



Biotech Daily

Friday May 13, 2022

Daily news on ASX-listed biotechnology companies

Dr Boreham's Crucible: Micro-X

By TIM BOREHAM

ASX code: MX1

Share price: 16.5 cents; **Shares on issue:** 461,454,266; **Market cap:** \$76.1 million

Chief executive officer: Peter Rowland

Board: David Knox (chair), Mr Rowland, Yasmin King, Dr Alexander Gosling, Jim McDowell, Patrick O'Brien

Financials (March quarter 2022): receipts \$2.06 million, revenue \$1.5 million, net cash outflows \$3.56m, cash of \$16.1 million, quarters of available funding: four.

Identifiable major holders: Perennial Value Management 14.6%, Tiga Trading-Thorney Investments 5.7%, Acorn Capital 5.3%, Australian Super 5.2% (Regal Funds Management held 5.6% but ceased to be a substantial holder on March 23, 2022.)

The Adelaide based innovator in lightweight and portable x-ray technology can't be accused of not doing its bit for the war effort in the Ukraine which - frankly - is looking like an old-fashioned battle between good and evil.

Micro-X is supplying its so-called Rover bedside imaging units to the US-based charity Revived Soldiers Ukraine. Developed at the request of the Australian Defence Force, these "ruggedized" battery-operated units are designed to be used in the field.

At 95 kilograms, the Rovers are much lighter than standard mobile x-ray units which weight between 350kg and 600kg.

At last count, 11 units had been shipped to the front line. Intriguingly, Revived Soldiers Ukraine is a well-established, registered US charity, having been set up in 2015 to provide medical and humanitarian assistance.

Suffice to say they really have their work cut out now ...

About Micro-X

Based on its patented cold cathode know-how, Micro-X is also pursuing airport security, stroke detection and explosives detection applications.

Micro-X's mobile medical x-ray device, the Carestream DRX Revolution Nano, is already approved in more than 30 countries, with 250 units sold to date.

Then there's the aforementioned Rover, for use in military applications such as mobile army hospitals.

Micro-X was founded in 2011, based on technology acquired from Xinray, a University of North Carolina spin-off company. Xinray planned to develop the tech itself, but these plans were sidelined, apparently because Xinray's people had more of an academic bent - understandably.

Off its own bat, Micro-X took up the quest of making its own carbon nanotubes and mass producing them to consistent quality. This is not as easy as it sounds and took some clever people to implement.

Micro-X listed on December 21, 2015, raising \$20 million at 50 cents apiece.

Mr Rowland is the former chief executive of Adelaide optical equipment maker Ellex (Medical Lasers) and among other jobs was BAE (British Aerospace) Systems business development head.

Micro-X carries out most of its development in the Adelaide suburb of Tonsley, but it recently opened a Seattle facility to oversee its sizeable US operations.

Warning! X-ray-ted content

X-rays still sound science fiction-y but the underlying technology is little changed since Germany physicist Wilhelm Rongen's accidental brainwave in 1895: a heated filament cathode that generates electrons in a vacuum tube.

These electrons are then accelerated by high voltage on to a tungsten anode target to produce x-rays on impact.

In short, the process is inefficient because a lot of waste heat is produced and the electrons don't all move in the right direction. Micro-X's cold cathode technique is based on an array of four-nanometre wide carbon tubes, under an electrified fine mesh structure.

While standard computed tomography (CT) scanners use only one x-ray source to rotate around an object, these electronically-controlled x-ray tubes enable x-ray beams to be fired from different angles and with no moving parts.

The upshot is the tubes can be made substantially smaller and 95 percent lighter - one kilogram compared with 20 kilograms.

Deals deals deals

Micro-X attributes its early sales momentum to its tie up with its worldwide distributor, Carestream Health Inc (formerly Kodak Medical Imaging). Carestream and Micro-X struck a five-year exclusive agreement in 2016, but in November 2020 the deal was modified to allow Micro-X to sell directly or via other agents.

On March 28, 2022 the company announced a non-exclusive, multi-year US distribution deal with the San Diego based MXR Imaging Inc, the country's biggest independent provider of radiology equipment

On April 4, Micro-X followed up with a collaboration and supply deal with the listed French x-ray equipment manufacturer DMS Imaging SA. The idea is that DMS will embed Micro-X's x-ray tech in an "innovative" product. As a guide to what it might mean financially for Micro-X, DMS has annual revenue of \$54 million and sells in 140 countries.

In July 2021, the company unveiled a version of the Rover, using third-party imaging software tailored for small animal examinations.

Australians spend \$2.6 billion a year on veterinary services, so globally the market is a multi-billion-dollar opportunity.

Screening at an airport near you

Also based on its cold-cathode technology, Micro-X is developing self-directed screening portals called Checkpoint, which integrates with passport scanning, photometric identification, body scans and luggage CT scans.

The big selling point is fewer staff and better detection.

"The concept is to shrink the x-ray component so it can be part of a self-service checkpoint," Mr Rowland says.

Micro-X already has two contracts with the US Transportation Safety Administration (TSA), which operates 2,200 x-ray lanes across 440 US airports.

The TSA is an arm of the US Department of Homeland Security, which has stumped up \$US4 million in funding.

Micro-X also has two contracts with the British Government's transport department, under its Future Aviation Security Solutions program.

These deals pertain to funding the development of lightweight x-ray imaging for detecting explosives hidden in consumer devices.

The company cites a total addressable market of \$US24 billion for airports alone: \$US8 billion in the US and \$US16 billion for the rest of the world. Micro-X aims to launch Checkpoint in 2026.

"This is going to change the future of checkpoints at every American airport, and from there, the world," Mr Rowland says.

Bomb disposal

Micro-X is developing an imaging camera, called Argus, for remote one-sided-viewing of suspected improvised explosive devices (IEDs).

Weighing a mere 15 kilograms, Argus consists of a self-contained camera carried by a robot. In 10 seconds, the device can determine whether a suspicious object such as a backpack contains a bomb or something less innocuous.

"At the moment there is no choice but to get closer to the device than you would really like to be," Mr Rowland says.

He cites a total addressable market of \$US1.8 billion; the key markets being police counter terrorism units, the military and border forces looking for contraband. The company reports that nine US agencies have requested trials, including the FBI. Mr Rowland notes there are 468 police bomb squads in the US alone.

"It's a marketer's dream," he says. "No matter how we price it, it's a rare bomb squad commander who will decide it's too expensive and put the lads in harm's way."

Argus was planned to be launched at the International Association of Bomb Technicians conference in July - always an explosive affair - but the big reveal is now expected towards the end of the year.

Stroke of fortune

Micro-X's stroke prevention work involves developing a lightweight computed tomography (CT) scanner for in-ambulance stroke diagnosis.

As emergency medicos know, there's a so-called Golden Hour after a stroke in which patients need to be treated; otherwise, they're likely to end up with a permanent disability.

Three-quarters of strokes are clots rather than bleeding and they can be effectively treated if help - and drugs - are administered swiftly.

Micro-X's challenge was to replicate the imaging performance of the current standard-of-care, an eight-slice helical, or spiral, CT scan.

Called a ring scanner, the stroke imaging device would be small and light enough to be standard kit in ambulances. The device has 29 miniature x-ray tubes flashing on and off, creating the illusion of a rotating x-ray beam. Each mini x-ray tube will use Micro-X's cold cathode tech, but the diameter of the tube will be reduced from 150mm to 40mm - about the size of a golf ball ... or large hail stone.

In late March, the company declared that it had reached the second milestone in its program to develop a point-of-care stroke imager. This one is with the Australian Medical Research Future Fund and the Australian Stroke Alliance (ASA).

The milestone involved the ASA's clinical review team accepting Micro-X's submission that its CT design elements can "produce images to best practice clinical standards for stroke detection". Micro-X also receives a \$900,000 milestone payment.

The company cites a total addressable market of \$US5 billion across 48,000 ambulances in North America and 60,000 in Europe.

Each unit is expected to cost around \$100,000, which sounds like good value given the average long-term cost of treating a stroke patient is around \$150,000

The company hopes to start patient trials within two years.

Finances and performance

Micro-X's March quarter was one of its best quarters to date, with revenue of \$3.56 million and receipts of \$2.06 million.

The revenue included \$1.8 million of mobile Rover sales - \$800,000 from the Ukrainian charity - and a further \$1.7 million from grant and consulting fees (pertaining to the brain CT and baggage scanner projects).

The company has about \$16 million in cash, enough to last another four quarters. The company last went to the well in mid-2020, raising \$15 million in a placement and rights issue.

Broker Morgans forecasts revenue of \$12.2 million for the current year to June 2022, rising to \$32 million in 2022-'23 and \$63 million in 2023-'24. The broker also expects the company to post its maiden full year profit of around \$5 million in the 2023-'24 stanza.

Since listing, Micro-X shares have traded between 56 cents (December 24, 2015) and 10 cents (March 24, 2020).

Dr Boreham's diagnosis:

Mr Rowland says Micro-X has been going from “strength to strength” as it develops new products and forges alliances.

Indeed, the company looks to be making good progress with its strategy of commercializing the easiest products before rivals come along and commoditization occurs.

Disappointingly, Micro-X shares have lost about one-third value over the last 12 months.

When we last ‘assayed’ Micro-X in December 2020, the stock traded at 38 cents. As Kamahl (sort of) said: “Why are some investors so unkind?”

But as we all know, the market's appetite for riskier plays has diminished and there's not management can do about the valuation.

Your columnist believes Micro-X is in a better position than your average device play, given the multiple products that tackle real problems.

Broker Morgans believes the Argus is likely to be a key revenue and profit driver, given attractive margins and lower regulatory hurdles.

Over the four businesses there's an addressable market of \$US30 billion.

We're not greedy: we'll take 10 percent of that which means that Micro-X should be a \$US300 million a year business with a multi-billion-dollar market capitalization.

Meanwhile, investors have the opportunity to grill management at the company's open day at its Tonsley digs on June 2.

Disclosure: Dr Boreham is not a qualified medical practitioner and does not possess a doctorate of any sort. As his contribution to the war effort, he will forego Beluga caviar in favor of borscht, which he is reliably informed* has Ukrainian and not Russian origins.

* by Wikipedia