Development

Checklist of key methodological and analytical information

This checklist is used to ensure good reporting standards and reproducibility in your paper (this checklist is compatible with the reporting standards recommended by the National Institutes of Health).

You must ensure that the following information is included in your manuscript. In general, this is best achieved by having specific subsections in the Materials and Methods section for reagents, animal models, statistics and data availability.

Reagents

1. For cell lines, detail their source and state whether they were recently authenticated and tested for contamination.

   Confirm - in Materials & Methods: ☐

   Reported elsewhere (specify)/NA:_____

2. For antibodies, provide a citation, catalog number and/or clone number and batch number. Provide details on antibody validation, either in Supplementary Information or by reference to an antibody validation profile (where possible). Give the dilutions used.

   Confirm – in Materials & Methods: ☐

   Reported elsewhere (specify)/NA:_____

3. We strongly encourage authors to deposit reagents in relevant repositories, such as Addgene for plasmids, or the appropriate stock centres for mutant lines. Provide details on how reagents can be obtained.

   Confirm – in Materials and Methods: ☐

   Reported elsewhere (specify)/NA: _____

Animal models

We recommend consulting the ARRIVE guidelines to ensure that other relevant aspects of animal studies are adequately reported.

1. Report species, strain, sex and age of animals

   Confirm – in Materials & Methods: ☐

   Reported elsewhere (specify)/NA:_____

2. Provide details on compliance with relevant ethical regulations including, where necessary, the identity of the committee(s) approving the experiments.

   Confirm – in Materials & Methods: ☐

   Reported elsewhere (specify)/NA:_____

Human subjects

1. Provide details on compliance with relevant ethical regulations and identify the commit tee(s) approving the study protocol.

2. Provide a statement confirming that informed consent was obtained from all subjects.

3. Where photographs of patients are included, provide a statement confirming that consent to publish was obtained.

4. For work involving human eggs or embryos, any financial recompense to donors must be declared.

5. Where the work reports new clinical trial data or includes a tumor marker prognostic study, appropriate guidelines for reporting must be followed (e.g. reporting the clinical trial registration number, submitting a CONSORT checklist, following REMARK reporting guide lines). Please contact the editorial office for further guidance if required.

   Confirm – in Materials & Methods: ☐

   Reported elsewhere (specify)/NA:_____

Data availability

For further details on our policies regarding data availability, please see here.

1. Include accession codes for deposited data.

   Confirm – in Data availability section: ☐

   Reported elsewhere (specify)/NA:_____

2. Include the source of all software. For any custom software, include a statement of how it can be obtained.

   Confirm – in Data availability section: ☐

   Reported elsewhere (specify)/NA:_____

Methodology and statistics

The Materials and Methods section should provide information on all points listed below. Please read these carefully and confirm that your manuscript conforms to these standards.

1. State how the sample size (*n*) was defined to ensure adequate power to detect a pre-speci fied effect size.

2. Describe inclusion and exclusion criteria if samples or animals were excluded from the analysis. State whether the criteria were pre-established.

3. Describe any methods of randomization used to determine how samples or animals were allocated to experimental groups and processed.

4. If the investigator was blinded to the group allocation during the experiment and/or when assessing the outcome, state the extent of blinding.

5. For data presented, statistical tests must be appropriate to the type of data. For example, do the data meet the assumptions of the tests (e.g. normal distribution)? Is there an estimate of variation within each group of data? Is the variance similar between the groups that are that are being statistically compared?

For small sample sizes ($n<5$), descriptive statistics are not appropriate, and instead individual data points should be plotted.

Confirm: ☐

Figure legends

The following should be reported in every figure legend

- the exact sample size (*n*) for each experimental group or condition, given as a number, not a range
- a description of the sample collection allowing the reader to understand whether the samples represent technical or biological replicates (including how many animals, cultures, etc.).
- a statement of how many times the experiment shown was replicated in the laboratory
- definition of average values as median or mean; definition of error bars as s.d., s.e.m. or c.i. (please write as e.g. mean±s.e.m.). Error bars should reflect independent experiments and not technical replicates.
- Statistical test results, e.g. *P* values.
- Details of statistical method
    - *t*-test, simple x2 tests, Wilcoxon, Mann–Whitney tests and one-way and two-way ANOVA tests can be identified by name only in the figure legend. More complex tests should be described in the Materials and Methods.
    - Are tests one-tailed or two-tailed?
    - Are there adjustments for multiple comparisons?

Confirm: ☐