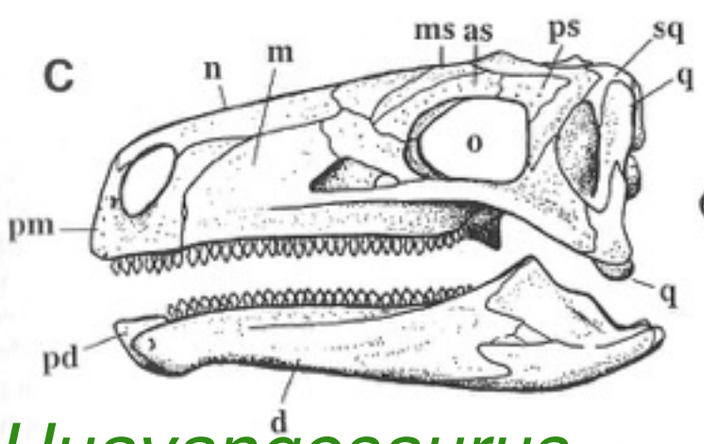
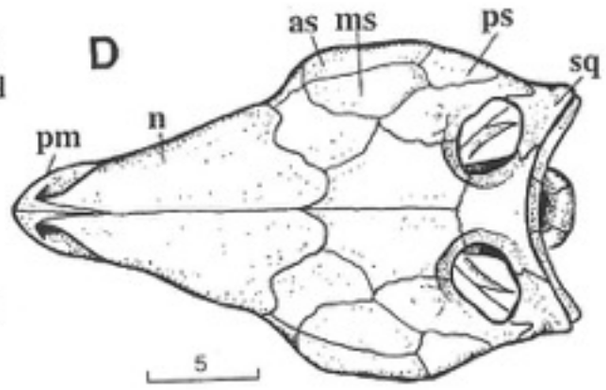
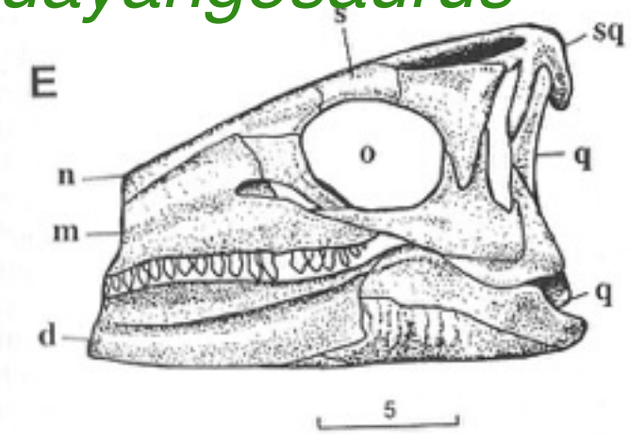
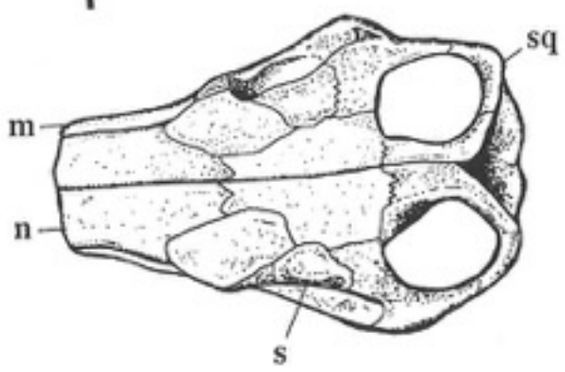


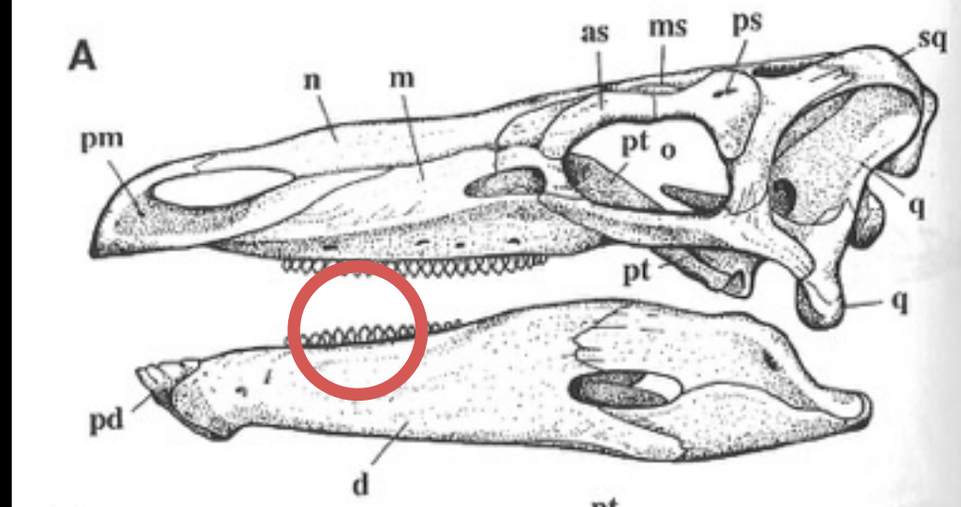


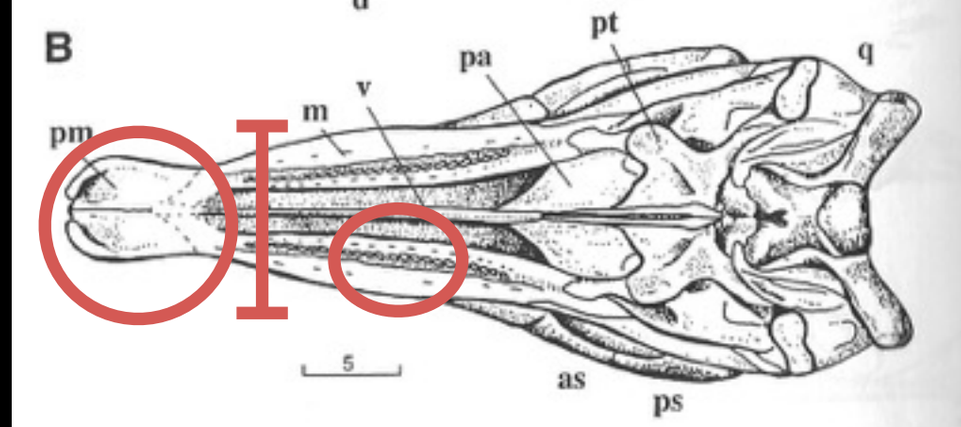
Huayangosaurus



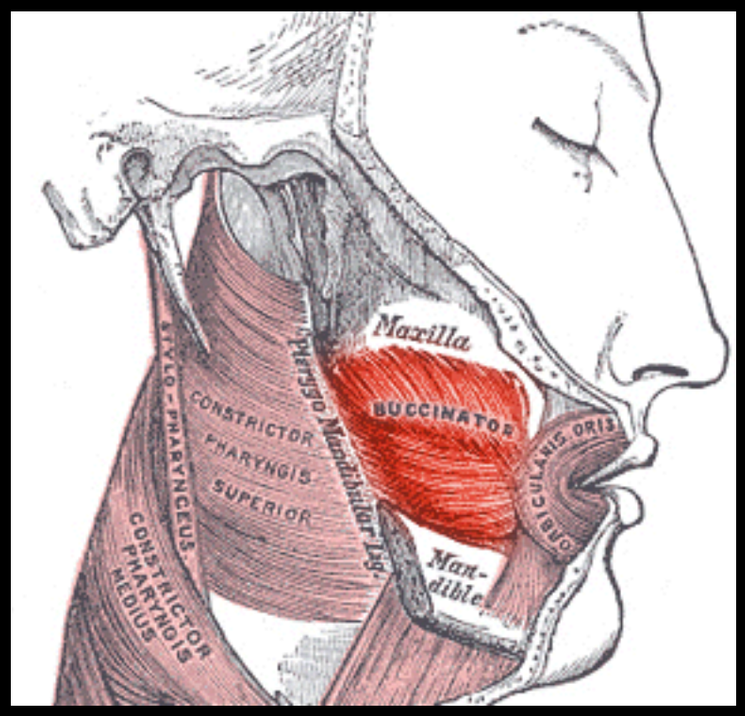


Scelidosaurus



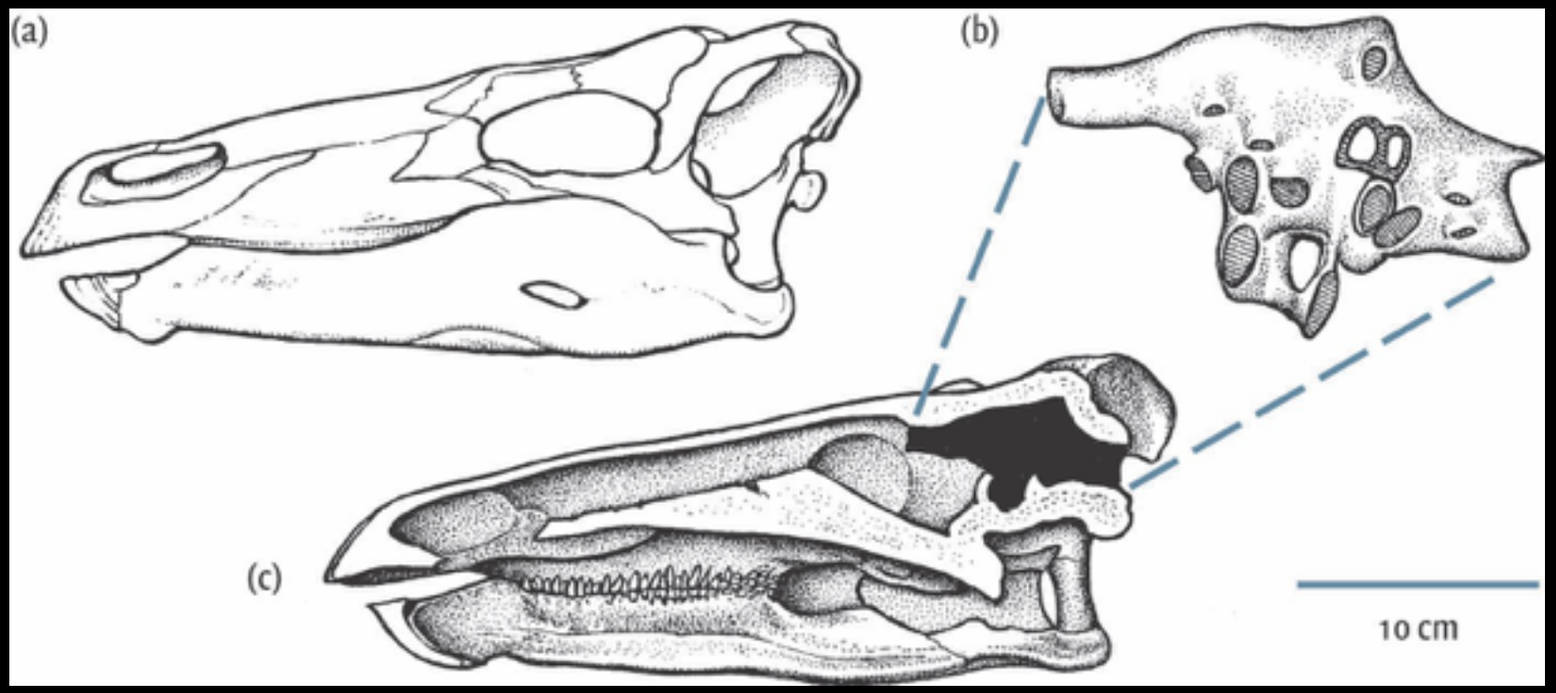


Stegosaurus

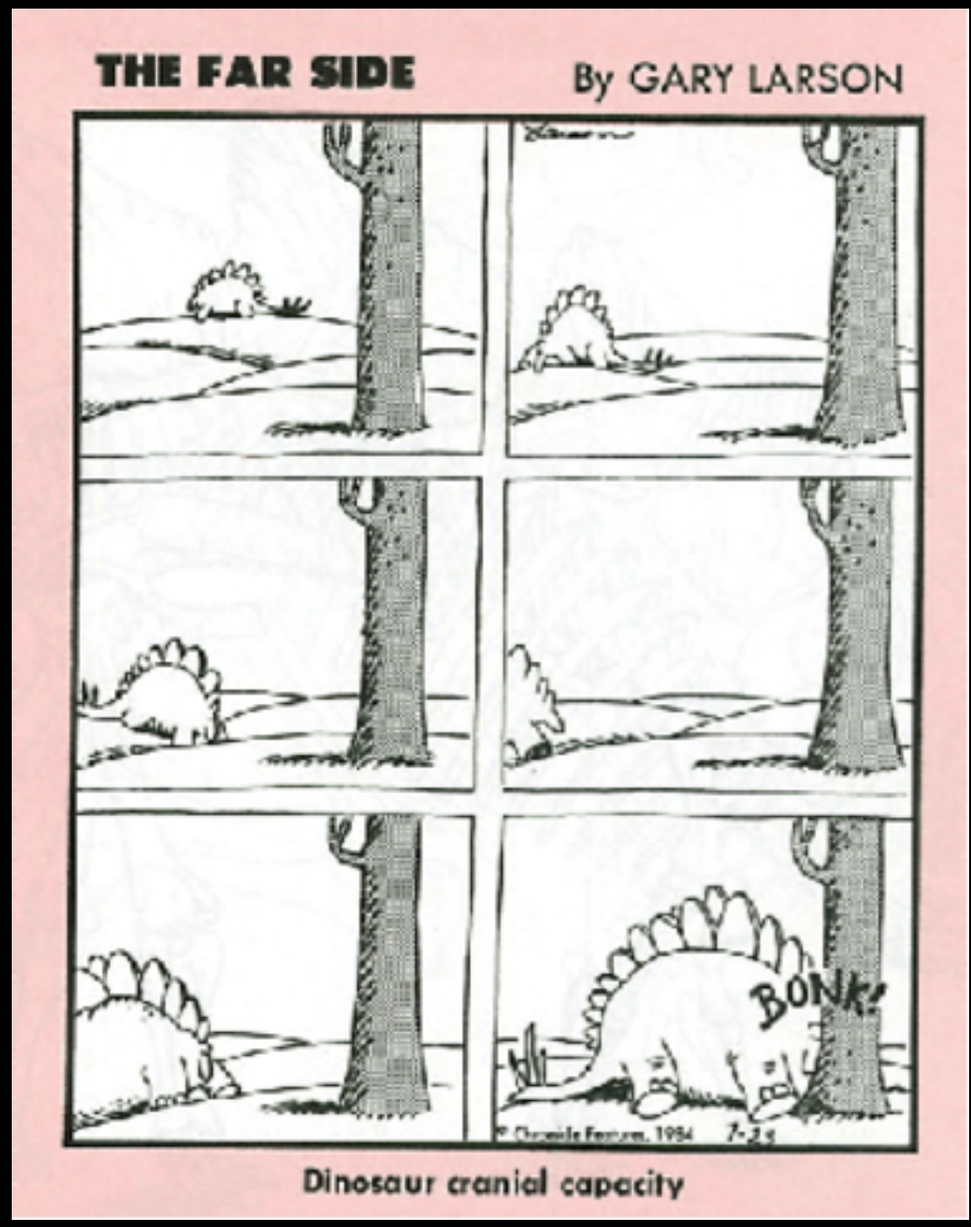


Cheeks:
No reptile has ever had a ‘buccinator’ muscle
Answer: highly flexible tongue

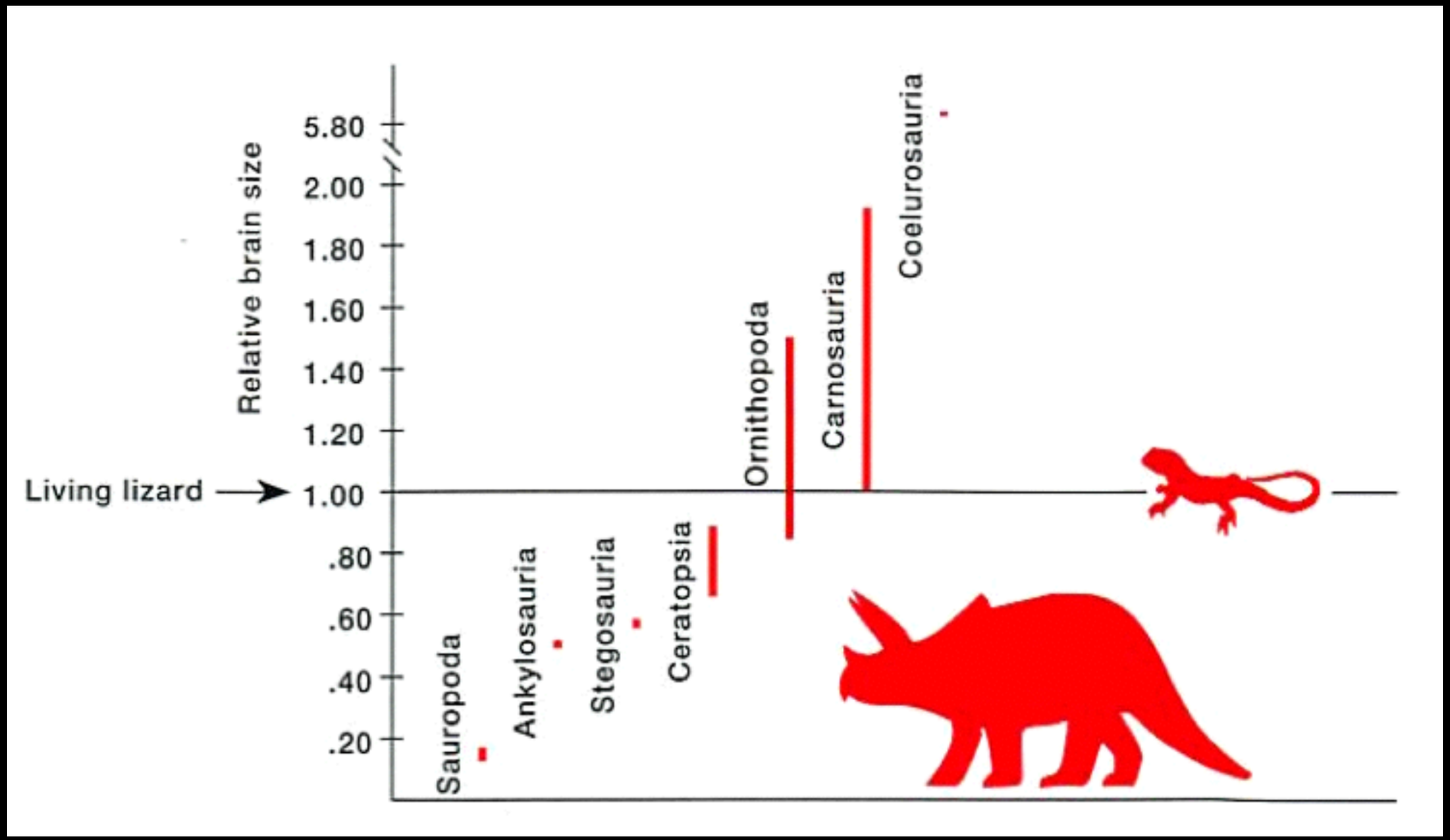
Brains



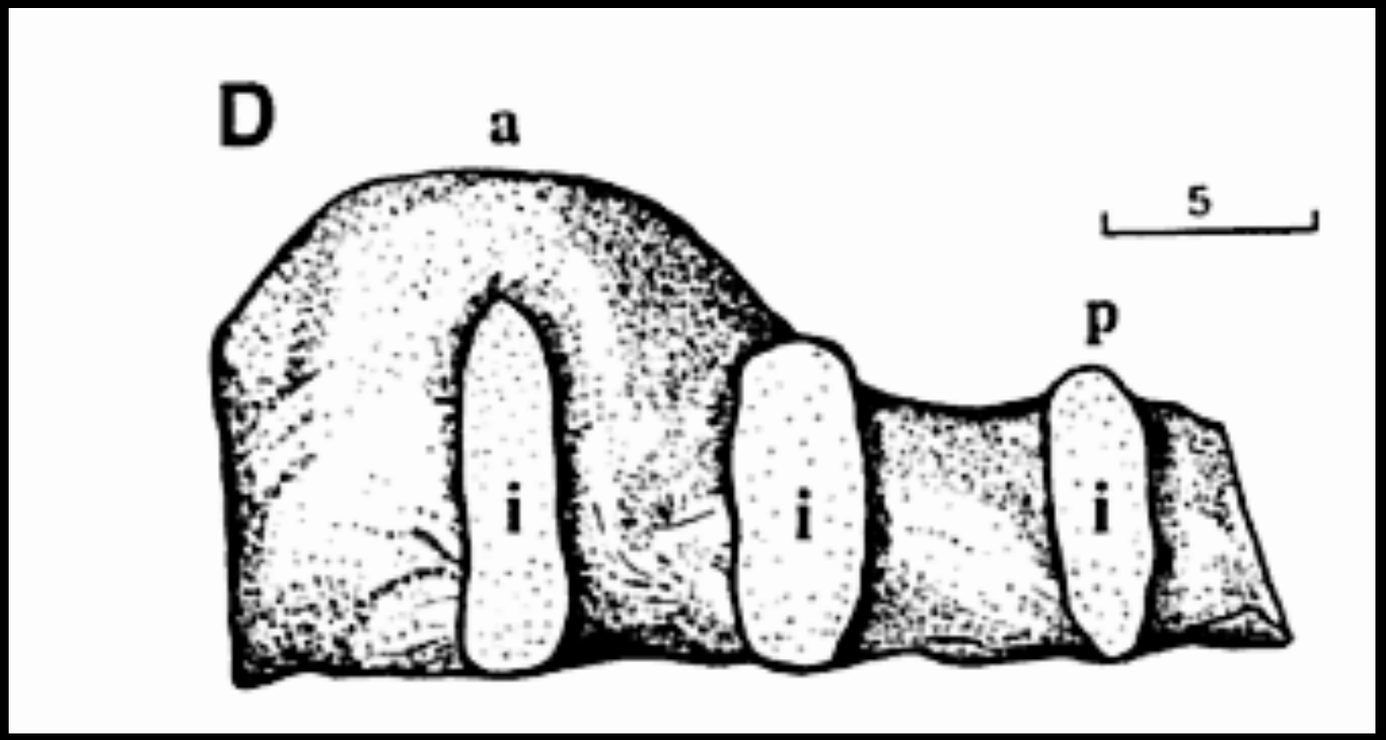
0.001% of stegosaur body weight
Compared to 1.8% in humans (1000x larger per unit body weight!)

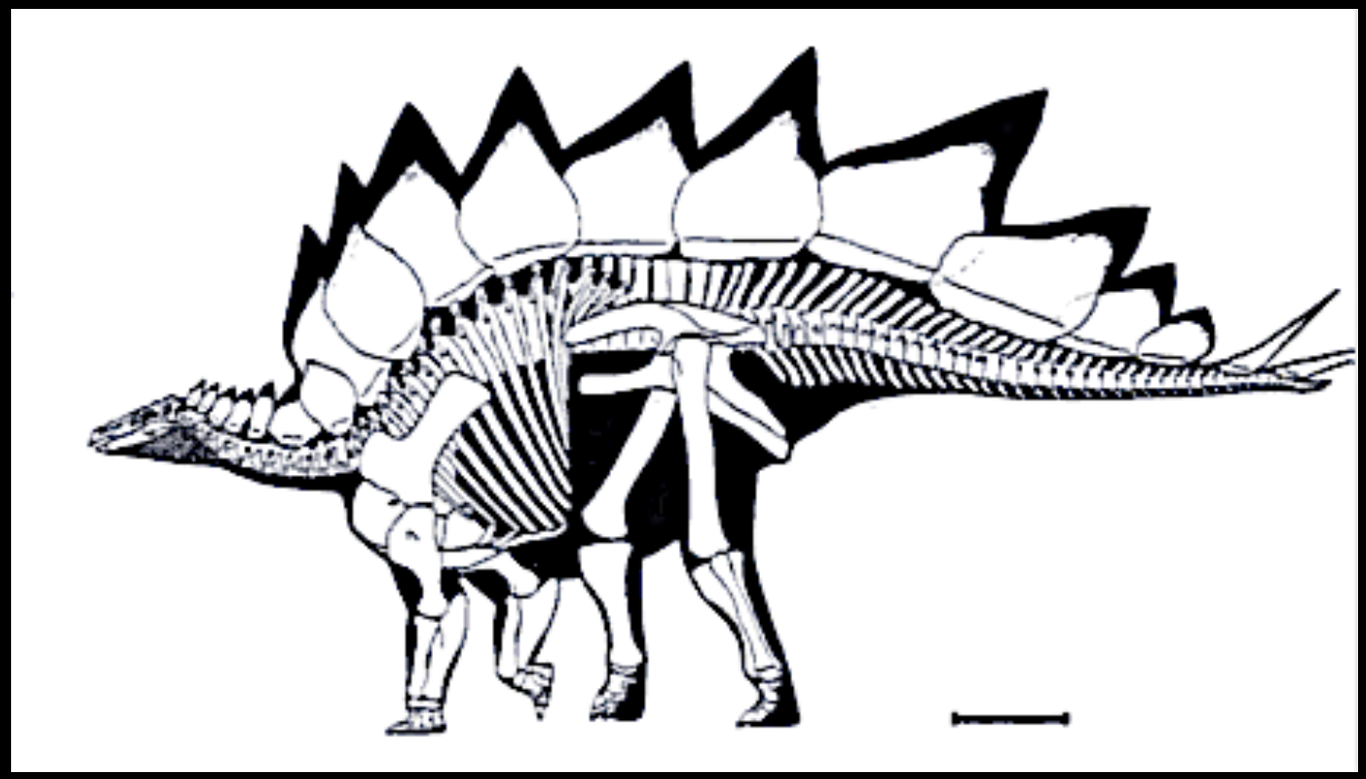


Brains

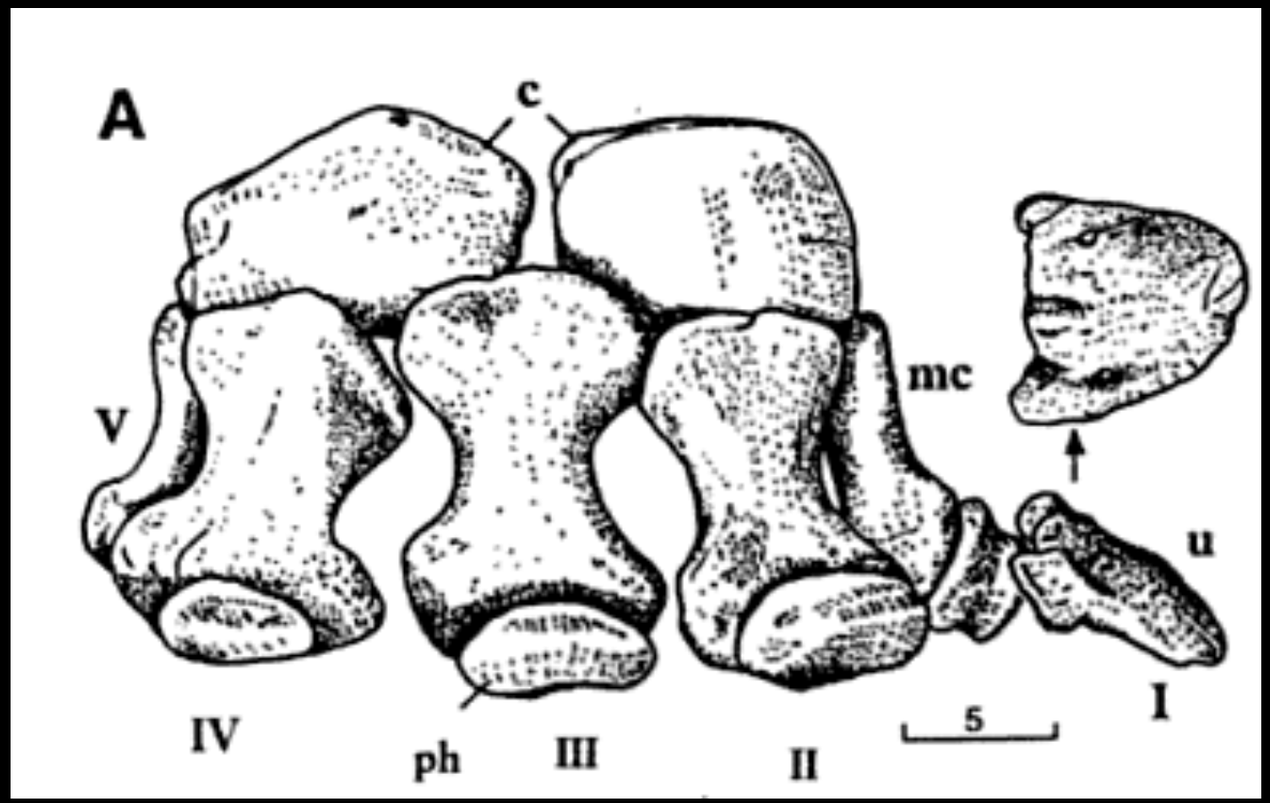

Relative brain size
5.80
2.00
1.80
1.60
1.40
1.20
Living lizard
1.00
.80
.60
.40
.20
Sauropoda
Ankylosauria
Stegosauria
Ceratopsia
Ornithopoda
Carnosauria
Coelurosauria

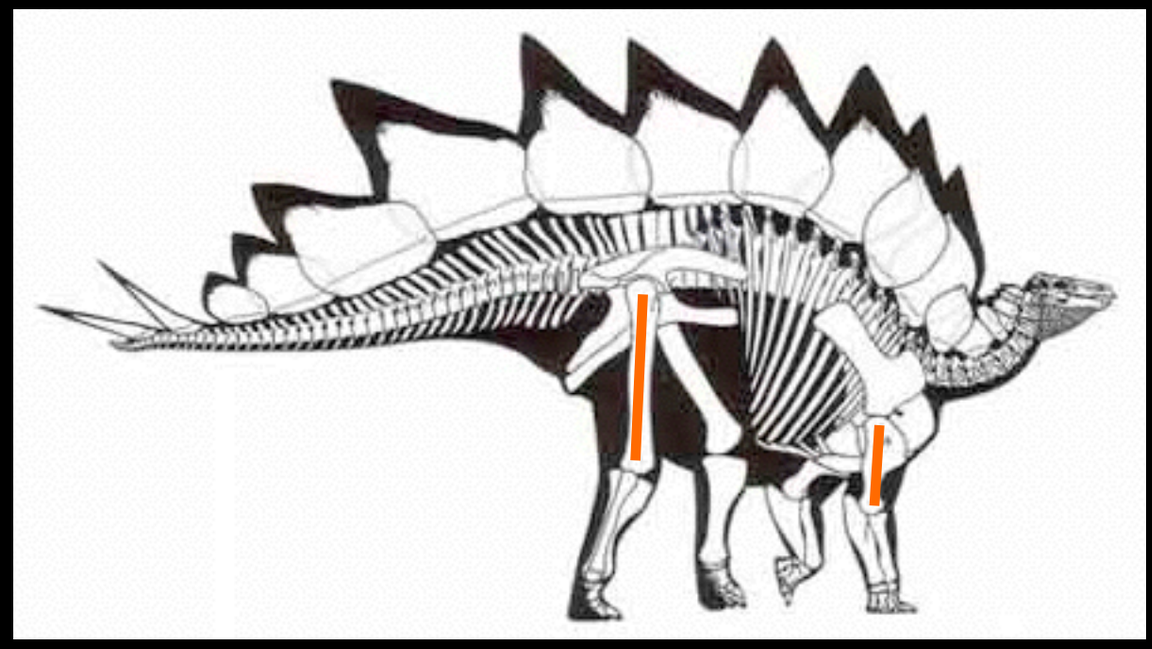
Brains





Locomotion





Elephantine hind feet
Shin bones fused with astragalus/ calcaneum
Femur: Long compared to humerus
Columnar

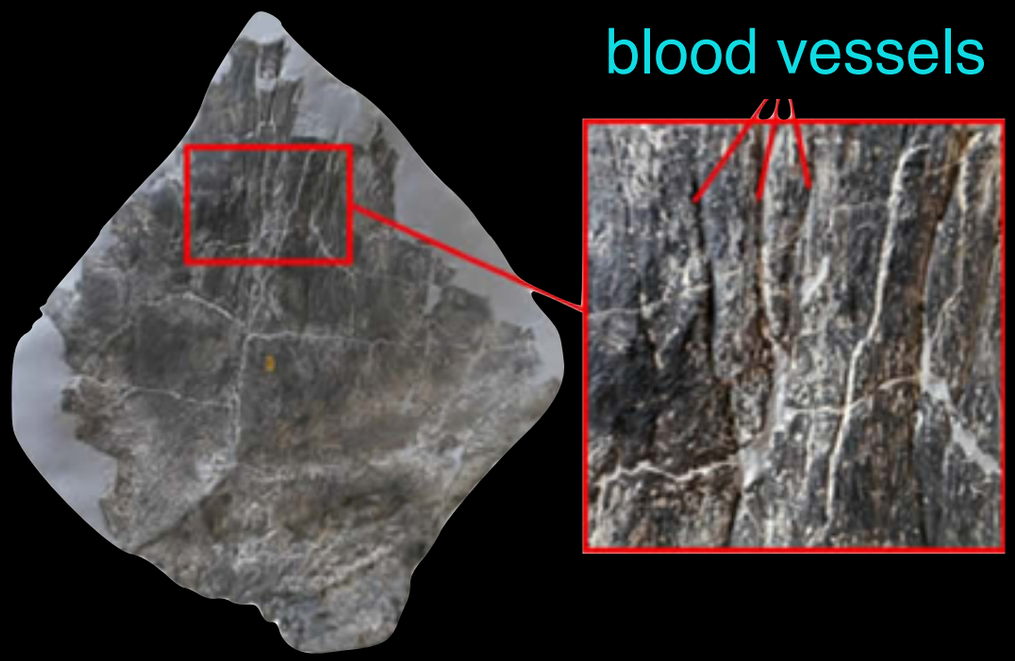
Facultative Tripodality?
Stocky forelimbs- could be used fo turning/posturing (Bakker)

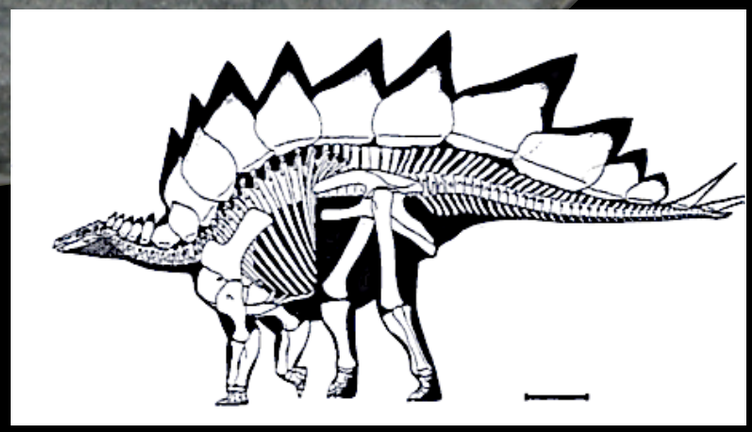
Graviportal Locomotion (weight-bearing)

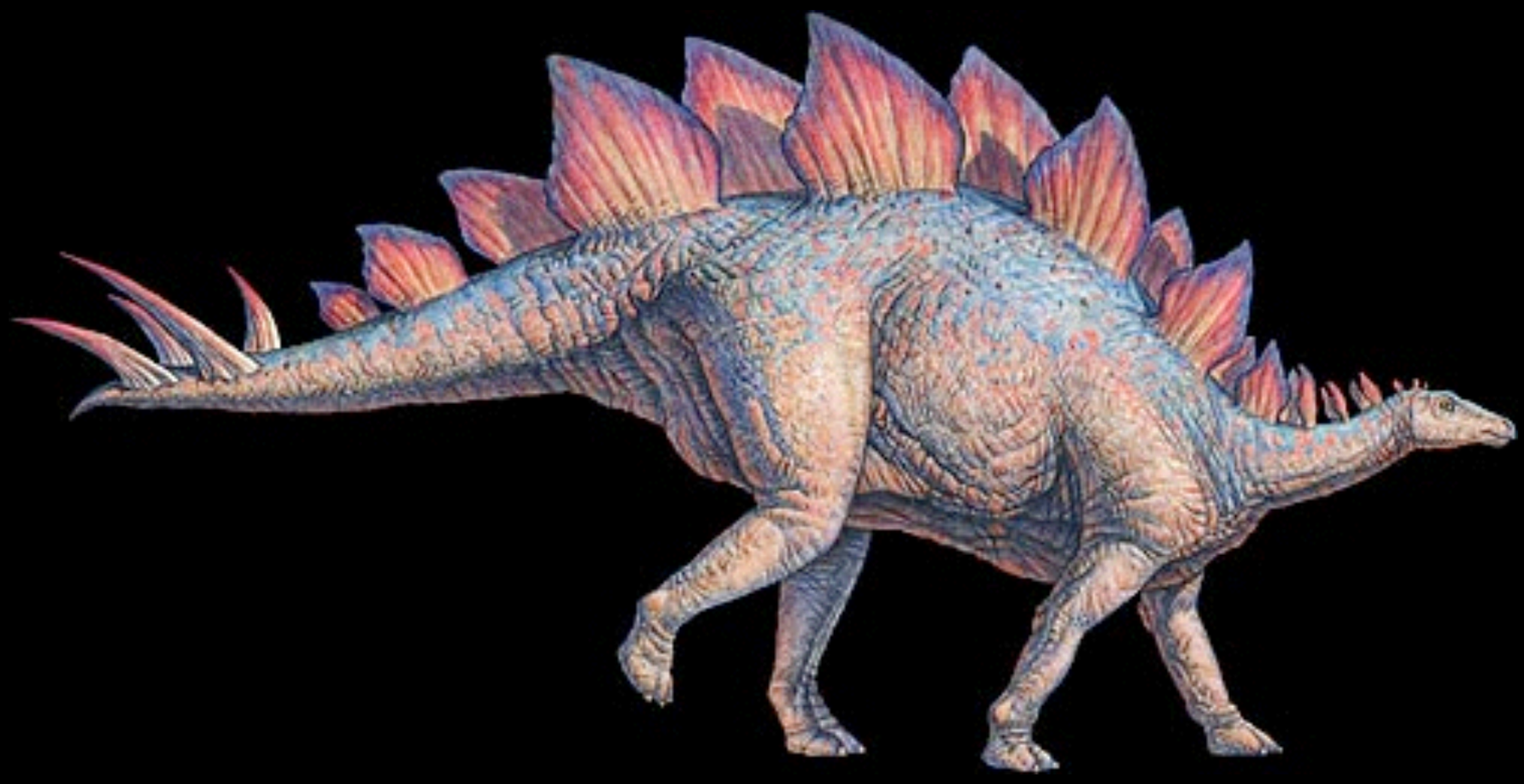
Dermal Armour?

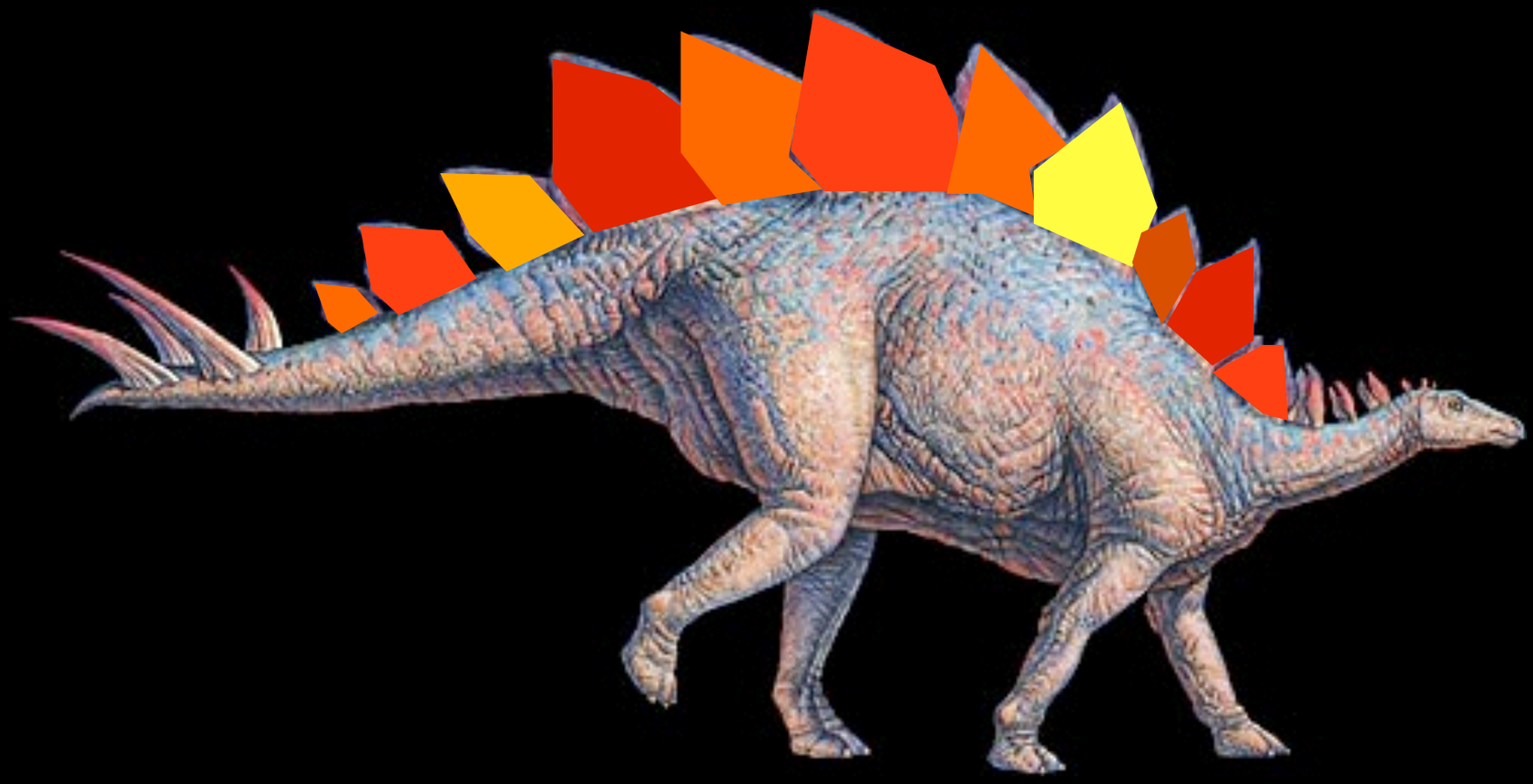
Pattern of plates and spines is species-specific
Plates paired or staggered (Stegosaurus)
Plates were probably not for defense... not tough enough
Rotation? Surface markings => symmetrical.
Rotation unlikely

Potential uses:
Thermoregulation? Warm up (ectotherms), Cool down (endotherms)
Signaling? positioned for maximal lateral visibility
Sexual Selection
Mate Recognition



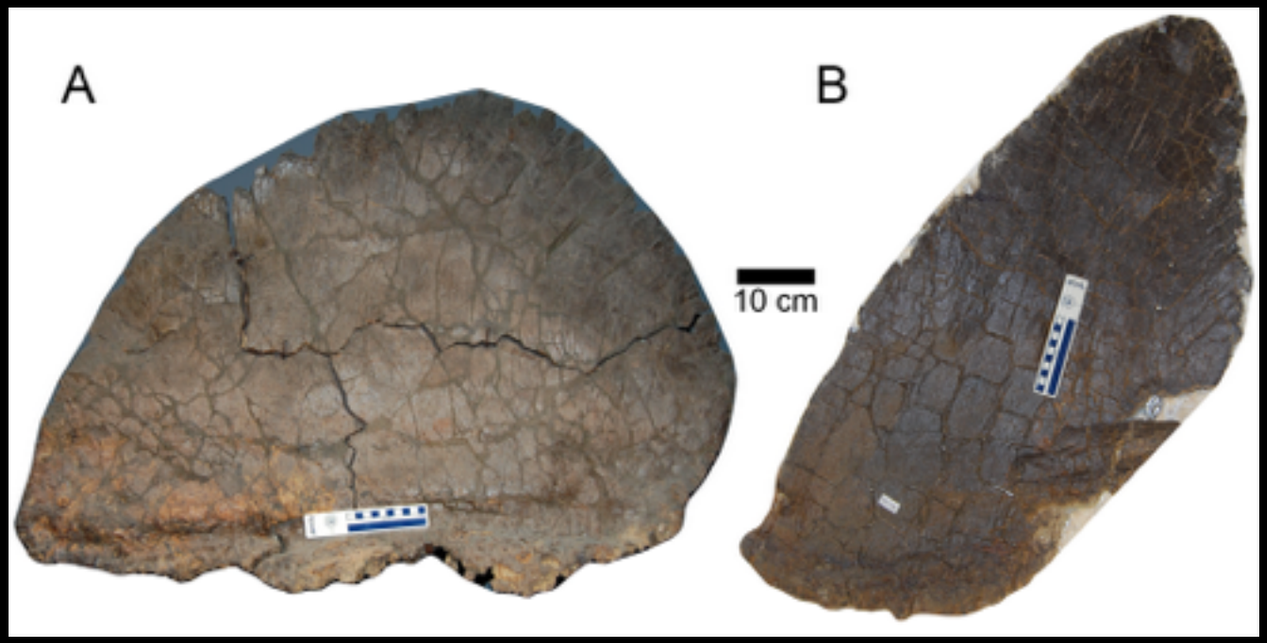




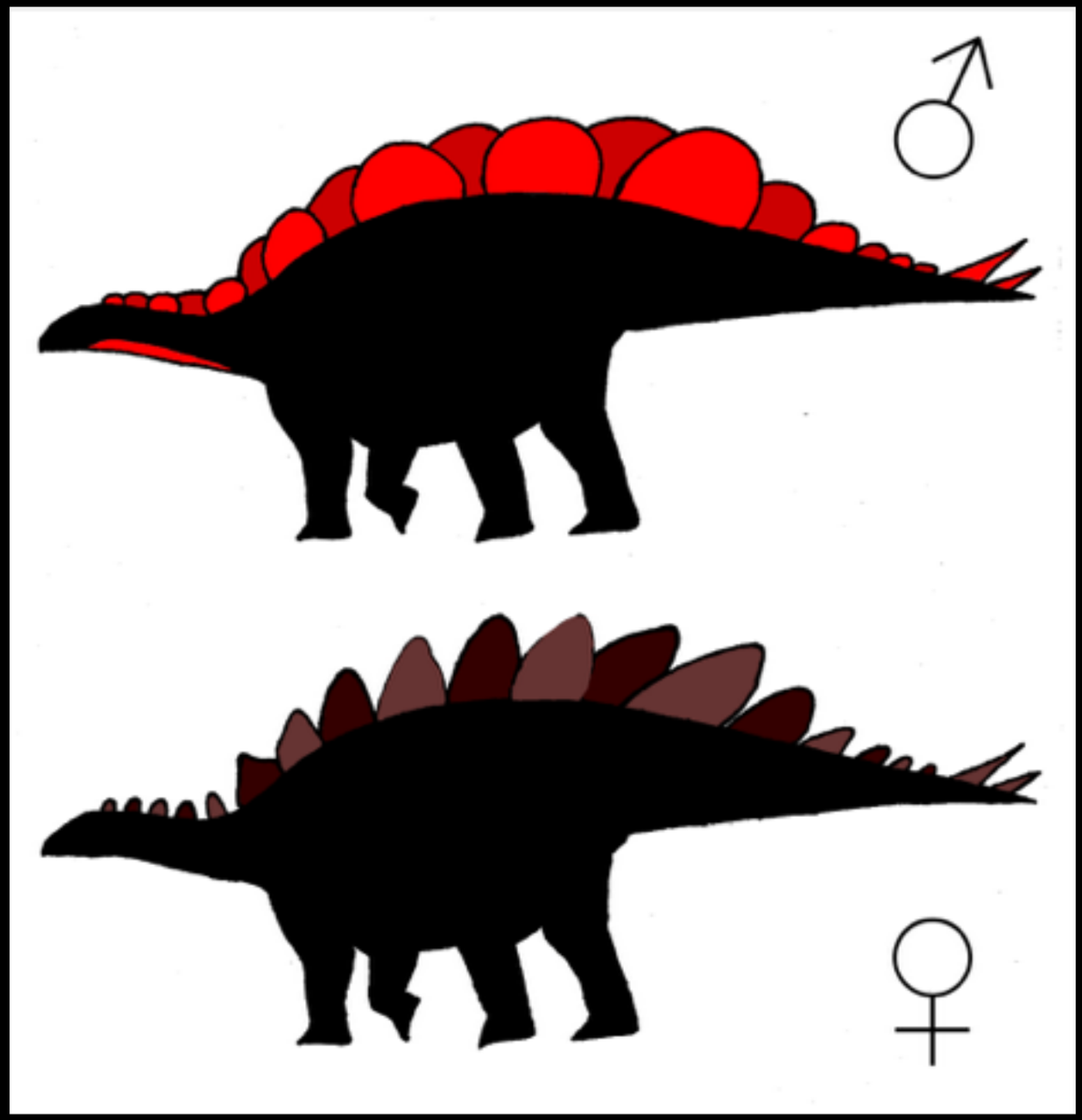


Sexual dimorphism

Differences between males and females of the same species



New finding
published in 2015

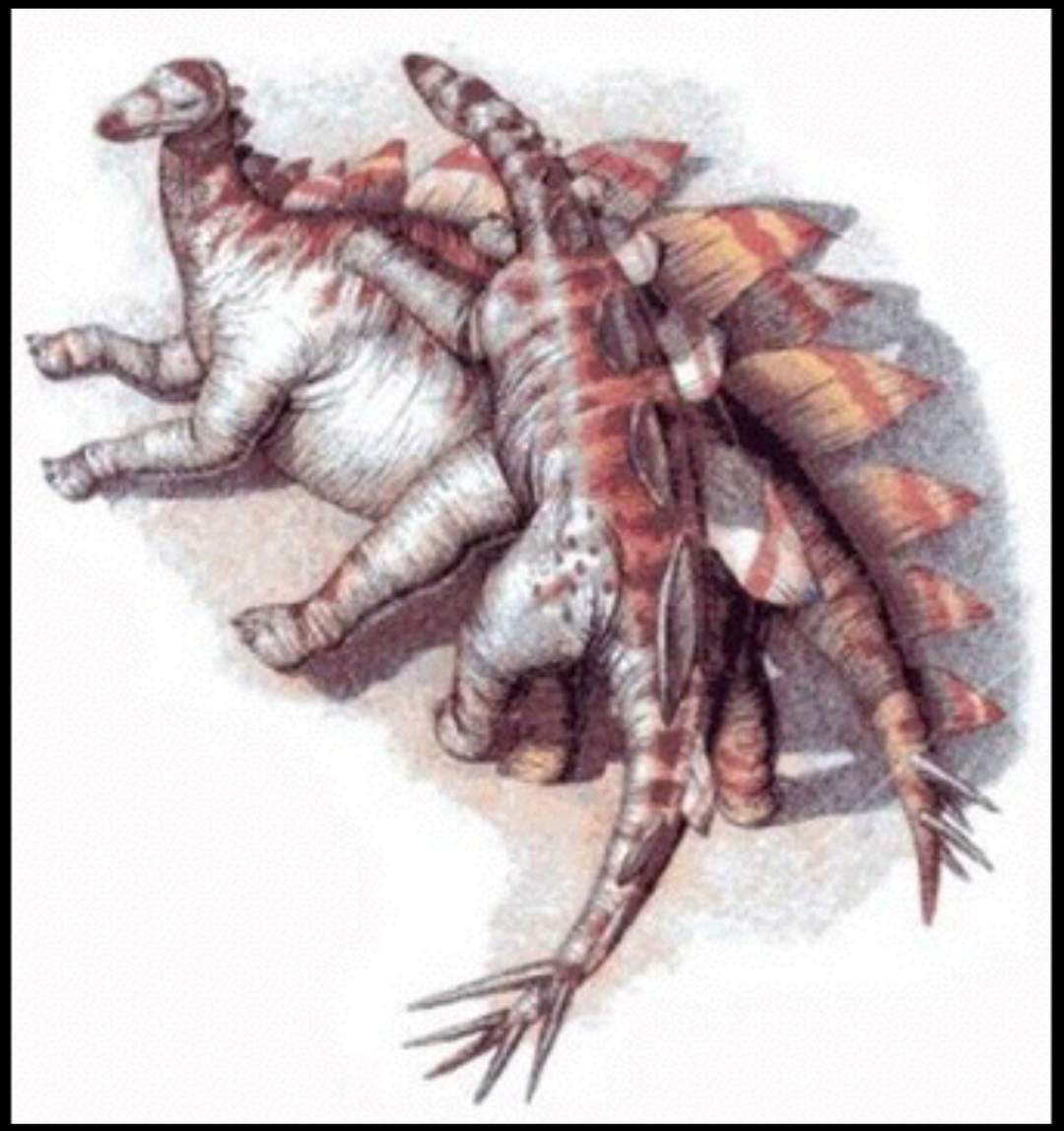


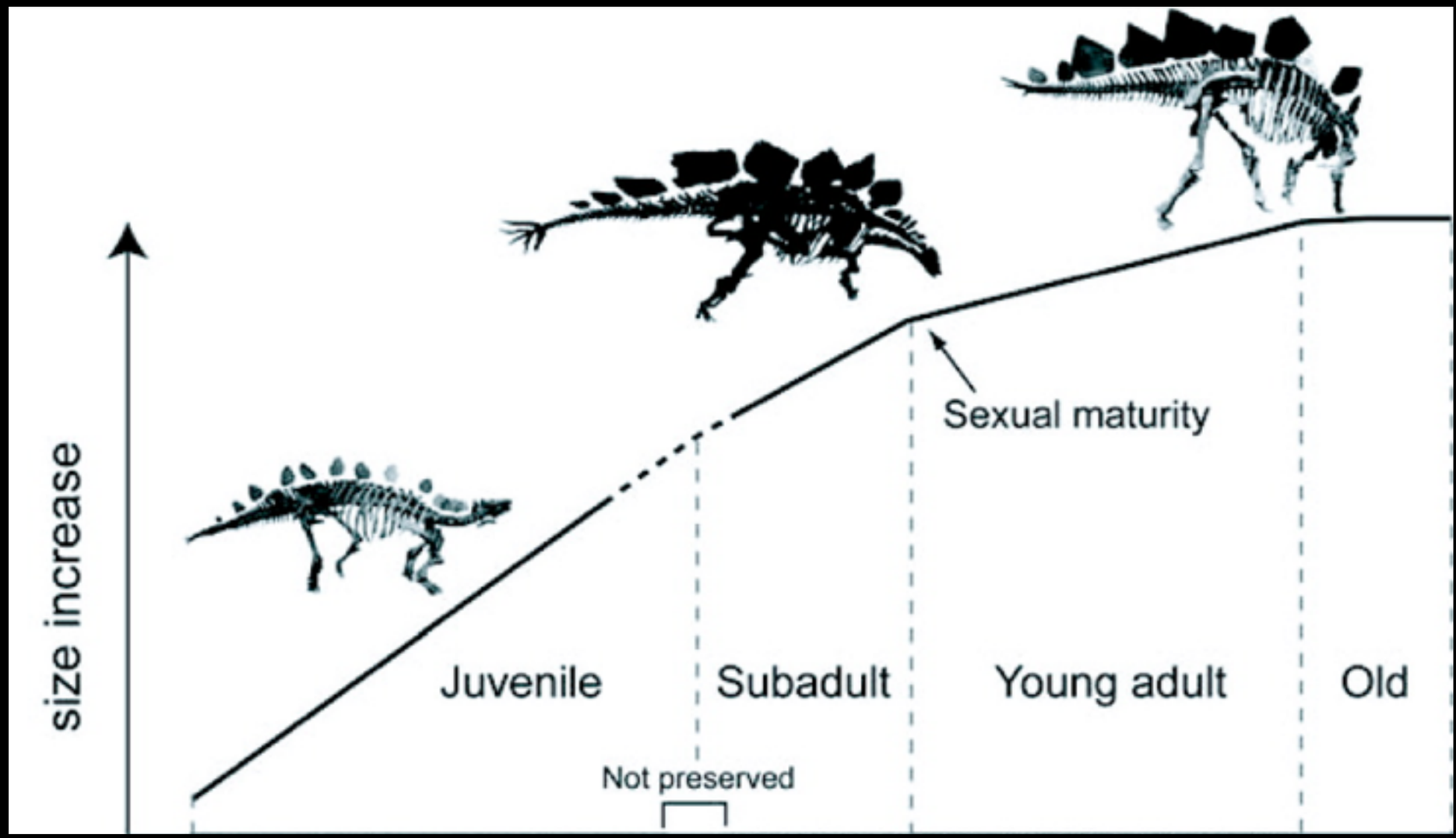
Stegosaurus
Morrison formation, Colorado

Dinosaur Sex

Figuring out how *Stegosaurus* even *could* have mated is a prickly subject. Females were just as well-armored as males, and it is unlikely that males mounted the females from the back. A different technique was necessary. Perhaps they angled so that they faced belly to belly, some have guessed, or maybe, as suggested by Timothy Isles in a recent paper, males faced away from standing females and backed up (a rather tricky maneuver!). The simplest technique yet proposed is that the female lay down on her side and the male approached standing up, thereby avoiding all those plates and spikes. However the *Stegosaurus* pair accomplished the feat, though, it was most likely brief—only as long as was needed for the exchange of genetic material. All that energy and effort, from growing ornaments to impressing a prospective mate, just for a few fleeting moments to continue the life of the species.

-Brian Switek

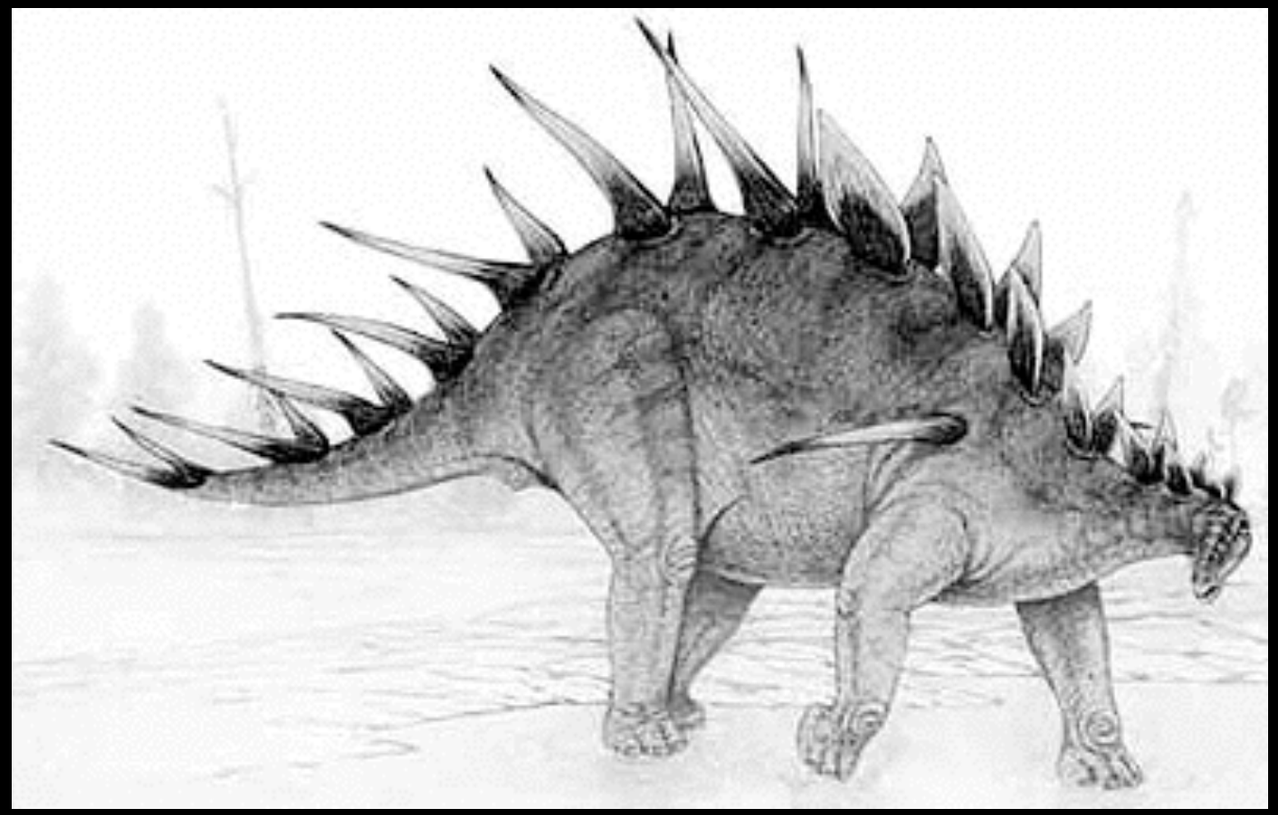



size increase
Sexual maturity
Juvenile
Subadult
Young adult
Old
Not preserved

Time

Walking with Dinosaurs
Chapter 2
10:23-13:41

Dermal Armour?

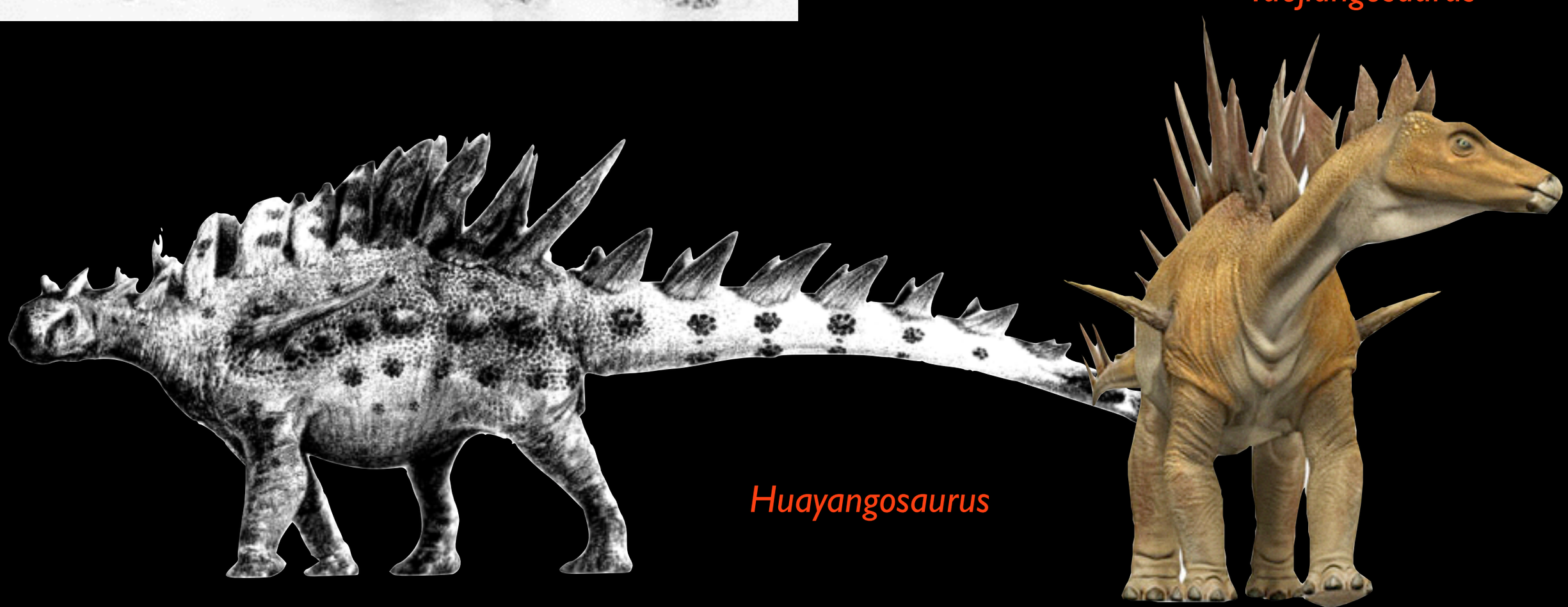


Kentrosaurus

Parascapular spines

Secondarily lost in *Stegosaurus*

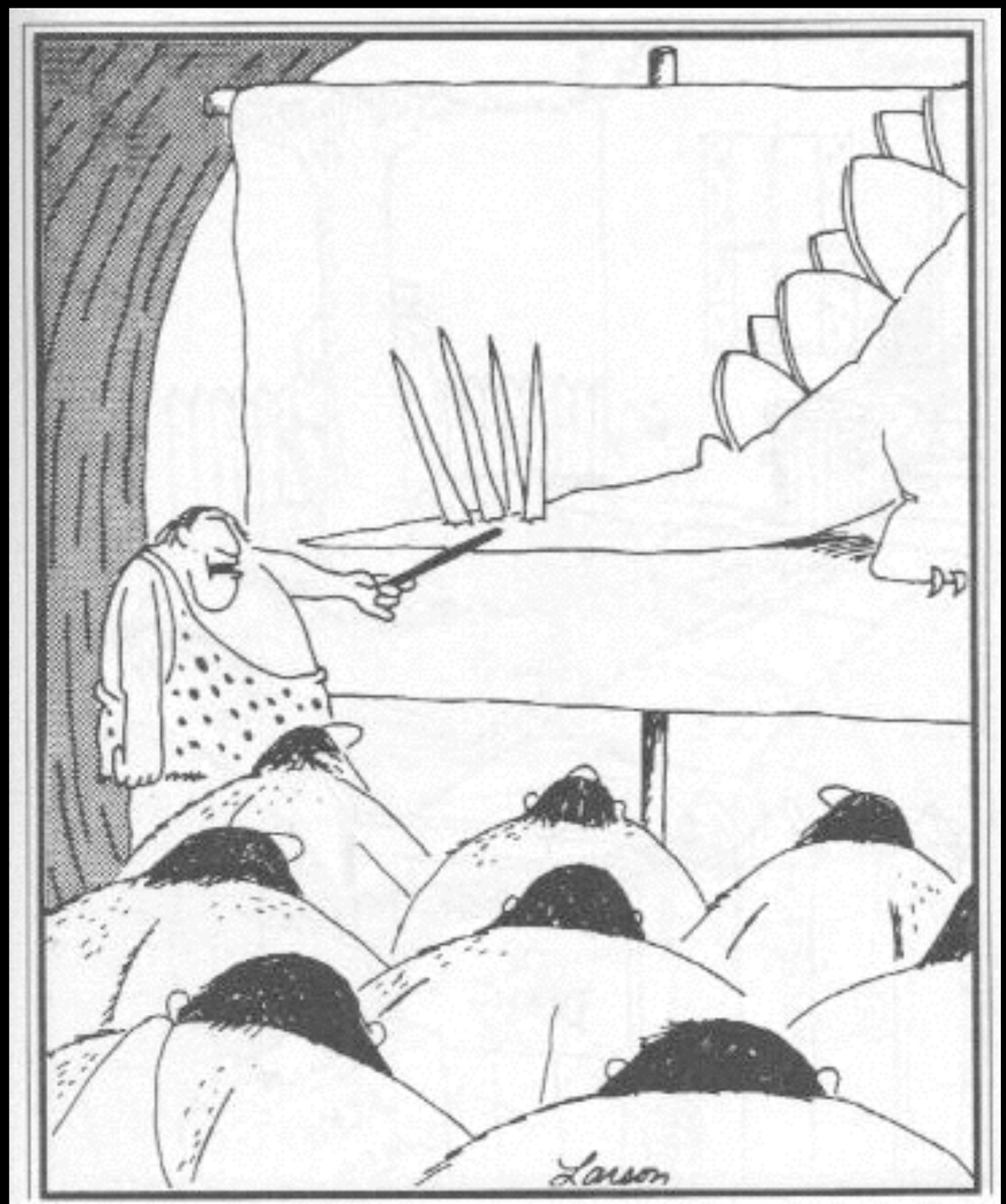
Tuojiangosaurus



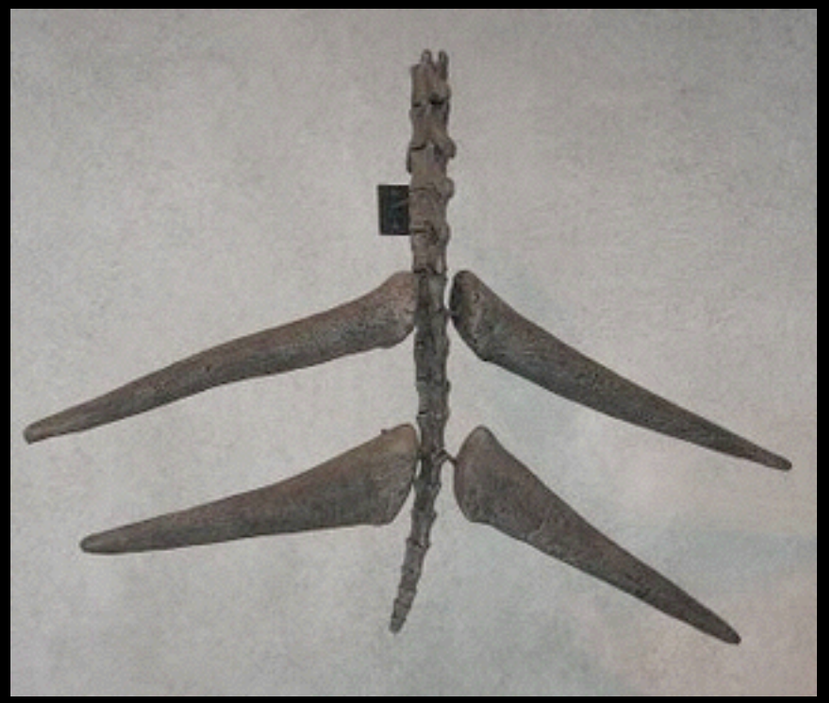
Huayangosaurus

Dermal Armour?

The Thagomizer



"Now this end is called the thagomizer . . . after the late Thag Simmons."

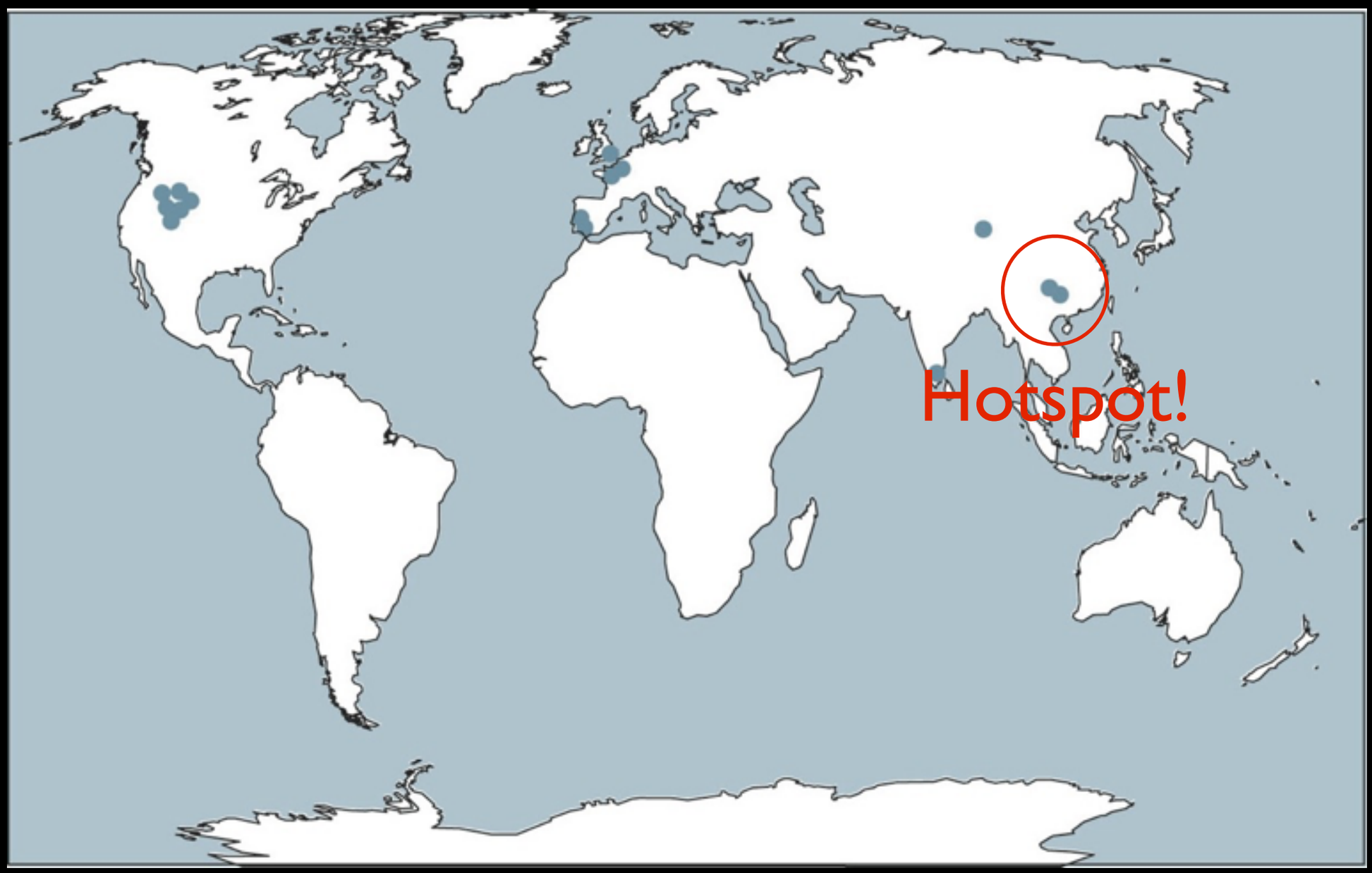


Distribution in Space and Time

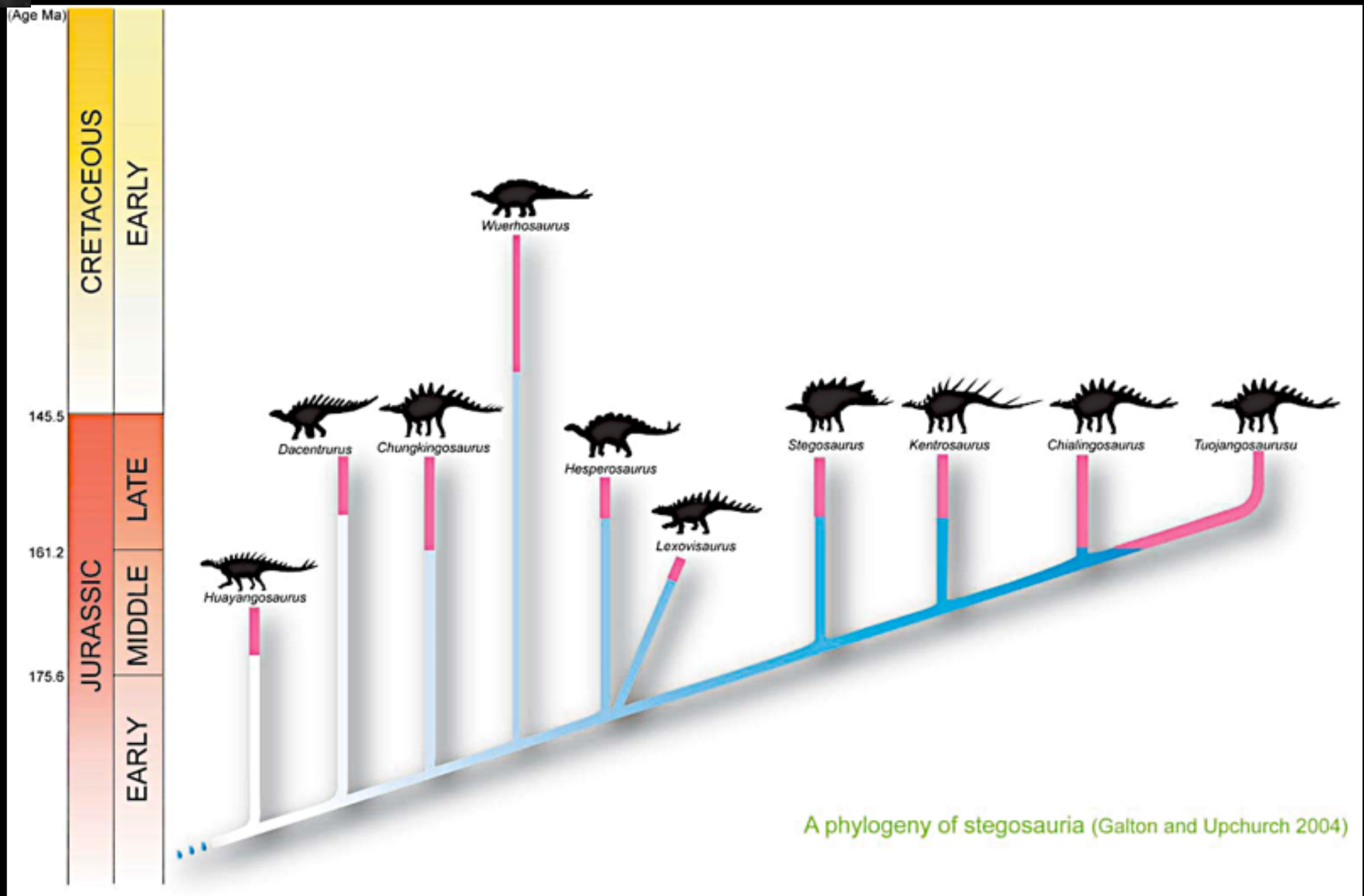
Branched off: Early Jurassic

Most abundant/diverse in Late Jurassic

Never very abundant compared to other herbivores



Distribution in Space and Time

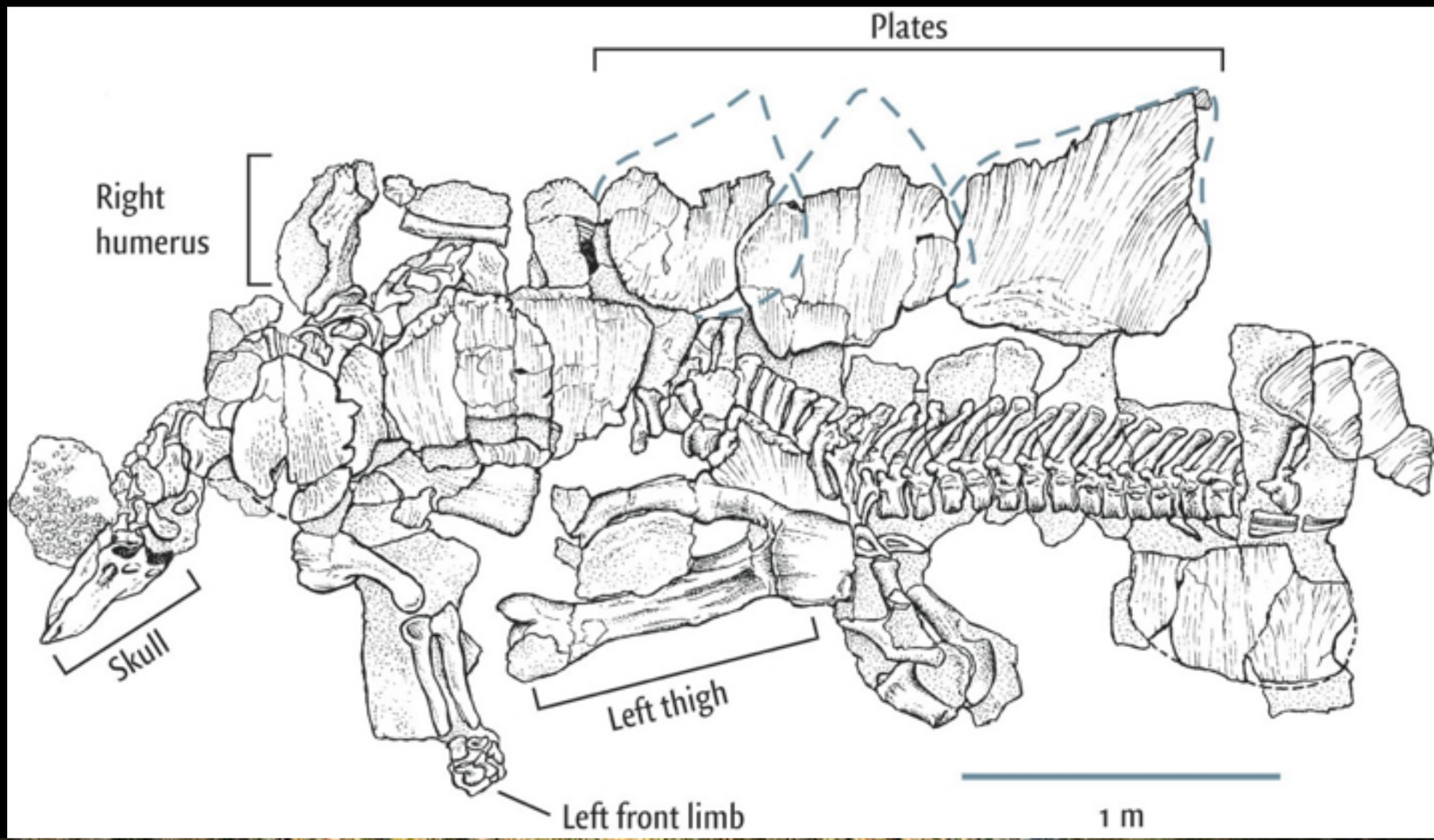


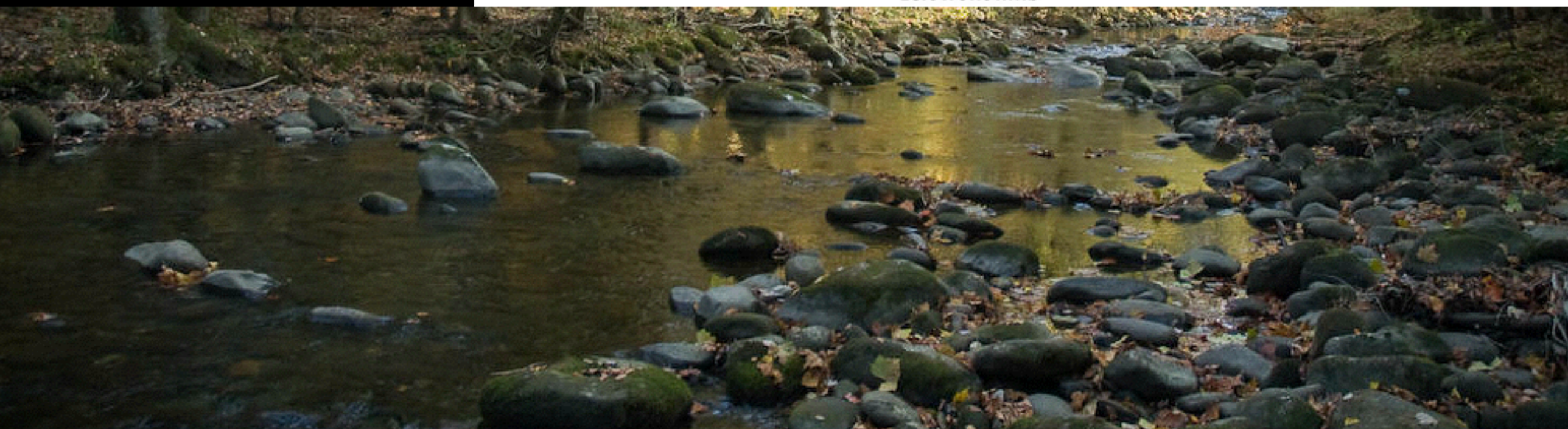
A phylogeny of stegosauria (Galton and Upchurch 2004)

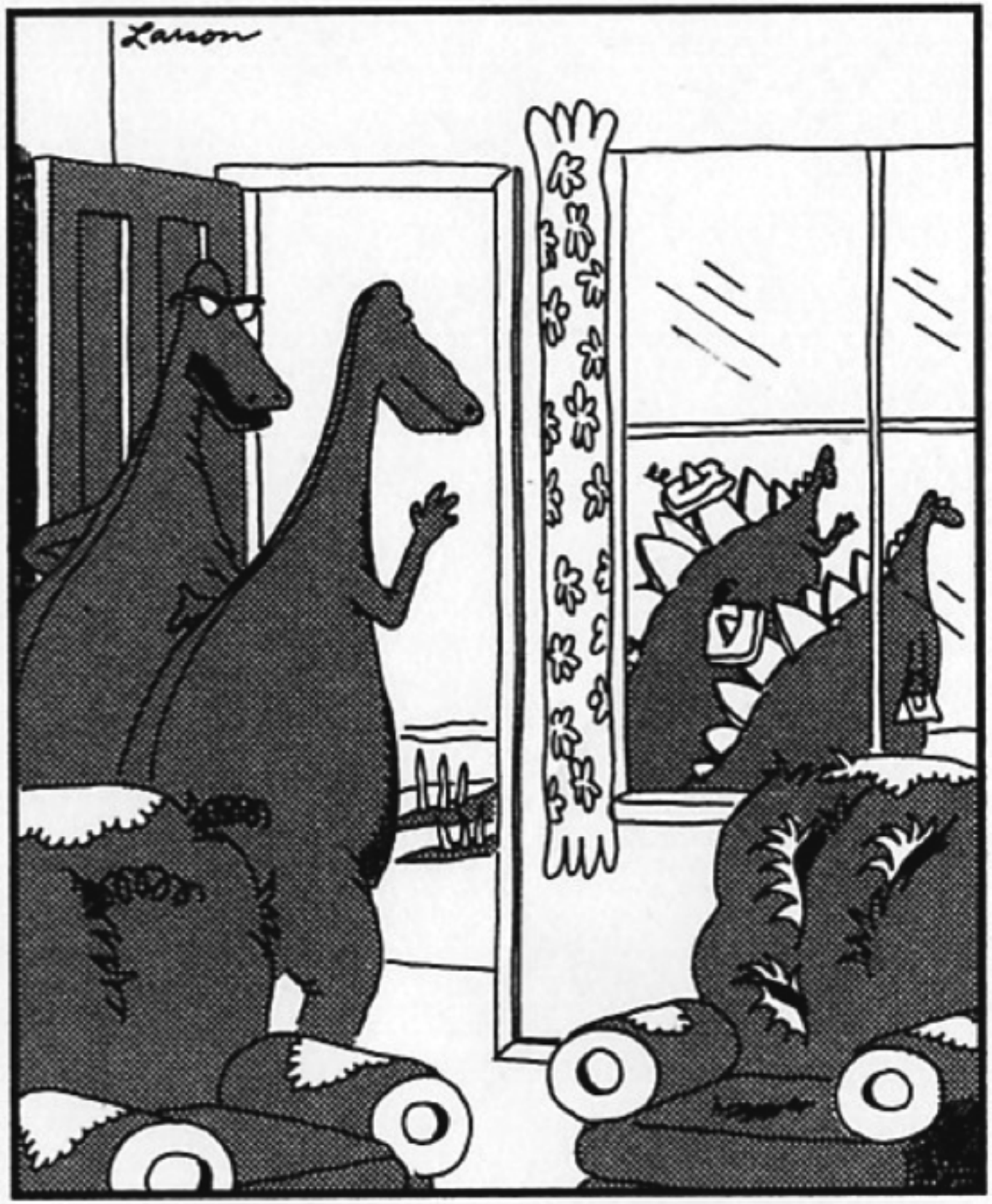
Distribution in Space and Time

early Jur	mid Jur	late Jur	early Cret	late Cret
Europe *Emausaurus* *Scelidosaurus*	**Europe** *Lexovisaurus* *Omosaurus* *Stegosaurus* **Asia** *Huayangosaurus*	**Europe** *Astrodon* *Dacentrurus* *Lexovisaurus* *Omosaurus* *Stegosaurus* **North America** *Diracodon* *Hesperosaurus* *Hypsirophus* *Stegosaurus* **Africa** *Anthodon* *Chialingosaurus* *Chungkingosaurus* *Doryphorosaurus* *Paleoscincus* *Tuojiangosaurus*	**Europe** *Craterosaurus* *Regnosaurus* **Africa** *Anthodon* *Paleoscincus* *Paranthodon* **Asia** *Wuerhosaurus* *Monkonosaurus*	**Asia** *Dravidosaurus??*

Distribution in Space and Time







"Well, that does it! Look at our furniture!
The Shuelers have visited us for the last time!"