The partnership is composed of two complementary entities:

ISTITUTO NAZIONALE RICERCHE CARDIOLOVASCOLARI (INRC)

INRC is a clinical research body specialized in studies on cardiovascular diseases with a network of 19 cooperating Universities.

The key persons in INRC involved into the project are:

- **ROSALINDA MADONNA (Unit PI)**
- **PIETRO AMERI (Unit GE)**
- **ASTRID PARENTI (Unit FI)**
- **SILVIA CETRULLO (Unit BO)**
- **CANTOR TARPERI (Unit VR)**

CARDEA
CONSULENZA AVANZATA PER FINANZIAMENTI ALL'INNOVAZIONE

PARTNER: **CARDEA SRL**

Cardea srl is a PMI specialized in innovation and owner of a composite platform of AI modules.

The key persons involved in the project are

- **FRANCESCO FUSCO**
- **GABRIELLA SANTORO**

PROJECT PROPOSAL TITLE: **HEARTZING**

The project combines data from electronic health records with data generated by new technologies to improve knowledge of **heart failure with preserved ejection fraction** (HFpEF). The project aims to enhance patient phenotyping, which is crucial for identifying those who respond to specific treatments, and responds to a fundamental need for innovative and personalized medicine for the provision of care in diseases.

Within the framework of the Extended Partnership Research Programme "Heal Italia"
HEALTH EXTENDED ALLIANCE FOR INNOVATIVE THERAPIES, ADVANCED LAB-RESEARCH, AND INTEGRATED APPROACHES OF PRECISION MEDICINE (PE_00000019)

spoke 4:
PRECISION DIAGNOSTIC

TOPIC ADDRESSES: TOPIC 2B

Innovative models to accelerate precision diagnostics in the setting of cancer, cancer cachexia and heart failure.

PROJECT AIMS

This project has 2 aims:

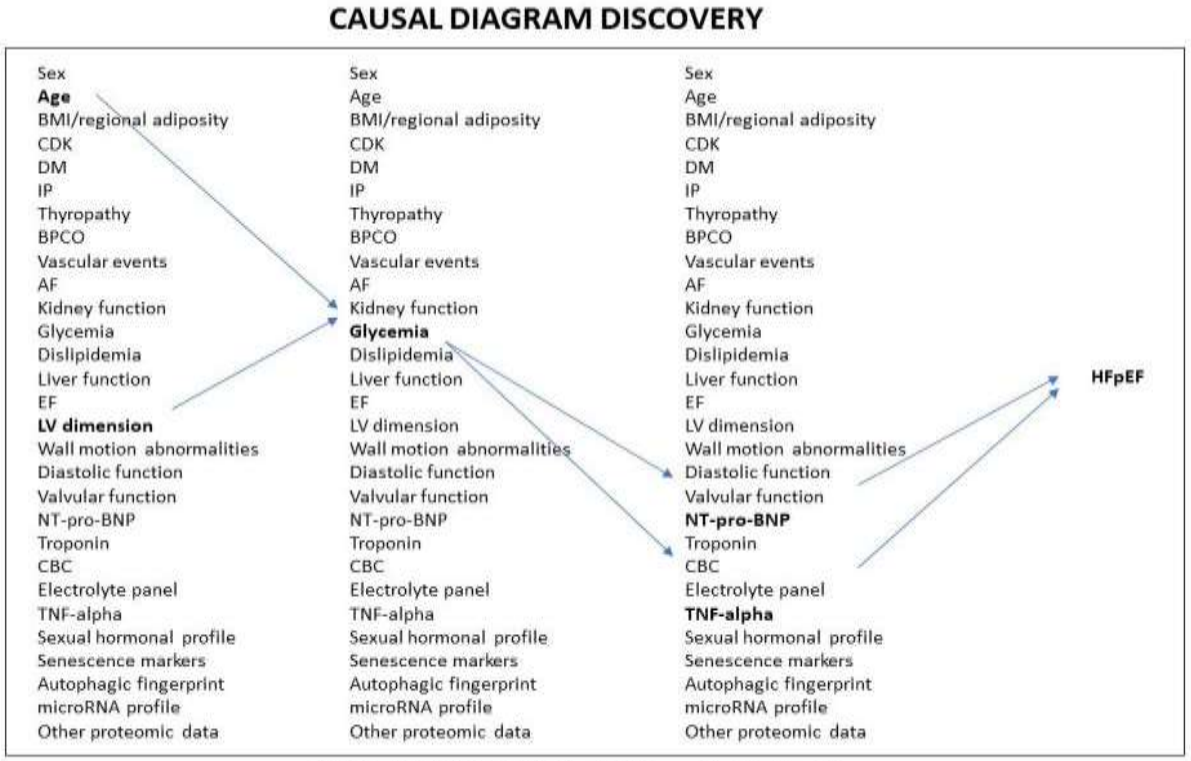
1. To develop an AI-driven tool for deep phenotyping of HFpEF patients according to clinical, imaging, biomarker and biological data and refine HFpEF phenogrouping;

2. To determine whether comorbidities of HFpEF induce long-standing alterations in cardiomyocytes.

Aim 1 will overcome the limitations of current AI approaches by integrating the types of variables already used in the literature with unique biological information and will represent a step forward in precision diagnostics of HFpEF.
Aim 2 will clarify whether information on cardiomyocytes is needed to further characterize HFpEF and will put the project in the perspective of precision therapeutics.

CONTRIBUTION TO THE SPOKE 4 RESEARCH PROGRAM

Heartzing is a Heal Italia-related project under Spoke 4 aiming at developing and testing a clinical-ready solution for HFpEF patients combining precision polygenic diagnostics with targeted treatments connected to potential evaluated risk prediction of a causal reasoner, to discover causal links between biodata and the cardiovascular disease.



CONTRIBUTION TO ''HEAL ITALIA'' and PRECISION MEDICINE

The originality relies on the combination of observational **biobank data** with an ad hoc **AI platform** that will be tested on the set of HF patients.

The project will apply precision medicine protocol in the HF segment by developing a **risk-based stratification platform opened to the other Heal SPOKEs.**

The integration of AI and precision medicine for heart failure management aims to transform clinical care by identifying unique patient phenotypes and tailoring interventions. A customized causal learning platform will process large datasets to improve the diagnosis and prognosis of HFpEF by isolating significant conditions.