

## Editorial Policy Checklist

This form is used to ensure compliance with Nature Research editorial policies related to research ethics and reproducibility. For further information, please see our [editorial policies](#) site. All relevant questions on the form must be answered.

### Competing interests

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#### Competing interests declaration

In the interest of transparency and to help readers form their own judgements of potential bias, Nature Research journals require authors to declare any competing financial and/or non-financial interest in relation to the work described in the submitted manuscript.

- ☒ We declare that none of the authors have competing financial or non-financial interests as defined by Nature Research.
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Prior to submission all listed authors must agree to all manuscript contents, the author list and its order and the author contribution statements. Any changes to the author list after submission must be approved by all authors.

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### Data availability

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#### Data availability statement

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

- ☒ We have provided a full data availability statement in the manuscript.

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Confirm that all relevant data are deposited into a public repository and that accession codes are provided.

- ☒ All relevant accession codes are provided ☐ Accession codes will be available before publication ☐ No data with mandated deposition

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#### Code availability statement

For all studies using custom code or mathematical algorithm that is deemed central to the conclusions, the manuscript must include a statement under the heading "Code availability" describing how readers can access the code, including any access restrictions. Code availability statements should be provided as a separate section after the data availability statement but before the References.

- ☒ We have provided a full code availability statement in the manuscript

## Data presentation

For all data presented in a plot, chart or other visual representation confirm that:

n/a Confirmed

- ☐ ☒ Individual data points are shown when possible, and always for  $n \leq 10$
- ☐ ☒ The format shows data distribution clearly (e.g. dot plots, box-and-whisker plots)
- ☐ ☒ Box-plot elements are defined (e.g. center line, median; box limits, upper and lower quartiles; whiskers, 1.5x interquartile range; points, outliers)
- ☐ ☒ Clearly defined error bars are present and what they represent (SD, SE, CI) is noted

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| Does not apply                      | Involved in the study                                                                                   |
|-------------------------------------|---------------------------------------------------------------------------------------------------------|
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## Human research participants

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### Ethical compliance

- ☒ We have complied with all relevant ethical regulations and include a statement affirming this in the manuscript.

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Confirm that the manuscript states the name(s) of the board and/or institution that:

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- ☒ We have obtained informed consent from all participants and this is noted in the manuscript.

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For publication of identifiable images of research participants, confirm that consent to publish was obtained and is noted in the Methods.

Authors must ensure that consent meets the conditions set out in the [Nature Research participant release form](#).

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I certify that all the above information is complete and correct.

Typed signature Jingyuan Fu

Date 5 July 2021