# Editing the Gene Ontology

Midori A. Harris
GO Editorial Office
EBI, Hinxton, UK


# GO Editorial Office

People:

Midori Harris, Jane Lomax,

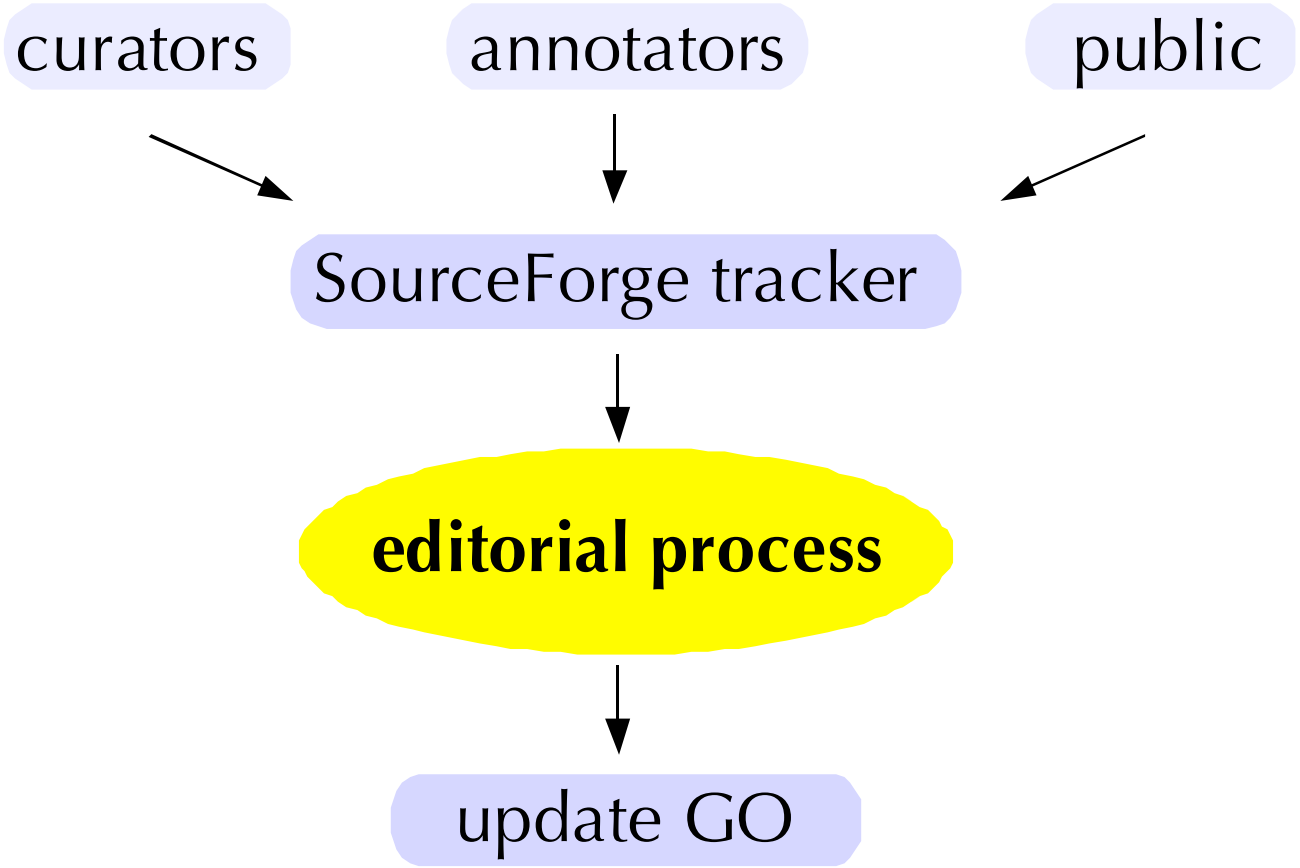
Amelia Ireland, Jennifer Clark

Activities:

- GO content: Coordinate all changes
- Maintain web pages, including documentation
- Conferences & workshops

# GO Editorial Procedure

## Overview

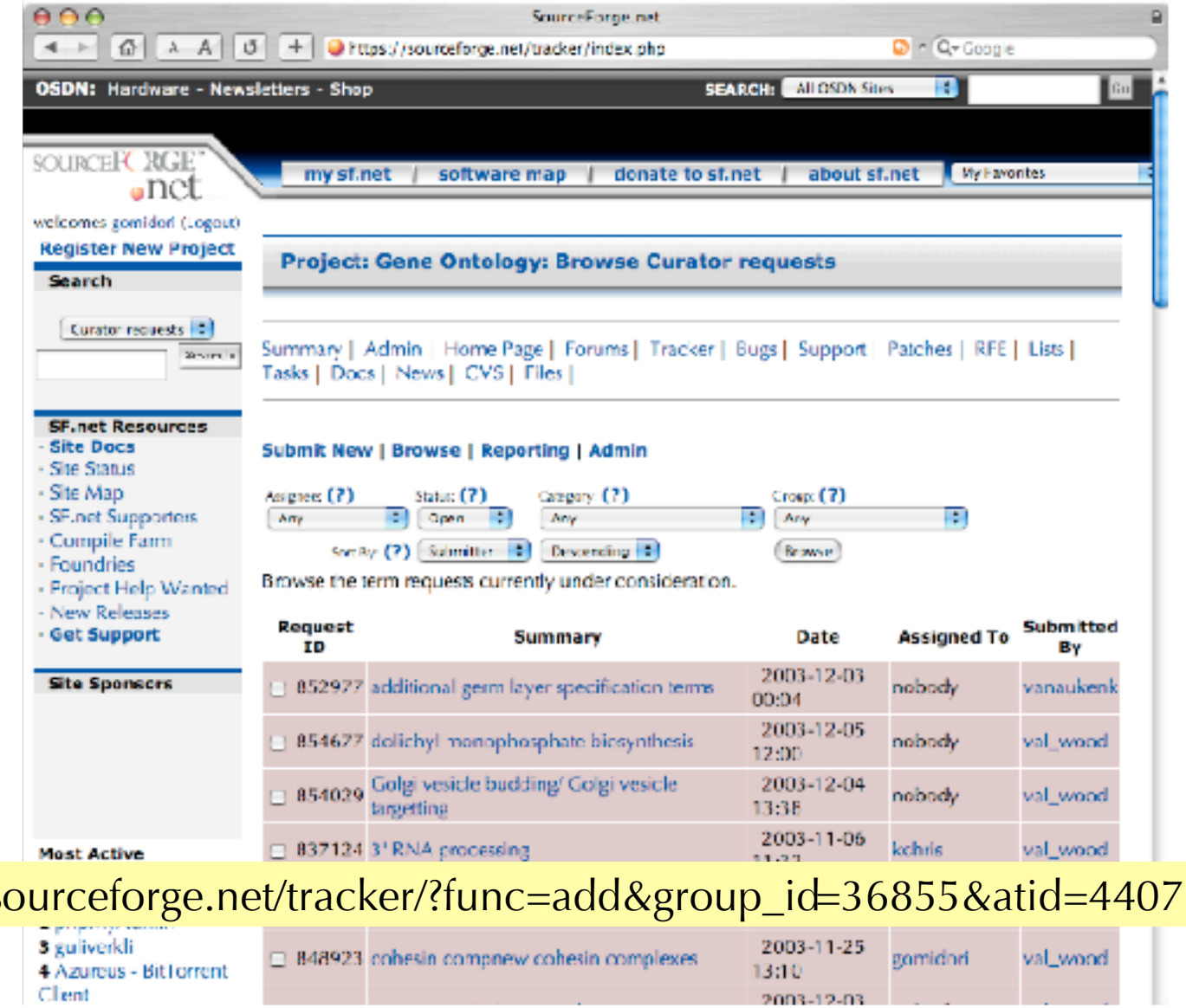



# SourceForge Tracker

- Item for every proposed change
- Submissions from curators, annotators, others
- Each item assigned to a curator
- Submitters and others can comment on items
- Records discussions and progress
- Archive of all entries

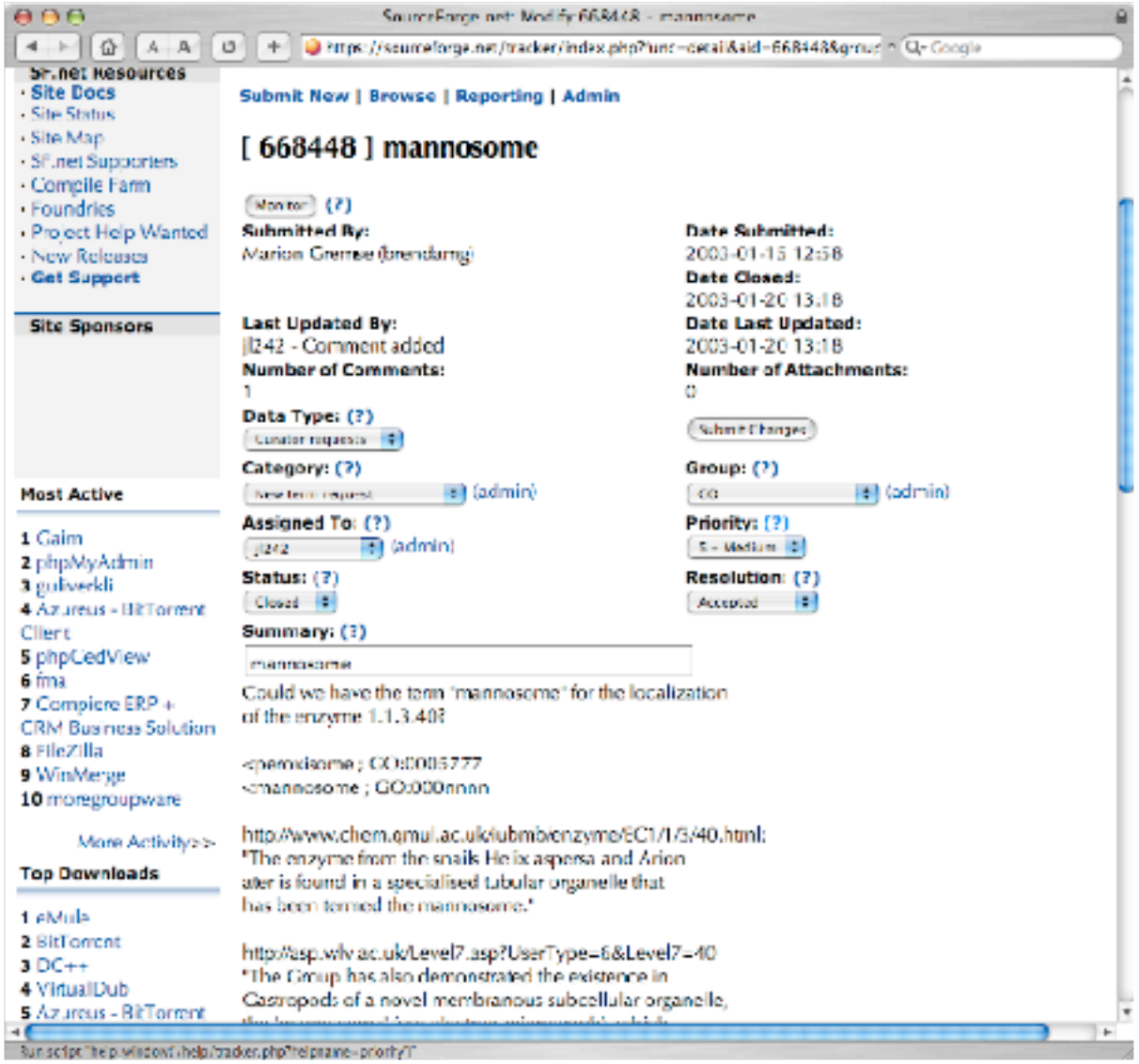
https://sourceforge.net/tracker/?func=add&group_id=36855&atid=440764

# SourceForge Tracker




https://sourceforge.net/tracker/?func=add&group_id=36855&atid=440764

# SourceForge Request




# GO Editorial Procedure

- Claim SourceForge item
- Consider:
  - does the term belong in GO?
  - term name & definition
    - standard wording?
  - relationships to other terms
- Consult literature, interest group, other curators & researchers as needed


# GO Editorial Results 1

Easy items:

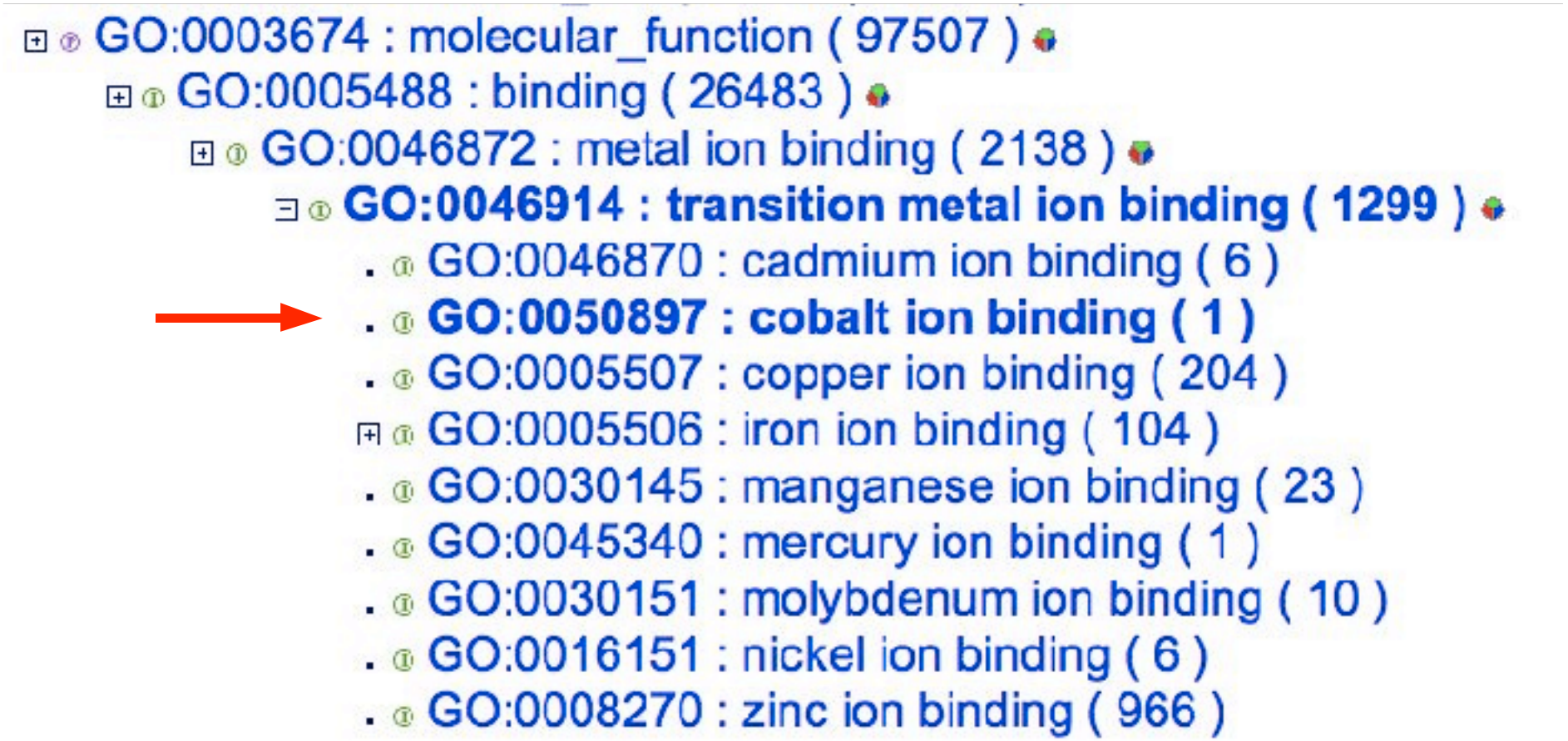
- Unambiguous request
- Clear term name(s) and meaning(s)
- Clear relationships to other terms

Curators make the change(s) at once

Example: cobalt ion binding

(SourceForge entry **896544**)

# Cobalt ion binding




AmiGO tree view

# GO Editorial Results 2

Moderately difficult items:

- Some aspect of request requires clarification
- Different proposals to be resolved

Discussion via SourceForge comments and email before curators make change(s)

Example: fore-, mid-, hindbrain development
(SourceForge entry 854736)

# Brain development

- Original request: add forebrain development
- Additional requests: midbrain development
  hindbrain development
- Question: How complicated must the DAG structure be? Do we need *sensu* terms?

Existing DAG:

```
(i) organogenesis ; GO:0009887
   (i)neurogenesis ; GO:0007399
      (p)central nervous system development ; GO:0007417
         (p)brain development ; GO:0007420
            (p)central complex development ; GO:0048036
            (p)mushroom body development ; GO:0016319
```


# Brain development

Simple structure option (no *sensu* terms)

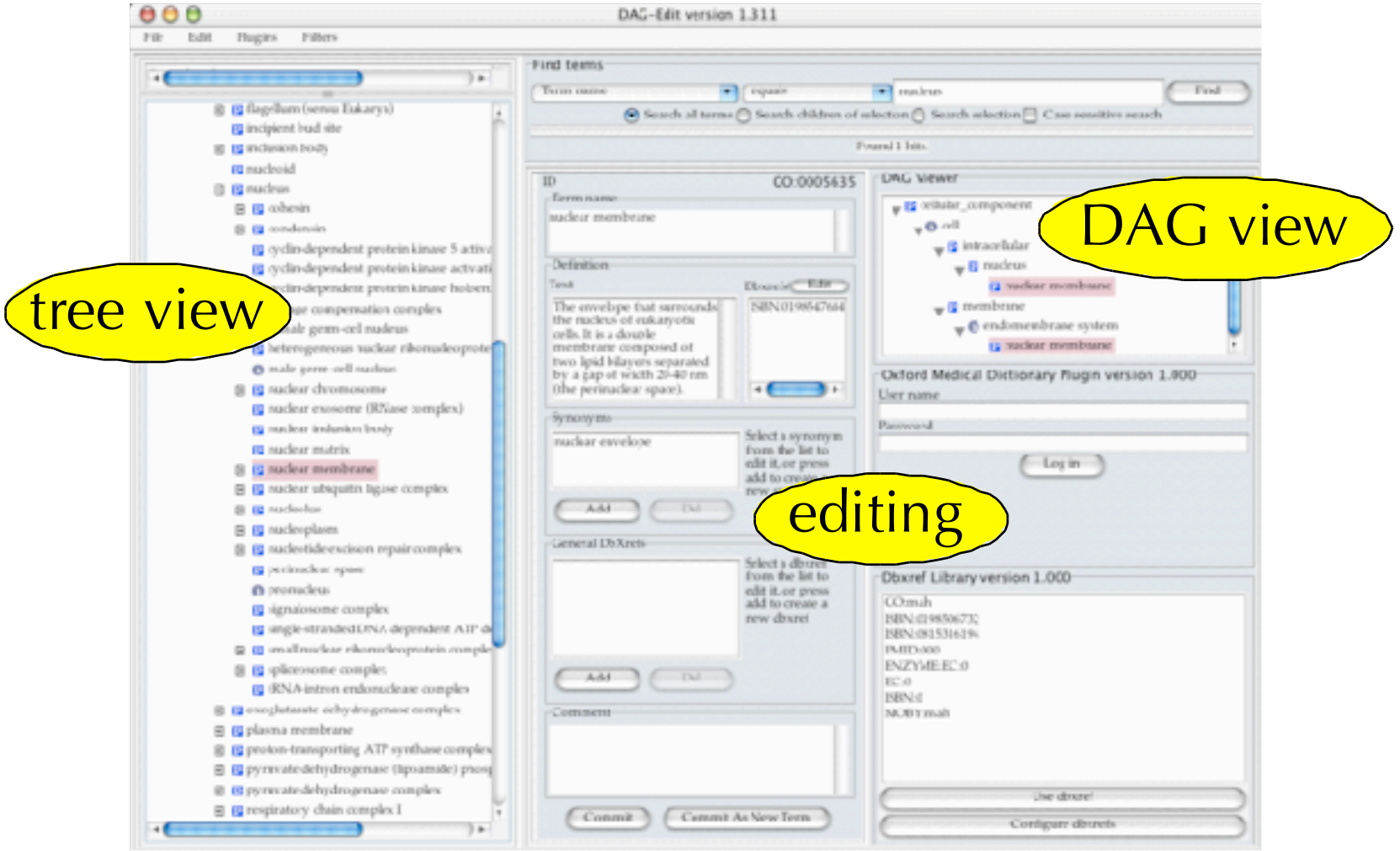
```
(i) organogenesis ; GO:0009887
   (i)neurogenesis ; GO:0007399
      (p)central nervous system development ; GO:0007417
         (p)brain development ; GO:0007420
            (p)forebrain development ; GO:new
            (p)midbrain development ; GO:new
            (p)hindbrain development ; GO:new
            (p)central complex development ; GO:0048036
            (p)mushroom body development ; GO:0016319
```


# Brain development

More complex structure, with
'*sensu* Chordata' and '*sensu* Insecta'

```
...
(i)neurogenesis
   (p)central nervous system development ; GO:0007417
      (p)brain development ; GO:0007420
         (i)brain development (sensu Chordata); GO:new
            (p)forebrain development ; GO:new
            (p)midbrain development ; GO:new
            (p)hindbrain development ; GO:new
         (i)brain development (sensu Insecta) ; GO:new
            (p)central complex development ; GO:0048036
            (p)mushroom body development ; GO:0016319
```

# DAG-Edit


DAG-Edit version 1.311
File
Edit
Plugins
Filters
Find terms
Find
Found 1 hits.
ID
GO:0005635
nuclear membrane
Definition
The envelope that surrounds the nucleus of eukaryotic cells. It is a double membrane composed of two lipid bilayers separated by a gap of width 20-40 nm (the perinuclear space).
ISBN:0198547684
Synonyms
nuclear envelope
Add
General DbXrefs
Add
Comment
Commit
Commit As New Term
DAG Viewer
cellular_component
cell
intracellular
nucleus
nuclear membrane
membrane
endomembrane system
nuclear membrane
Oxford Medical Dictionary Plugin version 1.000
User name
Password
Log in
Dbxref Library version 1.000
Use dbxref
Configure dbxrefs
tree view
DAG view
editing

# Brain development

Present solution: simpler structure


AmiGO tree view


# GO Editorial Results 3

Very difficult items:

- Challenging biology to model
- Extensive change in ontology structure or interpretation

Protracted discussion via SourceForge comments and email; resolve at face-to-face meeting

Example: cell killing & pathogenesis

(SourceForge entry 900600 & >30 emails)


# Pathogenesis & cell killing

Discussion if time permits ...


# SourceForge Statistics

May 5, 2004

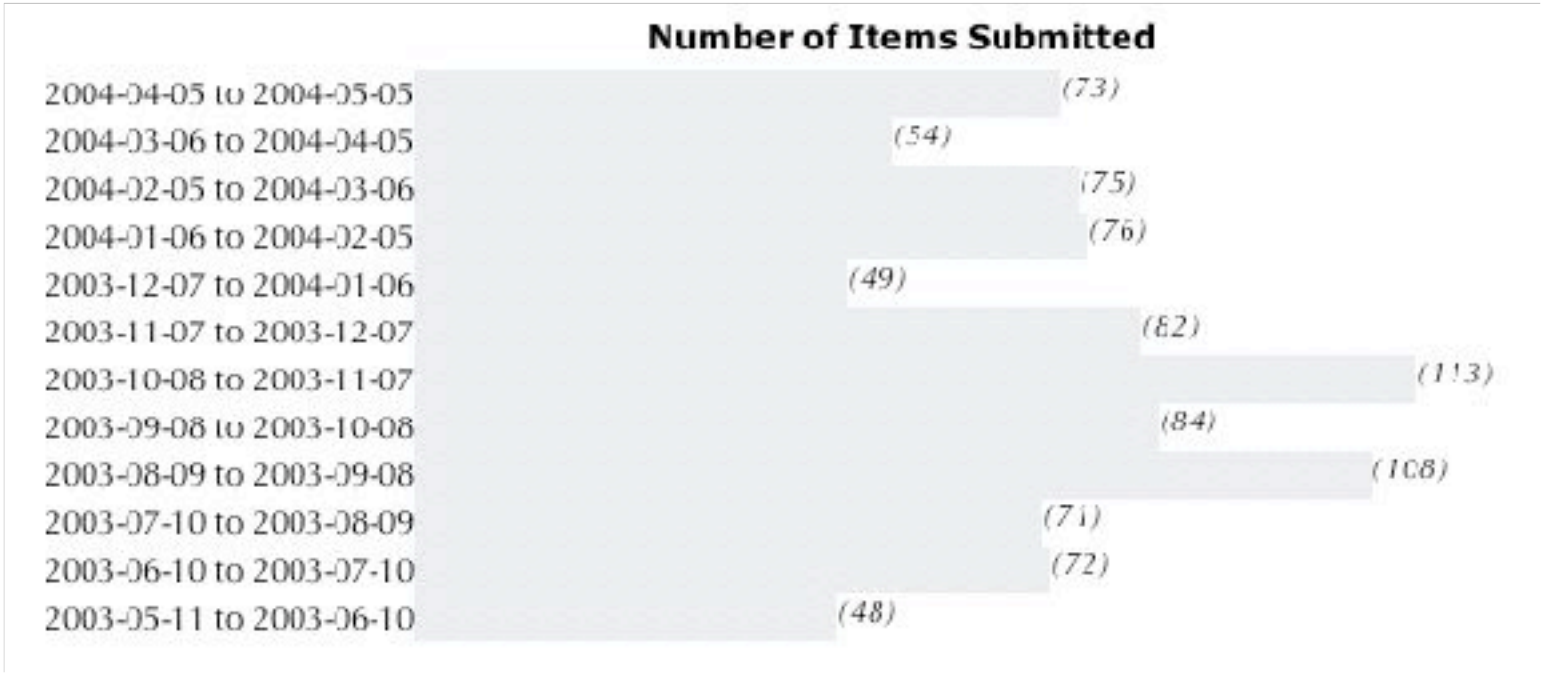
- 143 items open
- 1715 total

Reporting available online:

https://sourceforge.net/tracker/reporting/?group_id=36855&atid=440764

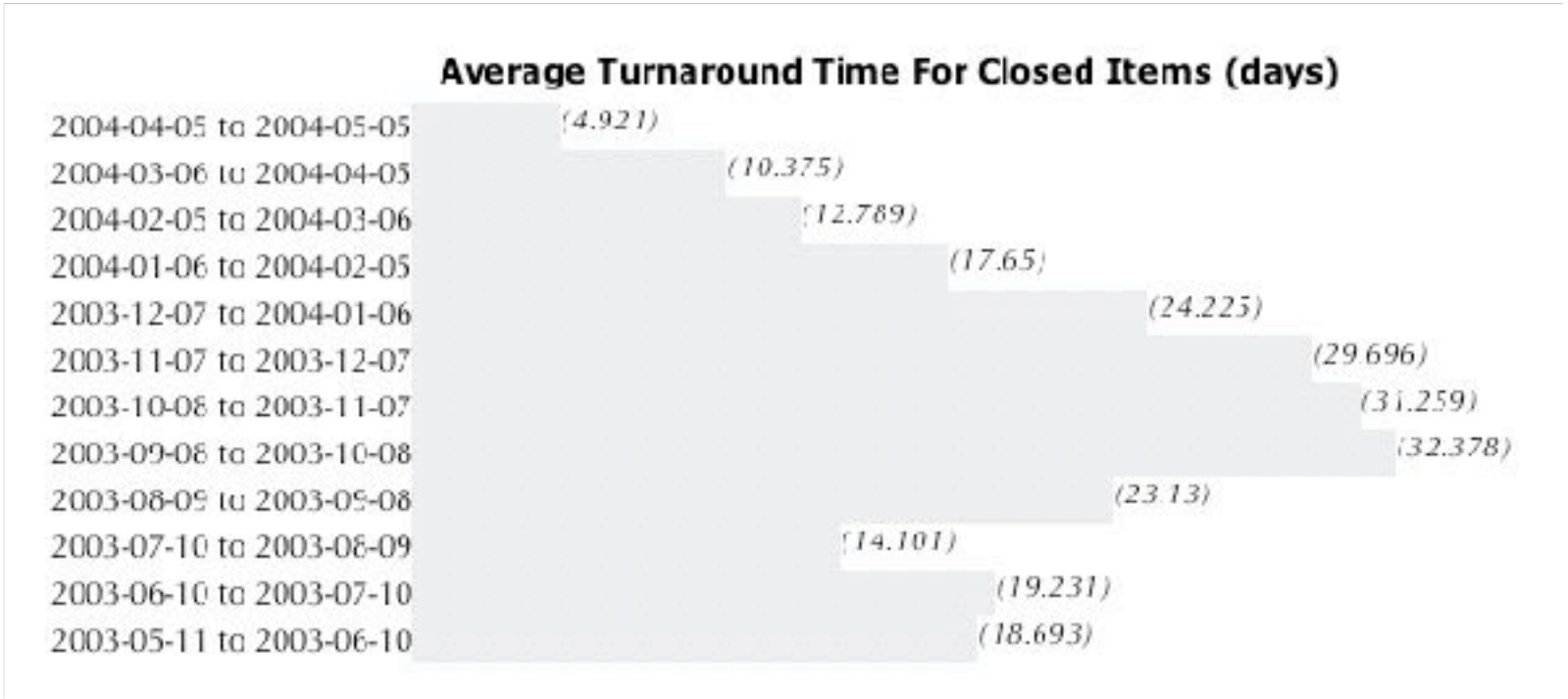
# SourceForge Statistics

Aging report: items submitted per month



# SourceForge Statistics

Aging report: turnaround time

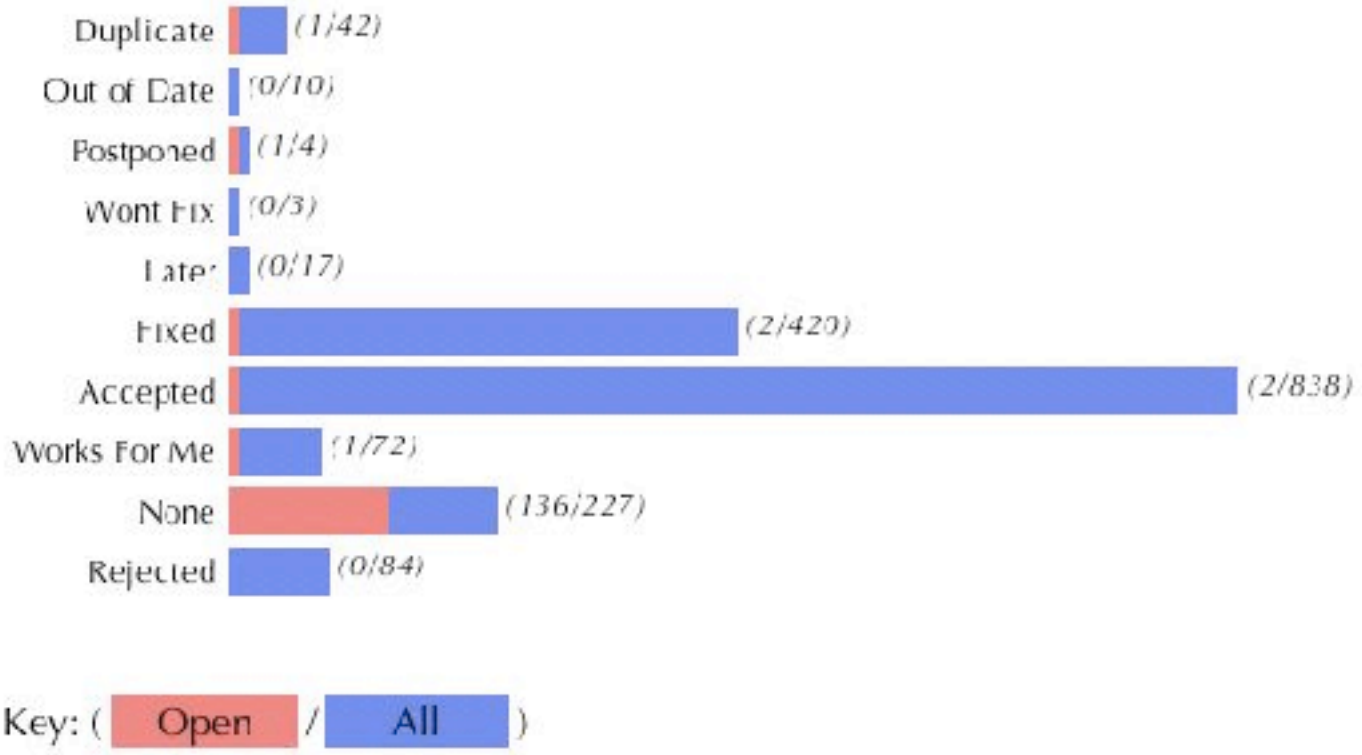


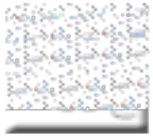

# SourceForge Statistics

Aging report: open items


# SourceForge Statistics

## Distribution By Resolution





# GO Editorial Procedure

- Claim SourceForge item
- Consider:
  - does the term belong in GO?
  - term name & definition
  - relationships to other terms
- Consult literature, interest group, other curators & researchers as needed
- More details in curator documentation

http://www.geneontology.org/GO.contents.curator.guides.html

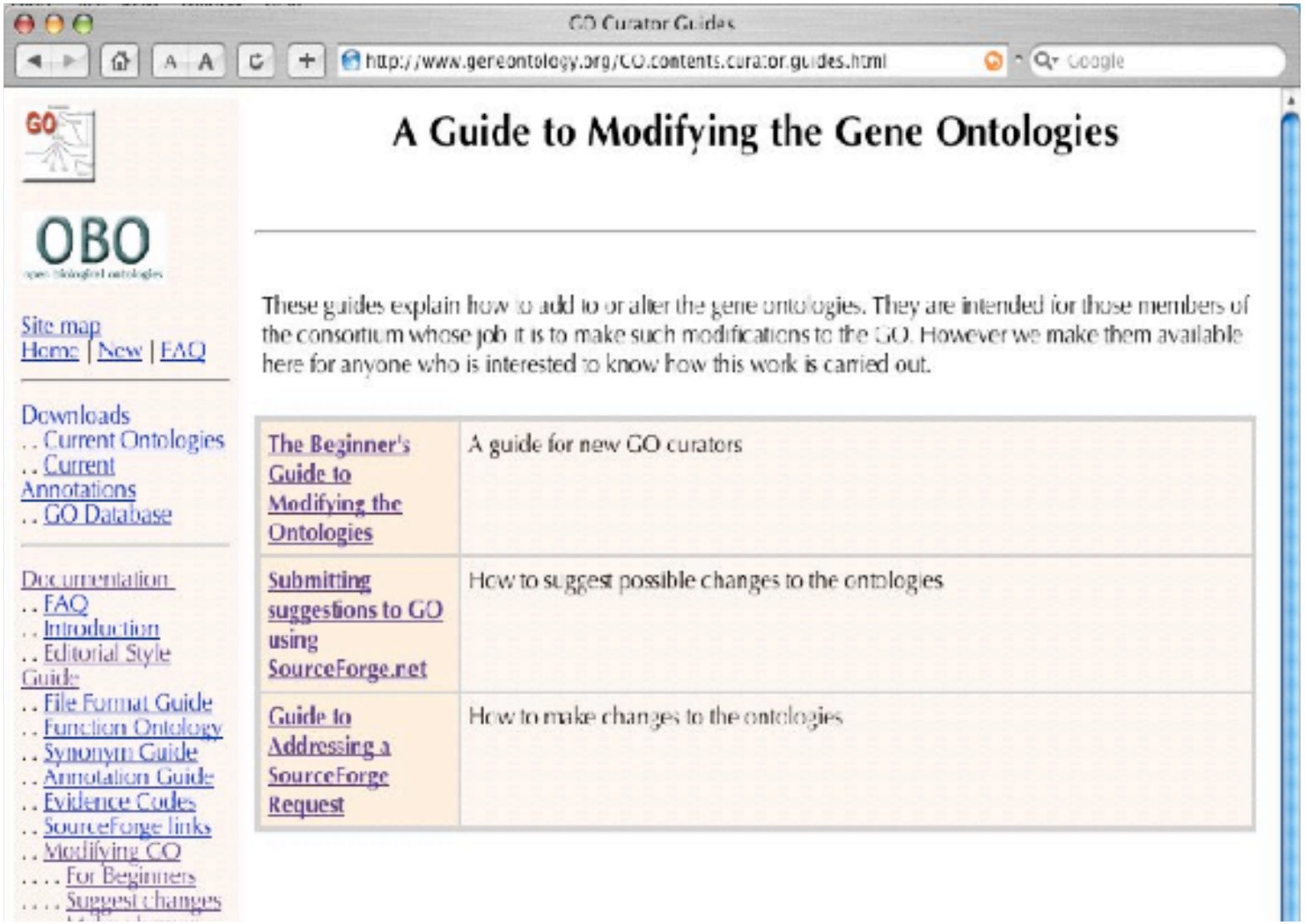

# Documentation for Curators

Guidelines for:

- using SourceForge
- making changes in the ontologies
- molecular function terms

  (biological process and cellular component guidelines planned)

# Documentation for Curators



# GO Curator Interest Groups

- Cover specific topics within GO
- Include GO curators and outside experts
- Group members develop portions of ontology, then report to Consortium
- Sample topics:

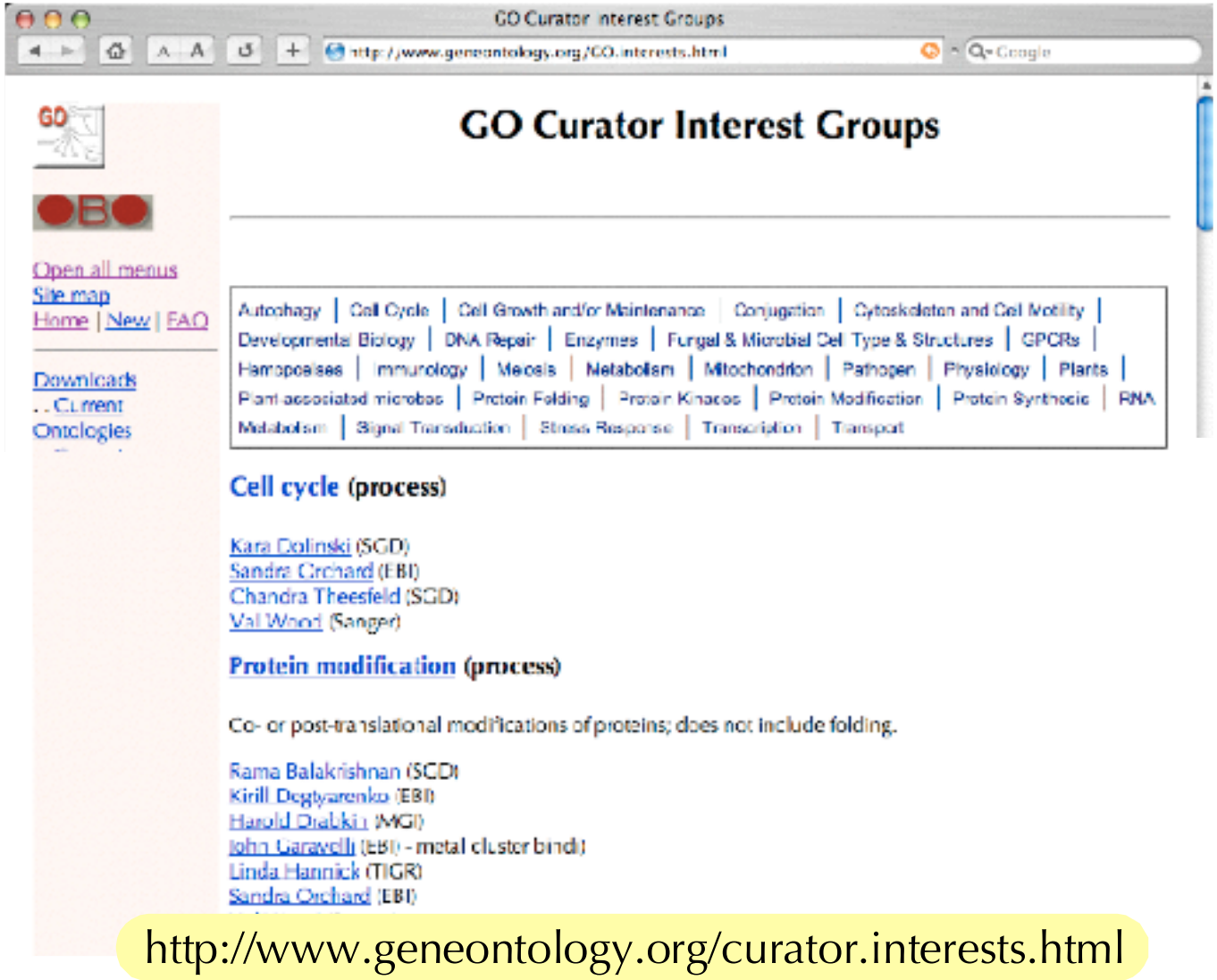
  developmental biology *e.g. limbs & fins*

  plant biology *e.g. pollination, flower development*

  protein modification

  transcription

# GO Curator Interest Groups




http://www.geneontology.org/curator.interests.html


# Current Priorities

Ontology topics:

- cellular vs. organismal processes
- developmental processes
  - cell fate specification & determination
  - plants: flower development
- cell cycle

Other activities:

- correct part_of relationships
- guidelines for process & component
- GO slims