Welcome to our latest newsletter. Read on to discover how to get the most out of R&D grants and how our academic collaborations are helping us accelerate the development of next-generation antibody-based therapeutics. Plus, we're moving into East Asia with a new partnership with South Korean biotech Wellmarker Bio.

Creating the next generation of immunotherapies

Immunotherapy has transformed the cancer treatment landscape in recent years, harnessing the power of the immune system to target cancer cells. However, checkpoint inhibitor drugs don't work for all patients, so the hunt is on for more targeted and personalised therapies that directly engage immune cells with cancer cells.

We've teamed up with Professor Martin Dyer's lab at the Ernest and Helen Scott Haematological Research Institute at the University of Leicester to develop novel immunotherapies for blood cancers such as multiple myeloma and diffuse large B cell lymphoma (DLBCL), potentially offering a new approach for patients with refractory cancers who have been through many rounds of treatment.

During the first year of the project, our team at Isogenica will be identifying and optimising VHH antibodies that recognise a tumour-associated antigen that is specifically expressed by a subset of B cells and upregulated in lymphoma. This will then be linked to an immune cell engager, creating a bi-specific antibody that directly brings cancer cells together with T cells to destroy them.

Next, these engineered molecules will then go forward for preclinical testing in the lab at Leicester, taking advantage of their impressive bank of lymphoma cell lines and patient samples to de-risk the drug development process and speed the journey to the clinic.

Lead researcher on the collaboration is PhD student Tash Spena, who is supported by an MRC iCASE award.

"I'm excited by the idea of being able to take this molecule from discovery all the way through to functional preclinical testing, which isn't something you might get to do in a typical PhD project. It's also a great opportunity to gain more skills than I might do in an academic lab, learning from all the molecular biology expertise at Isogenica that I wouldn't otherwise have access to." *Tash Spena*

Read about the Leicester team's first visit to Isogenica

Accelerating antibody discovery with machine learning

Advances in computing and data science, such as machine learning (ML) and artificial intelligence (AI), are transforming all aspects of bioscience research and drug development. But while ML has been applied to many aspects of understanding protein structures - such as DeepMind's AlphaFold algorithm - and in the design of proteins, enzymes and large antibodies, there's been relatively little progress so far in applying ML tools to smaller, nimbler VHH antibodies.

To fill this gap, we've teamed up with academic researchers at the University of Nottingham and Aston University to apply ML tools to our own way of working through a new knowledge transfer partnership (KTP), funded by UKRI through Innovate UK. KTPs aim to help businesses improve their competitiveness and productivity through the better use of knowledge, technology and skills within the UK knowledge economy.

The implementation of these technologies is being led by molecular biologist Dr Ben Wagstaffe, who joins us from the University of Nottingham. He previously gained his PhD working in Dr Anna Hine's group at Aston University who helped develop the Colibra™ technology used in our early antibody libraries.

Ben will be connecting his academic colleagues together with our antibody discovery and engineering experts to apply ML tools across our VHH antibody discovery and engineering pipeline to speed up and improve the ways in which we discover and optimise antibodies for biotherapeutic use.

It's still early days for this project, but we're excited to see how it unfolds over the coming

years.

"By the time I retire, machine learning and AI will have transformed the whole of biology. We'll be much more efficient, using our computing tools to generate new ideas and hypotheses that can be tested quickly in the lab, rather than relying on 'wet' research for discovery, getting us to effective solutions and new treatments faster than ever before." Dr Ben Wagstaffe

Want to learn more? Read "A guide to machine learning for biologists"

Top tips: Get the most out of R&D grants

Our academic collaborations were made possible thanks to Government R&D grants. If you're interested in learning more about the pros and cons of these kinds of funding incentives, check out this post from our Director of Business Development Dave Mead with the top takeaways from his recent OneNucleus BioWednesday panel event.

Are Government R&D incentives worth it?

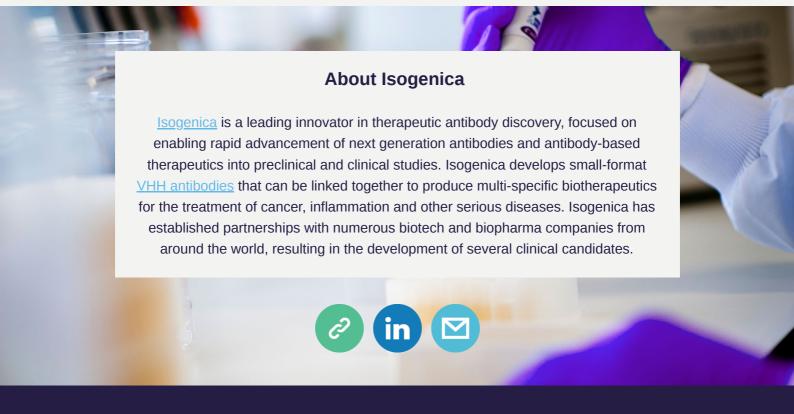*Dr Bill Eldridge, CEO of Isogenica, and Professor Dong-Hoon Jin, CEO of WMBIO, with the signed MoU*

Meet our new partners, Wellmarker Bio

We're delighted to announce a new partnership with Wellmarker Bio, an innovative South Korean clinical stage biotechnology company that is developing first-in-class drugs for unmet medical needs based on predictive biomarkers. This collaboration marks a milestone for us as we begin to partner with like-minded and ambitious companies in East Asia.

Looking for an antibody discovery partner for your next biotherapeutic? Get in touch

for a chat with our expert team about how our VHH antibodies and library display technology can support your drug development pipeline.

Contact us

About Isogenica

Isogenica is a leading innovator in therapeutic antibody discovery, focused on enabling rapid advancement of next generation antibodies and antibody-based therapeutics into preclinical and clinical studies. Isogenica develops small-format VHH antibodies that can be linked together to produce multi-specific biotherapeutics for the treatment of cancer, inflammation and other serious diseases. Isogenica has established partnerships with numerous biotech and biopharma companies from around the world, resulting in the development of several clinical candidates.