

Um lembrete:



wrong

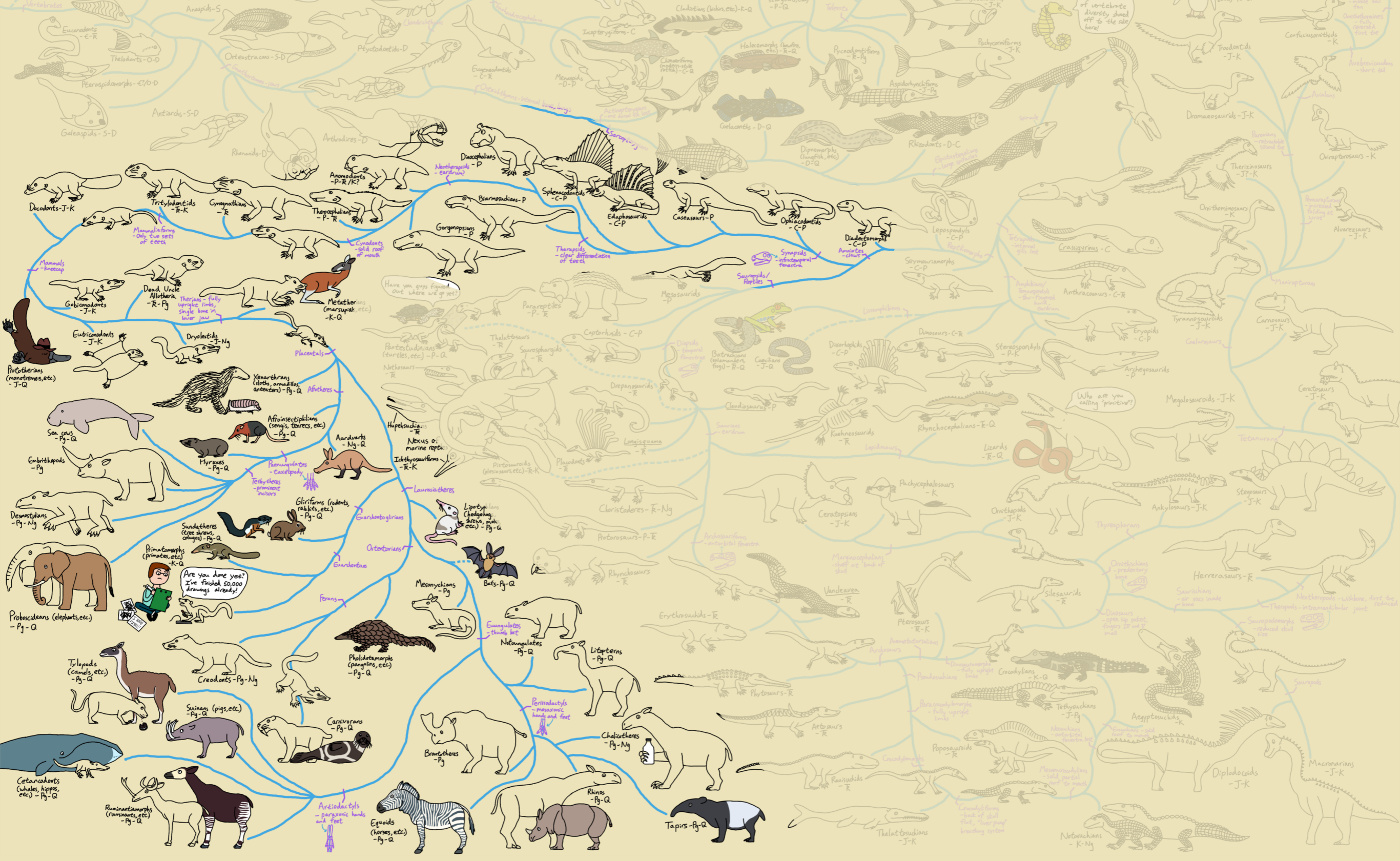


right

Q = Quaternary
N_g = Neogene
Pg = Paleogene
K = Cretaceous
J = Jurassic
R = Triassic
P = Permian
C = Carboniferous
D = Devonian
S = Silurian
O = Ordovician
E = Cambrian



Q = Quaternary
 N₃ = Neogene
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 P = Permian
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 D = Devonian
 S = Silurian
 O = Ordovician
 E = Cambrian



Mammalia

Eduardo S.A. Santos

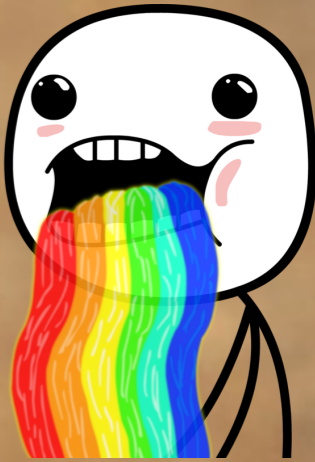
eduardosantos-lab.weebly.com

26/09/2018

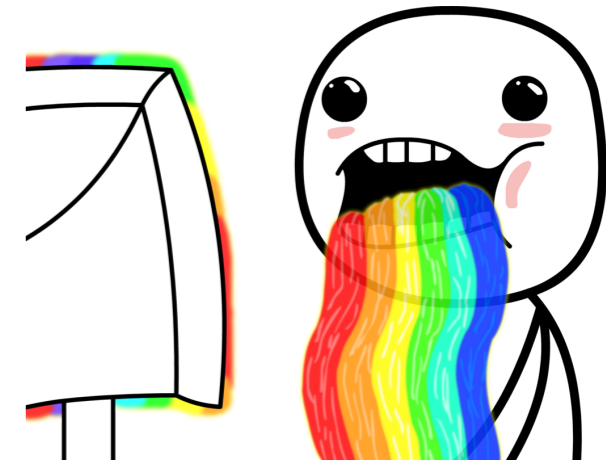
**WASSUP
PEOPLE**



I AM A MAMMAL

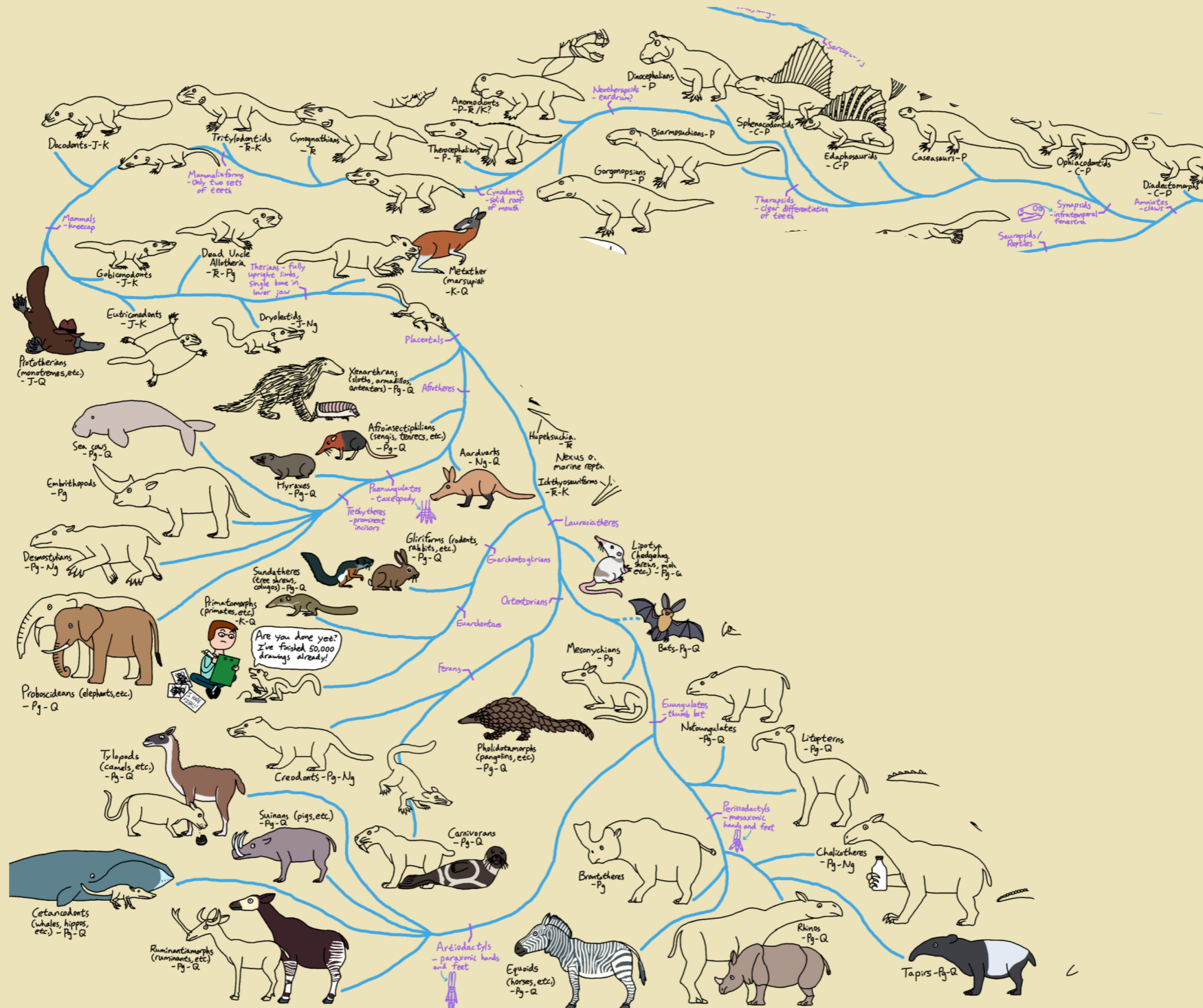


Origem e evolução

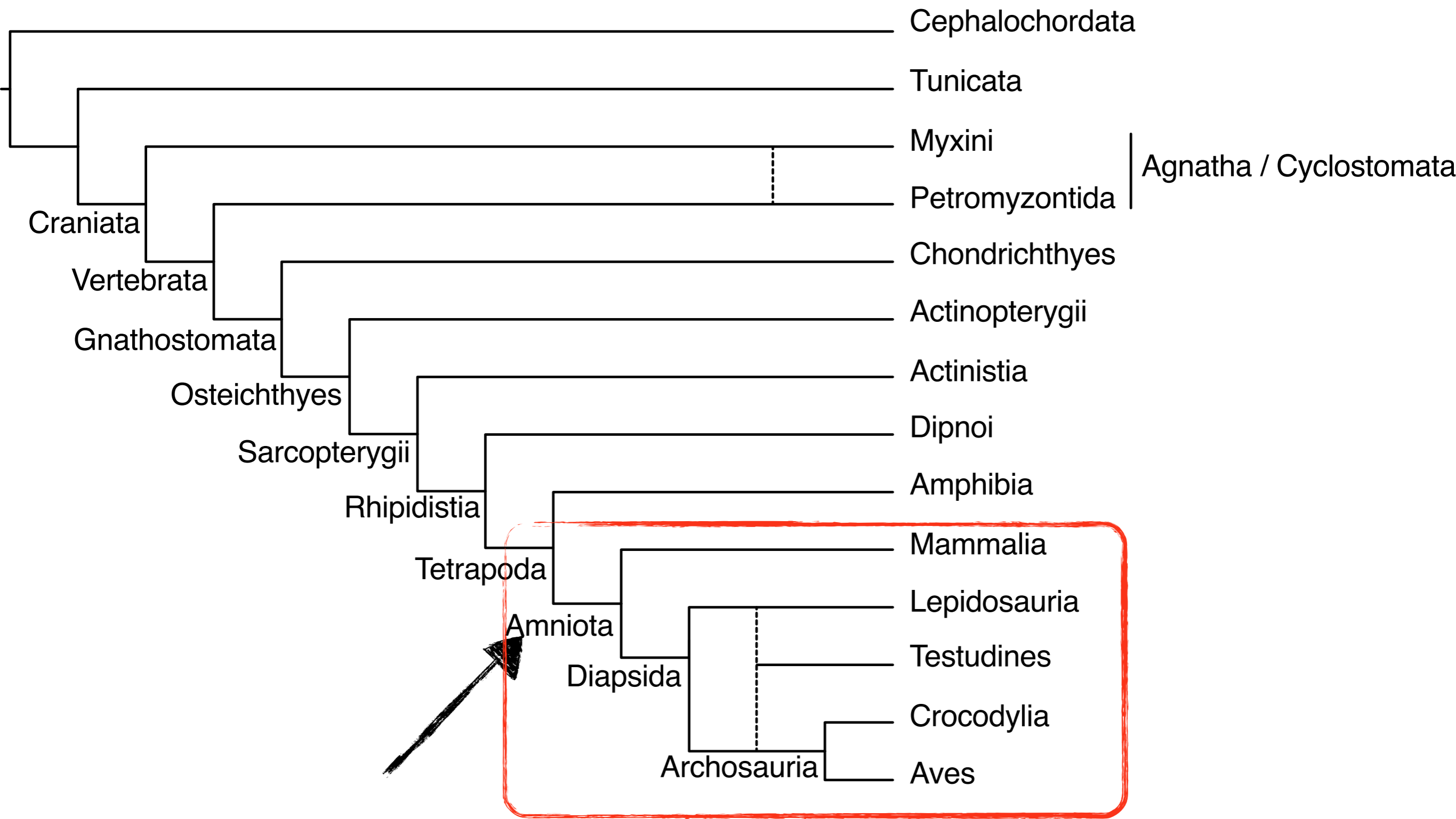


- Quem são os Synapsida?
- Quais são as principais tendências evolutivas?

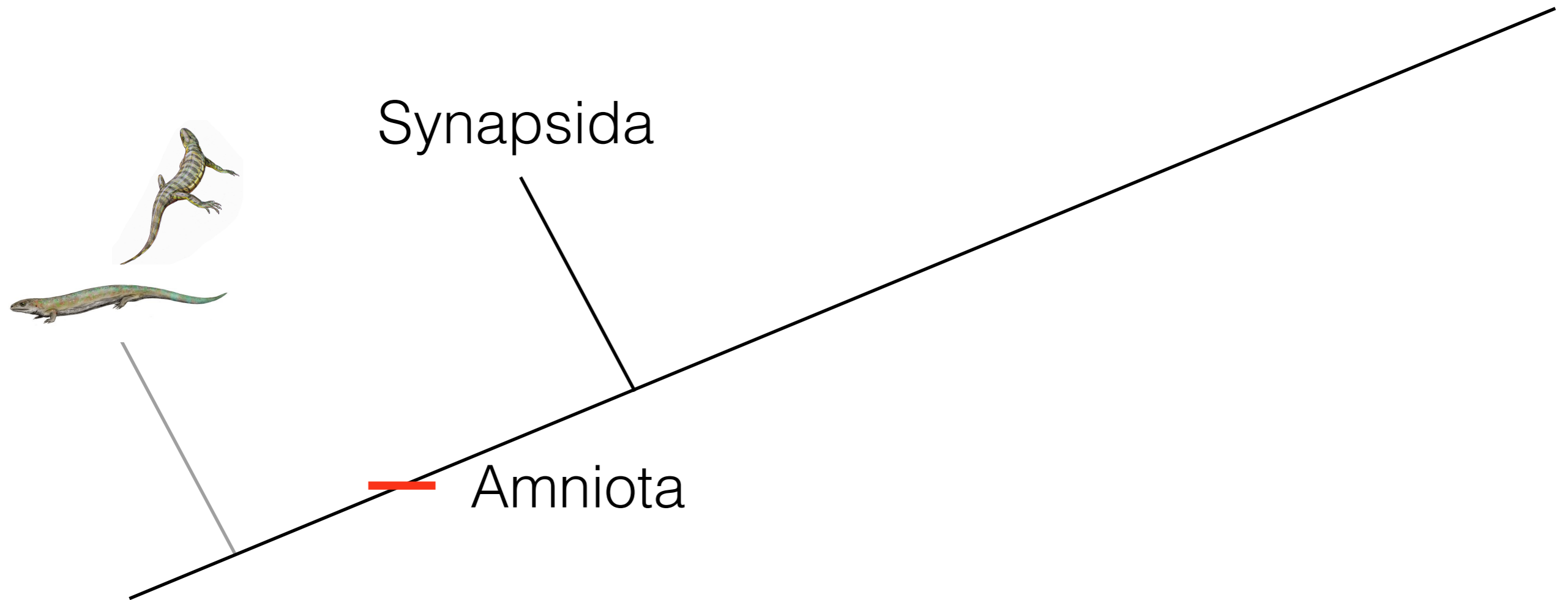
Quem são os Synapsida?



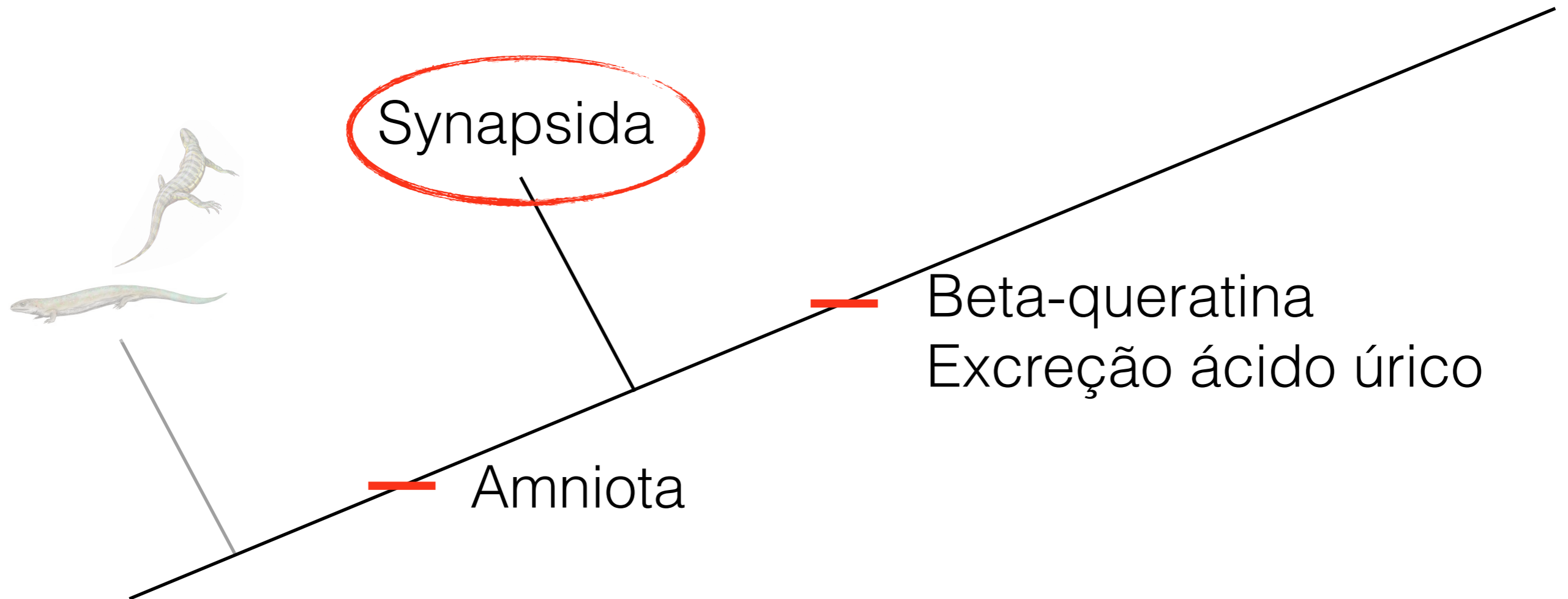
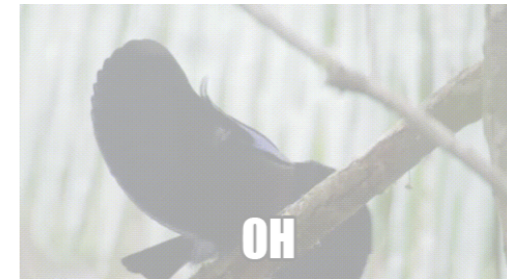
Filogenia de Chordata



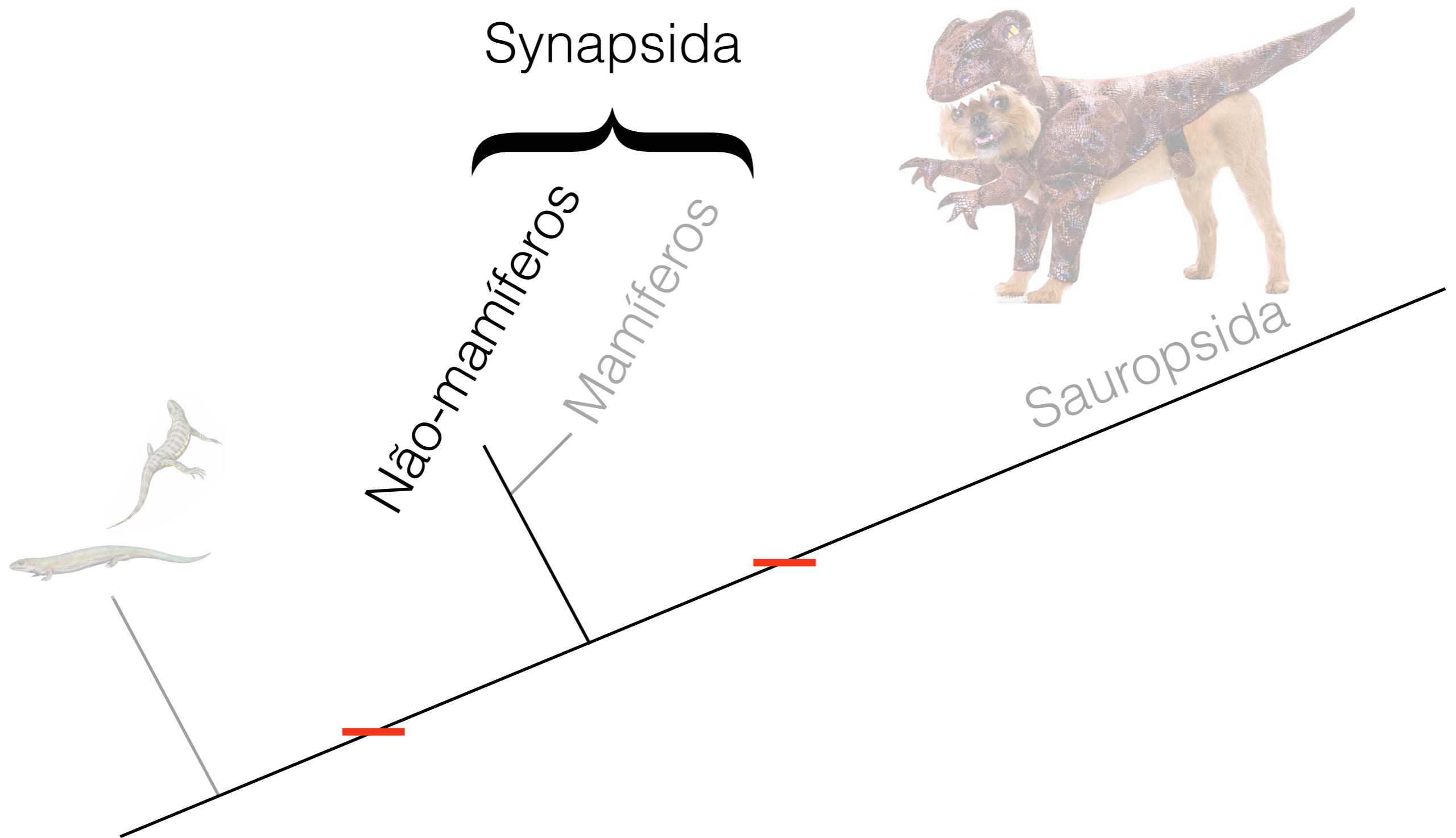
Synapsida e suas radiações



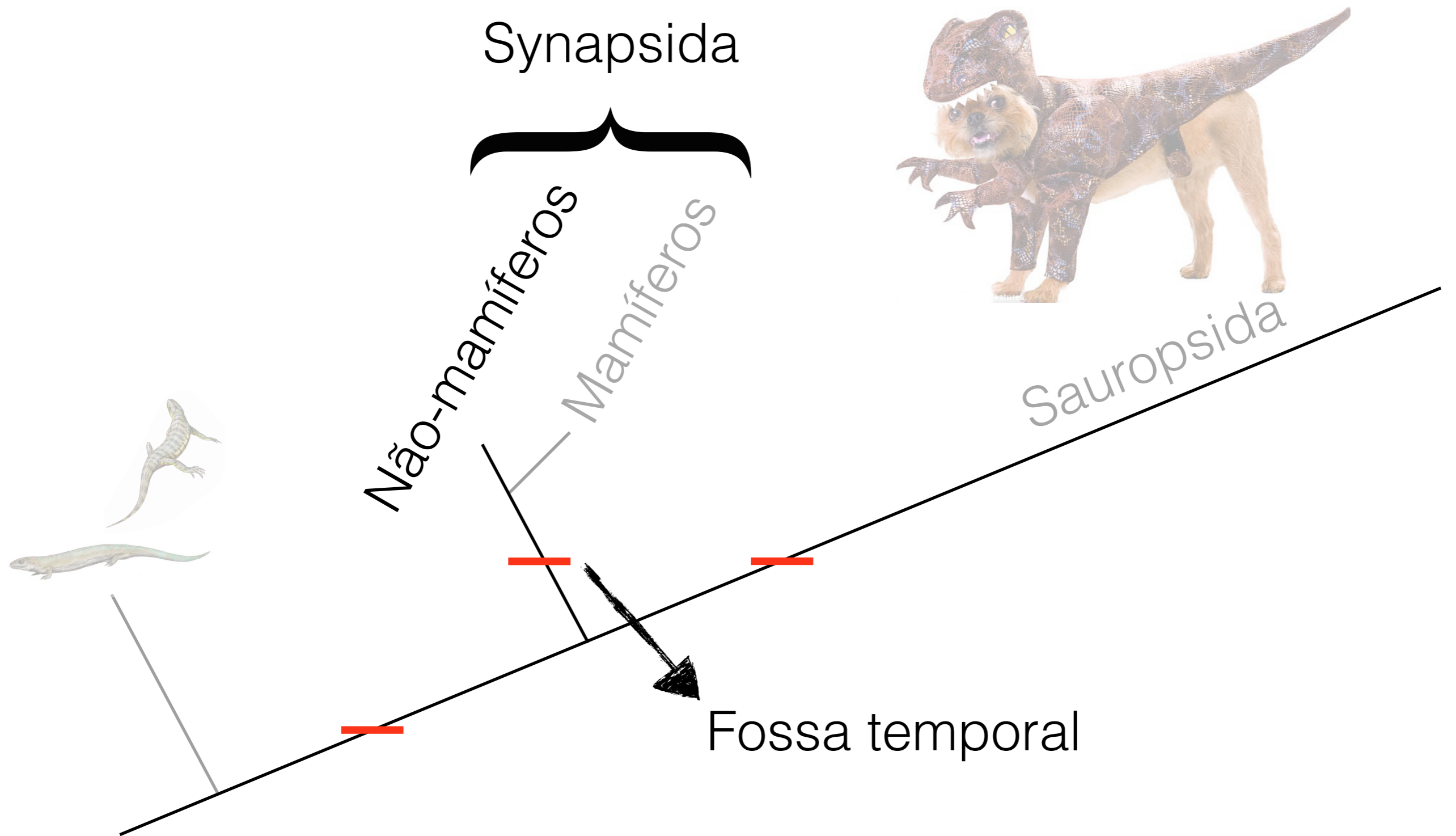
Synapsida e suas radiações



Synapsida e suas radiações

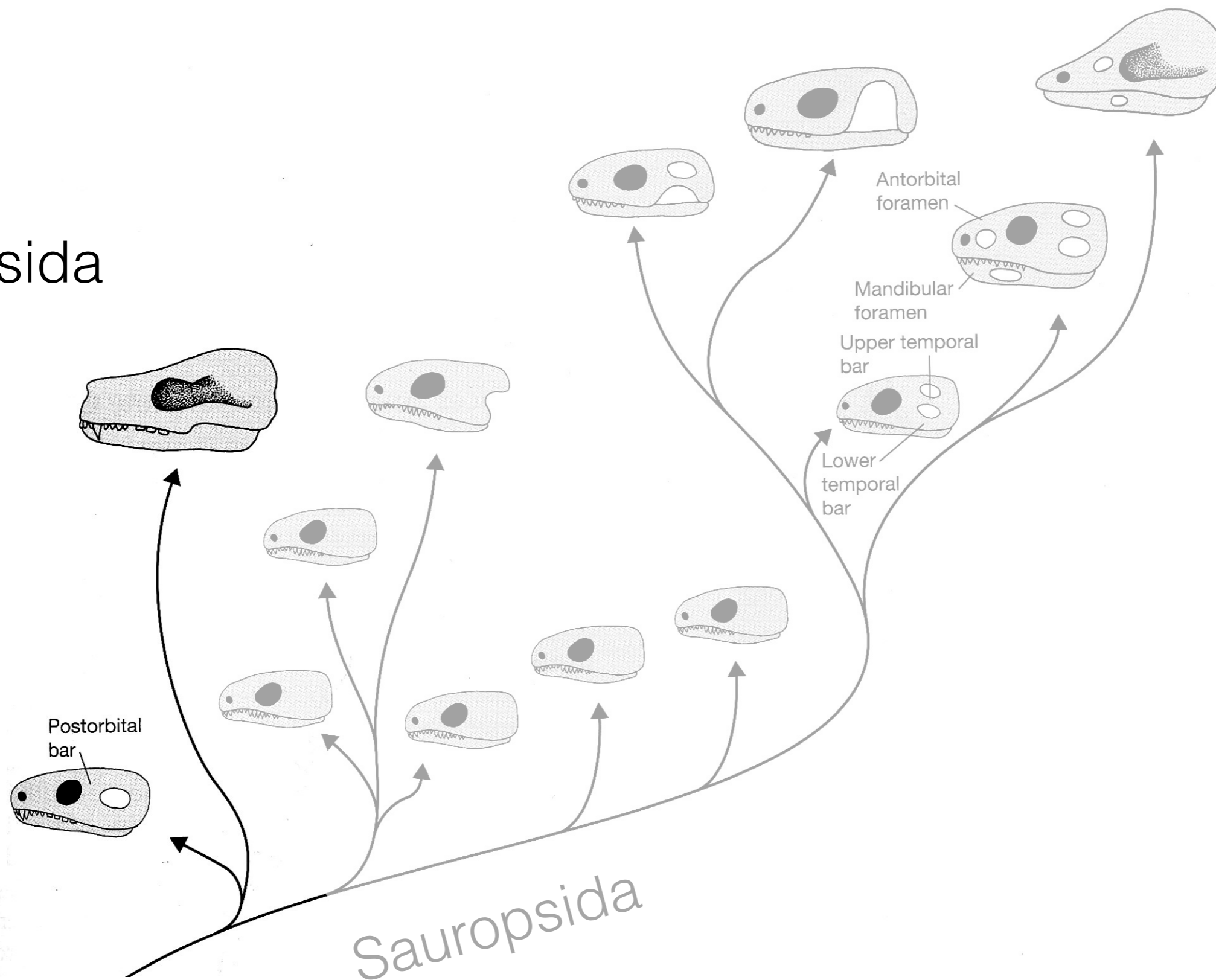


Synapsida e suas radiações



Padrões de fenestração

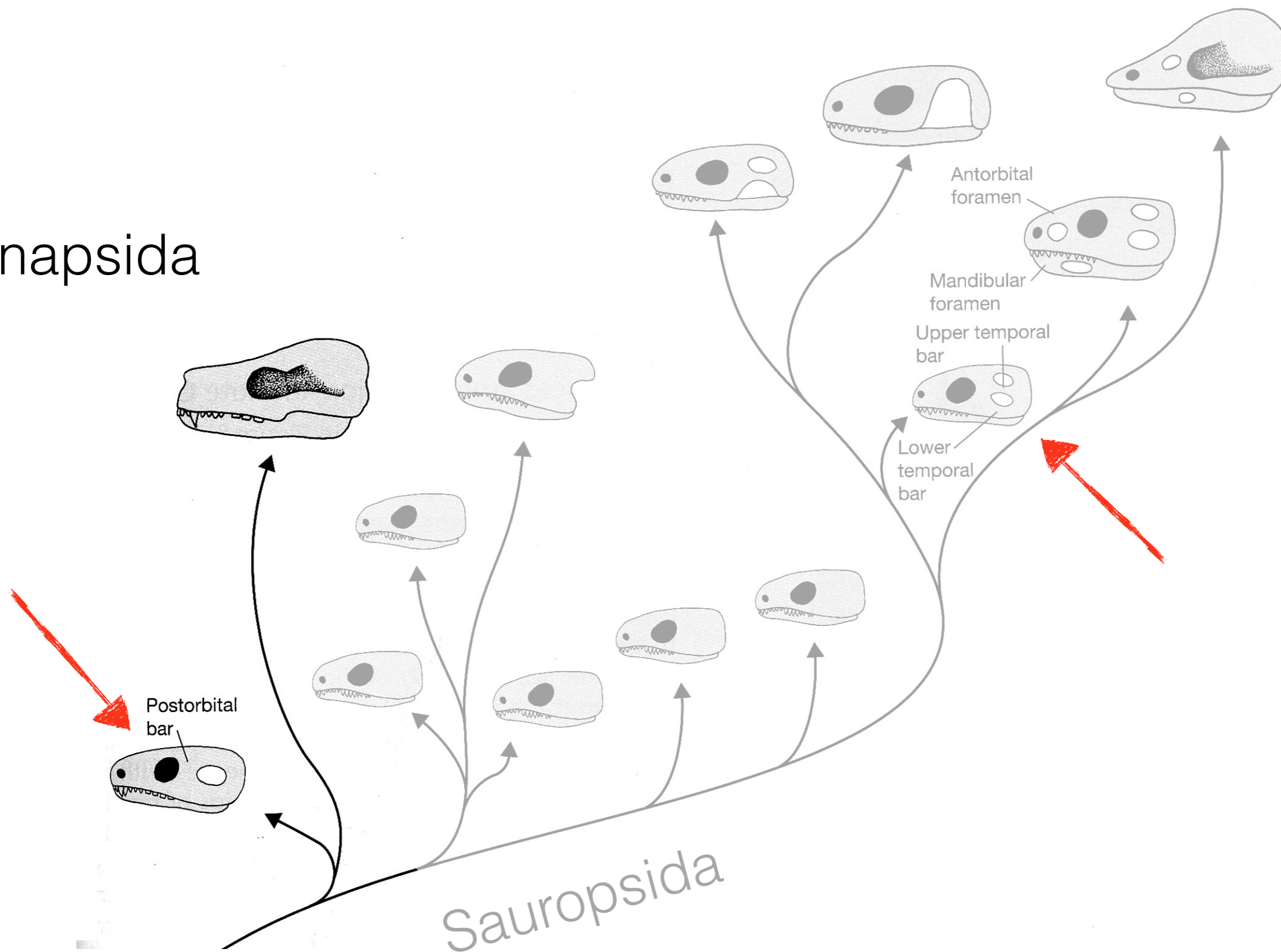
Synapsida



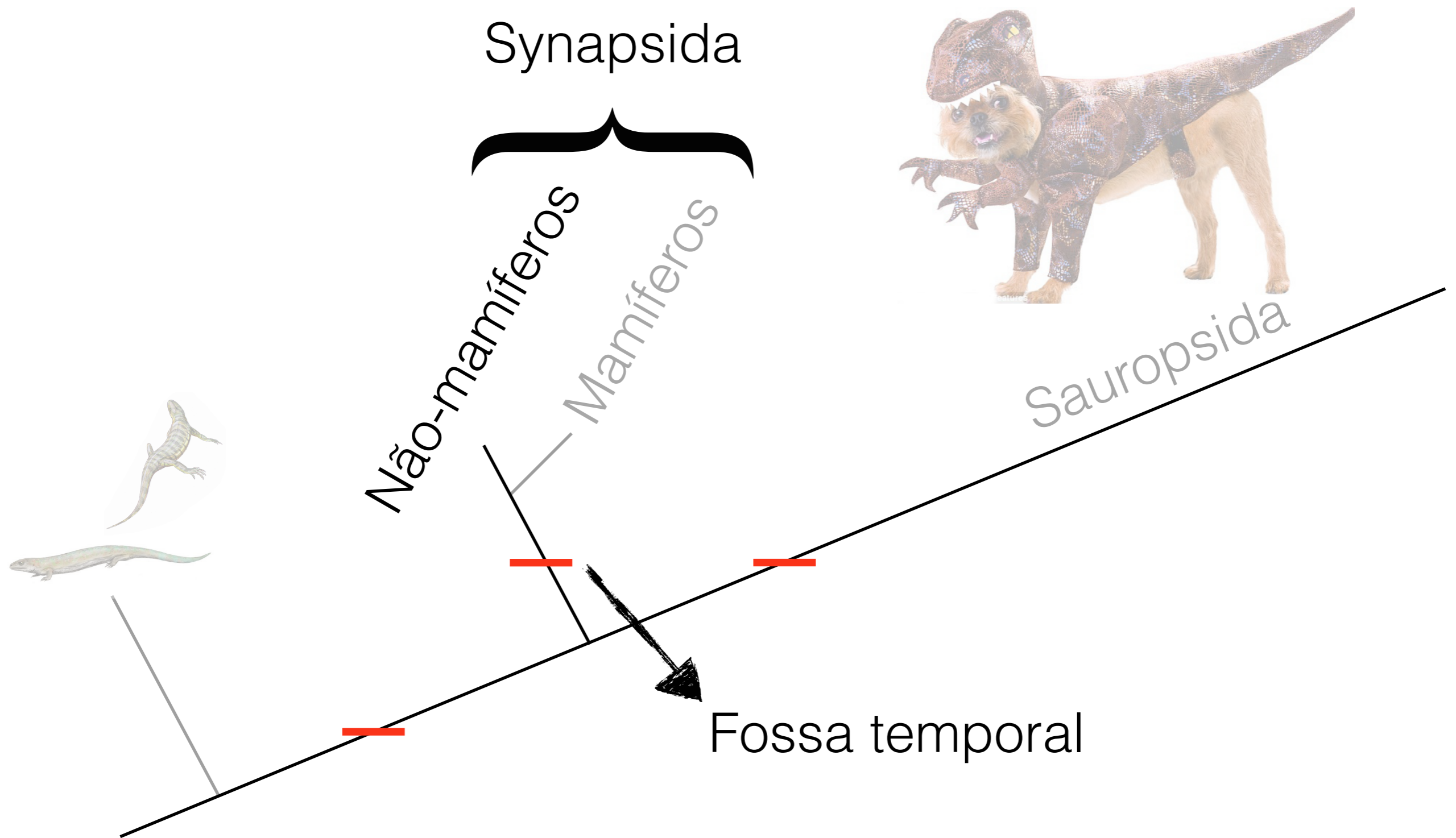
Sauropsida

Padrões de fenestração

Synapsida



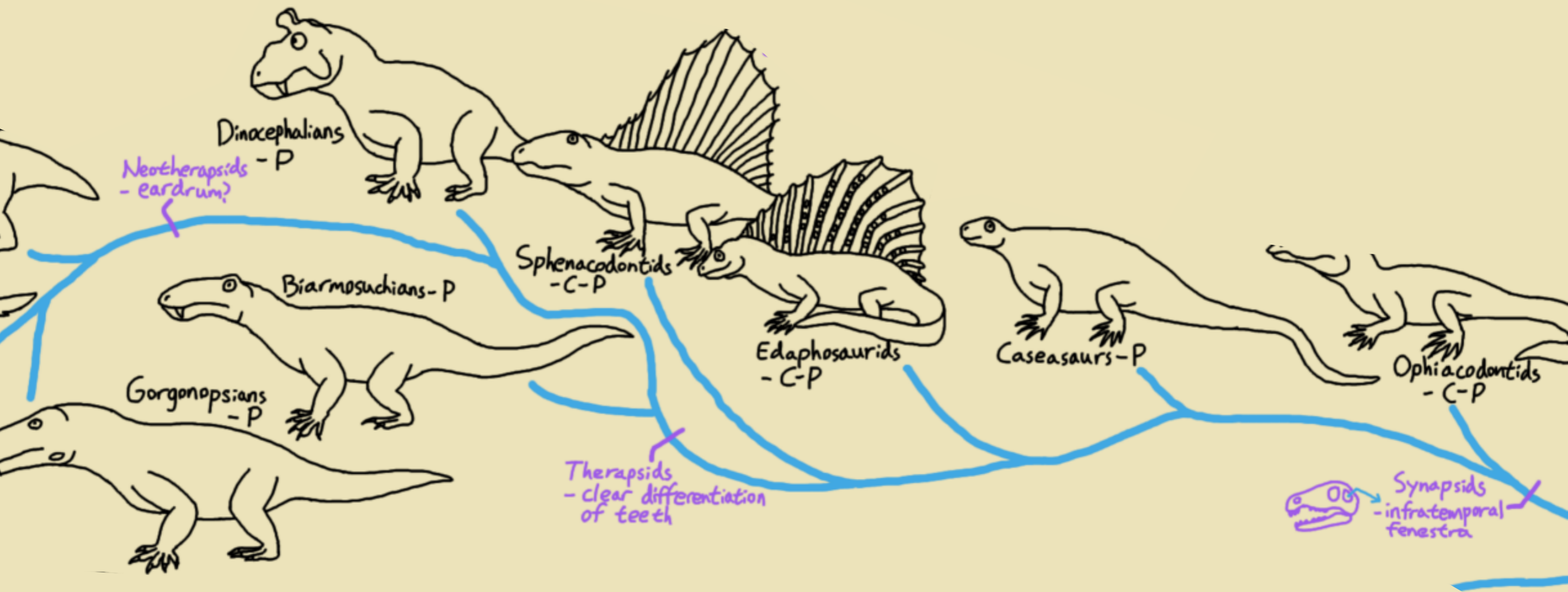
Synapsida e suas radiações

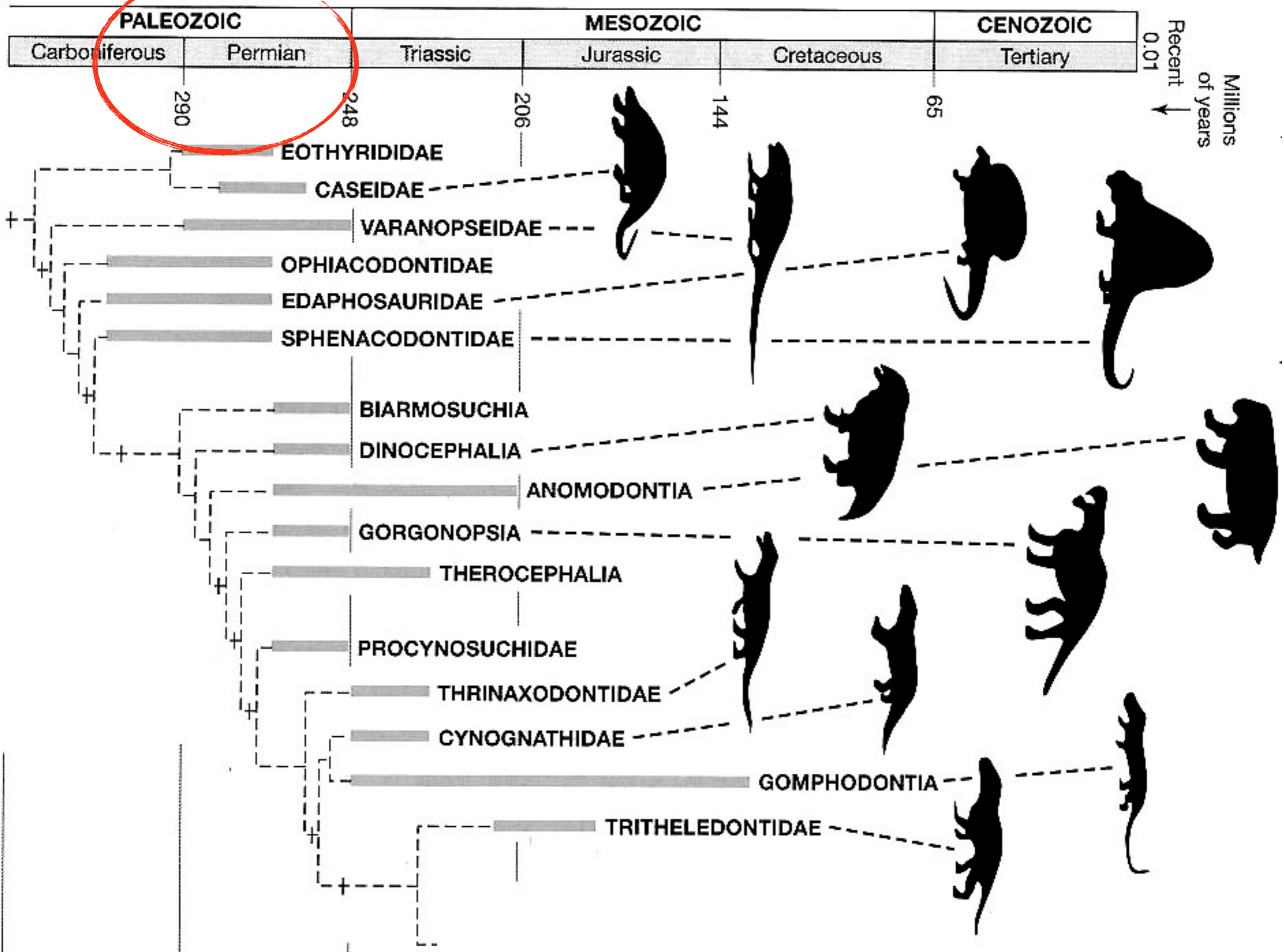


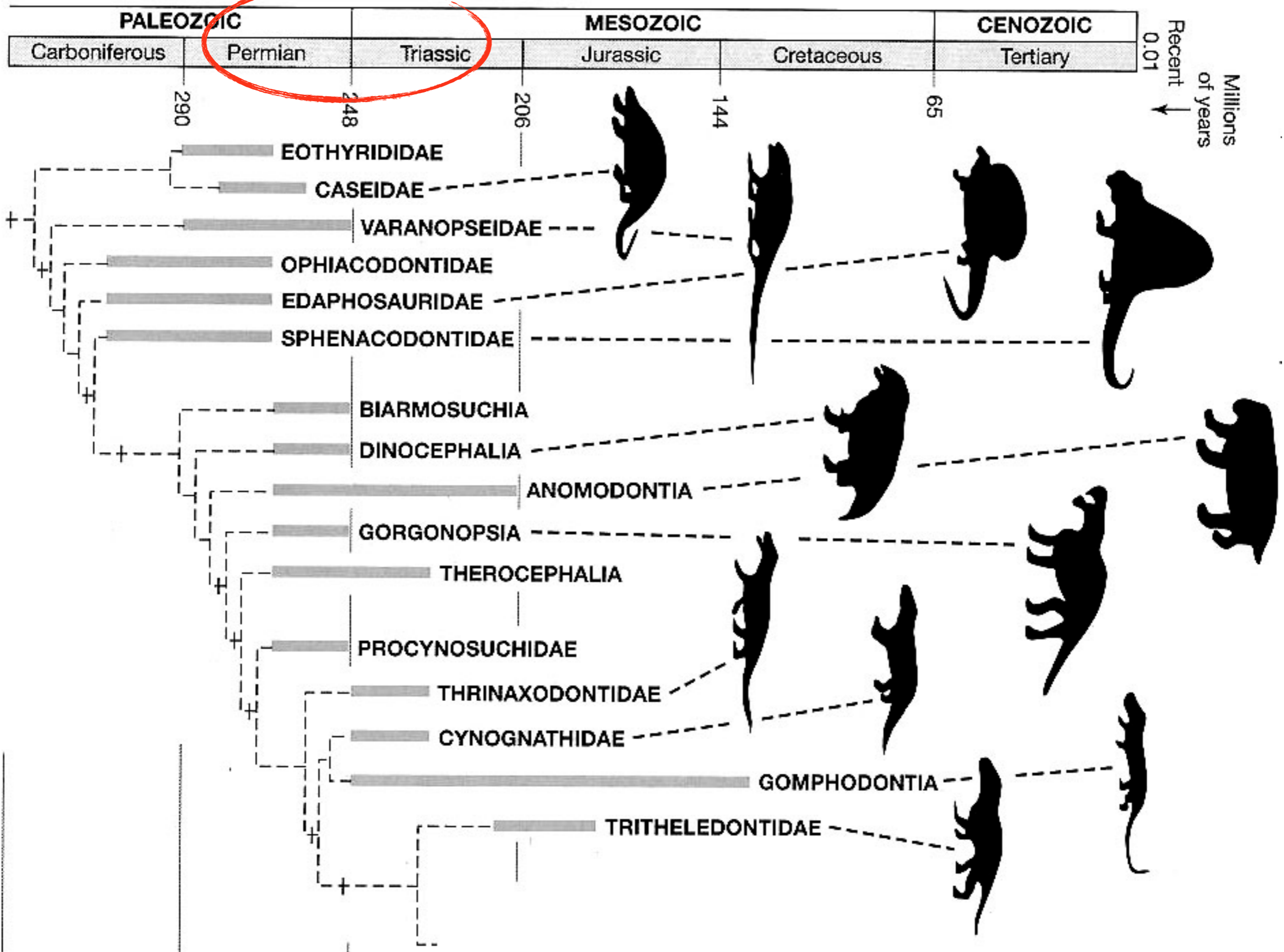
Synapsida e suas radiações



Quem são os Synapsida?

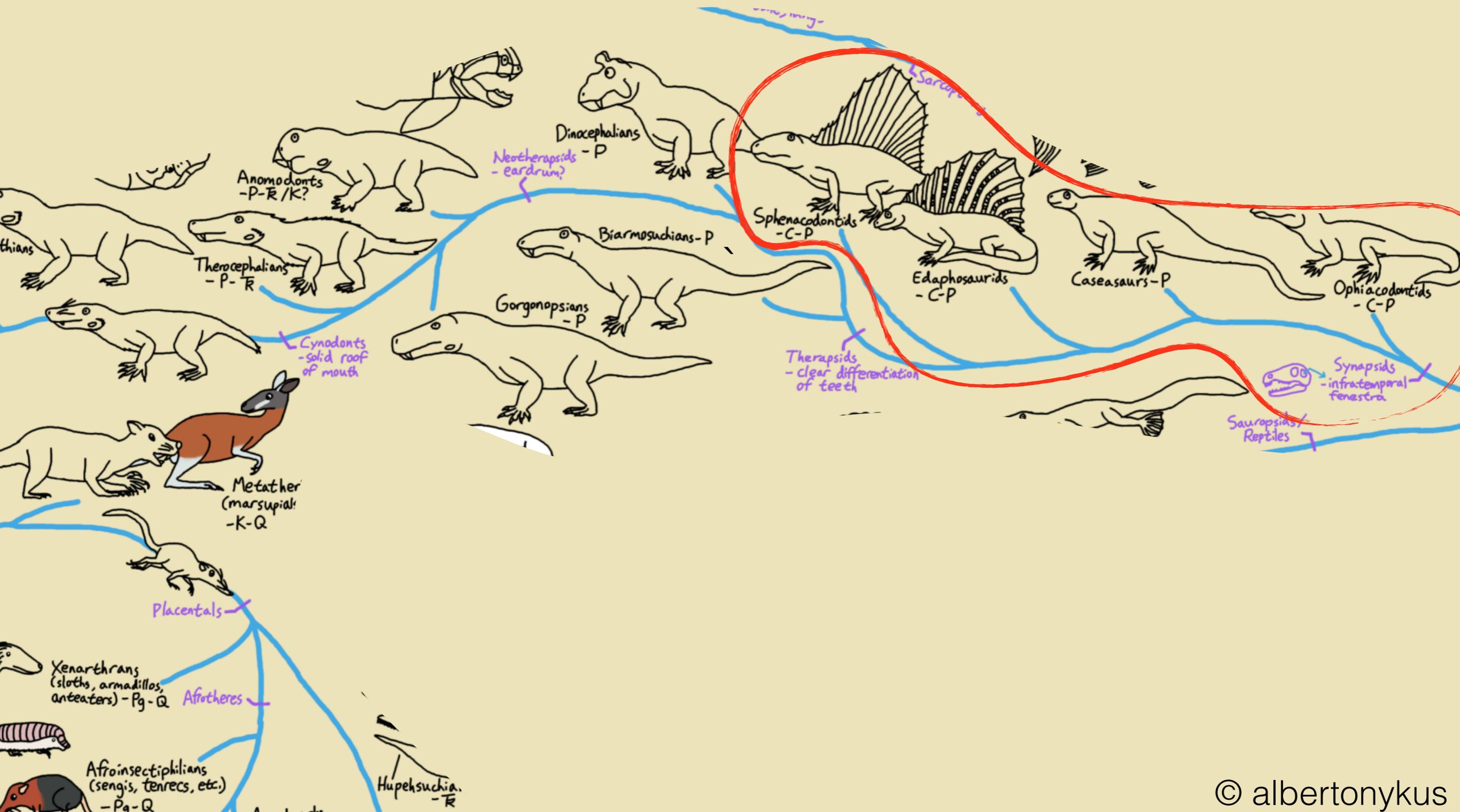




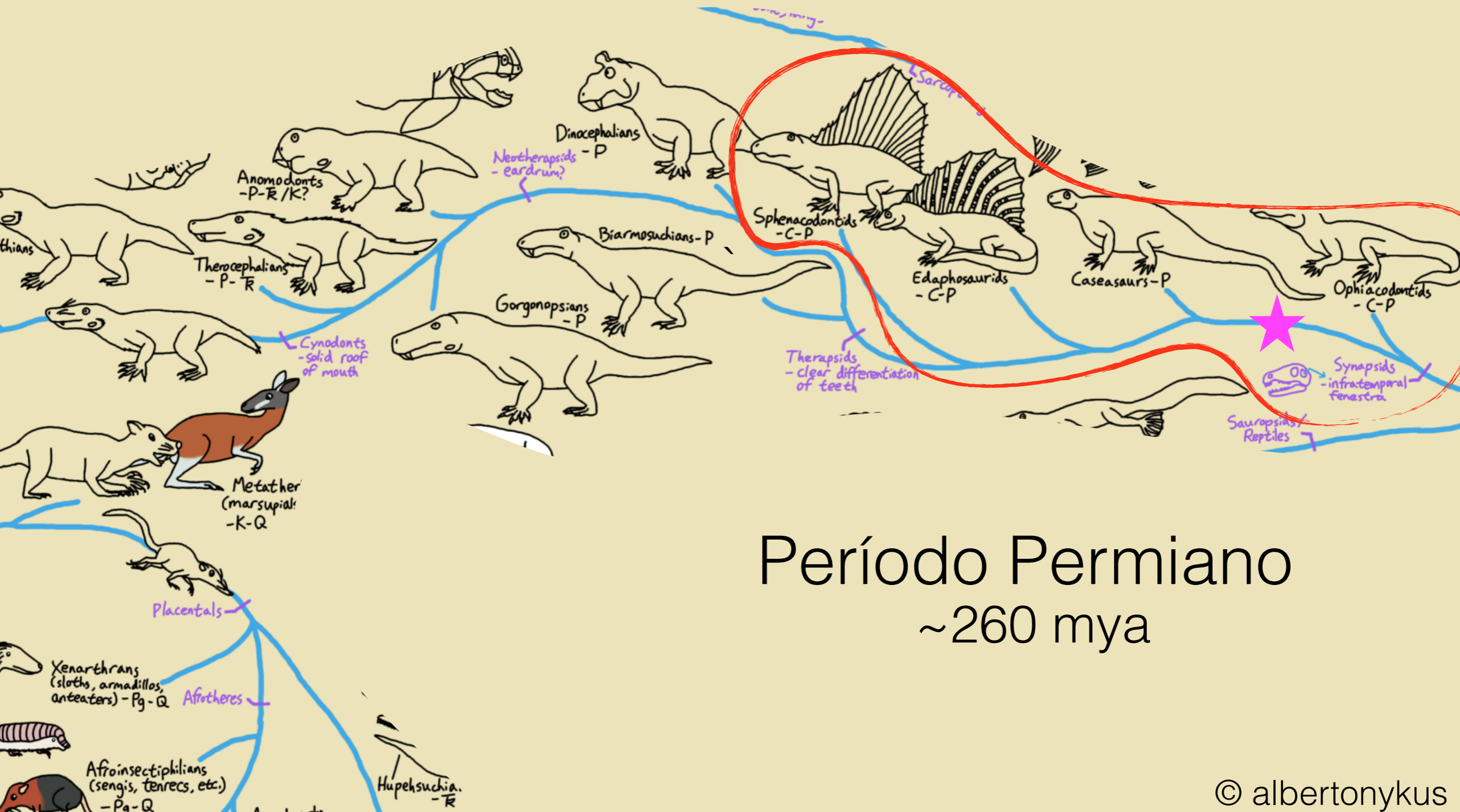


Era	Período		
Cenozóico	Quaternário	1.7	
	Terciário	65	• aparecem formas grandes de mamíferos, incluindo ordens atuais
Mesozóico	Cretáceo	144	<ul style="list-style-type: none"> • grande evento de extinção em massa • dinossauros dominantes • pequenos mamíferos se diversificam
	Jurássico	206	<ul style="list-style-type: none"> • Pangea começa a separar • dinossauros se diversificam • mamíferos são pequenos e inconspícuos
	Triássico	248	<ul style="list-style-type: none"> • diversificação dos arcossauros • desaparecimento de muitas linhagens de Synapsida • aparecimento dos primeiros mamíferos
Paleozóico	Permiano	290	<ul style="list-style-type: none"> • Pangea • grande evento de extinção em massa no final do período • pelicossauros e terápsidos são os maiores e dominantes Tetrapoda • declínio dos Tetrapoda não-amniota • diversificação dos Amniota
	Carbonífero	354	<ul style="list-style-type: none"> • primeiros Amniota (incluindo primeiros Synapsida - pelicossauros) • diverificação dos Tetrapoda não-amniota
	Devoniano	417	• primeiros Tetrapoda
	Siluriano	443	• peixes com maxilas
	Ordoviciano	490	
	Cambriano	540	• primeiros vertebrados

Eupelycosauria

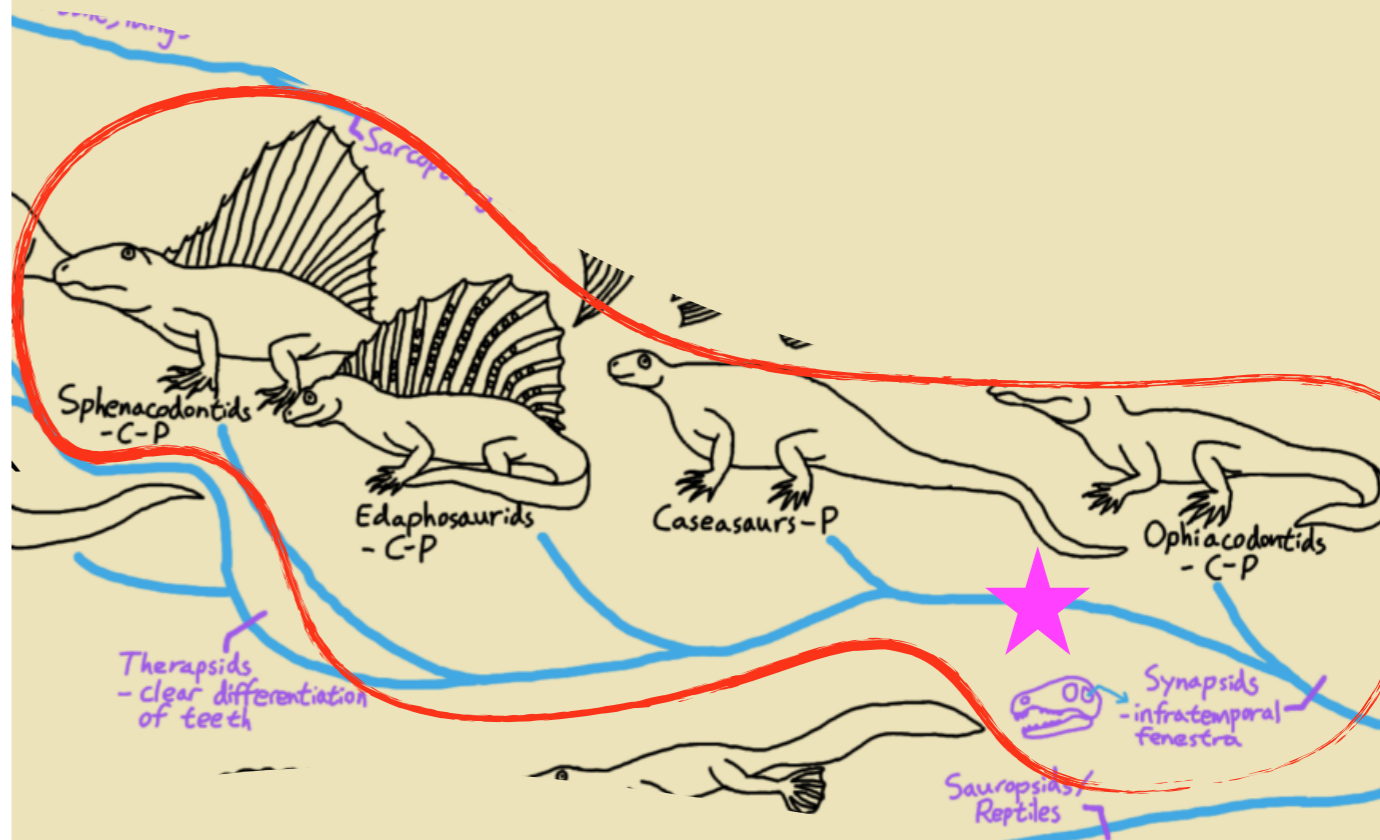
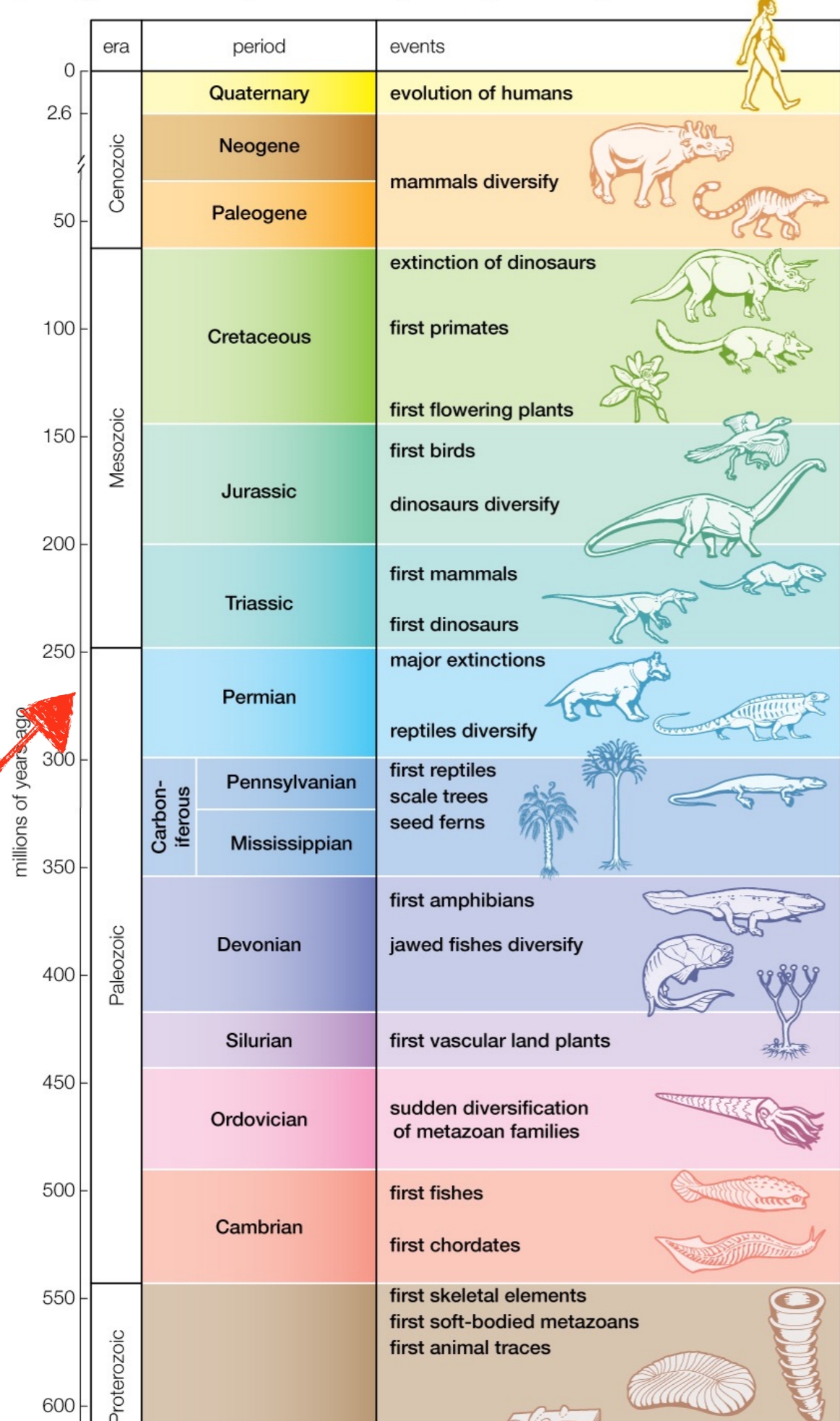


Eupelycosauria



Período Permiano
~260 mya

Geologic time scale, 650 million years ago to the present

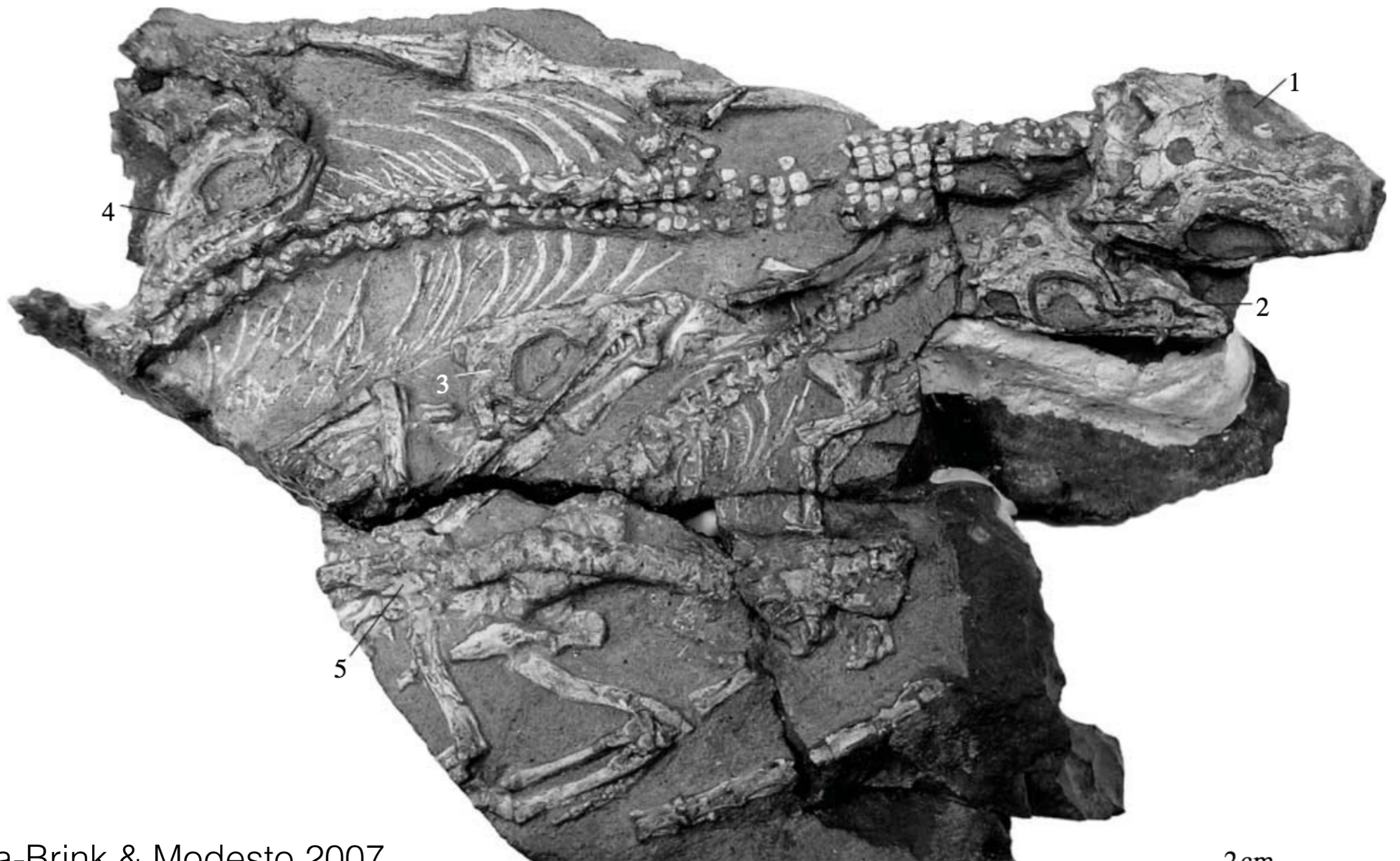


Período Permiano
~260 mya

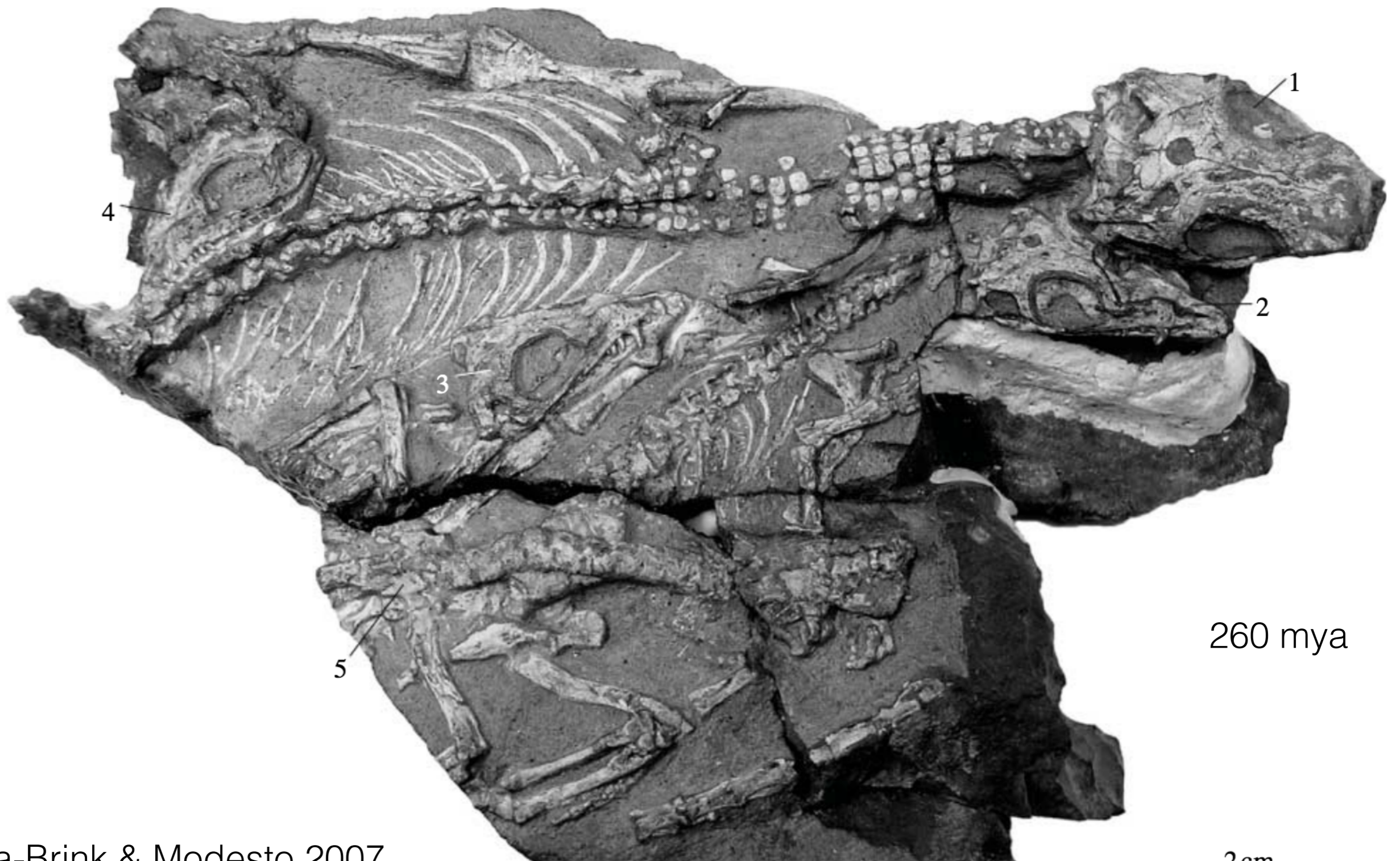
Pelicossauro varanopideo



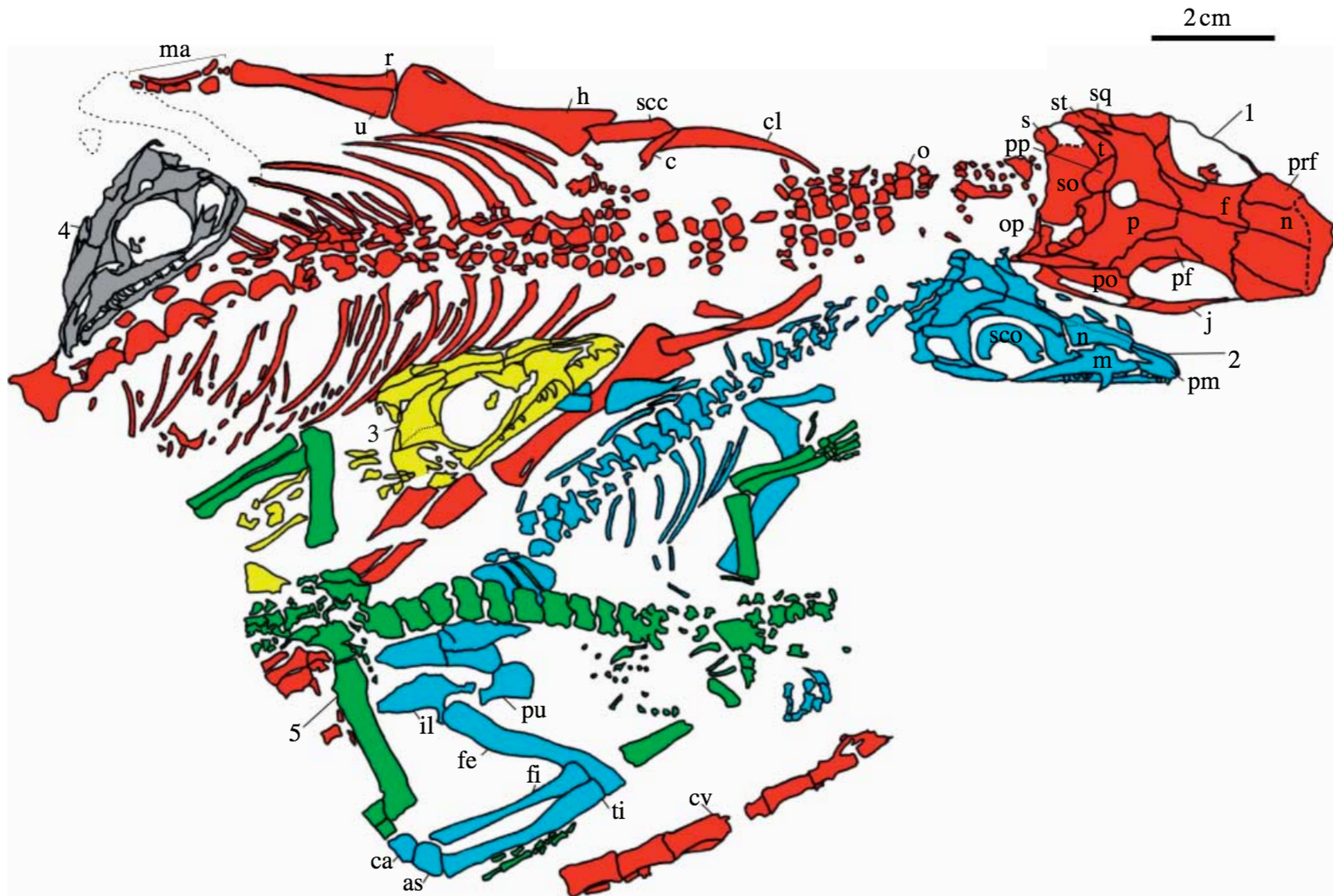
O que é isso?



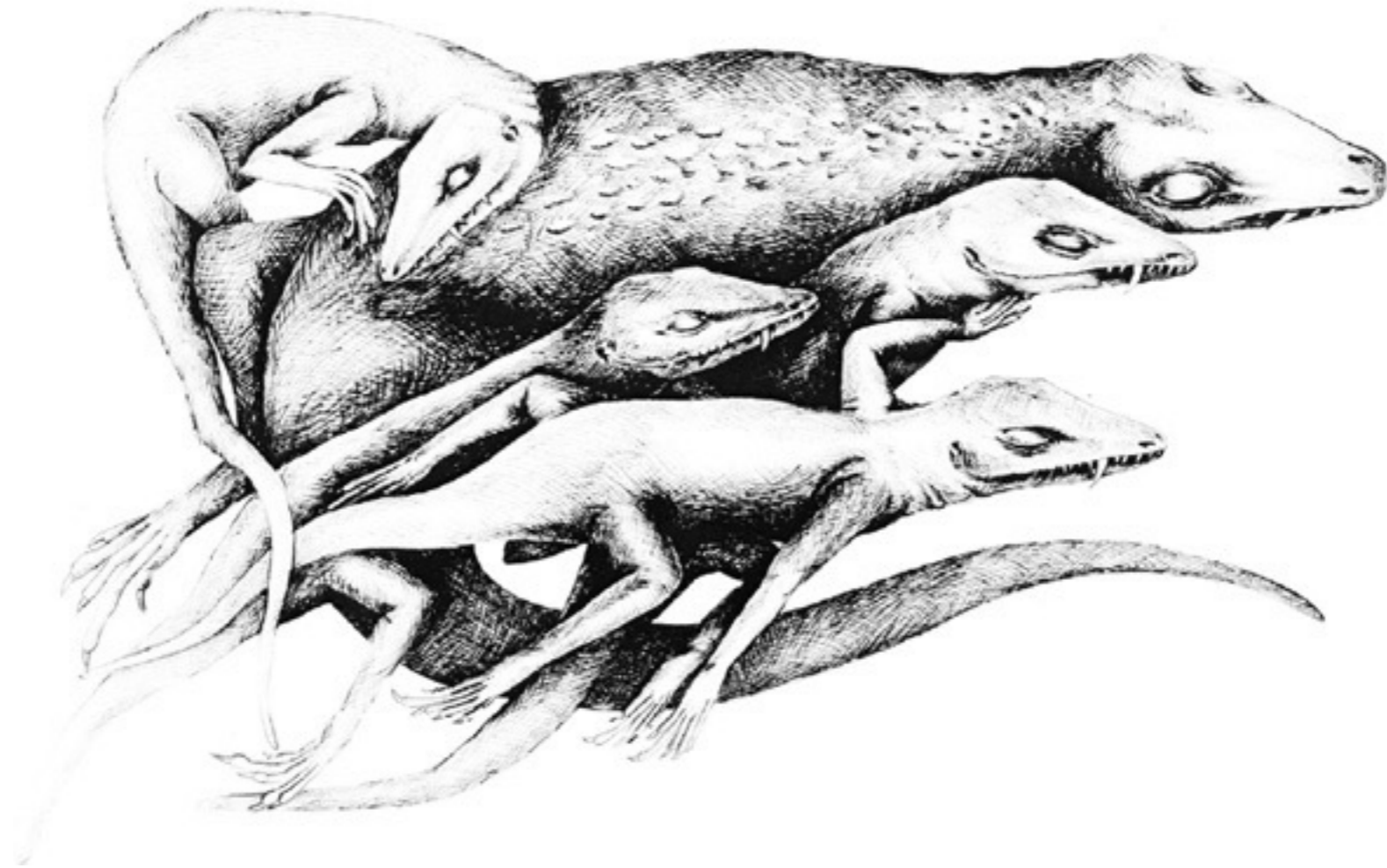
Evidência mais antiga de cuidado parental em amniota



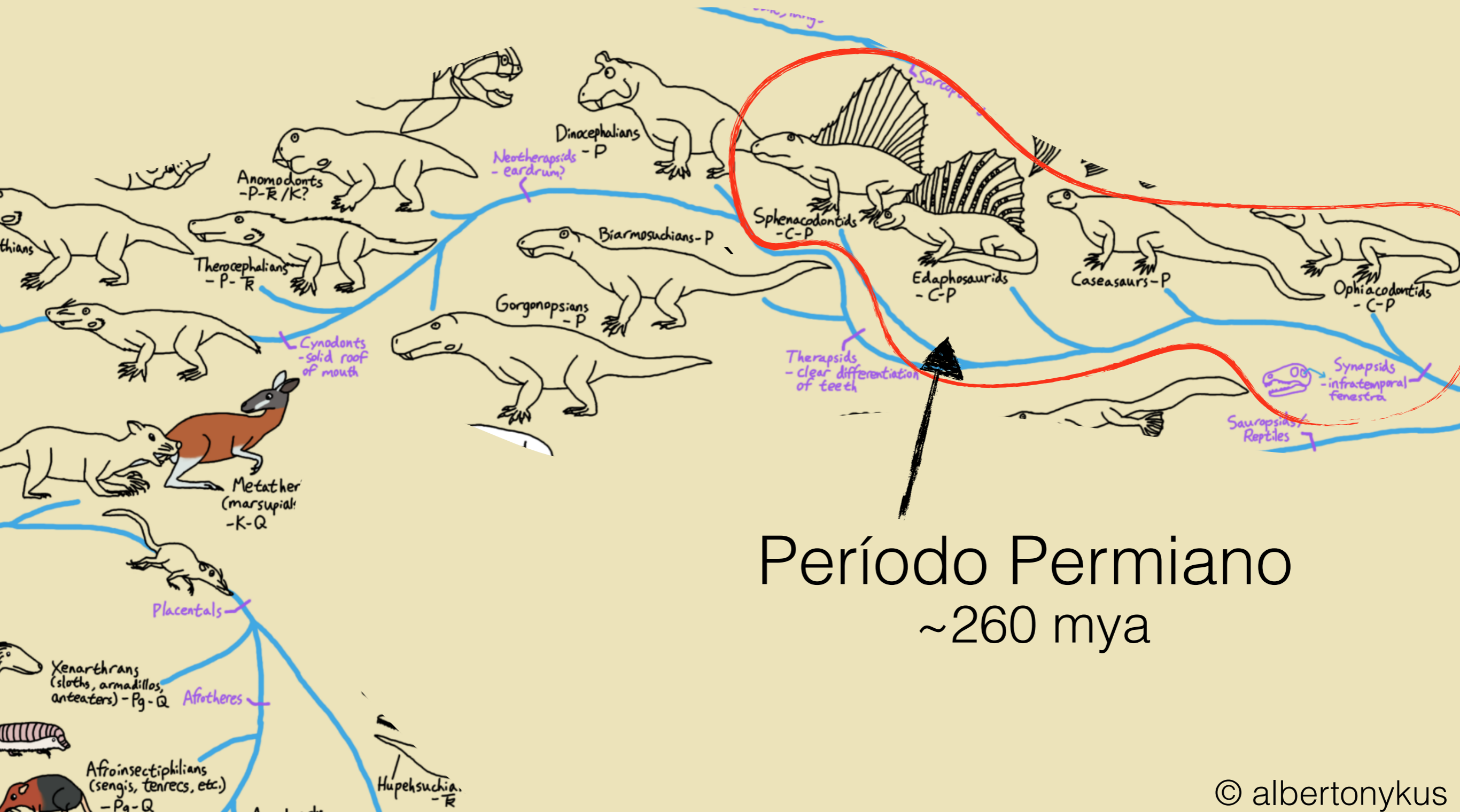
Evidência mais antiga de cuidado parental em amniota



Evidência mais antiga de cuidado parental em amniota



"Pelycosauros"



Período Permiano
~260 mya

AGES 4 AND UP



JURASSIC PARK™

DIMETRODON
WITH *Dino-Strike™* Clamping Jaws!

LIMITED EDITION
MOVIE COLLECTOR CARD



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TOYS R US
\$7.99
07

Jungle Surprise!



5

SAFETY TESTED—meets or exceeds ASTM F963-86

AGES 4 AND UP



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DIMETRODON
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SAFETY TESTED—meets or exceeds ASTM F963-86

AGES 4 AND UP



DIMETRODON
WITH *Dino-Strike™* Clamping Jaws!

JURASSIC PARK

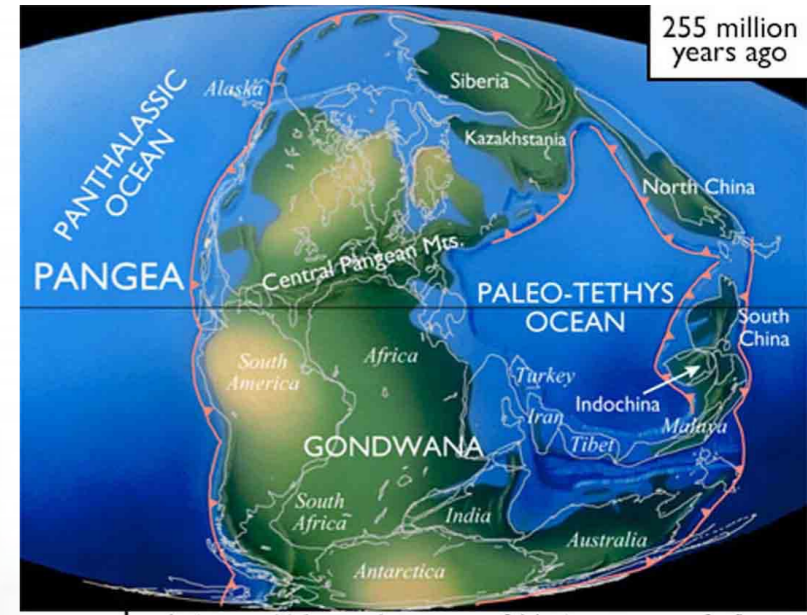


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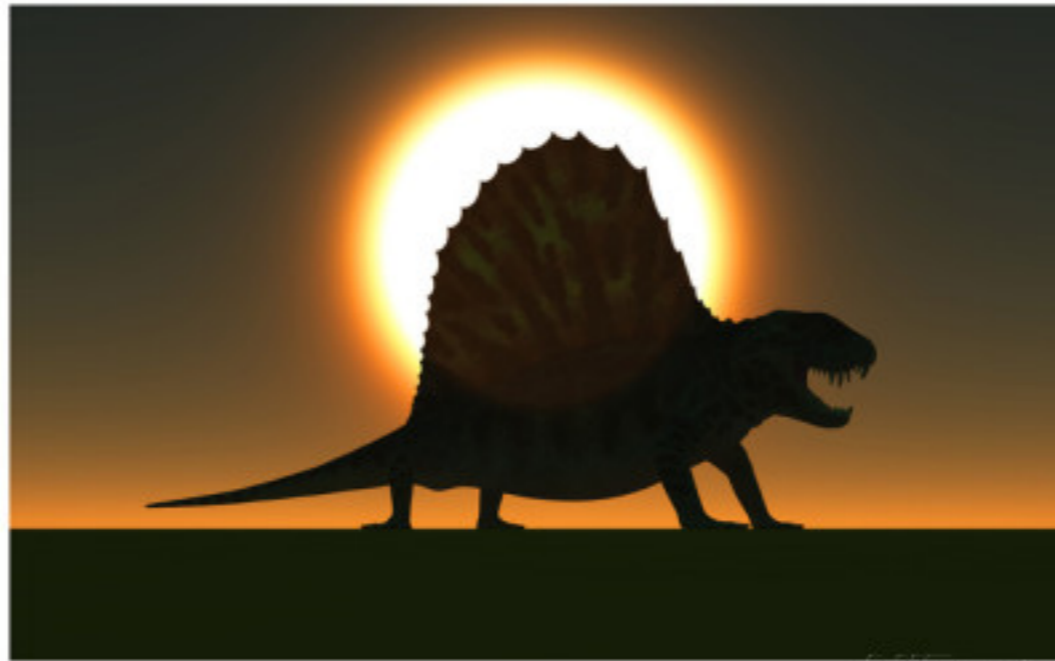
5

SAFETY TESTED—meets or exceeds ASTM F963-86



Qual é a função?





Termorregulação?



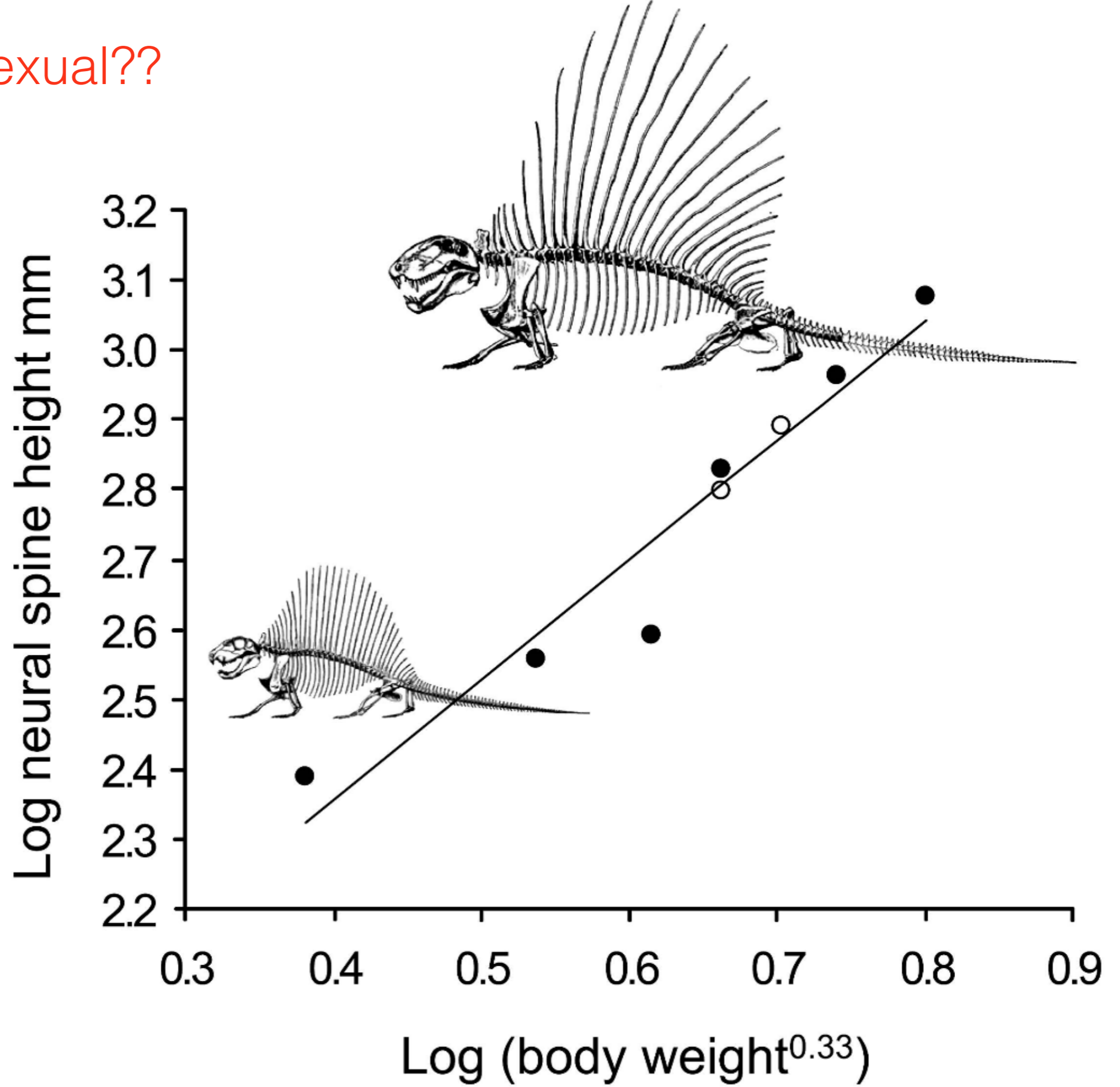
toysfromthepast.blogspot.com

Defesa?

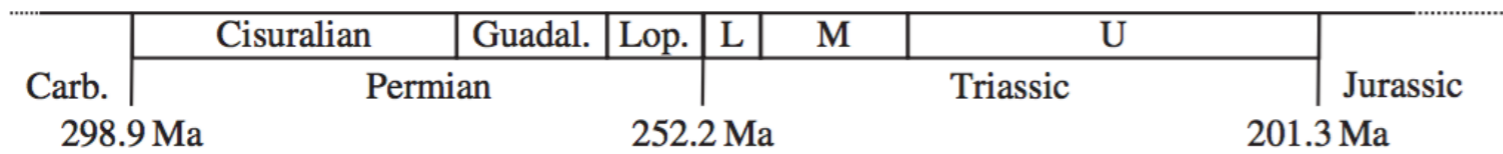
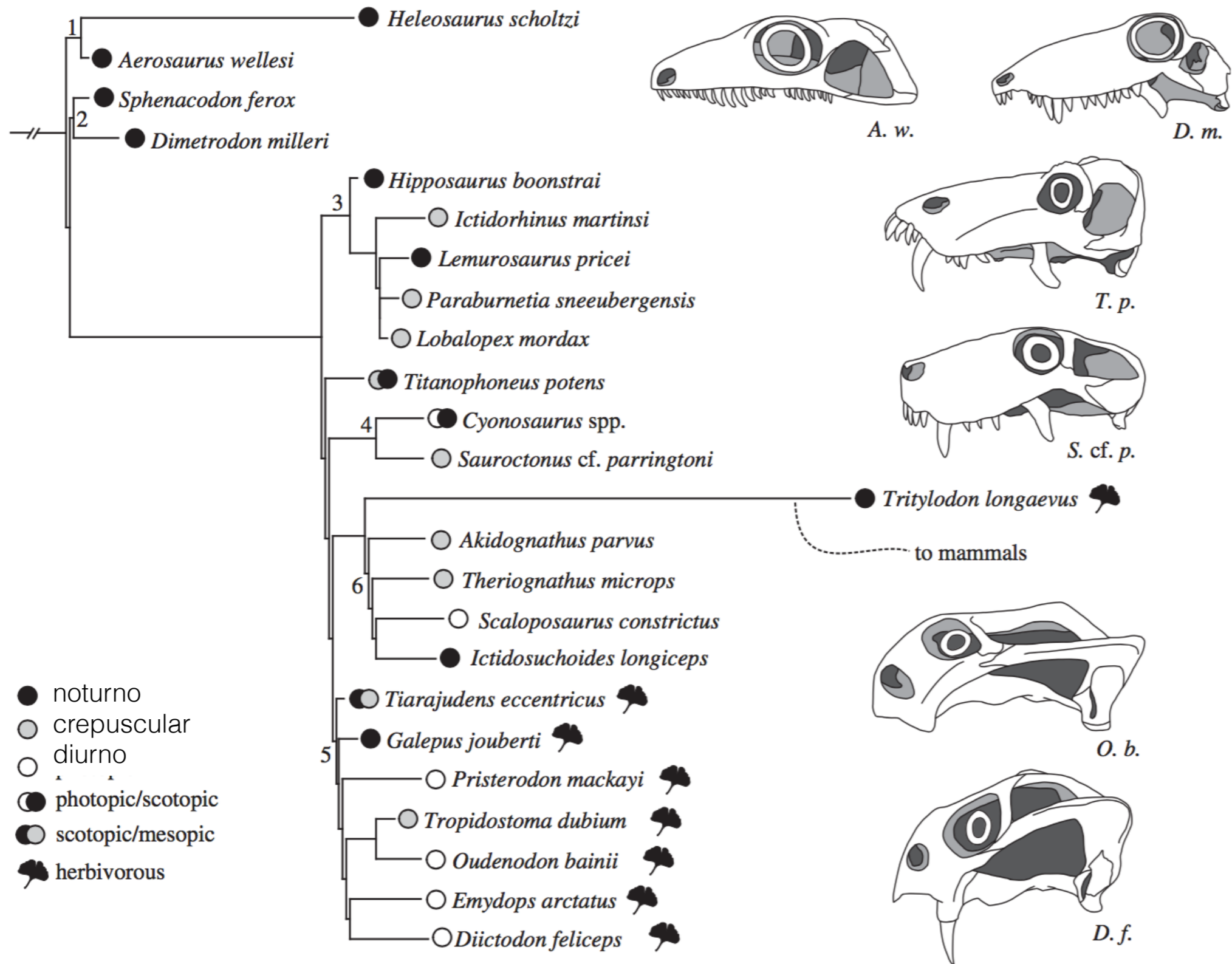
Seleção sexual??



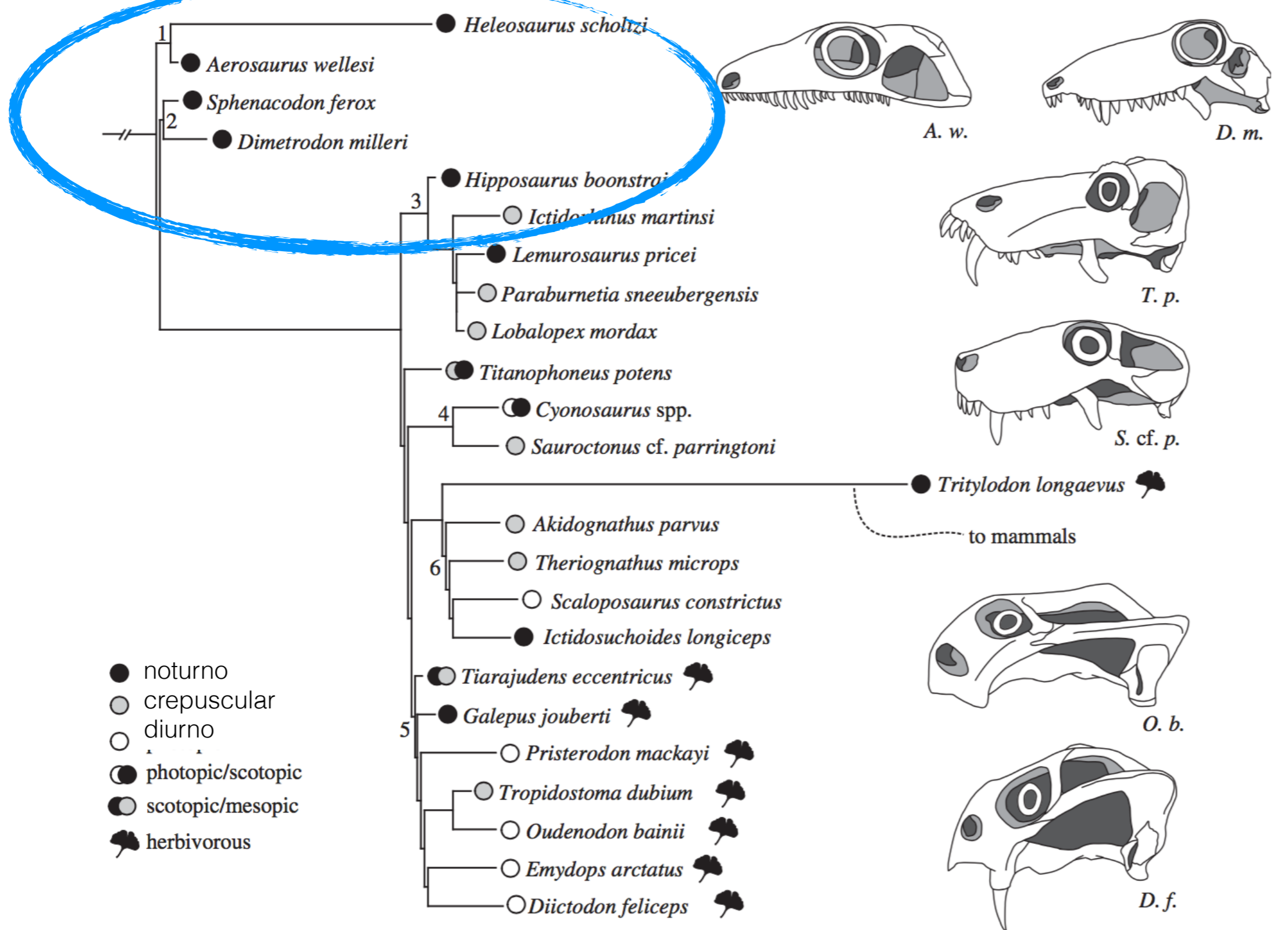
Seleção sexual??



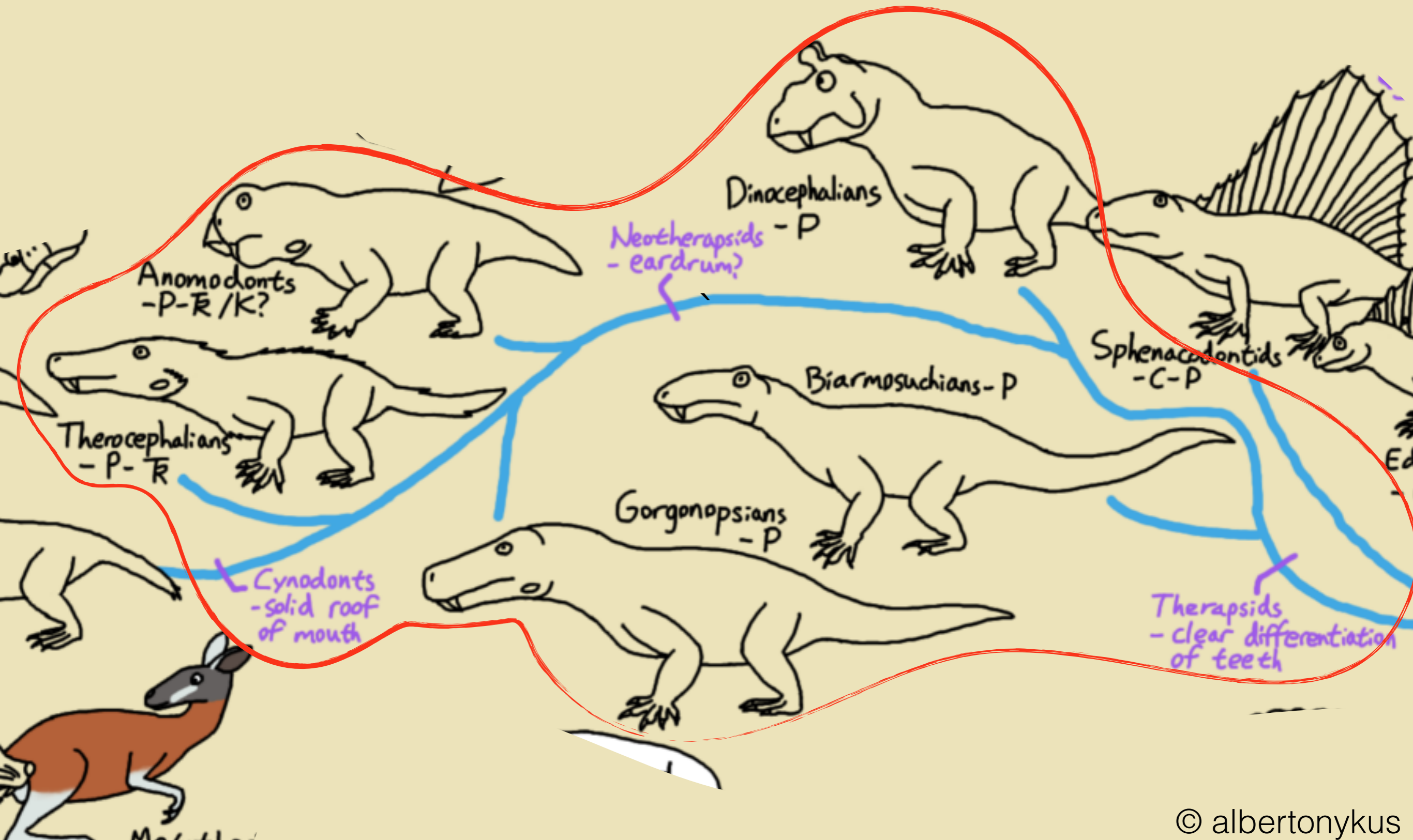
Quando estes animais estavam ativos?

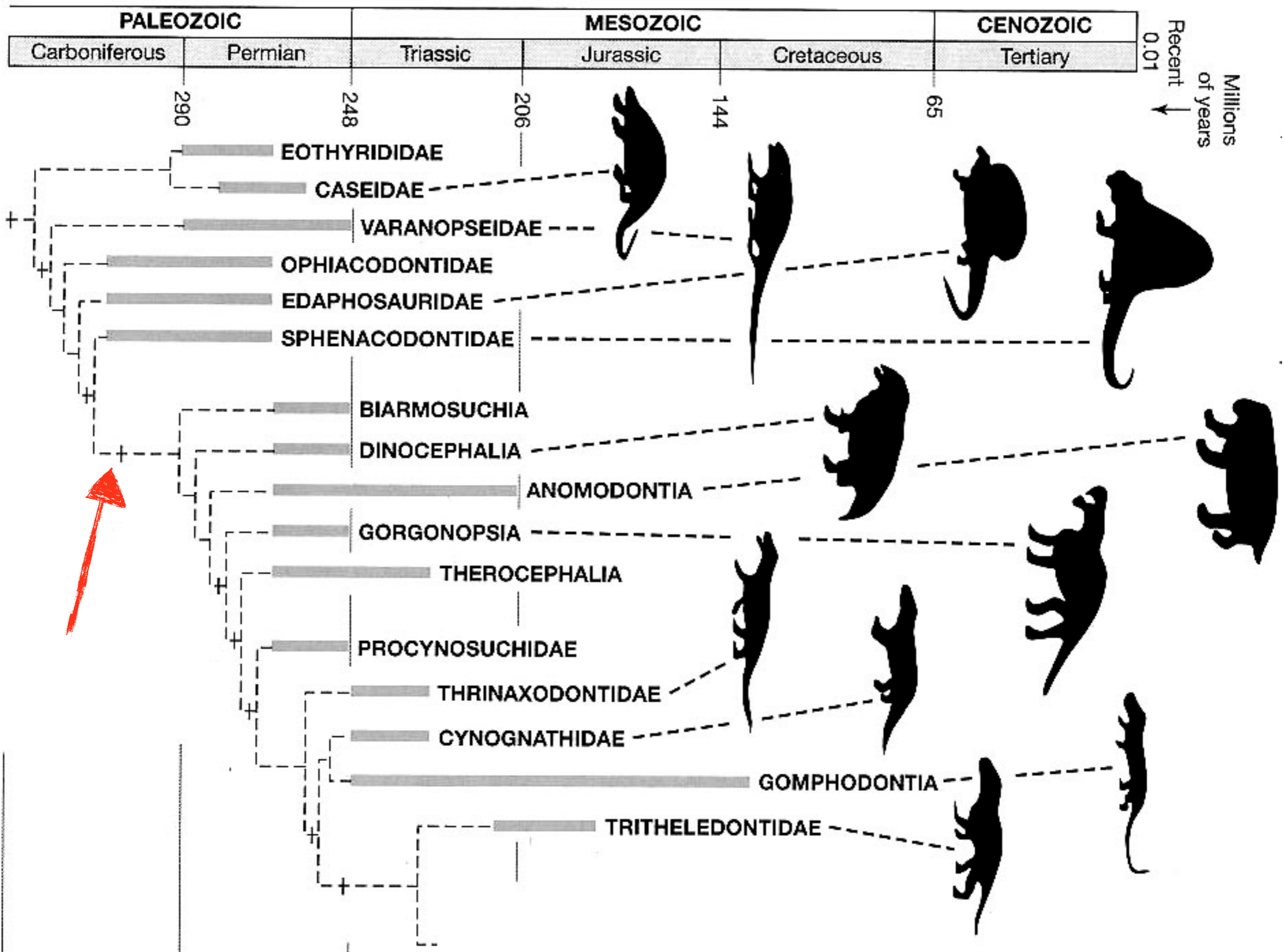


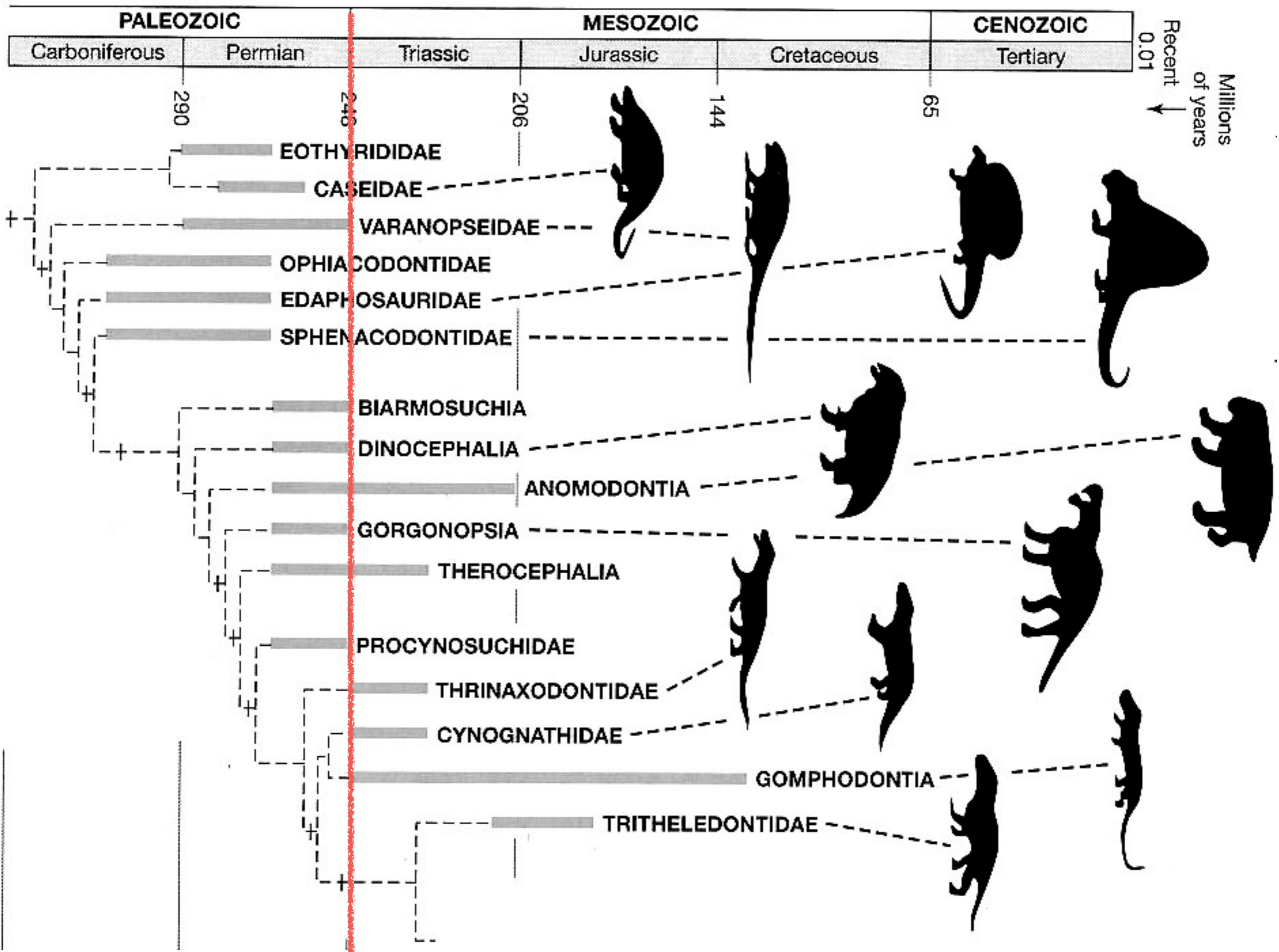
Noturnalidade ~300mya



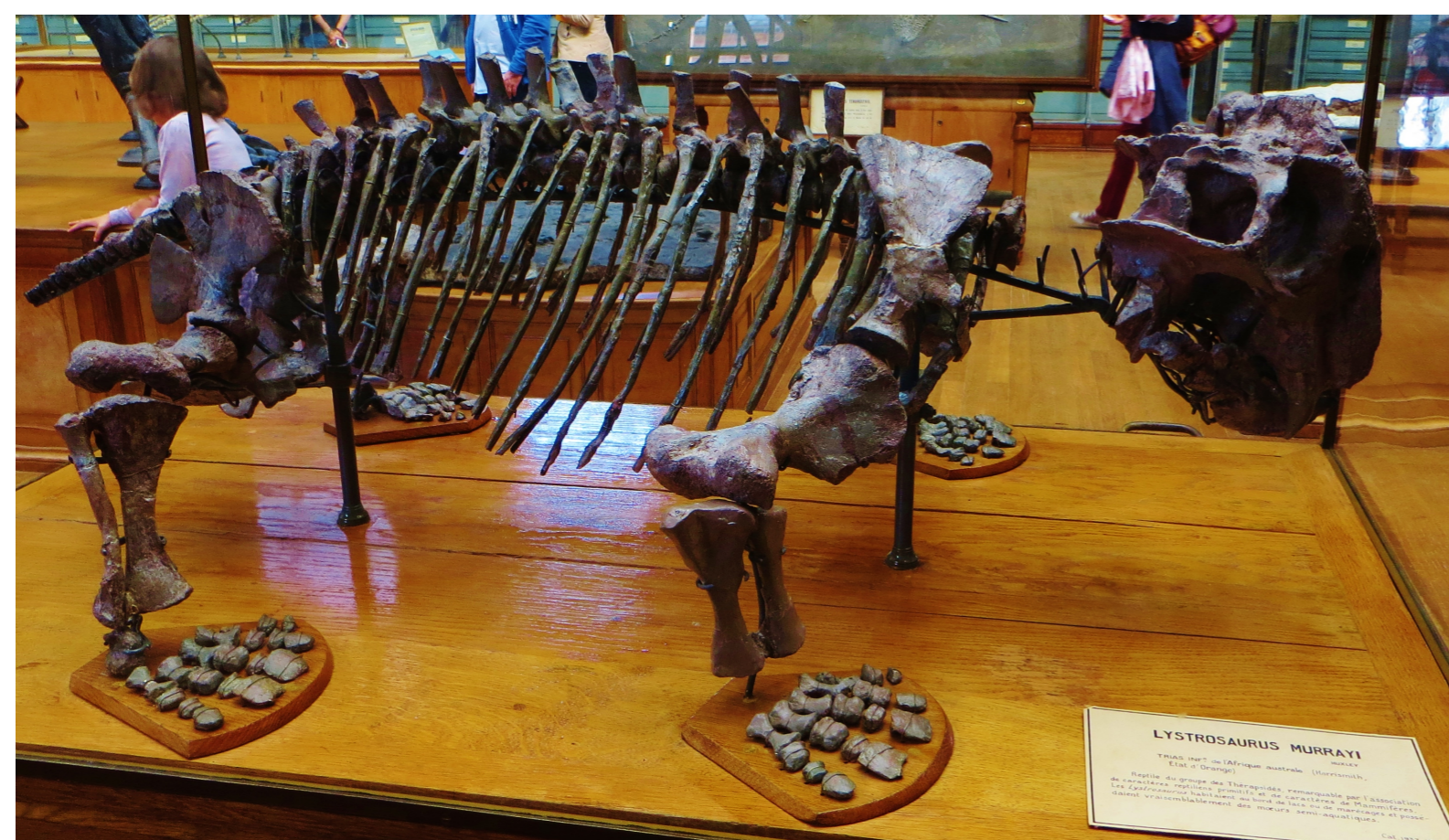
Therapsida





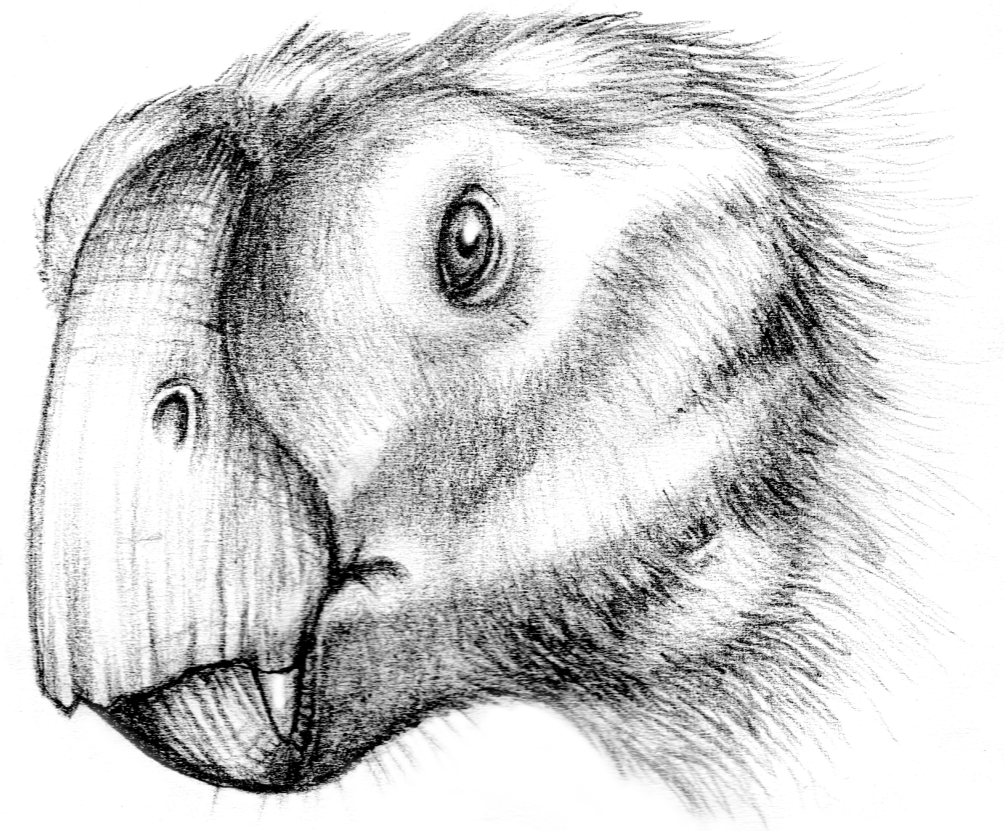


Therapsida não-cinodonte



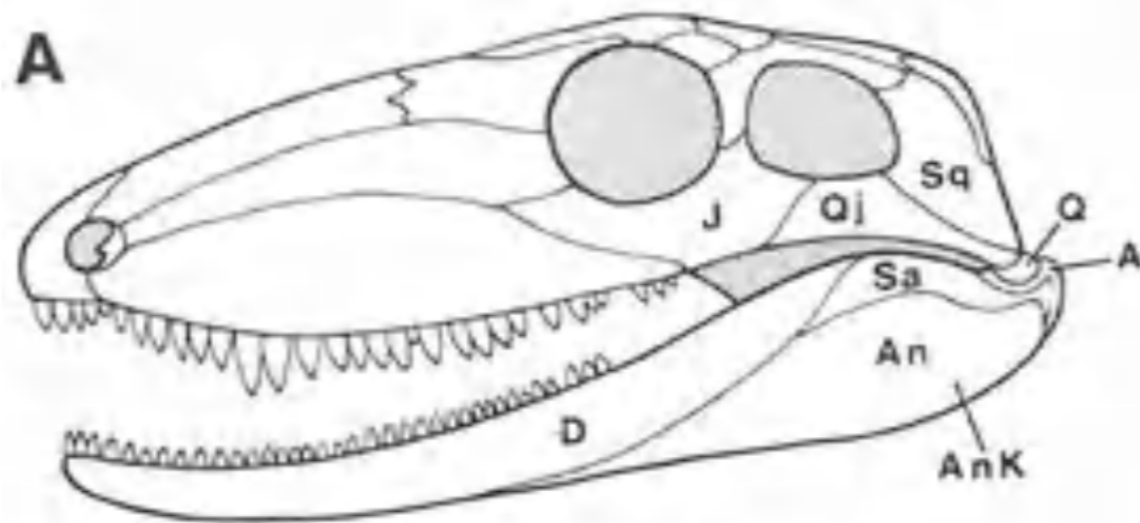
LYSTROSAURUS MURRAYI
TMSM 1967 - (Afrique australe, (Sud-ouest)
Espèce du groupe des Therapsides remarquable par l'association
de caractères multiples primitifs et de caractères de Mammifères.
Les Lystrosauriens habitèrent au bord de la mer ou de marécages et possé-
daient vraisemblablement des nageoires semi-aquatiques. Col. 1937-38

Lystrosaurus

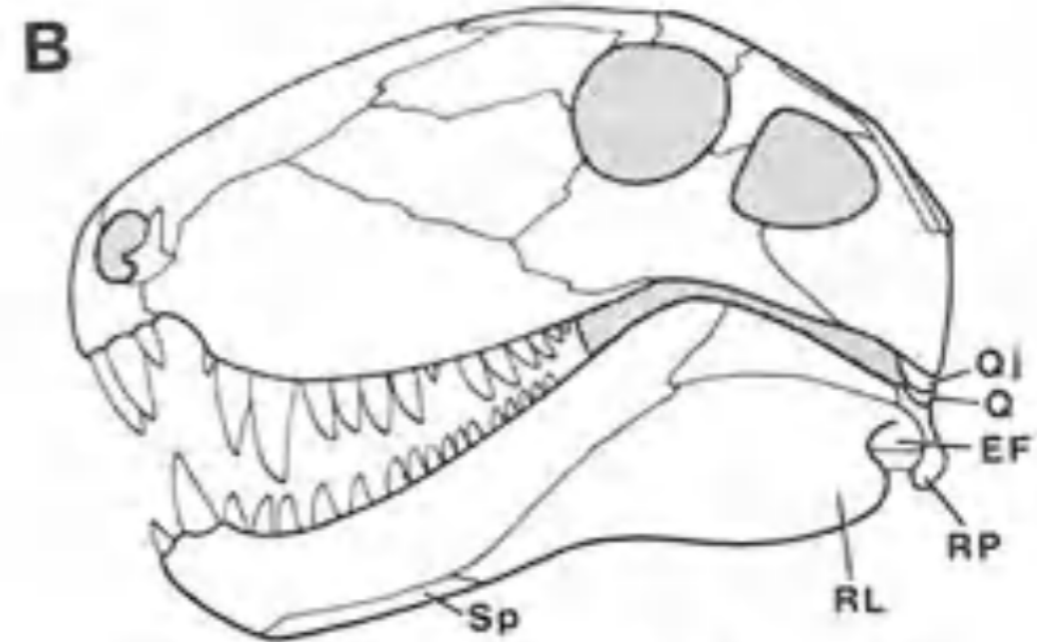


Lystrosaurus

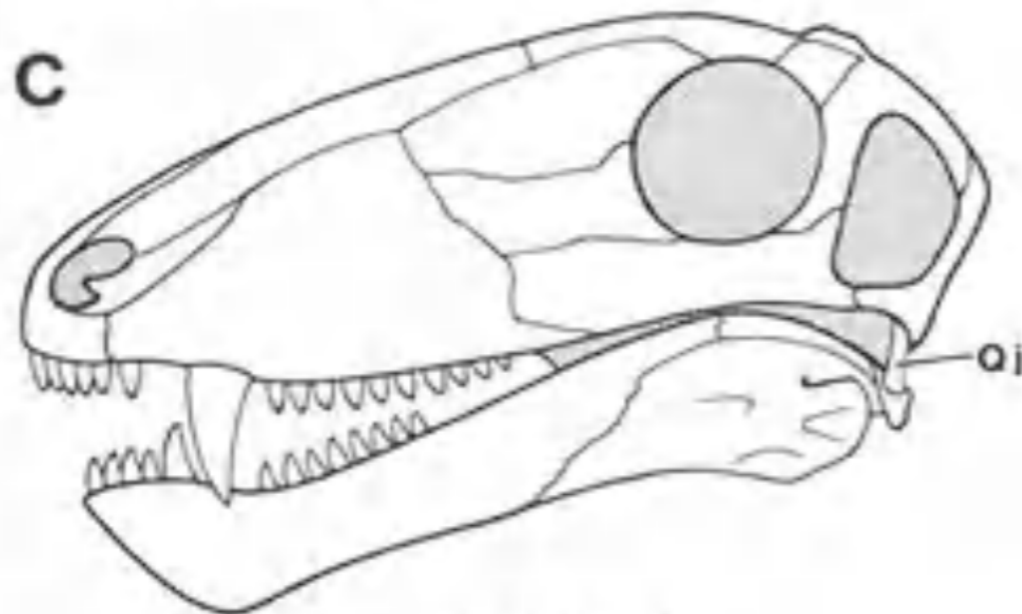
Principais diferenças entre pelicossauros e terápsidos



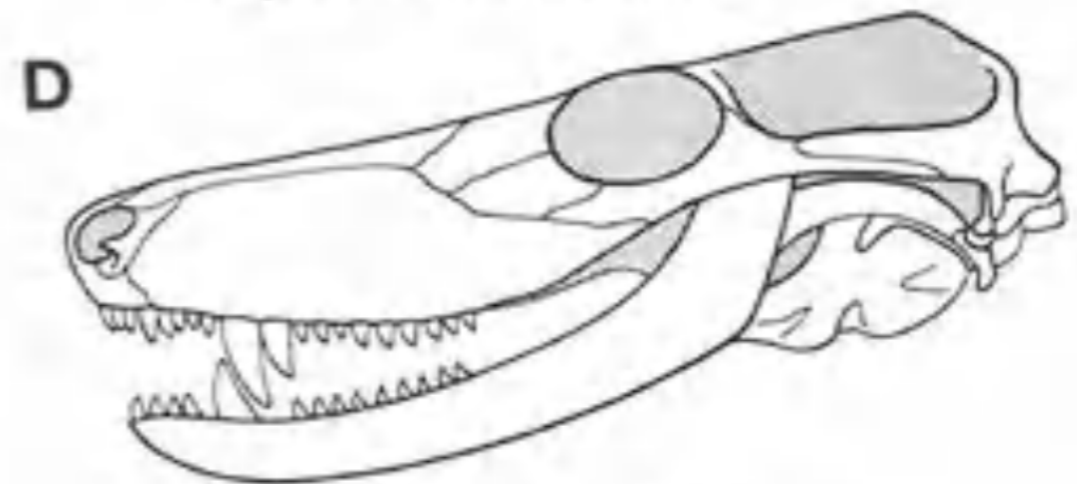
Primitive "pelycosaur"



Sphenacodontid



Biarmosuchian



Therocephalian



Dinogorgon
~ 260 my



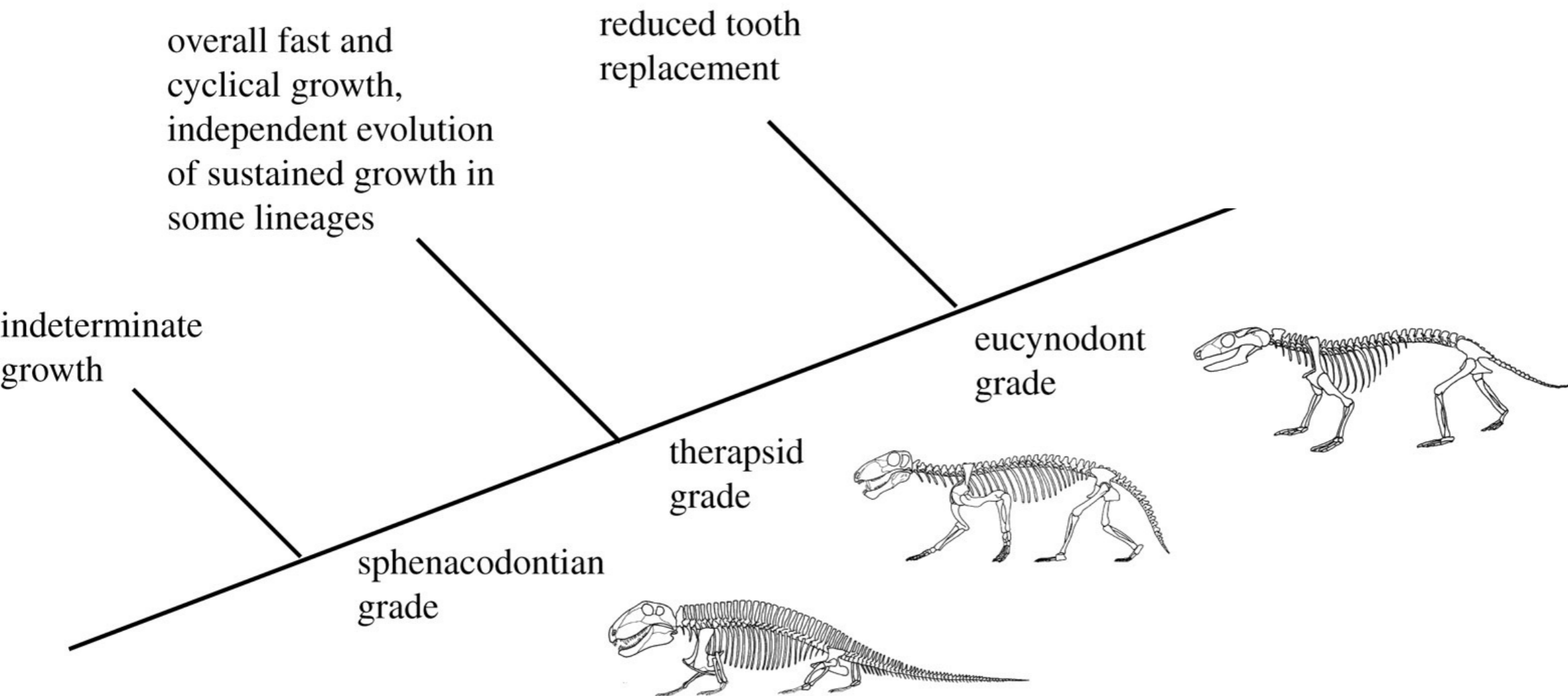
Dinogorgon
~ 260 my



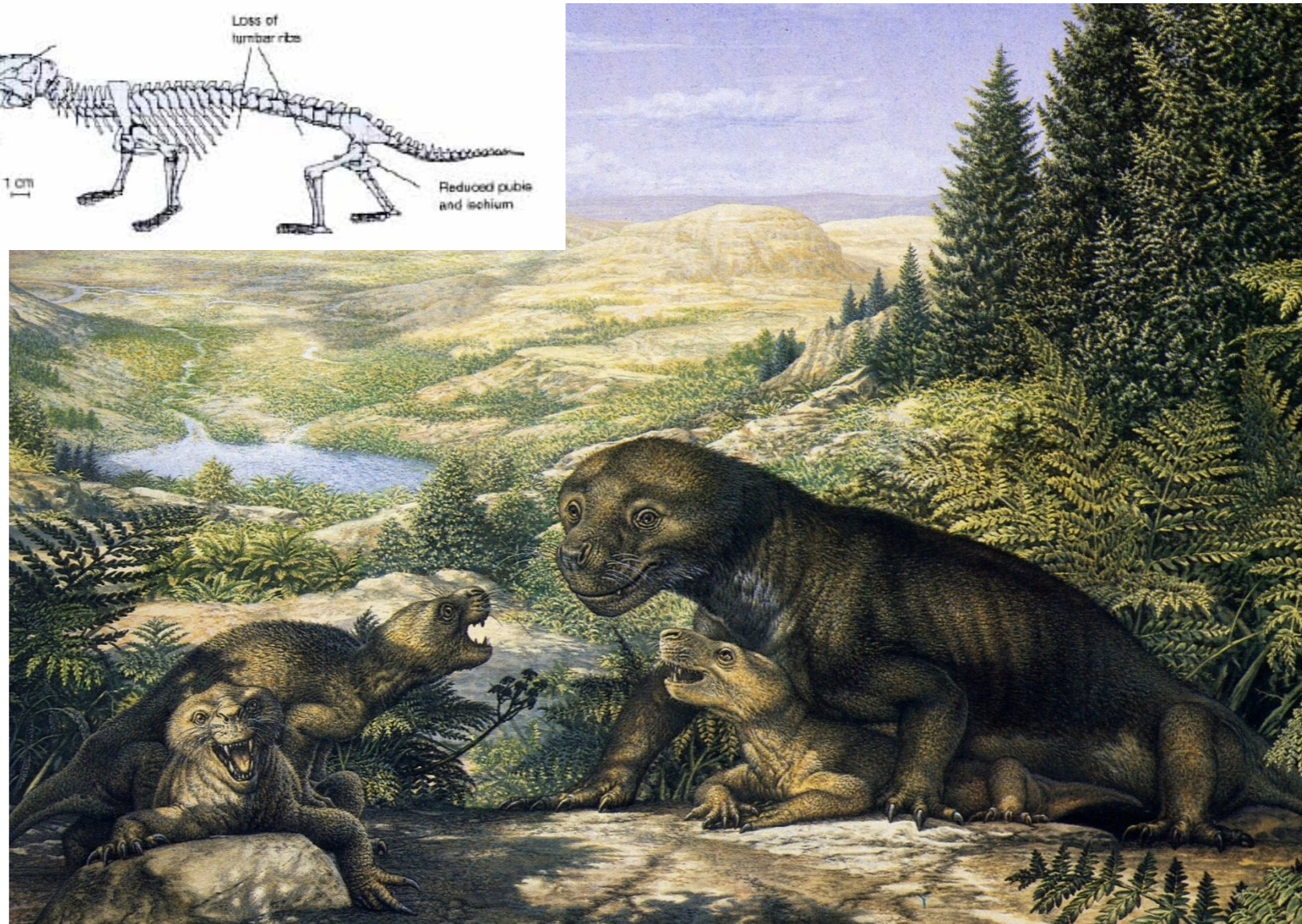
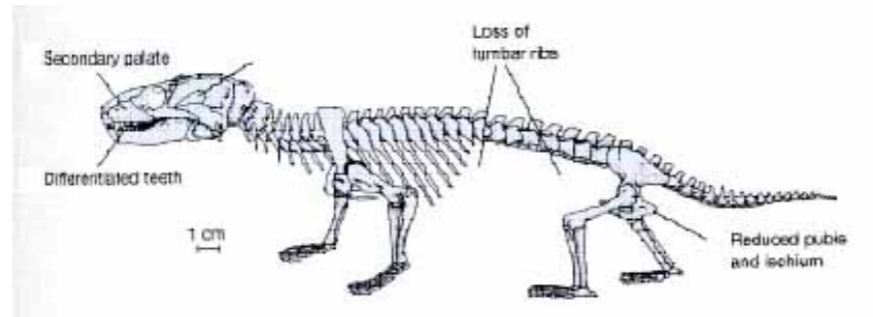
Suminia

~ 260 my





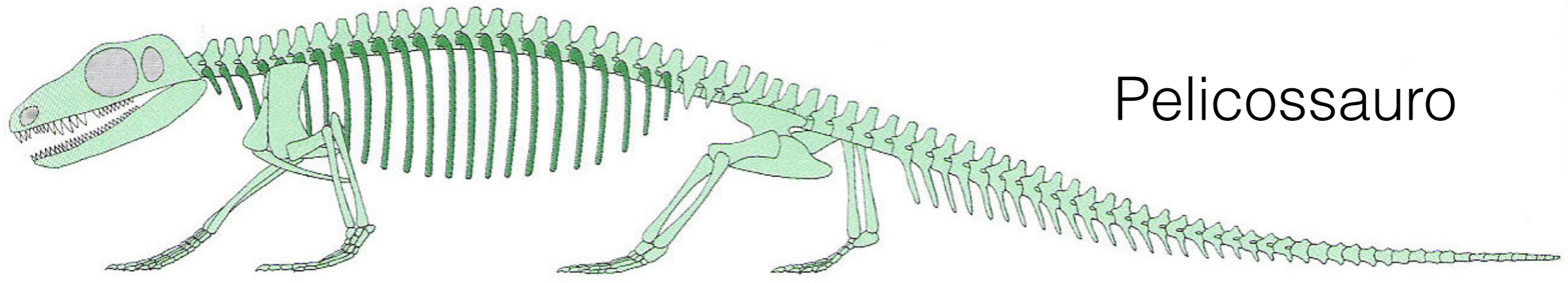
Cinodontes não-mamalianos



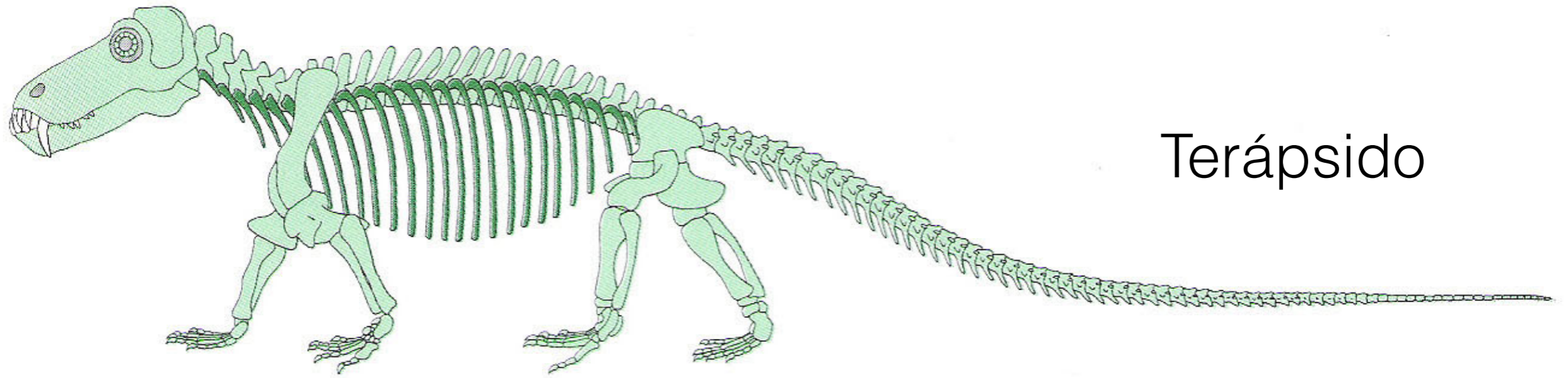
Thrinaxodon

Quais são as principais tendências evolutivas?

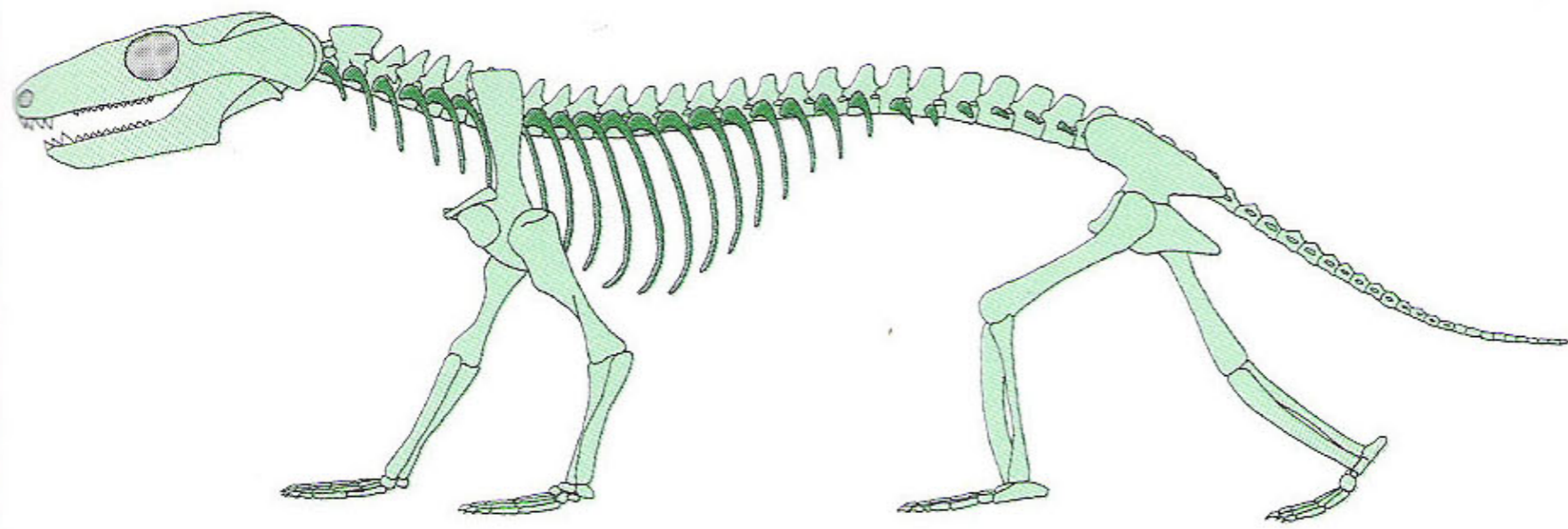




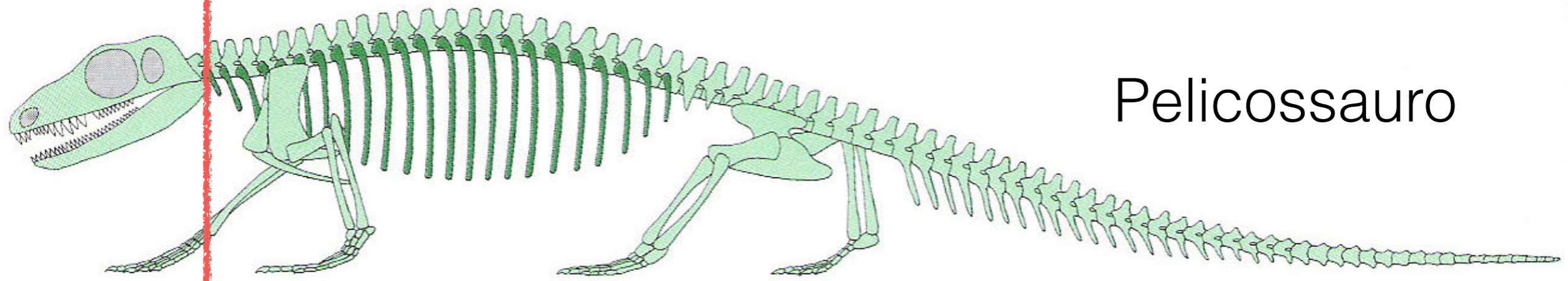
Pelicossauro



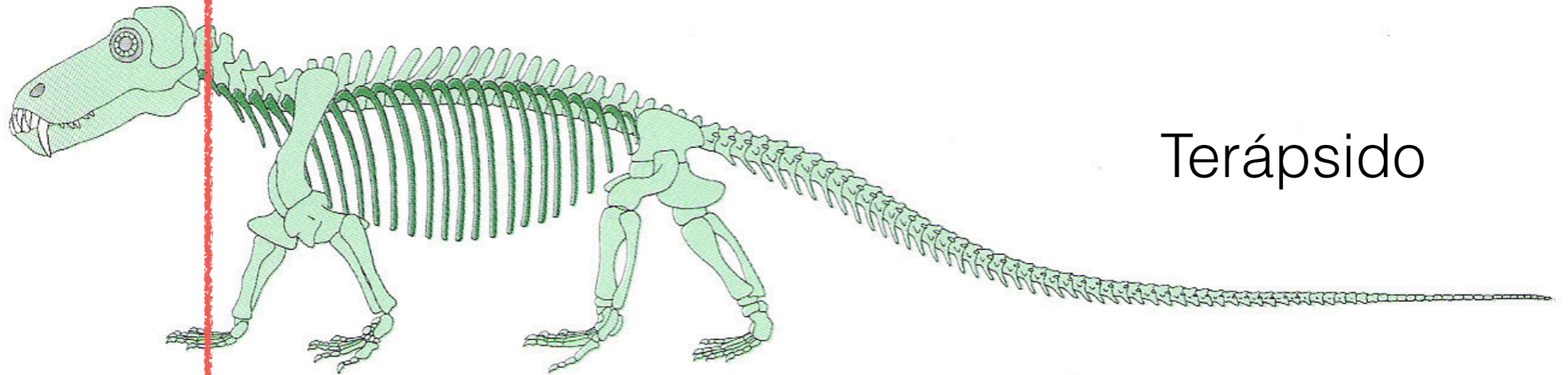
Terápsido



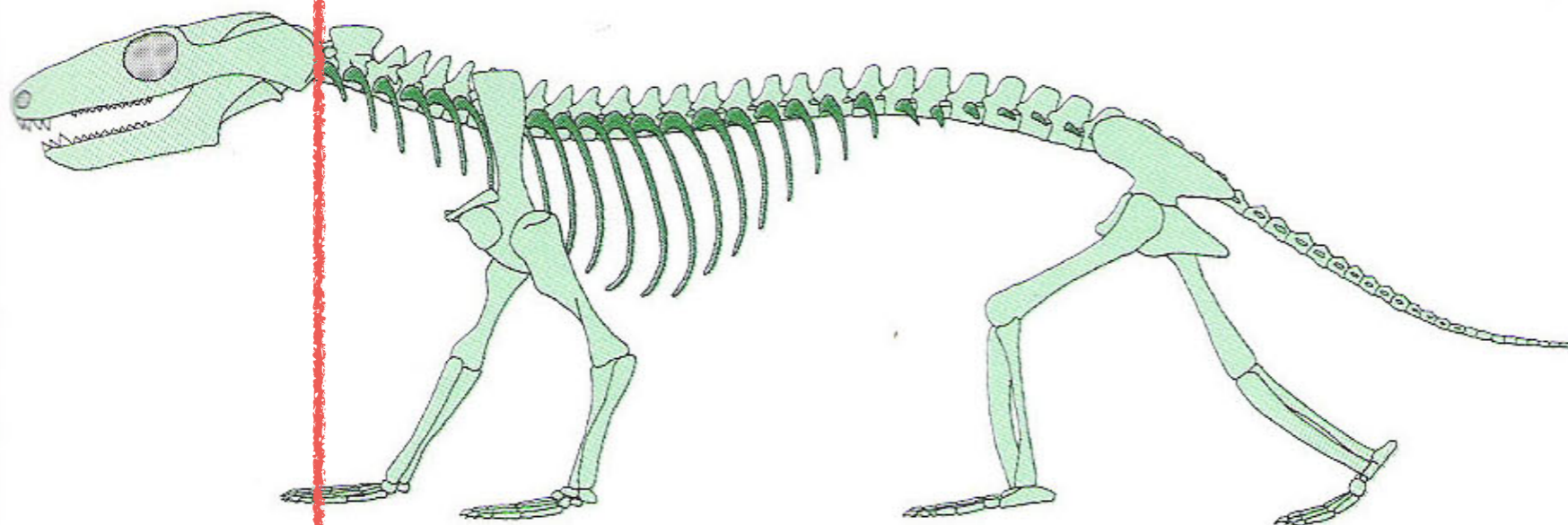
Cinodonte



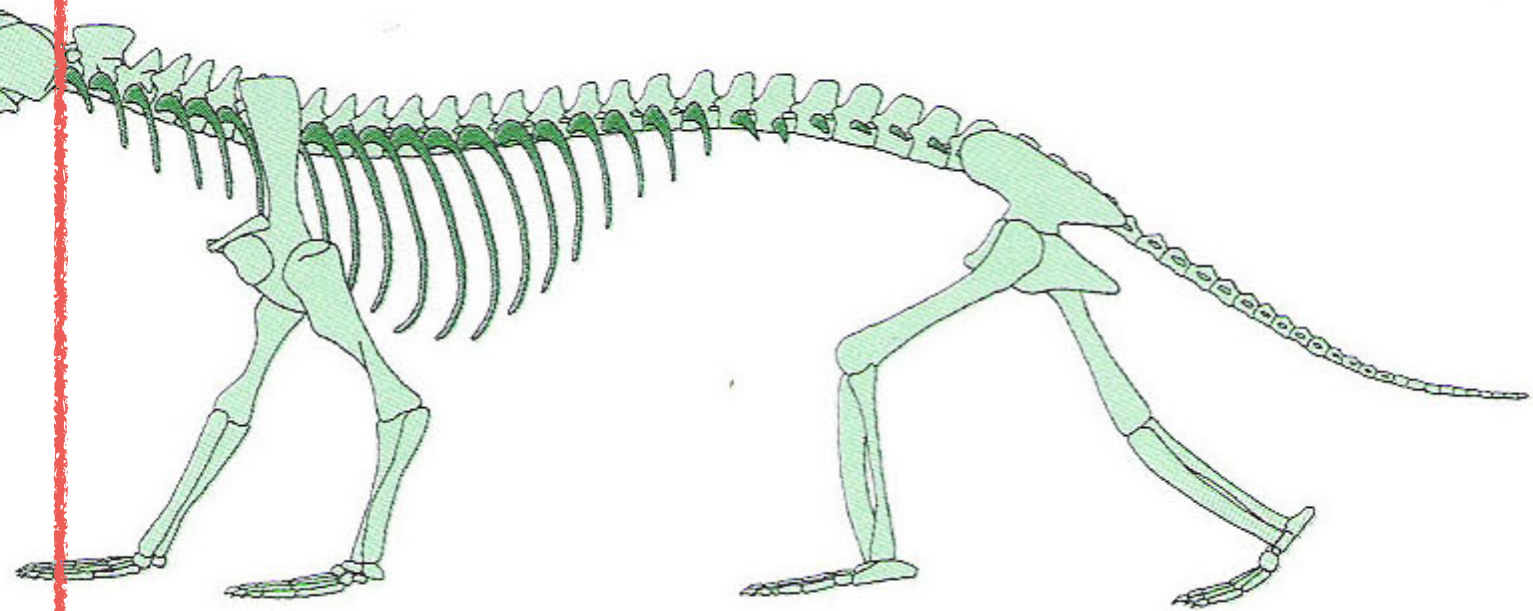
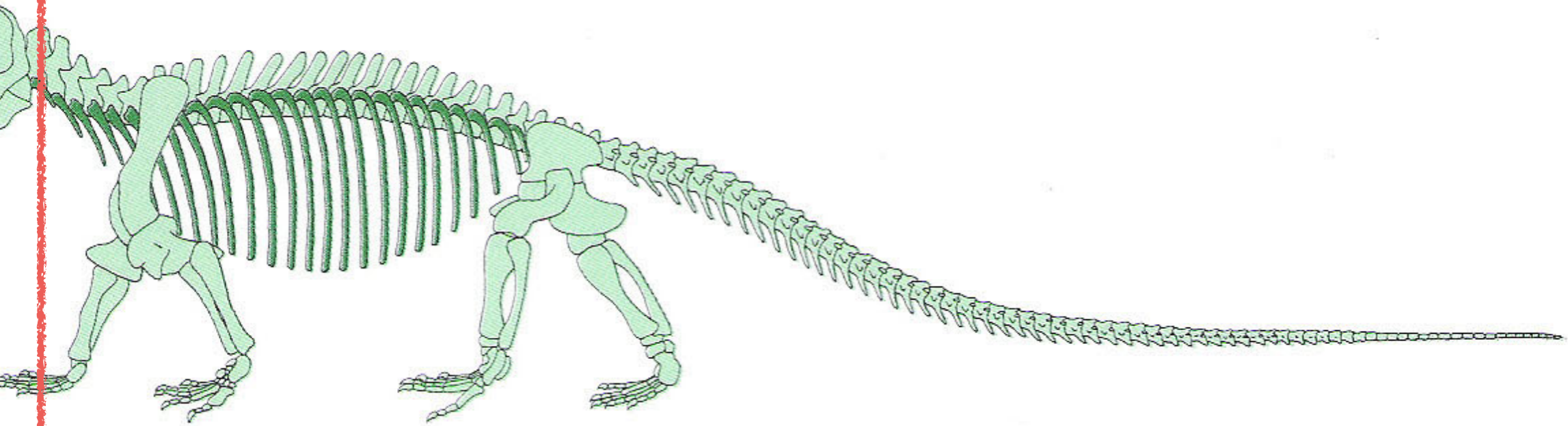
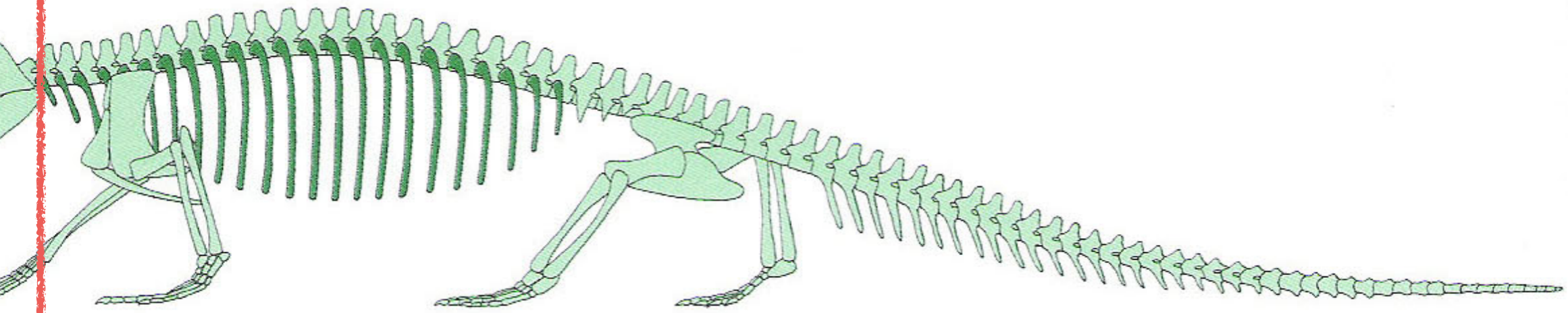
Pelicossauro



Terápsido



Cinodonte

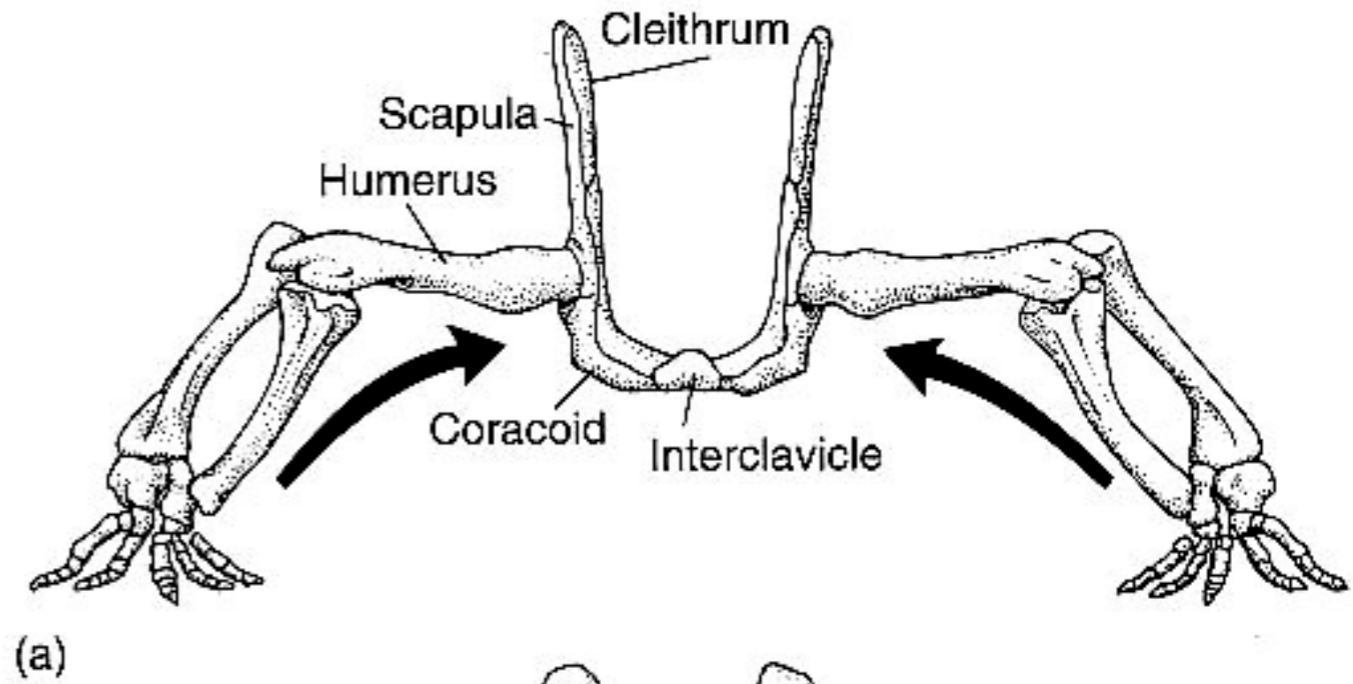


Aumento da taxa
metabólica:

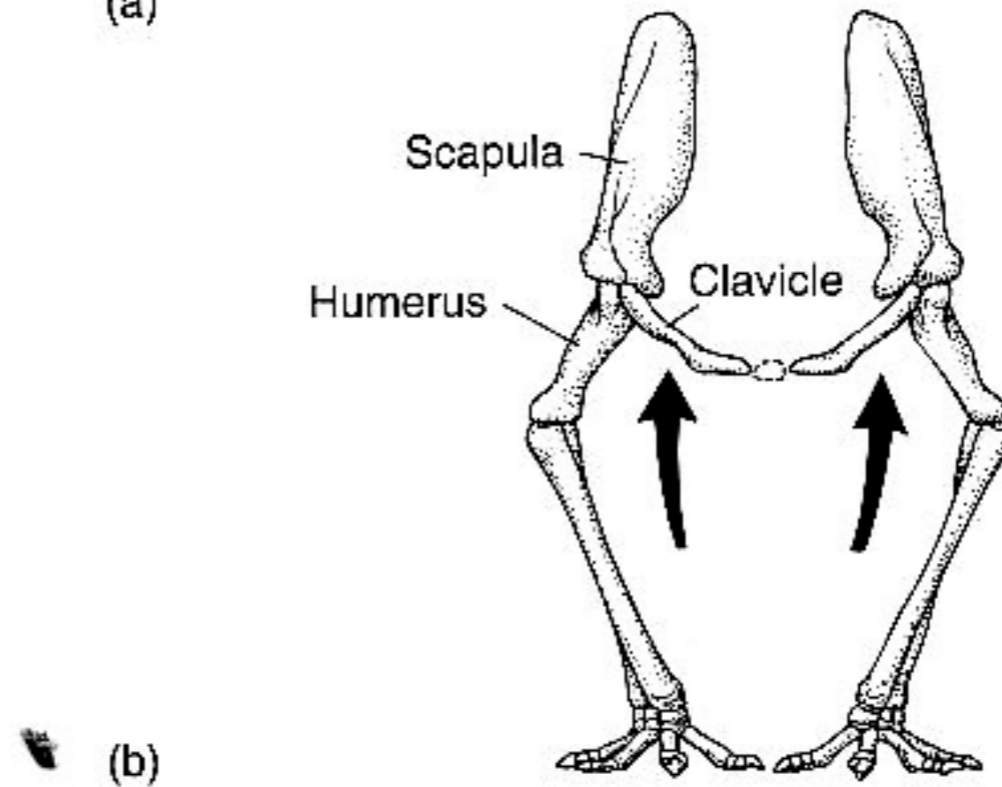
Como sabemos?

Eficiência do grau de atividade

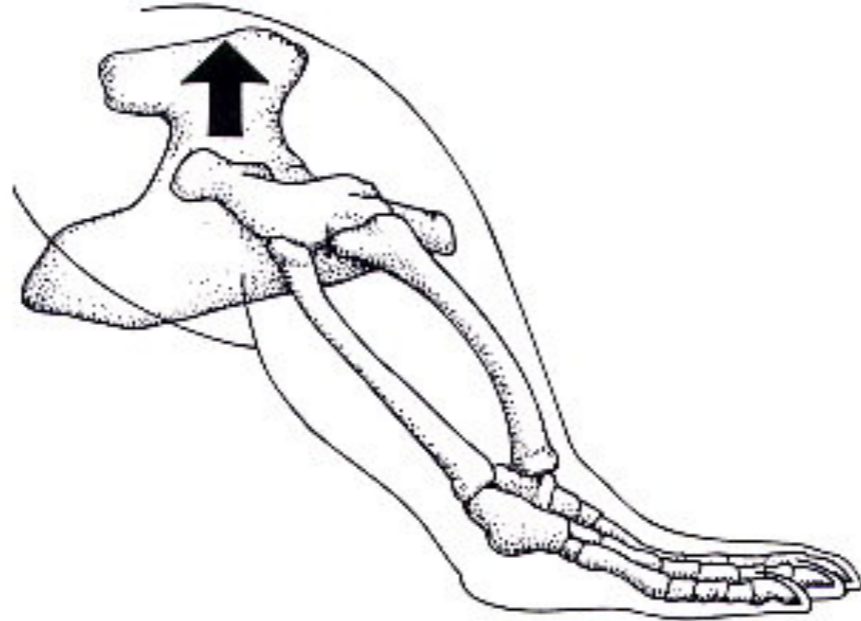
Pelicossauro



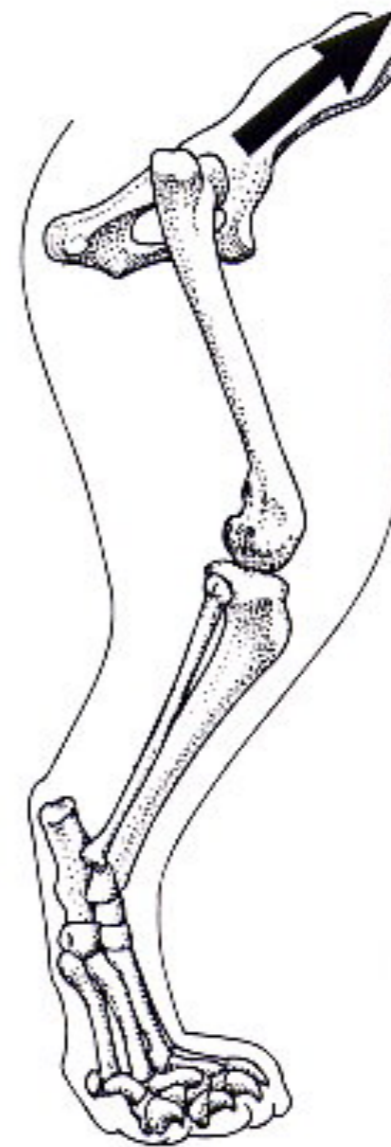
Cinodonte



Eficiência do grau de atividade



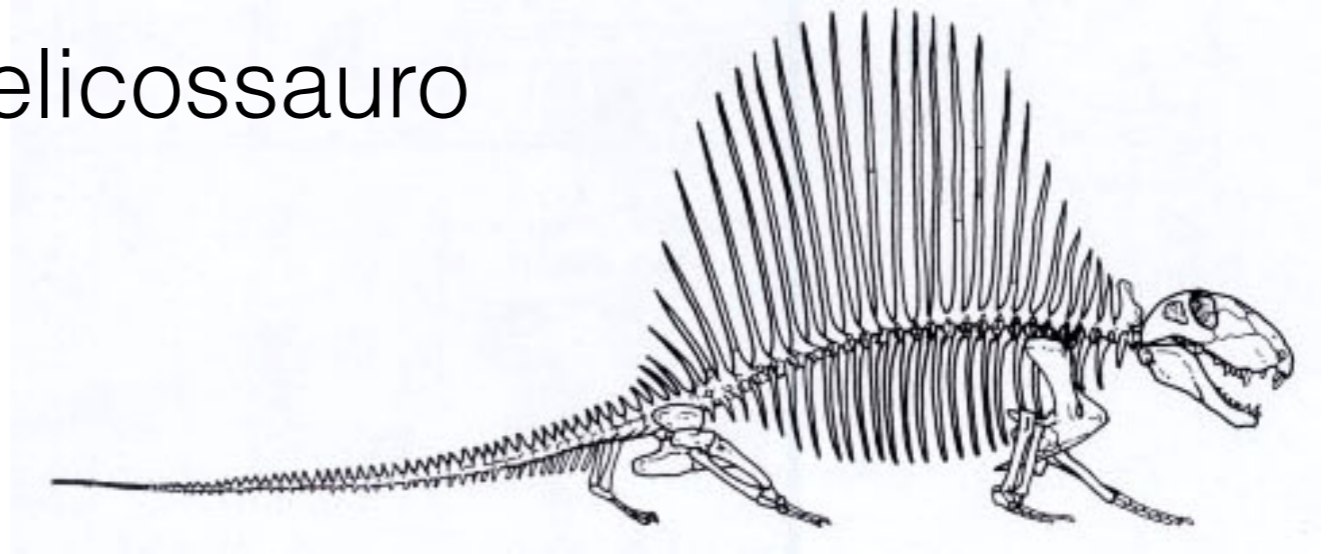
(a) Primitive reptile



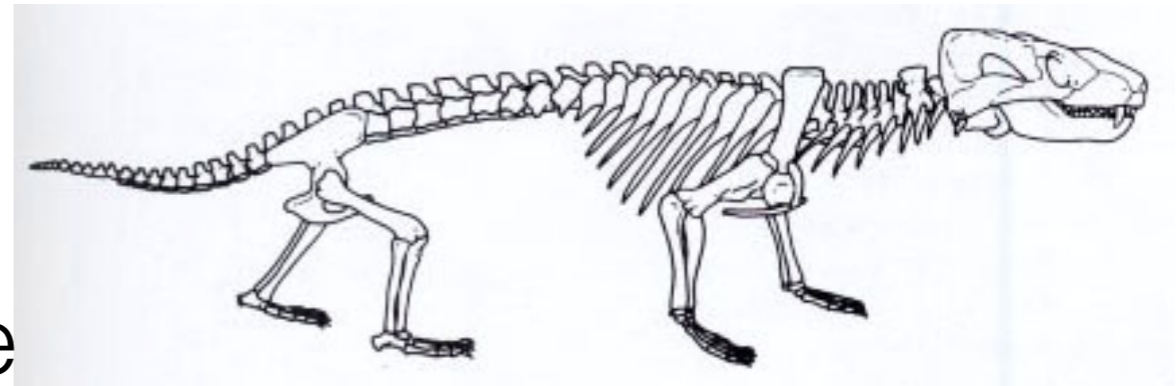
(b) Placental mammal

Eficiência do grau de atividade

Pelicossauo



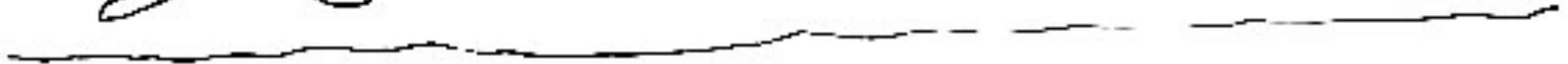
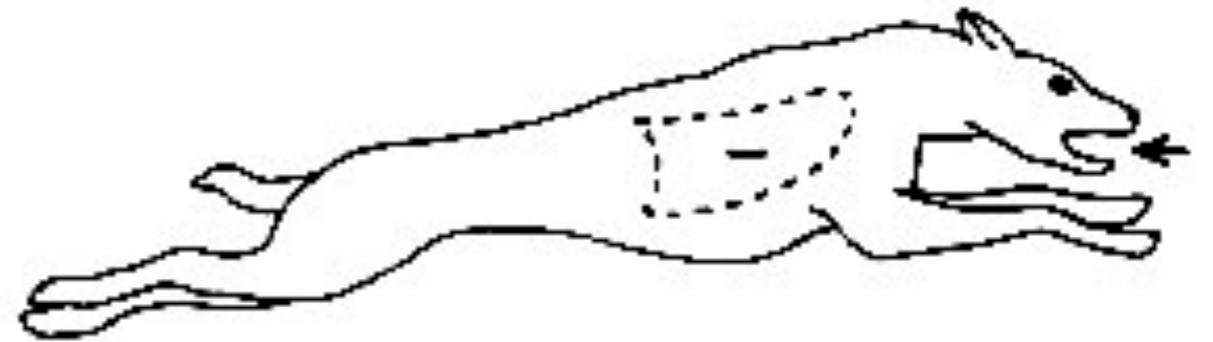
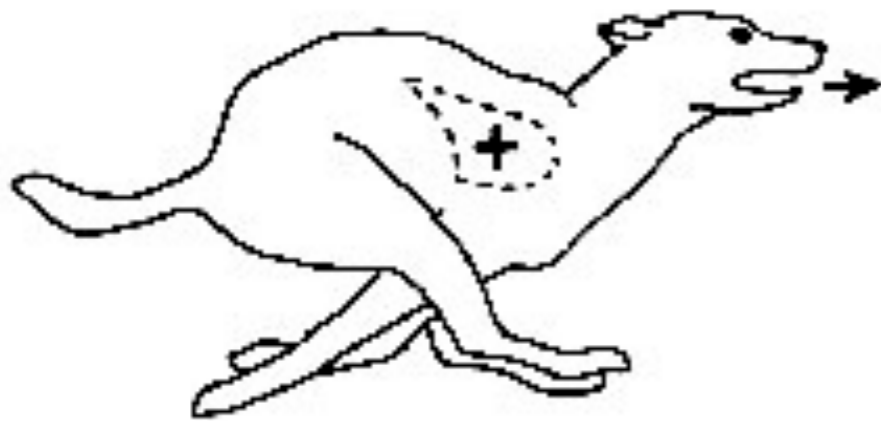
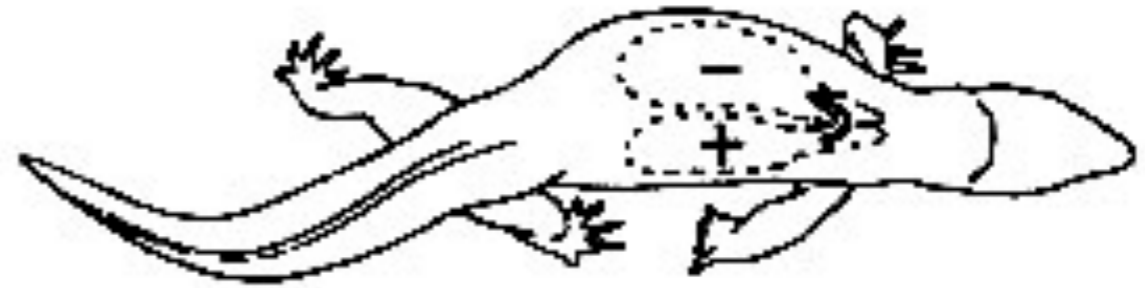
Cinodonte

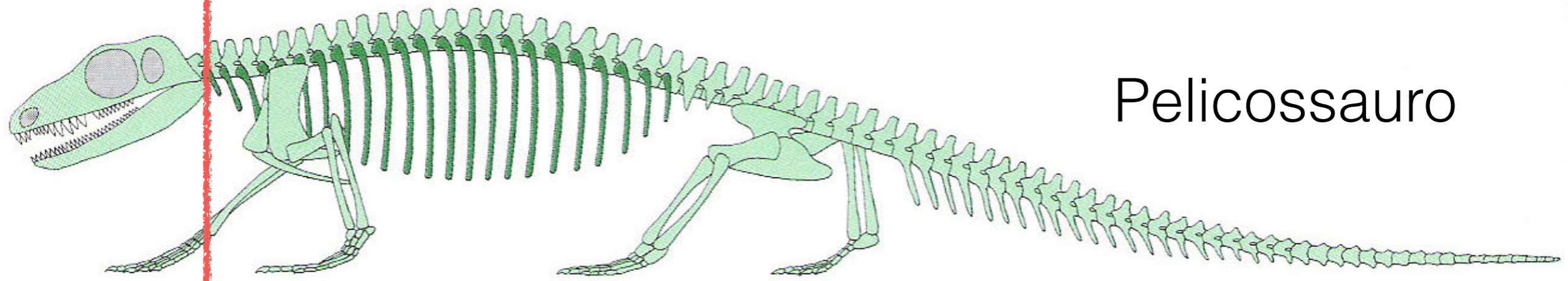


Mamífero

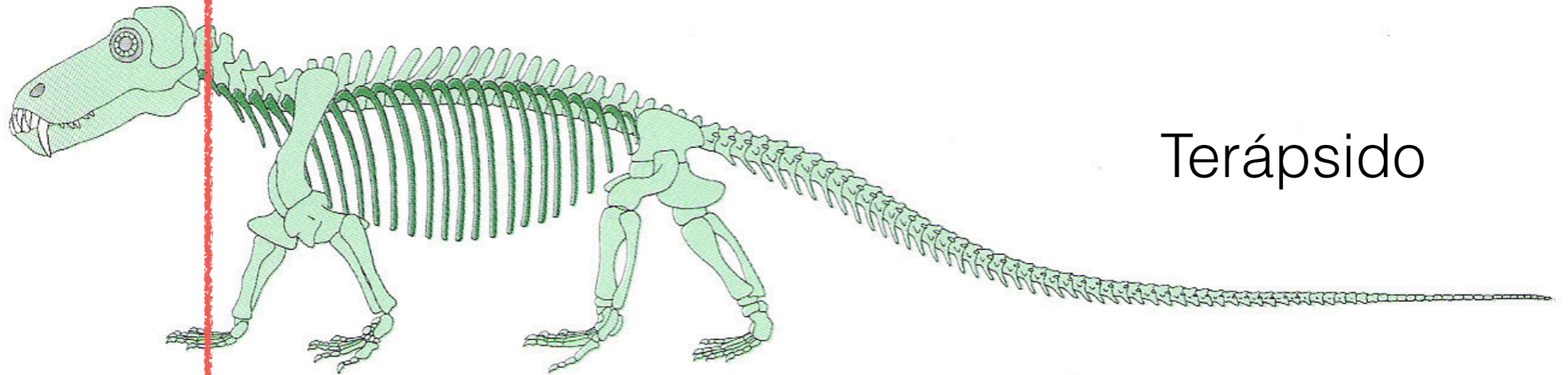


Eficiência do grau de atividade

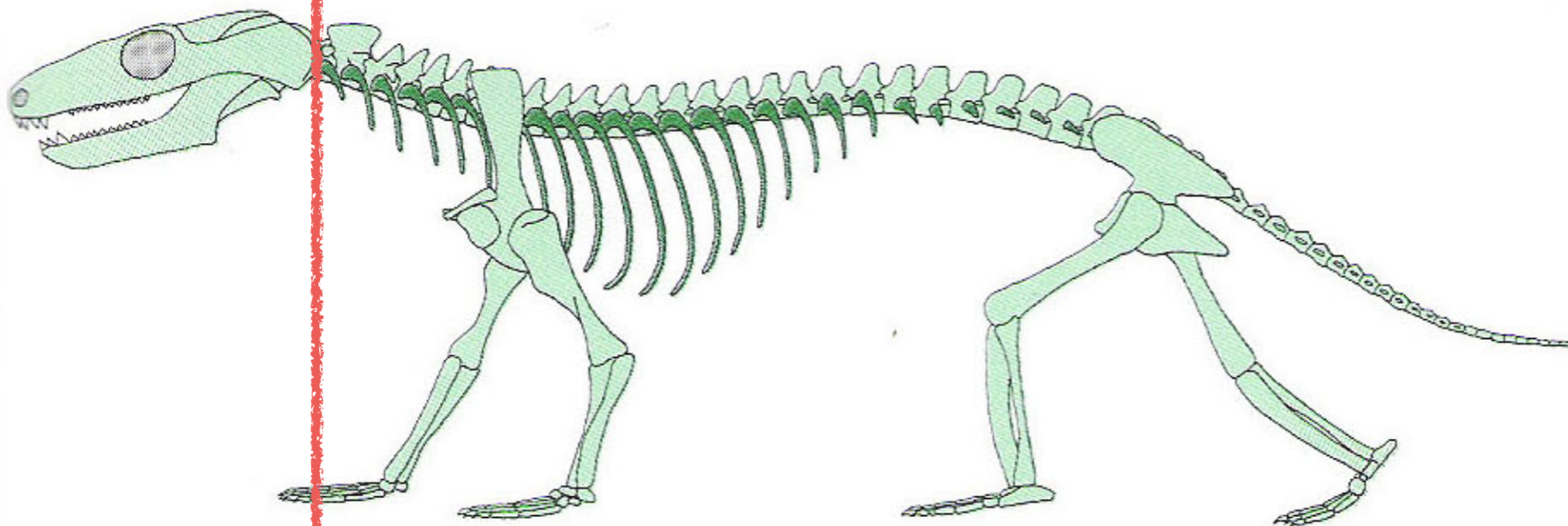




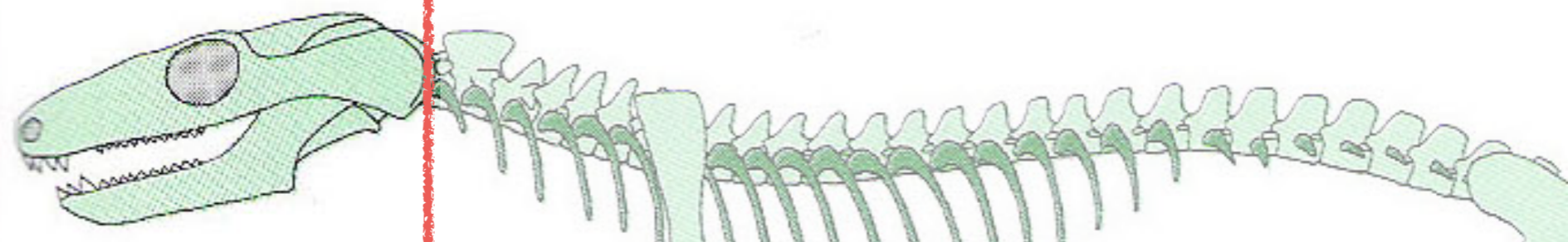
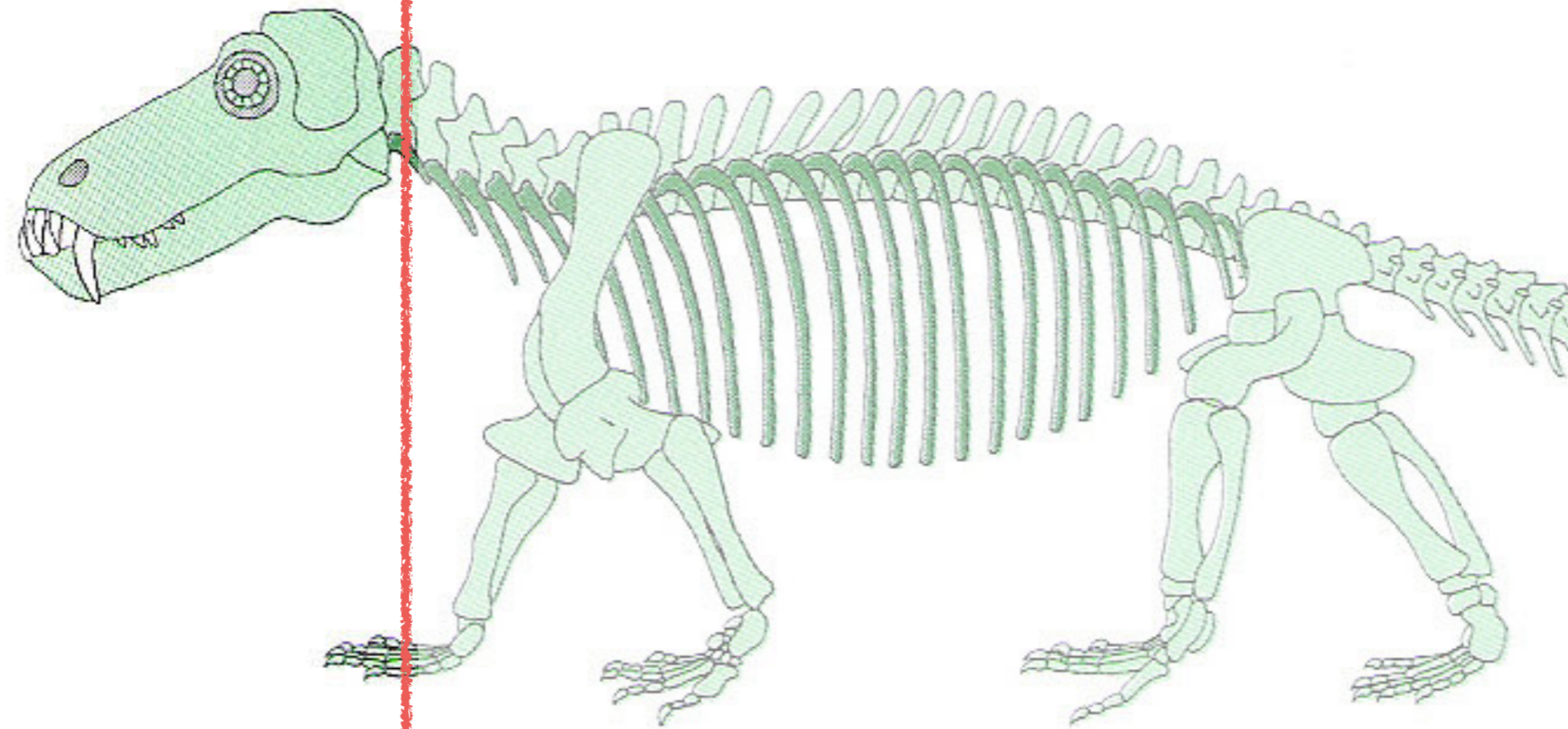
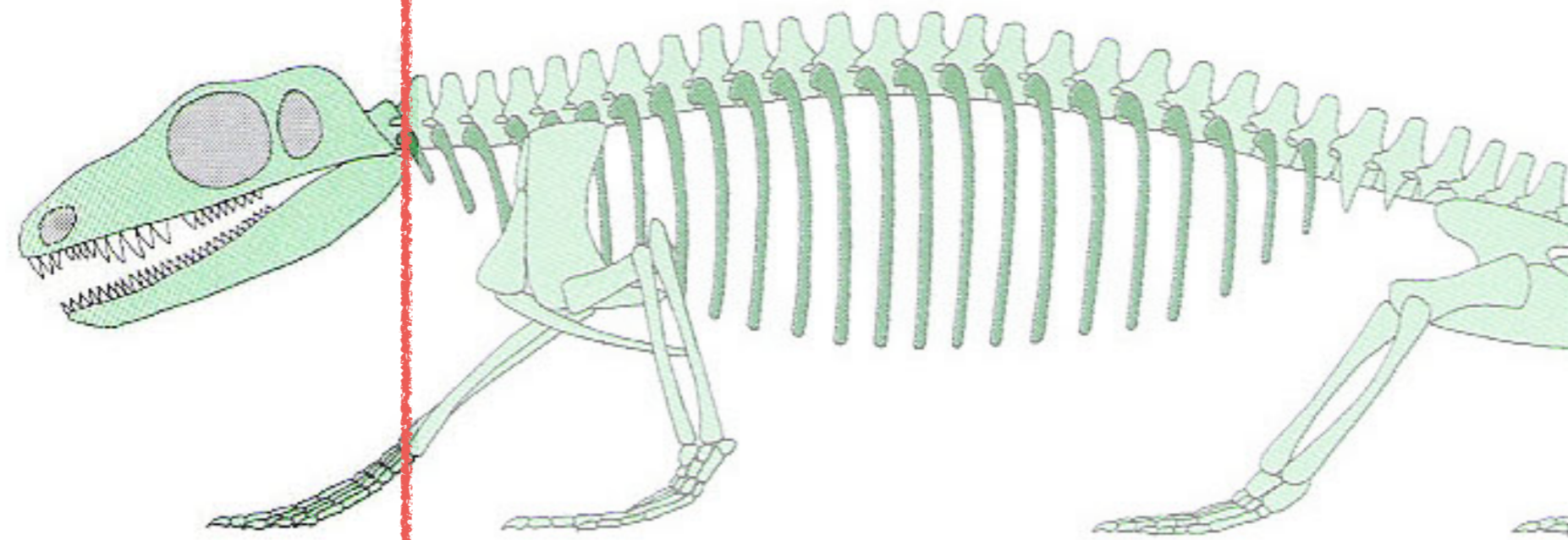
Pelicossauro



Terápsido



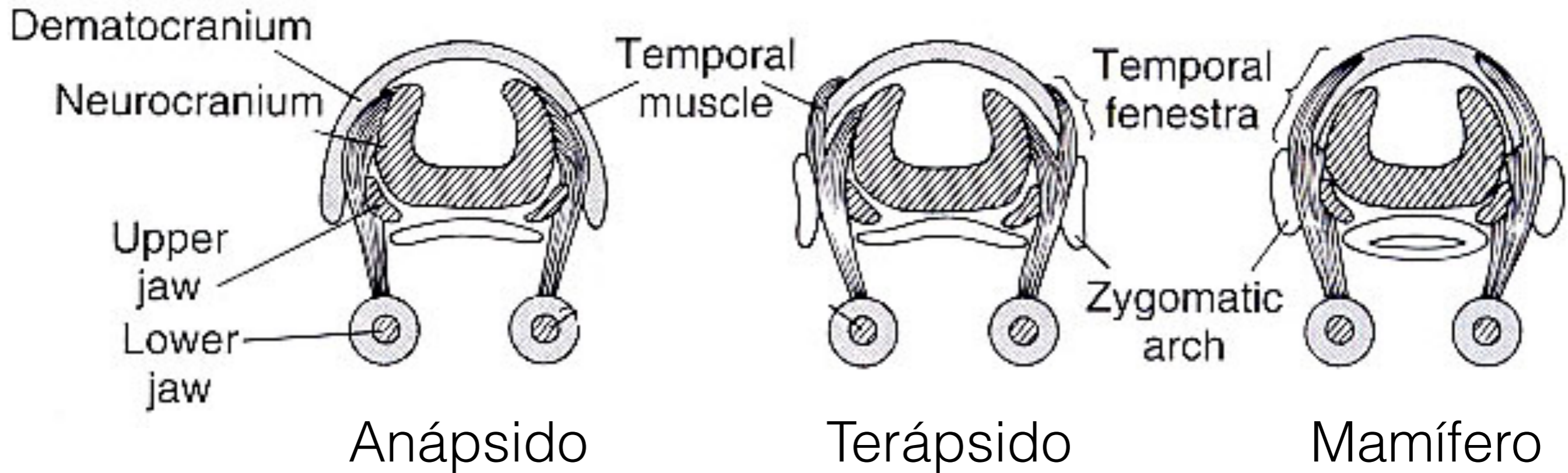
Cinodonte



Aumento da taxa
metabólica:

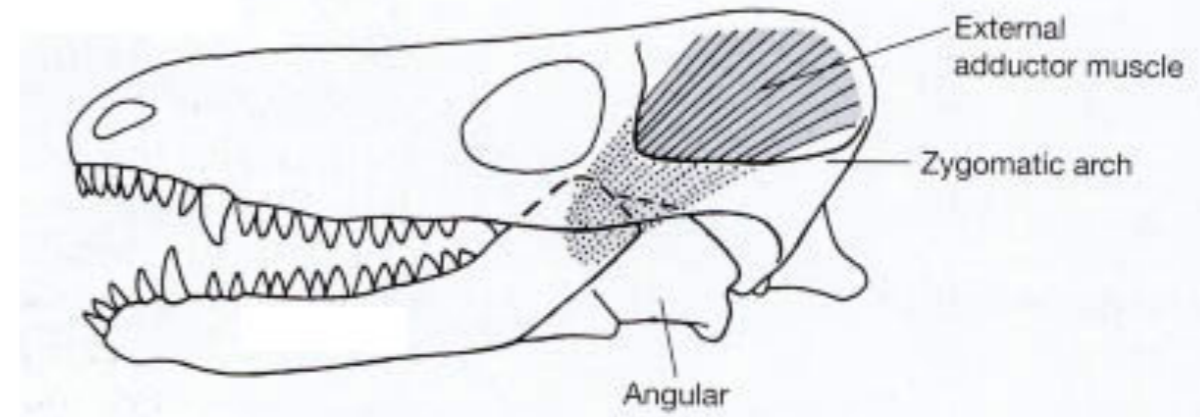
Eficiência do
processamento de
alimentos

Eficiência do processamento de alimentos

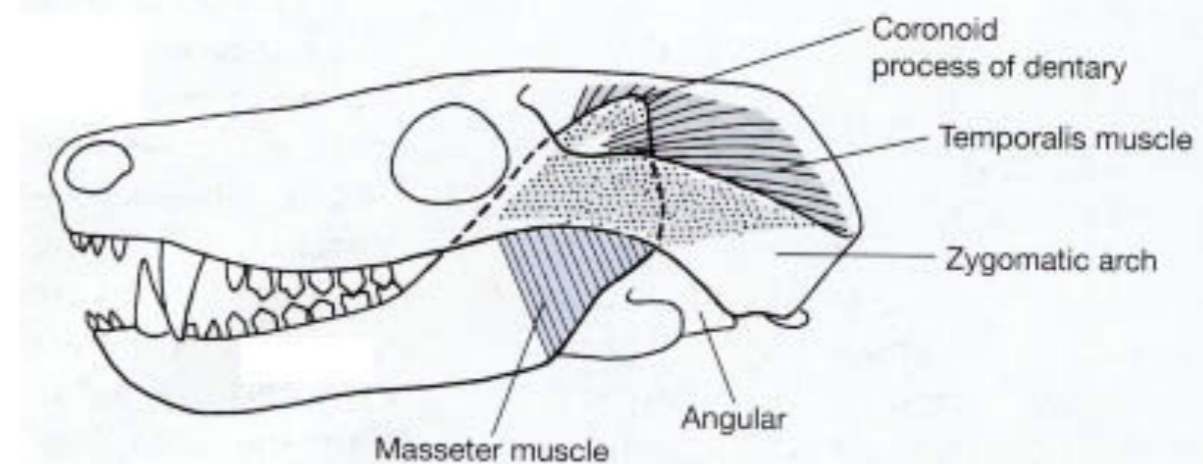


Eficiência do processamento de alimentos

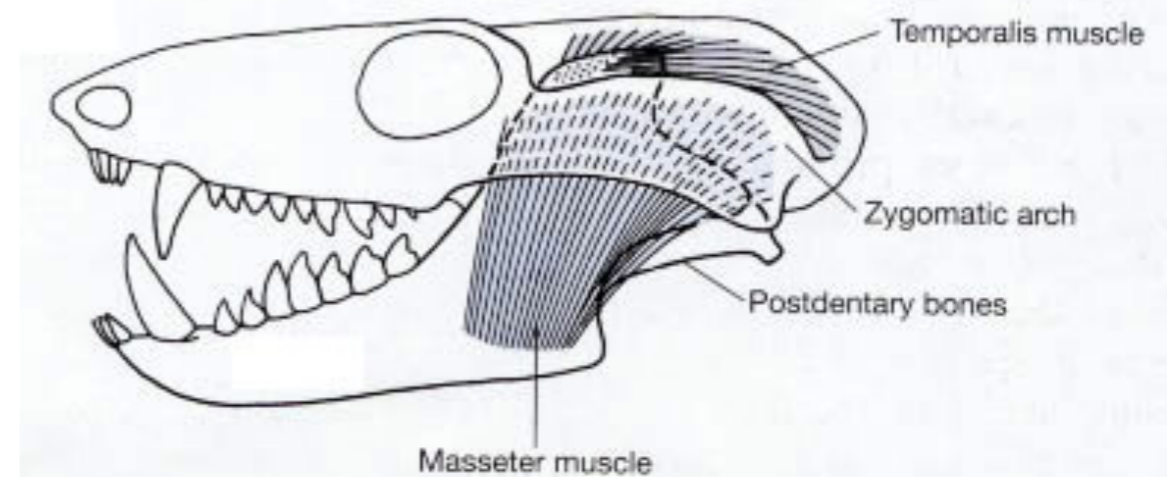
Terapsida
não-cinodonte



Cinodonte basal

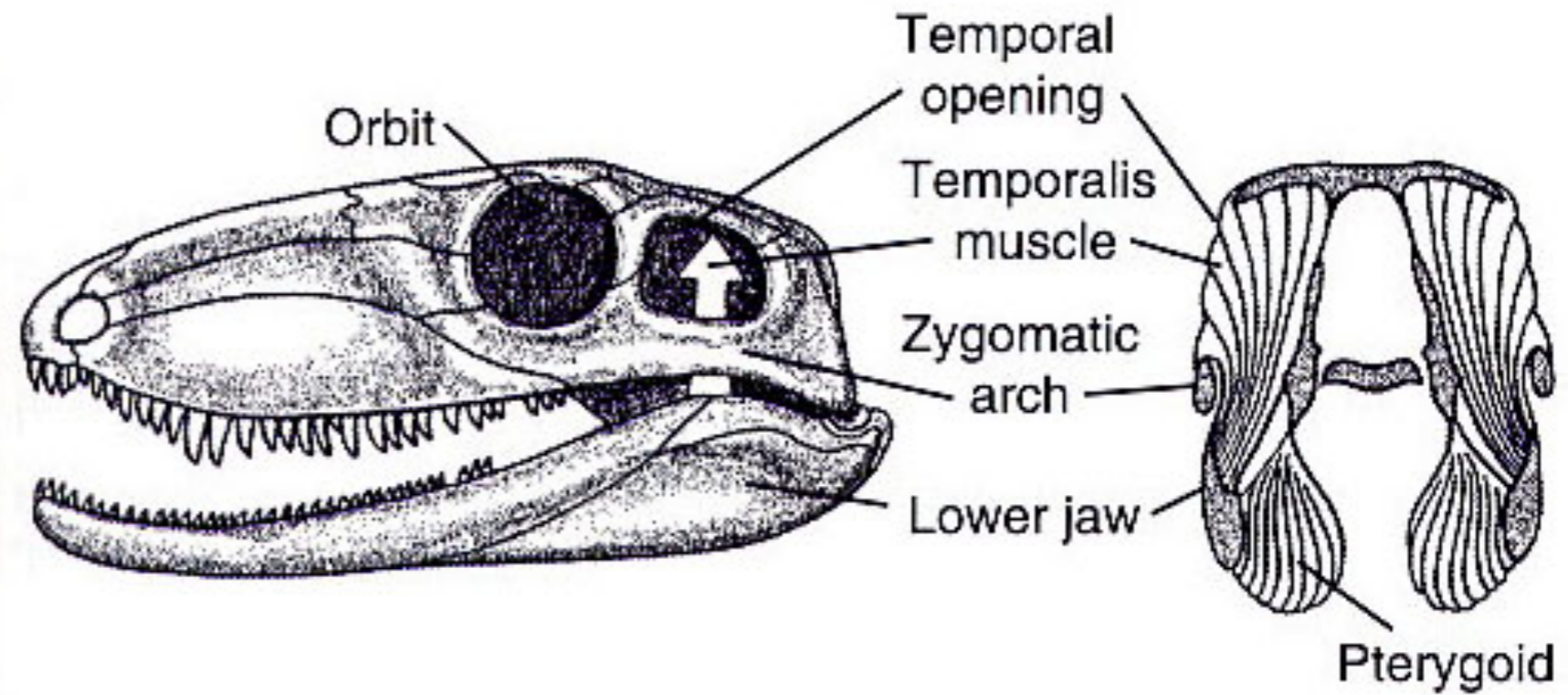


Cinodonte derivado

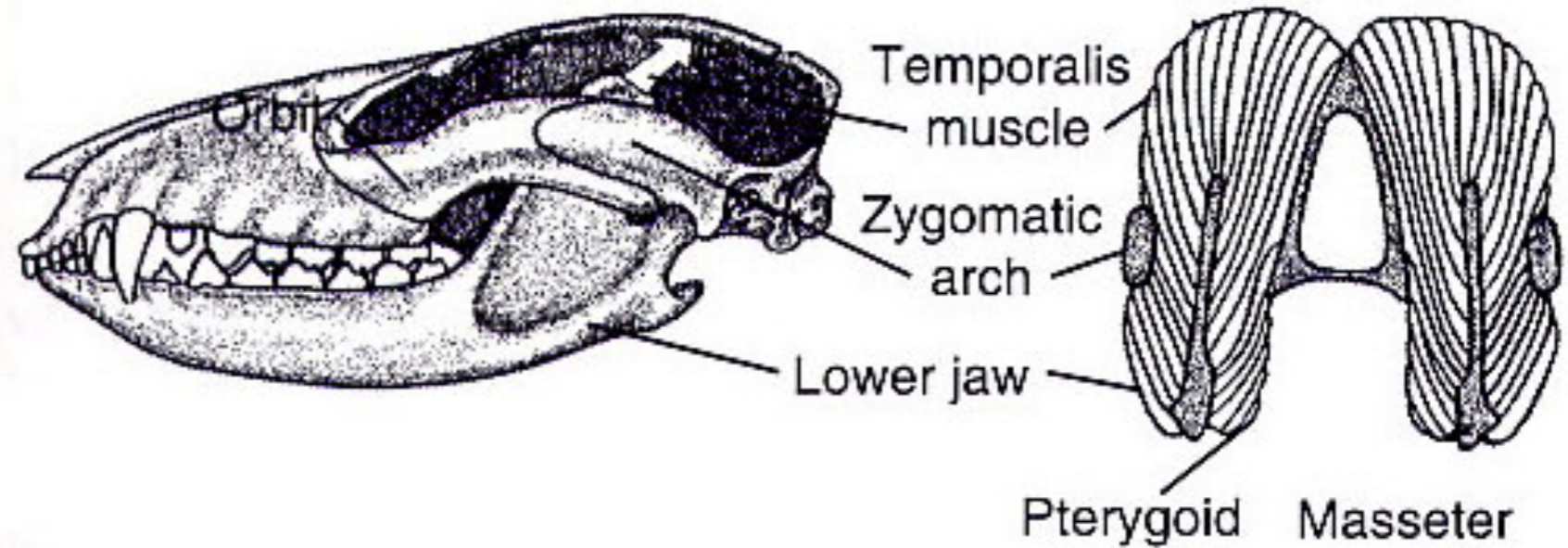


Eficiência do processamento de alimentos

Pelicossauro

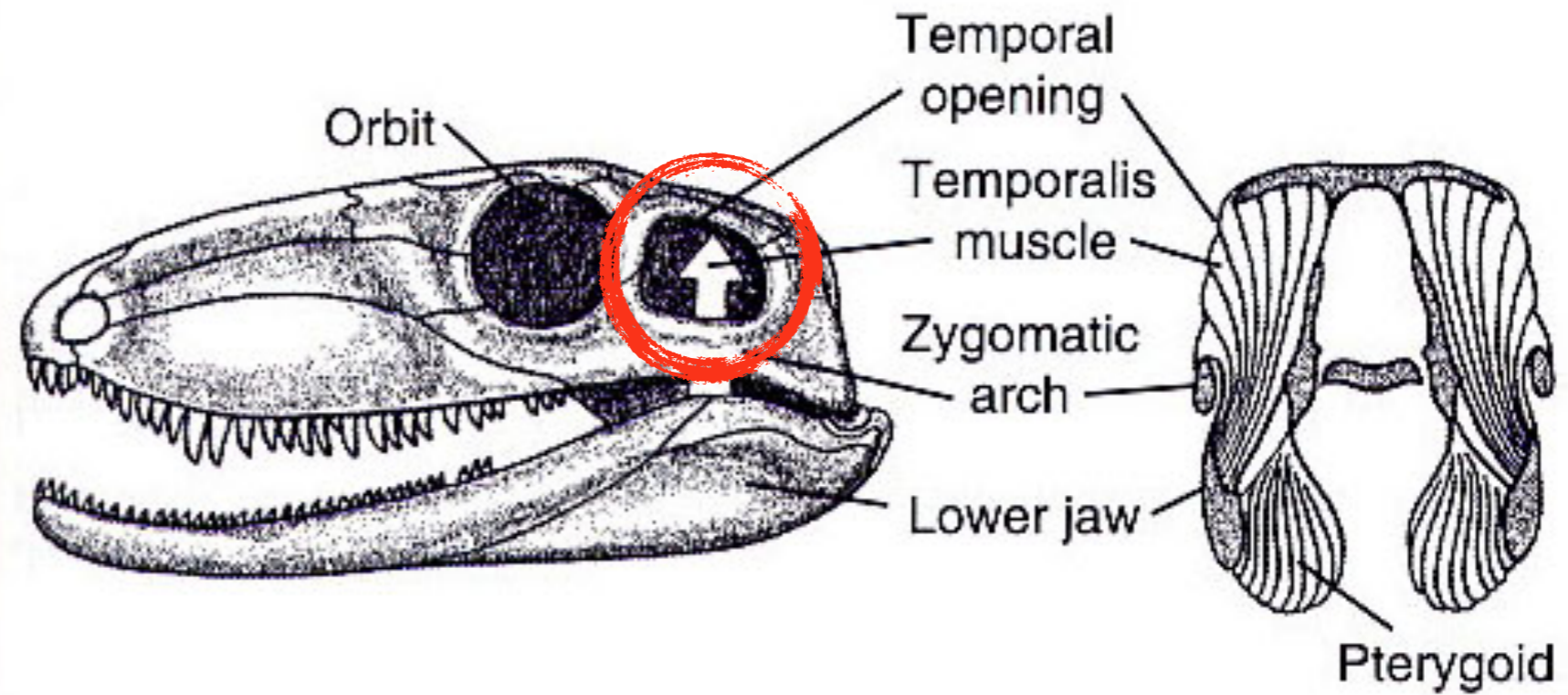


Mamífero

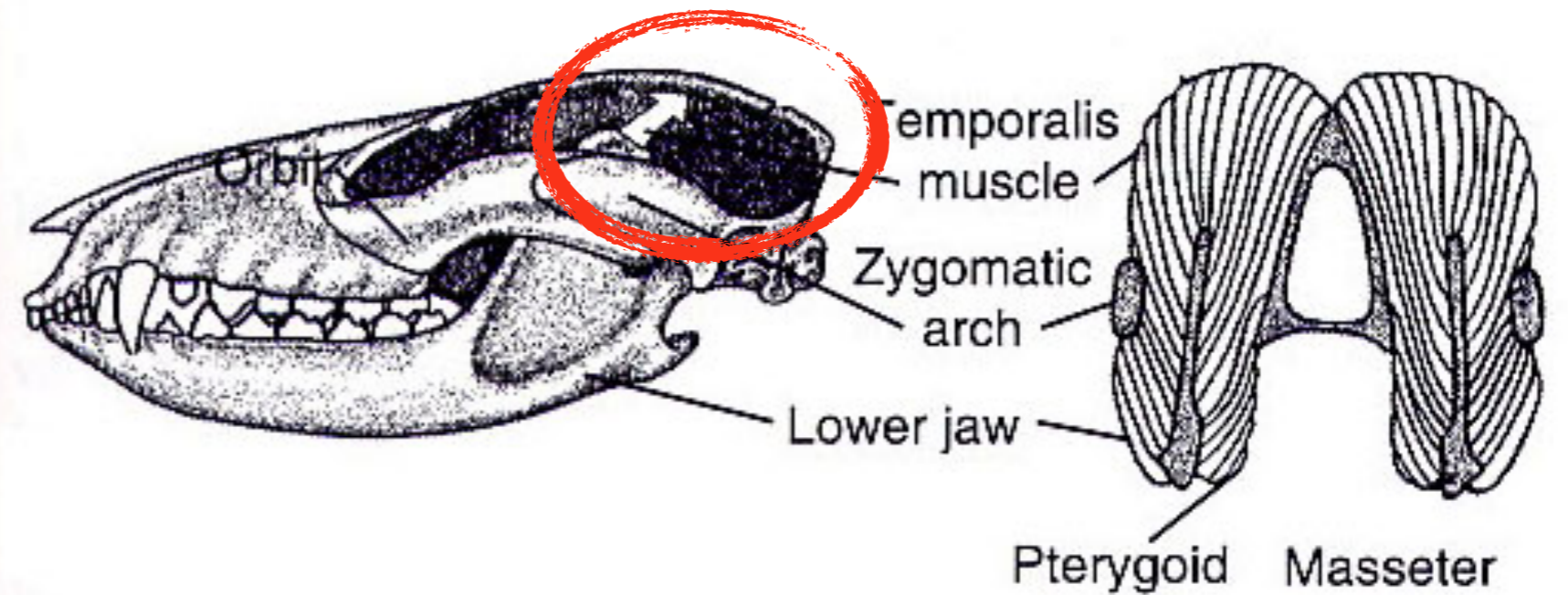


Eficiência do processamento de alimentos

Pelicossauro

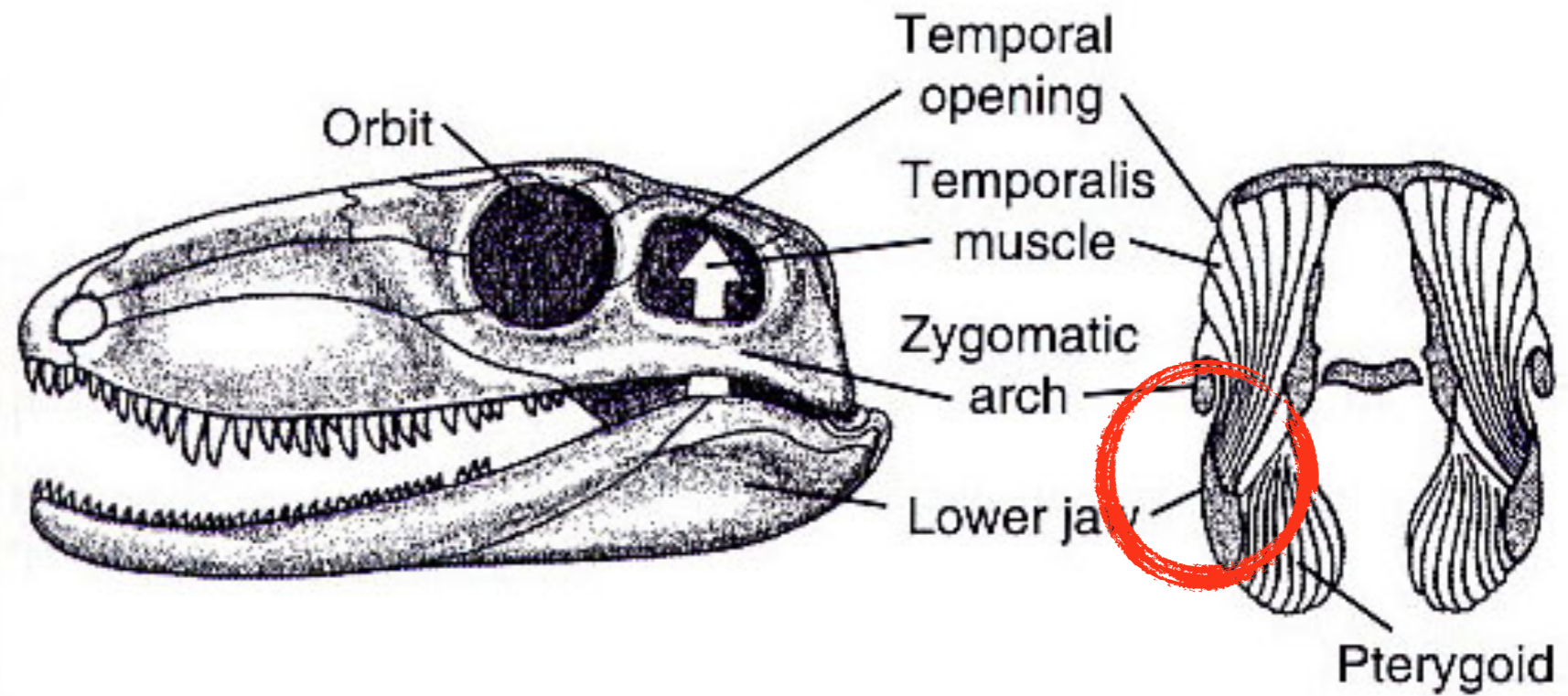


Mamífero

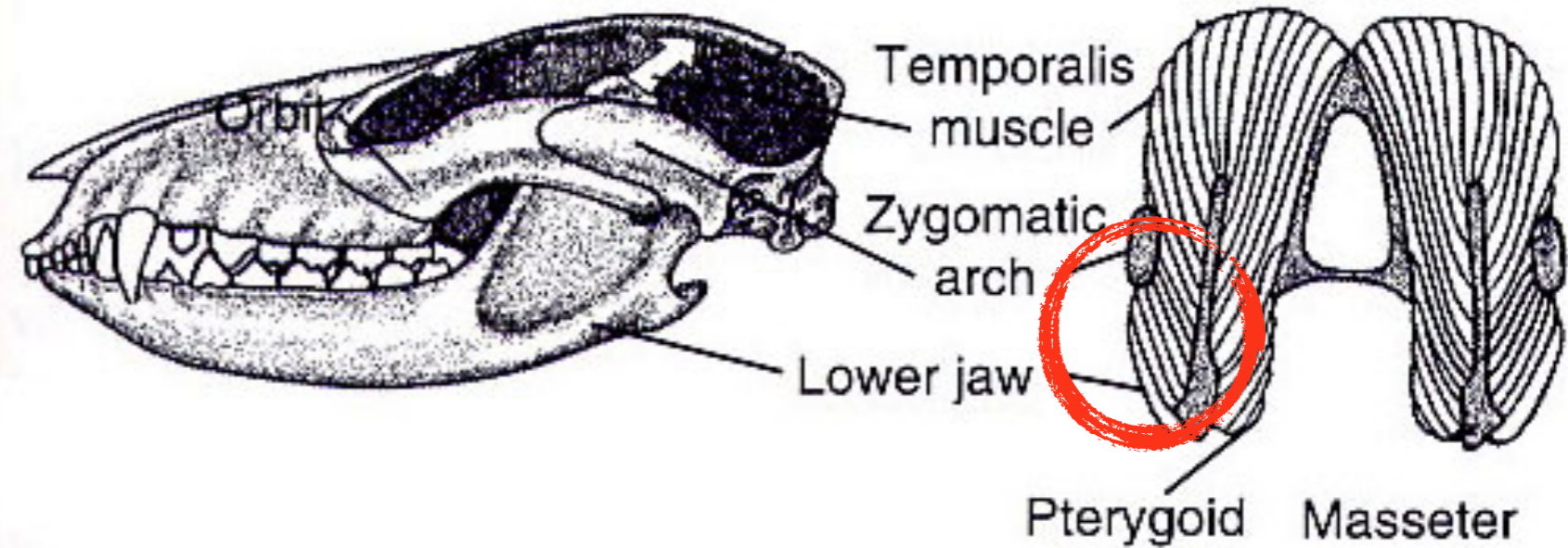


Eficiência do processamento de alimentos

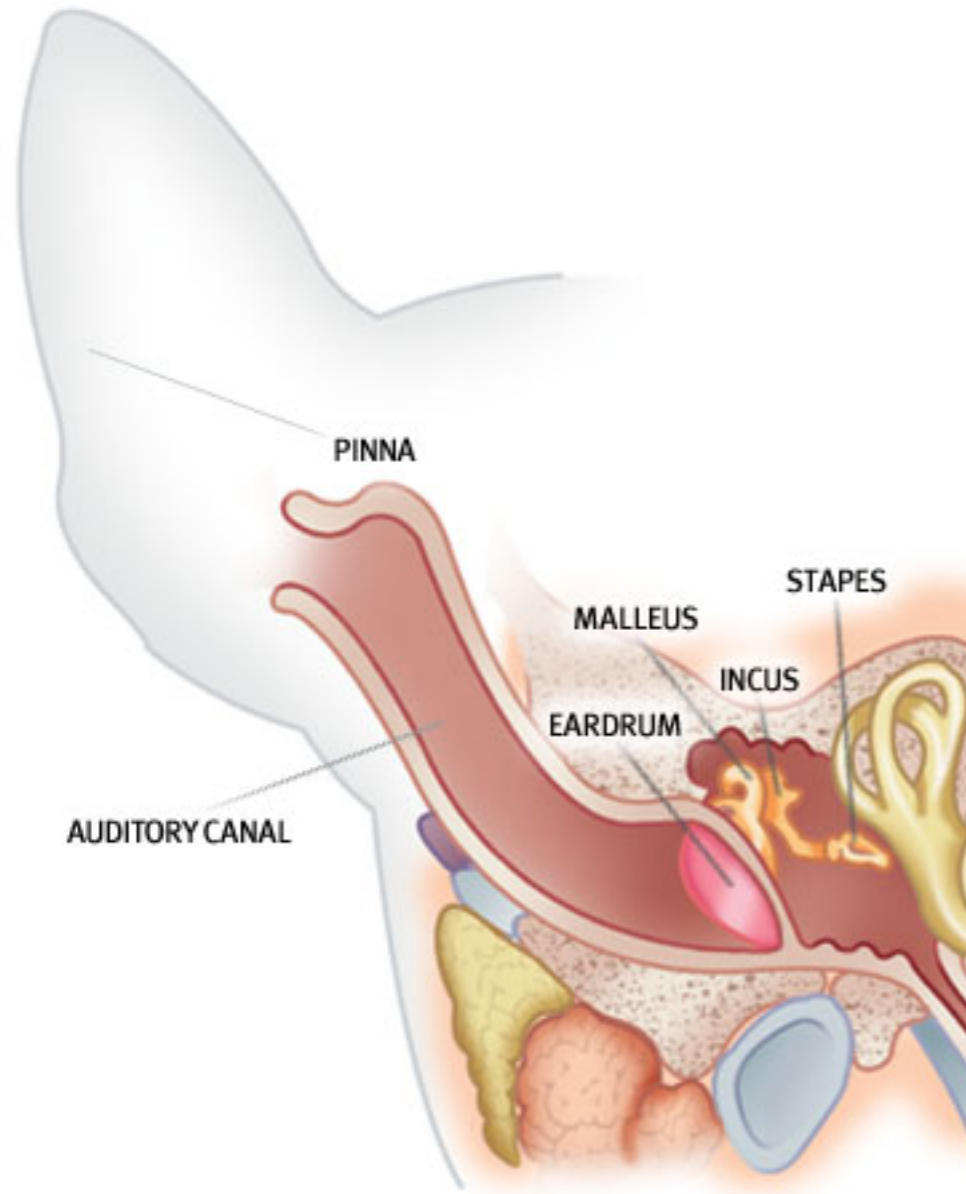
Pelicossauro



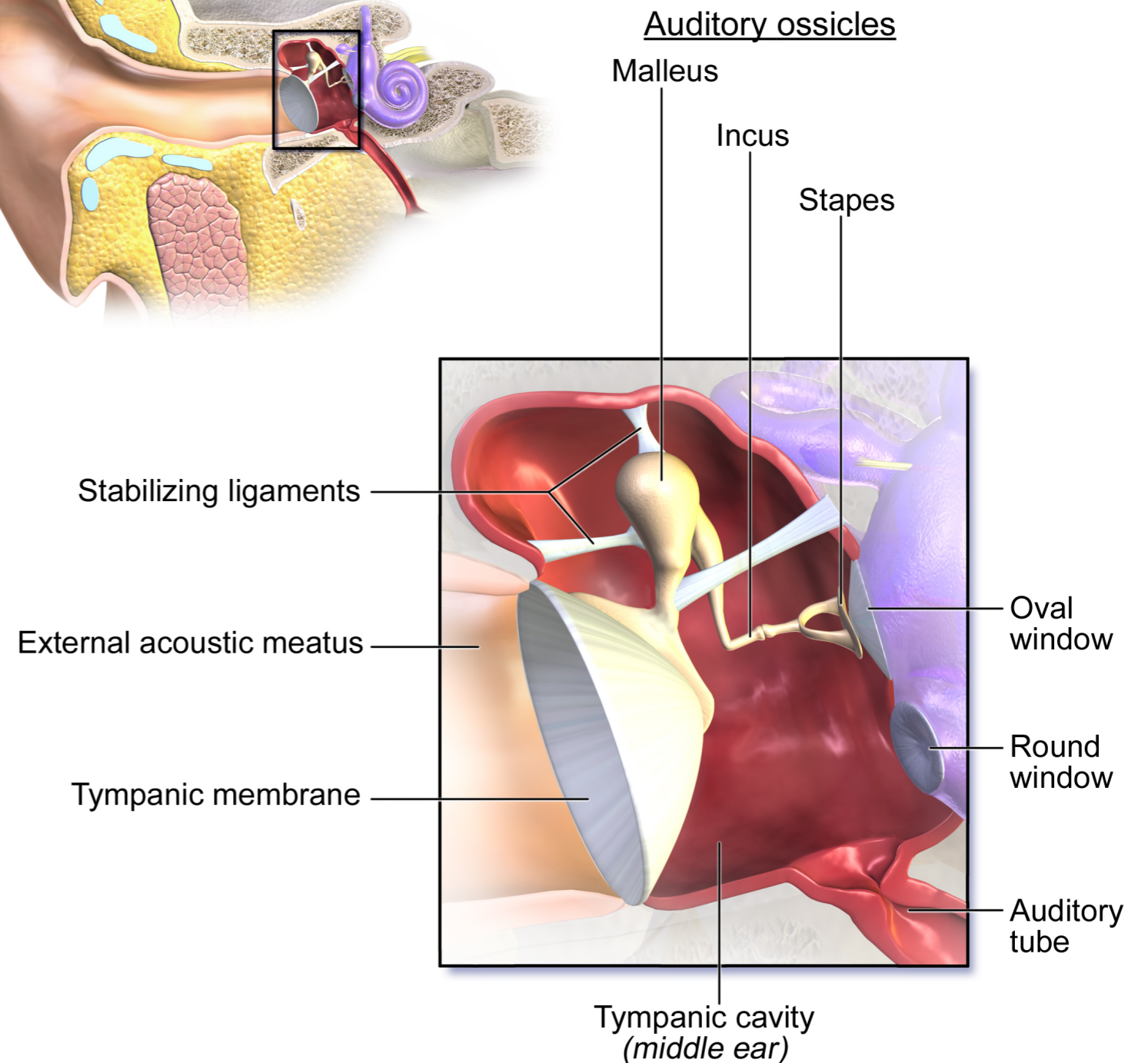
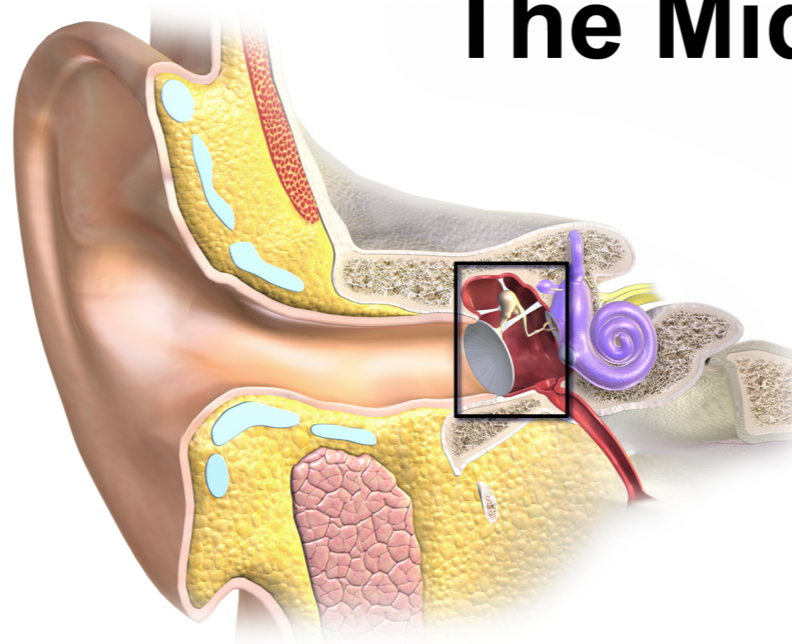
Mamífero



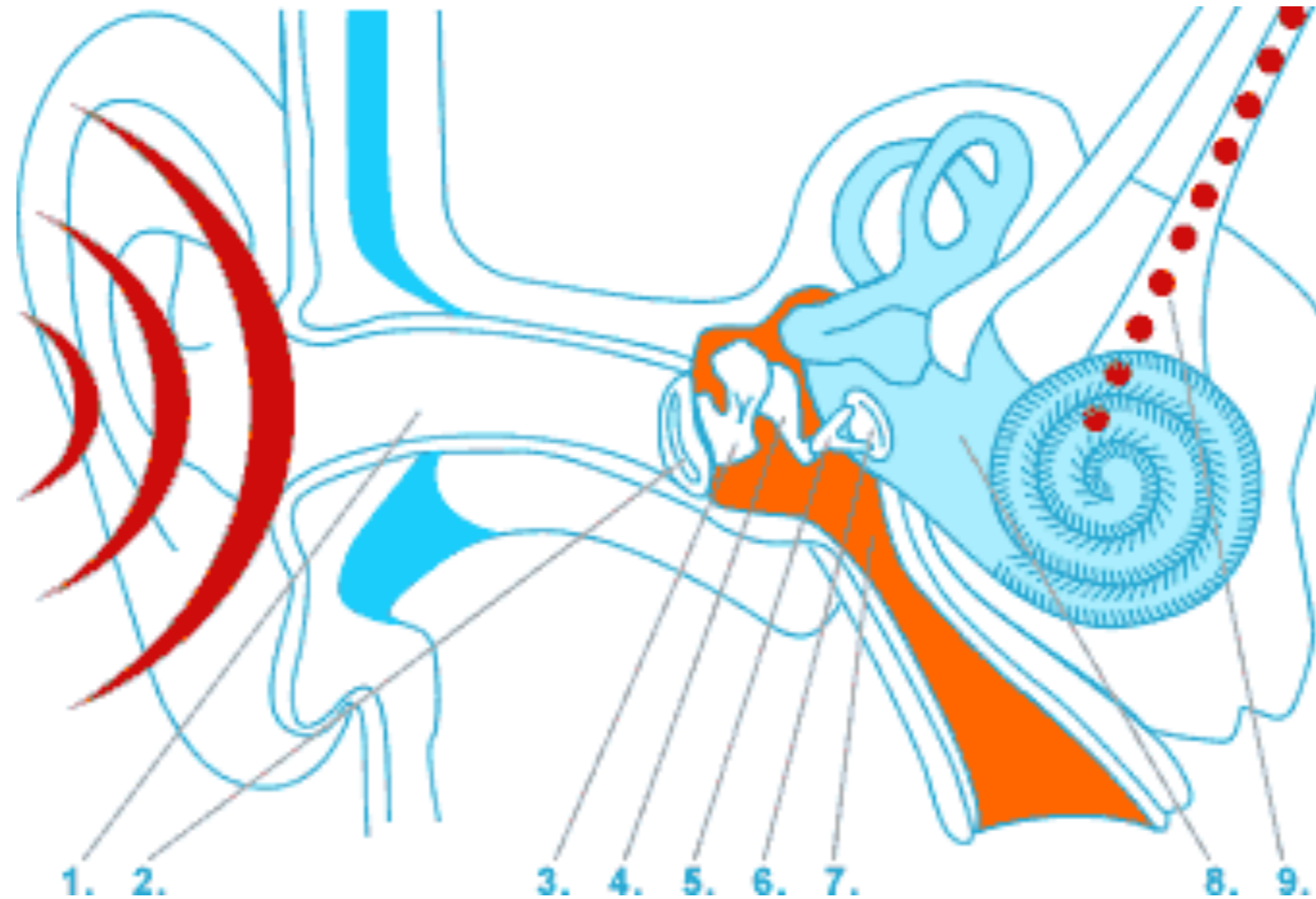
Conflito entre alimentação e audição



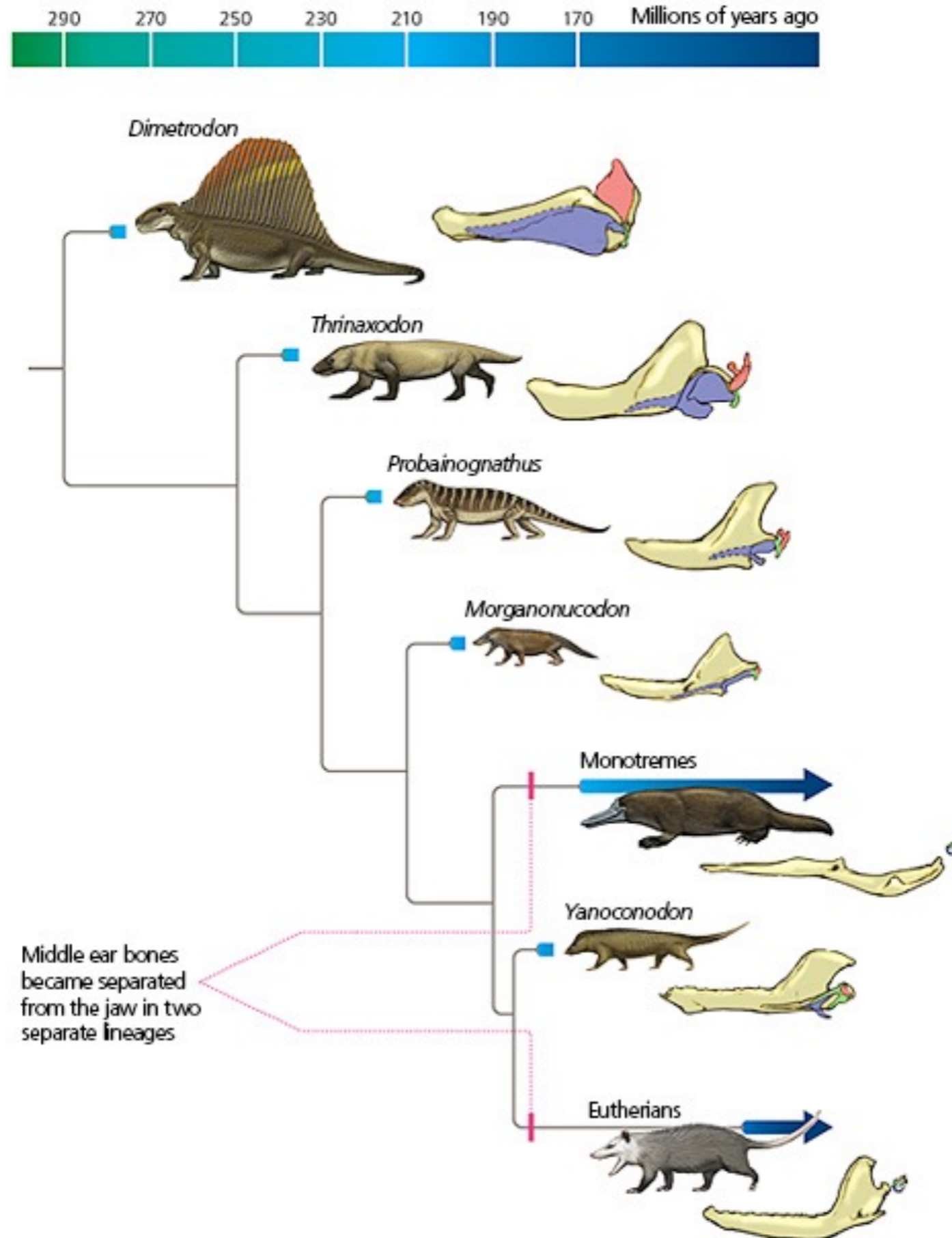
The Middle Ear



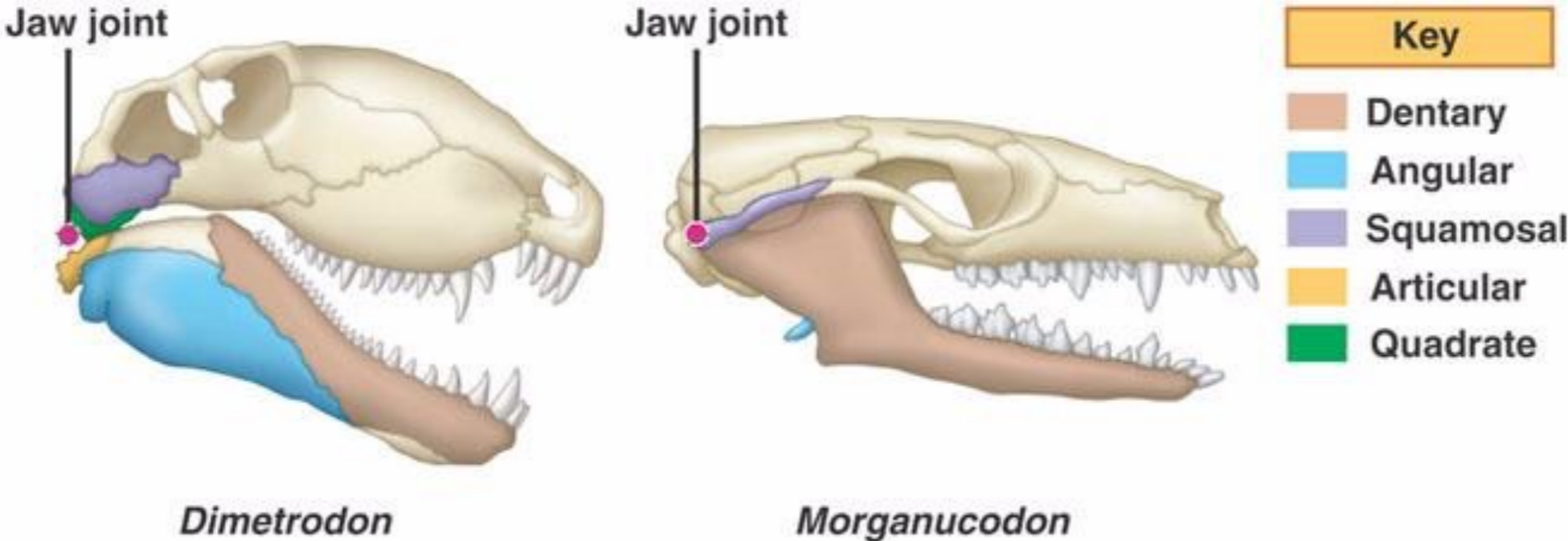
Conflito entre alimentação e audição



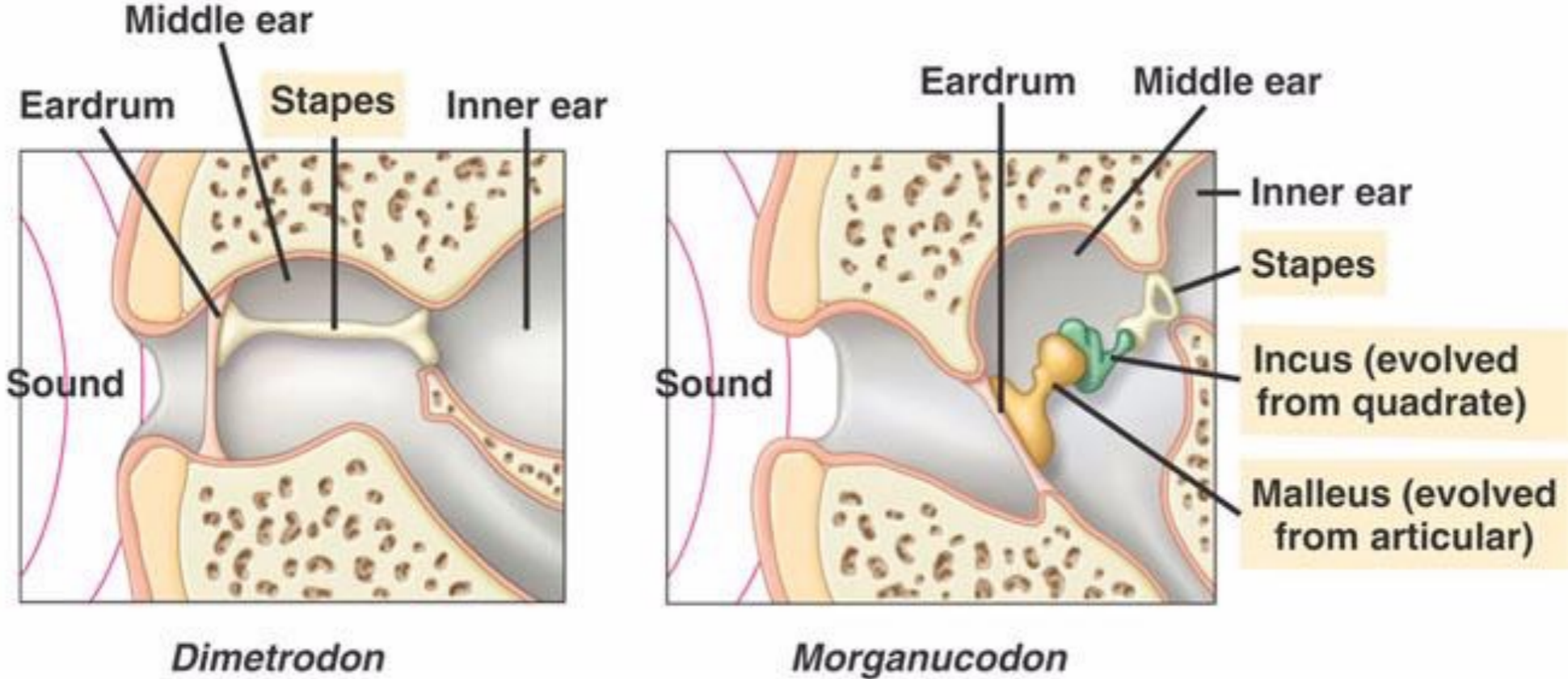
Conflito entre alimentação e audição



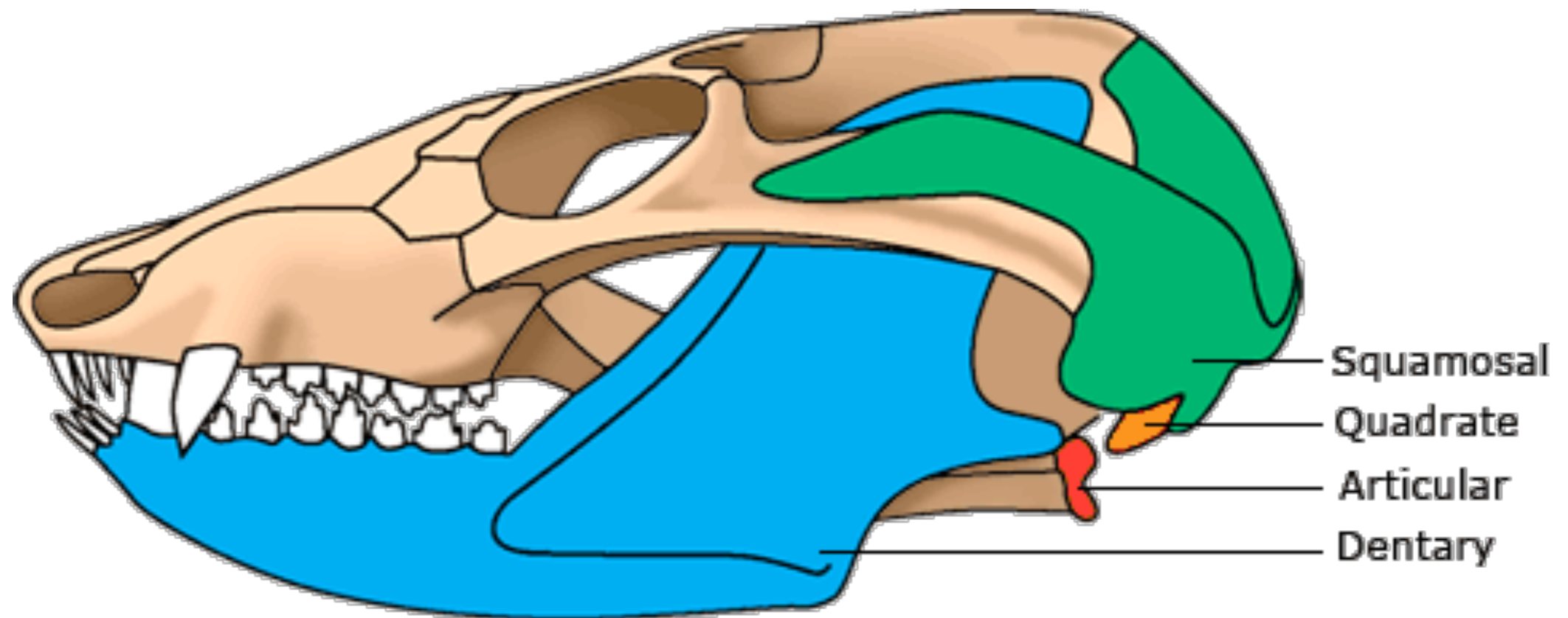
Conflito entre alimentação e audição



(a)

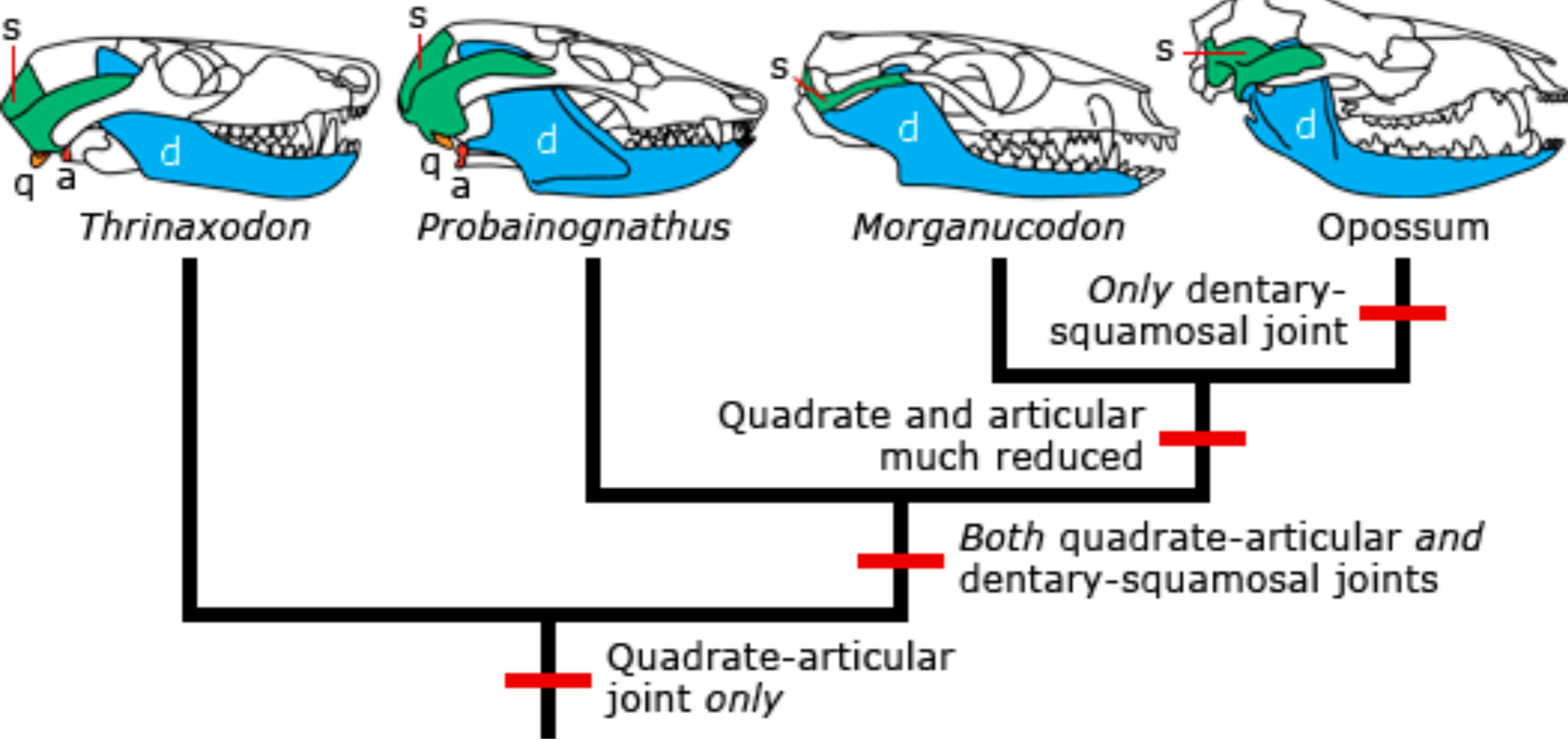


Conflito entre alimentação e audição



Cinodonte

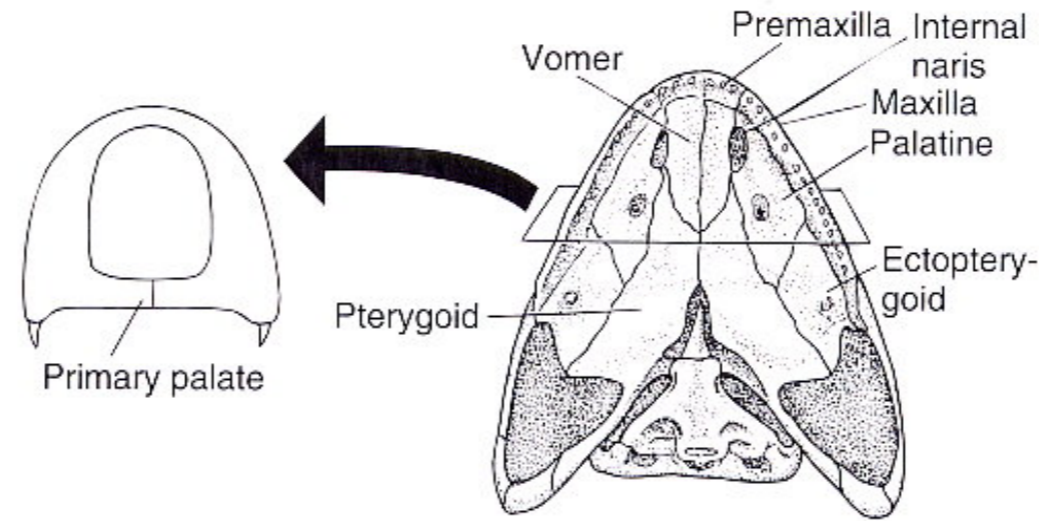
Conflito entre alimentação e audição



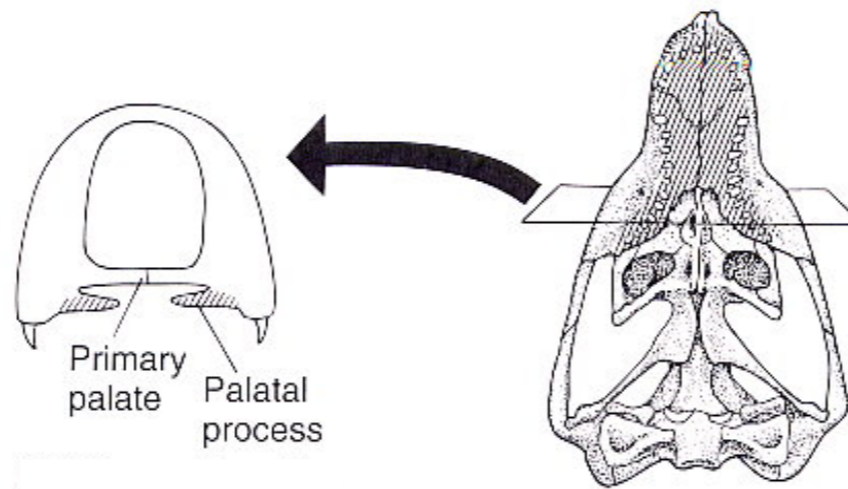
Aumento da taxa
metabólica:

Eficiência do
processamento de
alimentos

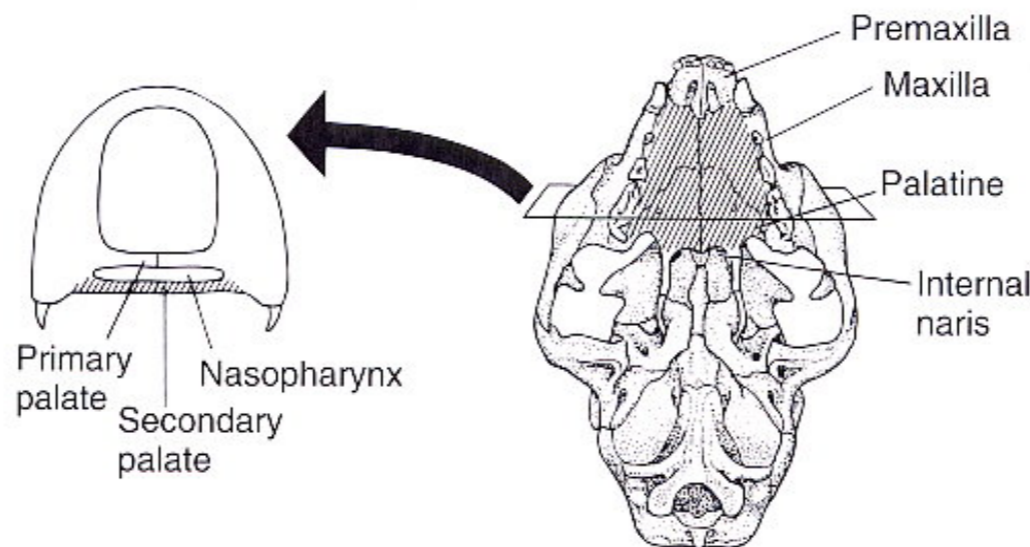
Conflito entre alimentação e respiração



Anfíbio

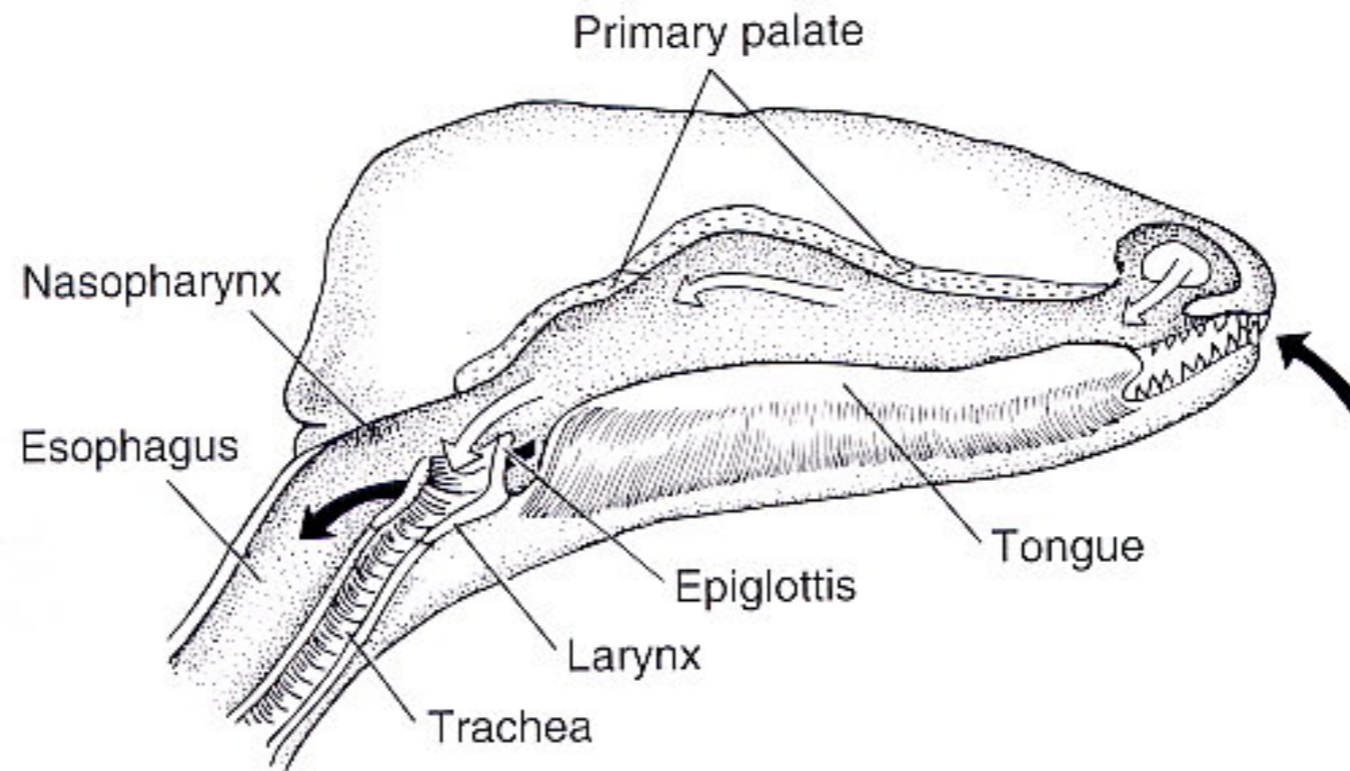


Cinodonte

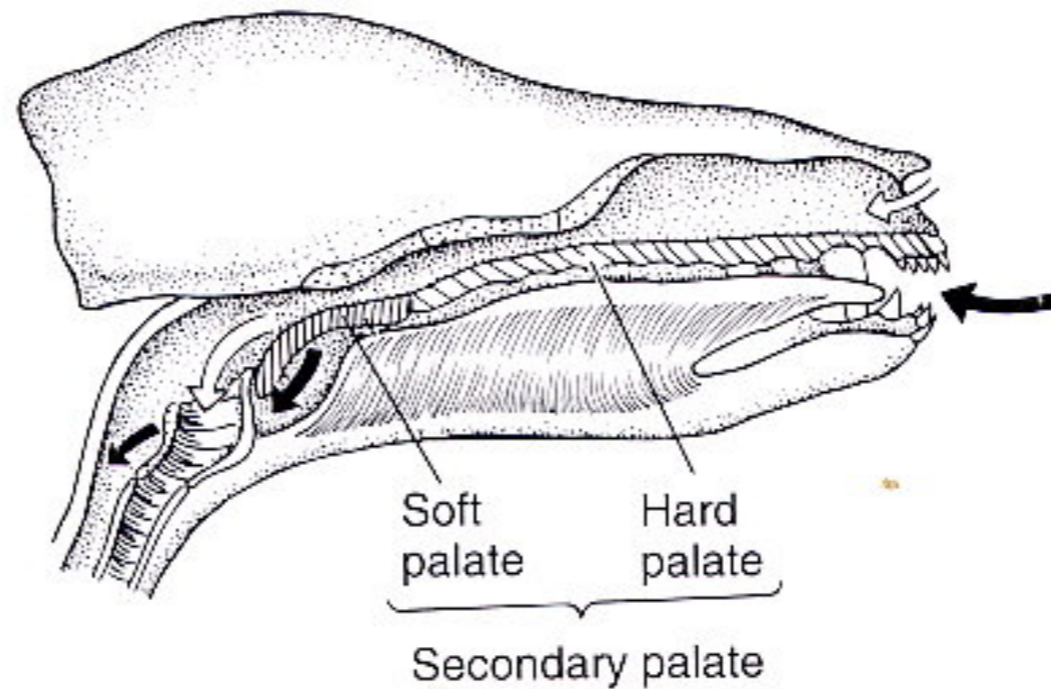


Mamífero

Conflito entre alimentação e respiração



Pelicossauro



Mamífero

Especialização dos dentes



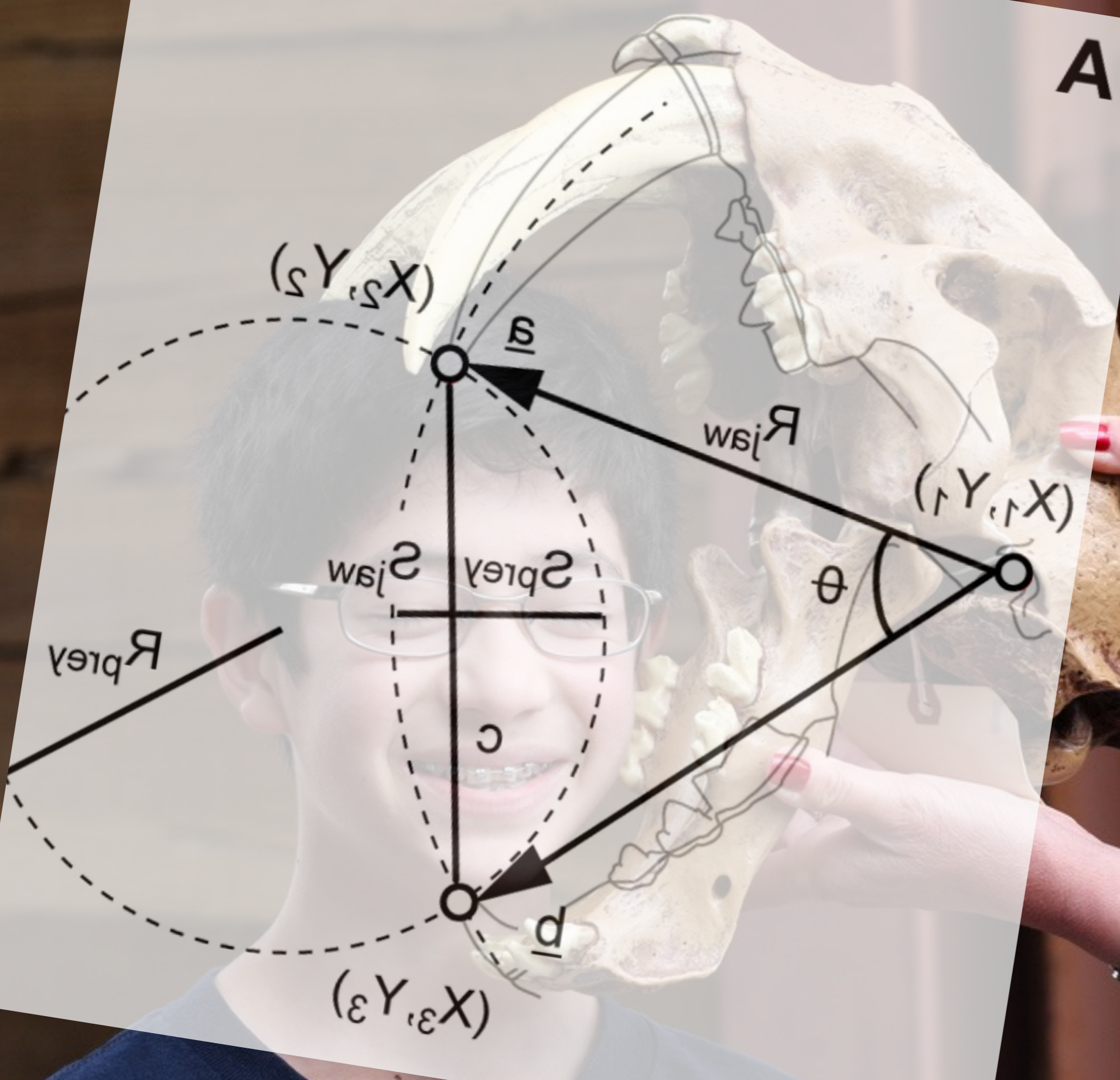
An old paleontological in joke proclaims that mammalian evolution is a tale told by teeth mating to produce slightly altered descendant teeth.

— *Stephen Jay Gould* —

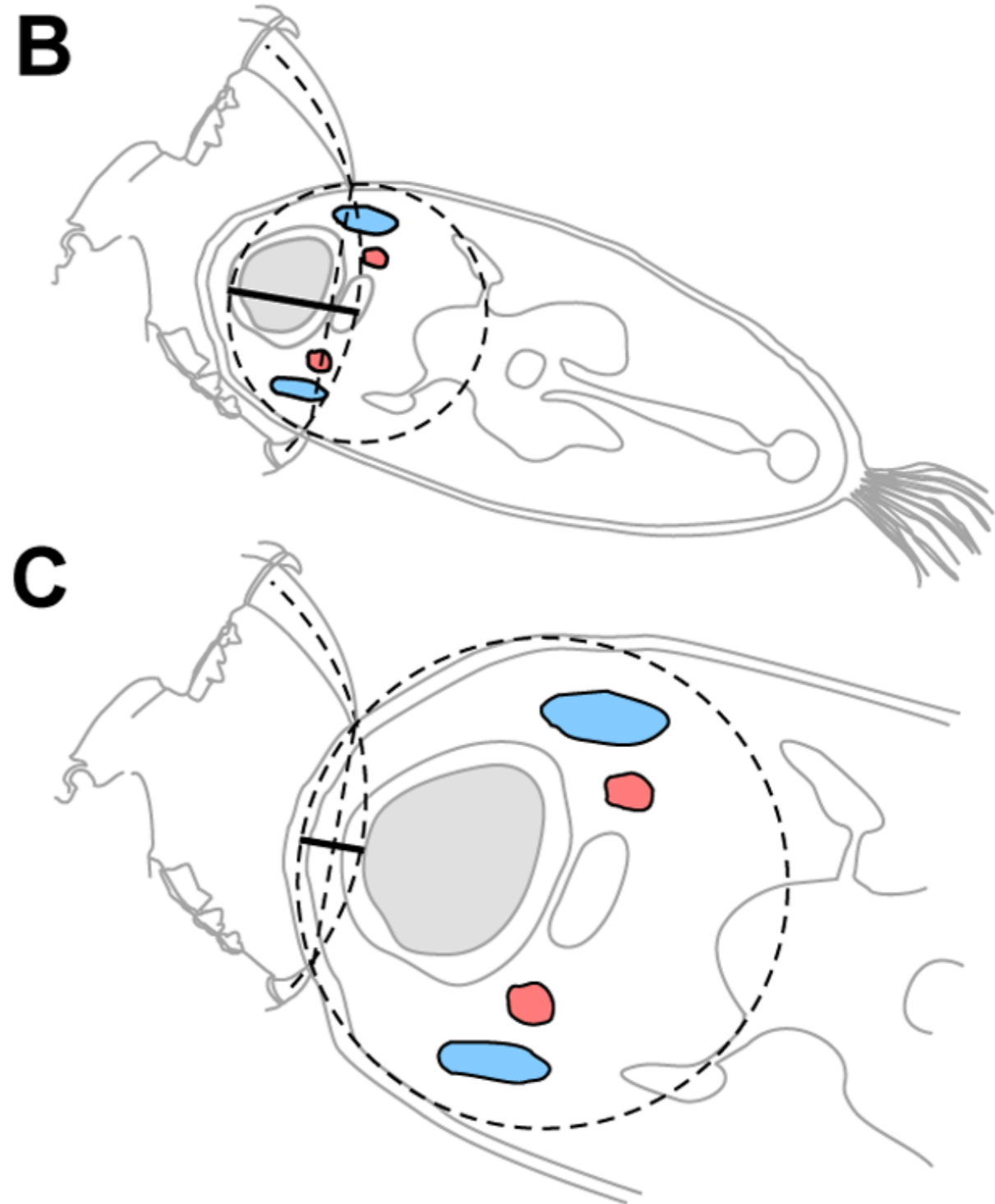
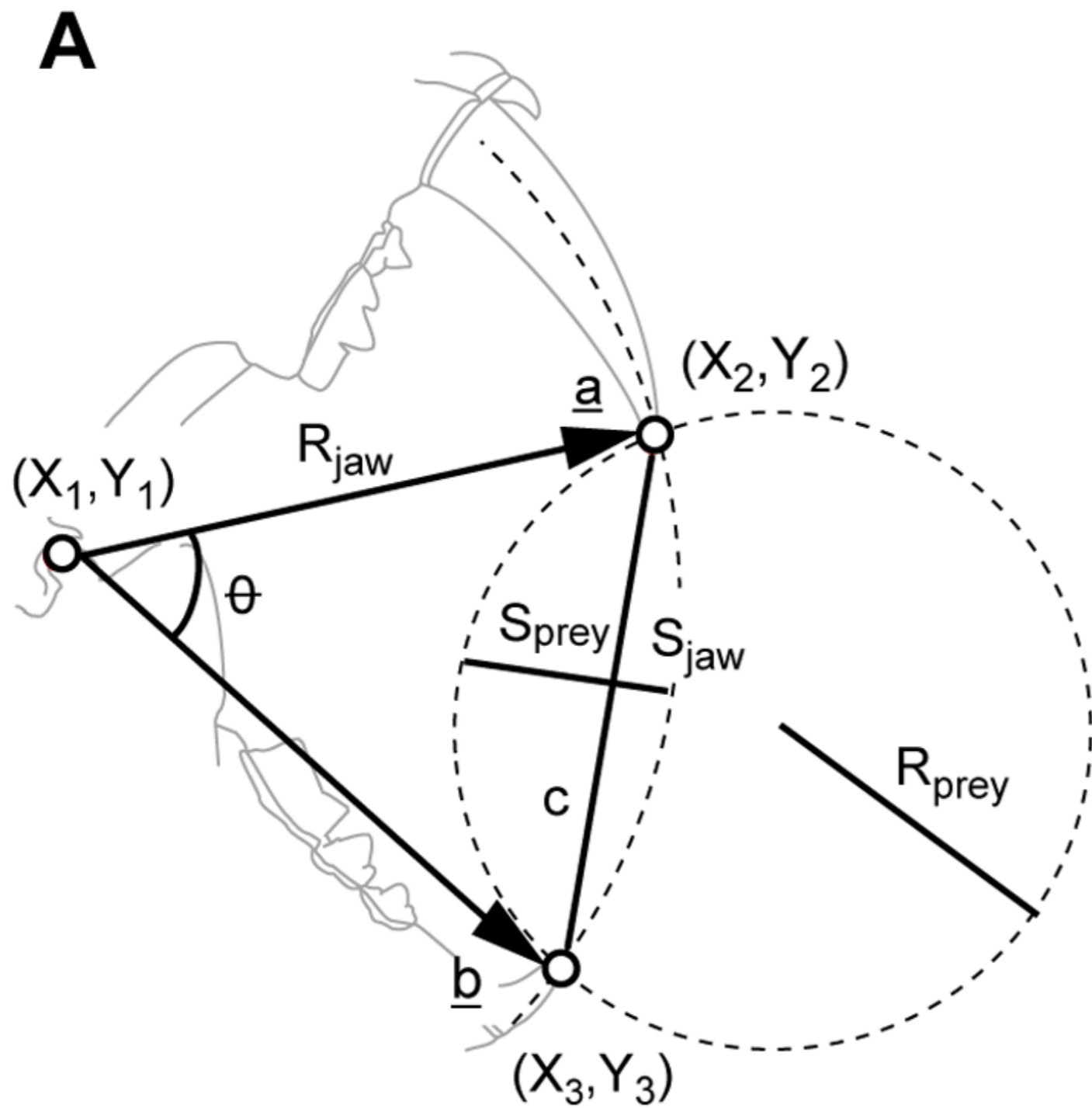
AZ QUOTES

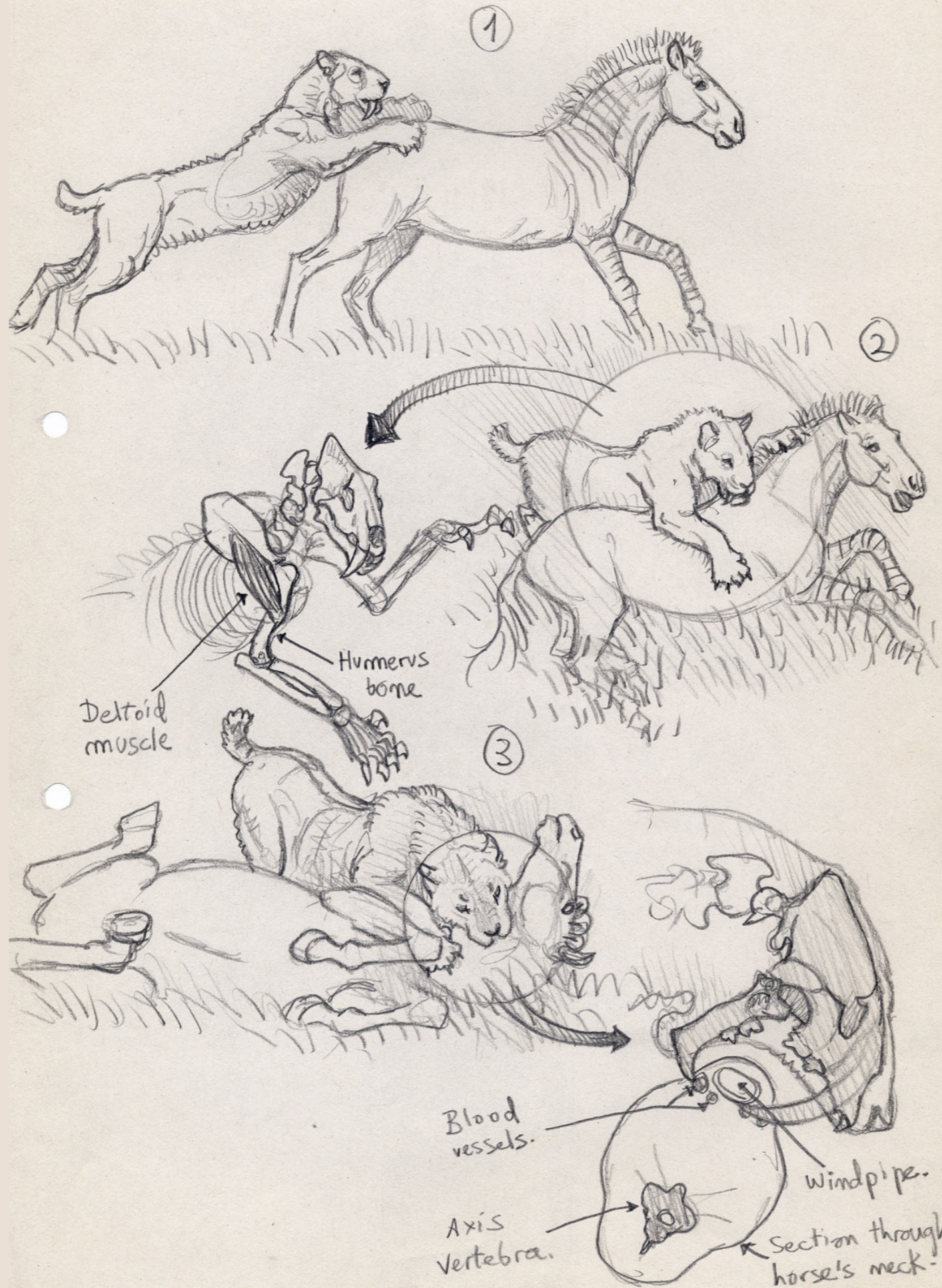


A

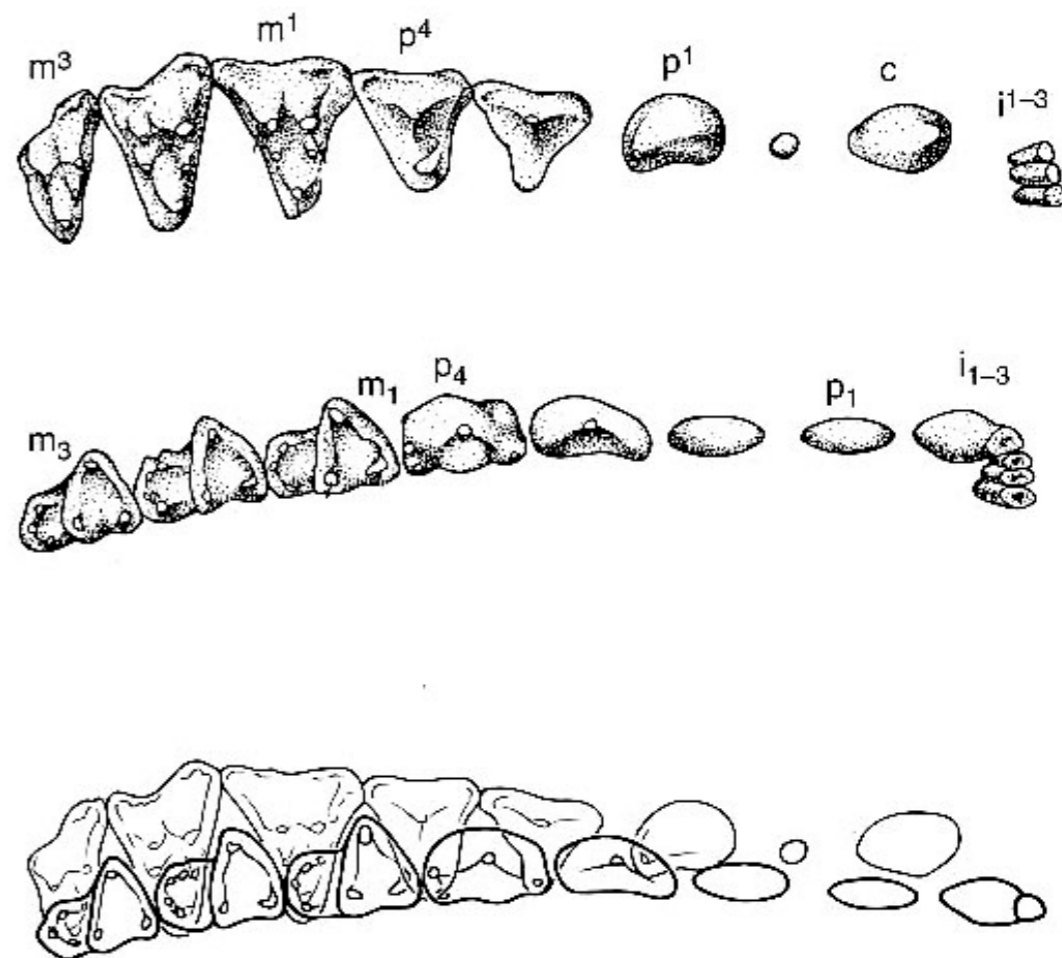
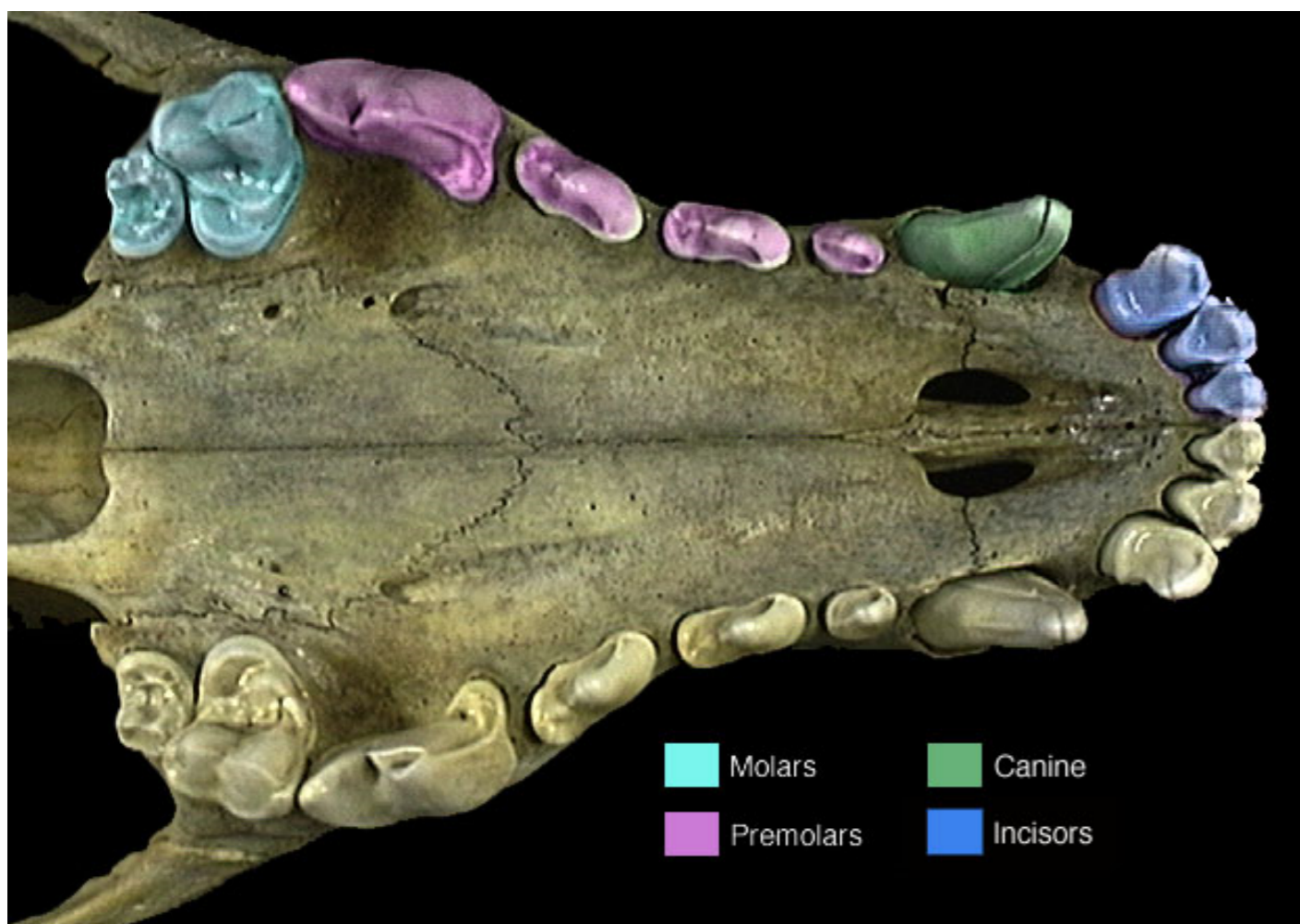


Especialização dos dentes

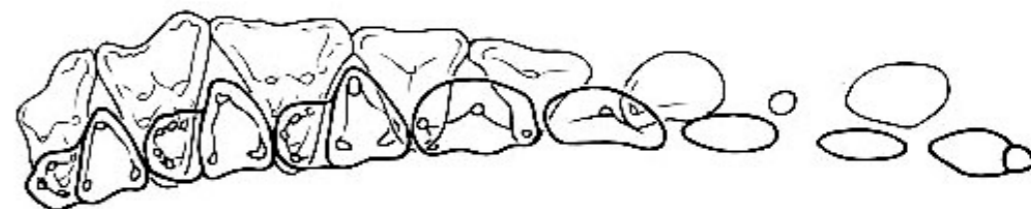
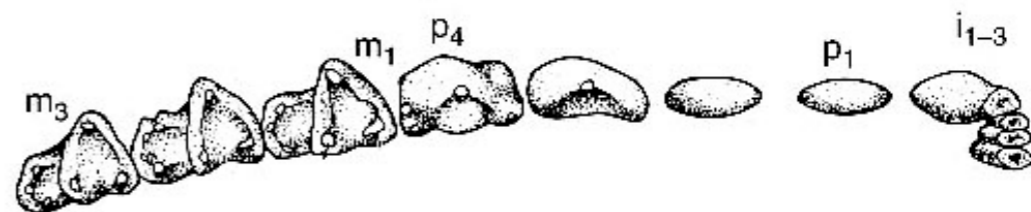
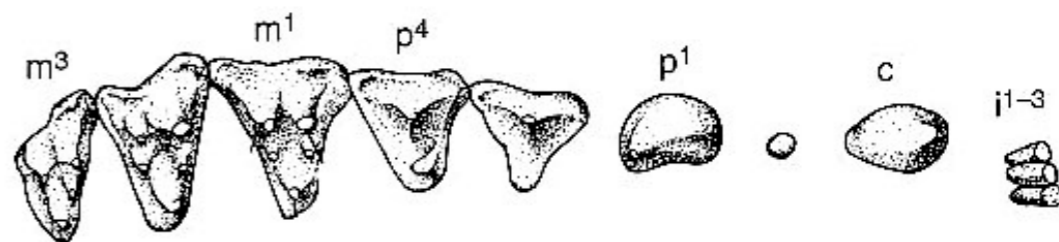
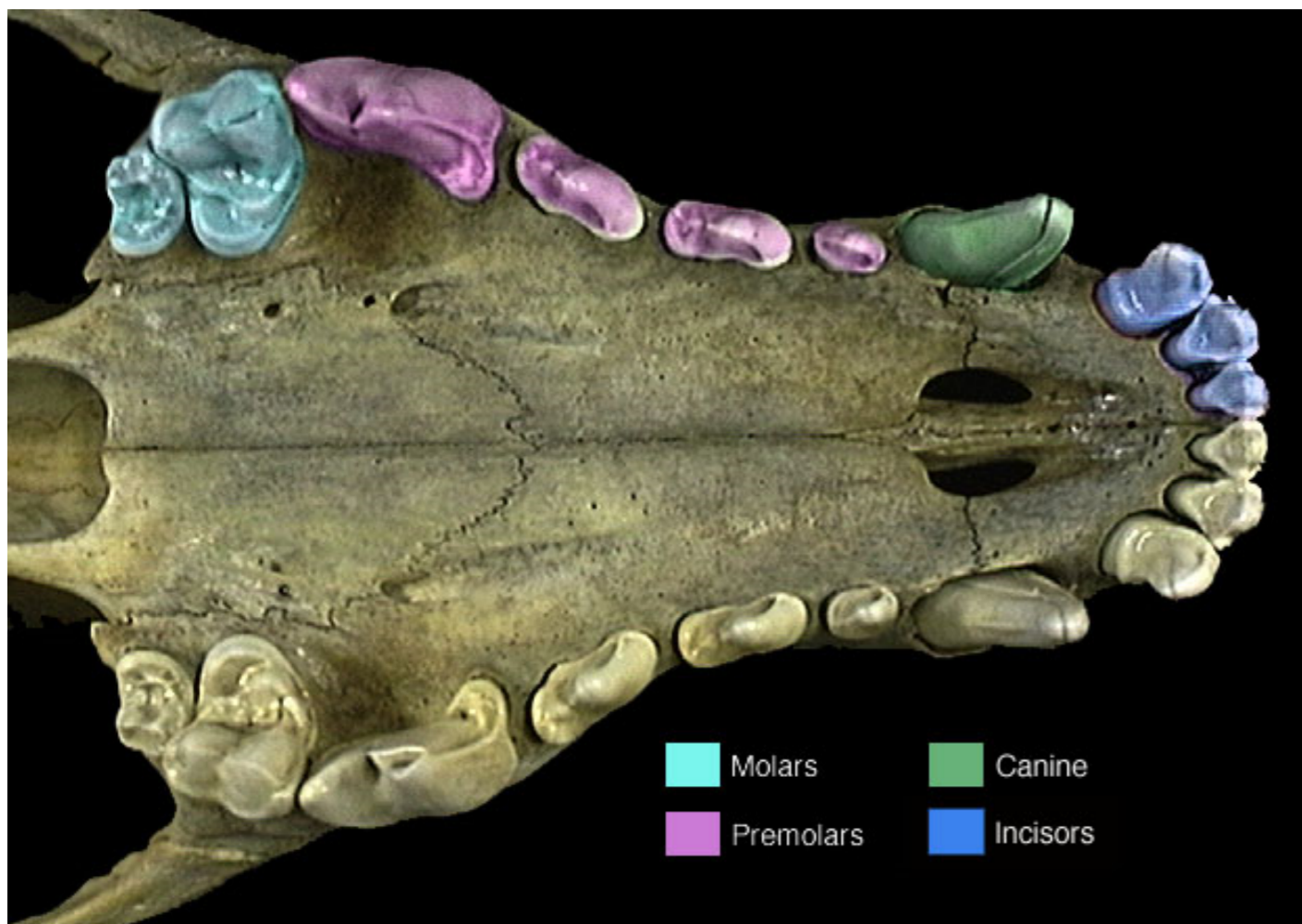




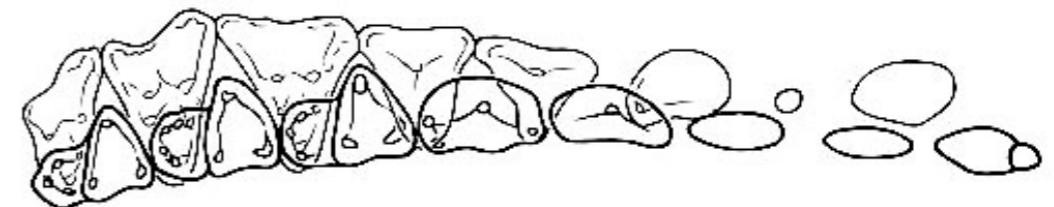
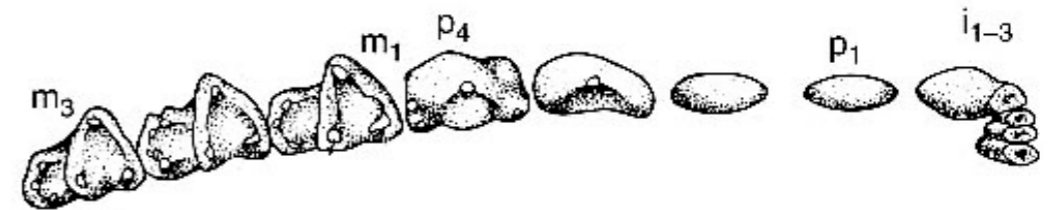
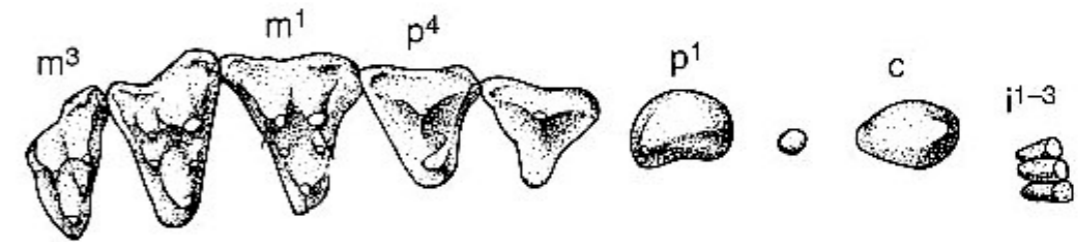
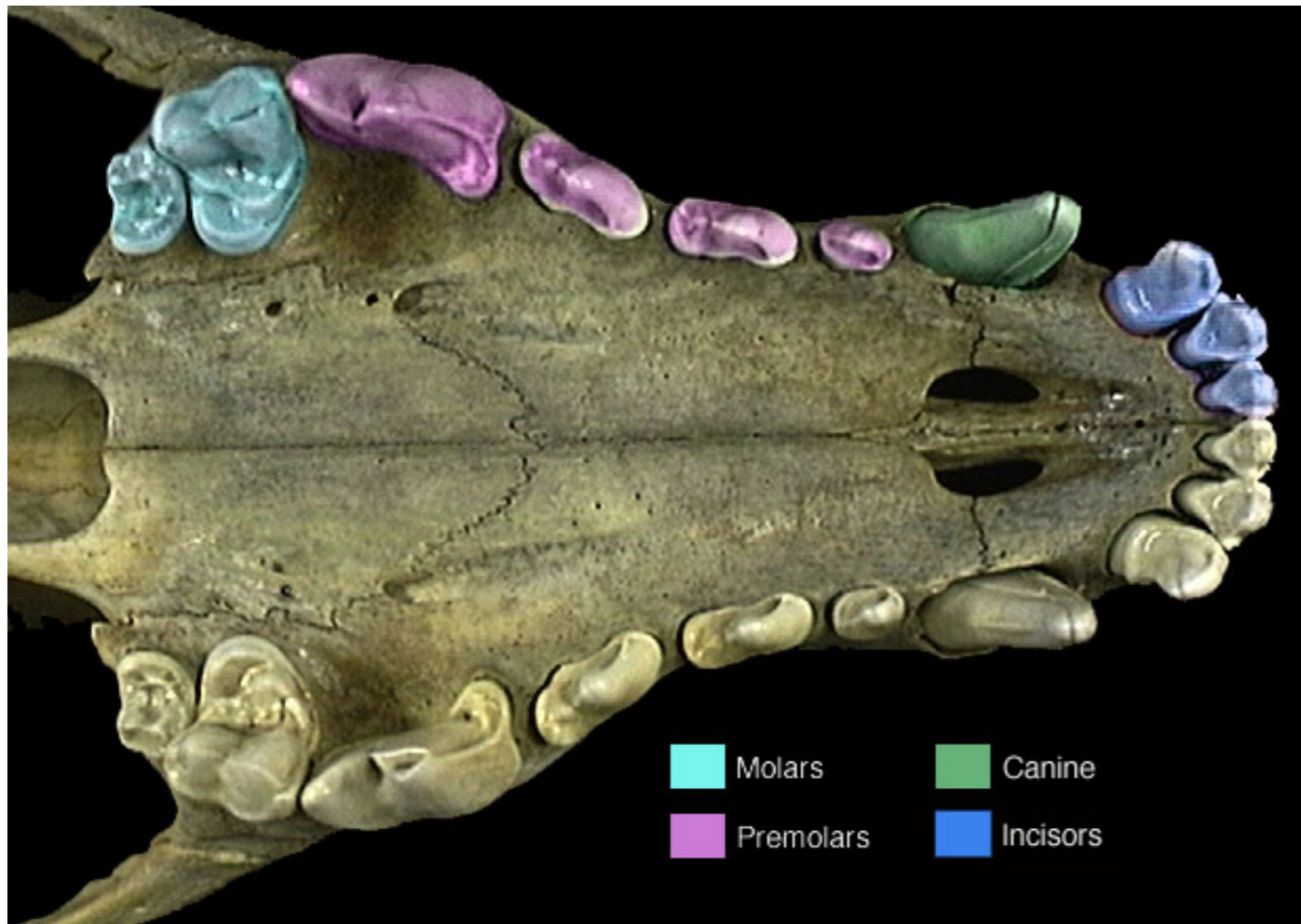
Especialização dos dentes



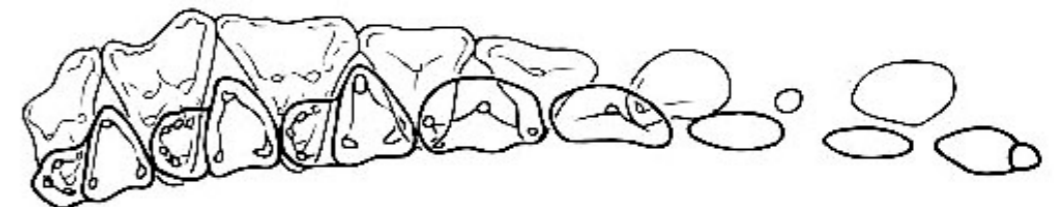
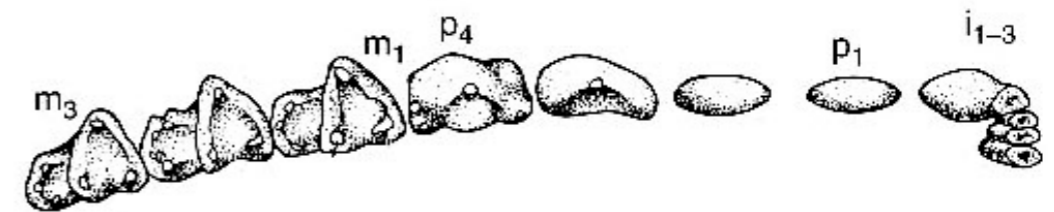
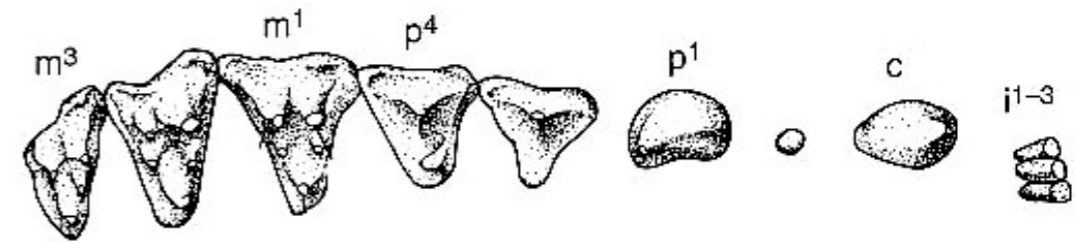
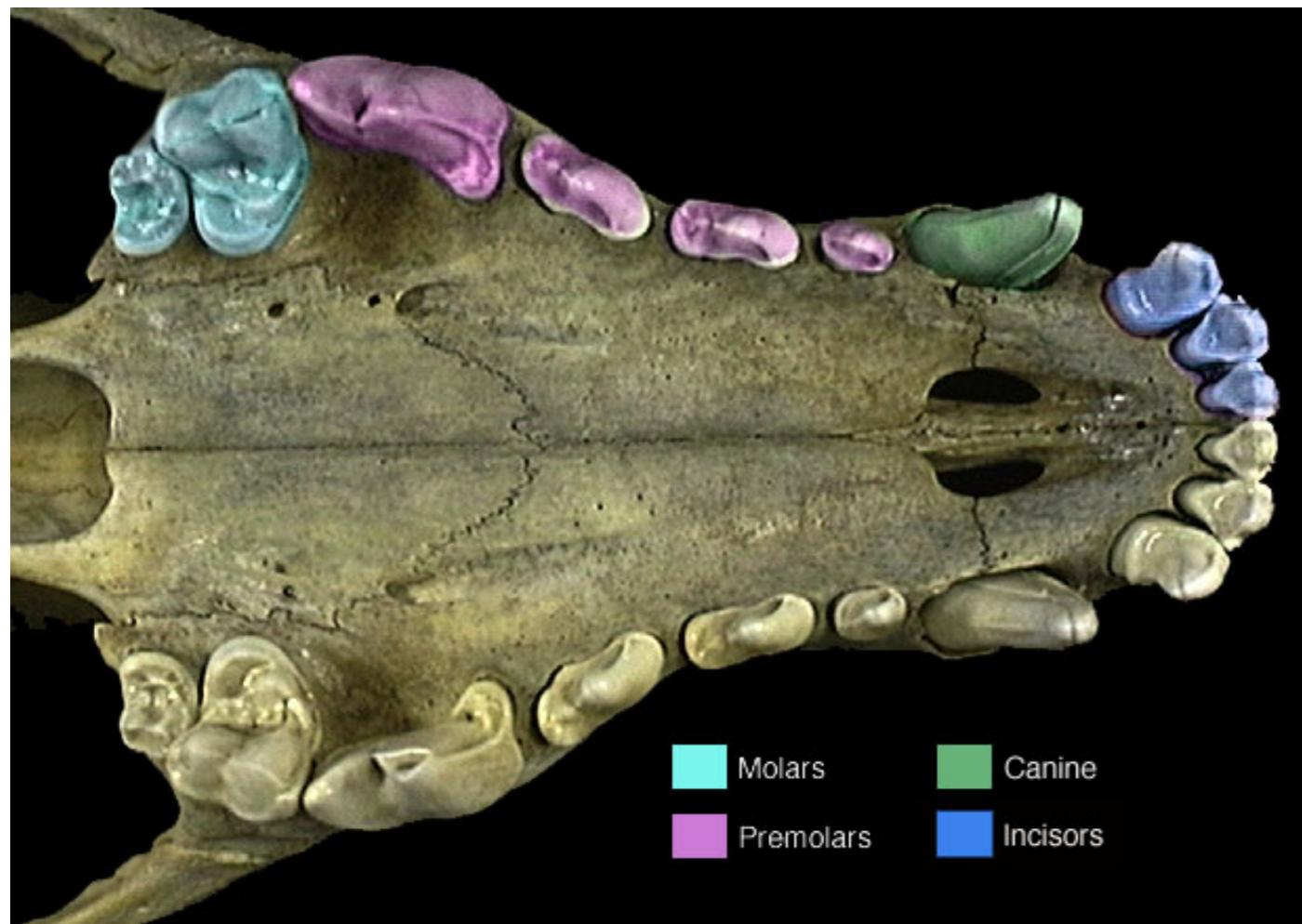
Especialização dos dentes



Especialização dos dentes

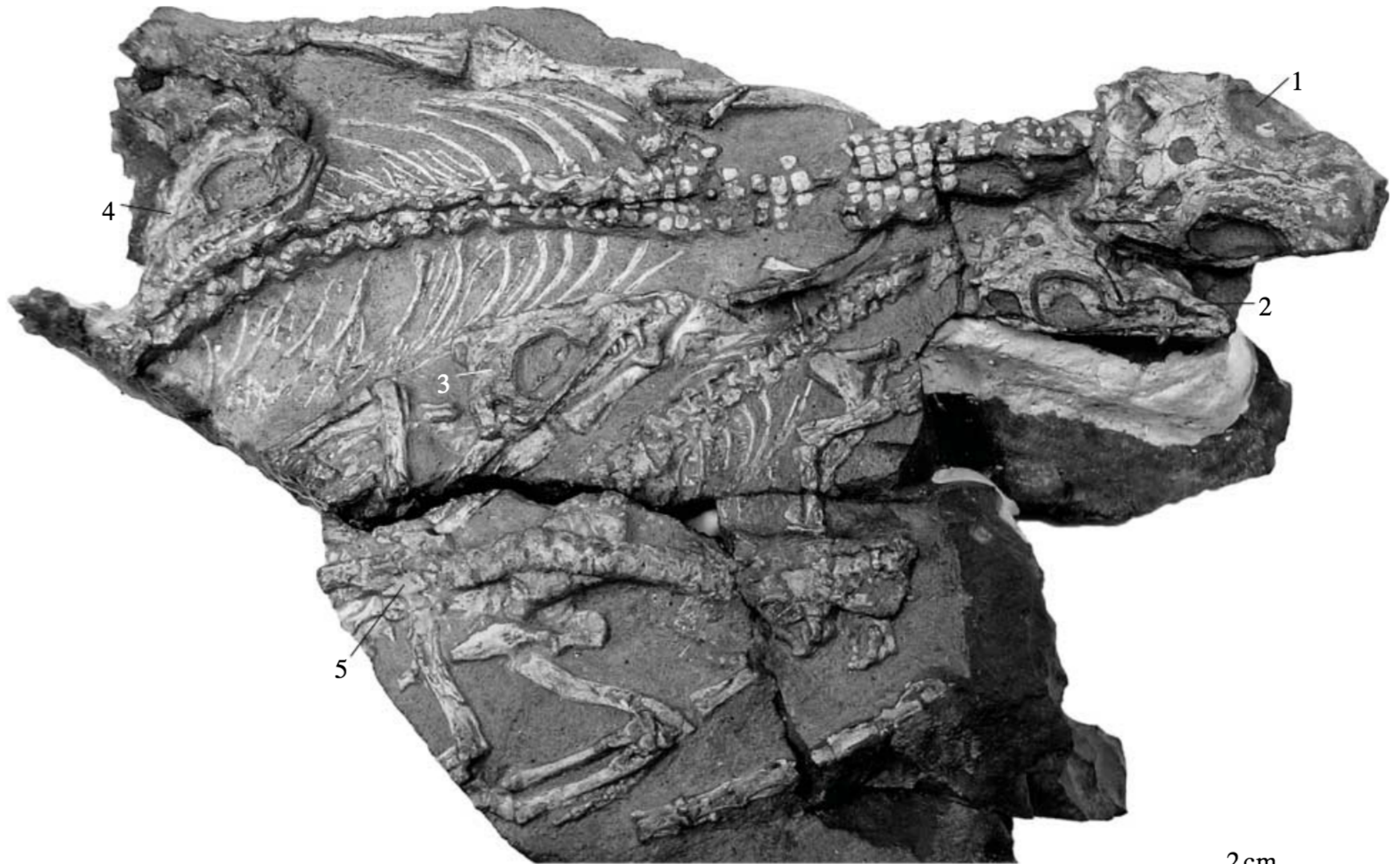


Especialização dos dentes

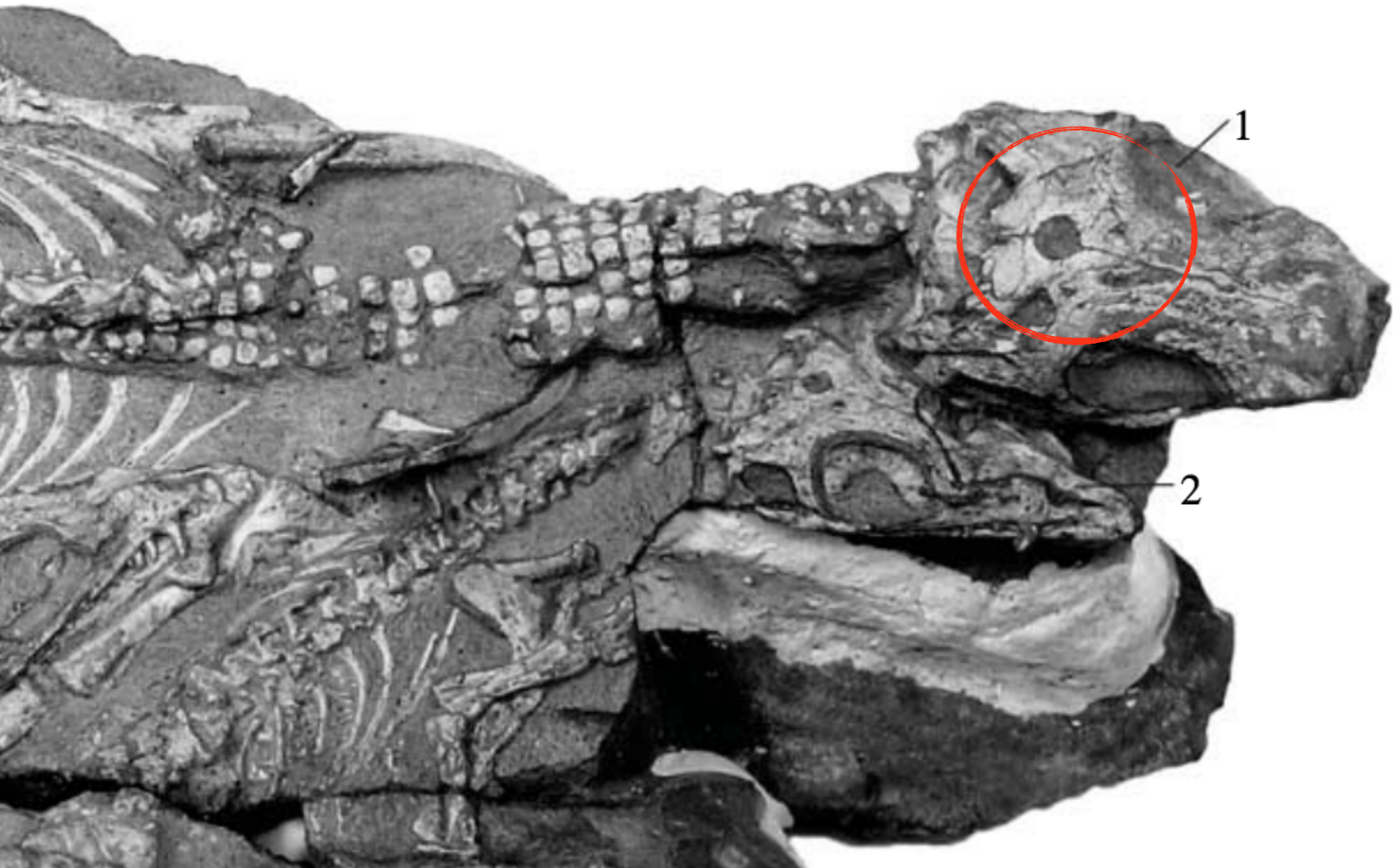


Surgimento da
endotermia

Como inferir?



Surgimento da endotermia



Surgimento da endotermia

DINODONTOSSAURO Extinta
(crânio e mandíbula)
DINODONTOSAUR (skull and jaws) - Extinct

Nome científico:

Dinodontosaurus turpior (von Huene, 1935)

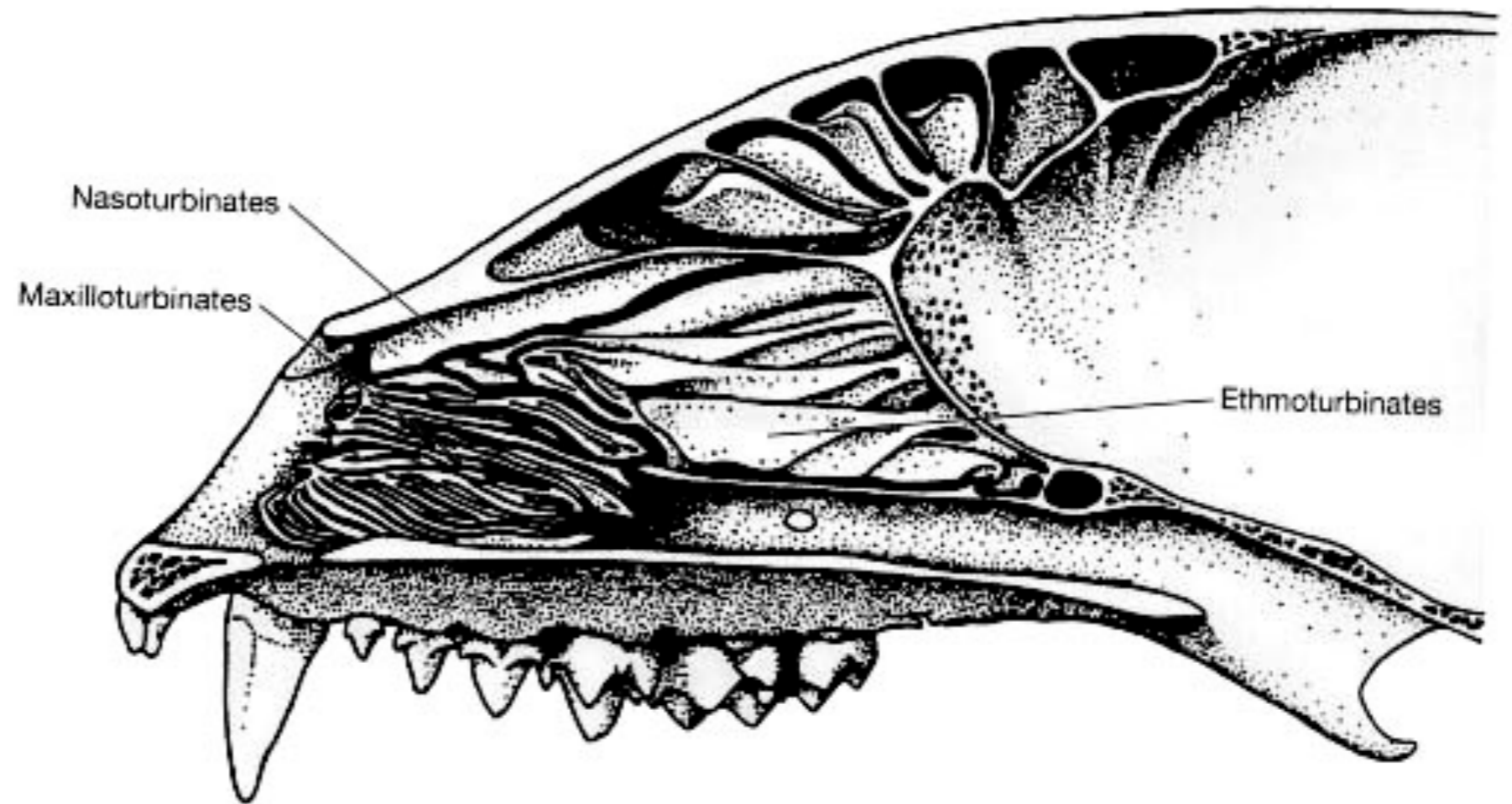
Distribuição: Rio Grande do Sul, Brasil.

Período: Triássico - 238 milhões de anos atrás.

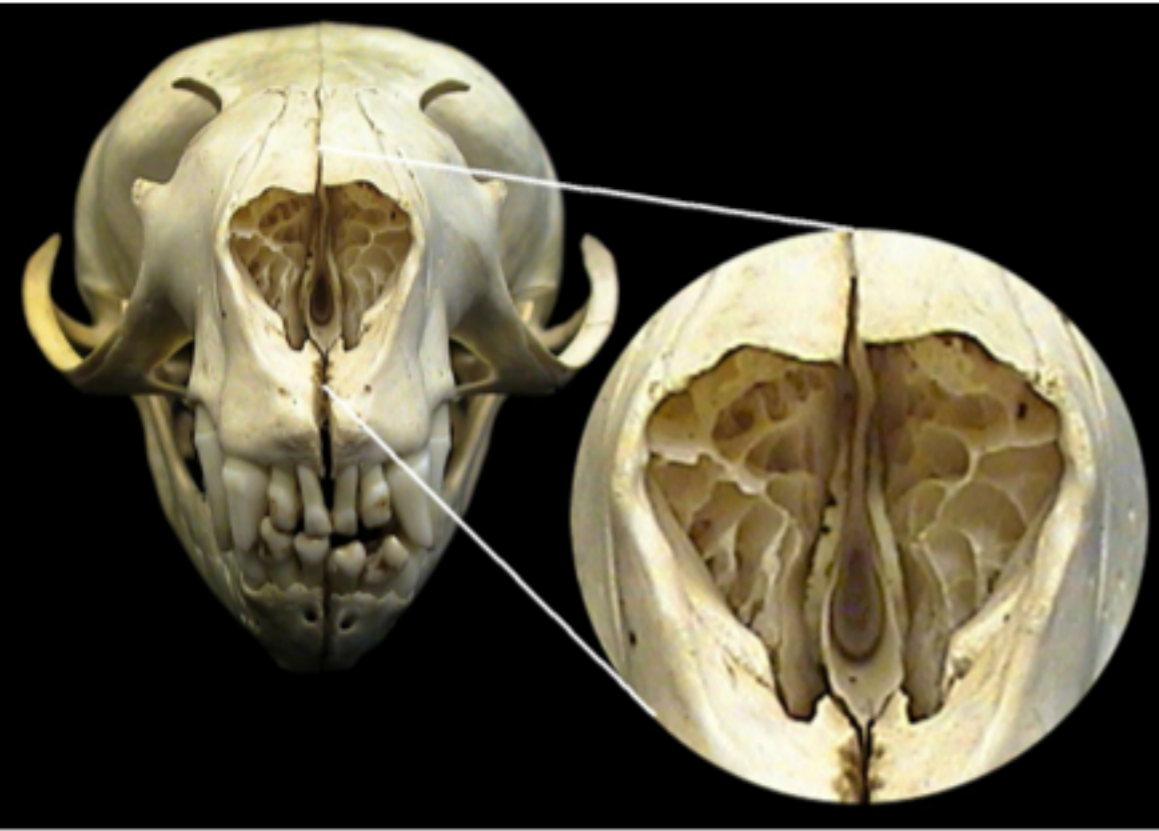
Estando entre os vertebrados terrestres mais abundantes na Terra durante o Permiano, os dicinodontes estavam entre as poucas linhagens que sobreviveram à grande extinção do final desse período. O registro fóssil sugere que espécies como a do dinodontossauro já apresentavam estratégias de coexistência em grupos e cuidado parental. Quando adultos, os indivíduos dessa espécie podiam ultrapassar 1 tonelada.



Surgimento da endotermia

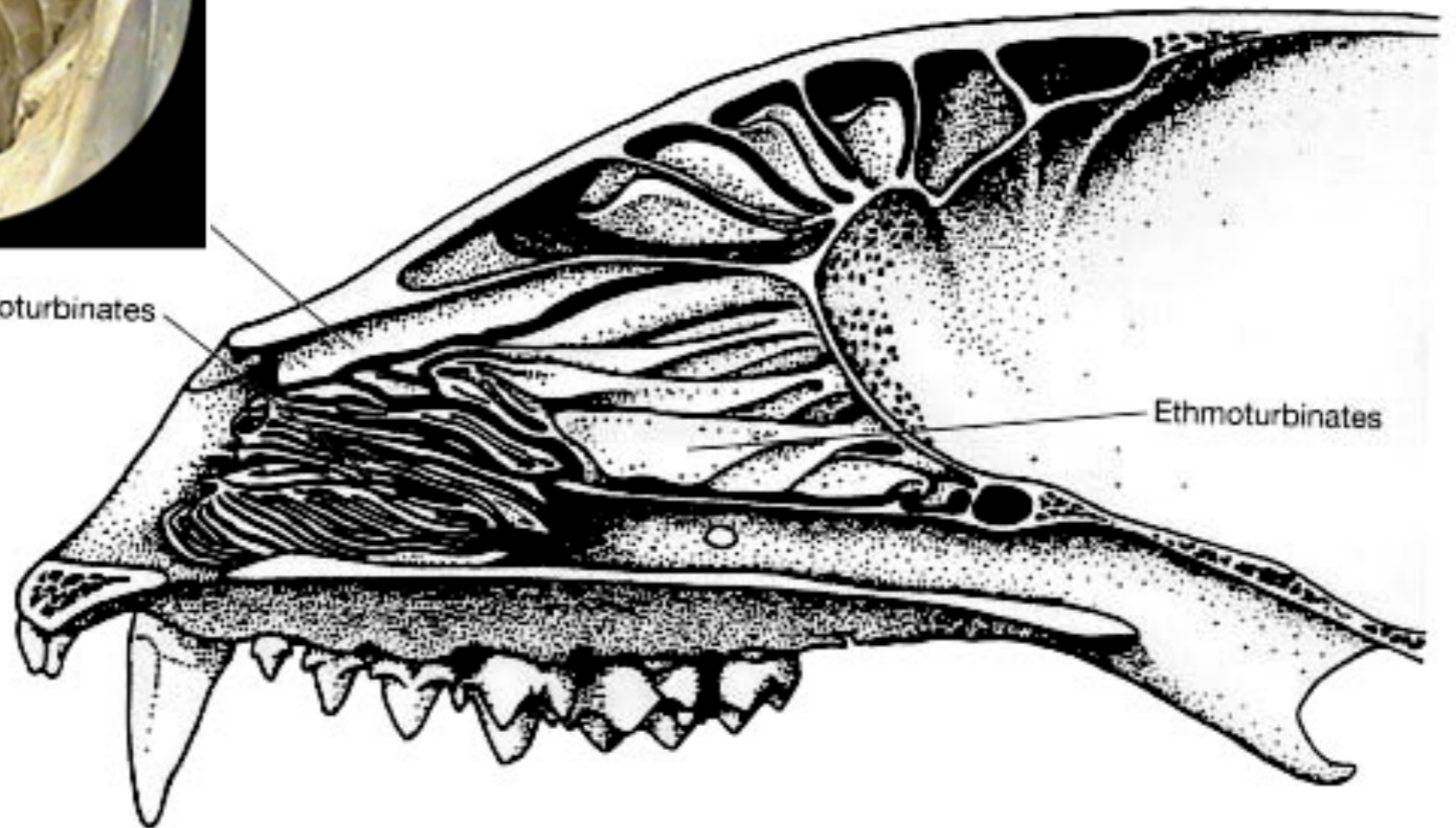


Surgimento da endotermia



Maxilloturbinates

Ethmoturbinates



Resumo do nosso conhecimento
sobre as tendências:

Resumo do nosso conhecimento sobre as tendências:

Eficiência do processamento de alimentos



Resumo do nosso conhecimento sobre as tendências:

Eficiência da locomoção

