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UK's T-Therapeutics Raises Almost $60m Despite Tough Funding Environment

by Kevin Grogan

CEO Allan Bradley tells *Scrip* that “we're at the very beginning of what I believe will be an explosion of TCR-based therapeutics” and his start-up hopes to take a leading position.

The biotech sector may be in the middle of a rough patch when it comes to financing but a start-up from Allan Bradley’s laboratory at Cambridge University called T-Therapeutics, which has the ambitious goal of making T-cell receptor (TCR) biologics a reality, has managed to raise a very impressive sum.

The world-renowned expert in the monoclonal antibody and mouse engineering fields has unveiled a £48m ($59m) series A financing led by Sofinnova Partners, F-Prime Capital, Digitalis Ventures and Cambridge Innovation Capital (CIC) with participation from Sanofi Ventures and the University of Cambridge Venture Fund. Bradley told *Scrip* that it was a major boost to have attracted interest from such a blue-chip syndicate, saying that “they're fantastic investors, they want the company to be successful and they're willing to back us with significant amounts of capital.”

The proceeds will be used to discover and develop novel TCR therapeutics initially for cancer indications. The space is in its infancy and only one treatment based on TCR technology has been approved, namely *Immunocore, Ltd.*’s Kimmtrak (tebentafusp), a gp100xCD3 bispecific T-cell engager which is on the market for the treatment of unresectable/metastatic uveal melanoma, a rare cancer of the eye. (Also see "*A Bright Spot In Biotech’s Tough Year, Immunocore Looks To Build On Kimmtrak Success*" - Scrip, 21 Dec, 2022.)

Claiming that “we're at the very beginning of what I believe will be an explosion of TCR-based therapeutics,” Bradley noted that Immunocore “pioneered this whole concept and came up with this amazing drug that they spent 15 years or so taking from concept to approval.” However, he said the problem Immunocore, Immatics and other companies in the area have had is that “the

TCRs they have been using come from humans and [human] T-cells are educated not to recognize these antigens. They have to evolve it into something that can recognize 'self,' so there's a lot of protein engineering that goes with that process and it's a difficult journey."

Now, "you can make the journey much easier and that's essentially what our company has done by moving that whole TCR repertoire into the mouse," Bradley said. T-Therapeutics has developed a proprietary transgenic mouse platform, called OpTiMus, which creates an almost unlimited repertoire of 'optimal' TCRs as building blocks for potential therapies.

The normal human repertoire "doesn't have the type of TCRs that you need to kill a cancer cell, that's the bottom line. But the mouse is able to do that because it's a foreign peptide," he added. OpTiMus addresses the limitations of current TCR therapies which only apply to certain cancers and lack specificity, leading to significant side effects, the company stated.

"We've been working on it for 10 years and you could say we're just slow but actually, the reason is that the mouse is really complicated," Bradley said. "It has something like 50 different genome engineering activities on it. In terms of human sequences, it's got the equivalent of two volumes of *Lord of the Rings* if you printed out the AGCTs [the four types of bases found in DNA: adenine, cytosine, guanine and thymine] and we've not damaged the mouse in any way."

He added, "We've hired a very experienced team and many have come from my former companies *Kymab Ltd.* (sold to *Sanofi* in 2021 for $1.45bn) and PetMedix (acquired by animal health giant Zoetis in September this year). They know what they're doing and they're looking to do it again. We have a very ambitious goal to be a clinical company within two years."

The series A funding was designed to get T-Therapeutics into the clinic within a relatively short period of time, and "we're building a pipeline, it's not just a single asset company," Bradley said, noting that the firm will also develop medicines which address various autoimmune disorders. He added that the space reminded him of "the early days of the antibody field of 30 years ago," saying that "the opportunity is larger, because, essentially it gives access to every target that's expressed in a cell. Antibodies are limited to the surface of the cell."

Bradley has decided to close his lab in Cambridge as he takes on the CEO role at T-Therapeutics "but I'm still very close to the science." Previously, he spent a decade as director of the Wellcome Sanger Institute (from 2000 to 2010), "where I was effectively CEO so I've done this kind of role before but with a large budget," he quipped. "If you have the right people around, you can play both roles but I've got to keep the investors happy and hopefully attract more investment going forwards."

As for the series A, he said that "it's a big investment for a UK company and I'm proud of the momentum and ambition of it."