

CytoSMART Lux3 FL Duo Kit

Side-by-side monitoring of two fluorescence live-cell imaging experiments

Using fluorescence live-cell imaging researchers can determine not only whether, but also when and how certain cellular events occur in culture. Currently, the most common fluorescence live-cell imaging setup is a fluorescence microscope, with a stage-top incubation box to regulate the culture conditions. However, there are practical issues when using this setup for live-cell imaging. The regulation of the culture conditions in the incubation box is more sensitive to variations compared to a dedicated incubator. This variability may disturb the cultures and can distort the results. Besides that, images are only captured at certain time points, but the microscope is unavailable for other users during the entire live-cell imaging experiment. Using the CytoSMART® Lux3 FL Duo Kit, an automated fluorescence live-cell imaging kit, two culture vessels containing fluorescently labeled cells can be imaged side-by-side at regular time intervals throughout the entire culturing period.

The CytoSMART® Lux3 FL Duo Kit can:

Monitor your cells from inside the incubator

The environmental shock your cells experience when taking them from the incubator for imaging can be prevented. The devices in the CytoSMART® Lux3 FL Duo Kit are designed to work inside the incubator, without disturbing the temperature and airflow. This enables you to perform your long-term imaging experiments at the optimum culture conditions for your cells, without any fluctuations in temperature or CO₂-level. Simply place your culture vessels on the surfaces of the devices, and follow the intuitive steps of the CytoSMART Lux3 FL Duo Kit app, where the two devices are controlled by a single laptop. Then you can start your experiment and walk away. The images of running or finished experiments can be accessed, processed and analyzed from any desired location using the CytoSMART® cloud-based environment, allowing monitoring of the cells without having to open the incubator, or even be in the lab.

Directly compare experimental groups

Since both devices of the CytoSMART® Lux3 FL Duo Kit can be placed directly next to each other in the same incubator, the monitored cultures are maintained in an identical culture environment. This facilitates optimal side-by-side comparison of experimental groups.

Display the whole picture with brightfield and fluorescence imaging

Clear brightfield as well as green and red fluorescence images can be captured with the CytoSMART® Lux3 FL Duo Kit (see figure 1A-C). This increases the available number of read-out parameters in a single experiment compared to brightfield-only imaging. The monitoring of cultures elucidates the time profile of (fluorescently labeled) cellular events, and shows when and how these events occur.



<https://cytosmart.com/products/cytosmart-lux3fl-duo-kit>

**Research use only. Not intended for diagnostic purposes.*

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Quantify cell growth and cell properties

The integrated image analysis in the CytoSMART® Cloud facilitates quantification of a large palette of output parameters. For the brightfield channel, as well as the green and red fluorescent channels per device, the confluence can be determined (see figure 1D-E). Particle count can be performed for the fluorescent channels (see figure 1F). These read-outs can provide valuable

insight into live/dead stainings, cell cycle stainings, cell-cell interactions in co-cultures (when a fluorescent label is assigned per cell type), transfection efficiency quantification, and more. This automated quantification – combined with the side-by-side comparison of cultures – minimizes unnecessary variation in results.

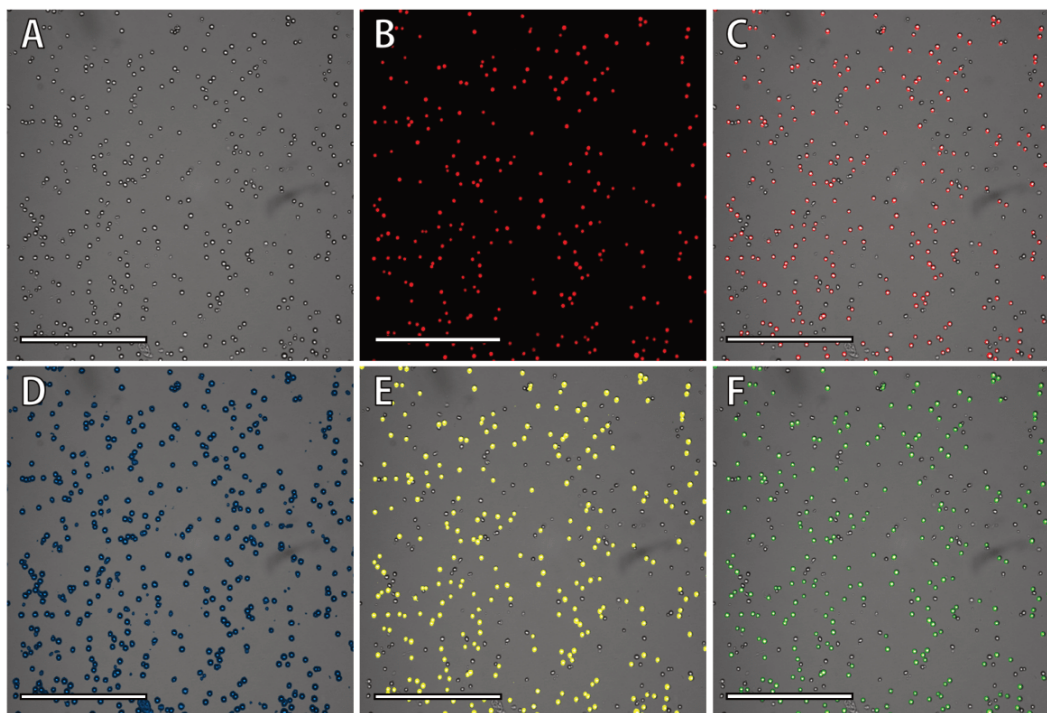


Figure 1.
 A) brightfield channel;
 B) red fluorescent channel;
 C) merged brightfield and red fluorescent channel;
 D) confluence analysis brightfield channel (dark blue);
 E) confluence analysis red fluorescent channel (yellow);
 F) object count red fluorescent channel (green).
 Scale bar: 500 μm .

CytoSMART® Lux3 FL Duo Kit specifications

No. devices	2
Dimensions (per device)	166 x 140 x 135 mm (L x W x H)
Weight (per device)	1.3 kg
Optics	Brightfield with digital phase contrast; fluorescence module
Magnification	10x fixed objective; additional 2x digital zoom
Brightfield light source	LED
Green fluorescence light source (bandwidth)	LED: 452 nm (45 nm)
Green fluorescence emission filter (bandwidth)	512 nm (23 nm)
Red fluorescence light source (bandwidth)	LED: 561 nm (14 nm)
Red fluorescence emission filter (bandwidth)	630 nm (90 nm)
Camera	6.4 MP CMOS
Field of view (per device)	1.45 x 1.45 mm; 2072 x 2072 pixels
Resolution	0.7 μm /pixel
Output options	Raw images (.jpg), processed images (.jpg, .tiff), processed videos (.mp4), processed data (.xlsx)
Well-plate types	6-384 well-plates (one fixed field of view per device)
Culture flask types	HYPERflask, T25-T225 and triple flasks (one fixed field of view per device)
Other culture vessels	Petri dish, any transparent vessel <55 mm high (one fixed field of view per device)
Operating environment	5-40 °C, 20-95% humidity



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