

ONTOLOGY RESOURCES FOR THE BIOMEDICAL COMMUNITY

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The National Center for Biomedical Ontology is producing **resources** and **tools** to enable researchers effectively access, manage, and use biomedical knowledge in electronic form. A key resource that the Center is producing is **Open Biomedical Ontologies (OBO)**, a comprehensive, online library of open-content ontologies and controlled terminologies. The Center is also developing a tool called **BioPortal**, a suite of Web services enabling both human users and computer-based agents to access the rich content in the OBO library.

OBO has been initially populated using the content currently hosted on sourceforge. We have also implemented the first version of the BioPortal system. BioPortal provides an interface enabling users to browse large ontology libraries and to view their contents according to categories of ontologies. BioPortal also collects and displays metadata describing the ontologies, including the type of ontology, its name and format, whether it is part of OBO Foundry, the current version number, and status.

We have been conducting research and development to create tools that will be incorporated into BioPortal to enhance the ability of researchers to access and use ontologies in their work:

- ***Methods for accessing ontologies and their contents:*** We are developing algorithms to map database entries to terms in ontologies to create annotations on data. These methods will permit researchers to apply ontology-based annotation to their existing raw data.
- ***Methods for navigating large, complex ontologies:*** We have created an approach to use biomedical images for navigating large ontologies. Images at multiple biological scales are used to restrict the scope of large ontologies to that subset of classes with which the images are associated.
- ***Methods for using ontology content in applications:*** We are developing applications that use ontology-based annotations to organize, visualize, and navigate biomedical databases. We have used our methods to navigate and visualize data in the Stanford Tissue Microarray Database.
- ***Methods for relating different ontologies and terminologies to one another and for creating mappings among them:*** We are extending the PROMPT tool for Protégé to align ontologies and to visualize mapping and versions of ontologies. We are also using ontology-based annotations on biomedical data to align related ontologies.
- ***Ontology metadata and services to support peer-review and ontology development:*** We are developing methods to collect feedback and critiques of ontology design and associate them directly to the applicable classes and relations in the ontology. We are also creating a Web of Trust platform to support a community-driven peer review process for evaluating and improving the biomedical ontologies in OBO.

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