PROPOSTA PROGETTUALE
DOTTORATO IN RNA THERAPEUTICS AND GENE THERAPY
CICLO XLI*

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PROJECT TITLE: Uncovering the role of TRPV3 in tumor plasticity of colorectal cancer

Project description (max 300 words**)**
Colorectal cancer (CRC) is one of the leading causes of cancer-related deaths worldwide. A key challenge in the treatment of advanced CRC is the high degree of cellular plasticity, which promotes metastasis and resistance to therapy (Fares et al., 2020). Notably, tumor plasticity and the acquisition of stem-like properties have recently been linked to the metabolic reprogramming of cancer cells.
The transient receptor potential vanilloid 3 (TRPV3), a member of the TRP channel family, is a non-selective ion channel that is highly expressed in the healthy colon (Bischof et al., 2020). Although a synonymous single nucleotide polymorphism (SNP) in the TRPV3 gene has been associated with increased CRC risk (Hoeft et al., 2010), its mechanistic role in tumorigenesis remains largely unexplored.
This project aims to investigate the role of TRPV3 in the metabolic reprogramming of colon cancer cells, with a focus on its contribution to tumor progression and dissemination. By using wild-type and *Trpv3* knockout mice in different models of colon cancer, we will assess how TRPV3 deficiency affects tumor development and key signaling pathways involved in glucose metabolism and mitochondrial function, which are critical for cancer cell survival and proliferation. Furthermore, we will explore the therapeutic potential of TRPV3 pharmacological targeting to suppress colon cancer growth. Finally, the role of TRPV3 in regulating cancer stem cell properties will be investigated by using 3D organoid cultures.

REFERENCES
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Hoeft B, Linseisen J, Beckmann L, Müller-Decker K, Canzian F, Hüsing A, Kaaks R, et al. Polymorphisms in fatty-acid-metabolism-related genes are associated with colorectal cancer risk. Carcinogenesis. 2010;31(3):466-72.

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Dipartimento di Farmacia

Dipartimento di Eccellenza
2018-2022 2023-2027

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

- ☒ **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**

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