HOMEGROWN SCIENTIFIC EXPERTISE DRAWS TOP GENOME EDITING FIRM

INVESTMENT CASE STUDY | JULY 2020

An appetite for agricultural innovation combined with a robust regulatory system and strong trading links with Asia motivated American food and ag company Elo Life Systems to set up its first international lab in Australia.

Elo Life Systems is on a mission to help Australian farmers make their crops more resilient to climate change.

Working in strategic partnership with Queensland University of Technology (QUT), the company is using its world-leading genome editing technology to create drought-tolerant, disease-resistant, protein-rich chickpeas. It is a development that could have an immense impact on world food production.

'We are a technology company that accelerates plant breeding,' says CEO Fayaz Khazi. 'Traditional breeding takes a lot of time and effort, sometimes decades, to breed a plant to adapt to withstand the negative impacts of its environment, diseases and pests. With our technology platforms we compress crop improvement into a very short time frame.'

Importantly, Elo's nature-inspired editing technology expedites classical breeding. No foreign genes are introduced. Instead Elo leverages its computational biology tools to pinpoint native genes and creates precise genetic variations that help the plant adapt to its environment.

'We use knowledge and science to do what nature does but, in an expeditious time frame, and with a huge sense of responsibility,' says Elo-Australia's Resident Director, Mario Pennisi.

As the world population grows, so too does demand for plant-based proteins, such as chickpeas, lentils, mung beans and pulses. Experts fear our current food system will be unable to meet that demand.

'There is universal recognition that plant-based proteins are essential in everyone's diet regardless of who you are or where you're from,' says Khazi. 'How can we address this massive nutritional need if the growers do not have access to crops that can grow reliably and reproducibly?'

Mario Pennisi and Fayaz Khazi; Chickpea samples at QUT.

'Great science happens in Australia. It has the right kind of professional mindset, critical infrastructure and a robust biotech community.'

Fayaz Khazi, CEO, Elo Life Systems

Various degrees of drought tolerance is seen across crops in nature; however, current chickpea varieties remain highly susceptible to drought and heat stress which affects yields and ultimately the economics.

That is where Elo's work on Australia's chickpea crops dovetails.

Australian Government
Australian Trade and Investment Commission

Boosting crops, boosting prosperity

'Chickpeas are a very important crop for the southeast Asian economies and for Australia,' says Pennisi. 'The opportunity is not that we can grow and sell chickpeas to Australians. The opportunity is that we can develop a foundational drought-tolerant chickpea variety to grow better, more nutritious chickpeas and support the export market. There is a true commercial opportunity here, a true unmet need. We have the technology to help Australia maintain a competitive edge globally.'

Australia is the largest global exporter of pulses in the world, and one of the top exporters of chickpeas.

Khazi cites Australia's recent bushfires and prolonged drought as a timely reminder of the intricate connection between crops, plants, climate change, farmers, food, human health and trade.

'We are living the impacts of climate change,' he says. 'It may take humanity several decades to correct the course on climate change, but what you grow needs to be adapted to the changing environment relatively quickly. That's exactly what we are doing.'

Pennisi points out there are growing concerns worldwide about rising carbon dioxide levels and water scarcity.

'It is going to be science that solves the food challenges we will face because of climate change.'

Expertise equal to any

'Great science happens in Australia,' says Khazi. 'It has the right kind of professional mindset, critical infrastructure and a robust biotech community, and QUT is the right environment for us to be part of.'

Elo, with its origins in Durham, North Carolina, is a wholly owned subsidiary of Precision BioSciences (Nasdaq: DTIL). In 2018, Elo first set up shop at QUT in the Institute for Future Environments and will soon open a new lab. 'Australia's scientific prowess is equal to any in the world,' says Pennisi.

In 2020, the 32-year-old QUT was named one of the fastest-rising universities in the world, and top in Australia, for scientific research in the Nature Index of high-quality research outputs.

Australia's reputation in agtech is also escalating. 'Across the country there is work being done in virtually every part of agriculture,' says Pennisi. 'You look left or right and there are opportunities as far as the eye can see.'

Three years ago, Elo began working with Austrade in the USA. 'They've been good, strong supporters,' says Pennisi. 'They were very much *en pointe*, making the appropriate introductions. They have the network that is able to be leveraged to the benefit of the client and the benefit of the Australian economy.'

The power of proximity

Pennisi points to Australia's advanced economy, its solid regulatory system and proximity to Asia as being a big draw for foreign investors.

'Australia is a bridge to multiple thriving economies in Asia. So, using our strong science, our good IP management, and our robust legal system ensures that the work we do at Elo Australia will be taken up to Australia's traditional trading partners.'

With the help of Austrade's offices throughout Asia, Elo will have easy access to advice on navigating regulatory, tax and safety issues, insights on the nature of individual markets, and potential partners.

Khazi believes Elo's solution-centric approach strongly differentiates it from other firms operating in this space.

'We have the world's best product-ready genome editing technology,' he says. 'We are the first genome editing commercial enterprise in Australia. With a solution-centric mindset, we are in Australia to solve problems, starting with those that are on the top of the list for every Australian grower: climate-smart crops.

'We have a diabolical situation facing us, but we have an exquisite solution.'

Importantly, too, Elo's genome editing technology is not limited to applications in plants alone.

'Our product-ready technology platform can be used to address unmet needs in the livestock industry, animal health, aquaculture, building resilience to pests and diseases, and improving environmental sustainability,' says Khazi.

About Austrade

The Australian Trade and Investment Commission (Austrade) is the Australian Government's international trade promotion and investment attraction agency.

We deliver quality trade and investment services to businesses to grow Australia's prosperity. We do this by generating and providing market information and insights, promoting Australian capability, and facilitating connections through our extensive global network.

Disclaimer: Whereas every effort has been made to ensure the information given in this document is accurate, Austrade does not provide warranty or accept liability for any loss arising from reliance on such information. © Commonwealth of Australia 2020