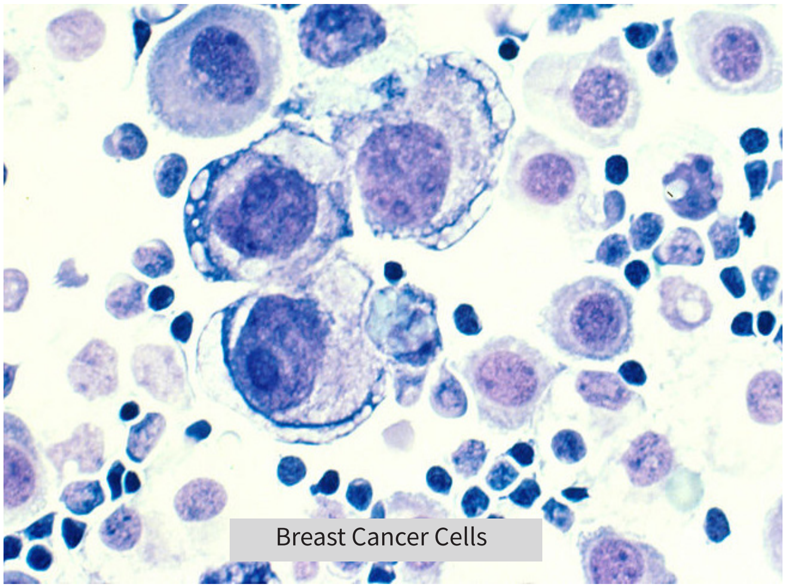
Reva
Educational Raman

Raman Spectroscopy for the Detection of Cancer

Raman spectroscopy can assist in the detection of cancerous cells and pick up on the metastization process, sometimes before other methods can.

Raman spectroscopy can be used to analyze organic materials just as it is used to understand the composition of inorganic materials. Within organic compounds, there is a limited presence of elements than when compared with inorganic compounds, and the presence of these elements are expressed in a fewer amount of functional groups.[1] This means that, although the results will need to be understood within a different framework, Raman is fully capable of uncovering key insights within organic material.

A notable function of Raman spectroscopy within the organic chemistry field is its use in cancer research. Raman can be used to monitor the distribution of drugs, specifically tyrosine kinase inhibitors (TKI), to different cells throughout the body.[2] Moreover, it is able to clearly detect the presence of cancerous oral cells with the help of gold nanoparticles, allowing for a non-invasive way to detect cancer.[3] Raman can be also used during the surgical excision process to check if margins are clear. This can be seen most notably in brain surgeries involving tumors.[4]


Breast Cancer Cells

This technique can also be used during the cancer detection process, not just the treatment, as Raman is able to detect changes in the biochemical makeup of the bones after tumor cell inoculations have been administered.[5] X-ray images were not able to do the same

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