Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
Università degli Studi di Napoli Federico II

PNRR Missione 4, Componente 2, Investimento 1.4 "Potenziamento strutture di ricerca e creazione di "campioni nazionali di R&S" su alcune Key Enabling Technologies"
Iniziativa finanziata dall'Unione europea –- NextGenerationEU.

National Center for Gene Therapy and Drugs based on RNA Technology
Sviluppo di terapia genica e farmaci con tecnologia a RNA

Codice progetto MUR: **CN00000041** – CUP UNINA: **E63C22000940007**

Doctorate of National Interest
RNA THERAPEUTICS AND GENE THERAPY

TITLE OF THE RESEARCH PROJECT
Role of SNORD3A in preclinical models of hypoxia, in vivo ischemic heart diseases and in patients with acute or chronic coronary disease

SELECT ONE OF THE FOLLOWING RESEARCH AREA:
☒ **Mechanisms of Diseases and Drug Target Identification**
☐ **Design and Delivery of New Gene Therapy and RNA-Based Medicines**
☐ **Validation and Safety In Preclinical and Clinical Studies**

LOCATION OF THE RESEARCH ACTIVITY (INSTITUTION/DEPARTMENT):

Federico II University, Department of Advanced Biomedical Sciences

TUTOR: Prof. C. Perrino, Prof. G. Esposito

PROPOSED RESEARCH ACTIVITIES (max 300 words):
Small nucleolar RNAs (snoRNAs) are typically 60-300-nucleotide-long and broadly expressed in nucleated cells, reflecting their primary role in rRNA maturation. Although their canonical functions in modifying rRNA have been most studied, snoRNAs have been also associated with a wide variety of cellular processes, such as regulation of mRNA splicing, chromatin organization, or oxidative stress. In addition, there are many putative orphan snoRNAs that do not have known RNA targets, and recent reports suggest that even canonical snoRNAs can also be associated with noncanonical regulatory functions. Currently, the impact of snoRNAs on cardiovascular diseases is still poorly understood. Furthermore, snoRNAs are frequently released from cells and can be found and measured in the circulation. This feature makes them attractive as potential biomarkers of disease. In addition, early data suggest that vesicle-mediated transfer can shuttle snoRNA and other lncRNAs between cells or distant tissues, raising the possibility of functional signaling or biological actions at a distance. Previous

studies in our laboratory have identified snoRNA SNORD3A in human samples from patients with heart failure. This PhD program will be focused on the definition of the role and mechanisms of regulation of the snoRNA SNORD3A in preclinical models of in vitro hypoxia, in vivo myocardial ischemia, and in patients with acute or chronic coronary diseases. This project will involve the use of in vitro and in vivo animal models of myocardial ischemia, ischemia and reperfusion, and ischemic heart failure, using wild-type and genetically modified mice, and samples from patients affected by chronic or acute ischemic heart disease.