

Prolysis: Jeff Errington, Russell Smith and Steve Ruston

Jeff Errington

Professor Errington says, "I concentrated on basic academic research for over twenty years and for about fifteen of them found nothing that could be commercialised. Then, around 1995, pharmaceutical companies began switching drug development towards what they call 'target-led' strategies, making it critical for them to know about those targets. We realised that processes being studied in my lab would interest pharmaceutical companies and could think of 'tricks' that could be adapted for screening by drug companies. So I talked with a friend in the pharmaceutical industry who got very excited, and gave me good advice. 'File some patents', he said. 'Then come back and talk formally'. So we filed a series of patents with Isis Innovation, and talked to him again and to many other industrialists."

"The results were disappointing, with only a little interest from big pharma in licensing our assays. So we decided to set up a spin-out company to develop our assay ideas commercially, obtain proof of principle, and then persuade big industry to use them."

Establishing Prolysis

"To establish the company we needed chemistry. We could do the biology, but to show that it worked, needed chemical compounds. Fortunately, Oxford Molecular, then very successfully selling pharmaceutical software, wanted to branch out into other kinds of screening and saw it would be sensible to sell services like ours to their clients. So Oxford Molecular put up £2.5 million and Prolysis was founded in June 1998 to establish a screening operation. If that was successful, Oxford Molecular had an option to buy and incorporate Prolysis."

"Problems soon arose. A spin-off needs premises, people and there are many important disciplines to learn, including accounting, HR, etc. Fortunately, being the first company founded after Tim Cook arrived there, ISIS provided us with good advice, but we took some time to hire anyone except me and one post-doc. By early 2000, however, we were established in our current premises in Begbroke and had 7 full-time employees."

Problems!

"A bigger challenge was that, as its case study shows, Oxford Molecular had financial problems. Moreover, we planned to sell services to pharmaceutical companies and, during the late 90s, numerous mergers left only a handful of them as potential customers. For example, we almost closed a deal with Dupont, just as it sold off its pharmaceutical division."

"All this aggregated into a huge problem. We were almost out of cash, had no deal with a pharmaceutical company and Oxford Molecular, our only potential funders, were going into receivership."

"Threatened that if we refinanced Prolysis much of our equity would disappear to pay off the Oxford Molecular receiver, we did a creative deal with him that allowed Prolysis to survive, use up the last of its cash in return for recovery of all of the original equity and the elimination of the loan financing, and rapidly re-finance itself."

"Early in 2000 we brought in Dr Russell Smith who had just left Avidex. He helped us with the negotiations with the Receiver, and through his contacts with Oxford business angels, etc helped us to do a rapid interim re-financing to keep the company going. With Russell's help, we also changed the business model to take account of the new climate, and moved the focus onto developing our own antibacterial compounds in house."

"Later in the year we appointed Dr Edwin Moses as Chairman, freeing me to focus my attention more onto the science. Together, the three of us ran a road show, which culminated in a Series A funding round being closed in November, 2002, raising £4.5 million."

"From a personal perspective, as an academic with no knowledge of how to run a business, I learned some important lessons in setting up Prolysis. First, It is crucial to get really good full-time management in as early as possible. Academics generally don't have the time or expertise to be able to establish a new company from scratch. I was very lucky in that at the crucial time I had a BBSRC Professorial Fellowship that freed me from serious teaching and administrative duties. Secondly, because we were one of the early spin outs, there was not a lot of expert advice and support available. ISIS Innovation now provides a wealth of expertise and experience and you should take full advantage of this. Third, I had no idea of how much time and effort I would have to put in to get the company off the ground. However, I have no regrets because there have been so many interesting challenges and I've thoroughly enjoyed being immersed in a world that most academics never engage with."

Russell Smith

Russell's views on his period with Prolysis are in his case study on this site, but he says he made 'a huge strategic decision' because he saw 'how much more value there was in Prolysis developing our own compounds.' So, instead of selling drug-handling services to companies, Prolysis acquired its own library of 100,000 chemical compounds and began to modify them, embarking on a joint programme with its partner, Evotec, which Russell argues 'matched their world-class chemistry with our world-class biology.'

Steve Ruston

By end-2002, after completion of the Series A funding round, a key element in the growth and development of the Company was the appointment of a full time CEO. Russell wanted to pursue other career opportunities and Steve Ruston was hired to replace him.

"By then," says Steve, "Prolysis had defined its role as being to apply its world-class biology to develop new antibiotic medicines and to partner these with major pharmaceutical companies to achieve commercialisation."

"Steve, in his role as CEO and acting Chairman, is leading the Series B funding round which is designed to support the progression of Prolysis' project portfolio into clinical trials."

Steve continues: "Prolysis was really secure only from the end of 2002 when the Series A funding round was completed. At this point we were able to assemble all the tools required to become a successful drug discovery organisation. We have built our team, established technology partnerships and our relationships with other companies. This enables us to move the research programmes through their different stages to human clinical trials. That will be a defining moment – developing a project with commercial potential."

The pre-clinical phase

"Today, we are still in a pre-clinical phase. Moving basic research idea to starting clinical trials will always mean several years' work. To achieve this we have strengthened our management team by acquiring pharmaceutical industry management experience through the appointment of Dr. Lloyd Czaplewski as Director of Research and me. Beyond that our Scientific Advisory Board is also composed of very experienced, knowledgeable and high-achieving individuals, from the drug discovery and development, clinical and marketing sectors. So the criteria we use to assess whether any of our research programmes show enough promise to be progressed are the same as we would have used in Glaxo, or Pfizer or elsewhere."

"The challenge in drug discovery is high, but if you set yourself lower standards, ultimately you won't have anything of real commercial value, and our goal is to take research ideas to clinical proof-of-concept. At that stage if early clinical trials show that we have a potential medicine, large scale clinical trials and other studies will be partnered out to a major pharmaceutical company."

Novel Insights

"Prolysis' competitive advantage comes from the novel and proprietary insights into bacterial cell biology and from this we have the ability to develop medicines that work through different action mechanisms compared with current therapies and should be free of the resistance problems being encountered, at least for a while.

Successful proof-of-principle studies in antibacterial R&D give you a reasonable confidence that they will lead to successful new medicines. Nevertheless, all these programmes have to go through stages that are very costly and resource-intensive."

"We believe that our advanced programmes lead the industry in the development of new classes of antibiotics and Prolysis is patenting new chemical substances synthesised through our strategic partnership with EvotecOAI as the basis for these new therapies."

EvotecOAI

"EvotecOAI is an international service-provider to the pharmaceutical and biotechnology industries and our contractual relationship and operational links with them centre on the provision of chemistry services that are delivered out of the UK. Our long-term strategic partnership agreement means they are effectively our chemistry division. They work very closely with our in-house biologists and their partnership is very effective."

The Prolysis Team

Prolysis can call on the talents of some 35 scientists covering the disciplines of biology, biochemistry, protein crystallography and chemistry.

"What's fantastic is that we've got a talented and highly-motivated team here which is the key to the Company's success. They have access to the world class science of Jeff Errington and the industry experience of our Advisors. Project scientists wouldn't get within a hundred miles of such senior players in big companies. Here, they see Jeff every Monday morning!"

"Prolysis is based at Oxford University Begbroke Science Park. We have an ongoing collaboration with the Errington Group in the University which is partly government-funded to widen and deepen our proprietary technology. But most of the work on our advanced programmes which will move us into clinical trials is being done here at Begbroke"

Funding issues

"Drug discovery and development is expensive, even if you're GlaxoSmithKline or Pfizer. There is a real need for small biotech companies researching into the discovery of new medicines. This is because major pharmaceutical companies increasingly rely on such companies to be creative and nimble in designing and prosecuting research programmes. So, when we succeed, by feeding new medicines into the late-stage development processes, which major companies run very well, not only will we be helping them, they'll be helping us also to create urgently-needed new medicines."

"There is a clear role for the biotech sector but it is a very difficult challenge to secure venture capital funding required to support our research programmes until they can generate a commercial return. We receive government assistance for our early research – for which we're extremely grateful – but there is a gap. It will take several years from an idea to beginning of human clinical trials. Seed funding or DTI money is often available for the early part of that several-year cycle and there may well be money from big pharma companies or venture capital institutions when clinical trials being undertaken, but bit in the middle phase, where Prolysis is now, the position is quite difficult."

"In the UK, significant research into new antibacterial medicines is no longer carried out in big Pharma and other R&D companies are focussing on different therapeutic areas."

"If we were not to succeed, there would be little or no antibacterial R&D in the UK which would be a great pity given the country's history in the development of penicillin and cephalosporin, and not least because there is such UK talent in this field – why wouldn't we want to fund that?"

Steve Ruston's experience

"I took a Ph.D in organic chemistry and worked both overseas and in international companies here in the UK and I have had an interesting and rewarding career. However in recent years a series of mergers and acquisitions had created such big organisations that it becomes increasingly difficult to feel you can make a difference. I've been through the complexities of the buying and selling, merger and acquisition processes several times yet share prices for the combined companies often show they have not actually produced the expected results. Big pharma is much less fun than it was!"

"Now, in Prolysis, we stand or fall on our own efforts. We have freedom to operate, good support from our US investors, close contact with fantastic scientists and very clear business objectives. We are doing something very much needed to address an urgent and growing medical need."

"When we succeed the sense of achievement will be the highlight of my career."

Douglas Hague and Christine Holmes, December 2004