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 article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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		N/A， this article is a bioinformatics analysis, does not involve animals and human experiments, the main data
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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 article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Animal observed in or captured from the field: Provide species, sex and age where possible		n/a, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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 article is a bioinformatics analysis, does not involve animals and human clinical data or experiments, the main data comes from published literature.
Microbes: provide species and strain, unique accession number if available, and source		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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 article is a bioinformatics analysis, does not involve animals and human
Provide statement confirming informed consent obtained from study participants.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

Report on age and sex for all study participants.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

Design

Study protocol	**Yes (indicate where**	**n/a**
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

Laboratory protocol	**Yes (indicate where**	**n/a**
Provide DOI or other citation details if detailed step-by-step protocols are available.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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.	A summary of the following steps is shown in Fig. 1	
Sample size determination		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Randomisation		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Blinding		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Inclusion/exclusion criteria	Methods section, paragraph 2.	

Sample definition and in-laboratory replication	**Yes (indicate where**	**n/a**
State number of times the experiment was replicated in laboratory		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

Define whether data describe technical or biological replicates		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.
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, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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		N/A, this article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

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 article is a bioinformatics analysis, does not involve animals and human experiments, the main data comes from published literature.

Statistics	Yes (indicate where	n/a
Describe statistical tests used and justify choice of tests.	Please see Statistical Analysis in this article.	

Data Availability	Yes (indicate where	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	Yes, please see the additional tables in this article.	
If data are publicly available, provide accession number in repository or DOI or URL.	Yes, please see the additional tables in this	
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	Yes, please see the additional tables in this article.	

Code Availability	Yes (indicate where	n/a
For all newly generated code and software essential for replicating the main findings of the study:		N/A. In this article, we only use the existing published software.
State whether the code or software is available.		N/A. In this article, we only use the existing published software.
If code is publicly available, provide accession number in repository, or DOI or URL.		N/A. In this article, we only use the existing published 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.		N/A
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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