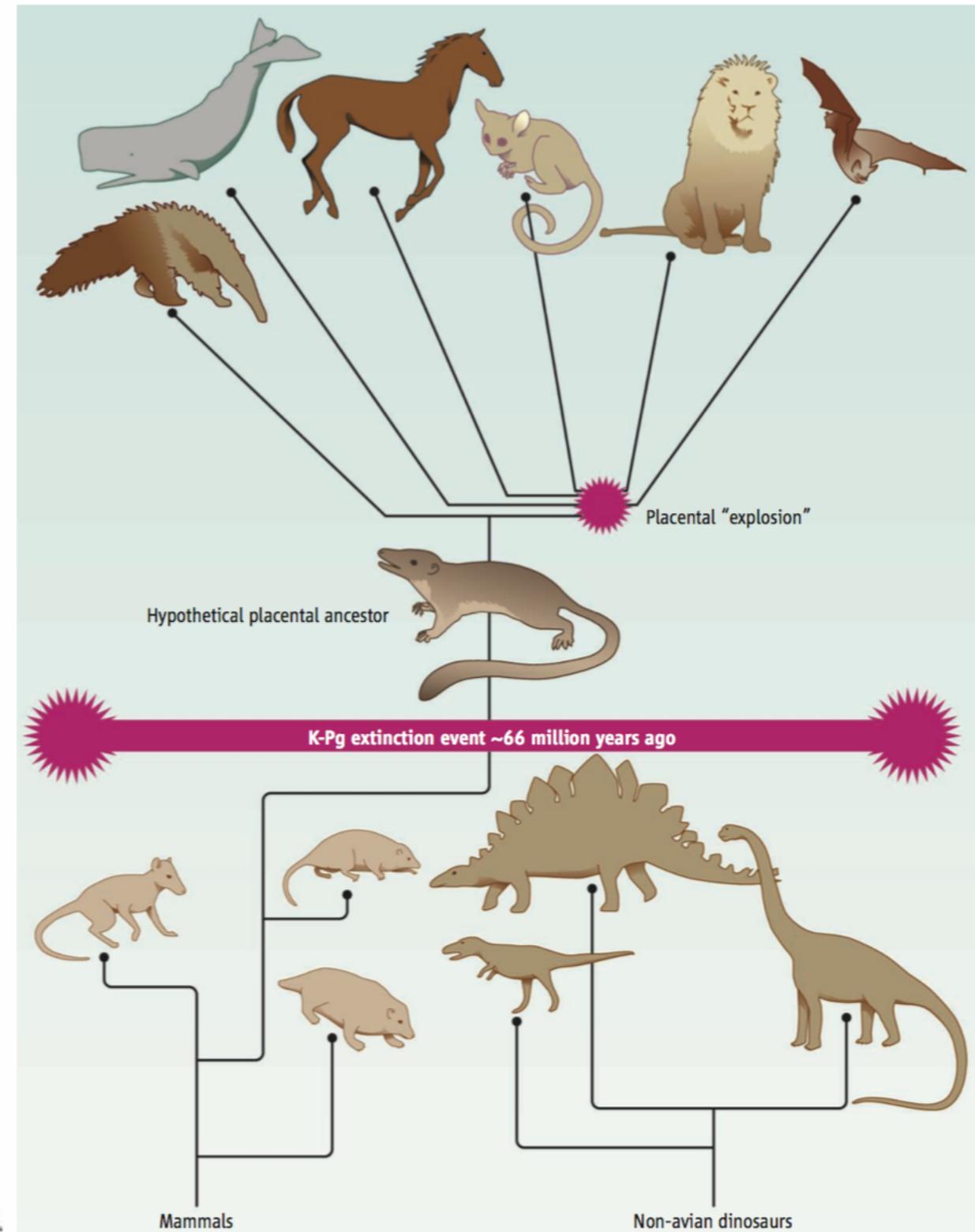
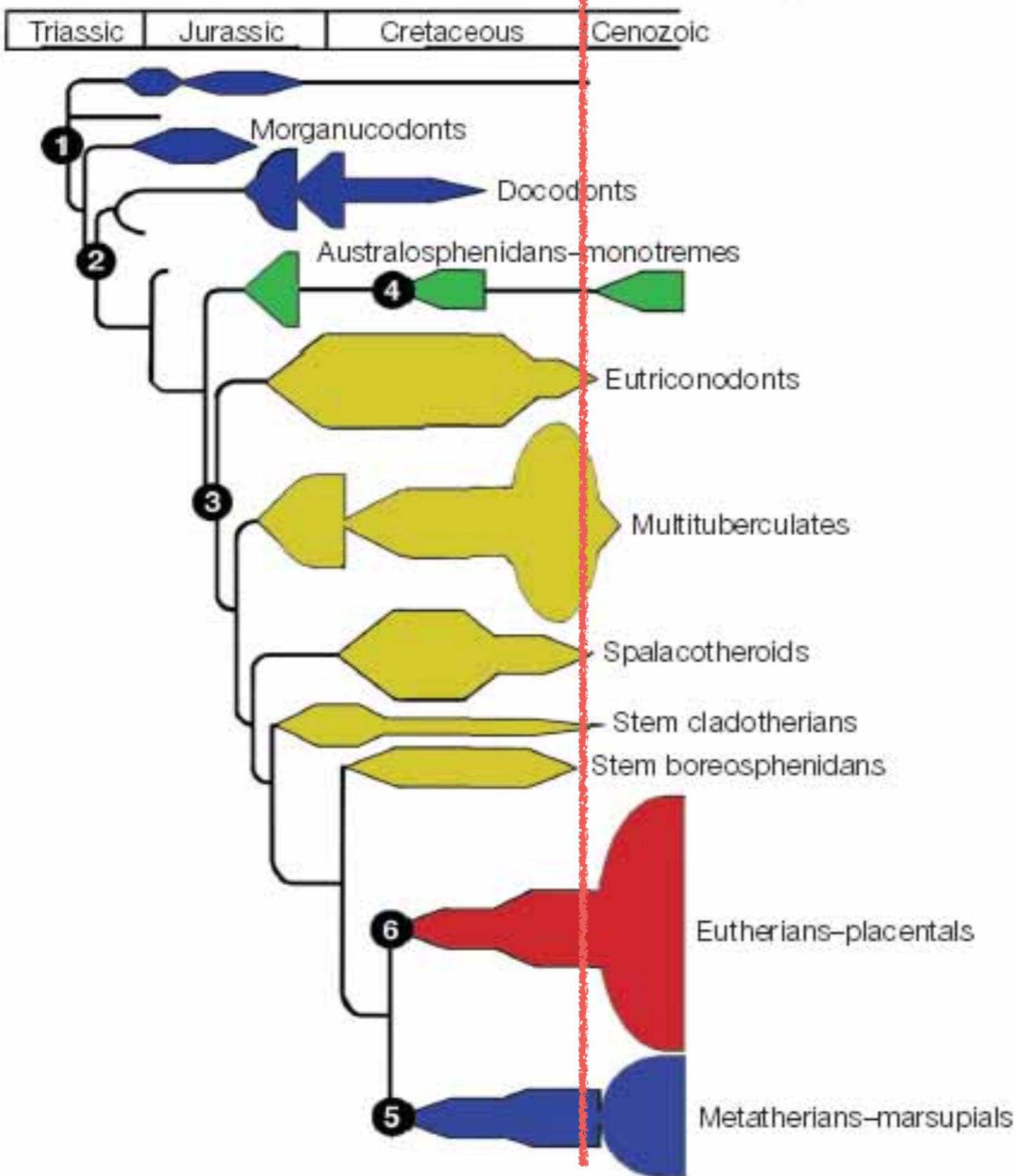
# Diversidade eco-morfológica



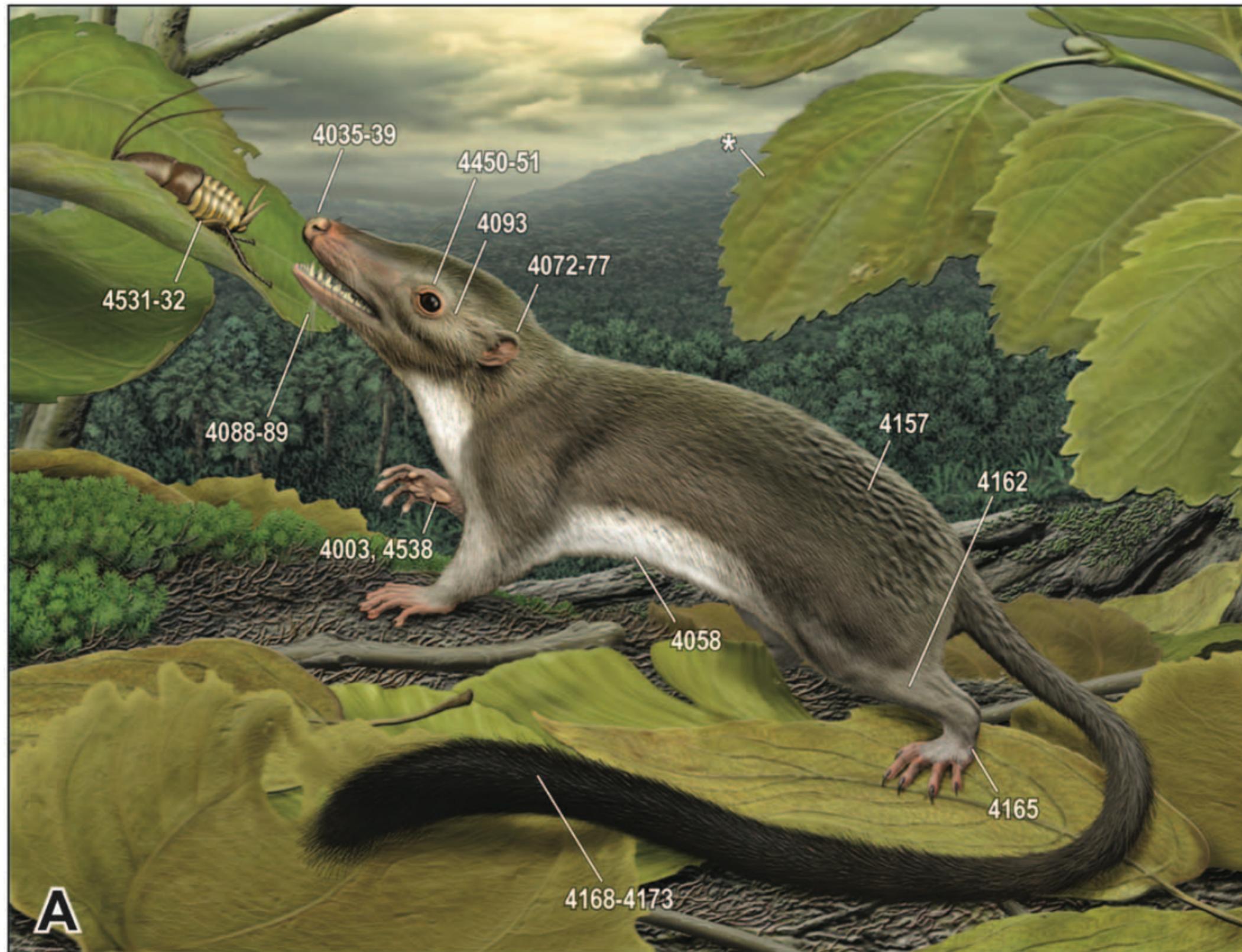
# Diversificação dos theria após K-Pg



# Diversificação dos theria após K-Pg



# Tatata...taravó Placentária



# Tatata...taravó Placentária



0:05 / 2:01:55



## Radiolab Live: Apocalyptical FULL SHOW



Radiolab WNYC

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218,493

Up next



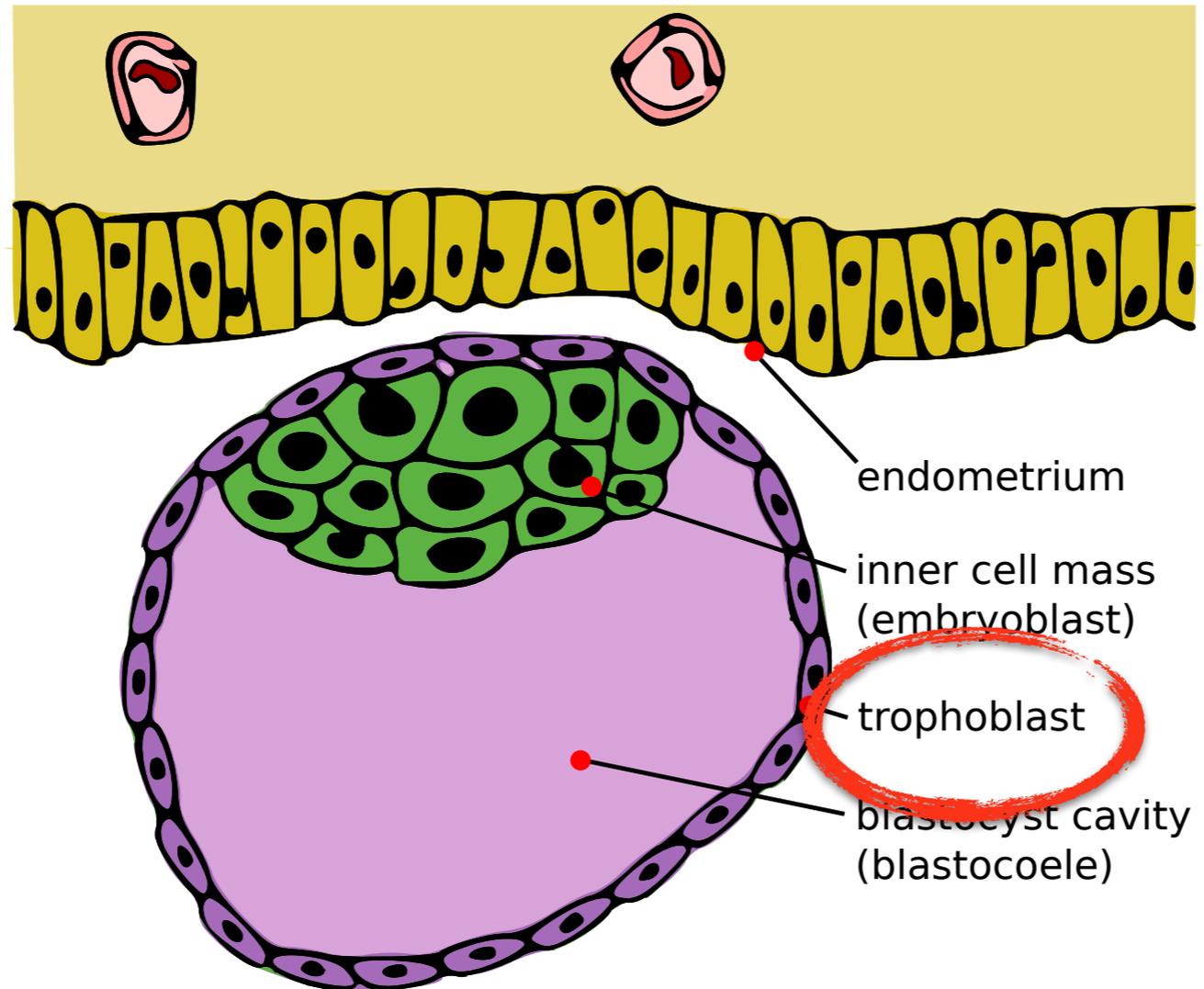
**Radiolab - Parasites**  
by Radiolab  
5,504 views

59:44

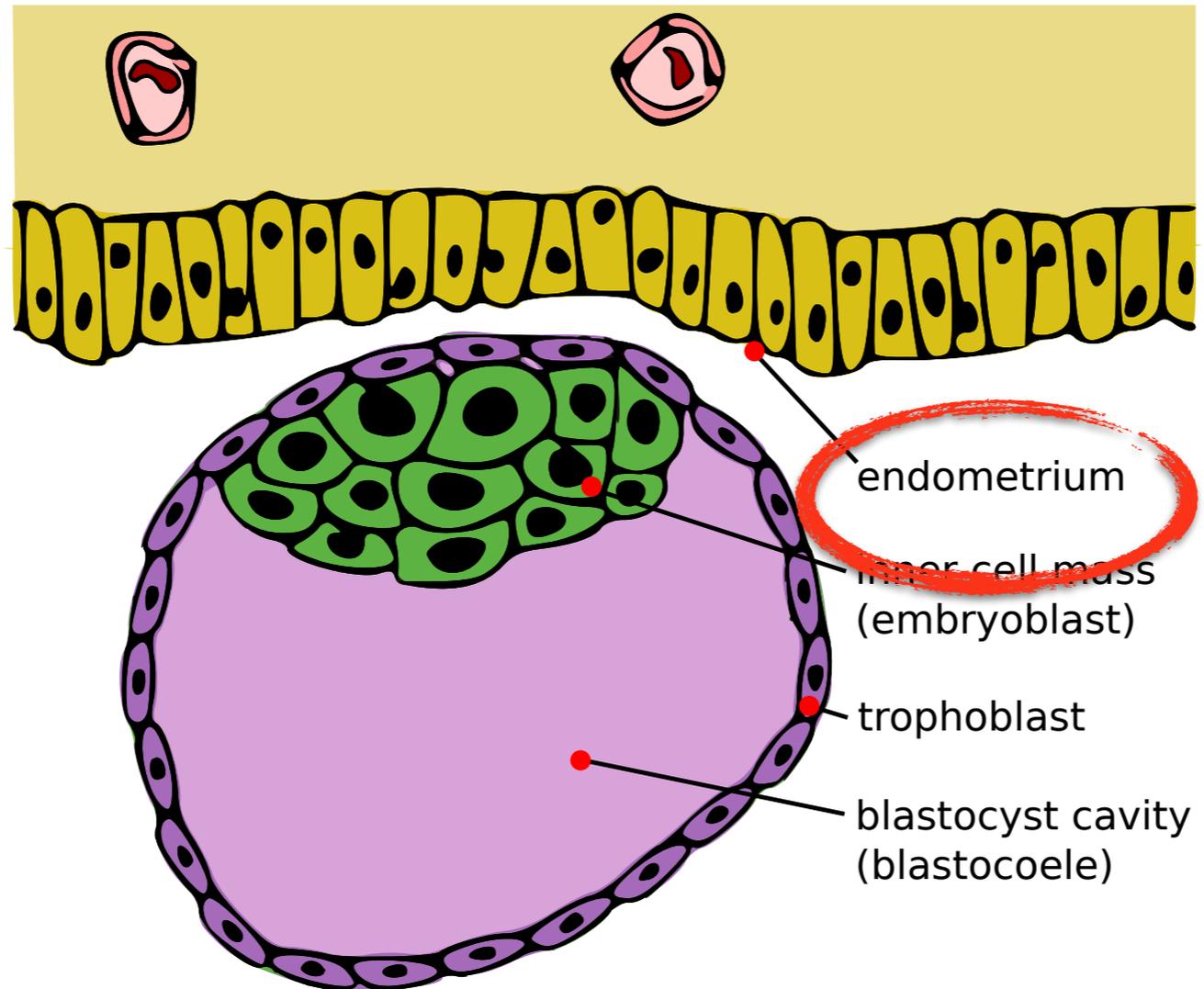
# Reprodução nos mamíferos



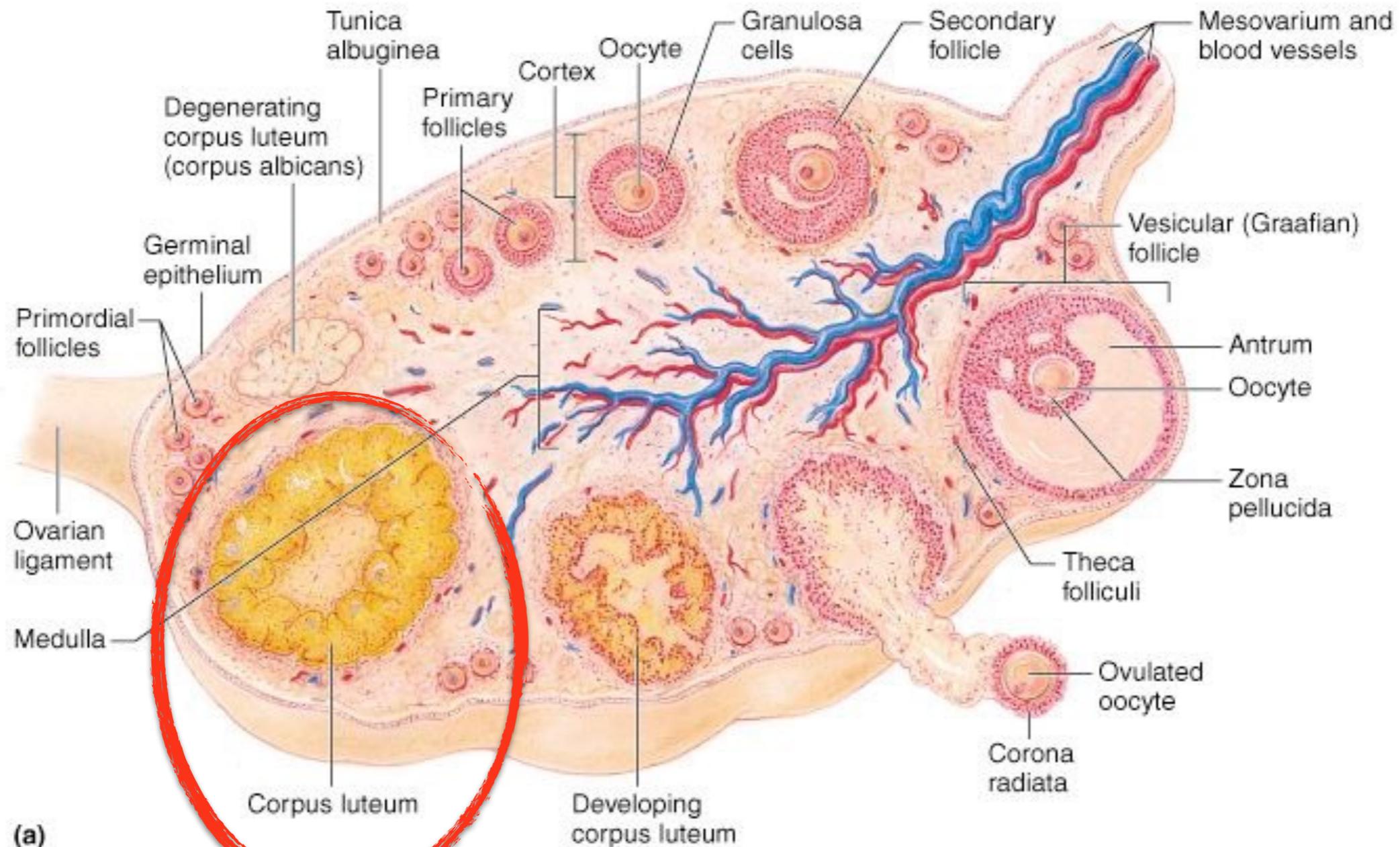
# Reprodução nos mamíferos: todos atuais tem...



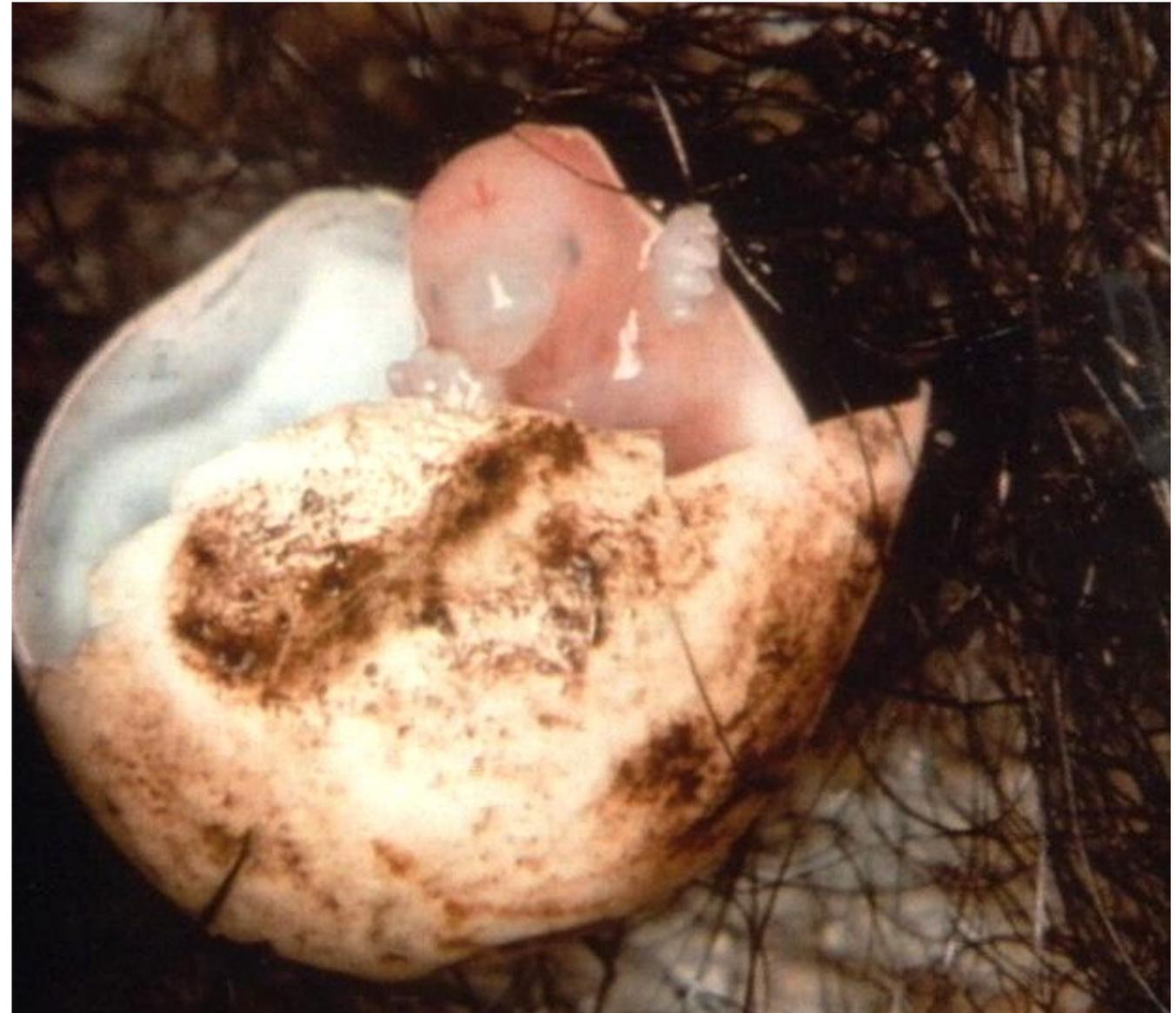
# Reprodução nos mamíferos: todos atuais tem...



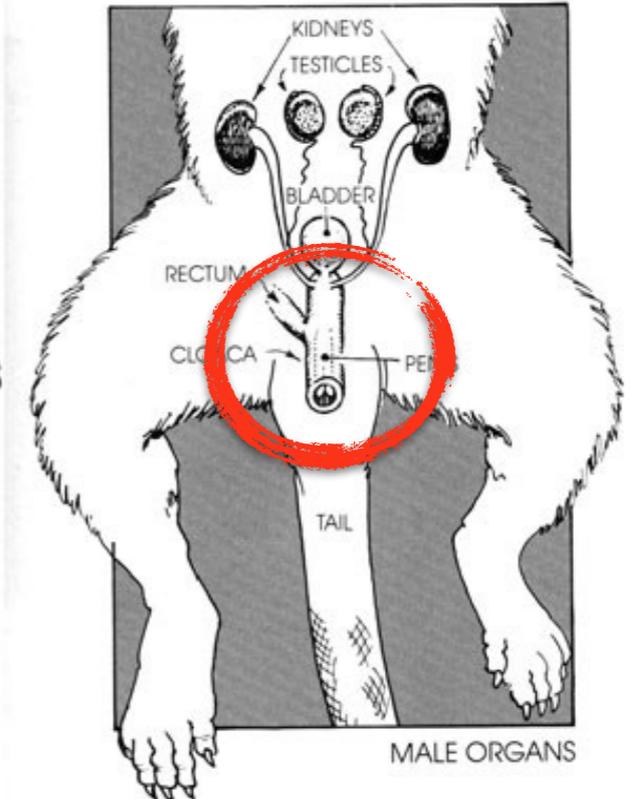
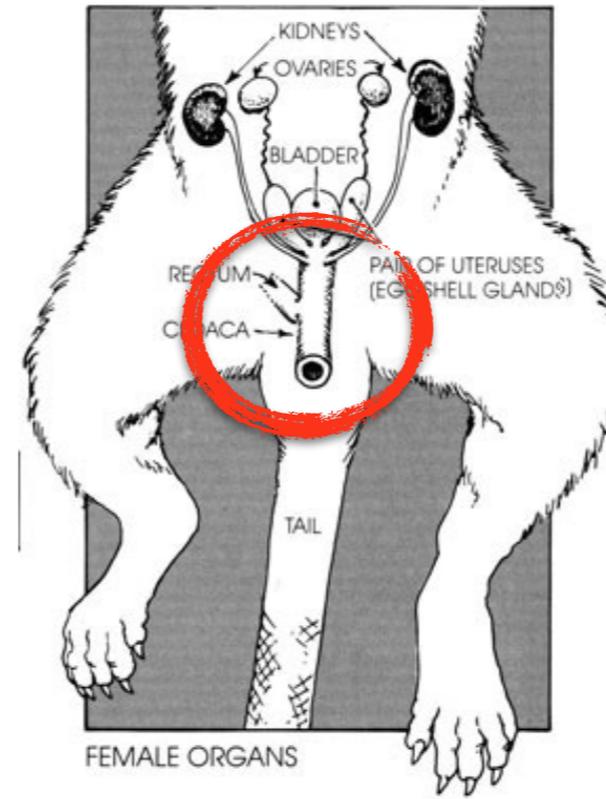
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# Reprodução nos mamíferos



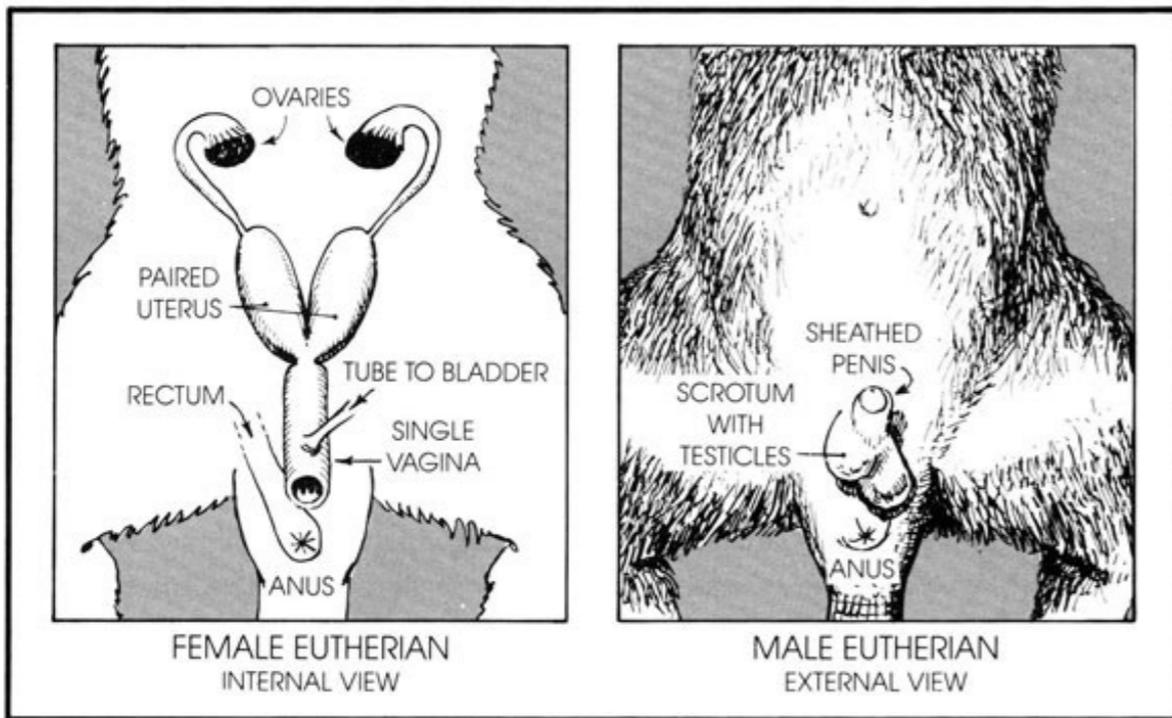
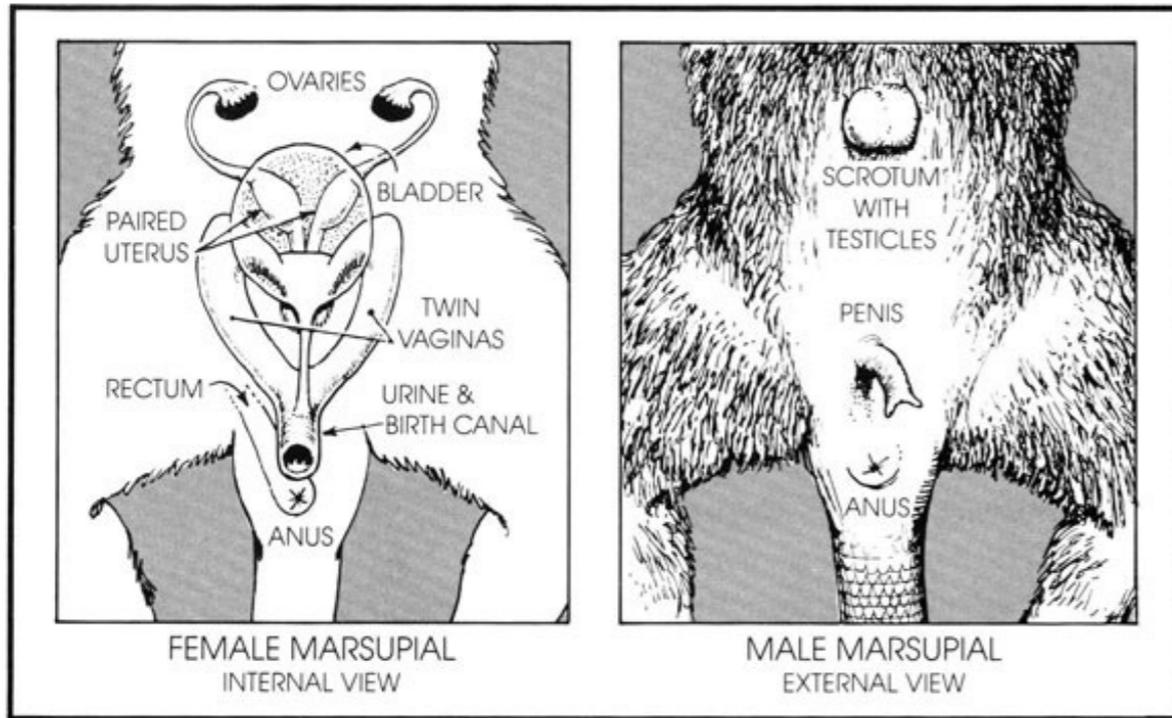
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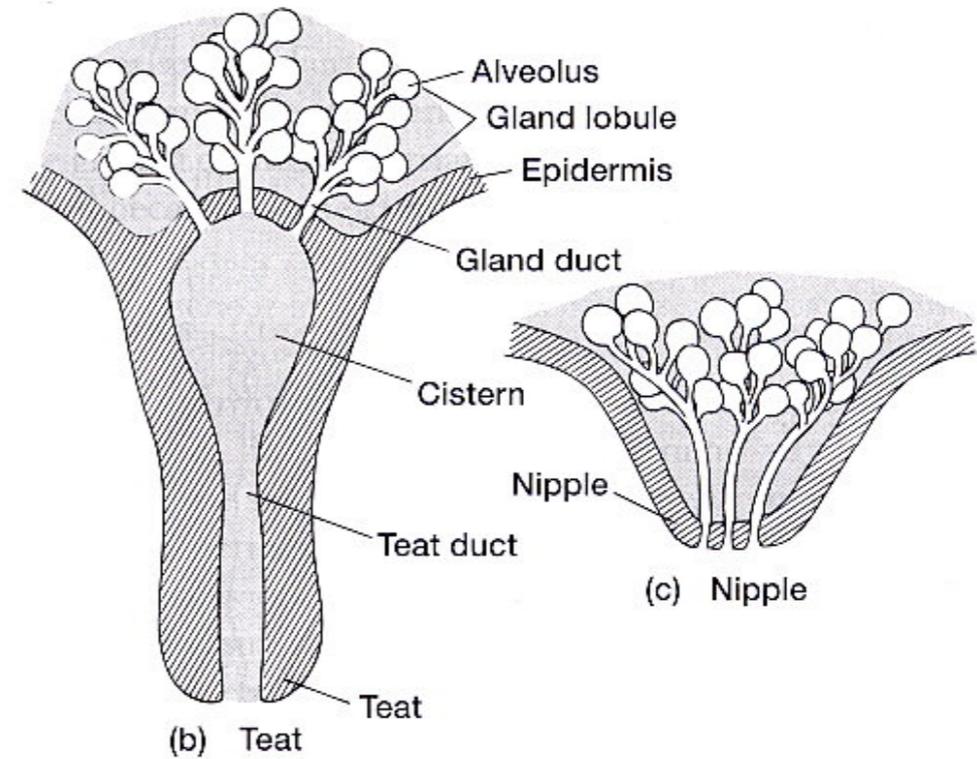
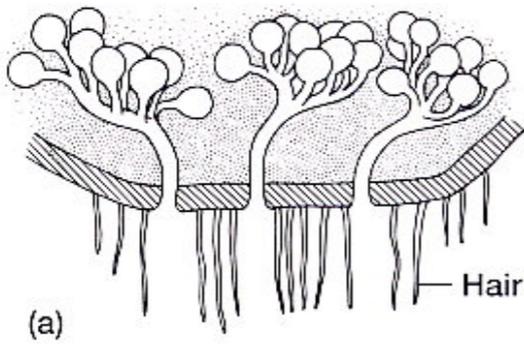
# Reprodução nos mamíferos



# Reprodução nos mamíferos



# Reprodução nos mamíferos



# Reprodução nos mamíferos



gestação <

lactação >

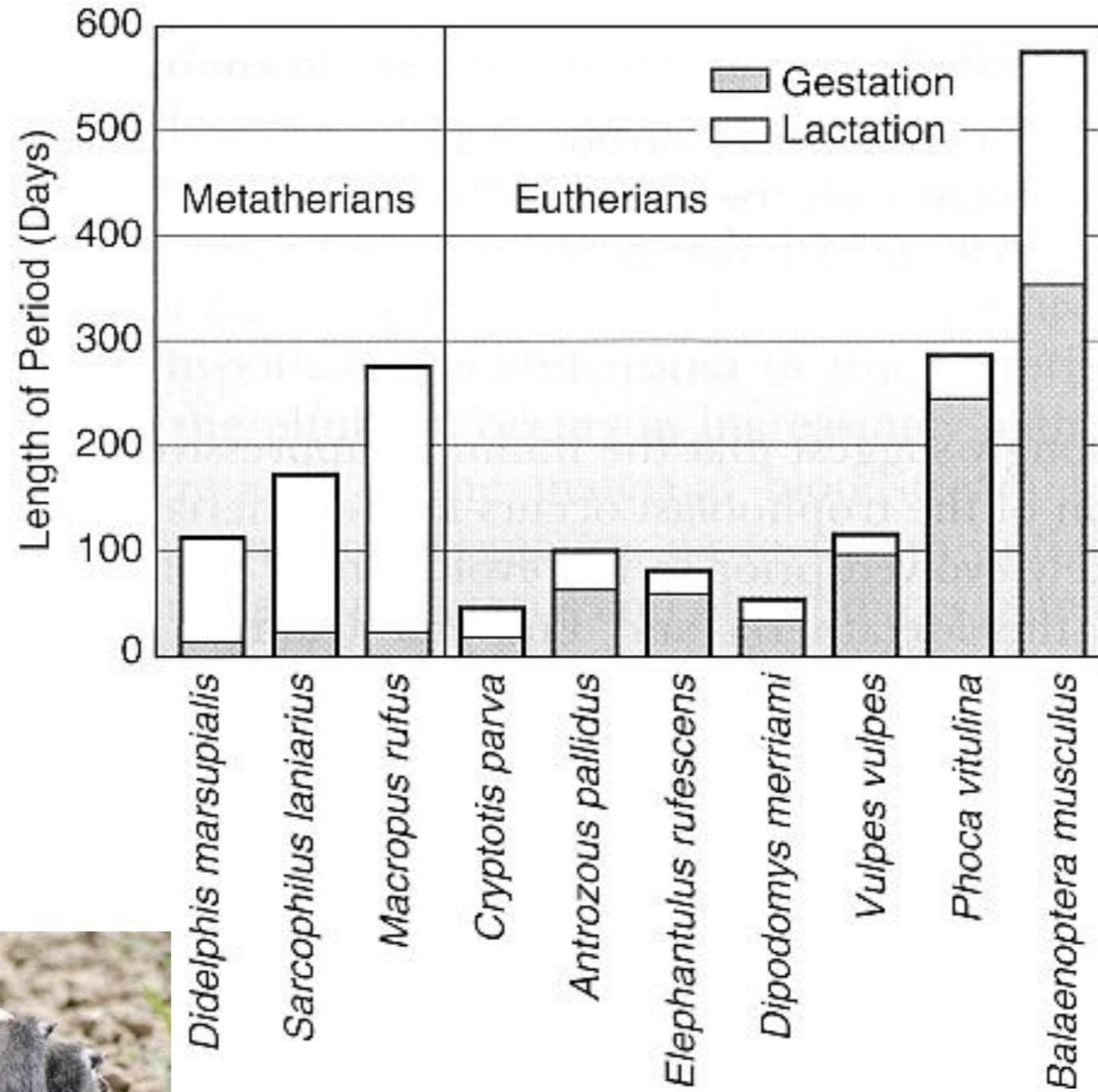


gestação >

lactação <



# Reprodução nos mamíferos



# Origem e evolução

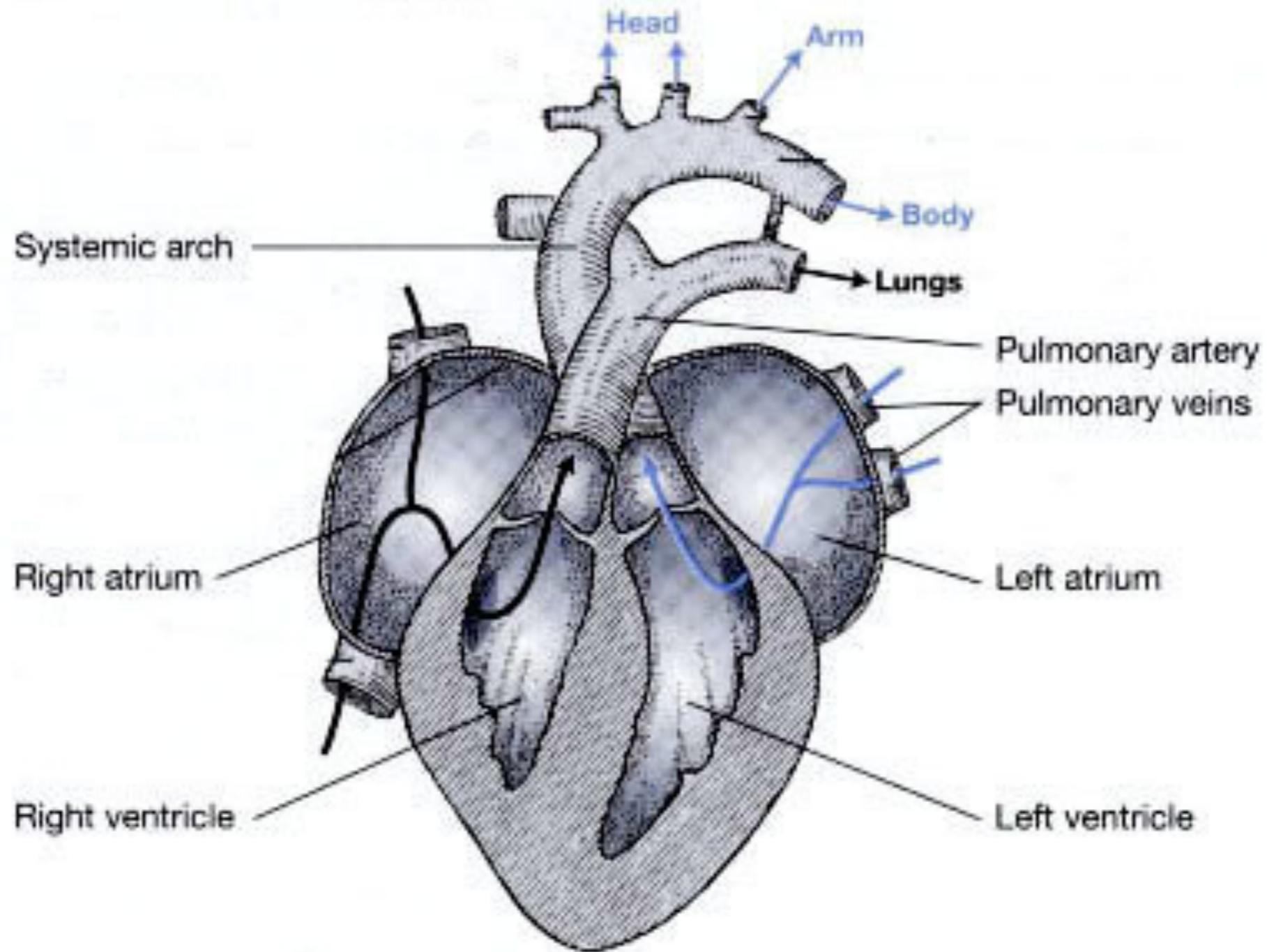
- Quem são os mamíferos?
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- Características dos atuais



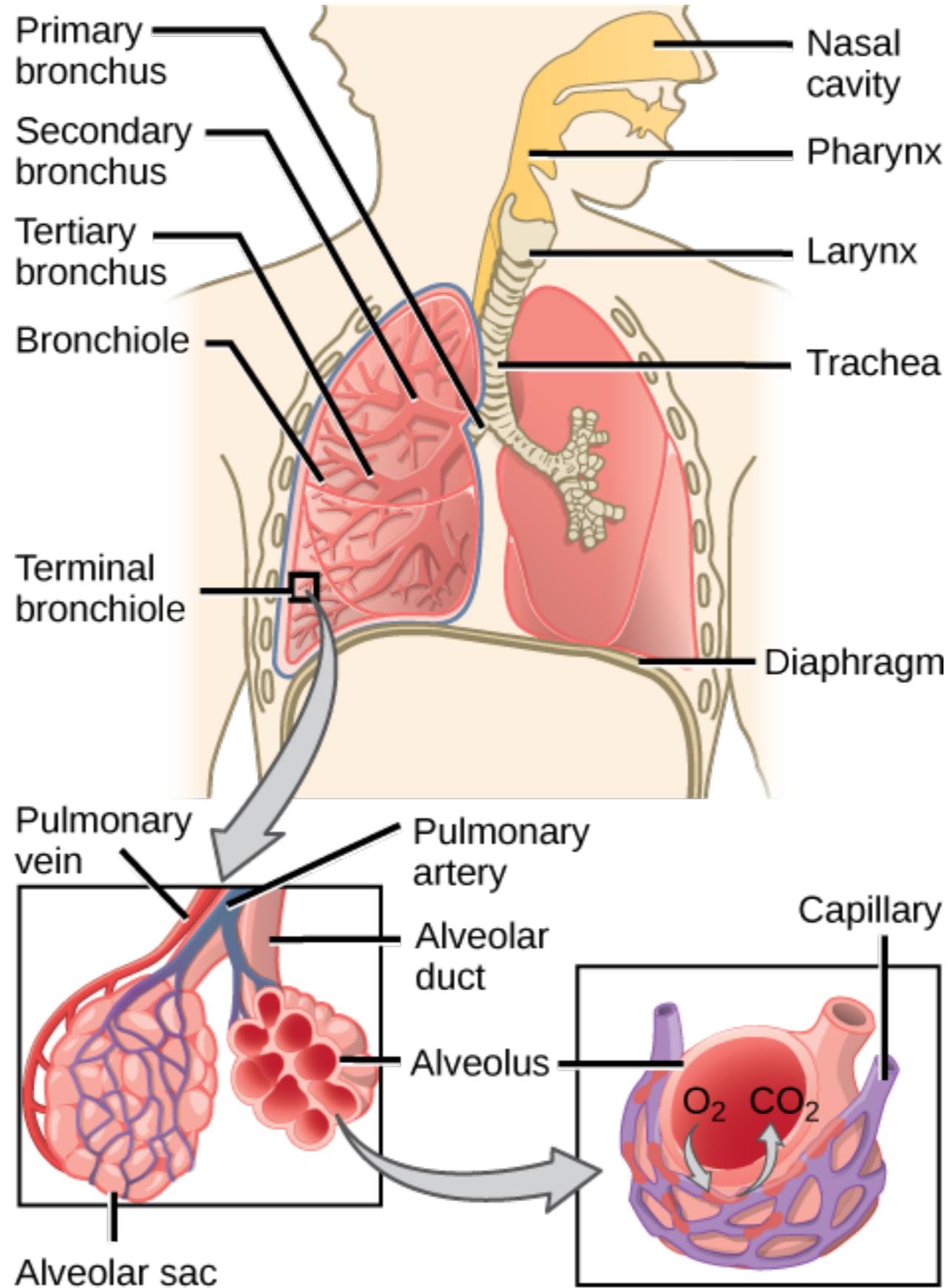
# Ativos e endotérmicos: tecido adiposo



# Ativos e endotérmicos: sistema circulatório



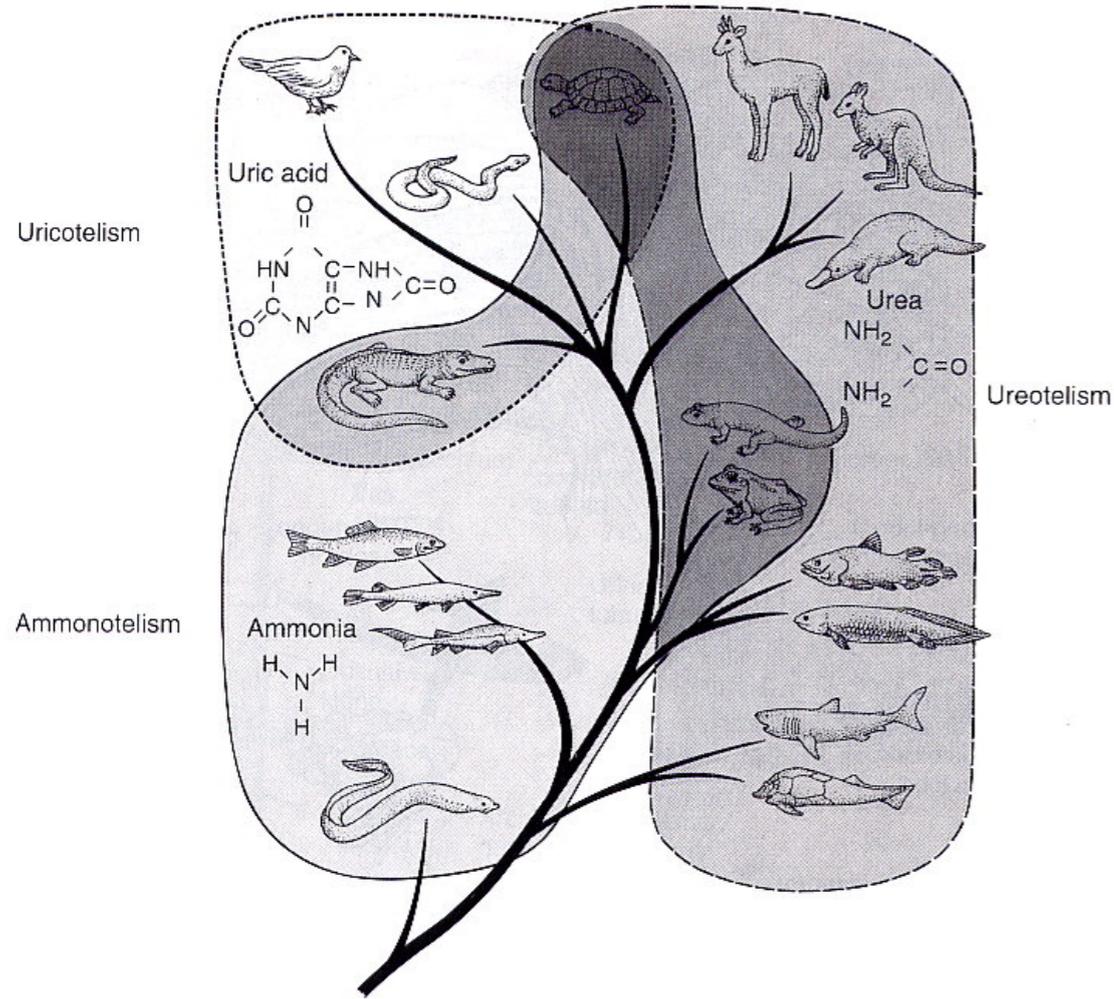
# Ativos e endotérmicos: sistema respiratório



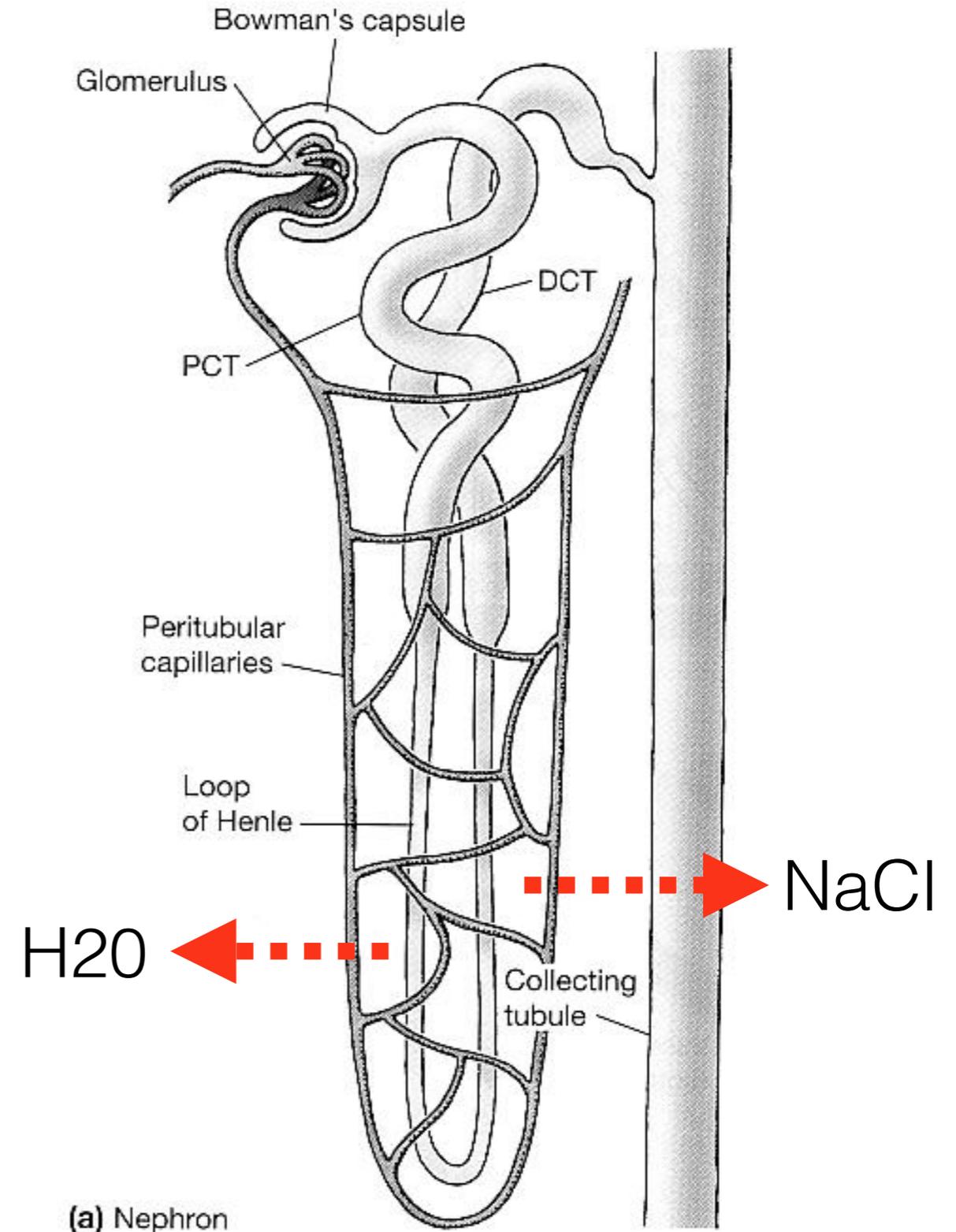
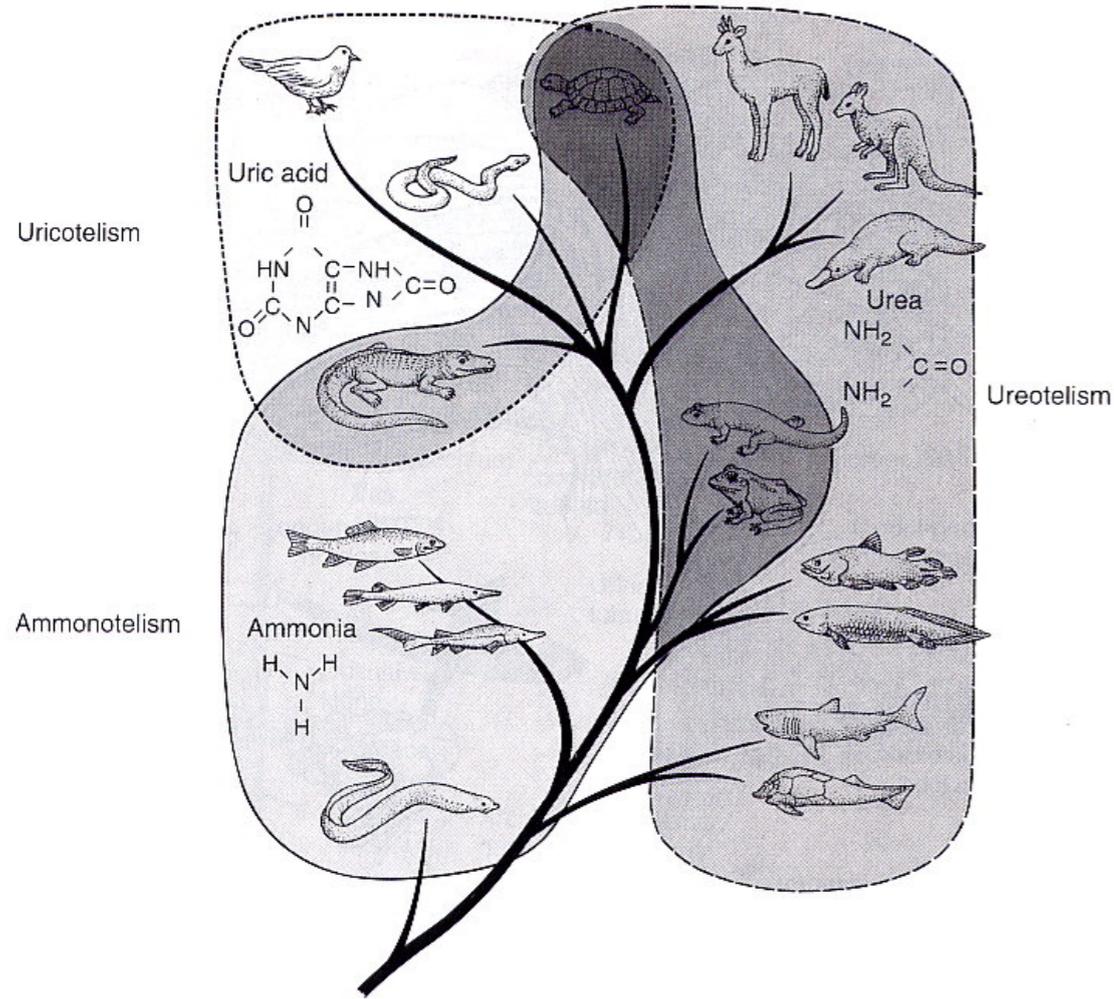
# Ativos e endotérmicos: sistema excretor



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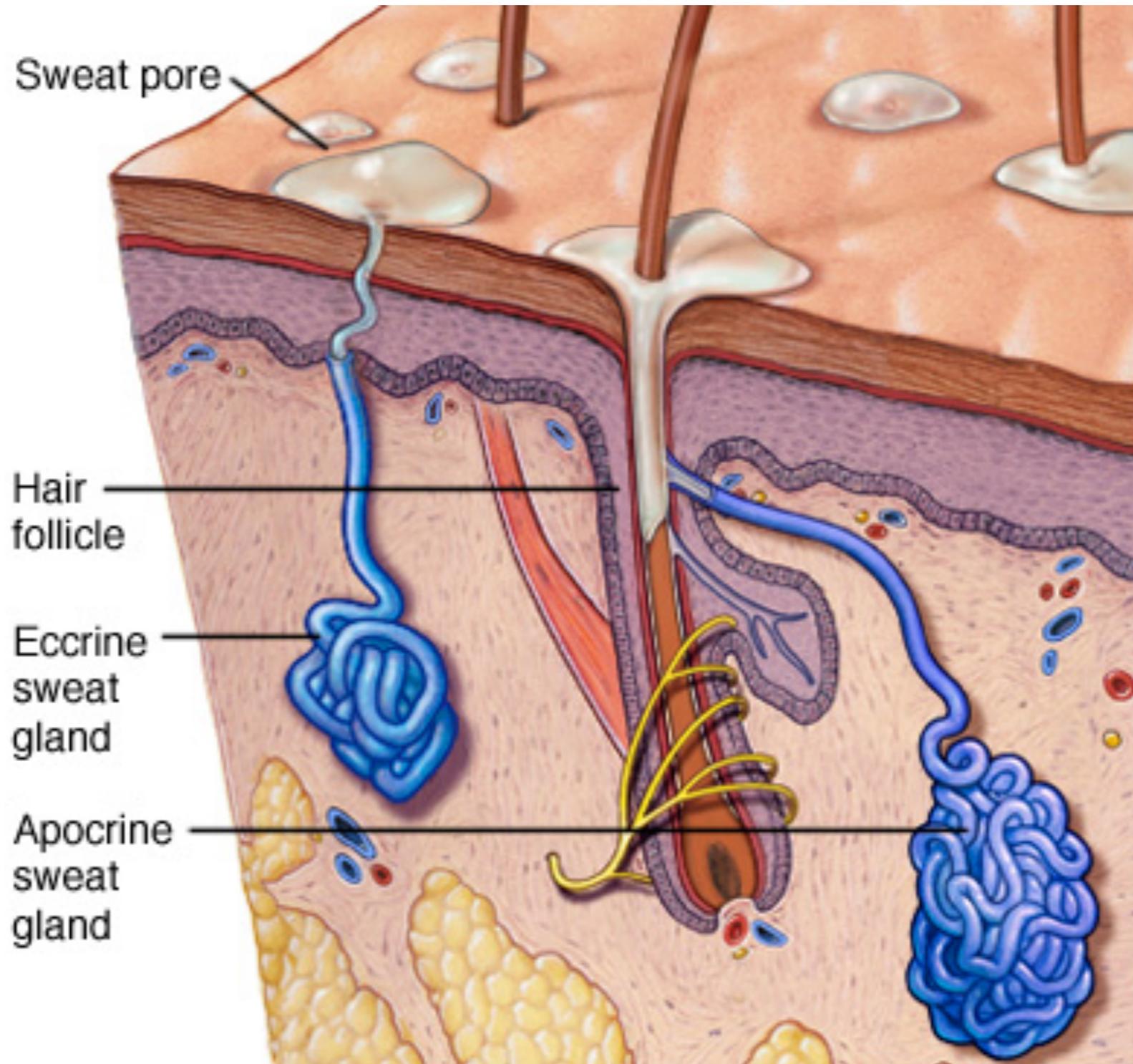
# Ativos e endotérmicos: sistema excretor

<i>Species</i>	<i>Maximum Observed Urine Concentration (mmole • kg<sup>-1</sup>)</i>	<i>Approximate Urine: Plasma Concentration Ratio</i>
American alligator ( <i>Alligator mississippiensis</i> )	312	0.95
Desert iguana ( <i>Dipsosaurus dorsalis</i> )	300	0.95
Desert tortoise ( <i>Gopherus agassizii</i> )	622	1.8
Pelican ( <i>Pelecanus erythrorhynchos</i> )	700	2
House sparrow ( <i>Passer domesticus</i> )	826	2.4
House finch ( <i>Carpodacus mexicanus</i> )	850	2.4
Human ( <i>Homo sapiens</i> )	1430	4
Bottlenose porpoise ( <i>Tursiops truncatus</i> )	2658	7.5
Hill kangaroo ( <i>Macropus robustus</i> )	2730	7.5
Camel ( <i>Camelus dromedarius</i> )	2800	8
White rat ( <i>Rattus norvegicus</i> )	2900	8.9
Marsupial mouse ( <i>Dasycercus eristicauda</i> )	3231	10
Cat ( <i>Felis domesticus</i> )	3250	9.9
Desert woodrat ( <i>Neotoma lepida</i> )	4250	12
Vampire bat ( <i>Desmodus rotundus</i> )	6250	20
Kangaroo rat ( <i>Dipodomys merriami</i> )	6382	18
Australian hopping mouse ( <i>Notomys alexis</i> )	9370	22

Tegumento glandular coberto por pelos



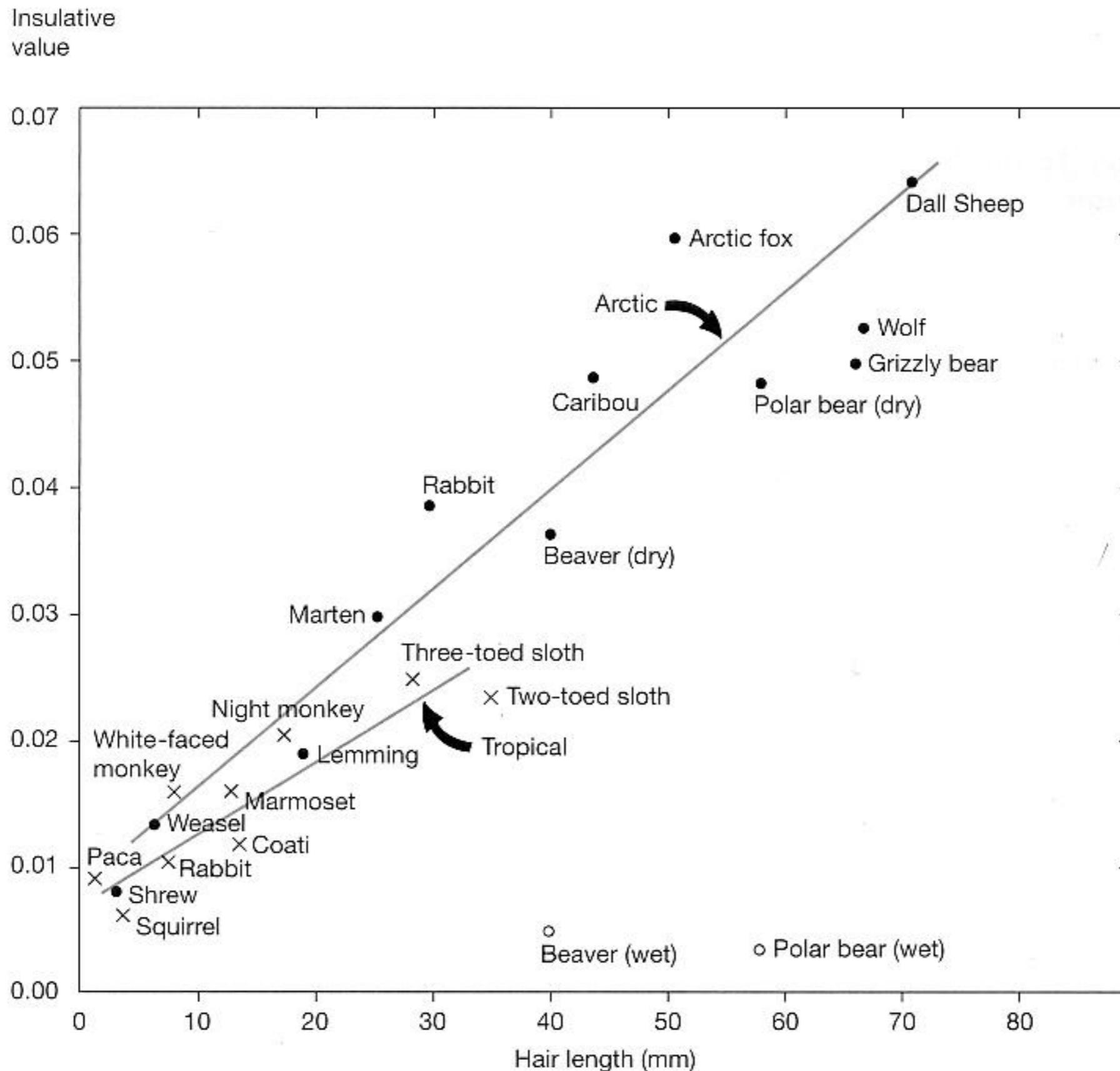
# Tegumento glandular coberto por pelos



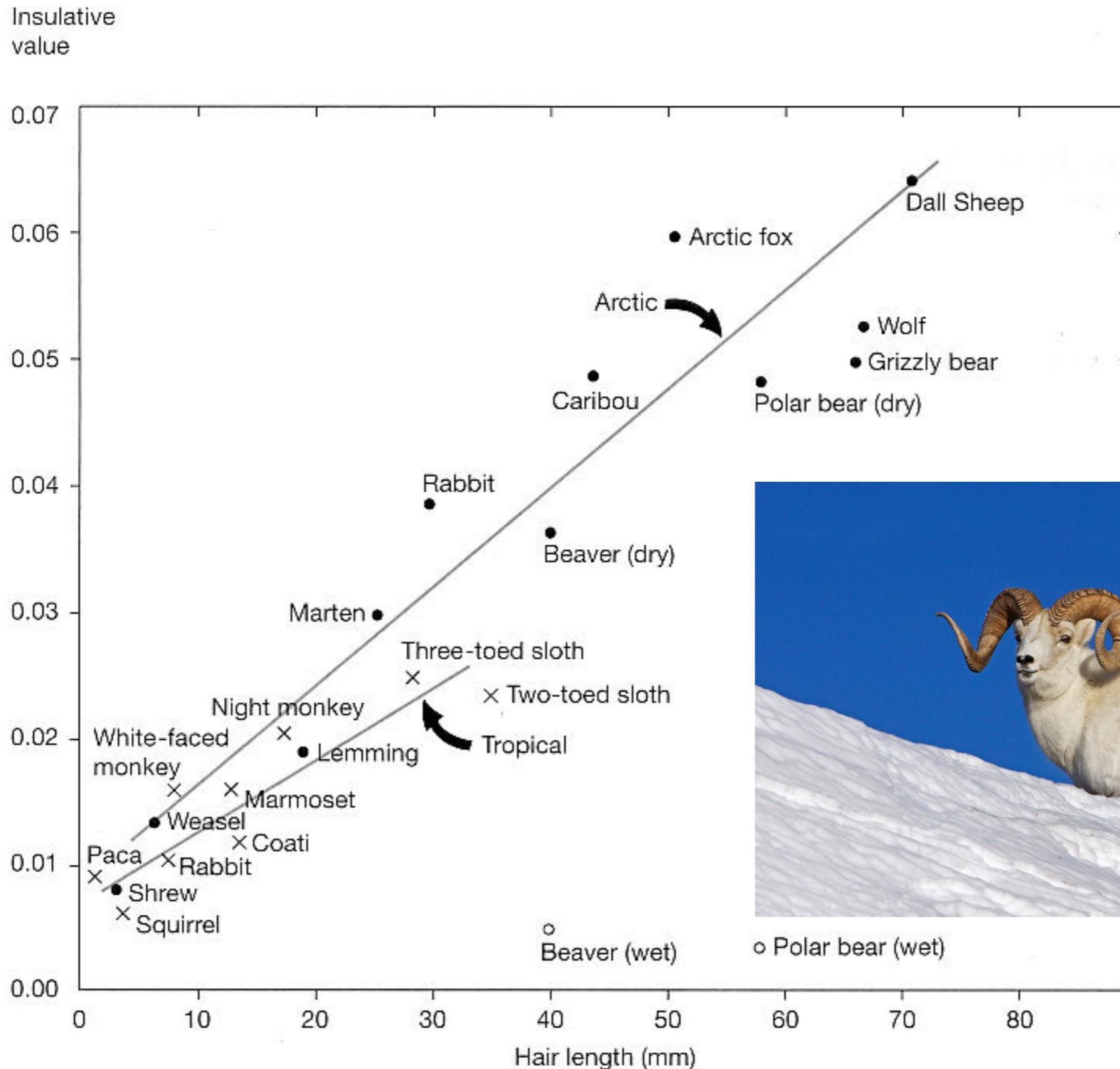
Tegumento glandular coberto por pelos



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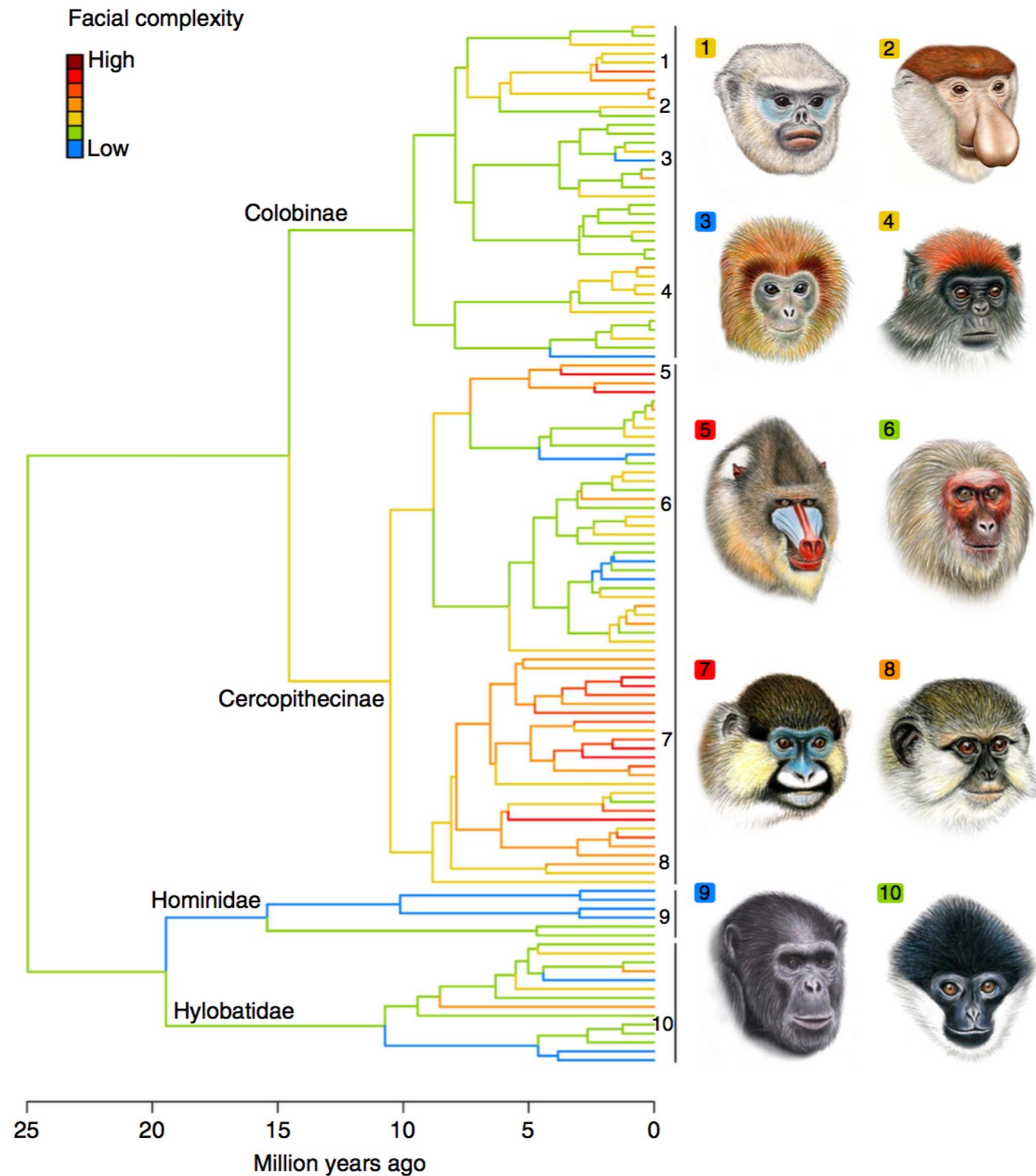
# Tegumento glandular coberto por pelos



Tegumento glandular coberto por pelos



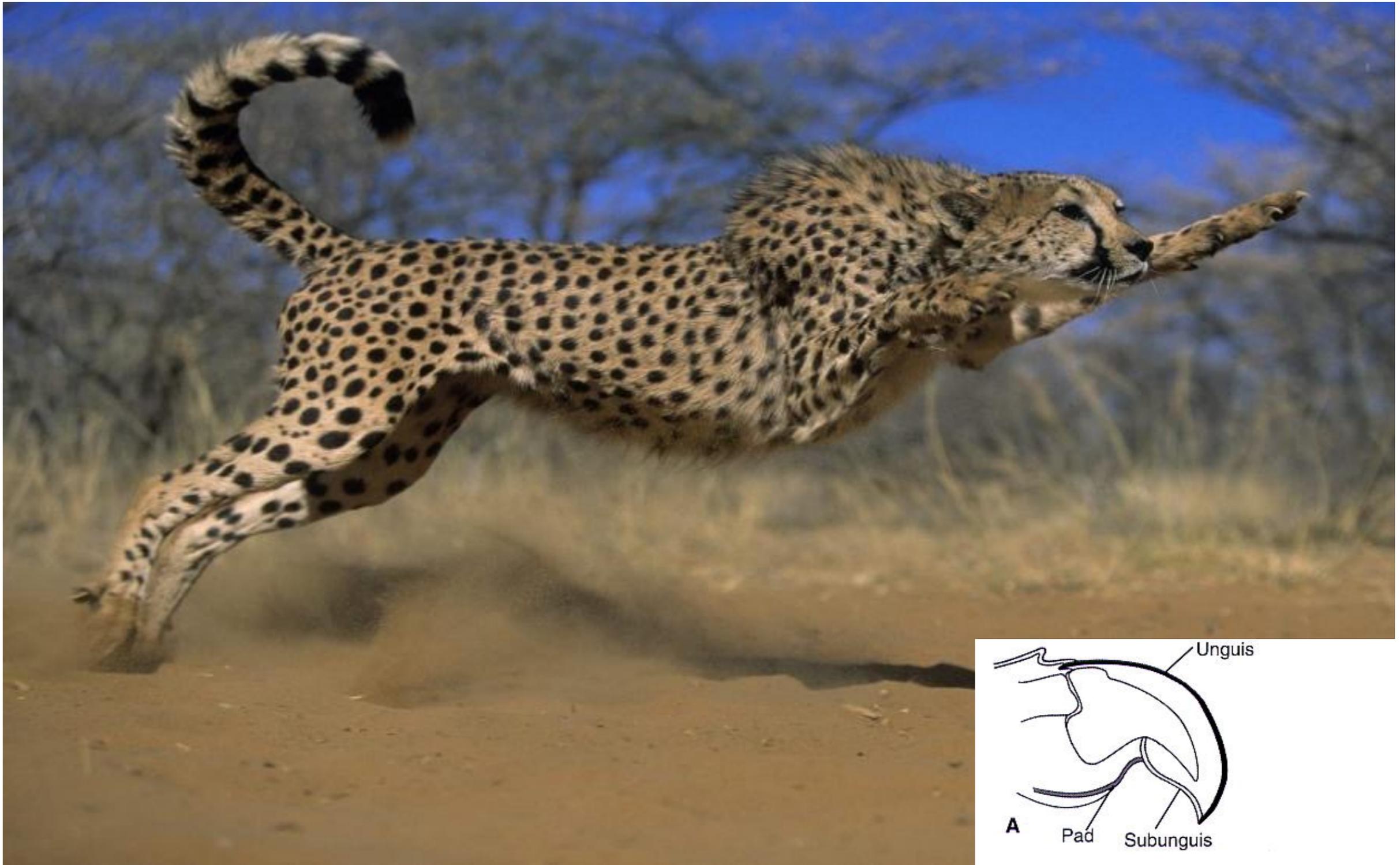
# Tegumento glandular coberto por pelos



Tegumento: unhas, garras, cascos



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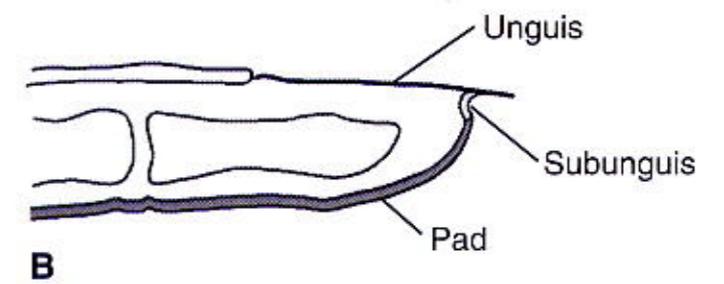
# Tegumento: unhas, garras, cascos



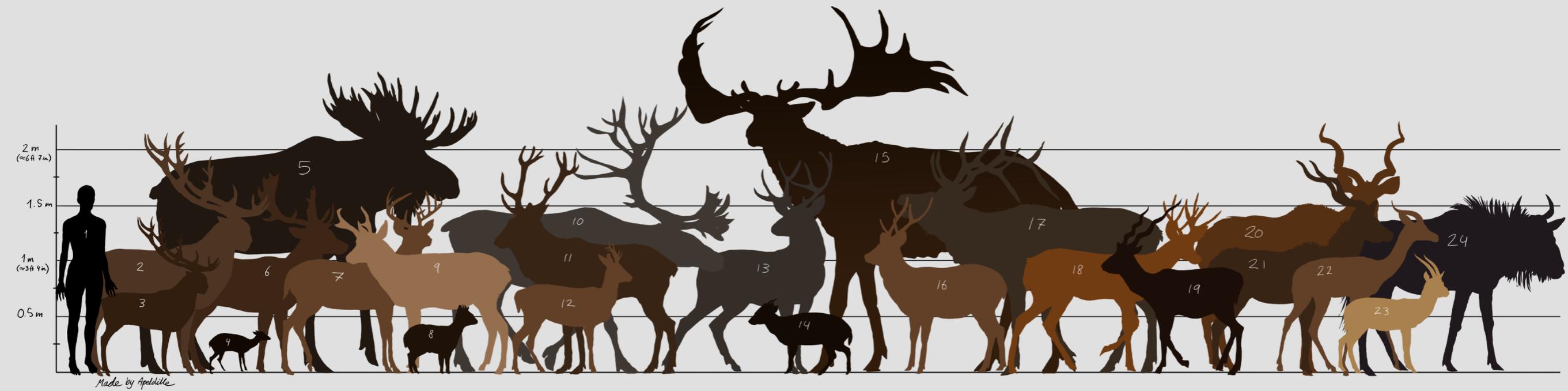
Tegumento: unhas, garras, cascos



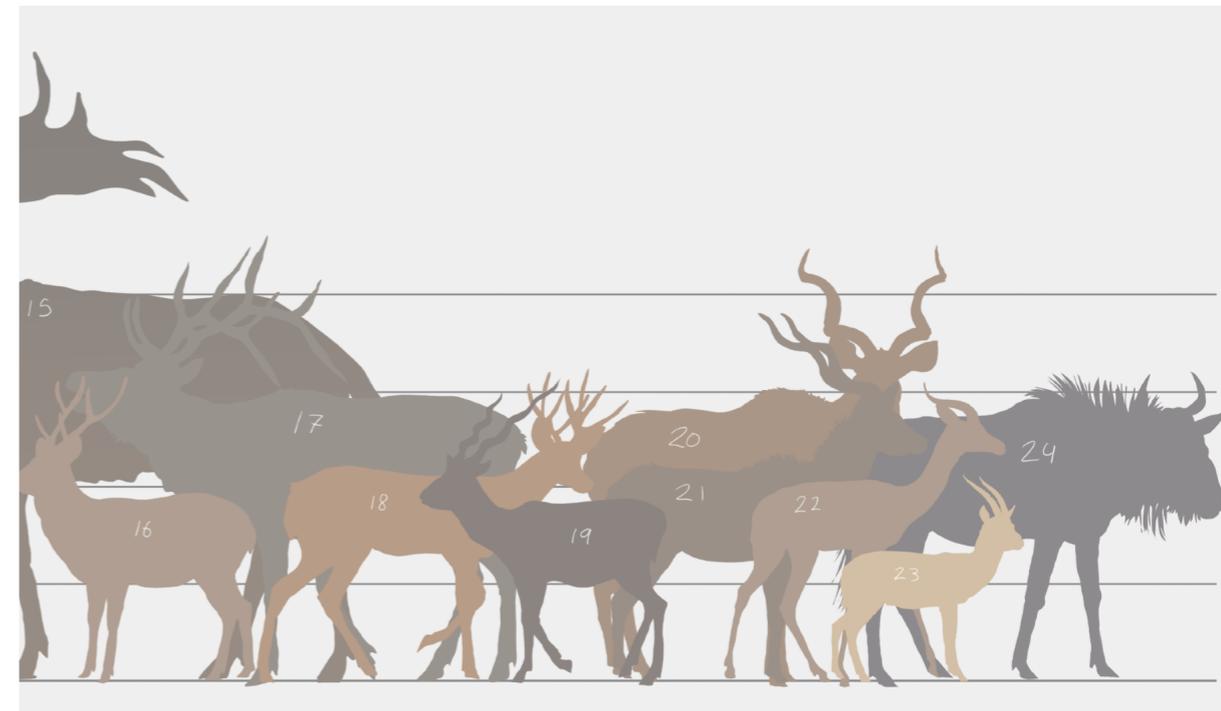
# Tegumento: unhas, garras, cascos



# Tegumento: chifres, cornos



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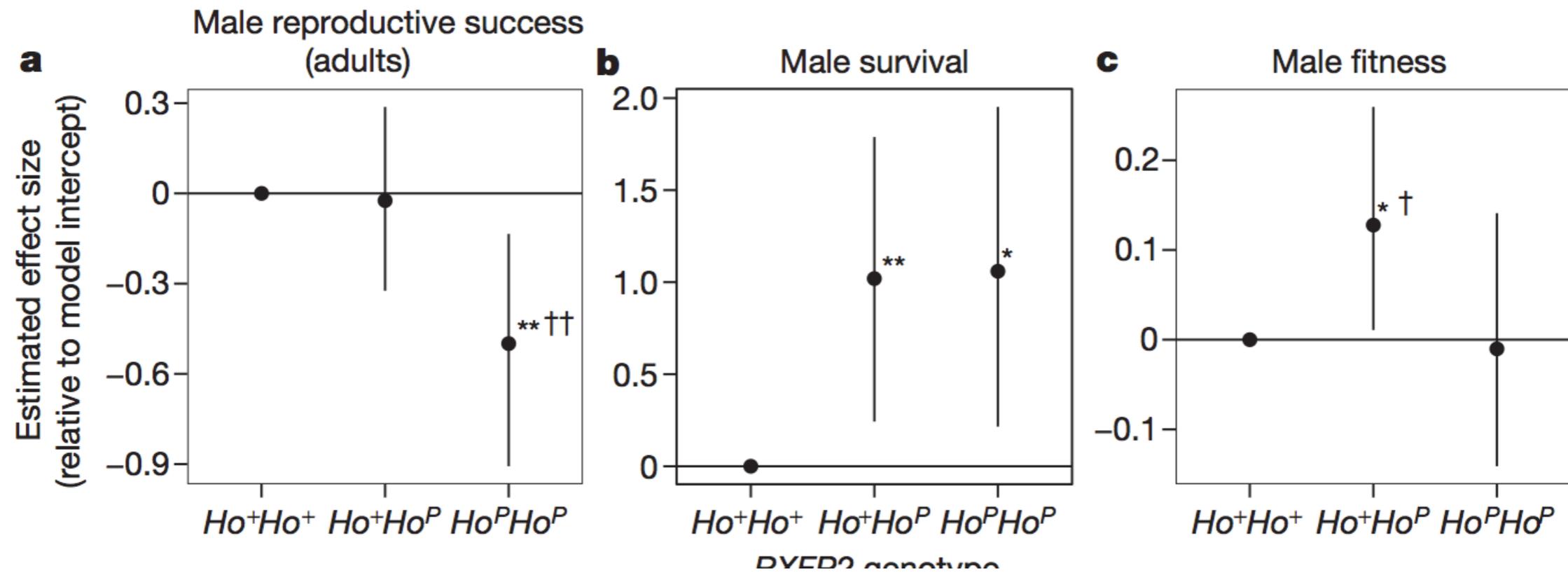


**Figure 1 | Horn morphology variation with *RXFP2* genotype.** Examples of adult male horn morphology with their corresponding *RXFP2* genotypes. **a**, Four-year-old normal-horned  $Ho^+Ho^+$ . **b**, Five-year-old normal-horned  $Ho^+Ho^P$ . **c**, Five-year-old normal-horned  $Ho^PHo^P$ . **d**, Three-year-old scurred  $Ho^PHo^P$ .

# Tegumento: chifres, cornos



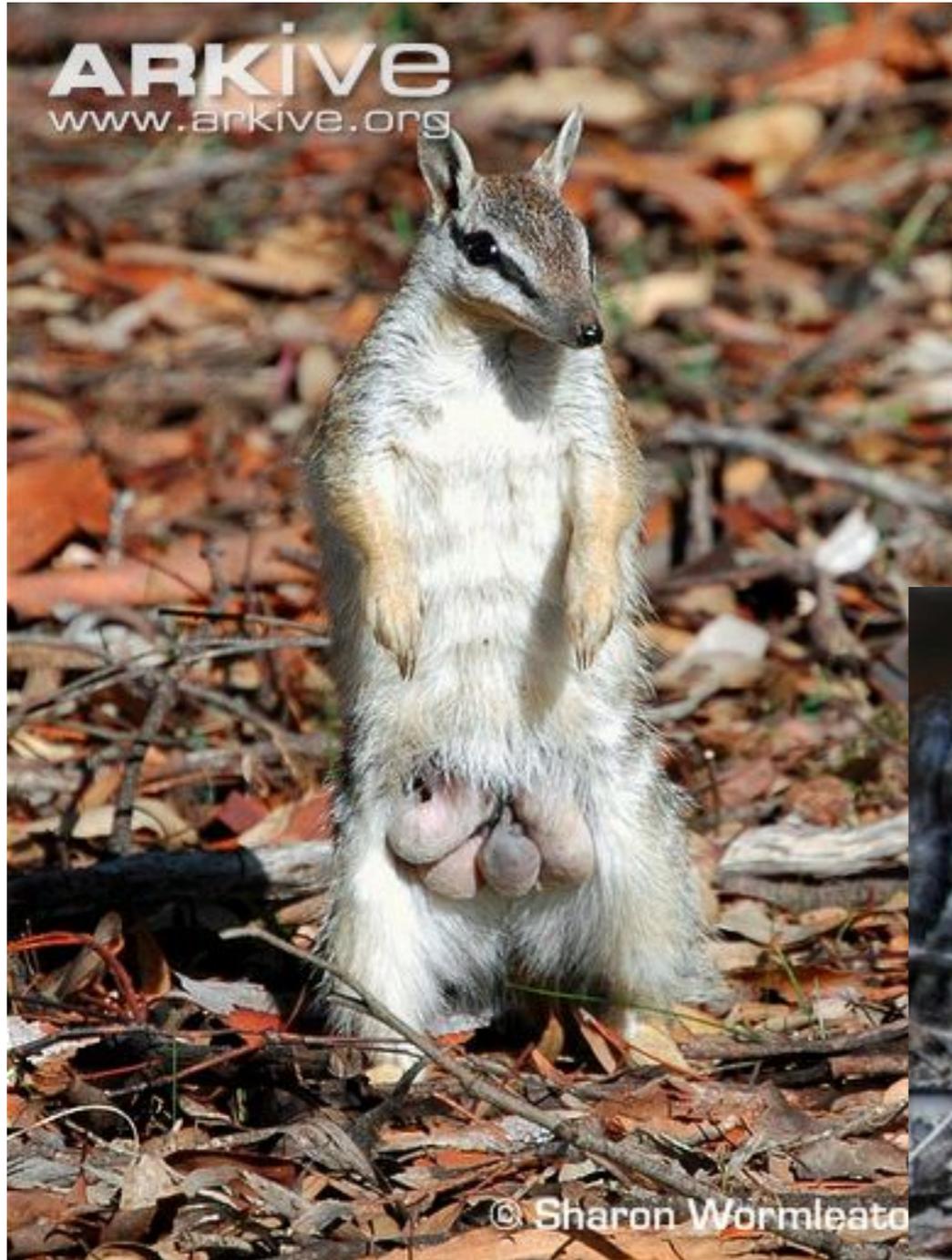
**Figure 1** | Horn n  
adult male horn n  
a, Four-year-old n  
 $Ho^+Ho^P$ . c, Five-y  
 $Ho^PHo^P$ .



# Tegumento: glândulas



# Tegumento: glândulas/lactação



# Tegumento: lactação



# Tegumento: lactação



# Tegumento: lactação/músculos faciais

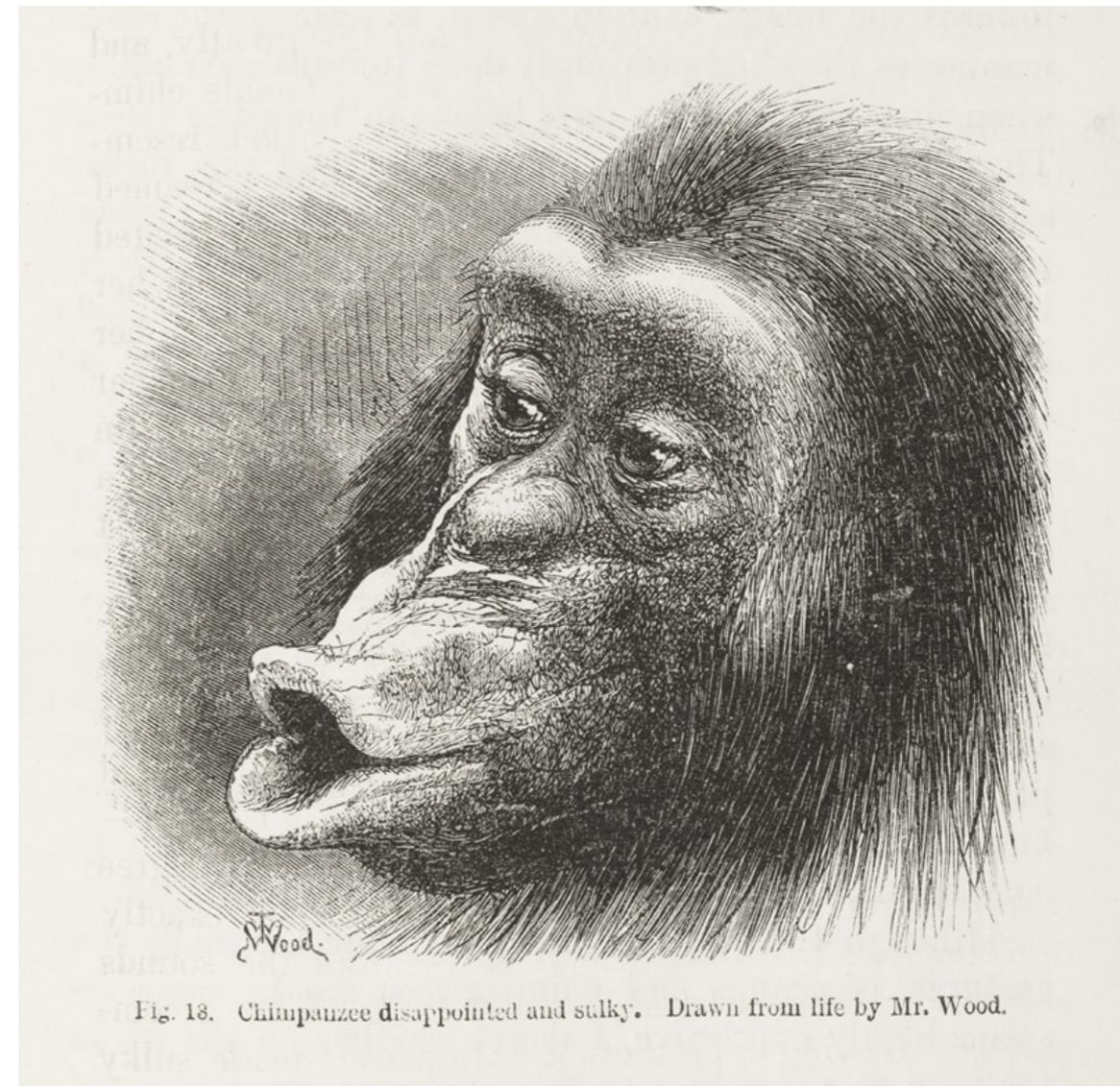
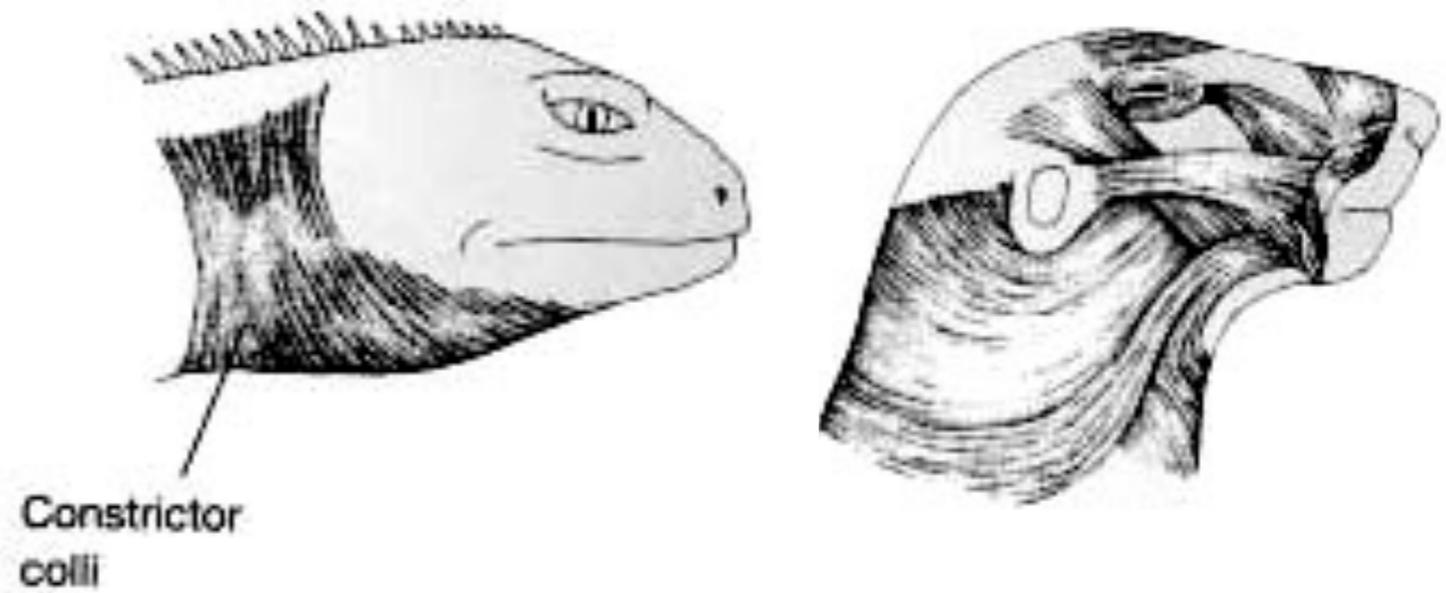
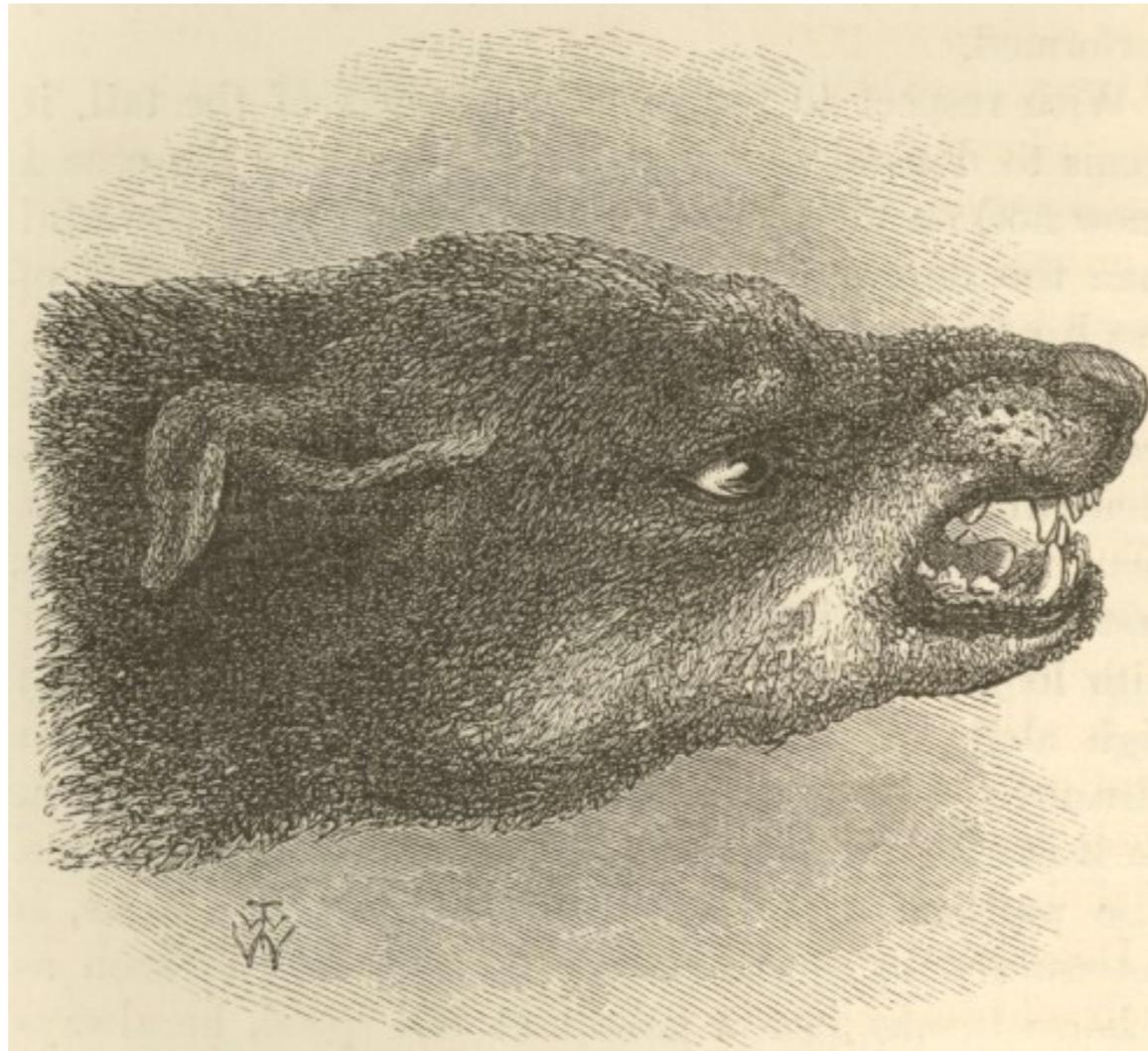
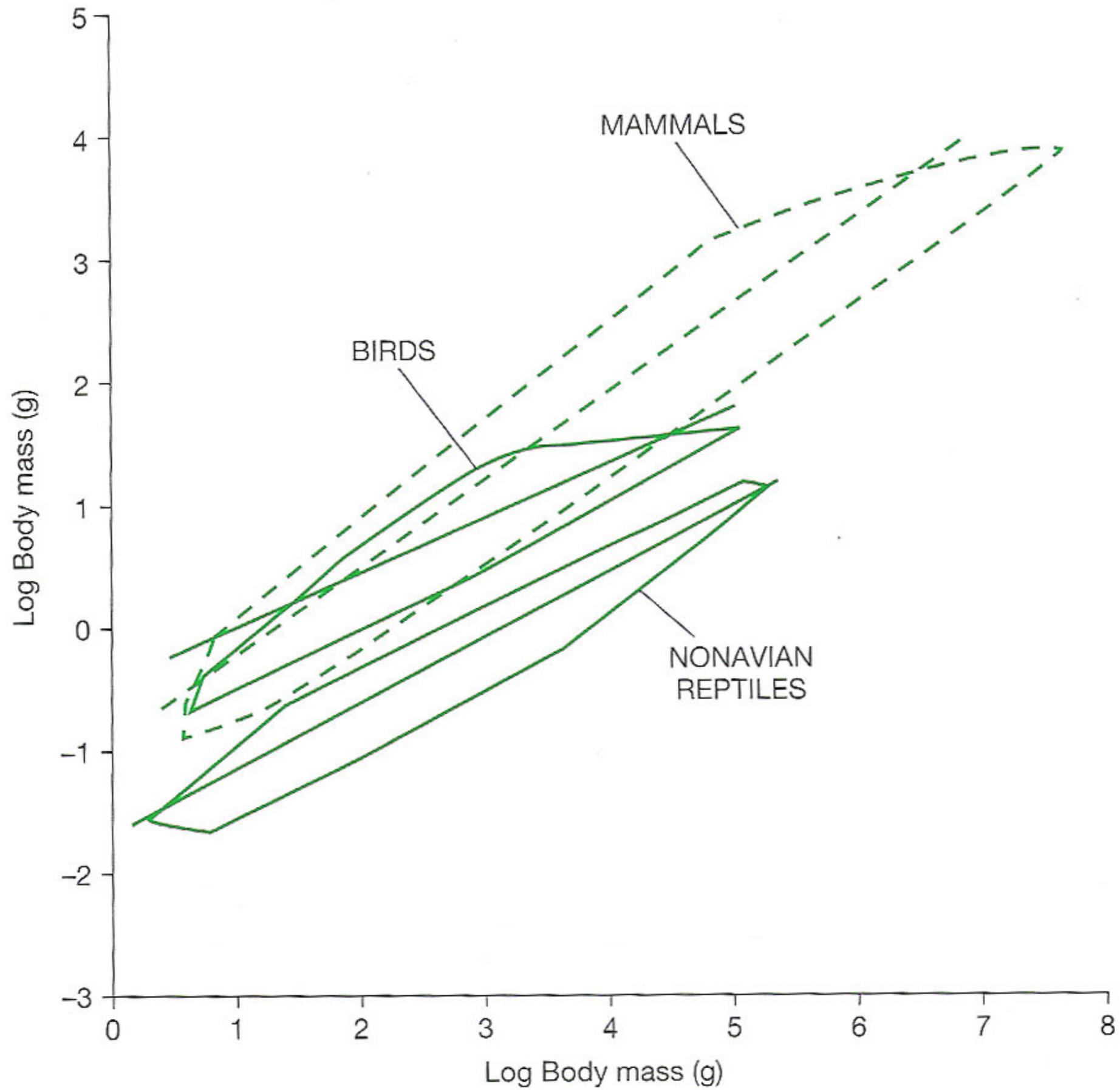


Fig. 13. Chimpanzee disappointed and sulky. Drawn from life by Mr. Wood.

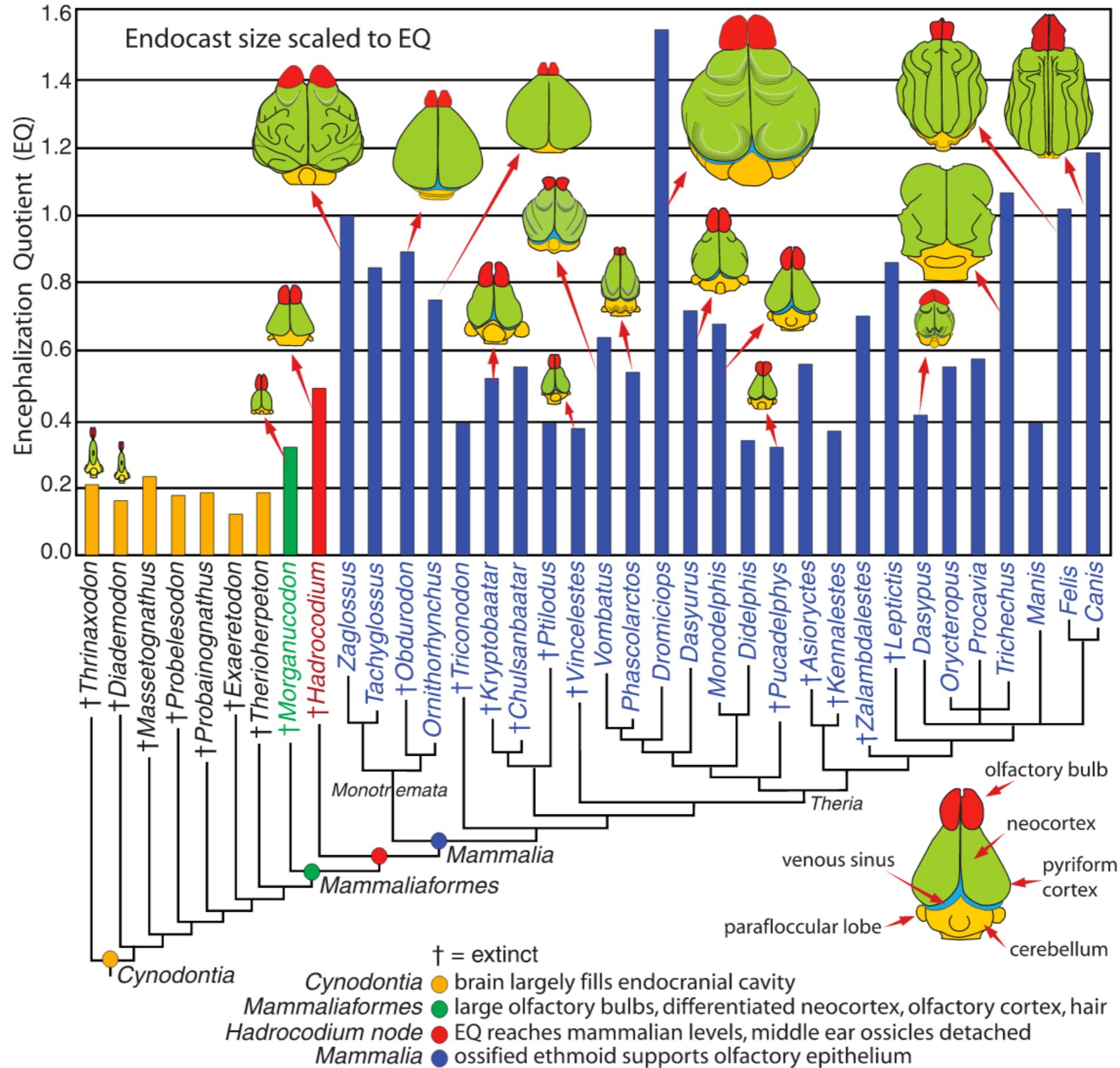


# BRAINS

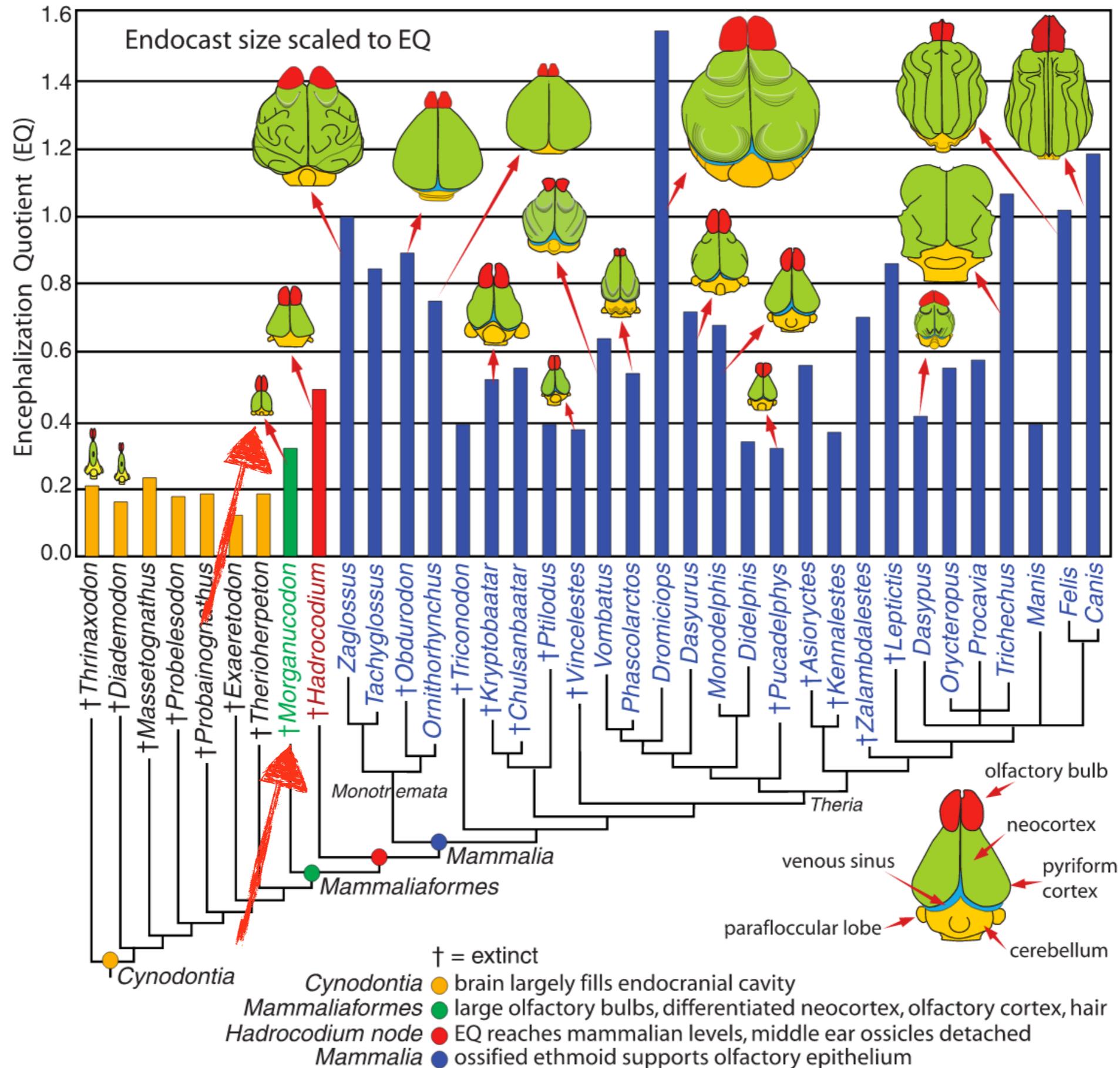
# Encéfalo



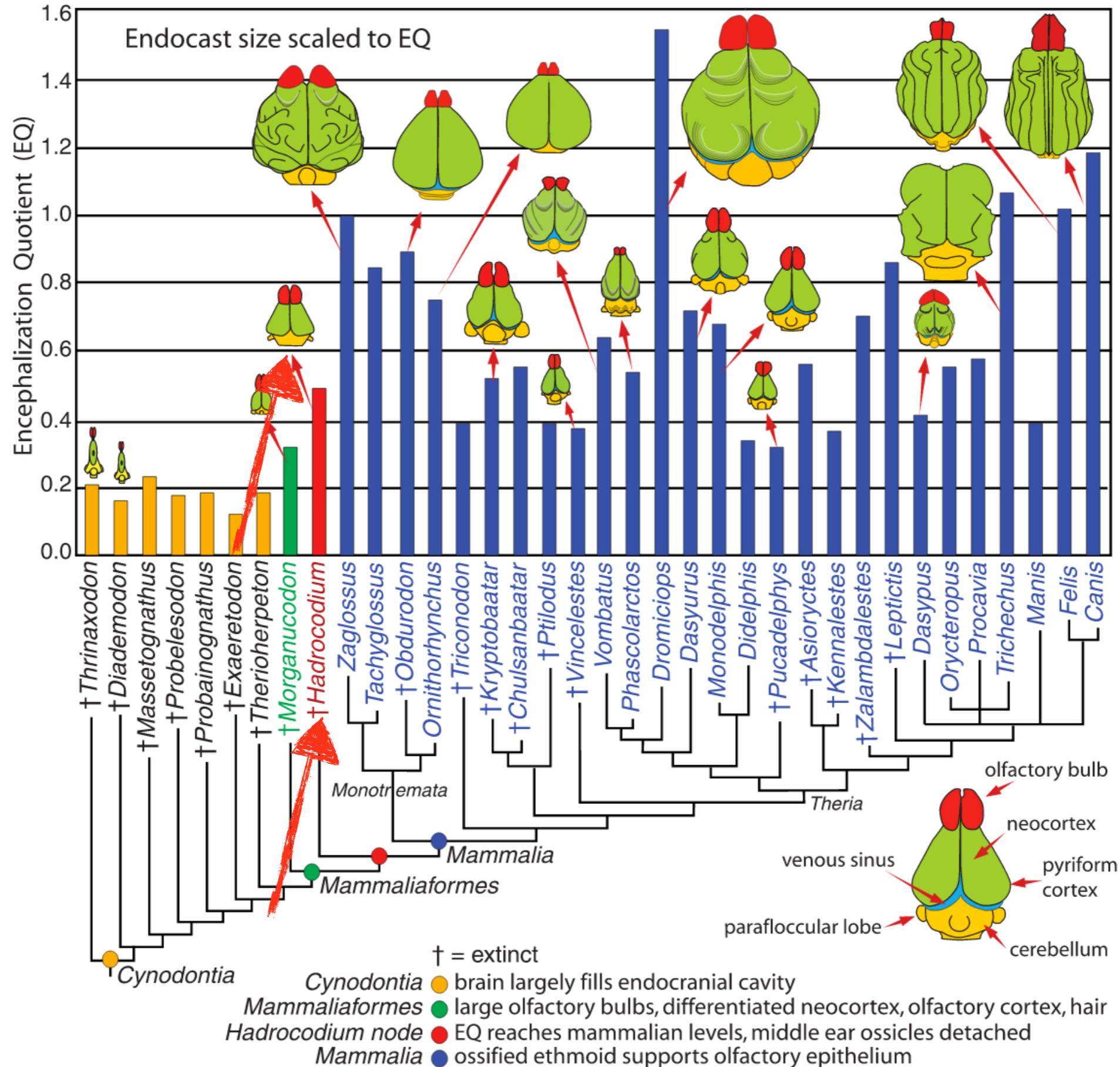
# Encéfalo



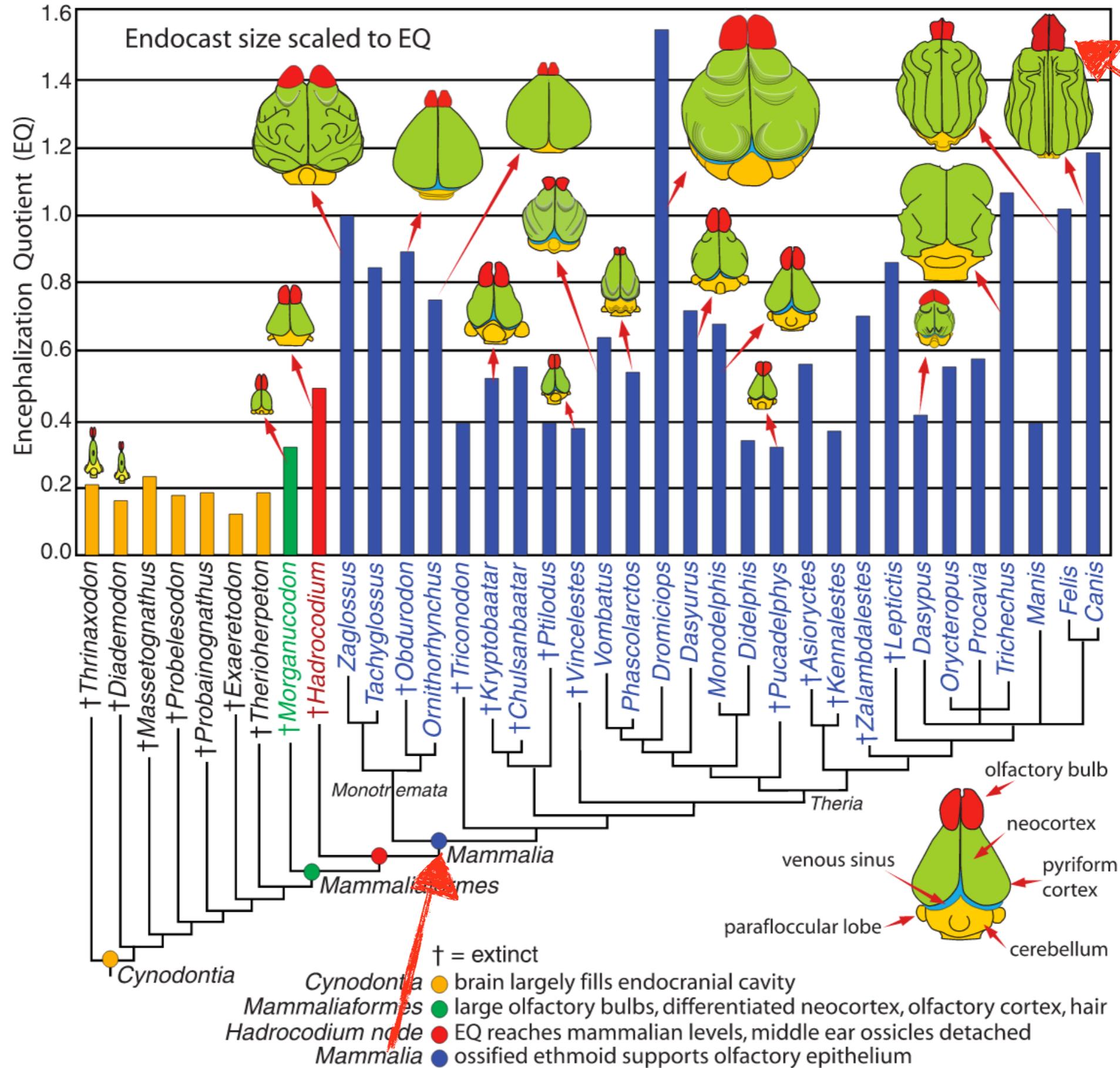
# Encéfalo



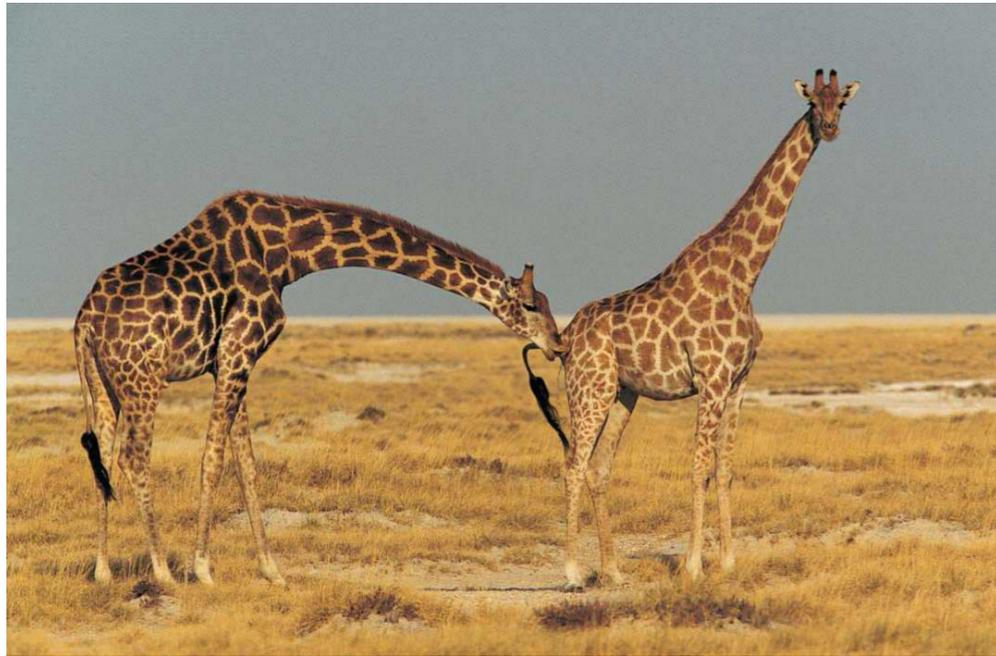
# Encéfalo



# Encéfalo



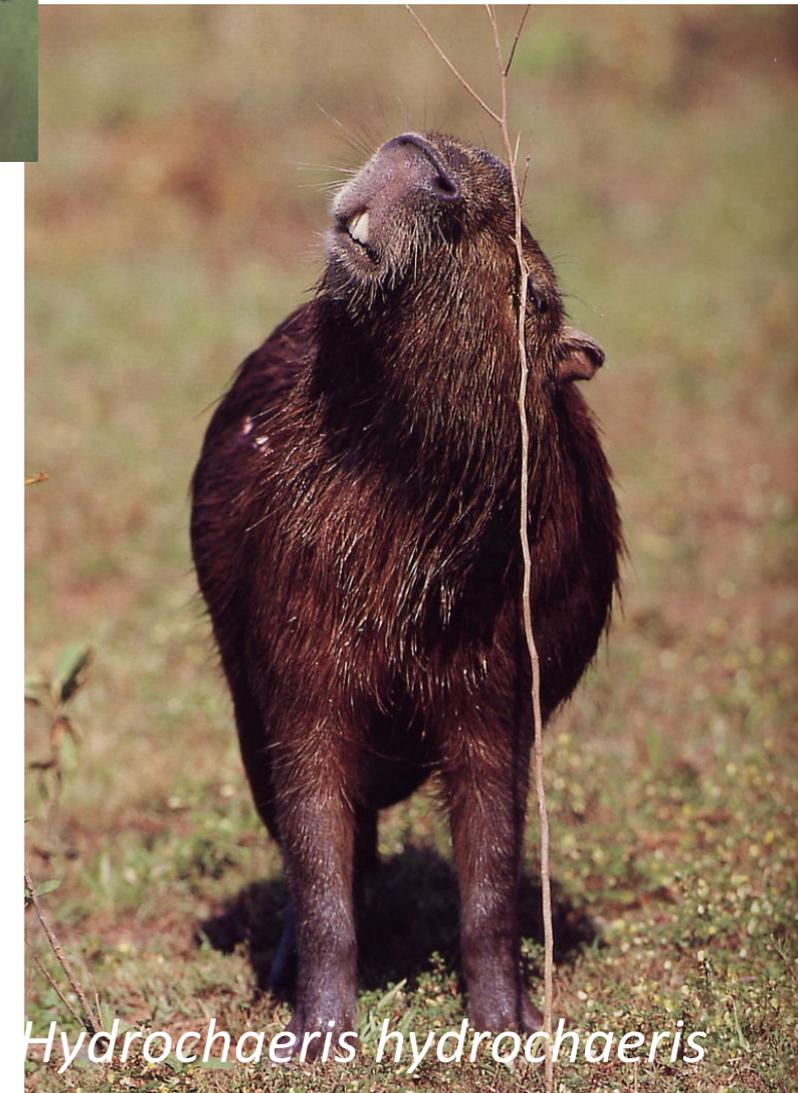
# Órgãos sensoriais



*Oreotragus oreotragus*



*Tupaia belangeri*

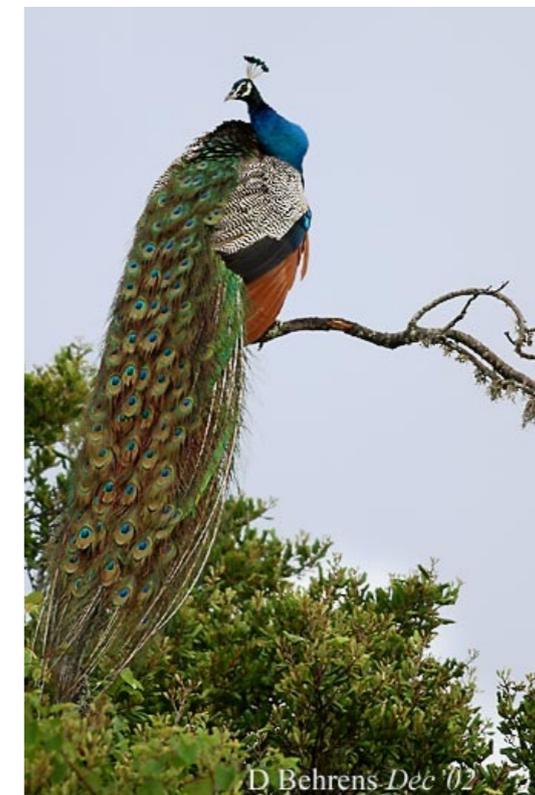
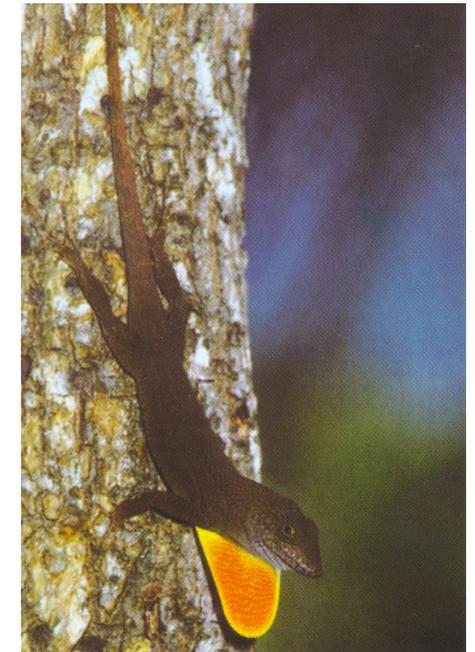
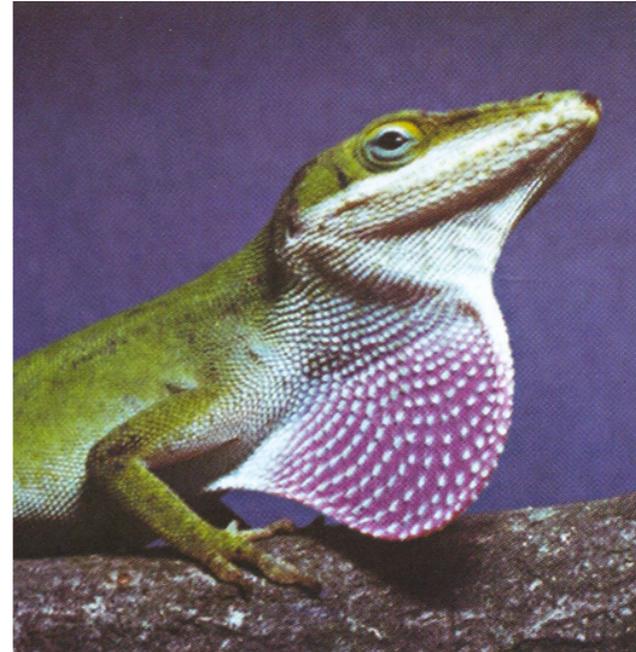


*Hydrochaeris hydrochaeris*

✓

## Sauropsida

(diurnos, visão, coloração e movimento)



# Estilo de vida comum dos mamíferos

- apenas dentário
- articulação dentário-esquamosal
- dentição heterodonte/ difiodonte/ oclusão perfeita

tecido adiposo

sistema respiratório, circulatório e excretor eficientes

ativos – endotérmicos

tegumento glandular coberto por pelos

camuflagem

lactação, músculos faciais

comunicação por  
marcação odorífera

cuidado parental  
materno

cérebro grande e olfato e  
audição bem desenvolvidos

sistemas sociais e de acasalamento

comportamento complexo,  
comunicação baseada no olfato