

Reporting Summary

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Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

- | | |
|-------------------------------------|---|
| n/a | Confirmed |
| ☐ | ☒ The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement |
| ☐ | ☒ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly |
| ☒ | ☐ The statistical test(s) used AND whether they are one- or two-sided
<i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i> |
| ☒ | ☐ A description of all covariates tested |
| ☒ | ☐ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons |
| ☒ | ☐ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals) |
| ☒ | ☐ For null hypothesis testing, the test statistic (e.g. F , t , r) with confidence intervals, effect sizes, degrees of freedom and P value noted
<i>Give P values as exact values whenever suitable.</i> |
| ☒ | ☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings |
| ☒ | ☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes |
| ☒ | ☐ Estimates of effect sizes (e.g. Cohen's d , Pearson's r), indicating how they were calculated |

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection

n/a

Data analysis

n/a

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors/reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

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

The authors declare that the data supporting the findings of this study are available within the paper [and its supplementary information].

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

- ☐ Life sciences ☐ Behavioural & social sciences ☒ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see [nature.com/documents/nr-reporting-summary-flat.pdf](https://www.nature.com/documents/nr-reporting-summary-flat.pdf)

Ecological, evolutionary & environmental sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	The study is a multidisciplinary research effort involving analysis and interpretation of prehistoric rock art in southern Sulawesi, Indonesia, as well as its direct-dating using Uranium-series analysis of overlying calcium carbonate materials (coralloid speleothem).
Research sample	The research sample comprises a total of four coralloid speleothem deposits directly associated with three animal motifs from a single rock art panel at a limestone cave (Leang Bulu' Sipong 4) in the Maros-Pangkep karst region of southwestern Sulawesi.
Sampling strategy	Opportunistic - when coralloid speleothems or other calcite deposits deemed to be of sufficient quality for Uranium-series dating were found in direct association with rock art motifs relevant to the study topic we collected them as dating samples.
Data collection	Maxime Aubert collected the coralloid speleothems following procedures outlined in detail in the Methods section of the paper.
Timing and spatial scale	The cave art site under study was discovered and recorded by our team in December 2017. The coralloid speleothem samples were collected by Maxime Aubert in February 2018.
Data exclusions	n/a
Reproducibility	n/a
Randomization	n/a
Blinding	n/a
Did the study involve field work?	☒ Yes ☐ No

Field work, collection and transport

Field conditions	Leang Bulu' Sipong 4 is located in a near-coastal lowland tower karst region (Maros-Pangkep). The field area is near-equatorial and thus hot and humid for most of the year. Our field research was conducted during the driest part of the year (June to September), with the exception of the February 2018 sample collection trip which was conducted during the monsoonal wet season.
Location	The general location of the site is indicated in Figure 1 in the paper but specific co-ordinates are not provided to protect it from unauthorised visits, vandalism, etc.
Access and import/export	Samples were exported to Australia for dating under the material transfer agreement of the Memorandum of Understanding between the Indonesian scientific counterpart (ARKENAS) and Griffith University, and also following collaborative arrangements with other local stakeholders.
Disturbance	We removed small calcium carbonate deposits that had formed over the top of, and thus partially obscured, rock art motifs

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology
☒	☐ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging