GO Galaxy
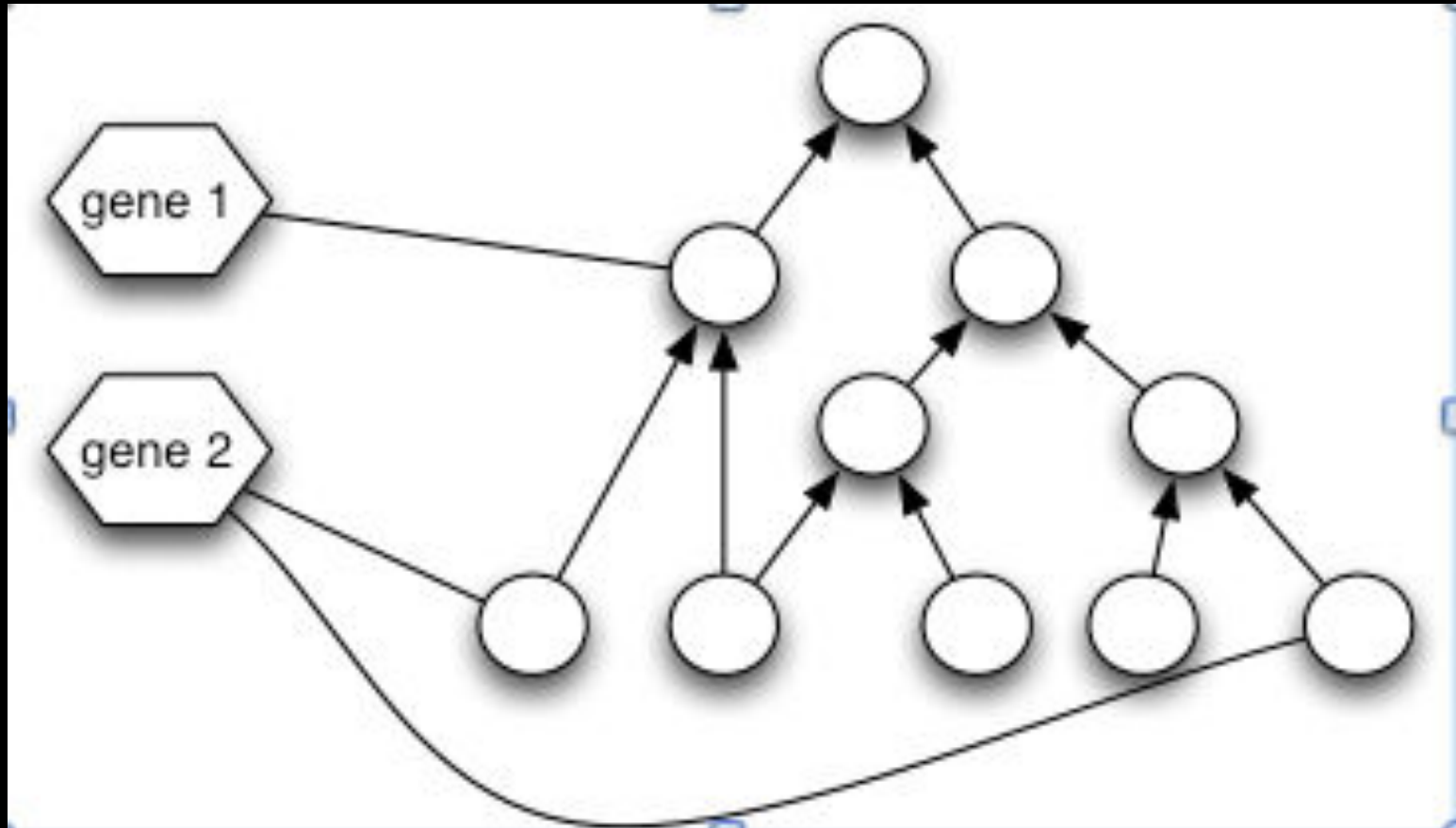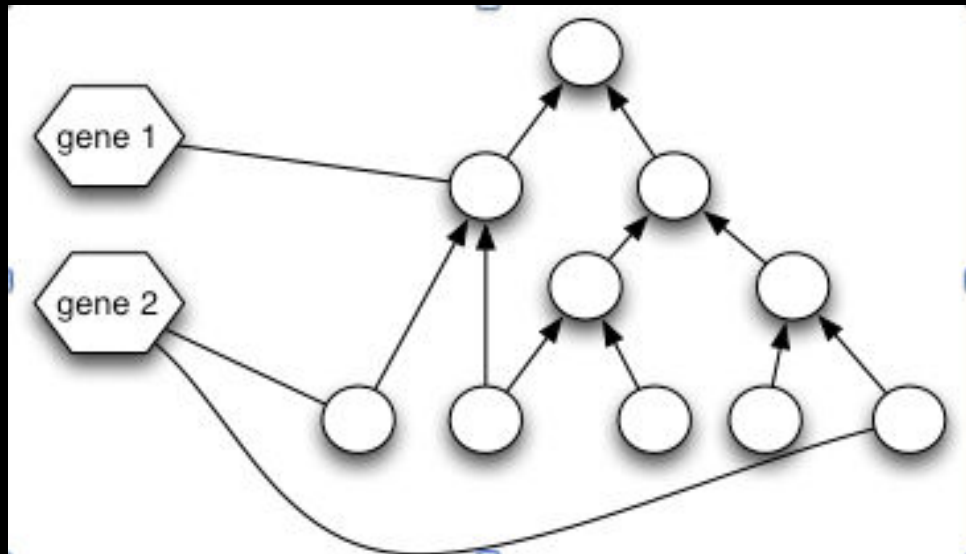
The Gene Ontology

The Gene Ontology

- New
  - Multi-ontology graph
    - Connects to CHEBI, anatomy ontologies, cell types
    - http://beta.geneontology.org/page/download-ontology
  - Annotation extensions

Not just search and queries

- Term enrichment and interpretation of experiments
- Annotation set Processing
- Ontology processing
- Function prediction
- Visualization
- Testing evolutionary hypotheses
- …

GO Term Enrichment Analysis

- Given a set of genes (proteins, chromosomal region)

- Find the properties (e.g. GO terms) present in these genes greater than some background population

- GO tools registry
  - Over 50 term enrichment tools registered
    - http://www.geneontology.org/GO.tools.shtml

GO-centric Processing and Analysis

- Existing solutions
  - Specialized web interfaces E.g. DAVID*
    - Difficult to customize
    - Hard to chain tasks together
    - Reproducibility
  - Command line 'powertools'
    - Hard for non-hackers

*http://david.abcc.ncifcrf.gov/

Using Galaxy for GO tasks

- Allows plug and play with different tools
  - E.g. different enrichment algorithms with different visualization
- Creation of workflows
- Empowers more users to do complex tasks
- Reprdocubility

GO Galaxy Workshop Goals

- Introduce GO Galaxy environment
- Walk through core capabilities
- Beta test
- Start a dialog
  - Tool developers
  - Users
  - Curators

Outline

- Fetching the GO and GO annotations into your Galaxy workspace
- Mapping annotations to a GO slim
  - Pre-defined slims
  - Custom slims
- Term Enrichment
- Workflows

GO galaxy

- URLs:
  - http://galaxy.berkeleybop.org
  - http://bit.ly/gogalaxy01
  - http://bit.ly/gogalaxy02

- Finding out more:
  http://wiki.geneontology.org/index.php/Galaxy

Feedback

- This workshop:
  - http://bit.ly/GOISB2013
- Tools requests:
  - go-help@genome.stanford.edu