Press release

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Revolutionising Colorectal Cancer Screening with DIOPTRA:
Holistic, Personalised, Accessible

DIOPTRA, a new Horizon Europe project, aims to revolutionise Colorectal Cancer (CRC) screening via cutting-edge research towards a holistic, personalised and accessible method for early detection. The project plans to introduce an early screening and risk assessment solution for all citizens that considers risk factors and protein biomarkers to identify high-risk cases in need of colonoscopy. This non-invasive approach has the potential to significantly improve colorectal cancer screening in medical practice, expanding population screening participation.

Colorectal cancer is the third most common tumour in men and the second in women, accounting for 10% of all tumours worldwide. It ranks second in cancer-related deaths with 9.4%, only below lung cancer. While CRC is now considered as a highly preventable disease, several factors such as long waiting times and preparation for colonoscopy, robust infrastructure for sample analysis and patient-related barriers (such as fear, socio-demographic, psychosocial, economic or geographic) deter systematic monitoring and follow-up.

DIOPTRA, a 4-year Horizon Europe Research and Innovation Action, aspires to use a routine blood test accessible by all age groups to pinpoint individuals that would otherwise not qualify for screening according to current EU guidelines.

The DIOPTRA project is a multi-phase initiative that uses artificial intelligence (AI) to improve colorectal cancer screening. Using a pool of 3,000 candidate biomarkers as a starting point, DIOPTRA will apply a dedicated biomarker discovery pipeline for investigating protein expression in CRC vs healthy blood/plasma serum samples. Following this assessment, biomarker "hits" will be developed and refined. Researchers will then use the data to train and test AI models, with the goal of risk stratification, behavioural monitoring and interventions. The final phase is a validation phase, which will deliver a final version of the screening protocol, a mobile app (that will offer healthy citizens the opportunity to monitor their CRC risk based on non-modifiable and modifiable factors, while also being able to document routine biomarkers) and risk-based stratification, as well as a report on the

transformation of the standard of care towards risk-based and liquid biopsy-based front-line screening.

The full DIOPTRA solution will seek clinical validation, real-settings feedback and adjustments, as well as extensive definition of implementation needs for healthcare upscaling. Conclusions and the definitive DIOPTRA solution will then be investigated for cost-effectiveness against the current status quo, aiming to produce quantified evidence for pushing policy changes on CRC screening guidelines.

"DIOPTRA aspires to constitute the driving force for creating change in colorectal cancer screening and everyday medical practice through accessible and non-invasive risk estimation, employing a straightforward liquid biopsy to stratify citizens in need for definitive assessment. Via DIOPTRA, screening and early detection bear the potential to become holistic, more personalised and accessible", said Prof. George K. Matsopoulos, DIOPTRA Project Coordinator.

About DIOPTRA

DIOPTRA, a 4-year Horizon Europe Research and Innovation Action, is powered by a powerful consortium of 28 partners from 15 countries: Institute of Communication and Computer Systems (Greece – Coordinator), Martel GmbH (Switzerland), Tecreando BV (Netherlands), Sphynx Technology Solutions (Switzerland), Panepistimio Ioanninon (Greece), Smartsol SIA (Latvia), I2GROW Innovation to Grow SRL (Italy), Netcompany-Intrasoft SA (Luxembourg), Protavio Ltd (Greece), Computer Solutions Cyprus LTD (Cyprus), Blocks Health and Social Care EOOD (Bulgaria), Arthur's Legal BV (Netherlands), CSI Center For Social Innovation LTD (Cyprus), Centre Hospitalier Universitaire De Liege (Belgium), UAB Teraglobus (Lithuania), Vilabs LTD (Cyprus), Randers Regional Hospital, Central Denmark Region (Denmark), Univerzitetni Klinicni Center Maribor (Slovenia), The Danish Committee for Health Education (Denmark), Federation Europeenne des Hopitaux et des Soins de Sante (Belgium), D.Tsakalidis-G.Domalis OE (Greece), Ainigma Technologies (Belgium), Fundación Burgos por la Investigación de la Salud (Spain), Hepatogastroenterology Unit, Second Department of Internal Medicine – Propaedeutic, Medical School, National and Kapodistrian University of Athens, ''Attikon'' University General Hospital, Athens (Greece), Cambridge Medical Academy (United Kingdom), Linac-Pet Scan Opco Limited – German Oncology Center (Cyprus), Geniko Antikarkiniko Ogkologiko Nosokomeio Athinon O Agios Savvas (Greece), Biobank Graz of the Medical University of Graz (Austria). Each DIOPTRA partners carry the background knowledge and have documented expertise on all necessary fields.

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