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 where provided: section/paragraph)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	Methods/paragraph 1-7.	

Cell materials	Yes (indicate where provided: section/paragraph)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	Methods/paragraph 1.	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	Methods/paragraph 1.	

Experimental animals	Yes (indicate where provided: section/paragraph)	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	We didn't use animals.	N/A
Animal observed in or captured from the field: Provide species, sex and age where possible	We didn't use animals.	N/A
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	We didn't use animals.	N/A

Plants and microbes	Yes (indicate where provided: section/paragraph)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)	We didn't use plants and microbes.	N/A
Microbes: provide species and strain, unique accession number if available, and source	We didn't use plants and microbes.	N/A

Human research participants	Yes (indicate where provided: section/paragraph)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	We didn't use human research participants.	N/A
Provide statement confirming informed consent obtained from study participants.	We didn't use human research participants.	N/A
Report on age and sex for all study participants.	We didn't use human research participants.	N/A

Design

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

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	We described the detailed protocol in the "Methods" section/ Paragraph 1-8.	N/A

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.	We didn't carry out the following issues.	
Sample size determination	We didn't carry out the following issues.	N/A
Randomisation	We didn't carry out the following issues.	N/A
Blinding	We didn't carry out the following issues.	N/A
Inclusion/exclusion criteria	We didn't carry out the following issues.	N/A

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	In the "Methods" section/ Paragraph 8.	
Define whether data describe technical or biological replicates	In the "Methods" section/ Paragraph 8.	

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.	This study didn't involve human participants.	N/A
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	This study didn't involve experimental animals.	N/A
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	This study didn't involve specimen and field samples.	N/A

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	This study is not subject to dual use research of concern.	N/A

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.	This study didn't refer to sample or data point from the analysis.	N/A

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Methods/paragraph 8.	

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.	Footnote/paragraph 3.	
If data are publicly available, provide accession number in repository or DOI or URL.	All raw data are included in the manuscript.	N/A
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	All raw data are included in the manuscript.	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:	This study didn't refer to newly generated code and software essential for replicating the main findings.	N/A
State whether the code or software is available.	This study didn't refer to newly generated code and software essential for replicating the main findings.	N/A
If code is publicly available, provide accession number in repository, or DOI or URL.	This study didn't refer to newly generated code and software essential for replicating the main findings.	N/A

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 recommendations for publication.	

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