

FoundingGIDE

Ontologies, metadata, identifiers, oh my!



Matthew Hartley

Team Leader, BioImage Archive / EMPIAR

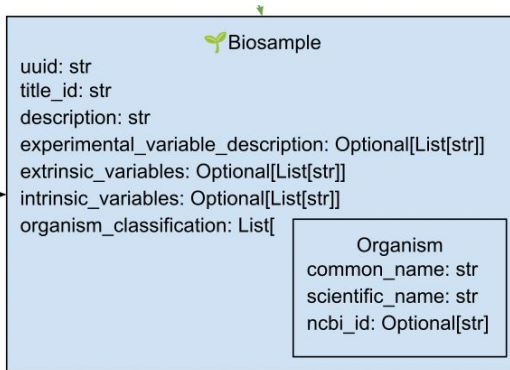


founding**GIDE**

Content warning



No pretty pictures

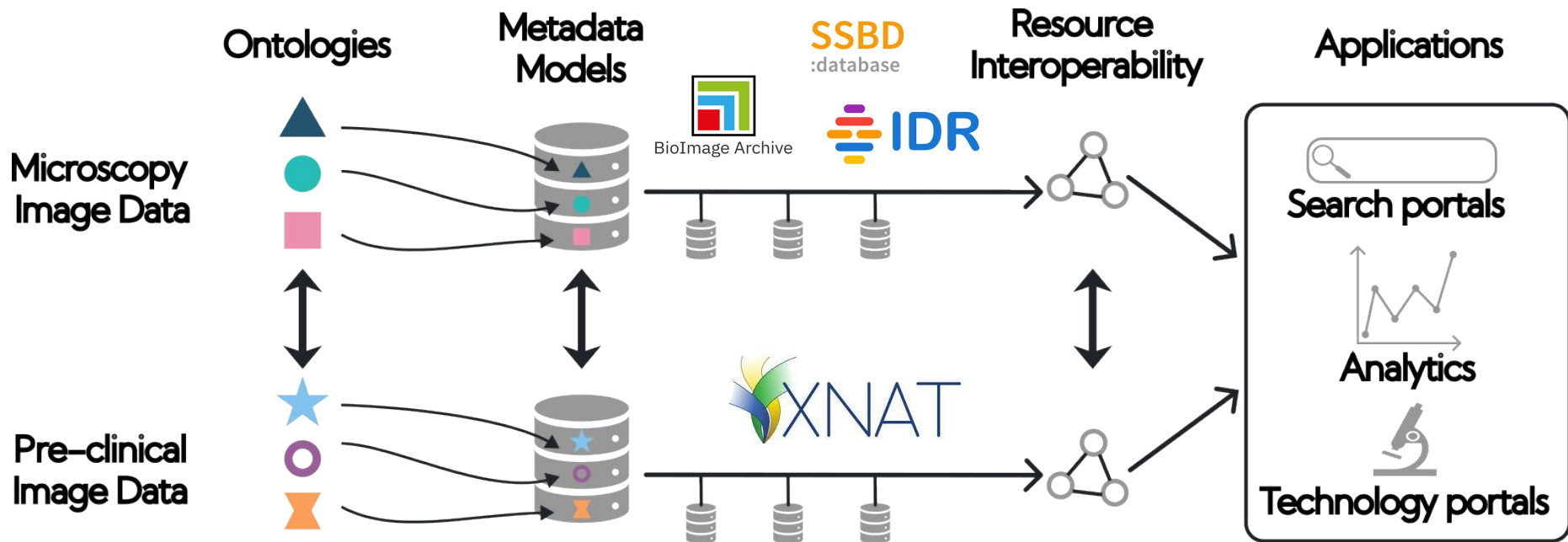


Several schema diagrams

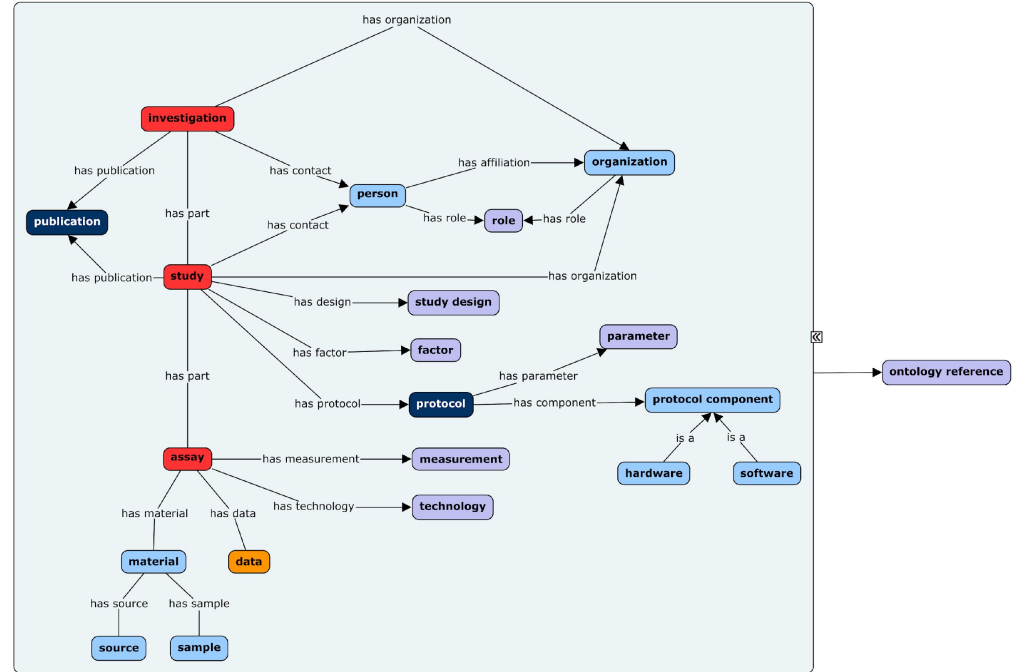
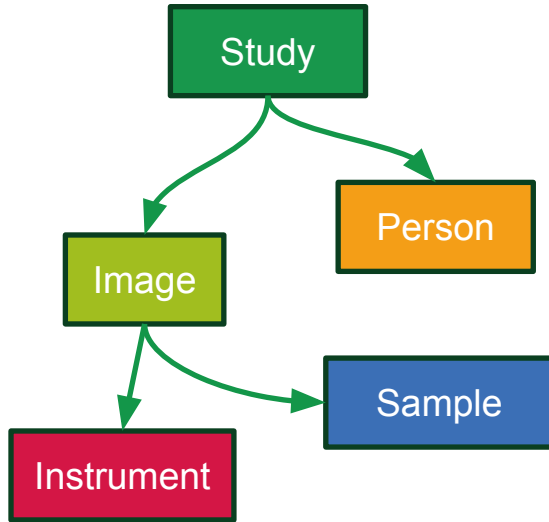
```
{
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  "@type": "CreativeWork",
  "conformsTo": {
    "@id": "https://w3id.org/ro/crate/1.1"
  },
  "about": {
    "@id": "."
  },
  {
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    "@type": "biosample",
    "organism_classification": {
      "@id": "NCBI:txid3701"
    }
  },
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    "@type": "specimen",
    "biosample": {
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    }
  },
  {
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    "@type": "image_acquisition",
    "fbi_id": {
      "@id": "obo:FBbi_00000585"
    },
    "specimen": {
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    }
  }
}
```

Some JSON

FoundingGIDE

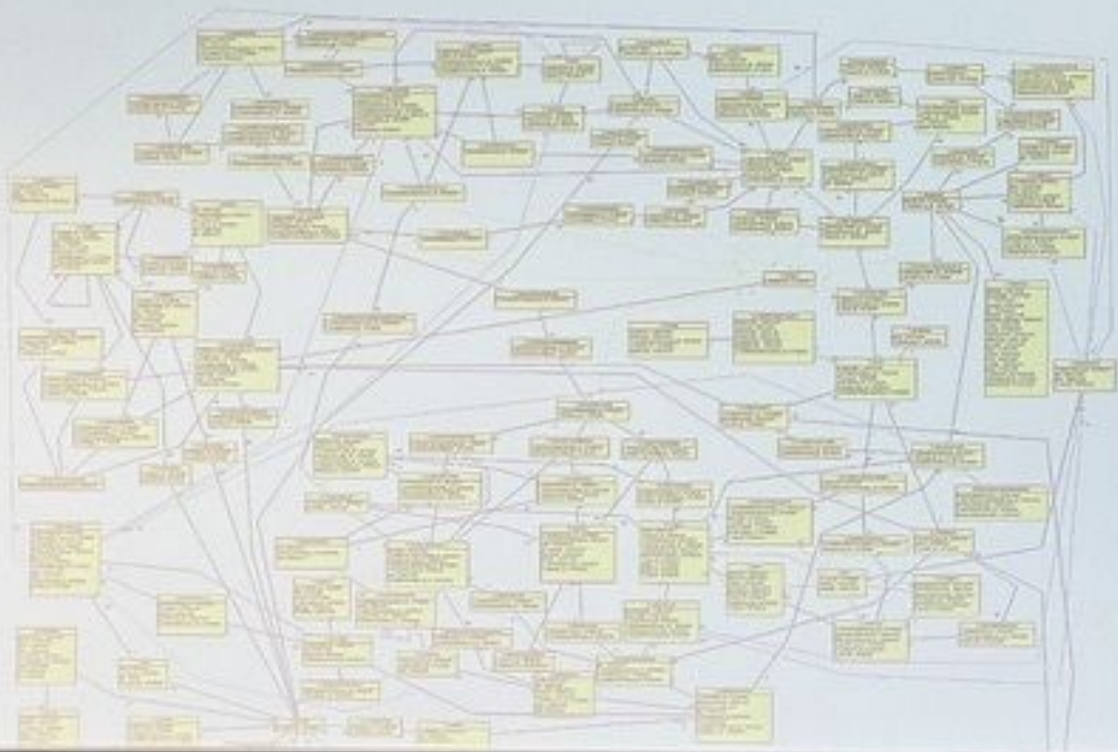


Data model



ISA – Investigation, Study, Assay

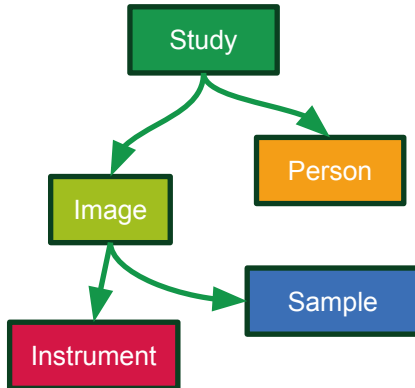
ArrayExpress data model- MAGE-OM



Data model, metadata, vocabularies

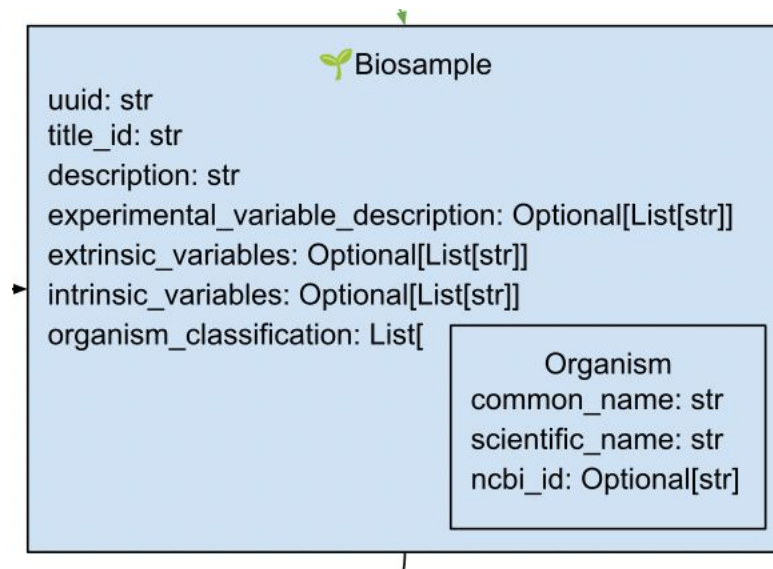


What sort of things
are we talking about?



Metadata schema

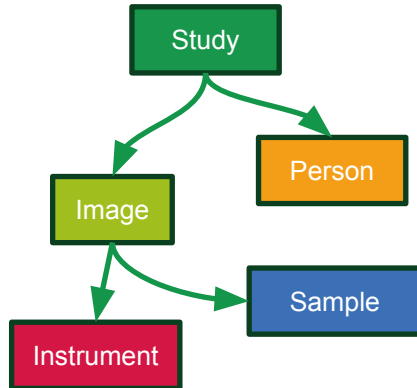
Sample



Data model, metadata, vocabularies

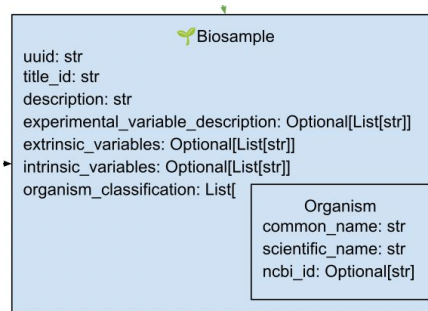
Data model

What sort of things
are we talking about?



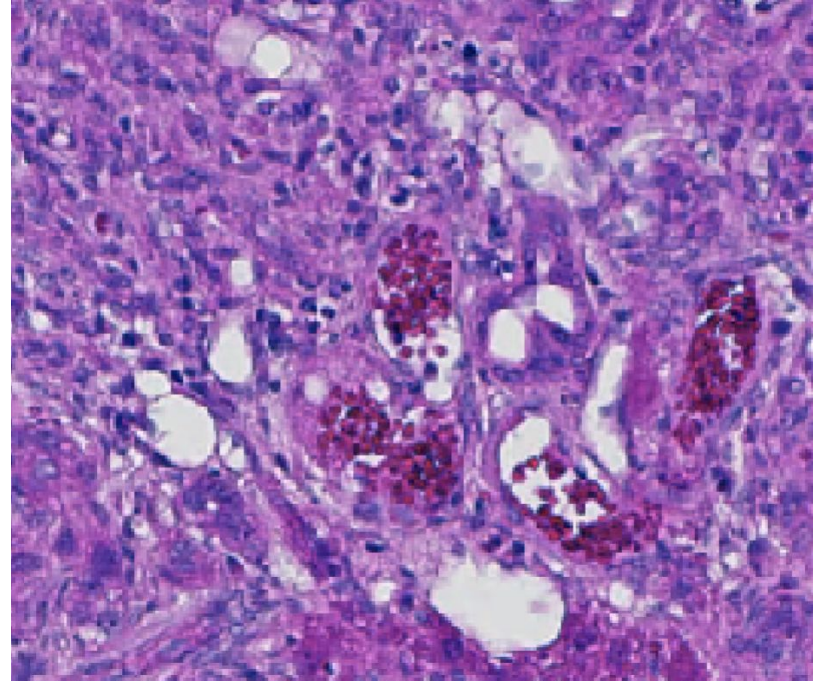
Metadata schema

What do we need to know
about those things?



Why ontologies (part I)?

- Thoracic cancer
- thoracic cancer
- Cancer (thoracic)
- Cancer of the thorax
- Cancer, thoracic




S-BIAD1250

Why ontologies (part I)?

thoracic cancer

http://purl.obolibrary.org/obo/DOID_5093  Copy

An organ system cancer located_in the thoracic cavity that develops in the different types of cells within the lungs, as well as less common cancers of the esophagus, the trachea, or the chest wall. 

Also appears in VO BAO CLO OHPI GSSO

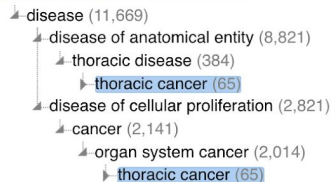
Synonym Thoracic tumor thorax cancer thorax neoplasm tumor of thorax

Search

☐ Exact match ☐ Include obsolete terms ☒ Include imported terms

 Tree

 Graph



- ☒ Preferred roots
- ☐ All classes
- ☒ Show counts
- ☐ Show obsolete terms
- ☐ Show all siblings

▼ Class Information

has_alternative_id

malignant neoplasm of thorax  1 ontology

has_dbxref

- ICD10CM:C76.1
- ICD9CM:195.1
- MESH:D013899
- NCI:C3406
- NCI:C3576
- SNOMEDCT_US_2023_03_01:188361007
- SNOMEDCT_US_2023_03_01:255058005
- UMLS_CUI:C0153661
- UMLS_CUI:C0039981

...but...

SNOMED CT Browser

Concept Details

Expression Constraint Queries

Concept Details

SummaryDetailsDiagramExpressionRefsetsMembersHistoryReferences

StatedInferred

Parents

Malignant neoplastic disease (disorder)

Neoplasm of thorax (disorder)

Malignant neoplasm of thorax (disorder)

SCTID: 188361007

188361007 | Malignant neoplasm of thorax (disorder) |

en Malignant neoplasm of thorax (disorder)

en Malignant neoplasm of thorax

en Malignant tumor of thorax

en Malignant tumour of thorax

Finding site → Thoracic structure

Associated morphology → Malignant neoplasm

Children (27)

Disseminated Langerhans cell histiocytosis of lymph nodes of thorax (disorder)

Malignant histiocytosis of intrathoracic lymph nodes (disorder)

Malignant lymphoma of intrathoracic lymph nodes (disorder)

Concepts do not always overlap!

SNOMED CT Browser

Concept Details

Expression Constraint Queries

Concept Details

Summary

Details

Diagram

Expression

Refsets

Members

History

References

Stated

Inferred

Parents

Disorder of thorax (disorder)

Mass of thoracic structure (finding)

Neoplasm of trunk (disorder)

Neoplasm of thorax (disorder)

SCTID: 255058005

255058005 | Neoplasm of thorax (disorder) |

en Neoplasm of thorax (disorder)

en Neoplasm of thorax

en Tumor of thorax

en Tumour of thorax

Finding site → Thoracic structure

Associated morphology → Neoplasm

Children (14)

Benign neoplasm of thorax (disorder)

Malignant neoplasm of thorax (disorder)

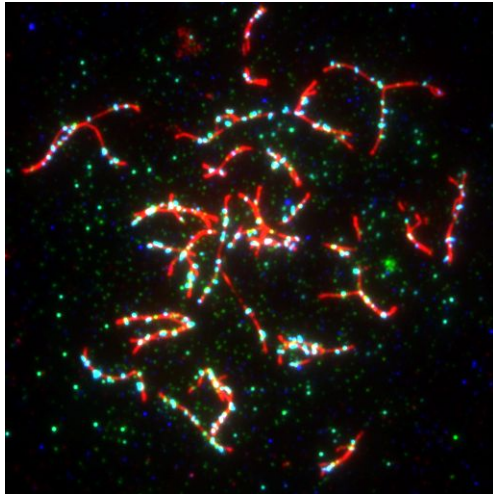
Neoplasm of blood vessel of thorax (disorder)

Neoplasm of breast (disorder)

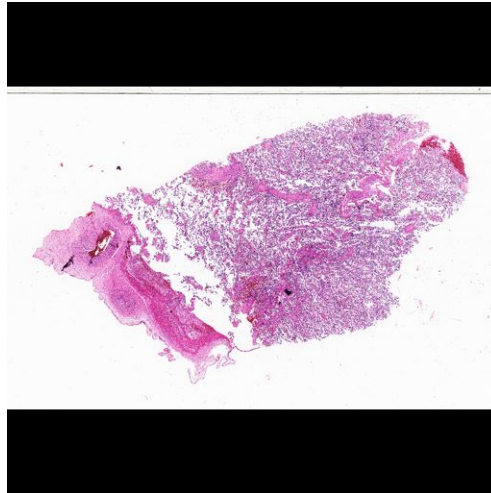
Why ontologies (part II)?

“What light microscopy images do you have?”

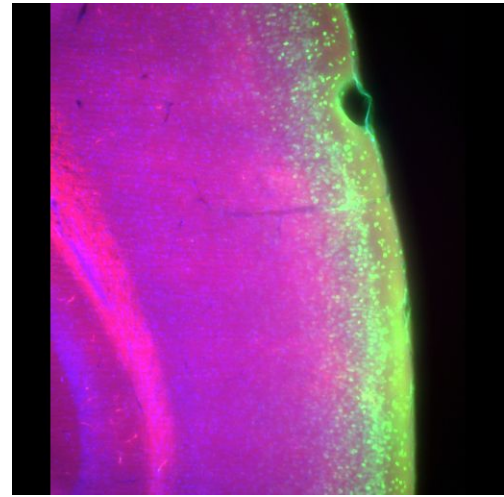
S-BIAD627, dSTORM



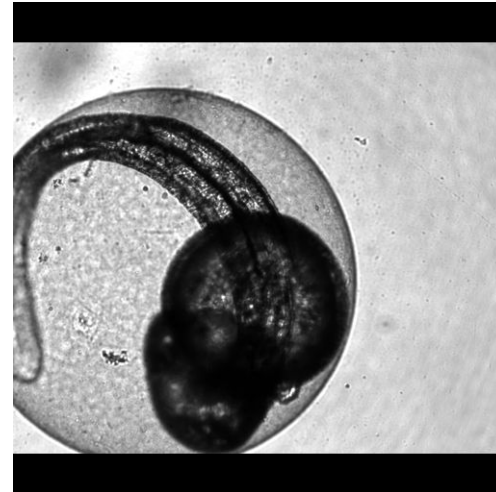
S-BIAD1045, bright-field
(histopathology)



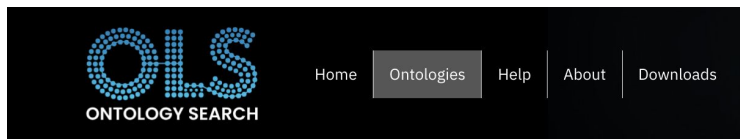
S-BIAD1077,
light-sheet



S-BIAD840,
bright-field



Why ontologies (part II)?



Ontologies ▸ **FBBI**

Biological Imaging Methods Ontology

Version 2020-11-06

Biological Imaging Methods CV

Imports from **CARO** **RO** **OIO** **DCTERMS** **RDFS** + 5

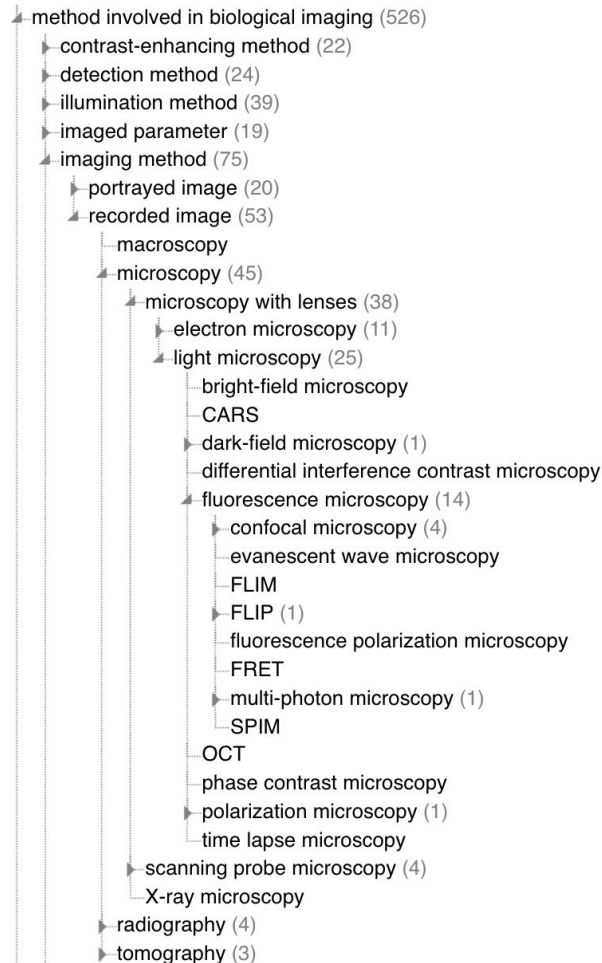
Search FBBI...

☐ Exact match ☐ Include obsolete terms ☒ Include imported terms

[Homepage](#)

[Issue Tracker](#)

Classes (647) **Properties (140)** **Individuals (0)**



What about PIDs?



Person

ORCID

<https://orcid.org/0000-0001-6178-2884>



Organisation

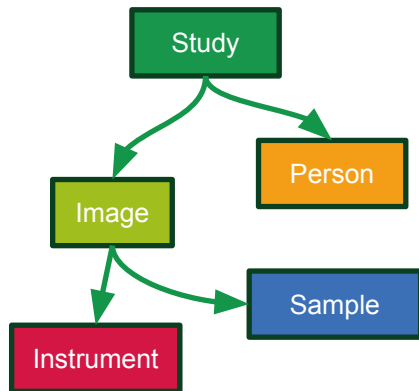
ROR

<https://ror.org/02catss52>

Data model, metadata, vocabularies

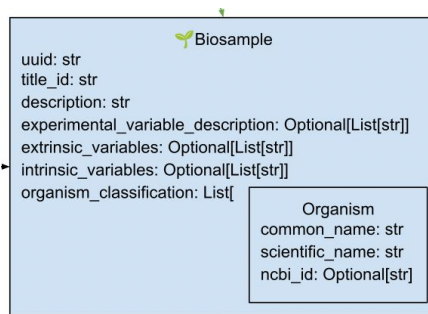
Data model

What sort of things
are we talking about?



Metadata schema

What do we need to know
about those things?



Standardised vocabularies
(ontologies, identifiers)

How should we describe
those facts?

