nature portfolio

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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 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	Clinical trial data was entered on the clinical trial database.
Data analysis	R was used to produce waterfall plots. The graphs generated for pharmacodynamic data was GraphPad Prizm.

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

Data availability statement in the manuscript

Research involving human participants, their data, or biological material

Policy information about studies with human participants or human data. See also policy information about sex, gender (identity/presentation), and sexual orientation and race, ethnicity and racism.

Reporting on sex and gender	This is a trial in cancer patients. Sex is mentioned in the table on demographics in supplementary table 1
Reporting on race, ethnicity, or other socially relevant groupings	Ethnicity has been reported in table on demographics in Suppl table 1
Population characteristics	Data related to age was collected and presented in the table of demographics in the paper.
Recruitment	Inclusion criteria is was clarified in the manuscript and the protocol has also been uploaded.
Ethics oversight	This protocol was passed through the UK National Ethics Comittee

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

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

Life sciences study design

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

Sample size	Sample sizes in the dose escalation is predetermined in a 3+3 dose escalation design. The size of the dose expansions were empiric, however the statistical probability of of detecting a clinically meaningful difference is detailed in the manuscript.
Data exclusions	All patients who received at least one dose was eligible for evaluation of toxicity which is the primary end point of the study. Patients who consented but did not receive a dose of drug were not included for assessment for the primary endpoint.
Replication	Not applicable
Randomization	Not applicable
Blinding	Non blinded study

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
☐	☒ Clinical data
☒	☐ Dual use research of concern
☒	☐ Plants

Methods

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

Antibodies

Antibodies used	Antibodies used, source and concentrations have been detailed in the materials and methods

Validation	Antibodies for immunohistochemistry in tumour tissue have been validated by western blot analysis

Clinical data

Policy information about clinical studies

All manuscripts should comply with the ICMJE guidelines for publication of clinical research and a completed CONSORT checklist must be included with all submissions.

Clinical trial registration	NCT03875820/EudraCT number 2017-001035-39
Study protocol	Has been attached
Data collection	The dates when the trial was open has been detailed in the manuscript
Outcomes	Primary, secondary and tertiary objectives and endpoints have been detailed in the manuscript and in the uploaded protocol

Plants

Seed stocks	N/A
Novel plant genotypes	N/A
Authentication	N/A

Magnetic resonance imaging

Experimental design

Design type	Routine standard of care imaging for RECIST measurement of tumour in cancer patients used in some cases.
Design specifications	CT and MRI scans were allowed for use in the protocol to measure disease as per RECIST, which are criteria used in clinical trials for cancer.
Behavioral performance measures	N/A

Acquisition

Imaging type(s)	As per standard of care in the National Health Service, not a research measure
Field strength	As per standard of care in the National Health Service, not a research measure
Sequence & imaging parameters	As per standard of care in the National Health Service, not a research measure
Area of acquisition	Abdomen/pelvis and brain where appropriate as a substitute for CT scans.

Diffusion MRI ☐ Used ☒ Not used

Preprocessing

Preprocessing software	As per standard of care in the National Health Service, not a research measure
Normalization	As per standard of care in the National Health Service, not a research measure
Normalization template	As per standard of care in the National Health Service, not a research measure
Noise and artifact removal	As per standard of care in the National Health Service, not a research measure
Volume censoring	As per standard of care in the National Health Service, not a research measure

Statistical modeling & inference

Model type and settings	As per standard of care in the National Health Service, not a research measure
Effect(s) tested	As per standard of care in the National Health Service, not a research measure

Specify type of analysis: ☐ Whole brain ☒ ROI-based ☐ Both

Anatomical location(s): Depends on where the tumour was to start with

Statistic type for inference (See Eklund et al. 2016)	As per standard of care in the National Health Service, not a research measure
Correction	As per standard of care in the National Health Service, not a research measure

Models & analysis

n/a	Involved in the study
☒	☐ Functional and/or effective connectivity
☒	☐ Graph analysis
☒	☐ Multivariate modeling or predictive analysis