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partner countries:



France



Belgium



Italy



Spain

NICHE: Nano-Immuno-CHEmotherapy

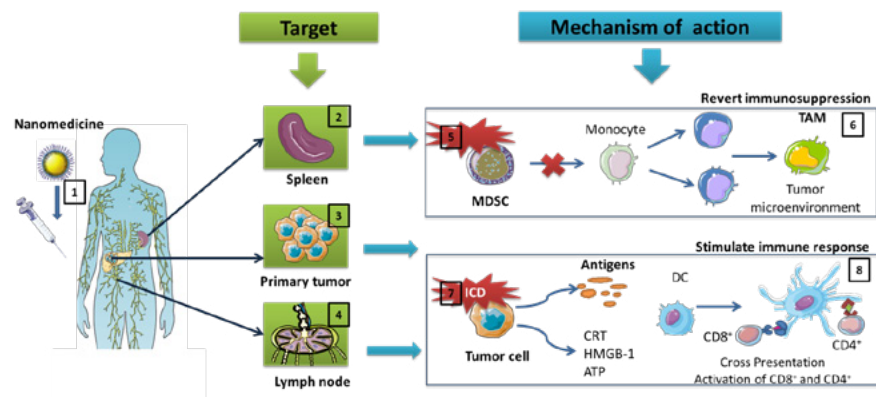
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Partner countries: France, Spain, Belgium, Italy,

Project description:

The immune system plays a critical role not only during early tumorigenesis but in the response of existing malignancies to therapy as well. The tumor microenvironment determines the alteration of a particular population of myeloid-derived suppressor cells (MDSCs), which activates an immunosuppressive program supporting tumor growth and expansion. The manipulation of this immunosuppressive network provides an opportunity to restore immune competence in tumor-bearing hosts. Besides, the stimulation of specific immunogenic cell death (ICD) in cells located both in tumor mass and in tumor-draining lymph nodes, represents a ground-breaking approach to treat aggressive cancers.

Taking advantage of the ability of selecting nanomedicines to localize and accumulate in the sites of interest, i.e. spleen, tumor and lymph nodes, we plan to directly deliver selected anticancer agents and si/micro RNA to MDSCs and neoplastic cells to trigger a tumor-specific immune response.



Through the administration of specific designed nanomedicines (1), we aim at targeting the spleen (2), tumor mass (3) and tumor metastasis in the lymph nodes (4). In the spleen, drug released from nanomedicines will determine the depletion of tumor-conditioned myeloid-derived suppressor cells (MDSCs) (5). The depletion of MDSCs will hinder the accumulation of TAM (6). Nanomedicines can also reach the tumor environment (3) and lymph nodes (4), release the drug and induce the death of tumor cells (7) that also determines the release of antigens that stimulates a specific antitumor immune response (8).