ABSTRACT –
“So far sauropod integument fossils include titanosaur embryos from Patagonia, diplodocid dorsal spines, foot impressions, and other isolated skin impressions found in association with sauropod fossil remains.”

Alternatively, this could be reworded as, “Thus far, the fossil record of sauropod integument includes titanosaur embryos from Patagonia, possibly keratinous diplodocid dorsal spines, trackways with foot impressions, and other isolated skin impressions found in association with sauropod body fossils.”

“Here we describe a newly uncovered skin mold that gives evidence of scale diversity in the *Diplodocus* genus.”

Alternatively, this could be reworded as, “Here we describe a newly uncovered skin mold that gives evidence of scale diversity in the diplodocid genus *Diplodocus*.”

“Based on analysis of extant integument and scale orientation of crocodilians and other reptiles, it is possible to hypothesize on the location of the integument relative to the body as well as the size and age of the individual.”

I know I will perpetually sound like the sauropod ontogeny broken record, but I would just caution saying anything about “age” when numerical assessments (i.e., determining the age in years of an animal) are not possible. I don’t think the message of this passage is incorrect, maybe just some alternative and more clarifying phrasing. Perhaps this could be reworded as, “Based on analysis of extant integument and scale orientation of crocodilians and other reptiles, it is possible to hypothesize on the location of the integument relative to the body as well as the approximate body size and relative maturational status of the individual.”

Line 26: For example, our understanding of posture and locomotion of dinosaurs has improved based on anatomical interpretations of skeletons.

Given the postural and locomotory changes since the time of Owen, I would certainly advocate for altering this to, “…has vastly improved based…” Also, like the following feather example, it might be beneficial to give one. A more recent example that comes to my mind is the *Triceratops* forelimb reconstructions by Fujiwara.
Fujiwara, S. I. (2009). A reevaluation of the manus structure in *Triceratops* (Ceratopsia: Ceratopsidae). Journal of Vertebrate Paleontology, 29(4), 1136-1147.

Line 28: “However, much less attention has been given to the morphology of scales, which is equally important to improve our understanding of dinosaur appearances.”

I would suggest rewording this sentence, “However, much less attention has been given to the morphology of scales, which is equally important to improving our overall understanding of dinosaurian appearances.”

Line 31: If the literature on dinosaur scales has recently increased, I would suggest giving more than a single example.

Lines 36 & 37: The Czerkas (1994) intext citation is out of order. It should be the first in the series.

Line 37: "Diplodocid integument fossils in particular are only known from several skin impressions and carbon film fossils consisting of the patterns described above."

The wording here is a bit conflicting. If diplodocid integument is rare, how can there be several specimens? Or, are you saying that the only kinds of diplodocid integument thus far known are skin impressions and the carbonized 'spines'? (If so, that wouldn't be correct, as biomineralized diplodocid ligaments are known.)

Line 40 & 41: Just because of the uses of "diversity" among many disciplines, I would suggest a minor modification to, "…as this discovery shed light on the potential integument diversity and appearance of dinosaurs (Czerkas, 1992)."

Site Background:
If it's okay, I will address a few points here, opposed to a line-by-line approach. 1: As yet, all of the MT Morrison Fm. is undivided. 2) Opposed to saying they represent an un-named species – which gives the suggestion of a novel taxon – I would suggest referring to them as indeterminate species. 3) Previously, the specimens were morphologically identified as "juveniles" and "subadults" based on element attributes. Only one published study has demonstrated their status through age-determinant histology. (And "juveniles" and "subadults" needs to be in quotations throughout since these are not fixed nor specified maturities) 4) Also, there, "…may be an additional dwarfed morphotype present…" (I'm going to advocate for "morphotype" here, because as yet, the only identifying feature or distinguishing characteristic could be size – which isn't a valid autapomorphy)

Line 68: This is probably just semantics, but I was taught that Latin phrases like *in situ, sensu, contra*, etc. should be italicized. That may be more opinion based or journal specified. Whichever you follow, just make sure to stay consistent.

Line 71: I wouldn't expect some super detailed or product-based explanation, but could you just simply explain a molding 'plan of action'? Will this be done with molding resins, latex, photogrammetry, all, etc.?

Line 82: It could very well just be the formatted pdf, but it appears like there is an irregular use of single and double spaces between sentences throughout. If this isn't a pdf issue, please be consistent throughout the manuscript.

Line 87: There needs to be spaces between A, B, and C.

Line 98: There needs to be a space between "fossils" and "("- "skin fossils(Czerkas,1994)"

Line 103: It's likely that I'm just not familiar with all of the specificities of formation, but how can the skin be preserved as the carbonized remnants and a mold? For a mold to form, isn't the buried organic material dissolved, leaving a void which is subsequently infilled?

Line 110: Perhaps more semantics, but I've had it drilled into me to be as anatomically specific as possible. Presumably, readers would know the orientations when you say a piece is 240 mm in height and 600 mm in width. However, I would add all anatomical orientations; so, this would then read, "…is 240 mm in dorsoventral height and 600 mm in anteroposterior width."

Lines 123-124: The possibility of a track indentation on the preserved skin is mentioned and referenced with Figure 3; but, there's no reference to this in Figure 3. I would outline this feature within the figure, and add relevant information to the caption.

Lines 133-134: I would reword this sentence as, "Rectangular tubercles have been observed before in sauropods, most notably in embryonic titanosaur scales from Patagonia (Coria and Chiappe, 2007)."

Line 143: A space is needed between "tubercles" & "(Fig.5)".

Line 151: I would reword, "…in an arrow shape pointing…" to either "arrow-like" or "arrowed profile".

Line 154: "Also taking into consideration the existence of dorsal spines on diplodocids (Czerkas, 1992)….". I would strongly suggest adding the word "possible" before "existence". The features Czerkas described are incredibly nebulous. As you know, there were not found in place, and their preservational nature makes discerning morphology and reconstructions tenuous at best. (Unashamedly, I couldn't make too much out when I saw and examined them in person.)

Line 161: This is entirely grammatical based on country and/or writing style, but a double quotation mark can imply a direct quote; for instance, if you were directly quoting a passage from another paper. Single quotation marks can infer an author's thought. In this specific case, these overlapping scales look like they are 'hugging' to you. My early writing is pockmarked by incorrect double quotations, so I would suggest a single in such cases, but I defer to the Editor and/or Journal guidelines.

Lines 171-173: There seem to be some unnecessary gaps between the paragraphs for Fragment B and C.

Line 171: Since you also use mm in the manuscript, and given the tiny size, I'd suggest putting >0.5cm in mm.

Lines 181-182: "Through close examination of the skin molds, the evidence suggests that the skin belonged to a small juvenile, possibly even an infant."

As addressed above, any maturational state in this manuscript ("infant", "juvenile", "subadult", "adult", etc.) needs to be in quotation marks. Also, in light of the maturational inferences from

this locality, I would suggest reword it to, “Through close examination of the skin molds, the evidence suggests that the skin belonged to a small individual, possibly of “juvenile” or even infantile maturation.”

Lines 186-190: “The presence of young and small individuals from this quarry have been thoroughly reported between 38-75% the size of other known adult *Diplodocus* specimens. Woodruff et al. (2018) even reported to have found the smallest Diplodocus specimen ever uncovered, consisting of a skull and some vertebra. Therefore, it is not unexpected that skin fossils found in the same bonebed are from a small and young individual.

First thing, the paragraph appears to be double indented. Technically, we reported on the smallest *Diplodocus* skull, and “vertebra” should be “vertebrae”. Also, “Diplodocus” (on line 188) needs to be italicized.

Line 197: There should be a “the” before “Howe Quarry”. Also, and important quarry distinction, but the Howe Quarry proper was the locality originally worked by AMNH. When Kirby Siber and the Sauriermuseum Aathal stared digging there in the early 90s, they opened several adjacent quarries, and each with its own name (like the Howe-Stevens Quarry). Emanuel Tschopp recently published the definitive history of the locality, and I’d urge using the specific quarry name if it’s possible to find (this also helps negate any confusion with it being a historic Brown era specimen).
Tschopp, E., Mehling, C., & Norell, M. A. (2020). Reconstructing the Specimens and History of Howe Quarry (Upper Jurassic Morrison Formation; Wyoming). American Museum Novitates, 2020(3956), 1-56.

Line 205: Just because I’ve learned this from curating such a specimen, for these dinosaur cases, “mummies” needs to be in quotations. Also, AMNH has not been spelled out prior (American Museum of Natural History). In consideration that this is the only museum abbreviation used, I personally do not think an Institutional Abbreviation section is warranted (but, if the ‘spines’ Czerkas described do have numbers, then they should be listed; and with two institutional abbreviations, then such a section should be added).

A final note on the “Juvenile Hypothesis” section: As you’re aware, the maturational status of the diplodocid specimens at the site has been debated. There’s evidence for histologically immature animals, morphology that corroborates immature statuses, and the possibility of a small-statured morphotype. But, there’s also the theory that some elements examined in Woodruff and Fowler (2012) were serially and maturationally mis-identified. I certainly believe that several aspects argued in our 2012 paper are now conclusively not 1:1 as we originally wrote. Now, I personally have not seen other ‘definitive’ “adult” diplodocid elements from this locality – something super simple, like a femur; but the hypothesis that typical “adult” sized material might be present should not be written off. I think the scale evidence you’ve presented herein supports that the site harbored some small body-sized remains, but including the hypothesis of Wedel and Taylor (2013) will help to illustrate the complexity of the locality, and aide in stressing how there is much more work to do here.

Wedel, M. J., & Taylor, M. P. (2013). Neural spine bifurcation in sauropod dinosaurs of the Morrison Formation: ontogenetic and phylogenetic implications. PalArch's Journal of Vertebrate Palaeontology, 10(1).

Line 215: "*sp.*" should not be italicized.

Line 217: I would reword this to say, "..on the ontogenetic development of diplodocid scales."

Figure 2 caption: "*sp.*" should not be italicized.

Figure 9 caption: I do not know if "*Alligator*" in B and C needs to be italicized. You include the genus and species name to begin, but I am unsure in this instance if you need to subsequently italicize because it is a common name. For example, in a previous paper, I was working on bison, and I had the scientific name – *Bison bison* – and throughout used "*Bison*". The reviewers and editor said to change it to "bison" because I was referencing the animal's common name (technically the American bison), not distinguishing between *Bison bison* and *Bison athabascae*. I'd be curious to hear what other reviewers and the Editor have to say about this.

Figure 10 caption: I would recommend removing mention of the glue bottle. The brush has its scale on it, so that negates the need for referencing the bottle.

Additional Notes –

Perhaps further semantics, but I would strongly consider replace the word "oval" with "ovoid" throughout the entire manuscript. It may sound silly, but for example, if you were to say a finding was significant, you mean that statically speaking, right? Your use of the word in this case means that your findings are important; there's no mathematical connotation. All paleo folks reading your paper will know what you mean by oval, but in other disciplines, "oval" has a very precise definition (either one or two axes of symmetry of an ellipse). If some scales didn't have perfect axes of symmetry, someone could (albeit foolishly) argue that you had mis identified the shaped. In this case, "ovoid" circumvents any strict definitions, while describing the overall shape or profile. (And this holds true for any shape: square vs. squared, triangle vs. triangular, etc.)

For all of the figures where you provide a drawing, I would add the word "interpretative" before "drawing", and I would reference the artist. Even as the lead author, you can mention yourself (i.e., "Interpretative drawing of globular scales from section Ba. Drawing by TG.")

Also, and this is a minor feature that might only improve upon you already nice figures, but I would stroke your lines and shapes in Photoshop. For example, in Figure 7, stroking ('outlining') the black lines in white, and the white text with black would help to make these important features to see and read pop out from the background image. And I can help explain this in detail if assistance is needed.

Finally, and I have to admit, I personally found it a bit difficult to follow your designation system. I get designating the 'main' pieces A, B, and C. But designating the 'sub-pieces' with the

same lowercase letters is confusing. For example, if Fragment A was in two pieces, why not alternatively label them as A1 and A2? (That might also avoid future confusion. “Were they talking about Bc, or was that Cb?”)