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Competing interests

Policy information about competing interests

Competing interests declaration

In the interest of transparency and to help readers form their own judgements of potential bias, Nature Portfolio 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 Portfolio.

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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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Policy information about availability of data

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- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
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☐ 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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Policy information about availability of computer code

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.

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

n/a	Confirmed
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☐	☐ 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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Policy information about image integrity

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Does not apply	Involved in the study
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☐	☐ Research animals and/or animal-derived materials that require ethical approval
☐	☐ Human embryos, gametes and/or stem cells
☐	☐ Human research participants
☐	☐ Clinical data
☐	☐ Archaeological, geological, and palaeontological materials

Macromolecular structural data

Policy information about special considerations for specific types of data

Validation report

☐ We have provided an official validation report from wwPDB for all macromolecular structures studied.

Biological materials

Policy information about availability of materials

Obtaining biological materials: *Describe any restrictions on the availability of unique materials OR confirm that all unique materials used are readily available from the authors or from standard commercial sources (and specify these sources).*

☐ We have described these restrictions in the manuscript. ☐ We have described how to obtain all materials in the manuscript.

Research animals

Policy information about studies involving animals; ARRIVE guidelines recommended for reporting animal research

Ethical compliance

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

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☐ We have disclosed the name(s) of the board and institution that approved the study protocol in the manuscript.

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Policy information about studies involving human embryos, gametes and stem cells

Manuscripts involving the use of human embryos, gametes or stem cells must include an ethics statement that provides the following information:
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- Confirmation that informed consent was obtained from all recipients and/or donors of cells or tissues
- The conditions for donating materials for the research

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Policy information about studies involving human research participants

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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.

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☐ Yes ☐ No identifiable images of human research participants

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Policy information about clinical studies

Clinical trial registration

☐ We have provided the trial registration number from ClinicalTrials.gov or an equivalent agency in the manuscript.

Phase 2 and 3 randomized controlled trials

We have provided the CONSORT checklist with your submission.

☐ Yes ☐ No ☐ Not a phase 2/3 randomized controlled trial

Tumor marker prognostic studies

We have followed the REMARK reporting guidelines.

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Archaeological, geological, and palaeontological materials

Policy information about studies involving archaeological, geological, and palaeontological materials

☐ We affirm that archaeological, geological, and palaeontological materials samples were collected (and, where applicable, exported) in a responsible manner and in accordance with relevant permits and local laws, and that this information is detailed within the manuscript.

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