

11-6-08

## Minimum Anatomy Terminology – MAT

MAT is a hierarchical controlled vocabulary (CV) that is intended to provide a simple coding for annotating and retrieving tissue-associated data. The intention is that MAT can easily be used by researchers and curators for basic annotation, although users may also require a taxon name and keywords for tissues not covered in MAT (e.g. heart myocardium is a MAT term, but heart ventricle is not).

MAT contains

- ~450 anatomical terms covering the key organ systems and tissues of plants and animals
- Nine timelines each for plants and for animal (from zygote onwards – Fig. 1)
- A general set of geometric (e.g. *proximal*) and anatomical (e.g. *placode*) modifiers.
- A very coarse taxonomy sufficient only to annotate
  - High-level taxon categories
  - Specific organisms having an anatomy ontology whose IDs are linked to MAT terms (Fig. 2).

Each tissue in the CV carries with it a MAT ID, synonyms and the appropriate IDs for the equivalent tissues that are in the current anatomy ontologies (~20, see [www.obofoundry.org](http://www.obofoundry.org)). A screenshot for the tissue *eye* is given in Fig. 3.

The many (~1600) ontology IDs included in MAT are intended to facilitate linkage and to provide a ready search list.

Users should note that terms higher up the hierarchy are to be viewed as no more than broader in meaning than those subordinate to them. Ontologists should note that this SKOS relationship ([www.w3.org/2004/02/skos/](http://www.w3.org/2004/02/skos/)) covers *part of* and *is a* relationships, but carries no inheritance implications in the CV.

The CV is intended to be read in an ontology browser such as

- COBrA (<http://www.xspan.org/cobra/index.html>)
- OBO-edit ([oboedit.org/](http://oboedit.org/))

but it can also be opened and read in any text editor as all the information about a particular tissue is grouped and can be read directly.

Any queries, criticisms, suggestions and other curatorial comments should be sent to [j.bard@ed.ac.uk](mailto:j.bard@ed.ac.uk)

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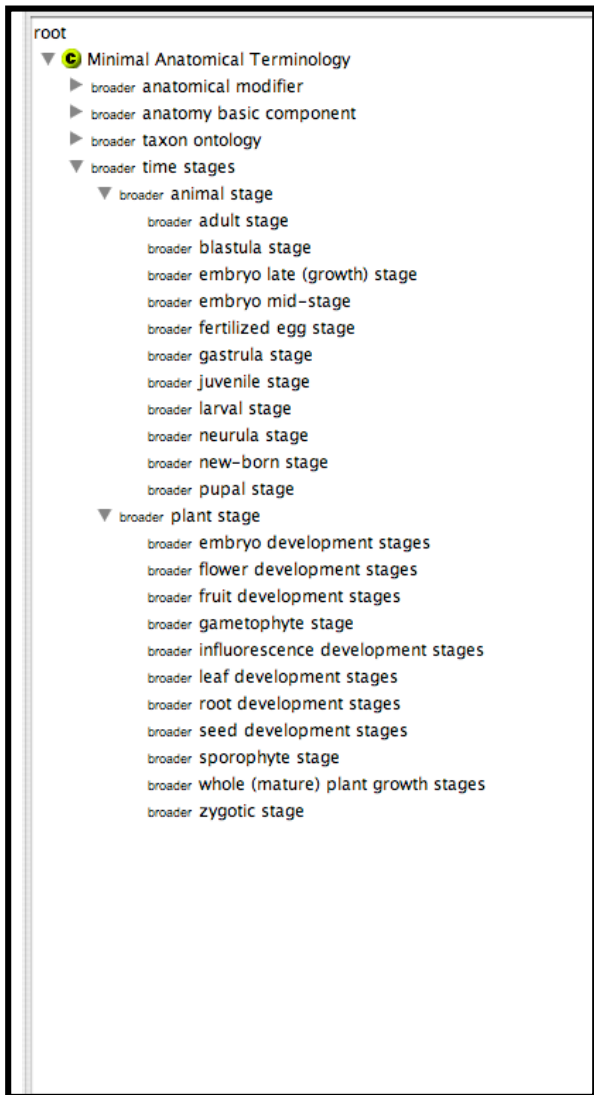


Fig. 1. The MAT timelines as seen in the COBRa viewer

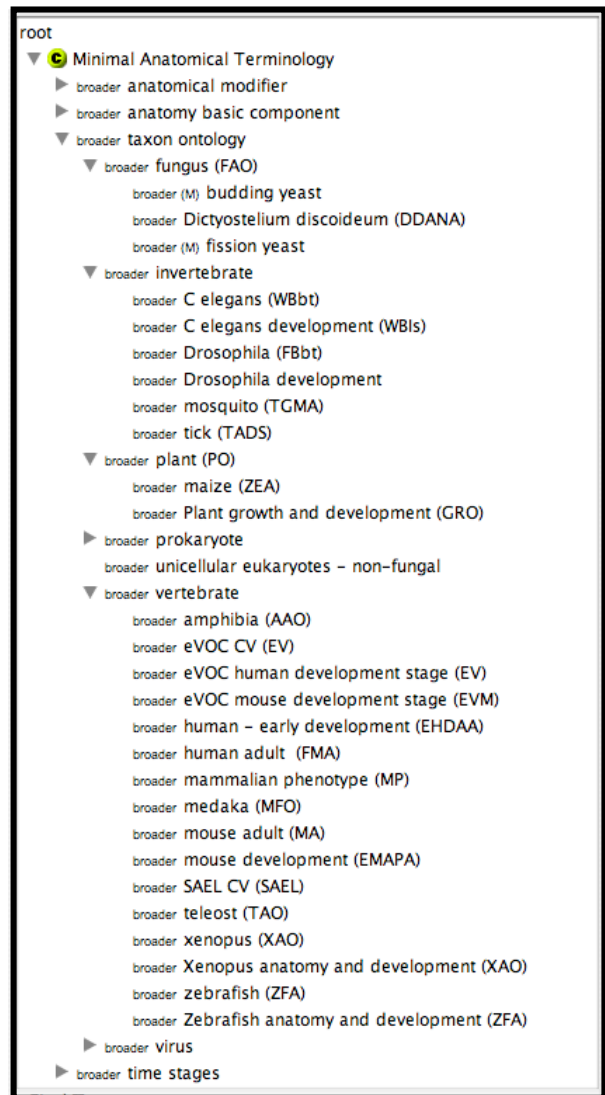


Fig. 2. The taxa with a MAT ID. The taxonomy is very coarse and mainly includes organisms for which there is an anatomy ontology (and their ID prefixes are in brackets)

The screenshot shows the COBRa Minimal-Anatomical-Terminology-MAT.obo viewer. The left panel displays a hierarchical tree of anatomical terms, with 'eye' selected. The right panel provides detailed information for the selected term 'eye'.

**Left Panel: Hierarchical Tree**

- Minimal Anatomical Terminology
  - broader anatomical modifier
  - broader anatomy basic component
    - broader animal component
      - broader (M) appendage
      - broader body part
      - broader cardiovascular system
      - broader craniofacial tissue
      - broader developmental tissue - animal
      - broader digestive system
      - broader fat tissue
      - broader fluid - animal
      - broader gland
      - broader haemopoietic system
      - broader integumental system
      - broader liver and biliary system
      - broader muscle system
      - broader nervous system
      - broader renal system
      - broader reproductive system - animals
      - broader respiratory system
      - broader sensory system
        - broader (M) antenna
        - broader chordotonal organ
        - broader (M) ear
        - broader (M) eye
        - broader (M) lateral line system
        - broader (M) nose
        - broader (M) sensillum
        - broader (M) sensory bristle
        - broader (M) taste system
      - broader skeleton
    - broader fungal component
    - broader plant component
    - broader taxon ontology
    - broader time stages

**Right Panel: Details for 'eye'**

Name : eye  
 ID : MAT:0000140 <http://www.xspan.org/obo.owl#>

Parents :  
 broader [MAT:0000017] craniofacial tissue  
 broader [MAT:0000031] sensory system

Children :  
 broader [MAT:0000283] eyeball  
 broader [MAT:0000141] lens  
 broader [MAT:0000143] omatidium  
 broader [MAT:0000142] retina

Additional IDs :  
 EV:0100336  
 FBbt:00004508  
 FMAID:54448  
 MA:0000261  
 MFO:0003480  
 MP:0002092  
 ZFA:0000107  
 TGMA:0000024  
 XAO:0000179  
 TADS:0000061  
 TAO:0001127  
 TAO:0000107  
 EHDAA:936  
 EMAPA:16198  
 AAO:0000632

Synonyms :  
 eyes []  
 visual apparatus []  
 adult compound eye []  
 visual\_system []

**Find Terms**

Start at selected term  Exact string Name

Find

Previous Next

Status : Read Minimal-Anatomical-Terminology-MAT.obo

Fig. 3. A view of MIAA (in the COBRa viewer). The left panel shows the high level animal categories and the details of the sensory system. The right panel shows the details associated with the eye: these include a MIAA ID, parents (sensory system and craniofacial tissue), children, synonyms and IDs from other anatomy ontologies that include the eye (or a synonym)