

Mapping AuNPs in Live Epithelial Cells

Gold nanoparticles (AuNPs) are widely utilized as biosensors and drug delivery agents in the growing field of nanomedicine. The inert nature of this material combined with its surface plasmon resonance properties provide many potential benefits for these applications. As part of this effort, it is important to observe the interaction between these AuNP constructs and live cell cultures in-vitro. With the CytoViva Hyperspectral Microscope System, researchers are able to optically observe, spectrally confirm and map AuNPs in a wide range of cell environments.

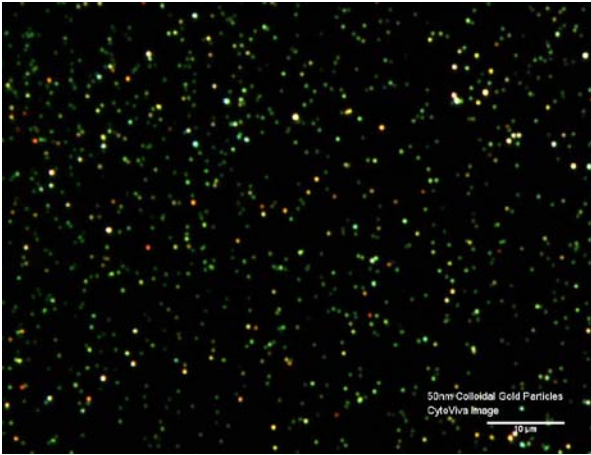


Figure 1. AuNPs in solution

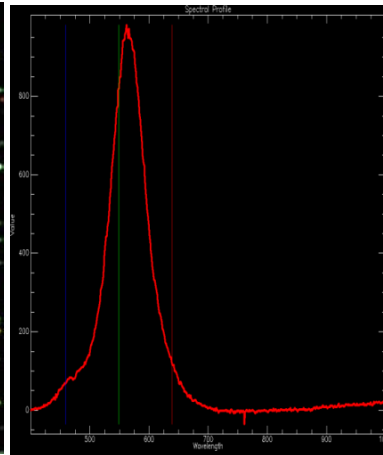


Figure 2. Spectral library from AuNPs

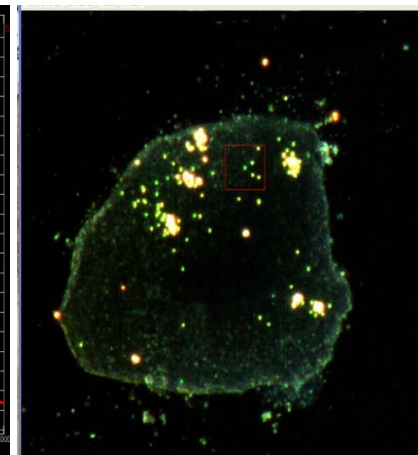


Figure 3. Epithelial cells incubated with AuNPs

With the **CytoViva system**, a hyperspectral image of AuNPs in solution is captured (Figure 1). This enables the development of a spectral library from one or several AuNPs in the image file as shown in Figure 2.

Figure 3 illustrates a hyperspectral image file of a live epithelial cell incubated with AuNPs. Using the spectral mapping function in the CytoViva Hyperspectral Image Analysis Software, all pixels in this image are compared against the previously recorded AuNP spectral library. Each pixel in this image that matches the AuNP spectra is mapped a pseudo color red, illustrating the presence and location of the AuNPs in the cells as shown in Figure 4.

Using the **CytoViva Hyperspectral Microscope System** to map the presence and location of the AuNPs in the cell, enables researchers to better understand the interaction between nanoparticles and cells.

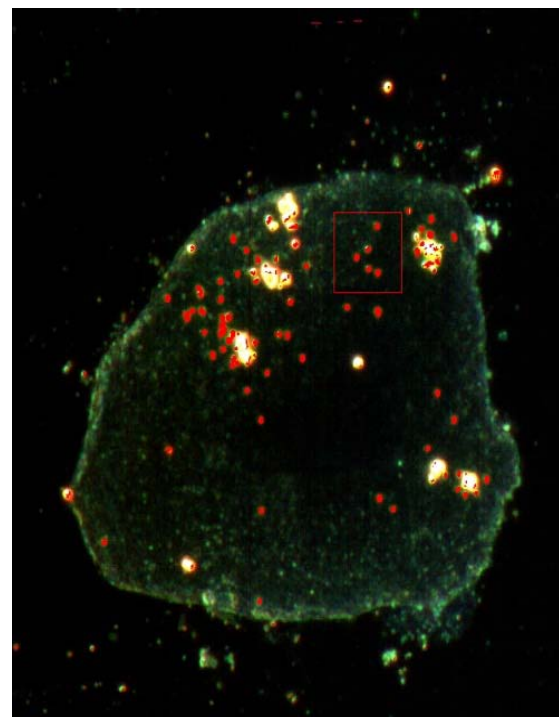


Figure 4. AuNPs mapped (in red) in epithelial cell culture