IHI Call Days | Call 9

CASCADE (Cancer Advanced Spatial Clinical Applications and Diagnostics Excellence)

Steven Bagshaw, Grand Challenge Lead

CPI

Steven.bagshaw@uk-cpi.com

innovative health initiative

Challenges and objectives

SO1: contribute towards a better understanding of the determinants of health and priority disease areas

- Spatial biology includes different advanced techniques which analyse how cells behave and interact within their spatial context in tissues and organs.

- Multi-omics is the integration of many “omics” layers to gain a holistic understanding of cancer, including genomics, transcriptomics, proteomics, epigenomics and metabolomics.

- Both provide understanding of relationships between immune cells, stromal cells & blood vessels in tumour development. And the correlation between DNA, proteins & the products of metabolism

  This will enable earlier and more precise detection of cancer, and improved treatment strategies

- To enable this, we need to translate complex, high-dimensional data from spatial biology and multi-omics into clinically-relevant actions by solving key issues including…..complex data, clinical actionability, technology standardisation, regulations, reimbursement, education of professionals and infrastructure (databases, frameworks)

innovative health initiative

Your approach to solve the problem

- Our programme would be focussed on integrating academia, healthcare and industry together to build the building blocks for bringing spatial biology with multi-omics into future clinically-validated for cancer diagnostics

WPO: Foundation
Goal – Ensure capture of existing formats, technologies and scientific developments which could feed into the programme

WP1: Standardisation
Goal – Develop standardised protocols and technologies for data collection, processing and integration to ensure consistency and interoperability

WP2: Clinical reporting
Goal – Developing reporting tools required to integrate solutions into clinical oncology workflows for adoption with a focus on clinical-actionable insights

WP3: Pre-competitive infrastructure and resources
Goal – Create shared resources and infrastructure, including computing, databases, tools, biobanks and equipment to support R&D and clinical utility

WP4: Regulatory framework
Goal: Create a regulatory framework for spatial biology by facilitating a multi-stakeholder dialogues with regulatory agencies across the world

WP5: Re-imbursement and health economics analysis
Goal: Conduct preliminary health economic studies for cost effectiveness and clinical value

WP6: Adoption along the patient journey
Goal: Educate healthcare professionals and patients on value and integration into care pathways

innovative health initiative

Is your project suitable for IHI?

- Solving such intense complexities for driving adoption into the clinic will need strong collaborations between healthcare, industry, academia and government.
- Healthcare systems needs to work closely with industry, governments and academia to implement these high-potential developments to drive earlier, more precision detection within clinical pathways.
- Industry includes life sciences tools companies (to develop technologies), diagnostics companies (to develop instruments), pharma (treatments), imaging companies (for digital pathology) and big tech/ AI (for data analysis)
- Government needs to drive the policies and regulatory support to unlock the clinical applications of spatial biology and multi-omics - additionally the reimbursement mechanisms to drive their clinical adoption
- Academia would provide the foundational research into the biological underpinnings of cancer

innovative health initiative

Outcomes and Impact

- CASCADE will provide standardization of technologies, protocols, regulatory guidelines, reimbursement mechanisms and the training of healthcare professionals to drive adoption of spatial biology and multi-omics into real applications in the clinic
- It will drive the development of instruments, consumables and services for use of spatial biology with multi-omics in the clinic – providing a real path to market for EU companies (SMEs, large corporations)
- Key developments within these next-generation markets currently have an easier path to market in other territories (e.g. US, LDT route)
- CASCADE will leverage EU's world-class scientific research in these areas and networks to enhance its commercial potential and time-to-market within these markets of the future
- It will advance earlier and more precise detection of cancer…especially within more challenging cancer types (e.g. internal cancers) and for selection & monitoring of the next-generation of therapies

innovative health initiative

Expertise and resources

- CPI has ~750 scientists and engineers covering disciplines which include engineering, software, imaging, assay development, material, usability, regulations and formulation.
- It has a strong network at a senior level across leading medical device, pharma and big tech companies…and UK SMEs
- As part of the UK Government's High Value Manufacturing catapult, CPI has strong links with the UK healthcare system and a partner network across ~15 of the UK's leading Universities.
- **We need** further connections into the European ecosystem within healthcare, academia, large companies and SMEs - across a broader number of countries

innovative health initiative