CRUK Convergence Science Centre Annual Symposium

Monday 9th February 2026
The Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG

We are delighted to welcome you to the CRUK Convergence Science Centre Annual Symposium 2026, taking place at the prestigious Royal Society, London. This event brings together researchers, clinicians, students and collaborators from across The Institute of Cancer Research, Imperial College London, and our wider partner network to celebrate and advance the power of convergence science in cancer research.

Convergence science is an interdisciplinary approach that goes beyond traditional boundaries, integrating expertise from engineering, physical sciences, life sciences and medicine to tackle complex challenges in cancer research. By harnessing diverse perspectives and technologies, we aim to accelerate breakthroughs in how we understand, detect, monitor and treat cancer.

Today's programme showcases the breadth and impact of this approach across our three core research themes:

- **Personalised diagnostics and patient stratification,**
- **Convergence therapies and interventions, and**
- **Therapy enhancement and resistance monitoring.**

Throughout the day you will hear from leading scientists, early-career researchers and Centre-funded PhD students who are pushing the frontiers of interdisciplinary discovery. We hope the discussions, posters and networking sessions inspire new ideas, collaborations and connections.

Thank you for joining us - we look forward to a stimulating and impactful day.

> *"I believe that multidisciplinary working across all areas of science is critical to help us address fundamental questions about cancer that are considered intractable using currently available methods, and to improve disease detection, diagnosis and expand the repertoire of effective therapies. It is my vision that together we will build a cross-institutional collaborative culture that will lead to meaningful changes to cancer patient care."*

Prof Axel Behrens
Scientific Director of the Convergence Science Centre

Feedback

We'd be grateful if you could please complete **this short feedback form** to tell us about your experience to help us improve future events.

Photography

We have a photographer to document today's event. If you do not want to be photographed, please speak to a member of staff.

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09:00 - 09:30 Arrival - Registration and refreshments

09:30 – 09:40 Welcome – Prof Axel Behrens
09:40 – 10:25 Keynote Address - Prof Gerard Evan

Session 1 - Personalised Diagnostics and Patient Stratification
Chaired by Dr Sam Au (Imperial, Department of Bioengineering)

10:30 – 11:00 Dr Periklis (Laki) Pantazis
11:00 – 11:20 Dr Mathew Vithayathil
11:20 – 11:50 Prof Anguraj Sadanandam

11:50 - 12:50 Lunch and Poster Session (see poster details below)

Session 2 - Convergence Therapies and Interventions
Chaired by Prof Udai Banerji (ICR, Division of Cancer Therapeutics, Drug Development Unit)

12:50 – 13:00 Precision at the Margin: Convergence Science for Better Cancer Surgery
Video led by Dr Patrick Kierkegaard
13:00 – 13:30 Prof Daniel Elson
13:30 – 14:00 Prof Juanita Lopez
14:00 – 14:20 Joshua Killilea

14:20 - 14:40 Break

Session 3 – Therapy Enhancement and Resistance Monitoring
Chaired by Dr Navita Somaiah (ICR, Division of Radiotherapy and Imaging)

14:40 – 15:10 Dr Emma Harris
15:10 – 15:30 Yarden Toiber Kent
15:30 – 16:00 Dr Marco Di Antonio
16:00 – 16:05 Closing remarks – Prof Axel Behrens

16:05 - 17:00 Drinks Reception, Networking and Posters (see poster details below)

Speaker Details

Keynote Address

Prof Gerard Evan
Francis Crick Institute and Kings College London, London, UK

Shifting cancer into reverse
Many adult cancers exhibit some degree of local immune suppression and immune evasion. Such immune evasion is usually depicted as a consequence of the strong initial selection against tumours and their neo-antigens: however, our data indicate that suppression of both adaptive and innate immunity are inherent properties of mitotic oncogene activity in both pathological (neoplasia) and physiological (reparative) tissue growth and regeneration.

For example, in mouse models of both lung and pancreatic adenocarcinoma, as well as a liver injury model, acute activation of Myc triggers rapid influx of inflammatory monocytic and granulocytic cells along concurrently with immediate exclusion of lymphocytes (abT, B and NK). Moreover, many of these Myc-driven immune manipulations are essential for the transition of indolent pre-tumors into malignant neoplasms. Similarly, CCl4 liver injury triggers an immediate, abrupt and Myc dependent exclusion of lymphoid cells and influx of monocytic and granulocytic that is essential for successful liver repair. Moreover, in liver the switch from post-injury regeneration to injury resolution is dependent upon Myc down regulation and re-influx of innate immune NK-like cells.

Taken together, our data indicate that cancer is an aberrantly "hacked" persistent version of normal post-injury tissue repair and regeneration. Conversely, blocking Myc (or upstream oncogenic signals) is therapeutically efficacious in cancer because forcibly turning Myc off "hacks" the physiological tissue injury resolution program by which innate immune cells prune supernumerary tissue and return the "repaired" tissue to its normal size, architecture and function.

Session 1 - Personalised Diagnostics and Patient Stratification

Dr Periklis (Laki) Pantazis
Imperial College London, Department of Bioengineering

Illuminating Cancer Mechanics and Evolution: GenEPi, Primed Conversion and Bioharmonophore Theranostics
Cancer is a dynamic, evolving system in which mechanical forces and clonal selection jointly shape tumour behaviour and treatment response. Yet both mechanosensation and tumour evolution remain largely invisible to current diagnostic workflows. In this talk, I will present a convergent imaging strategy that combines protein engineering, advanced optics and nanotechnology to reveal these hidden dimensions of cancer biology.

Dr Mathew Vithayathil
Convergence Science Centre, Clinical Research Fellow

Imaging-based deep learning and machine learning radiomic models predict treatment response and survival in patients with liver cancer
Predicting response and survival after immunotherapy in hepatocellular carcinoma is challenging. Using an integrated deep learning and machine learning pipeline, radiomic features from pre-treatment imaging can be used to predict future response, survival and progression in patients receiving immunotherapy. These AI-based models outperform established clinical markers and can be used to guide personalised treatment strategies

Prof Anguraj Sadanandam
Institute of Cancer Research, Division of Cancer Biology

Redefining Personalised Cancer Diagnosis and Treatment Through Multiscale Multiomics Phenomics and Living Systems Biology
Cancer patients deserve treatments tailored to their unique tumour biology. This presentation explores an integrated framework that combines cutting-edge multiomics, patient-derived living tumour (organoid/mouse) models, and artificial intelligence to advance truly personalised cancer diagnosis and treatment selection in gastrointestinal cancers. By leveraging multiscale, multimodal, and phenotypic data, this approach provides a holistic view of tumour ecosystems, capturing genomic/multiomics alterations, cellular states, microenvironmental influences, and functional behaviour. Integrating these diverse data layers enables the identification of therapeutic vulnerabilities that are often invisible to conventional data integration methods, while improving patient stratification and informing rational therapy choices. This talk will highlight how multimodal technologies and computational models can be translated into clinically meaningful insights, ultimately paving the way for more precise and effective cancer care for patients across gastrointestinal and other solid tumours.

Session 2 - Convergence Therapies and Interventions

Prof Daniel Elson
Imperial College London, Department of Surgery and Cancer

Intraoperative optical spectroscopy – in vivo diagnostics and surgical guidance
Strategies for the acquisition of optical spectroscopic data in human studies will be discussed, particularly for cancer detection and diagnosis. This includes the use of multispectral imaging, as well as spectroscopic modalities such as diffuse reflection spectroscopy and spectrally resolved fluorescence. While spectroscopy will be shown to provide high diagnostic accuracy, including in human surgical studies, the ergonomic and visual limitations of these instruments will be shown as significant barriers to their general use. The addition of imaging, computer vision and robotics techniques will be presented as potential solutions.

Prof Juanita Lopez
Royal Marsden Hospital & Institute of Cancer Research, Drug Development Unit

How do we solve a problem like glioblastoma?

Glioblastoma has been too long considered a too-difficult cancer with no improvement in patient outcomes over the last 40 years. This calls for urgent innovation and the multi-disciplinary incorporation of novel technologies along the patient journey to systematically transform the disease. The 5G (next-Generation aGile Genomically Guided Glioma) study is a first in brain hypotheses platform which incorporates AI and machine strategies into an adaptive platform trial design with novel longitudinal biomarkers in a world first attempt to accelerate hypotheses testing in this disease.

Joshua Killilea
Convergence Science Centre, MB-PhD Student

Electroactive drug delivery for local glioblastoma treatment

Treatment outcomes for glioblastoma have remained stagnant for over two decades. Effective treatment is challenging as the disease is highly heterogeneous, poorly immunogenic, and the presence of the blood brain barrier restricts the entry of systemically administered drugs that can reach the tumour site. Overcoming the blood-brain barrier to allow local drug delivery would allow for a wider range of anti-cancer agents to be used, while also increasing efficacy and minimising debilitating side effects. Previous local delivery strategies for glioblastoma have been ineffective as they relied on liquid infusions, did not offer control over release, and required additional surgical and imaging timepoints.

This project explores the development of a novel material which enables the controlled, solid-state release of drug molecules for local brain tumour treatment. This material has been used to manufacture a device that has been co-designed with neurosurgeons to facilitate its clinical use at existing treatment timepoints, and across all brain tumour patients, including inoperable cases. This technology aims to expand treatment options for brain tumour patients and allow for flexible clinical use across the entire patient treatment pathway, including recurrence. The goal is to provide an option for more targeted treatment, while minimising debilitating side effects and disruption to a patient's life.

Session 3 – Therapy Enhancement and Resistance Monitoring

Dr Emma Harris
Institute of Cancer Research, Division of Radiotherapy and Imaging

Ultrasound-stimulated microbubbles for radiotherapy enhancement
This talk summarises our work investigating ultrasound-stimulated microbubbles (USMB) as a strategy to enhance the radiation response of tumours. By using low-intensity, highly focused ultrasound in combination with an ultrasound contrast agent already approved for diagnostic imaging, this approach is considered very safe. We will present data showing that USMB delivered six hours prior to radiation significantly increased tumour doubling times in two immunocompetent head and neck cancer models. Finally, we will discuss proposed mechanisms underlying this growth delay, including an observed increase in CD8$^+$ T cell infiltration following USMB plus radiotherapy compared to radiotherapy alone. The work was conducted by Hannah Bargh-Dawson (ICR) in collaboration with Graeme Birdsey (Imperial) and researchers at ICR including Erik Wennerberg, Carol Box, Jeff Bamber, Kevin Harrington, Jessica Downs and John Civale.

Yarden Toiber Kent
Convergence Science Centre, MB-PhD Student

A Circulating Tumour Cell-Based Liquid Biopsy Approach for Minimally Invasive Tracking of PARP Inhibitor Response in BRCA-Mutated Breast Cancer
PARP inhibitors improve outcomes for patients with BRCA-mutated breast cancer, yet de-novo and acquired resistance remain significant clinical challenges. This talk will present a circulating tumour cell (CTC) assay that combines microfluidic, biomarker-agnostic CTC capture with immunofluorescence imaging to assess DNA damage response activity as a minimally invasive biomarker of treatment response. Preliminary patient-derived findings will be discussed, alongside plans for future multi-analyte extensions to support the elucidation of resistance mechanisms.

Dr Marco Di Antonio
Imperial College London, Department of Chemistry

DNA secondary structures mould chromatin to promote chemoresistance in ovarian cancer
We have mapped the prevalence of DNA secondary structures called G-quadruplex (G4) in ovarian cancer cell models. We revealed that cell lines established from patients before establishing resistance to therapies (PEO1) have a substantially different distribution of G4-structures when compared to the resistant counterparts (PEO4) obtained from the same patient after development of chemoresistance. We further identify that such changes in G4-distribution are linked to transcriptional perturbations that promote resistance to chemotherapy. Additionally, we demonstrate that targeting G4 through small molecule ligands can re-wire chromatin architecture and prevent transcriptional hijacking, revering chemoresistant cells into a sensitive state.

Poster Presentations

1. **In vitro assessment of an EphA2-targeting CAR-T cell therapy for NSCLC**
   Ray Tan, *Convergence Science Centre Clinical Research Fellow*

2. **Versatile Biodegradable Semiconducting Polymer Nanoparticle Platform**
   Jan Sandler, *Convergence Science Centre Non-Clinical PhD Student*

3. **Investigating the role of the bone marrow microenvironment in haematopoietic recovery after chemotherapy in AML patients**
   Germaine Chia, *Convergence Science Centre Clinical Research Fellow*

4. **Resolving isoform-specific signalling of RSK1 and RSK4 in breast and lung cancers**
   Maja Bronowska, *Convergence Science Centre Non-Clinical PhD Student*

5. **Co-delivery of doxorubicin and mRNA using polymeric nanoparticles for combination cancer therapy**
   Elina Tanskanen, *Convergence Science Centre MB-PhD Student*

6. **Optocompete: Illuminating Cell Competition One Cell at a Time**
   Julian Boecker, *Convergence Science Centre MB-PhD Student*

7. **Towards the development of an explant-in-chip platform for intravascular perfusion of tumour biopsies ex vivo and immune cell motility tracking ex vivo**
   Saverio Charalambous, *Convergence Science Centre Non-Clinical PhD Student*

8. **In Vivo Differentiation of Tissue Using Diffuse Reflectance Spectroscopy in Upper Gastrointestinal Cancer Surgery**
   Maxime Giot, *Convergence Science Centre MB-PhD Student*

9. **Deep Learning Assisted Analyses of T-Cell Distribution in Prostate Cancer, STING, and Chemoattraction to Tumour-Stromal Boundaries**
   Bora Gurel, *Institute of Cancer Research, Drug Development Unit*

10. **Integrative AI-Based Digital Pathology and Immune Multi-Omics for Colitis-Associated Cancer Risk Prediction**
    Konstantin Braeutigam, *Institute of Cancer Research, Division of Cancer Biology*

11. **FRAME: An academic Clinical trial of Defactinib and Avutometinib combination. Advancing innovative ideas into better patient outcomes.**
    Dr Mona Parmar, *Institute of Cancer Research, Drug Development Unit*

12. **New Smart Bioresorbable Materials and Devices for Safer Minimally Invasive Tumour Ablation Procedures**
    Emiliano Bilotti, *Department of Aeronautics* and Ed Johnston, *Royal Marsden Hospital*