



## RESEARCH TOPIC CLIS

### Advanced Computed Tomography technology for novel targeted atherosclerosis therapy Clinical Unit name

U.O. Cardiovascular Imaging  
IRCCS – Humanitas Research Hospital

#### Supervisor

Marco Francone  
[marco.francone@hunimed.eu](mailto:marco.francone@hunimed.eu)

#### Abstract

##### Background:

Despite the well-documented improved survival of coronary artery disease (CAD) with the use of statins, their effects on atherosclerotic plaques remain controversial (1). Computed Tomography Coronary Angiography (CTCA) has emerged as the new gold standard modality for CAD evaluation and plaque characterization (2), but its contribution remains limited in discriminating between fibrous and lipid-rich lesions. Recent development of Photon-Counting (PC)-CT technology led to doubling of spatial resolution with improved tissue characterization plaques with accurate analysis of its volume and composition (3).

##### Aim:

Our project seeks to explore volumetric and composition changes in soft tissue plaques of patients undergoing statin therapy and aims to demonstrate PC-CT may be key for a and CAD progression monitoring and targeted treatment (4).

##### Methods:

Patients with minimal to moderate coronary plaques at PC-CT will be included. Plaque analysis will be done before treatment and at 12 months' follow-up. Plaque stenosis volume and characteristics will be correlated to clinical and lab values to assess progression and modulate therapy. Artificial intelligence analysis will also be carried-out considering intrinsic radiomic features of lesions.

##### Conclusions:

Advanced CT technology, monitoring atherosclerotic plaque progression and treatment response, will be the key to drive a novel targeted patient's tailored therapy.

#### Type of contract

PhD scholarship of € 22.400 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art.



2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.

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