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.		n/a

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		n/a
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		n/a

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		n/a
Animal observed in or captured from the field: Provide species, sex and age where possible		n/a
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		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)		n/a
Microbes: provide species and strain, unique accession number if available, and source		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.	Yes. (section: Ethics approval and informed consent, page 11, line: 394-398). See supplement file: Ethics approval documents	
Provide statement confirming informed consent obtained from study participants.	Yes. (section: Ethics approval and informed consent, page 11, line: 394-398). See supplement file: Ethics	
Report on age and sex for all study participants.	Yes, see file: Table1 Patient clinical information	

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

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	Yes. (Line: 103-193.)	

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	Yes. (section: 2.1 Study Population. page4, line: 104-110)	
Randomisation		n/
Blinding		n/
Inclusion/exclusion criteria	Primary lung adenocarcinoma and lung adenocarcinoma bone metastasis in Xuanwei, China (page 4).	

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. We collect 3 cases of primary lung adenocarcinoma (P1-P3) and 3 cases of lung adenocarcinoma bone metastasis for RNA-seq. And the qRT-PCR verification experiment was repeated three times.	
Define whether data describe technical or biological replicates	The RNA-seq experiment is biological replicates. And the qrt-pcr experiment is technical repeat.	

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.	Yes. All human tissues experiments involved in our study were approved by the Institutional Ethics Committee of the Third Affiliated Hospital of Kunming Medical University (Yunnan Cancer Hospital). (section: Ethics approval and informed consent, line: 394-398). See supplement file: Ethics approval documents	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		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.	Yes. All human tissues experiments involved in our study were approved by the Institutional Ethics Committee of the Third Affiliated Hospital of Kunming Medical University (Yunnan Cancer Hospital). (section: Ethics approval and informed consent, line: 394-398). See supplement file: Ethics approval documents	

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

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.	Yes. To acquire the clean reads from the RNA sequencing results of lncRNA and mRNA, we used cutadapt and Fastx-Toolkit to remove lower quality sequences, including adapter sequences, sequences with mass fraction <20 and sequences with N base rates of raw reads >10% and sequence less than 18bp. (section: 2.4 MiRNA and lncRNA sequencing and data processing, page 5, line: 134-148). But for circRNA sequencing results, we removed low quality reads using software SOAPnuke. (section: 2.5 CircRNA library construction, sequencing and data processing. Page 5, line: 150-163).	

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Yes, different analyses had different statistical tests such as (section: 2.3 MiRNA library construction, sequencing and data processing, line: 118-132; 2.4 MiRNA and lncRNA sequencing and data processing, line: 134-148; 2.5 CircRNA library construction, sequencing and data processing, line: 150-163; 2.6 Functional analysis of DEmRNAs and DEncRNAs, line: 165-174)	

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.	Yes. (section: Availability of supporting data, page12, line: 403-405)	
If data are publicly available, provide accession number in repository or DOI or URL.	Yes. (section: Availability of supporting data, page12, line: 403-405)	
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.	Yes. All code and software used in our study are available. (page 5, section: 2.3 MiRNA library construction, sequencing and data processing; 2.4 MiRNA and lncRNA sequencing and data processing; 2.5 CircRNA library construction, sequencing and data processing; 2.6 Functional analysis of DEmRNAs and DEncRNAs; 2.7 Analysis of the ceRNA regulatory network)	
If code is publicly available, provide accession number in repository, or DOI or URL.	Yes, the data that support the findings of this study are available from the corresponding author upon reasonable request.	

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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