SUPPLEMENTAL DATA 1

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Appendicular osteology of *Dreadnoughtus schrani*, a giant titanosaurian (Sauropoda, Titanosauria) from the Late Cretaceous of Patagonia, Argentina

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This supplement provides figures of less well-preserved, contralateral appendicular elements of the holotype skeleton of *Dreadnoughtus schrani* (MPM-PV 1156), as well as a brief description of the preserved appendicular elements of the paratype skeleton (MPM-PV 3546) found adjacent to the holotype skeleton at the same site in Santa Cruz Province, southern Argentina. For the holotype, these elements comprise the left tibia (Fig. 1S) and right ischium (Fig. 2S). For the paratype, these elements comprise both ilia, pubes, and ischia, and the left femur. The well-preserved left ilium of the paratype is figured in the main text (Fig. 9A, B); figures of the paratype pubes (Fig. 3S), ischia (Fig. 4S), and deformed left femur (Fig. 5S) are provided here.

Description of Appendicular Elements of the Paratype of *Dreadnoughtus schrani*

Though both ilia of the paratype of *Dreadnoughtus schrani* (MPM-PV 3546) are preserved, neither is complete. The caudodorsal margins of both supraacetabular regions are incomplete, and most of the postacetabular lobes are fragmentary, missing, or strongly crushed medially. The acetabular region of the left ilium (Fig. 9B) is more complete and less distorted taphonomically than for the right ilium, and the preacetabular lobe of the left ilium is far less distorted than in either ilium of the holotype. The right ischiadic peduncle is missing, but the left is preserved (Fig. 9B).

The right ilium of the paratype has a broad preacetabular lobe that is semicircular in dorsolateral view and has a small, rounded extension protruding from its ventrolateral margin, as in the holotype. The preacetabular lobe projects cranioventrally from the sacral axis at an angle of roughly 40°, matching the condition seen in the holotype. As is the left ilium, the highest point of the bone lies cranial to the pubic peduncle, giving the ilium a craniodorsal–caudoventral ‘tilt’ in lateral view. As in the holotype, the pubic peduncle is long and mediolaterally oblate in end view. The medial margin retains portions of three sacral ribs still fused to its surface. These have been twisted and crushed by lithostatic forces that also laterally twisted the caudal region of the right ilium into a large, deformed knob.

As in the holotype, the ischiadic peduncle of the left ilium of the paratype is separated from the postacetabular lobe, mediolaterally wide, and distally rugose (Fig. 9B). Taken together, the pubic and ischiadic peduncle define a rounded acetabulum that has been mediolaterally compressed in both ilia of the paratype.

Both pubes of the paratype generally agree in overall morphology with those of the holotype. Both paratype pubes are deformed taphonomically such that the proximal end of each has been twisted into a nearly co-planar orientation with its distal blade (Fig. 3S:A), diminishing expression of the ventrolateral longitudinal ridge. The proximal end of the right pubis of the paratype is complete except for part of its proximomedial edge. The medial edge of the articular surface for the contralateral pubis remains thin along most of its length, though it is disrupted near its midpoint by a compression fracture.

The left pubis of the paratype (Fig. 3S:A, right) is missing its iliac peduncle but appears otherwise to be mostly complete. Its proximomedial corner is fractured and offset ventrally, compressing the ischiadic peduncle (Fig. 3S:D–E). As in the right pubis, the medial articular surface becomes extremely thin near its midpoint, reaching a minimum dorsoventral thickness of only 7.5 mm. The distal blades of both paratype pubes are thickened dorsoventrally (Fig. 3S:B, C) and subrectangular in dorsal view with a slight lateral extension at the distal tip (Fig. 3S:A).

Neither ischium of the paratype is complete: the right ischium (Fig. 4S:A–C) is missing the ventral portion of the pubic peduncle and much of the medial and distal margins of the distal blade, and the left ischium (Fig. 4S:D–F) is missing its iliac peduncle, acetabular contribution, and pubic articulation. Mediolateral lithostatic compression has affected both paratype ischia, causing each to form a nearly planar sheet that exhibits minimal mediolateral torsion of the distal blade. The preserved proximal portion of the left paratype ischium is crushed dorsoventrally to become folded over on itself in medial view (Fig. 4S:D). Both paratype ischia agree in morphology with those of the holotype in most respects. The distal blade of the right ischium is deflected distally nearly twice as much ($\sim 40^\circ$) as in either ischium of the holotype (Fig. 4S:A), demonstrating the effects of taphonomic deformation afflicting the ischia of the holotype.

The left femur of the paratype is greatly distorted. The femoral head and greater trochanter extend much farther medially than in the holotype (Fig. 5S:A, B), and the distal condyles are flattened distally and splay radially outward from the shaft (Fig. 5S:B, D). Because this specimen was vertically oriented in the bone-bearing horizon in the field, its odd morphology plausibly can be attributed to proximodistal lithostatic compaction. Multiple lines of additional evidence further support proximodistal compression, including: (1) a transverse fracture between the fourth trochanter and femoral head that creates overlapping of external cortex on the medial shaft; (2) an unnatural, mediolaterally oriented ridge of bone on the caudal face below the greater trochanter that appears to be crushed distally downward from the proximal surface; (3) development of an unnatural lip of bone along the lateral edge of the lateral distal condyle, and; (4) an arcuate fracture near the distal end of the medial face, just above the medial distal condyle, where external cortex again appears to overlap itself. At this time, however, pathologic influences on the anatomy of this specimen either alone or in addition to taphonomic distortion cannot fully be ruled out. As in the femur of the holotype, the fourth trochanter is developed as a low, rounded ridge (Fig. 5S:C, E) and no *linea intermuscularis cranialis* can be discerned on the cranial face of the shaft (Fig. 5S:B). The distal condyles are nearly equal in breadth and are oriented nearly in parallel with the craniocaudal axis.

FIGURE 1S. *Dreadnoughtus schrani*, MPM-PV 1156, left tibia of the holotype in **A**, cranial, **B**, lateral, **C**, caudal, **D**, medial, and **E**, distal views (lateral toward the bottom of the page).

Abbreviations: **aspa**, articular surface for the ascending process of the astragalus; **cc**, cnemial crest; **cvp**, caudoventral process; **scc**, second cnemial crest. Scale bar equals 20 cm.

FIGURE 2S. *Dreadnoughtus schrani*, MPM-PV 1156, ischia. **A**, cranial view. **B–E**, Right ischium in **B**, lateral and **C**, medial views. **D**, proximal view of right iliac peduncle (caudal toward the top of the page). **E**, distal view of right ischiadic blade (dorsal toward the top of the page). **Abbreviations:** **acet**, acetabulum; **ilped**, iliac peduncle; **ist**, ischial tuberosity; **pped**, pubic peduncle. Scale bars equal 20 cm (**A–C**) and 10 cm (**D**, **E**).

FIGURE 3S. *Dreadnoughtus schrani*, MPM-PV 1156, pubes. **A**, craniodorsal view. **B**, distal view of right pubis (cranial toward the top of the page). **C**, distal view of left pubis (cranial toward the top of the page). **D**, right pubis in lateral view. **E**, left pubis in lateral view. **Abbreviations:** **ilped**, iliac peduncle; **isped**, ischiadic peduncle; **of**, obturator foramen. Scale bar equals 20 cm.

FIGURE 4S. *Dreadnoughtus schrani*, MPM-PV 1156, ischia. Right ischium in **A**, lateral, **B**, cranial, and **C**, medial views. Left ischium in **D**, medial and **E**, lateral views. **F**, distal view of ischiadic blade (dorsal toward the top of the page). **Abbreviations:** **acet**, acetabulum; **ilped**, iliac peduncle; **ist**, ischial tuberosity; **pped**, pubic peduncle. Scale bar equals 20 cm.

FIGURE 5S. *Dreadnoughtus schrani*, MPM-PV 3546, paratype, deformed left femur in **A**, proximal, **B**, cranial, **C**, lateral, **D**, caudal, and **E**, medial views. In **A**, cranial is toward the bottom of the page. **Abbreviations:** **ft**, fourth trochanter; **gtr**, greater trochanter; **hd**, head; **lb**, lateral bulge. Scale bar equals 20 cm.