

# BREEDING HIGH-QUALITY HERDS WITH CATTLE IVF

EXPORT CASE STUDY | MAY 2017

**Australian Reproductive Technologies (ART) is helping beef and dairy producers around the world to accelerate the growth and genetic improvement of their herds.**

Based near Rockhampton in Queensland, ART is a leader in assisted reproductive technologies for cattle. The company is known for combining the latest human in-vitro fertilisation (IVF) techniques with the best of cattle biotechnology to improve embryo production and quality.

ART founder and managing director Simon Walton is an embryologist with more than a decade of experience in human IVF. He comes from a long line of cattlemen and had always wanted to work in cattle reproduction. After discovering human IVF techniques were about 10 years ahead of cattle reproductive technologies, he saw an opportunity to infuse the best of the two disciplines.

By adapting culture techniques and replacing overseas-sourced culture media (the material in which embryos are grown) with a higher-quality Australian solution, ART significantly improves the productivity of cattle herds and enhances their genetic quality.

‘In Australia, our customers are primarily beef studs that breed bulls for seedstock producers, so they want to produce more and better-quality bulls that fetch high prices,’ said Walton.

‘Elite cows produce one calf a year when bred naturally, and seven to eight calves in a lifetime. Using our IVF technology, we can produce 50 to 100 calves a year from one elite donor cow. It’s an efficient way of mass-replicating elite genetics to create top-quality cattle. We can also utilise our sex semen technology to skew the ratio of calves towards bulls, or towards cows for dairy farmers.’



Image caption: Donor cattle.

**‘The idea of a joint venture – where you share profits in a big program – is really attractive but there are pitfalls to watch out for.’**

Simon Walton, Managing Director, Australian Reproductive Technologies

To stay at the forefront of cattle reproductive technology, ART has research collaborations with the University of Adelaide (new culture media and embryo manipulation); the University of Queensland (semen research, and the use of IVF in endangered wildlife); the University of Sydney (fertility issues); and Central Queensland University (deep-freezing of cattle embryos).

## International success

ART’s innovative approach has attracted the attention of cattle breeders overseas. The company has worked with beef producers in Botswana and hosted researchers from Nigeria, China and France.

In 2015, the Ministry of Agriculture and Rural Development in Vietnam approached ART to see how the company’s IVF technologies could be applied to grow its beef and dairy cattle herds.



Australian Government

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‘Vietnam is looking to increase its beef cattle capacity to reduce its reliance on imports,’ said Walton. ‘In April 2017, we shipped tropically adapted cattle to Vietnam. We’ll then use our reproductive technologies to create embryos from these cattle and build an elite herd of animals.’

In June 2017, ART won a tender to supply frozen cattle embryos to Fiji. Under stage one of the arrangement, ART will create 300 embryos in Australia and ship them to Fiji, where Walton’s team will work with Fijian beef and dairy cattle breeders to implant the embryos. Stage 2 will be to provide education and training.

‘For the project to be economically sustainable, the technology needs to be operated by Fijians,’ said Walton. ‘We will train Fijian workers in our lab in Queensland so they have the skills to use our technology when they return home.’

It will be two years before embryos can be taken from the first lot of resulting progeny. During that time – and pending funding – ART is aiming to establish a lab in Fiji and train Fijian staff. ‘By the time the core group of elite animals are ready to replicate, we will hopefully have the systems in place so the work can largely be done by Fijians,’ said Walton.

## Exploring new markets

Walton plans to open a new facility in southern New South Wales in June 2017 to expand ART’s services to local cattle breeders. He will also keep exploring new offshore markets.

‘Asia is a logical place for us to export our technologies as there are many developing economies in the region that want to grow their cattle herds,’ said Walton. ‘We are particularly interested in Indonesia and India, as well as the Philippines, Malaysia, Laos, Cambodia and Thailand.’

‘Austrade provided market identification and analysis and translation services, organised market visits and made introductions to potential customers,’ said Walton. ‘ART’s international success could not have happened without the assistance of Austrade, Tradestart and [Trade and Investment Queensland](#).’

While the booming markets of Asia offer opportunities for Australian exporters, Walton’s advice is to proceed with caution. In 2014, ART entered into a joint venture with a Chinese state-owned dairy company that ‘had the potential to be the biggest embryo transfer program in the world’, said Walton.

However, a series of food security issues – including the adulteration of milk and infant formula with melamine, a mercury contamination and an *E.coli* outbreak – led to many Chinese dairy companies reducing the size of their herds.

ART’s joint venture partner halted operations altogether, causing the company to lose a significant amount of money. Walton’s focus on China at the expense of ART’s Australian operations also had an adverse impact on local business. Despite this, Walton says he is open to returning to China, ‘with eyes open and much wiser’.

Learning from his experience in China, Walton decided to work with a private company on the Vietnam project under an arrangement where ART is paid progressively for its work.

‘The idea of a joint venture – where you share profits in a big program – is really attractive but there are pitfalls to watch out for,’ said Walton. ‘Once business relationships are established, we can look at pursuing a joint venture–style framework in Vietnam.’

For companies that rely on the use of proprietary technology to deliver services, Walton advises retaining the most critical part of the technology to avoid copying: ‘We may show customers how our technology works but would never divulge the formula for the culture media we use.’

## About Austrade

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