Title:
Polymeric nanoparticles for theranostic approaches in solid tumors

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Description of the project:
The project aims to develop new nanotechnology approaches for the diagnosis and treatment of cancers, including solid tumors. Theranostics provides the ability to diagnose and evaluate response during treatment. Nanotechnology-based carriers, such as polymeric nanoparticles, are promising platforms for theranostic applications, enabling simultaneous delivery of imaging and pharmaceutical agents. Imaging agents can be designed to improve signal-to-noise ratios and enable rapid elimination. At the same time, therapeutic agents can be designed to accumulate at high concentrations at the site of disease through antibody strategies that target specific tumor-associated antigens. In addition, the importance of nanocarrier biocompatibility requires careful design of the proposed theranostic nanostructures. Definition of the potential theranostic strategies, the production of the targeted nanosystems, in vitro characterization, and in vivo analysis of efficacy and side effects will be part of the activities required to characterize the proposed theranostic approaches.