

**Yokogawa Releases CellActivision Software for Analysis of Images of Label-free Live Cells
–For the observation of live cells in the preclinical and clinical stages of regenerative
medicine and iPS cell-related research–**

Johannesburg, South Africa – 1 October 2015 - Yokogawa Electric Corporation announces the release of CellActivision, an application program for the analysis and evaluation of images of label-free cells taken using cell imaging systems or conventional microscopes. This software is also useful for controlling cell quality in regenerative medicine and iPS cell-related research.

In basic research, live cells are usually observed by labeling them with a fluorescent marker and then irradiating them with a laser. However, this has a phototoxic effect and causes the cells to deteriorate. For preclinical and clinical research, or when cells are to be transplanted into the human body, the cells must be free of such effects and thus must not be labeled. However, it is very difficult to do a detailed visual analysis of label-free live cells under a conventional microscope.

Also driving the need for technologies that facilitate label-free live cell observation and analysis is the now widespread practice of using iPS cells in drug discovery research and the emerging use of tissue engineering to produce tissues and organs for transplant into the human body.

To satisfy such needs, Yokogawa is releasing this software to the market. Capable of analyzing the status of label-free live cells using images from a cell imaging system or conventional microscope, this software is based on a label-free image analysis technology that Yokogawa obtained from the Finnish company Chip-Man Technologies Oy*1 in June of this year. With this new software product, Yokogawa aims to expand its business in the rapidly growing fields of regenerative medicine and iPS cell-related research.

Product Merits

In most cases it is not possible to observe the activity of groups of cells and identify individual cells by type without labeling them with a fluorescent marker. In addition, no suitable conventional means is available for analyzing the status of label-free cells based on the morphological information present in their images.

Using advanced cell recognition algorithms, CellActivision is able to identify and conduct a detailed analysis of the activity of label-free live cells based on the morphological information present in images that have been captured using a cell imaging system or conventional microscope. Computer analysis of label-free live cells offers the following advantages:

1. Efficient evaluation of drug efficacy

The process for evaluating the efficacy of a new drug involves a specific sequence of steps. At present, this is usually done by exposing a drug candidate to live cells, fixing*2 the cells, labeling them with a fluorescent marker, and then checking their status. This sequence must be repeated multiple times to compensate for possible variability in the cell samples. In contrast, with CellActivision cells can be analyzed based on their morphology, eliminating the need for fixation. With this software, only a small number of live cells are required to evaluate the efficacy of drug candidates.

2. Efficient quality control with tissue-engineered materials

Evaluation of the cell density and other characteristics of tissue-engineered materials that are to be transplanted into the human body must be done without fluorescent labeling, necessitating microscopic observation of all the tissue-engineered materials. By minimizing the specific regions in the materials that will require visual observation, CellActivision is able to speed up the evaluation process and ensure a more uniform result.

*1 Founded in Finland in 2002, this limited liability company had a variety of technologies and products such as a microscope of its own design that was used in the medical and drug discovery fields. This company has been liquidated.

*2 A chemical process that causes a cessation of all biochemical reactions in a cell, thus allowing a fluorescent substance to permeate its membrane and stain a targeted protein.

About Yokogawa

Yokogawa's global network of 88 companies spans 56 countries. Founded in 1915, the US\$3.5 billion company conducts cutting-edge research and innovation. Yokogawa is active in the Industrial Automation and Control (IA), Test and Measurement, and other businesses segments. The IA segment plays a vital role in a wide range of industries including Oil & Gas, Chemical, Food & Beverage, Iron & Steel, LNG Supply Chain, Petrochemical, Oil & Gas, Pharmaceutical, Power, Pulp

& Paper, Refining, Renewable Energy and Water & Wastewater.

Yokogawa South Africa (Pty) Limited is an empowered South African company jointly owned by Identity Capital Partners (Pty) Ltd, a local black women-owned organisation, and Yokogawa Europe BV, incorporated in the Netherlands. Yokogawa Europe BV is owned by Yokogawa Electric Corporation, a Japanese company listed on the Tokyo Stock Exchange.

Yokogawa South Africa (Pty) Limited's comprehensive solutions range from sensors (such as Pressure transmitters, Temperature, Flow meters, Level and Liquid & Gas Analysers) and network solution products, to control and safety systems. This includes the software for advanced control that optimises productivity; and services that minimise plant lifecycle costs. Yokogawa South Africa's Service Training Department is accredited and proficient in theoretical and practical training for Instrumentation and Control systems from first principles. Our Internship Programme contributes to the continued technical skills improvement in South Africa.

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