First of all, we would like to thank all of the reviewers for their professional comments and suggestions. Our point-by-point responses to the reviewers' comments are list below:

Our point-by-point responses to the reviewers' comments:

Reviewer #1 (reviewer's code 00004011):

Comment 1. It is an interesting manuscript however ELISA or Western blot for some proteins that found to be significantly different between patients and controls in order to verify the LC/MS results are necessary

Response to comment 1: We appreciate this comment. This is a pilot study and the aim of this research is to ascertain the feasibility of the experiments, which will serve as a guide for the main study. The data we obtained confirmed the feasibility of the experiments and also gave interesting primary results, which will prompt us to perform the main study. This study had some limitations that should be addressed in future studies to confirm the interesting phenomena observed in this pilot study, including analysis of a larger sample size, analysis of controls, and most importantly, the significantly differentially expressed candidate autoantibodies identified in this study should be verified, for example by enzyme-linked immunosorbent assay or western blotting. Considering your professional comment and the aim of our research, we have added a related description in the section of Discussion, second paragraph from the bottom.

Comment 2. minor language polishing

Response to comment 2: Thank you for your suggestion. We have had our manuscript thoroughly reviewed for English language by a biomedical editing company, which we consider has greatly enhanced the readability of our manuscript.

Reviewer #2 (reviewer's code 03478635):

Comment 1. Proofreading is needed. Panel B in Figure 1 is not shown for some reason. The order of the panels for Gene Ontology biological processes, molecular functions and cellular components, and Kyoto Encyclopedia of Genes and Genomes pathways in the

results of enrichment analysis may be unified in every figures.

Response to comment 1: Thank you for the professional suggestion. We have proofread the manuscript and revised the figures according to your comment.

Reviewer #3 (reviewer's code 02567669):

Comment 1. XX

Response to comment 1: Thank you for your review and comment.

Reviewer #4 (reviewer's code 02541688):

Comment 1. It is an interesting study for us. As we known, AMA was established as the diagnostic biomarker of PBC, there has been controversy surrounding AMA-negative PBC. This paper has explored the pathogenesis of PBC by identifying candidate autoantibodies in serum samples by proteomics and bioinformatics, and demonstrated that AMA cannot be detected in serum might be the method applied in clinical practice is not sensitive enough. It will prompt us to using a larger sample size and verify the candidate autoantigens

Response to comment 1: Thank you for your positive view of our research.

Comment 2. minor language polishing

Response to comment 2: Thank you for your suggestion. We have had our manuscript thoroughly reviewed for English language by a biomedical editing company, which we consider has greatly enhanced the readability of our manuscript.

Editor:

Comment 1. minor language polishing

Response to comment 1: We have had our manuscript thoroughly reviewed for English language by a biomedical editing company, which we consider has greatly enhanced the readability of our manuscript.

Comment 2. Correct all names like "Chui-Wen Deng"

Response to comment 2: We have corrected all the author names.

Comment 3. ORCID number

Response to comment 3: We have added all the ORCID number in the manuscript.

Comment 4. you need to provide the grant application form(s) or certificate of funding agency for every grant, or we will delete the part of "Supported by...".

Response to comment 4: We have provided the grant application forms or certificate of funding agency for every grant listed in the revised manuscript.

Comment 5. Correct all references number like this, Superscript

Response to comment 5: We have corrected all references number.

Comment 6. Please finish this part (article highlight) following the below reminders

Response to comment 6: We have finished this part according to the reminders.

Comment 7. Please check that there are no repeated references

Response to comment 7: We have checked and confirmed that there are no repeated references.

Comment 8. It's not clear, please provide high resolution photo here (Figure 1-5)

Response to comment 8: We have provided higher resolution photo (Figure 1-5) in the revised manuscript.