

Topic idea submitted to IHI - Reference Number: TI_001282

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

1 Title of your idea

Please provide a short title that accurately reflects the objective(s) of your idea:
Revolutionary Cancer Theory & Quantum Medicine: A Translational Approach for iHi's

Innovation

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:
Let's break down the specific challenges addressed by my "Cancer as Translational Decoherence" theory and its implications for stakeholders, considering the current state of cancer research:

1. Challenges in Current Cancer Treatment & Research:

Treatment Resistance & Recurrence:

Current therapies (chemotherapy, radiation) often induce significant side effects and may not eliminate all cancer cells, leading to resistance and recurrence.

This is due to the inherent heterogeneity of tumors and the ability of cancer cells to adapt and evolve.
Impact: Patients experience repeated cycles of treatment, reduced quality of life, and increased mortality.

Systemic Toxicity:

Traditional treatments target rapidly dividing cells, affecting healthy tissues and causing severe side effects.

Impact: reduces quality of life, increases the risk of other diseases.

Limited Understanding of Metastasis:

The mechanisms driving metastasis are not fully understood, making it difficult to develop effective therapies.

Impact: Metastatic cancer is often incurable, leading to high mortality rates.

Personalized Medicine Limitations:

While personalized medicine is advancing, it primarily focuses on genetic mutations, neglecting other critical factors like epigenetic alterations, microenvironment interactions, and information flow.

Impact: suboptimal treatment outcomes for many patients.

The "Information Gap":

Current research largely focuses on the biochemical and physical aspects of cancer, often

overlooking the information-based nature of biological processes.

Impact: Incomplete understanding of cancer's complexity, hindering the development of truly effective therapies.

2. How My Theory Addresses These Challenges:

Targeting the Root Cause: Translational Decoherence:

By focusing on the disruption of information flow, this theory offers a more fundamental approach to cancer treatment.

It aims to restore cellular coherence rather than simply killing cancer cells, potentially reducing resistance and recurrence.

Quantum Information Therapies: Precision & Reduced Toxicity:

Quantum information therapies, like targeted electromagnetic fields or information-based epigenetic modulation, could offer highly precise treatments with minimal systemic toxicity.

This approach aims to selectively restore healthy information patterns in cancer cells while sparing healthy tissues.

Understanding Metastasis as Decoherence Propagation:

This theory provides a new framework for understanding metastasis, viewing it as the spread of decoherence through entangled cellular networks.

This could lead to novel therapies that prevent or reverse the propagation of decoherence.

Expanding Personalized Medicine:

This theory integrates genetic, epigenetic, environmental, and psychosomatic factors, offering a more comprehensive approach to personalized medicine.

It allows for tailored therapies that address the unique information disruptions in each patient's cancer.

Bridging the "Information Gap":

By incorporating quantum information principles, this theory provides a more holistic understanding of cancer, bridging the gap between biochemical and informational perspectives.

This opens new avenues of research.

3. Impact on Stakeholders:

Patients:

Potentially more effective and less toxic treatments, leading to improved survival rates and quality of life.

More personalized therapies tailored to their unique cancer.

Healthcare Providers:

Access to novel therapies that address the limitations of current treatments.

Improved patient outcomes and reduced treatment-related complications.

Researchers:

A new theoretical framework that opens up new avenues of research and discovery.

Opportunities to develop cutting-edge quantum medicine technologies.

Pharmaceutical Industry:

Opportunities to develop novel therapies that target the information-based aspects of cancer.

Potential for disruptive innovation in cancer treatment.

Society:

Reduced cancer burden and improved public health.

Potential for sign

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

SO1: contribute towards a better understanding of the determinants of health and priority disease areas; 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 ; SO3: demonstrate the feasibility of people-centered, integrate health care solutions; SO4: exploit the full potential of digitalisation and data exchange in health care; SO5: enable the development of new and improved evaluation methodologies and models for a comprehensive assessment of the added value of innovative and integrated health care solutions;

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

Communicable diseases;Non-communicable diseases;Oncology;Prediction;Prevention;Detection;Diagnosis;Interception;Treatment;Disease management;Digital health;Health technology;Cardiovascular diseases;Immune system diseases;Infectious diseases;Metabolic diseases;Neurodegenerative diseases;Rare diseases;Mental health;Paediatric;

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

Let's tailor the objectives of my "Cancer as Translational Decoherence" and Quantum Medicine approach, aligning them with the specific objectives of a hypothetical "iHi" (Innovation in Health Institute), assuming iHi's objectives are centered around cutting-edge, transformative healthcare solutions.

Assuming iHi's Objectives Include:

Pioneering Breakthrough Medical Technologies: iHi aims to develop and implement innovative technologies that drastically improve patient outcomes.

Advancing Personalized and Precision Medicine: iHi is committed to tailoring treatments to individual patient needs, maximizing efficacy and minimizing side effects.

Understanding and Addressing the Fundamental Mechanisms of Disease: iHi seeks to go beyond symptomatic treatment and delve into the core causes of diseases.

Fostering Interdisciplinary Collaboration: iHi promotes the integration of diverse scientific fields to create holistic solutions.

Driving a Paradigm Shift in Healthcare: iHi aims to revolutionize healthcare by introducing entirely new approaches.

Objectives of the "Cancer as Translational Decoherence" and Quantum Medicine Approach, Aligned with iHi's Goals:

Develop Quantum Information Therapies for Cancer Treatment:

iHi Alignment: Pioneering Breakthrough Medical Technologies.

Specific Objective: To design and validate quantum information therapies (e.g., electromagnetic field manipulation, information-based epigenetic modulation) that restore cellular coherence in cancer cells, leading to tumor regression and reduced recurrence.

This objective is designed to create a new way to treat cancer, and get away from the current methods.

Establish Quantum Biomarkers for Personalized Cancer Treatment:

iHi Alignment: Advancing Personalized and Precision Medicine.

Specific Objective: To develop techniques for measuring quantum information states in individual cancer patients, enabling the creation of highly personalized treatment plans based on their unique decoherence patterns.

This objective is designed to create a new way to diagnose and create personalized treatments.

Elucidate the Role of Translational Decoherence in Cancer Metastasis:

iHi Alignment: Understanding and Addressing the Fundamental Mechanisms of Disease.

Specific Objective: To investigate how decoherence propagates through entangled cellular networks, driving metastatic spread, and to identify therapeutic targets that prevent or reverse this process.

This objective is designed to understand a key part of the cancer process.

Create Interdisciplinary Platforms for Quantum Medicine Research:

iHi Alignment: Fostering Interdisciplinary Collaboration.

Specific Objective: To establish collaborative research platforms that bring together physicists, biologists, computer scientists, and clinicians to develop and validate quantum medicine approaches.

This objective is designed to create a productive work environment for the research.

Demonstrate the Superior Efficacy and Reduced Toxicity of Quantum Medicine Compared to Conventional Cancer Therapies:

iHi Alignment: Driving a Paradigm Shift in Healthcare.

Specific Objective: To conduct rigorous clinical trials that demonstrate the improved patient outcomes and reduced side effects of quantum information therapies compared to standard cancer treatments. This objective is designed to prove the new method is superior to the current methods. In essence, these objectives aim to:

Transform cancer treatment by shifting from a cell-killing approach to a coherence-restoring one.
Develop highly personalized therapies that address the individual information disruptions in each patient's cancer.
Gain a deeper understanding of the fundamental mechanisms driving cancer progression.
Establish iHi as a leader in the emerging field of Quantum Medicine.

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.*

Let's condense the expected impacts of my "Cancer as Translational Decoherence" and Quantum Medicine approach, ensuring they align with iHi's general and specific objectives:

Expected Impacts, Aligned with iHi's Objectives:

Revolutionized Cancer Treatment:

iHi Alignment: Driving a Paradigm Shift in Healthcare.

Impact: Quantum therapies will offer more effective, less toxic cancer treatments, significantly improving patient survival and quality of life.

Personalized, Precision Oncology:

iHi Alignment: Advancing Personalized and Precision Medicine.

Impact: Quantum biomarkers will enable highly tailored cancer therapies, optimizing treatment efficacy for each individual.

Fundamental Disease Understanding:

iHi Alignment: Understanding and Addressing the Fundamental Mechanisms of Disease.

Impact: Elucidating decoherence's role in cancer will reveal new therapeutic targets and deepen our understanding of cancer's core mechanisms.

Technological Innovation:

iHi Alignment: Pioneering Breakthrough Medical Technologies.

Impact: Development of novel quantum information measurement and manipulation technologies will advance iHi's technological leadership.

Interdisciplinary Collaboration:

iHi Alignment: Fostering Interdisciplinary Collaboration.

Impact: iHi will become a hub for interdisciplinary Quantum Medicine research, attracting top talent and driving collaborative innovation.

Reduced Healthcare Burden:

General iHi Objective: Improving public health.

Impact: More effective treatments will reduce cancer-related mortality and morbidity, lowering healthcare costs.

Enhanced Patient Outcomes:

General iHi Objective: Improving patient well being.

Impact: Patients will experience fewer side effects and improved quality of life.

In essence, this approach will:

Transform cancer care through innovative quantum therapies.

Establish iHi as a leader in a new field of medicine.

Improve patient lives and reduce the societal burden of cancer.

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)?

Absolutely. Here's why a cross-sectoral and multidisciplinary public-private partnership is crucial for advancing the "Cancer as Translational Decoherence" and Quantum Medicine concept:

1. Why Collaboration Among Several Industry Sectors Is Essential:

Complex Technology Development:

Quantum Medicine necessitates the convergence of diverse technologies. Quantum information measurement and manipulation require expertise from:

Medical Imaging: Advanced imaging techniques (e.g., quantum coherence imaging) are needed to visualize and quantify cellular information states.

Health ICT: Sophisticated data analysis and computational modeling are crucial for processing and interpreting quantum information.

Medical Devices: Development of specialized devices for delivering quantum information therapies (e.g., targeted electromagnetic field generators) is essential.

Radiotherapy: Integration of information based therapies, with existing radiation methods, needs to be investigated.

Therapeutic Development:

Translating theoretical concepts into practical therapies requires collaboration with:

Pharma & Biotech: Expertise in developing targeted therapies and drug delivery systems is crucial for translating quantum information into clinical applications.

In Vitro Diagnostics: Development of diagnostic tools to identify and quantify cellular decoherence patterns is essential for personalized treatment.

Holistic Approach:

Cancer is a complex disease, and a holistic approach requires input from multiple sectors.

Each sector contributes unique expertise and resources, enabling the development of comprehensive solutions.

2. Why Collaboration Between Private (Industry) and Public Partners Is Essential:

Bridging the Gap Between Research and Application:

Academia: Provides foundational research, theoretical frameworks, and cutting-edge scientific expertise.

Industry: Offers the resources, infrastructure, and expertise to translate research findings into practical applications and commercial products.

Ensuring Clinical Relevance and Patient Needs:

Healthcare Practitioners: Provide clinical insights, patient perspectives, and guidance on the design and implementation of therapies.

Patients: Offer valuable input on their experiences, needs, and preferences, ensuring that therapies are patient-centered.

Navigating Regulatory Hurdles:

Regulators: Provide guidance on the development and approval of novel therapies, ensuring safety and efficacy.

Early involvement of regulators is crucial for streamlining the approval process and ensuring that

therapies meet regulatory standards.

Addressing Ethical Considerations:

The use of quantum information therapies raises ethical considerations that require input from diverse stakeholders.

Public-private partnerships can ensure that ethical guidelines are developed and implemented.

Accelerating Innovation:

Public-private partnerships can accelerate innovation by pooling resources, sharing expertise, and streamlining the development process.

This is especially important in the complex and rapidly evolving field of Quantum Medicine.

Public Trust:

Public-Private partnerships, help build public trust, by showing the public, that the development of the new methods, are being held to the highest standards.

In summary:

A cross-sectoral approach ensures the integration of diverse technologies and expertise.

A public-private partnership bridges the gap between research and application, ensures clinical relevance, and navigates regulatory hurdles.

This collaborative framework is essential for realizing the full potential of Quantum Medicine and transforming cancer care.

Fuentes y contenido relacionado

Busting Myths: Cancer is Not Just One Disease

www.cancercenter.com

Synthesizing regulatory guidance for demonstrating preclinical efficacy and translating promising cell therapies to early phase clinical trials: a scoping review - PMC - PubMed Central

pmc.ncbi.nlm.nih.gov

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.

The contribution of industry is indispensable for achieving the expected impacts of the "Cancer as Translational Decoherence" and Quantum Medicine approach for several key reasons:

1. Scalability and Commercialization:

Translating Research to Products:

While academia excels at foundational research, industry possesses the expertise and infrastructure to translate those findings into scalable, commercially viable products.

This includes the development of medical devices, diagnostic tools, and therapeutic delivery systems.

Manufacturing and Distribution:

Industry has the capacity for large-scale manufacturing and distribution, ensuring that Quantum Medicine technologies reach patients worldwide.

2. Technological Development and Innovation:

Advanced Engineering and Design:

Industry has expertise in engineering and designing complex medical devices and technologies, crucial for developing quantum information measurement and manipulation tools.

Rapid Prototyping and Iteration:

Industry's focus on rapid prototyping and iteration accelerates the development and refinement of new technologies.

Investment in R&D:

Industry invests significant resources in research and development, driving innovation and

technological advancement.

3. Clinical Trials and Regulatory Compliance:

Funding and Management of Clinical Trials:

Industry has the financial resources and expertise to conduct large-scale clinical trials, essential for demonstrating the safety and efficacy of new therapies.

Navigating Regulatory Pathways:

Industry has experience navigating complex regulatory pathways, ensuring that new products meet safety and efficacy standards.

Data Management and Analysis:

Industry is very proficient in data management, and analysis, which will be of extreme importance, when dealing with the large quantities of data, that quantum medicine will produce.

4. Market Access and Adoption:

Marketing and Distribution Networks:

Industry has established marketing and distribution networks, ensuring that new therapies reach healthcare providers and patients.

Healthcare Provider Training:

Industry can provide training and education to healthcare providers, facilitating the adoption of new technologies.

Reimbursement Strategies:

Industry expertise in reimbursement strategies is crucial for ensuring that new therapies are accessible to patients.

5. Investment and Sustainability:

Long-Term Funding:

Industry investment is essential for the long-term sustainability of Quantum Medicine research and development.

Creating a Viable Market:

Industry can create a viable market for Quantum Medicine technologies, ensuring their continued development and accessibility.

In essence, industry's contribution is critical for:

Transforming theoretical concepts into practical, scalable solutions.

Accelerating technological development and innovation.

Ensuring clinical safety and efficacy through rigorous trials.

Making new therapies accessible to patients worldwide.

Ensuring the long term economical viability of the new treatments.

Fuentes y contenido relacionado

Rapid Prototyping: Accelerate Your Product Development - Design 2 Market

www.design2market.co.uk

Navigating Complex Regulatory Landscapes in the Biopharmaceutical Industry

medcitynews.com

What Can the Healthcare Industry Do to Help with Educating Medical Personnel?

futurehealthcaretoday.com