

Global BioImaging Training Resource

Submission Guidelines

Training Resource: background information

Global BioImaging Training Resource is a community-driven resource consisting of training and informative material collected and curated by members of the imaging community for use by anyone interested in imaging and microscopy.

The existing modules span a wide variety of topics ranging from imaging technologies and instrument operation to data management, image analysis & visualization, and core facility management.

The target audience for the Training Resource includes both imaging core facility staff and researchers utilizing imaging and microscopy in their research. Currently, modules are available in 4 different categories:

1. Imaging Technologies
2. Instrument Operation
3. Image Data
4. Core Facility Management

Members of the imaging community are welcome and encouraged to submit modules to the Global BioImaging Training Resource, to be incorporated into the existing categories indicated above or a new category can be proposed at the time of submission.

Submission procedure: requested information

As part of the submission process to the Global BioImaging Training Resource, the following information is requested in the submission form (link below):

- **Contact information of the person submitting a module**
 - The person making the submission will be contacted in case any additional information about a module is required
 - In addition, the person will be notified when the submitted module has been incorporated into the Training Resource
 - Furthermore, the person will be contacted once a year to ensure that the submitted material and the module stay up to date and relevant to the imaging community
- **Category selection**
 - A category where the submitted module should be located is chosen
 - Existing categories can be selected or a new category can be suggested
- **General information about a module**
 - **Module title.** Must be short and concise
 - **Module description.** A minimum of 2-4 sentences are required to provide an overview of a module

- **Target audience.** Select one from the following: Researchers, Staff of imaging facilities, or Both researchers and staff
- **Intended audience.** Select one from the following: Beginner, Intermediate, or Advanced
- **Estimated time of completion.** Summation of the duration of all of the videos. Recommended external training courses can also be included in the estimated time of completion if the time of completion for that course is known. Time of completion should be provided in minutes
- **Keywords:** 2-8 keywords, separated by a comma, should be provided that best describe the material in the module
- **Contents of a module**
 - For each training material, you will be asked to choose between a video, PDF document, or external weblink
 - For some training material, a text-based description of the training material is required

What kind of material can be included in the training resource?

The material that is incorporated into the module needs to be publicly available.

Three types of resources can be included in a module: video, PDF document, and external weblink (see image below).

MODULE 05 **Image data repositories** (16 topics) USER INTERMEDIATE 3 hours 8 mins 9 secs

This module invites you to learn about exiting image data repositories that provide open access to light microscopy and electron microscopy images and associated metadata. Image data repositories include BioImage Archive, Image Data Resource (IDR), and Electron Microscopy Public Image Archive (EMPIAR).

What is Image Data Resource (IDR)

The Image Data Resource, IDR, is a public repository of image datasets from published scientific studies, where the community can submit, search and access highly annotated datasets. The IDR makes datasets that have never been previously accessible publicly available, allowing the community to search, view, mine and even process and analyze large, complex, multidimensional life sciences image data. Sharing of image data promotes the validation of experimental methods and scientific conclusions, the comparison with new image data obtained by the global scientific community, and enables data reuse by developers of new image analysis and processing tools.

Introduction to Image Data Resource (IDR) Brief introduction to the Image Data Resource (IDR) in the form of presentation slides.	PDF document
Workshop: Image Data Resource (IDR) Presenter: Petr Walczysko, Open Microscopy Environment, University of Dundee, Dundee, Scotland	Video

Workshop: Image Data Resource (IDR) - Topics


- Complete overview of Image Data Resource (IDR)
- How to browse and search the data in IDR and briefly explain the submission process
- Demonstrate how to integrate a variety of image processing tools such as ImageJ/Fiji, ilastik, and CellProfiler in a Jupyter notebook environment and use these for analysis of the images and metadata stored in IDR

Supplementary material for Workshop: Image Data Resource (IDR)


Access Image Data Resource (IDR)	External weblink
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1. Videos that are publicly available can be made part of a module. In the Training Resource, videos are displayed using a built-in video player.
2. Publicly available PDF documents can also be made part of a module. In the Training Resource, PDF documents are displayed using a built-in PDF reader.
3. *External weblink* redirects a visitor to an external website. Weblinks for various resources such as image data repositories, training resources, free of charge external courses, peer-reviewed articles, software such as image analysis and/or visualization software, data management software, and so forth can be included in a module. Essentially, any external weblink that may enhance the experience of the user of that particular module can be added into a module.


Resource description can accompany three types of resources (see image below).


Introduction to BioImage Archive and EMPIAR


Presenter: Gerard Kleywegt, EMBL-EBI, Wellcome Genome Campus, Cambridge, United Kingdom


Introduction to BioImage Archive and EMPIAR - Topics

- Available image data repositories and structure archives provided to the imaging community by EMBL-EBI
- Protein Data Bank (PDB): brief overview
- Electron Microscopy Data Bank (EMDB): brief overview
- Electron Microscopy Public Image Archive (EMPIAR): overview, growth, and expansion
- Examples of EMPIAR releases
- How to access, deposit, segment, and annotate images in EMPIAR
- Volume EM in EMPIAR
- BioImage Archive: overview, scope,
- Recommended Metadata for Biological Images (REMBI)
- Overall architecture of the bioimage data ecosystem
- BioStudies: resource for aggregating all of the outputs of research studies
- Improving reusability of image data (Findable, Accessible, Interoperable, Reusable; FAIR)


Course: Learn how to use EMPIAR

Developed by: Andrii Iudin and Ardan Patwardhan, EMBL-EBI, Cambridge, United Kingdom


Course: Learn how to use EMPIAR - Topics

- Search and access raw electron microscopy images in EMPIAR
- Deposit electron microscopy data in EMPIAR
- Know how to access further support when using EMPIAR

Resource description is a text-based entry that is used to describe a resource.

Examples of resource description include the following:

- Learning objectives of a module
- Definition of a topic
- Topics introduced in a video or PDF document
- Suggested further reading (with a possibility of embedding a hyperlink)

Adding resource description is encouraged since it greatly adds value to a module through curation and in some cases, adding resource description is mandatory (see below).

Module content: resource types

The following three types of resources can be included in the module:

- **Video**
 - Weblink to a video
 - Videos hosted on YouTube and Vimeo video sharing platforms can be included with YouTube being a preferred platform
- **PDF document**
 - Web link to a PDF document
- **External weblink**
 - Web link to an external website (e.g. software download page, free of charge course, etc.)

Each of the resource types can be accompanied by a text-based resource description.

Resource description is mandatory for the following:

- Videos:
 - Topics described in a video must be provided (separated by a comma in the submission form)
 - Name and affiliation of a presenter or an instructor must be provided (if available)
- Image data repositories: brief description must be provided
- Image analysis and data management software: brief description must be provided
- External courses: brief description must be provided
- Training resources and e-learning platforms: brief description must be provided

The following options are available as part of resource description:

- Bold or italic text
- Numbered or bulleted lists
- Embedded links

It is recommended to check the existing modules on the Global BioImaging Training Resource to fully understand the different uses of resource types and accompanying resource description. For example, module 5 on Image data repositories located [here](#) nicely illustrates what can be accomplished using the available resource types.

Further reading

Further reading can also be included as part of a module (see image below).

Further reading

1. **BioImage Archive:** Ellenberg et al. (2018). A call for public archives for biological image data. *Nature Methods*, volume 15, pages 849–854.
2. **Image Data Resource:** Williams et al. (2017). Image Data Resource: a bioimage data integration and publication platform. *Nature Methods*, volume 14, pages 775–781.
3. **EMPIAR:** Iudin et al. (2016). EMPIAR: a public archive for raw electron microscopy image data. *Nature Methods*, volume 13, pages 387–388.

Please use the following citation format for further reading:

Last name of the first author et al. (Year). Title. Name of the journal, Volume (number), pages.

Submission form

The submission form can be accessed at the following link:

https://www.surveymonkey.com/r/module_submission