

## OC30

## Nanotheranostics with microRNA: Application in radiotherapy

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Radiotherapy is one of the most widely approaches used for treating patients with prostate cancer (Pca).<sup>1</sup> There are two major limitations of this technique: the difficulty in delineating the contours of tumor volume for planning and problems associated with radioresistant mechanisms of tumor cells, resulting from mutations and disorders of gene expression.<sup>2</sup> One of the major regulatory mechanisms of gene expression occurs in the post-transcriptional stage by degradation of messenger RNA, where microRNAs play an important role in the pathogenesis of PCa.<sup>3</sup>

Therefore, this work proposes the development of a nanosystem based on gold nanoparticles (AuNP) with miRNA to improve diagnosis by computed tomography in the planning phase of the treatment and, simultaneously, increase the sensitivity of the cancer cells to radiotherapy. Radiosensitization tests shall be made in PC3 and LNCaP cells. The AuNPs are further modified with molecularly imprinted polymers (MIP), to enhance the affinity of the nanosystem to the therapeutic target and consequently contribute to reduce colateral damage in healthy tissues (Figure 1).

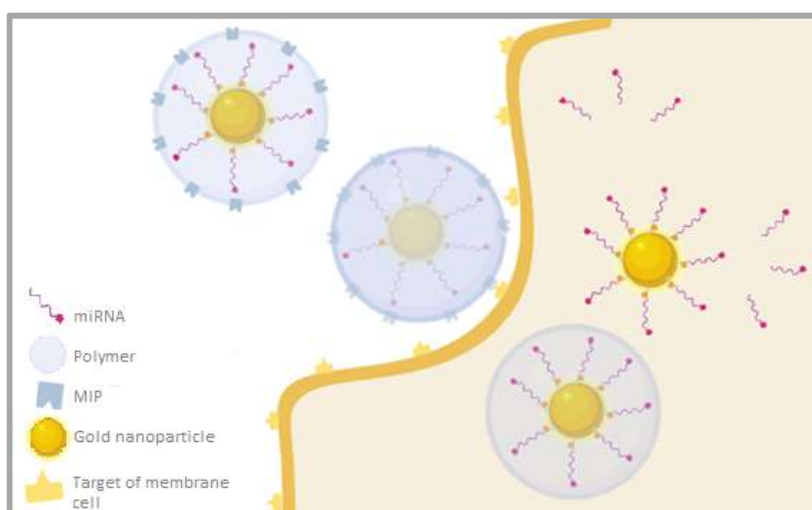


Figure 1: Gold nanoparticle with miRNA coating with polymer

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