

Topic idea submitted to IHI - Reference Number: TI_001310

Are you submitting the idea:

- ☐ in your personal capacity?
☒ on behalf of an organisation?

Please indicate the name of the group organisation: Resistance Oncology Aps

Please select from the list below the type of stakeholders your organization represents: Small & medium enterprise (SME)

1 Title of your idea

Please provide a short title that accurately reflects the objective(s) of your idea:

Targeting Resistance in Cancer (TRIC)

2 Scope

Explain the specific challenges/problems to be addressed by your idea and how these affect relevant stakeholders, taking into account what is already known and/or available in the field:

Despite major advances in cancer treatment, drug resistance remains the leading barrier to long-term survival in patients with advanced disease. Tumors can exploit both intrinsic and acquired mechanisms to evade chemotherapy, targeted therapies, and immunotherapies. Even after initial responses, disease progression is often inevitable.

The number of cancer-related deaths in the EU continues to rise, with drug resistance estimated to account for 80% of these deaths. This corresponds to more than 3,150 deaths per day—approximately 1.15 million annually—across the EU. At present, very few therapies specifically targeting drug resistance in cancer are available. Therefore, there is an urgent need for novel therapeutic strategies that can prevent or overcome resistance. This ambitious and innovative proposal directly addresses one of the most critical challenges in modern cancer therapy: drug resistance.

A comprehensive understanding of the underlying biology of drug resistance requires systematic mapping of resistance mechanisms. Generating and integrating such knowledge will be a central component of the proposed knowledge platform. Establishing a robust and effective platform in this field will necessitate large-scale collaboration across industry sectors, as well as between public and private partners.

In the longer term, knowledge and innovations generated through these collaborations can be seamlessly translated into advanced healthcare solutions, including novel therapeutics and companion diagnostics.

The successful development of drugs targeting cancer drug resistance will strengthen the global competitiveness of the EU healthcare industry while delivering significant societal benefits, including improved cure rates and prolonged patient survival, reduced healthcare costs, and advancement of scientific knowledge

Please indicate which IHI specific objective(s) (SO), as described in the IHI Strategic Research and Innovation Agenda (SRIA), your idea addresses:

["SO2: integrate fragmented health research and innovation efforts bringing together health industry sectors and other stakeholders, focusing on unmet public health needs, to enable the development of tools, data, platforms, technologies and processes for improved prediction, prevention, interception, diagnosis, treatment and management of diseases, meeting the needs of end-users"]

Please select the keywords that are most relevant to your idea:

["Oncology"
"Prediction"
"Treatment"]

In alignment with the IHI specific objective(s) selected above, specify the objectives of your idea:

In accordance with SO2, the objective of the present proposal is to bring together EU pharmaceutical industries, biotechnology companies, academic groups, and other stakeholders to establish a consortium. This consortium will create a shared pre-competitive knowledge platform, incorporating common tools, methodologies, data structures, and frameworks to support novel approaches for addressing anticancer drug resistance.

The knowledge platform will be governed by agreed data-sharing principles, ensuring secure access, compliance with applicable data protection regulations, and broad usability across both public and private partners.

Initially, the consortium will focus its efforts on resistance to two of the most widely used classes of chemotherapy: taxanes and platinum-based agents. Based on the data generated within the knowledge platform, consortium members—either collaboratively or independently—will be positioned to develop innovative concepts and technologies aimed at overcoming cancer drug resistance

3 Expected impacts to be achieved by your idea

Briefly describe the expected impacts to be achieved by your idea, ensuring that they contribute to IHI general and relevant specific objectives, as described in the IHI SRIA:

Impacts are wider long-term effects on society (including the environment), the economy and science, enabled by the outcomes of R&I investments. Impacts generally occur sometime after the end of the project, e.g. successful implementation of digital solutions supporting people-centred care.

***IHI general objectives:** 1. contribute towards the creation of an EU-wide health research and innovation ecosystem that facilitates translation of scientific knowledge into innovations, notably by launching at least 30 large-scale, cross-sectoral projects, focussing on health innovations; 2. foster the development of safe, effective, people-centred and cost-effective innovations that respond to strategic unmet public health needs, by exhibiting, in at least 5 examples, the feasibility of integrating health care products or services, with demonstrated suitability for uptake by health care systems. The related projects should address the prevention, diagnosis, treatment and/or management of diseases affecting the EU population, including contribution to 'Europe's Beating Cancer Plan'; 3. drive cross-sectoral health innovation for a globally competitive European health industry and contribute to reaching the objectives of the new Industrial Strategy for Europe and the Pharmaceutical Strategy for Europe.*

The impact of supporting the development of novel technologies to combat cancer drug resistance is multifaceted:

1. The project will generate the knowledge, methodologies, and scientific collaborations required to effectively address drug resistance in cancer.
2. Another key impact of establishing a shared knowledge platform on cancer drug resistance is the promotion of increased collaboration across European healthcare sectors. This, in turn, will help create a new and innovative direction—Targeting Drug Resistance in Cancer (TRIC)—for the European pharmaceutical and biotechnology industries.
3. The project addresses a significant unmet medical need, with a clear objective of improving survival outcomes for cancer patients. In doing so, it contributes to Europe's Beating Cancer Plan and delivers tangible benefits for both patients and society. Furthermore, the project has the potential to drive a paradigm shift in the way cancer is currently treated

4 Why should your idea become an IHI call topic?

Explain why collaboration through a cross-sectoral and multidisciplinary public private partnership is needed in particular:

Why does it require collaboration among several industry sectors (e.g. pharma, vaccines, biotech, medical devices, in vitro diagnostics, radiotherapy, medical imaging health ICT)?

Why does it require collaboration between private (industry) and public partners (e.g. academia, healthcare practitioners, patients, regulators)?

Cancer is a complex disease entity with genetic instability leading to heterogeneous tumors with cell sub-populations presenting with different degrees of drug resistance. In order to understand this complexity, collaboration between cross-sectoral and multidisciplinary partners are needed. Going from basic molecular biology studies to development of tools to combat drug resistance in cancer takes close collaboration between amongst others basic molecular scientists, cell biologists, pharmacologists, medicine chemists, physicians and regulatory experts. Especially the progression from preclinical experiments to clinical testing requires a strong and close collaboration between Academia (hospitals), biotech, pharma industry, diagnostic companies, patients and regulators.

Why is the contribution of industry needed to achieve the expected impacts?

***Contribution of industry:** Large companies that are members of the IHI industry partners (i.e. COCIR, EFPIA, EuropaBio, MedTech Europe, Vaccines Europe) contribute to the programme, primarily through 'in-kind' contributions (e.g. their researchers' time, laboratories, data, compounds). At least 45% of each project's total costs have to be in-kind contribution.*

Drug and biomarker development is a multifactorial discipline that requires a wide range of competencies. While biotech companies and academia often generate the initial ideas and conduct early preclinical research for new treatment modalities, only large pharmaceutical companies possess the necessary resources—such as access to compound libraries, data, specialized expertise, in-kind support, and financial capacity—to advance novel medical innovations to patient care. In Europe, several major pharmaceutical companies maintain oncology drug portfolios, including Novartis, Bayer, and AstraZeneca. However, competition from large non-European pharmaceutical companies remains intense. To remain competitive, European companies may benefit from adopting new directions in oncology development, with a potential focus on drug resistance. The market is substantial, with approximately 6.5 million new cancer cases and 2.5 million cancer-related deaths reported annually in the Western world—figures that continue to rise.