How big did *Barosaurus* get?

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Art by John Conway.

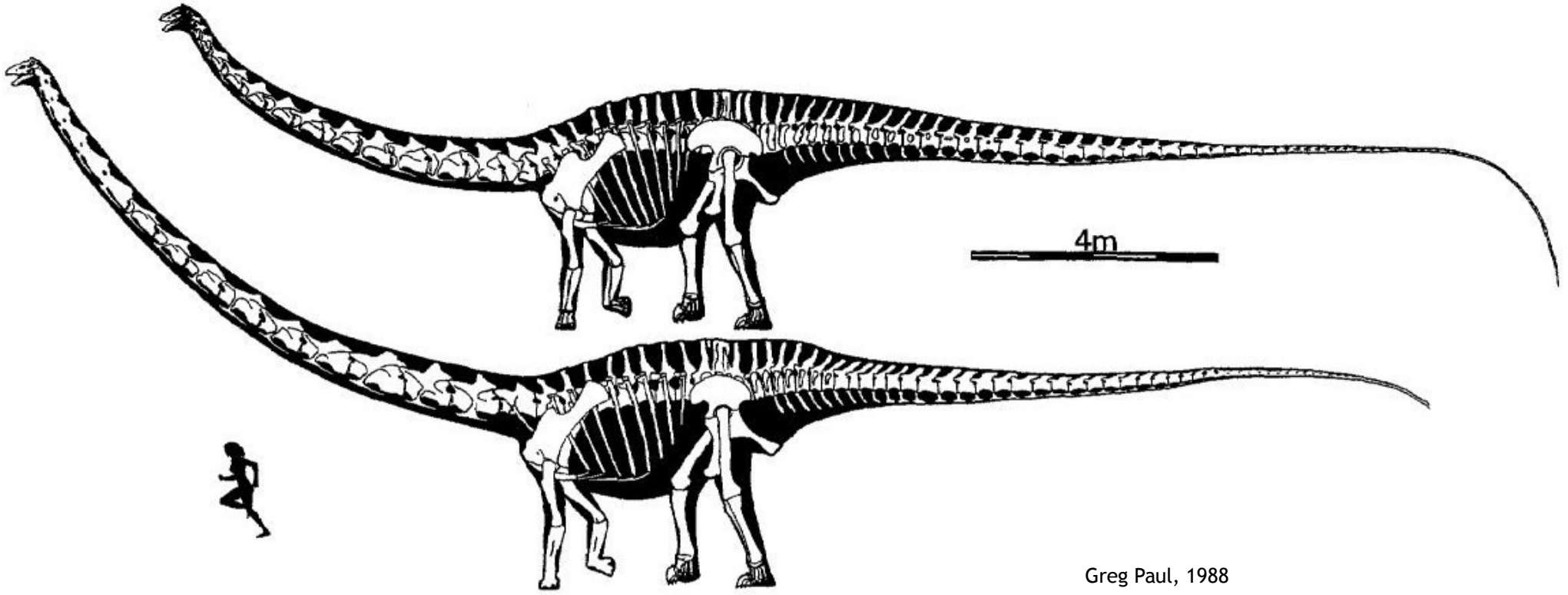
At the American Museum of Natural History


At the American Museum
of Natural History


At the Utah Museum of Natural History.
Evidence from the Quarry
150 million years ago

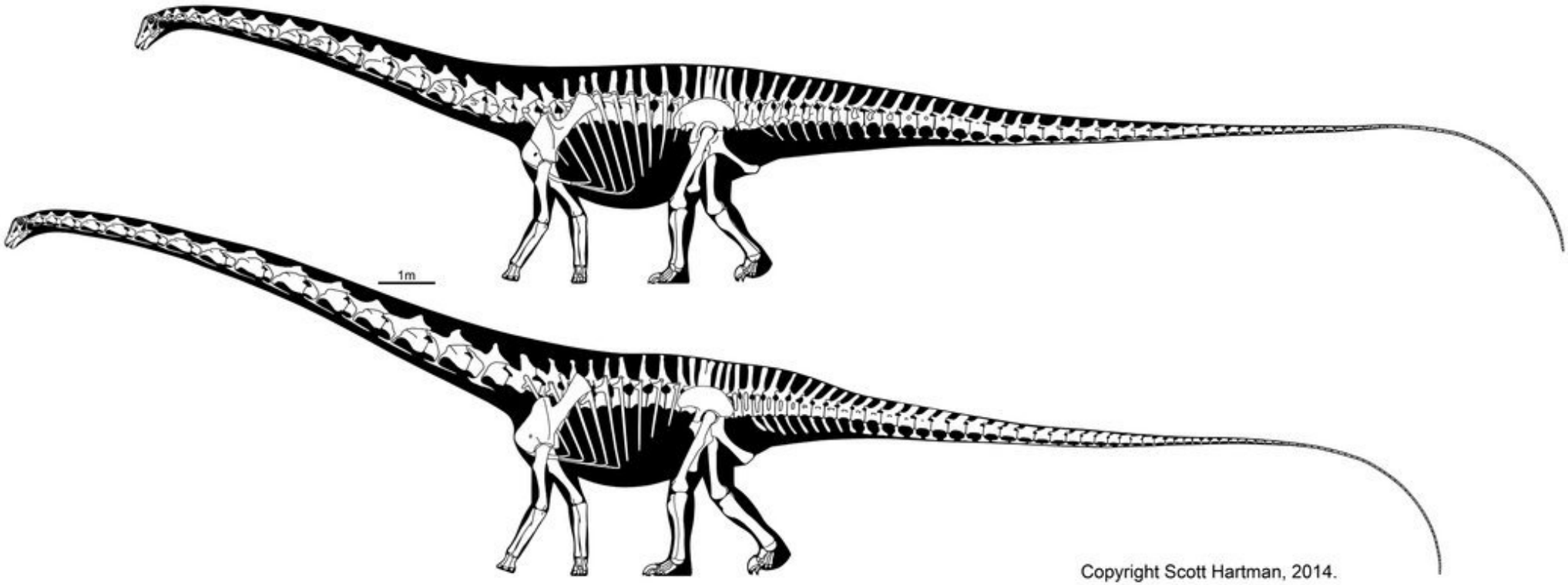
At the Utah Museum of Natural History

Barosaurus: longer neck than *Diplodocus*, otherwise broadly similar



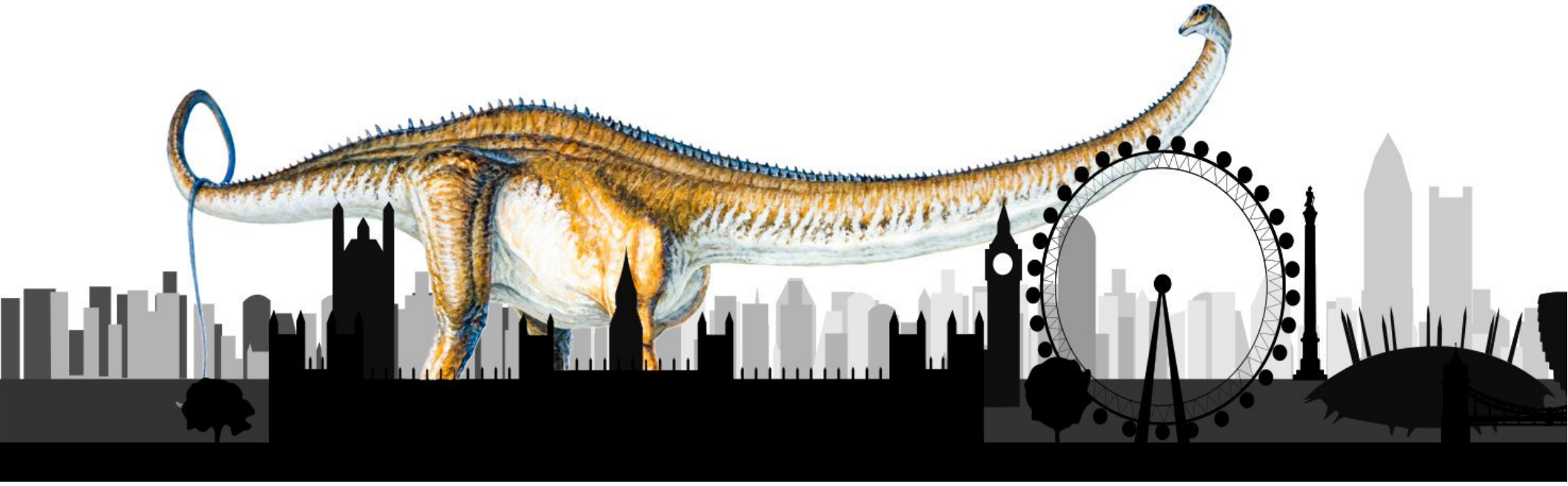
Greg Paul, 1988

Barosaurus: longer neck than *Diplodocus*, otherwise broadly similar




We all know what *Diplodocus* is like — disappointingly small
NATURAL HISTORY MUSEUM
Join us

But did *Barosaurus* get *really* big?

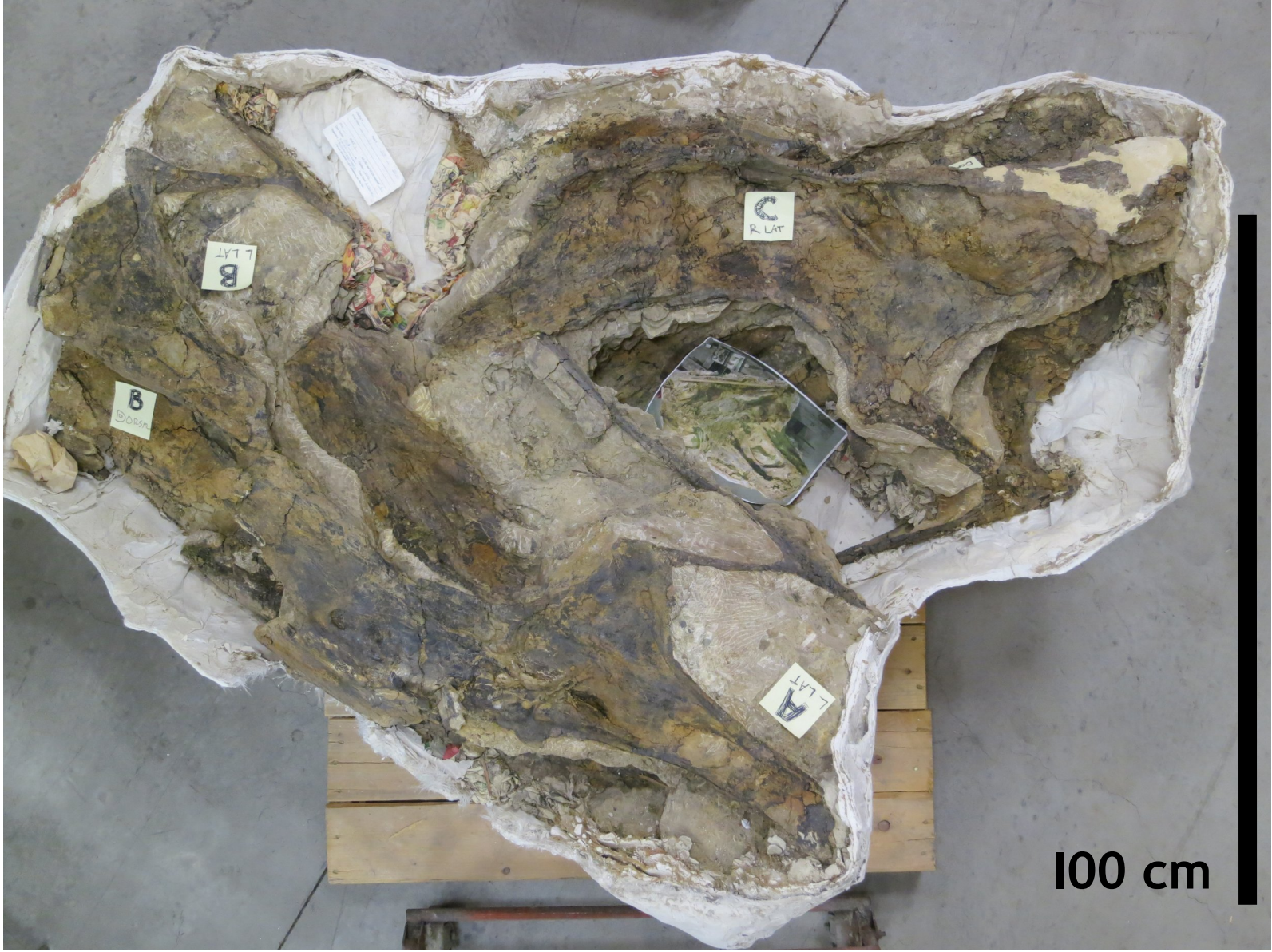


Jensen's Jensen/Jensen quarry, Jensen

BYU field jacket 3GR, excavated 1966 from Jensen/Jensen

BYU field jacket 3GR, excavated 1966 from Jensen/Jensen

Contains three ?consecutive *Barosaurus* cervicals, designated A, B and C.

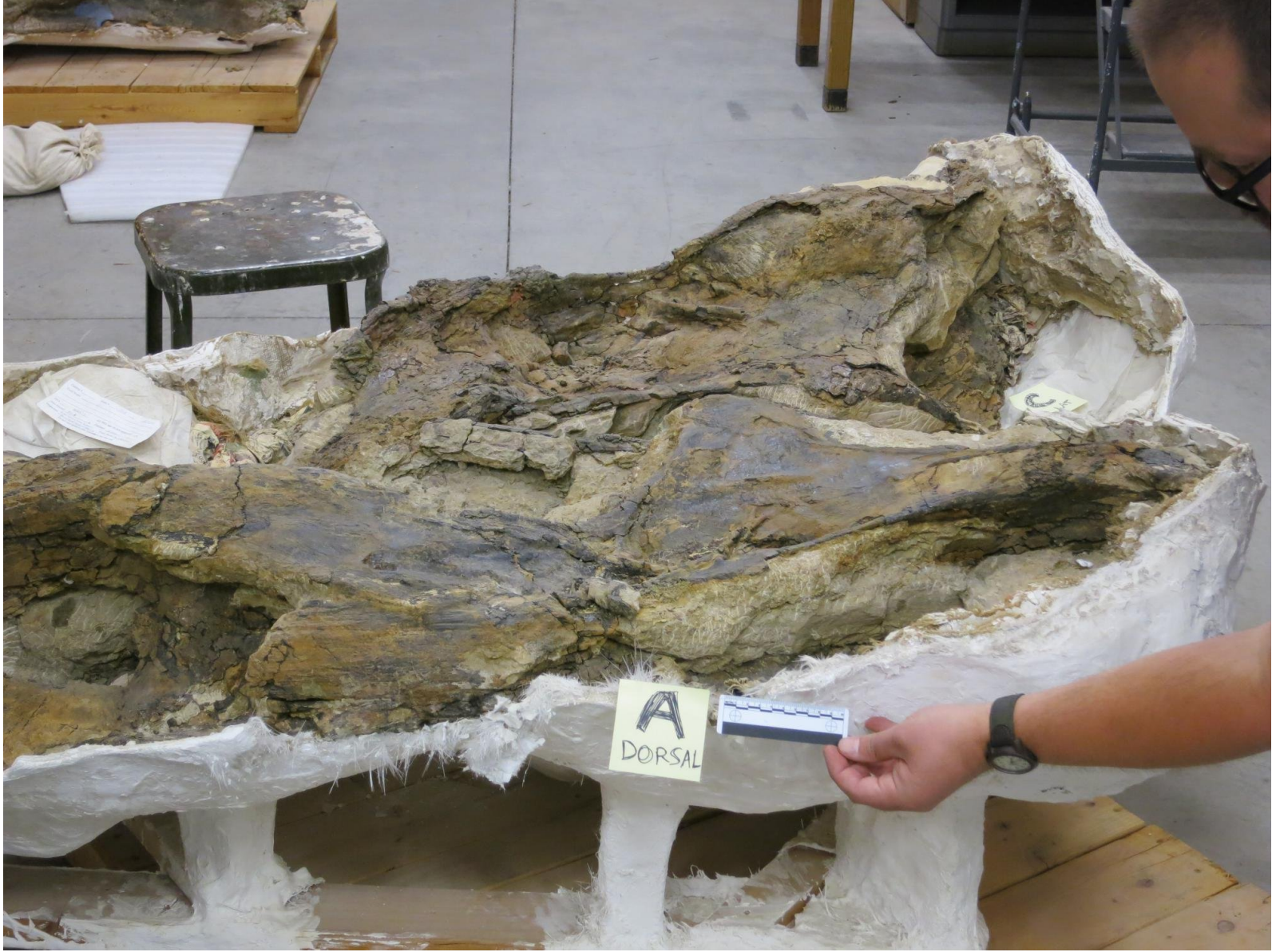


Barosaurus cervical A, left lateral

Barosaurus cervical A, left lateral

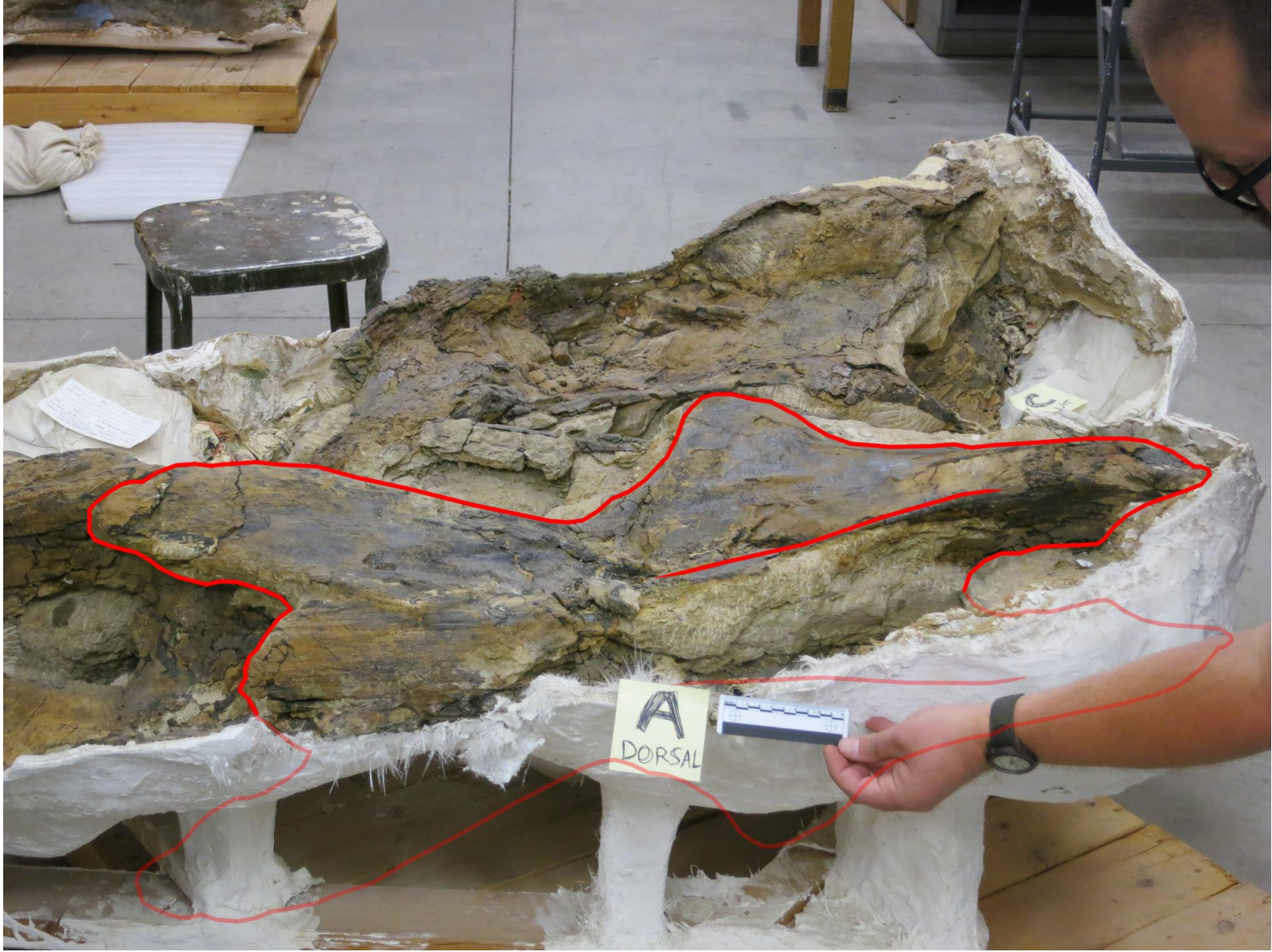
Barosaurus cervical A, dorsal view

(anterior to right)



Barosaurus cervical A, dorsal view

(anterior to right)



Barosaurus cervical B, left lateral

Barosaurus
cervical B,
left lateral

Barosaurus cervical B, dorsal view

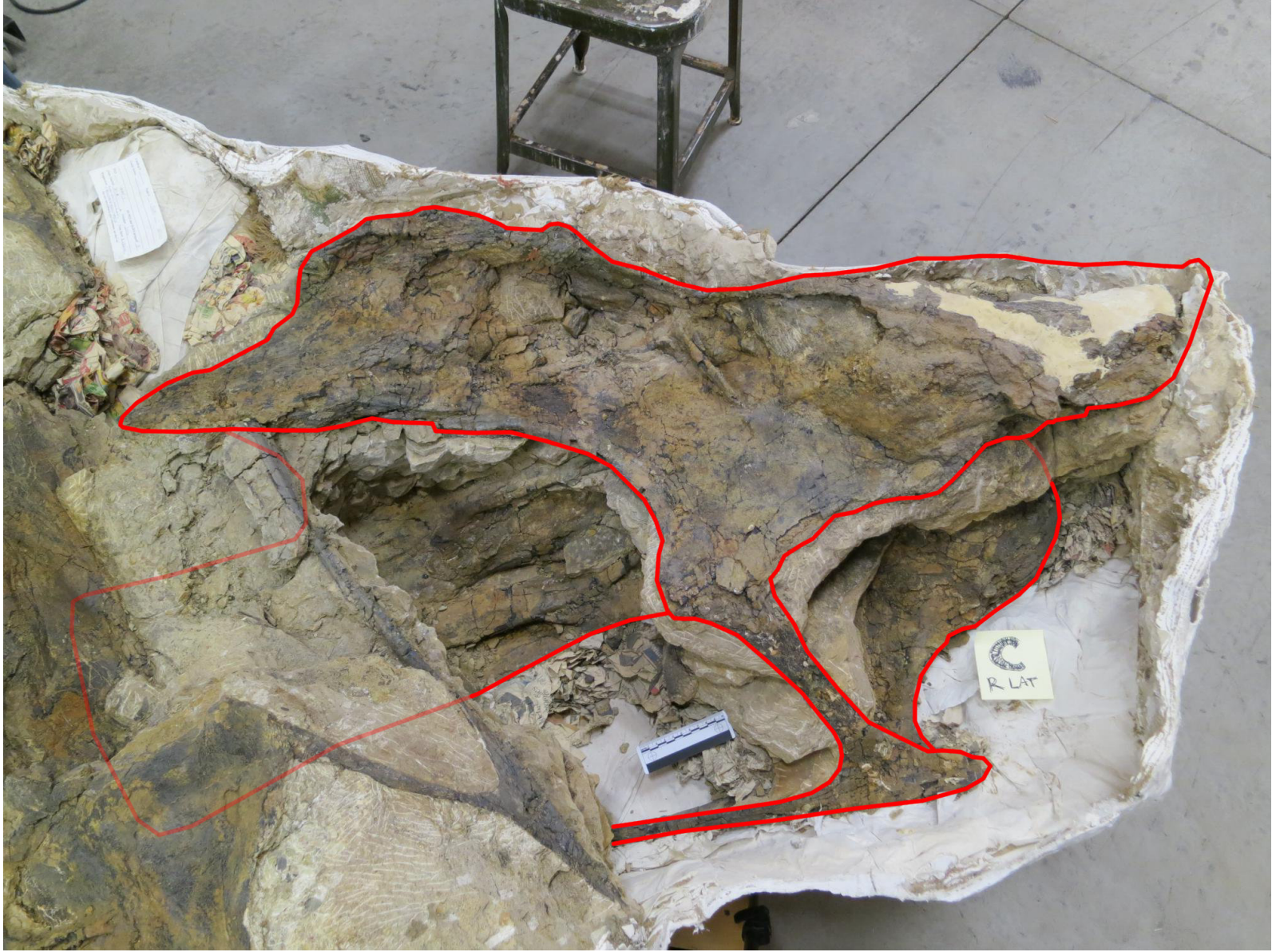
(anterior to right)

Barosaurus cervical B, dorsal view

(anterior to right)

Barosaurus
cervical C,
right lateral

Barosaurus
cervical C,
right lateral



Barosaurus cervical C, dorsal view

(anterior to left)

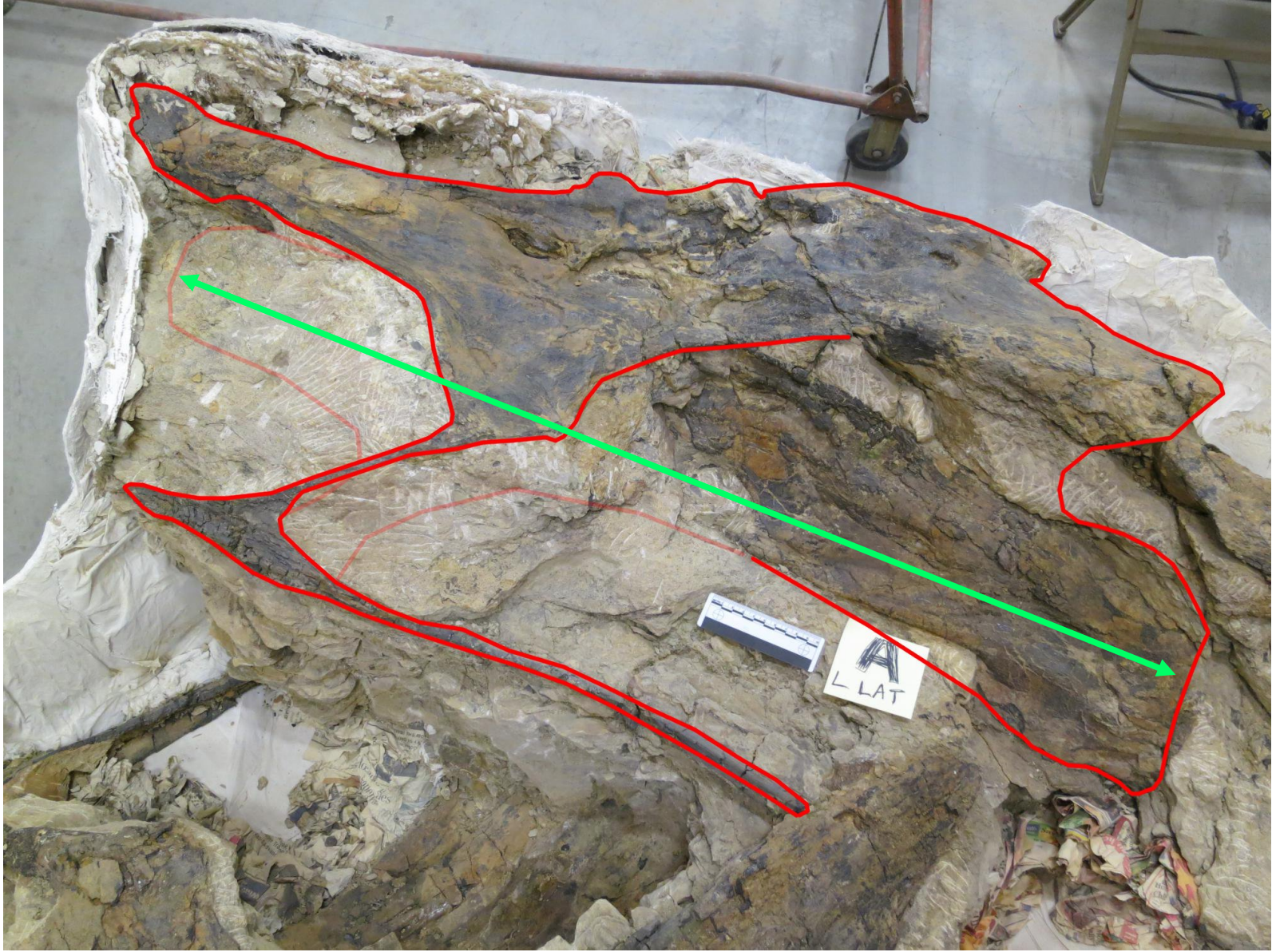
Barosaurus cervical C, dorsal view

(anterior to left)

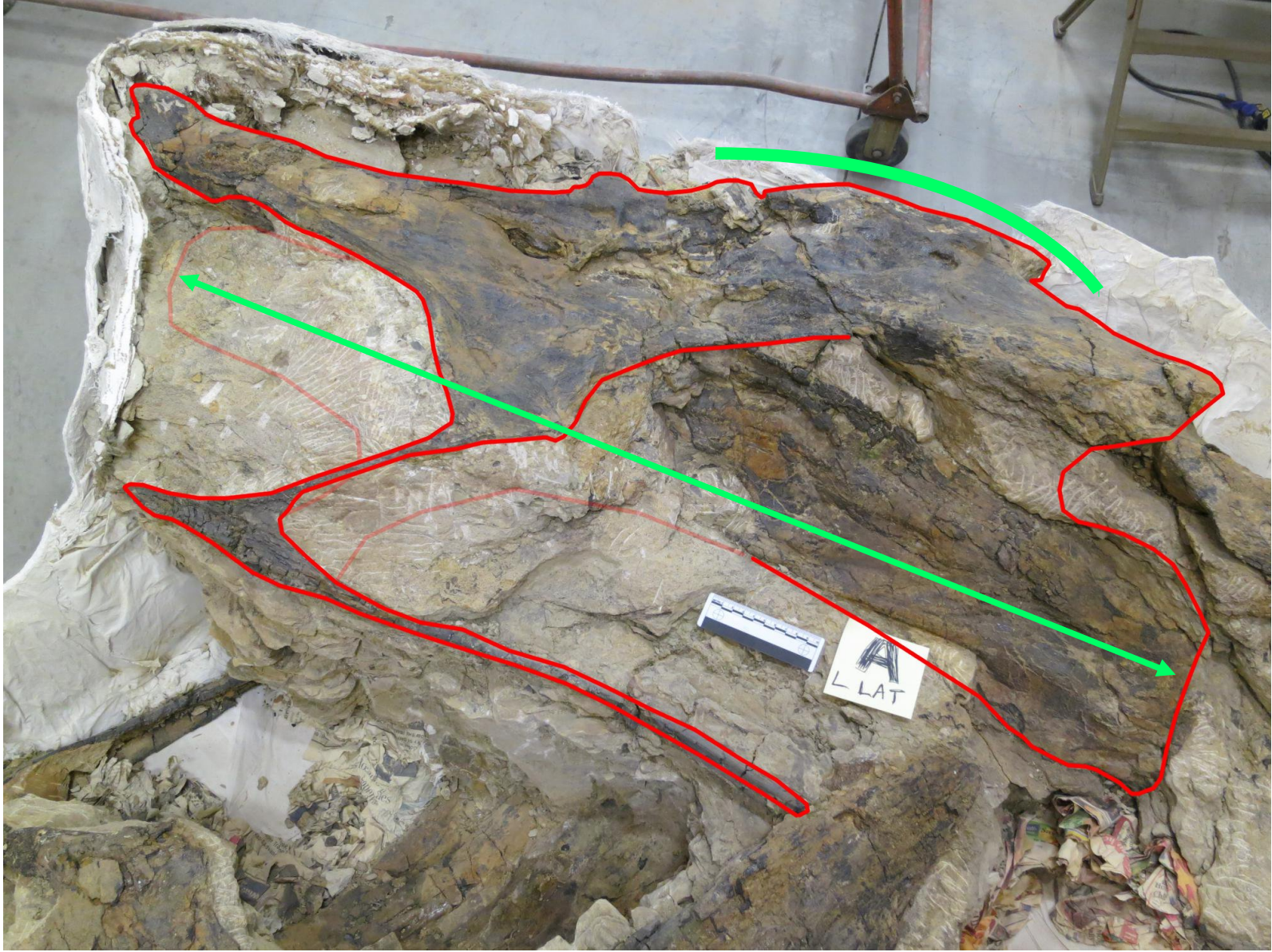
Why do we think this is *Barosaurus*?

Barosaurus cervical A, left lateral

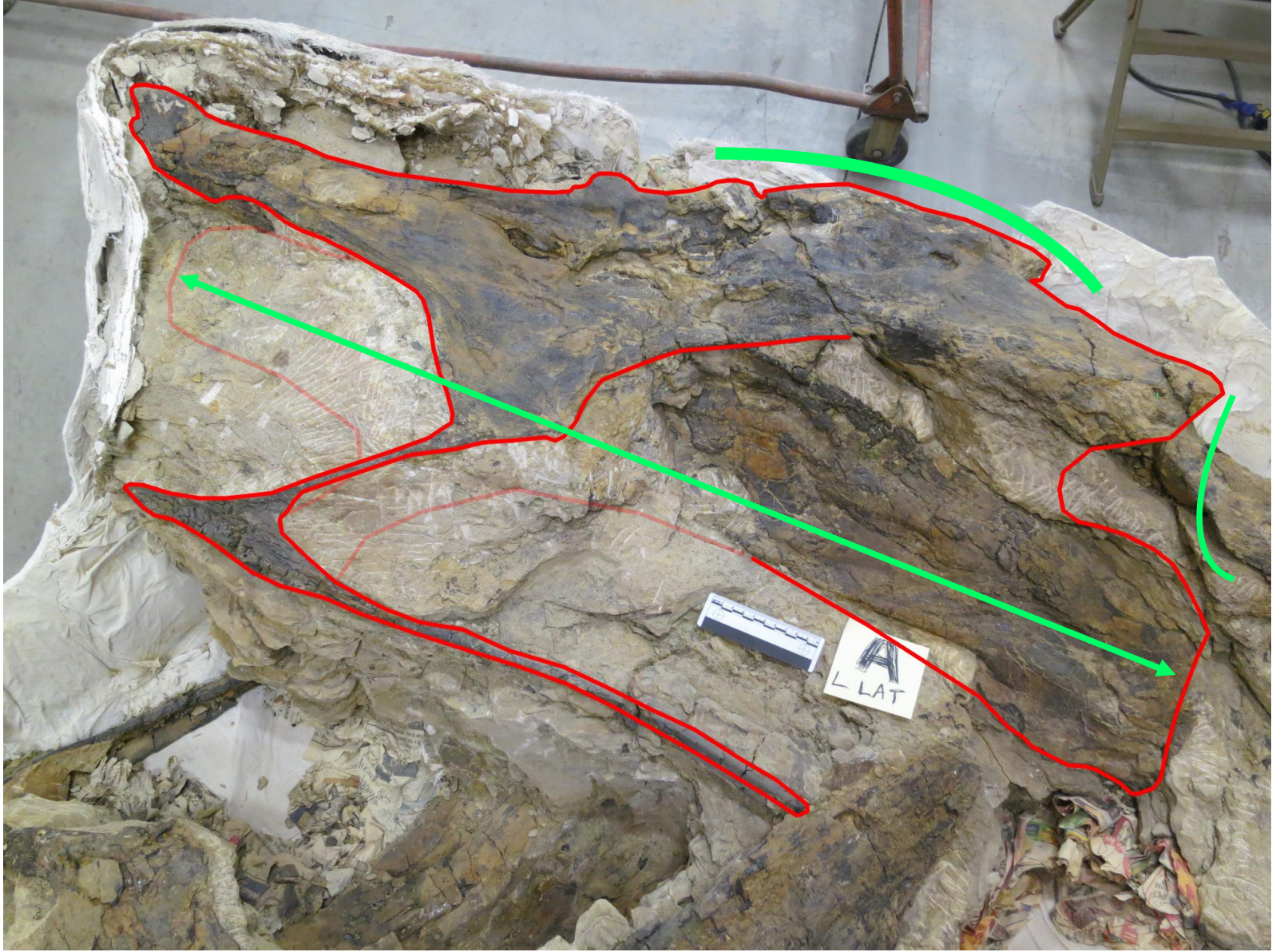
Barosaurus cervical A, left lateral



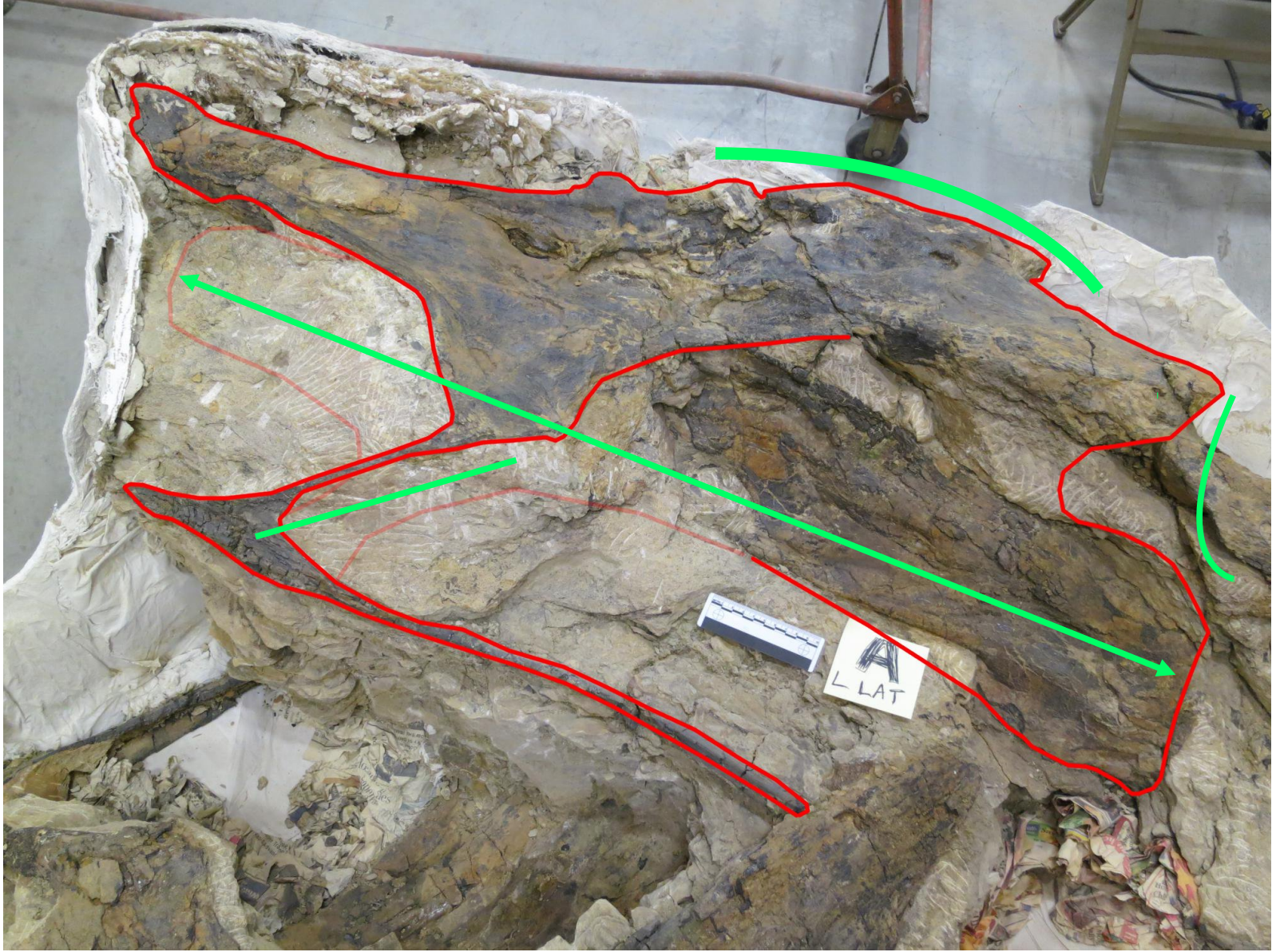
Barosaurus cervical A, left lateral



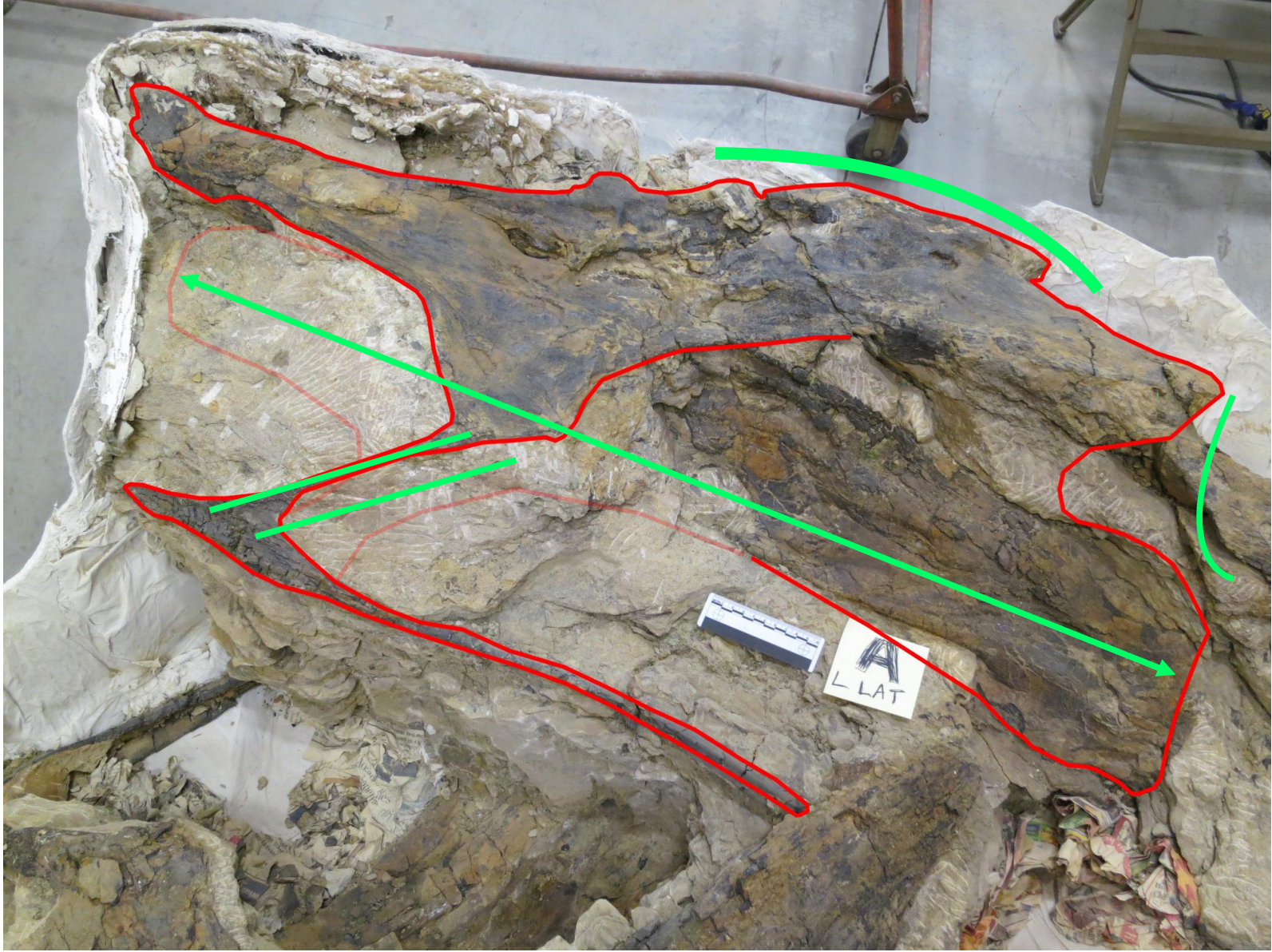
Barosaurus
cervical A,
left lateral



Barosaurus cervical A, left lateral

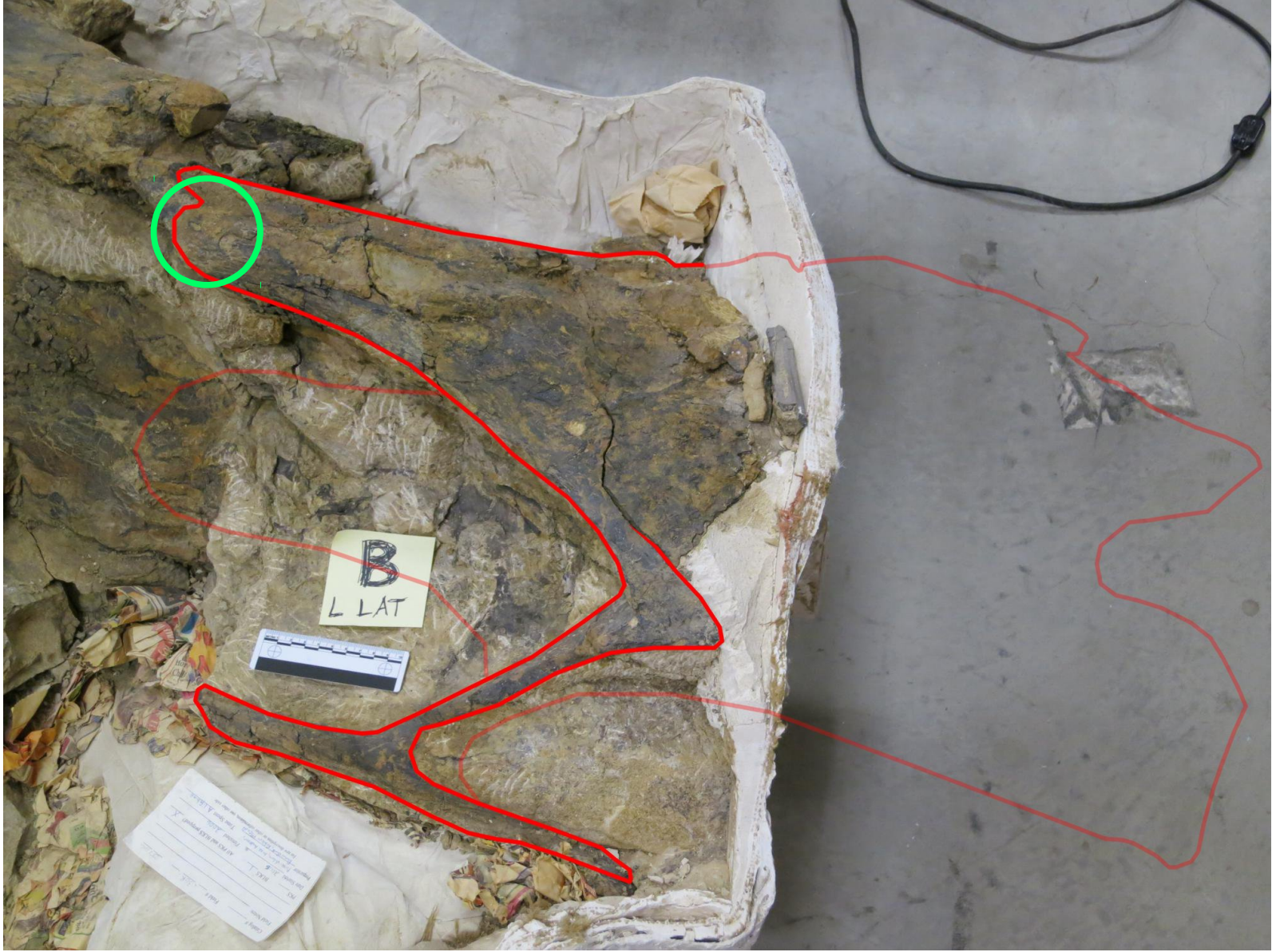


Barosaurus
cervical A,
left lateral



Barosaurus
cervical B,
left lateral

Barosaurus
cervical B,
left lateral



Barosaurus
Holotype
YPM 429,
Cervical R

"thumb groove"

Barosaurus nice example of thumb-slot.

Privately owned specimen at NAMAL …

Access courtesy
Western Paleo Labs

Privately owned specimen at NAMAL …

… Not like the nice specimen at AMNH which is always available to researchers.

Barosaurus cervical B, dorsal view

(anterior to right)

Barosaurus cervical B, dorsal view

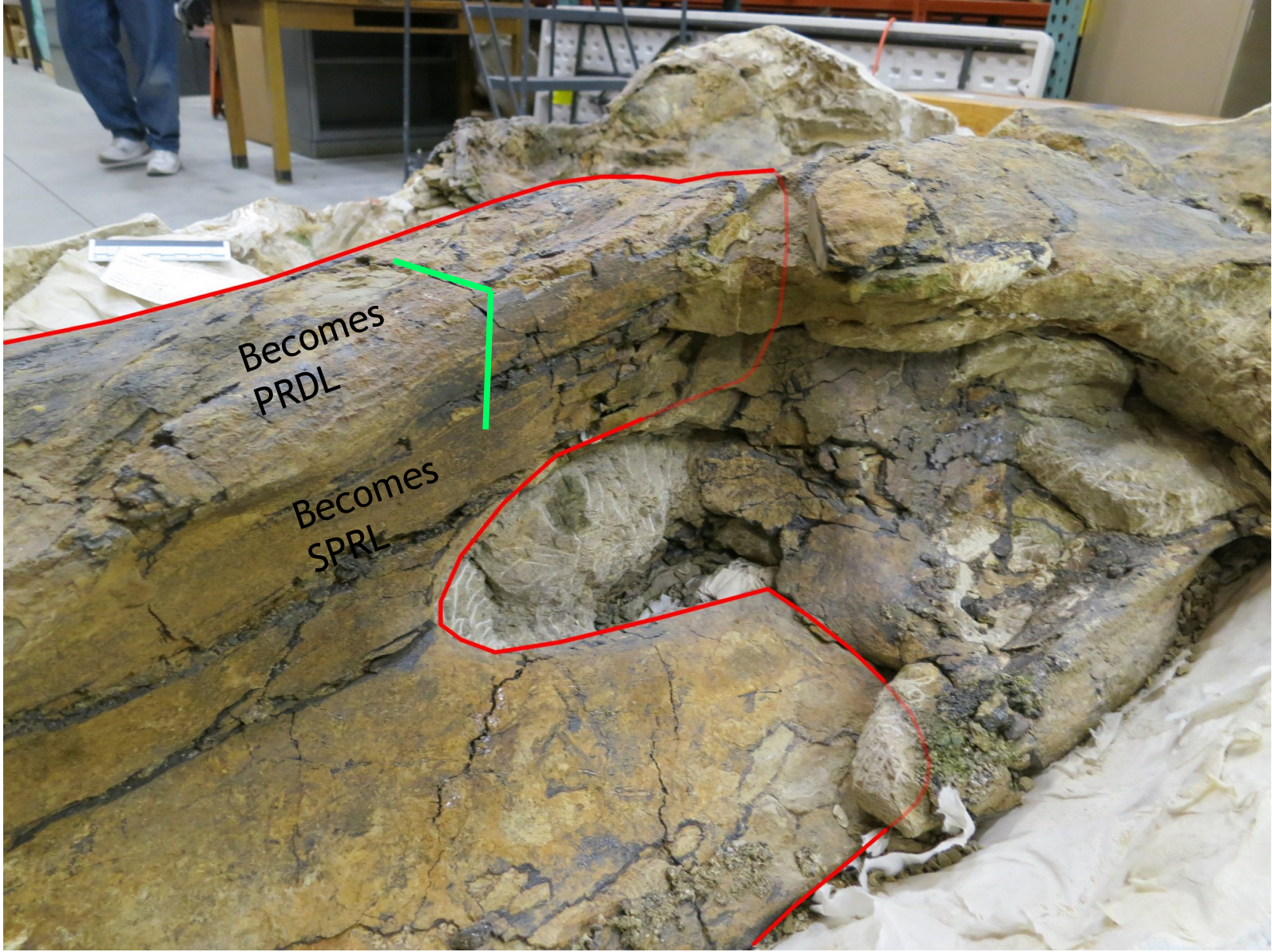
(anterior to right)

Barosaurus cervical B, dorsal view

(anterior to right)

Barosaurus cervical B, dorsal view

(anterior to right)

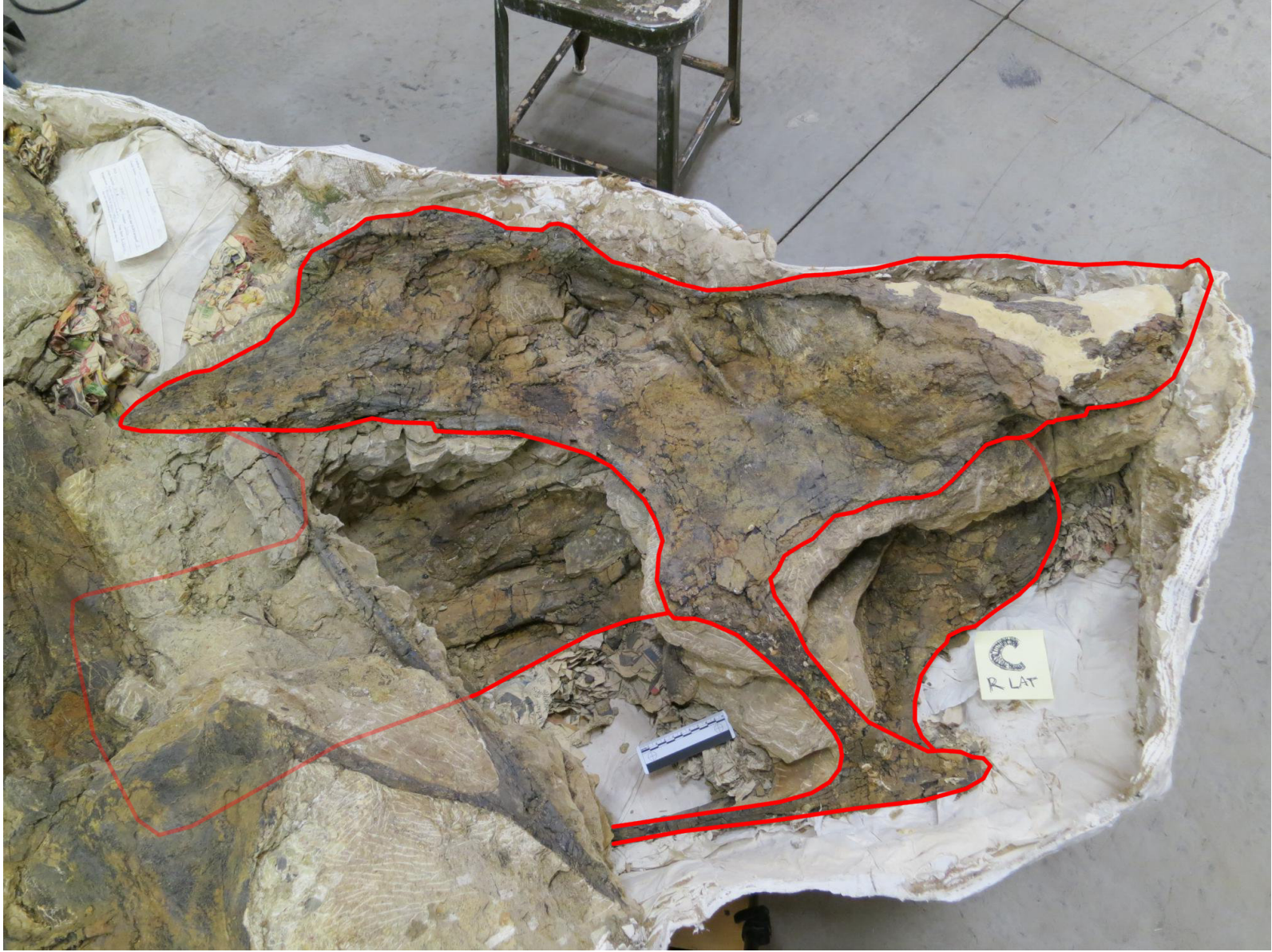


Barosaurus nice example of “hinges”.

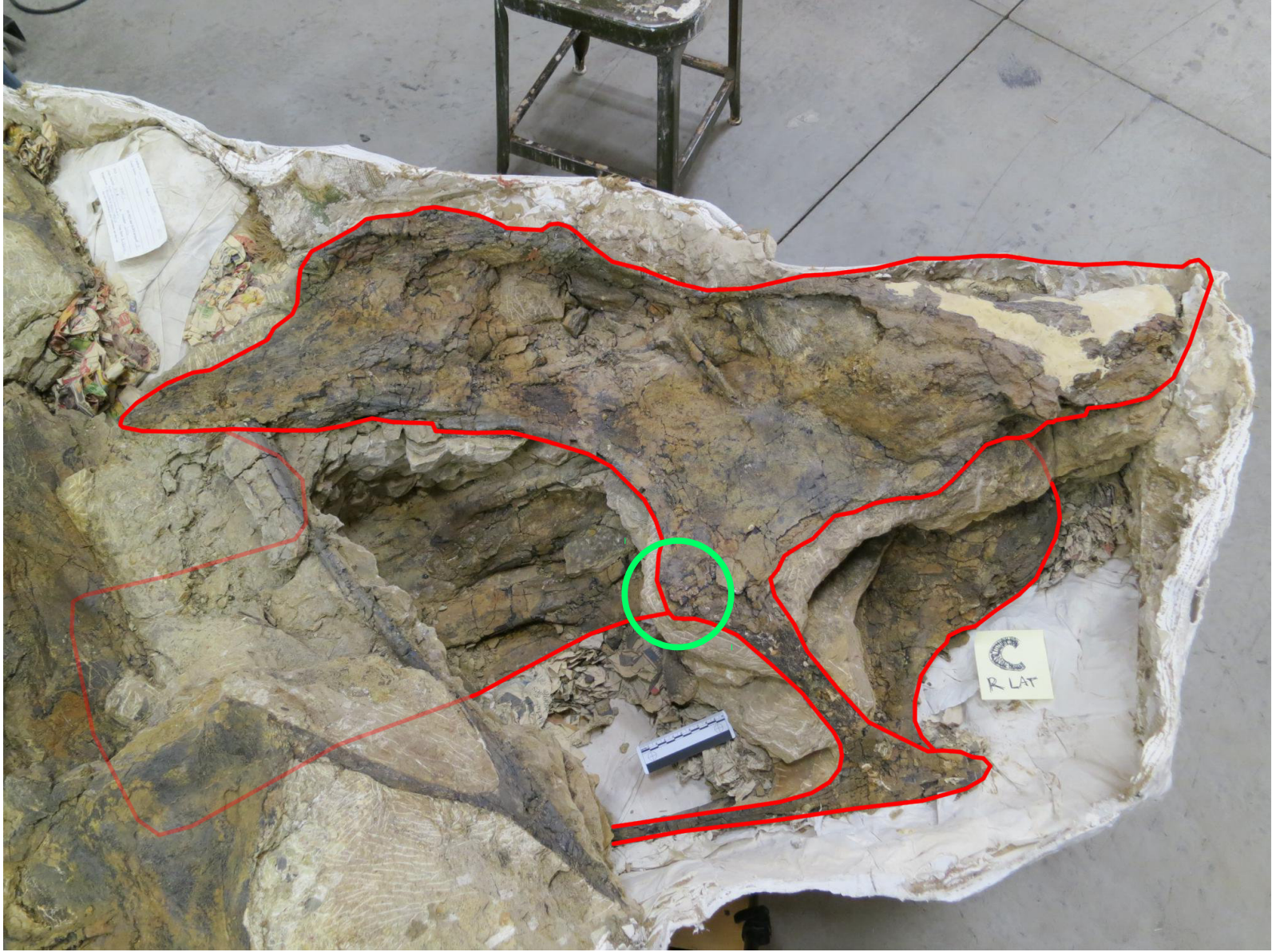
Privately owned specimen at NAMAL.

Access courtesy
Western Paleo Labs

Barosaurus
cervical C,
right lateral



Barosaurus
cervical C,
right lateral



Barosaurus cervical C, dorsal view

(anterior to left)

Barosaurus cervical C, dorsal view

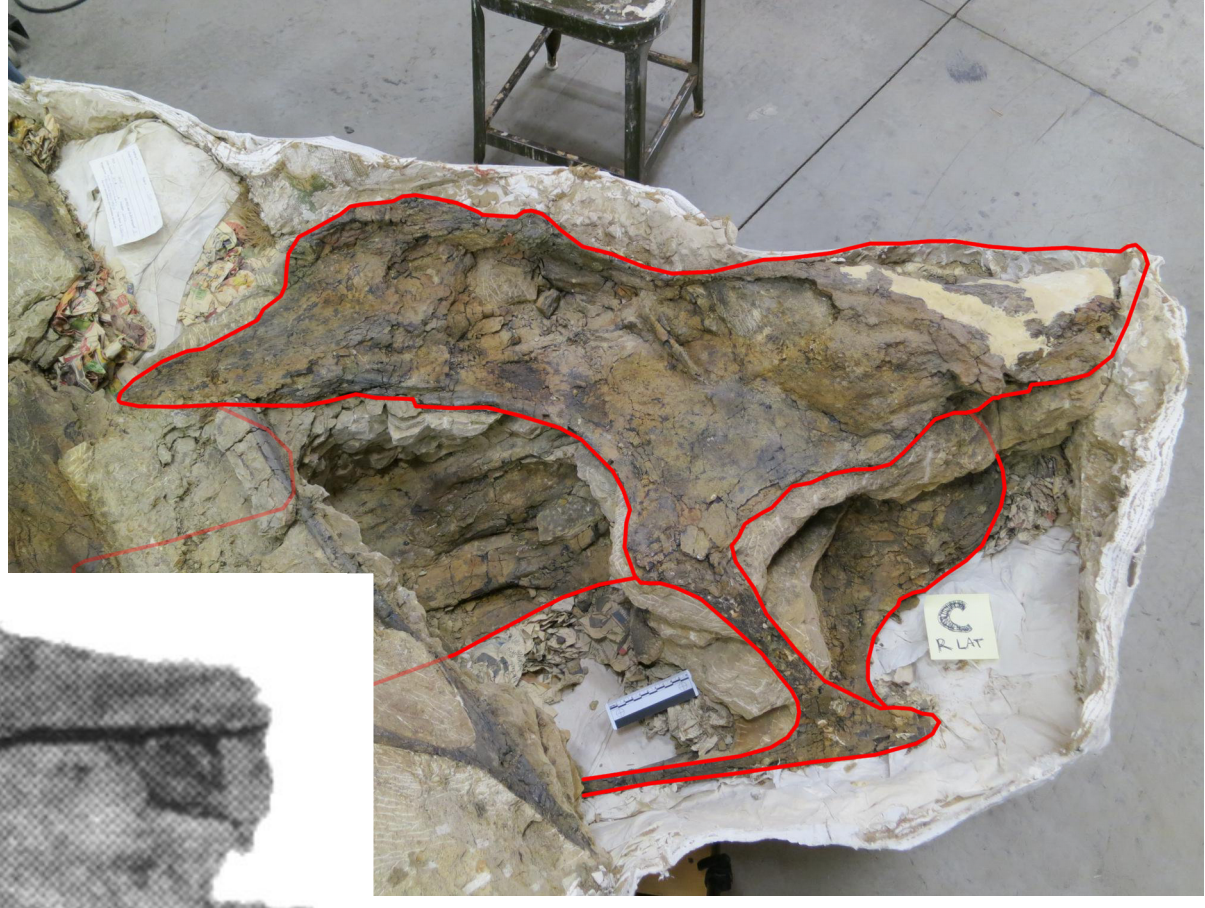
(anterior to left)

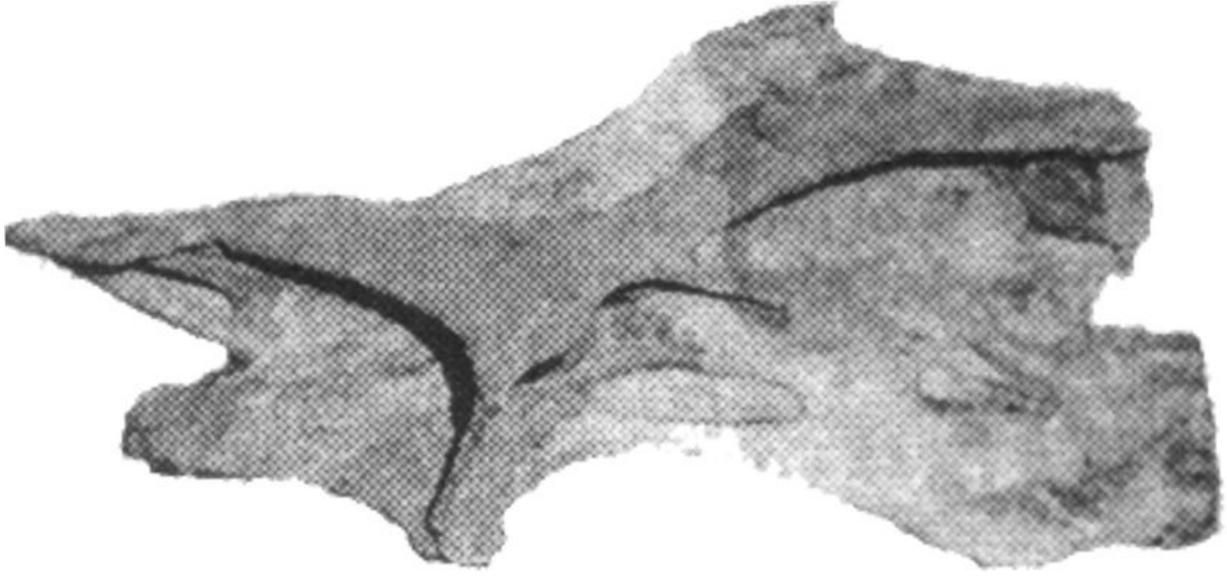
Barosaurus cervical C, dorsal view

(anterior to left)

Cervical C is probably C9 based on proportions and spine bifurcation.

But could be C10 or C11.





How long are these bones?

Cervical A

prezyg to postzyg: 102 cm
prezyg to cotyle: 108 cm

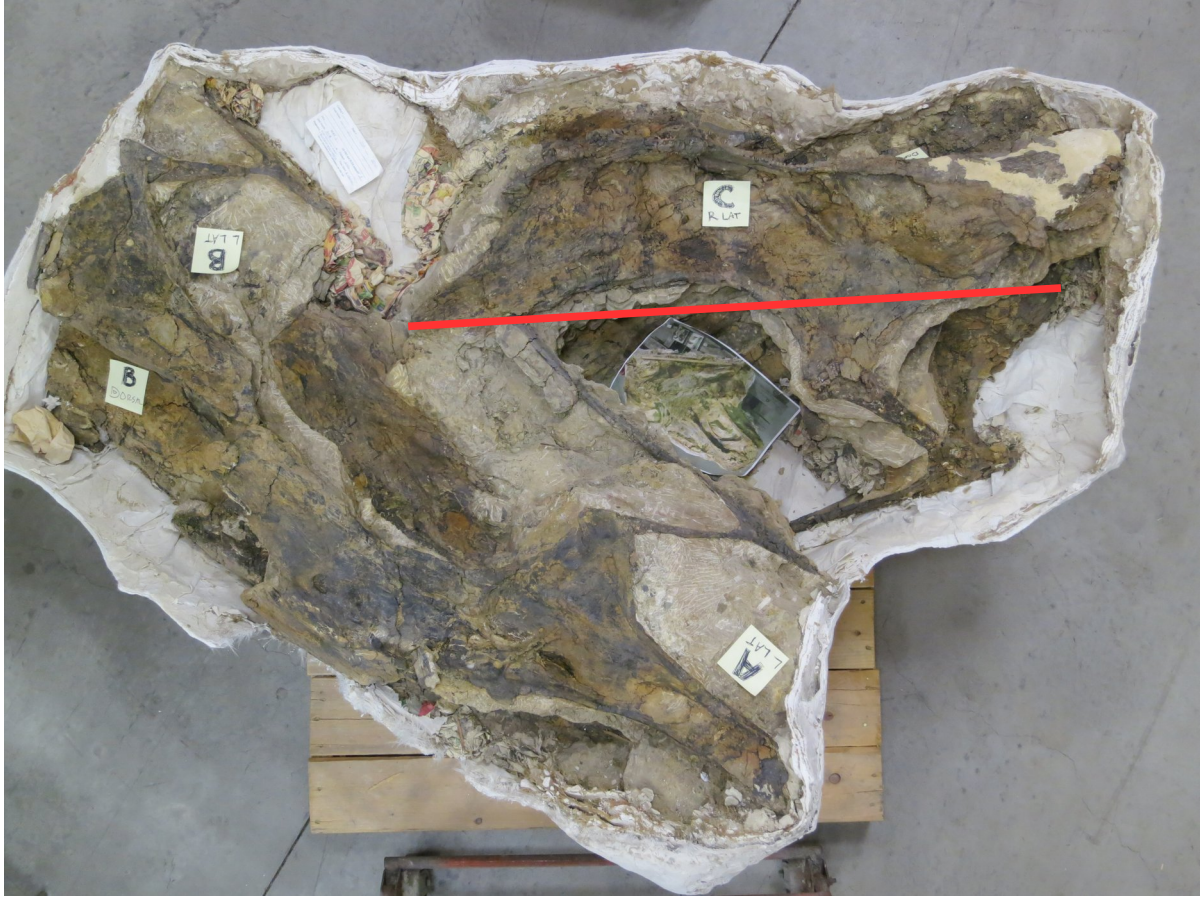
=> postzyg to cotyle: 6 cm

How long are these bones?

Cervical A
prezyg to postzyg: 102 cm
prezyg to cotyle: 108 cm

=> postzyg to cotyle: 6 cm

Cervical C
condyle to postzyg: 104 cm



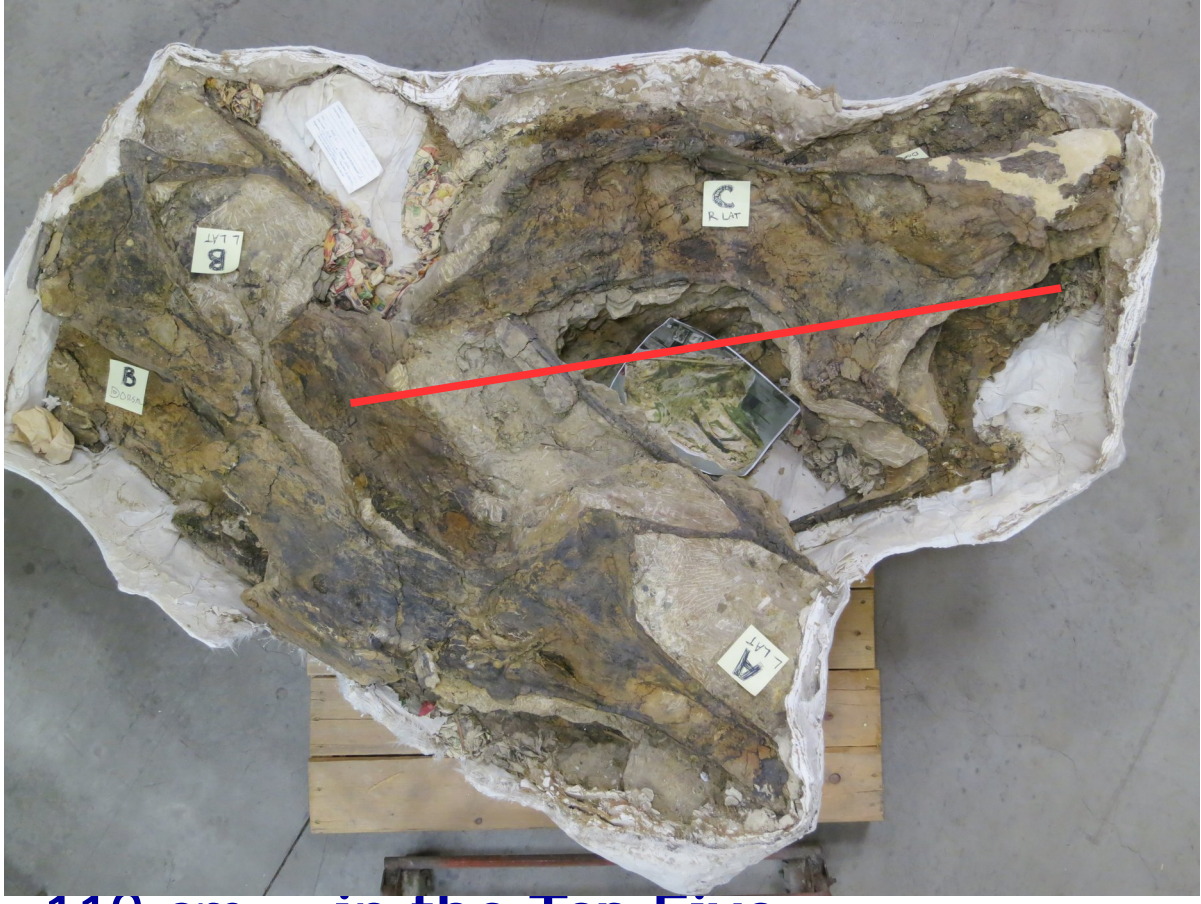
How long are these bones?

Cervical A
prezyg to postzyg: 102 cm
prezyg to cotyle: 108 cm

=> postzyg to cotyle: 6 cm

Cervical C
condyle to postzyg: 104 cm

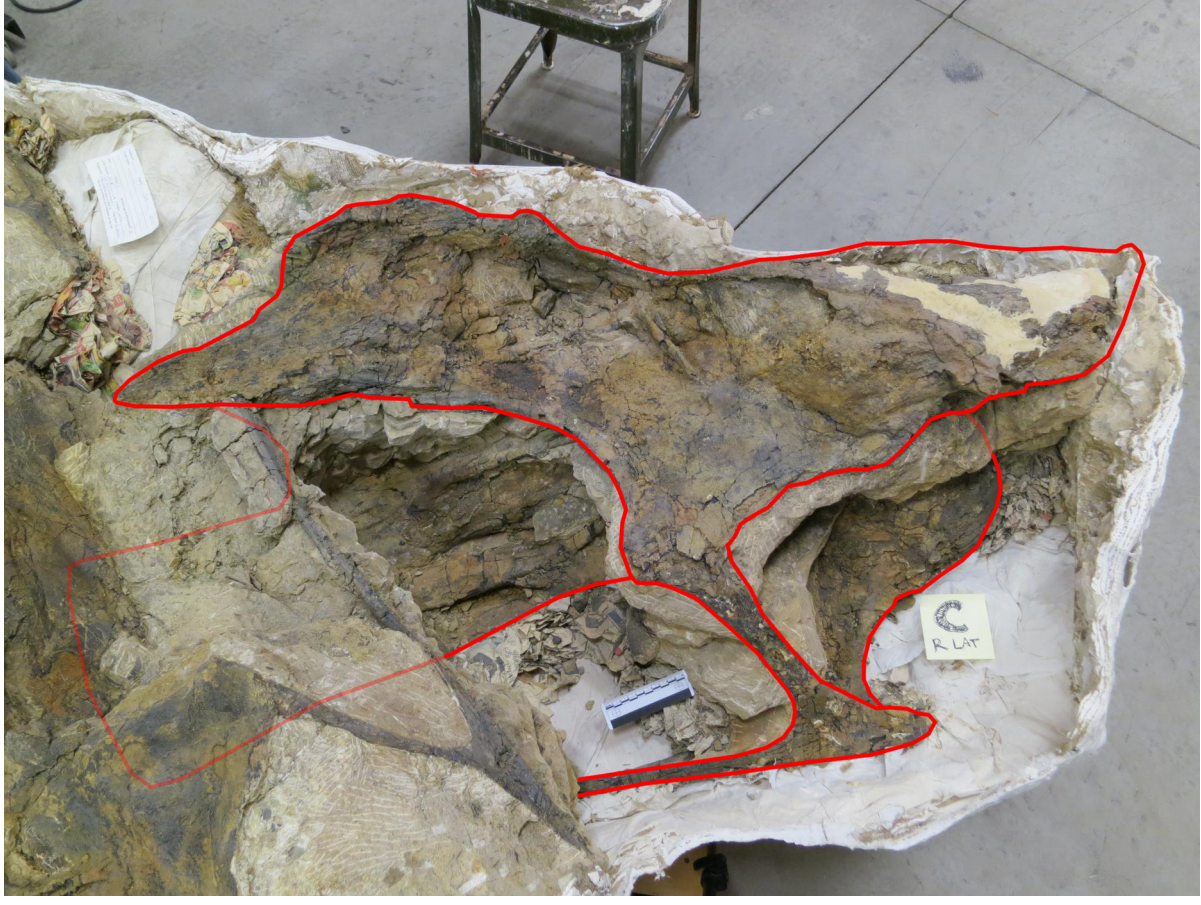
=> condyle to cotyle: 104 + 6 = 110 cm — **in the Top Five**



AMNH centra:
C9: 685 mm
C10: 737 mm
C11: 777 mm

Cervical C centrum:
1100 mm (est.)

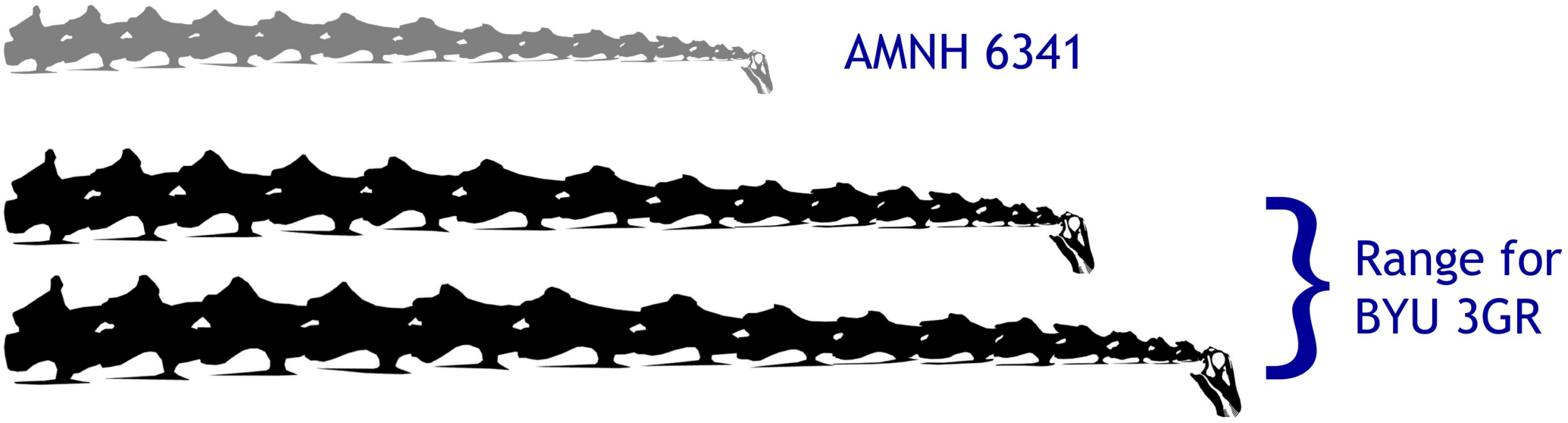
1.61 × C9
1.49 × C10
1.42 × C11



Based on 8.5 m for AMNH, suggests a neck 12.07-13.69 m long

AMNH 6341

Based on 8.5 m for AMNH, suggests a neck 12.07-13.69 m long



BYU 9024 “*Supersaurus*” Cervical

“It's incredible that a beast that size could support its own weight.”

BYU 9024 “*Supersaurus*” Cervical

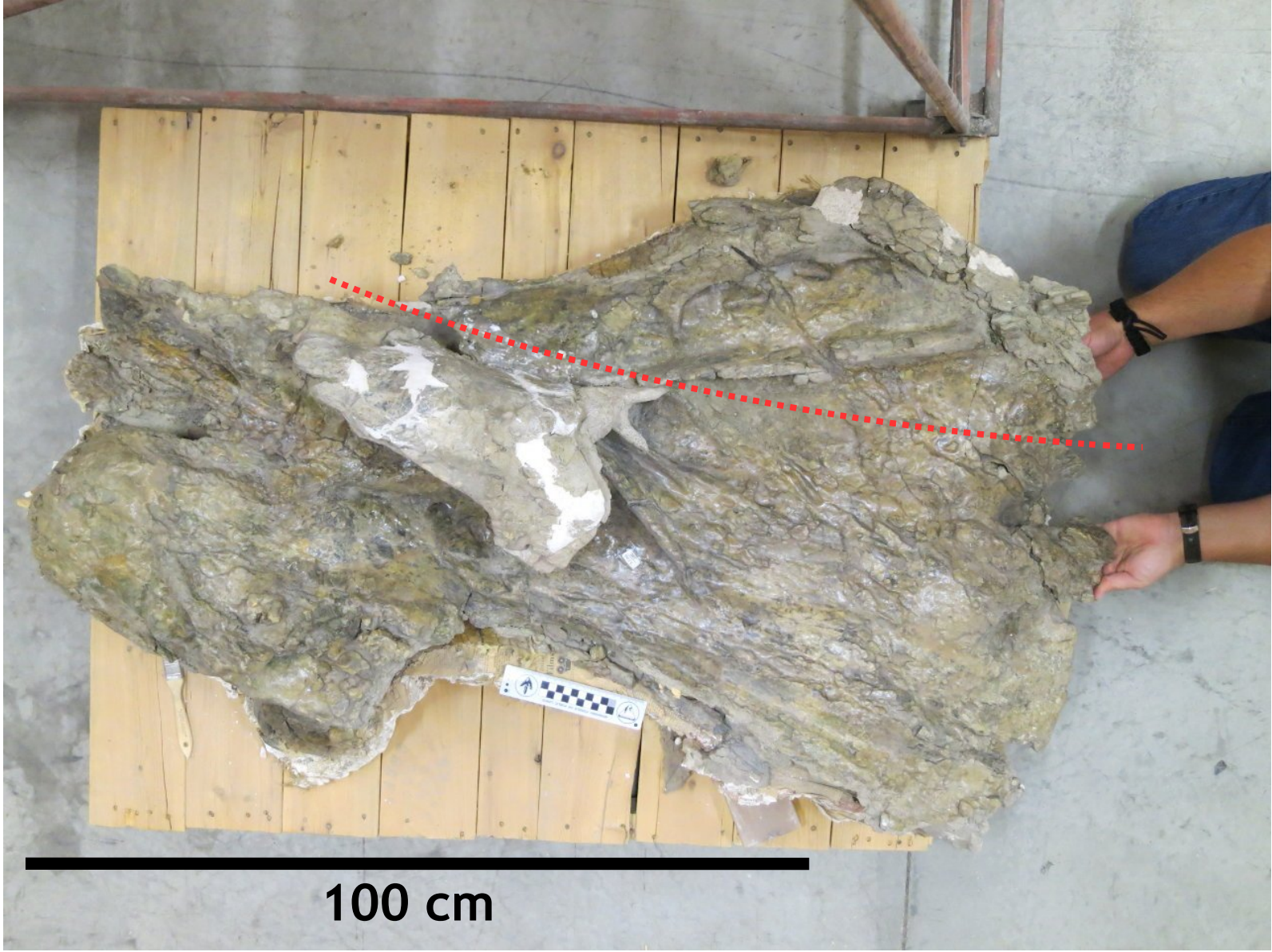
“It's incredible that a beast that size could support its own weight.”

“Yes, and the *Supersaurus* vertebra was from an even bigger animal.”

BYU 9024
“*Supersaurus*”
Cervical

Left lateral.

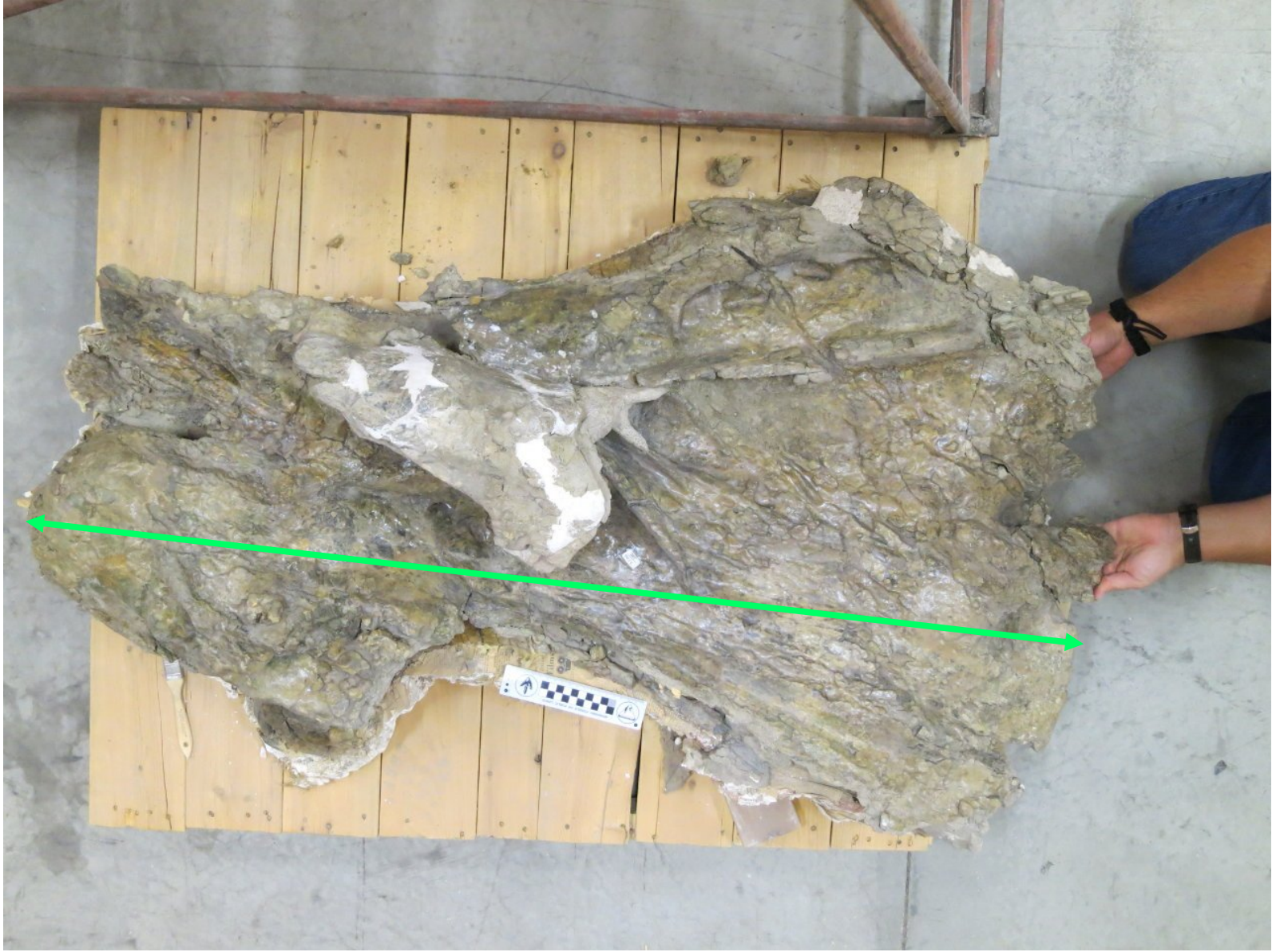
Postzyg and PODL folded upwards.



BYU 9024
"*Supersaurus*"
Cervical

Left lateral.

We think
it's *Barosaurus*!



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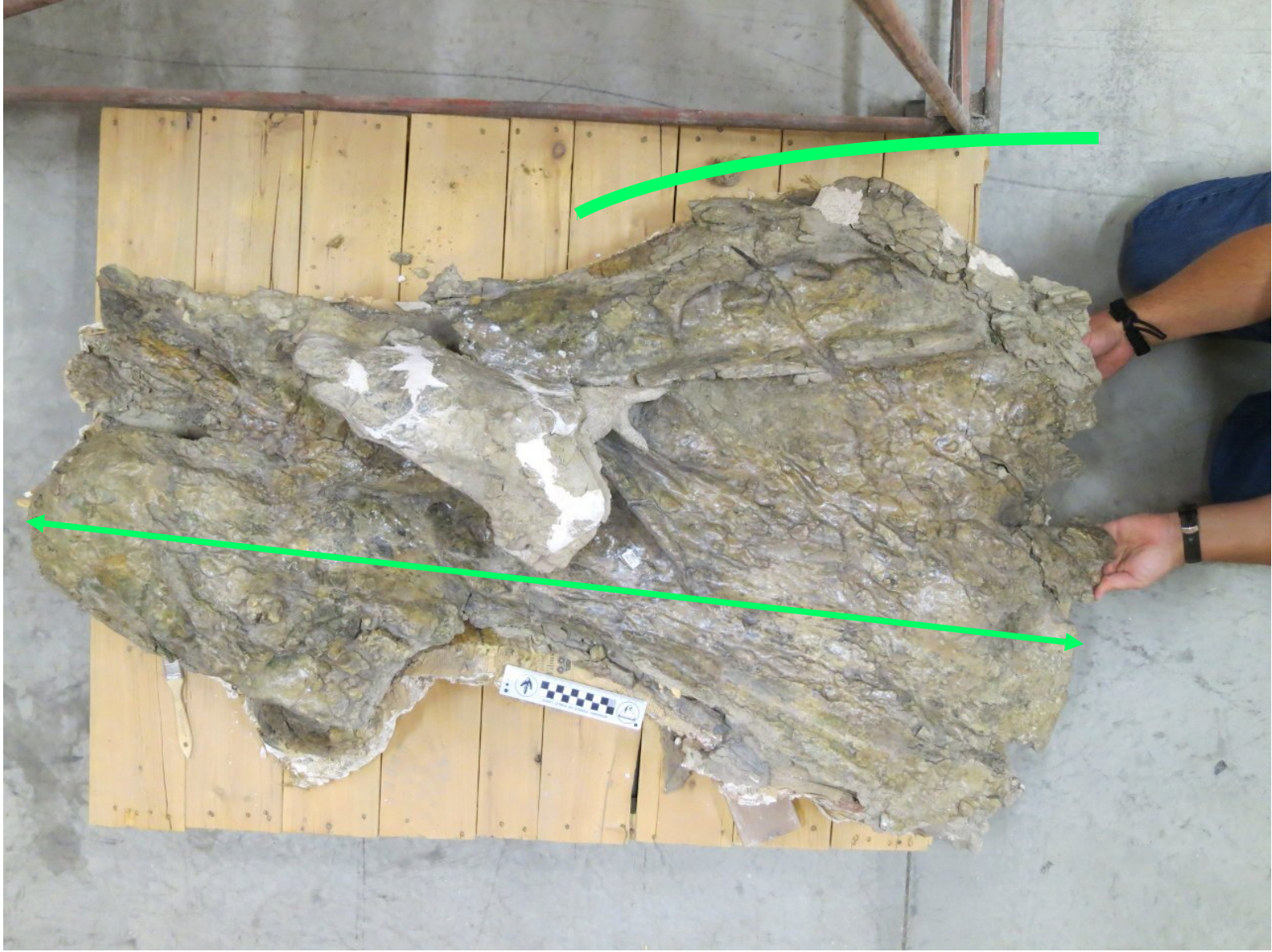

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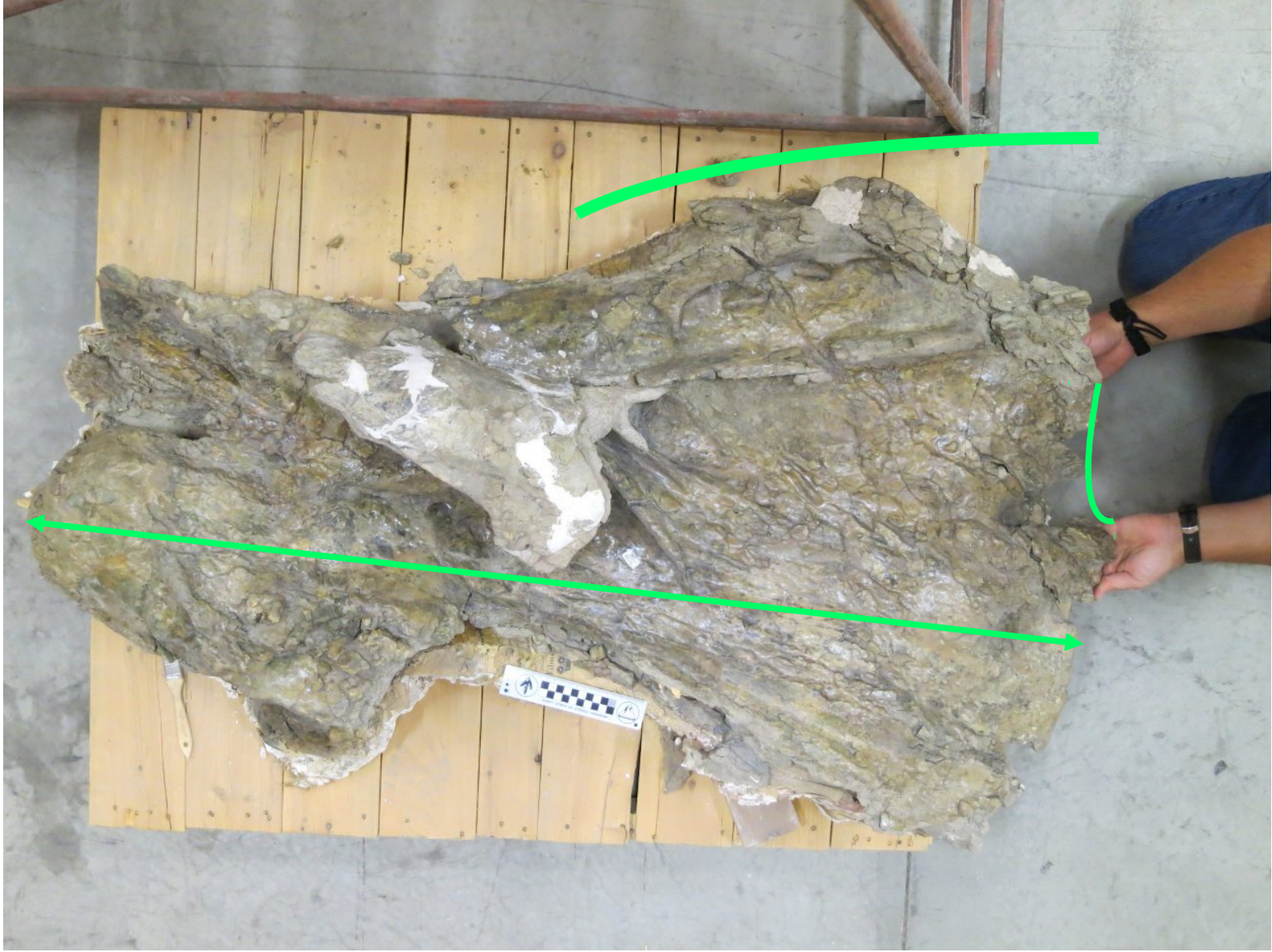

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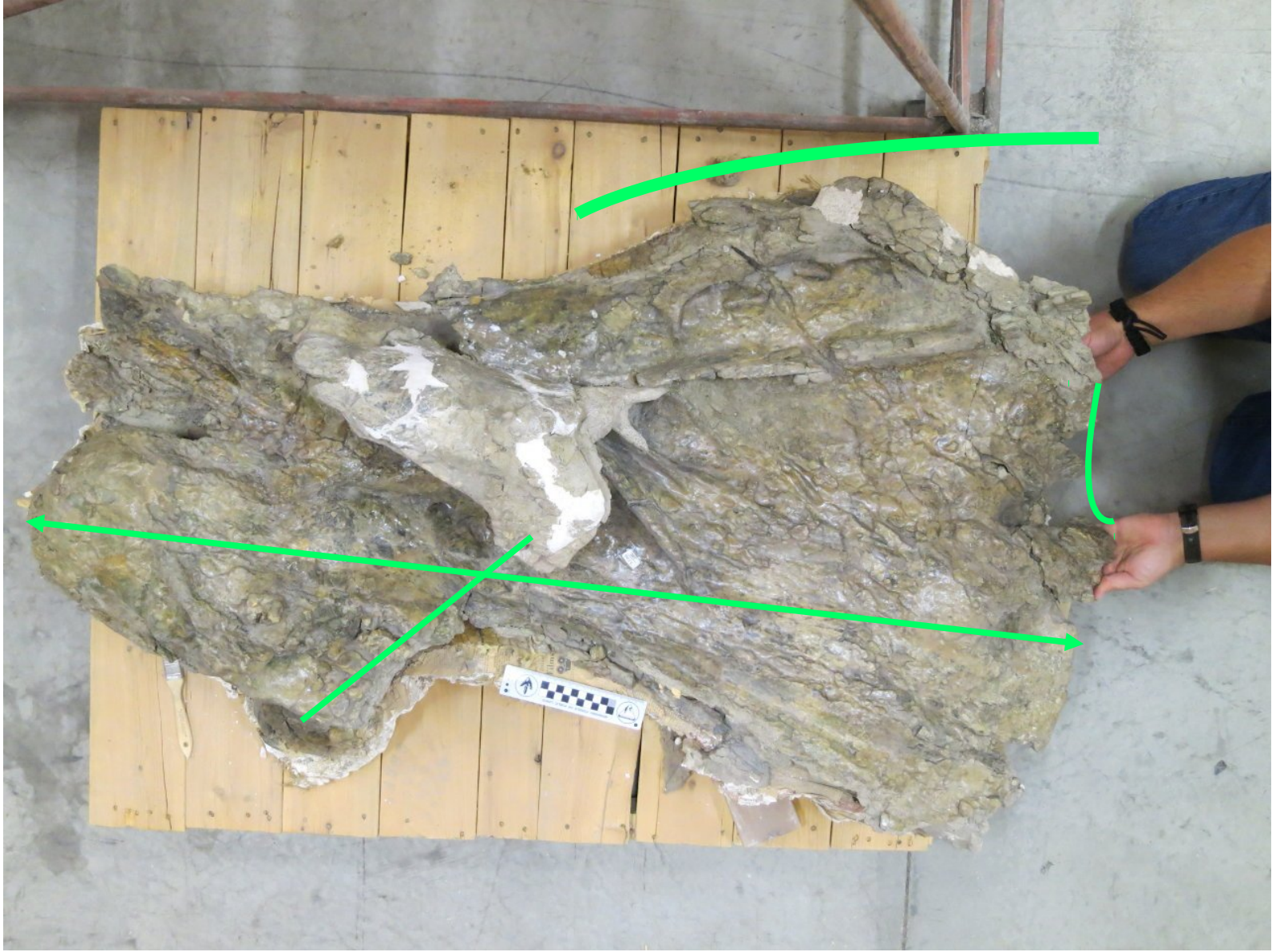

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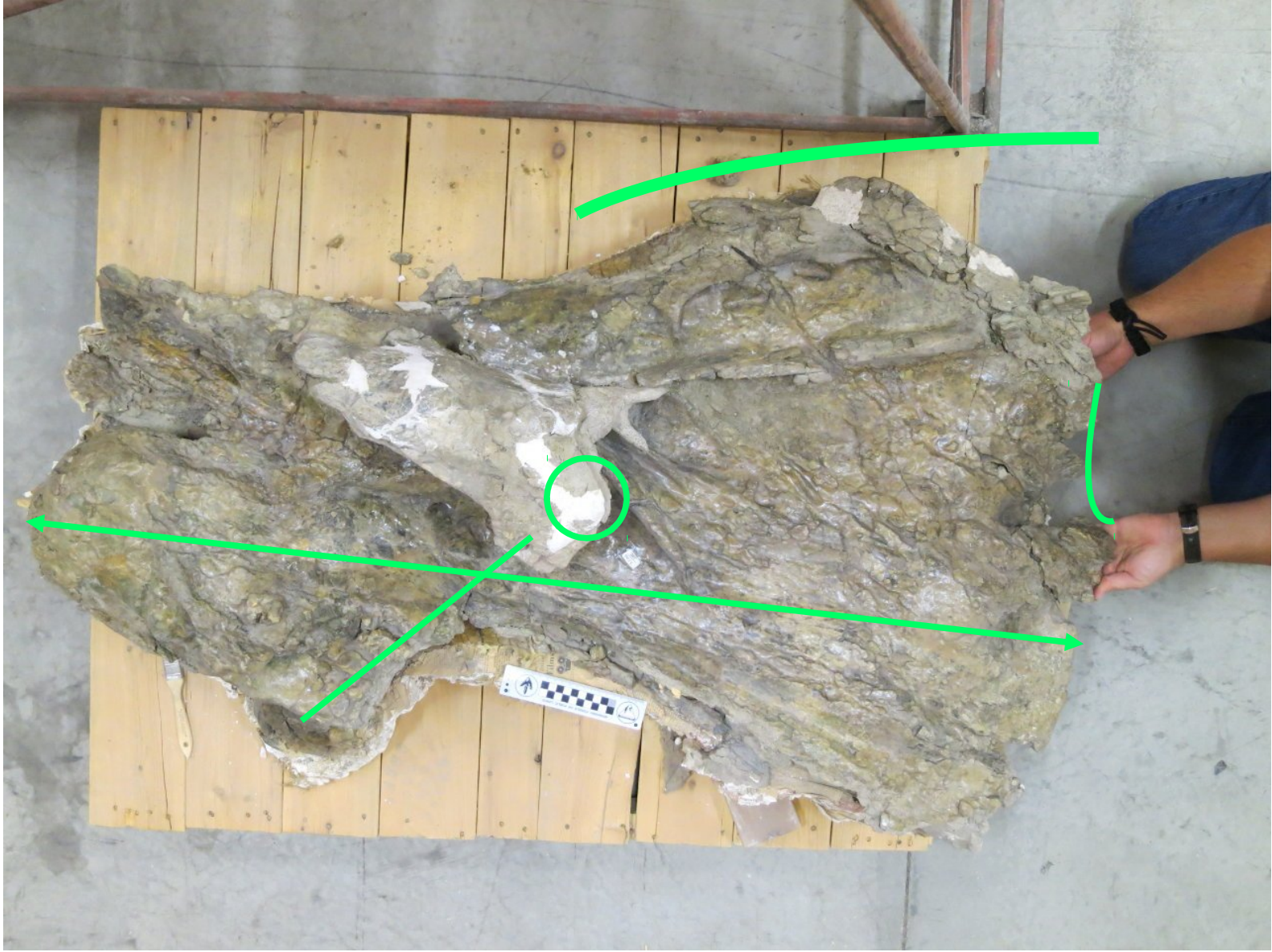

BYU 9024
"*Supersaurus*"
Cervical

Left lateral.

We think
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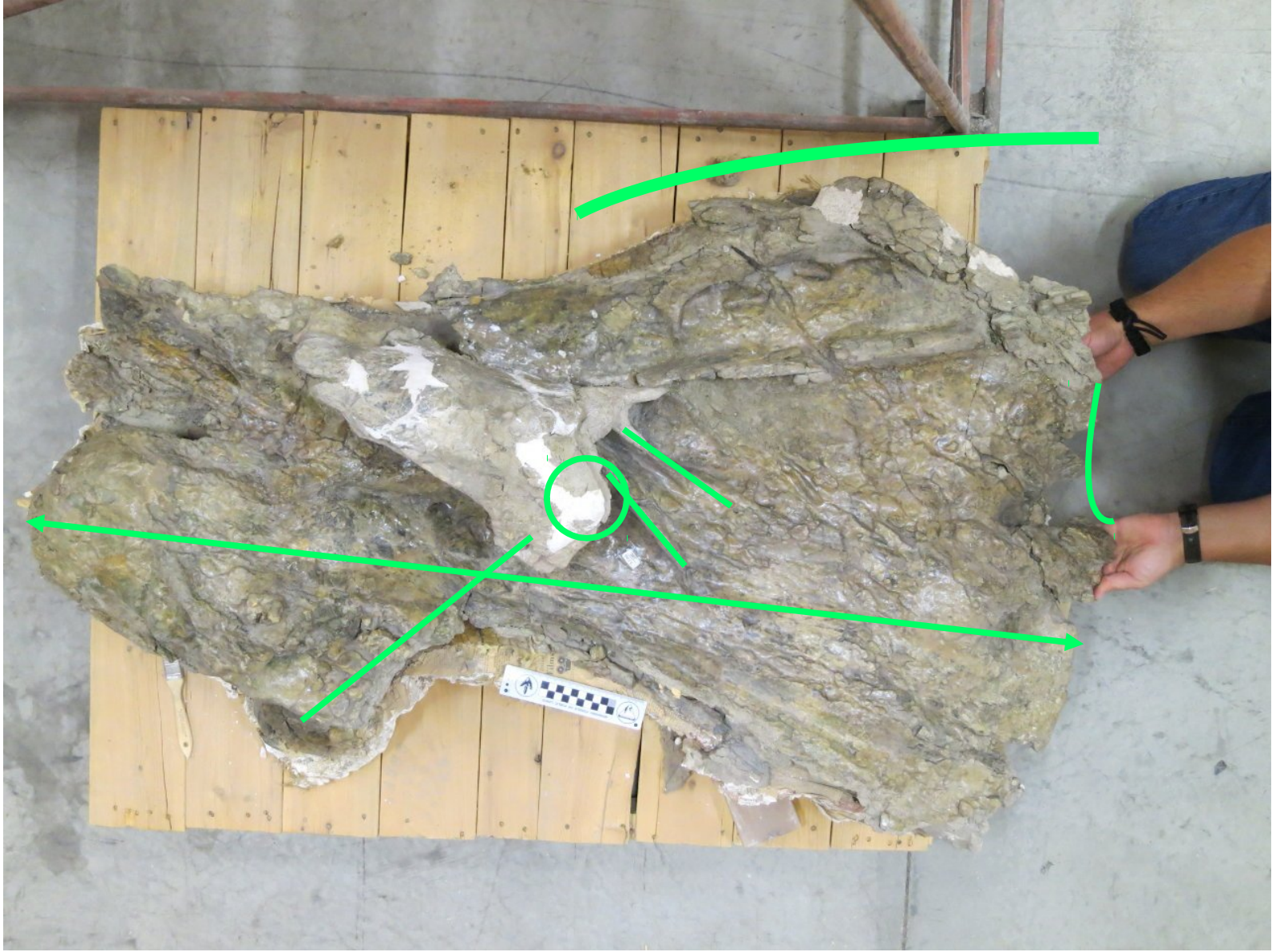

BYU 9024
"*Supersaurus*"
Cervical

Anterodorsal, anterior to right.

We think it's *Barosaurus*!

BYU 9024
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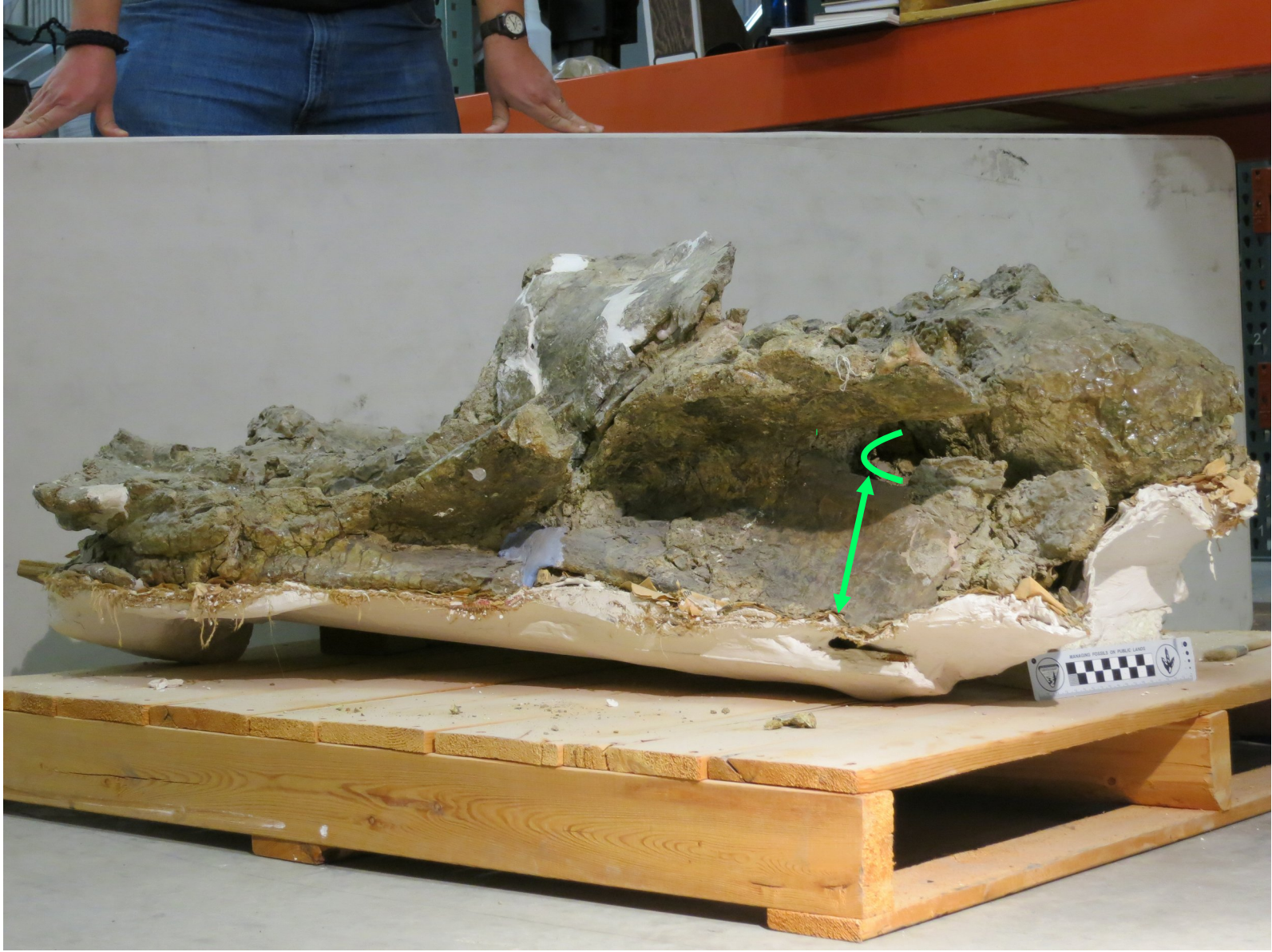

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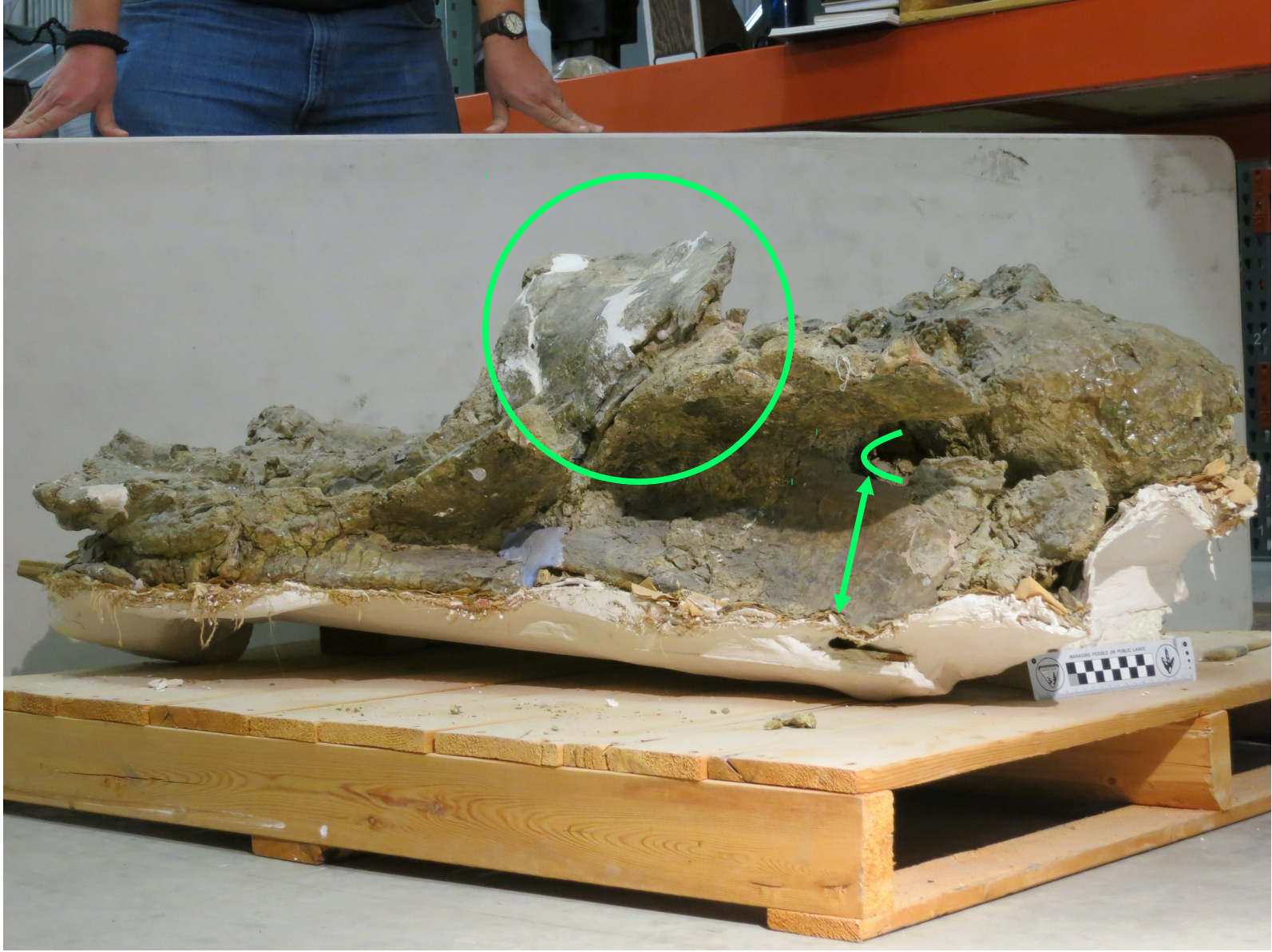

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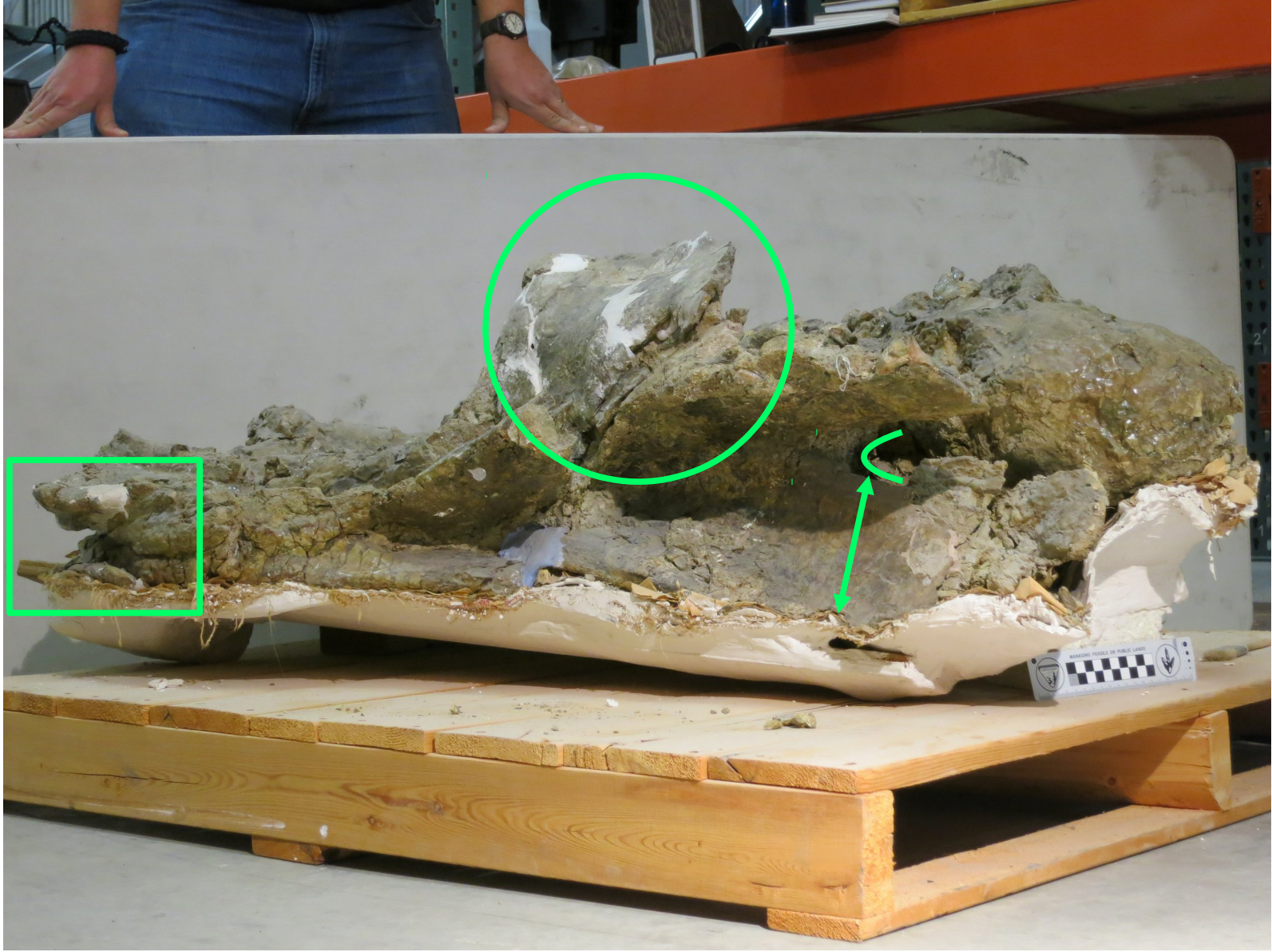


Does this mean that *Supersaurus* is *Barosaurus*?

No, it's not that easy.

And by the way …

I don't think the Wyoming "*Supersaurus*" is *Barosaurus*.

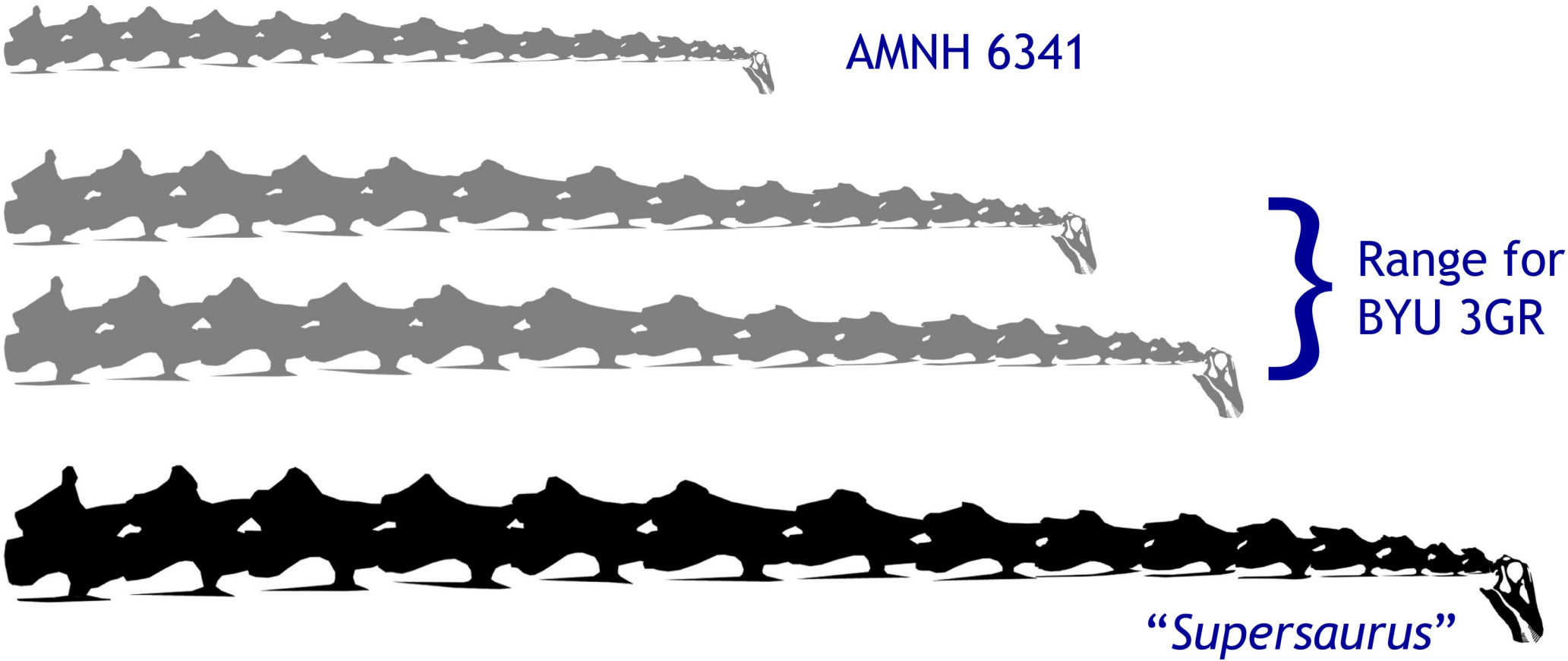
Probably C9, based on neural spine bifurcation

Probably C9, based on neural spine bifurcation

AMNH C9 centrum:
685 mm
“*Supersaurus*” centrum:
1370 mm

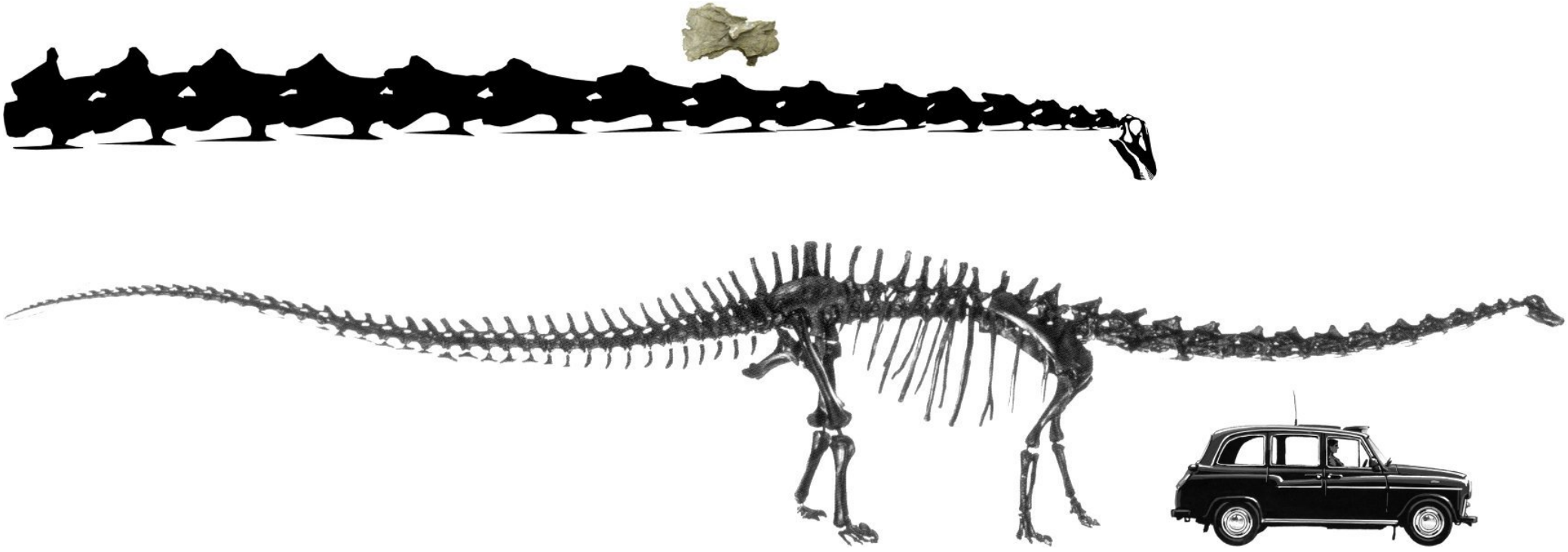
Exactly twice as long!

Based on 8.5 m for AMNH, suggests a neck 17 m long



What does a double-sized B*arosaurus* neck look like?

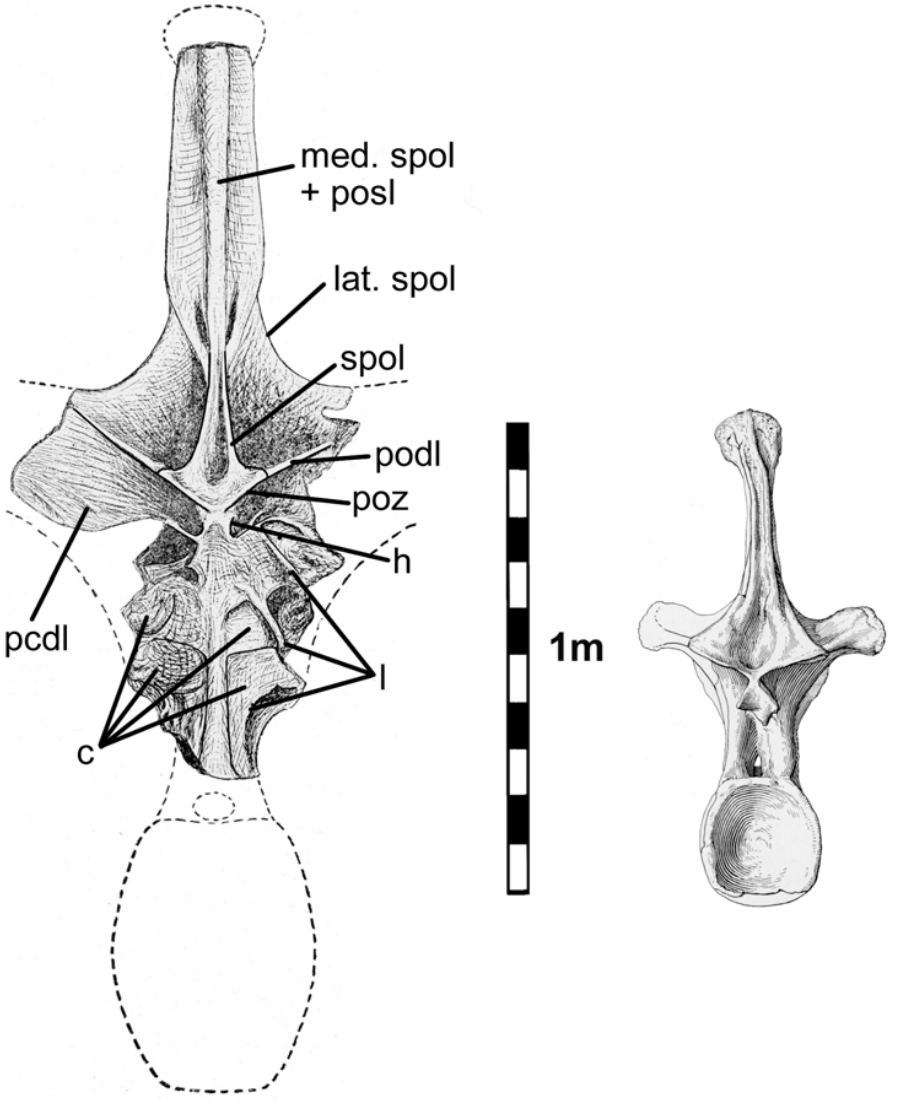
What does a double-sized B*arosaurus* neck look like?



The "*Supersaurus*" cervical is from a double-sized *Barosaurus*.

That might sound familiar.

"*Amphicoelias fragillimus*" is an apocryphal double-sized *Diplodocus*.



What does a double-sized *Diplodocus* look like?

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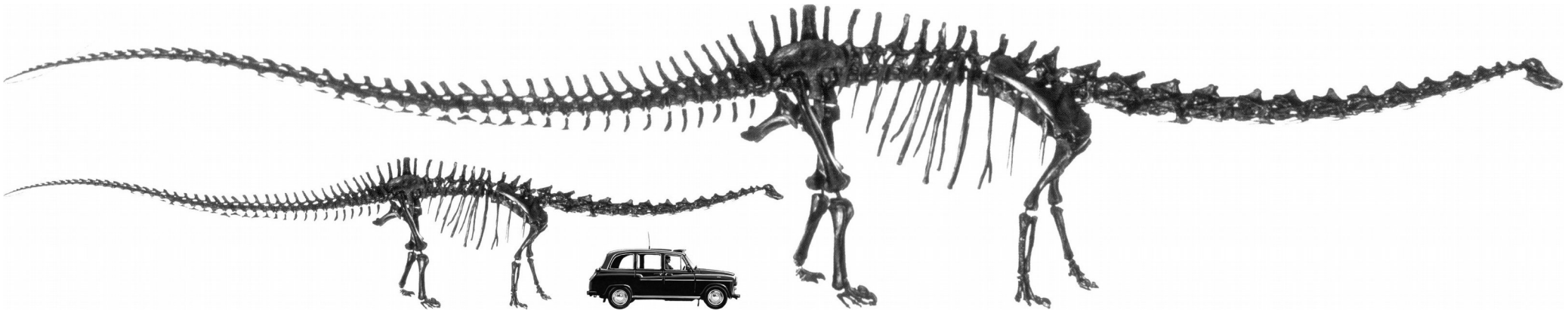
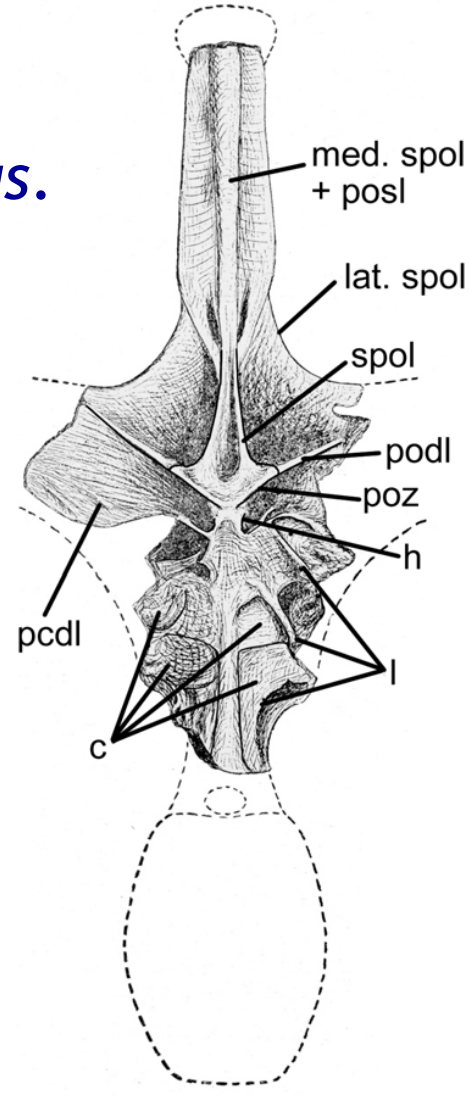
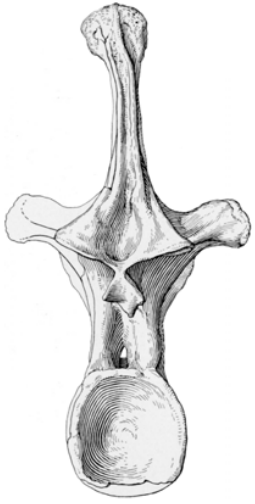


Conclusion: sauropods got *really* big.

"*Supersaurus*": double-sized *Barosaurus*.
Amphicoelias fragillimus:
double-sized *Diplodocus*.



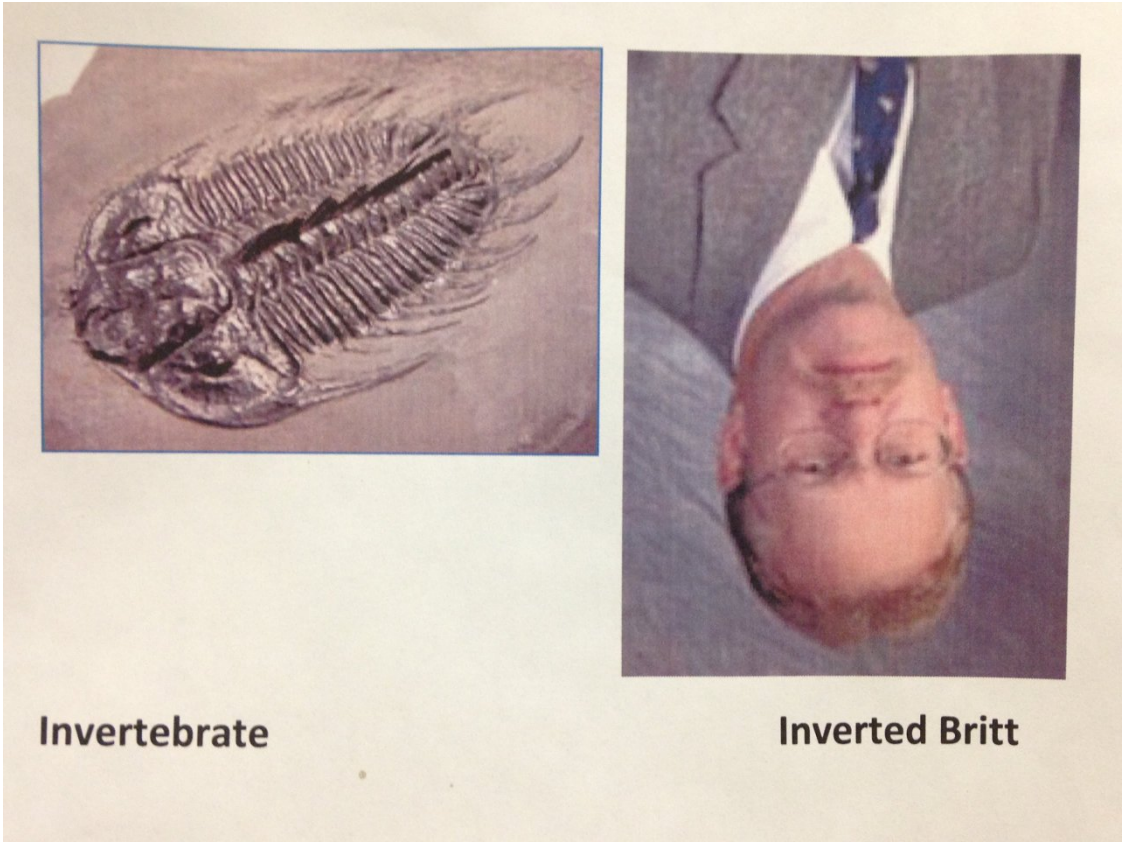


Acknowledgements

Thanks to Brooks Britt for access to BYU collections.

Rick Hunter for access to Western Paleo's *Barosaurus* material.

Dan Brinkman for access to Yale's *Barosaurus* holotype.



How big did *Barosaurus* get?

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Pomona, California, USA.
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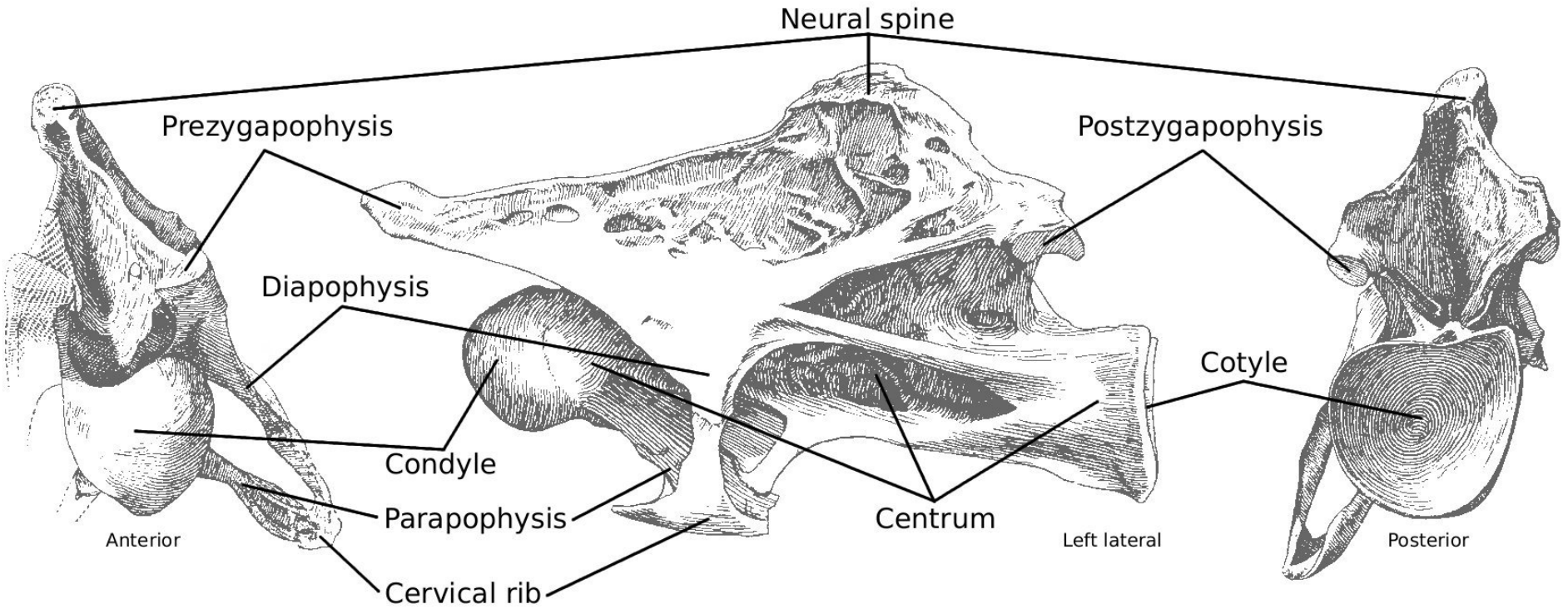
Art by John Conway.

Basic anatomy of sauropod cervical vertebrae



BYU 9024 "*Supersaurus*" Cervical

It's not easy photographing
a bone this size.

BYU 9024
“*Supersaurus*”
Cervical

Jim Jensen's model of the undistorted vertebra.

Actually, really good.

BYU 9024
“*Supersaurus*”
Cervical

Jim Jensen's model of the undistorted vertebra.

Actually, really good.

BYU 9024
“*Supersaurus*”
Cervical

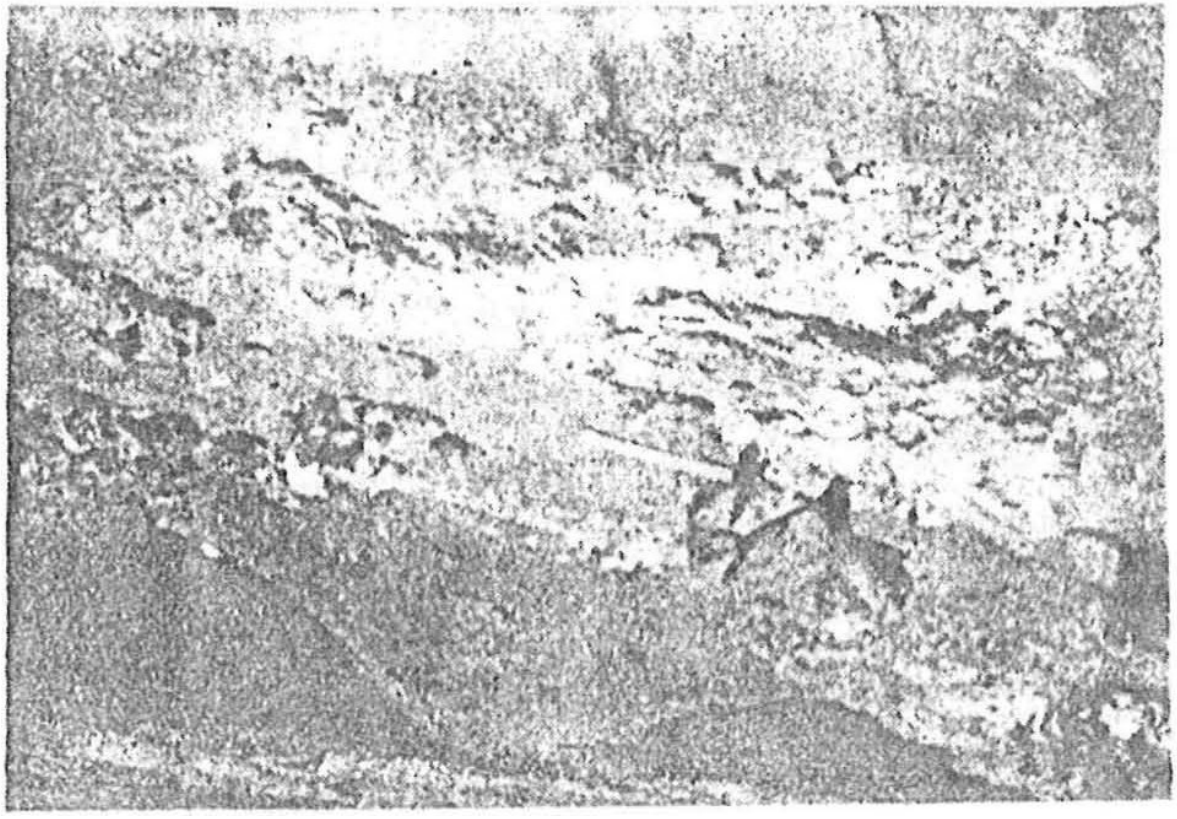
Left lateral.

Postzyg facet.

Bruhathkayosaurus: the world's biggest titanosaur?

Bruhathkayosaurus: the world's biggest titanosaur?

Plate-I



a. Ilium in dorsal view.

Bruhathkayosaurus: the world's biggest titanosaur?

Plate-I

a. Ilium in dorsal view.

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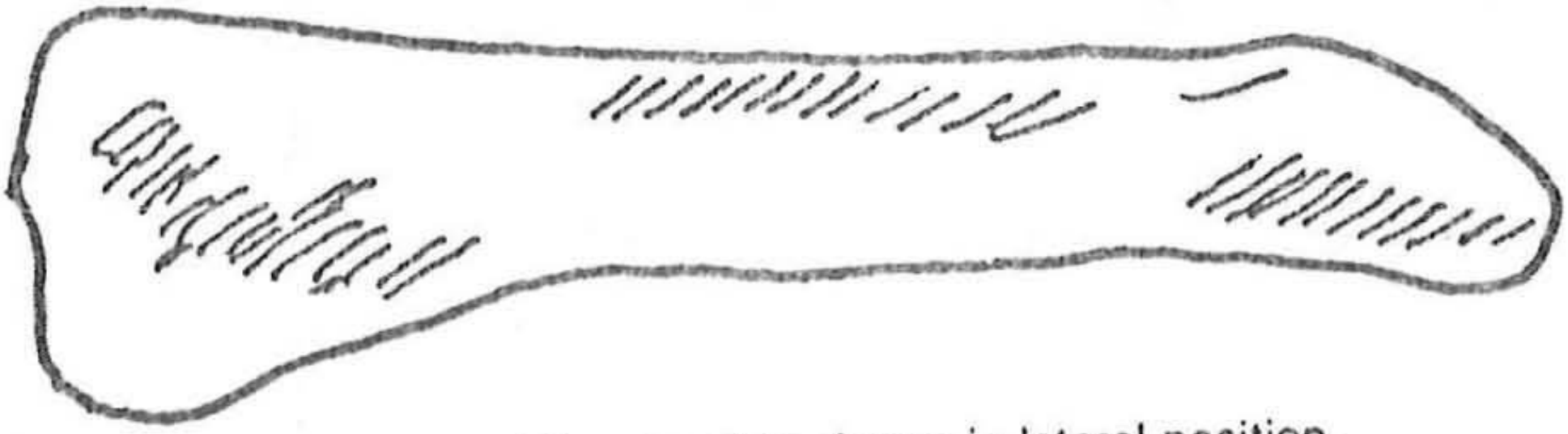


c. Massive tibia shown in lateral position.

50 Cm

Fig-2

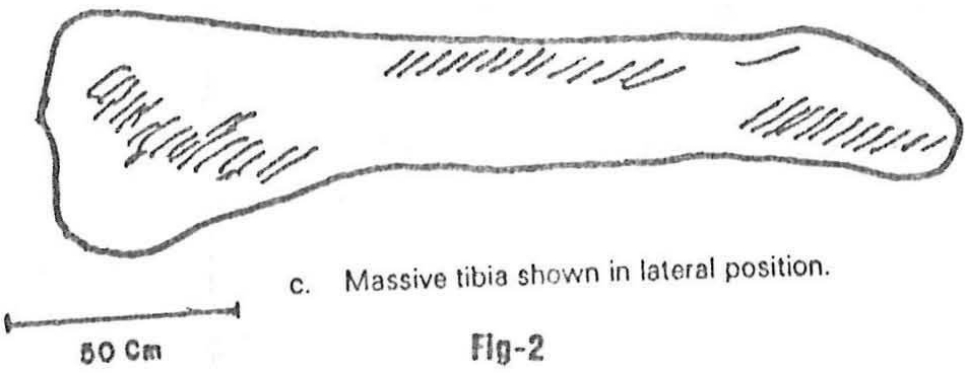
Bruhathkayosaurus: Actual life restoration.

(Found on the wall at BYU.)

Art by Bob Nicholls.

Bruhathkayosaurus: the world's biggest titanosaur?

Bruhathkayosaurus tibia: 200 cm
Argentinosaurus tibia: 155 cm
(based on 155 cm fibula)



c. Massive tibia shown in lateral position.

Fig-2

200/155 = 1.29 × longer

If isometrically similar,
1.29^3 = 2.15 × more massive

If *Argentinosaurus* massed 73 tonnes (Mazzetta et al. 2004)
Bruhathkayosaurus may have massed 2.15 × 73 = **147 tonnes**