Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our Editorial Policies and the Editorial Policy Checklist.

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 possible.
☐ | ☒ 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

Software and code

Policy information about availability of computer code

Data collection | Python 3.8, CYANA 3.98.13, TALOS-N1.0 on Linux (Ubuntu 18.04.3 LTS), NMRbrowser 1.0 webserver at https://nmrbrowser.org

Data analysis | Python 3.8 on Linux (Ubuntu 18.04.3 LTS)

For manuscripts utilizing custom algorithms, software that is not standard or is not available to editors and reviewers must be made available to editors and reviewers. Where possible, provide references to software such as that found in BioSoft or the Bioinformatics section of Nature Methods. Software and code must be made available to editors and reviewers.

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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 description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our policy

Reference structures: PDB Protein Data Bank (https://www.rcsb.org/, accession codes in Fig. 2 and Supplementary Table 3)
Spectra and reference assignments: BMRB Biological Magnetic Resonance Data Bank (https://bmrbr.io/, entry IDs in Supplementary Table 3)
Peak lists, assignments, and structures: https://nmrbrowser.org/static/public/publications/artinA/ARTINA_results.zip
Source data for Figs. 2, 4, and 5 is available in Supplementary Tables 2, 4, and 5, respectively.
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.

- [x] Life sciences
- [ ] Behavioural & social sciences
- [ ] Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/ni-reporting-summary-flat.pdf

Life sciences study design

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

| Sample size | 100 proteins |
|-------------|--------------|
| Data exclusions | none |
| Replication | N/A |
| Randomization | N/A |
| Blinding | N/A |

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 all list item applies to your research, read the appropriate section before selecting a response.

**Materials & experimental systems**

- [x] Antibodies
- [x] Eukaryotic cell lines
- [x] Palaeontology and archaeology
- [x] Animals and other organisms
- [x] Human research participants
- [x] Clinical data
- [x] Dual use research of concern

**Methods**

- [x] ChIP-seq
- [x] Flow cytometry
- [x] MRI-based neuroimaging