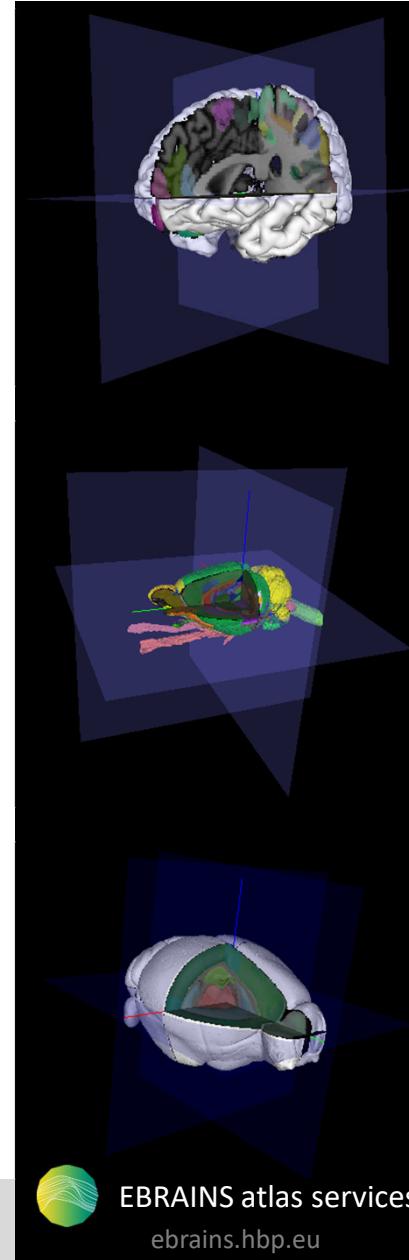


Atlas ontology model for FAIR integration of neuroscience data

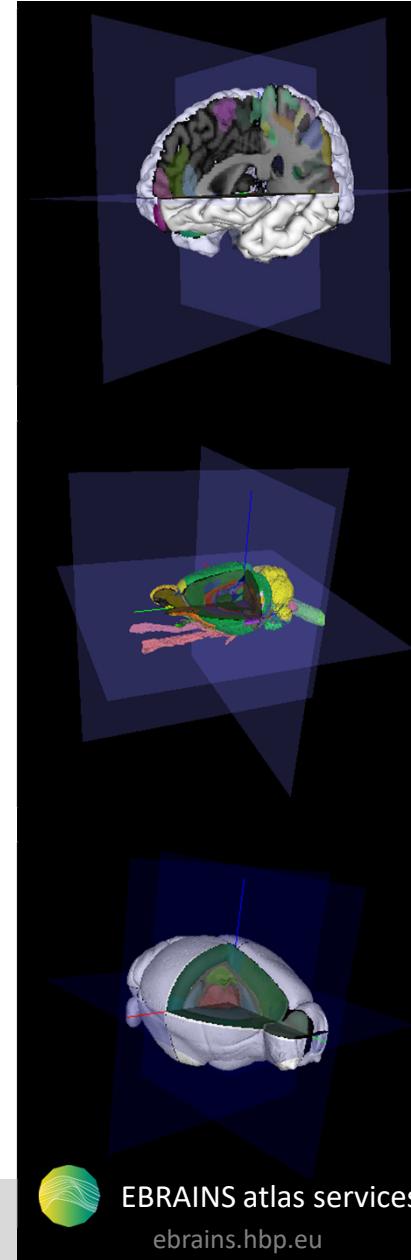
Heidi Kleven

Neural Systems Laboratory
Institute of Basic Medical Sciences
University of Oslo, Norway



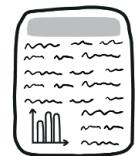
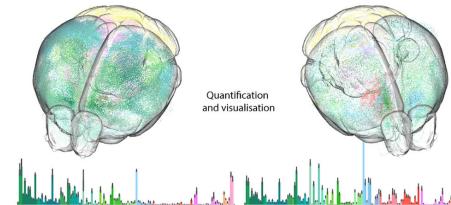
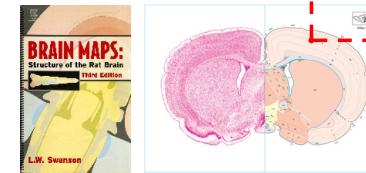
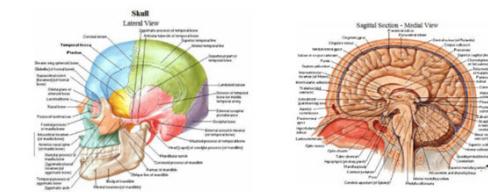
Outline

- Background: FAIR atlases in neuroscience?
- The anatomy of an atlas
- The reference atlas ontology model – AtOM
- Enabling FAIR data integration?
- Summary and outlook



Spatial reference resources for neuroscience

- Studying brain anatomy
- Planning experiments
- Interpretation and analysis
- Communicating observations and measurements

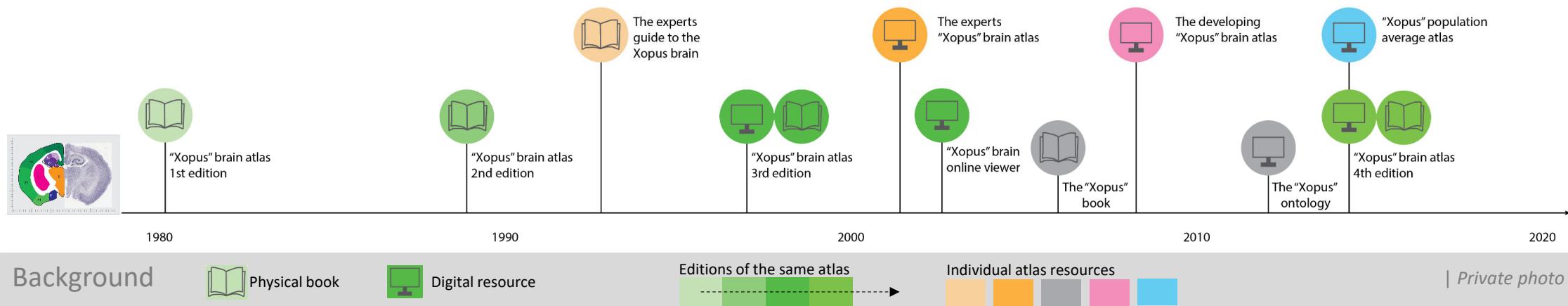


Spatial reference resources for neuroscience



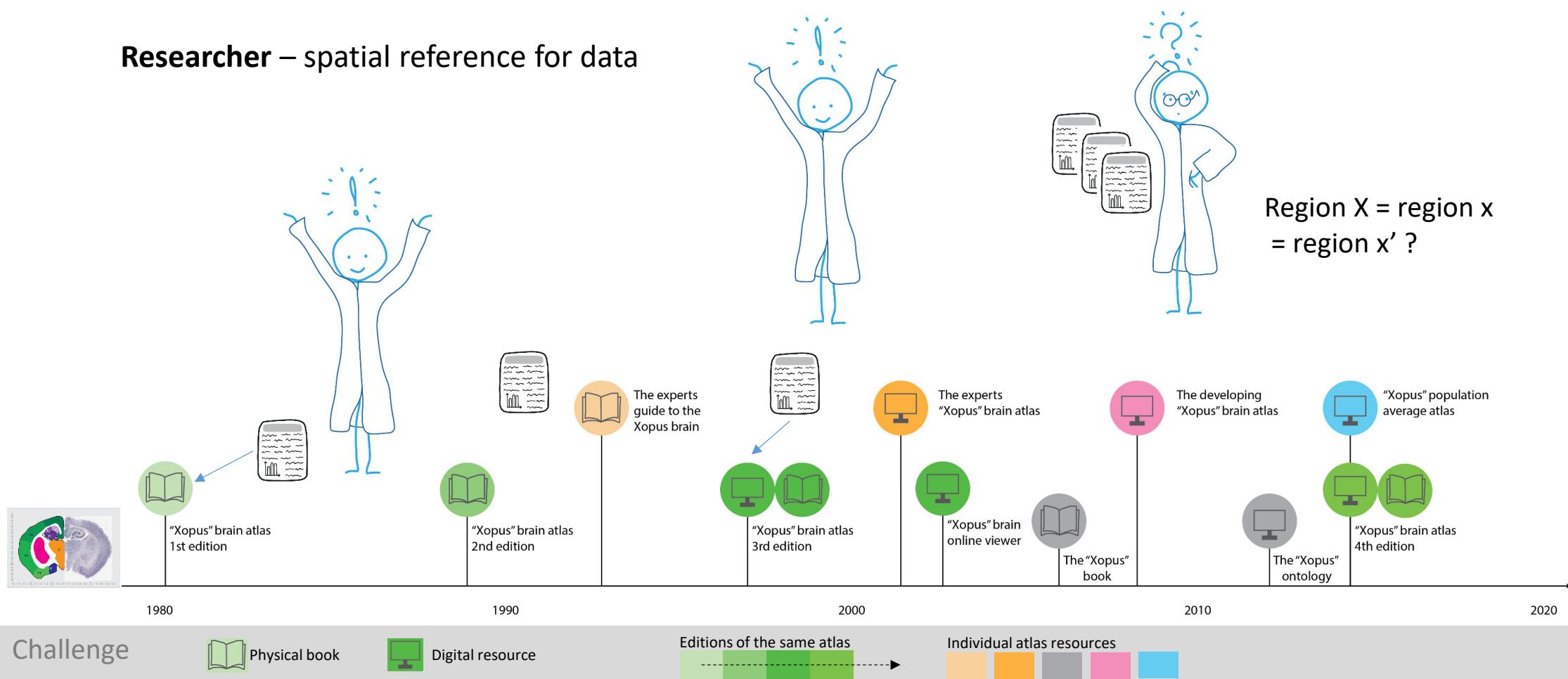
Spatial reference resources for neuroscience

Brain atlases and resources
for the fictional creature “Xopus”



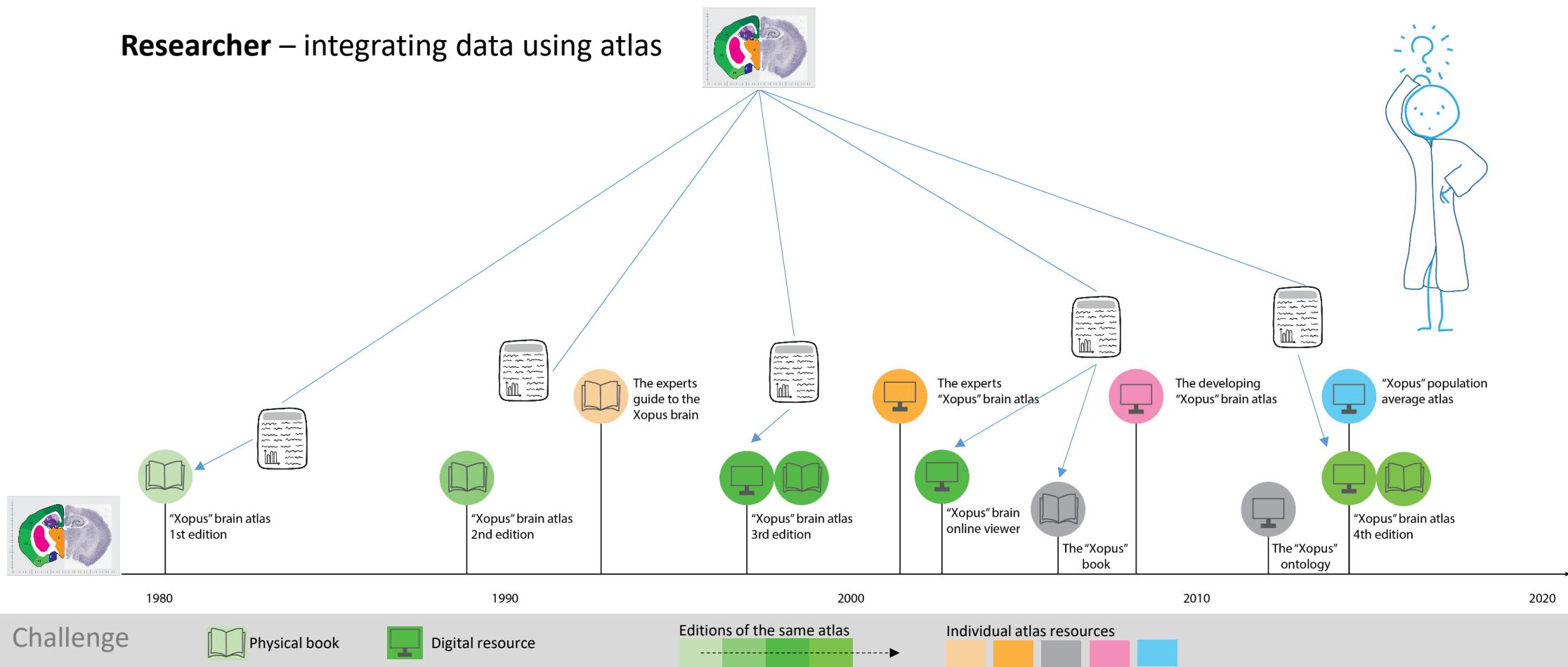
Spatial reference resources for neuroscience

Researcher – spatial reference for data



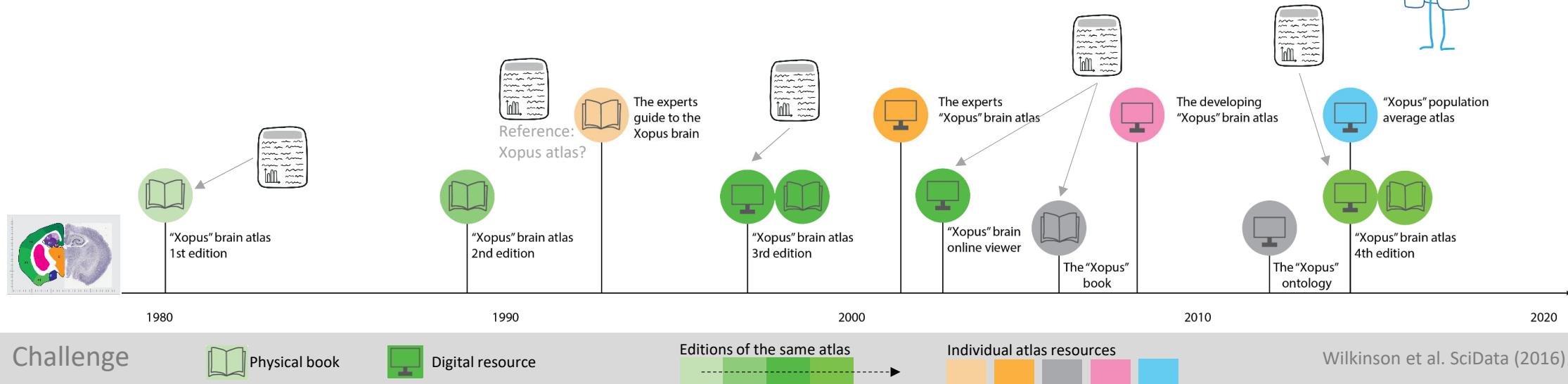
Spatial reference resources for neuroscience

Researcher – integrating data using atlas



FAIR atlases

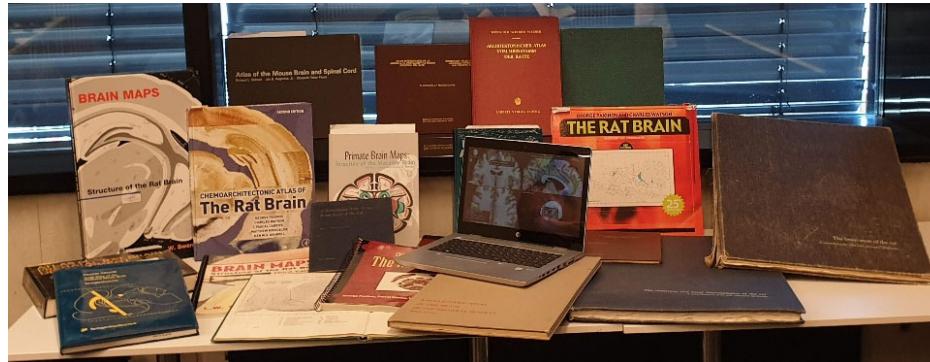
- ✓ • Findable ➤ Where and how to find an atlas?
- ✓ • Accessible ➤ Formats, hardback books versus digital files?
- ✗ • Interoperable ➤ What is the difference between two versions or two atlases?
- ✓ • Reusable ➤ Copyright restrictions, unclear how to reference?



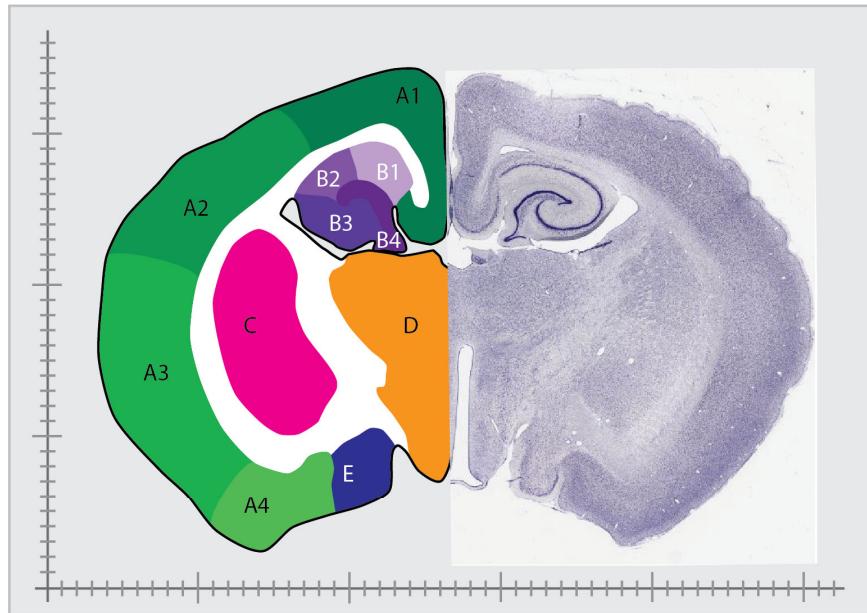
FAIR atlases

- Clarification of what an atlas consist of
- What should an atlas provide?
- Version management

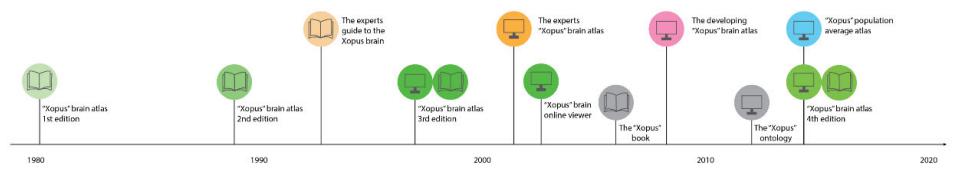
- What are the key elements of an atlas?
- How are these elements related?
- How does this help with version management and make atlases interoperable?



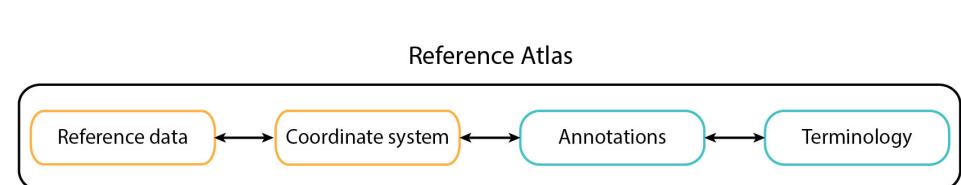
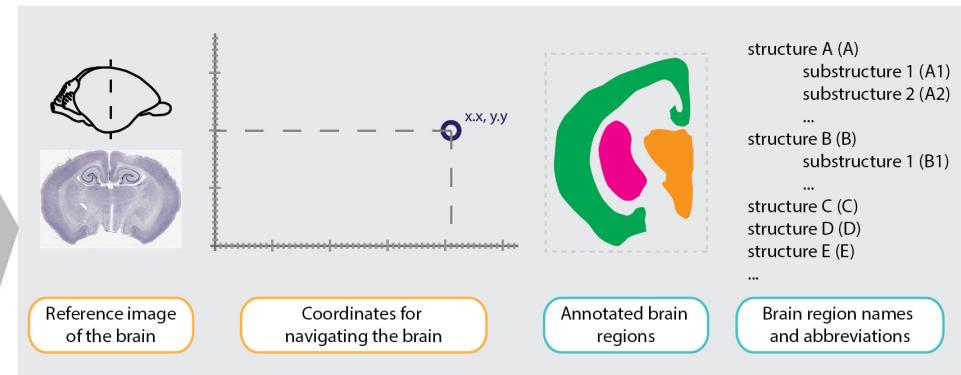
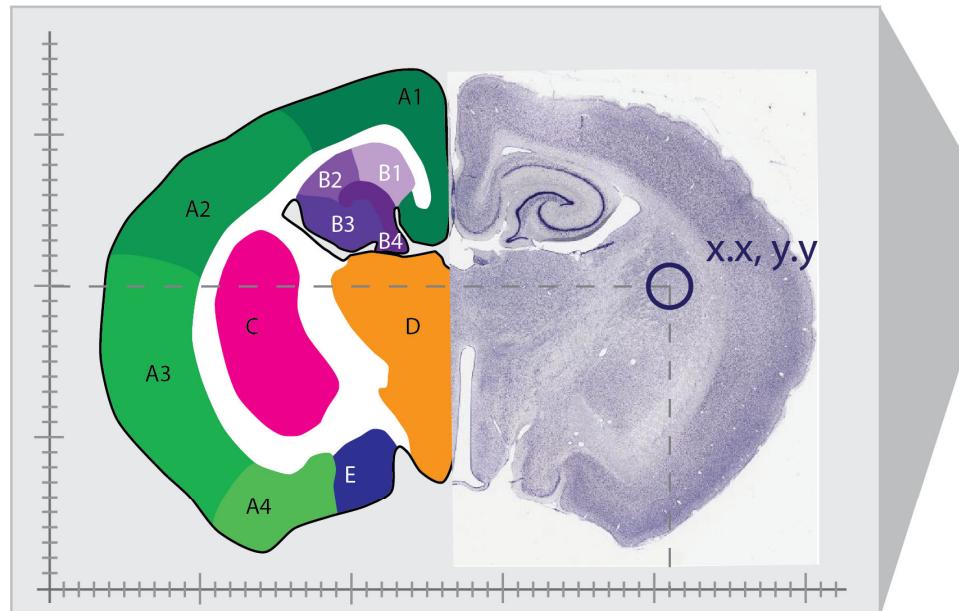
The anatomy of an atlas



- **What are the key elements of an atlas?**
- How are these elements related?
- How does this help with version management and make atlases interoperable?

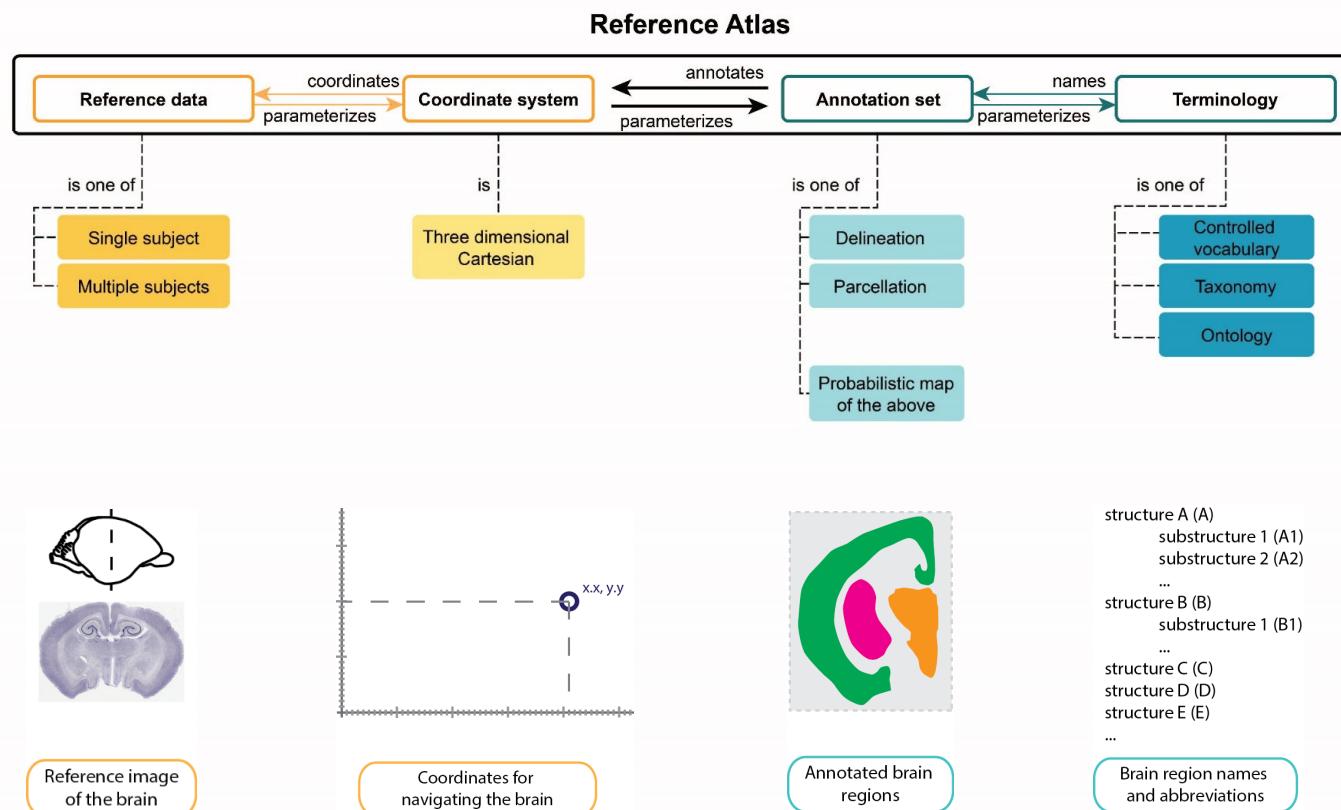


Four key elements



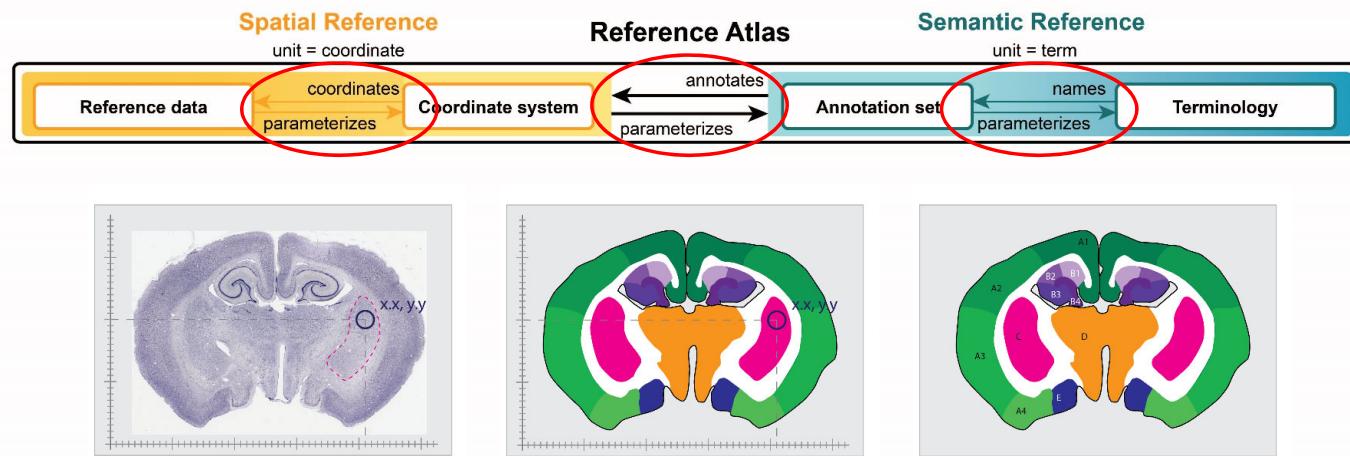
The Reference Atlas Ontology Model- AtOM

The reference Atlas Ontology Model – AtOM



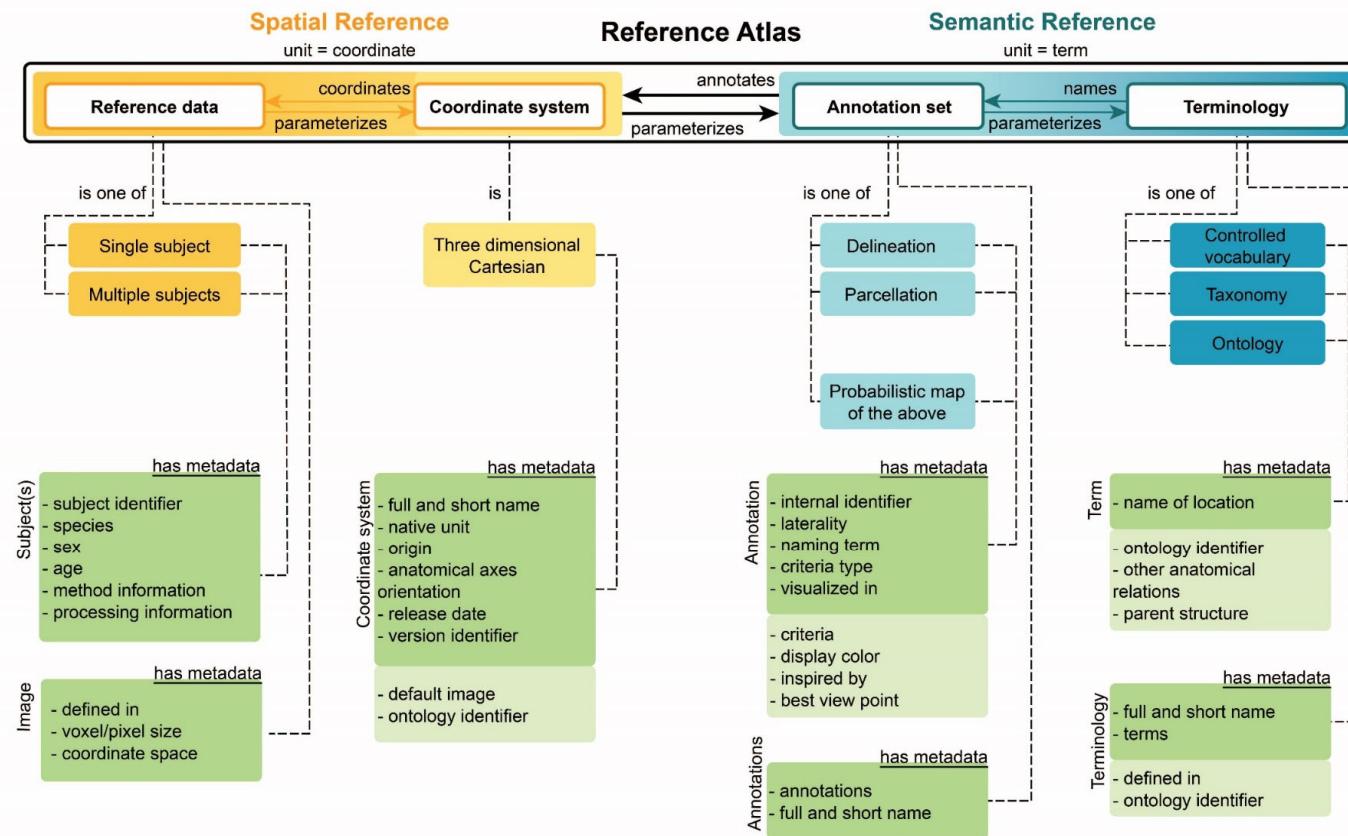
- What are the key elements of an atlas?
- How are these elements related?
- How does this help with version management and make atlases interoperable?

The reference Atlas Ontology Model – AtOM



- What are the key elements of an atlas?
- How are these elements related?
- **How does this help with version management and make atlases interoperable?**

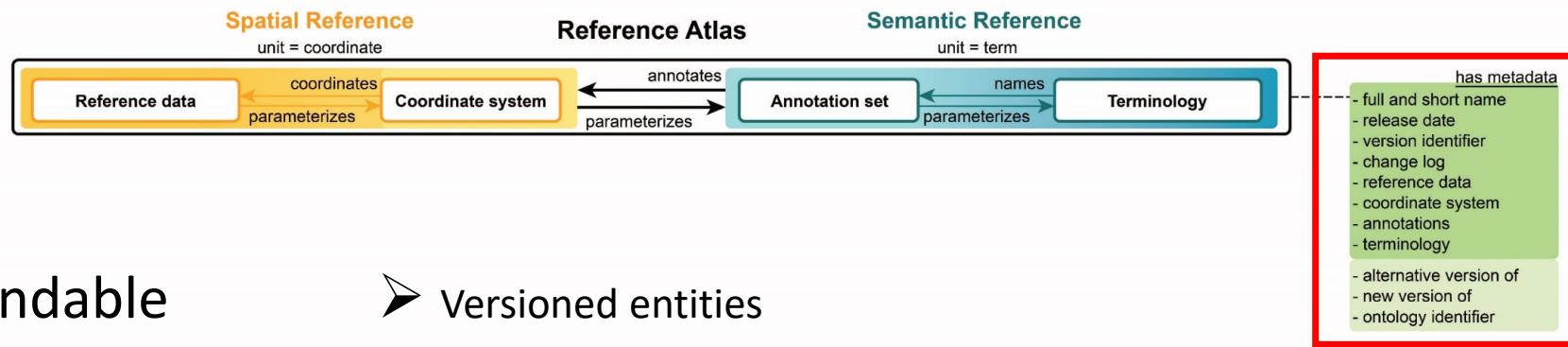
The reference Atlas Ontology Model – AtOM



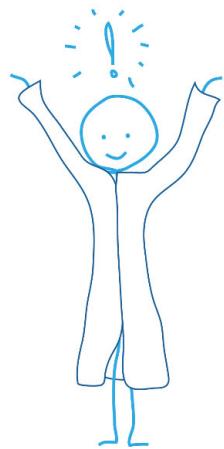
- Defined elements
- Relations
- Metadata

Interoperable

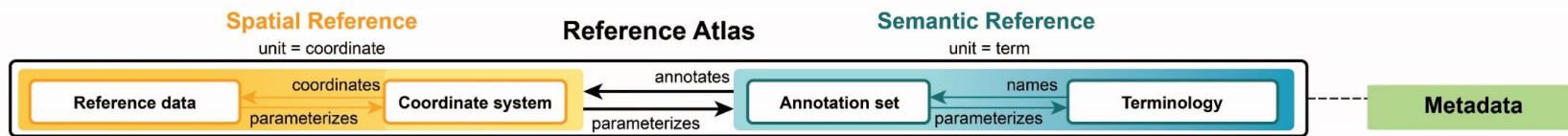
Enabling FAIR data integration



- ✓ • Findable ➤ Versioned entities
- ✓ • Accessible ➤ Digitally available and machine-readable
- ✓ • Interoperable ➤ Defined elements, relations and metadata
- ✓ • Reusable ➤ Clear license and open access



Summary and outlook



- Atlases have these four key elements
- Every atlas iteration can be uniquely cited
- AtOM is a way to formalize FAIR atlasing
- Interoperable atlases enable interoperable data

Thank you for your attention!

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2021 INCF Assembly – Atlas ontology model for FAIR integration of neuroscience data

