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Daily news on ASX-listed biotechnology companies

Dr Boreham's Crucible: Radiopharm Theranostics

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ASX code: RAD

Share price: 3.8 cents

Shares on issue (pre $70m capital raising)**:** 460,367,051

Market cap: $17.5 million

Chief executive officer: Riccardo Canevari

Board: Paul Hopper (executive chair), Mr Canevari, Ian Turner, Hester Larkin, Dr Leila Alland, Phillip Hains

Financials (March 2024 quarter): receipts $291,000, operating cash outflows $4.2 million, cash balance $2.93 million (ahead of circa $70 million capital raising)

Identifiable major holders: (post-capital raising) Paul Hopper 7.8%, Lantheus emerges as 6.9 percent shareholder with options to increase to 19.9 percent.

Is the 'Telix glow' finally starting to illuminate its ASX-listed peers?

We're referring of course to the stupendous success of radio-pharmacy play Telix Pharmaceuticals, which now bears a $6 billion-plus market valuation on the back of its approved prostate cancer imaging agent.

Shares in the down-in-the-dumps Clarity Pharmaceuticals started moving six months ago and last week it was the now cashed-up Radiopharm Theranostics' turn.

The catalyst for Radiopharm's Tuesday's share jump of up to 35 percent was the announcement that the company would raise $70 million of capital, by way of a $62.5 million institutional placement and an initial $7.5 million strategic investment from Nasdaq-listed radio imaging giant Lantheus Holdings.

Lantheus also relieves Radiopharm of two pre-clinical assets for another $3 million.

Put in context, the 1.7 billion extra shares boosts Radiopharm's shares on issue by 372 percent, but happily the deal was struck at a premium to the prevailing price. Lantheus emerges with a 6.9 percent undiluted stake, but has the option to climb to 19.9 percent later on by way of $7.5 million of unlisted options and listed options on top of that.

A recent precedent bodes well: In January this year, Lantheus took a $US33 million, 19.9 percent stake in US radio-pharmacy peer Perspective Therapeutics, with Perspective shares since climbing 150 percent.

About Radiopharm

Radiopharm operates in nuclear medicine, which is about combining a molecule and an isotope to form a radioactive tracer which is then detected by scans such as positron emission tomography (PET).

Radiopharm has programs covering the use of several different isotopes with agents to target cancer biomarkers including PDL-1, HER-2, the integrin alpha V beta 6 peptide (AVB6) and the fatty acid synthase.

A creation of biotech entrepreneur Paul Hopper, Radiopharm listed on the ASX in November 2021, with assets acquired from Imperial College London, New York's Sloan Kettering Memorial Hospital and the Technical University of Munich.

Radiopharm has tweaked targeting agents and isotopes to address multiple indications, notably brain cancer, non-small cell lung cancer and breast, gastric and pancreatic cancers.

"The thinking was to do something different in the space … and bring innovation to the market," CEO Riccardo Canevari says.

Complementing the company's own programs, two years ago Radiopharm formed a private joint venture with the Texas-based MD Anderson Cancer Center (MDACC) to in-licence MDACC technologies. Radiopharm owns 51 percent of the JV with the first program in pre-clinical stage, a molecule targeting B7H3 in multiple cancers.

Mixing and matching

The 'theranostics' in the company's name refers to developing both diagnostic and therapeutic radiopharmaceuticals for cancer. The diagnostic leg involves the use of low-energy radio-isotopes to allow physicians to 'see' and measure tumors.

The treatment bit involves high-energy particles. The process involves attaching a low-energy radioactive isotope to a targeting agent, such as a small molecule or antibody.

“With the same molecule using different isotopes you can have an imaging agent to detect where the tumor is – both large tumors and small metastases,” Mr Canaveri says.

“Then you switch isotopes to get the therapeutic model going to the same place the imaging agent went.”

Targeting the brain

Radiopharm’s most advanced program, RAD-101, aims to develop an imaging tool for brain metastases. It involves using the isotope F18 (not the fighter jet) and combining it with a radio-tracer called pivalate.

The target is the fatty acid synthase, which is overexpressed in cancerous brain cells but not healthy ones.

In 2022, the company reported positive results of a phase II imaging trial involving 17 patients (11 of them treatment-naïve). The gist was that the injected radiotracers migrated to the tumors effectively, which is crucial for a targeted treatment that does not zap healthy cells.

The company has submitted an investigational new device (IND) application to the US Food and Drug Administration for a phase IIb trial, targeting 30 patients. A read-out is expected by July 2026.

But what problem is the company trying to resolve?

Mr Canaveri says the standard-of-care magnetic resonance imaging (MRI) scans work quite well for the initial assessment of brain metastases.

The trouble is, 70 percent of patients need treatment by way of stereotactic radiosurgery (radiation beams).

Post treatment, some tissue becomes necrotic - dead - and the MRI no longer can distinguish between the deceased area and the tumor.

The company believes its treatment can negate these problems.

Mr Canevari says there are about 300,000 new brain cancer patients in the US every year - a similar-sized market to prostate cancer and representing a $US1.25 billion-a-year addressable market.

On the competitive front, Italy’s Bracco Imaging is in phase III studies using Axumin, a previous prostate cancer imaging tool, for brain cancer imaging.

So, we guess RAD-101 just has to be more effective - and management is confident it will be.

Pretty RAD agenda

Based on the lutetium 177 (Lu-177) isotope, Radiopharm's RAD-204 program is for non-small cell lung cancers that express the PD-L1 target. A phase I therapeutic trial is enrolling 27 patients in multiple Australian locations.

This program centres on genetically-engineered antibodies called nano-mabs (monoclonal antibodies), which derive from a specific breed of camel (dromedaries, we believe, but don't get the hump if that's wrong).

Also deploying Lu-177, RAD-202 targeting HER-2, mainly for patients with breast or gastric cancer.

"We think we can start a trial in September and are putting together four or five clinical centres in Australia," Mr Canevari says.

With pancreatic cancer, the company has FDA orphan device indication for Trivehexin, a peptide deployed with either the gallium-68 or Lu-177 isotopes.

The imaging program, RAD301, uses gallium-68 to target AVB6, with a readout expected in late 2024.

A therapeutic program, RAD302 also targets AVB6, but with Lu-177. The next step is a phase I dose escalation trial, planned for early 2025.

RAD302 has potential for other caners including head and neck, lung and colorectal.

"We know a lot about the agent, because it was used in Germany on 66 patients before we licensed it," Mr Canevari says.

Mr Canevari says the open-label nature of the trials can communicate on aspects such as dose escalation.

"A phase I trial might take 14 to 16 months but it is not a black hole. We will keep informing the market on progress."

Don't get caught in traffic

Given the half-life of isotopes can be short, logistics play a key role in the production and supply of nuclear agents.

"You don't want your products to be stuck in a traffic jam," Mr Canevari concurs.

He adds that with demand for isotopes soaring, it's crucial to have a solid long-term supply contracts with the nuclear facilities producing the goodies.

In Australia the Australian Nuclear Science and Technology (ANSTO) provides the isotopes, while Isotopia and Shine Technologies do the honors in the Europe and the US respectively.

Finances and performance

The capital raising means the company is cashed up to the tune of $72.9 million and is well placed to execute its clinical programs.

Radiopharm on Tuesday said it had “firm commitments” to raise about $62.5 million in the placement at four cents a share, taking the total with the Lantheus placement to $70 million.

Lantheus also subscribes to unlisted options, exercisable at five cents that would raise another $7.5 million within six months.

The four cent shares are an 18 percent premium on the closing price of 3.4 cents on June 19; the five cent shares are at a meaty 47 percent premium.

Investors in the two-tranche placement will also receive one option for every four shares issued, exercisable at six cents each within two years. Are you keeping up?

Lantheus eventually can get to 19.9 percent by way of the placement shares and unlisted options, its options from the placement entitlement and then another swag of options - worth $2.24 million - if the placement options are exercised. Got it?

Given that only $23.9 million of the placement shares fall within the company’s existing placement capacity, a shareholders’ meeting will be held in early August to approve the remaining $46.1 million of shares and all options.

Subject to shareholder approval, Mr Hopper will invest $3 million in the placement.

Mr Canevari says the phase IIb brain cancer trial is likely to cost around $5 million.

“For phase III you would be looking at around $25 million, but that is still not a lot compared with a therapeutic trial that might need 600 patients.”

After a trading halt was lifted on Tuesday, Radiopharm shares climbed from 3.4 cents to as high as 4.6 cents.

Since listing the shares have traded between 36 cents (late December 2021) and last week’s low of three cents (ahead of the Lantheus news). The shares listed at 60 cents each, but lost one-third of their value on the day and never traded above the issue price.

Dr Boreham’s diagnosis:

Mr Canevari says the Lantheus investment is a “solid endorsement” of Radiopharm’s potential - and we’re sure Lantheus had plenty of other investment options.

As Great Aunt Dora used to say before receiving her yuletide gift of sherry: “You needn’t have!” before drinking it, anyway.

A key benefit of developing radio-imaging devices is that the proponents don't need to show their tool is better than the standard-of-care, but just as good in terms of detecting false positives and negatives.

That should bode well for near-term commercialization, but one has to be a nuclear scientist to appreciate the relative merits of the various agents and isotopes.

For glioblastoma, Lodge Partners estimates an addressable US market of 265,000 patients and an initial penetration of 10 percent. At an estimated treatment cost of $US4,730 per dose, that equates to a handy $US125 million.

Of course, rule number one of drug and device development is that market approval usually takes longer than expected.

Rule number two is that achieving market penetration takes longer than anticipated.

Rule number three is to be patient, in anticipation of rule number one and rule number two.

Disclosure: Dr Boreham is not a qualified medical practitioner and does not possess a doctorate of any sort. He is also no nuclear physicist but he knows the rules and is waiting patiently for his sherry.