***MethodsX* protocol article template Version 5 (April 2024)**

**AUTHOR INSTRUCTIONS**

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* Brief **instructions are in blue italics**. Additional instructions appear in comment boxes to the right of the main text.
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**Article information**

**Article title**

*Max. 20 words. The title should be unique.*

**Authors**

*List all authors. Please mark the corresponding author with (\*)*

**Affiliations**

*Please include the full address of each author institution*

**Corresponding author’s email address and Twitter handle**

*Institutional email address mandatory. If you have a X (formerly Twitter) handle, please add it here ‘X: @....’*

**Keywords**

*List a minimum of three keywords, separated by semi colons.**There is no maximum.*

**Related research article**

*If your protocol article supports an original research article* ***of your own****, please cite that same article here. You should only list one article.*

***For a published article:***

*J. van der Geer, J.A.J. Hanraads, R.A. Lupton, The art of writing a scientific article, J. Sci. Commun. 163 (2010) 51–59.* [*https://doi.org/10.1016/j.Sc.2010.00372*](https://doi.org/10.1016/j.Sc.2010.00372)

*If your protocol article is* ***not related to a research article****, please state “none”.*

**Abstract**

*Maximum length is 200 words.*  *Include 1-3 bullet points that outline your protocol – avoid the technical steps involved; these will be described later.*

**Graphical abstract**

*The graphical abstract should summarize the contents of your article in a concise, pictorial form. Graphical abstracts should be submitted as a separate file. Image size:****please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more****. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files.*

**Specifications table**

*This table provides general information on your protocol.*

|  |  |
| --- | --- |
| **Subject area** | *Please Select Subject Area from dropdown list* |
| **More specific subject area** | *Describe narrower subject area* |
| **Name of your protocol** | *Please write the name of the protocol you are describing in this article* |
| **Reagents/tools** | *If applicable, include a list of reagents and equipment with manufacturers’ details* |
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| **Trial registration** | *If applicable, include clinical trial registry and number* |
| **Ethics** | *MethodsX has ethical guidelines that all authors must comply with. In addition, we ask you to complete the relevant statement(s) below. Please delete those which are not relevant to your work.*  ***If your work involved human subjects,*** *please include a statement here confirming that the relevant informed consent was obtained from those subjects:*  ***If your work involved animal experiments,*** *please**include a statement here confirming that those experiments complied with the*[*ARRIVE guidelines*](https://www.nc3rs.org.uk/arrive-guidelines)*and were carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines;*[*EU Directive 2010/63/EU for animal experiments*](http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm)*; or the National Institutes of Health guide for the care and use of laboratory animals (NIH Publications No. 8023, revised 1978). Note, the sex of the animals must be indicated, and, where appropriate, the influence (or association) of sex on the results of the study:*  ***If your work involved data collected from social media platforms****, please include a statement here confirming that a) informed consent was obtained from participants or that participant data has been fully anonymized, and b) the platform(s)’ data redistribution policies were complied with:* |
| **Value of the Protocol** | *Describe the importance of the protocol in up to 3 bullet points.* |

**Background**

*Please describe your motivation and context behind providing this protocol. This section should provide readers with context for why and how your protocol may be used. (Max. 500 words).*

**Description of protocol**

*Our goal is to publish protocols that can be replicated by other researchers. Please include a clear rationale for the study. Include a step by step description of the protocol. Describe the experimental design, reagents/tools, data measurement and analysis, study guideline such as FDA guidelines, human subject guidelines.*

* ***There is no word limit!*** *You can include figures, tables, videos – anything you feel will help others reproduce your protocol.*

**Protocol validation**

*Results and Discussion are not part of a protocol article. However, if possible please provide data that validate the protocol.*

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*Please describe any limitations that the protocol you describe may have. For eg., experimental conditions in which the protocol may not work.*

*If there are none, please write ‘None’ or ‘Not applicable’.*

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**References**

*If your protocol article is about a customization you made, include at least one reference to the original publication of that protocol.*

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***Thank you!***