

COB: A Core Ontology for Biology and Biomedicine

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Abstract

The OBO Foundry is a community organization of ontology developers that aims to support the development, harmonization, application, and sharing of an interoperable set of ontologies. The OBO Foundry principles are a defined set of guidelines that enable these aims. The OBO operations group has steadily worked towards making these principles (or parts thereof) computationally operational. The outcome of the computationally enforceable translation of the OBO principles saves a great deal of expert volunteer time and promotes greater adherence by individual ontologies (Jackson et al., 2021). However, the OBO principle for ‘interoperability’ is not easy to computationally check for. While it is possible to check for logical compatibility between ontologies, that is insufficient, as different ontologies can simply avoid ‘talking to each other’ and falsely seem compatible, by using distinct relations and classes.

To address this issue, we created the Core Ontology for Biology and Biomedicine (COB), which provides a set of classes and relations that all OBO ontologies should be built upon and compatible with. COB extends on BFO, which provides a domain-neutral high-level set of classes. Specifically, COB was designed to 1) provide a direct parent to every top-level OBO ontology class; 2) be anchored in Basic Formal Ontology (BFO), but hide its complexity from end-users; and 3) include logical axioms that make inconsistencies within and between OBO ontologies apparent through reasoning. Here we report on our current progress on COB, the methods used to test for COB compatibility of an OBO ontology, and the remaining gaps in COB class coverage that reveal existing inconsistencies between OBO ontologies. COB is available from <https://obofoundry.org/COB/>.

Keywords

ontology, interoperability, reasoning

1. References

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