

Tracking Unlabeled Copolymer Nanovectors in Tissue

One of the major obstacles in determining the efficacy of new nano drug delivery vectors, such as copolymers or liposomes, is the ability to accurately track the nanovector and its drug load in tissue. Researchers and clinicians would like to extract targeted tissue exposed to a drug delivery vector and confirm the drugs presence in a fast and accurate manner. Ideally, this should be done without using fluorescence or other labeling.

CytoViva's integrated, enhanced darkfield and hyperspectral microscopy system is proving to be an ideal tool to accurately identify and map unlabeled nanovectors and drugs in ex-vivo tissue.

A recent *Nature* paper illustrates this imaging capability with a 2-diethylaminoethyl-dextran methyl methacrylate copolymer (DDMC) that was aerosolized and targeted to certain lung cancers. The CytoViva Hyperspectral Microscope System allowed scientists to spectrally confirm the presence of DDMC in mouse lung tissue.

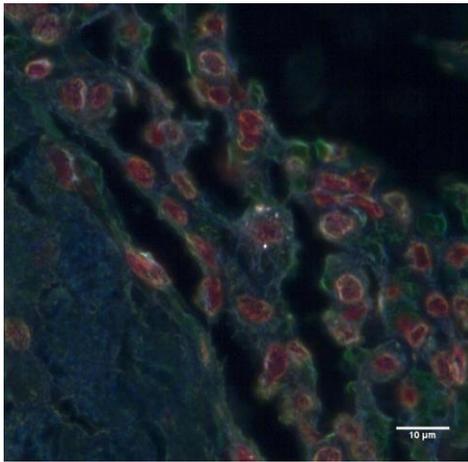


Figure 1. Stained Lung Tissue with Embedded DDMC

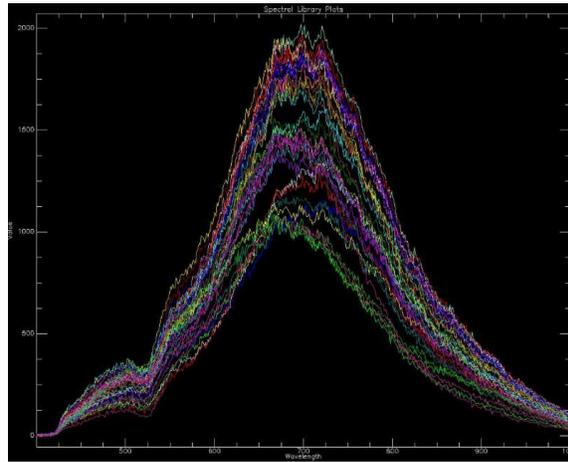


Figure 2. Spectral Library of DDMC in Stained Lung Tissue

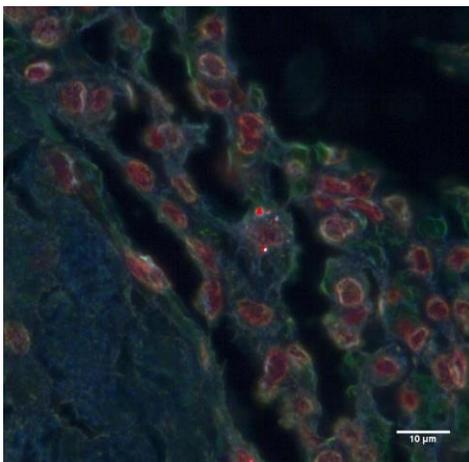


Figure 3. Red Pixels show Location of DDMC in Tissue

In this experiment, mice were exposed to the DDMC therapy through inhalation after which the lung sections were harvested and prepared for evaluation. Figure 1 is a spectral image of H&E stained mouse lung tissue that had been exposed to DDMC. Figure 2 shows the spectral library created from DDMC embedded in stained lung tissue. Using the proprietary CytoViva Hyperspectral Imaging software, the reference spectral library was compared to the experimental sample, confirming the presence of the drug vector embedded in the lung tissue. The red pixels in Figure 3 illustrate the location of DDMC in the tissue.

The CytoViva Hyperspectral Microscope System allows researchers to classify and quantify a wide range of nanovectors and drugs in tissue. For additional information, please contact CytoViva at info@cytoviva.com. We would be pleased to conduct test imaging of your samples to help you understand how the CytoViva technology can advance your work.

More Information

Read the full abstract at the following link: <http://www.futuremedicine.com/doi/abs/10.2217/fo.13.111>

More Information at www.cytoviva.com, , or 
Contact Us at info@cytoviva.com