conferenceseries.com

7th International Conference and Exhibition on

Analytical & Bioanalytical Techniques

September 28-30, 2016   Orlando, USA

Joon Myong Song

Seoul National University, South Korea

Quantitative multicolor single cell imaging cytometry for high-content drug screening based on nanoprobes

Cell-based assays are essential to assess drug-mediated toxicity and cellular responses and to discover new chemical entities in the early phase of drug discovery. Cellular assays are usually based on either imaging or spectroscopic analysis. However, quantitative image-based cellular assays are still a major challenge for drug screening. In this work, quantitative multivariate image-based high-content cellular assays (HCAs) are reported. These assays were achieved using acousto-optical tunable filter and quantum dot probes. This approach is based on uniform threshold intensity distribution (TID) through quantitative multispectral and multicolor imaging cytometry. This method is capable of performing wide arrays of automated, quantitative, and multivariate cellular assays via single-cell monitoring over time. The approach of employing region selection to slightly defocused, background-nullified and threshold images facilitated rapid quantitative measurements during cellular assays by providing uniform TID over the objects (cells), necessary for automated quantitative analysis. This high-content cellular imaging method offers imaging and quantitative analysis of targeted cellular moieties, which can be further applied to various cellular assays in combination with snapshot methods. Application of HCA to organ-specific cell models provides deeper biological information suitable for better decisions on progressing compounds. Gaining a deep understanding of the mechanisms underlying these cellular responses is valuable before a series of lead compounds are progressed to time-consuming and expensive animal tests. This work has great significance for the exploration of various cellular response involved in drug efficacy and toxicity in the process of drug discovery.

Biography

Joon Myong Song has received his PhD in 1997 at Kyushu University, Japan. He has worked as a Postdoctoral Research Fellow from 1998 to 2004 at Iowa State University, Brookhaven National Laboratory and Oak Ridge National Laboratory in United States. Presently, he is a Professor and Head of Department of Pharmacy at College of Pharmacy, Seoul National University in South Korea. His research area includes multifunctional nanoparticle for diagnosis and therapy and high-content cell-based drug screening and diagnosis using hyper-multicolor cellular imaging. He has published 90 peer reviewed papers in the top journals, 7 book chapters and 10 patents.

jmsong@snu.ac.kr

J Anal Bioanal Tech 2016

ISSN: 2155-9872 JABT, an open access journal

Analytica 2016
September 28-30, 2016

Volume 7, Issue 5(Suppl)

Page 23