

## Tracking Liposomal Drugs in Prostate Cancer Cells

Liposomes are biocompatible bubble-like structures composed of a lipid bilayer. Liposomal coatings have been proven to be effective delivery methods of antibiotics, antivirals, and anticancer drugs. The lipid bilayer encapsulation of medicines allows effective drug delivery by targeting endocytotic events or direct cell membrane fusion. Researchers are currently investigating ways of adding targeted ligands to liposomal carriers. The effort to determine the efficacy of each ligand coating can be supported by the CytoViva Hyperspectral Microscope System.

In this experiment, a prostate cancer specific peptide is added to a doxorubicin loaded liposome. With the CytoViva Hyperspectral Microscope System, the researcher is able to create a reference spectral library (Figure 1) unique to the liposomal drug (Figure 2). The reference spectral library can then be compared to an unknown sample. Figure 3 shows a tumor cell that has been incubated with the liposome construct. The red in Figure 4 confirms the presence and location of liposomal construct within the tumor cell.

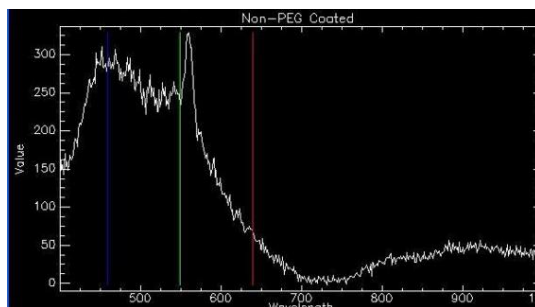


Figure 1: Liposomal Drug representative spectra

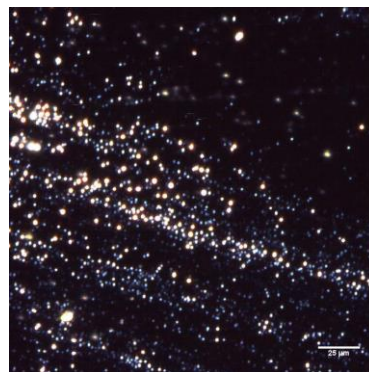


Figure 2: Liposomal Drug in solution

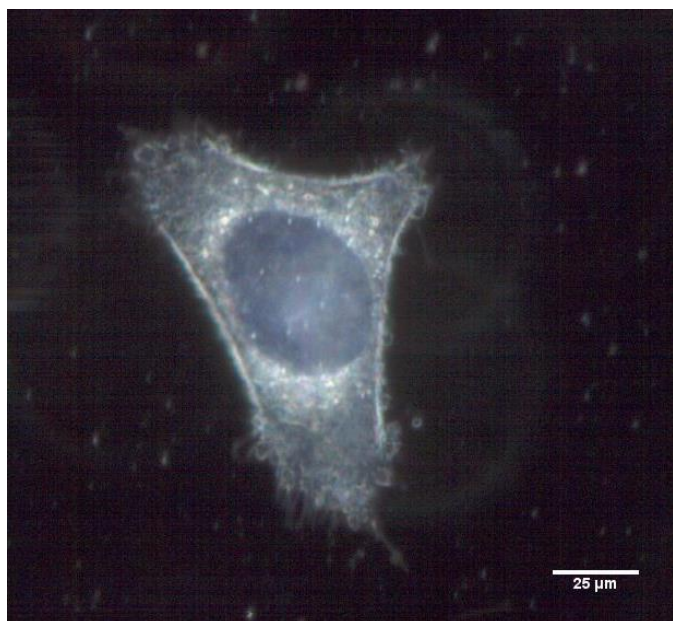


Figure 3: Cell incubated with Liposomal Drug

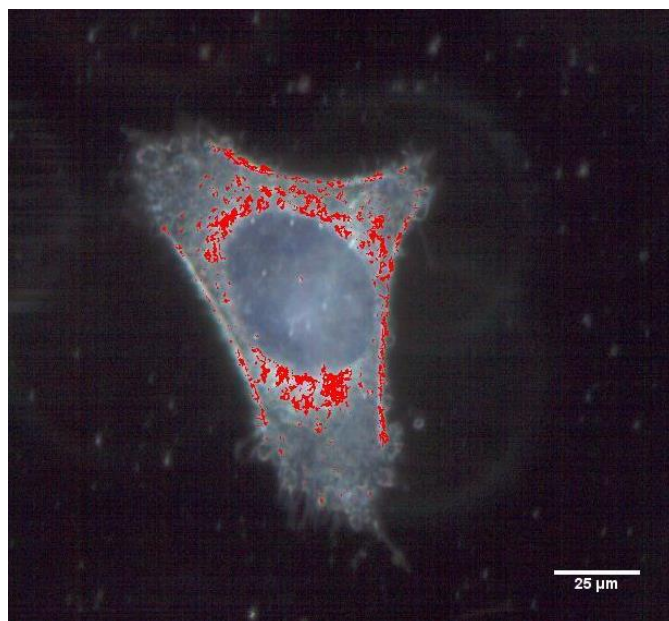


Figure 4: Red Pixels confirm presence of Liposomal Drug in Cell

The CytoViva Hyperspectral Microscope System allows researchers to spectrally confirm and spatially determine the location of drugs in cells without the use of a fluorophore.

[http://www.nanomedjournal.com/article/S1549-9634\(10\)00012-2/abstract](http://www.nanomedjournal.com/article/S1549-9634(10)00012-2/abstract)