

Research L^AT_EX Template

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Abstract

The abstract should be a single paragraph written in plain language that a general reader can understand. Do not include citations, figures, tables, or undefined abbreviations in the abstract. Any abbreviations that appear in the title should be defined in the abstract. The length should be 200 words and not exceed 300 words, to include:

- An opening sentence that states the question/problem addressed by the research AND
- Enough background content to give context to the study AND
- A brief statement of primary results AND
- A short concluding sentence.

1 Introduction

Your manuscript should contain all of the sections specified in this template: Introduction, Results, Discussion, Materials and Methods.

The manuscript should start with a brief introduction that lays out the problem addressed by the research and describes the paper's importance. The scientific question being investigated should be described in detail. The introduction should provide sufficient background information to make the article understandable to readers in other disciplines and provide enough context to ensure that the implications of the experimental findings are clear.

Citations

Citations of references in the text should be identified using numbers in square brackets e.g., “as discussed by Cui [Cui1]” or “as discussed elsewhere [Cui1, Ninomiya1, Li1, Wang1, Yang1].” All references should be cited within the text and uncited references will be removed.

As an example, this template includes a “sample.bib” file containing the references in BibTeX.

Equations

Equations should be provided in a text format, rather than as an image. Equations should be numbered consecutively, in round brackets, on the right-hand side of the page by using the “`\begin{equation}`” command. They should be referred to as Equation 1, etc. in the main text.

For example, see Equation 1 and Equation 2 below.

$$a^2 + b^2 = c^2 \tag{1}$$

$$\begin{aligned} A &= \frac{\pi r^2}{2} \\ &= \frac{1}{2} \pi r^2 \end{aligned} \tag{2}$$

Figures

Figures should be called out within the text and numbered in the order of their citation in the text. Every figure must have a descriptive title beginning with “Figure [Number] ...” All figure titles should be either a phrase or a sentence; do not mix the two styles. See Figure 1 for example.



Figure 1: Short title of the figure. The figure legend should begin with a title (an overall description of the figure) followed by additional text. Each legend should be placed immediately after its corresponding figure.

Legends (i.e., captions) should be included immediately after each figure or table. Each legend should start with a short title beginning with “Fig. [Number] ...” or “Table [Number] ...” No single legend should be longer than about 200 words. Nomenclature, abbreviations, symbols, and units used in a figure legend (and in the figure itself) should match those used in the text. Captions should be in full sentences and explain all components of a figure, including any acronyms, units, or

45 variables; color or symbol schemes, if not obvious from the figure; length of scale bars, if not labeled;
46 etc.

47 Figures should be displayed on a white background. When preparing figures, consider that they
48 can occupy either a single column (half page width) or two columns (full page width), and should
49 be sized accordingly.

50 If a figure consists of multiple panels, they should be ordered logically and labelled with roman
51 letters (i.e., A, B, C, etc.). All labels should be explained in the legend. See Figure 2 for example.

52 Upon acceptance, authors will be asked to provide the figures as separate electronic files. At
53 that stage, figures should be supplied as Adobe Portable Document Format (PDF), PostScript (PS),
54 or Encapsulated PostScript (EPS) for illustrations or diagrams; Tagged Image File Format (TIFF),
55 JPEG, PNG, PhotoShop (PSD), EPS, or PDF for photography or microscopy. Bitmap formats
56 (Photoshop, TIFF, JPEG, PNG) images should be of at least 300 dpi resolution, unless due to the
57 limited resolution of a scientific instrument. If a bitmap image has labels, the image and labels
should be embedded in separate layers.

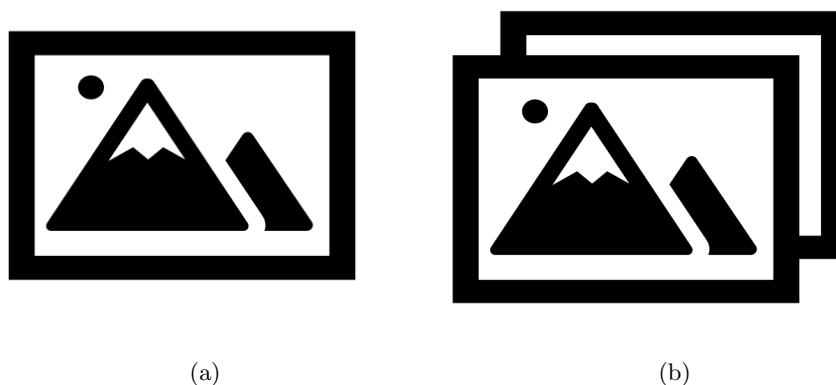


Figure 2: This is an example of a figure consisting of multiple panels. (a) This is the first panel. (b) This is the second panel.

58

59 Tables

60 Tables should supplement, not duplicate, the text. They should be called out consecutively within
61 the text and numbered in the order of their citation in the text.

62 Every table must have a descriptive title beginning with “Table [Number] . . .” as noted in Table
63 1. If numerical measurements are given, the units should be included in the column heading. Every
64 vertical column should have a heading, followed by a unit of measure (if any) in parentheses. Units
65 should not change within a column. Vertical rules should not be used.

66 Centered headings of the body of the table can be used to break the entries into groups. Do
67 not use footnotes in column heads; include any such details in sentence form in the table legend.
68 Footnotes should contain information relevant to specific cells of the table; use lowercase letters in
69 alphabetical order, as needed: a, b, c, etc.

70 2 Results

71 The results should describe the experiments performed and the findings observed. The results section
72 should be divided into subsections to delineate different experimental themes.

- 73 • All data should be presented in the Results. No data should be presented for the first time in
74 the Discussion. Data (such as from Western blots) should be appropriately quantified.
- 75 • Subheadings must be either all complete sentences or all phrases. They should be brief, ideally
76 less than 10 words. Subheadings should not end in a period. Your paper may have as many
77 subheadings as are necessary.
- 78 • Figures and tables must be called out in numerical order. For example, the first mention of
79 any panel of Fig. 3 cannot precede the first mention of all panels of Fig. 2. The supplementary
80 figures (for example, fig. S1) and tables (table S1) must also be called out in numerical order.

81 3 Discussion

82 Include a Discussion that summarizes (but does not merely repeat) your conclusions and elaborates
83 on their implications. There should be a paragraph outlining the limitations of your results and
84 interpretation, as well as a discussion of the steps that need to be taken for the findings to be
85 applied. Please avoid claims of priority.

86 4 Materials and Methods

87 The materials and methods section should provide sufficient information to allow replication of the
88 results. This section should be broken up by subheadings. Under exceptional circumstances, when a
89 particularly lengthy description is required, a portion of the materials and methods can be included
90 in the Supplementary Materials.

91 4.1 Experimental Design

92 Begin with a section titled Experimental Design describing the objectives and design of the study
93 as well as prespecified components.

Table 1: This is an example table.

Column 1	Column 2	Column 3
Cell 1	Cell 2	Cell 3
Cell 4	Cell 5	Cell 6

94 4.2 Statistical Analysis

95 If applicable, include a section titled Statistical Analysis that fully describes the statistical methods
96 with enough detail to enable a knowledgeable reader with access to the original data to verify the
97 results. The values for N, P, and the specific statistical test performed for each experiment should
98 be included in the appropriate figure legend or main text.

99 4.3 Ethical Statements

100 For investigations on humans, a statement must be including indicating that informed consent was
101 obtained after the nature and possible consequences of the study was explained.

102 For authors using experimental animals, a statement must be included indicating that the ani-
103 mals' care was in accordance with institutional guidelines.

104 Acknowledgments

105 Anyone who made a contribution to the research or manuscript, but who is not a listed author,
106 should be acknowledged (with their permission). Types of acknowledgements include:

107 General

108 Thank others for any contributions, whether it be direct technical help or indirect assistance

109 Author Contributions

110 Describe contributions of each author to the paper, using the first initial and full last name.

111 Examples:

112 "S. Zhang conceived the idea and designed the experiments."

113 "E. F. Mustermann and J. F. Smith conducted the experiments."

114 "All authors contributed equally to the writing of the manuscript."

115 Funding

116 Name financially supporting bodies (written out in full), followed by the funding awardee and asso-
117 ciated grant numbers (if applicable) in square brackets.

118 Example:

119 "This work was supported by the Engineering and Physical Sciences Research Council [grant
120 numbers xxxx, yyyy]; the National Science Foundation [grant number zzzz]; and a Leverhulme
121 Trust Research Project Grant."

122 If the research did not receive specific funding, but was performed as part of the employment
123 of the authors, please name this employer. If the funder was involved in the manuscript writing,
124 editing, approval, or decision to publish, please declare this.

Conflicts of Interest

Conflicts of interest (COIs, also known as “competing interests”) occur when issues outside research could be reasonably perceived to affect the neutrality or objectivity of the work or its assessment.

Authors must declare all potential interests – whether or not they actually had an influence – in a ‘Conflicts of Interest’ section, which should explain why the interest may be a conflict. Authors must declare current or recent funding (including for Article Processing Charges) and other payments, goods or services that might influence the work. All funding, whether a conflict or not, must be declared in a “Funding Statement.” The involvement of anyone other than the authors who 1) has an interest in the outcome of the work; 2) is affiliated to an organization with such an interest; or 3) was employed or paid by a funder, in the commissioning, conception, planning, design, conduct, or analysis of the work, the preparation or editing of the manuscript, or the decision to publish must be declared.

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Data Availability

A data availability statement is compulsory for all research articles. This statement describes whether and how others can access the data supporting the findings of the paper, including 1) what the nature of the data is, 2) where the data can be accessed, and 3) any restrictions on data access and why.

If data are in an archive, include the accession number or a placeholder for it. Also include any materials that must be obtained through a Material Transfer Agreements (MTA).

Supplementary Materials

Describe any supplementary materials submitted with the manuscript (e.g., audio files, video clips or datasets).

Please group supplementary materials in the following order: materials and methods, figures, tables, and other files (such as movies, data, interactive images, or database files).

Example: Fig. S1. Title of the first supplementary figure.

Fig. S2. Title of the second supplementary figure.

Table S1. Title of the first supplementary table.

Data file S1. Title of the first supplementary data file.

Movie S1. Title of the first supplementary movie.

Be sure to submit all supplementary materials with the manuscript and remember to reference the supplementary materials at appropriate points within the manuscript. We recommend citing

specific items, rather than referring to the supplementary materials in general, for example: “See Figures S1-S10 in the Supplementary Material for comprehensive image analysis.”

A link to access the supplementary materials will be provided in the published article.

Supplementary Materials may include additional author notes—for example, a list of group authors.

Guidelines for References

References may be submitted in any style. If accepted, Research will reformat the references. Authors are responsible for ensuring that the information in each reference is complete and accurate. All data must be cited and references to “data not shown” or citations to unpublished results are permitted.

There is only one reference list for all sources cited in the main text, figure and table legends, and Supplementary Materials. Do not include a second reference list in the Supplementary Materials section. Include references cited only in the Supplementary Materials at the end of the reference section of the main text; reference numbering should continue as if the Supplementary Materials are a continuation of the main text. References cited only in the Supplementary Materials section are not counted toward length guidelines.

Please do not include any extraneous language such as explanatory notes as part of a reference to a given source. Research prefers that manuscripts do not include end notes; if information is important enough to include, please put into main text. If you need to include notes, please explain why they are needed in your cover letter to the editor.