



# TUTORIAL F

## ICBO: International Conference on Biomedical Ontology

### From OBO to OWL and Back: An Approach to Building Scalable Ontologies

July 27, 2011 ▪ 12:30pm - 4:00pm

#### Instructors:

David Osumi-Sutherland  
Christopher Mungall

#### Workshop Venue:

Marriott Buffalo Niagara, 1340 Millersport Highway ▪ Amherst, New York 14221  
Room: Salon E / 2nd Floor

#### Objective / Background

Building scalable, maintainable ontologies requires the use of reasoning. In particular, maintaining multiple axes of classification by hand quickly becomes impractical. A much more scalable approach is to assert only a single classification for each class and infer additional classifications using a reasoner.

The ontology language OWL 2 is ideal for this approach, as it allows expressive logical definitions of terms for use by a range of fast and well-tested reasoners. But many bio-ontologists find the OBO ontology format and its associated editor, OBO-Edit more convenient to work with. In addition, many major databases currently require completely classified ontologies in OBO format.

Recent improvements in OBO to OWL mapping specifications and tools make lossless conversion between OBO and OWL easy. This tutorial will focus on how to use these tools, along with OBO-Edit, to build scalable ontologies in OBO while using OWL reasoners and tools such as Protege 4 to test ontologies as you build them and make pre-classified release versions. For some it may be a step to moving from OBO to OWL completely, for others this approach can provide the best of both worlds.

#### Intended Audience

This half-day, hands-on tutorial is suitable for those new to ontology or experienced ontologists currently working in OBO format. Attendees are required to bring laptops and install specified software. Details of the software to install and their configuration along with test ontologies to download can be found at:

[http://www.bioontology.org/wiki/index.php?title=From\\_OBO\\_to\\_OWL\\_and\\_back](http://www.bioontology.org/wiki/index.php?title=From_OBO_to_OWL_and_back)

**PLEASE NOTE:** *It is essential that you download the software and test ontologies before the tutorial. While there will be WIFI access in the meeting room, you should not assume it will be reliable or fast enough to download this material.*

The test ontology is based around a draft new release of the CARO upper anatomy ontology and an extension to it, FUNCARO, for classifying anatomical structures by function.

Those of you not familiar with OWL2 and Protégé 4 may wish to try the popular [Protégé Pizza tutorial](#). The [OWL-2 Primer](#) provides an accessible introduction to the language. It is best viewed by choosing to show examples in Manchester syntax and hide other syntaxes (configured [here](#):). Slides used in the tutorial will be posted closer to the date. In the meantime, these [slides from an older version of the tutorial](#) may be useful in understanding the relationship of OBO to OWL. These slides also outline some of the more advanced features of OBO-Edit.

#### Preparatory Reading

- [OWL 2 primer](#)
- [Protege Pizza tutorial](#)
- Rector, A. 2003 [Modularisation of Domain Ontologies Implemented in Description Logics and related formalisms including OWL](#). Proc. K-CAP:ACM: p. 121-129.
- Smith et al., 2005 [Relations in biomedical ontologies](#). Genome Biol vol. 6 (5) pp. R46



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## PROGRAM

**12:30pm Registration**

**1:00pm Introduction**

- What do OBO ontologies mean? – OBO as a dialect of OWL
- Building scalable ontologies – Why we need reasoning
- Reasoning examples
- Other useful tools that require OWL

**1:45pm Setup and Testing**

While we would like all participants to set up software and run some basic tests before the tutorial, we appreciate that some attendees may hit bugs and problems installing and setting up. This slot is set aside for dealing with these issues.

**2:00pm Working with the Test Ontology**

- Converting and viewing an OBO ontology in OWL
- Querying in Protégé 4
- Key reasoning examples
- OBO to OWL roundtrips with reasoning can produce pre-reasoned release versions of OBO ontologies

**3:00pm Users add their own terms or work through pre-prepared exercises.**

**4:00pm Conclusion of Tutorial**