

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.

Materials

Antibodies	Yes (indicate where provided: page no/section/legend)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	Yes, Materials and Methods (pages 13-16) and Table S7	
Cell materials	Yes (indicate where provided: page no/section/legend)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository OR supplier name, catalog number, clone number, OR RRID	1) The <i>Ixodes scapularis</i> embryo-derived tick cell line ISE6, as detailed doi: 10.1006/jipa.1996.0050 2) Chinese Hamster Ovary Cell Line, ATCC, PTA-3765	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		n/a
Experimental animals	Yes (indicate where provided: page no/section/legend)	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	Yes, Materials and Methods (section <i>Bacteria, mice, and ticks</i> , page 13)	
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: page no/section/legend)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location)		n/a
Microbes: provide species and strain, unique accession number if available, and source	<i>Borrelia burgdorferi</i> and <i>Anaplasma phagocytophilum</i> ; see Materials and Methods (section <i>Bacteria, mice, and ticks</i> , page 13), and as detailed doi: 10.1016/j.chom.2016.06.001 and doi: 10.1038/ncomms14401	
Human research participants	Yes (indicate where provided: page no/section/legend)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		n/a
Provide statement confirming informed consent obtained from study participants.		n/a
Report on age and sex for all study participants.		n/a

Design

Study protocol	Yes (indicate where provided: page no/section/legend)	n/a
For clinical trials, provide the trial registration number OR cite DOI in manuscript.		n/a
Laboratory protocol	Yes (indicate where provided: page no/section/legend)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		n/a
Experimental study design (statistics details)	Yes (indicate where provided: page no/section/legend)	n/a
State whether and how the following have been done, or if they were not carried out.	Yes, Materials and Methods	
Sample size determination	The sample size for each of the experiments was determined based on parallel studies in the field, including ours (doi: 10.1016/j.chom.2016.06.001; doi: 10.1038/s41598-021-85624-5; doi: 10.1074/jbc.M113.538272), in accordance with the common practice to generate statistically meaningful data, as appropriate.	
Randomisation	All experimental studies were carried out in a randomized order, such as for control and experimental groups to avoid biased outcomes.	
Blinding	All microscopic analyses were performed in a double-blinded manner to avoid biased outcomes.	
Inclusion/exclusion criteria	A very limited set of dsRNA-microinjected ticks that either failed to display RNAi-induced knockdown or that were dead or moribund were excluded from analysis.	
Sample definition and in-laboratory replication	Yes (indicate where provided: page no/section/legend)	n/a
State number of times the experiment was replicated in laboratory	Yes, Materials and Methods (pages 13-17) and figure legends (page 22-30)	
Define whether data describe technical or biological replicates	Yes, biological replicates: detailed in figure legends (page 22-30)	
Ethics	Yes (indicate where provided: page no/section/legend)	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
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	All animal experiments were performed in accordance with the ethical and animal care guidelines approved by the University of Maryland Institutional Animal Care and Use Committee (IACUC) and the Institutional Biosafety Committee (IBC), as stated in the Materials and Methods section of the manuscript (Page 13). IACUC approval number (and date): R-APR-19-19 (approved 04/19/2019) and R-APR-22-19 (approved 04/08/2022). IBC approval number (and date): PN 223 (12/12/2018)	
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
Dual Use Research of Concern (DURC)	Yes (indicate where provided: page no/section/legend)	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: page no/section/legend)	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.	A very limited set of dsRNA-microinjected ticks that either failed to display RNAi-induced knockdown or that were dead or moribund were excluded from analysis.	
Statistics	Yes (indicate where provided: page no/section/legend)	n/a
Describe statistical tests used and justify choice of tests.	Yes, Materials and Methods (page 17)	
Data Availability	Yes (indicate where provided: page no/section/legend)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	All data are available in the manuscript and supplementary materials.	
If data are publicly available, provide accession number in repository or DOI or URL.		n/a
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		a/a
Code Availability	Yes (indicate where provided: page no/section/legend)	n/a
For all newly generated code and software essential for replicating the main findings of the study:		n/a
State whether the code or software is available.		n/a
If code is publicly available, provide accession number in repository, or DOI or URL.		n/a

Reporting

Adherence to community standards	Yes (indicate where provided: page no/section/legend)	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.		n/a