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	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	Yes，provided in the Methods/ The first paragraph	

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

Experimental animals	Yes (indicate where	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		There is no animal experiments in this paper.
Animal observed in or captured from the field: Provide species, sex and age where possible		There is no animal experiments in this paper.
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		There is no animal experiments in this paper.

Plants and microbes	Yes (indicate where	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)		There are no plant-related experiments in this paper.
Microbes: provide species and strain, unique accession number if available, and source		There are no microbes-related experiments in this paper.

Human research participants	Yes (indicate where	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Yes，provided in the Methods/ The second paragraph	
Provide statement confirming informed consent obtained from study participants.	yes	
Report on age and sex for all study participants.	Yes，provided in the Methods/ The second paragraph	

Design

Study protocol	Yes (indicate where	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		Clinical trials are not involved in the article.

Laboratory protocol	Yes (indicate where	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	Yes， provided in the Methods/ The fifth paragraph	

Experimental study design (statistics details)	Yes (indicate where	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination	Yes， provided in the Methods/ The 7-11 paragraphs	
Randomisation	Yes， provided in the Methods/ The second paragraph	
Blinding		It was not carried out.
Inclusion/exclusion criteria	Yes， provided in the Methods/ The second paragraph	

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	Yes, triplicate, provide in the Methods/ the 2-11 paragraphs	
Define whether data describe technical or biological replicates	Yes, Biological replicates	

Ethics	Yes (indicate where	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Yes， provided in the Methods/ The second paragraph	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		The research does not involve animal experiments.
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		There were no field samples in this study

Dual Use Research of Concern (DURC)	Yes (indicate where	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval		Not involved

Analysis

Attrition	Yes (indicate where	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.	Yes， provided in the Methods/ The second paragraph	

Statistics	Yes (indicate where	n/a
Describe statistical tests used and justify choice of tests.	Yes， provided in the Methods/ The Statistical	

Data Availability	Yes (indicate where	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	yes	
If data are publicly available, provide accession number in repository or DOI or URL.		Without public data
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		Without public data

Code Availability	Yes (indicate where	n/a
For all newly generated code and software essential for replicating the main findings of the study:		No new code or software was used in this study.
State whether the code or software is available.		No new code or software was used in this study.
If code is publicly available, provide accession number in repository, or DOI or URL.		No new code or software was used in this study.

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.	

Article information: https://dx.doi.org/10.21037/atm-21-4652