

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):

Università degli Studi di Milano

Department of Pharmacological and Biomolecular Sciences 'Rodolfo Paoletti'

TUTOR:

Prof. Emanuela Corsini

PROPOSED RESEARCH ACTIVITIES (max 300 words):

Nucleic acid-based drugs pose peculiar and largely undefined and toxicological questions, related to their molecular identity and to the need of carriers for organ-specific delivery. The overall activities of the research will focus on the screen of the potential toxicity of nucleic acids-based drugs using in vitro methods. The strategy is to implement and optimize a battery of in vitro tests suitable to study the toxicological profile of nucleic acid-based drugs and vector candidates by vertical spokes. RNA seq analysis will be used to identify gene signatures indicating the biological processes associated with the toxic activities of compounds under evaluation. The main objectives are: 1. Preclinical assay for assessing off target toxicity; 2. Early characterization of potential toxicity of new NA drugs that can serve as a bridge to in vivo assessment.; 3. Characterization of off target effects; 4. Improve safety profile; 5. Identification of new biomarker of adverse effects translatable to in clinic. Data generated will inform on the magnitude of and underlying molecular mechanisms responsible for accidental toxicity, interindividual and gender variability.