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

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):

University of Bari Aldo Moro (Department of Biosciences, Biotechnologies and Environment)

TUTOR:

Prof. Clelia Tiziana Storlazzi

PROPOSED RESEARCH ACTIVITIES (max 300 words):

The project aims to develop a new RNA-based strategy for cancer treatment. CircRNAs are stable RNAs generated from 'back-splicing' events, involved in several diseases, including cancer, as they affect the expression of genes regulating proliferation, invasion, apoptosis, and angiogenesis. Fusion circRNAs (f-circRNAs) originated from the back-splicing of linear fusion RNAs derived from genomic rearrangements. CircRNAs/f-circRNAs will be used as targets in cancer therapies. siRNAs/antisense oligonucleotides will knock down circRNAs/f-circRNAs with a documented tumorigenic role. They will be designed specifically on the back-splicing junction of each circRNA (in order to avoid interference with the linear cognate transcripts) and tested *in vitro* by transfecting tumor cell lines. The siRNAs/antisense oligonucleotides showing an *in vitro* significant impact on

cell phenotype will be eventually tested in appropriate in vivo models by specific approaches, like RNA exosome delivery.