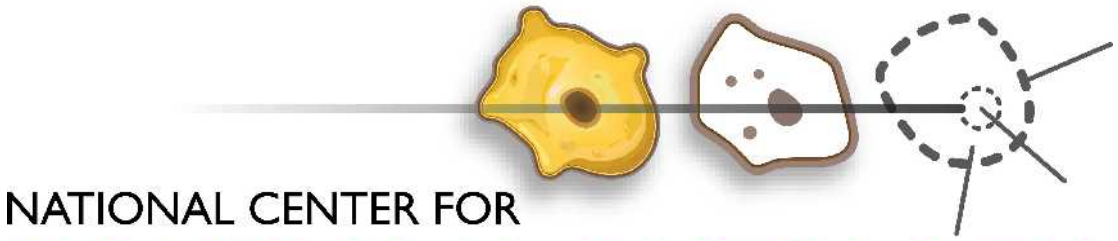
The National Center for Biomedical Ontology

Mark A. Musen

Stanford University



Search GO:

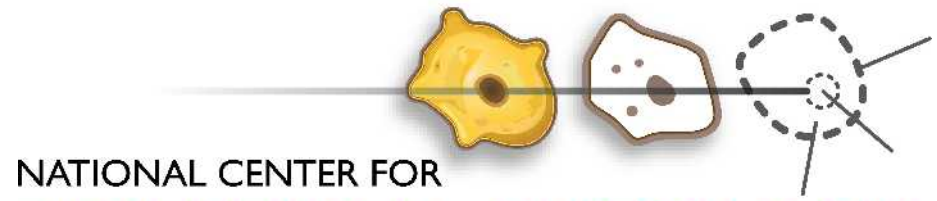
Terms Gene Products

Top Docs Gene Ontology GO Links GO Summary

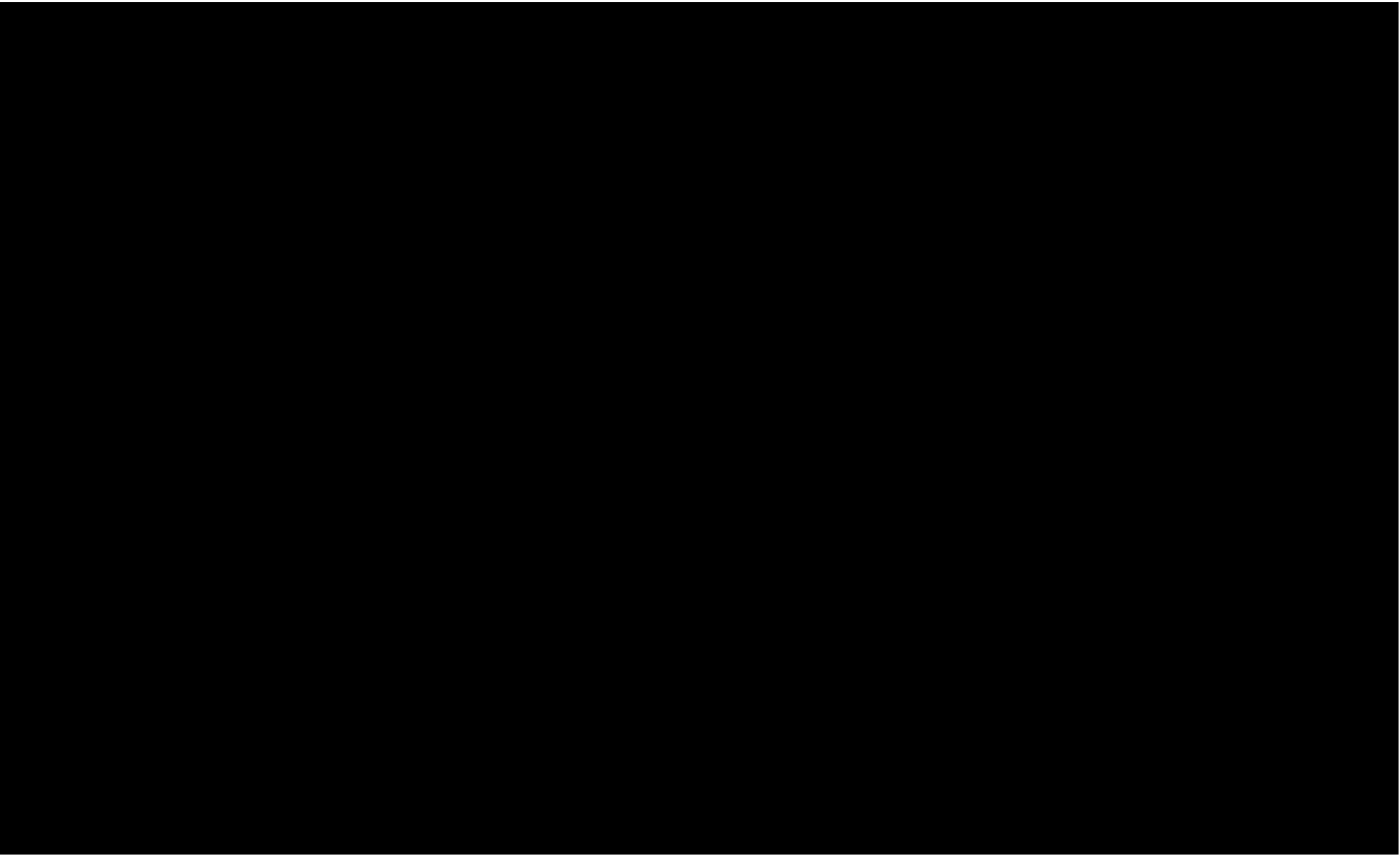
- **GO:0003673 : Gene Ontology (92932)**
  - **GO:0008150 : biological process (56952)**
    - GO:0007610 : behavior (566)
    - GO:0000004 : biological process unknown (6152)
    - **GO:0007154 : cell communication (11916)**
      - GO:0007155 : cell adhesion (830)
      - GO:0030260 : cell invasion (0)
      - GO:0008037 : cell recognition (210)
      - **GO:0007267 : cell-cell signaling (1318)**
        - GO:0045168 : cell-cell signaling involved in cell fate commitment (0)
        - **GO:0030072 : peptide hormone secretion (6)**
          - GO:0030252 : growth hormone secretion (2)
          - GO:0030073 : insulin secretion (4)
          - GO:0030103 : vasopressin secretion (2)
        - GO:0019226 : transmission of nerve impulse (688)
      - GO:0030383 : host-pathogen interaction (12)

The National Center for Biomedical Ontology

- One of three National Centers for Biomedical Computing launched by NIH in 2005
- Collaboration of Stanford, Berkeley, Mayo, Buffalo, Victoria, UCSF, Oregon, and Cambridge
- Primary goal is to make ontologies accessible and usable
- Research will develop technologies for ontology indexing, alignment, and peer review



A Portion of the OBO Library



Ontologies

View By: Category

Select item and ... | Download | Visualize | Submit Ontology

Expand All | Collapse All

Ontologies

Select	Focus	Ontology	Knowledge Representation Language	Foundry	Current Version	Release Date	Version Status
		Ontologies					
	⌖	Anatomy					
○		BRENDA tissue / enzyme source	OBO Text	No	1.1	5/3/2006	Production
○		Cell type	OBO Text	Yes	1.1	5/3/2006	Pre-Production
○		Drosophila gross anatomy	OBO Text	Yes	1.1	5/3/2006	Production
○		Mosquito gross anatomy	OBO Text	No	1.1	5/3/2006	Production
	⌖	Gross Anatomy					
	⌖	Animal Gross Anatomy					
	⌖	Fish Anatomy					
○		Medaka fish anatomy and development	OBO Text	Yes	1.1	5/3/2006	Pre-Production
○		Zebrafish anatomy and development	OBO Text	Yes	1.1	5/3/2006	Production
	⌖	Human Developmental Anatomy					
○		Human developmental anatomy, abstract version	OBO Text	Yes	1.1	5/3/2006	Production
○		Human developmental anatomy, timed version	OBO Text	Yes	1.1	5/3/2006	Production
	⌖	Mouse Anatomy					
○		Mouse gross anatomy and development	OBO Text	Yes	1.1	5/3/2006	Production
○		Mouse adult gross anatomy	OBO Text	Yes	1.1	5/3/2006	Production
	⌖	Microbial Anatomy					
○		Dictyostelium discoideum anatomy	OBO Text	Yes	1.1	5/3/2006	Pre-Production
○		Fungal gross anatomy	OBO Text	Yes	1.1	5/3/2006	Production
	⌖	Plant Anatomy					
○		Maize gross anatomy	OBO Text	Yes	1.1	5/3/2006	Pre-Production
○		Cereal plant gross anatomy	OBO Text	Yes	1.1	5/3/2006	Retired
	⌖	Chemical					

View details of the current ontology.

Other Center Activities

- Biological Driving Projects that will use BioPortal ontologies to annotate biomedical data
- Collaborating projects that will use BioPortal ontologies for
  - natural-language processing
  - information integration
  - data and knowledge visualization
- Outreach activities to help different communities to build better ontologies and to utilize the Center's technology

Are we addressing the right questions?

- No one has done a requirements analysis for biomedical informatics
- Centers were selected by peer review of proposals, not programmatic determination to cover the waterfront
- Lots of stuff is missing
  - Grid computing
  - Data integration
  - Natural-language processing
  - Et cetera

What are we missing?

- Ontology content
- Ontology content
- Ontology content
- Ontology content

What are the prime areas for collaboration?

- Activities that can stimulate NCBC technology development
- Technology development that can contribute to NCBC core mission
- Biomedical research that can inter-relate NCBC technology
- Becoming a Driving Biological Project

What is NCBO seeking in collaboration?

- Ontology management, visualization, alignment, annotation, peer-review
- Biolomedical research projects that dependent critically on the Center's technology—particularly in *new* application areas such as
  - Natural-language processing
  - Decision support
  - Data integration
  - Et cetera