

## **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.	Details are provided in the section "materials availability statement"	
<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 <u>RRID</u> , if available.	Details are provided in the Supplementary Materials - Materials and Methods - Immunofluorescence / Immunohistochemistry	
<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.		/
<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, catalog number, clone number, <b>OR</b> RRID.		/
<b>Primary cultures:</b> Provide species, strain, sex of origin, genetic modification status.		/
<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.	Details are provided in the Supplementary Materials - Materials and Methods - Animals	
<b>Animal observed in or captured from the field:</b> Provide species, sex, and age where possible.		/
<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).		/
<b>Microbes:</b> provide species and strain, unique accession number if available, and source.		/
<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.	Details are provided in the Supplementary Materials - Materials and Methods - Human participants	

**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.		/

<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.		/

<b>Experimental study design (statistics details)</b>		
<b>For in vivo studies: State whether and how the following have been done</b>	<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	Information are provided in the Materials and Methods - Study Design Sample sizes were determined on the basis of prior studies or power calculation. Specific sample sizes and replicates for each experiment are provided in the corresponding figure legends or in Materials and Methods.	
Randomisation		/
Blinding	Information are provided in the Materials and Methods - Study Design (not done)	
Inclusion/exclusion criteria	Information are provided in the Materials and Methods - Study Design No data were excluded from the analyses, other than those that were justified for the study in $\alpha$ SYN(A30P) mouse model. See also Fig. S9B.	

<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.	Information are provided in figure legends	
Define whether data describe technical or biological replicates.	Information on technical or biological replicates are provided in figure legends	

<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.	Details are provided in the Supplementary Materials - Materials and Methods	
<b>Studies involving experimental animals:</b> State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Details are provided in the Supplementary Materials - Materials and Methods	
<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.		/

<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.		/

**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.	No data were excluded from the analyses, other than those that were justified for the study in $\alpha$ SYN(A30P) mouse model based on immunohistochemistry analysis. See Fig. S9B.	

<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.	Details are provided in the Materials and Methods - Statistical Analysis, and the statistical tests used are specified in the figure legends.	

<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.	Details are provided in the section “materials availability statement”	
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.	Details are provided in the section “materials availability statement”	
If reused data is publicly available provide accession number in repository <b>OR</b> DOI <b>OR</b> URL, <b>OR</b> citation.		/

<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.		/
If reused code is publicly available provide accession number in repository <b>OR</b> DOI <b>OR</b> URL, <b>OR</b> citation.		/

## **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.		/

## **Clinical Studies**

<b>Adherence to clinical standards</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
State if relevant checklists are provided in the supplementary materials e.g., CONSORT for randomized controlled clinical trials, TREND for non randomized studies, REMARK for tumor prognostic studies, BRISQ for human biospecimens. Confirm that a CONSORT flow diagram is in Figure 1	(not applicable – the first-in-human imaging study was conducted following the regulations of the German Medicinal Products Act (“Arzneimittelgesetz” AMG §13(2b)))	/

<b>Clinical Trial Registration</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Confirm that the clinical trial was pre-registered (before patient enrollment) and provide clinical trial registration number from ClinicalTrials.gov or other national registry	(not applicable – the first-in-human imaging study was conducted following the regulations of the German Medicinal Products Act (“Arzneimittelgesetz” AMG §13(2b)))	/

<b>Ethics</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Confirm that informed consent was obtained from all human participants and state the details of the IRB or other authority granting ethics approval including approval reference number	Informed consents were obtained – Details are provided in the Supplementary Materials - Materials and Methods (IRB/ethics approval not applicable – the first-in-human imaging study was conducted following the regulations of the German Medicinal Products Act (“Arzneimittelgesetz” AMG §13(2b)))	

<b>Demographics Reporting</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Study should follow authoritative standards for reporting demographics data. Descriptors for any demographic identities should be clear, unbiased, and up-to-date.		/

<b>Identifiable images</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Authors should remove information from patient photographs that could be used to identify the patient. Where this is not possible, a written release from the patient must be provided.		/

<b>Data Access</b>	<b>indicate where provided: page no/section/legend</b>	<b>n/a</b>
Confirm that de-identified human data collected for the study will be made available to researchers/clinicians after publication. Confirm that		

the manuscript includes a Data and Materials Availability statement that provides details regarding data access or states restrictions on data access. If access to data is subject to a data transfer agreement (DTA) or data use agreement (DUA) provide a link to DTA/DUA or provide a copy of the DTA/DUA (which may be included as a supplementary materials file). If there are restrictions on data access, provide a statement regarding which data are restricted and the nature of the restriction.

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