EARLY DETECTION OF PANCREATIC CANCER SANDPIT INNOVATION WORKSHOP

APPLICATION GUIDELINES
EXECUTIVE SUMMARY

Sandpit Innovation Workshops are residential interactive workshops over three days dedicated to developing new interdisciplinary and revolutionary research ideas. Sandpits bring together a mix of multidisciplinary participants to drive lateral thinking and insights to address research challenges. These events bring together people that would not normally interact to inspire creative thinking, define challenges, share tools and insights and give birth to radical new ideas. The workshop is led by a Director and Subject-Guides working as mentors to help facilitate discussion at the event.

Cancer Research UK has identified early detection of cancer as a strategic priority and in July 2017 launched a new funding committee and award schemes to support research in this area. As part of our wider efforts in early detection, we have recognized that this developing field benefits from bringing together expertise not only from cancer biology, but other disciplines, leveraging the best minds and most novel concepts emerging from chemistry, physics, engineering, mathematics, and computer science.

Pancreatic Cancer UK (PCUK) are dedicated to supporting the pancreatic cancer research community to achieve earlier detection and diagnosis for people with pancreatic cancer. In 2018 PCUK brought together dozens of the world’s brightest minds from different fields to form the Early Diagnosis Research Alliance. This collaborative encourages the sharing of information and expertise, coordination of efforts and establishes a more holistic approach to delivering early diagnosis of pancreatic cancer. Only by continuing to encourage collaboration and attract unique insights will we achieve earlier diagnosis of pancreatic cancer.

The Engineering and Physical Sciences Research Council (EPSRC) has emphasised in their 2019-20 Delivery Plan the need for future affordable healthcare solutions, leading the discovery, development and deployment of cutting edge, affordable technologies, ranging from medical diagnostics/imaging systems to targeted therapeutics. Generating new interdisciplinary research partnerships in early cancer detection and improved patient outcomes, accelerating translation of EPS research to healthcare applications, building a critical mass of EPS researchers in these areas and working in partnership with other funders to open pathways to patient impact is of priority. As researchers learn more about the biological processes underpinning early cancer and pre-cancerous states, engineering, physical sciences, mathematics, statistics and computer science will be critical in enabling their detection.

For the first time, we are uniting the CRUK, PCUK and EPSRC communities for the fifth Early Detection Sandpit Innovation Workshop taking place from 7th – 10th of June, focusing on novel technological approaches for the early detection of pancreatic cancer. This three-day event is dedicated to developing new multidisciplinary and revolutionary research ideas, with up to 5 of the best proposals being awarded £100K seed-funding to support the subsequent pilot and feasibility studies, including covering associated running costs and named research staff.
Applications are welcome from across a range of academic, industry, and community sectors. Participants will be expected to engage constructively with each other, the event facilitators, the Sandpit academic Director and Subject-Guides to develop brand-new collaborative research ideas during the sandpit. Prior experience in early detection of cancer is not required.

We invite online applications from eligible individuals using the online application form. The submission deadline is 15th of April. The sandpit is an intensive residential event and participants must attend all three days of the event. By submitting an application form, you are confirming that you are available for the full three days of the sandpit.

**RESEARCH CHALLENGE**

Research in the early detection of cancer aims to develop new approaches to detect consequential cancer, or pre-cancerous states, at the earliest possible time point at which an intervention might be made. It is well-established in many cancers that the detection and diagnosis of cancer at earlier stages leads to better patient survival and outcomes. Over the last 40 years, improvements in detection, prevention and treatment have led to better survival. However, progress has not been equal for all types of disease.

Pancreatic cancer is the fourth leading cause of cancer death in Western countries and is projected to rise to the second cause within a decade. Over the last 10 years, diagnosis and detection of this disease at earlier stages has had limited improvement; therefore, there is an urgent unmet clinical need that calls for action. Most patients with pancreatic cancer present with symptomatic, surgically unresectable disease leading to poor prognosis and survival rates: half of people diagnosed with pancreatic cancer will die within three months. The late detection of pancreatic cancer is, among others, attributed to late symptom presentation, complex pancreatic cancer biology, the lack of established and validated biomarkers and the absence of imaging techniques that can accurately detect small pre-cancer lesions. In addition, the low incidence of pancreatic cancer and the absence of cheap and effective tests reduces the possibility to implement general population screening.

In order to improve patients’ outcomes in pancreatic cancer, development of novel technologies, diagnostic techniques and new analytics/algorithms to assess risk for developing pancreatic cancer are paramount. This workshop will bring together the pancreatic cancer research community with networks from outside biomedicine such as computational scientists, engineers, chemists and physicists. We aim to stimulate ideas for novel and innovative approaches to detecting pancreatic cancer early. In addition, this sandpit aims to lever big datasets such as health electronic records, as well as imaging, genomic and digital data, to accelerate the early detection of pancreatic cancer. Therefore, we would value applicants with access to biobanks and/or existing cohort datasets.

This Sandpit Innovation Workshop could focus on one or a combination of the challenges below, but is not limited to:
• Development of new sensor devices.
  o Innovation in sensor technology to detect pancreatic cancer markers. For instance, sensor technology to detect biomarkers in blood, breath, urine, faeces, pancreatic cyst fluid, etc.
  o Development of systems and/or technologies for high-risk patients to monitor biomarker levels over time. For example, patients with new-onset diabetes mellitus or familial pancreatitis.

• Development of new computational approaches – new analytics and algorithms to:
  o Identify high-risk groups through e.g. population and germline genomic data
  o Distinguish subtypes of pancreatic cancer across patients and examine tumour heterogeneity, including identification of specific signatures, in order to prognose accurately from early detection
  o Validate and translate previously identified biomarkers through mathematical models and large datasets
  o Identify sensitive and specific biomarkers/other signatures through large datasets (omics, imaging, etc.) as well as develop tools for biomarker prioritisation

• Development of new integrative modalities of cancer diagnostic tools and/or decision-making tools leveraging from electronic health records and other health care data e.g. diagnostic imaging datasets, multi-omics datasets, etc.

Do you have the skills, knowledge and ideas that you are motivated to apply to such questions? Can you define additional challenges that you’d like to dive into with other workshop participants?

APPLICATION PROCESS

ELIGIBILITY

Participants are selected for the sandpit workshop via a short application form. Applications are welcome from academic, industry, and community sectors.

The range of people selected is intentionally diverse, and it is intended that a wide range of disciplines, including those from private, public and third sector organisations and community groups will be represented. If you would like to transform the future of pancreatic cancer early detection in the UK, we invite you to apply irrespective of your expertise or background. We are interested in new ideas, underpinned by radical and innovative thinking.

We regret that, on this occasion, PhD students and applicants based overseas are not eligible to apply.
APPLYING TO ATTEND

The sandpit is an intensive residential event and participants must be available to attend for the full three days of the event. By submitting an application form, you are confirming that you are available for the full duration of the sandpit. Standard class travel, accommodation, refreshments, breakfast, lunch and dinner costs will be met by the organisers.

It is a requirement that you obtain the approval of your research organisation, employer, board, shareholder(s) (as appropriate) before applying to ensure that your organisation is willing and able to engage in and support a collaborative project. Applicants must provide a covering statement from a representative of their organisation (e.g., supervisor, manager, or other relevant persons), confirming that, in the event of a grant, it will provide the necessary infrastructure for the applicant to conduct the research at that Host Institution.

The organisers and scientific leads will select attendees based upon answers to the online application form. Applicants should demonstrate their relevant skills and attitude to participate in the sandpit. It is strongly advised that applicants do not merely list their achievements (e.g. publications, research experience), but, rather, use these to demonstrate how they may approach the challenge using innovative and collaborative working. No other documentation will be accepted or considered. The submission deadline for completed applications and statement of support will be 15th of April. Applications will not be considered after this deadline.

All application forms received by the deadline will be reviewed by CRUK, PCUK and EPSRC to ensure a mix of disciplines, skills and experience. Selection criteria will include:

- The potential to work in trans-disciplinary environments
- The potential to develop innovative and adventurous approaches to research
- The ability to work collaboratively with others
- The ability to communicate and engage with diverse non-academic stakeholders throughout the research process
- Relevant research expertise and experience

Successful candidates will be notified by email after the closing date in May. We regret that we will not be able to provide feedback to unsuccessful candidates.

PROPOSALS

On the final day of the sandpit, project teams will present their final ideas, with up to 5 of the best research ideas being awarded up to £100K in seed-funding to support the subsequent development of feasibility or pilot work, focus groups, stakeholder/collaborator meetings, etc. The funding recommendations will be made by the sandpit Director and Subject-Guides.

Following the sandpit, the principal investigator (PI) for each successful project team will have approximately four weeks to draft a full feasibility study proposal that covers their group’s intended activities as presented at the sandpit. For ease of administration of funding, identified
PIs should be members of recognised research organisations that can receive the award. While project team members can be from commercial or non-research settings, we would ask that they not be designated as PI on the award.

The specific role of each project team member, in terms of their involvement with, and contribution to, the project will be agreed by the project team (i.e. some members may be named as joint lead investigators or contribute in an advisory capacity, etc.).

Feasibility study proposals will be submitted via CRUK’s Flexi-Grant System by the 15th of July. Feasibility studies will last up to 12 months in duration, starting in October. All awards are subject to CRUK’s terms and conditions. CRUK and PCUK will offer support and advice throughout the lifetime of the project, including quarterly teleconferences with project groups.

Further guidance on the post-award processes will be made available to successful applicants at the sandpit.

THE COMMISSIONING PROCESS

We expect that feasibility studies will run for up to 12 months, commencing by six months after the workshop (see Figure 1). Studies will be funded in partnership between CRUK, PCUK and EPSRC. Following the outcome of the feasibility studies, we expect this to lead to the development of high quality full research proposals to be submitted to an appropriate funder.
Submit sandpit workshop application
CRUK will email you the outcome of your application

Three day sandpit workshop
Funding decisions will be made by the Sandpit Director and Subject-Guides on the final day of the workshop

Work up and submit feasibility study proposal
Proposals will be submitted via CRUK’s Flexi-Grant System and CRUK will issue a grant award letters.

Feasibility studies commence
Studies will be no longer than 12 months in duration

Figure 1: Innovation Workshop application and funding process

The sandpit is an interactive and free-thinking environment, where a diverse group of around 30/33 participants from a range of disciplines and backgrounds get together for three days - away from their everyday worlds - to immerse themselves in collaborative thinking processes in order to construct innovative trans-disciplinary approaches.

Participants should arrive on Sunday at the hotel and the sandpit begins on the Sunday (approximately at 5.30 pm) and finishes on the Wednesday afternoon (approximately 5pm).

The process can be broken down into several stages:

• Defining the scope of the challenge.
• Sharing understandings of the challenge and expertise brought to the sandpit by participants.
• Evolving common languages and terminologies amongst people from a diverse range of backgrounds and disciplines.
• Breaking down preconceptions of researchers and stakeholders.
• Taking part in break-out sessions focused on challenges, using creative thinking techniques.
• Capturing outputs in the form of highly innovative feasibility study proposals.
• A funding decision on those proposals at the sandpit, using “real time” peer-review.
As the sandpit is an intensive process, so opportunities for relaxation, reflection and networking will be built into the timetable.

The sandpit is led by two Co-Directors. The Directors of this workshop will be Prof. Eithne Costello (University of Liverpool) and Prof Stephen Pereira (University College London). The Directors and a number of Subject-Guides and stakeholders will take part in the sandpit but will not be eligible to receive research funding. During the sandpit, a number of speakers will provide different perspectives that may help participants develop new questions or novel ideas for potential feasibility studies. The Director and Subject-Guides will act as independent reviewers to make recommendations concerning the allocation of funding to research ideas emerging from the process through the real-time peer review process.

COMMISSIONING TIME TABLE

- 15th April 2020 - Deadline for submission of online application forms
- 5 weeks before event - Applicants notified of outcome
- June 7th – 10th 2020 - Sandpit event (Bristol)
- 15th July 2020 - Deadline for submission of feasibility study proposals
- November - Feasibility studies commence

More information about the sandpit workshop will be shared with successful applicants in May.

FURTHER INFORMATION & APPLICATIONS

If you have any questions or would like any further information, please contact Dr Ana Lopez on ana.lopezmunoz@cancer.org.uk or 0203 469 5691.