

1 FOREWORD AND CNIC MISSION

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The Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC) is a biomedical research center funded through a pioneering public-private partnership between the Spanish Government and the Pro CNIC Foundation (composed of eleven Spanish companies unrelated to the biomedical sector). The CNIC is a Severo Ochoa Center of Excellence of Spain's Ministry of Science and Innovation. The Center also benefits from the external support of its Scientific Advisory Board, composed of leading international experts who provide guidance on strategy and regularly assess the performance of the Center and its program projects and group leaders.

Cardiovascular disease (CVD) is the principal cause of death worldwide, and the exponential increase in the cost of treating CVD in its symptomatic phase places an insurmountable burden on patients, families, and health systems. In response to this challenge, the CNIC has defined three major goals: to increase the understanding of cardiovascular health, to improve disease prevention, and to generate treatment advances for the prevalent manifestations of CVD. These goals require mechanistic studies to gain insight into the molecular and cellular processes underlying disease, clinical studies and the translation of these findings into improvements in health promotion, diagnosis, and disease management.

To meet these challenges, the CNIC has four pillars: excellence in basic and clinical research, technology, networking and training.

CNIC scientific area is organized into two departments focused on Basic Research and Clinical Research, fully interconnected through seven highly focused and integrated programs: (1) novel mechanisms of atherosclerosis, (2) myocardial homeostasis & cardiac injury, (3) cardiovascular regeneration, (4) novel arrhythmogenic mechanisms, (5) CVD, risk factors & brain health, (6) cardiovascular health promotion, and (7) technology development. These programs span from basic research to advanced health-changing clinical trials and build on the CNIC's deep-rooted and proven expertise in state-of-the-art technology, cellular and other experimental models, imaging modalities, and large-scale data gathering and analysis.

In 2023, CNIC recruited three Group Leaders, Dr Inés García Lunar in the novel mechanisms of atherosclerosis program,

Dr Ana García Álvarez in the myocardial homeostasis and cardiac injury program and Dr Florian Weinberger in the cardiovascular regeneration program.

According to the SCImago Institutions Ranking, the CNIC was evaluated in 2023 as the second-best cardiovascular research centre in the world, just behind the National Heart Lung and Blood Institute, which depends on the US NIH, and the CNIC is even ahead in the area of innovation.

The Center's eleven translational studies, including several large randomized clinical trials, have already changed clinical practice worldwide. These studies bear testimony to the enthusiastic commitment of researchers, healthy volunteers, patients, and emergency service personnel to defining the causes and risk factors of CVD. The most recent clinical practice guidelines of the European Society of Cardiology for the year 2023, focusing on both the Treatment of Cardiomyopathies and the Treatment of Acute Coronary Syndromes, have integrated 13 references from specialized work of the CNIC. The importance of these guidelines is based on the fact that the recommendations they offer for clinical practice come from the best existing scientific evidence.

The CNIC's most important patent is the polypill. A major milestone in 2023 was the inclusion of the polypill developed by the CNIC and Ferrer Laboratories in the World Health Organisation's (WHO) List of Essential Medicines. Marketed in 29 countries, this drug, which allows patients to take a single daily pill after a heart attack, is not only a more convenient option, it also saves lives. The polypill has been shown to be effective in preventing cardiovascular events after a heart attack by reducing cardiovascular events by 24% and cardiovascular death by 33% in patients who have previously suffered a myocardial infarction. Other important 2023 findings in basic, translational and clinical research are included in the section of Scientific Highlights.

As we move forward, the CNIC will maintain the drive and focus established in its initial phases and ensure that the Center's basic and clinical scientists continue to work closely together to devise innovative projects that help reduce the health and socioeconomic burden associated with CVD and to train the researchers of the future.

