

# CRUK Convergence Science Centre | Development Fund Guidelines

## 1. Overview of the Development Fund

**Developing new technologies, methodologies, and tools** to address urgent unmet clinical needs in cancer healthcare and to solve intractable cancer problems is the key focus of the CRUK Convergence Science Centre. The Development Fund aims to promote novel research at the convergence of engineering, physical and data sciences with biological and clinical research. Awards of up to **£50K** for a 12-month period are available to support the development of preliminary data required to build a more substantive project that could attract investment from external sources, for example the [CRUK Multidisciplinary Project Award](#) and the [Early Detection & Diagnosis Award](#).

## 2.0 Development Fund Call Remit

### INTERVENTIONAL AND DATA SCIENCES

**Interventional Science:** This theme aims to deliver improvements in surgery, radiotherapy, novel localised therapies, and innovations to monitor therapeutic efficacy. This will be achieved through improvements in the precision of cancer detection and diagnosis and in treatment planning, delivery, and response monitoring at specific phases of the patient journey.

- **Early Detection:** The Centre will be looking for projects aligning advanced biological research with state-of-the-art detection technologies that offer substantial advantages over existing solutions, whether involving biomarkers, genetic markers, or other innovative approaches for early detection.
- **Earlier Diagnosis:** As cancer detection referrals increase, the Centre is dedicated to supporting technologies that enhance patient stratification, diagnosis accuracy, and treatment decisions. We prioritise rapid diagnosis, specificity, sensitivity, and integration with imaging technologies. Detecting cancer recurrence early is also a key focus.
- **Improved and novel therapies:** Surgery and radiotherapy remain vital for treating solid malignancies. The Centre is committed to advancing these technologies and exploring innovative therapies, image-guided interventions, and treatment decision tools. While we support novel technological and methodological components, we do not fund drug discovery projects unless they include innovative technology. Other types of Chemical Biology approaches are welcome.
- **Therapy and care monitoring:** The Centre is interested in monitoring technologies, encompassing devices for real-time assessment during therapy, as well as those for medium to long-term post-therapy monitoring. We seek technologies that enhance precision during treatment, monitor immediate responses, and support at-home use.

Our goal is to prevent therapy failure, rehospitalisation, relapses, and enhance overall patient well-being and quality of life.

**The Data Science initiative** represents a novel addition to our strategy, functioning as an overarching approach aimed at tackling data science challenges in alignment with [CRUK's Data Strategy](#). This initiative encompasses three key areas of interest:

- **Mathematical Oncology: Multi-modal approaches to Discovery Research.** This involves using a combination of diverse data sources and mathematical modeling techniques to enhance our understanding of cancer. It integrates various types of data, such as genomics, imaging, and clinical information, to create comprehensive models that can reveal intricate aspects of cancer biology.
- **AI-assisted medical imaging and digital pathology.** This refers to the utilisation of artificial intelligence (AI), in its broad definition, to enhance the analysis of medical images and pathology slides. It aims to improve methodologies and technologies to enable automated and more precise interpretation of medical images, such as X-rays, MRIs, and CT scans, as well as digitised pathology slides or even patient-derived models such as organoids.
- **Use of Health Data for cancer stratification, detection, and monitoring.** This entails harnessing health data, such as patient records, genetic information, and real-time monitoring data, to refine the stratification, early detection, and continuous monitoring of cancer.

Applicants must clearly articulate the clinical and/or biological question that will be addressed and the need for novel engineering and physical sciences (EPS) approaches to address them. Applications must utilise a convergence science approach. Convergence science is a unique approach to solve vexing research problems, especially those focusing on societal needs, or in the case of cancer research, unmet clinical needs. The focus of the CRUK Convergence Science Centre is to merge EPS and cancer research expertise to develop **new technologies, methodologies and tools** that directly put cancer patient wellbeing at the centre of their design. While the Centre may choose to support basic research projects, the emphasis must be on clinical translation. To support researchers in finding whether their project ideas fit within the remit of this call and find collaborators, the **Centre offers advice** in the form of consultations that are freely available by completing this [request form](#). Please note that this service is only advisory and is only meant to help build convergence collaborations and projects. It is independent from our funding decision pipeline.

Priority will be given to the development of innovative cancer technologies, methodologies, and tools. Cross-institutional applications are recommended but not mandatory.

### 3.0 Eligibility

- Applications are open to researchers that can confirm that they have access to space, staff, and equipment to undertake the study and that their contract allows them to undertake an independent research project.
- Applications should typically be led by researchers from different disciplines, and while the collaborative teams do not need to be newly formed, the project's work packages

needs to be new. Lead applicants will be expected to have equal intellectual input into the design and delivery of the study and will be given equal recognition for the project.

- Applications are particularly encouraged from newly independent investigators to enable the development of preliminary data to support future applications for funding. The inclusion of early career researchers (including PhD Students) as collaborators is also highly encouraged.

#### 4.0 How the proposals will be assessed

In addition to the eligibility criteria, successful applications must:

- Align to the Centre strategic priorities (see 2.0).
- Use a convergence science approach
- Demonstrate high scientific and technological quality by highlighting the following:
  - Importance of the question to be addressed in cancer.
  - Quality of the science proposed – with sufficient experimental detail across all disciplines involved.
  - Need for a convergence science approach to address the problem and alignment with the Centre strategic priorities.
  - Novelty of the proposed approach – i.e., that this is a new approach being developed to address the question, not the application of existing methodology. Where existing methodologies and technologies will be applied, the application must articulate why and how they will be adapted to address the question under investigation.
  - Strength of the team – i.e., there is a clear rationale for input from complementary disciplines
  - Future plans to develop the project – highlighting how this funding will provide the necessary preliminary data to make the project competitive for external funding. The schemes you are intending to target should be identified.

The applications are highly encouraged to focus on novel tools, technologies or methods aligned to biological/medical questions, although new applications of existing technologies or methods to poorly explored problematics will also be considered

Finally, additional considerations will be given to applications that:

- Address the benefit for cancer patients
- Include a well thought public and patient involvement and engagement (PPIE) plan. Note that the inclusion of a PPIE plan is mandatory. Please see **section 8** for the PPIE guidelines.
- Make use of [dissemination and implementation science](#) to address human factors and health economics requirement for clinical adoption
- Make use of the Centre's [infrastructure](#).

The applications will be reviewed by the [Research Subcommittee of the Centre](#), which comprises equal membership from ICR and Imperial and reflects convergence science expertise. The Subcommittee may also seek additional internal peer review when assessing applications.

## 5.0 Guidelines for completing the application form

Applicants should complete all the relevant sections of the form.

- 1) **Project title:** Please provide a title describing the project, up to 20 words.
- 2) **Applicant details:** Please provide the names, departments and contact details for the lead applicants. Applications are expected to have two lead applicants from distinct disciplines. Further co-investigators can be added, but only those who are essential to the delivery of the project should be included.
- 3) **Aims and objectives:** Up to 150 words. Please provide an overview of the question you wish to address and an overview of the approach you will take to address it.
- 4) **Background and rationale:** Up to 250 words. This section is to highlight the background to the research
- 5) **Workplan:** Up to 750 words. This section is to provide an overview of the experimental plan and should indicate how the different teams will work together to achieve the initial aims of the study. Please list the staff members that will carry out the research. Within this section you should indicate what preliminary data you hope to gather and why this is key to supporting the onward progression of the project. We allow one additional side of A4 for figures and brief captions.
- 6) **Potential outcomes and future directions:** Up to 150 words. This section should briefly outline the key outputs from the project and highlight how the outcomes of the Development Fund project will align with external funding schemes.
- 7) **Potential benefits for cancer patients:** Up to 150 words. This section should briefly outline the benefits the research could bring to the real-world clinic and patients' quality of life.
- 8) **Public and patient involvement and engagement plan:** This section should outline patient and public involvement and engagement plans, up to 300 words. This should include the below sections:

- Patient and public involvement in the design, conduct and management of the study
- Public engagement, i.e., communication and information about your study

Successful proposals should provide details of the items below:

- How PPI/E is expected to inform and/or influence the study;
- How the PPI/E activities proposed will benefit the CRUK Convergence Science Centre;
- Your approach for PPI/E, i.e., how you will involve and engage patient and public. For example, as members of the project management team, co-applicants, and collaborators, working with 2 patient and public contributors and how, etc.
- The rationale/reasons for taking such an approach;
- Individuals and/or groups with which they will collaborate;
- The specific PPI/E activities they will undertake, the resources and timescales required;
- Any arrangements for training and support, and
- Clear deliverables and outcomes, i.e., meetings, papers, events, videos, etc.
- Detailed costing of the proposed PPI/E activities.

Successful proposals will be able to demonstrate and deliver clear outputs achieved with the involvement of patients/members of the public within the CRUK Convergence Science Centre.

9) **Finances:** Applicants can request up to £50k for the project, which can be used to support salaries (not recruitment), running expenses and up to £5k for equipment. Brief details of proposed expenditure under each of these headings is required. Please note that the award does not cover overheads. Please include the ICR budget draft or proforma and Imperial draft Worktribe [Standalone](#) costing with your submission. **N.B. Successful awards will be set up as subprojects under the main Centre award and so the Worktribe costings will not be submitted.**

10) **Animal licences:** Please indicate whether the project will use animals and the status of the Home Office licence.

11) **Ethics:** Please indicate whether ethical approval is required for this project and the status of any ethics applications.

12) **Dissemination and Implementation plan:** Up to 150 words. Implementation science is the study of methods that influence the integration of evidence-based interventions into practice settings. Dissemination is the process of spreading knowledge and information to these settings. The Centre provides [expertise](#) to help you with the adoption of your tools, technologies methods and biomarker platforms in the real-world clinical practice. This section is meant to indicate whether this aspect has been explored.