

# **Morphster:** Morphological Phyloinformatics

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<http://www.morphster.org>

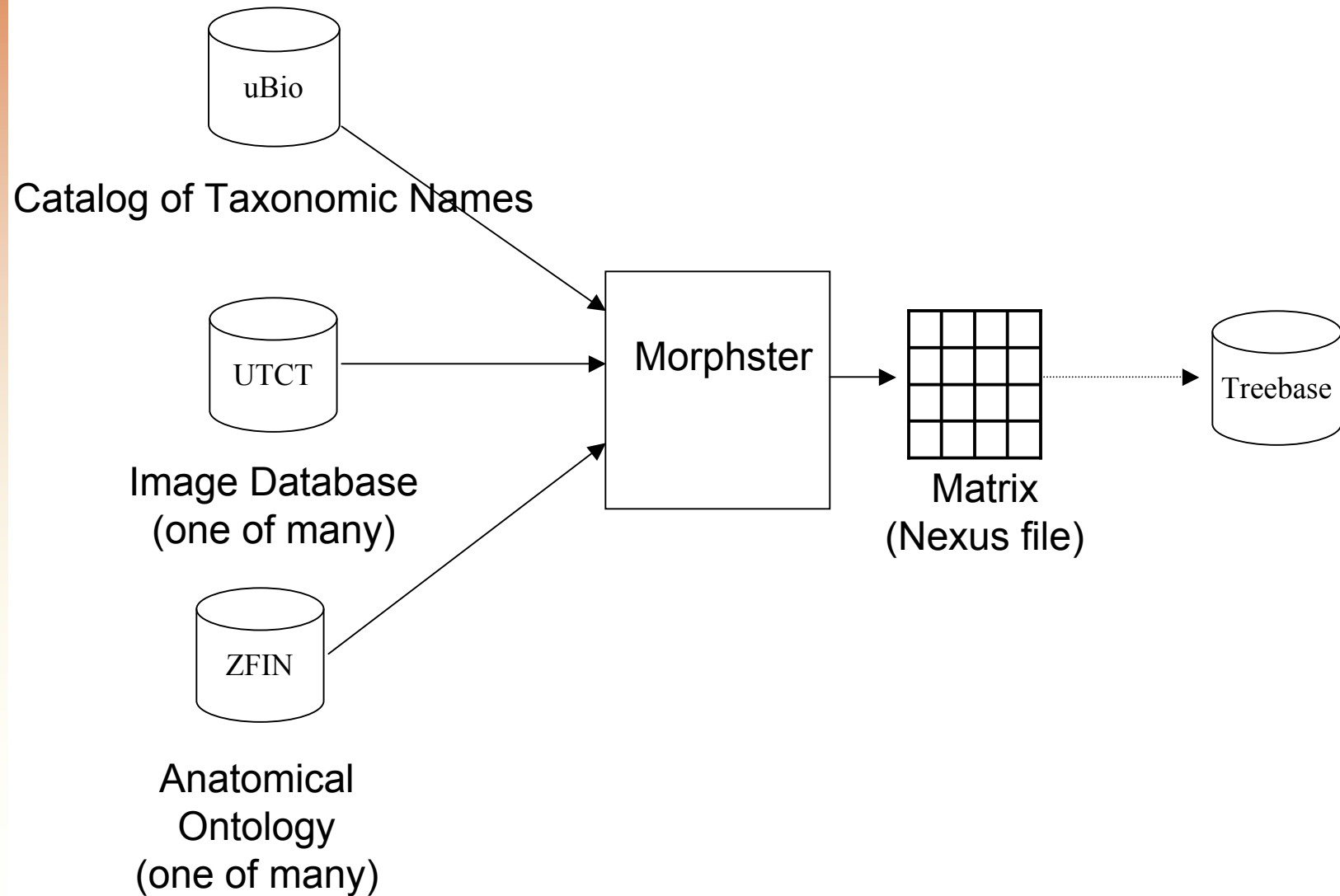
Collaborators: Tim Rowe, Julian Humphries

# Scope: Productivity Tool for Creation of Morphological Phylogenetic Studies

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- Image-Driven Ontology Editing
  - Ontology driven image annotation
  - *But*, ontologies are not complete/static
- Distributed Data Integration
  - Data Provenance

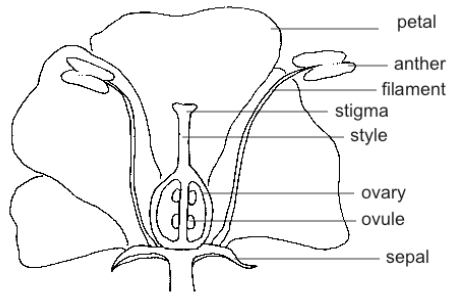
# Morphster Workflow



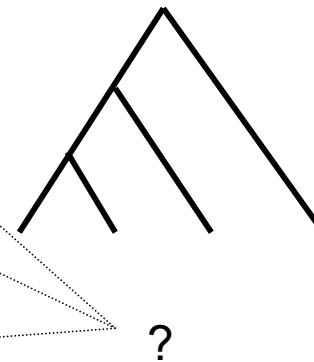
# Later - Go Back and Make Sense of it All



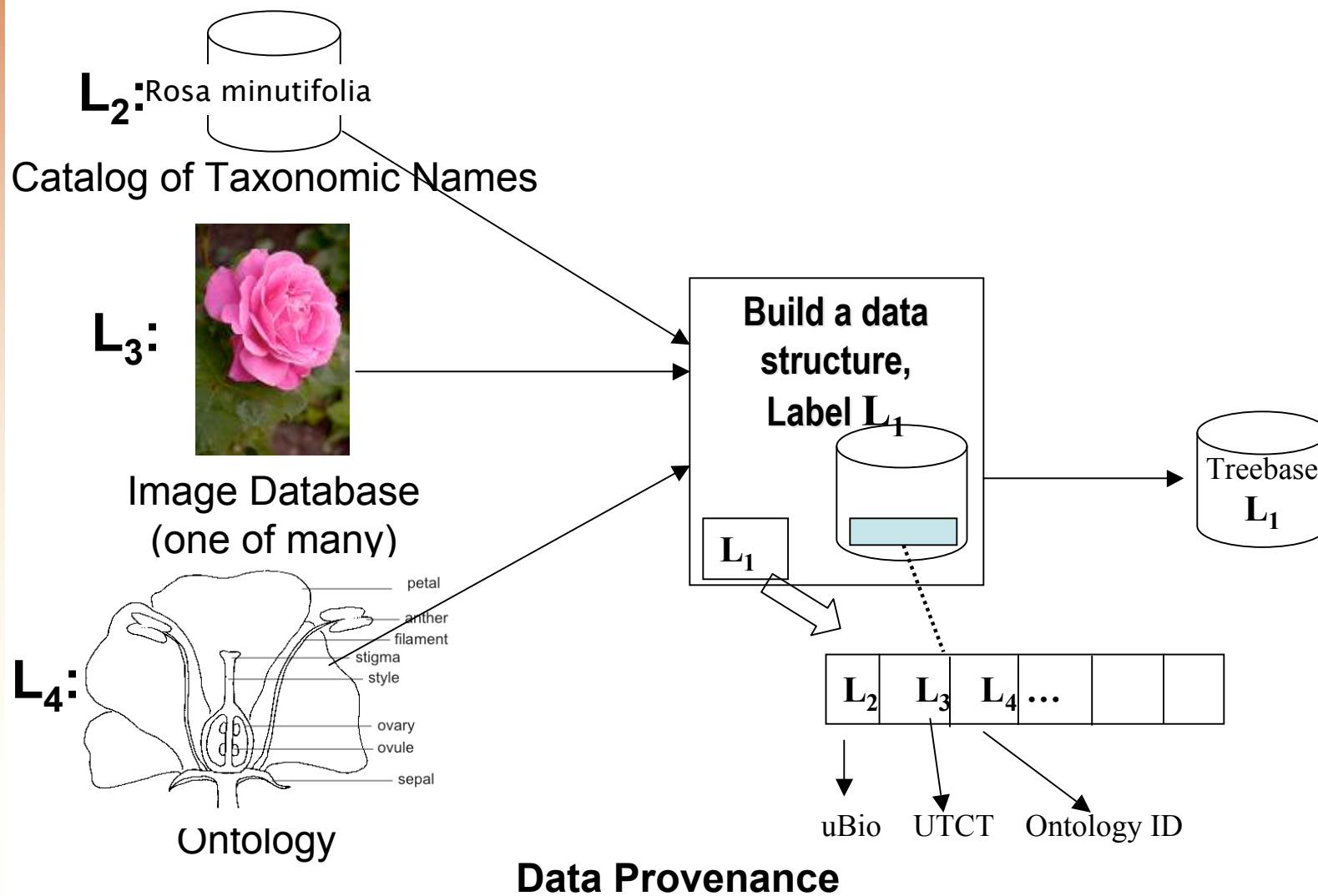
Image Database  
(one of many)



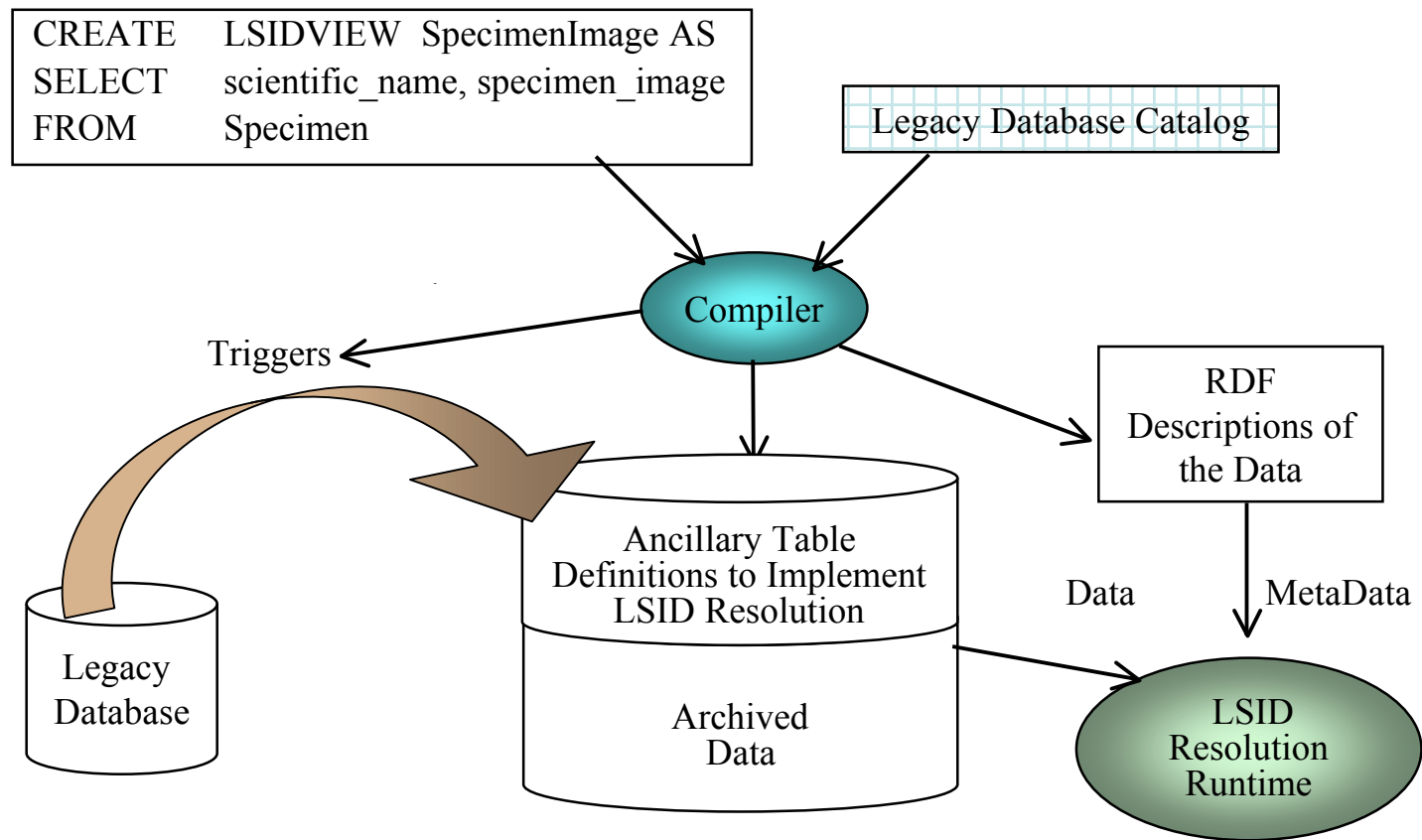
Ontology

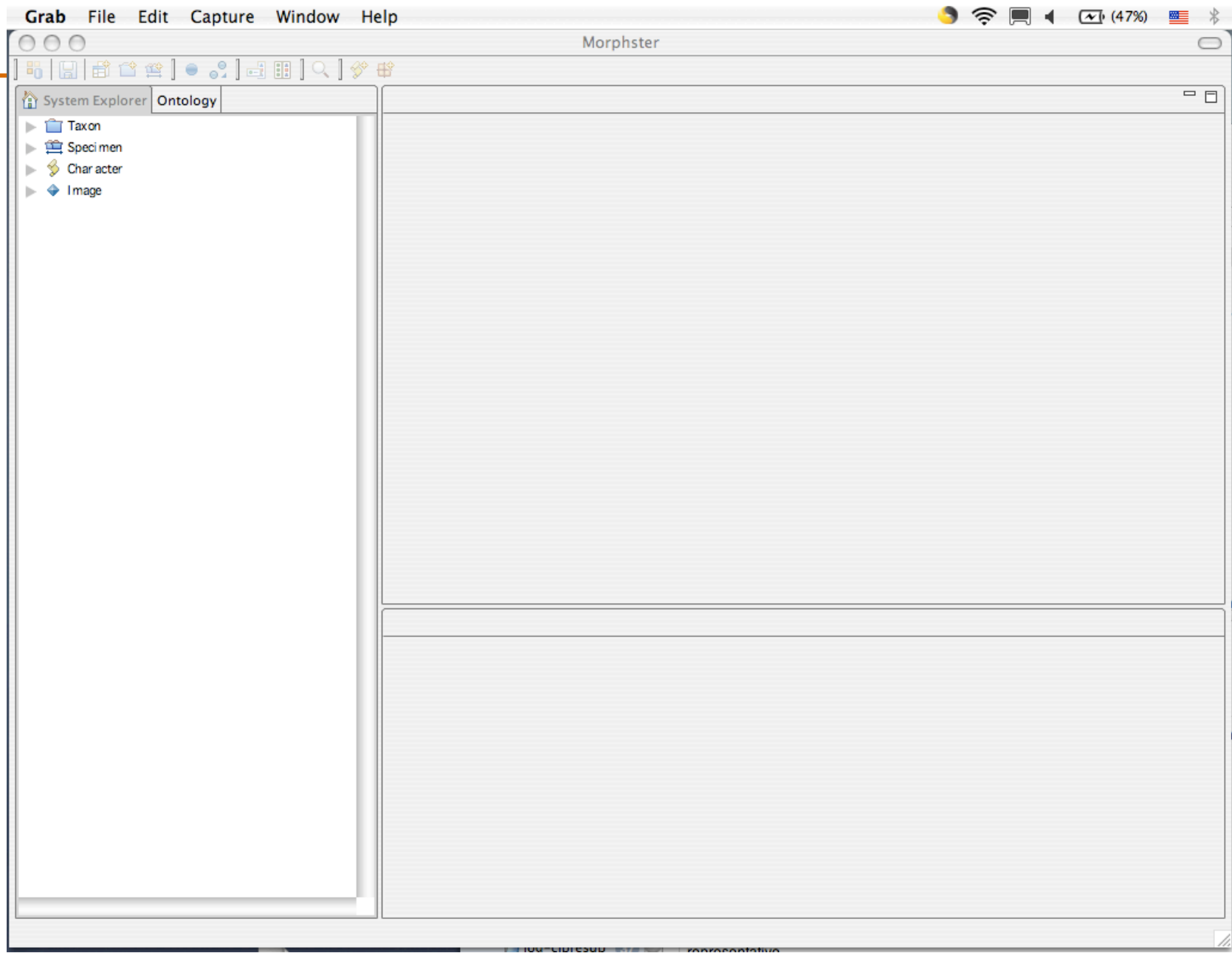


# Morphster LSIDs Embody All the Provenance of a Study



# The Full Picture: Could be Implemented by a Compiler









Amia grossidens-Taxon Editor

System Explorer | **Ontology** | \*Amia grossidens-Taxon Editor | Image Gallery

ZfinAnatomy

- OTHER TAXA
- anatomical system
  - hematopoietic system
  - renal system
  - skeletal system
    - cranial skeleton
    - median fin skeleton
    - paired fin skeleton
    - axial skeleton
      - notochord
      - supraneural
      - vertebra
      - Weberian apparatus
      - median fin skeleton
      - axial cartilage
      - rib
      - intermuscular bone
    - immune system
    - endocrine system
    - liver and biliary system
    - nervous system
    - respiratory system

Search: amia

- uBio
  - Scientific Names
    - Amia
    - Amia (Amioides) grossidens
    - Amia (Kindleia)
    - Amia (Kindleia) Jordan, 1927

IMAGE FILTER ... | SORT BY ...

Grid of images:

- pda
- Dummy 01
- Dummy 03
- Dummy 04
- Label ed Mouse S...
- Dummy 05
- Mouse Skull 2
- Mouse Skull Diagona
- Dummy 06
- Kerin-001**
- Dummy of 30
- Dummy of 31
- Dummy of 12
- Dummy of 17
- Dummy of 17- 1
- Another Dummy 1...
- ontology- 1- inn
- ontology- rif
- ontology- inn
- fish- 2- inn

Preview: Kerin-001 (Format: jpg)

Image Title: Kerin-001

MTEST-C 0010 (Amia W. L...)

Register | Unregister

Amia (Amioides) grossidens Smith & Radcliffe in Radcliffe 1912-Taxon Details

Namebank ID: 1936616 | Rank name: Species | Select taxon

LSID: urn:lsid:ubio.org:namebank:1936616 | Package name: Pisces

# Today: Publish “Illustrated Ontologies”

The screenshot shows a web browser window titled "Morphster Ontology Browser" with the URL "http://www.morphster.org:8080/Ontobrowser/". The browser's address bar and tabs are visible. Below the browser window, the Morphster.org logo and the text "MORPHSTER.ORG THE UNIVERSITY OF TEXAS AT AUSTIN" are displayed, along with the tagline "ASSEMBLING THE TREE OF LIFE: 3D PHYLOINFORMATICS".

The main content area is titled "ZFIN\_Weberian\_Apparatus\_ST" and is divided into three sections:

- TREE VIEW:** A hierarchical tree structure showing the following terms:
  - [-] Weberian apparatus
    - [+] Weberian ossicle
    - [-] Weberian vertebrae
      - [+] vertebra 1
      - [-] vertebra 2
        - intercalarium**
        - parapophysis 2
      - [+] vertebra 3
      - [+] vertebra 4
    - [+] Weberian supraneural

- IMAGERY:** A section titled "Exemplar" showing two 3D renderings of the intercalarium bone. Below the renderings is a section titled "Associated Imagery" which contains the text "No Images Found".
- TERM DETAILS:** A table of details for the selected term:

<b>ID:</b> ZFA:0000525
<b>Name:</b> intercalarium
<b>Definition:</b> null
<b>Comments:</b> null

The browser's status bar at the bottom shows "Done".

# Other Major Aspects

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- Ontobrowser
  - publication of illustrated ontologies as web sites.
    - V1 done.
    - V2 nearly done.
- OBO ----> OWL translation
  - Ours does a round trip
    - done
- Schema Driven LSID Assignment
  - Given your data is in a relational DBMS
  - Specify an export schema (in SQL)
    - Compiler and runtime does all the work.
    - At the feasibility stage.