IMMUNE HOMEOSTASIS INNOVATION WORKSHOP: CALL FOR APPLICATIONS

If you would like to transform the future of cancer and arthritis treatment in the UK, we invite you to apply – irrespective of your expertise or background. We are more interested in new ideas, underpinned by radical and innovative thinking.

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EXECUTIVE SUMMARY

Cancer Research UK and Arthritis Research UK are delighted to launch a new initiative to address challenges in immunology which could lead to advances in our understanding of cancer and of arthritis/related musculoskeletal (MSK) disorders. The initiative aims to melt the barriers that commonly separate the fields of oncology and inflammatory disease. By doing so, the initiative will promote cross-disciplinary synergies that accelerate progress in both areas. We expect that these will arise from new collaborations, and through the development of innovative, radical and pioneering approaches. To initiate this, we propose an Innovation Workshop focusing on new research relevant to the homeostasis reached by chronic immune responses in inflammatory MSK conditions and in cancer. It will take place from 18-20 July 2017 at the Oxford Belfry, Oxfordshire.

The format will be “sandpit-style”, comprising three intensive, highly interactive days spent in residence and culminating in the development of pilot/feasibility proposals, up to five of which will be selected for development for pilot/feasibility funding. We expect outputs from funded pilot/feasibility studies to fuel the development of outstanding full research proposals to be submitted to either Cancer Research UK’s, Arthritis Research UK’s, or other appropriate funders’ research committees. Pilot/feasibility studies will be awarded up to £45,000 over 12 months and need to have commenced by 1 January 2018.

Applications to attend the workshop are welcome from across a range of academic and industry sectors. Participants will be expected to engage constructively with each other, the event facilitators, the Director, and Subject-Guides so as to develop innovative, collaborative research ideas. Because of this, all 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. Cancer Research UK and Arthritis Research UK invite applications from eligible individuals using the available application form. The submission deadline is noon on 3 May 2017. It is a requirement that you obtain the approval of your organisation before applying. 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 pilot/feasibility funding award, their organisation is willing and able to engage in, and support a collaborative project.
FIGURE 1: INNOVATION WORKSHOP APPLICATION AND FUNDING PROCESS

RESEARCH CHALLENGE: IMMUNE HOMEOSTASIS

Cancer Research UK and Arthritis Research UK have both highlighted immunology as a strategic priority, aware that advances in the field can bring benefits to significant numbers of patients. Cancer Research UK’s vision is that three in four people will survive cancer by 2034⁴, and to achieve this it is investing in research that investigates how core immune processes influence the causes and drivers of cancer, and responses to treatment. Arthritis Research UK’s long-term commitment is to prevent the onset of arthritis⁵, to develop a cure for arthritis, and to transform the lives of the 10 million people living with arthritis in the UK today⁶. To realise this vision in the shortest possible time requires that the immunology of inflammatory disease be investigated in a broader context, including cancer immunology. In sum, there is convergence in the research strategies of the two funders that are best explored by novel, joined-up approaches. Moreover, recent successes in immunology research have highlighted the potential of

* Arthritis is used as an umbrella term to describe 200-plus separate, related MSK conditions affecting the whole joint and/or bone, tendons, ligaments and muscle.
multidisciplinary collaborations spanning the biological and physical sciences to accelerate advances in the treatment and prevention of cancer and arthritis.

The initial focus of the joint initiative is **immune homeostasis, defined as an equilibrium, which the immune system reaches. In health, this equilibrium results in the effective discrimination of foreign entities with pathogenic potential from self.** Conversely, dysregulated homeostasis can have severe consequences. For example, an over-reactive immune response can lead to autoimmune and inflammatory diseases, but might also limit the growth of cancer cells and the formation of tumours. In contrast, an over-cautious immune response may fail to recognise growing tumours as immunogenic. Hence, the molecular and cellular basis of dysregulated homeostasis is core to the immunology of MSK disease and to cancer. What are the signature features of the immune system in different homeostatic modes, and how best might those modes be reset so as to realise practical therapeutic benefits? Given the successes that immunotherapies for MSK disease and for cancer have each achieved, there is the likelihood of even greater benefits when, for example, greater knowledge permits improved strategies of immune checkpoint blockade that do not promote auto-inflammatory conditions, including MSK disease. Likewise, a greater understanding of immune homeostasis and its perturbation may provide novel, prognostic bio-markers for disease progression and/or remission. This potential may be improved by accommodating growing knowledge of gender-based and age-related differences in immune homeostasis.

While focused on immune homeostasis, there are very many opportunities for shared learning across the spectrum of inflammatory diseases and cancer. From the roles of defined cell types in the arthritic knee to cancer metastasis; through the development of new clinical paradigms by which oncologists and rheumatologists integrate their experiences; to an understanding of how wound healing may relate to remission in both sets of diseases. In short, research conducted in response to this call should be relevant to a range of issues within immune homeostasis and should lead to the significant advancement of our understanding of the processes involved. This includes, but is not limited to:

- By multi-parameter analyses, by analysis of variation, by analysis of gender and age, and by analysis over time, how does immunological baseline in inflammatory diseases and cancer differ from healthy baseline?
- Does immunological baseline correlate with patient responsiveness/outcomes and therefore inform treatment decisions?
- Does an adaptation of tolerance over time alter immunological baseline, suppressing autoimmunity and tumour immunity?
- How can a weak immune homeostasis be strengthened and how can an over-active immune homeostasis be restrained *in practical terms* and with *minimum adverse events*?
- What is the impact of wound healing on different modes of immune homeostasis?
- How is immune homeostasis and perturbations from it regulated by physiological processes, including metabolism and endocrinology?
RESPONSE TO THE RESEARCH CHALLENGE

The immune system continues to intrigue and test us: as we get closer to finding ways of harnessing or modulating immune responses, new and unexpected consequences and challenges present themselves, often testing even our most fundamental understanding. Cancer Research UK and Arthritis Research UK have come together to ask you to help us rise to the specific challenge of understanding immune homeostasis in different disease modes: to explore how it is maintained, how it becomes perturbed and how it can be effectively harnessed for therapeutic use.

Cancer Research UK and Arthritis Research UK aim to bring together top researchers and clinical academics in inflammatory disease, in cancer, and in fields outside of these, whose expertise can be applied to the key questions concerning immune homeostasis. This sandpit workshop will encourage participants to melt barriers and to develop a common language that promotes collaborations, fuels novel approaches, and suggests new immunotherapeutic strategies.

THE SANDPIT WORKSHOP COMMISSIONING PROCESS

The sandpit is an intensive, interactive and free-thinking environment, where a diverse group of around 25 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.

The sandpit begins on the morning of Tuesday 18 July and finishes on the Thursday afternoon.

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.

The sandpit is led by a Director, Professor Adrian Hayday FMedSci FRS, founding-Chair of Immunobiology at King’s College London and Senior Group leader at the Francis Crick Institute. The Director 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. As the sandpit is an intensive process, opportunities for relaxation, reflection and networking will be built into the timetable.
More information about the sandpit workshop will be shared with successful applicants one month before the event.

ELIGIBILITY

Participants are selected for the sandpit workshop via submission of a short application form and an up to date CV. Applications are welcome from both academic and industry sectors.

The range of participants selected is intentionally diverse, and it is intended that a wide range of disciplines will be represented. If you would like to transform the future of cancer and arthritis treatment in the UK, we invite you to apply - irrespective of your expertise or background. We are more interested in new ideas, underpinned by radical and innovative thinking.

Owing to the interactive and intensive nature of the workshop, applicants must have the personal attributes of creativity, openness, and the ability to work effectively as part of a team. We regret that PhD students and applicants based overseas are not eligible to apply.

APPLICATION PROCESS

A decision will be made on your attendance at the workshop based upon your answers to the application form and an up to date CV. Applicants should demonstrate their suitable 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 ways. No other documentation will be accepted or considered. The submission deadline for completed applications and CV is noon 3 May 2017. Applications will not be considered after this deadline.

Applications received by the deadline will be reviewed by Cancer Research UK and Arthritis Research UK, 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 of the decision the week commencing 15 May 2017. 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 seed-funding to support the subsequent development of feasibility or pilot work,
stakeholder/collaborator meetings, etc. The funding decisions will be made by the sandpit Director and Subject-Guides on the final day of the sandpit.

Following the sandpit, the principal investigator (PI) for each successful project team will have four weeks to draft a full pilot/feasibility study proposal that covers their group’s intended activities as presented at the sandpit. PIs who are not established members of a recognised research organisation must be accommodated by a research organisation and provided with appropriate facilities to carry out the research as agreed by the Head of the organisation in the application form. 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).

Pilot/feasibility study proposals will be submitted via Cancer Research UK’s electronic Grant Management System (eGMS) by 10 August 2017. Feasibility studies will last up to 12 months in duration, and must have started by 1 January 2018. All awards are subject to Cancer Research UK’s terms and conditions. Cancer Research UK and Arthritis Research UK will offer support and advice throughout the lifetime of the project, including quarterly teleconferences with project groups. A report documenting feasibility outputs will be required by the funders upon project completion. There is an expectation successful project teams will generate subsequent full project proposals to be submitted to either Cancer Research UK, Arthritis Research UK or other relevant funders for further funding.

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

COMMISSIONING TIMETABLE

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>3 May 2017</td>
<td>Deadline for submission of online application forms</td>
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<tr>
<td>15 May 2017</td>
<td>Applicants notified of outcome</td>
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<tr>
<td>18-20 July 2017</td>
<td>Sandpit event (Oxford Belfry, Oxfordshire)</td>
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<tr>
<td>10 August 2017</td>
<td>Deadline for submission of feasibility study proposals</td>
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<tr>
<td>1 January 2018</td>
<td>Feasibility studies need to have commenced</td>
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FURTHER INFORMATION

If you have any questions or would like any further information, please contact Kristina Tubby (Kristina.Tubby@cancer.org.uk) or Elizabeth Waterman (research@arthritisresearchuk.org).

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