

# Nanotechnology meets Biology in the Cancer Cell: Applications in medicine, drug delivery and determining drug efficacy.

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A short introduction about the plasmonic gold and silver nanoparticles and plasmonic properties will be given.<sup>1</sup> We then summarize the new properties of Gold when its size is reduced to the nanoscale. By conjugating small concentrations of gold nanoparticles to the nucleus membrane of the cancer cells we were able to record its SERS and/or its Rayleigh scattering images in the different phases of its full cycle<sup>2</sup> or as it dies if given cancer drugs.<sup>3</sup> This enabled us to follow the dynamics of drug delivery<sup>3</sup> and measure the relative efficacy of different cancer drugs<sup>4</sup> using either Rayleigh or SERS method of detection. Finally, the SERS technique was used in developing a simple method that enabled us to follow the time profile of the different processes involved in the mechanism<sup>5</sup> of death of a cancer cell caused by use of a cancer drug.

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