

## Cupido M2 PRESS RELEASE – Project Presentation

### The nano-revolution reaches the heart: the EU-funded project Cupido

Cardiovascular diseases, such as myocardial infarct and heart failure, represent a societal burden, accounting for more than 30% of deaths globally and spending yearly ~190 billion € in European healthcare. The chronic treatment of patients leads only to short-term benefits since the conventional therapies show several weak points.

The available drug-delivery methods, oral and intravenous, allow the drug to circulate systematically in the blood stream causing several side-effects and reducing its efficacy. Later, during the end-stages of the disease, the administration might become even more invasive, employing catheters or implantable pumps. The cardiovascular field needs fresh approaches to discover novel patient-friendly therapies that are more efficient, safe and heart-specific.

The EU-funded project Cupido, started in February 2017, propose an innovative solution: the application of nanotechnologies to the cardiovascular field. Cupido aims to hit the core of the cardiovascular disease, developing inhalable nanoparticles that can deliver as simple as breathing a therapeutic directly to the diseased heart. Nanoparticles are extremely tiny, almost 1 million times smaller than a grain of sand in size and far too small to see with conventional microscopes. Exploiting such a tiny system as a route of administration can revolutionize the cardiovascular field, becoming the first non-invasive and heart-specific therapeutic approach.

To achieve the goal, the Cupido consortium is working to develop biocompatible and biodegradable nanoparticles that can self-assemble and encapsulate drugs (novel or available) in a suitable format for the treatment of cardiovascular disease. The nanoparticles, once inhaled, will translocate through the lungs and fast reach the heart, where the drug will be finally released on the site of interest. The heart-specificity will be ensured thanks to chemical and magnetic guidance, reducing the chances of adverse side effects and lowering the required amounts of therapeutic compound.

The EU-based consortium, composed of 6 academic research groups, 5 SMEs, 2 industries, and 1 pharmaceutical company, gathers a vast array of expertise and joins cutting-edge research with pre-clinical experience and industrial manufacturing. The 4-year project, funded with 6M € under the EU Horizon 2020 Framework Programme, aims to proof the preclinical feasibility of the nanotherapy, preparing the way for future clinical trials.



Consortium:

- CNR – National Research Council of Italy
- Charité - Universitätsmedizin Berlin
- Simula Research Laboratory AS
- Imperial College of Science, Technology and Medicine
- BET solutionn
- IN S.r.l
- Cambridge Innovation Technologies Consulting Ltd
- Sanofi-Aventis Recherche & Developpement
- Nemera
- FIN-CERAMICA Faenza S.p.A.
- L.I.F.E. Corporation S.A.
- PlumeStars S.r.l.