Acting as the meeting point between academia and industry, Cancer Research Technology provides routes to commercialisation, speeding up the development and translation of cancer research into the clinic. Keith Blundy highlights CRT’s unique characteristics.
Can you set the scene with a synopsis of Cancer Research Technology (CRT)’s history? When and why was the organisation created?

CRT is the development and commercialisation arm of the charity Cancer Research UK. It aims to develop new discoveries in cancer research for the benefit of cancer patients and has exclusive rights to intellectual property (IP) derived from Cancer Research UK-funded science.

The company was formed in 2002, at the same time as the Imperial Cancer Research Fund and Cancer Research Campaign were merging to form Cancer Research UK. Combining the strengths and employees of its predecessor technology transfer companies, Cancer Research Campaign Technology, Cancer Research Ventures and Imperial Cancer Research Technology, CRT’s track record goes back much further.

The idea was to form a company, wholly owned by Cancer Research UK, that would progress discoveries made by the charity’s extensive network of scientists by attracting potential investors and collaborators with the necessary expertise and resources to help deliver new treatments to cancer patients. We’ve been hugely successful in achieving this, with an active portfolio of projects available for licensing and co-development, more than 30 partnered agents in preclinical and clinical development, and three drugs currently on the market and benefiting patients.

What is your involvement with CRT and how did you first become interested in the company?

I decided quite early in my career that genetics was the area that was key to the future understanding of biology. But I also always wanted to do something that applied research findings into real use. After graduating in genetics, I embarked on a PhD using transgenics to understand gene regulation in crops and continued in this field for 10-15 years. I then moved into a business development role within a small company called Advanced Technologies Cambridge. This gave me the grounding in managing collaborative research and dealing with IP, through a commercial scientific organisation, that I needed to make the jump to Cancer Research Campaign Technology, as it was then known. Seventeen years later, after considerable growth and evolution of the business, I’m still here. The main thing that attracted me to the technology transfer space was the cutting-edge nature of the science and the sheer variety of research going on in cancer. Discovering and applying new things has always been a real source of inspiration for me.

Can you discuss CRT’s role as a central organisation in the Cancer Research UK network?

Its role is to advance discoveries to beat cancer. We work closely with Cancer Research UK-funded scientists to identify the most promising research projects to take forward for development. We then provide necessary access to funding, technology or infrastructure, and the specialist expertise needed to help get potential new cancer treatments and diagnostics to patients.

A large aspect of this work involves identifying the best commercial partner to take a new treatment forward for patients – someone with the right expertise, but also with a shared commitment to see things through and further the development of the discovery towards the clinic. As part of the deal, we ensure that all parties get a fair share of any commercial revenues. Any profit generated by CRT is returned to Cancer Research UK to invest in further research.

What unmet needs in cancer does CRT seek to address?

CRT shares a vision with its parent organisation, Cancer Research UK, to accelerate progress into treating cancer, ultimately leading to three-quarters of patients surviving the disease within the next 20 years. In the 1970s, just one in four people survived. Today, that figure is two in four.
To achieve these ambitious targets, Cancer Research UK is seeking to develop effective partnerships, encourage collaborative approaches and foster more efficient development of products for cancer patients. CRT’s primary focus is to support Cancer Research UK in the implementation of this strategy.

Can you give an insight into some of the company’s innovative initiatives to this end?

CRT is focused on accelerating the translation of research into patient benefit through early stage development. For example, we’re currently working with UK company Abcodia to discover biomarkers for the early detection and screening of cancer. The company owns commercial rights to a biobank of more than 5 million serum samples, collected from women as part of the UK Collaborative Trial of Ovarian Cancer Screening (UKCTOCS), which Cancer Research UK helped to fund.

We’ve also established a joint lab in Cambridge with MedImmune, the global biologics R&D arm of AstraZeneca, to carry out discovery of antibody-based cancer treatments. The agreement brings together MedImmune’s renowned antibody technology with Cancer Research UK’s cancer biology expertise. Researchers from both organisations will work side by side in the newly established laboratory in what is a first-of-its-kind partnership for both organisations. By joining forces in this way, we expect to speed up development and translation into the clinic.

The CRT Pioneer Fund – a £70 million specialist fund established by CRT, the European Investment Fund and the Battle Against Cancer Investment Trust Limited (BACIT) – is focused on investing in oncology assets to take them from lead optimisation through to entry to Phase II clinical trials, thereby plugging a gap in the UK funding of drug discovery. It’s a truly innovative way of funding drug discovery that we hope will result in more drugs getting to patients sooner.

With 30 years’ specialist experience in the commercialisation of cancer research, where do CRT’s key strengths lie?

There are three characteristics that make CRT unique. Firstly, we’re entirely focused on cancer. Secondly, we have access to a huge pipeline of research here in the UK (Cancer Research UK funds over £350 million of cancer research each year, making it the largest charitable funder of cancer research in the world) – and all of that flows through CRT. Thirdly, we have access to development and translational infrastructure that enables us to remove some of the early risk before working in partnership with industry.

We’re uniquely placed to capitalise on the research and connections of our parent organisation, Cancer Research UK, and the strong links we’ve established with leading clinical and academic institutions, pharmaceutical companies and biotechs worldwide. Crucially, this gives us specialist understanding of both the academic and industry perspective, and the ability to facilitate productive, mutually beneficial partnerships.

What have been some of the organisation’s most successful innovations?

Drugs developed from Cancer Research UK science have extended or improved the lives of thousands of cancer patients, and also raised vital funds to support more research. A shining example of this is temozolomide, a drug developed by Cancer Research UK scientists throughout the 1970s and 1980s that today is used worldwide to treat the most common type of adult brain cancer, glioblastoma, and several other types.

Following successful phase II trials of the drug, CRT brokered the deal with pharmaceutical company Schering-Plough (now merged with Merck)

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A STRATEGY FOR SUCCESS

Cancer Research UK’s research strategy, launched last year, sets out priority areas for the next several years

1. Substantially increase investment to support earlier diagnosis of cancer
2. Increase investment in lung, pancreatic, oesophageal cancers and brain tumours two- to threefold over the next five years
3. Continue to discover and develop new therapeutics, surgery, and radiotherapy treatments, including increased investment in biological therapies
4. Increase investment in prevention research, including a new centre to support long-term reduction in cancer incidence and continued work on tobacco control
5. Optimise the chance of survival for every individual, through precision medicine approaches.
to fund a series of trials that led to the approval of temozolomide for use on the National Health Service (NHS) in the UK and in other countries.

Almost 20 years ago, Cancer Research UK-funded scientist Professor Steve Jackson, and his team in Cambridge, began research to find drugs to block DNA repair pathways, including PARP. Working with Cancer Research UK and the University of Cambridge, CRT set up a spin-out company, KuDOS Pharmaceuticals, which discovered and developed promising DNA repair inhibitors.

In 2005, researchers at the Institute of Cancer Research (part-funded by Cancer Research UK) showed that PARP inhibitors which block DNA repair pathways could destroy cancer cells with faulty BRCA1 or BRCA2. AstraZeneca bought KuDOS in 2006, based on the promise that PARP inhibitors showed in the lab and took olaparib into clinical trials for various types of cancer caused by faulty BRCA genes. A phase III trial proved the drug can improve survival for women with advanced ovarian cancer caused by BRCA gene faults.

How does CRT translate research into commercial propositions and, in turn, how does this benefit patients?

One of the most common routes to commercialisation is the grant of a licence to a commercial partner. CRT has a broad portfolio of cancer-focused projects available for licensing or co-development; we complete around 50 licensing or collaboration agreements each year.

In some cases, where technologies have a broad application, this may involve setting up a spin-out company. We’ve been involved in the formation of 24 start-ups, including KuDOS, Piramed and Spirogen, some of which have gone on to be acquired by leading pharmaceutical companies for further development.

We also collaborate directly with a diverse range of commercial and academic partners to carry out vital preclinical work in promising areas of research. As the innovative alliance models CRT has put in place with industry partners demonstrate, this increasingly means building strategic partnerships that extend beyond individual projects and assets.

Could you discuss CRT’s alliance model? How do CRT’s Discovery Laboratories (CRT-DL) forge alliances between industry and academia?

CRT-DL is the in-house drug discovery unit of CRT. Based at the Babraham Research Campus, Cambridge, and the London Bioscience Innovation Centre, the unit comprises over 70 staff from both industrial and academic backgrounds.

It has pioneered a model that brings together the best minds in basic and clinical cancer research, the rigour and drive of pharmaceutical and biotech companies, and CRT’s in-house drug discovery and alliance management capabilities to deliver breakthrough medicines for cancer patients. In recent years, we have established successful alliances with AstraZeneca, Teva Pharmaceuticals and FORMA Therapeutics.

With whom does the organisation collaborate to achieve success?

CRT has established major partnerships with most of the world’s leading pharmaceutical and biotechnology companies. We’ve recently joined forces with Astellas Pharma Inc. to conduct a two-year research programme in the UK to find promising new drug targets that block the autophagy pathway in pancreatic cancer cells. This is the first collaboration of this kind between Cancer Research UK, CRT and a Japanese pharmaceutical company.

Where will CRT’s focus lie in the next five to 10 years?

Our ongoing focus is to ensure CRT’s development and commercialisation activities help drive delivery of the new Cancer Research UK research strategy in bold, innovative and effective ways. CRT exists to work in partnership with CRUK to identify innovative scientific and business solutions to unmet needs in cancer. We will continue to establish initiatives such as the CRUK-MEDI Alliance Laboratory and CRT Pioneer Fund, to deliver on this purpose.

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