

JCGG Luncheon Seminar 2 (Wako Pure Chemical Industries, Ltd.)

Real-time Monitoring of Cell-based Assays using Electronic Cell Sensor Technology

Xiao Xu (ACEA Biosciences, Inc.)

The use of cell-based assays is crucial for understanding the efficacy, specificity, permeability, solubility, stability and mechanism of drug or ligand interaction with target cells. Most cell-based assays are determined by single-point tests, which provide a “snapshot” of the experiment and often involve labeling and destruction of the cells. Since cells are living, there seems significant limitation, because biological and cellular processes are dynamic. In order to fully understand, appreciate and measure biological and cellular processes, it is necessary to use a system that is non-invasive and provides kinetic data regarding the dynamic nature of cellular response to certain challenges such as drug treatment or stimulation with a growth factor.

The system has been successfully used for a broad range of cell-based assays in many big pharmaceutical companies and academic institutions. The major applications of the RT-CES system are listed as follows:

1. Real-time monitoring of cell proliferation and cytotoxicity.
2. Dynamic monitoring of cell adhesion and spreading.
3. Dynamic monitoring of receptor-ligand interactions in living cells.
4. Dynamic monitoring of endothelial barrier function.
5. Dynamic monitoring of Natural Killer cell-mediated cytotoxicity of cancer cells.