

TITLE: PREVALUNG EU	
FUNDING BODY:	European Commission, Horizon Europe
CALL:	HORIZON-RIA HORIZON Research and Innovation Actions Hop-on facility (HORIZON-WIDERA-2023-ACCESS-06)
GRANT AGREEMENT:	101095604
PROJECT MANAGER:	Manlio Vinciguerra, PhD
DURATION:	2023 – 2027

Summary:

A large European program coordinated by Gustave Roussy, PREVALUNG EU is an extension of the PREVALUNG study started in 2019 measuring the prevalence of lung cancer among patients with smoking-related cardiovascular disease. The objective of PREVALUNG EU is to validate in retrospective and prospective cohorts four classifiers based on systemic disorders (immunity, microbiota, inflammation, metabolism or bone marrow) that are the basis for carcinogenesis. These classifiers should make it possible to assess the risk of developing tobacco-related cancers, but also to reduce this risk through, not only life style changes, but also food supplements or immunomodulators based on the classifiers. Ultimately, PREVALUNG EU will allow for individualized lung cancer screening programs in cardiovascular patients who are current or former smokers based on low-dose chest tomographic scans with personalised prevention. This program has been selected by the European Commission in the framework of the Horizon Europe call for projects to receive funding of 7 million euros over 5 years (grant agreement No 101095604).

Smokers prone to cardiovascular disease have an annual incidence of lung cancer of 1-2%. Screening programs allow for early diagnosis in 80% of cases, with the result that curative treatments are more effective. Through the implementation of appropriate preventive measures and a better understanding of the pathophysiological failures linking cardiovascular disease to lung cancer, the PREVALUNG EU project has a major public health impact.

The program is an extension of the prospective PREVALUNG study, initiated in 2019 at Marie Lannelongue Hospital (Paris-Saint-Joseph Hospital Group) as part of a partnership between Prof. David Boulate's team (coordinator of the lung cancer screening care program), and Prof. Laurence Zitvogel's INSERM unit (coordinator of omics translational research). In this prospective study, 508 smokers aged 45 to 75 years with a history of smoking-related cardiovascular disease were selected to assess the prevalence of lung cancer. The prevalence of lung cancer was estimated to be approximately 3% in low-dose chest tomography scan in asymptomatic individuals. The biological analyses performed among PREVALUNG participants are based on five analytical technologies: metabolomics, metagenomics, proteomics, immunomics and bone marrow senescence genetics. Exploratory analyses have identified 4 main classifiers based on the 4 systemic pillars of early carcinogenesis (cancer formation) process: autophagy and metabolism, innate immunity, intestinal barrier defects (dysbiosis), and clonal hematopoiesis. The identification of these biomarkers must now be validated in other European cohorts prospectively and then exploited in the PREVALUNG EU program for the implementation of cancer risk

stratification tools and personalised measures to intercept lung cancer.

PREVALUNG EU, organized as a consortium of twelve European partners from eight countries and coordinated by Gustave Roussy, has four main objectives:

To refine and validate, in retrospective and prospective cohorts of over 60,000 patients, four biomarkers for implementing lung cancer risk stratification;

To develop and validate reliable and user-friendly tools for monitoring these biomarkers and clinically assessing patient risk;

To demonstrate the applicability of these biomarkers as targets for dietary supplements or pharmacological agents, in addition to changes in diet and lifestyle, to achieve a risk level equivalent to that of the general population;

To adapt a secure interface between patients and clinical researchers that utilizes the new tools for long-term monitoring of interventional measures.

The PREVALUNG EU Consortium is characterised by a multidisciplinary group of experts including cardiologists, epidemiologists specialising in cardiovascular disease, lung cancer screening and biomarker development, thoracic surgeons, oncologists, pulmonologists and scientists with expertise in immunology and cellular metabolism. The study, structured into six work programs, also relies on technology transfer to industrial partners integrated into the consortium for the development of diagnostic tools for patients. The company Bio-Me is involved in the development of rapid analysis of the digestive microbiota and the company Olink Proteomics AB in the analysis of blood proteomics. Finally, the Patients en Réseau association is integrated into the consortium in order to include patients in the development of diagnostic tools. The project has been selected by the European Commission as part of the Horizon Europe call for projects, the European Union's framework program for research and innovation for the period 2021-2027. It has been awarded 7 million euros in funding for 60 months (grant agreement No 101095604).

This consortium brings together the universities of Turin (TORINO), London (University College London), Leuven (KU Leuven), Rotterdam (Erasmus), the Paris Saint-Joseph Hospital Group (Marie Lannelongue site), the Assistance Publique-Hôpitaux de Marseille (APHM)

https://www.gustaveroussy.fr/sites/default/files/press_release_horizon_europe_prevalung_eu_uk.pdf

