

Basic reporting

Overall, the design and analysis of the study is sound, with clear results and relatively straightforward conclusions. Regarding reporting, I recommend the following to improve readability of the manuscripts:

Line 62: the sentence "accelerated the pace of national physical examination" is bit unclear. It if is referring to a specific nation, then it should state it more explicitly. Recommend rephrasing.

Line71- Line80 this seems like a very lengthy discussion about second operation, which isn't directly relevant to the focus of the paper. Recommend streamlining.

Line84 - Line96 Similarly, this part seems like a very lengthy introduction of the methodology. This part could be streamlined, or details moved to methods section.

Line197: Description of the text does not match the figure. The text is referring Fig2E.

Line202: Description of the text does not match the figure. The text is referring to Fig2D. Fig2D and Fig2E should be switched according to the text.

Line214: Fig3A-C y axis title can be modified to reflect overall survival, relapse-free survival and overall survival respectively.

Line218-219 Readers could benefit from having more context on what GSE50081 study has already done.

Line228: Fig3D and Fig4B should each be labelled with a title to allow reader to distinguish the difference more easily. One is for overall survival, the other one is for recurrence.

Line248: the axis ticks, labels are all very small and hard to read. Recommend enlarging text size.

Line248-249: It would be very helpful if the authors can guide readers on these figures and provide more descriptive details on how they interpreted Figures 5D-5I before reaching conclusions.

Most of the figure legend main titles could benefit from being more descriptive. Recommend adding key information and takeaways for figure legend main titles. Especially for Fig3-Fig8.

Experimental design

Line175: In general, the software/packages versions should also be reported for reproducibility. Which R version is used?

Line176: Is the p value referred here after correction for multiple testing? If so what method (FDR, BH etc.)

Line187: the font size of the pathway text is very small and hard to read. Recommend increasing text font size.

Line208 and Line280: In the supplementary text1, the authors showed the normality test and p values, however it would improve clarity if they can also show how they determined risk score cut-off values based on normality test.

Line203-line204: Could the authors explain how the four genes were screened out from the K-M analysis. How and why were these four genes chosen for downstream signature analysis? There seems a missing methodology step here.

Validity of the findings

Overall well done study from the authors. The data analysis and results justify the conclusions.

General comments for the author

The prognostic and recurrence biomarkers have great values, and I believe this study will be of interest to scientists and clinicians involved in lung adenocarcinoma research as well as cancer biology in general. There are some areas the authors could modify to improve readability and clarity, as outlined above.