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

| Category                      | Requirement | Indicates Where Provided | n/a |
|-------------------------------|-------------|--------------------------|-----|
| Antibodies                    | Yes         | (indicate where provided: section/paragraph) | n/a |
| For commercial reagents       |             | Yes (materials & methods / paragraph 2, line 121 & paragraph 4, line 134, 140-142 & paragraph 5, line 149-151 & paragraph 8, line 169, 170, 176-178, 180-182) | |
| Cell lines                    |             | No cell lines used       | n/a |
| Primary cultures              |             | No cultures used         | n/a |
| Experimental animals          | Yes         | (indicate where provided: section/paragraph) | n/a |
| Laboratory animals            |             | No laboratory animals used | n/a |
| Animal observed in or captured from the field | No laboratory animals used | n/a |
| Model organisms               |             | No model organisms used  | n/a |
| Plants and microbes           | Yes         | (indicate where provided: section/paragraph) | n/a |
| Plants                        |             | No plants used           | n/a |
| Microbes                      |             | No microbes used         | 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 (materials & methods/ paragraph 1, line 115-117) | |
| Provide statement confirming informed consent obtained from study participants. | Yes (materials & methods/ paragraph 1, line 113-114) | |
| Report on age and sex for all study participants. | In vitro study using discarded tissue. No necessity to disclose such information. | n/a |
## Design

|                                      | Yes (indicate where provided: section/paragraph) | n/a |
|--------------------------------------|-------------------------------------------------|-----|
| **Study protocol**                   |                                                 |     |
| For clinical trials, provide the trial registration number OR cite DOI in manuscript. | No clinical trials | n/a |
| **Laboratory protocol**              |                                                 |     |
| Provide DOI or other citation details if detailed step-by-step protocols are available. | No laboratory protocols | n/a |
| **Experimental study design (statistics details)** |                                                 |     |
| State whether and how the following have been done, or if they were not carried out. | Yes (see below) |     |
| Sample size determination            | Materials & methods/paragraph 11, line 214-217 |     |
| Randomisation                        | Materials & methods/paragraph 2, line 118-119   |     |
| Blinding                             | Materials & methods/paragraph 10, line 202      |     |
| Inclusion/exclusion criteria         | No samples were excluded in this study.         | n/a |
| **Sample definition and in-laboratory replication** |                                                 |     |
| State number of times the experiment was replicated in laboratory | Yes (Figure legends / Fig 1, line 533; Fig 2, line 537; Fig 3, line 547; Fig 4 line 552-556) |     |
| Define whether data describe technical or biological replicates | No data describing technical or biological replicates | n/a |
| **Ethics**                           |                                                 |     |
| Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval. | Yes (material & methods/paragraph 1, line 115-117) |     |
| Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval. | No animals studied | 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. | No field samples | n/a |
| **Dual Use Research of Concern (DURC)** |                                                 |     |
| 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 research | 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. | No data excluded | n/a |

### Statistics
| Yes (indicate where provided: section/paragraph) | n/a |
|-----------------------------------------------|-----|
| Describe statistical tests used and justify choice of tests. | Yes (materials & methods/paragraph 11&12, line 210-220) | n/a |

### 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. | No new data sets | n/a |
| If data are publicly available, provide accession number in repository or DOI or URL. | No publicly available data | n/a |
| If publicly available data are reused, provide accession number in repository or DOI or URL, where possible. | No reuse of publicly available data | 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: | No new code generated, no software used | n/a |
| State whether the code or software is available. | No new code or software | n/a |
| If code is publicly available, provide accession number in repository, or DOI or URL. | No new code | n/a |

## 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. | ICMJE guidelines were followed as the journal follows ICMJE guidelines for publication. |
| 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. | |

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