**The ARRIVE guidelines 2.0: author checklist**

**The ARRIVE Essential 10**

These items are the basic minimum to include in a manuscript. Without this information, readers and reviewers cannot assess the reliability of the findings.

| Item | Recommendation | Section/line number, or reason for not reporting |
|------|----------------|-----------------------------------------------|
| **Study design** | For each experiment, provide brief details of study design including: | Experiments in vivo/Li324-242 |
| | a. The groups being compared, including control groups. If no control group has been used, the rationale should be stated. | **Experiments in vivo/Li233** |
| | b. The experimental unit (e.g. a single animal, litter, or cage of animals). | **Experiments in vivo/Li342-240** |
| **Sample size** | a. Specify the exact number of experimental units allocated to each group, and the total number in each experiment. Also indicate the total number of animals used. | **Experiments in vivo/Li234-242** |
| | b. Explain how the sample size was decided. Provide details of any a priori sample size calculation, if done. | **Results/Li366-375** |
| **Inclusion and exclusion criteria** | a. Describe any criteria used for including and excluding animals (or experimental units) during the experiment, and data points during the analysis. Specify if these criteria were established a priori. If no criteria were set, state this explicitly. | Experiments in vivo/Li237-238 and Li234-240 |
| | b. For each experimental group, report any animals, experimental units or data points not included in the analysis and explain why. If there were no exclusions, state so. | **Experiments in vivo/Li324-242** |
| | c. For each analysis, report the exact value of \( n \) in each experimental group. | **Experiments in vivo/Li235 and Li241** |
| **Randomisation** | a. State whether randomisation was used to allocate experimental units to control and treatment groups. If done, provide the method used to generate the randomisation sequence. | Experiments in vivo/Li234-235 and Li241-242 |
| | b. Describe the strategy used to minimise potential confounders such as the order of treatments and measurements, or animal/cage location. If confounders were not controlled, state this explicitly. | **Experiments in vivo/Li235-241** |
| **Blinding** | Describe who was aware of the group allocation at the different stages of the experiment (during the allocation, the conduct of the experiment, the outcome assessment, and the data analysis). | Methods/Li238-241 |
| **Outcome measures** | a. Clearly define all outcome measures assessed (e.g. cell death, molecular markers, or behavioural changes). | Statistical analysis/Li262 |
| | b. For hypothesis-testing studies, specify the primary outcome measure, i.e. the outcome measure that was used to determine the sample size. | **Statistical analysis/Li259-263** |
| **Statistical methods** | a. Provide details of the statistical methods used for each analysis, including software used. | **Statistical analysis/Li260-206** |
| | b. Describe any methods used to assess whether the data met the assumptions of the statistical approach, and what was done if the assumptions were not met. | **Experiments in vivo/Li233-234** |
| **Experimental animals** | a. Provide species-appropriate details of the animals used, including species, strain and substrain, sex, age or developmental stage, and, if relevant, weight. | **Experiments in vivo/Li233-234** |
| | b. Provide further relevant information on the provenance of animals, health/immune status, genetic modification status, genotype, and any previous procedures. | Methods/Li243-246 |
| **Experimental procedures** | For each experimental group, including controls, describe the procedures in enough detail to allow others to replicate them, including: | Methods/Li247-238 and Li244-245 |
| | a. What was done, how it was done and what was used. | Methods/Li241-242 |
| | b. When and how often. | Methods/Li240 and Li244 |
| | c. Where (including detail of any acclimatisation periods). | **Results/Li366-375 and Higure7** |
| | d. Why (provide rationale for procedures). | **Results/Li367-369 and Li373-375** |
| **Results** | For each experiment conducted, including independent replications, report: | **Results/Li366-375 and Higure7** |
| | a. Summary/descriptive statistics for each experimental group, with a measure of variability where applicable (e.g. mean and SD, or median and range). | **Results/Li367-369 and Li373-375** |
| | b. If applicable, the effect size with a confidence interval. | **Results/Li366-375 and Higure7** |
# The Recommended Set

These items complement the Essential 10 and add important context to the study. Reporting the items in both sets represents best practice.

| Item                              | Recommendation                                                                 | Section/line number, or reason for not reporting |
|-----------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------|
| **Abstract**                      | Provide an accurate summary of the research objectives, animal species, strain and sex, key methods, principal findings, and study conclusions. | **Abstract/Line 55-56**                           |
| **Background**                    | a. Include sufficient scientific background to understand the rationale and context for the study, and explain the experimental approach.  
b. Explain how the animal species and model used address the scientific objectives and, where appropriate, the relevance to human biology. | **Introduction/Line 96-98**                       |
| **Objectives**                    | Clearly describe the research question, research objectives and, where appropriate, specific hypotheses being tested. | **Introduction/Line 65-67**                       |
| **Ethical statement**             | Provide the name of the ethical review committee or equivalent that has approved the use of animals in this study, and any relevant licence or protocol numbers (if applicable). If ethical approval was not sought or granted, provide a justification. | **Experiments in vivo/Line 24-6 249**             |
| **Housing and husbandry**         | Provide details of housing and husbandry conditions, including any environmental enrichment. | **Experiments in vivo/Line 26-289**               |
| **Animal care and monitoring**    | a. Describe any interventions or steps taken in the experimental protocols to reduce pain, suffering and distress.  
b. Report any expected or unexpected adverse events.  
c. Describe the humane endpoints established for the study, the signs that were monitored and the frequency of monitoring. If the study did not have humane endpoints, state this. | **Experiments in vivo/Line 248-249**  
**No unexpected adverse events.**  
**Experiments in vivo/Line 244-245** |
| **Interpretation/scientific implications** | a. Interpret the results, taking into account the study objectives and hypotheses, current theory and other relevant studies in the literature.  
b. Comment on the study limitations including potential sources of bias, limitations of the animal model, and imprecision associated with the results. | **Results/Line 65-376**  
**Discussion/Line 421-425** |
| **Generalisability/translation**  | Comment on whether, and how, the findings of this study are likely to generalise to other species or experimental conditions, including any relevance to human biology (where appropriate). | **Conclusions/Line 427-433**                     |
| **Protocol registration**         | Provide a statement indicating whether a protocol (including the research question, key design features, and analysis plan) was prepared before the study, and if and where this protocol was registered. | **Methods/Line 247-249**                         |
| **Data access**                   | Provide a statement describing if and where study data are available. | **Results/Line 375-376**                         |
| **Declaration of interests**      | a. Declare any potential conflicts of interest, including financial and non-financial. If none exist, this should be stated.  
b. List all funding sources (including grant identifier) and the role of the funder(s) in the design, analysis and reporting of the study. | **FoodNote/ 443-444**  
**FoodNote/ 437-439** |

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*As the checklist was provided upon initial submission, the page number/line number reported may be changed due to copyediting and may not be referable in the published version. In this case, the section/paragraph may be used as an alternative reference.*