Anette Gjörloff Wingren, J Nucl Med Radiat Ther 2015, 6:4
http://dx.doi.org/10.4172/2155-9619.S1.002

OMICS International
conferenceseries.com

International Conference on
Medical Physics
August 03-05, 2015 Birmingham, UK

Three-dimensional monitoring and quantification of living cells with digital holographic microscopy

Anette Gjörloff Wingren
Malmö University, Sweden

We are using the label-free technique of holographic microscopy to analyze cellular parameters including cell number, confluence, cellular volume and area directly in the cell culture environment. We show that death-induced cells can be distinguished from untreated counterparts by the use of holographic microscopy, and we demonstrate its capability for cell death assessment. Morphological analysis on adherent cells was performed in the culture flasks without any prior cell detachment. For suspension cells, the cells were adhered to antibody-coated glass slides or cultured in chambers before analysis.The different cell lines used were treated with the anti-tumour agent etoposide for one to three days. Measurements by holographic microscopy showed significant differences in average cell number, confluence, volume and area when comparing etoposide-treated cells with untreated cells. We show that holographic microscopy allows label-free and completely non-invasive morphological measurements of cell growth, viability and death. Future applications will could include real-time monitoring of holographic microscopy parameters in response to clinically relevant compounds.

Biography

Dr Gjörloff Wingren has completed her PhD in Tumor Immunology from Lund University, Sweden, and postdoctoral studies from La Jolla Institute for Allergy and Immunology and the Sidney Kimmel Cancer Center in San Diego, USA. She is a lecturer in Biomedical Laboratory Science at Malmö University, Malmö, Sweden. She has published more than 35 papers in reputed journals. During the past ten years, she has been involved in developing the methodology of digital holgraphic microscopy for analysis of living and dying cells. Moreover, the morphology of individual cancer cells undergoing cell division, measurement of the average cell volume, as well as the length of the cell cycle of cells undergoing cell cycle arrest have been monitored by her research group. Her research projects also involve signal transduction and biomarker analysis of cancer cells.

anette.gjorloff-wingren@mah.se

Notes: