



# 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 notreporting
<b>Study design</b>	1 For each experiment, provide brief details of study design including:	animal section 67~71 line
	a. The groups being compared, including control groups. If no control group has been used, the rationale should be stated. b. The experimental unit (e.g. a single animal, litter, or cage of animals).	animal section 65~66 line
<b>Sample size</b>	2 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.	animal section 65~66 line
	b. Explain how the sample size was decided. Provide details of any <i>a priori</i> sample size calculation, if done.	animal section 65~66 line
<b>Inclusion and exclusion criteria</b>	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 <i>a priori</i> . If no criteria were set, state this explicitly.	animal section 62~64line
	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.	animal section 62~64line
	c. For each analysis, report the exact value of <i>n</i> in each experimental group.	animal section 62~64line
<b>Randomisation</b>	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.	animal section 62~66line
	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.	animal section 62~66line
<b>Blinding</b>	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).	animal section 62~66line
<b>Outcome measures</b>	6 a. Clearly define all outcome measures assessed (e.g. cell death, molecular markers, or behavioural changes).	Methods section 69~70 line
	b. For hypothesis-testing studies, specify the primary outcome measure, i.e. the outcome measure that was used to determine the sample size.	Methods section 69~70 line
<b>Statistical methods</b>	7 a. Provide details of the statistical methods used for each analysis, including software used.	Statistical analysis 148~151 line
	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.	Statistical analysis section 148~151 line
<b>Experimental animals</b>	8 a. Providespecies-appropriate details of the animals used, including species, strain and substrain, sex, age or developmental stage, and, if relevant, weight.	Animal section 64~66 line
	b. Provide further relevant information on the provenance of animals, health/immune status, genetic modification status, genotype, and any previous procedures.	Animal section 64~66 line
<b>Experimental procedures</b>	9 For each experimental group, including controls, describe the procedures in enough detail to allow others to replicate them, including:	Methods section 62~72 line
	a. What was done, how it was done and what was used.	Methods section 62~72 line
	b. When and how often.	Methods section 62~72 line
	c. Where (including detail of any acclimatisation periods).	Methods section 62~72 line
	d. Why (provide rationale for procedures).	Methods section 62~72 line
<b>Results</b>	10 For each experiment conducted, including independent replications, report:	Methods section 68~71 line
	a. Summary/descriptive statistics for each experimental group, with a measure of variability where applicable (e.g. mean and SD, or median and range). b. If applicable, the effect size with a confidence interval.	Methods section 68~71 line

## 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
<b>Abstract</b>	11 Provide an accurate summary of the research objectives, animal species, strain and sex, key methods, principal findings, and study conclusions.	Abstract section 16~17 line
<b>Background</b>	12 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.	Abstract section 16~17 line Abstract section 18~19 line
<b>Objectives</b>	13 Clearly describe the research question, research objectives and, where appropriate, specific hypotheses being tested.	Abstract section 14~17 line
<b>Ethical statement</b>	14 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.	Animal section 62~64 line
<b>Housing and husbandry</b>	15 Provide details of housing and husbandry conditions, including any environmental enrichment.	Animal section 62~64 line
<b>Animal care and monitoring</b>	16 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.	Animal section 69~71 line Animal section 62~63 line Animal section 62~63 line
<b>Interpretation/scientific implications</b>	17 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.	discussion section 263~265 line discussion section 263~265 line
<b>Generalisability/translation</b>	18 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 section 262~264 line
<b>Protocol registration</b>	19 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.	introduction section 82 line
<b>Data access</b>	20 Provide a statement describing if and where study data are available.	Footnote section 346 line.
<b>Declaration of interests</b>	21 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.	Acknowledgments section 272 line none

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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.