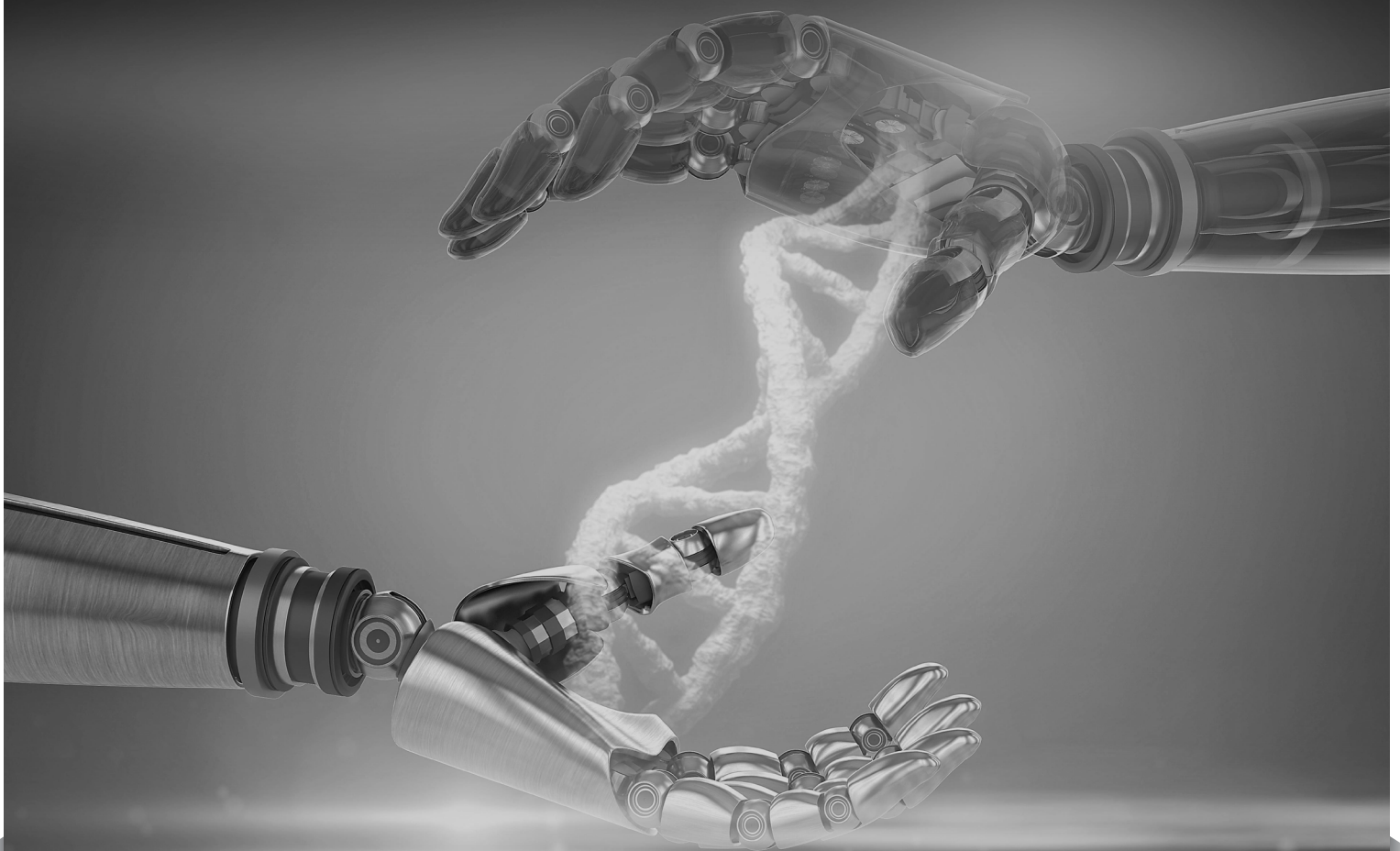




Emerging Stocks Down Under

📖 *An investment in knowledge pays the best interest.* 🗨️

- Benjamin Franklin (1705 - 1790), American inventor and Founding Father



DOTZ NANO

Late to the party

NEUROSCIENTIFIC BIOPHARMACEU- TICALS

Great pre-clinical data,
now comes the clinic

CARNEGIE CLEAN ENERGY

Riding the Waves of
Progress

DOTZ NANO

Late to the party

Stocks Down Under rating: ★★

ASX: DTZ
Market cap: A\$ 119M

52-week range: A\$0.074 / A\$0.39
Share price: A\$ 0.29

Israel is famous for its innovation, but Dotz Nano seems to be the exception. The company is attempting to break into a technology called taggants, using them to help confirm a product's manufacturing chain and authenticity. Unfortunately, we believe the company is far too late to the party and will face rather challenging hurdles as it attempts to bring its product to market.

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ASX: NSB
Market cap: A\$ 43.8M

52-week range: A\$0.17 / A\$0.38
Share price: A\$ 0.295

In the field of Life Sciences, drugs for neurodegenerative conditions, such as Alzheimer's or Parkinson's, are right up there when it comes to risk. That's because we know relatively little about the Central Nervous System compared to what we know about cancer or infectious diseases like COVID-19. That 'relatively little', however, can still get you a long way, as Neuroscientific Biopharmaceuticals has shown over the last couple of years.

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Carnegie is a company looking to disrupt the renewable energy sector with its proprietary CETO technology. While the primary aim of the company is to research and make use of wave energy to provide renewable and clean power, Carnegie is also willing to utilize proven sources of clean energy, such as solar panels. With a cutting-edge research facility at its disposal and healthy finances, we believe Carnegie stands ready to take on future projects and commercialize its technology within the next couple of years.

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Share price chart



Source: Tradingview

A new spin on an old concept

As long as there have been patents protecting intellectual property, there have been issues with counterfeiting. These can range from the sweatshop-made Gnocchi knock-off bag you bought during your latest trip to New York City's Canal Street to the downright dangerous knock-off medication and COVID-19 testing kits. Clearly, counterfeiting is often far more nefarious than its common focus on the fashion industry suggests. Many tactics have been developed to help prevent these products from entering legitimate supply chains, with varying degrees of success.

One form of technology that has shown to be highly effective is taggants. Taggants are not one specific type of technology, but rather the name of a category. There are many different types of taggants, from chemical solutions mixed into barrels of oil to microchips used by the military to catalogue its missiles. The main principle behind this technology is that with only a handheld scanner, an individual can quickly and accurately determine the origin of the product.

If this technology is ringing a bell, it's because taggants are nothing new. The ability to produce chemical taggants has been around for as long as the 1980s, when the United States Office of Technology Assessment compiled a report for Congress to determine the viability of pending legislation forcing taggants into military and commercial explosives. What's changed over the last ten years is two main things: prices have significantly dropped and it is now possible to produce taggants safe for human consumption.

Still no date to the dance

Dotz Nano has focused its taggants development efforts on three main types: BioDotz, ValiDotz and Fluorensic tracers. BioDotz are simply bio-tracers that are safe for human consumption, targeting the marijuana industry. Instead of using RFID tags to track the plants, Dotz's product is introduced during the growing process, effectively making the plant itself a taggant.

ValiDotz is a chemical taggant that is introduced during the production of plastic parts and water/solvent-based inks, creating a product-specific taggant. For example, suppose the plastic in a Coca Cola bottle could be scanned, proving it was manufactured in a Coca Cola bottle plant, you'd be significantly more confident that you're drinking actual Coca Cola. Another example would be using a taggant-mixed ink cartridge to print out a prescription, allowing the pharmacy to ensure it was printed from the doctor's office in question. We do need to clarify that these are just use-case examples and are not current ways the company is monetising ValiDotz.

Lastly, Fluorensic tracers were designed to be added to chemical and industrial fluids to better track events such as spillage, leaks, or proving the fluid's origin.

These products do seem quite clever. However, the issue is there are already multiple companies with the same type of product out there, except for the marijuana use case. The industry has undoubtedly become far more economical and innovative, but the idea and base technology have been around for years.

Unfortunately, with only \$394,461 in revenue for CY20, it's clear that Dotz Nano still has no date to the dance. This led to a net loss of \$5.1m in CY20, forcing the company to issue shares to fund operations, especially since it is not eligible for Australia's R&D Tax Refund. During CY20 and CY19, management issued \$4.8m and \$3.6m in new shares. As the company is still not ready to go to market with its products, we expect this to continue in the foreseeable future.

Try and pull one over the ASX at your peril

As if the company's financial and competitor situation was not tough enough, during 1Q21 alone, the ASX forced management to issue two large retractions and clarifications, and not for the first time. On 3 February 2021, management was forced to reissue pages 73 through 77 of its 2019 annual report because it contained incorrect information on the company's additional shareholders. Granted, this change was not very market-sensitive, in our opinion. However, many of the retractions and clarifications made on 1 March 2021 were. In this market release, management was forced to retract and clarify 15 separate statements made by its Chairman and Interim CEO Mar Bernie Brookes during a 4 December 2020 investor webinar.

One example we wanted to highlight from this report was the statement: "The Dotz Test Kit is being trialled with the Sheba Medical Group in Israel, Turkey and the Middle East." This statement was clarified to be mostly false with testing currently only undertaken in Israel. No trials were held in Turkey or elsewhere in the Middle East. We believe these are honest mistakes made by the Chairman during his presentation, but it still forces us to be cautious with future presentations released by the company.

Unfortunately for shareholders, the company is not only dealing with the issues we mentioned above. Dotz's current valuation also leaves much to be desired. Due to a lack of management or market estimates, we are using a trailing 12-month EV/Revenue ratio, which is currently around 231x. With all the problems Dotz Nano has, that's far too rich a valuation for our blood, two stars.

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Share price chart



Source: Tradingview

Long name, but promising

It beats the heck out of us why the company chose such a long name, but don't hold that against Neuroscientific Biopharmaceuticals. This innovative, Perth-based company reckons its portfolio of therapeutic peptides may be useful across a range of indications in neurology and ophthalmology.

Peptides, the building blocks of proteins, are simply long strings of amino acids. They are becoming commonplace in medicine these days, because they are cheap and easy to manufacture and are great for binding targets of interest. The lead candidate from Neuroscientific's portfolio of peptides is EmtinB, which is modelled on a protein called Metallothionein-II (MT-II) and seems to replicate its ability to control neuroinflammation and prevent the destruction of neurons in the human body.

A lead candidate that can blunt neuroinflammation

MT-II is found in the astrocyte cell type in the Central Nervous System (CNS). MT-II is unique in the sense that it can be used to target injured neurons and possibly heal them. MT-II has shown to have extracellular effects, meaning that it can act outside of the astrocyte cell type. This fact has been discovered relatively recently through new research and it is that research that Neuroscientific hopes to capitalize on.

EmtinB has so far shown promising results in in-vitro studies as well as animal models. It has been able to pass the blood-brain barrier for up to 24 hours. Difficulty in passing the blood-brain barrier has rendered previous MT-II-based therapies useless and Neuroscientific hopes to change that with EmtinB.

A good story thus far

Neuroscientific went public in July 2018 with a suite of future applications of EmtinB in mind. By this time, EmtinB had shown strong promise in preclinical trials and had shown to have a positive effect in animal models on Alzheimer's and damage to both the brain and the optic nerve.

EmtinB had shown to increase the survival rate of brain cells by an average of 90% and stimulate neurite outgrowth by nearly 300%. The Alzheimer's animal model showed that EmtinB had slowed memory impairment by more than 80%. The same year, Neuroscientific partnered with Covance to begin work on researching whether EmtinB was effective against other diseases.

In July of 2019, Neuroscientific used a spinal cord injury model to show that EmtinB was more potent in stimulating neurite growth than Copaxone, its main competitor in treating neurodegenerative diseases.

By late 2019, Neuroscientific was exploring the possibility of using EmtinB to treat Glaucoma. Results on a study conducted on a pig Glaucoma model came out in March 2020, indicating that EmtinB had the potential to penetrate the optic nerve without any side-effects. It positively impacted the level of all neurofilaments and cytoskeleton components in the study, showing that EmtinB could be used to treat or prevent Glaucoma. Since then, EmtinB has shown similar results in studies for Multiple Sclerosis and the company seems ready to move forward to the clinical trials phase.

Still pre-clinical

Reading the above, you may be thinking that Neuroscientific has hit the jackpot. After all, a patented drug that can slow down or halt symptoms of Alzheimer's, Multiple Sclerosis and Glaucoma would be valued in the billions. Alzheimer's alone has been a relative wasteland in terms of new drugs in almost two decades and since one in eight of us may ultimately get it, the market opportunity here is in the tens of billions. However, there are significant challenges ahead because the pre-clinical work now has to transition into the clinic. The trials for Alzheimer's disease and Glaucoma are currently in the IND-enabling phase.

The IND-enabling phase involves nonclinical studies that must be done before clinical trials can be performed. The phase involves things such as predicting possible risks, determining proper ways of monitoring the results of the drugs and determining the correct dosage for the clinical trials. Phase-1 clinical trials are expected to begin sometime later this year. The work on optic nerve atrophy and Multiple Sclerosis are still in the research phase.

Big pharma likes new CNS targets

If NSB is such an early-stage company, why look now? Well, one of the trends we're noticing in the pharmaceutical industry is a willingness to bet big on early-stage programmes in the CNS where the mechanism of action is new. That's why we expect a considerable rerate of the share price if NSB's Phase 1 trials are successful.

With around A\$15m cash as at March 2021 thanks to some recent option exercises, this company has a very solid runway. Over the next twelve months, we expect the clinical trials for Alzheimer's Disease and Glaucoma to begin. Even before then, any good news at the pre-clinical end of the spectrum is likely to attract attention. Four stars from us.

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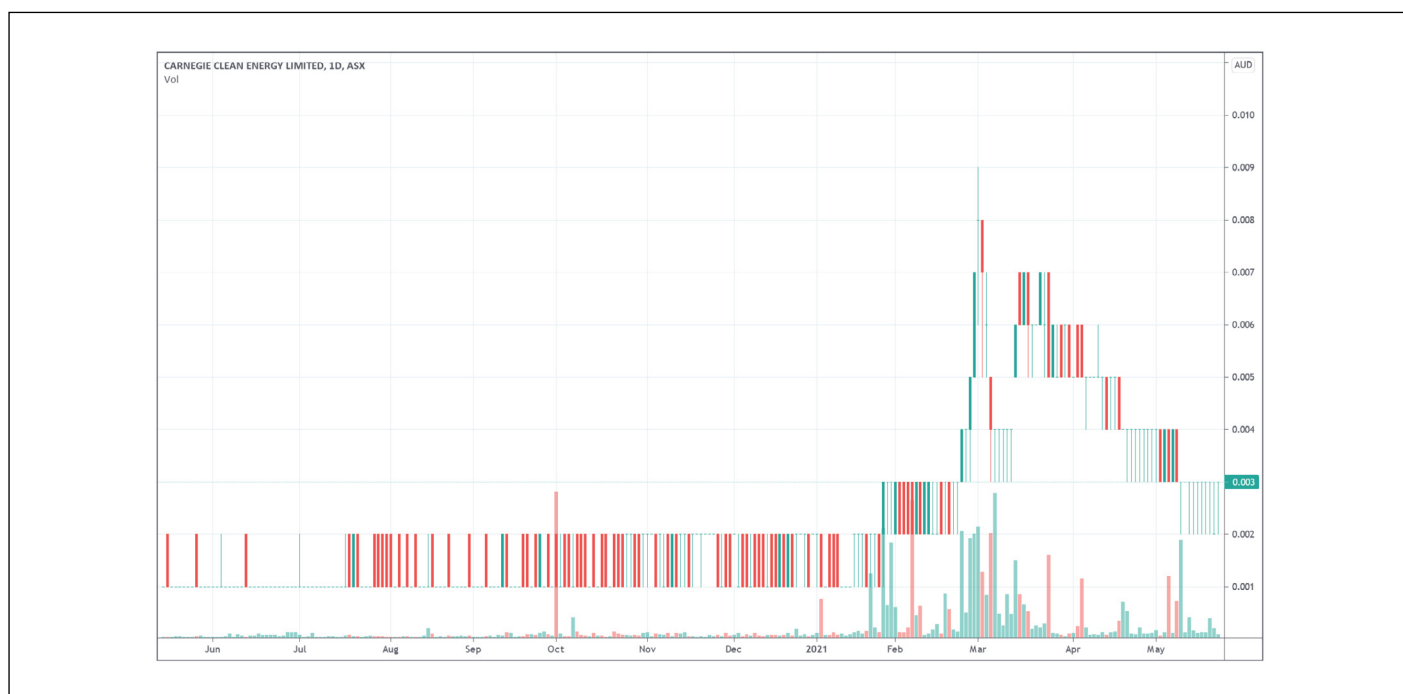
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Share price chart



Source: Tradingview

Harnessing the ocean

Generating electricity from water is not a new idea. In fact, hydroelectric power has been used in its modern form since the late 19th century and water has been used as a power source for thousands of years.

However, hydroelectric power, while being one of the cleanest sources of energy, has its drawbacks. The setup costs are immensely high as a water reservoir may need to be built. Add to that the constant maintenance and problems, such as sedimentation (which is the accumulation of sand and other materials in a water reservoir), and hydroelectric power begins to look a lot less attractive as an alternative energy source than it initially did.

Another huge problem with hydroelectric power lies in its reliability. If the reservoir dries up, generating electricity becomes difficult. This has led to power outages in places where hydroelectric power is the main source of electricity.

Carnegie Clean Energy attempts to solve this through its proprietary CETO technology. CETO makes use of submerged buoys that move with the ocean (using energy from the incoming waves) and convert that motion into electricity.

CETO has numerous benefits over traditional hydroelectric power sources and most other renewable sources of energy. While the technology itself is quite advanced, setting it up is not that complicated. Once you have the buoy, you just need it to be set up a few meters below the ocean surface.

Over the last few years, Carnegie has been making use of Machine Learning to better predict waves and enhance power generation. If those insights can be successfully implemented, this would grant CETO a huge advantage over hydroelectric power in terms of reliability.

Having a negligible impact on the environment, CETO has proven to be a reliable source of energy. With the ability to work regardless of external factors, like weather conditions, CETO can simultaneously generate electricity and provide fresh water, thereby solving two major problems in one go. It is able to provide fresh water by desalinating it through a process known as reverse osmosis. Reverse osmosis pressurises the water onto a partially permeable membrane, thereby removing any large particles (including salt) from it.

From a tidal wave to a tsunami

Carnegie has been around in one form or the other since the early 2000s. Alan Burns founded Carnegie Wave Energy and raised money from both government grants and shareholders to research and fund the CETO project, a design that he worked on himself.

It was in late 2016 that the company took its modern form, starting with the name change to Carnegie Clean Energy and expanding its focus from just wave technology to clean energy in general.

2016 was also the year when Carnegie purchased Energy Made Clean (EMC), a solar engineering company. EMC was purchased by Carnegie as they thought that EMC would help generate much-needed cash to fund research on their wave-energy project. However, the acquisition of EMC only led to problems. Not only was EMC not generating any profits, but it caused Carnegie to incur substantial losses, so much so that the company was unable to fund its own projects. A perfect example of this was the Albany project, where Carnegie won the bid and was to receive a \$15.75 million government grant. The first payment from the grant was reduced once Carnegie failed to raise funding for their end of the deal. The funding was later withdrawn altogether. EMC was later merged with the Tag Pacific Group to form a new entity called MPower, with Carnegie investors being given a 32% stake in the new company.

Not everything was going downhill though. At the end of 2018, Carnegie opened a 10 MW solar farm in Northam, Western Australia. Work was also being done on the Garden Island Microgrid project, a 2MW solar project for the department of defence that was commissioned in February 2019 and was operational by August.

Calmer waters lie ahead

Currently, Carnegie is continuing to develop its CETO technology. Currently, Carnegie can predict waves 30 seconds in advance. Work is being done to further improve on this through collaboration with Microsoft and Hewlett-Packard. Carnegie also plans to enhance the power generation capacity of CETO through more advanced electrical generators and systems that can help reduce costs. There are plans to find partners for exploring commercial projects in the latter half of 2021.

What elevates Carnegie as a worthwhile investment, in our opinion, is that it achieved debt-free status in March 2021, owing to the conversion of all of its remaining convertible notes. With an additional exercise of options raising \$0.7 million, the company currently has a cash position of \$3.5 million. This gives it a runway of eighteen months at its current burn rate, more than enough for it to explore viable commercial options for its CETO technology.

That said, investors should be cautious as the future of the company entirely depends on its ability to install CETO generators and provide power across Australia. If the claims made by the company are correct, then we believe that this should not be a problem come 2022. Four stars.

Pitt Street Research Pty Ltd

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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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