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UCT spearheads new technologies for life-saving cancer treatment

The University of Cape Town (UCT) has acquired a portfolio of key life sciences patents to develop innovative treatments for human cancers.

This cancer biotechnology research follows the recent appointment of Professor Stefan Barth as the Department of Science and Technology/National Research Foundation's South African Research Chair (SARChI) in Cancer Biotechnology at UCT.

As part of this role, Professor Barth established the UCT Medical Biotechnology and Immunotherapy (MB&I) research group, which focuses on developing targeted approaches to diagnose and treat different diseases using antibodies, proteins produced by the immune system. This field of immunotherapy is pioneering cancer therapies with fewer and less severe side effects, and less toxicity than traditional therapies.

Since its establishment and accreditation as a university-recognised research unit in 2018, MB&I's research focus has been on using antibodies as diagnostic and therapeutic tools for certain cancers. Because antibodies bind specifically to foreign targets as a means of allowing the immune system to flush them out, they can – in practice and when harnessed correctly – be used to detect tumour cells.

Taking this concept a step further: the same antibody can be used to deliver a therapeutic substance directly to these cells, once it has been developed successfully as a diagnostic tool that binds to tumour but not normal cells. By targeting only diseased cells, this kind of personalised treatment could limit – or eliminate – damage to healthy cells, which is common with more conventional therapies. This will reduce negative side effects in cancer patients.

"The patents we've acquired allow us to generate fusion proteins for treating human cancers," says Professor Barth. "They are very valuable and provide a good basis for continuing our research."

Getting these types of life-saving inventions out of the lab to the market can be costly and very time-consuming. Since potential investors and joint venture partners may be hesitant about lengthy decision-making, they sometimes prefer to engage with a private company rather than a research institution.

He says while researching the higher education system in South Africa, he recognised that a massive number of skilled scientists are being produced, but that after three or four years of post-doctoral funding, employment opportunities for them are few and far between. He sees the pipeline agreement between UCT and CURIT Biotech South Africa, a company he co-founded as a key component of addressing this problem for his own research group.

“To be able translate products into application at this early stage, we would aim to get private sector funding for CURIT Biotech South Africa and then subcontract selected projects to MB&I as the research and development unit taking care of this,” Professor Barth explains.

Ultimately, Professor Barth's hope is that the MB&I will become a space where scarce skills are not only developed but also retained through developing internationally competitive intellectual property on antibody technologies that can be translated into financially viable products both nationally and worldwide.

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