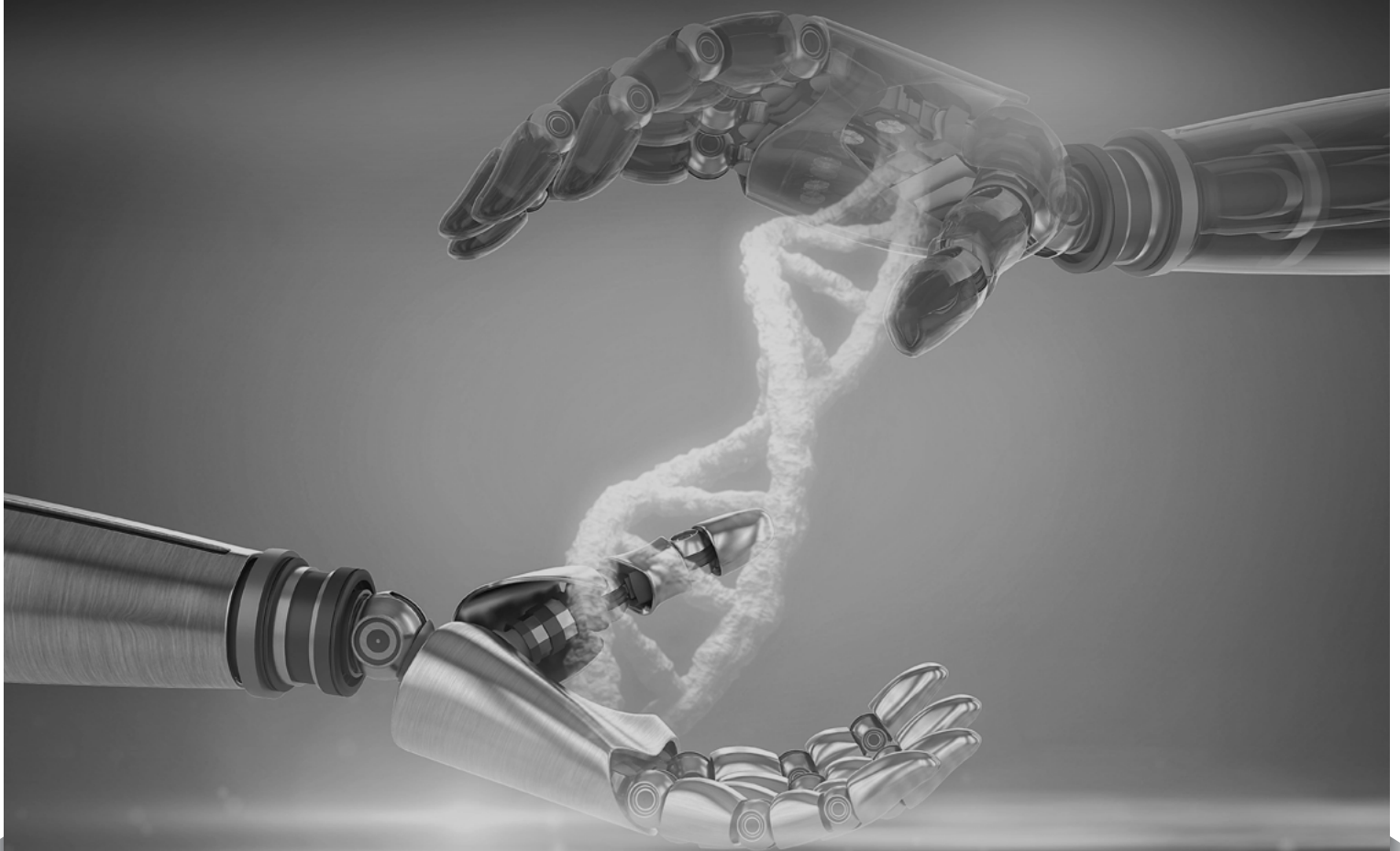




Emerging Stocks Down Under

📖 *There is nothing more intoxicating than victory,
and nothing more dangerous.* 📖

- Robert Greene (Born 1959), American writer



AUDIOPIXELS

Still not quite there yet

OPTHEA

Success is in the eye of
the beholder

EMVISION MEDICAL DEVICES

Still a way to go

AUDIOPIXELS

Still not quite there yet

Stocks Down Under rating: ★★ ★

ASX: AKP
Market cap: A\$ 691M

52-week range: A\$8.69 / A\$31.85
Share price: A\$ 23.75

Israel-based AudioPixels is developing, what it claims will be, a breakthrough in digital speaker technology. Instead of using the traditional magnets, voice coils and cones to produce sound the old-fashioned way, AudioPixels is developing a Micro Electromechanical System, or MEMS, to replicate sound directly from a digital signal. MEMS are a type of semiconductor, or computer chip. As any investor in newly-developed semiconductor applications will know, bringing this sort of technology to commercial fruition is very hard. The road is long and littered with stumbling blocks. It's been no different for AudioPixels.

[READ MORE](#)

OPTHEA

Success is in the eye of the beholder

Stocks Down Under rating: ★★ ★★

ASX: OPT
Market cap: A\$ 648M

52-week range: A\$1.17 / A\$3.60
Share price: A\$ 1.92

This small Melbourne-based biomed company is slowly making its name in the treatment of retinal diseases. With two phases of clinical work already under its belt, Opthea is preparing for its third and largest clinical trial to combat vision loss associated with macular degeneration and macular edema, diseases often associated with poor quality of life and even poorer effective treatment outcomes. The company's strategy is to bridge the treatment gaps while targeting a growing market opportunity. We believe this is a four star opportunity, but the stock has trended lower for a while now.

[READ MORE](#)

EMVISION MEDICAL DEVICES

Still a way to go

Stocks Down Under rating: ★★

ASX: EMV
Market cap: A\$ 203M

52-week range: A\$0.40 / A\$4.20
Share price: A\$ 2.76

Sydney-based EMVision Medical Devices is developing a powerful brain scanner for the cost-effective diagnosis and monitoring of stroke. A lot of work has gone in to this device, including ten years of research by a team at the University of Queensland. EMVision stock has responded well to very encouraging pilot study data. However, we believe the stock may need to cool it for a while.

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Share price chart



Source: Tradingview

In analog speakers, bigger is better

What's wrong with today's speakers to make AudioPixels want to invent a digital speaker the size of a small fingernail? Well, as any audiophile will tell you, the quality of the sound produced depends in large part on the size of the speaker, especially the cone. In an analog speaker, electrical energy from the music's digital signal is converted into motion (mechanical energy) through magnets, the voice coil, and the cone (we'll spare you the details).

What you need to know is that the movement of the cone creates sound waves that we can hear. The lower the frequency, the bigger the cone needs to be to create acceptable sound quality. Now you know why bass lovers, like yours truly, are not fans of earbuds to play music. The form factor is too small to create that deep bass sound you get with big speakers or even with some high-end over-ear headsets.

In a nutshell, current speaker technology prohibits the delivery of high-quality sound in smaller packages. That's where AudioPixels' MEMS come in.

What is a MEMS?

Micro Electromechanical Systems are very small devices, manufactured using semiconductor manufacturing technology, that can be used in a wide variety of applications. For instance, ASX-listed Sensera (ASX: SE1) manufactures MEMS mostly for medical applications, such as so-called organs-on-a-chip and sensors, e.g. microfluidic MEMS that can measure blood pressure. For some more background on MEMS you can check out the article we wrote about Sensera on 13 February 2020, which you can find in the Stocks Down Under archive on the Publications page on our website.

Other types of MEMS, like micromirrors, can be used together with Lidar radar in autonomous vehicles, or in optoelectronics. The range of applications is seemingly endless and also includes digital speakers. That is, if AudioPixels can get its technology to work properly.

There's a lot to like

AudioPixels' technology has been in development since 2006 when the company was founded in Israel. In 2010, ASX-listed Global Properties Ltd (ASX: GPB) acquired AudioPixels and the company became a listed entity. The technology has several advantages over acoustic speakers. Although the company's chip is very small, it is able to create about 10x the air pressure of a conventional speaker of the same surface area by using clever fluid manipulation techniques and miniaturisation. AudioPixels also has a wider frequency range, including lower frequencies, than today's speakers. Furthermore, whereas traditional speakers continue to resonate for a little while after the input signal has stopped, AudioPixels' chip switches off immediately, so there's no residual sound, leading to crisper audio. And importantly, especially for mobile applications, like phones and wireless headsets and earplugs that have limited battery life, the technology uses far less energy than existing products on the market.

But the shares are expensive

So, there are a lot of benefits to AudioPixels' technology, but it's still not ready for commercialisation, even after all these years of development. The company puts out fairly regular development updates, but it seems there's always something that's not going right, or needs more work. And while we are used to semiconductor development timelines not being met, having spent more than 20 years covering this sector, working on this particular technology for almost 15 years to get it to where it is today, seems excessive. It makes us cautious with respect to the remaining time needed to get to full-scale commercialisation. We think it may take longer than people think.

Then there's the company's valuation. At yesterday's closing price of \$23.75, AudioPixels is capitalised at \$691m, which is clearly higher than companies such as Weebit Nano (ASX: WBT), which is capitalised at \$410m, but which we believe is closer to commercialisation than AudioPixels. Another semiconductor development company, BrainChip (ASX: BRN), is capped at around \$840m, but this company has already secured its first commercial licensing deal.

In other words, we believe AudioPixels is too expensive, given where it is in its development process. Mind you, that doesn't mean the shares will go down. You see, with the Top 20 shareholders sitting on more than 65% of the shares, liquidity in AKP is very limited. There's basically not a lot of room to get in and out of the stock without moving the share price too much, making it unattractive for the trading-oriented crowd on ASX.

So for now, we'll go with 3 stars for AudioPixels. We need to see a clear catalyst, like an initial commercial deal, or even a simple demonstration outside of a cleanroom environment, for the shares to move up substantially.

In the meantime, we prefer other stocks in the ASX-listed semiconductor space. Ones that have a more interesting valuation compared to where they are in their development process, like BrainChip, Weebit Nano and 4DS Memory (ASX: 4DS).

OPTHEA

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Share price chart



Source: Tradingview

One phase at a time

Opthea is another biotech hoping to join the ranks of the Amgens and the Gileads, and so far it's had a good journey having passed two important clinical trials in the treatment of 'wet' AMD (age-related macular degeneration) and DME (diabetic macular edema). Both wet AMD and DME are similar conditions where blood vessels leak fluid into the macular resulting in reduced visual acuity.

Around 15 million Americans have some form of AMD, a leading cause of blindness in people over 55. That number is set to increase to 22 million in an aging population. The company's August 2019 Phase 2 trial in AMD of its lead candidate OPT-302 resulted in significant benefits for the treatment group when used in combination with Lucentis, another AMD treatment. Opthea's Phase 2 trial also used another drug, Eylea, in the treatment of DME, which found improvements in visual acuity and a reduction in retinal thickness.

It should be noted that both Lucentis and Eylea were best sellers for Novartis and Regeneron, respectively. Opthea's ability to demonstrate OPT-302's effectiveness in conjunction with established market treatments bodes well for a future standalone OPT-302 treatment, but the next Phase 3 trials for AMD and DME – which

will be the company's biggest undertaking so far with over 900 patients in each trial – will be a huge test before potential commercialisation.

The company has completed a raise of US\$128m (A\$180m) as part of a US IPO dual-listing, but is otherwise in for the long-haul as it widens OPT-302's scope. Opthea's share price reached \$3.15 in October after the listing, although it's since trended back.

Eyeing further retinal treatments in a profitable market

Since Opthea's primary mission with OPT-302 is to find and treat patients which have not responded to previous therapy, there is clearly a meaningful gap in a lucrative retinal eye treatment market for OPT-302 to rival drugs, like Lucentis or Eylea. Those drugs had a combined sales of US\$11.9bn in 2019. As an age-related disease, AMD is a prime target, but the company notes that the eye-treatment needs of DME sufferers will soar as diabetes cases increase, with visual impairments affecting 1-3% of all people with diabetes.

A factor which could separate Opthea from other biomed companies is the opportunity to diversify in the treatment of other eye diseases, including Retinal Vein Occlusion (RVO), which occurs when blockages in the retinal veins obstruct nutrients and oxygen to the retina. Like both Lucentis and Eylea, OPT-302 is an injectable soluble molecule, which works to bind and block multiple VEGF (vascular endothelial growth factor) proteins from weakening blood vessels, the company is confident in its ability to target other VEGF's down the track.

Scratching the surface

Opthea is fully funded as it heads toward Phase 3 trials in early 2021, with A\$62m on the balance sheet. A quick jump onto the NASDAQ will certainly help the company gain access to capital and market exposure as well as supporting product development, with the possibility of partnering with established big pharma. Understandably, much depends on the effectiveness of Phase 3 AMD trials – much larger in scale with over 1,000 patients – in getting that helping hand.

But Opthea's shareholders don't seem worried about the company's future if the share price reaction after the end of Phase 2 is anything to go by. Now that there is proof of OPT-302's efficacy in conjunction with established therapies, Opthea has two competitive advantages in bridging the health gap for existing patients as well as extending its view toward multiple retinal eye diseases.

Pending a poor result in Phase 3, we believe Opthea is a strong four star company in the medium term with a direct path to approval in the US and beyond. That said, with the stock having been weak since 2019, investors who like this story may be better served by waiting a while.



EMVISION MEDICAL DEVICES

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Share price chart



Source: Tradingview

On 28 November 2019 our sister company Pitt Street Research hosted its inaugural Life Sciences conference in association with Baker McKenzie. One of the more impressive presentations was from Dr. Ron Weinberger, CEO of EMVision Medical Devices. EMVision had just assembled its first brain scanner for stroke diagnosis and was getting ready to take it into the clinic. It was a one-of-a-kind device, Ron explained, and there was a huge market opportunity given the incidence of stroke that was out there. On 28 November 2019 EMVision stock was 75 cents. By 17 November 2020 it had made it to \$4.13.

Another genius named Stuart

EMVision is the brainchild of Professor Stuart Crozier, director of Biomedical Engineering at the University of Queensland (UQ) and, as of December 2020, EMVision's Chief Scientific Officer. If you've ever had an MRI scan any time in the last 20 years or so, say a quiet thank you for this genius. Back in the 1990s, Crozier and David Doddrell co-invented a signal correction technology so that MRI machines would produce faster, clearer and more accurate images with no extra cost. They patented their work and are estimated to have created around \$20m in royalty value for UQ.

One thing we've noticed is that smart Life Science inventors rarely stop after just one patent. Crozier's Next Big Thing, developed with Professor Amin Abbosh, was EMVT, an algorithm allowing electromagnetic microwave

energy to rapidly produce a three-dimensional image of the brain. It's not MRI and it's not CT, so the image isn't as sharp as what those diagnostic imaging modalities will get you. But it's not meant to. The idea is to quickly get some image in the hand of the doctors so they can identify if there's a haemorrhage or clot in the brain that's causing a stroke and to initiate treatment as soon as possible.

Saving years of brain decline in hours

The thing about stroke is, the faster you act, the less brain damage, with the brain aging 3.6 years for every hour there's no treatment. Crozier's and Abbosh's technology could save years of your brain. Because it's portable, you don't have to risk the patient having complications while you're moving between the radiology department and the ICU. You just image them at their bedside. It's worth noting that a device like Crozier's and Abbosh's could be very useful in countries where the medical system can't afford many MRI or CT scanners, which represents about two-thirds of the world's population. Moreover, the brain is only one organ that EMVT could scan. So, there was a lot of upside in EMVT.

EMVision was that company that UQ, via its commercial arm Uniquist, formed around EMVT to make it happen. The company went public on the ASX in late 2018 to raise \$6m at 25 cents. January 2020 saw the pilot trial of the device initiate at Princess Alexandra Hospital in Brisbane. By April the doctors there had EMVT functional, imaging scans of patients with ischemic stroke – the stroke caused by blood clots - and could compare these to the so-called 'ground truth', that is, the tried and trusted MRI and CT scans. The correlations were encouraging. July 2020 saw similar success with haemorrhagic stroke. After 30 patients EMVision's investigators were able to say that the EMVision device could help pick which stroke type - ischemic or haemorrhagic - with between 93% and 96% accuracy, and could localise where in the brain the trouble was, compared to ground truth, between 87% and 96% of the time. Not bad for a first clinical run of the EMVision device. The data came out on 28 October, and they were the reason we saw the \$4.13 share price peak in November.

After the initial pilot, the cooling-off period

Interestingly, between 17 November and 11 December EMVision stock cooled off by 31% before stabilising. And fair enough, because there's still a long way to go. EMVision Medical Devices now has to take the learnings of this pilot to further improve the hard- and software in order to further improve sensitivity and specificity, as well as make the device more user-friendly. And the company has decided to recruit another 20 patients into the pilot to further these learnings.

We are concerned that investors will get impatient at this need to optimise the EMVision device before it can move forward into bigger studies. After such a massive run-up after the Corona Crash, EMVision is currently capitalised at over A\$200m. As at December 2020 there was \$13.1m in cash so EMVision will likely have to raise capital soon.

We think the stock might cool off some more in the meantime. It doesn't mean this isn't groundbreaking technology that has a great clinical and commercial future. It does mean that investors might get bored even with this well-managed company, just as they did for a while with Micro-X (ASX: MX1) before mid-2020, as we noted on 12 January. That's why, for now, we're calling EMVision two stars, with the potential to switch back to four once the stock is sufficiently cooled.

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Pitt Street Research Pty Ltd is founded on more than 40 years of combined experience researching companies in a range of different sectors.

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