

Response to Reviewer 4 Comments

I sincerely appreciate your valuable feedback on my manuscript titled " Identification of Goat KCNJ15 Gene Copy Number Variation and Its Association with Growth Traits" Each comment provided by you has been immensely helpful in making significant improvements to my paper.

I am pleased to inform you that I have incorporated revisions in line with the recommendations provided by the reviewing teacher. The modified sections have been clearly delineated using the track changes feature. In response to the specific guidance from the reviewer, I wish to provide the following explanations for the alterations made:

Comments 1: Methods are not properly described.

Response 1:

We feel great thanks for your professional review work on our article. As you are concerned, We have added more method details described in the manuscript.

Comments 2: At which age were the goats measured.

Response 2: we are grateful for the suggestion. As suggested by the reviewer, we have added more details of we have added descriptions of the ages of the goats involved in the experiment as follow " All the goats included in the study were sexually mature female adults, ranging in age from 4 to 5 years, with no restrictions on their food source. Additionally, all goats were in good physical condition without any disease."

Comments 3: The characteristics of protein are described in detail, but not eventual differences among CNVs.

Response 3: we are grateful for the suggestion. As suggested by the reviewer, we have rewrote the sentence in the revised manuscript as the following " Numerous recent studies have identified correlations between animal economic traits and copy number variation. We conducted an analysis to examine the associa-tion between copy number variation (CNV) types of the KCNJ15 gene and economic traits across five goat breeds, using general linear models. According to the results Ta-ble 3-7, The CNV of the KCNJ15 gene had a significant effect on canno round in GZB sheep breed ($p < 0.05$), and the normal individual has better growth traits. In the GZW sheep breed, CNV had a significant effect on body weight and chest circumference ($p < 0.05$). Specifically, individuals with a CNV of 3 displayed superior growth traits. In the HH sheep breed, CNV had a significant effect on body slanting length ($p < 0.05$). Specifically, individuals with duplication displayed superior growth traits. There was no sig-nificant effect of CNV of KCNJ15 gene on HB sheep breed. In the TH sheep breed, CNV had a significant effect on body height and body weight ($p < 0.05$). Specifically, indi-viduals with normal displayed superior growth traits."

Comments 4: Delete rr. 84-93.

Response 4: we are grateful for the suggestion. As suggested by the reviewer, we have deleted the corresponding content as requested

Comments 5: Table 3, you write in the legend n=number of goats, but is not in the table. There is twice body weight. There is not mentioned HB breed..

Response 5: we are grateful for the suggestion. Now we have the results for all 5 varieties in the main text. We originally only listed the significant results separately, but HB was not listed in the table because the results were not significant.

Comments 6: Give the frequencies in breeds and in the all group analyzed. Give the body measures within breed for different CNVs. Was the effect of the breed significant?

Response 6: we are grateful for the suggestion. As suggested by the reviewer, we have added more details of Results table for each variety. We have rearranged the table as you suggested, you can see it in the revised manuscript

Comments 7: Fig. 6, GZH, BH and HUAI are in the figure, but are not in the legend; conversely GZB, HH and HB are in the legend, but not in the figure.

Response 7: we apologize for the figure problems in the original manuscript we have re-produced the images in the manuscript

Comments 8: What is canno round.

Response 8: We are very sorry for our incorrect writing. We have already modified the wrong one to Circumference of cannon bone

Comments 9: You write in the text that the deletion variant was most common, in the Fig. 6 are most frequent $CN \geq 5$.

Response 9: We are very sorry for our incorrect writing. We have modified the original text to " The copy number polymorphism frequency of five goat breeds showed that most goats showed Duplication type (Figure 6)."

Comments 10: Rr. 285-6, 706 goats were analyzed, not goat breeds.

Response 10: we appologize for the language problems in the original manuscript, We have modified the original text to " We examined the copy number variation (CNV) types of the *KCNJ15* gene in a sample of 706 individuals from five different goat breeds."

Comments 11: Formal errors:

Abstract, explain the abbreviations.

Check the formulation in rr. 50-52, 101-103, 324 and in other places.

R. 124, -40.

R. 156, divide into 2 paragraphs, equation, and legend.

R. 240 breeds of goat, not species.

Response 11: We feel great thanks for your professional review work on our article. As you are concerned, there are several problems that need to be addressed. According to your nice suggestions, we have made modifications in the manuscript to address the above issues.

I am grateful for the time and expertise you have dedicated to the review process. Your valuable insights have played a pivotal role in enhancing the overall quality of my work. I eagerly anticipate any additional guidance or feedback you may offer. Thank you once again for your invaluable contributions.

Best regards,
Jiahao Zhao, Yong-zhen Huang