Multifunctional Nanotechnology for Selective Detection and Treatment of Cancer (MULTIFUN)

Research Areas

- Tool Development
- Product Development

At a Glance

- Status: Active Consortium
- Year Launched: 2011
- Initiating Organization: IMDEA Nanoscience
- Initiator Type: Government
- Location: Europe

Abstract

The Multifunctional Nanotechnology for selective detection and Treatment of Cancer (MULTIFUN) consortium focuses on the development and validation of new systems based upon minimal invasive nanotechnology for the early and selective detection and elimination of breast and pancreatic cancer with reduced side effects. The project will deploy a strategy based on the multifunctionalization of magnetic iron oxide nanoparticles (MNPs), combining diagnostic and therapeutic features against breast and pancreatic cancer and cancer stem cells.

Mission

The MULTIFUN therapeutic approach is multimodal, combining the nanoparticle heating induced by alternating magnetic fields with intracellular drug delivery in order to reinforce the therapeutic outcome. Because nanoparticles can be detected through magnetic resonance imaging (MRI), they can also be used as contrast agents for cancer cell detection. In this way, MULTIFUN combines therapeutic and diagnostic aspects leading to a potential “theragnostics” tool.
A key point of the project is to assess the safety and toxicity of the developed nanoparticles. Thus, MULTIFUN includes a broad set of in vitro and in vivo toxicity and biodistribution tests in different animal models including mice, rats, and pigs.

Finally, in order to improve the translation of the outcomes and their economic potential, the consortium will also study the scale-up of the production methods for the main components.

**Financing**

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**Links/Social Media Feed**

Homepage  
http://www.multifun-project.eu/

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