PROJECT TITLE: Formulation of Nano-Artificial Biomimetic Vesicles by Microfluidic for the delivery of CAR proteins as innovative Immunotherapy

ACRONYM: : CAR-MA

Affiliated SPOKE: Spoke 5 Next-Gen Therapeutics

INSTITUTION: Università degli Studi di Salerno

Principal Investigator

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"*Scuola Medica Salernitana*" (DIPMED-UNISA)

Finanziato dall'Unione europea NextGenerationEU

Ministero dell'Università e della Ricerca

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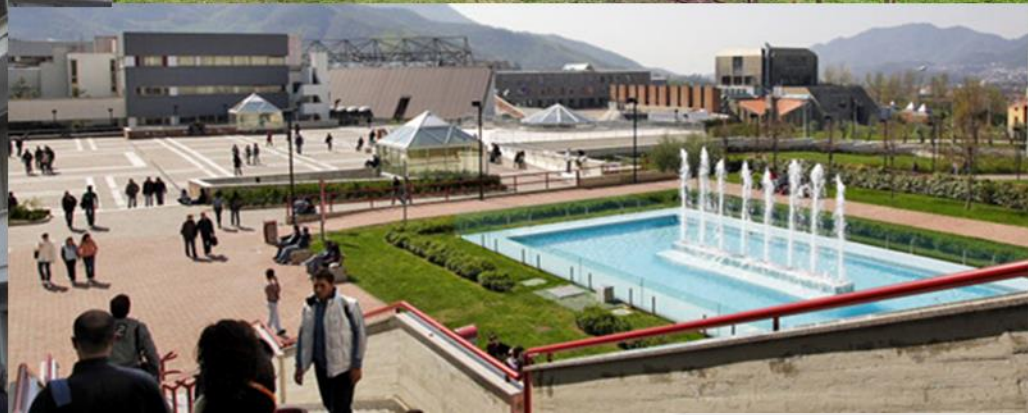
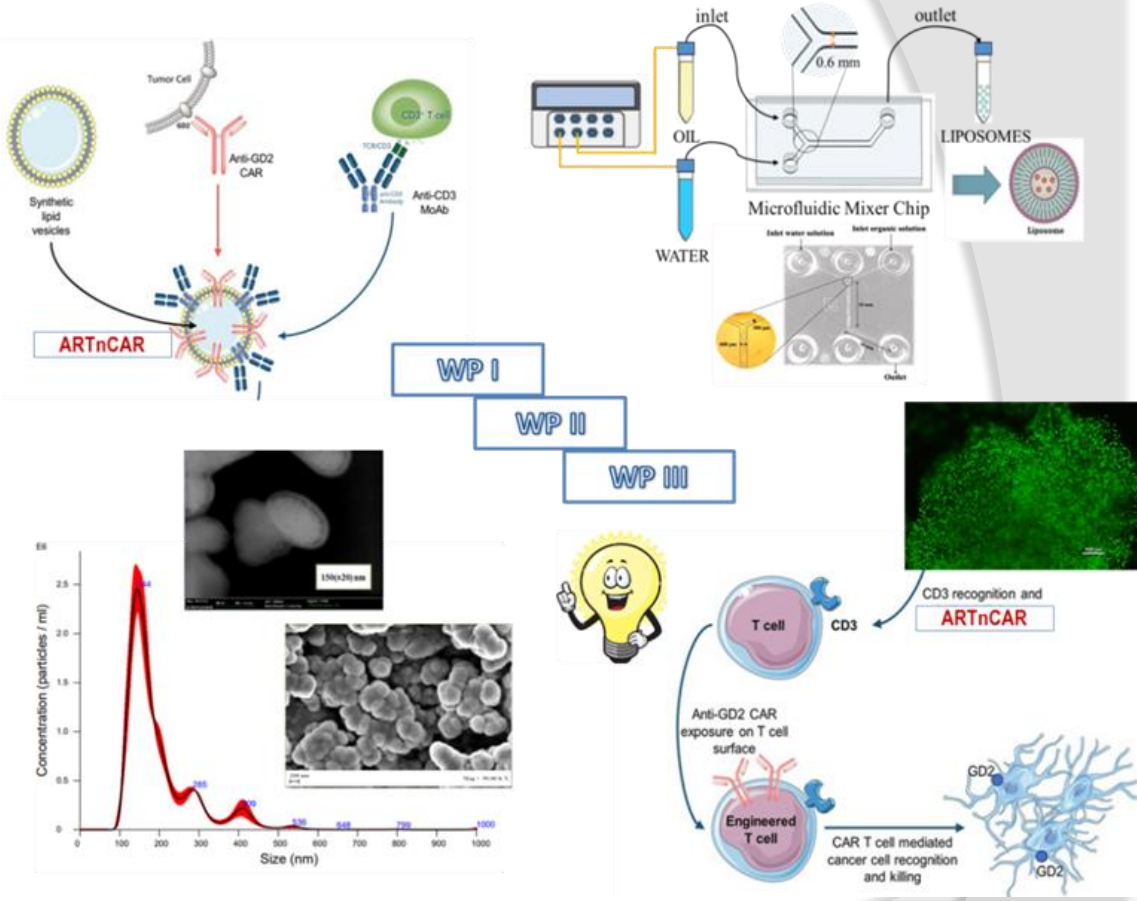


I. Working Packages

WP I. The research project aims to develop **biomimetic nanovesicles** using microfluidic technology for the targeted delivery of chimeric antigen receptors (CARs) designed to combat brain tumors, such as **glioblastoma.**

WP II. CAR-MA nanovesicles cargo will be optimized and utilized to modify healthy lymphocytes, enabling them to express chimeric antigen receptors..

WP III. CAR-MA instructed lymphocytes will be studied to understand if they have the ability to detect and target cancer cells in 3D glioblastoma in-vitro culture



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II. Contribution to the Research Program of Spoke 5 Next-Gen Therapeutics

CAR-MA NanoMedicine System marks a significant advancement in two key areas, such as protein delivery for engineering immune system cells and nanotechnology for designing innovative nanovesicles capable of loading and delivering specific proteins.

This research offers a groundbreaking contribution by introducing an ***INNOVATIVE NANOMEDICINE STRATEGY*** to generate tumor-specific CAR immune effectors (sub-theme A1), potentially transforming current therapies, regulatory frameworks, and the healthcare market.

The project aims to develop a universal, patient-independent ***CAR-MA*** formulation with substantial therapeutic market potential.

III. Contribution to the HEAL ITALIA Programme and Precision Medicine

- ✓ ***CAR-MA*** formulation:
  - ✓ Is designed as a ready-to-use platform, it exemplifies an innovative approach to Precision Medicine
  - ✓ can be mass-produced and distributed as a ready-to-use treatment, significantly lowering costs and making high-precision medical therapies more accessible to a broader population.
  - ✓ eliminates the need for ex vivo modification and expansion of patient-specific T cells
  - ✓ is capable of stimulating adaptive immunity while minimizing the risk of severe adverse reactions.

The research results will certainly contribute to the communication and dissemination of **HEAL ITALIA**.