

## **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](https://doi.org/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.

**For all that apply, please note where in the manuscript the required information is provided.**

**Materials:**

<b>Newly created materials</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
The manuscript includes a dedicated "materials availability statement" providing transparent disclosure about availability of newly created materials including details on how materials can be accessed and describing any restrictions on access.	Acknowledgments P.27 – Data and materials availability	
<b>Antibodies</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
For commercial reagents, provide supplier name, catalogue number and <a href="#">RRID</a> , if available.	Materials and Methods P.9 – Preparation and culture of mouse oocytes and follicles P.10 – Preparation of bovine and porcine oocytes P.10 – Immunofluorescence P.11 – mRNA fluorescence in situ hybridization (FISH) P.11 – Single-molecule fluorescence in situ hybridization (smFISH) P.12 – Proximity ligation assay (PLA) P.12 – Expression constructs, mRNA synthesis, protein expression, and purification P.14 – Short-interfering RNAs P.14 – Microinjection of mouse oocytes P.14 – Confocal microscopy P.15 – Electron microscopy and immuno-gold labeling P.15 – In vitro phase separation assay P.16 – Vital stain labeling and drug treatment P.16 – Trim-Away in mouse oocytes P.17 – RNA sequencing and data analysis P.17 – RT-qPCR P.18 – Immunoblotting P.18 – In vitro phosphorylation assay P.18 – Mass spectrometry analysis	
<b>DNA and RNA sequences</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
<b>Short novel DNA or RNA including primers, probes:</b> Sequences should be included or deposited in a public repository.	Materials and Methods P.11 – mRNA fluorescence in situ hybridization (FISH) P.11 – Single-molecule fluorescence in situ hybridization (smFISH) P.14 – Short-interfering RNAs Supplementary Materials Data S5 Data S6	
<b>Cell materials</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
<b>Cell lines:</b> Provide species information, strain. Provide accession number in repository <b>OR</b> supplier name, catalogue number, clone number, <b>OR</b> RRID.		N/A
<b>Primary cultures:</b> Provide species, strain, sex of origin, genetic modification status.	Materials and Methods P.9 – Preparation and culture of mouse oocytes and follicles P.10 – Preparation of bovine and porcine oocytes P.10 – Source of human oocytes	
<b>Experimental animals</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>

<b>Laboratory animals or Model organisms:</b> Provide species, strain, sex, age, genetic modification status. Provide accession number in repository <b>OR</b> supplier name, catalog number, clone number, <b>OR</b> RRID.	Materials and Methods P.9 – Preparation and culture of mouse oocytes and follicles	
<b>Animal observed in or captured from the field:</b> Provide species, sex, and age where possible.		N/A

<b>Plants and microbes</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
<b>Plants:</b> provide species and strain, ecotype and cultivar where relevant, unique accession number if available, and source (including location for collected wild specimens).		N/A
<b>Microbes:</b> provide species and strain, unique accession number if available, and source.	Materials and Methods P.12 – Expression constructs, mRNA synthesis, protein expression, and purification	

<b>Human research participants</b>	<b>indicate where provided: page no/section/legend) or state if these demographics were not collected</b>	<b>n/a</b>
If collected and within the bounds of privacy constraints report on age, sex and gender or ethnicity for all study participants.	Materials and Methods P.10 – Source of human oocytes Female 30 – 40 years old	

## Design:

<b>Study protocol</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
If study protocol has been pre-registered, provide DOI. For clinical trials, provide the trial registration number <b>OR</b> cite DOI.		N/A

<b>Laboratory protocol</b>	<b>indicate where provided: page no/section/legend)</b>	<b>n/a</b>
Provide DOI <b>OR</b> other citation details if detailed step-by-step protocols are available.	Materials and Methods P.16 – Trim-Away in mouse oocytes DOI: 10.1038/s41596-018-0028-3	

<b>Experimental study design (statistics details)</b>		
<b>For in vivo studies:</b> State whether and how the following have been done	<b>indicate where provided: page no/section/legend. If it could have been done, but was not, write not done</b>	<b>n/a</b>
Sample size determination	Materials and Methods P.21 – Statistical analysis	
Randomisation	Materials and Methods P.21 – Statistical analysis	
Blinding	Materials and Methods P.21 – Statistical analysis	
Inclusion/exclusion criteria		N/A

<b>Sample definition and in-laboratory replication</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
State number of times the experiment was replicated in laboratory.	P.21 – Statistical analysis	
Define whether data describe technical or biological replicates.	P.28 – Fig. 1 legend P.29 – Fig. 2 legend P.30 – Fig. 3 legend P.31 – Fig. 4 legend P.32 – Fig. 5 legend P.33 – Fig. 6 legend P.34 – Fig. 7 legend Supplementary Materials P.3 – Fig. S1 legend P.7 – Fig. S3 legend P.11 – Fig. S5 legend P.15 – Fig. S7 legend P.17 – Fig. S8 legend P.21 – Fig. S10 legend P.23 – Fig. S11 legend P.25 – Fig. S12 legend P.29 – Fig. S14 legend P.31 – Fig. S15 legend	

<b>Ethics</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
<b>Studies involving human participants:</b> State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Materials and Methods P.10 – Source of human oocytes	
<b>Studies involving experimental animals:</b> State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Materials and Methods P.9 – Preparation and culture of mouse oocytes and follicles	
<b>Studies involving specimen and field samples:</b> State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		N/A

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<b>Dual Use Research of Concern (DURC)</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
If study is subject to dual use research of concern regulations, state the authority granting approval and reference number for the regulatory approval.		N/A

## **Analysis:**

<b>Attrition</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Describe whether exclusion criteria were preestablished. Report if sample or data points were omitted from analysis. If yes report if this was due to attrition or intentional exclusion and provide justification.		N/A

<b>Statistics</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Describe statistical tests used and justify choice of tests.	Materials and Methods P.21 – Statistical analysis	

<b>Data availability</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
For newly created and reused datasets, the manuscript includes a data availability statement that provides details for access or notes restrictions on access.	Acknowledgments P.27 – Data and materials availability	
If newly created datasets are publicly available, provide accession number in repository <b>OR</b> DOI <b>OR</b> URL and licensing details where available.	Acknowledgments P.27 – Data and materials availability GEO accession number: GSE213351	
If reused data is publicly available provide accession number in repository <b>OR</b> DOI <b>OR</b> URL, <b>OR</b> citation.	Materials and Methods P.17 – RNA sequencing and data analysis DOI: 10.1093/nar/gkaa010 (GEO accession number: GSE135525) DOI: 10.1126/sciadv.abj3967	

<b>Code availability</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
For all newly generated custom computer code/software/mathematical algorithm or re-used code essential for replicating the main findings of the study, the manuscript includes a data availability statement that provides details for access or notes restrictions.		
If newly generated code is publicly available, provide accession number in repository, <b>OR</b> DOI <b>OR</b> URL and licensing details where available. State any restrictions on code availability or accessibility.		N/A
If reused code is publicly available provide accession number in repository <b>OR</b> DOI <b>OR</b> URL, <b>OR</b> citation.		N/A

## **Reporting**

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.

<b>Adherence to community standards</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
State if relevant guidelines (e.g., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (e.g., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.		N/A