



MODULATING
TISSUE
IMMUNITY

INNOVATION WORKSHOP
CALL FOR APPLICATIONS



CANCER
RESEARCH
UK

**VERSUS
ARTHRITIS**

Modulating Tissue Immunity Innovation Workshop

If you would like to transform the treatment of cancer and musculoskeletal conditions 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

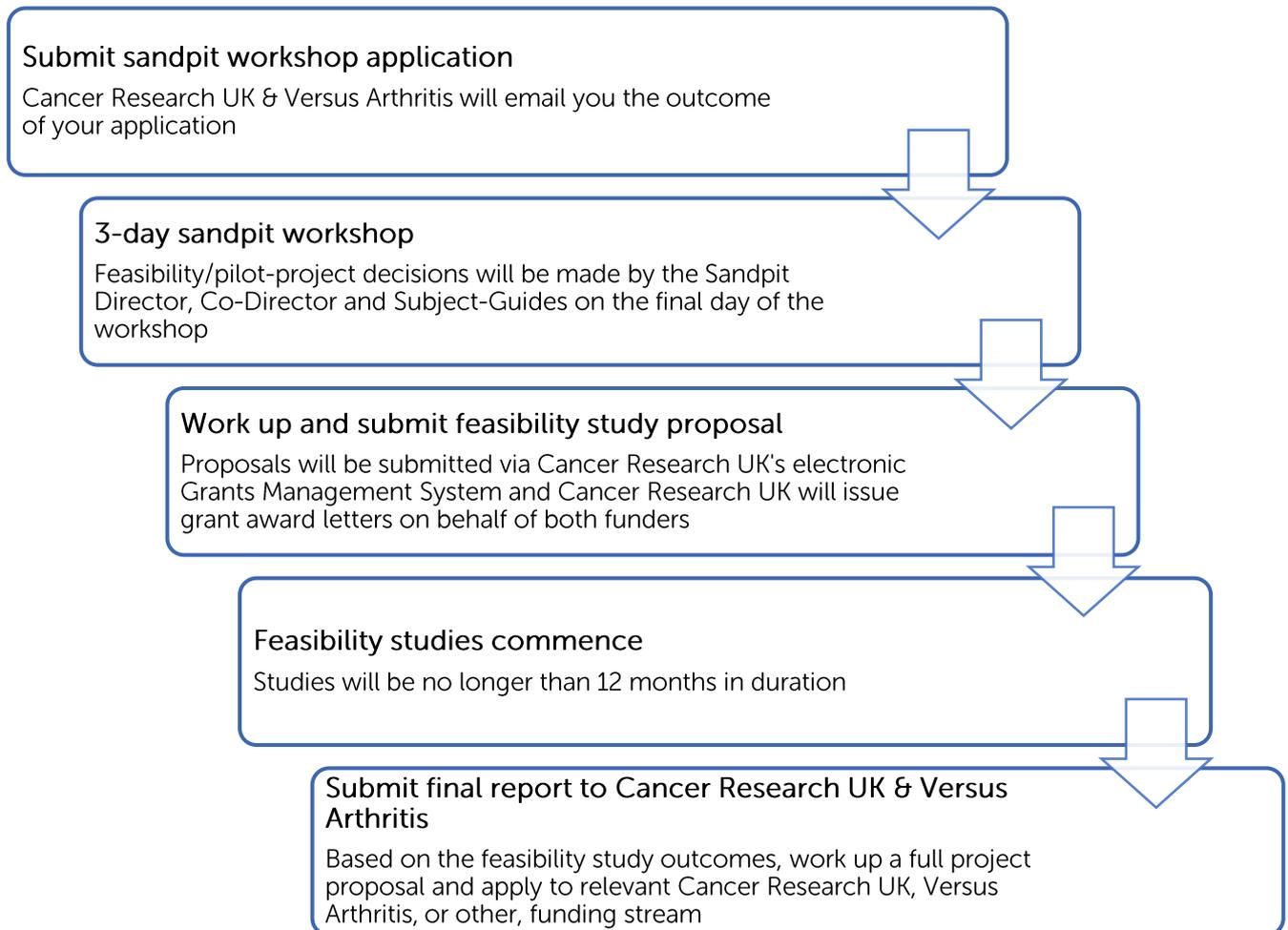
Cancer Research UK and Versus Arthritis*¹ are delighted to launch the second innovation workshop to address challenges in immunology which could lead to advances in our understanding of cancer and of arthritis /related musculoskeletal (MSK) disorders. The initiative aims to break down the barriers that 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, new ideas and concepts drawing on fresh perspectives, and through the development of innovative, radical and pioneering approaches. To continue to develop this, we propose a second **Innovation Workshop** focusing on new research relevant to **modulation of tissue immunity** in inflammatory MSK conditions and in cancer. It will take place from **3-5 April 2019 at the Jubilee Conference Centre, Nottingham.**

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 research committees of Cancer Research UK, Versus Arthritis, or other appropriate funders. Pilot/feasibility studies will run for up to 12 months and need to have commenced by **1st October 2019.**

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 Versus Arthritis invite applications from eligible individuals using the available application form. The submission deadline is **noon on 11th February 2019.** 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.**

*¹ Versus Arthritis was formed in 2018, following a merger of Arthritis Research UK and Arthritis Care

Figure 1: Innovation Workshop application and funding process



Research Challenge: Modulating tissue immunity

Cancer Research UK and Versus Arthritis have both highlighted immunology as a strategic priority, being 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 2034¹, and to achieve this it is investing in research that explores how core immune processes influence the causes and drivers of cancer, as well as responses to treatment. Versus Arthritis's long-term commitment is to no longer tolerate the pain, fatigue and isolation of arthritis*² and to transform the lives of the 10 million people living with arthritis in the UK today². To realise both these visions in the shortest possible time requires that inflammatory disease research be investigated in a broader context, including cancer immunology. In summary, there are convergences 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 multidisciplinary collaborations spanning the biological and physical sciences to accelerate advances in the treatment and prevention of cancer and arthritis.

*² 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

The overarching theme for the second innovation workshop is **modulating tissue immunity in cancer and arthritis**. The workshop aims to look holistically at the way the immune system functions in the body under challenges caused by arthritis or cancer. For example, an altered metabolic state, tissue damage and the toxicity of immune checkpoint blockade therapy. Furthermore, the impact of the dysregulated immune states on both cancer and arthritis are important to explore, as it is clear that a dysregulated immune state has severe consequences in both disease settings. For example, an unchecked immune response can lead to autoimmune and inflammatory diseases, but equivalent processes also limit the growth of cancer cells and the formation of tumours. In contrast, a limited immune response may lead to a failure in the immunogenic recognition of growing tumours. Within the overarching theme of *modulating tissue immunity*, three potential areas have been specifically identified: **immuno-metabolism, immune checkpoint modulation, and immune / tissue cell interactions**.

- **Immuno-metabolism** is an emerging area with evidence of metabolic dysfunction of the immune system in both disease areas. Sharing of expertise between the cancer metabolism community and the immune-metabolism community, focusing on basic mechanistic aspects, this area has the potential to facilitate exploration of the overlap between these disease areas and potential therapeutic outcomes.
- Despite recent successes in the field of **immune checkpoint modulation** in cancer, and blockade of immune and inflammatory pathways in arthritis, significant challenges remain. Toxicity arising from immunotherapies represents a significant clinical limitation, yet, currently there is very little known about the causes and mechanisms of this toxicity. A greater understanding of mechanism would permit improved strategies for immune checkpoint blockade in cancer that do not promote auto-inflammatory conditions, including arthritis. Likewise, investigation of the modulation of the immune system in these patient populations may provide novel, prognostic biomarkers for disease progression and/or remission. In short, exploration of the mechanisms of action of one disease area has the clear potential to inform the other.
- To understand the mechanisms behind toxicities arising from immunotherapy, as well as chronic inflammation in arthritis, investigation of how the immune system impacts on normal tissue as well as inflamed tissue would be required. **Hence, research questions related to immune / tissue cell interactions will be the third focus area of the workshop.**

Research conducted in response to this call should promote cross-disciplinary synergies that accelerate progress in both cancer and arthritis. Potential questions include (but are not limited to):

- What is the role of tissue resident immune cells in modulating tissue homeostasis, versus the role of immune cells recruited to tissues in a disease setting?
- How does the tissue stroma and tumour microenvironment modulate the immune state?
- How does the magnitude and nature of the immune response compare between both diseases?
- How can our understanding of tissue immunity help to inform tissue engineering techniques?

- Can we design more suitable model systems to investigate checkpoint modulation?
- What roles do myeloid cells play in orchestrating immune tissue cell interactions in cancer and arthritis
- Can the detrimental side effects of checkpoint inhibitors be ameliorated?

Response to the Research Challenge:

Cancer Research UK and Versus Arthritis have come together to ask you to help us rise to the specific challenge of understanding immune modulation in cancer and arthritis: to explore how the immune state is maintained, how it becomes perturbed and how it can be effectively harnessed for therapeutic use.

The initiative will bring together top researchers from academic, clinical and industry backgrounds in inflammatory disease, in cancer, and in fields outside of these, whose expertise can be applied to the key questions concerning immune modulation. 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 Wednesday 3rd April and finishes on the afternoon of Friday 5th. The process can be broken down into several stages:

- Defining the scope of the challenge.
- Sharing understanding 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 Fiona Powrie FMedSci FRS, Head of the Kennedy Institute of Rheumatology at the University of Oxford. The Director, a co-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 11 February 2019.** Applications will not be considered after this deadline.

Applications received by the deadline will be reviewed by Cancer Research UK and Versus Arthritis, 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 25 Feb 2019. 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 cover letter. 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, as collaborators or contribute in an advisory capacity).

Pilot/feasibility study proposals will be submitted via Cancer Research UK's electronic Grant Management System (eGMS) by **7th May 2019**. Feasibility studies will last up to 12 months in duration, starting **1st October 2019**. All awards are subject to Cancer Research UK's terms and conditions. Cancer Research UK and Versus Arthritis 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 that successful project teams will generate subsequent full project proposals to be submitted to either Cancer Research UK, Versus Arthritis 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 time table

- Noon 11th February 2019 - Deadline for submission of application forms
- 25th Feb 2019 - Applicants notified of outcome
- 3-5 April 2019 - Sandpit event (*Jubilee Conference Centre, Nottingham*)
- 7th May 2019 - Deadline for submission of feasibility study proposals
- 1st October 2019 - Feasibility studies need to have commenced

Further information

If you have any questions or would like any further information, please contact Anwen Howells (anwen.howells@cancer.org.uk) or Elizabeth Waterman (research@versusarthritis.org).

¹ Cancer Research UK, <http://www.cancerresearchuk.org/funding-for-researchers/how-we-deliver-research/our-research-strategy>, May 2014

² Versus Arthritis, <https://www.versusarthritis.org/research/research-funding-and-policy/our-approach-to-research-funding/>, June 2016