Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.		N/A Using public database data, no antibodies

Cell materials	Yes (indicate	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID		N/A Using public database data, no **cell materials**
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		N/A Using public database data, no **cell materials**

Experimental animals	Yes (indicate	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID		N/A Using public database data, no **experimental animals**
Animal observed in or captured from the field: Provide species, sex and age where possible		N/A Using public database data, no **experimental animals**
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		N/A Using public database data, no **experimental animals**

Plants and microbes	Yes (indicate	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)		N/A Using public database data, no **plants**
Microbes: provide species and strain, unique accession number if available, and source		N/A Using public database data, no **microbes**

Human research participants	Yes (indicate	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		N/A Using public database data, no **Human research**
Provide statement confirming informed consent obtained from study participants.		N/A Using public database data, no **Human research**
Report on age and sex for all study participants.		N/A Using public database data, no **Human research**

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		N/A, Not a clinical trial

Laboratory protocol	Yes (indicate where	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		N/A, No lab

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination		N/A, Using public database data
Randomisation		N/A, Using public database data
Blinding		N/A, Using public database data
Inclusion/exclusion criteria		N/A, Using public database data

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory		N/A, Using public database data
Define whether data describe technical or biological replicates		N/A, Using public database data

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		N/A, No human involvement
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		N/A, No animals involvement
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		N/A, No specimen and field samples involvement

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval		N/A, No dual use research of concern

Analysis

Attrition	Yes (indicate where provided: section/paragraph)	n/a
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.		N/A

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Method/paragraph 2,4,5,7,11 ##Pan-cancer prognostic analysis of cGAS expression ##Analysis of mismatch repair (MMR) and MSI in cancer ##Association analysis of cGAS and methyltransferases ##Association analysis of cGAS with immune neoantigens and immune checkpoint genes ##Statistical Analyses	

Data Availability	Yes (indicate where provided: section/paragraph)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.		N/A
If data are publicly available, provide accession number in repository or DOI or URL.	Method/paragraph 1,3,8,9,10 The TCGA database (https://portal.gdc.cancer.gov/) , the GTEx database (https://gtexportal.org/), the CCLE database (https://portals.broadinstitute.org/), The TMB data were downloaded from UCSC Xena, The cBioPortal database (http://www.cbioportal.org/), the Human Protein Atlas (https://www.proteinatlas.org/), GeneMANIA (http://www.genemania.org), the Cell Miner Resource Collection (https://discover.nci.nih.gov/cellminer/) , the PubChem database (https://pubchem.ncbi.nlm.nih.gov/)	
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		N/A

Code Availability	Yes (indicate where provided: section/paragraph)	n/a
For all newly generated code and software essential for replicating the main findings of the study:		
State whether the code or software is available.	Method/paragraph2-10 1. Kaplan-Meier (KM) forest plots (https://kmplot.com/analysis/) 2. The R Programming Language(Ggplot, Spearman, ClusterProfiler）	
If code is publicly available, provide accession number in repository, or DOI or URL.	Method/paragraph2 Kaplan-Meier (KM) forest plots (https://kmplot.com/analysis/)	

Reporting

Adherence to community standards	Yes (indicate where provided: section/paragraph)	n/a
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific		

guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed as the journal follows ICMJE guidelines for publication.	

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