CANCER RESEARCH UK | CONVERGENCE SCIENCE CENTRE

ICR The Institute of Cancer Research | Imperial College London

CRUK Convergence Science Centre

Guidelines:
Applications for Convergence Science PhD Studentship Funding

CRUK Convergence Science Centre PhD Studentship

Funding Application Guidelines

These guidelines explain what we are looking for in proposals for the Convergence Science Centre PhD Programme. We advise careful reading before completing and submitting the accompanying application form.

KEY DATES

Supervisor Connect Meeting: **September 16th, 2022**

Application deadline: **October 14th, 2022**

Funding decision: **November 2022**

Funding commences: **October 1st, 2023**

Applicants are advised to read the MIT White Paper "The Third Revolution: The Convergence of the life sciences, physical sciences and engineering" which outlines key concepts of convergence science.

Cancer Research UK Case Studies on multidisciplinary research which can found here and here.

These articles are key examples of convergence research and give insights on the type of proposals we are looking for.

1. What is the Convergence Science Centre PhD Programme?

The CRUK Convergence Science Centre is a partnership between the Institute of Cancer Research and Imperial College London, which brings together world leading expertise in cancer research, engineering and the physical sciences (EPS) to address the big challenges in cancer. One of our strategic goals is to train future scientists by building cross-institutional research teams with supervisors from distinct disciplines who will equip our PhD students with cutting-edge convergence research skills.

2. What are we offering?

We are offering several highly competitive PhD Studentships that are inclusive of home fees (funding for overseas fees is not provided; however, overseas students may apply and discuss other options to support the difference in international fees with prospective supervisors), a fixed annual stipend and a consumable budget for a period of four years. Applications should demonstrate a clear strategy/pathway for training the students to ensure success in their PhD and their future careers.

3. What are we looking for?

A key challenge for the clinician is to understand how well a therapy is working and when to change or stop a therapy. There is a need for new approaches to monitor responses to therapy more accurately and more frequently, and with lower impact on patients' lives (i.e., less invasively and reducing hospital visits). Novel methods are needed to understand treatment resistance including innovative assays to be able to predict response at the point of diagnosis. The goal is to develop low-cost therapy monitoring technologies that will provide a readout of therapeutic response, which can be implemented in a healthcare setting to inform treatment decision making. Applicants should address the mechanisms associated resistance to chemo-, radio- and immunotherapies; how can we design technologies that will predict resistance or reoccurrence.

Proposals submitted to this call should clearly articulate how they will address challenges associated with **therapy monitoring and therapy resistance.**

We are seeking cross-institutional (ICR and Imperial), convergence science PhD proposals from EPS and cancer researchers working together. Proposals must address an unmet need in understanding cancer in our thematic area of **therapy monitoring and therapy resistance.**

Applicants should articulate the cancer related question(s) and outline the need for novel engineering or physical sciences approaches to address them. **The application of existing tools or methodologies is not considered to be convergence science.** For example, the application of existing bioinformatics tools to biological data is not considered to be convergence science – the generation of new approaches to model and analyse biological data iteratively with biological experimentation would be considered within remit. To train successful convergence scientists, we expect that students will be exposed to scientific research across different disciplines. Therefore, the proposal should clearly articulate how the learnings from one discipline will inform experimental strategies in the partner discipline and vice versa, and how the student will be trained in the relevant experimental techniques.

Applications in this area must span different disciplines with cross-institutional joint supervisory partners.

4. How will we assess your application?

Your application will be reviewed by the Convergence Science Centre Training Committee comprising equal membership from Imperial College London and the Institute of Cancer Research. The Committee membership reflects convergence research and cancer biology expertise and will judge your proposal in the following areas:

CANCER LED	• Addresses an unmet need in cancer which aligns with the strategic research theme
CONVERGENCE APPROACH	• Addresses the need for a convergence science approach to meet the challenge • The appropriateness of the research teams and how the student will be trained in multidisciplinary research/share their time appropriately between teams
NOVELTY	• Quality and originality of the research • Clear and justified research questions • Translational potential
FEASIBILITY	• Training plan, including how the student will be trained in a manner that will benefit their career prospects • Achievability of the project for a postgraduate student for the duration of the funding

5. Are you the right applicant?

We welcome applications from all who meet their institutional criteria for supervising PhD students. We are also supportive of applications from early career researchers who meet their institutional requirement for supervising a PhD and who will have tenure for the duration of the studentship.

Please note that studentships will not be allocated in consecutive years to successful applicants even when a new bid is submitted with one-half of a previously successful partnership. Consider the following questions before completing the application form. Your eligibility as an applicant depends on a positive answer.

- Do you have access to the space and equipment necessary for successful completion of the studentship?
- Do you have approval from your Head of Department/Division to apply for this studentship? Please note that students applying to this PhD Programme will share their time working across both institutions. However, they can only be registered at one institution (the primary) with affiliate or visiting status at the other (the secondary). The tuition fees will only be paid to the primary institution whereas research expenses will be shared between both institutions.

- Do you fulfil the eligibility criteria to supervise PhD students according to your home institution guidelines, including tenure at your institution for the duration of the studentship?

6. How should you complete the application form?

Proposal Title: Please provide a short title that accurately summaries your project. This will be used to advertise the project to prospective students.

Supervisors: Please provide the name and contact details of the supervisors. Also indicate the number of previously supervised research degrees. Please include any additional supervisors whom you deem necessary for the success of your project, e.g., institutes, partners or associates.

Proposal outline: Outline the scientific aims and approaches to be employed explaining why this meets our remit, in particular the application of novel approaches to address the research question and any translational potential. Within this section, you should include any relevant preliminary data that supports your hypothesis and proposed approach. (*Up to 1000 words and 1 additional page of figures. Figure legends should not be used to add additional experimental details.*)

Proposal feasibility*:* Describe the suitability of your proposal for a PhD project, include a timeline showing the achievability of the project within four years. (*Up to 300 words*)

Convergence science approach: State the novelty of the technologies and methodologies from the different disciplines to be employed. Outline the roles and contributions of the supervisors/teams and provide a tailored strategy for training in convergence research, this might include taught modules, technical training courses etc. Give details of the project timeline and how you anticipate your student will share their time across the participating teams. Please note that applications that **do not** justify the convergence of distinct disciplines and approaches or only use well established methodologies to address the research question will not be considered within remit. (*Up to 500 words)*

Research theme alignment: Outline how your work aligns to our priority theme. (*Up to 300 words)*

Literature references: Include a bibliography in the standard Harvard format listing any articles referred to in your proposal.

Advertising details: If your application is successful, we will advertise your project on external websites. Please list up to 6 key words/phrases that students might type into search engines to find your project.

Project suitability: Please indicate from the list provided the student background that will be the right fit for your project.

Key dates

The following timeline will apply:

Supervisor Connection Meeting
We understand that the opportunities for collaborations between Imperial and ICR supervisors may not always be obvious. To address this, we propose the building of cross-institutional supervision teams via an online meeting on **September 16th, 2022, at 10am – 12pm**, the aim is to showcase the breath of engineering and physical sciences expertise and the cutting-edge cancer research undertaken at both institutions. Supervisors attending this meeting will be given the opportunity to present two slides on their research to help connect and integrate approaches in the creation of a PhD research proposal.

Submission deadline
Supervisors develop and submit PhD research proposals aligning to our thematic area.
The deadline for submission of proposals is **October 14th, 2022, at midnight.**

Feedback and advertising
The proposals are reviewed by the Training Subcommittee comprising ICR and Imperial academics with convergence science and cancer biology expertise. Outcomes will be announced in **November 2022**. An abridged version of the successful proposals will be advertised online to recruit candidates in **December 2022**.

Recruitment
Interviews for shortlisted candidates will be held in **Early February 2023**

Funding commences
Funding for studentships will commence in **October 2023**