nature research

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Last updated by author(s): Dec 13, 2021

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 *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☐	☒	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 *Give P values as exact values whenever suitable.*
☐	☒	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	Archaeological excavation data were collected in the custom-built SQL relational database SJMSYS version 2.7.2 (Museum of Southwest Jutland, www.sol.sydvestjyskemuseer.dk).
Data analysis	OxCal 4.3.2 and Matlab 2020. All details are given in the Supplementary Information.

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 and 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

All data and code produced for this study is available in the main text or the Supplementary Information (including the tree-ring data we used in addition to IntCal20). The IntCal20 dataset is available in Reimer et al. (2020) and at http://intcal.qub.ac.uk/JS/JSintcal20/. Additional information about the site and excavation can be found at https://projects.au.dk/northernemporium/, additional artefact photographs at http://sol.sydvestjyskemuseer.dk/ using the search term "SJM 3 ".

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

Ecological, evolutionary & environmental sciences study design

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

Study description	The Northern Emporium project undertook a detailed stratigraphic excavation of an area in the centre of the settlement area of early Ribe. The excavation was conducted in collaboration between the Centre for Urban Network Evolutions (UrbNet) at Aarhus University and the Museum of Southwest Jutland, and took place from June 2017 to August 2018. (Finds and archival records are stored at the Museum of Southwest Jutland, file no. SJM 3 Posthustorvet). The excavation was carried out using a systematic stratigraphic protocol and high-definition documentation methods, including 3D laser scanning of all exposed surfaces, wet sieving of all excavated soil, and systematic geoarchaeological sampling of excavation units.
Research sample	Samples for radiocarbon dating were selected from excavation phases F3 to F14, as these are the stratified settlement layers. We selected those samples that best represented the archaeological strata, considering taphonomic processes. We targeted short-lived organic material for radiocarbon dating, such as cereal grains, charcoal of young branches, antlers or animal bones. For constructing the calibration curve, we used IntCal20 (Reimer et al. 2020) with additional tree ring measurements obtained at our laboratory.
Sampling strategy	Wherever possible, we radiocarbon-dated at least three samples per archaeological context. Layers or parts of layers with evidence for massive bioturbation were avoided as well as large homogenous layers that were interpreted as levelling layers, e.g. preparation of a plot after the demolition of a house, which could include substantial amounts of redeposited older material. For the calibration curve, we measured bi-annual tree-ring data for the period 650–902 CE on Danish oak trees. We measured two radiocarbon dates for each cellulose sample. Selected wide rings were used as an internal reference material, pretreated and dated in several batches.
Data collection	Artefacts were identified and counted by archaeologists at the Museum of Southwest Jutland. Radiocarbon dates were measured at the Aarhus AMS Centre.
Timing and spatial scale	All samples derive from the excavation of one 87m2 area in the town of Ribe, Denmark. The excavation took place from June 2017 to August 2018. Finds and radiocarbon samples were analysed during and after the excavation period.
Data exclusions	Several radiocarbon dates were identified as outliers (i.e., redeposited samples) and thus excluded from further analysis. All excluded dates and the exclusion criteria are listed in the Supplementary Information.
Reproducibility	The general stratigraphy was compared to earlier neighbouring excavations and showed good agreement (see Supplementary Information). Reproducibility of the radiocarbon dating method was ensured by pre-treating and dating of reference samples of known age, including background samples of infinite age, as well as repeated measurements of some samples, according to the AMS Centre's ongoing quality control measures (including the participation in international intercomparison studies).
Randomization	N/A (as we have used observations, empirical data and descriptive statistics)
Blinding	N/A (as it is not possible to influence the result of radiocarbon counts)

Did the study involve field work? ☒ Yes ☐ No

Field work, collection and transport

Field conditions	The excavation area was protected by a tent, but otherwise influenced by the weather (temperature, humidity) during the 14-months-period.
Location	SJM 3, Posthustorvet, Ribe Bygrunde, Sankt Katharine Sogn, Ribe, Denmark. UTM zone 32U 485270 / 6131435 or 55deg19'44,71" / 8deg46'03.66". Elevation above sea level: 6m DVR90 (Danish Vertical Reference)
Access & import/export	The analyzed materials were obtained from rare, preserved stratified settlement deposits from the early urban site Ribe, Denmark, from a sequence dating c. 700-900 CE. The materials were excavated, recorded and analyzed in accordance with the regulations set out by the Danish Museum Act no. 1505 of 14 December 2006. They were analyzed in laboratories in Denmark, hence no import/ export was required.
Disturbance	The archaeological remains within the excavated area (91m2) were completely retrieved and preserved by record. All sediments from the excavation (125m3 of sediments) were wet-sieved to ensure that all artefacts, faunal and botanical remains were found. All artefacts are stored at the Museum of Southwest Jutland.

The excavated area, including a public footpath, was subsequently re-established. The excavation was conducted under close supervision by Esbjerg municipality and within the guidelines of the Danish Agency for Culture and Palaces.

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 and archaeology
☒	☐ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

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

Palaeontology and Archaeology

Specimen provenance

All specimens examined were obtained from excavations in Ribe, Denmark. They were analyzed in collaboration with the Museum of Southwest Jutland, Ribe, Denmark, which is issued with the authority to supervise archaeological work on materials from the site in accordance with the regulations set out by the Danish Museum Act no. 1505 of 14 December 2006.

Specimen deposition

All finds from the excavation are stored at the Museum of Southwest Jutland, Ribe, Denmark.

Dating methods

We used radiocarbon dating of tree rings for the construction of a calibration curve, and radiocarbon dating of bones, charcoal, wood and charred cereal grains to determine the ages of the archaeological layers.
We extracted α-cellulose from all wood samples [19,72,73,74]. Samples were bleached at 70°C with 1M sodium chlorite ($NaClO_2$), acidified with 1M hydrochloric acid (HCl), then treated at room temperature with 17% sodium hydroxide (NaOH) to dissolve hemicellulose. Lastly, they were treated with 1M hydrochloric acid at room temperature to remove any atmospheric CO_2 absorbed during the NaOH treatment. Subsequently, the α-cellulose was sealed in glass tubes containing copper oxide (CuO) and combusted to CO_2 at 900°C, cryogenically purified, and converted to graphite using the H_2 reduction method with iron as catalyst [75]. All samples were analysed in the 1MV High Voltage Engineering accelerator mass spectrometer system at the Aarhus AMS Centre, Aarhus University, Denmark [76]. The data presented here is basically bi-annual and each data point based on at least two measurements. The only exceptions are years which yielded insufficient sample material for multiple measurements. In those cases, we also measured one sample from the subsequent year.
Radiocarbon ages are reported as conventional 14C dates in 14C yr BP based on the measured 14C/12C ratio corrected for the natural and process isotopic fractionation by normalizing the result to the standard $\delta^{13}C$ value of 25‰ VPDB using the 13C/12C ratios measured during AMS analysis [77].
Samples of charcoal, wood and grains were treated with 1M HCl for one hour at 80°C to remove soil carbonates, 1M NaOH for three hours at 80°C to remove soil humates, and lastly with 1M HCl overnight at room temperature to remove any atmospheric CO_2 absorbed during the NaOH step. Samples were oven-dried at 80°C. Collagen was extracted from bone samples according to the protocol by Longin (1971) with modifications by Brown et al. (1988) and Jørkov et al. (2007) [80,81,82]. Combustion, graphitisation and measurement were performed as described above.
Numbers refer to references as listed at the end of the Supplementary Information.

☒ Tick this box to confirm that the raw and calibrated dates are available in the paper or in Supplementary Information.

Ethics oversight

The materials were excavated, recorded and analyzed in accordance with the regulations set out by the Danish Museum Act no. 1505 of 14 December 2006.

Note that full information on the approval of the study protocol must also be provided in the manuscript.