



# OSCARS

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## Funded Project

### Enhancing AI-Readiness of Bioimaging Data with Content-Based Identifiers (BIO-CODES)

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Implemented by



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## What problem(s) are you going to solve?

- Rapid **growth of bioimaging data** presents challenges in management, integrity, and reusability.
- **Lack of standardized identifiers** for bioimages leads to difficulties in tracking, verifying, and certifying data.
- Existing **FAIR principles** (Findability, Accessibility, Interoperability, Reusability) are not fully implemented in bioimaging workflows.
- Use of AI in bioimaging data analysis requires transparency in data provenance and authenticity.

## What are you planning to do to solve the problem?

- Implementing the International Standard Content Code (ISCC) for bioimaging data (e.g. OME-Zarr) and figure renderings.
- Developing a **proof-of-concept integration** of ISCC with existing bioimaging workflows.
- Automating ISCC code generation at the point of image acquisition for better data traceability.
- Exploring integration with existing bioimaging metadata standards like RO-Crate and platforms like OMERO.

## What will be the results and how do you plan to make them available to the broader community?

- Standardized **content-based identifiers for bioimaging data**.
- Improved data integrity, transparency, and reusability.
- ISCC adoption in Euro-BioImaging and EOSC infrastructures.
- Enhanced AI-readiness of bioimaging datasets for trusted AI applications.
- Integration of ISCC within vendor platforms and research infrastructures.

## What risks could limit the success of the project, and how can they be mitigated?

- **Adoption Barrier:** Technical complexity may cause delay in adoption by bioimaging facilities and vendors → **Mitigation:** Engage stakeholders early, provide material for simple onboarding.
- **Technical Integration:** Development of ISCC for bioimaging data incl. proprietary image formats is challenging → **Mitigation:** Considering dedicated ISCC code unit for only OME-Zarr (and most common bioimaging formats).

## Who is doing it?

- **Leiden University:** Coordination, bioimaging data management.
- **ISCC Foundation:** ISCC technology implementation.
- Key Contributors:
  - **Sylvia Le Dévédec** (Leiden University) – Bioimaging data scientist.
  - **Katy Wolstencroft** (Amsterdam UMC) – FAIR data management expert.
  - **Titusz Pan** (ISCC Foundation) – ISCC lead developer.
  - **Josh Moore** (German BioImaging, OME team) – Advisor on bioimaging standards.
  - **Sebastian Posth** – Project manager and ISCC application developer.
  - Team from **Leiden University** (Leiden Cell Observatory) and **LUMC** (Light and Electron Microscopy Facility)