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# CANCER

Cancer-fighting biotech **TELIX PHARMACEUTICALS** hopes to become a household name in healthcare, as the company builds on the success of its prostate cancer imaging tool and works on new products for kidney and brain cancer.

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Christian Behrenbruch

**C**HRISTIAN BEHRENBRUCH was outraged. That's what started it all. The then 26-year-old PhD candidate from Melbourne was at a routine lab meeting at Oxford when it was mentioned that the lab was dropping a bunch of patents it owned.

He couldn't get his head around it. "We'd developed these amazing technologies that would allow the early diagnosis of breast cancer, and nobody was interested: not the medical imaging companies nor the med-tech companies. I found that deeply offensive."

It wasn't like Behrenbruch had made an enormous contribution to the inventions himself. After graduating in engineering at Monash, he'd gone to Oxford on a scholarship

and was pursuing a biomedical engineering PhD – attempting to understand which breast cancer patients would benefit most from which treatments. But the Canadian-born student knew enough to know the enormous potential of the lab's imaging technology.

His supervisor had already told him his future was not in academia. But he was a good collaborator and bringing large projects to life.

"I was so outraged that the core intellectual contribution of the lab was just going to wither on the vine, that we started a company and optioned the patents for a pound," Behrenbruch says.

Behrenbruch found himself CEO of the fledgling Mirada Medical while still in his second year of grad school, making him the boss of his professor and others from the lab. "We raised venture capital, did

clinical trials, and got an FDA approval for our nuclear-medicine radiology product." Mirada grew to 100 people, and they sold after a couple of years. "We all got great paydays, so you think, 'Well, I must be good.' Then you realise you just got lucky." But the spark was there. "In the following two decades, I've been involved in starting a bunch of healthcare companies, some successful, some not."

The most recent of those, Telix Ltd, sits on the positive side of that ledger. Since floating in 2017 at 65 cents a share, the company has risen to around \$9 a share and a market capitalisation of \$3.5 billion. Behrenbruch owns 24 million shares.

In the last year, Telix has found itself swimming in an enormous cashflow, running at an annualised \$500 million, propelled by just one product, Illuccix, a diagnostic that uses a molecule – a monoclonal antibody – loaded with radiation to find prostate cancer anywhere in the body.

But what allows Behrenbruch to say with a straight face that he wants Telix to be the next CSL [market cap \$116 billion] is that there are two more diagnostic tools just like it in the pipeline and then three more products further off that won't just be using the same acutely targeted nuclear medicine to find cancers, but – Phase-2-and-3 trials willing – to destroy them. Those treatments are aimed at prostate cancer, kidney cancer and the most common and aggressive form of brain cancer, glioblastoma.

And while its diagnostic prostate product, Illuccix – available in Australia since September 2022 – sells in the US for about US\$5,000 a pop, if they can get the related therapeutic treatment into the market, it will likely go for about 30 times that amount. It has commenced a Phase-3 trial. Behrenbruch's straight face might almost be breaking into a smile.

#### THE SNOWBALL

Behrenbruch was born in Canada in 1975. His father was in the oil industry, so the family moved around the world until they put down roots in Melbourne when Behrenbruch was in his mid-teens. After Mirada, he lived in the US where more start-ups followed. He returned to Melbourne in 2015 and became interested in technologies that attached radioactive isotopes to molecules that sought out cancer cells for the radiation to hitch a ride directly to where it was wanted.

Such technologies weren't new. Radioactive iodine had been used to target thyroid cancer since 1942, but lacking such precise transport vehicles for other cancers, the larger field had been ignored.

The other significant impediment for such radiopharmaceuticals to scale was their requirement for the radioactive material to go from a reactor to a patient's arm in a couple of hours before the radioactive material decayed. "If you can't deliver a product to a customer anywhere in the world, every single day, you don't really have a product," says Behrenbruch.

With the industry uninterested in the field, research had been sustained by a few key academics around the world, such as the University of Melbourne's Professor Rod Hicks, who keenly felt the lack of enthusiasm for his passion. "Radionuclide therapy was often

seen as the treatment of last resort," says Hicks. "It required an admission of failure by the medical oncologist. 'I've got nothing more to offer you. Go off and see this guy in the basement,' where nuclear medicine normally is." Even if the patient improved – and they often did – the oncologists rarely saw it, Hicks said.

But Behrenbruch sensed that the field was evolving. Thanks to government investment in the Australian Nuclear Science and Technology Organisation (ANSTO), Australia was reaching supply-chain maturity. Speciality transport companies appeared capable of moving nuclear material around. Clinics were geared up to receive it. "It's a snowball effect. It started with a few little clinical trials. 'Wow! This lutetium 177 stuff works great.' Then, that triggers interest in investing in the infrastructure, which results in more clinical data that becomes this kind of virtuous cycle. We have thousands of clinical trials running globally because that infrastructure has been built."

In Germany, Andreas Kluge had been thinking the same thing. Kluge had been a hospital neurologist who hated the night shift and switched to research. "Due to my big mouth, I was fired after two years," he says, "which afforded me a very big golden handshake which allowed me to found ABX advanced biochemical. Today, it's the leading manufacturer of radiopharmaceutical precursor compounds with 500 employees, based near Dresden."



Andreas Kluge

**"IT WAS AN UNDER-INVESTED SPACE, SO THE COST OF LICENSING IP WAS NOT VERY HIGH."**

KLUGE felt that traditional drug companies would not/could not understand radiopharmaceuticals. There'd already been failures, so nobody would touch it. Kluge was also working on a specific radiopharmaceutical for the aggressive and common brain cancer, glioblastoma, looking for ways to take it forward without selling the IP to a major who, he was sure, would likely shelve it.

A colleague and customer, Professor Jean-Francois Chatal, told him that Behrenbruch was looking to start a company doing just that sort of thing. "That is how we fell, let's say, in love, professionally," says Kluge. "We share the vision that this is the potential for an entirely new industry." They formed Telix in December 2015. "We spent a year and a half shopping around and building a portfolio of assets that we

thought were interesting," says Behrenbruch. "Andreas and I paid for everything. It was an under-invested space, so the cost of licensing IP was not very high."

Australia's competitive edge in the field, Behrenbruch could see, was that the Therapeutic Goods Administration did not control the field as stiffly as the FDA in the US, allowing physicians to lead the research, driving innovation.

For example, they found the work of associate professor Paul Donnelly at the University of Melbourne's Bio21 Institute. Donnelly had found a better way to tag cancer antibodies with a radioactive trace so they could go on their search-or-destroy missions. Telix licensed his tech, though Donnelly has since founded rival Clarity Radiopharmaceuticals Ltd [market cap \$267 million].

They continued to self-fund, Behrenbruch says, until they got to the point of making drugs, when "it starts to stretch household

budgets and marriages". He tried to raise money in the US. "But at the time, there just wasn't the institutional investor appetite for radio-pharma. Today, it's super-hot. I turn up at an investor forum in New York, and it's like I'm the belle of the ball."

Former Macquarie Group and Origin Energy chair Kevin McCann got a phone call from his former Macquarie Group colleague Allan Moss, who said he'd invested in Telix and they were looking for a chair to take them through an IPO. Would he be interested?

McCann was cautious about throwing his lot in with a start-up. "You do have a brand," he says. He met with Kluge and Behrenbruch and did his due diligence, meeting with auditors and the proposed CFO and travelled to Melbourne to meet key academics in the field.

"I had to satisfy myself that these people were what they said they were," McCann said. A lawyer by training, McCann knew little about the field but was reassured by mentoring by another investor, Caledonia's Mark Nelson, who has a PhD in pharmacology.

Through all this, he started to draw conclusions about Behrenbruch. "He didn't come across as a person motivated by profit. He wanted to help patients and clinicians."

Telix raised \$8.5 million in seed capital in January 2017, then floated on the ASX in November of that year, selling 77 million shares at 65 cents, raising \$50 million and giving the company a market capitalisation of \$128 million. Its success was "unheard of", says Kluge, "and certainly had to do with very favourable conditions of the Australian finance environment due to the mechanics of your superannuation system."

## KIDNEY PUNCH

Dr Brian Shuch, director of UCLA's kidney cancer program, ran the Phase-3 study into Telix's kidney cancer diagnostic, Girentuximab, published in February. He told a Telix investor meeting it was "one of the most exciting advances we've had in the field for a very long time".

There were 70,000 to 80,000 diagnoses of malignant kidney cancers every year in the US, Shuch says, but after the patient's kidney had been removed, 20% to 30% of those tumours were found to be harmless. "I can tell you; urologists hate taking out kidneys and then finding out the tumour was benign. It's a punch in the guts for the surgeon, and it's worse for the patient." One in 500 dies from the procedure.

His study enrolled 300 patients about to have cancerous kidneys removed. Before surgery, they were given Girentuximab and then scanned. The sliced-and-diced kidneys could then be compared to the radiographers' predictions. "It crushed any prior imaging metrics ever performed," Shuch said. They identified the cancer with 87% specificity in larger and 90% in smaller cancers.

Drug trials for diagnostics are quick and easy to run. Unlike therapeutics, you're not waiting three years to see who dies. This, Behrenbruch says, was the Telix strategy: punch out a bunch of diagnostic tools and use that cash flow to pay for the longer-term therapeutic studies.

Because it's the same antibodies carrying the same nuclear material to the same target, it's just a higher dose of radiation that differentiates between a diagnostic and a therapeutic. That's why the field has coined the word "theranostics" to embrace this class of drugs.

"IF WE DO WELL BY PATIENTS, THE SHARE PRICE WILL TAKE CARE OF ITSELF."

## THE TELIX TEA LEAVES

Telix's share price doubled between February and June - peaking at \$12.79 and a market cap of \$4 billion - when Illuccix started to bring in hard sales numbers annualised to about \$500 million. The most recent quarterly revenue numbers were \$133 million, down about 5% on analyst predictions.

At the same time, the results of the prostate cancer therapeutic Phase-1 trial were published. Ostensibly positive, the results appear not to have been positive enough, and the stock fell below \$9, shrinking the market cap to \$2.75 billion but leaving it as the fourth largest radiopharmaceuticals player in the world by market cap - behind Novartis, Bayer and US firm Lantheus.

**PROFESSOR HICKS** - a scientific advisor to Telix and a shareholder - said the market had misunderstood the purpose of the Phase-1 trial. "I was not discouraged by the study results. I don't presume to understand what happens with the share market. The trial's purpose was to look at safety, not effectiveness. Perhaps because the market was looking for a signal of outcomes rather than a safety profile, it was seen as underwhelming."

Nevertheless, stock watchers have continued to rate Telix a "buy". Investment company Jarden has a price target of \$12.99, while Bell Potter and UBS have \$14 targets.

The head of healthcare equity research at Jefferies, David Stanton, has followed Telix since 2020 and remains optimistic. "They've done pretty much everything they said they would do. They said they were going to get this Illuccix drug onto the market. They got that. They said we would do these clinical trials in a kidney diagnostic, TLX250-CDx [Girentuximab]. They've done the Phase-3 clinical trial. It was a good result. They've said they're going to progress this prostate cancer therapy drug, and they've done that." Jefferies has Telix's price target at \$14.80.

Behrenbruch tries to ignore the stock price as much as possible but knows he must pay it some regard. "I try to look at it once a week, on my second glass of wine on a Friday night." He soaks up the abusive comments on the forums. "That's how I like to end my week. It's almost my CEO obligation to tell you the company is woefully underpriced. We'll continue to grow revenues for the next few years, and we've got lots of follow-on products that are fully cooked. We know they work. We just have to continue to execute well; if we do well by patients, the share price will take care of itself."

The sector remains out of favour. The Nasdaq biotechnology index is still down about 25% on its September 2021 high. "It's so fickle," says Behrenbruch. "Just out of a pandemic where the biopharmaceutical industry saved millions of lives, you'd think that alone would establish it as a credible asset class."

He says that far from being speculatively financed like many in the field, Telix was earning enough to pump \$100 million a year into R&D - which is not being valued into the share price. "What's changed for us over the last 12 months is about 25% of our register are now US investors - typically sophisticated biotech investors. They're taking the bet the market will wake up and realise the pipeline we have - which is not contributing to our market cap today - will get unlocked," he says.

He's never gone after the mum and dad investors, he says. Biotech is too risky. It needs to be de-risked by institutional investors first. But he feels Telix has entered a new phase. "I've got friends and family who hold Telix stock, and it bothers me less now."

