



Book of Abstracts - EU Cancer Projects -



Book of EU Cancer Projects: to present information on Cancer Mission projects in the Understanding Cluster as well as Horizon Europe projects related to understanding cancer.



European Initiative to UNderstand CANcer



Main Goal

A blueprint to set up the UNCAN.eu network.

To enable the exchange of any type of cancer research data, collected from patients and experimental models and connected through a federated network of national data nodes to a central EU node that will provide access to these data through a process aligned with the European Health Data Space (EHDS).

Work areas

Main outcomes

The main outcome is a blueprint that was delivered to the European Commission on November 30, 2023 and can be accessed here:

<https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e50bcc45ed&appId=PPGMS>

The objective was to generate a new level of understanding of cancer through facilitating the circulation of any type of cancer research data in Europe and beyond, following FAIR principles.

Support the EU Cancer Mission

Further Development needed

The Coordination and Support Action 4.UNCAN.eu made two main recommendations for the next steps: one is to launch use cases in which cancer research data will be collected or generated to address a key medical and scientific question in cancer research, thereby contributing to better "Understand Cancer". These data will be standardised and stored where they have been generated, while metadata will circulate through UNCAN.eu network to generate a catalogue that researchers will interrogate. The other one is the creation of National Nodes in Member States in which research groups are involved in use cases to start circulating metadata and the structuration of the European central node. Other recommendations includes the need to associate patients and citizens to building UNCAN.eu network and organize its governance, as well as setting up initiatives to decrease inequities in cancer research between Member States.

The coordination of use cases and the creation of the data network is a first challenge that we require involvement of stakeholders in every Member State. The repetition of use cases along the years to learn, and feed, and expand the cancer research data is another challenge.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of cancer research institutes across Europe.

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Project URL: <https://uncan.eu/>



Phenotype switching: plasticity and/or differentiation of stromal cells and their progenitors within the tumour microenvironment regulate tumour fate

PhenoSwitch

03/2023 – 04/2028

Main Goal

We aimed at understanding how immune cells within the tumour microenvironment change their function and whether they can differentiate from stem cells to specific cell types which support the growth of the tumour.

We developed different tumour models originating from the same cell line. We systemically analysed the tumour promoting and tumour restricting stromal cells using various high throughput techniques, and we screened for pharmacological molecules which support the differentiation of pre-mature immune cells into tumour restricting microenvironment. Thus, we used multidisciplinary approaches including bioinformatics, chemistry for drug design, and in vitro and in vivo systems.

Work areas**Main outcomes**

We identified specific differentiation patterns of immune cells which support the growth of the tumour and its metastasis. We studied the function of the premature immune cells and based on their frequency in tumours and blood we showed that they serve as a biomarker for therapy outcomes. We also identified some factors expressed by the pre-mature cells which support growth of tissue, which may not help cancer, but can definitely improve the regenerative medicine field.

The EU mission aims to improve the lives of millions and cure those affected by cancer. Our research is of translational nature and allow direct transition of the pre-clinical work into clinical outcomes. Based on our research, the development of a biomarker to identify patients who will respond to specific treatment has been initiated by a pharma company. The results will save lives of patients by providing them the appropriate treatment for their disease based on their own response to the treatment.

Support the EU Cancer Mission**Further Development needed**

Some of the results of this project not only improved our understanding how cancer grows and metastasise but also allow the development of drugs and treatments which can restrict the growth of the tumour. Indeed, some of the results of this research are currently being developed further by a pharmaceutical company to improve precision medicine in oncology.

Gaps & Recommendations**Contact Name**

The project is implemented by a consortium of Technion, Israel Institute of Technology and an academic university with medical, exact and life science faculties.

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Project URL: <https://cordis.europa.eu/project/id/771112>



Assessing the role of intratumoral microbiota in therapy responses using patient-derived tumor-on-chip

**ARTURO**

07/2024 – 06/2028

Main Goal

To ethically explore the role of intratumoural microbiota in lung and breast cancers and its potential implication in immunotherapy resistance or efficacy, by using an innovative state-of-the-art 3D tumor-on-chip (ToC) model and evaluating the speed of translation of its innovations to clinical practice and co-design of policies.

Resistance to therapies in immuno-oncology. Tumour microenvironment and intratumoural microbiota. Non-Small Cell Lung Cancer (NSCLC) and Invasive Lobular breast Cancer (ILC). Tumor-on-chip (ToC) technology, as part of the emerging field of Micro-Physiological Systems (MPS). Co-design of cancer-related innovations and health policies. Integration of implementation science methodologies, strategies, and outcomes. 'Ethics by design' recommendations and regulatory frameworks.

Work areas

Main outcomes

Better understanding by researchers and health professionals of the role of intratumoural microbiota in cancer development and progression in patients. Increased accessibility and re-usability of data, models and technology and contribution to the development of the UNCAN.eu platform. Awareness of improved understanding of tumor-host interactions in patients with cancer through implementation science and co-design of cancer-related innovation policies aimed at delivering treatment and care solutions.

ARTURO will contribute and support the UNCAN.eu platform, by adding datasets and algorithms to the European Federated Cancer Research data hub, also after its duration. ARTURO may also link to and capitalize on other EU-Funded initiatives, projects, and EU alignment and coordination.

Support the EU Cancer Mission

Further Development needed

Research & innovation: Further efforts of applied research will be required in order to translate the ARTURO results into novel microbiota-based intervention strategies for personalized medicine, and more specifically for immuno-oncology. ARTURO's speed of translation of its innovations will be assessed.

Policy: ARTURO will contribute to the co-design of cancer-related innovation and health policies that will improve tangible and intangible dimensions of quality of life for patients with cancer and their families.

Uptake: ARTURO's will result in patient-derived tumor on chip that, in the future, through AI, could be taken up to predict treatment efficacy and determine effective treatment sequences.

Implementation research: Implementation science methodologies, strategies, and outcomes will be integrated to identify further developments needed to take ARTURO's results forward.

For uptake and adoption of Organ-on-Chip/Tumor-on-Chip technology in biomedical laboratories practices, it will be necessary to bridge the gap between Research & Innovation and health policies, at both National and European levels. To do so, ARTURO proposes three complementary and interlinked strategies: co-design of research and policies; translation of research into a user-friendly speech; and implementation science. ARTURO will also evaluate its own ethical challenges and implications. 'Ethics by design' recommendations will be developed so can further contribute to ethical and regulatory frameworks in the EU.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of Institut Curie, AP-HP, Hospital Bichat-Claude Bernard, Rome TorVergata, Humanitas University, and Universidade Católica Portuguesa.

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Project URL: <https://cordis.europa.eu/project/id/101136464>



European Linkage of Initiative from Science to Action in Health



Main Goal

The ELISAH project, supported by the EU4Health Programme, designed as a 'multi-directional and holistic' initiative, aims to reduce the burden of breast cancer by acting on modifiable risk factors and involving NGOs and patient groups. It will develop different strategies that integrate structural interventions, individual health promotion and risk factor gap analysis.

The project is composed of two parts: The first, dedicated to gap analysis: a Europe-wide gap analysis of national cancer plans, breast cancer rates and risk factor distribution, followed by a 'high-definition' gap analysis to assess the distribution of specific risk factors in persons with breast cancer. The second part is dedicated to innovative interventions and actions that will be easily replicable in all European countries to overcome the current limits in breast cancer prevention. Risk factors we will work on: environmental pollution, the built environment, exposure to unhealthy nutrition, lack of physical activity, as well as alcohol and tobacco use and health inequalities.

Work areas

Main outcomes

We will be able to assess:

1. the efficacy of the structural and individual interventions and actions we have proposed to lower the exposures to breast cancer risk factors: Web-based intervention, app and web-site, to change women exposure to unhealthy behaviors; actions to trigger changes in the built environment in disadvantaged urban neighborhoods to lower breast cancer risk factor exposure; actions to tackle inequalities in disadvantaged groups such as IDP (internally displaced people) under war conditions in Ukraine
2. the main gaps in breast cancer prevention by comparison of national cancer plan, risk factor distributions and cancer rates, and assessment of exposure to pollution, overweight, tobacco and alcohol use in women diagnosed with breast cancer.

The ELISAH project will contribute to the EU Mission on Cancer working on the transition from scientific research to public health initiatives, by studying the gaps and the actions to improve the built environment, the exposure to unhealthy diet, physical inactivity and pollution, addressing the entire cancer control continuum with a particular focus on vulnerable categories and working.

Support the EU Cancer Mission

Further Development needed

We have analysed the issue of sustainability, and we are applying measures to make the ELISAH project analysis and actions to be continued over the end of the project. We have planned evaluations during the development of the project to check and look for additional measures to be taken with EU and MS if they will agree.

We will continue to evaluate them during the development of the project.

Gaps & Recommendations

The project is implemented by a consortium of Istituto Nazionale dei Tumori Girona Biomedical Research Institute Dr. Josep Trueta (IDIBGI), Institut d'Investigació Sanitària Pere Virgili (IISPV), Ethniko Kai Kapodistriako Panepistimio Athinon, Ivano-Frankivsk Central City Clinical Hospital, Azienda Ospedaliera Universitaria Policlinico Paolo Giaccone Di Palermo, Salute Donna Onlus, Cittadini Per L'Aria Onlus, Carpathian Institute Of Analytics FrankoLytics, Università Degli Studi Di Brescia, and the Università Degli Studi Di Perugia



Contact Name

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Project URL: https://health.ec.europa.eu/non-communicable-diseases/cancer/europes-beating-cancer-plan-eu4health-financed-projects/projects/elisah_en?prefLang=en&#:~:text=ELISAH%20-%20European%20Linkage%20of%20Initiative%20from%20Science,risk%20factors%20and%20involving%20NGOs%20and%20patient%20groups



Elucidation of risk factors and health determinants associated with PROGRESSION of Monoclonal Gammopathies to Multiple Myeloma

ELMUMY

01/2023 – 12/2026

Main Goal

Our goal is to understand the molecular features associated with the onset of Multiple Myeloma (MM), a chronic malignancy characterized by slow progression and recurrences, in order to improve diagnosis and treatment of patients.

Application of omics technologies, and bioinformatics approaches on highly annotated samples obtained from all informative states (monoclonal gammopathy of undetermined significance - MGUS), smoldering MM (sMM), and active MM (MM), could identify biological pathways and molecules responsible for the onset, progression and resistance to therapy of Multiple Myeloma. In parallel, particular emphasis will be given to elucidating the health determinants and risk factors associated with progression to active MM from early stages (MGUS/sMM) by using extensive demographic, lifestyle and exposure datasets.

Work areas

Main outcomes

Although recent advances have expanded our understanding of the cellular functions associated with health to disease transition, recurrence and response to therapy, critical aspects of this complex pathology remain to be elucidated. We propose an interdisciplinary approach bringing together clinicians and researchers aiming to integrate epidemiological, clinical and experimental datasets in order to create a molecular model of cellular processes associated with the onset of active MM and response to therapy. The proposed systems medicine approach could yield clinically actionable molecular features that could improve MM patient management. Moreover, the integration of lifestyle, clinical and omics information will provide specific profiles for each patient allowing personalized diagnosis, prevention, and therapeutic approaches.

ELMUMY will elucidate crucial elements associated with MM onset and progression (molecular features, demographic data, lifestyle and exposure). Thus, we will be able to better understand the impact of risk factors and health determinants on the development and progression of this devastating malignancy.

Support the EU Cancer Mission

Further Development needed

The biomarkers and risk factors that will be identified during ELMUMY implementation will allow improved management of individuals that are at high risk of progression from asymptomatic MGUS to MM. Other key expected outcomes are novel therapeutic targets for treating recurring MM. The introduction of these novel features to clinical practice will require clinical trials in independent patient cohorts. These clinical trials will require the participation of pharmaceutical and biotechnology companies.

The EU could accelerate significantly the introduction of novel biomarkers in clinical practice by establishing specific guidelines for their evaluation and inclusion in clinical trials.

Gaps & Recommendations



Contact Name

The project, coordinated by the National and Kapodistrian University of Athens, is implemented by a consortium of Universities, Fundamental Research Centers, Clinical Research Centers, Hospitals, Small and Medium Enterprises with expertise in research implementation and dissemination of scientific results.

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A European-wide foundation to accelerate Data-driven Cancer Research

eosc | cancer

09/2022 – 02/2025

Main Goal

EOSC4Cancer will make diverse cancer data types accessible: genomics, imaging, medical, clinical, environmental and socio-economic. It will use and enhance federated and interoperable systems for securely identifying, sharing, processing and reusing FAIR data across borders and offer them via community-driven analysis environments.

The project is built around five use cases along the cancer patient journey, from prevention and early detection to diagnosis and advanced treatments. These use cases represent real cancer research scenarios that will identify the current needs and gaps in the data flows for cancer research that the technical developments within the project will address. These include the cataloguing of cancer datasets, their harmonisation, and their connection to analysis and visualisation platforms.

Work areas

Main outcomes

The developments of EOSC4Cancer have contributed to the definition of a blueprint for UNCAN via close interactions with the 4.UNCAN.eu CSA, including the definition of a federated digital infrastructure across different European countries and based on existing projects and Research Infrastructures. This infrastructure would provide data discovery and access mechanisms, analytical and visualisation platforms for medical, imaging, and genomic data, and guidance for managing cancer-related data. The proposed platform will empower scientists and clinical researchers, minimising their need for prior knowledge of data sources, technical details, or specific software and computational environments for data processing.

EOSC4Cancer proposes a technical platform built on open and validated software based on current developments in EOSC4Cancer, EUCAIM, GDI, and related projects, and utilising existing Research Infrastructures assets. These technologies can support and accelerate the objectives of the EU Mission on Cancer, bolstering the infrastructure required for complex data-driven challenges in cancer research and healthcare.

Support the EU Cancer Mission

Further Development needed

Cancer research is fueled by new technologies that constantly emerge and vast amounts of data that are produced in an unstructured manner. To realise the full potential of these data sources and applications, EOSC4Cancer aims for a framework that facilitates the rapid and efficient exchange of cancer research data and clinical data across member states, collaborative projects, and institutions. What we need now is to bridge the gap between technical advancements in research data management and analysis and the demands and expectations of different stakeholders, including the vast and diverse cancer research community, policy-makers, and patients, survivors and their relatives.

These implementations should leverage existing technical components, often disconnected and requiring refactoring to operate seamlessly in production environments. We are currently in the implementation stage of numerous projects aiming to deliver usable products. While structures are in place to support sustainable and beneficial systems for cancer research, operational implementations are crucial to progress beyond volatile projects and build upon existing developments. To ensure widespread adoption and maintenance, adherence to the Open Science principles is essential and requires a sustainable investment in the technological framework for enabling the use and reuse of cancer-related data across the entire patient journey and beyond.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of 29 organizations from 13 countries coordinated by the BSC, including cancer research centres, scientific infrastructures such as ELIXIR, BBMRI-ERIC, EATRIS, ECRIN, EuroBioImaging among others, leading research groups, hospitals and supercomputing centres.

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Project URL: <https://eosc4cancer.eu/>



Understanding Gene Environment Interaction in Alcohol-related hepatocellular carcinoma



01/2023 – 12/2027

Main Goal

The project focuses on generating clinically relevant animal models that resemble defined subgroups of medulloblastoma, the most common malignant brain tumour in children. The models were used to identify the specific cell type these tumours originate from. Drug targets were identified cells involved in brain metastasis and tumour recurrence were studied.

The project's main work areas include: Genetics: identification of new inherited genetic variants associated with ALD-HCC. Environmental factors assessment: Implementation of detailed questionnaires in prospective cohorts to assess environmental influences such as alcohol consumption, diet, and lifestyle on ALD-HCC risk. Single-cell and spatial metabolomics: analysis of cellular interactions and metabolic changes within liver tissue at a high resolution. Artificial Intelligence (AI): utilization of AI to synthesize genetic, clinical, and environmental data, aiming to improve diagnostic tools and predictive models for ALD-HCC.

Work areas

Main outcomes

GENIAL contributes to the EU Cancer Mission by improving our understanding of ALD-HCC risk factors, particularly genetic and environmental factors contributing to ALD-HCC risk, thus aiding in the development of targeted prevention and early detection strategies.

Expected outcomes include identifying novel inherited genetic variants influencing ALD-HCC risk; better define environmental risk factors for alcohol-related liver cancer; improved understanding of gene-environment interactions; integrating comprehensive environmental, genetic, and imaging data using AI, to develop prognostic models for better clinical decision-making. Emerging outcomes include designing new strategies for prevention of ALD-HCC and early identification; Identifying potential therapeutic targets.

Support the EU Cancer Mission

Further Development needed

The GENIAL project aims to enhance our understanding of how genetics and environmental factors, such as alcohol consumption, diet, and lifestyle, contribute to ALD-HCC. The findings could inform policy changes, advocating for stricter alcohol regulations and improved public health strategies to minimize identified risk factors. Future implementation research will focus on integrating this knowledge into healthcare systems for earlier interventions.

The GENIAL project has not yet identified specific gaps or recommendations related to the aspects listed above, as it is still in its early stages. However, it is designed to potentially address significant gaps in our understanding of the genetic and environmental interactions contributing to ALD-HCC. Through its comprehensive research approach, the project anticipates identifying critical areas where current public health strategies and clinical practices may fall short. Recommendations for policy changes, healthcare integration, and clinical applications will be developed as findings emerge, particularly in how genetic predispositions and lifestyle factors like alcohol consumption influence liver cancer development and more generally liver health.

Gaps & Recommendations



Contact Name

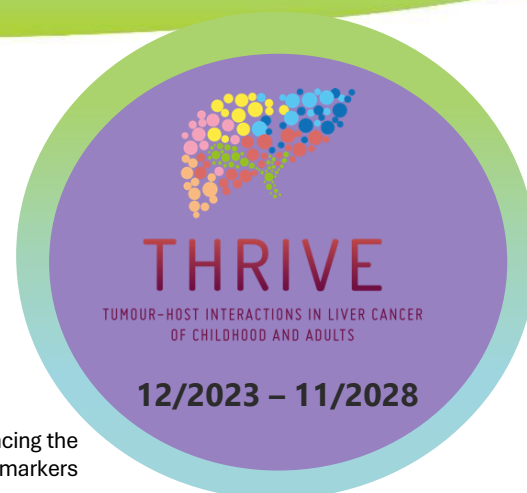
The project is implemented by a consortium of Université Libre de Bruxelles, Technische Universität Dresden, Università degli Studi di Milano, Institut National de la Santé et de la Recherche Médicale, Vlaams Instituut voor Biotechnologie, Champalimaud Foundation, Assistance Publique - Hôpitaux de Paris, Policlinico di Milano, European Liver Patients Association, European Association for the Study of the Liver (EASL), Stratipath, and Finovatis.

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Project URL: <https://www.genial-project.com/en/>



TUMOUR-HOST INTERACTIONS IN LIVER CANCER OF CHILDHOOD AND ADULTS



Main Goal

To enhance the outcome of paediatric and adult liver cancer patients by advancing the understanding of the disease regarding tumor-host interactions, identifying biomarkers for current therapies, and developing novel treatments to overcome resistance.

Paediatric and adult liver cancer will be dissected from a molecular, genomic and immunologic standpoint. We aim to identify molecular predictors at risk of HCC development by using large cohorts of patients with metabolic liver disease. In addition, single-cell -omics and spatial transcriptomics will provide insights to identify novel immune-based combination strategies in HCC and to assess strategies to overcome chemoresistance in paediatric liver cancer. High-resolution image-based deep-learning approaches will be used generate the predictors of cancer onset and response to treatment. By using preclinical mouse models recapitulating human HCC and innovative patient-derived organoid models of liver cancer, we expect to provide novel therapies to overcome resistance to the current standard of care.

Work areas

Main outcomes

1. New knowledge on the molecular features of liver cancer predisposition and prediction tools to stratify at-risk populations for surveillance and early cancer detection.
2. A human liver cancer spatial atlas with tumour, immune and stromal cells integrated; and the intratumoural microbiome.
3. Novel biomarkers enabling precision oncology and the development of affordable therapies with high socio-economic impact.
4. An artificial-intelligence-based tool that uses histopathological information to predict therapy response.
5. A preclinical drug testing platform based on PDOs and mouse models, to propose novel drug combinations, beyond the current standard of care.
6. Integrate our discoveries with publicly available large-scale datasets, such as the UNCAN.eu research dataplatfrom.
7. Impact in policymakers, stakeholders and caregivers through clinical practice guidelines and guidance documents on policy recommendations.

By generating new knowledge on liver cancer onset and progression, biomarkers of response to treatment, and proposing novel combination treatments to overcome resistance to current standard of care, THRIVE's commitment is to help reduce cancer burden in the EU and pave the way for comprehensive translational cancer research focused on precision medicine.

Support the EU Cancer Mission

Further Development needed

The described liver cancer cell atlas will be hypothesis-generating for novel therapeutic strategies to be explored at the preclinical level by researchers, with subsequent clinical studies.

Biomarkers of cancer predisposition will be used by clinicians in preventive medicine approaches and in stratification of patients for surveillance policies, with the expectation of triggering new lines of research. Biomarkers of response to systemic therapies will provide a new, more affordable and cost-effective treatment scenario.

THRIVE will inform health policy makers about the project findings - understanding of tumour-host interactions in liver cancer, through publications and guidelines (clinical practice guidelines, white papers, consensus papers; Lancet Commission papers). Together with EASL and ELPA we will reach out to European policy makers and health authorities.

THRIVE has identified few funding strategies for translational research projects focused on understanding tumour recurrence and resistance in cancers of poor prognosis.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of research Centres, Universities and Hospitals (FRCB-IDIBAPS, EKUT, UNEW, NUTH, UPCITE, IJC – CERCA, LUMC, IGTP-CERCA, WEIZMANN, DKFZ), the patients association ELPA, the European Association for the Study of Liver (EASL), and Inn-Acta.

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Project URL: <https://thrive-liver-cancer.eu/>



European Federation for Cancer Images

EUCAIM**01/2023 – 12/2026**

Main Goal

The project, supported by the Digital Europe Programme, focused on generating clinically relevant animal models that resemble defined subgroups of medulloblastoma, the most common malignant brain tumour in children. The models were used to identify the specific cell type these tumours originate from. Drug targets were identified cells involved in brain metastasis and tumour recurrence were studied.

Relation with data holders: promote the enrolment of the different health data holders.

Developing the ELSI governance framework: detail ethical and legal aspects.

Develop the Governance and Implementation of the Central Hub.

Data Federation & Interoperability Framework: specification of the requirements, implementations of tools for data pre-processing and interoperability.

Design and implement a technical framework for Federated data processing and distributed analysis.

Data incorporation use cases from external parties, Benchmarking & Quality Control of data and tools.

Definition of business & Sustainability models.

Work areas

Main outcomes

A sustainable governance and a coordination mechanism for the Federated European infrastructure for cancer images data.

Deployment of an interoperable, FAIR-compliant and secure infrastructure and data governance.

Tools and services for distributed analysis of cancer imaging data and related clinical information.

Approaches and tools for clinical validation including for the analysis of cancer imaging data and related clinical information.

Demonstration of the added value of the infrastructure for clinicians, researchers and innovators as part of the sustainability strategy.

A long-term sustainability plans.

De-identified cancer images of different cancer types useful for developing clinically relevant AI algorithms for specific use cases.

EUCAIM is the cornerstone of the European Cancer Imaging Initiative, which is a flagship of Europe's Beating Cancer Plan. The EUCAIM project support the EU Cancer Mission's objective Diagnosis and treatment, given that it will allow researchers to improve cancer diagnosis through the images analysis and the AI tools.

Support the EU Cancer Mission

Further Development needed

For future sustainability, the EUCAIM project is looking towards the establishment of an EDIC, a European Digital Infrastructure Consortium. For the constitution of an EDIC, support from Member States is necessary. As such, further development on policy level is likely needed.

Gaps & Recommendations



Contact Name

The project, coordinated by the European Institute for Biomedical Imaging Research, is implemented by a consortium of hospitals, ERIC, universities, technological centres, health research institutes, SMEs, large industry.

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Project URL: <https://cancerimage.eu/>



Establishment and Exploitation of a European-Latin American Research Consortium towards Eradication of Preventable Gallbladder Cancer

Main Goal

We are building a European-Latin America biorepository that facilitates research into the development of gallbladder cancer (GBC). The ultimate goal is primary and secondary disease prevention. We are identifying, validating and functionally characterizing new risk and early disease biomarkers, as well as novel epidemiological, genetic and molecular risk factors that will lead to more accurate risk prediction, individualized prevention, and more targeted therapy.

Biobanking and applied computer science to build a unique European–Latin American biorepository. Molecular genetic epidemiology to identify, validate and functionally characterize novel GBC biomarkers. Biostatistics and bioinformatics to develop a multifactorial risk score that integrates established and newly identified epidemiological and molecular risk factors. Genetic epidemiology, nutrition and sociology to improve the understanding of the causal mechanisms that link lifestyle, cultural and behavioral factors to GBC development. Molecular pathology to unravel novel opportunities for the targeted therapy of incidental GBC. Advanced statistical methods, including artificial intelligence tools (machine and deep learning) to exploit existing and newly generated epidemiological and multi-omics data to improve the accuracy of GBC risk prediction. Public health to translate the results of the project into more effective health policies.

Work areas

Main outcomes

The developed risk scores will permit identification of populations at high GBC risk, guiding surveillance and individualized decisions on the possible benefit of prophylactic cholecystectomy. After validation in independent cohorts, individual risk estimates will inform GBC prevention and early detection health policies, providing sound evidence to establish and refine national prevention programmes. Our European–Latin American biorepository already constitutes a prime resource for translational research on individualized prevention, tailored early detection and precision therapy of GBC. The planned collaborative research between European and Latin American countries will contribute to attaining the sustainable development goals for noncommunicable diseases. In particular, we aim to reduce GBC mortality through primary, secondary and tertiary prevention.

We are identifying novel GBC biomarkers to increase the efficiency of current prevention programmes. The expected reduction in the number of cholecystectomies needed to prevent GBC will promote health policies that guarantee universal access to quality prevention measures and to affordable medication for all. The training of Latin American PhD students in personalized medicine contributes to substantially increasing the retention of health professionals in developing and less developed countries.

Support the EU Cancer Mission

Further Development needed

Policy: We are already in contact with the Argentinian and Chilean Ministries of Health to translate project results into more effective cancer prevention strategies. Applied research: We are looking for start-ups interested in developing commercial tests based on the biomarkers that we are identifying. Others: The methodology and results of our project could be transferred to other types of cancer. For example, we are exploiting genetic diversity (the Latin American genome is a mixture of European and indigenous American ancestry) for biomarker identification.

We have recently shown that patients with gallstones have an increased risk of cancer (e.g. kidney, breast and endometrial cancer). Every year, around 900.000 gallbladders are surgically removed in Europe to treat gallstone disease, and the prevention of gallstone-related cancer has enormous potential. Our European-Latin America biorepository already has high-quality data and samples (whole blood, serum, plasma, urine, faeces and saliva) from 9,000 gallstone patients (15,000 at the end of the project) that could be exploited to advance the prevention of gallstone-related cancer.

Gaps & Recommendations



Contact Name

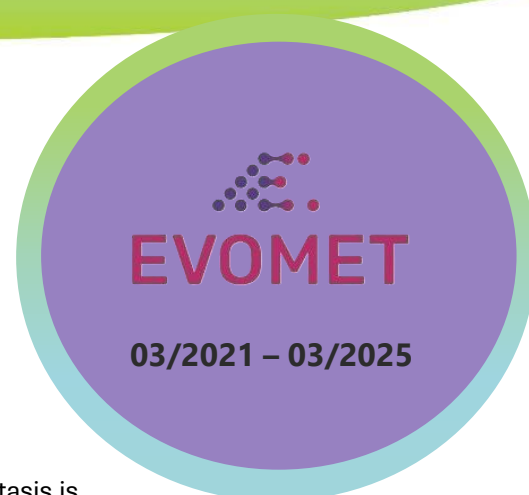
The project, coordinated by the Heidelberg University Hospital, is implemented by a consortium of universities, cancer research institutes, patient representatives, health ministry representatives.

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Project URL: www.SaludVesiculaBiliar.org



Evomet – Deconstructing the evolution of metastasis



Main Goal

The Evomet research project aims to transform how cancer metastasis is understood and treated.

Cell fate, Environment, Latency and Expansion of Cancer Metastasis.

Work areas

Main outcomes

The outcome of the project is to have 15 Early Stage Researchers interdisciplinary trained to be the future leaders of metastasis.

Evomet's objectives are closely aligned with those of Mission Cancer, especially in the understanding of cancer. Results from Evomet's individual research projects are expected to contribute directly towards unravelling the role of metastasis and investigating potential barriers to effective treatment. Evomet is training the next generation of metastasis researchers whose careers will impact Europe across all priority areas defined by Mission Cancer.

Support the EU Cancer Mission

Further Development needed

Evomet's research thus far has uncovered the need for further research into metastatic adaptation in the next paradigm shift towards understanding cancer.

Gaps & Recommendations

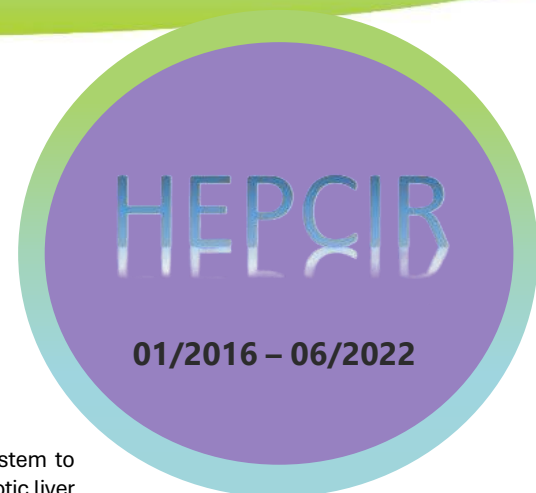


Contact Name

The project, coordinated by the Institute for Research in Biomedicine in Barcelona, is implemented by a consortium of academic institutions, industry, hospitals.

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Project URL: <https://evomet-itn.eu>



Cell circuits as targets and biomarkers for liver disease and cancer prevention

Main Goal

The project's main goal was to exploit chronic HCV infection as a model system to decipher the key factors and pathways responsible for the pathogenesis of fibrotic liver disease progression leading to hepatocellular carcinoma (HCC).

Molecular and cellular biology, Disease modelling, Biomarker discovery, Target and drug discovery.

Work areas

Main outcomes

Within the framework of HEPCIR, we developed a cell-based system that models liver disease progression and predicts HCC risk as well as novel animal model and patient-derived systems that allowed us to decipher cell circuits involved in disease progression and carcinogenesis; identify therapeutic targets and novel therapeutic approaches to treat advanced liver disease and HCC; and develop novel biomarkers of disease progression and prediction of HCC risk for patient stratification. Novel cancer pathways and cell surface proteins were identified as drivers and therapeutic targets for liver fibrosis and carcinogenesis which are now in clinical development.

HEPCIR has led to the identification of new therapeutic targets to treat fibrosis and liver cancer, a milestone for the development of a novel therapeutic approach for the prevention and treatment of HCC (objectives 2 and 3). Further study of the mechanism of action of these targets has brought a better understanding of the biological mechanisms involved in the progression of liver fibrosis towards cancer (objective 1).

Support the EU Cancer Mission

Further Development needed

Several steps have been identified to take the results of the project forward, towards having an impact on patients' care. Further research is required to better understand the role of the targets in liver fibrosis and cancer. This is the focus of ERC AdG project FIBCAN (ongoing). Moreover, the clinical translation of the results is needed to impact patients. For this purpose, the startup biotech Alentis Therapeutics was founded who is developing now compounds discovered and developed within HEPCIR. Building on this work, further steps will be required to ensure the development of a new therapy for liver cancer, including evaluation and authorisation, production and commercialisation, communication with patient associations and medical bodies.

Two main gaps were identified (and addressed):

1. The need for funding to ensure the clinical translation of basic research results
2. The need for industrial stakeholders and partners to ensure the development and commercialisation of the new therapies.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of Institute for Translational Medicine and Liver Disease (Inserm) and the University of Texas Southwestern Medical Center (UTSW)

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Project URL: <https://cordis.europa.eu/project/id/671231>



Targeting tumour-host interactions in paediatric malignant gliomas to reinvigorate immunity and improve radio- and immunotherapy efficacy



12/2023 – 12/2027

Main Goal

The HIT-GLIO aims to dissect tumour-host interactions in malignant paediatric brain tumours (pBT) with single-cell omics and multi-modal imaging and develop strategies to enhance immunotherapy and radiotherapy response. We will develop cellular and mouse models of pBT to unravel defects of anti-tumour immunity, identify therapeutic targets, and test innovative technologies targeting tumour-host interactions to boost immunotherapy and improve therapy responses.

Single-cell omics and multi-modal imaging of malignant paediatric brain tumours, defining role of hypoxia pathobiology and responses to radiotherapy; development of cellular, patient derived immune-organoids and mouse models of pBT; generating new syngeneic models of pBT; development of nano- and interfering peptide technologies. Development of bimodal CAR T cells and hypoxia activated tools. Neuropsychological determination and alleviation of cognitive deficits in young patients, evaluation of stress in caregivers.

Work areas

Main outcomes

The “HIT-GLIO - Targeting tumour-host interactions in paediatric malignant gliomas to reinvigorate immunity and improve radio- and immunotherapy efficacy” addresses all specific queries of the call. The expected outcomes are in line with all key objectives of the call and fit perfectly to those specified in this topic. The wider impacts in implementing single-cell and spatial transcriptomics technologies, nanocarriers brain tumours and new tools fighting hypoxia are envisioned. Outcomes will broaden our knowledge of poorly-understood tumour-host interactions in paediatric malignant gliomas by the comprehensive, multi-omics analysis of the complexity of the immune system and hypoxic components of the tumour microenvironment.

In line with supporting the EU Cancer Mission’s objectives, HIT-GLIO will deeply characterise tumour-host interactions in paediatric gliomas; create new glioma models to determine TME, identify potential therapeutic targets; develop target tumour-host interactions with the innovative technologies to boost immunotherapy and RT responses; assess neurodevelopmental alterations of disease and foster psychological approaches to increase quality-of-life of patients and their caregivers.

Support the EU Cancer Mission

Further Development needed

HIT-GLIO project addressed several unmet needs that are critical in the current treatment in paediatric brain tumours. We aim to improve immunotherapy (dual CAR T cell strategy or targeting immunosuppressive myeloid cells) or radiotherapy (targeting hypoxic tumour regions) which may shift the anti-tumour therapy into new directions. The results of our project will provide a strong background from new drug development, that will be critical for research and innovation. Our communication approaches will increase awareness of those tumours and patient’s needs leading to increasing investments from the pharma and governments.

We have not identified these gaps yet, but we envisage that in the duration of the project and depending on the results, we will be able to provide more feedback on the matter.

Gaps & Recommendations



Contact Name

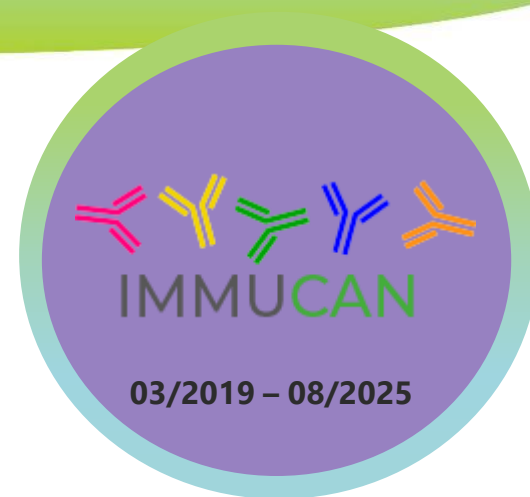
The project, coordinated by the Nencki Institute of Experimental Biology, is implemented by a consortium of research Institutes, governmental institutes, national health centres, SMEs.

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Project URL: <https://cordis.europa.eu/project/id/101136835>



Integrated iMMUnoprofiling of large adaptive CANcer patient cohorts



Main Goal

To understand the interplay between cancer cells and the immune system and the impact of therapeutic interventions. To that end, high-quality human biological material and clinical data are being collected from up to 3,000 patients with colorectal, lung, head & neck, breast and gastric cancers. The broad molecular and cellular profiling data generated from various immunoprofiling techniques are integrated with the longitudinal clinical data and used for the discovery of novel biomarkers to further document the understanding of resistance mechanisms to immunotherapy.

Molecular and cellular profiling. Immunotherapy in cancer.

Involved organizations: International public-private consortium of 30 academic, pharma and SME partners under the leadership of EORTC and Merck.

Work areas

Main outcomes

IMMUCan will generate molecular and cellular profiling data of the tumour and its microenvironment from up to 3000 cancer patients. The generated profiling data will be integrated with related clinical data collected over time. All data will be stored in IMMUCan Knowledge Management System managed by the Swiss Institute of Bioinformatics. Unused biological samples or the portion left after use will be stored at the Integrated Biobank of Luxembourg. IMMUCan will maintain the generated resources and support its future use by the research community after the end of the IHI grant.

By understanding the interplay between cancer cells and the immune system and the impact of therapeutic interventions. This would improve the prediction of response to immunotherapy, the development of new therapies or design of combination therapies in cancer.

Support the EU Cancer Mission

Further Development needed

Maintaining IMMUCan assets and supporting access for research will require resources. It would be important to consider public funding mechanisms supporting the maintenance and eventual further development for valuable project assets such database and biobank. It should not exclude hybrid sustainability model where consortium is also raising incomes by itself from e.g. access fees.

Sustainability support measures would be helpful.

Gaps & Recommendations



Contact Name

The project is coordinated by EORTC and Merck

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Molecularly defined models of human childhood brain tumors

Medulloblastoma
05/2015 – 04/2020

Main Goal

We generated clinically relevant animal models that carefully resemble defined subgroups of medulloblastoma, the most common malignant brain tumor in children. We used the models to identify the specific cell type these tumors originates from. We finally identified novel drug targets and studied cells involved in brain metastasis and tumor recurrence; the main cause of death in brain tumor patients.

The project intended to create a resource for creating humanized models for pediatric brain tumors of defined subgroups. The project was able to generate subtypes of distinct subgroups. The project also aimed to identify novel genes involved in initiating brain tumors. Such genes were found that collaborate with brain tumor formation. Finally, a model for medulloblastoma relapse was generated that can help understand important mechanisms for therapy-resistance and deadly tumor progression.

Work areas

Main outcomes

The project has led to findings (PMID: 31786016) of drug targets (mTOR/PI3K inhibitors) that can reduce the mortality in a subtype of infant medulloblastoma. The project identified gene involved in promoting brain tumor formation in collaboration with a platelet-derived growth factor (PDGF) commonly amplified in brain tumors. The project has led to findings that can diagnose relapsing cells in pediatric brain tumors (PMID: 36219398). This can help diagnose patients at higher risk of developing a deadly relapse. A stem cell factor, SOX9 was identified as essential in driving recurrence.

Malignant brain tumors comprise different subgroups resulting in about 52,000 deaths per year in the European region. The findings from this project has identified diagnostic and prognostic markers for brain tumor progression and relapse. Recurrent brain tumor disease remains almost always fatal. Our findings can lead to novel treatments to treat this devastating disease in both adults and children.

Support the EU Cancer Mission

Further Development needed

The project as identified further developments and was moving forward with a development of commercialization on the relapse marker, which was supported by an ERC PoC grant, Soxradicate Relapse, 09/2022 - 02/2024. The project needs further developments in research and innovation e.g. supported within EU Cancer Mission or as a future ERC Grant proposal. The project needs further help with commercialisation. Here we developed a diagnostics tool and a gene therapy for aggressive brain tumor relapse and would need to find suitable partners or companies that can invest in our innovation.

A support from e.g. a EIC Transition grant has been recommended to us and could move this project forward towards implementation and could help develop a road map for a future clinical trial for patients with brain tumor relapses.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of the Dept. of Immunology, Genetics and Pathology, Uppsala University

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TUMOUR BASED PREDICTION AND MANIPULATION OF IMMUNE RESPONSE



01/2024 – 12/2027

Main Goal

Our main goal is to better predict response to immunotherapy in skin, lung and bladder cancer, through the investigation of tumour profiling (using existing bulk omics datasets) supplemented by single-cell technologies combined with advanced bioinformatics and artificial intelligence (AI). This will improve our understanding of tumour-host interactions and build novel hypotheses, later to be validated through *in vivo* and *in vitro* perturbation assays.

Clinical trials in skin, lung and bladder cancers, biology, multi-omics, translational research, artificial intelligence.

Work areas

Main outcomes

Our project's main outcome is the implementation of artificial intelligence as a medical tool in cancer treatment. cell factor, SOX9 was identified as essential in driving recurrence.

This project aims at improving the quality of cancer care. Our findings can lead to novel treatments to treat this devastating disease in both adults and children.

Support the EU Cancer Mission

Further Development needed

Gaps & Recommen- dations



Contact Name

The project is implemented by a consortium of Inserm, BRFAA, UCD Dublin, Nantes University Hospital, the University Hospital Essen, the University of Zurich, the Radboud UMC, Aarhus University, HORG, Medical University of Vienna, and McGill University, Atomic Intelligence, Norwegian Institute of Public Health, University of Patients-Sorbonne, Exelixis, and Fundación Eticas Data Society.

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Project URL: <https://www.multir.eu/>



Targeting genetic and epigenetic mechanisms in pediatric sarcomas

PedSarc
01/2019 – 12/2024

Main Goal

Identify key players in epigenetic deregulation in pediatric sarcomas and generate new mouse models to assist clinical translation and development of the new therapeutic targets for these diseases.

Biological Sciences, Medical Sciences, Oncology, Genetics, Epigenetics.

Work areas

Main outcomes

The project achieved a significant breakthrough with its work on a specific oncofusion protein that gives rise to synovial sarcoma in children and young adults. Our study identified the molecular mechanisms of oncofusion protein-gene interaction that enables it to regulate specific genes to promote cancer. The PedSarc project also developed new methods for investigating sarcomas *in vivo*. For this, we pioneered a new way of delivering transposon vectors into muscle tissue in mice. These fragments of DNA mediate the insertion of specific mutated genes into the genome to model sarcoma development.

By providing molecular insights into pediatric cancer and novel preclinical models, PedSarc supports the mission of understanding cancer, providing better tools for diagnostic and treatment therefore improving the quality of life for patients and their families. Pediatric cancer in particular, will benefit from more targeted therapies to reduce acute and late *toxicities* in healthy tissues.

Support the EU Cancer Mission

Further Development needed

Application of mouse models of pediatric sarcoma will be used in several subsequent projects and shared to the scientific community.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of German Cancer Research Center (DKFZ) and Hopp Children's Cancer Center Heidelberg (KiTZ).

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Microbiota against cancer

ONCOBIOME

Microbiota against cancer
International research program

01/2019 – 06/2025

Main Goal

Four main goals to define 1/ "Gut OncoMicrobiome Signatures (GOMS)" using stool metagenomics of 1,000 cancer patients (melanoma, lung, colon and breast cancers), 2/ clinical relevance of cancer-associated dysbiosis (GOMS) as for pre-cancer status, chemotherapy and immunotherapy -related efficacy and side effects, 3/ the lead bacteria and metabolites associated with prognosis, 4/ a friendly-user test for the diagnosis of GOMS.

A consortium of broad expertise encompassed clinical and nutrition oncologists (organized in a network of oncologists across various European countries), epidemiologists, data scientists (metagenomics), immunologists, cell biologists, microbiologists, researchers involved in preclinical models (enteroids, animal studies, in vitro studies), accompanied by patient advocates and communication employees. This coordinated effort generated 33 cohorts (+2 national registries) of 3414 cancer patients (+350 controls, 68% females, 32% males) and prospective collection of 10693 stools (fully sequenced) and plasma for a careful biobanking and processing (metabolomics and serology against microbiota). International symposia allowed to increment more collaborations (with microbiota-centered consortia of the EU) for a positive cross-fertilization of the effort.

Work areas

Main outcomes

We described GOMS across cancer types and shared between cancers that are related to cancer-associated stress ileopathy. Moreover, a friendly user routine test (PCR-based) for the diagnosis of dysbiosis associated with resistance to immunotherapy was reported based on metagenomics of >850 lung cancer, melanoma and colorectal cancer patients. Avatar animal models showed the cause-effect relationship between beneficial (*Akkermansia* species (spp)) and harmful (*Enterocloster* spp.) bacteria during therapy with anti-PD1 or -CTLA4 Abs. The links between GOMS and immune -related side effects was reported. The study of gut-derived metabolites pointed to deleterious effects of secondary bile acids in antibiotics or gut dysbiosis-associated resistance to immunotherapy. The pivotal role of the mucosal addressing MAdCAM-1 in keeping in check gut homeostasis during cancer progression was unveiled.

A deviation in the repertoire of the gut microbiota or microbiome composition is associated with various chronic inflammatory or degenerative disorders including cancer. Defining diagnosis tools enabling to identify populations of patients subjected to a transition from health to disease is a priority of EU and of this project. This consortium brought up the diagnosis toolbox to personalize cancer therapies based on microbiota.

Support the EU Cancer Mission

Further Development needed

The next steps should facilitate the clinical implementations of new formulations of probiotics, also called "live biotherapeutics" or the development of clinical grade "minimal microbial ecosystems" consisting in a balanced microflora, necessary and sufficient to restore proper metabolism, gut barrier integrity and immune tonus to rescue cancer patients from immunoresistance. Indeed, fecal microbial transplantation and pioneering probiotics appears to be efficient in raising response rates and circumventing primary resistance to immunotherapy in melanoma. Implementation research, applied research, and commercialization of "artificial microbiota" should be a European priority.

Gaps & Recommendations

The COVID19 pandemic allowed to show a direct relationship between gut dysbiosis and resistance to COVID19 vaccines across three cohorts, assessing lack of immunization efficacy using friendly user T cell assays and not just serology. Therefore, it appears that future vaccines against emerging pathogens should take into account gut dysbiosis and T cell assays to monitor effective immunization in mass roll out campaigns.



Contact Name

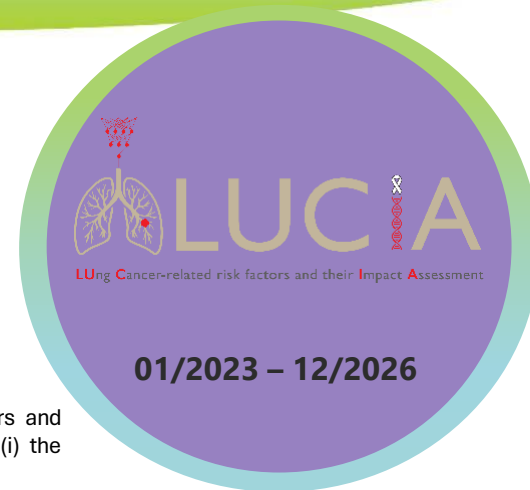
The project, coordinated by the Gustav Roussy Institute, is implemented by a consortium of European cancer centers and networks (UNICANCER-France, GBG -Germany, Karolinska Institute), two national registries (the Netherlands, Sweden), two biotech cities in France, together with metagenomics-centered data scientists in Italy and Czech Republic.

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Understanding Lung Cancer related risk factors and their Impact assessment



Main Goal

LUCIA aims to develop a toolbox for studying and understanding risk factors and causes of LC via three complementary domains that feed into each other: (i) the personal risk factors; (ii) the external risk factors; and (iii) the cellular processes.

LUCIA work area is the development of a risk factor oriented personalized LC pathway, from personalized prevention to screening and diagnosis, that will have a substantial effect on identifying LC early, reducing the level of diagnostic error thereby reducing healthcare costs and improving patient outcomes. To achieve the objectives and outcomes of LUCIA, the project is focused on 5 main pillars: 1) Technological Innovation and Implementation 2) Clinical Validation 3) AI Impact Assessment 4) Social and Societal Aspects 5) Communication, Dissemination, and Exploitation.

Work areas

Main outcomes

LUCIA will combine holistic data sets representing multiple factors with new understanding of omics and cellular processes to create a full understanding of the development and progression of LC. These will feed risk factor prediction models, combined to a Toolbox, that will be made available to the scientific and health community to be used to design and optimize prevention, screening, and early detection protocols.

LUCIA will provide:

1. proof-of-concept for utilization of the multi-omic risk scores in all stages of personalized cancer medicine.
2. Conceptual advances in polygenic risk scoring methodologies
3. Improved cancer risk prediction
4. Genomics-informed experimental models that recapitulate LC-evolution the accuracy of the models and their predictions will be tested in an observational clinical study.

LUCIA project will improve LC prevention, screening, and early detection in the EU Healthcare Systems. The improved understanding of risk factors and health determinants will allow policymakers to make evidence-informed decisions and optimize Clinical Guidelines. LUCIA will support the implementation of nationwide, population-based LC screening programme in EU countries and will create an international data registry to introduce value-based principles of management.

Support the EU Cancer Mission

Further Development needed

LUCIA project led the recent “Policy brief formulating recommendations...” in which further developments were identified. Briefly:

1. The heterogeneity among data management protocols in different healthcare institutions and across countries.
2. There is an issue with data protection, general data access, and the collection and sharing of data
3. The lack of adequate infrastructure for data analysis across projects and limited computational capacity
4. No one specific regulation in the EU, each country involved has its own regulations and demands.
5. Language can make the transmission of knowledge and best practices more difficult.
6. Lack of consensus on the optimal risk prediction model and uncertainties surrounding their robustness means strategies to pre-select participants for screening have not yet been implemented in many EU countries.

“Policy brief formulating recommendations” deliverable highlights:

1. Establish standardised protocols for data/material management and data sharing best practices.
2. Facilitate the creation of a centralized repository/platforms for sharing datasets on risk factors and molecular features.
3. Promote and adopt common nomenclature and establish common data exchange protocols.
4. Promote harmonization of GDPR understanding across countries/stakeholders, and the use of one-time consent and/or derogation.
5. Enhance uptake, trust, standardisation, and interpretability of AI-models among healthcare professionals and patients.
6. Foster the development of open-source tools/platforms.
7. Develop a common framework to guide the life cycle assessment of innovations and provide guidelines on how to transfer/adopt results in EU-healthcare systems under the new health technology assessment (HTA) Regulation.

Gaps & Recommendations



Contact Name

The project, coordinated by Technion Israel Institute of Technology, is implemented by a consortium of 20 partners – academia, associations, hospitals, NGOs, research and technological organizations, and industry.

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Specific Imaging of Immune Cell Dynamics Using Novel Tracer Strategies



Main Goal

Our vision is to set up a sustainable and flexible platform for molecular imaging of immune cell dynamics using a broad range of novel tracer strategies. New immunotracers will enable smart monitoring of immunotherapies and widespread usage of a personalised medicine approach.

Specifically, Immune-Image main work areas are to

1. Communicate and disseminate deliverables for science and innovation and create sustainable platforms beyond Immune-Image.
2. Develop an infrastructure for data sharing, harmonisation and biobanking.
3. Generate imaging agents for characterisation of specific immune cell subsets.
4. Develop and optimise imaging workflows and conduct proof-of-principle studies.
5. Validate immunotracers in disease models (cancer, IMIDs) with the aim of making them applicable to clinical studies.
6. Conduct human clinical trials to confirm safety and to evaluate the clinical potential of novel immunotracers.

Work areas

Main outcomes

Expected project outcomes are:

Immunotracers

Enabling optimal immunotherapy choice for patients, response prediction; Facilitating drug development; Bispecific tracer platform technology; Usage of isotopes that are easily accessible at several hospitals to benefit patients

Cell targeting technologies

Unprecedented immune cell targeting, potential usage in fundamental research or deriving targeted immunotherapies; Immunotracer validation and establishment of imaging protocols; High throughput immunotracer specificity screening; Knock-in or knock-out and humanised rodent models; Standardised procedures, IT infrastructure

Longitudinal disease and therapy monitoring in tumour and IMIDs models

Optimal immunotracer and longitudinal immunotherapy testing in syngeneic mouse models and humanised rodent models

Imaging modalities and analytical approaches in imaging

Facilitating drug development; Protocols for data analysis and kinetic modelling of PET data; Protocols for radiomics analysis standardisation

Changing the research landscape

Fostering of collaborative approaches, sharing of resources, expertise and knowledge through PPP (academia, SMEs, EFPIA).

The Immune-Image project supports the EU Cancer Mission's objective to improve the diagnosis and treatment of cancer patients by providing insights into the immunological status of individual patients, which will lead to prediction of response to therapeutic interventions and provide insights into individual therapy responses. The patient will benefit with optimised therapies, increased safety and prevention of unnecessary side effects.

Support the EU Cancer Mission

Further Development needed

Our project will lead to new Imaging techniques to monitor the effect of immunotherapy in individual patients. Upon successful evaluation, it will need to be investigated in a larger patient population if the new imaging techniques are truly beneficial in a clinical setting in a successive clinical research project and next level would be to have the imaging technique clinically approved and included in treatment guidelines.

The additional work will be dependent on financing either from private sources or from the EU. Only then patients in Europe (and beyond) will profit maximally from the new imaging techniques.

Gaps & Recommendations



Contact Name

The project is implemented by a consortium of 22 key stakeholders from across nine countries. This consortium comprises ten academic institutions, 4 SMEs, a patient organization and seven pharmaceutical companies (EFPIA).

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Project URL: <https://www.immune-image.eu/>



SPatial Analysis of Cancer Evolution in the Tumour Immune MicroEnvironment

SPACETIME
08/2024 – 07/2029

Main Goal

The overall goal of SPACETIME is to define novel spatio-temporal tumour microenvironment signatures to be used as the basis for precision immunotherapy in lung cancer patients.

Oncology, Pathology, Biomarkers, Precision Medicine, Immunotherapy.

Work areas

Main outcomes

An investigator-driven clinical trial for SPACETIME diagnostic-test; Assays and clear criteria for scoring the spatial features to determine tumour microenvironment features of NSCLC; Potential therapeutic targets, applicable animal models of the tumour microenvironment and dataset for the characterization of the tumour microenvironment; Prognosis for early stage nodules; Support to collect evidence for novel IO agents, incorporating spatial signatures as part of patient inclusion criteria; Adjustment of health policies and other prevention efforts.

The project aims to address poorly understood Lung tumor-host interactions at various levels, integrate all data into an overarching model, and prepare all necessary steps for speedy implementation into the clinic where it can facilitate personalized immunotherapy treatment. Therefore, SPACETIME aligns with the four objectives of the EU Mission Cancer. By understanding better how lung cancer works (objective 1), we will be able to diagnose it and treat it more effectively (objective 3). The spatio-temporal signature support efforts towards lung cancer screening programmes, providing direction for early interventions by predicting the course of tumour development. (objective 2). An earlier and more effective treatment can have significant positive effects on cancer patients and their families, particularly in terms of their quality of life (improved survival rates, reduced stress, reduced financial burden, etc) (objective 4).

Support the EU Cancer Mission

Further Development needed

Yes, there are plans in place to identify further developments to advance the project results. The SPACETIME Impact Board, produce guidelines for effective implementation. This guideline will encompass not only a broad spectrum of stakeholders (including the EU and Member state) but also different areas, including policy adjustments, research and innovation initiatives, strategies to enhance uptake, implementation, pathways for commercialization and communication strategies. In regards to developments needed to be taken by the EU, we will engage with national and international health policy makers and public authorities in order to: promote future implementation of health policies; promote cross-sectorial policies to close disparities, improve access, and optimize cancer care for all populations; (co)develop guidelines for clinicians for the implementation of a spatial signature test.; promote prioritisation of reducing risk factors from the environment; promote funding for cancer research into precision immunotherapy.

Not yet applicable.

Gaps & Recommendations



Contact Name

The project, coordinated by the Amsterdam University Medical Centre, is implemented by a consortium of academic hospitals, research institutes, patient organization, health care specialists, and an SME.

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