



Finanziato
dall'Unione europea
NextGenerationEU



Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA



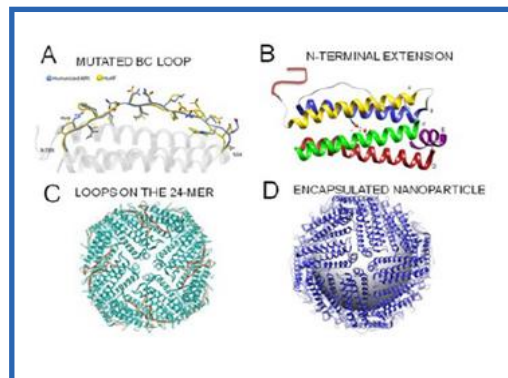
Consiglio Nazionale
delle Ricerche

Project title: Ferritins shine bright

Partners:

- IBPM-CNR: Elisabetta Falvo*, UO 3
- Università degli Studi di PALERMO:
Valeria Militello, UO 2
- Università degli Studi di ROMA "La Sapienza":
Alberto Boffi, UO 1

* elisabetta.falvo@cnr.it



Description:

The present project is focused on the development of smart tumor cells tracking nanoparticles capable of specific receptor recognition properties and high intensity near infrared luminescence for high resolution imaging of neoplastic tissues. The key objects of the study are represented by ferritin-based nanoparticles endowed with self-assembling properties, selective receptor recognition properties. The idea is to incorporate antenna systems (highly fluorescent compounds) and/or superparamagnetic nanoparticles (SPIONS) into the ferritin cage, and use the loaded cage for receptor specific, tumor cells delivery.

Aims:

Key objective of the research is to create a novel tool in cancer diagnostics capable of receptor specific targeting. Identification of a novel antenna system capable of visible excitation and efficient energy transfer to the lanthanide ion, generation of an innovative ternary complex among one engineered ferritin, the antenna system and the lanthanide ion, generation of at least one engineered, chimeric ferritin endowed with high affinity for the EGFR.

Expected results (max 500 characters with spaces):

Spectroscopic measurements and detailed analysis will be carried out to confirm if the SPIONs are encapsulated inside the HumAfft. New antenna systems with other lanthanides or other fluorescent probes will be studied and tested, in vitro and in vivo in cells and tissues. Simulations will provide the molecular basis of ion translocation through ferritin channels; results would help in developing new strategies for including imaging probes, drugs, and theranostic agents.

Funded by the European Union – Next Generation EU, M4C2 – CUP B53D23016520006