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.		n/a，this research is not involved in the antibodies.

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,		n/a，this research is not involved in the cell materials.
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		n/a，this research is not involved in the cell materials.

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		n/a，this research is not involved in the experimental animals.
Animal observed in or captured from the field: Provide species, sex and age where possible		n/a，this research is not involved in the experimental animals.
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		n/a，this research is not involved in the experimental animals.

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)		n/a，this research is not involved in the plants.
Microbes: provide species and strain, unique accession number if available, and source		n/a，this research is not involved in the microbes.

Human research participants	Yes (indicate where	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		n/a，this research is not involved in the clinical trial.
Provide statement confirming informed consent obtained from study participants.		n/a，this research is not involved in the clinical trial.
Report on age and sex for all study participants.		n/a，this research is not involved in the clinical trial.

Design

Study protocol	Yes (indicate where provided:	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		n/a，this research is not involved in the clinical trial.

Laboratory protocol	Yes (indicate where provided:	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		n/a，this research is not involved in the clinical trial.

Experimental study design (statistics details)	Yes (indicate where provided:	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination		n/a，this research is not involved in the clinical trial.
Randomisation		n/a，this research is not involved in the
Blinding		n/a，this research is not involved in the clinical trial
Inclusion/exclusion criteria		n/a，this research is not involved in the clinical trial.

Sample definition and in-laboratory replication	Yes (indicate where provided:	n/a
State number of times the experiment was replicated in laboratory	Section:Methods,paragraph:Fluores	
Define whether data describe technical or biological replicates	Section:Methods,paragraph:Fluorescence analysis of RCA	

Ethics	Yes (indicate where provided:	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，this research is not involved in the human participants.
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		n/a，this research is not involved in the experimental animals.
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	Section:Ethical Statement	

Dual Use Research of Concern (DURC)	Yes (indicate where provided:	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, this study is not subject to dual use research of concern.

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.		n/a,this study is not involved in the sample or data point, the criteria for exclusion.

Statistics	Yes (indicate where	n/a
Describe statistical tests used and justify choice of tests.	Methods,paragraph:Data analysis:Results,paragraph:Detection performance the method	

Data Availability	Yes (indicate where	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.		n/a,this study is not involved in the newly created datasets.
If data are publicly available, provide accession number in repository or DOI or URL.		n/a,this study is not involved in the publicly available data.
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		n/a,this study is not involved in the publicly available data.

Code Availability	Yes (indicate where	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.		n/a,this study is not involved in the newly generated code or software.
If code is publicly available, provide accession number in repository, or DOI or URL.		n/a,this study is not involved in the newly generated code or software.

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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