IHI Call Days | Call 9

Advanced Cell Models for drug discovery

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Links to the IHI brokerage platform:

- https://tinyurl.com/4rhnmunz
- https://tinyurl.com/yy2y4ef9

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Challenges and objectives

- The project aims to speed up the introduction of **new anti-cancer drug treatments** in Europe.

- The proposal addresses **SO2 –** bringing together pharmaceutical and medical technology sectors

- Europe accounts for a tenth of the world's population, but a quarter of the world's cancer cases. Unless we take decisive action, lives lost to cancer in the EU are set to increase by more than 24% by 2035, making it the leading cause of death in the EU.
- The overall economic impact of cancer in Europe is estimated to exceed €100 billion annually[1]

Ref 1: https://health.ec.europa.eu/system/files/2022-02/eu_cancer-plan_en_0.pdf

Your approach to solve the problem

- We propose to develop new, improved in-vitro models for tox screening which will de-risk screening of new cancer drug candidates at an earlier stage and reduce requirements for animal testing.
- Our approach is to use 3D organoid models and in-vitro organ models which more accurately reproduce in-vitro behaviour.
- Technical problems to address include, longevity of cell culture, creating mixed cell populations, working with primary/iPS cells, species differences and linking multiple organs.
- We aim to develop reliable, repeatable, automated, high throughput tox screening assays based on 3d cell cultures and organ on a chip models
- Work with regulators and clinicians to address the gap in the European regulatory framework for assessment of non-animal model tox screening results.

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Is your project suitable for IHI?

- This project requires a cross-sector collaboration between pharma companies, medical device companies and life science companies in consultation with regulators and clinicians to succeed.
- Pharma companies are the ones with the drug candidates and will be using the models but the technology for creating realistic in-vitro models requires the involvement of the whole supply chain from the cells seeded into the models, the cell scaffolds, the re-creation of perfusion through the model, the automation of the workflow and the interpretation of the results.
- New anti-cancer drugs have high impact on patients due to high and increasing clinical needs.

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Outcomes and Impact

- Results/outcomes and impacts
  - Advanced cell models for use in the new cancer drugs screening pipeline.
  - New methods and equipment for preparing and using organ on a chip models.
  - Cancer drug tox screening data using the new models.
  - ❖ Reduce the risk of harming patients involved in clinical trials.
  - ❖ A clearer EU regulatory framework for pre-clinical evidence from in-vitro models
  - ❖ Demonstrate a speed or cost saving advantage in the drug pipeline.

❑ How do you envisage your proposal to ensure translation from research to implementation?.

- ❑ Those drugs or drug combinations which meet the most urgent clinical needs will be prioritized in the project for testing with the new models.
- ❑ Involvement of clinical partners to advise

➢ How does your proposal contribute to strengthening industry competitiveness?

- ➢ New cancer drug treatments are high revenue earners.Tagrisso, an AZ lung cancer treatment, earned $5.8bn in sales in 2023, making it the company's highest earner.

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Expertise and resources

- We have:
  - CPI has in-house expertise in formulation/ synthesis of cell scaffolds/ hydrogels; bioprinting & cell culture for creation of 3d cellular models, digital modelling (data and physics-based), development of automated methods, microfludics device fabrication and validation, lifecycle analysis and techno-economic assessments.
  - Experience in coordination of large public-private partnerships with Pharma companies.
  - We are not bringing in-kind contributions

- We are looking for:
  - **Pharma** companies involved in the development of new anti-cancer drugs (as end users in the project).
  - **Companies** involved in the development of **3d organoid** or **organ on a chip** in-vitro models.
  - **Companies** involved in the development of **cell lines**, **consumables and reagent supplies** for drug discovery.
  - **Companies** involved in cell **bioprinting** or bioprinting of cellular scaffolds or bioprinting of biocompatible microstructures suitable for 3d cell culture or printing of organ on a chip devices.
  - **Individuals or organisations** involved in the **regulation of pharmaceutical products**, especially where they have an interested in non-animal-based testing or screening.

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Additional information

- Alternative contact person name: Dr Tom Harvey
- Organisation: CPI
- E-mail: tom.harvey@uk-cpi.com
- Links to the IHI brokerage platform:

- https://tinyurl.com/4rhnmunz
- https://tinyurl.com/yy2y4ef9