# Guide to writing your Natural History report

## Natural History of Dinosaurs, 2016

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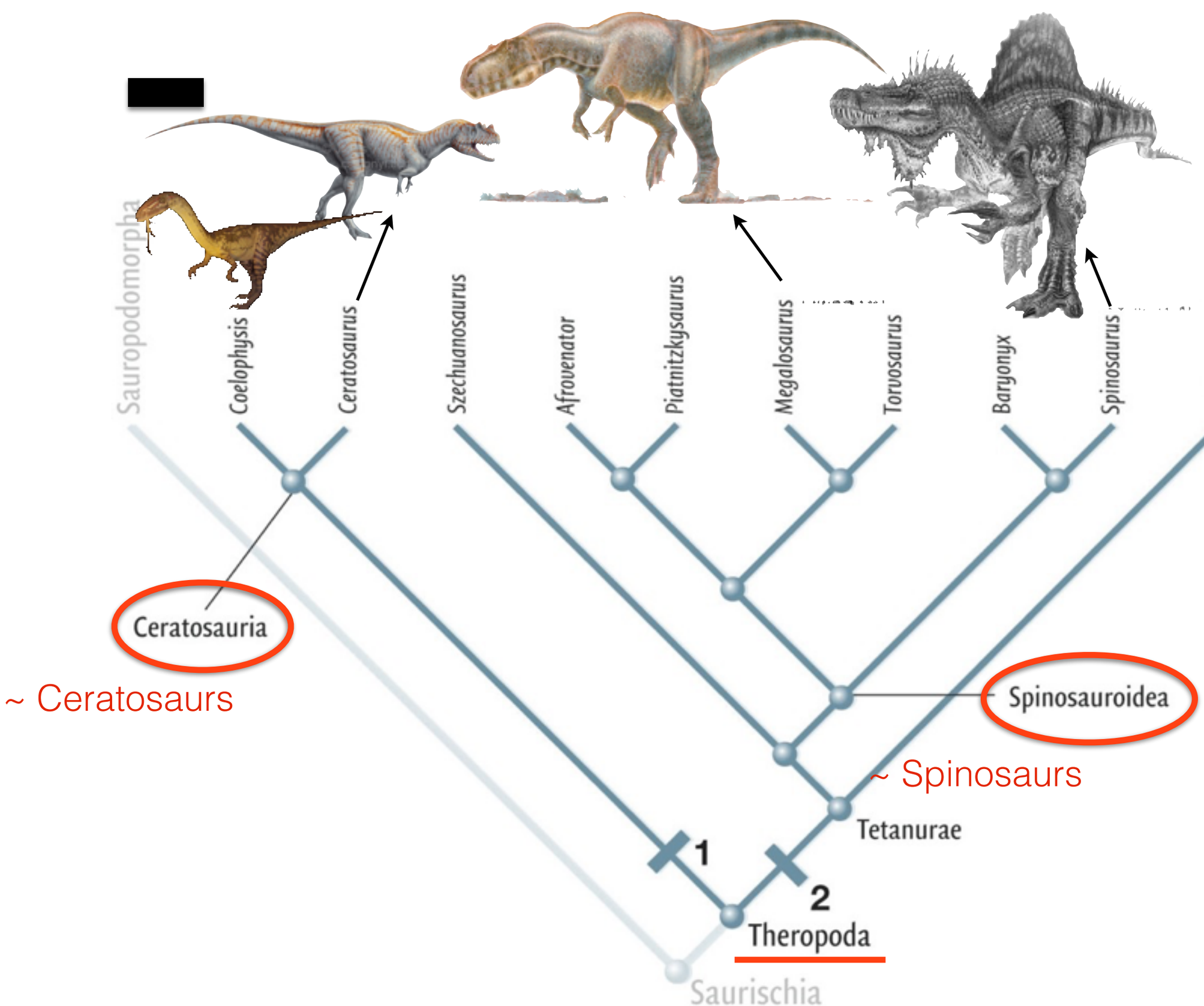
### Guidelines

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

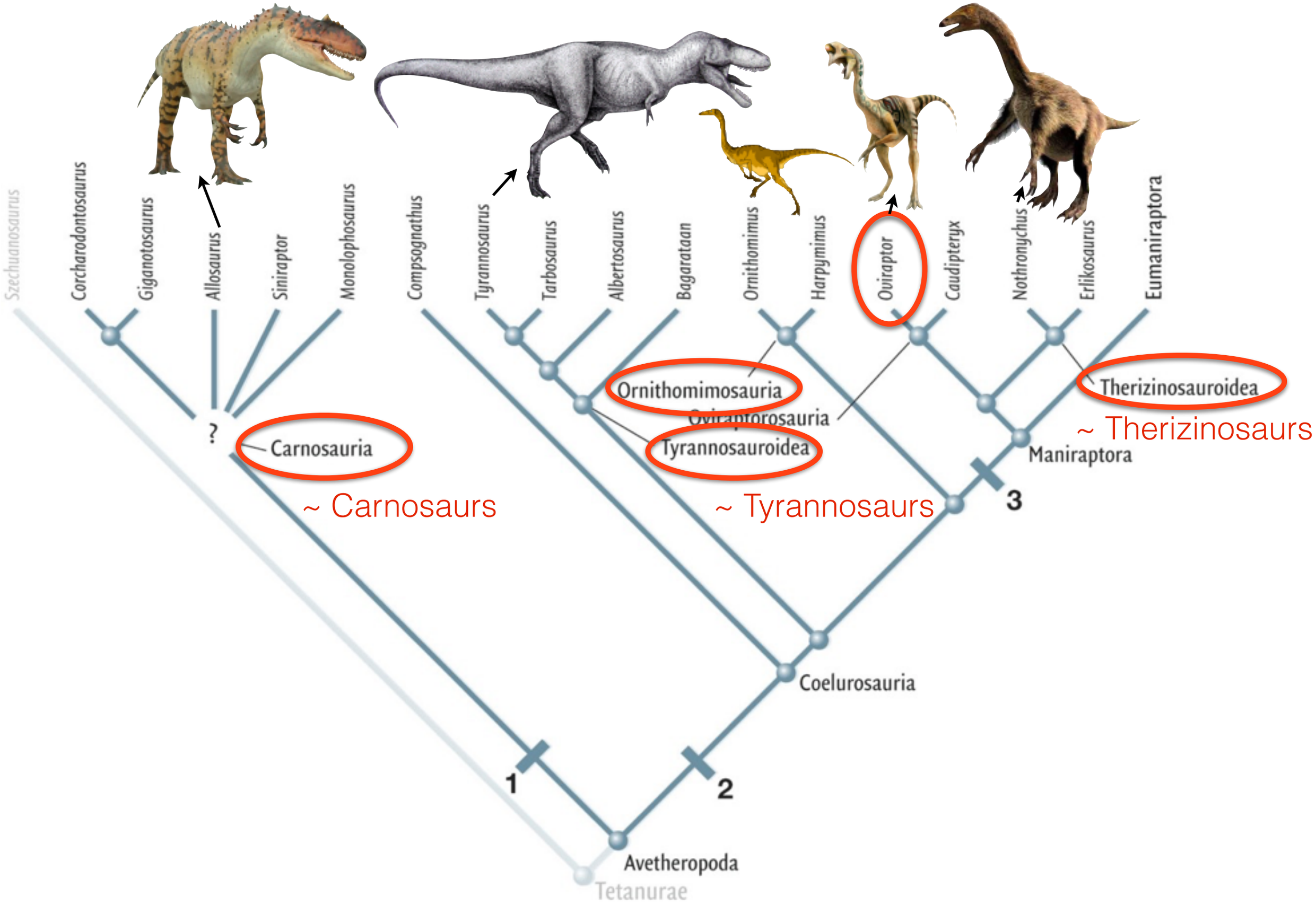
- **Report Body:** 4 pages long (no more, no less)
- **References:** Place your references on the 5th page. The format should be: "Author(s). Date. Title. Source." All references must be cited at least once within the text of the report (see below for instructions regarding parenthetical citations)
- 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***

Fastovsky ch. 12

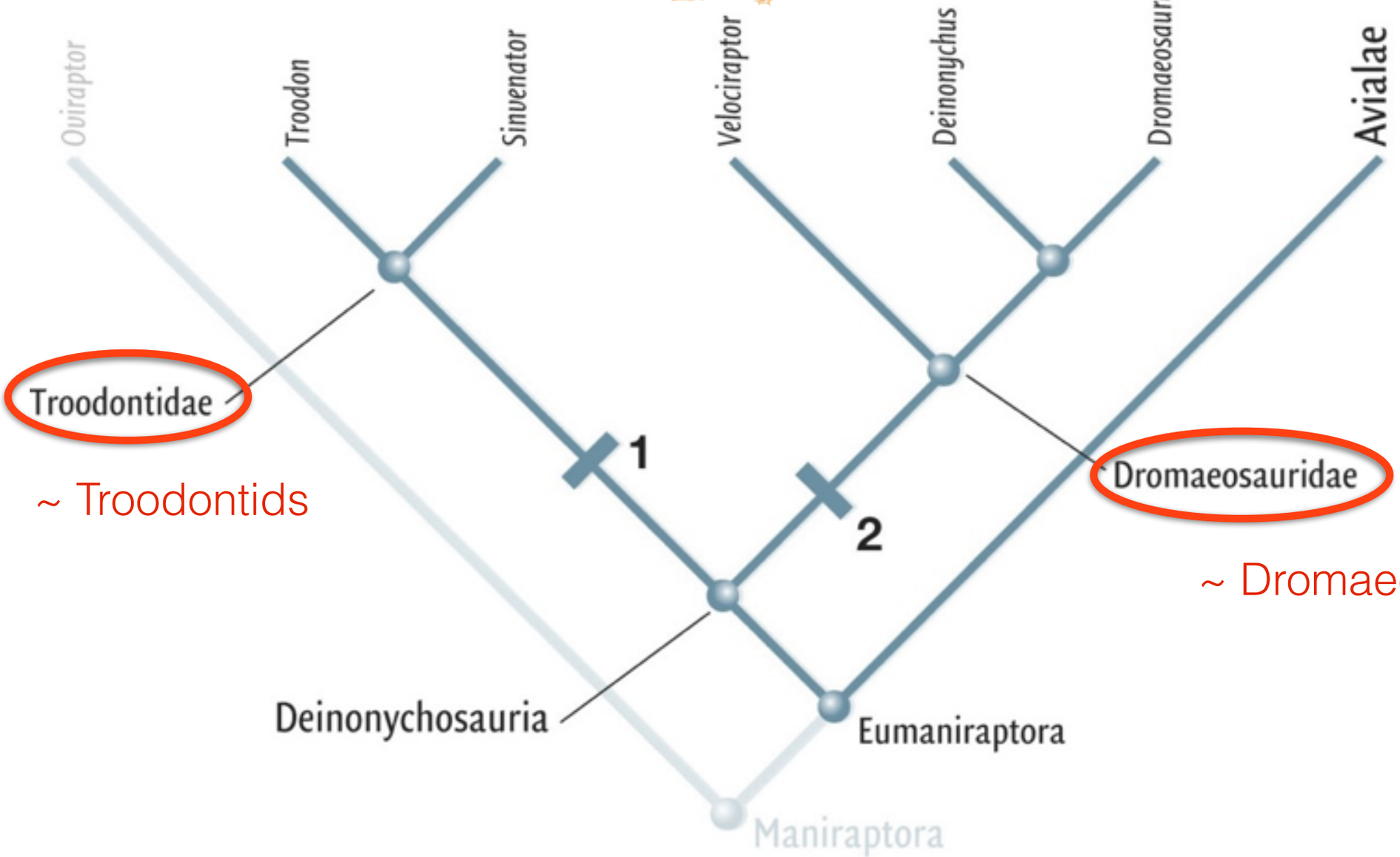
| | | | | | |
|---|---|---|---|---|---|
| **9** | **3/14** | Dino physiology & ecology I. | Reproduction and growth | ~~Brusatte Chpt 8~~ | |
| | **3/16** | Dino physiology & ecology II. | Diet and food webs | | |
| | **3/18** | Dino physiology & ecology III. | Some like it hot: endothermy vs. ectothermy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



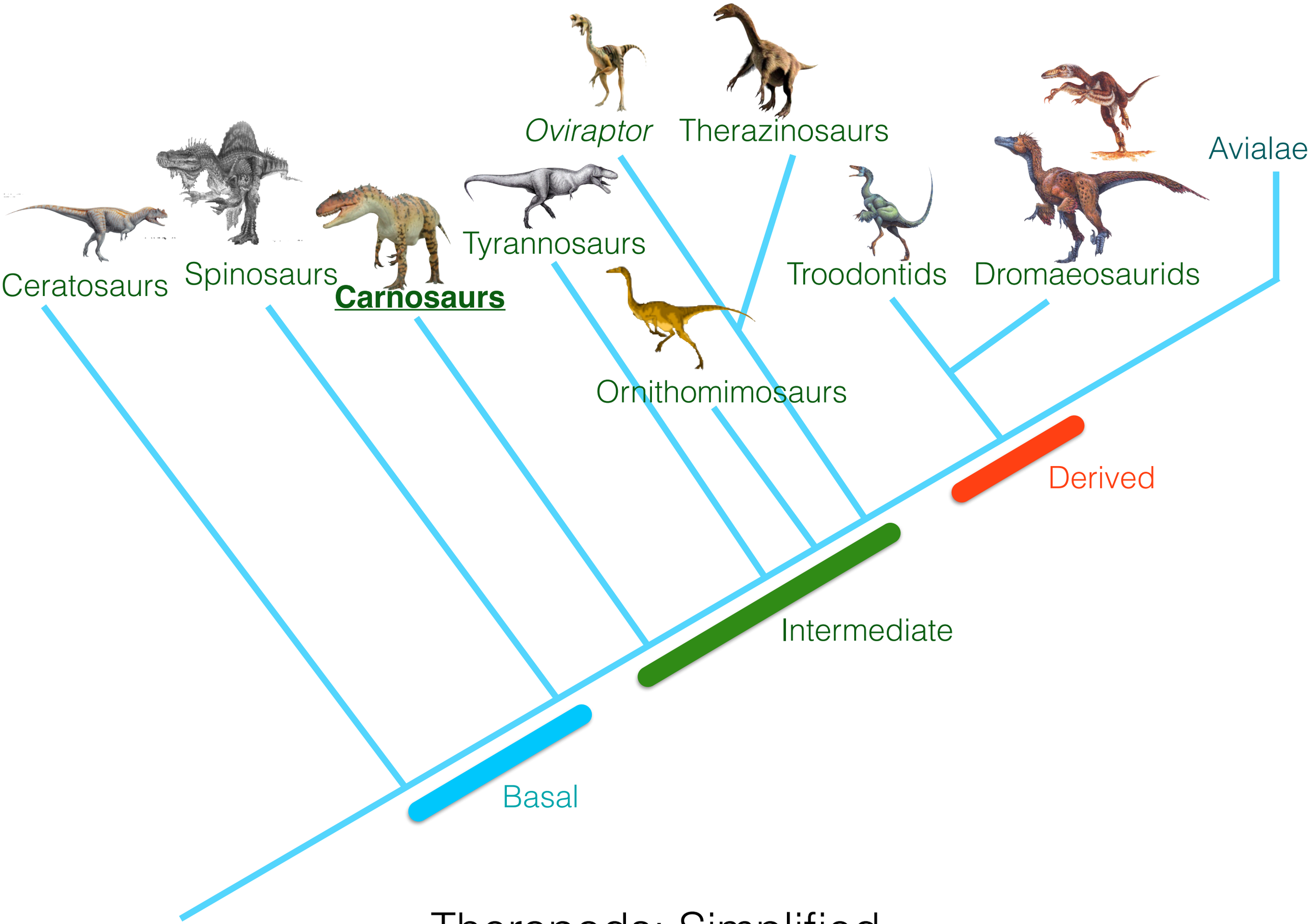

# Basal Theropods




# Intermediate Theropods

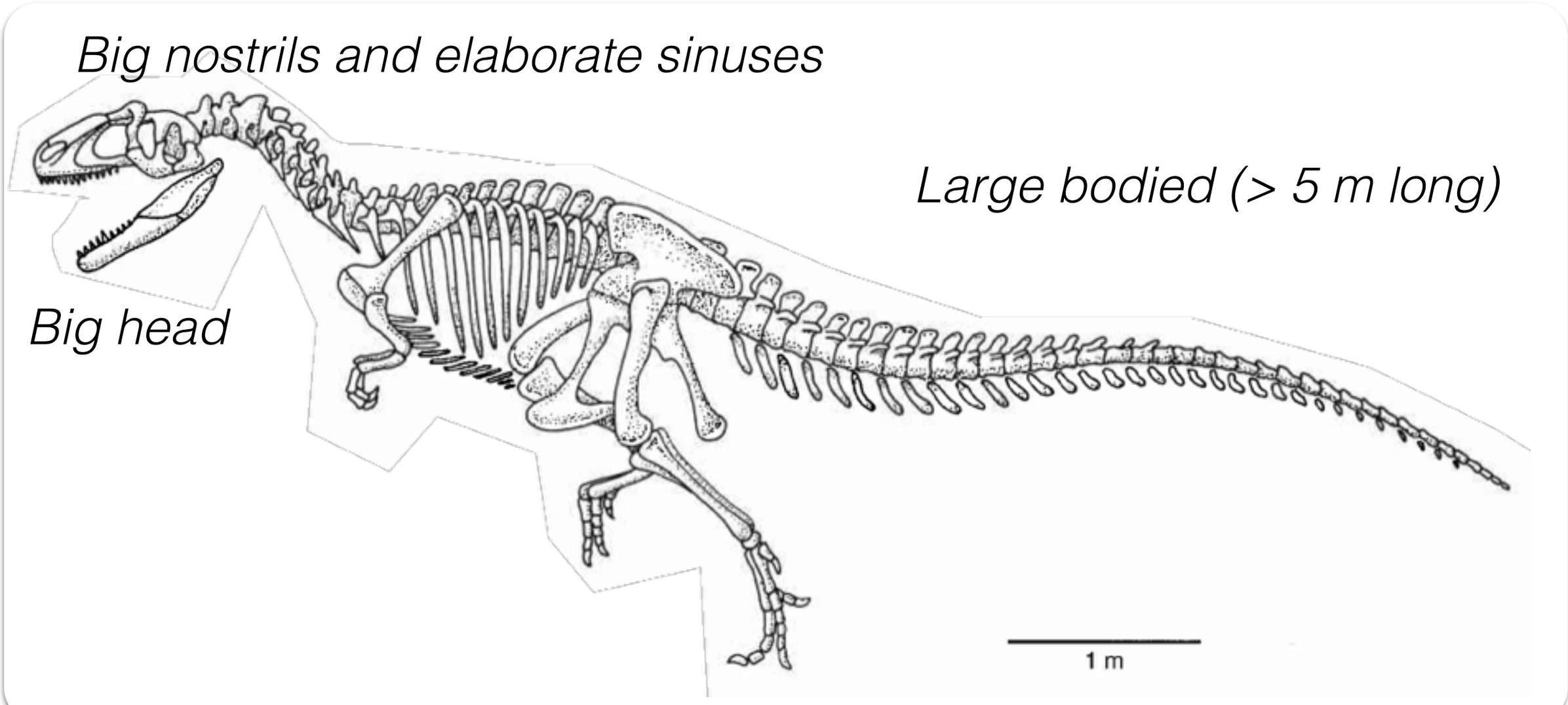



# Derived Theropods



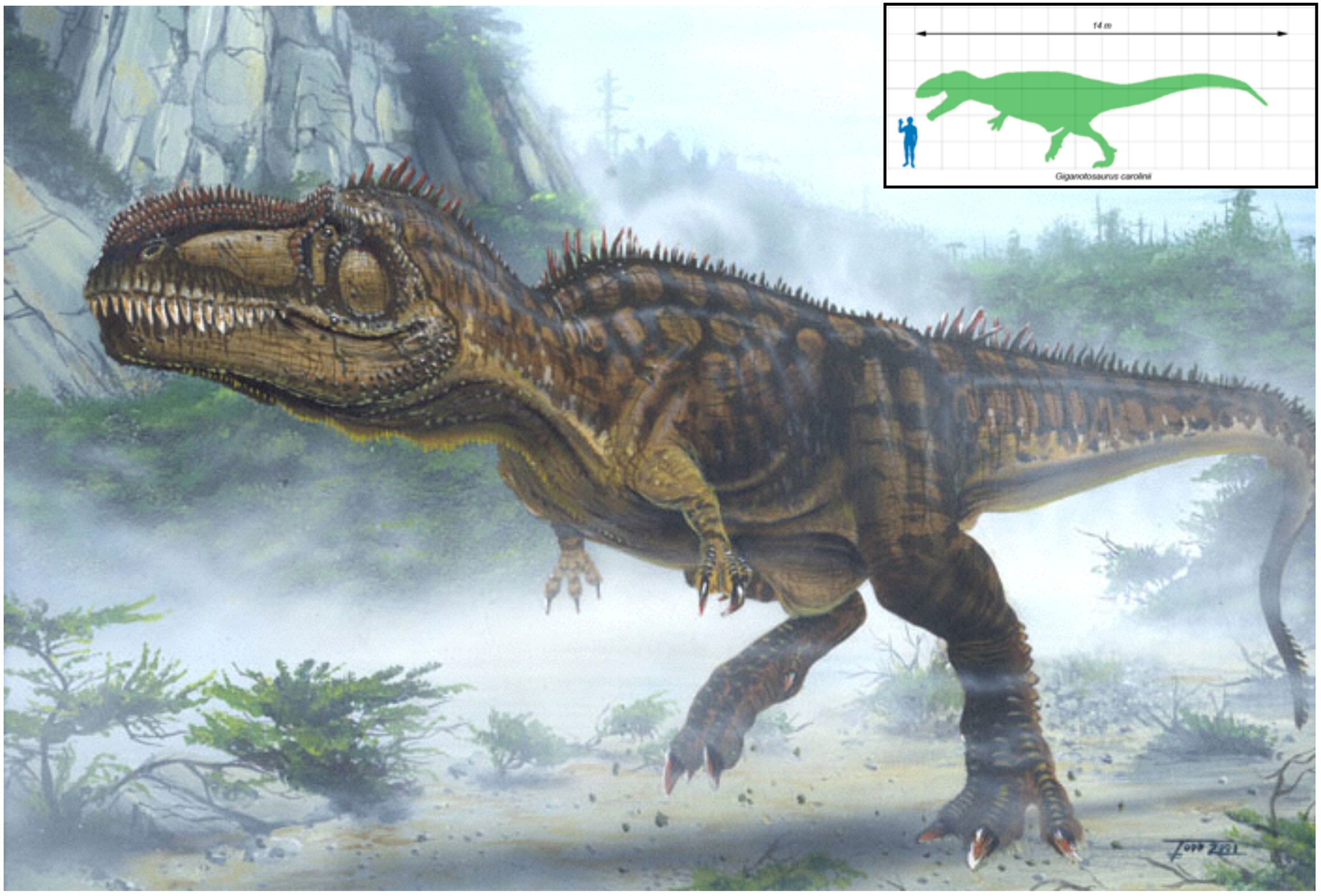

Theropods: Simplified

# Carnosaurs




*Allosaurus*

# Carnosaurs




*Giganotosaurus; Late Cretaceous South America*

*16 meters (52 ft) long*

*Skull was 6.3 ft long*

*May have preyed on large Sauropods*

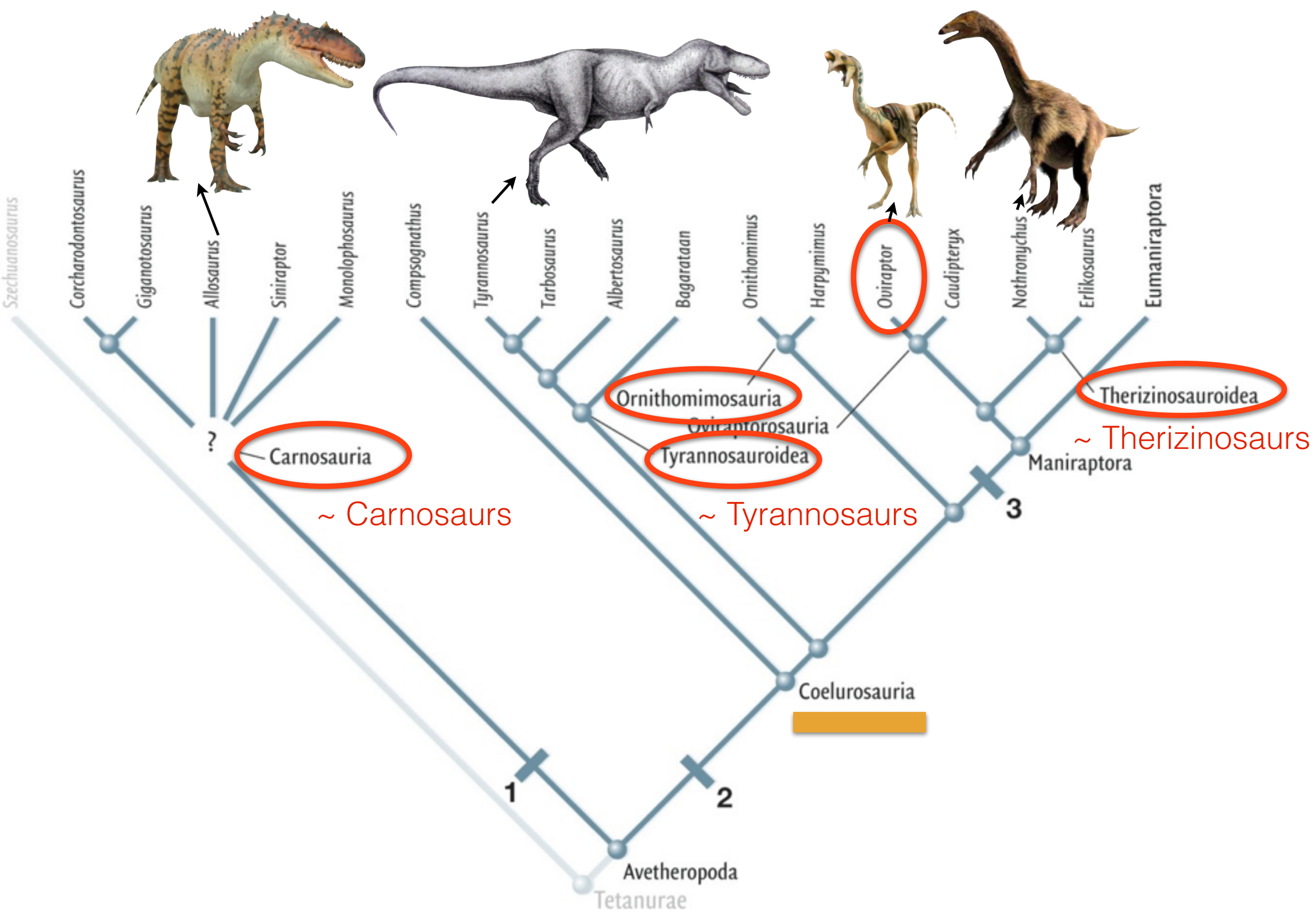
*Possibly a pack hunter.*
*16% larger brain than similar-sized carnivores*
**WINNING**

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

# Carnosaurs

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

*Carcharodont-osaurus*
‘jagged tooth’-reptile



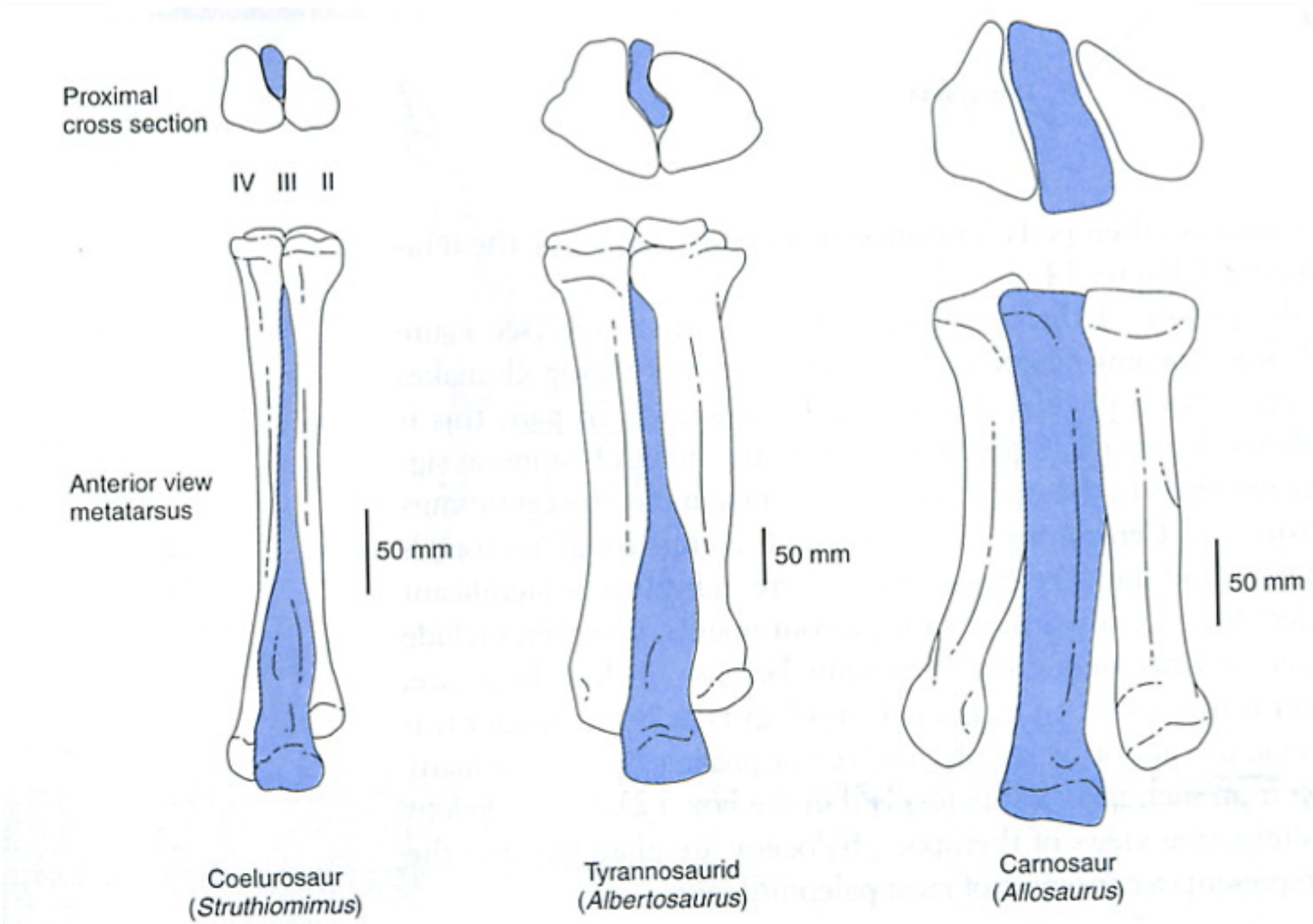

# Coelurosauria

OOPS *Coelophysis*

vs

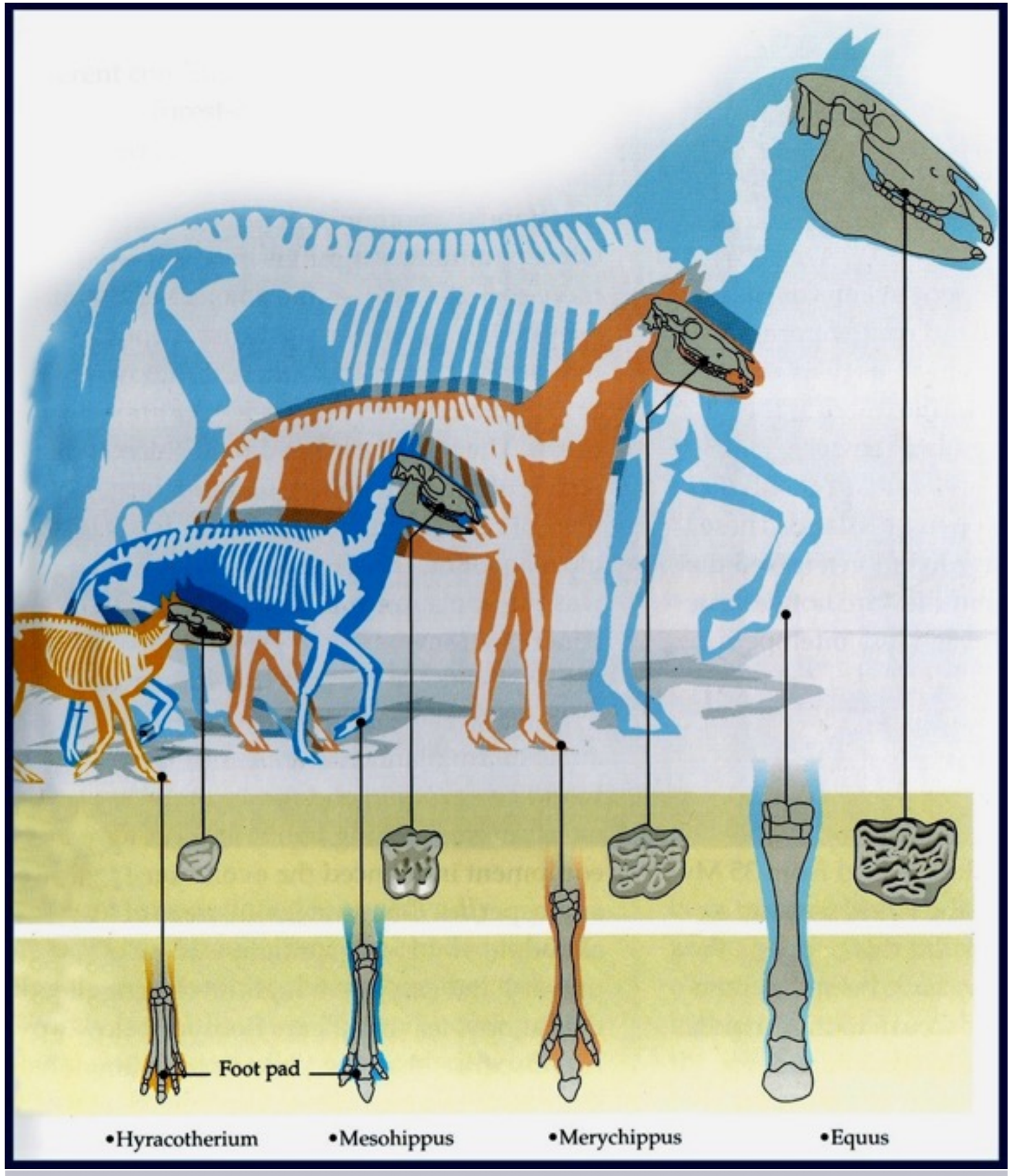
*Compsognathus*

# Arctometatarsal ankle
# =
# faster runners?




yes yes no

# Coelurosaurs:
# An Equine Analogue



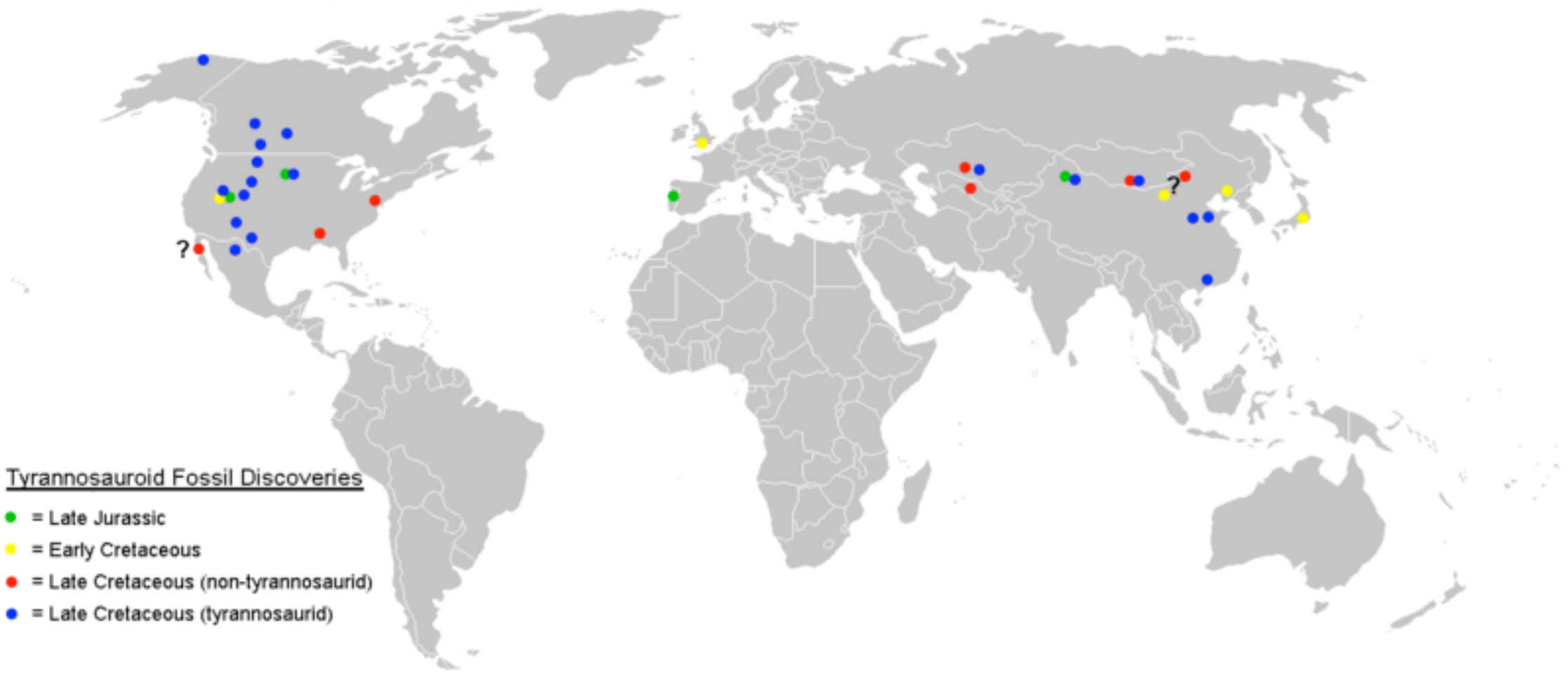
# Tyrannosaurs

*Laelaps*

*Guanlong: basal Tyrannosaur*

*Large bodies, short arms*

*T. rex*: last and largest Tyrannosaur

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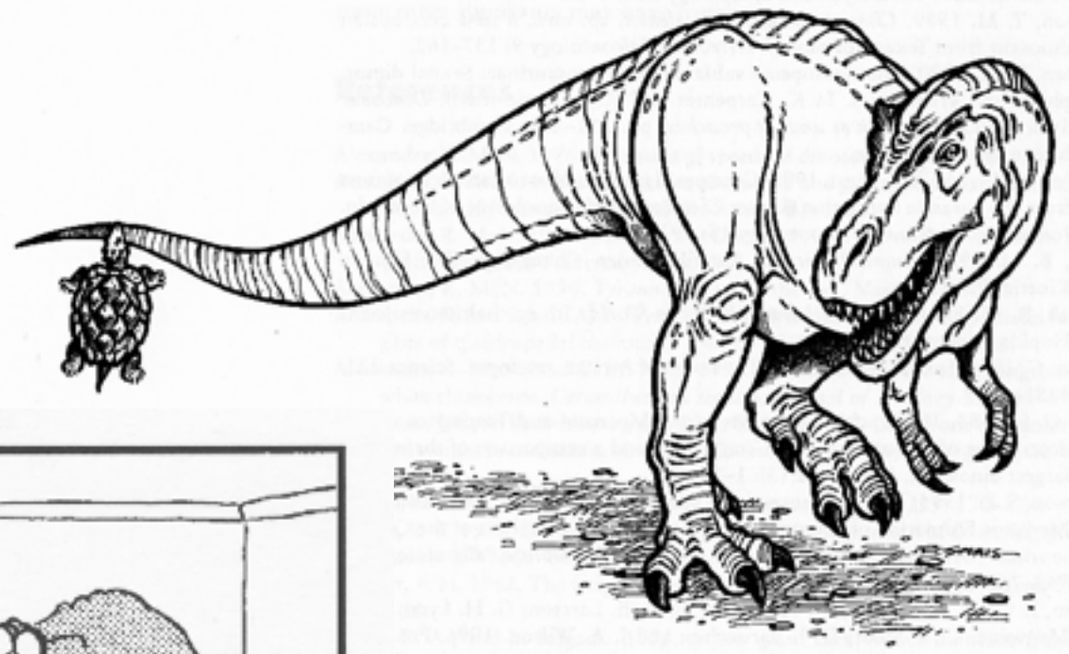
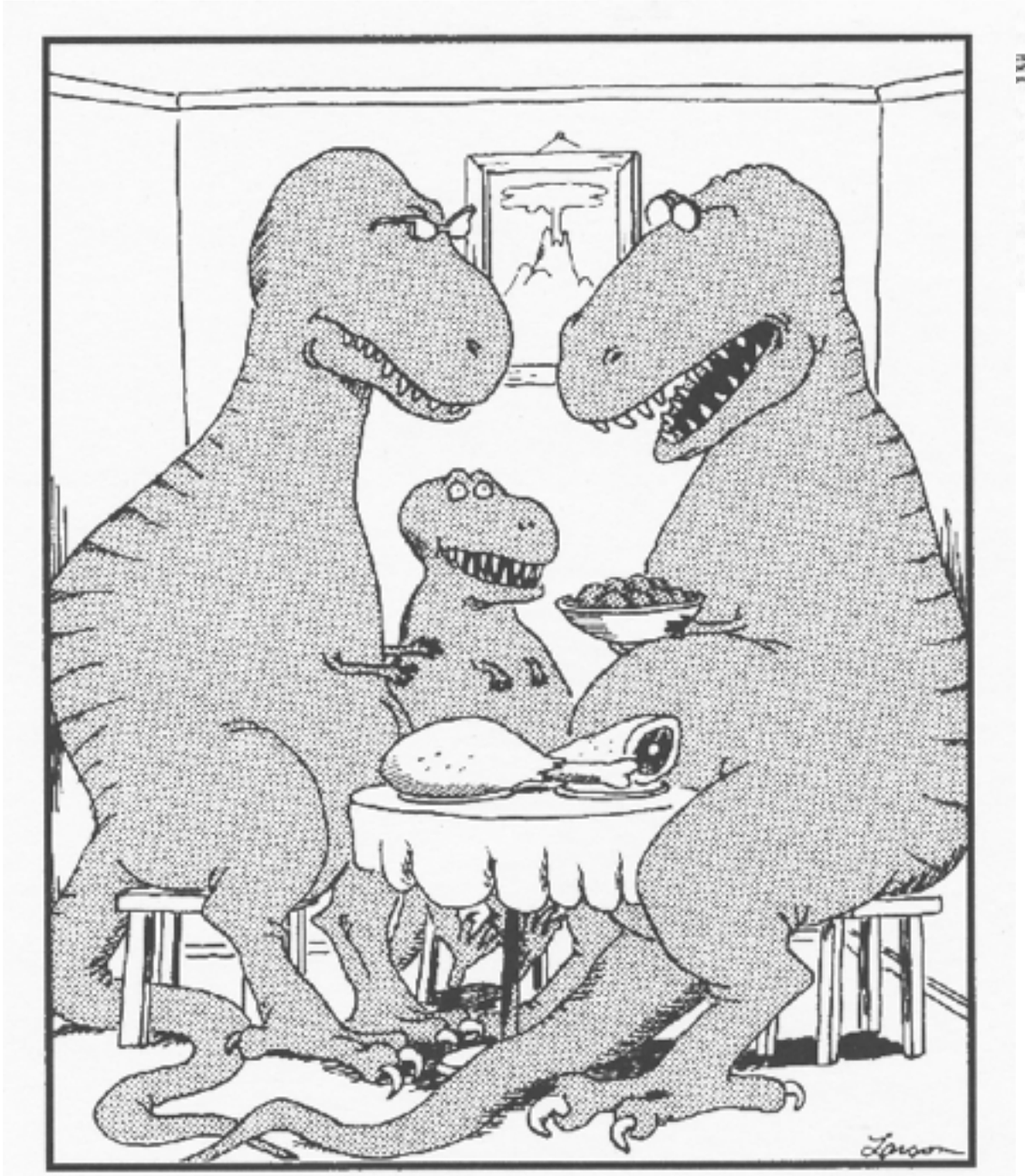
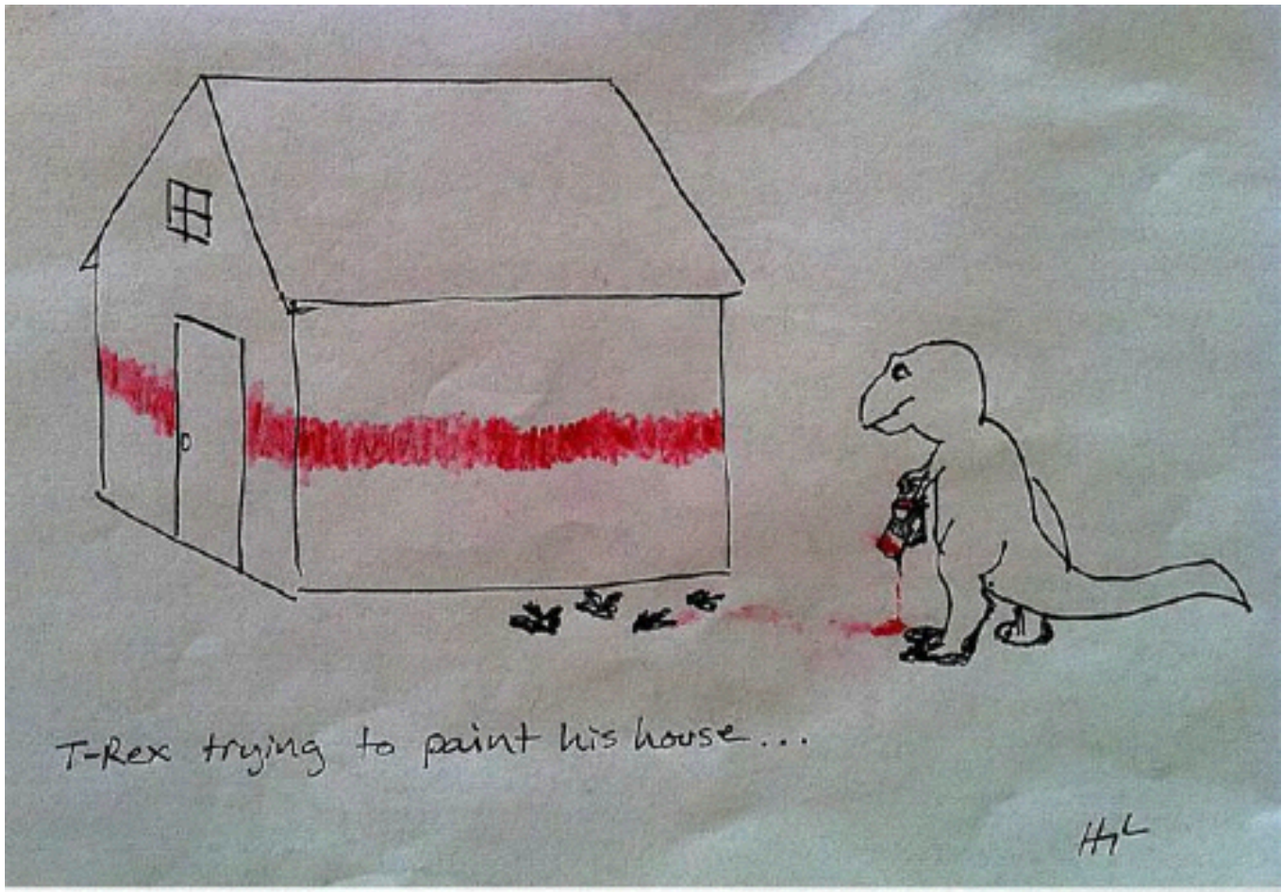
Horse-sized primitive tyrannosaur *Timurlengia euotica* from the middle Cretaceous (ca. 90 million to 92 million years ago) of Uzbekistan.

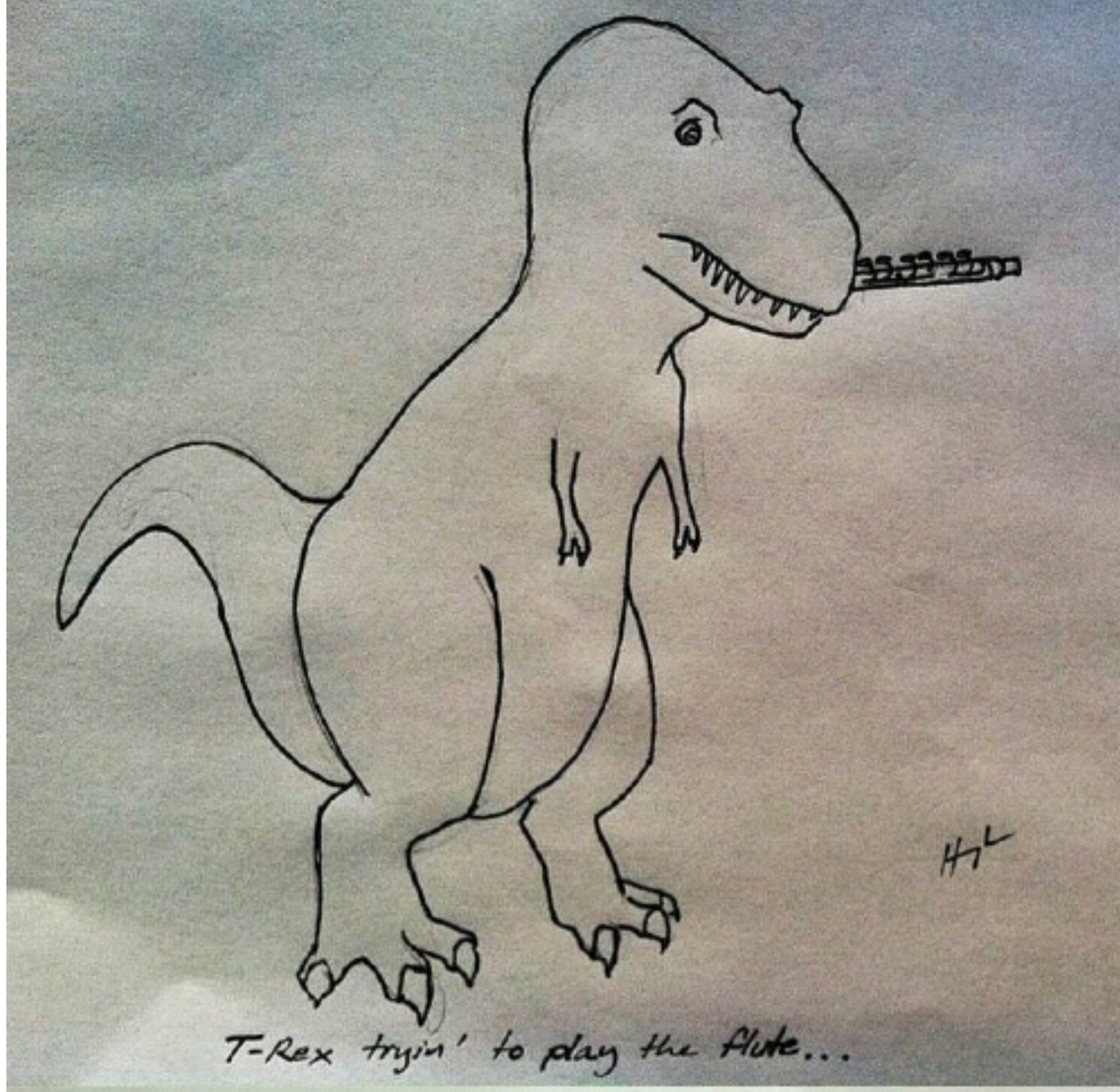

corner bakery





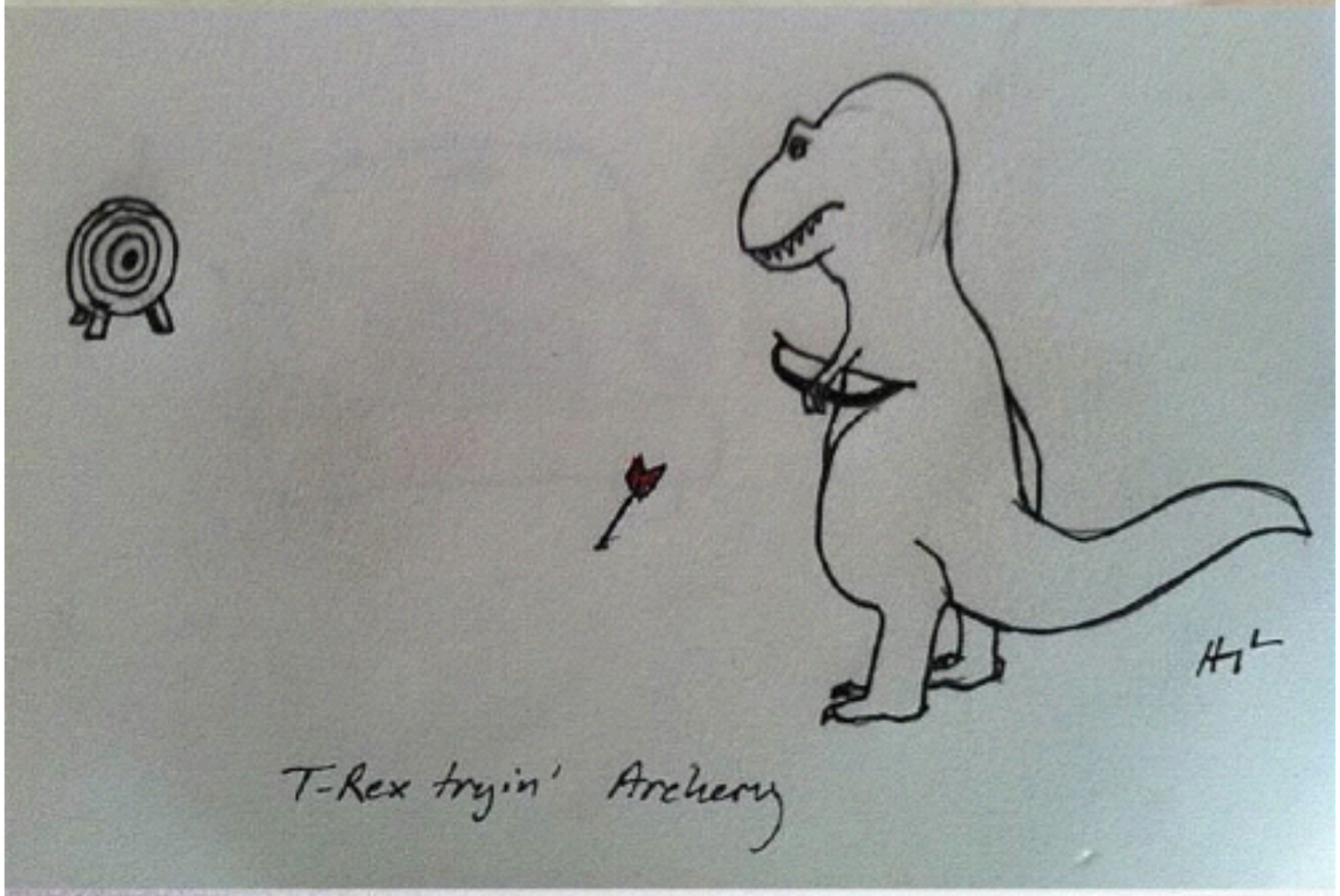
"Hey! I'm *trying* to pass the potatoes! … Remember, my forearms are just as useless as yours!"

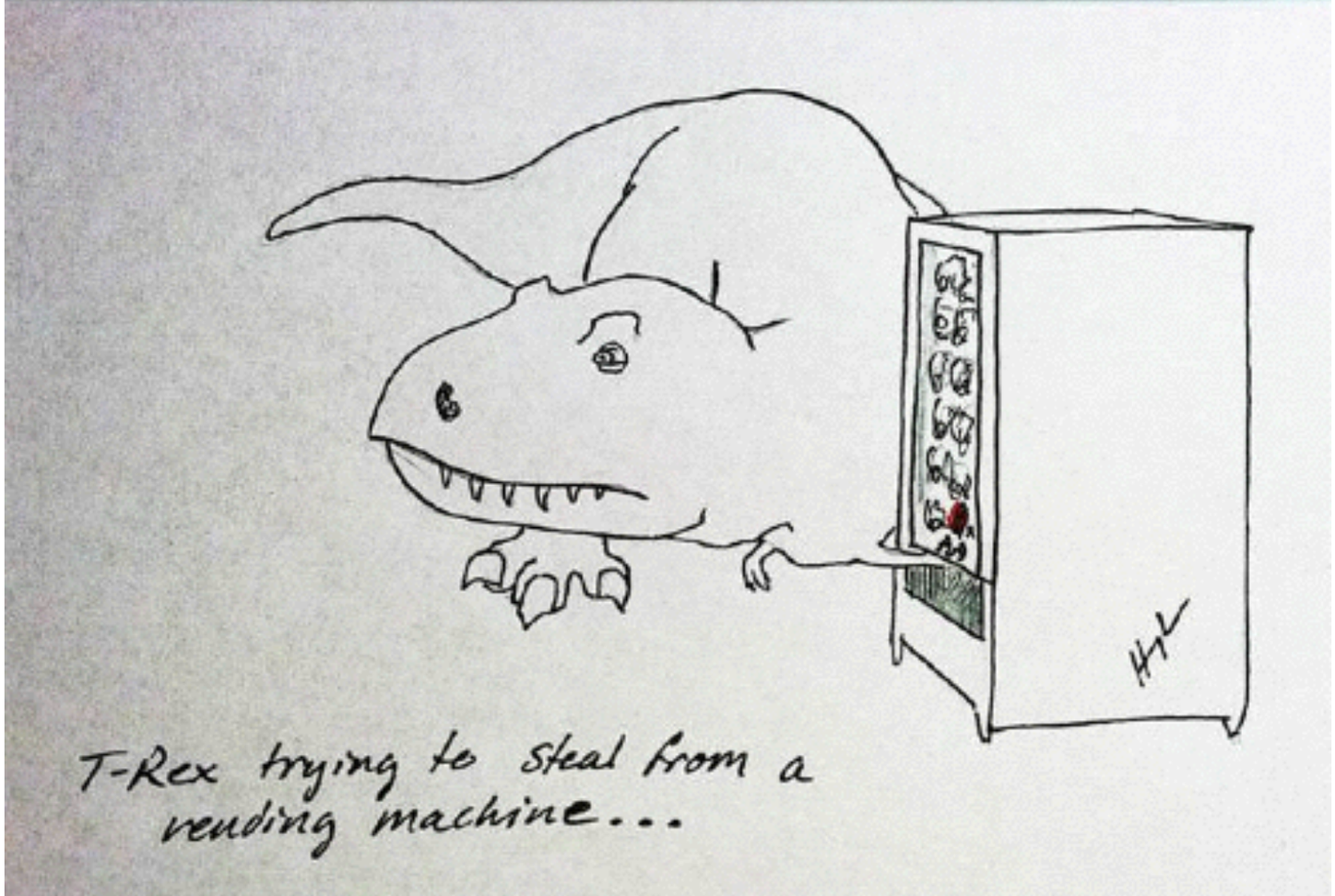

T-Rex trying to paint his house...

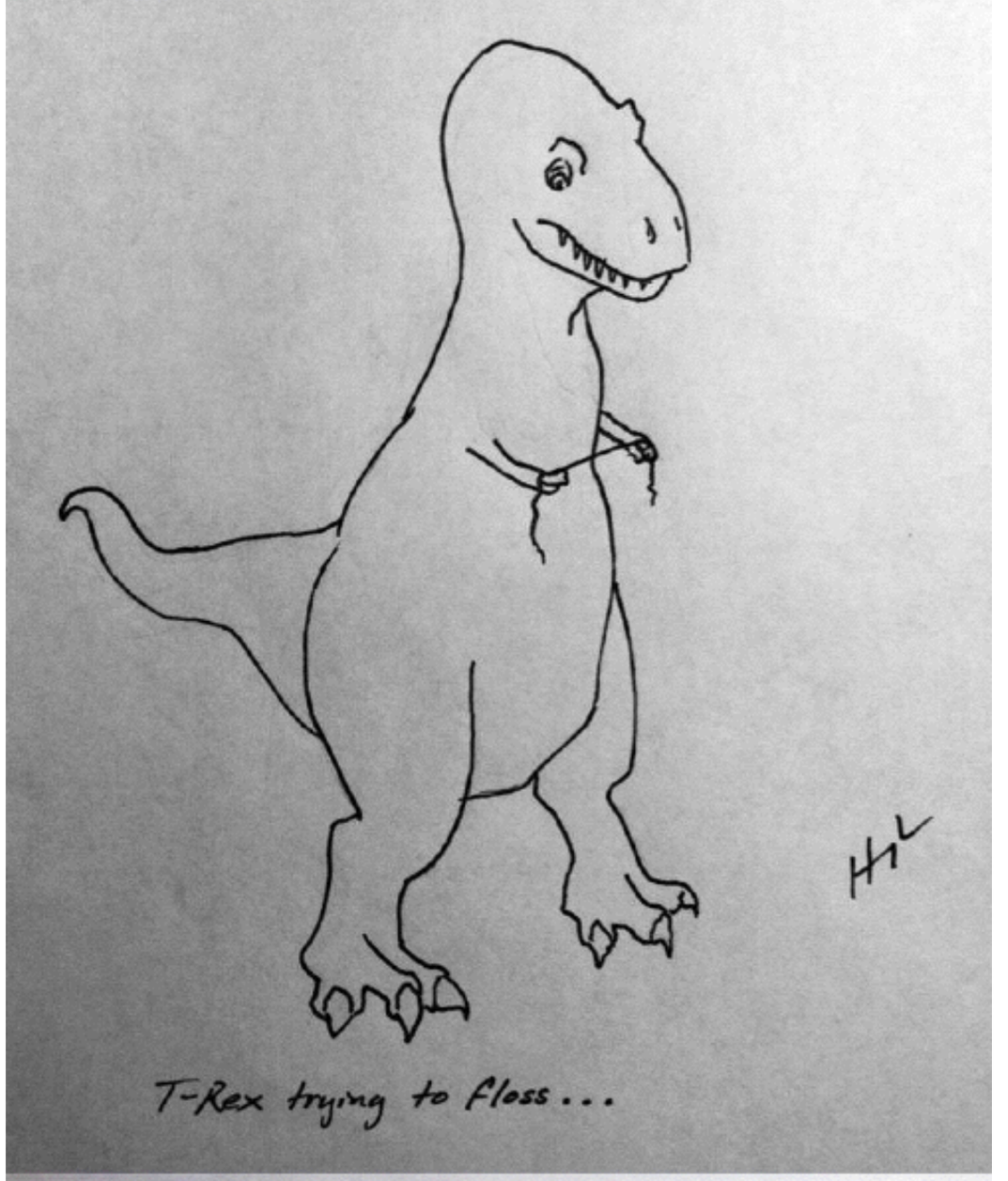

T-Rex tryin' to play the flute...

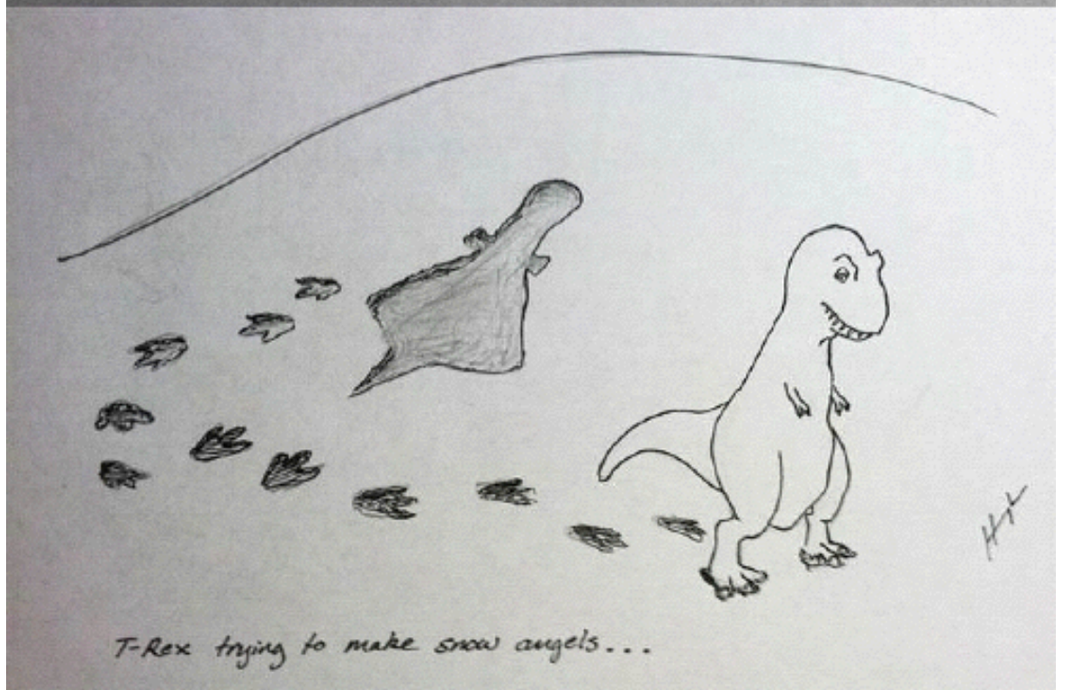

T-Rex trying to play rock-paper-scissors...


T-Rex tryin' to row a boat...

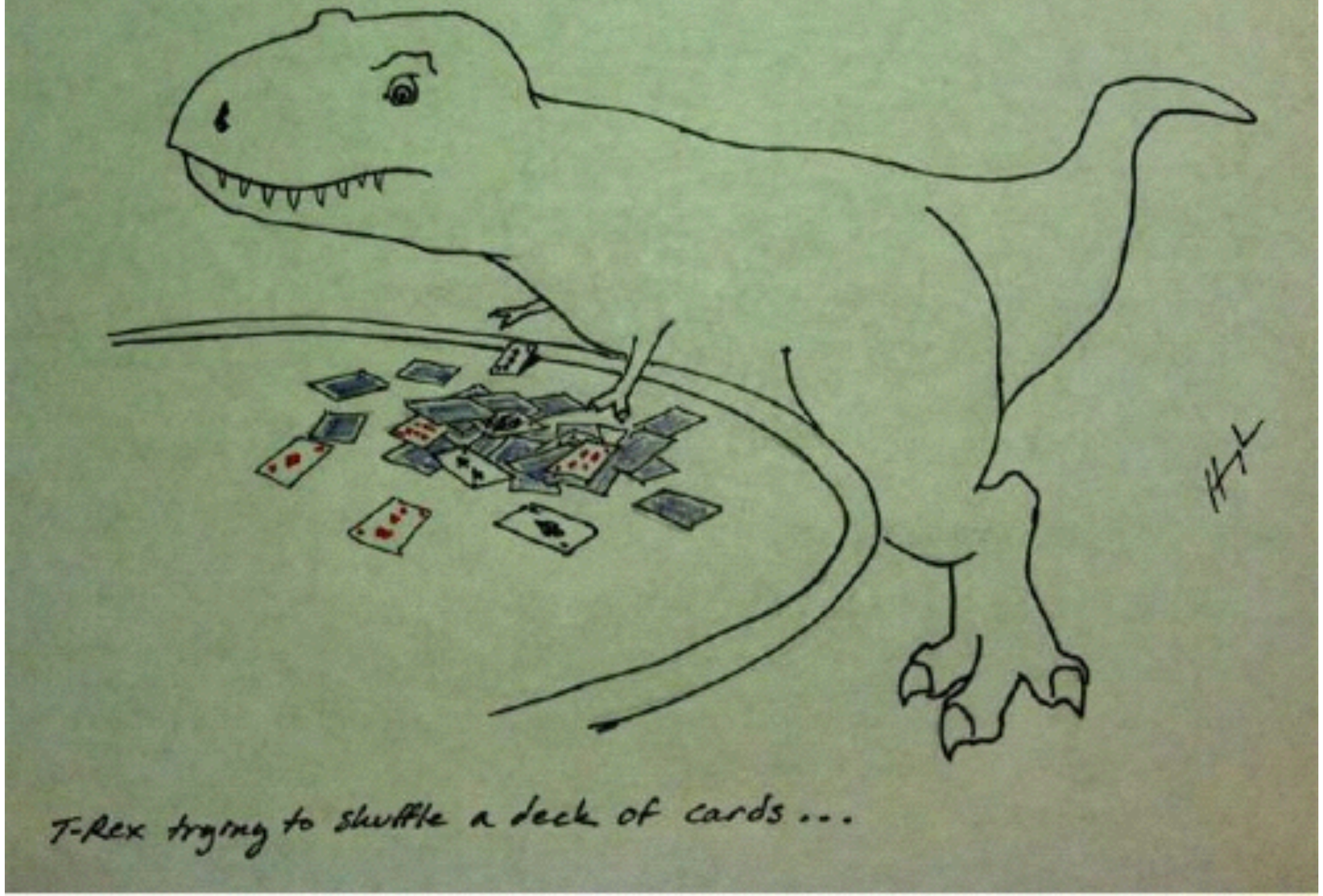

T-Rex tryin' Archery


T-Rex trying to steal from a vending machine...

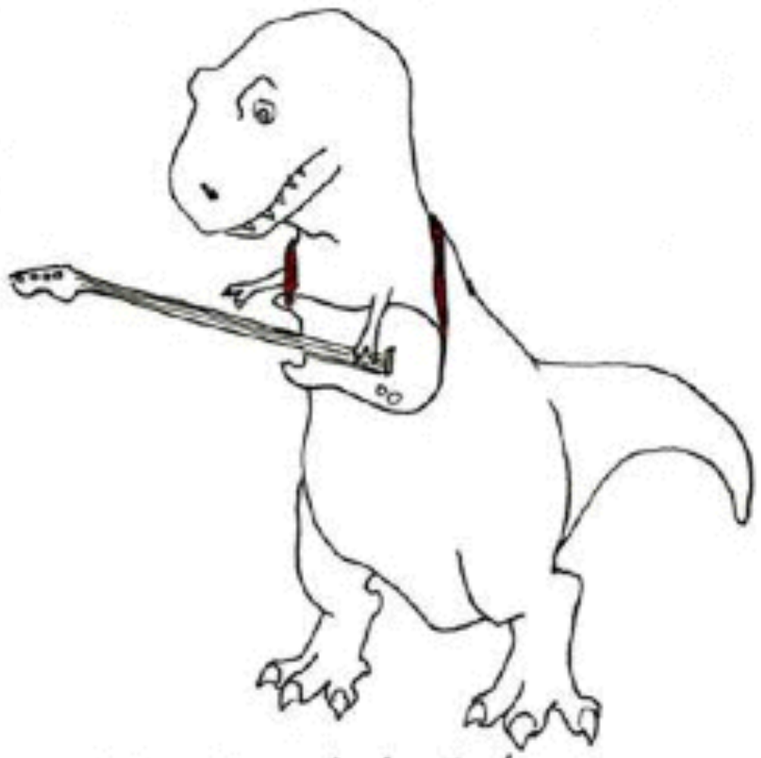

T-Rex trying to floss...


T-Rex trying to make snow angels...

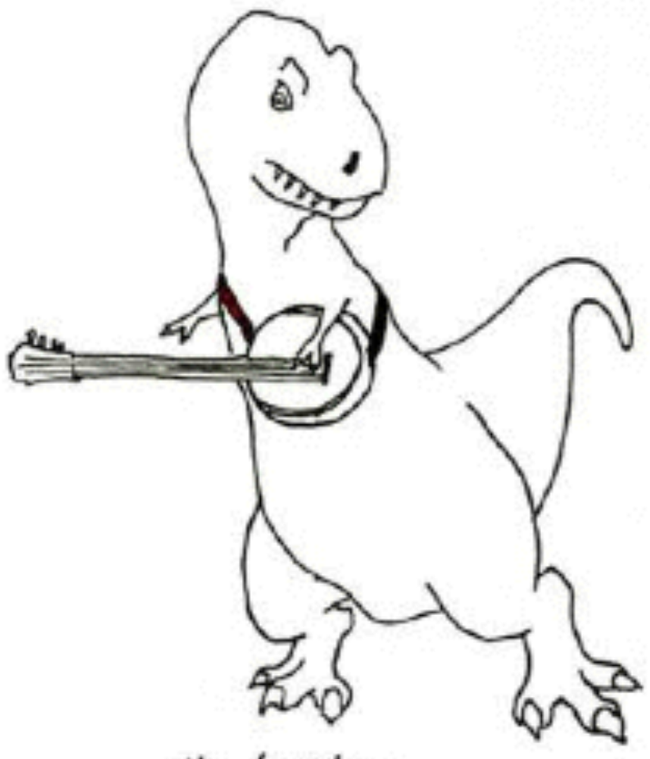
T-Rex trying to make snow angels...



T-Rex trying to shuffle a deck of cards...



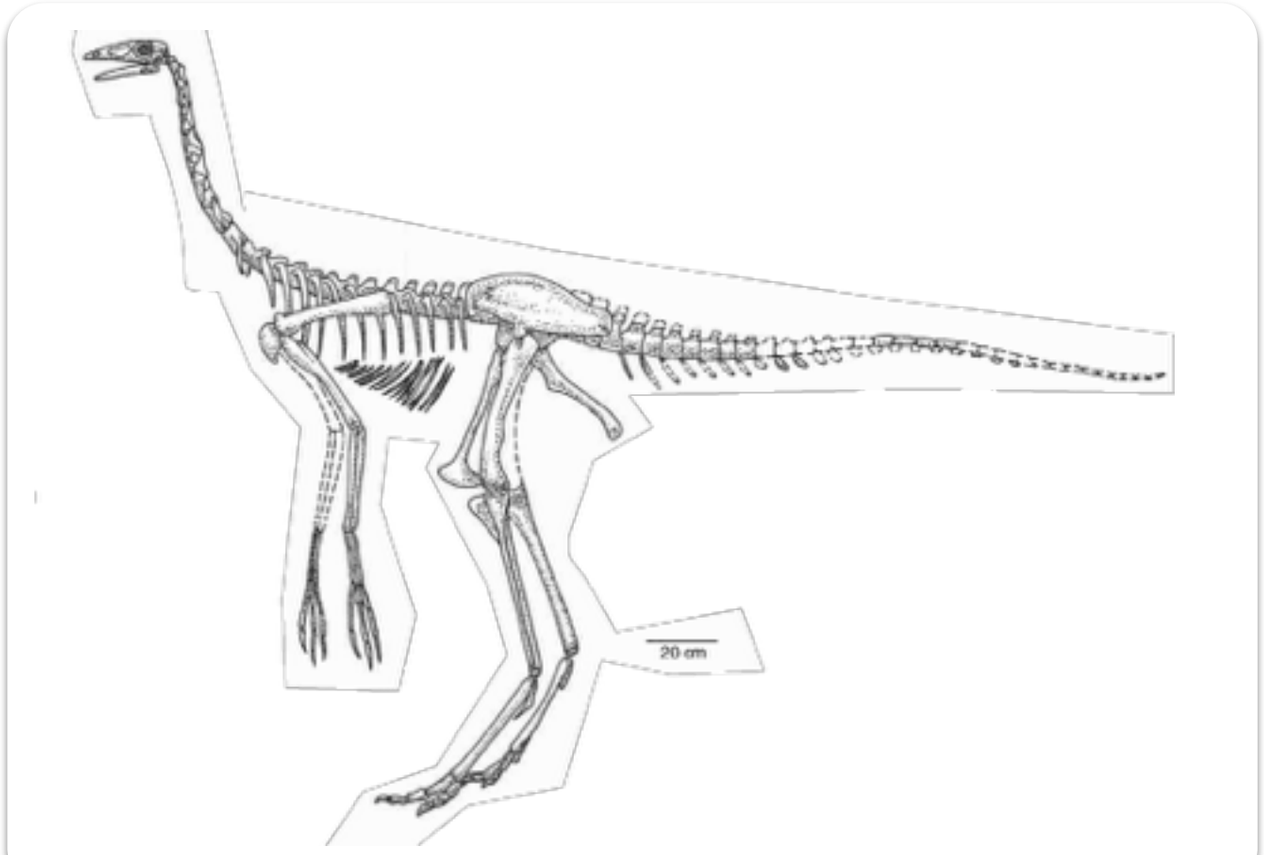
T-Rex trying to play the bass...

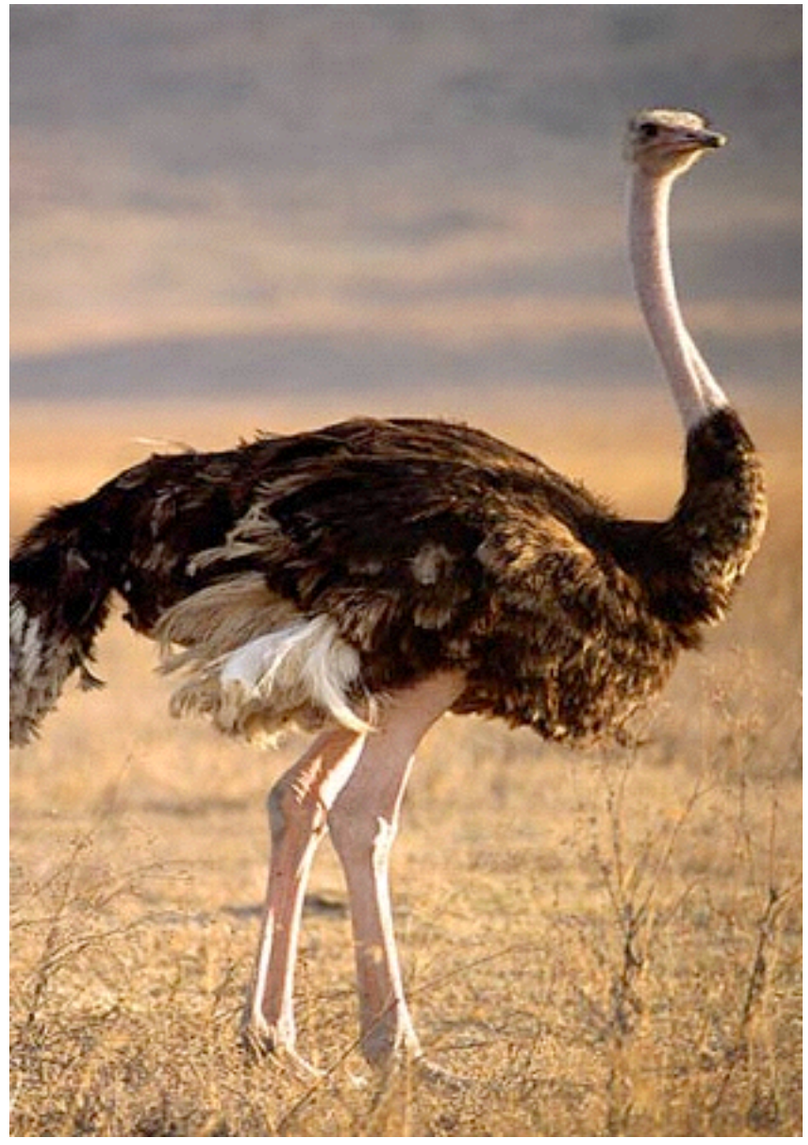


the banjo...

the UKULELE!!!

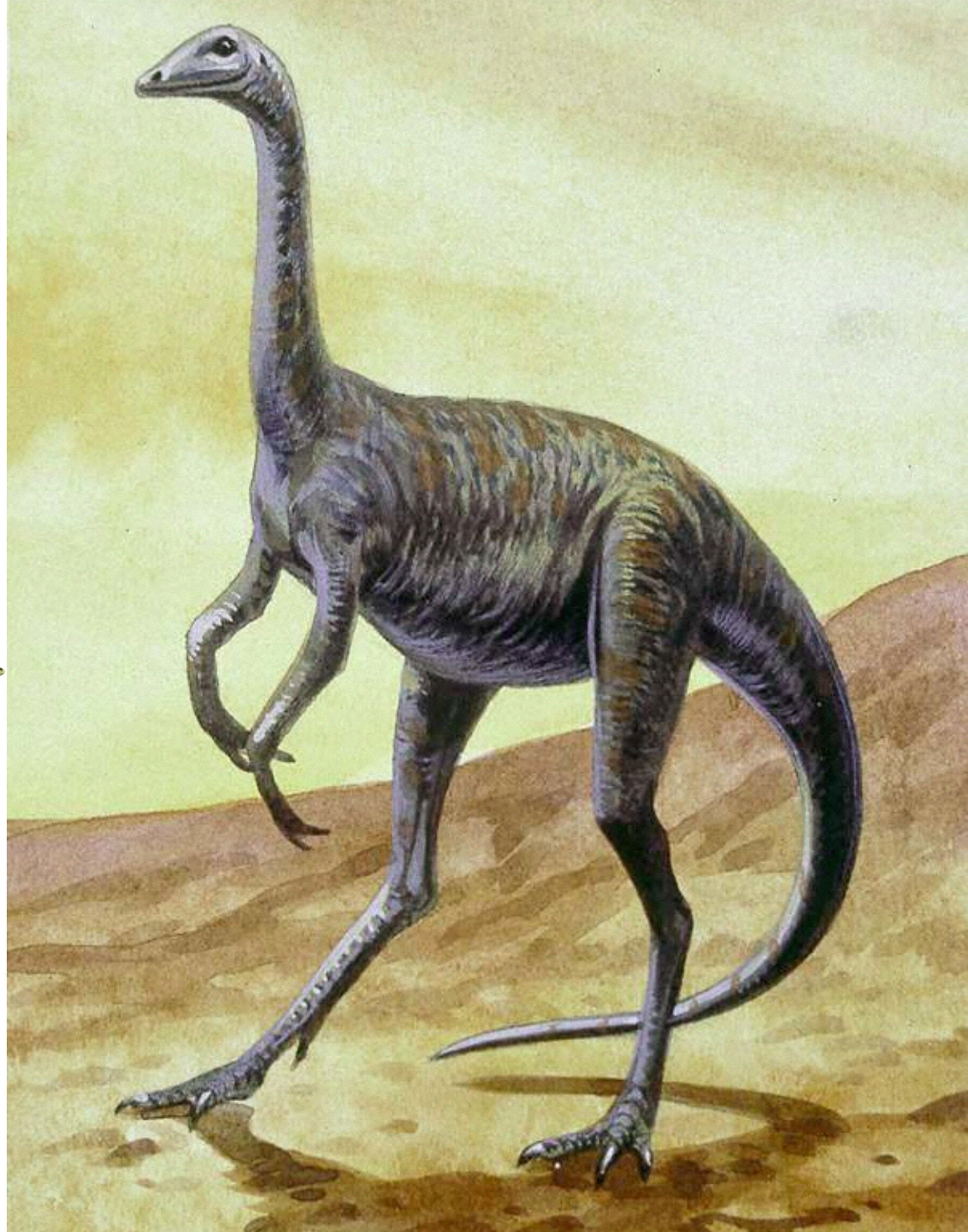
# *Ornithomimosaurs*



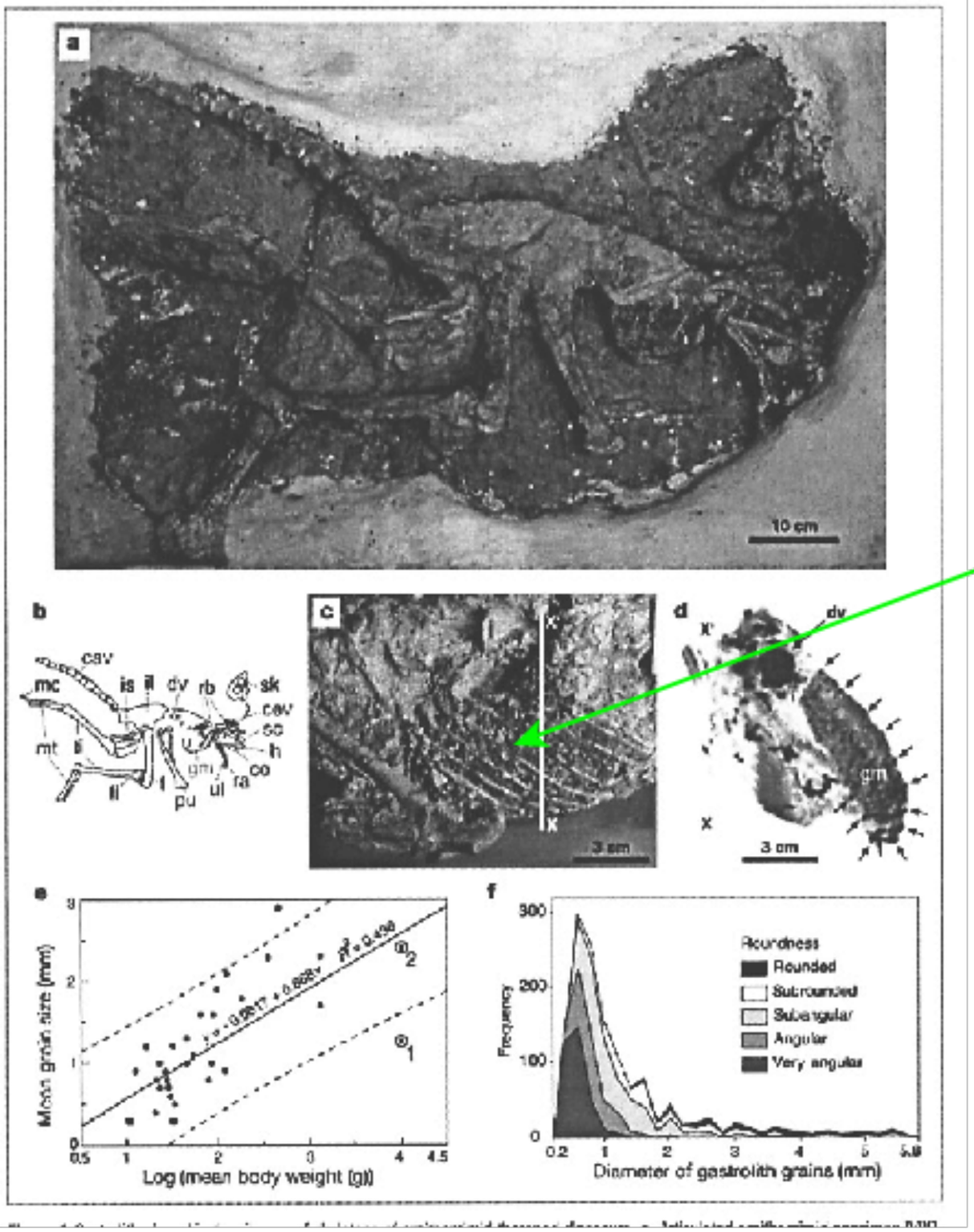



*Small, lightly built skulls with tiny orbits*
*No upper teeth, few lower teeth*
*Long arms*


*Struthiomimus; Late Cretaceous N. America*
*4.3 meters (14 ft) long*



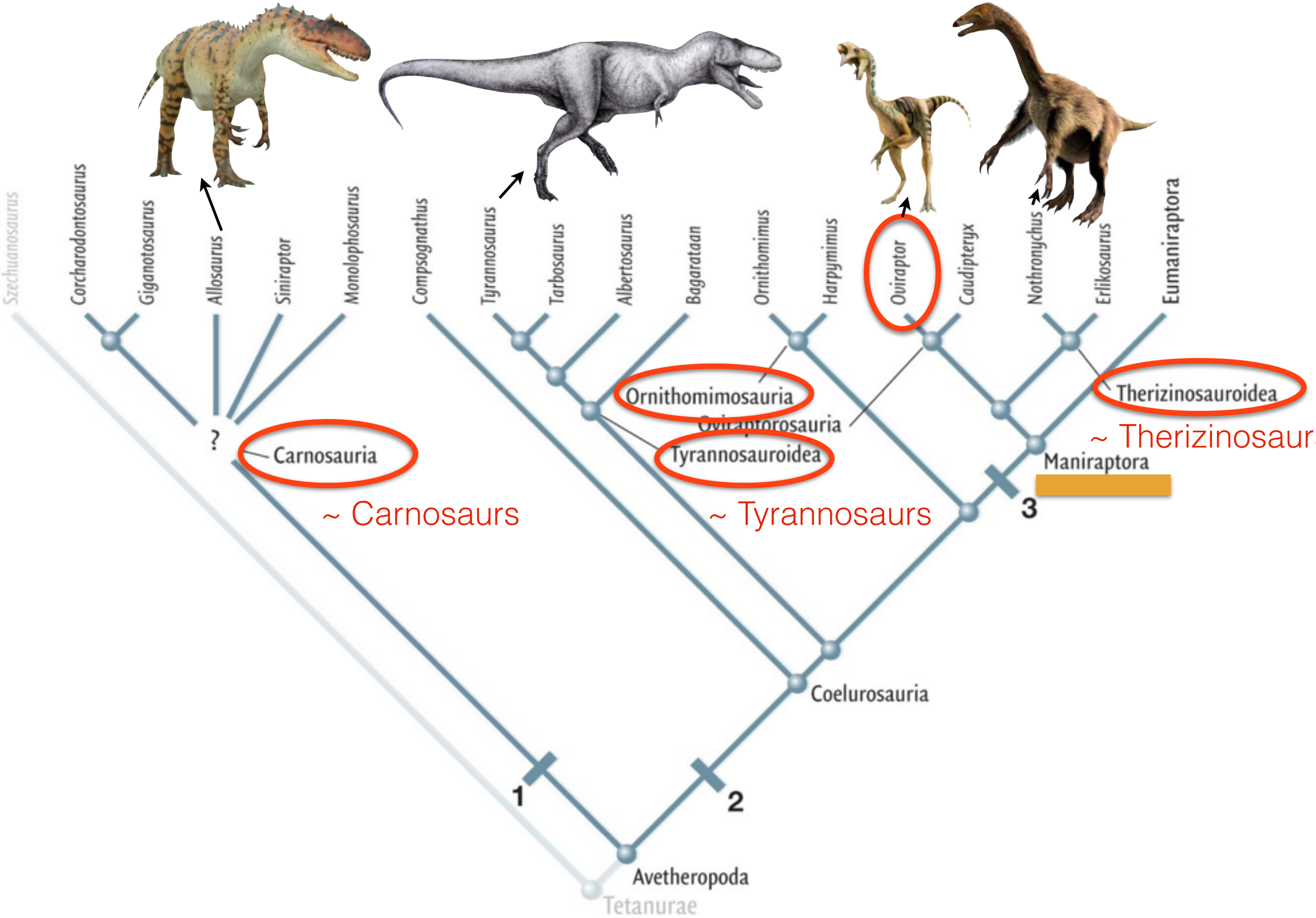
# Ornithomimids




**Gastroliths!**
(12 Mongolian specimens)

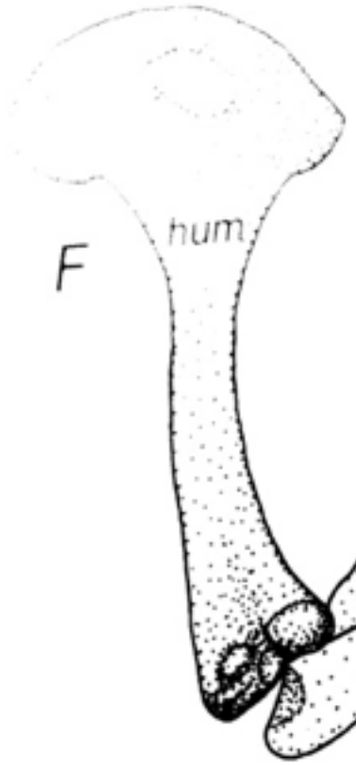

Baleen-like strainers!

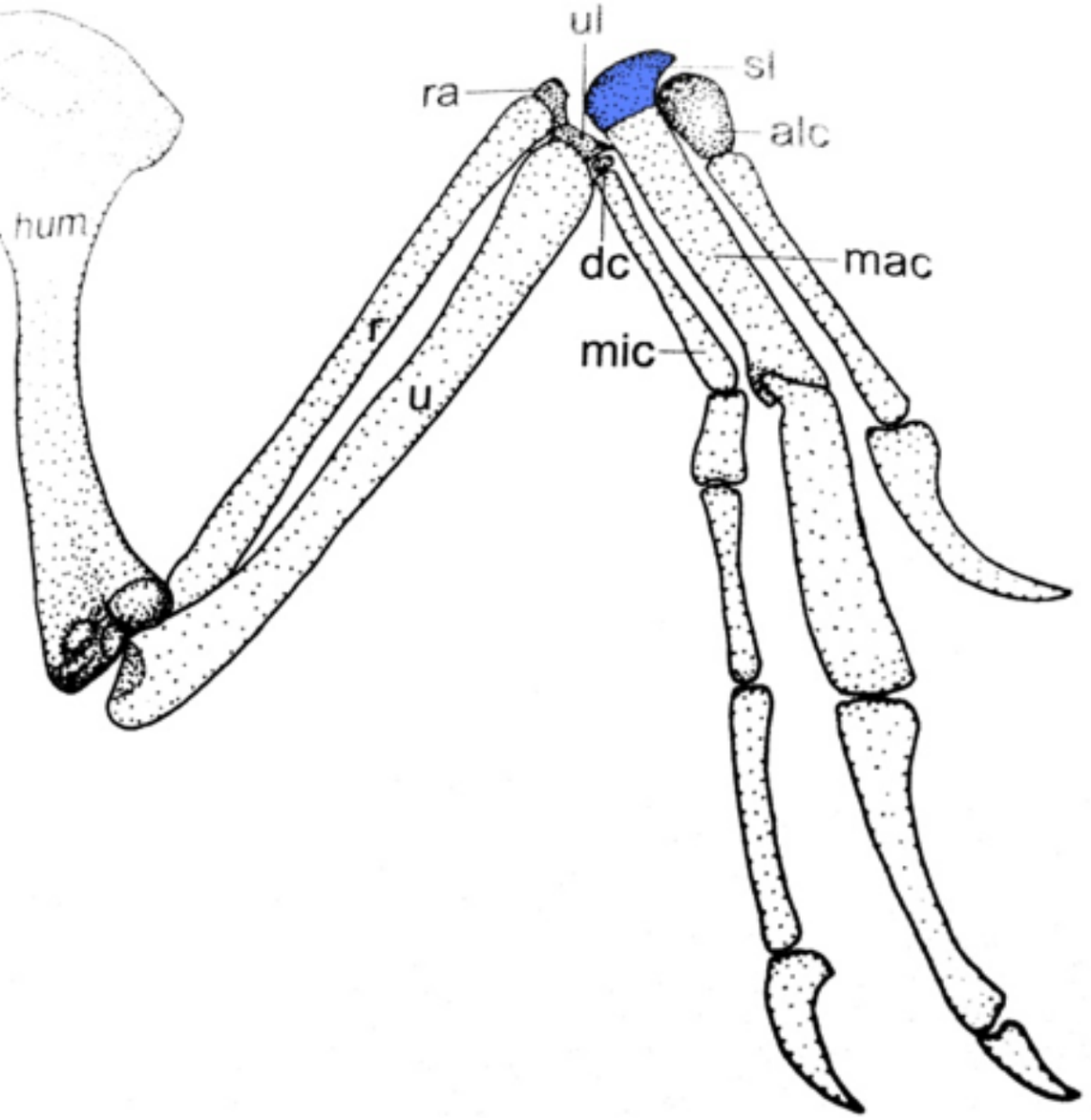

*Gallimimus bullatus*



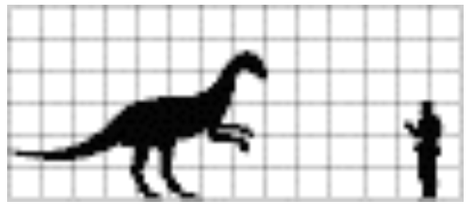

# Coelurosauria

# Maniraptorans: Evolution of the semi-lunate carpal ~ wrist bone that increased hand dexterity

# *Oviraptor*

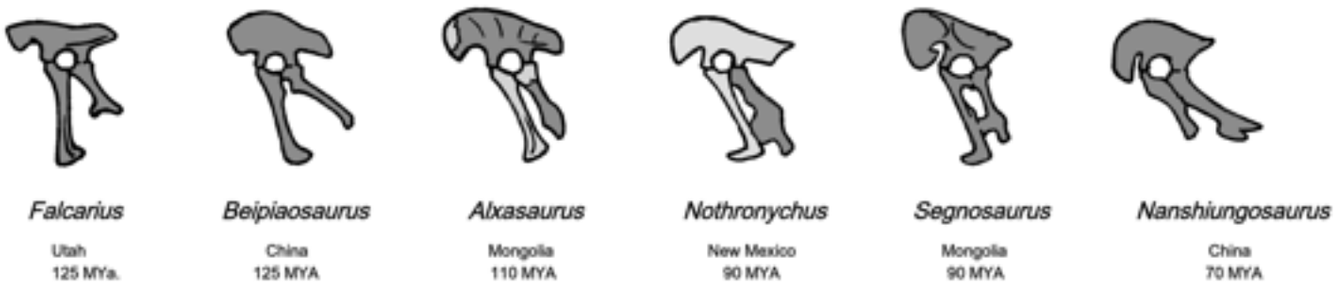


# Therazinosaurs

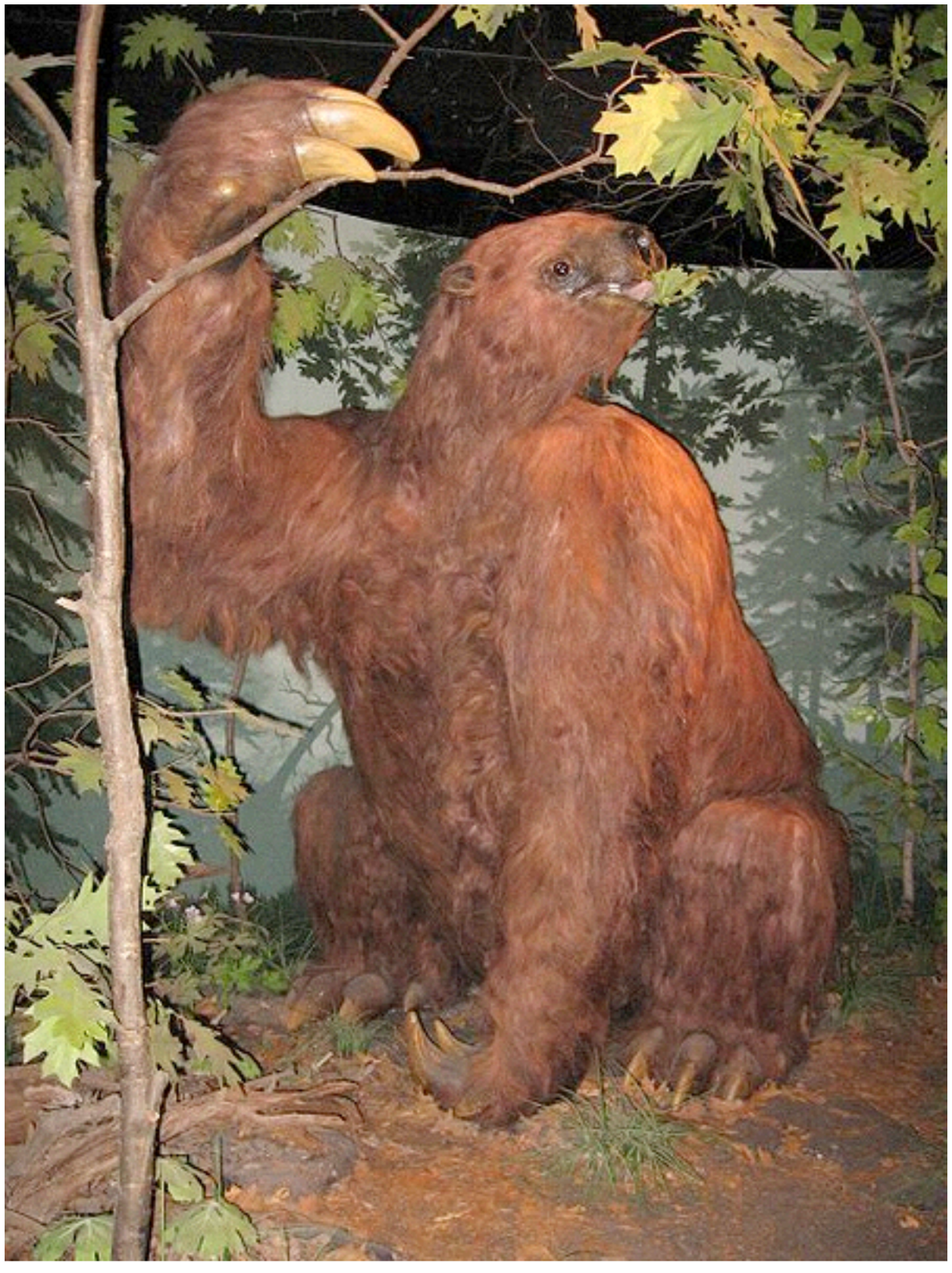
*Erlikosaurus*

Plant-eating teeth?
Backward pointing hips
3 ft. long claws

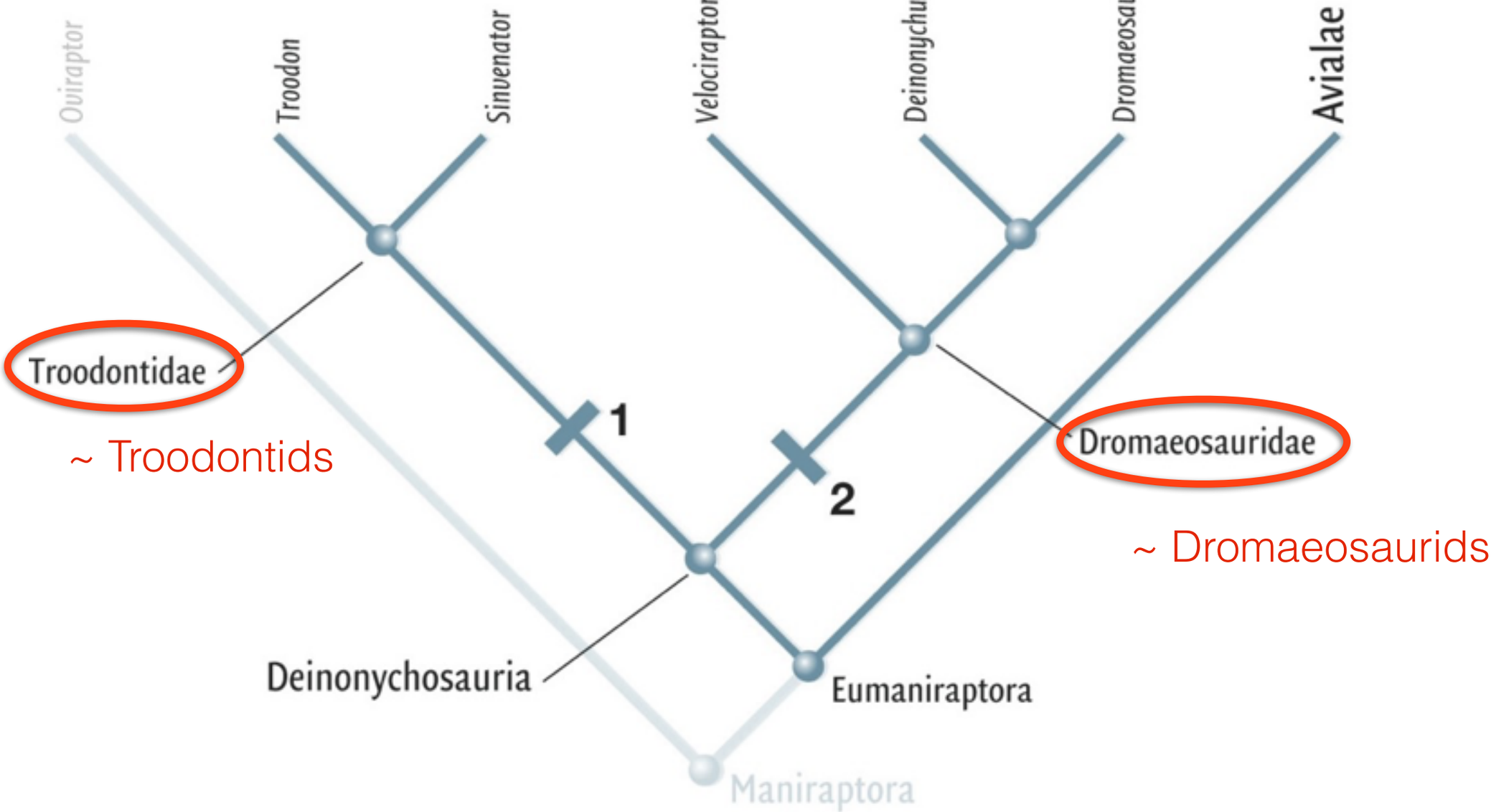
*Nothronychus*




# Therazinosaurs



## Ground Sloths of the Mesozoic?




# Derived Theropods

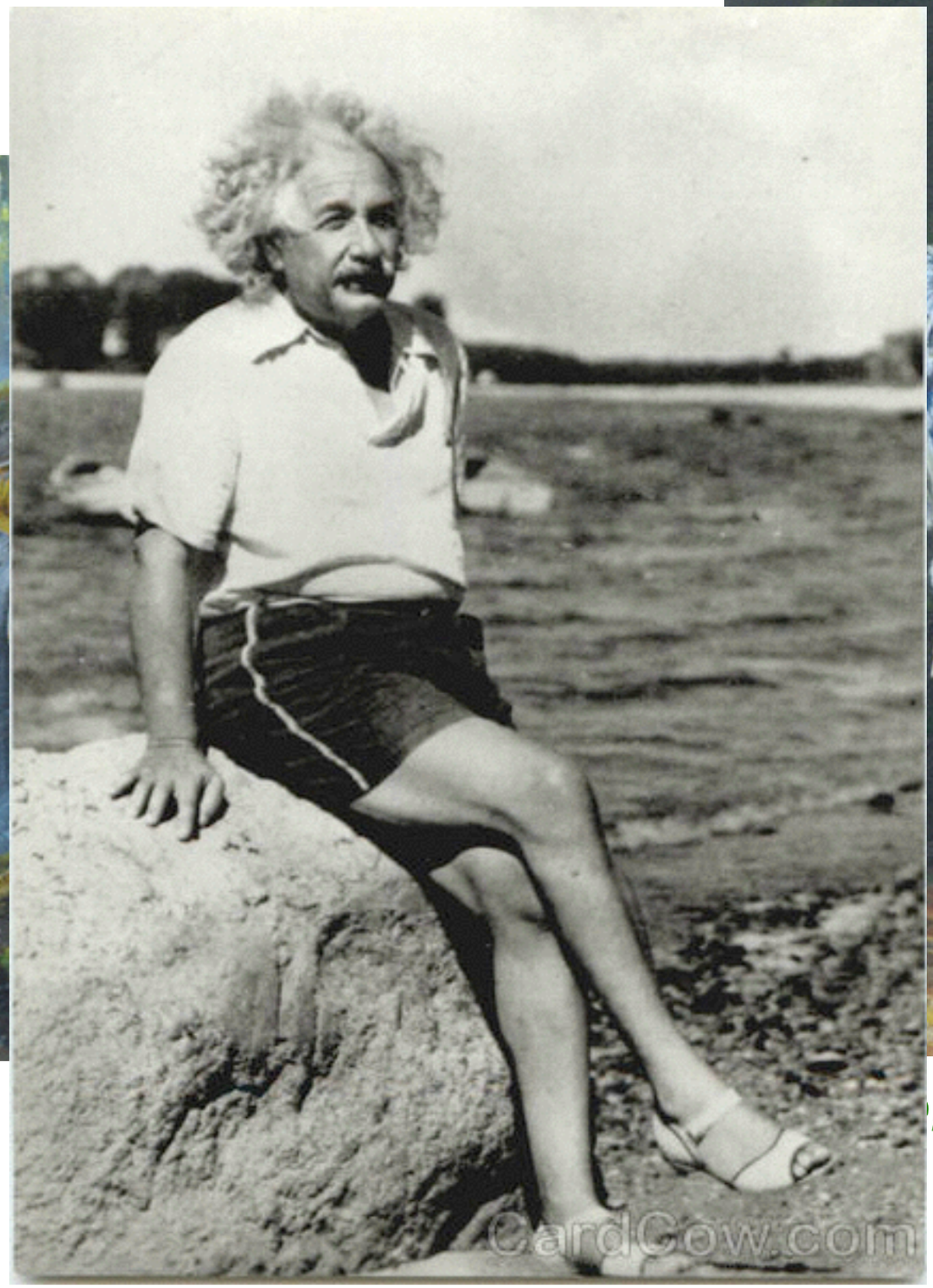
# Troodontids

*Troodon*

*Sinvenator*

# Troodontids

*Troodon*




*nator*

# EQ - Encephalization Quotient

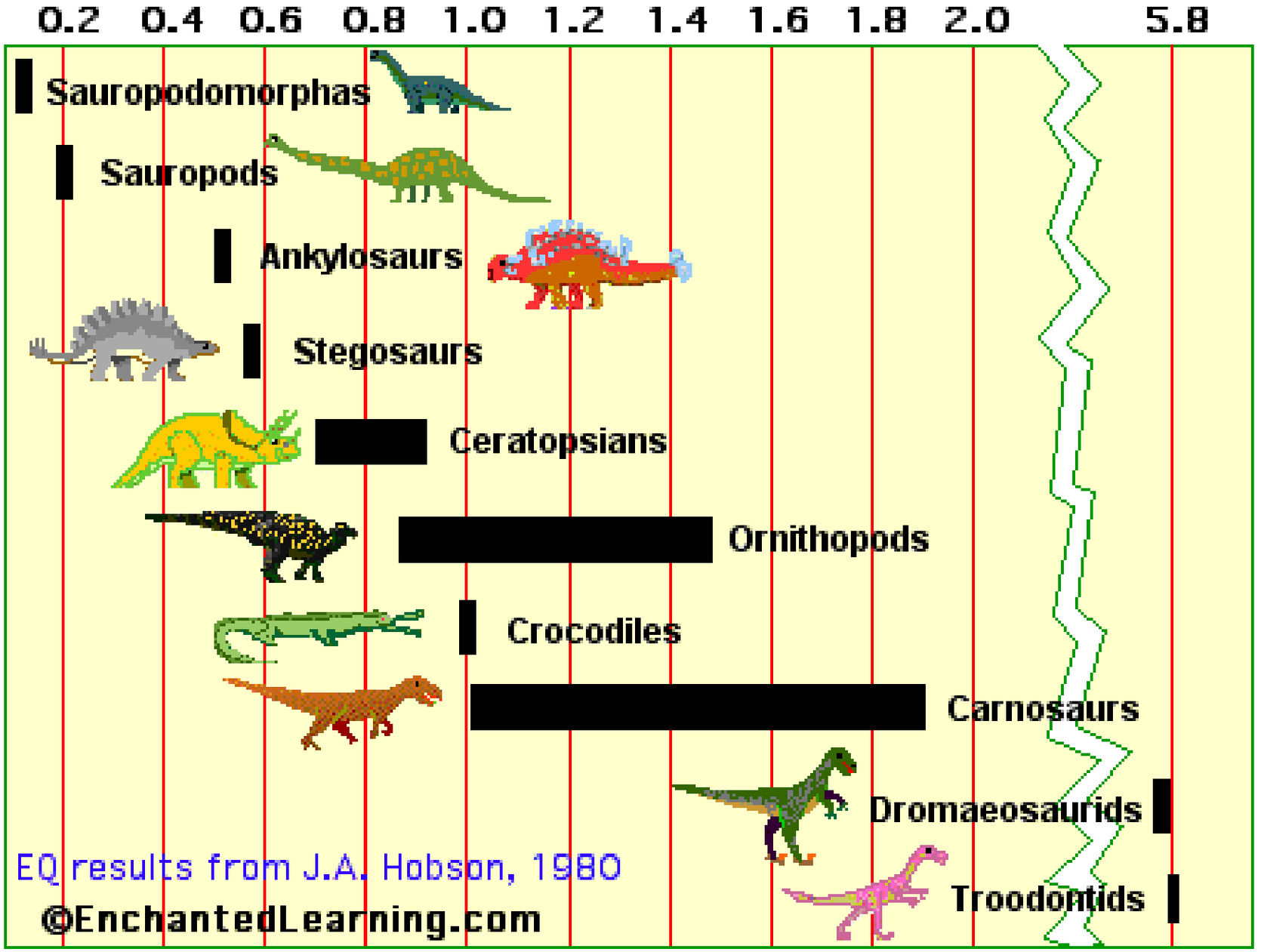


Fig. 2

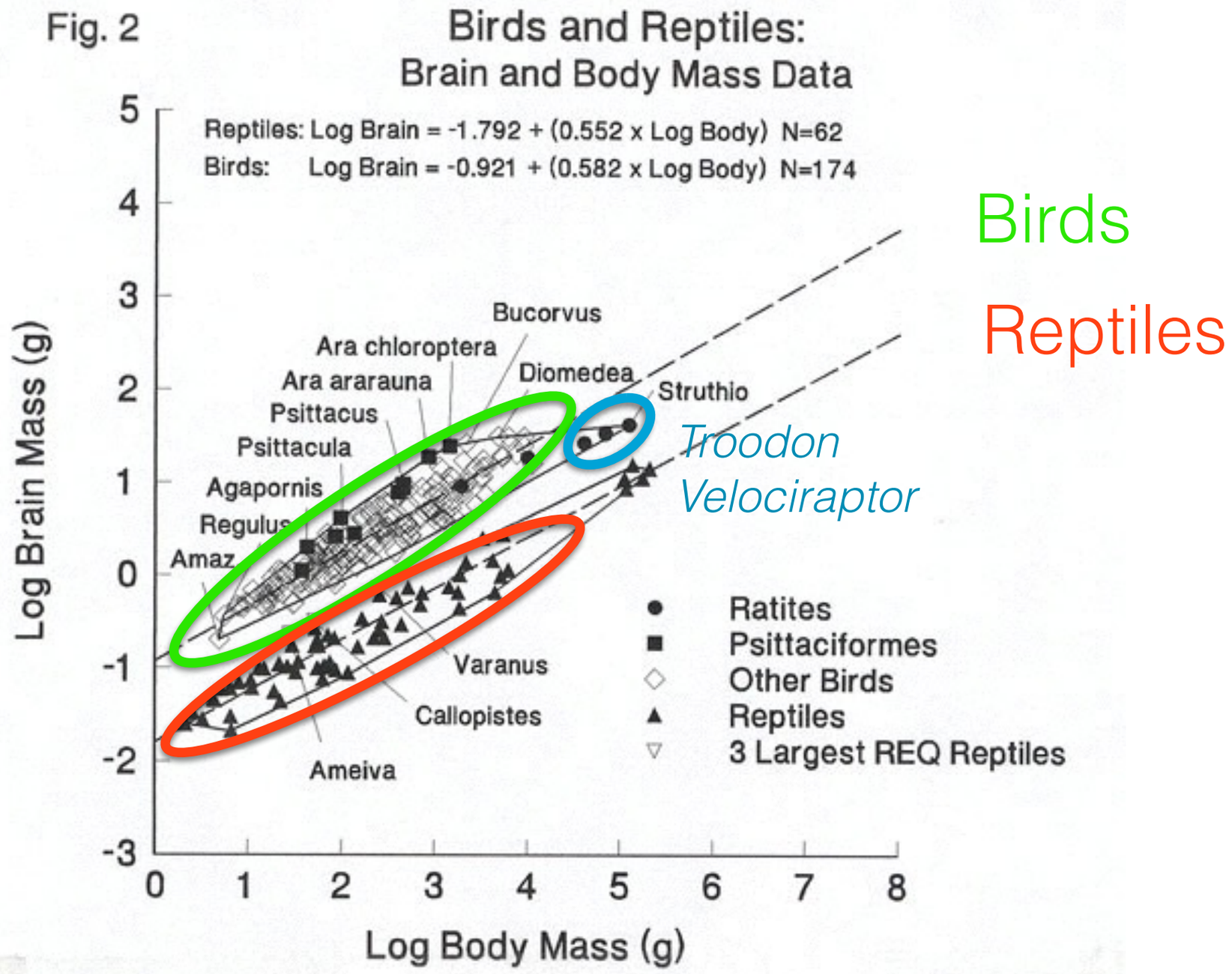
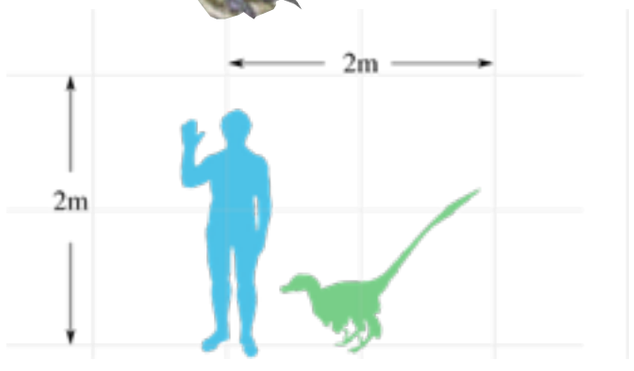
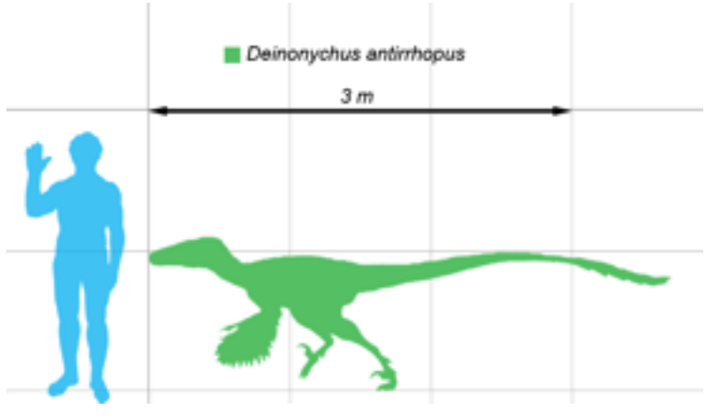



Figure 2. Graph of Log Brain and Body Mass of 174 recent bird species and 62 recent reptile species, with two specimens each of Boa, Alligator, and Crocodylus). Minimum convex polygons surround the point scatters of each of birds and reptiles; bird and reptile brain-body regression lines are also shown.

# Dromaeosaurids




*Velociraptor*




*Deinonychus*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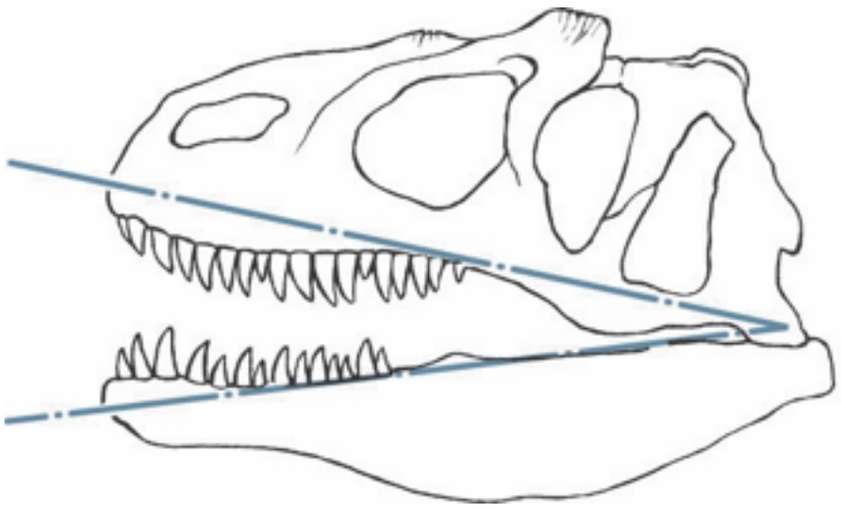
“*Boreonykus*, a new species of dinosaur about the size of a dog and possessing a lethal claw. The remains of the *Boreonykus* were discovered at the Pipestone Creek bonebed — a huge gravesite of the plant-eating dinosaur *Pachyrhinosaurus* that dates back 73 million years.”

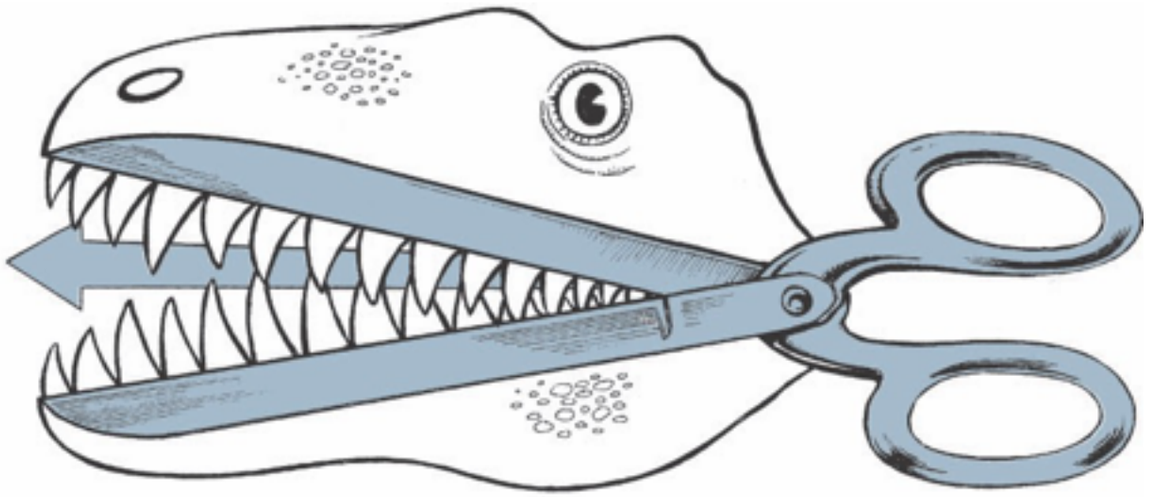
# Dromaeosaurids

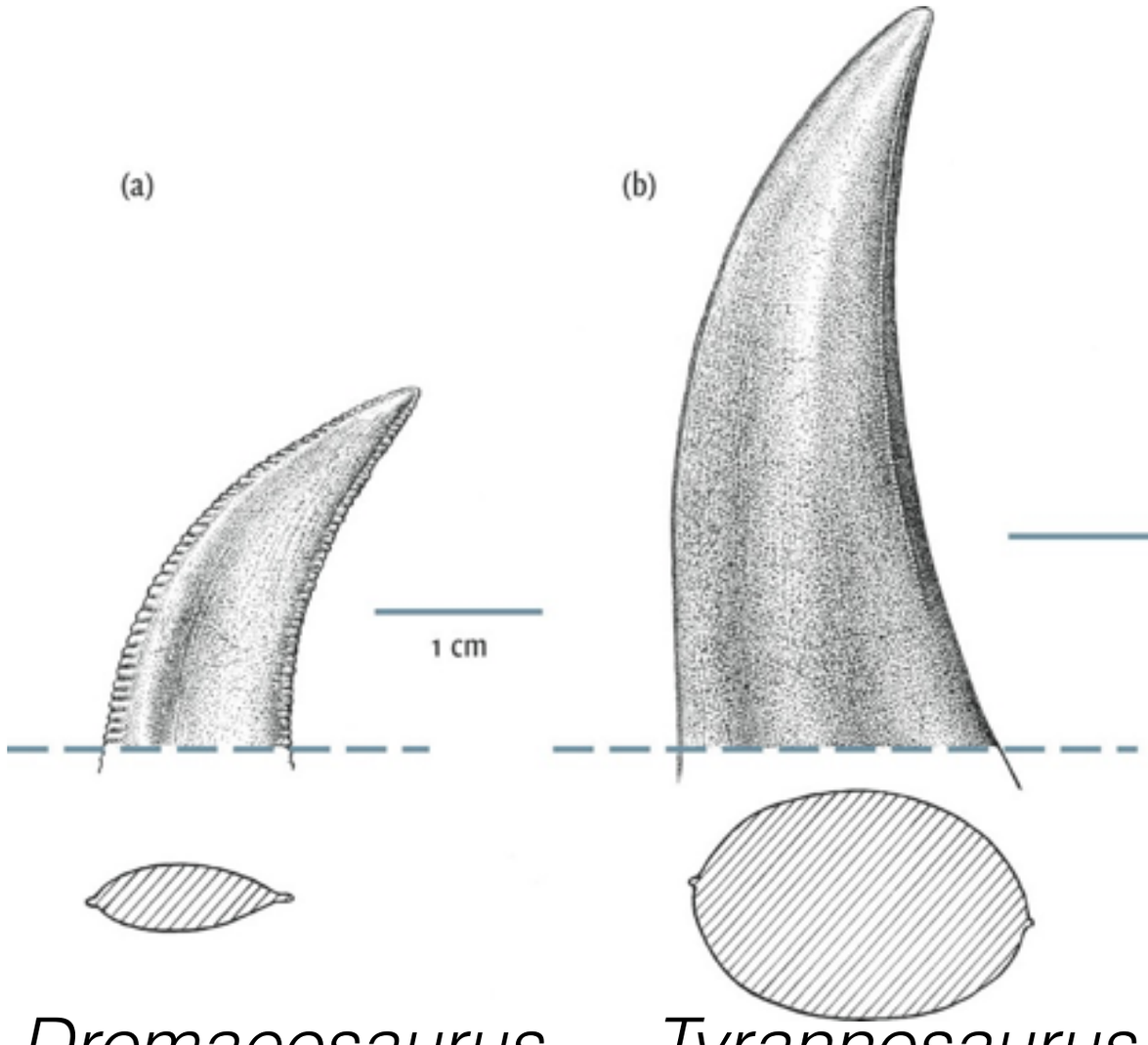


*Utahraptor*

# Theropod Teeth








*Dromaeosaurus* *Tyrannosaurus*

## *Dromaeosaurids*

*Recurved*

*Larger serration-length to tooth-length ratio*

*slash-and-tear*

## *Tyrannosaurids*

*Conical; bulky*

*Smaller serration-length to tooth-length ratio*

*CRUSH-AND-DESTROY*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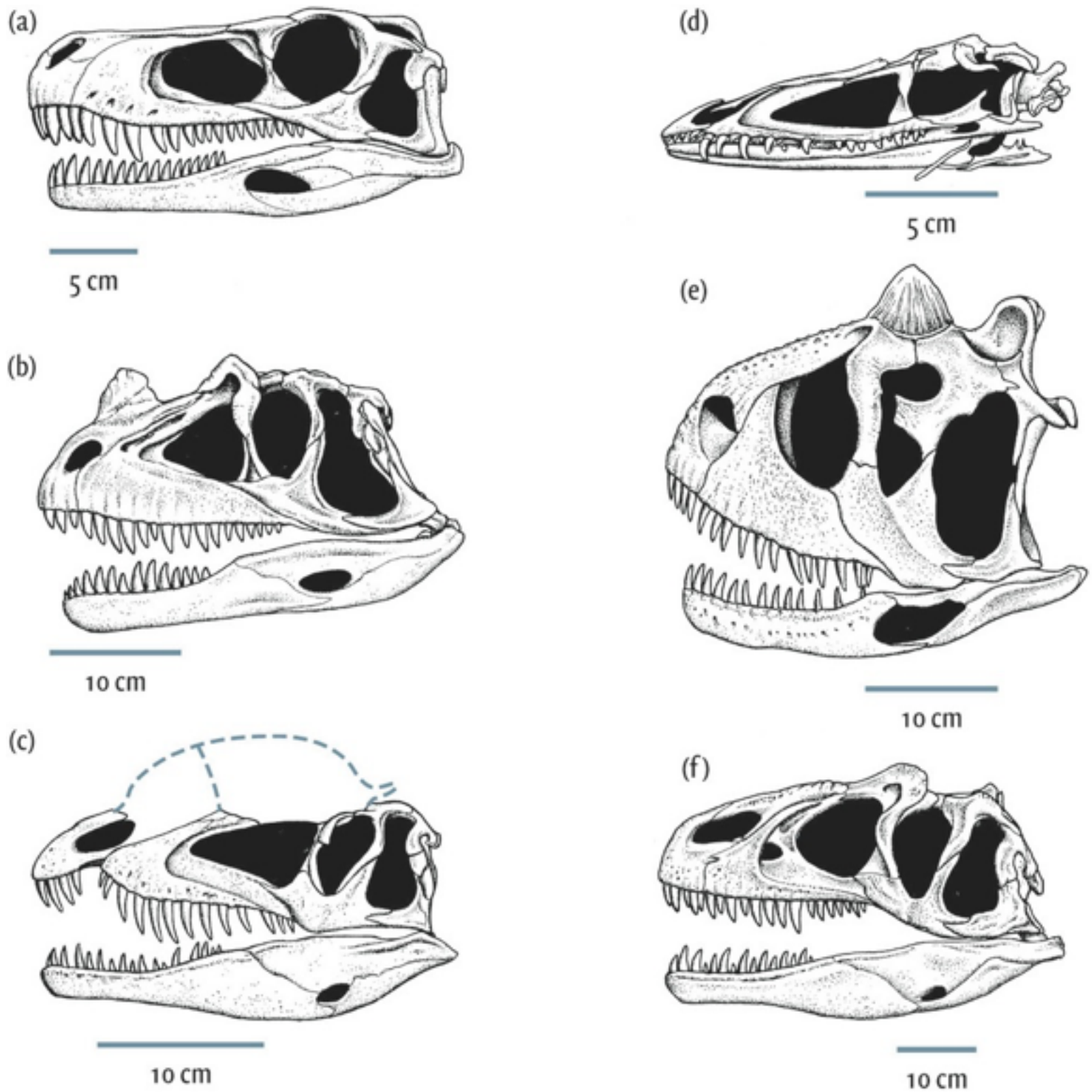
*Independent loss of teeth among Theropod dinosaurs*

*Oviraptors: Egg eaters? Nope.*
- *Mollusk shells?*
- *Large seeds?*

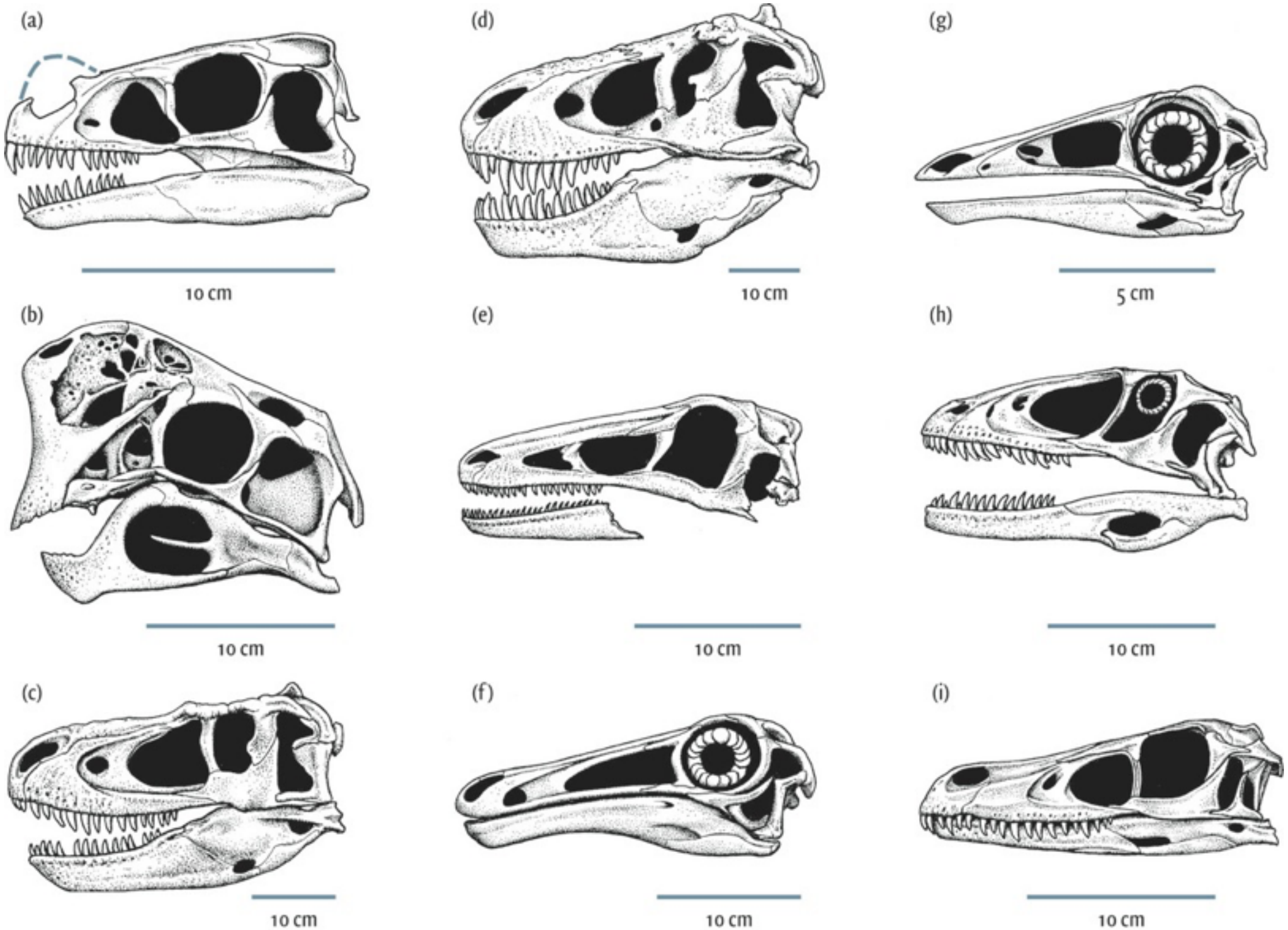
*Ornithomimids: Omnivorous?*
- *Small vertebrates/invertebrates*
- *Eggs, Seeds, Fruits*

# Theropod Skulls




***Robust***

# Theropod Skulls




***Gracile***