



Challenge Light My Cells II

From Multimodal Transmitted Light To Focus-Aware Multichannel Fluorescence

Data acquisition framework

Biosample

- 2D **Mammalian cell culture** (human, rodent, dog, monkey, etc.)
- Observation of different **subcellular structures** on a **cellular scale**
- **Live OR Fixed** cell culture

Image Acquisition

- Wide field microscope
- About 5 acquisition sets with different samples
- For each acquisition sets about 10 images
- Objective free from 20x to 100x
- **Time-lapse (very) encouraged** (slow movement variations to prevent cell loss)
- No specific wavelength (to keep in the metadata)
- Multiple microscopes are encouraged (even for the same plate)
- Multiple objectives and magnifications are also welcome
- ⚠ Minimal movement shift between fluorescent and phase contrast acquisitions

Imaging Data

- 2D with **few z** planes (around 10 to 20) with **different focus** (Δz free)
- **One stack with several channels** :
 1. **Bright Field** AND/OR **Phase Contrast** AND/OR **DIC** (No confocal !)
 2. **Fluorescence** imaging of structures

Required:

Cytoplasm (any fluorescent marker **diffusing** in the cytoplasm but excluding nuclei)

OR / AND

Tubulin (ex: SIR-tubulin, GFP, Alexa568-Alpha, EB3-Cherry, etc.)

OR / AND

Actin (ex: SIR-actin, Phalloidin, Atto647-Myofibrils, etc.)

Additional:

OR / AND

Mitochondria (ex: Cyto-red, MISP-Cherry, GFP, MitoTracker, etc.)

OR / AND

Nucleus (ex: DRAQ5, SIR-DNA-647, mCherry-H2B, DAPI, etc.)

→ **If you can do several, that would be better (the ideal being all 5).**

- If time, a few time steps (around 10 to 20) ; Δt free—in minutes for actin & tubulin.
- Format and sizes : FREE (but can be opened in ImageJ & Napari)
- Mandatory **metadata** — To ensure your images can be used, you have to **download and complete** the **metadata template** : [Word \(.docx\)](#), [Markdown \(.md\)](#), [OpenDocument \(.odt\)](#) — see also [Example from V1 \(.pdf\)](#)

Contact

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Export

File Sender (<100GB)

<https://filesender.renater.fr/>

Seafile (<600GB)

<https://seafile.lirmm.fr/accounts/login/> (contact us)

FTP (<2TB)

<ftp.omerofbi.fr> (contact us)

Examples from the [Light My Cells database](#):

Image 85 (study 4) from Light My Cells Database : human HELA cells

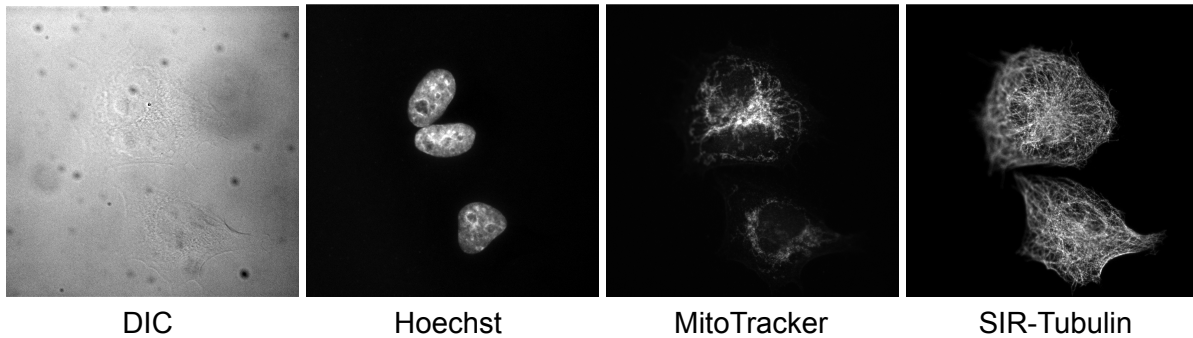


Image 100 (study 5) from Light My Cells Database : human muscle fiber

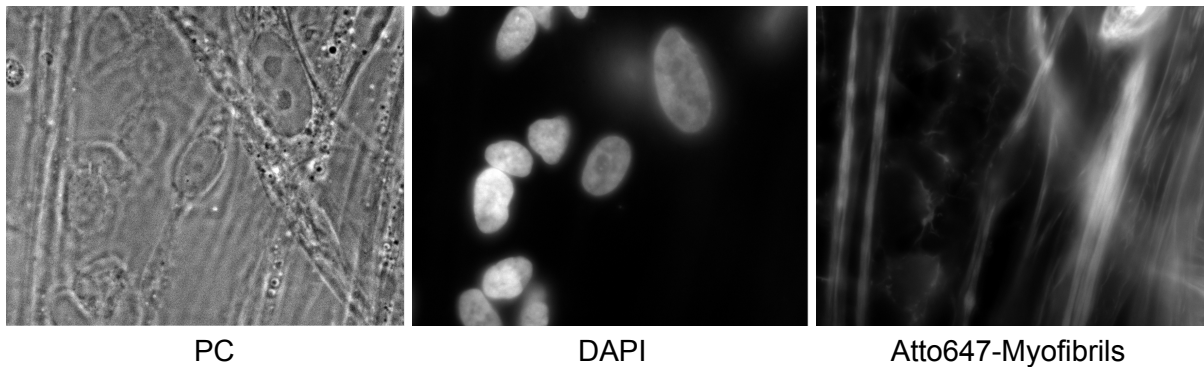


Image 130 (study 10) from Light My Cells Database : T24 human bladder cancer cells

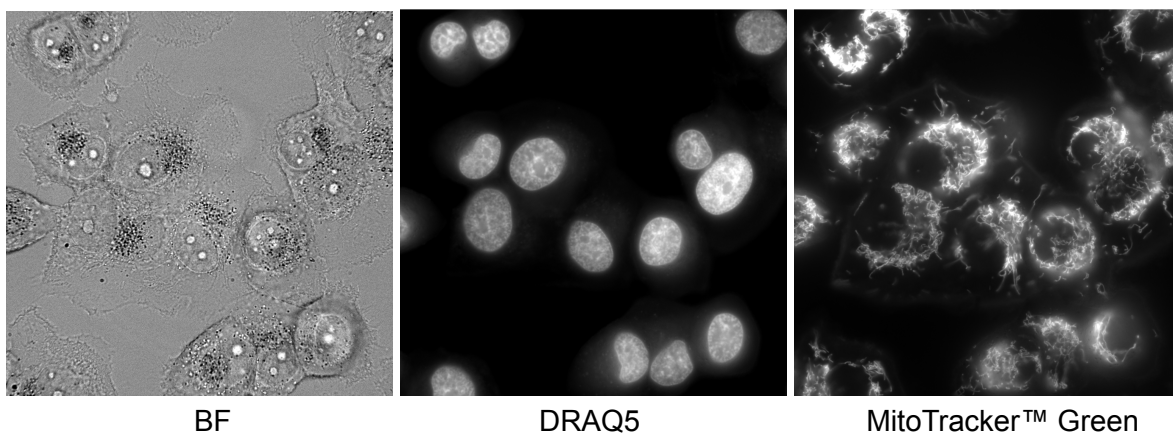


Image 313 (study 20) from Light My Cells Database : MDCK dog cells

