Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
HEALITALIA

Project title: Personalised RNA-Oriented MedIciNE in Italy Novel Therapeutics (PROMINENT)

Università degli Studi della Campania *Luigi Vanvitelli*

The University of Campania "Luigi Vanvitelli" is a public university, a primary seat of free research and free education as established by the Statute issued with D.R. 645 of 17/10/2016. The Department of Precision Medicine (DMP) that participates in this project, presents itself as an academic center for translational medical research in which innovative technologies are applied in the definition of the pathogenesis of human diseases.

The DMP boasts a long tradition of research in the oncology field, characterized by a multidisciplinary approach to the study of the molecular aspects of tumorigenesis and tumor progression. The Department, in fact, gathers skills ranging from analytical biochemistry, which uses the most advanced technologies to molecular and cellular biology, providing the best framework of knowledge, expertise and equipment.

The DMP is organized into divisions that represent a link between different clinical and experimental disciplines aiming to obtain the right interdisciplinarity and to be able to compete in the research and development sector in frontier sciences such as biotechnology, pharmacology and biomedicine, up to clinical application.

SPOKE 1: Holistic Nosology

FROM PATIENTS TO MOLECULES & BACK: Mapping the omics landscape of clinical to molecular environment, to identify, classify, and refine the phenotypes of multifactorial diseases.

Spoke leader: University of Rome «Tor Vergata»

N. partner	Denomination	Company profile
1 (PI)	Fondazione Human Technopole (FHT)	
2	Università della Campania "L. Vanvitelli"	
3	IRCCS INT Fondazione "G. Pascale" (INT – Pascale)	
4	Biogem scarl (Biogem)	MI

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PROMINENT GOAL

The project aims to develop **innovative**, **cost-effective**, and evidence-based **non-invasive diagnostic pathways** for faster, earlier, more accurate, accessible, and affordable prediction, detection, and monitoring of monogenic (rare), polygenic (cardiovascular and metabolic) diseases, and cancer, while identifying effective and **innovative therapeutic approaches**.

1. Precision Medicine: the common soil hypothesis and the Moli-sani studies and other cohorts.
2. Genomics, Phenomics and Biomarkers.
3. Metabolome mapping from mouse to Moli-sani sub-cohorts and development of new therapeutic targets.

Contribution to the Research Program of the Spoke 1 – DMP

The expected results of the DMP activities are the following:

- **Identification of new biomarkers or biomarkers for early diagnosis and prediction of clinical outcome of human neoplasms.** The DMP will provide innovative data on new circulating biomarkers (miRNA and methylated nucleic acids) in human tumors. The validation phase of differentially expressed biomarkers on a large cohort of patients with standardized technologies will be followed by a phase of validation and characterization of the in vitro biological effects of the detected biomarkers.

- **Characterization of the in vitro biological effects of the detected biomarkers.** The specific selected markers will be functionally evaluated both in silico (for the prediction of molecular targets) and in vitro on tumor cells (evaluation of biological effects). Gene expression interference strategies (siRNA and CRISPR) will subsequently be developed in order to evaluate the functional effects of (epi)genetic markers on tumor proliferation and metastasis.

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Contribution to the Programme HEAL ITALIA and Precision Medicine

- The proposed project aims to identify and validate causal molecular targets of complex diseases. To this end, it will use the results of association studies conducted on hundreds of thousands of individuals and using millions of genetic variants, aligning itself with the 'Big Data' theme.
- The technologies developed within the project have a high translational value, making the large amount of available data usable by the project partners. This also clearly falls within the themes of spoke 1, whose objective is precisely the identification of molecular targets for complex diseases. It also achieves the objective by validating the results obtained within the population of Moli-sani that is already included in the 'Heal Italia' project and in particular in Spoke 1.
- This knowledge is also integrated with potential developments in the personalization and stratification of preventive and therapeutic interventions for the diseases covered by the project.