

Nanotechnology in Cancer Treatment

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Abstract. This article explores the transformative role of nanotechnology in the treatment of cancer. By leveraging nanoparticles, researchers are developing targeted therapies that minimize damage to healthy cells while enhancing the efficacy of drugs. The study discusses various types of nanoparticles and their potential applications in oncology, highlighting recent advancements and clinical trials that underscore their promise in revolutionizing cancer care.

Keywords: Nanotechnology, Cancer Treatment, Drug Delivery, Nanoparticles, Oncology

Introduction

Nanotechnology has emerged as a groundbreaking field in medical science, offering new avenues for the treatment of various diseases, particularly cancer. The unique properties of nanoparticles, such as their small size and large surface area, allow for the development of novel drug delivery systems. These systems can target cancer cells with high precision, reducing the side effects commonly associated with traditional cancer treatments like chemotherapy and radiation. Recent advancements have focused on engineering nanoparticles to carry therapeutic agents directly to tumor sites, thus enhancing the efficacy of the treatment while preserving healthy tissue. This article reviews the current state of nanotechnology in cancer treatment, examining the types of nanoparticles used, their mechanisms of action, and the outcomes of recent clinical trials. By exploring these innovative approaches, we aim to provide insights into how nanotechnology is poised to transform oncology practices and improve patient outcomes.

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