

# Last call for abstract revisions

**If your abstract was no accepted and you did not turn in a revision, a topic will be assigned to you**

\*via catcourses\*

## Guidelines

The Natural History report is due: *April 25, 2016* in SECTION.

- **Report Body:** 4 pages long (no more, no less)
- **References:** Place your references on the 5th page. The format should be: “Author(s). Date. Title. Source.” All references must be cited at least once within the text of the report (see below for instructions regarding parenthetical citations)
- Need *at least* 5 references
- **Margins:** 1 inch (top, bottom, left, right)
- **Spacing:** 1.5
- **Font:** 12 point Times New Roman
- ***Ignoring these guidelines will result in loss of points***

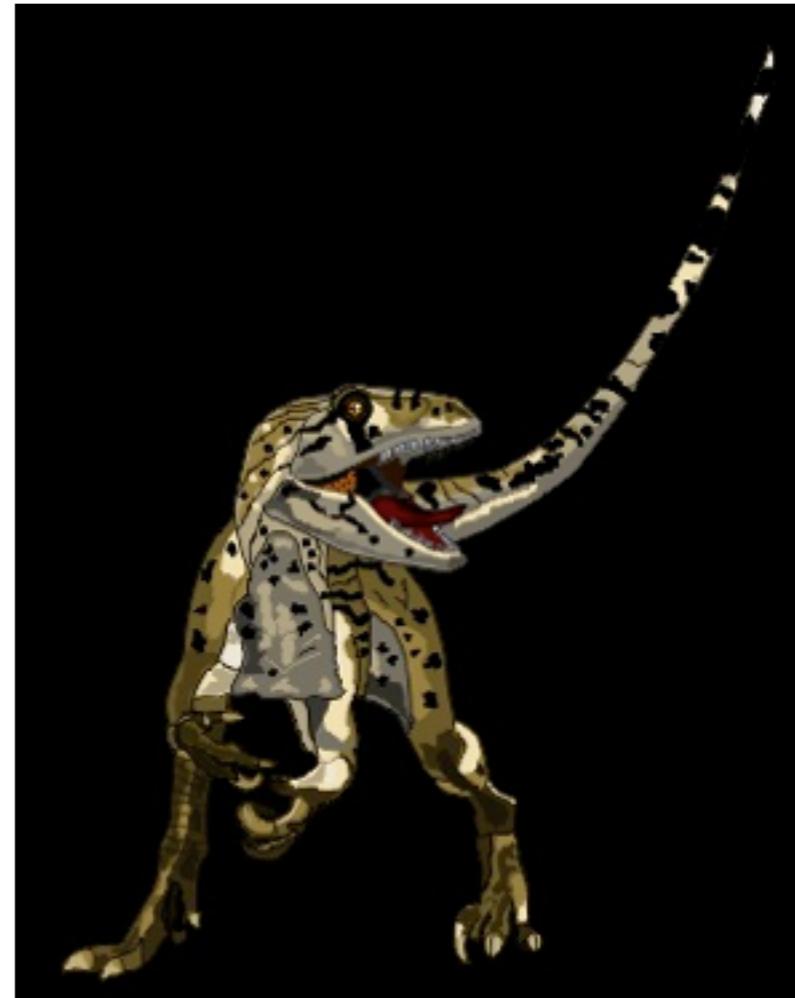
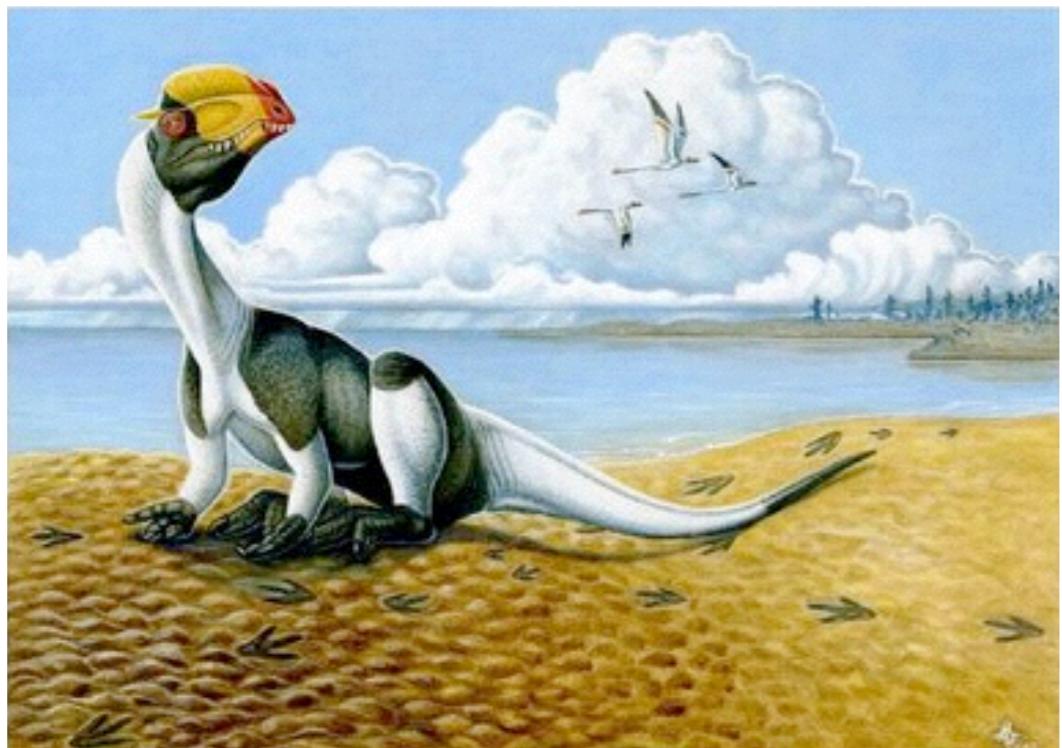
The topic of the paper must be based on your proposed and accepted paper abstract. If you wish to change your topic, you must consult me first. Your paper will be graded on *clarity, accuracy, creativity*, as well as the extent to which you follow the above directions.

To write a good paper, each paragraph should have a self-contained point that flows naturally from the previous paragraph and leads into the next. A key to writing a paper like this is to outline the topic for each paragraph ahead of time, before you begin writing. Once you have this *backbone*, make sure that the narrative makes sense, that it addresses the primary question/issue described in your abstract, and that there are no gaps in your logic. Accurately report what is known or not known in the field regarding your topic of interest. Make sure that you support your points with your references. To do this, you will need to include **parenthetical citations**. For example, you might write: “Dorsal plates among the *Thyreophora* may be arranged either parallel to one another, or offset from one another (Fastovsky, 2015)”. The citation for Fastovksy would then be included in your **References** section.

# Fastovsky ch. 12

<b>9</b>	<b>3/14</b>	Dino physiology & ecology I.	Reproduction and growth	<del>Brusatte Chpt 8</del>	
	<b>3/16</b>	Dino physiology & ecology II.	Diet and food webs		
	<b>3/18</b>	Dino physiology & ecology III.	Some like it hot: endothermy vs. ectothermy		
<b>S9</b>		<b>Physiology and ecology</b>	<b>HW4: TBA</b>		
<b>SPRING BREAK</b>					
<b>10</b>	<b>3/28</b>	Theropods	Basal theropods	Fastovsky Chpt 9	
	<b>3/30</b>	Theropods	The strange: Spinosaurus, Oviraptor, and Therizinosaurs		
	<b>4/1</b>	Theropods	Derived theropods: brawn and brains		
<b>S10</b>		<b>Theropods</b>	<b>HW5: TBA</b>		<b>Homework 4 due</b>
<b>11</b>	<b>4/4</b>	Origin of birds I	From theropods to Avialae	Fastovsky Chpt <b>10</b> + maybe ch. 11?	
	<b>4/6</b>	Origin of birds II	Feathers and flight	(only if we cover these chapters in class)	
<b>S11</b>		<b>Review for Exam III</b>	<b>HW6: TBA</b>		<b>Homework 5 due</b>
<b>12</b>	<b>4/11</b>	<b>Exam III</b>			

# Theropoda: Roadrunners from HELL.



# Enter Saurischia!

## Saurischians:

Two major clades:

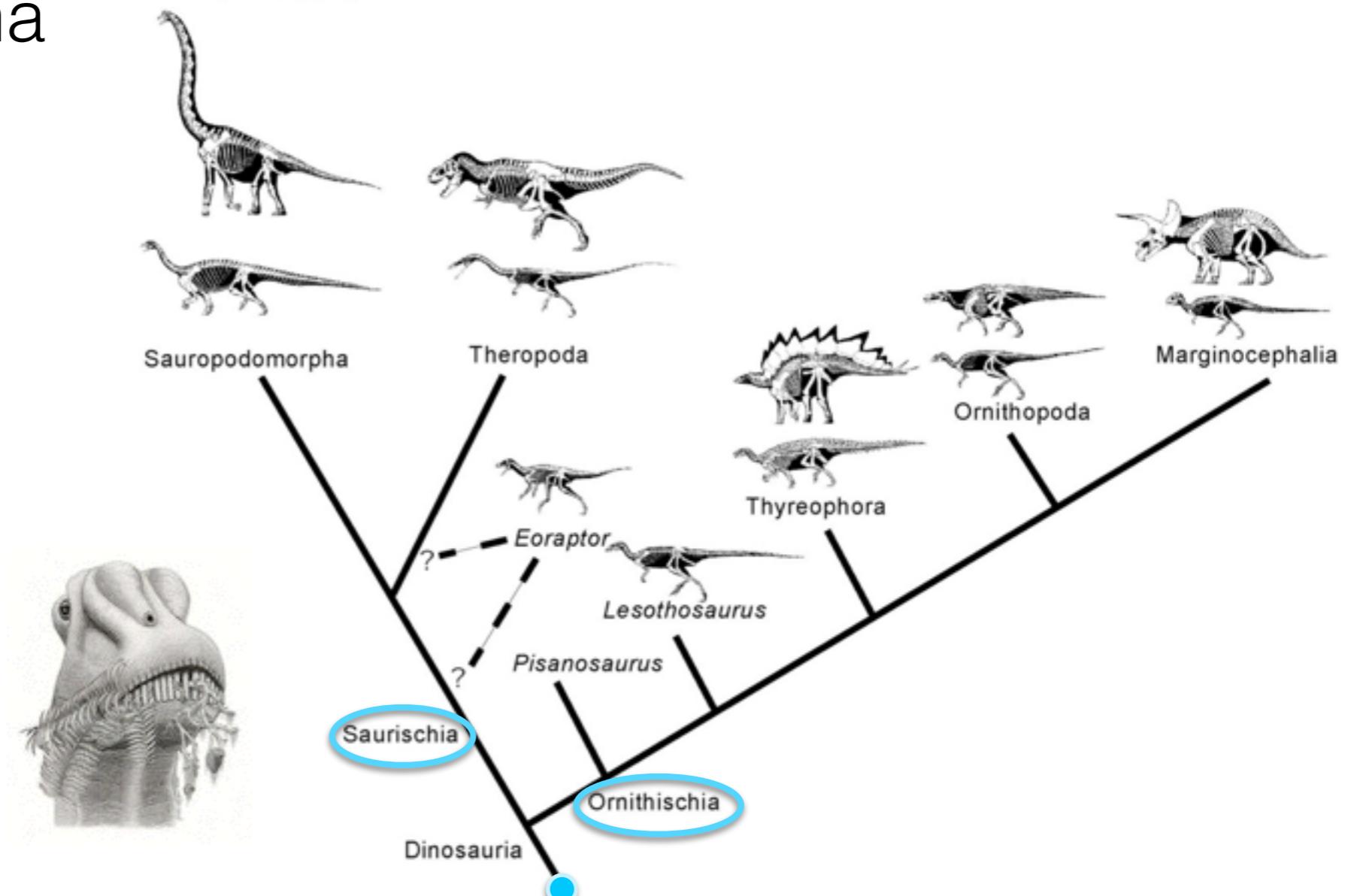
-Sauro**pod**omorpha

The Big

-Theropoda

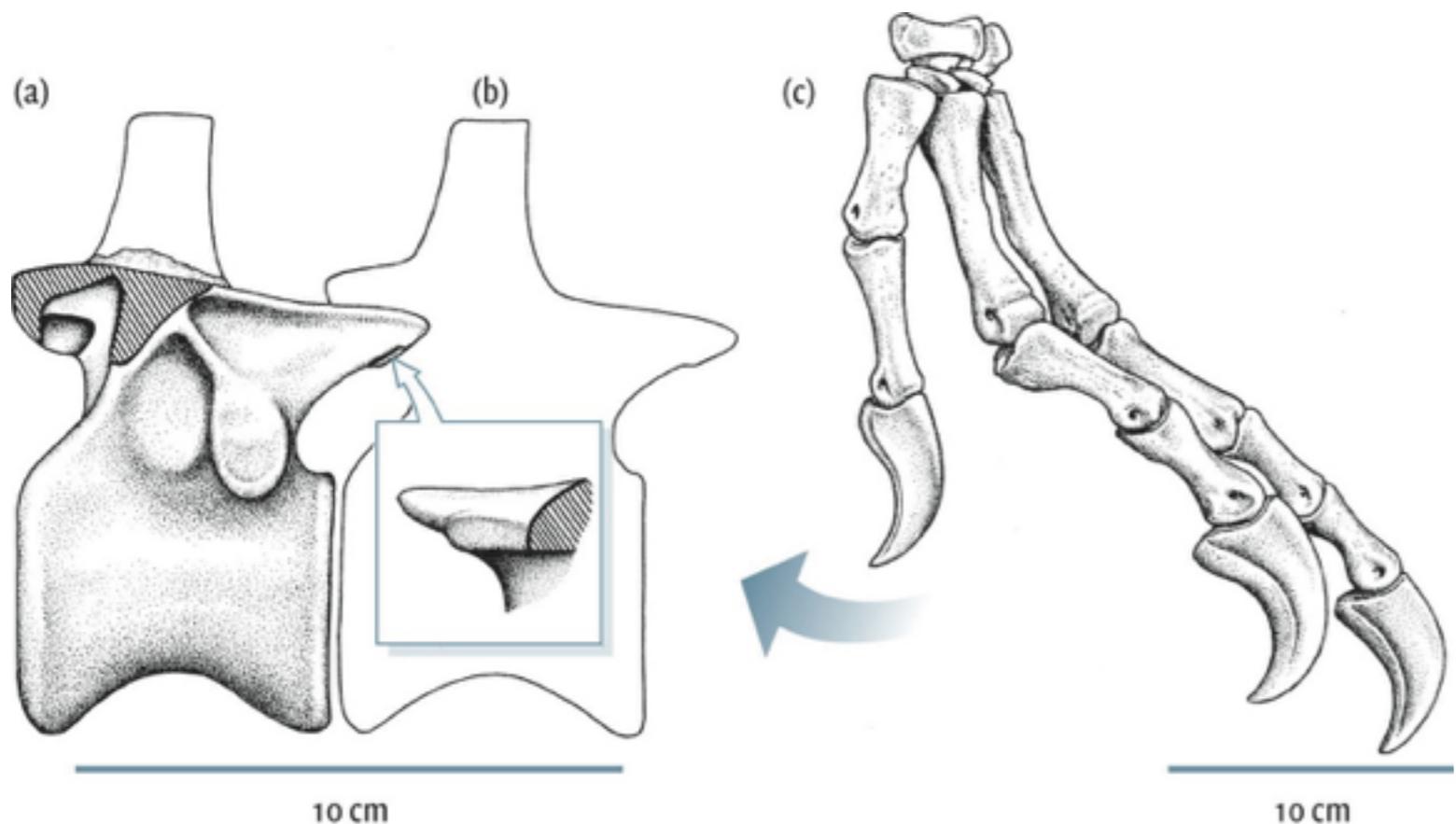
The Bad

The Ugly



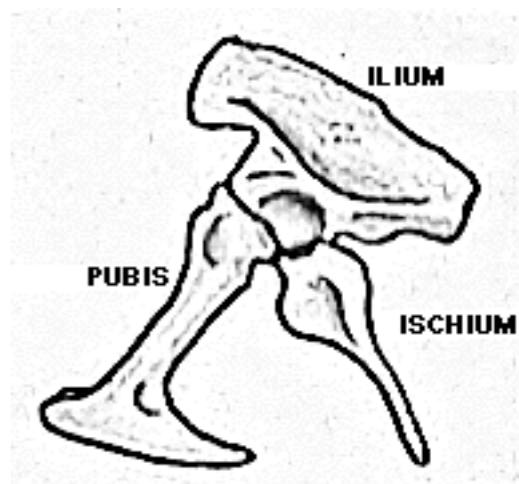
# What characterizes Saurischian Dinosaurs?

1. Subnarial foramen
2. Extra articulation on dorsal vertebrae
3. Twisted thumb



*Tyrannosaurus*

Ancestral characteristics:  
-'Lizard Hip' three-pronged pelvis structure



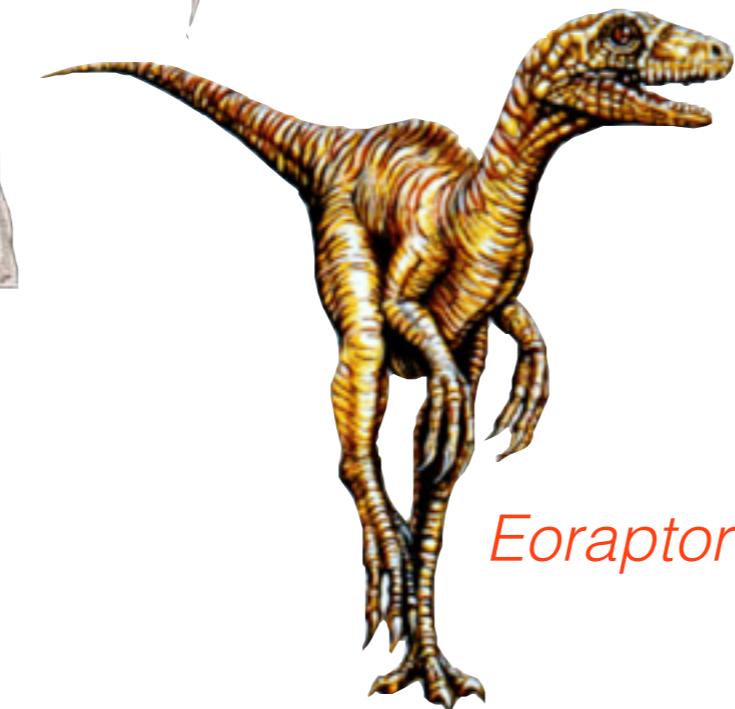


# Basal, non-sauropoda Saurischians

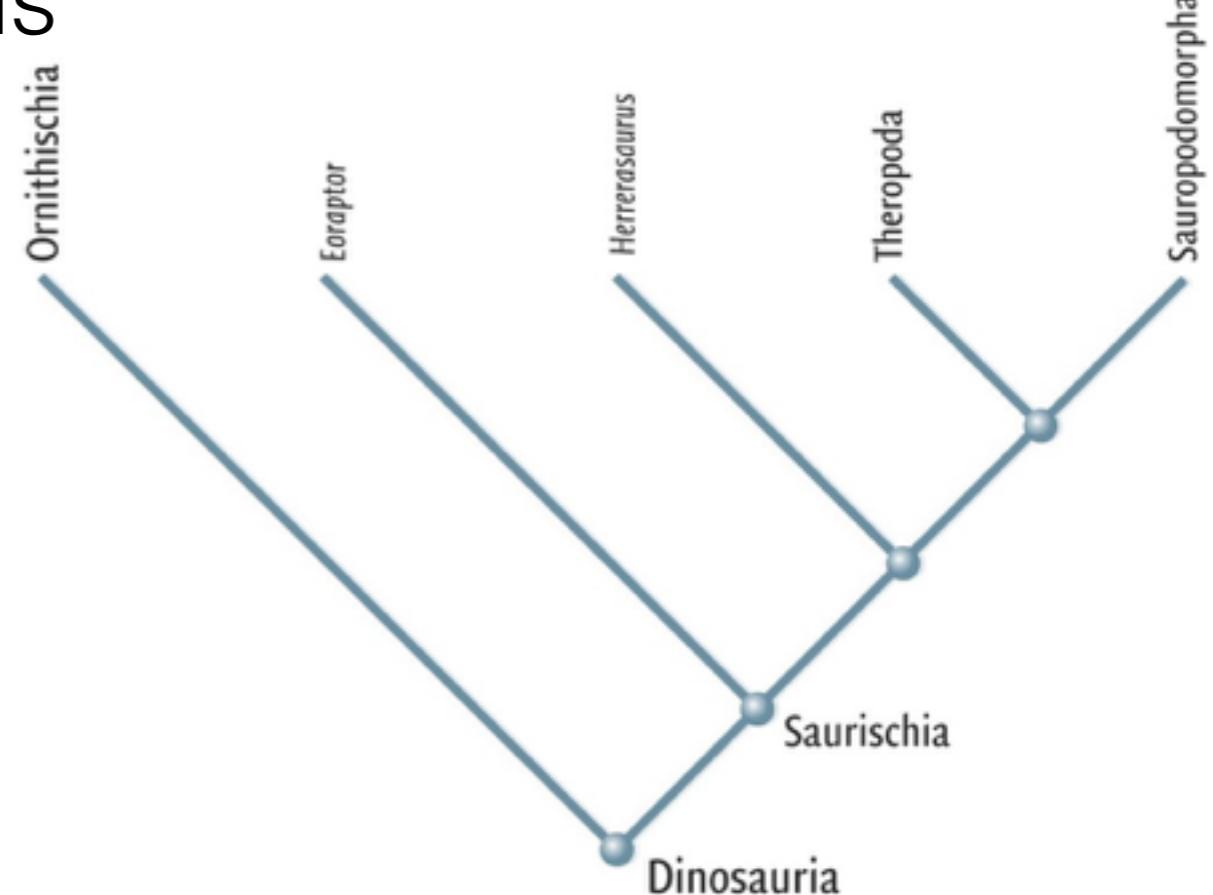
Small  
Bipedal  
Fast-moving (how can you tell?)  
Carnivorous



*Herrerasaurus*



*Eoraptor*



Possibly a very early sauropodomorpha: *Saturnalia*



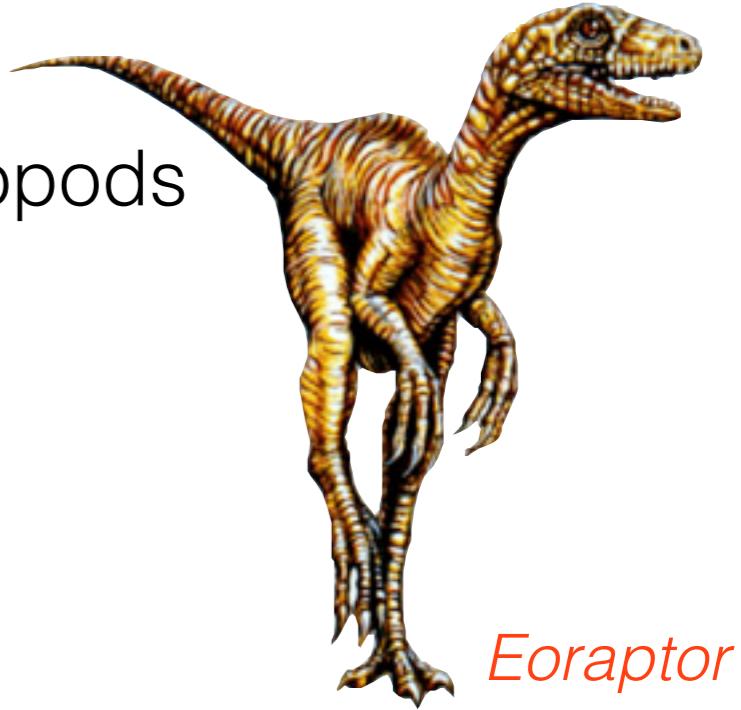
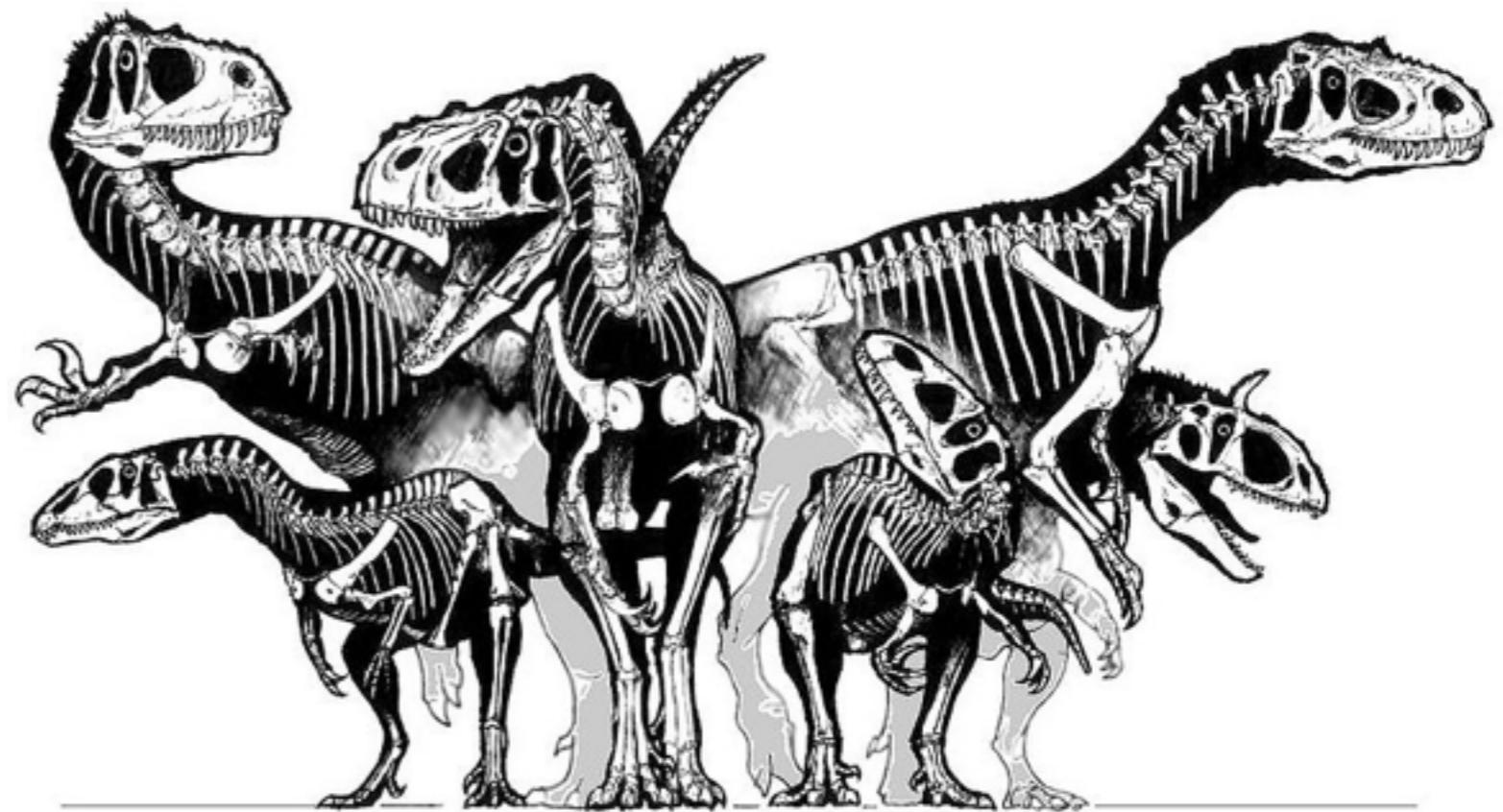
# Who were the Theropod dinosaurs?

Second half of Saurischia, most closely related to Sauropods

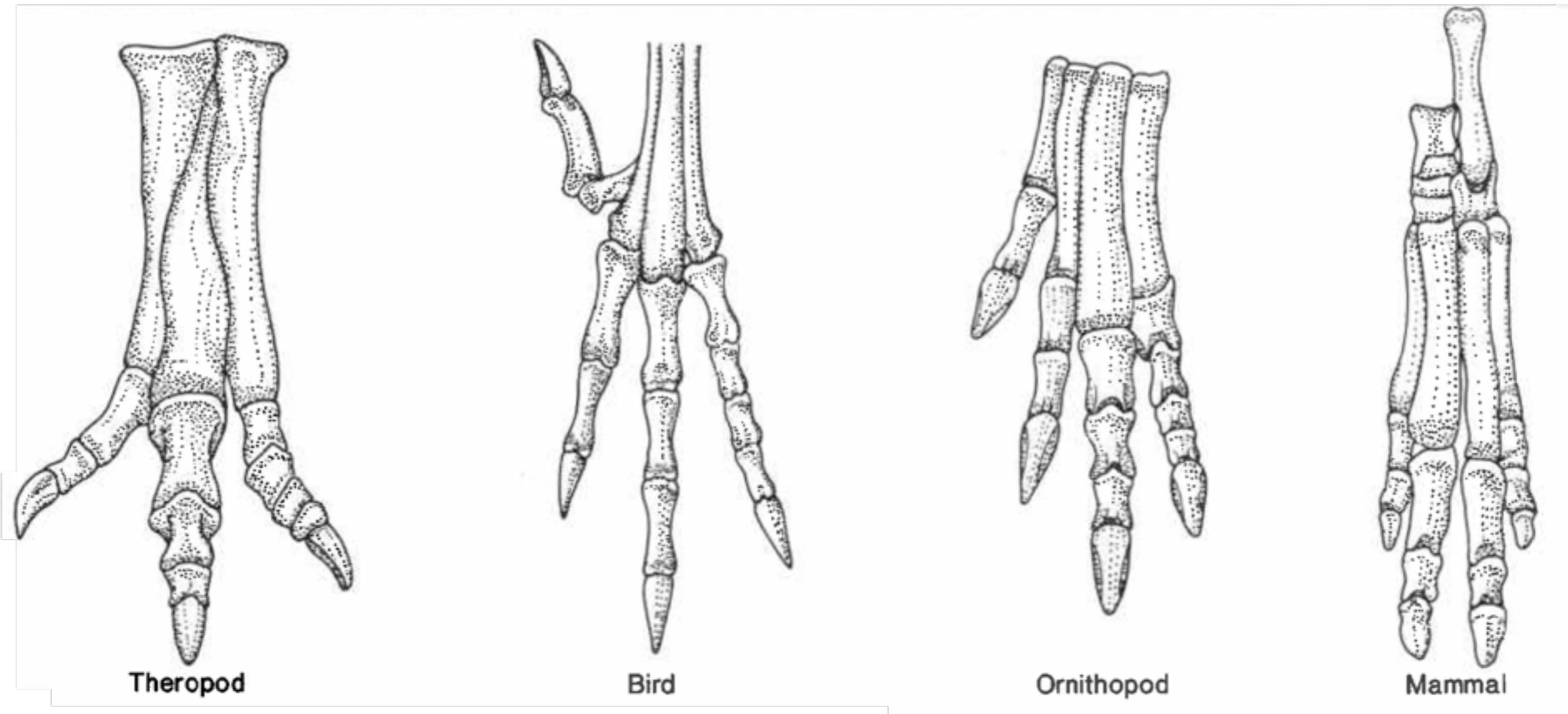
Represent some of the earliest known dinosaurs



*Herrerasaurus*

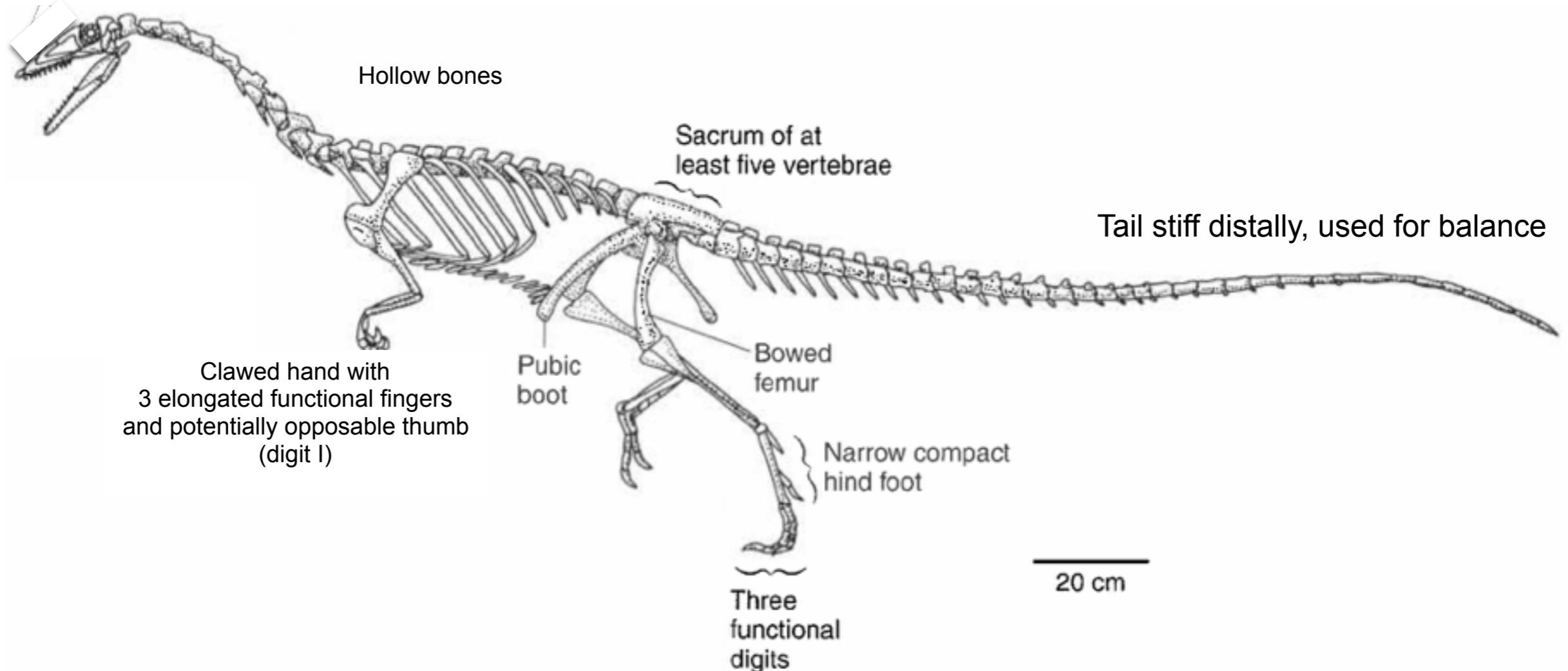


*Eoraptor*



Beast Foot

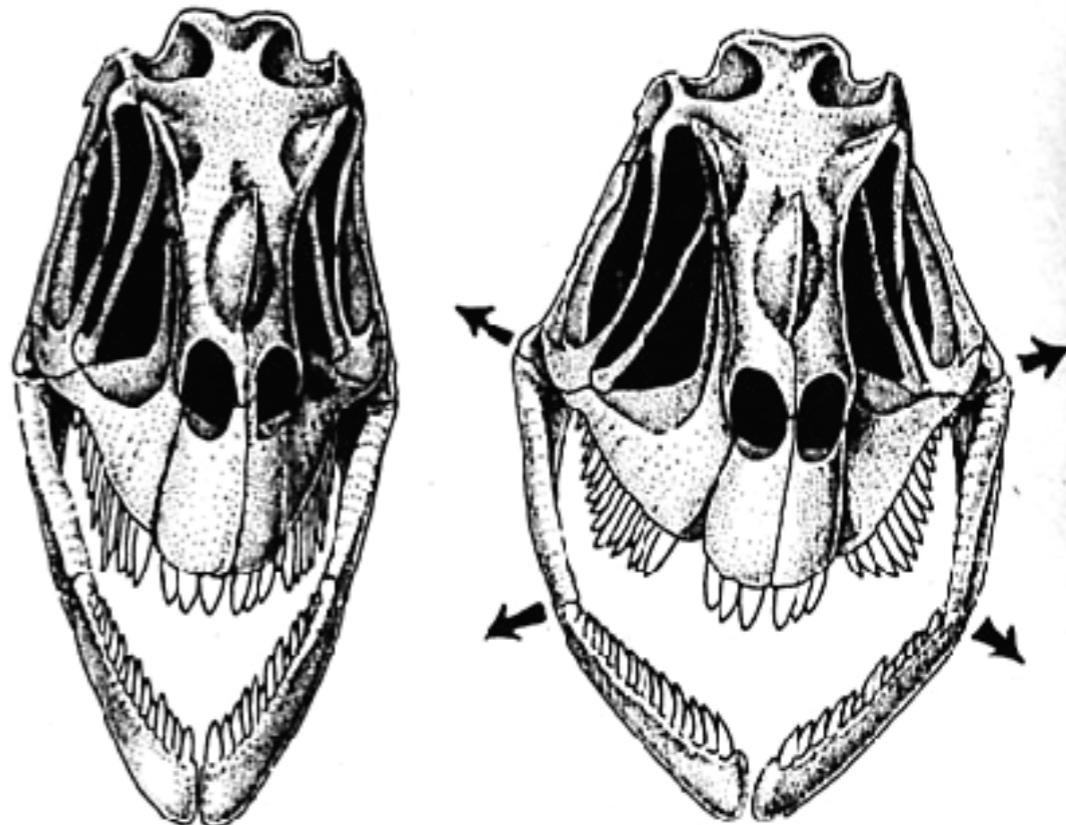
Bird Foot



## Shared, Derived Characteristics:

- 1) Clawed bipeds
- 2) Sharp, serrated teeth
- 3) Hollow vertebrae and limb bones
- 4) Reduction of outer fingers of hand
- 5) Stiff tail
- 6) 3 functional digits in foot

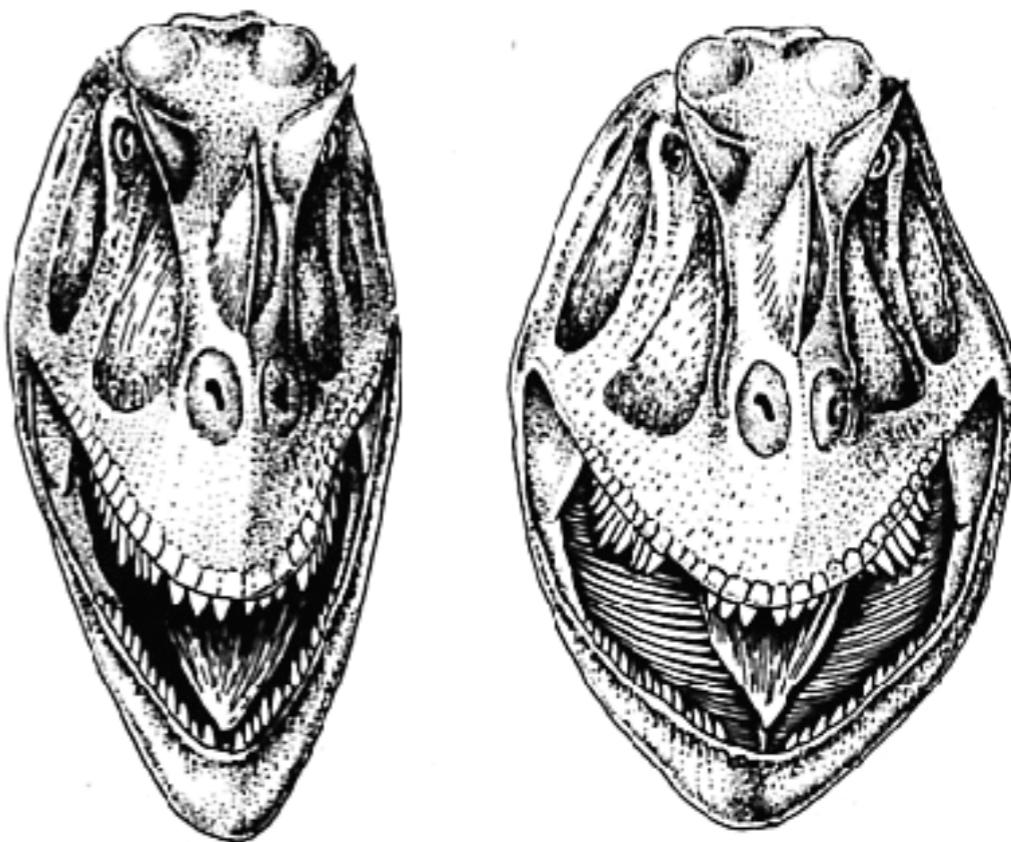
## Loosely jointed, kinetic skulls



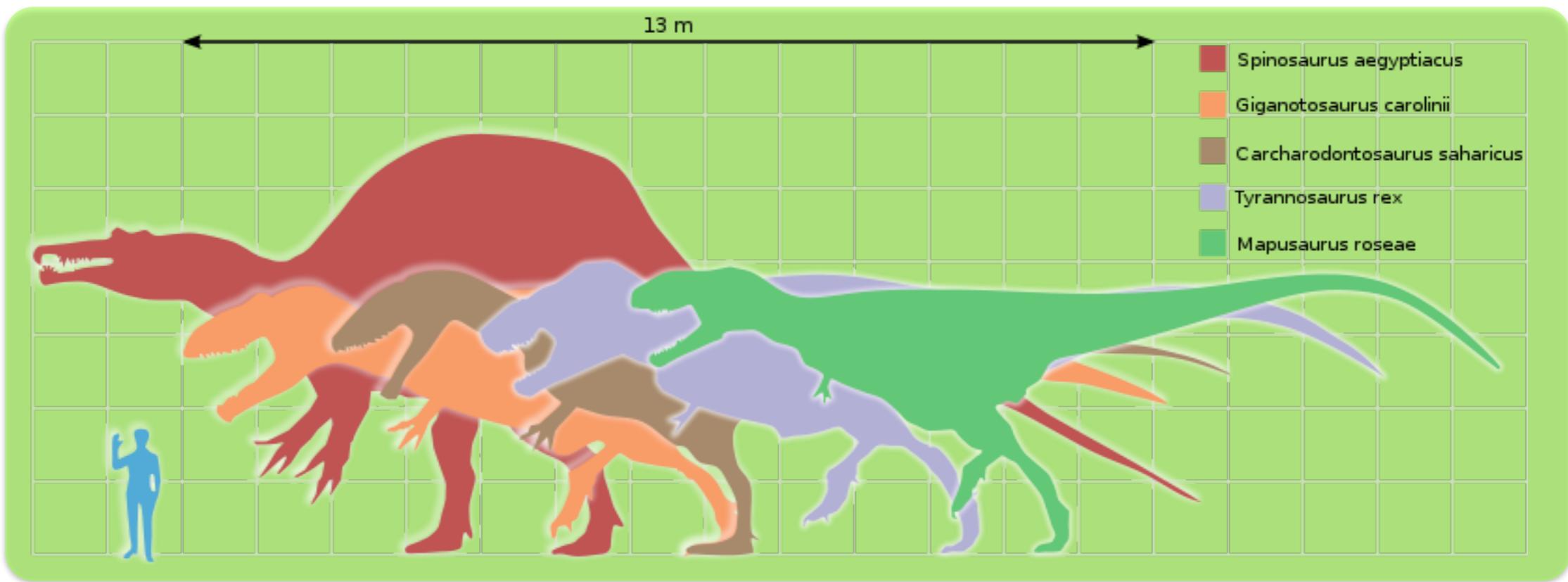
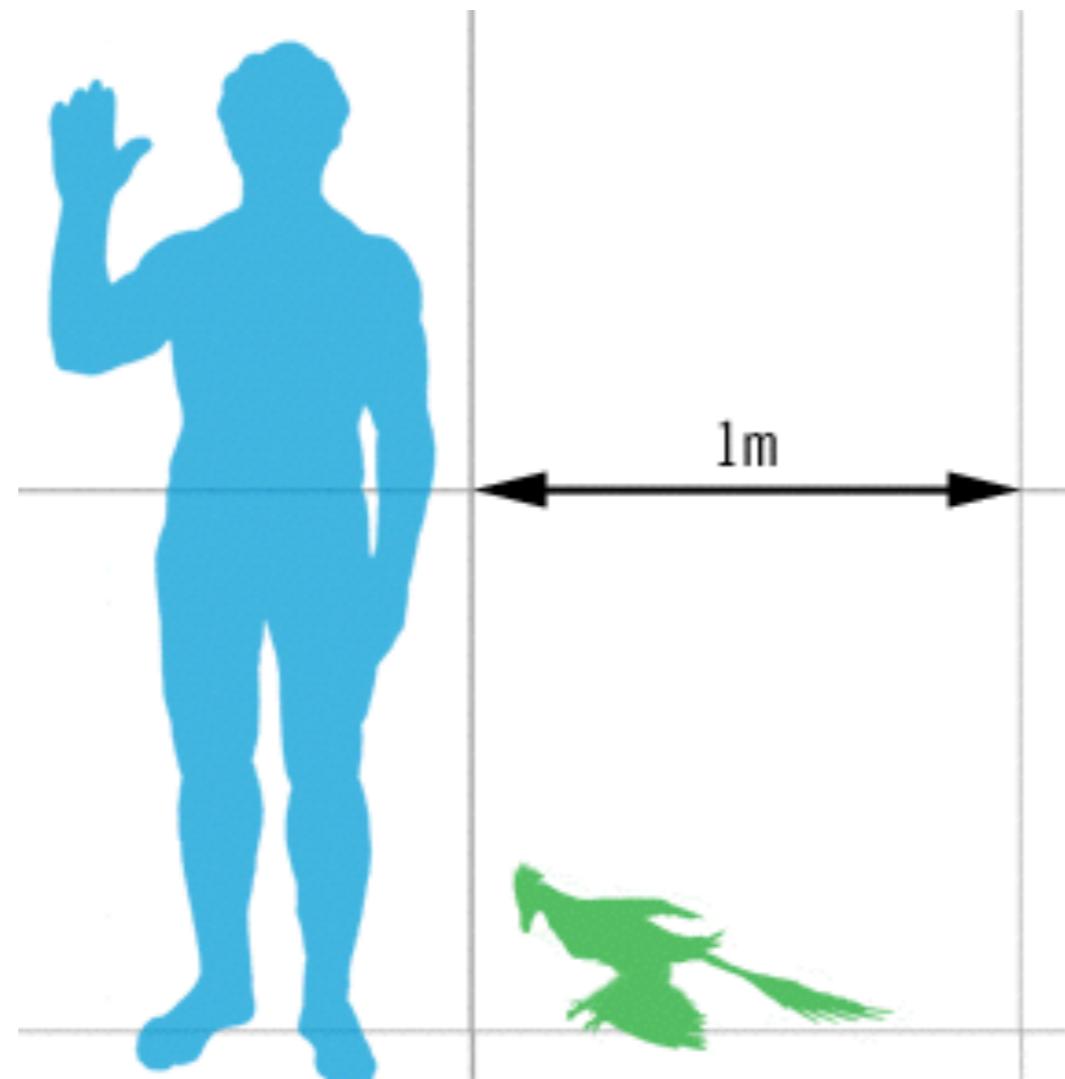
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How to swallow something larger than your head—dinosaur-style. Face-front view of *Ceratosaurus*. All the bones of the skull's side were loosely hinged to the skull top, so the head expanded sideways when the beast swallowed an extra-large meat chunk. And a hinge in each lower jaw opened outward, just like a boa constrictor.

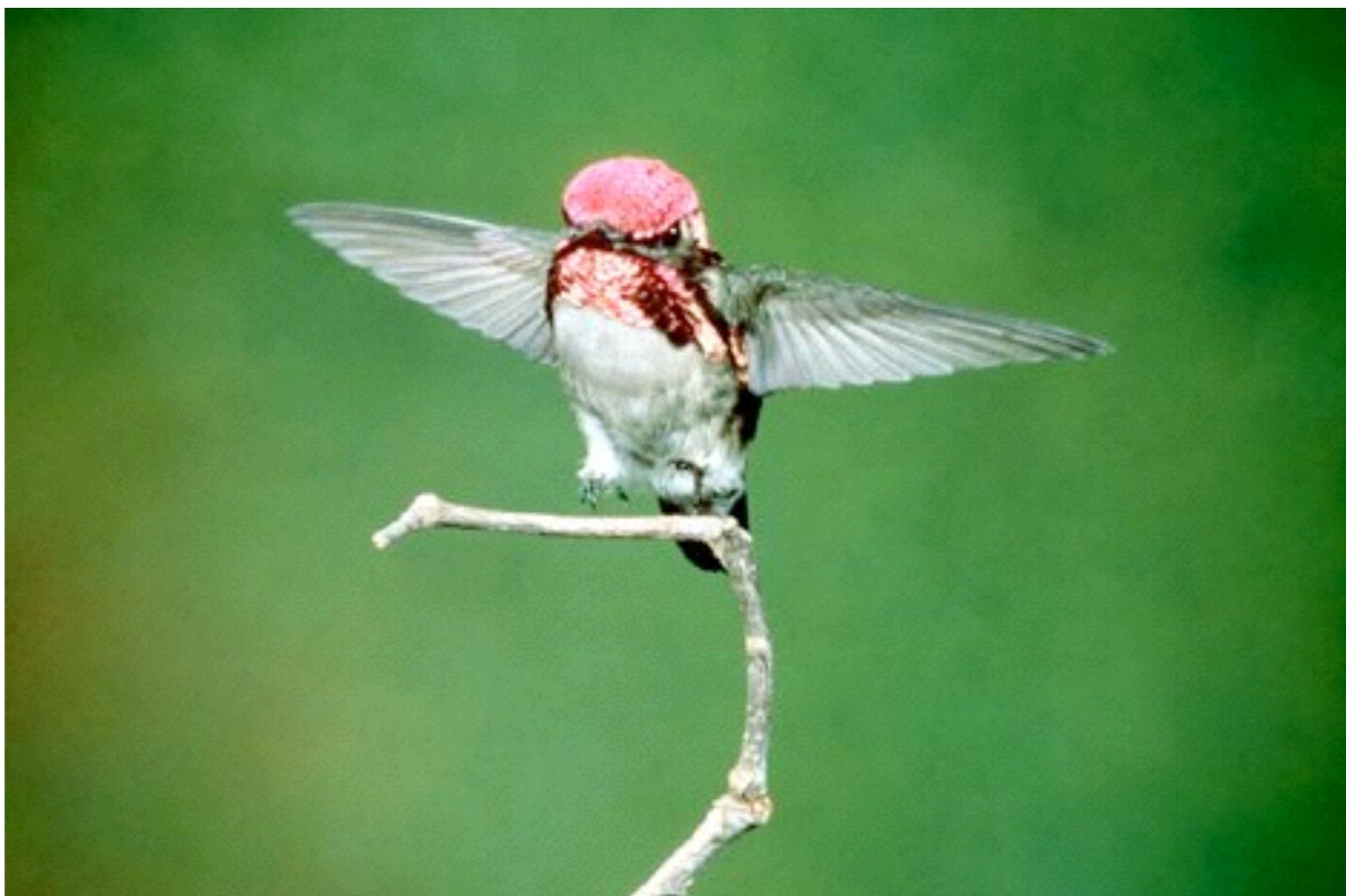
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# Theropod sizes



'Bee Hummingbird' is actually the smallest Theropod.



All Theropods are obligate bipeds

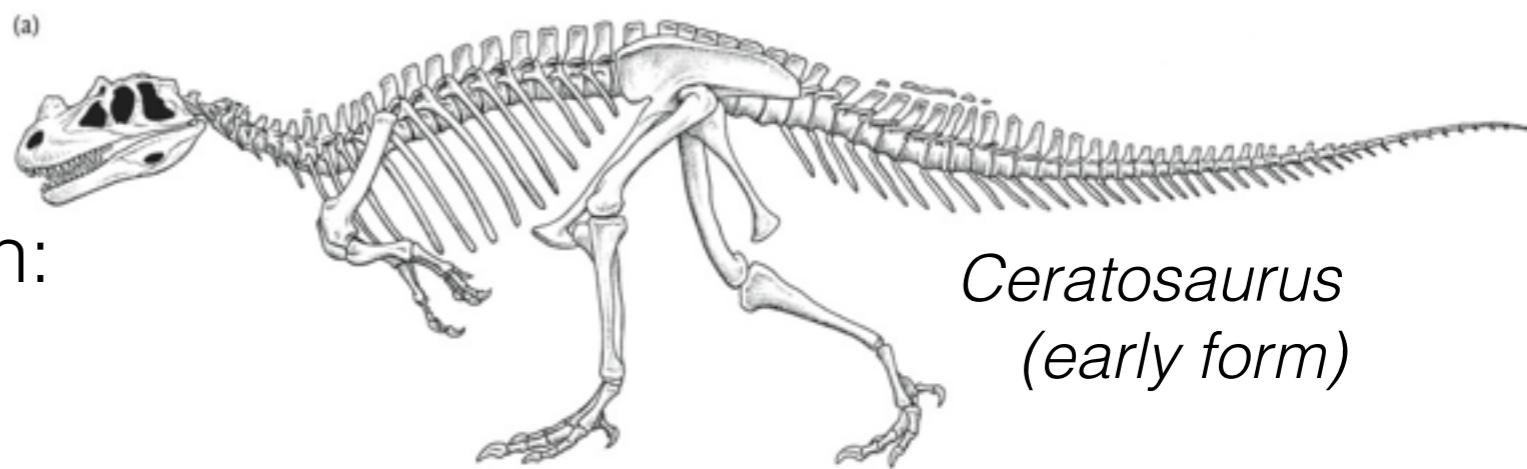
Feet close to the midline

Structural design was focused on:

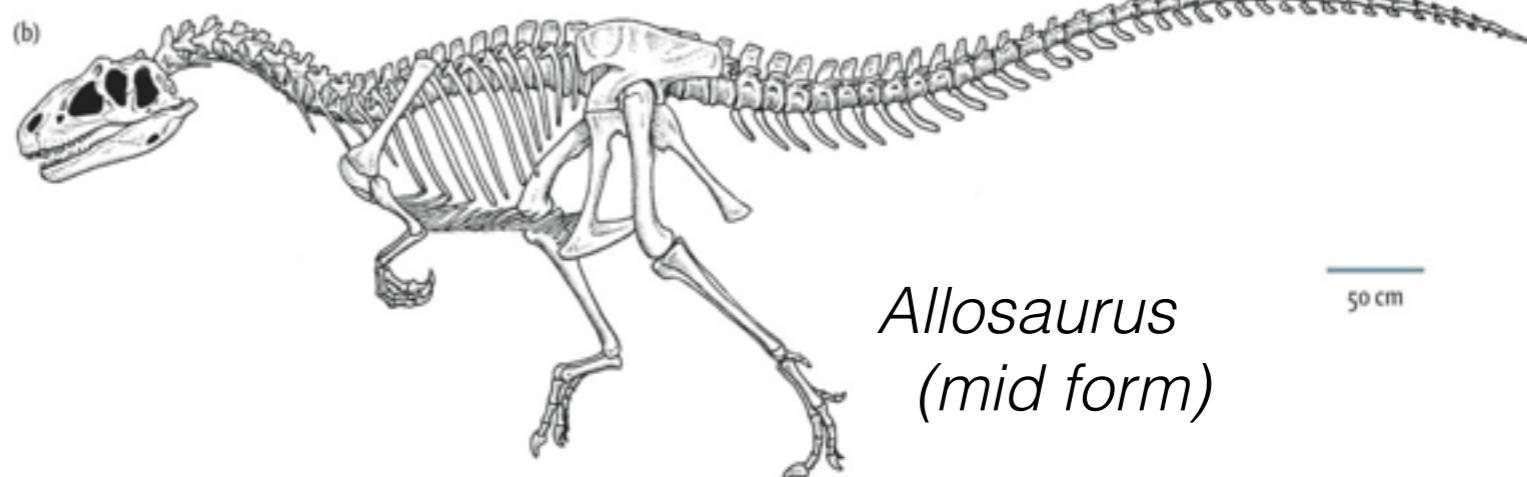
tracking

attacking

feeding

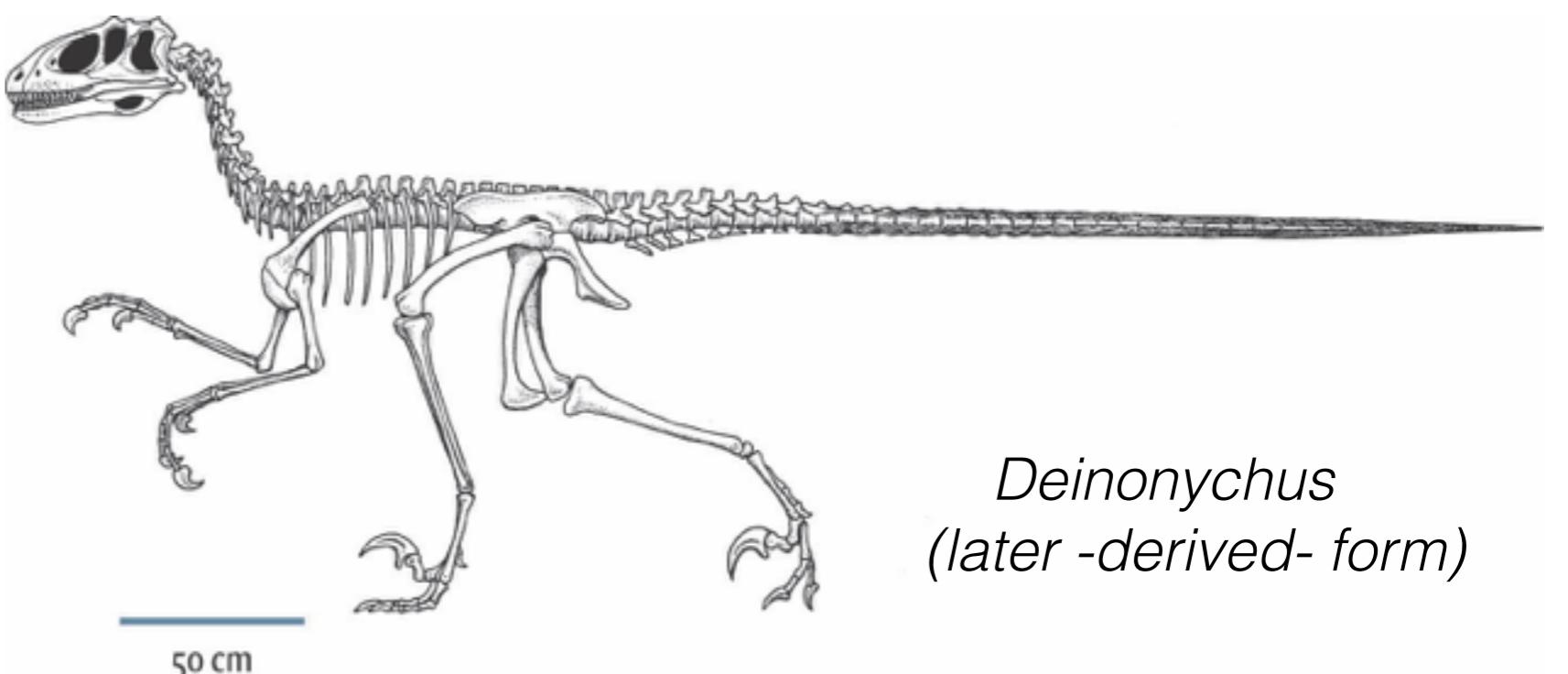


*Ceratosaurus*  
(early form)



*Allosaurus*  
(mid form)

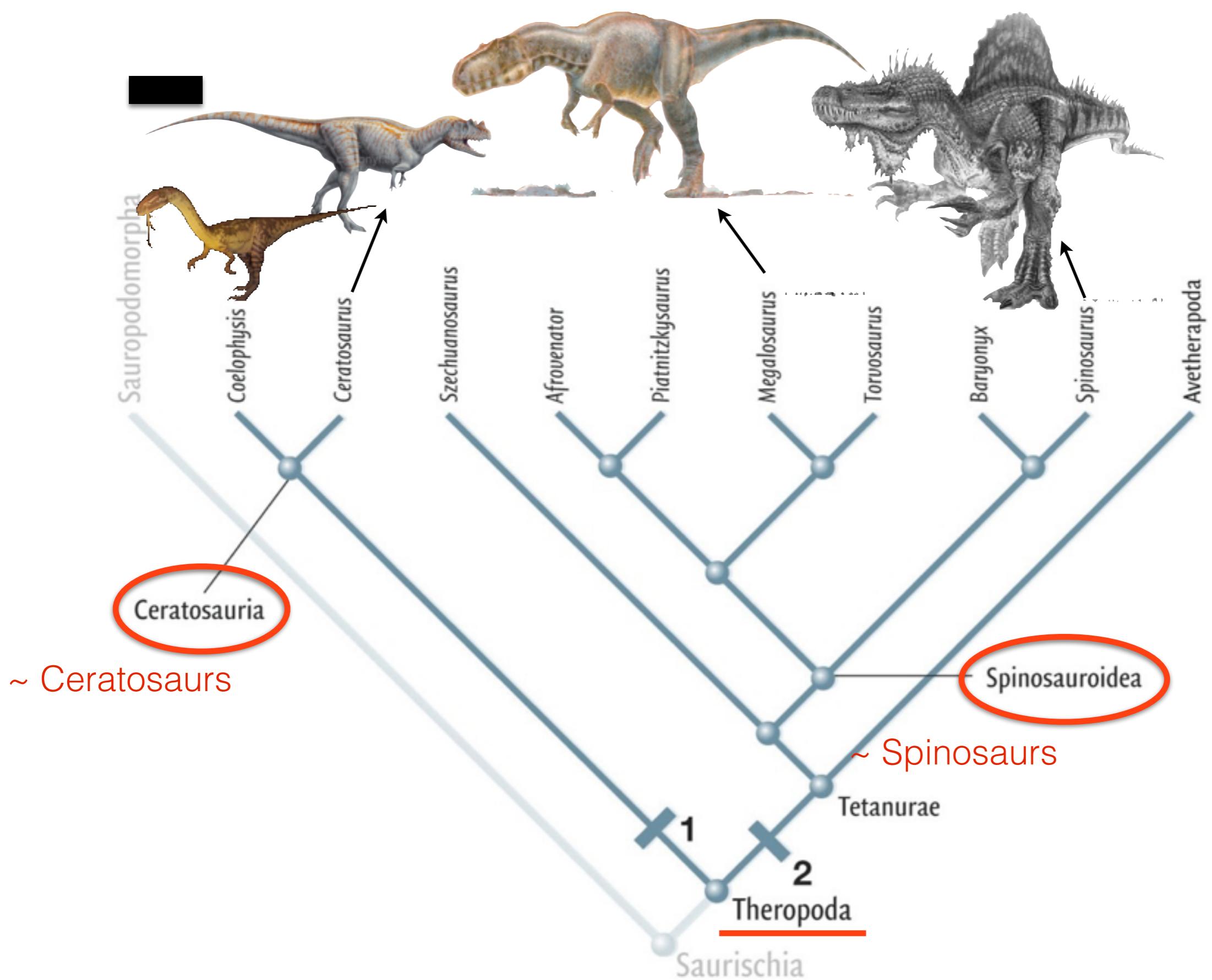
50 cm



*Deinonychus*  
(later -derived- form)

50 cm

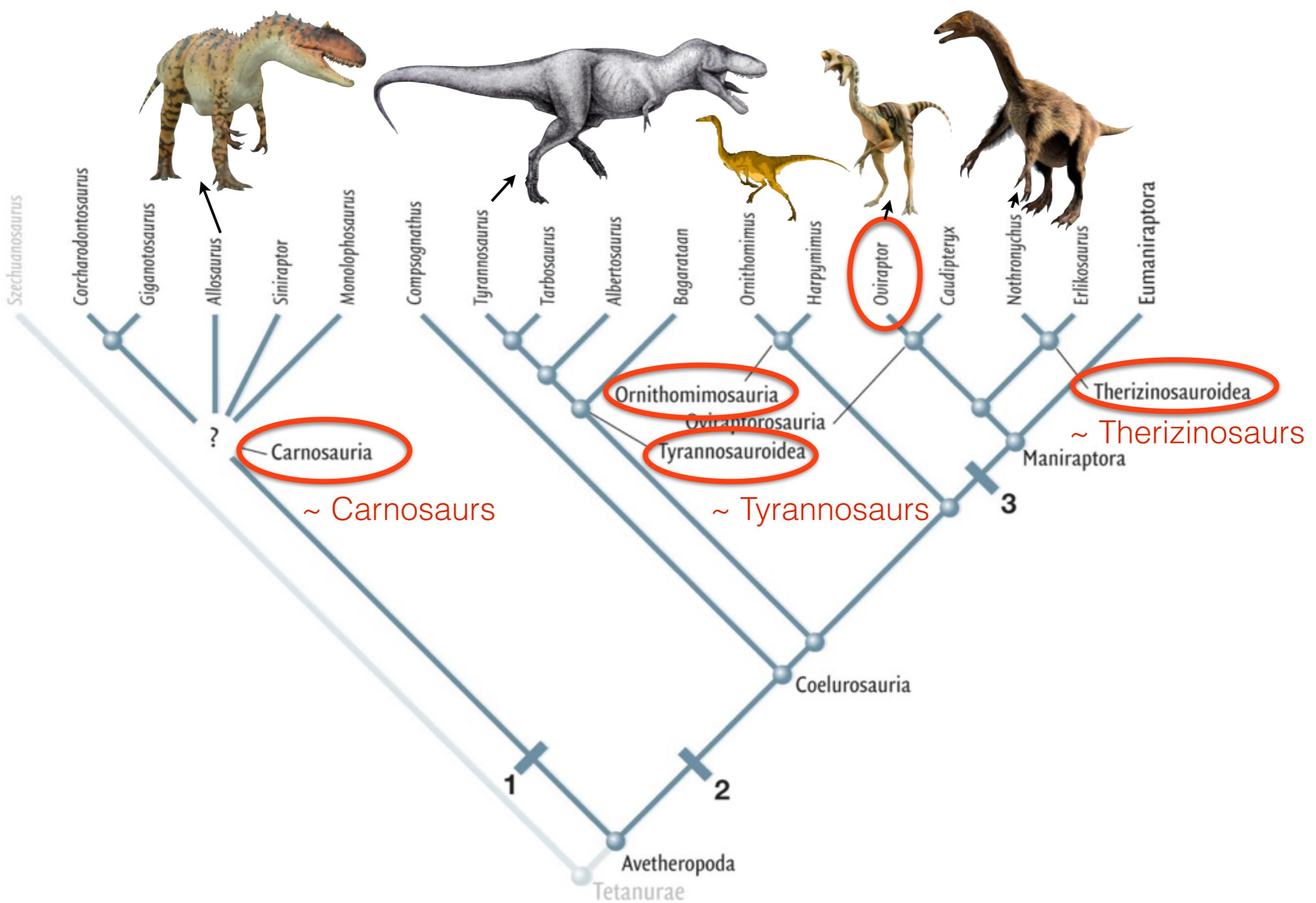




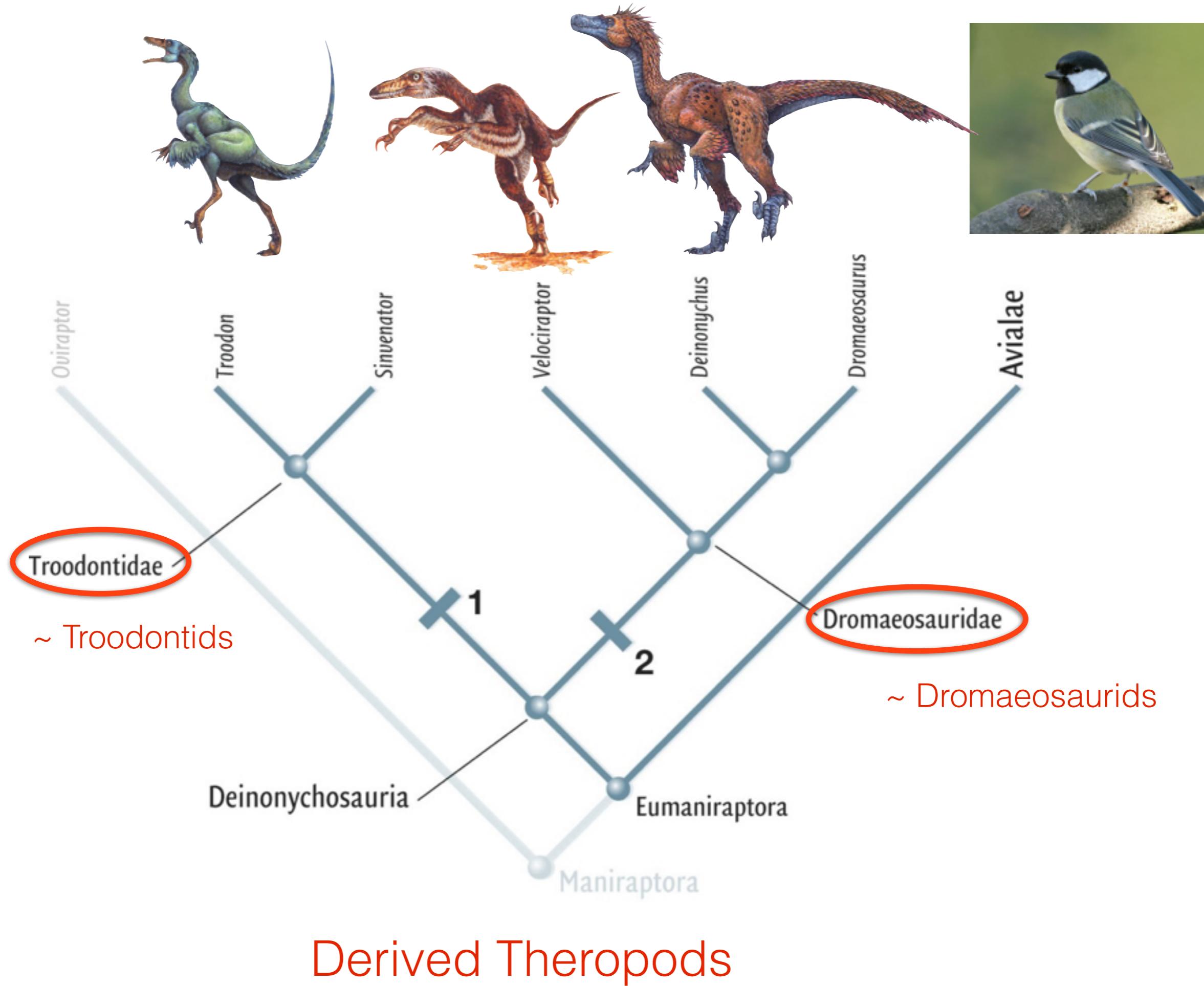
Basal Theropods



Distribution of Basal Theropods

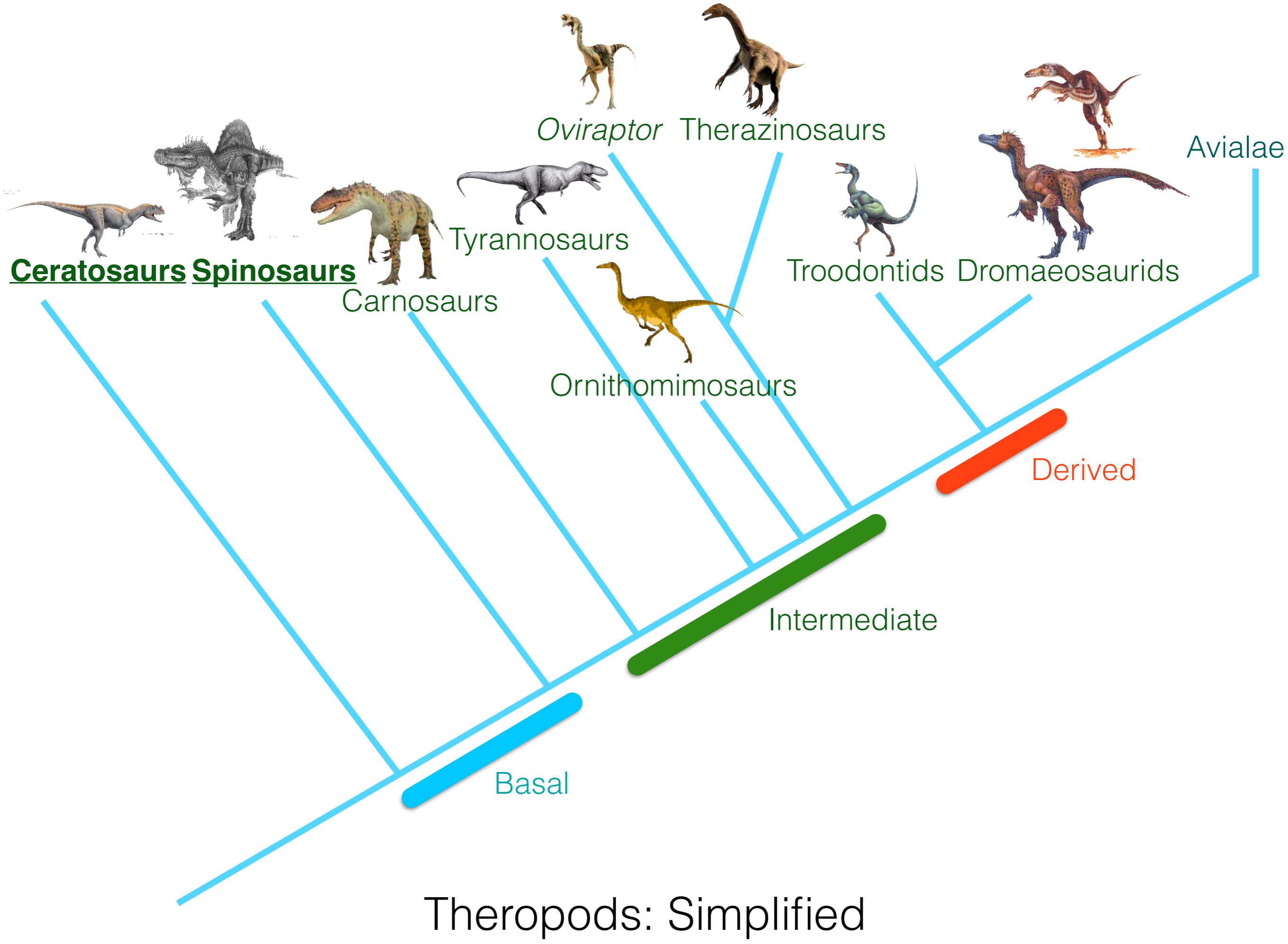


## Intermediate Theropods



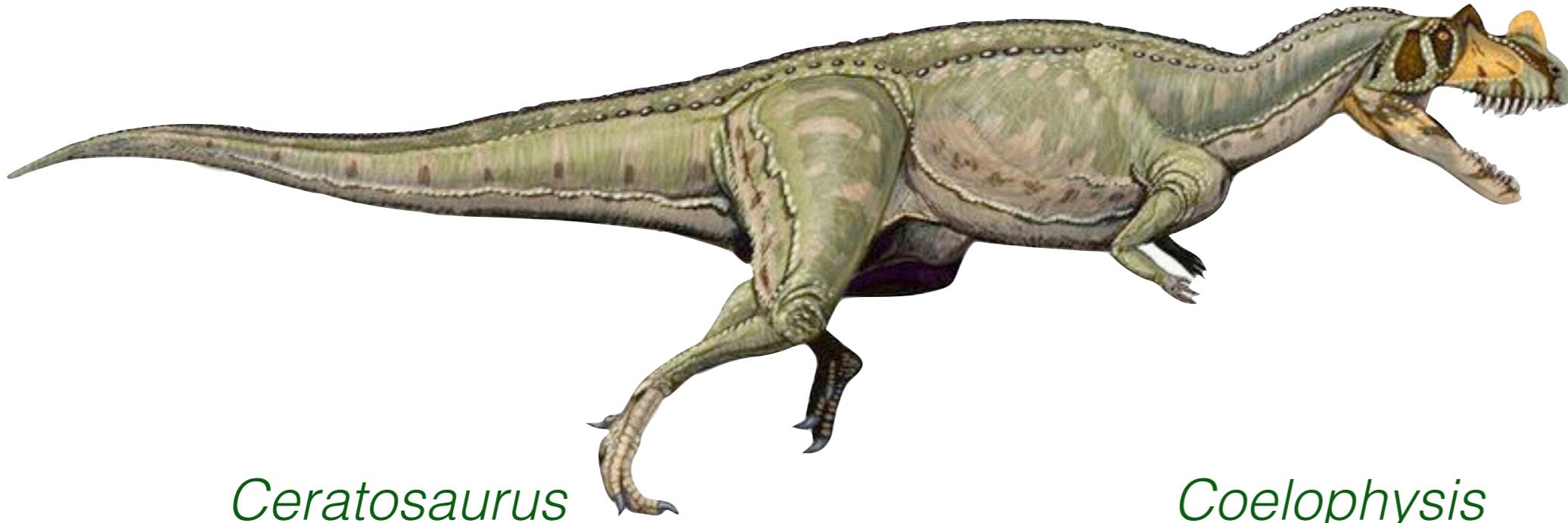


Distribution of Intermediate and Derived Theropods





## Ceratosaurs



*Ceratosaurus*

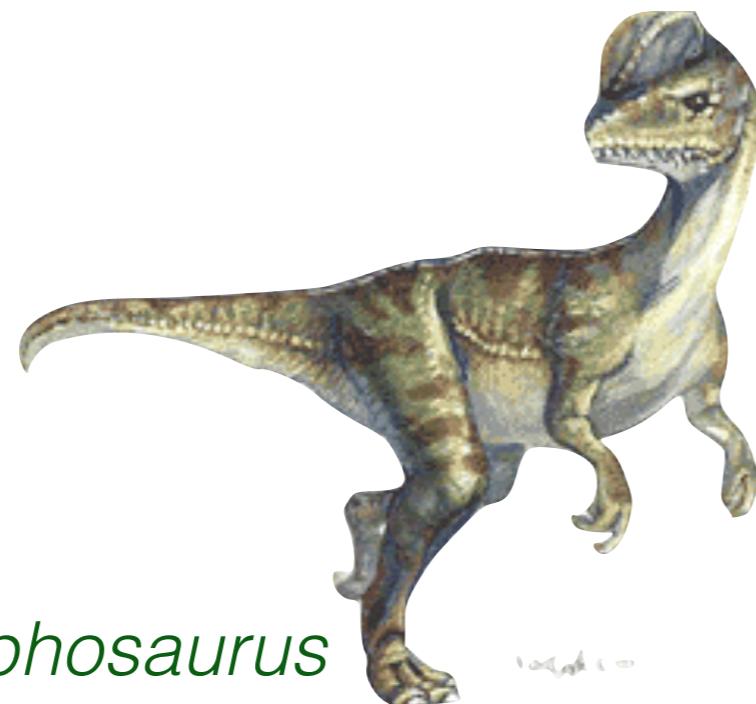
Robust hip joint

Fusion of upper ankle bones for support

Late Jurassic to Early Cretaceous

Enormous bonebeds known for

*Coelophysis*



*Dilophosaurus*



*Coelophysis*



## Ceratosaurs



*Dracoraptor* ~ earliest Jurassic  
Fed on small vertebrates  
Survived the Triassic Extinction

Looks very 'raptor-like',  
but a distant ancestor





## Spinosaurus

### *Megalosaurus*



Strong shoulder, long arms

Long, narrow snout

Probably fish eaters

Includes Megalosaurids

Known for giant sails (but not across all taxa)



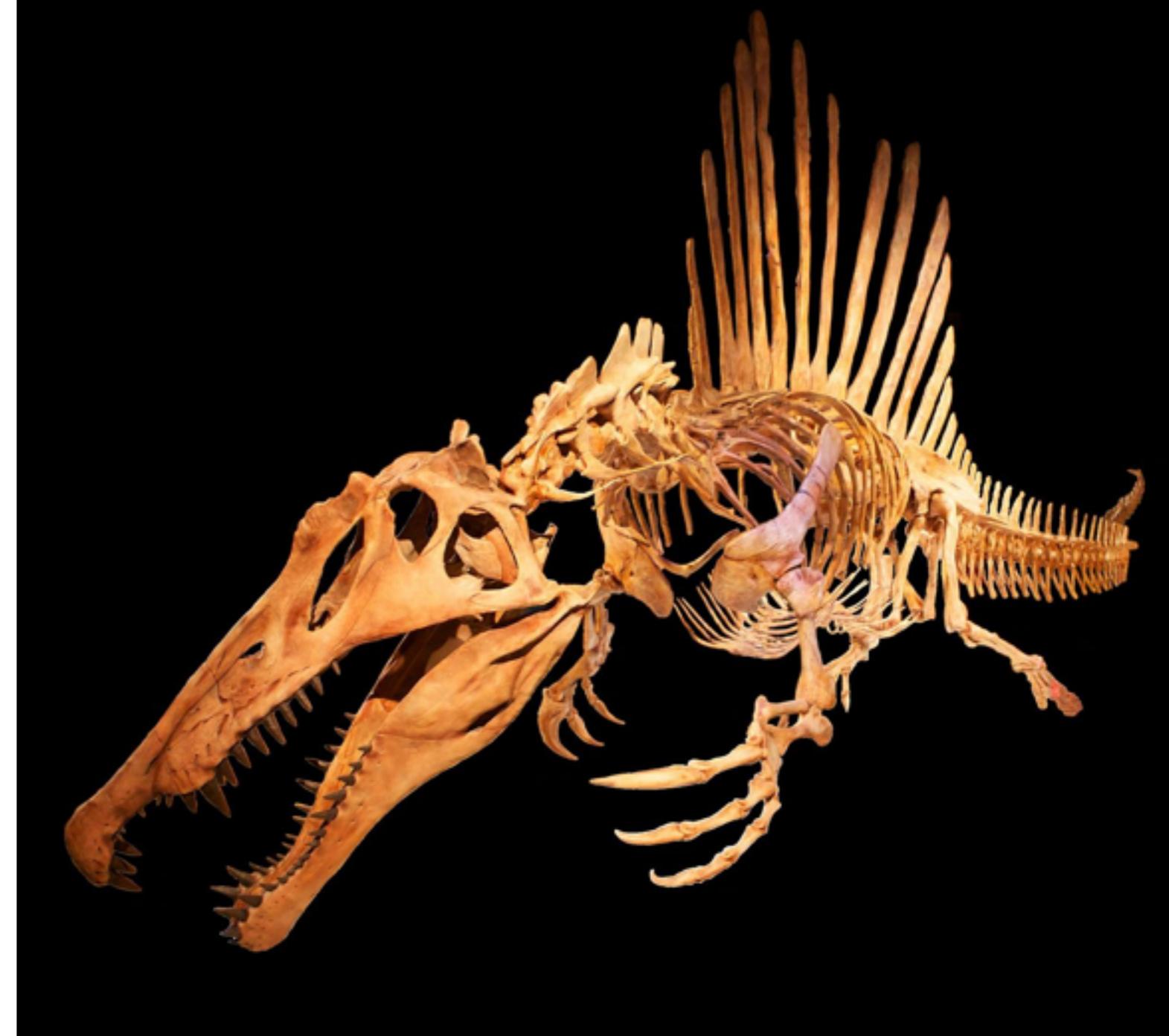
### *Spinosaurus*

Skulls are long, thin, and narrow

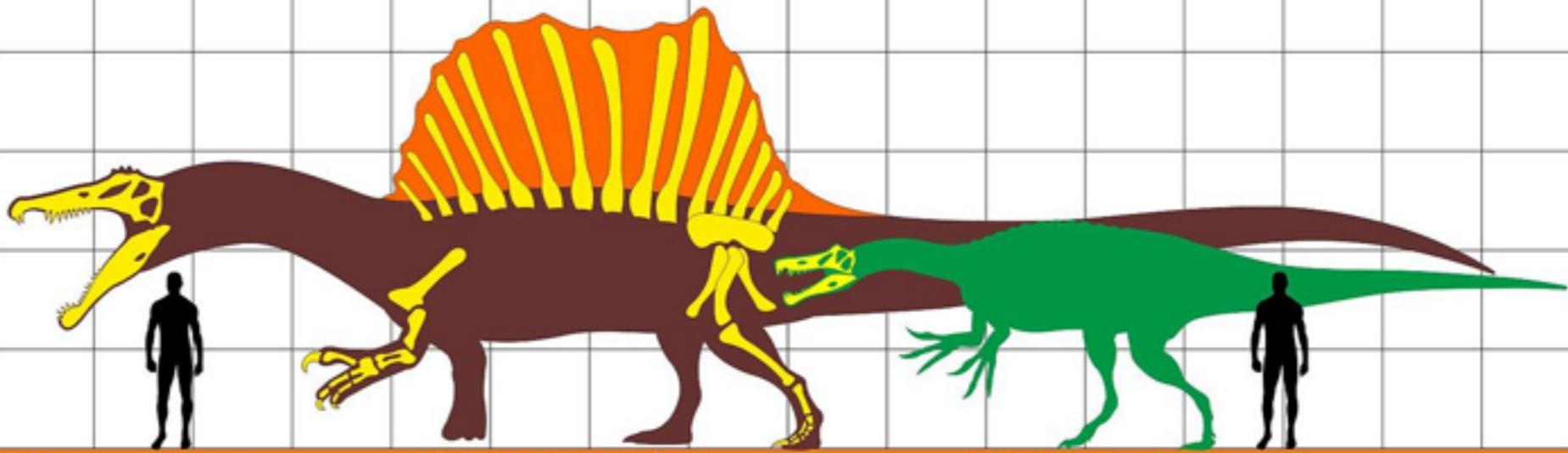
Not good for attacking large, herbivores or any animal that would put up a fight (JP3 notwithstanding)

Quick, powerful strikes on small prey

Semi-aquatic lifestyles



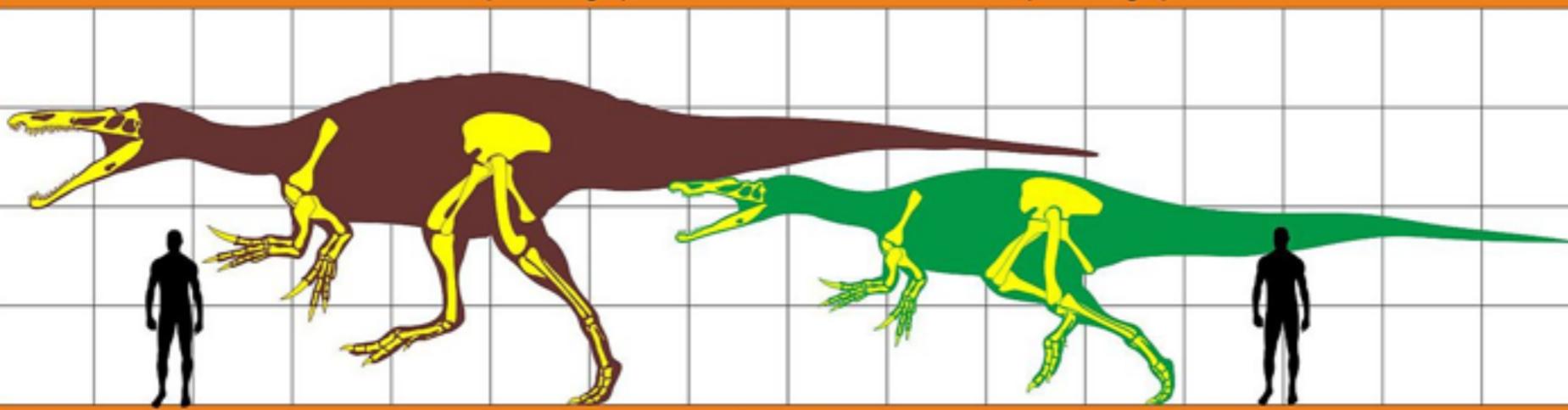




## Spinosaurinae

*Spinosaurus aegypticus*  
uzunluk (length) ~15 m  
ağırlık (weight) ~7-9 t  
kafa (skull length) ~1.5 m

*Irritator challengereri*  
uzunluk (length) ~8 m  
ağırlık (weight) ~2-3 t  
kafa (skull length) ~84 cm

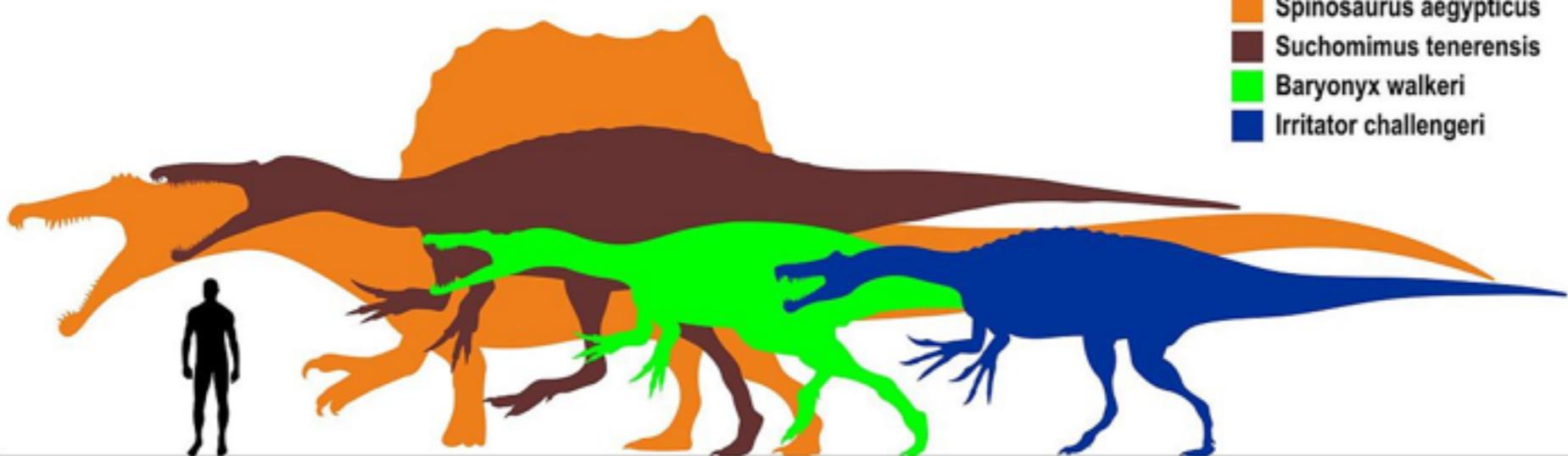


## Baryonychinae

*Suchomimus tenerensis* (MNHN GDF 500)  
uzunluk (length) ~11 m  
kalça yük. (hip height) ~3.6 m  
ağırlık (weight) ~2.9-4.8 t  
kafa (skull length) ~1.2 m

*Baryonyx walkereri* (BMNH R9951)  
uzunluk (length) ~8.5-9.5 m  
kalça yük. (hip height) ~2.6-2.75 m  
ağırlık (weight) ~1.7-2.7 t  
kafa (skull length) ~0.915 m

- *Spinosaurus aegypticus*
- *Suchomimus tenerensis*
- *Baryonyx walkereri*
- *Irritator challengereri*

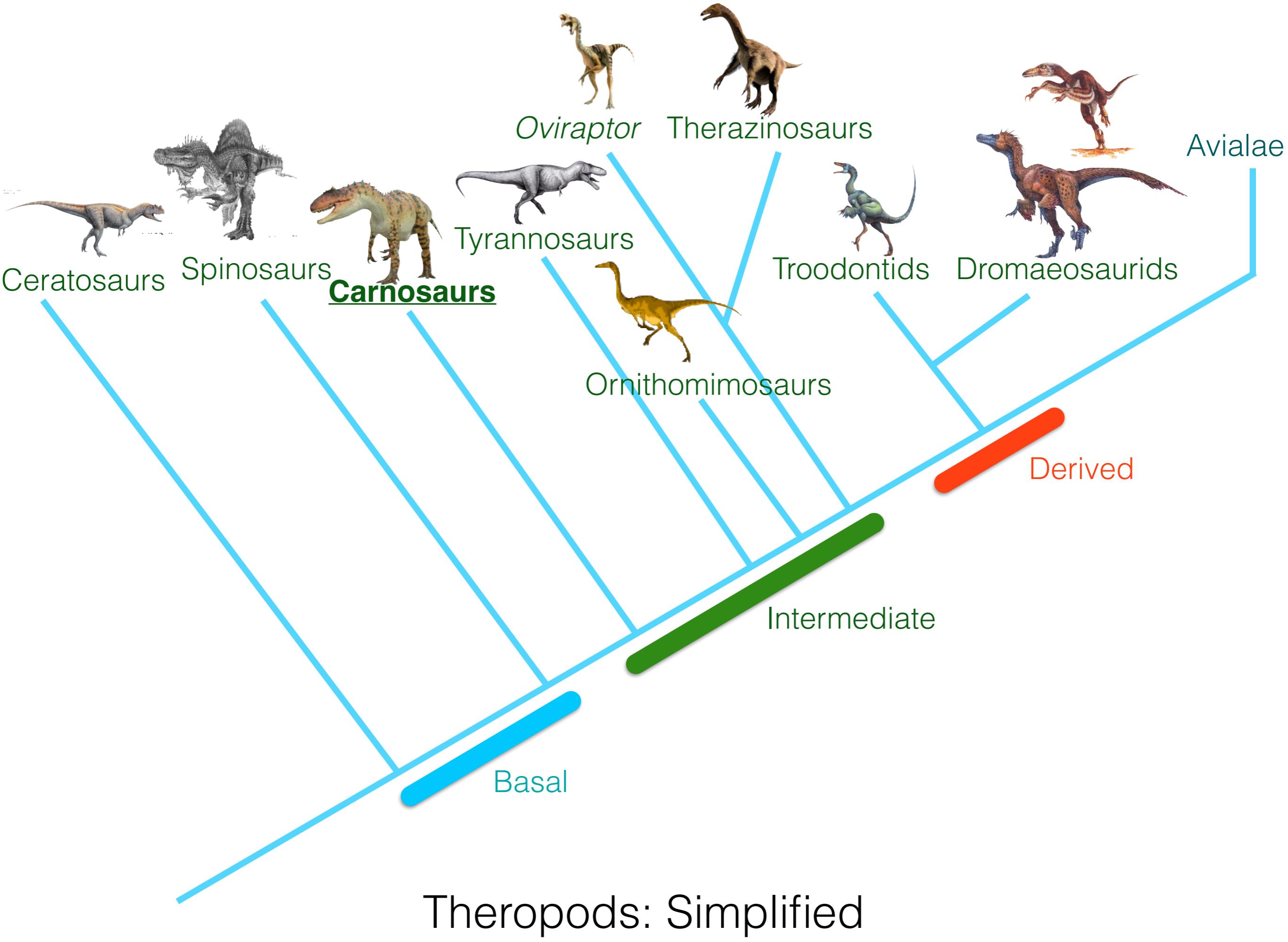


*mimas*



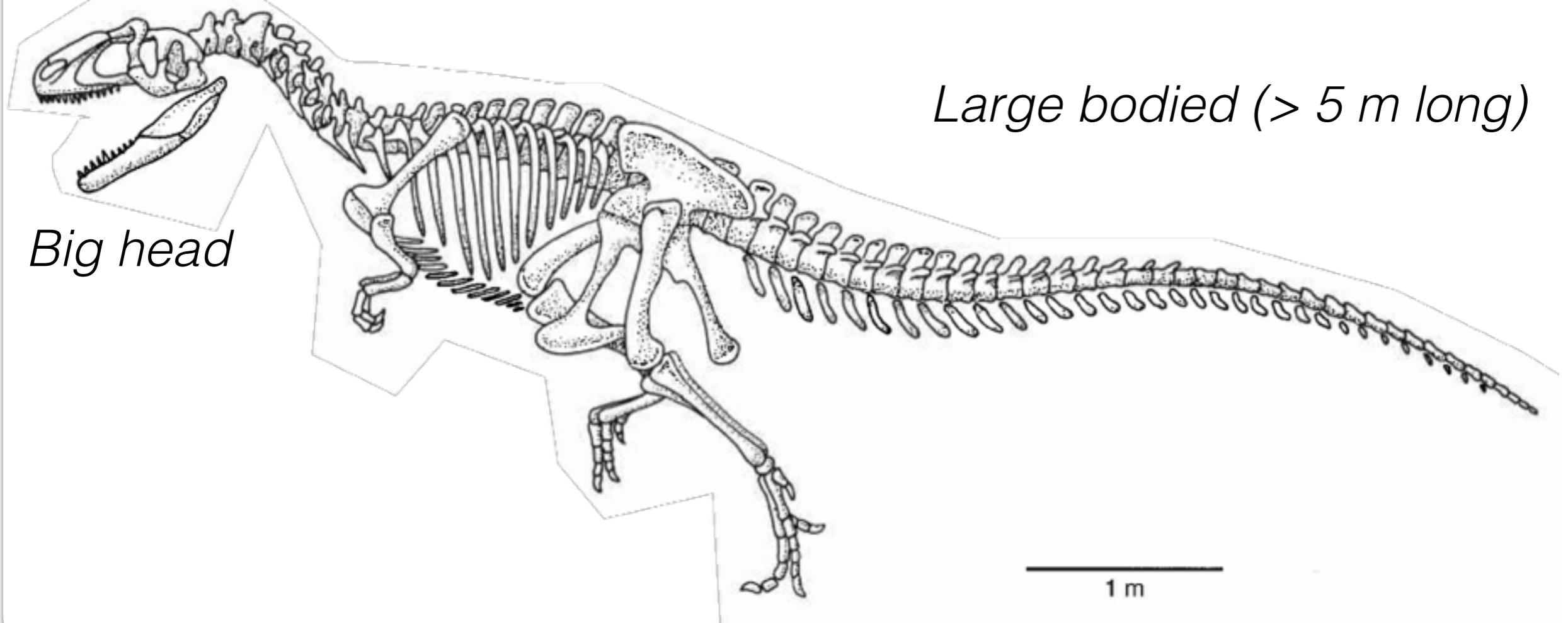
'onyx





# Carnosaurs

*Big nostrils and elaborate sinuses*

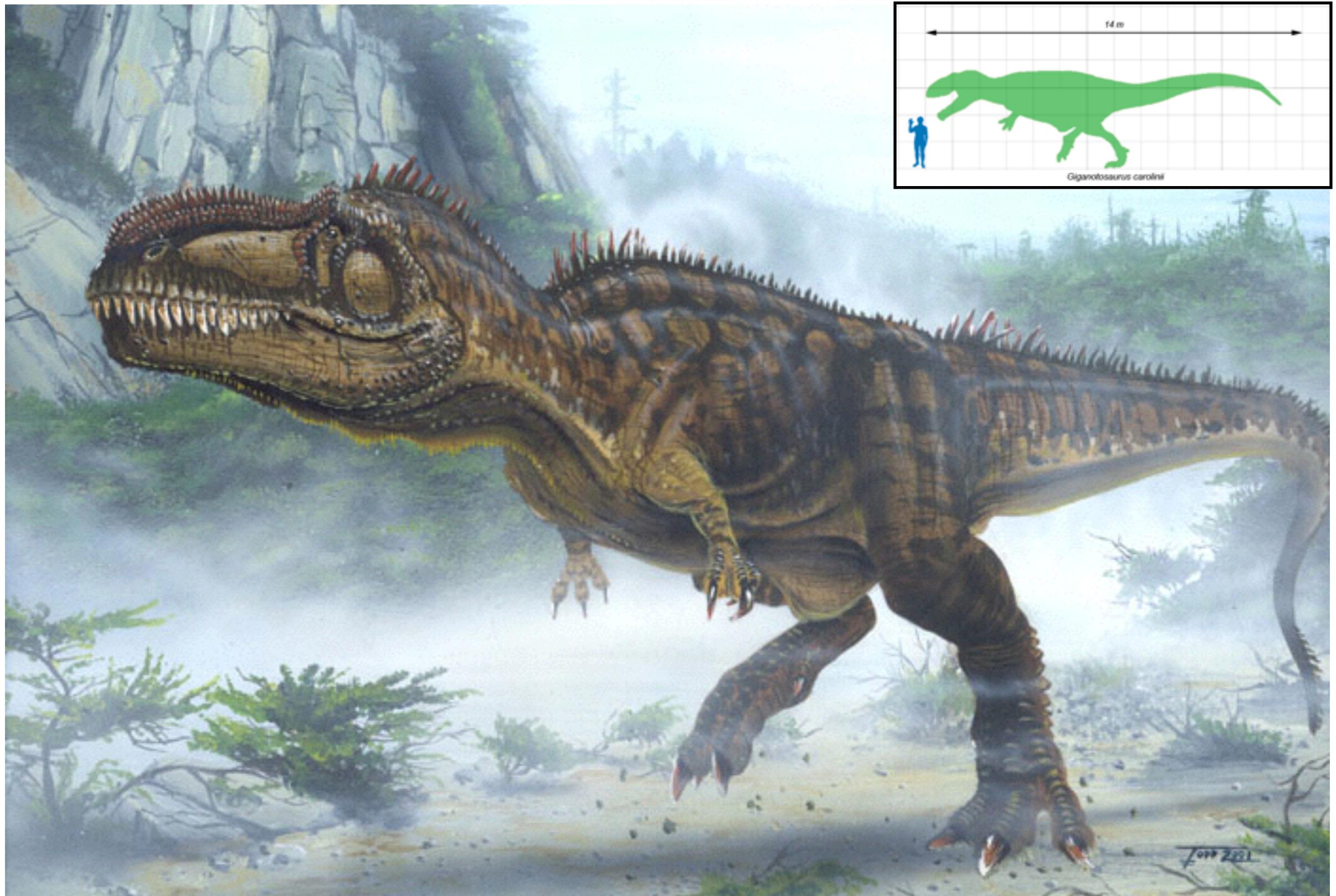


*Large bodied (> 5 m long)*

*Big head*

*Allosaurus*

# Carnosaurs



*Giganotosaurus*; Late Cretaceous South America  
16 meters (52 ft) long

Skull was 6.3 ft long  
May have preyed on large Sauropods



*Possibly a pack hunter.  
16% larger brain than similar-sized  
carnivores  
\*WINNING\**

*Giganotosaurus; Late Cretaceous South America  
16 meters (52 ft) long*

# Carnosaurs



*Charcarodontosaurus; Mid Cretaceous Africa  
15 meters (50 ft) long*

*Carcharodontosaurus*  
‘jagged tooth’-reptile

