BIOMEDICAL IMAGING REPOSITORIES AND TOOLS IN EOSC OPEN SCIENCE I AND II PROJECTS

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https://cbia.fi.muni.cz/

MUNI FI

CZECH BIOIMAGING

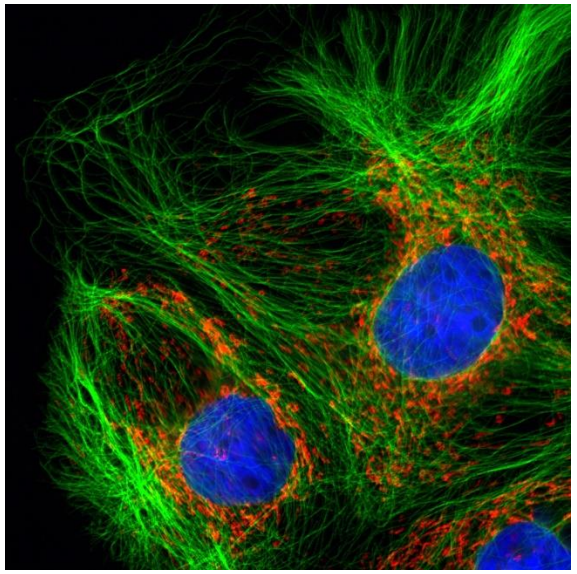
CBIA CENTRE FOR BIOMEDICAL IMAGE ANALYSIS

BioImaging = Biological Imaging + Medical Imaging

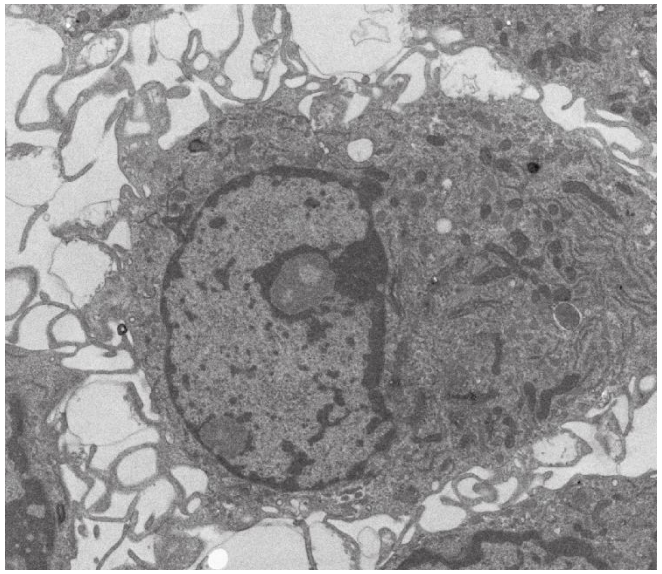
Biological Imaging = Light Microscopy + Electron Microscopy

Medical Imaging = Human Imaging + Animal Imaging

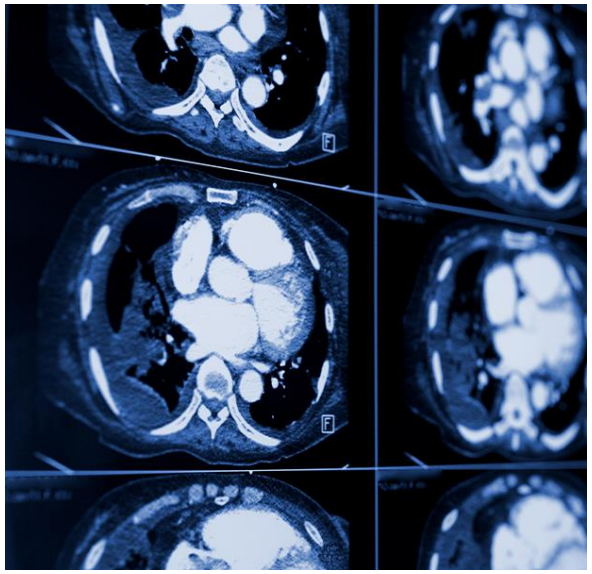
Light Microscopy



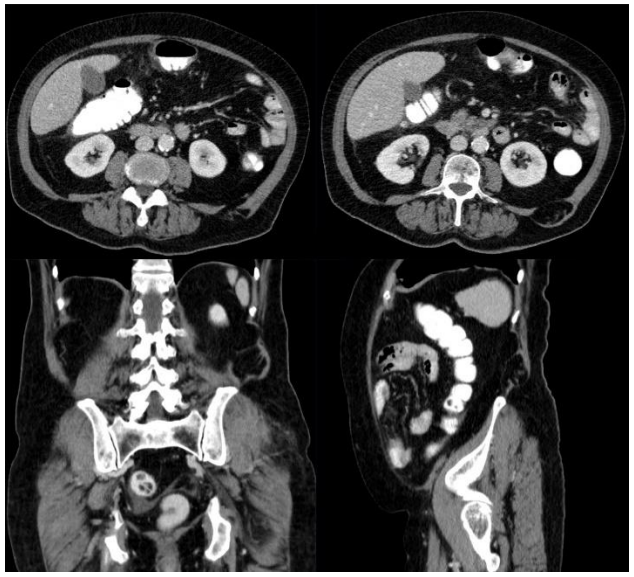
Electron Microscopy



Human Imaging



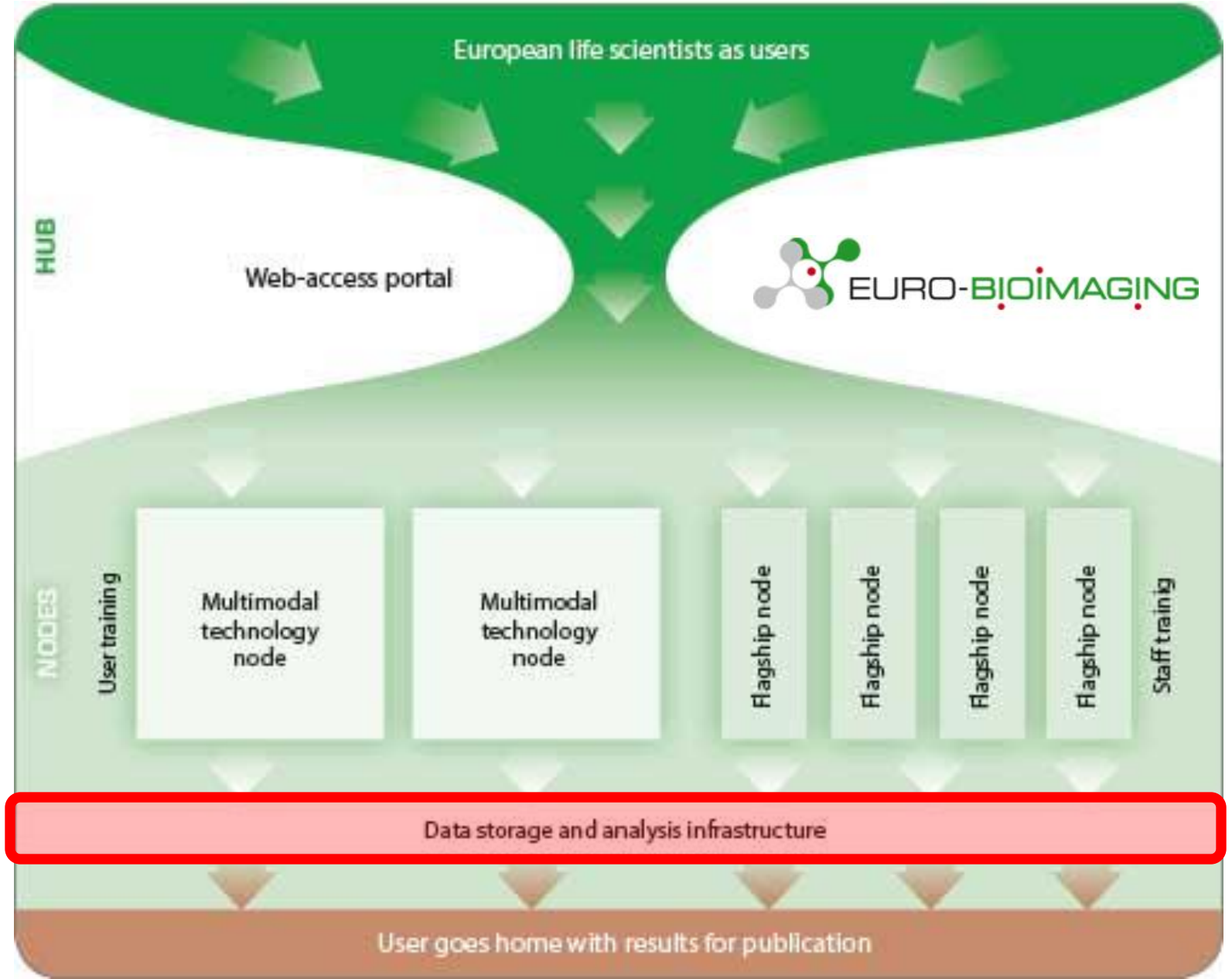
Animal Imaging



Properties of data: Multidimensional (2D, 3D, 4D, 5D) / Multimodal / Multicentric

https://www.czech-bioimaging.cz/

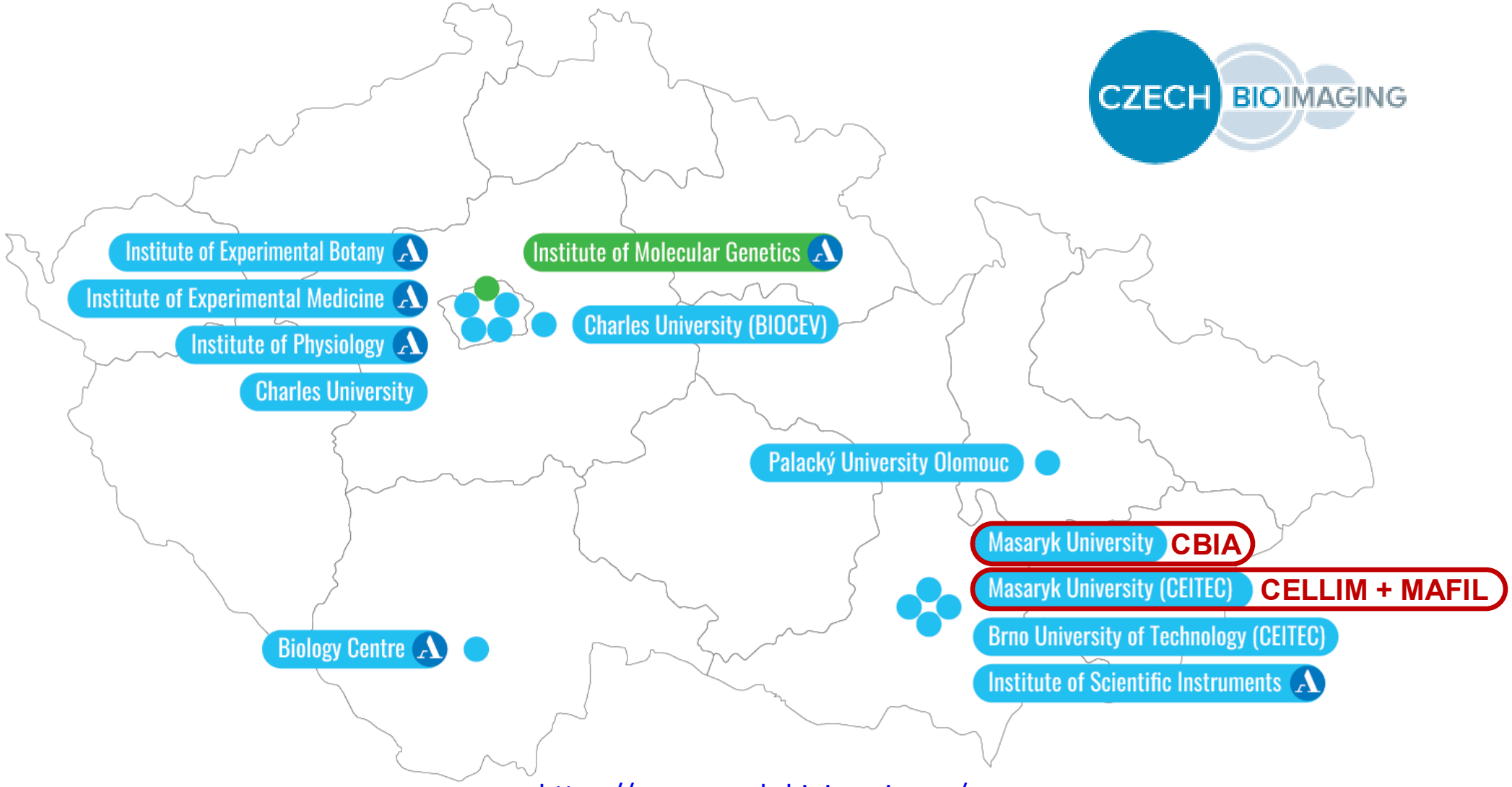
Euro-BioImaging Research Infrastructure



https://www.eurobioimaging.eu/

Czech-BioImaging Research Infrastructure

Role of CBIA FI MU: responsible for **data management**



https://www.czech-bioimaging.cz/

What Has Been Done (EU Level)

BioImage Archive

Search BioImage Archive

Examples: brain, capsid

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The BioImage Archive is a free, publicly available online resource which stores and distributes biological images. It accepts submissions of data from any imaging modality, as long as the data are either associated with a peer-reviewed publication, or of value beyond a single experiment.

You can submit your data on our submission page. All data submitted to the BioImage Archive must be consented for a public release and the submitter self certifies that they have the rights to submit such data to a public archive. You can find more about our policies here.

The BioImage Archive also provides data archiving services to the broader bioimaging database community including added-value bioimaging data resources such as EMPIAR and IDR. Submission to related community resources may be more appropriate for some data types. You can find out more about the BioImage Archive's scope, and where your data should best be archived here and here. The BioImage Archive cannot accept patient-identifiable medical data, such as that derived from clinical imaging.

The BioImage Archive supports FAIR Sharing and implements the REMBI guidelines to enable FAIR data.

Further information

ONLINE TUTORIAL
BioImage Archive
Quick tour

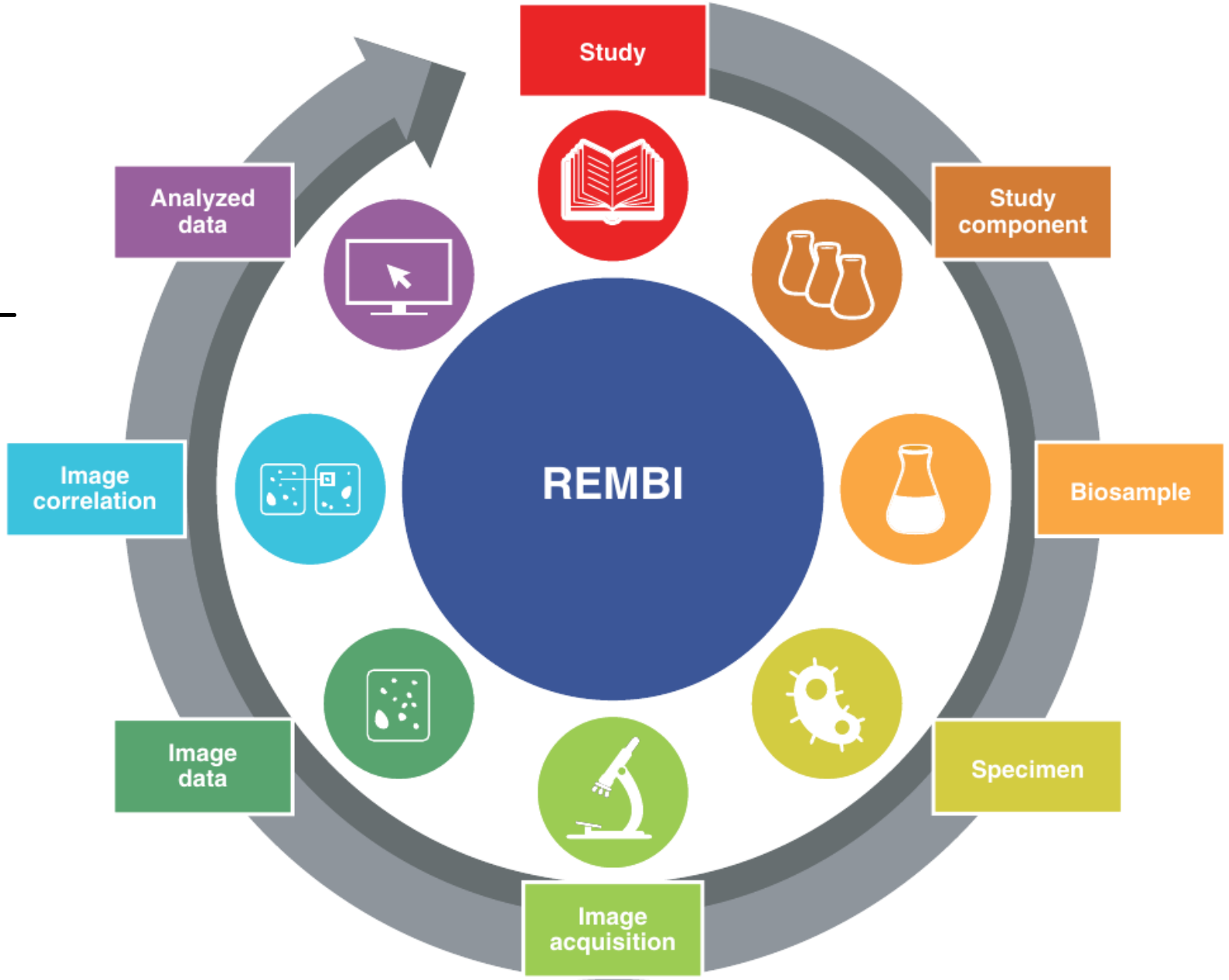
The BioImage Archive Online Tutorial

The BioImage Archive – Building a Home for Life-Sciences Microscopy Data
Journal of Molecular Biology **434**: 167505 (2022)

Priorities Fund and operational costs supported by EMBL member state funding.

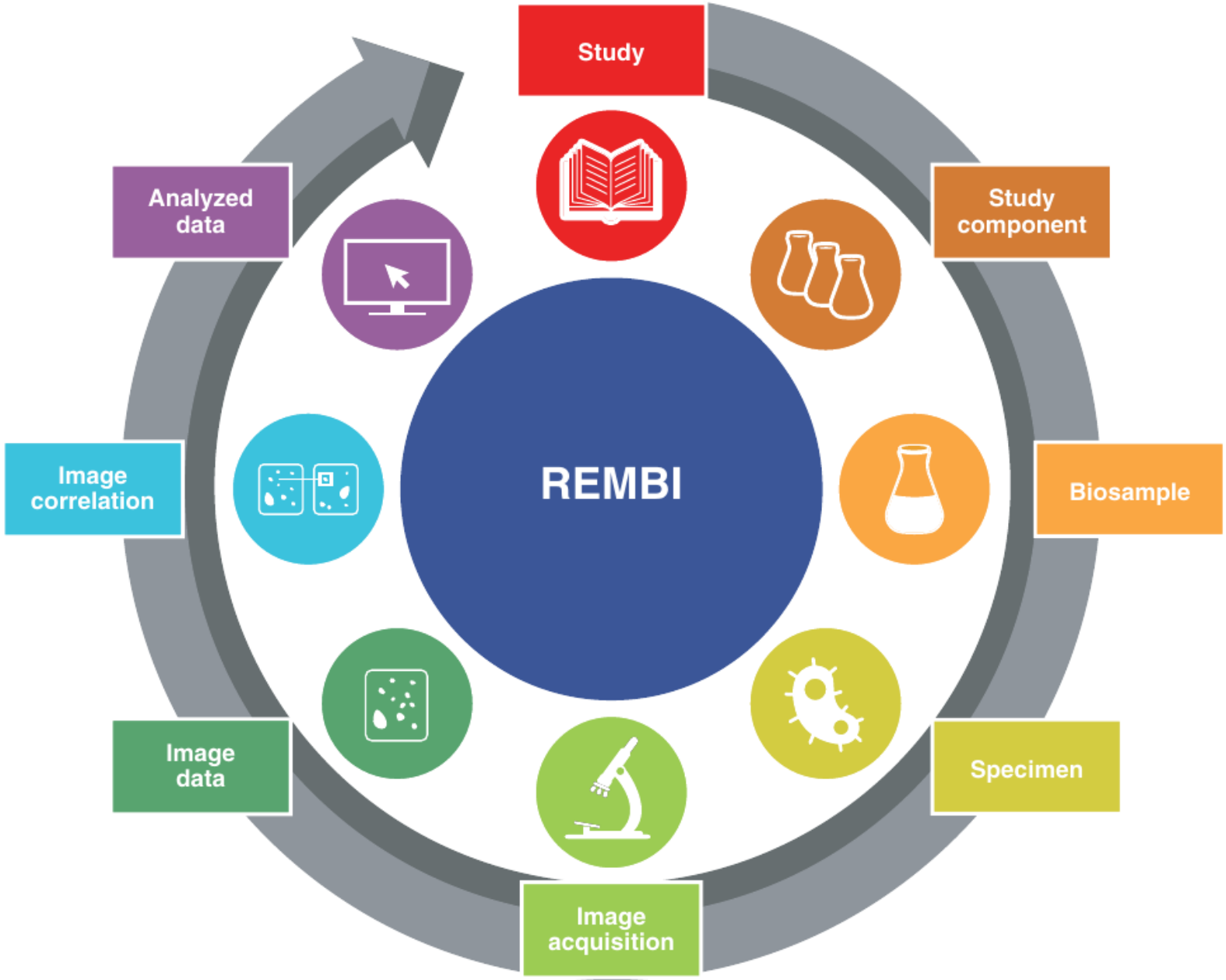
What Has Been Done (EU Level)

- **REMBI:** **Re**commended **M**etadata for **B**iological **I**mages—enabling reuse of microscopy data in biology. *Nature Methods* **18**, 1418–22 (2021)



What Has Been Done (CZ Level)

- **REMBI.CZ**
  - Based on REMBI 1.5 used in BioImage Archive
  - Freetext replaced with ontologies wherever possible
  - Mandatory items only (for now)
- **Biological Image Data Repository**
  - First version to be launched in 2025



What Has Been Planned (CZ Level)

- **Current Solution**
  - Local data storage and processing
    (at core facilities or on institutional servers)
  - Metadata not stored properly
    (only partially, e.g., acquisition parameters by imaging instruments)
- **New Proposed Solution (EOSC projects Open Science I and II)**
  - Useful curated FAIR data stored in a central repository
    (with processing support, e.g., for training AI models)
  - Division into two repositories:
    - Biological Image Data (Light + Electron Microscopy) – Open Science I Project
    - Medical Image Data (Human + Animal) – Open Science II Project
  - Metadata stored properly along with the data
  - Tools available to support data/metadata management

Thank you for attention!