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REVIEW

# GOLD NANOPARTICLES: FROM SYNTHESIS THROUGH FUNCTIONALIZATION TO BIOMEDICAL APPLICATIONS

## REVIEW

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**Abstract** *This review presents a comprehensive analysis of current research on gold nanoparticles (GNPs), encompassing their synthesis, characterization and applications in cancer therapy. GNPs are synthesized through various chemical and biological methods, each contributing to their significance in diverse applications. Cytotoxicity plays a critical role in determining their practical utility, with distinct considerations depending on the context: in medical applications, high biocompatibility with living normal cells is essential, while in targeting pathogens and cancer cells, inducing apoptosis is desirable. Thus, optimizing the concentration of GNPs for each specific application is of paramount importance. Additionally, this review highlights the characterization techniques for GNPs, their functionalization using biomolecules, and their subsequent applications in cancer therapy, emphasizing their potential in advancing therapeutic strategies.*

**Keywords**: gold nanoparticles, synthesis, characterization, cancer cell lines

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