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Sommario/riassunto	<p>After a quarter of century of rapid technological advances, research has revealed the complexity of cancer, a disease intimately related to the dynamic transformation of the genome. However, the full understanding of the molecular onset of this disease is still far from achieved and the search for mechanisms of treatment will follow closely. It is here that Nanotechnology enters the fray offering a wealth of tools to diagnose and treat cancer. In fact, the National Cancer Institute predicts that over the next years, nanotechnology will result in important advances in early detection, molecular imaging, targeted and multifunctional therapeutics, prevention and control of cancer.</p> <p>Nanotechnology offers numerous tools to diagnose and treat cancer, such as new imaging agents, multifunctional devices capable of overcome biological barriers to deliver therapeutic agents directly to cells and tissues involved in cancer growth and metastasis, and devices capable of predicting molecular changes to prevent action against precancerous cells... Nevertheless, despite the significant efforts</p>

towards the use of nanomaterials in biologically relevant research, more in vivo studies are needed to assess the applicability of these materials as delivery agents. In fact, only a few went through feasible clinical trials. Nanomaterials have to serve as the norm rather than an exception in the future conventional cancer treatments. Future in vivo work will need to carefully consider the correct choice of chemical modifications to incorporate into the multifunctional nanocarriers to avoid activation off-target, side effects and toxicity. Moreover the majority of studies on nanomaterials do not consider the final application to guide the design of nanomaterial. Instead, the focus is predominantly on engineering materials with specific physical or chemical properties. It is imperative to learn how advances in nanosystem's capabilities are being used to identify new diagnostic and therapy tools driving the development of personalized medicine in oncology; discover how integrating cancer research and nanotechnology modeling can help patient diagnosis and treatment; recognize how to translate nanotheranostics data into an actionable clinical strategy; discuss with industry leaders how nanotheranostics is evolving and what the impact is on current research efforts; and last but not least, learn what approaches are proving fruitful in turning promising clinical data into treatment realities.
