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Template for a *Hypothesis Description* paper

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Abstract

Hypothesis Descriptions are a type of manuscript dedicated to the formal description of a hypothesis, as introduced in an accompanying editorial and an examplary *Hypothesis Description* for the Enemy Release Hypothesis that is used in invasion biology. This questionnaire provides a template for such a *Hypothesis Description* manuscript. The template's format was designed for simplicity to facilitate adoption, and it can be easily extended to capture additional information, e.g. instructions for falsification or generalization, taxonomic or geographic scope, etymology, or relevant information in other research fields or other languages. The template reflects the recommended structure for a *Hypothesis Description* manuscript in that each of its sections provides the title for a section in a *Hypothesis Description* manuscript and indicates whether that section is mandatory or optional. Four sections - Keywords (mandatory), Conflicts of interest (optional), Acknowledgments (optional) and References (mandatory) - are in this template filled in for the template itself but should otherwise be adjusted for the hypothesis at hand. Comments to guide authors who work on a *Hypothesis Description* manuscript are provided as well.

Keywords

formalization, formalized hypotheses, manuscript template

Title

This section is mandatory.

It has to be the name of the hypothesis, e.g. "Enemy Release Hypothesis", prefixed by "Hypothesis Description:".

Author(s)

This section is mandatory.

It should list the author(s) of the *Hypothesis Description* paper with their affiliation(s).

Abstract

This section is mandatory.

It should provide a short outline of the paper's content.

Introduction

This section is mandatory.

It should provide a general introduction, e.g. to the research question(s) this hypothesis is connected to. This introduction should be helpful for understanding the scope of the hypothesis.

For this template, relevant background information can be found in the editorial that introduces *Hypothesis Descriptions* (Mietchen et al. 2024) and the accompanying example of a *Hypothesis Description* for the Enemy Release Hypothesis (Heger et al. 2024). A blank and editable version of the template is provided in Suppl. material 1.

General information

Hypothesis name

This section is mandatory.

It should just contain the plain name of the hypothesis.

Synonym(s)

This section is optional.

It offers the possibility to provide additional names that are in use for the same hypothesis.

Acronym(s)

This section is optional.

It offers the possibility to provide abbreviations that are used for the hypothesis.

Identifier(s)

This section is optional.

It offers the possibility to provide identifiers for the hypothesis, e.g. in Wikidata or some ontology, to enhance machine readability.

Domains that make use of this hypothesis

This section is mandatory.

List specific research fields that deal with this hypothesis, along with any information that helps to decide whether a particular type of research is in scope of this hypothesis. If possible, provide Wikidata or other identifiers for these research fields.

Reviews and meta-analyses

This section is optional.

Possibility to provide a list of reviews and meta-analyses on the hypothesis, ideally providing the method how they were found.

Related hypotheses

This section is optional.

It provides the possibility to list hypotheses that are similar to the focal hypothesis. For example and as outlined in Heger et al. (2024), hypotheses listed as 'related' to the enemy release hypothesis are the resource-enemy release hypothesis and the evolution of increased competitive ability (EICA) hypothesis. Both build on the enemy release hypothesis but are statements referring to different mechanisms.

Hypothesis definition(s)

This section is mandatory.

It should contain textual hypothesis statement(s) in the version proposed by the author(s), or proposed by original author(s) - in the latter case, please provide this as a textual

citation (with English translation as needed). Be sure to give information on the used name, the year in which the definition was published, and a reference; if there are several definitions, please provide this information as a table.

Formalized representation of hypothesis variants

This section is optional.

It provides the possibility to include a table showing formalized representations of different versions of the hypothesis, providing them as triples in the form 'subject - relationship - object', including information on the type of hypothesis (causal, comparative, other), where it has been described, and linked identifiers. Ideally, the relationship would be represented using the Super-Pattern Ontology (https://larahack.github.io/linkflows_superpattern/doc/sp/index-en.html), as described in Bucur et al. (2021).

Outlook

This section is optional.

It could contain suggestions on how the information provided in this publication might enhance future research or applications.

Acknowledgments

This section is optional.

It can, for example, be used to provide information on funding sources and contributors that are not co-authors.

Nanopublications

This section is optional.

It can be used to provide a table with nanopublications related to this publication.

References

This section is mandatory.

It should list the cited literature, if possible with identifiers like Digital Object Identifier (DOI), International Standard Book Number (ISBN) or Wikidata.

Conflicts of interest

This section is optional.

It should outline conflicts of interests as well as circumstances that could be construed as such with respect to the given manuscript.

Disclaimer: This article is (co-)authored by any of the Editors-in-Chief, Managing Editors or their deputies in this journal.

References

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- Heger T, Zarrieß S, Algergawy A, Jeschke J, König-Ries B (2022) INAS: Interactive Argumentation Support for the Scientific Domain of Invasion Biology. Research Ideas and Outcomes 8 https://doi.org/10.3897/rio.8.e80457
- Heger T, Jeschke J, Bernard-Verdier M, Musseau C, Mietchen D (2024) Hypothesis Description: Enemy Release Hypothesis. Research Ideas and Outcomes 10 https://doi.org/10.3897/rio.10.e107393
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Supplementary material

Suppl. material 1: Template for a Hypothesis Description paper `doi`

Authors: Tina Heger, Daniel Mietchen, Jonathan M. Jeschke
Data type: OpenDocument Format
Brief description: Blank version of the template with brief instructions.
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