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):* | n/a |
|------------|----------------------------------|-----|
| For commercial reagents, provide supplier name, catalogue number and RRID, if available. | Methods section: Immunofluorescence and ELISA |

| Cell materials | Yes *(indicate where provided):* | n/a |
|----------------|----------------------------------|-----|
| Cell lines: Provide species information, strain. Provide accession number in repository OR supplier name, catalog number, clone number, OR RRID | √ No cell lines were used. |
| Primary cultures: Provide species, strain, sex of origin, genetic modification status. | Supplementary Table 2 |

| Experimental animals | Yes *(indicate where provided):* | 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 | √ No animals were used. |
| Animal observed in or captured from the field: Provide species, sex and age where possible | √ No animals were used. |
| Model organisms: Provide Accession number in repository (where relevant) OR RRID | √ No model organisms were used. |

| Plants and microbes | Yes *(indicate where provided):* | n/a |
|---------------------|----------------------------------|-----|
| Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens) | √ No plants were used. |
| Microbes: provide species and strain, unique accession number if available, and source | √ No microbes were used. |

| Human research participants | Yes *(indicate where provided):* | n/a |
|-----------------------------|----------------------------------|-----|
| Identify authority granting ethics approval (IRB or equivalent committee(s)), provide reference number for approval. | Methods section: Study subjects and materials |
| Provide statement confirming informed consent obtained from study participants. | Methods section: Study subjects and materials |
| Report on age and sex for all study participants. | Supplementary Table 1 |
## Design

| Study protocol | Yes (indicate where provided): | n/a |
|----------------|--------------------------------|-----|
| For clinical trials, provide the trial registration number OR cite DOI in manuscript. | | √ This is not a trial. |

| Laboratory protocol | Yes (indicate where provided): | n/a |
|---------------------|-------------------------------|-----|
| Provide DOI or other citation details if detailed step-by-step protocols are available. | Methods section: M5 data analysis | |

| 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 | Methods section: Study subjects and materials | |
| Randomisation | | √ No randomization was used. |
| Blinding | | √ No blinding was used. |
| Inclusion/exclusion criteria | Methods section: Study subjects and materials | |

| Sample definition and in-laboratory replication | Yes (indicate where provided): | n/a |
|-------------------------------------------------|--------------------------------|-----|
| State number of times the experiment was replicated in laboratory | Figure Legends | |
| Define whether data describe technical or biological replicates | Figure Legends | |

| 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. | Methods section: Study subjects and materials | |
| Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s)), provide reference number for approval. | | √ No animals were used. |
| Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why. | | √ No specimens or field samples were used. |

| 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 | | √ No dual use was applicable. |
### Analysis

| Attrition | Yes (indicate where provided): | 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. | Methods section: Study subjects and materials | |

| Statistics | Yes (indicate where provided): | n/a |
|------------|--------------------------------|-----|
| Describe statistical tests used and justify choice of tests. | Methods section: MS data analysis and Statistical analysis | |

| Data Availability | Yes (indicate where provided): | n/a |
|-------------------|--------------------------------|-----|
| State whether newly created datasets are available, including protocols for access or restriction on access. | Methods section: MS data analysis and Supplementary Data 1 and 2 | |
| If data are publicly available, provide accession number in repository or DOI or URL. | URL | |
| If publicly available data are reused, provide accession number in repository or DOI or URL, where possible. | ✓ No reused data. | |

| Code Availability | Yes (indicate where provided): | n/a |
|-------------------|--------------------------------|-----|
| For all newly generated code and software essential for replicating the main findings of the study: | ✓ No new code was used. | |
| State whether the code or software is available. | ✓ No new code was used. | |
| If code is publicly available, provide accession number in repository, or DOI or URL. | ✓ No new code was used. | |

### 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 (e.g., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (e.g., CONSORT, PRISMA, ARRIVE) is provided with the manuscript. | ICMJE guidelines were followed, as the journal follows ICMJE recommendations for publication. | |

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