CytoSMART Lux3 FL

Get more out of fluorescent experiments using live-cell imaging

Monitor fluorescently-labelled cellular processes for hours, days or even weeks. The CytoSMART Lux3 FL is a small live-cell imaging microscope equipped with one brightfield and two fluorescent channels (green and red). The device can be used inside any standard cell culture incubator.

Insight in detailed cellular processes

Cellular processes such as growth, proliferation, differentiation, migration, and apoptosis are fundamental in development, tissue repair and immune regulation. However, deregulation of these processes can result in pathologies, such as cancer, autoimmune disorders, and chronic inflammation. Fluorescent labels are readily available, or can be easily designed, to visualise these processes in detail. Currently, fluorescent labelling is mostly used as an end-point measurement. Imaging living cells, however, can give more information about cellular processes. By using automated imaging at regular time intervals the temporal resolution of the fluorescent data is increased, leading to even more relevant data about the cellular processes.

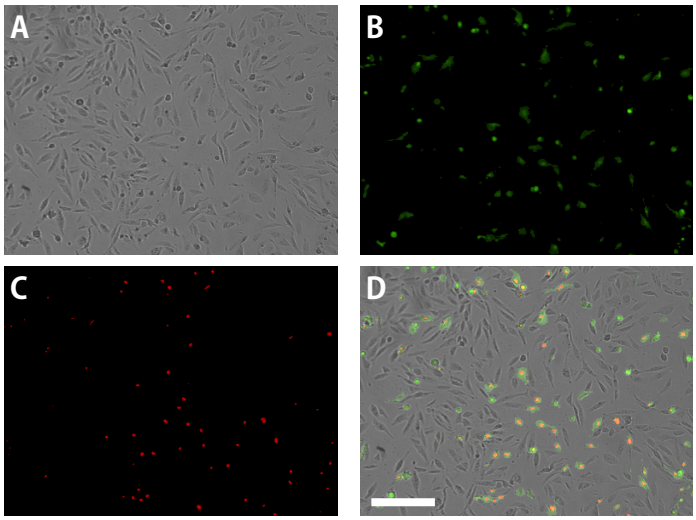

Figure 1: CHO-K1 cells after 6 h of exposure to 0.6 mM H_2O_2. A. Brightfield channel. B. Green channel (pSIVA). C. Red channel (PI). D. Overlay of the three channels. Scale bar represents 200 µm.

Application example: apoptosis assay

Using the Lux3 FL, real-time measurements can be obtained to unveil the kinetics of biological processes. For instance, to closely examine the apoptosis pathway. When cells experience too much stress (e.g. due to toxic compounds such as hydrogen peroxide (H_2O_2)), cells will undergo apoptosis: programmed cell death. Cells in apoptosis first change cell membrane composition, indicated by pSIVA (green; fig. 1B). Next, cells lose membrane integrity, indicated by propidium iodide (PI), a red nuclear dye (fig. 1C). The Lux3-FL was used to monitor the apoptosis process for 24h at 15 min time intervals (fig. 2). In this way the device helps researchers unravel cellular processes in real-time, while the cells are kept in a controlled environment.

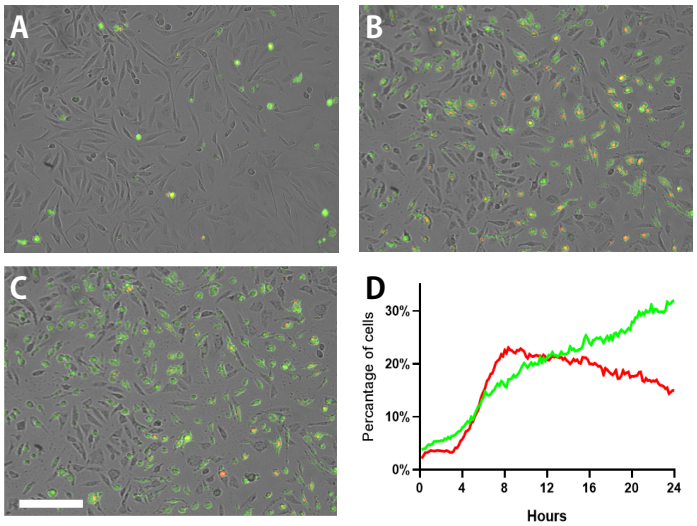

Figure 2: CHO-K1 cells exposured to 0.6 mM H_2O_2 for 0 (A), 12 (B) and 24 h (C). Corresponding graph (D). Overlay of brightfield, green (pSIVA) and red (PI) channels. Scale bar represents 200 µm.