

## RESEARCH TOPIC MEM 15

### The link between metabolism and heart failure Curriculum MEM

#### Laboratory name

Molecular Cardiology

#### Pre-clinical Supervisor

Gianluigi Condorelli

[gianluigi.condorelli@hunimed.eu](mailto:gianluigi.condorelli@hunimed.eu)

#### Abstract

Most cardiovascular diseases have an immune component. Inflammation, immunity and atherosclerosis or heart failure are interconnected through multiple mechanisms that involve bone marrow hematopoiesis, monocyte release and homing into vascular or myocardial lesions, with consequential conversion of monocytes into different subtypes of activated macrophages. Recent methodologies, including single cell RNA sequencing, allow an identification at a single cell level of the type and function of immune cell subtypes in different forms of cardiovascular disease. The project aims to characterise the relevance of peripheral blood inflammation on the progression of cardiac, correlating inflammatory biomarkers with clinical data and evaluating the impact of optimal secondary prevention on inflammation and disease progression. The analysis will be conducted at a single cell level both at on cardiovascular tissue and on peripheral blood through a bioinformatic approach.

#### Main technical approaches

Basic knowledge of bioinformatics

#### Scientific references

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#### Type of contract

PhD scholarship of € 18.000 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.

Borsa di dottorato pari a € 18.000 annui lordi erogata da Humanitas University. Importo non soggetto a tassazione IRPEF a norma dell'art. 4 della L. 13 agosto 1984 n. 476 e soggetto, in materia previdenziale, alle norme di cui all'art. 2, commi 26 e segg., della L. 8 agosto 1995, n. 335 e successive modificazioni.