

# Business with chemistry

Persistence is about to pay off, big time, for Brisbane-based global pharmaceutical company, Alchemia.

Running an ASX-listed company with its name bearing remarkable similarity to *alchemy* – the medieval science and philosophy dedicated to converting base metals into gold, finding cures for all disease and discovering the secrets of immortality – chief executive Pete Smith nevertheless holds a lot less faith in mysticism than in his talented team and the biotechnologies they are creating.

The path to success is a long and winding one for pharmaceutical companies at the best of times – and the challenges for a small, ASX-listed pharma company like Alchemia are amplified under current financial conditions.

But it all comes good next year when Alchemia's first product – a generic anti-coagulant drug based on the GlaxoSmithKline-marketed *Arixtra* – comes to market and steady losses morph with an estimated \$30million a year share in the profits.

With a second molecule on the way in the cancer treatment market, also a type of generic, Alchemia is set to reap the rewards for almost 10 years of quiet, costly research persistence.

Dr Smith, a Briton of extensive pharmaceuticals experience who took on the CEO role in 2006, readily admits that Alchemia's path to market with its first two drugs – in the industry they are referred to simply as *molecules* – is based more on good business than revolutionary chemistry.

Nevertheless, the biotechnology basis of the company – which came from founders Peter Andrews, who is now the Queensland Chief Scientist but remains on the board as a non-executive director, and Tracie Ramsdale, who also remains a non-executive director – is unique.

By going the generic drug manufacturing route, Alchemia is taking care

of business in a way that should make the Queensland company's presence felt in a resounding way.

"Rather than going for real blue sky, a lot of the companies that are making headway now in this industry are aiming for easier targets," Dr Smith said. "They might not be the blockbusters (an industry term that refers to billion-dollar-a-year sellers) but they are going for targets that are more achievable."

Alchemia's strategy revolves around a unique way to manufacture a generic anti-clotting drug, called fondaparinux, that is used in the treatment and prevention of deep vein thrombosis, pulmonary embolism and acute coronary syndrome. Naturally, Alchemia has been watching the outstanding growth in the use of the branded drug *Arixtra*, which should sell over US\$250million in the US market alone next year.

The use of *Arixtra* is recommended by the American College of Chest Physicians and it recently received the European Society of Cardiology's highest recommendation for use in acute coronary syndromes (ACS). It is most likely that Alchemia's own fondaparinux will be the first and, perhaps, only generic version of *Arixtra* in the market.

"In our case, with the anti-coagulant drug, fondaparinux, we are in the extraordinary position, and it is an extraordinary position, that it is very likely we will have the only generic product," Dr Smith said.

Alchemia, back in 1995, was founded on its ability to do complex chemistry, in particular using sugar molecules, Dr Smith said.

"It was really recognising that this particular chemistry would enable us to synthesize other drugs like this very difficult to make (fondaparinux) molecule."

The process of creating Alchemia's fondaparinux began in 2000.

It took four years for Alchemia to develop the process itself and the rest of that time has been spent scaling it up for production and creating manufacturing and marketing alliances, the most significant of which is with Indian global pharmaceutical giant Dr Reddys, which will volume manufacture and market Alchemia's generic drug to the US and other countries.

"To get a generic drug to market, all you have to show is that your drug is identical to the branded drug," Dr Smith said. "But the high value proposition here is that it's a very difficult to make the molecule, but we've done it."

"This is very rare. I don't think there is another situation in which a significant branded drug has just one generic – ordinarily you'd have 10, 15, sometimes 20 competitors there, all fighting for contracts with hospitals and pharmacies, and all purely on price."

The real winner for Alchemia is that its production process is different to the existing methods and the patent is protected, preventing the process from being copied by others.

## EXTENSIVE USE

Heparins have been used since the 1930s to prevent blood clots. They were developed as a purified product out of the intestines of cows and pigs. Today heparins are mostly sourced from pigs. In the early 1980s researchers developed what are called low molecular weight heparins, which are fractions of heparin molecules – and these worked even better.

"The market for anti-coagulants (drugs that prevent blood clots) is close to \$5billion worldwide. They are used after knee surgery, hip surgery, prevention of heart attacks and other patients who were at risk of blood clots. A whole range of different uses," Dr Smith said. Heparin



Pete Smith.

**THE HIGH VALUE PROPOSITION HERE IS IT'S VERY DIFFICULT TO MAKE THE MOLECULE. WE'VE DONE IT. I DON'T THINK THERE IS ANOTHER SITUATION IN WHICH A BRANDED DRUG HAS JUST ONE GENERIC.**

molecules are a complicated mixture of long chains of sugar molecules.

"Alchemia's product is the only synthetic molecule in the anti-coagulant space. It's all made by chemistry. A pig never gets near this molecule or this process, so no risk of contamination or anything like that, which is good from our point of view, especially given the contamination problems the other heparin drugs had earlier this year.

"Without spending the money on expensive clinical trials, we will have a drug on the market that will have profit margins that are comparable to a branded drug that would have cost hundreds of millions of dollars to develop.

"So in that regard, it has been a great business strategy," Dr Smith said.

**REVENUE CRUCIAL**

Alchemia's model of generating early revenue and substantial profits from a generic drug may be unusual for the biotechnology industry, but it seems like business common sense.

"Clearly, in times like these where credit is hard to come by and any sort of private equity is hard to come by, having a source of revenue is an absolutely phenomenal asset," Dr Smith said. "From this product, starting next year when it's launched, we could be earning a profit that is, certainly, in the order of tens of millions of dollars. We estimate potentially \$30-\$40million per annum."

Dr Smith said, "One of the things that drives me is the promise of building a substantial stand-alone company, from the assets that we have

today," Dr Smith said. "But if the shareholders say, well, actually, we want to cash in as we've reached a good point or we actually don't want to wait that next five years to see the next clinical trial result, that's entirely their call.

"But I think it is very important when running a company like this, instead of just dressing it up for sale, you have always got to be focussing on building substance within it. And I think that's where the long-term value comes from.

"Sometimes I think it's perceived that a lot of people in the biotech sector are megalomaniacs only wanting to build multi-billion dollar corporations. But I think if you are not aiming for that you are not going to build any value that is going to be recognised."

**CANCER TREATMENTS**

Alchemia's vision for growth will slip into second gear when its second product is released into the anti-cancer treatment space. The product and

Image: creative-eyedentity.com.au



**QUEENSLAND LEADERS**

Alchemia is a partner in Queensland Leaders, the organisation helping to foster and mentor the next generation of Queensland-based international companies. Dr Smith became interested in Queensland Leaders initially when he became CEO of Alchemia. Moving to Brisbane from Britain, he realised he needed to develop links with leading Queensland company networks and the Queensland Government at the highest levels. Furthermore, as a Queensland-based international company in a very challenging field, Alchemia has a lot to offer the companies Queensland Leaders mentors. [www.queenslandleaders.com.au](http://www.queenslandleaders.com.au)

area it operates in may be vastly different, but the business model seems remarkably similar.

“We are taking old drugs – these are cancer drugs – and doing a process of what we call in our industry reformulation,” Dr Smith said. “Basically we are changing the way in which the drug is delivered, to make it work better.”

Alchemia’s technology carries the anti-cancer drug to tumours and helps it to hyper-concentrate there.

“The active ingredients (in Alchemia’s product) is exactly the same as approved anti-cancer drugs. Again, there are big advantages in terms of clinical development. Going back to what the FDA is interested in – safety – each drug we reformulate already has a huge file of data on the safety of the molecule, its side effects, how it’s used, its dosing etc. That’s a big chunk of data that we don’t have to recreate.

“Basically we combine an active cancer drug with a material called hyaluronic acid – it’s a naturally occurring substance which is already used in eye surgery and knee surgery – so again it’s already approved for human use and the FDA has experience with it,” he said.

“Putting it simply, the hyaluronic

acid is a material that will carry the drug to the tumour as it sticks there selectively. It works because there are receptors on the tumour cells that bind to this material.

“There’s lots of science behind it and why the tumour produces these receptors... but the gist of it is that we are getting more drug to the tumour. The thing with every cancer drug is you’d like to give more of it, but the problem is that you are prevented from doing so by the drugs’ toxicity. So you are limited in terms of the amount of damage that you can do to the tumour by the damage that the rest of the body has to endure.

“So if we can get more drug to the tumour without putting more drug in the body overall, we’ll be doing more damage to the tumour every time that drug is being used, without increasing side-effects,” Dr Smith said.

Phase two clinical studies in an 80-patient study have been very encouraging, Dr Smith said. This study featured the technology carrying the active drug irinotecan (marketed by Pfizer’s as *Camptosar*), which is widely used in colo-rectal (bowel) cancer treatment.

Alchemia’s product, named HA-irinotecan was shown to increase the efficacy of the drug by about 116 per cent, Dr Smith said, with no increase in adverse side effects.

“In that particular patient group, it delivered a very significant result. This was bowel cancer, colo-rectal

cancer. We were very, very excited by that result, especially as colo-rectal cancer is one of the most prevalent cancer types.

“The interesting thing about this technology is the same material that carries irinotecan can be used to ferry any one of a number of other cancer drugs to tumours. So it really is a platform where, theoretically, we can take just about any generic cancer drug and make it work better.”

**HUMAN SIDE**

Dr Smith admitted that part of the pressure to get Alchemia’s anti-cancer drug to market was the human side of the equation – saving lives.

“My previous company was also working in the cancer field. I can remember the first time going down to the clinic and seeing patients who were on our clinical trial who just hoped against hope that this new treatment was going to benefit them, or their dad, or brother... it was prostate cancer treatment in this case. It does bring it home.

“These are products of great significance to people in very difficult times in their lives,” Dr Smith said.

“We tend to start with clinical trials in the sickest patients first because that is the patient group that is available. Hopefully we will also be able to improve treatments for earlier stage patients with the dream that someone will be cured or their cancer stays in remission for longer and people get more of what are now referred to as *quality of life years*.”

But ongoing business pressures still dictate the pace of getting to market, Dr Smith said.

“I think it is a big motivator for people at the end of the day, but, we have got to remember it’s a business and we can’t spend all our days chasing rainbows. At the end of the day, if the company is going to survive we have got to meet the needs of shareholders, otherwise we are not going to be funded to get products on the market.

“So there is always this balancing act. Yes, we’d love to go as fast as possible, but we have got to prove the technology first in order to reduce the risk for investors. That sometimes means it does take longer to get to market. But until we’ve proven it works we are not going to get the money to develop all the other products.”

And there is another quiet pressure that dogs all pharmaceutical companies.

"The annoying thing is that all the time in the background you can hear the ticking of the patent life on the technology running down," Dr Smith said. "Every day delayed in a project in our industry is a day of maximum cashflow that is lost at the end. So speed is important."

"We have limited resources, we operate in a very, very expensive environment – it's very expensive to do clinical studies, so we have to make decisions about the optimal course."

**MADE IN QUEENSLAND**

Alchemia's substantial premises at Brisbane Technology Park, Eight Mile Plains, is an ever-increasing hive of activity as products come closer to market. But the reality is that when the halls and laboratories seem emptier it's because activity has stepped up further afield.

"While our base is here, we have really international staff, from all corners of the planet, working for us, bringing a lot of different skills and we have collaborations with the US, Europe, India, China – so even though we are a long way away from

our collaborators we're working very actively with groups from around the world," Dr Smith said.

"There are lots of challenges. Lots of flying for face-to-face meetings and lots of early morning and late night calls. We actually do have to run harder than our European and US colleagues just to be competitive."

"I don't think it's any different here to how it was in Europe or the US," said Dr Smith. "I think the biotechnology industry in the US has been much more successful simply because of the number of companies, the number of venture capitalists and the number of dollars that have been invested."

Dr Smith said a strong advantage Alchemia found in Queensland was the high level of government support for the industry.

"It's true you get a lot of government support, which I think is very important," he said. "But I think the principal factors have been the founding technology and company's founders being here."

"It's very tempting to go running off at the earliest opportunity to the

US to pursue the capital markets or to be closer to the biggest market in terms of our customers. But I think, as CSL has shown, we don't necessarily have to do that.

"It's a good place to live. Costs are lower here. Although there are challenges in that it takes longer to get specialised equipment and reagents, so it's not all one-sided."

"Investors in the Australian stock market are not as experienced in following pharmaceutical and biotech companies as those in Europe and the US. But there is nothing that is more comprehensible to the market than a black number at the bottom of the P&L. We are very close to achieving that."

"That's the dream situation to be in. Rather than explaining the science, show people how the drug benefits patients. More patients alive on drug X than there are on drug Y. That sort of thing."

"It's not surprising, anywhere in the world it's hard to explain cutting edge science," said Dr Smith.

It's like explaining alchemy, after all. [www.alchemia.com.au](http://www.alchemia.com.au)



Expand your **investment** portfolio

**Invest in our knowledge now**

- SALES & LEASING
- PROPERTY MANAGEMENT
- PROJECT MARKETING
- INVESTMENT PROPERTY SALES
- APPRAISALS & CONSULTANCY
- ACCREDITED AUCTIONEERS
- INDUSTRIAL LAND DIVISION
- BUSINESS BROKERAGE



**MC Commercial.GC**  
GOLD COAST

Commercial Real Estate Agents & Auctioneers

Contact Head Office 07 5539 6900 or email [info@mccommercial.com.au](mailto:info@mccommercial.com.au) W: [www.mccommercial.com.au](http://www.mccommercial.com.au)