

Issue 01
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PREVENTION
& EARLY
DETECTION
CLUSTER

Prevention & Early Detection (Screening)

CLUSTER NEWSLETTER

Horizon Europe Health Research Cluster for a Healthy Society

DIOPTRA | LUCIA | MammoScreen | ONCOSCREEN

PANCAID | SANGUINE | ThermoBreast



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PREVENTION & EARLY DETECTION CLUSTER



Joint forces to fight cancer: Prevention & Early detection (Screening) cluster

Over 2.7 million people in the EU-27 are diagnosed with cancer every year, with 1.3 million dying from the disease annually.

European Commission launched Mission on Cancer of Europe's Beating Cancer Plan, as part of the EU missions, an important novelty introduced with the Horizon Europe Research and Innovation programme for the 2021-2027 period. The aim is to develop concrete actions with the ambition of delivering tangible results by 2030, as stated in the Mission's slogan "By 2030, more than 3 million lives saved, living longer and better". The Mission is focused on intensifying research and innovation efforts to understand cancer risk factors better and improve screening programmes, diagnosis, therapies, treatments, and prevention policies. It also aims to refine and strengthen cancer research and its infrastructure, optimising cancer therapies, creating a European digital centre for cancer patients, establishing national hubs for cancer missions and creating a network to support the EU Mission Against Cancer.

A collaboration of seven EU-funded research projects DIOPTRA, LUCIA, MammoScreen, ONCOSCREEN, PANCAID, SANGUINE and ThermoBreast, form the EU Mission on Cancer's Prevention and Early Detection (Screening) cluster with the focus on unlocking the potential of new tools and digital solutions for a healthy society.

DIOPTRA, a Horizon Europe project, aiming to revolutionise Colorectal Cancer screening via a holistic, personalised and accessible method for early detection.

! PROBLEM: COLORECTAL CANCER

Colorectal cancer (CRC) is a malignant tumour that forms in the tissues of the colon or of the rectum. Colon cancer and rectal cancer are often grouped together because they have many features in common. In EU-27 countries in 2020, colorectal cancer accounted for 12.7% of all new cancer diagnoses and 12.4% of all deaths due to cancer. That made it the second most frequently occurring cancer (after breast cancer) and the second cause of cancer death (after 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.

Achievements in 2023

- Launch of the the ‘Predictive Risk Factors for Colorectal Cancer in the DIOPTRA Retrospective’ study
- Launch of the “Prospective data collection for early dynamic screening for colorectal cancer via novel protein biomarkers reflecting biological initiation mechanisms” study
- Contribution to the activities of the cluster



🔗 DIOPTRA SOLUTION

DIOPTRA aims to introduce a front-line screening tool that will consider risk factors and protein biomarkers for pinpointing individuals at high risk for colorectal cancer (CRC) incidence. Tissue & blood samples will be examined towards a discriminative set of prognostic proteins that are detectable via standard bloodwork and can indicate a need for further evaluation (i.e. colonoscopy). Other data (e.g. medical, behavioural) will also be considered as potential risk factors. Artificial intelligence (AI) will be leveraged for assessing prognostic power, while personalised behavioural change will be promoted based on modifiable risk factors. Given the low citizen participation in CRC screening across the European Union, DIOPTRA seeks to broaden the evaluated population, boosting participation rates and bypassing age screening thresholds.

2024 Outlook

- The third Consortium Meeting in Cambridge (UK)
- Development of the mobile app
- Enrollment of patients in the Prospective study



www.dioptra-project.eu



@dioptra_project



LUCIA (Lung Cancer-related risk factors and their Impact Assessment) aims to develop a toolbox for discovering and understanding risk factors and causes of lung cancer via three domains that feed into each other: (1) the personal risk factors; (2) the external risk factors; and (3) the cellular process.



! LUNG CANCER: PROBLEM

Lung cancer (LC) is the biggest cancer killer worldwide. Every 30 seconds, someone, somewhere in the world dies of LC. The current five-year survival rate following diagnosis of all types of LC is 21%. Low survival rate of the patients can also be connected to the very late diagnostic of the disease, and lack of efficient screening programs. The high correlation of smoking to LC is common knowledge, however for other risk factors and cellular processes associated with LC, such as, environmental, spatial, occupational, genetical risk factors only poor knowledge exist.

Achievements in 2023

- Kick-off meeting in Haifa, Israel
- First newsletter
- Launch of social media & website
- Workshop „Understanding Lung Cancer“ in San Sebastian
- Cluster meeting organised by LUCIA in San Sebastian

@ LUCIA SOLUTION

LUCIA would provide those populations at high risk to develop LC to be screened out at early stage of the disease, by that increasing substantially the survival rate and in parallel reducing healthcare burden.

The proactive approach of LUCIA not only increase survivability, but also allows for effective policymaking that reduces healthcare costs on a global scale.

2024 Outlook

- Next consortium meeting in Germany
- 2 newsletters throughout the year



www.luciaeproject.technion.ac.il



@luciaeproject



MAMMOSCREEN

MammoScreen (Innovative and safe microwave-based imaging technology to make breast cancer screening more accurate, inclusive and female-friendly) aims to generate clinical evidence on the use of MammoWave, a new mammograph based on microwave frequencies, for breast cancer screening.

! BREAST CANCER: PROBLEM

Breast cancer is the most common cancer in women worldwide, affecting 1 in 8 women. The World Health Organisation estimates that in 2020, worldwide cases of breast cancer accounted for 24% of all cancers in women, with 2.26 million women diagnosed with cancer and 685,000 deaths globally. While mammography is the gold standard technology for breast cancer screening – it has been demonstrated through different randomized controlled trials to reduce breast cancer mortality – it has limitations and drawbacks, such as the use of radiations, breast compression, limited use in the case of women with dense breast and in some types of hidden cancers.

Achievements in 2023

- First in person consortium meeting (UK)
- Launch of social media & website
- Ethic & Scientific Advisory Boards appointed
- Data Management Plan
- 1st Patient Workshop
- Cluster Kick Off Meeting
- Cluster Initial Work Plan
- Approval of clinical study by Italian CET



@ MAMMOSCREEN SOLUTION

The MammoWave technology uses safe and non-invasive microwave signals and has already proven to be able to effectively detect breast lesions. Besides, it is not affected by the density of the breast, unlike conventional mammography, whose assessment is limited in the case of dense breasts. MammoWave is female-friendly, as it makes examination fast and easy and no pressure is applied on the breast, avoiding any discomfort or pain in sensitive women. MammoScreen will also devise a modern, patient engagement app to put patients and their needs at the center of the screening process, and perform a health technology assessment to guarantee a rapid uptake of MammoWave by health systems and clinicians.

2024 Outlook

- First patient in the clinical study
- 1st Stakeholders Workshop
- Start building the patient engagement app



www.mammoscreenproject.eu



@mammoscreenproject



ONCOSCREEN is a European shield against colorectal cancer based on novel, more precise and affordable risk-based screening methods and viable policy pathways.

! PROBLEM: COLORECTAL CANCER

Colorectal cancer is on the rise in the number of diagnosed cases in the European Union. However, the survival rate and the incidence of cases vary significantly among European Member States. Differences in healthcare spending levels and the varying quality of screening, diagnosis, and treatment partially explain this variation. It is estimated that only 14% of European citizens participate in colorectal screening programmes. Colorectal cancer screening methods are often invasive, uncomfortable, and expensive, and national colorectal cancer screening programs cover only a small part of the population. Other barriers to screening include fear, social and economic factors, and a lack of awareness about the disease or available screening programmes.

Achievements in 2023

- Kick-off meeting in Athens, Greece
- Launch of social media and website
- Completed two laboratory and integration tests designed to test the integration of ONCOSCREEN solutions and to discuss and update end user requirements.
- Prepared the clinical study protocols for the ONCOSCREEN clinical studies that will take place in 10 different countries.

🔗 ONCOSCREEN SOLUTION

The ONCOSCREEN project addresses these challenges and aims to develop a groundbreaking set of 11 technological solutions for colorectal cancer screening. ONCOSCREEN will introduce novel diagnostic methods for colorectal cancer using breath and liquid biopsy. The project will create an integrated diagnostic decision support tool for clinicians and establish personalised alternative screening pathways for patients. It will closely collaborate with national cancer mission hubs to facilitate policy dialogues on cancer and related research actions, as well as develop intelligent monitoring tools for policymakers.

2024 Outlook

- First ONCOSCREEN Plenary Meeting in Paris, France
- Enrolment of patients and the start of clinical studies (Phase A)
- ONCOSCREEN will host the annual cluster meeting in Greece



<https://oncoscreen.health/>



@oncoscreen



PANCAID (PANcreatic CANcer Initial Detection via liquid biopsy) aims to make significant advancements in the early detection of pancreatic cancer through the development of a minimally invasive blood test.

! PANCREATIC CANCER: PROBLEM

Pancreatic cancer is a malignant neoplasm that originates in the cells of the pancreas, an organ located in the abdominal cavity behind the stomach. It is known to be one of the most aggressive and deadly types of cancer, with a high mortality rate. Pancreatic cancer is often difficult to detect in its early stages, as it tends to show minimal or no symptoms until it reaches advanced stages. This makes it challenging to diagnose and treat, and contributes to its poor prognosis.

Achievements in 2023

- Kick-Off meeting in Hamburg, Germany
- Launch of social media and website
- First newsletter



www.pancaid-project.eu



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@ PANCAID SOLUTION

Utilizing a comprehensive panel of liquid biopsy diagnostics, which involves analyzing genetic mutations, circulating tumor cells, and other biomarkers in blood samples, PANCAID aims to develop a minimally invasive blood test to detect pancreatic cancer at an early stage.

2024 Outlook

- Next meeting: GA in Madrid
- First stakeholder dialogue event
- 2 newsletters





SANGUINE



SANGUINE is an innovative cancer research project pioneering the advancement of hematological malignancy detection through a cutting-edge blood test. The test utilizes innovative technology to detect specific biomarkers, enabling early detection and improving patient outcomes. The project aims to revolutionize cancer screening across Europe, providing validated tools and software for effective, accessible, and affordable testing.

! HEMATOLOGICAL CANCER: PROBLEM

Annually, haematological cancers affect thousands of people in Europe and pose significant obstacles to early identification, precise diagnosis, and individualised treatment plans. Identifying these illnesses in a timely manner is critical to improving outcomes for people impacted. The development of blood test technology is essential for improving survival rates by enabling early detection and personalised therapy, while also resolving the accuracy and accessibility issues with present diagnostic methods.

Achievements in 2023

- Patient and sample recruitment is ongoing
- Biomarker discovery stage is ongoing with promising results (100% screening success rate for Acute Myeloid Leukemia)
- The clinical trial is listed in US National Institutes of Health (NIH) clinical trials database
- Production of sample chips has started
- Two online consortium meetings held
- The project was presented on Israeli national media

@ SANGUINE SOLUTION

SANGUINE embraces a multidisciplinary approach, emphasizing the role of Social Sciences and Humanities (SSH) in developing its test. Human interaction and ethical considerations are crucial for informed medical decision-making, meeting the needs of professionals and patients, and ensuring effective implementation. The project focuses on five key social principles: beneficence, non-maleficence, autonomy, justice, and explainability. By tackling bias, under-representation, and ethical considerations, our inclusive and reliable blood test is shaped.

2024 Outlook

- Next steps by clinical partners to be added
- Mapping and recruitment of relevant patients, high-risk individuals and stakeholders
- A first project newsletter
- Project social media channels



www.sanguine-project.eu



[@sanguine-project](https://www.linkedin.com/company/sanguine-project)

ThermoBreast

ThermoBreast aims to improve early breast cancer detection and patient monitoring by developing safe and patient-centered breast cancer screening with next-generation dynamic thermal imaging and Artificial Intelligence.



! BREAST CANCER: PROBLEM

According to the American Cancer Society (ACS) 1 in 8 women has a chance of developing breast cancer in her lifetime. The World Health Organisation (WHO) reports that in 2020, there were 2.3 million women diagnosed with breast cancer and 685 000 deaths worldwide. The results of a study headed by the National Institute for Health and Care Research (NIHR) revealed that the annual screening of women aged 40 or above saves one life per every thousand women checked. The World Health Organization (WHO) also stated that when breast cancer is identified and treated at its initial stages, it can have a cure rate close to 90%.

Achievements in 2023

- Fully functioning device prototype Vision One developed
- 12 centres are preparing for patient recruitment
- The Vision One device successfully deployed and ready for operation in two partner clinics
- Growing visibility and outreach, public interest in the project
- Cluster workplan established and common activities are being implemented

@ ThermoBreast SOLUTION

ThermoBreast introduces a new, safe vertical in breast cancer screening using AI-based dynamic thermal imaging. Its approach can unlock the potential of dynamic thermography, improving breast cancer prevention and diagnostics. The aim is to improve the survival rate by effectively detecting cancer in early stages in women of all ages and breast densities. Its method will enable regular screening, facilitate follow-up tests and use ThermoBreast as a supplementary diagnostic modality. Due to its harmless, comfortable screening and instant analysis, it will be possible to implement better patient monitoring programs, reducing the burden on women and their families.

2024 Outlook

- The Vision One system deployed in all clinics
- First patient recruited, the start of the ThermoBreast clinical study
- New feature addition for user experience enhancement to be delivered to all clinics
- 1st Steering Committee Meeting in Heidelberg, Germany



www.thermobreast.eu



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