



**University of Naples Federico II**  
**Department of Pharmacy**  
*Doctoral Course in Pharmaceutical Sciences XL Cycle*



**IMMUNO-INFLAMMATORY EVENTS IN AGING-RELATED CARDIOVASCULAR DISEASES**

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Aging affects all individuals and is currently emerging as a significant risk factor for chronic degenerative diseases affecting various systems, including the cardiovascular system. It is well known that the immune system, through both innate and adaptive mechanisms, plays a key role in these pathological conditions, potentially serving as a valuable focus for research on early markers of pathogenesis, diagnosis, and follow-up. On these premises, this project aims to better understand the molecular and cellular pathways involved in the inflammatory processes underlying diseases such as atherosclerosis and heart failure typical of old age.

The development strategy includes:

1. The use of both simple (monocultures) and complex (bi- and three-dimensional cultures) cell lines to establish models useful for understanding the genetic, biochemical, and molecular determinants underlying the etiopathogenesis and progression of diseases.
2. The use of ad hoc animal models, both traditional and transgenic, with the latter representing a valuable approach for understanding complex pathophysiological phenomena and validating new therapeutic targets.
3. Techniques such as imaging, flow cytometric analysis, differential gene expression analysis through single-cell RNA sequencing, and proteomic analysis.
4. Databases, bioinformatic and statistical approaches (R package).

A better understanding of the inflammatory processes involved in cardiovascular diseases could thus promote the identification of new therapeutic targets for the prevention and/or treatment of such diseases.