# 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:          | Material and methods/line 75-81                |
|                                           | a. The groups being compared, including control groups. If no control group has | Material and methods/line 75-81                |
|                                           | been used, the rationale should be stated.                                    | Material and methods/line 147-156              |
|                                           | b. The experimental unit (e.g. a single animal, litter, or cage of animals).   | Material and methods/line 147-156              |
| Sample size                               | 2 a. Specify the exact number of experimental units allocated to each group,  | Material and methods/line 147-156              |
|                                           | and the total number in each experiment. Also indicate the total number of animals used. | Material and methods/line 147-156              |
|                                           | b. Explain how the sample size was decided. Provide details of any a priori sample size calculation, if done. | Material and methods/line 147-156              |
| Inclusion and exclusion criteria          | 3 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. | Material and methods/line 147-156              |
|                                           | 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. | Material and methods/line 147-156              |
|                                           | c. For each analysis, report the exact value of n in each experimental group.   | Material and methods/line 147-156              |
| Randomisation                             | 4 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. | Material and methods/line 147-156              |
|                                           | 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. | Material and methods/line 147-156              |
| Blinding                                  | 5 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). | NA                                              |
| Outcome measures                          | 6 a. Clearly define all outcome measures assessed (e.g. cell death, molecular markers, or behavioural changes). | Results/line 182-221                           |
|                                           | b. For hypothesis-testing studies, specify the primary outcome measure, i.e. the outcome measure that was used to determine the sample size. | Results/line 182-221                           |
| Statistical methods                       | 7 a. Provide details of the statistical methods used for each analysis, including software used. | Material and methods/line 178-180              |
|                                           | 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. | Material and methods/line 178-180              |
| Experimental animals                      | 8 a. Provide species-appropriate details of the animals used, including species, strain and substrain, sex, age or developmental stage, and, if relevant, weight. | Material and methods/line 147-156              |
|                                           | b. Provide further relevant information on the provenance of animals, health/immune status, genetic modification status, genotype, and any previous procedures. | Material and methods/line 147-156              |
| Experimental procedures                  | 9 For each experimental group, including controls, describe the procedures in enough detail to allow others to replicate them, including: | Material and methods/line 75-176               |
|                                           | a. What was done, how it was done and what was used.                         | Material and methods/line 75-176               |
|                                           | b. When and how often.                                                       | Material and methods/line 75-176               |
|                                           | c. Where (including detail of any acclimatisation periods).                  | Material and methods/line 75-176               |
|                                           | d. Why (provide rationale for procedures).                                   | Material and methods/line 75-176               |
| Results                                   | 10 For each experiment conducted, including independent replications, report: | Results/line 82-221                            |
|                                           | 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/line 82-221                            |
|                                           | b. If applicable, the effect size with a confidence interval.                | Results/line 82-221                            |
# 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 19-37                              |
| **Background**                     |                                                                                 |                                                  |
| a.                                 | Include sufficient scientific background to understand the rationale and context for the study, and explain the experimental approach. | Material and methods/line 19-37                   |
| b.                                 | Explain how the animal species and model used address the scientific objectives and, where appropriate, the relevance to human biology. | Material and methods/line 19-37                   |
| **Objectives**                     | Clearly describe the research question, research objectives and, where appropriate, specific hypotheses being tested. | Abstract/Line 19-37                              |
| **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. | Material and methods/line 19-37                   |
| **Housing and husbandry**          | Provide details of housing and husbandry conditions, including any environmental enrichment. | Material and methods/line 19-37                   |
| **Animal care and monitoring**     | Describe any interventions or steps taken in the experimental protocols to reduce pain, suffering and distress. Report any expected or unexpected adverse events. 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. | NA                                                |
| **Interpretation/scientific implications** | Interpret the results, taking into account the study objectives and hypotheses, current theory and other relevant studies in the literature. Comment on the study limitations including potential sources of bias, limitations of the animal model, and imprecision associated with the results. | Results/line 182-221                             |
| **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). | Discussion/line 223-266                          |
| **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. | Footnote/line 357                                |
| **Data access**                    | Provide a statement describing if and where study data are available.            | Results/line 182-221                             |
| **Declaration of interests**       | Declare any potential conflicts of interest, including financial and non-financial. If none exist, this should be stated. List all funding sources (including grant identifier) and the role of the funder(s) in the design, analysis and reporting of the study. | Conflicts of interest/line 182-221                 |

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