SCREEN

News Letter

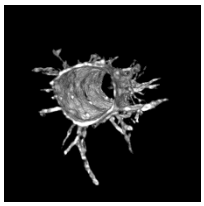
SCREEN Holdings Co., Ltd.

SCREEN Develops Deep Tomography System for Observation and Measurement of 3D Images

Enables Non-invasive 3D Observation of Live Samples

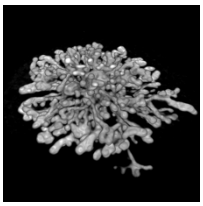
Kyoto, Japan – October 2, 2017 – SCREEN Holdings Co., Ltd. has finalized development of Cell^{3}iMager Estier, a new system that uses optical coherence tomography to enable non-invasive[1] 3D observation of cells and other microorganisms. The system is expected to make a significant contribution to the analysis of various phenomena and functions related to these organisms. It is scheduled for release in December 2017.

Cell^{3}iMager Estier



Angiogenic Sprouting

(Photo provided by Yukiko T. Matsunaga, Assistant Professor, Institute of Industrial Science, The University of Tokyo, Japan)



Reconstituted Kidney-like Structures

(Photo provided by Tetsuya Ohbayashi, Associate Professor, Tottori University, Japan)

Please download the photos from www.screen.co.jp/eng/press/download/HD171002.zip

In recent years, the cell imaging field has achieved remarkable progress, supported by the continuing development of analytical devices. The use of biological microscopes is enabling increasingly detailed analysis of organic phenomena. However, while these microscopes can capture clear, high-resolution images, they have limited field of view / view field and require staining and other preparations before processing. This has led to issues such as the invasive effects created by analyzing samples.

Responding to these challenges, SCREEN has developed Cell^{3}iMager Estier. The new system employs the optical coherence tomography (OCT) technology[2] used in the ophthalmology field for the examination of retinas. It does not require any special preparations and greatly simplifies the safe, non-invasive capture of 3D images of tissue samples and organoids[3] created from iPS cells, ES cells and so on.

Cell^{3}iMager Estier is able to image cavities, gaps and other internal structures that can not be seen from the outside to a depth of several hundred micrometers in just one minute[4]. The system also allows the observation of samples while they are still in the well plates and culture dishes commonly used at research facilities. This enables excellent linking with existing biological microscopes and supports superior 3D analysis of organic

phenomena.

With the release of the new Cell^{3}iMager Estier, SCREEN is aiming to expand its business in the cell imaging field. The area is expected to show a strong increase in demand. SCREEN hopes its development efforts will also contribute to the continuing expansion of this rapidly diversifying field.

1. Non-invasive techniques eliminate the potential for damaging organisms and ensure the homeostasis of their internal environment is not disturbed.
2. OCT technology uses the optical coherence of light to capture tomographic images of organisms. It radiates near-infrared light that enables non-contact, non-invasive imaging. There are no concerns about radiation exposure and the technology can be used for tomographic imaging of various organs in the human body.
3. Organoids are simplified versions of internal organs produced in vitro in three dimensions.
4. This figure is for the imaging of a cube with sides of 300 micrometers.

Note: Cell^{3}iMager Estier will be introduced at BioJapan 2017, to be held at Pacifico Yokohama from October 11 (Wed) to 13 (Fri).

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