

### **Biotech Capital – Clever Investments in World Leading Australian Technologies and Trading at a 40% Discount**

Biotech Capital Ltd (BTC) is a venture capital company that is listed on the Australian Stock Exchange. In 2000, the company raised \$40 million from predominantly retail investors to invest in emerging life science companies in Australia. The company has been structured as a Pooled Development Fund, which means, through legislation passed in 1992, that any capital gains in shares or dividends from this company will be tax free to shareholders.

The company's mandate has been to invest in Australian life science companies across the industry, which includes companies operating in the fields of genomics, proteomics, bioinformatics, medical devices and any enabling technologies. By September 2002, the company had made six investments valued in total at \$20 million.

Venture capital companies traditionally provide financing to early and mid-staged emerging companies. These are companies that are generally very speculative and at the cusp of entering the strong value creation phase of their businesses. Venture capital companies aim to have a diverse investment portfolio to spread the risk of any one investment. Although returns from very successful companies may be greater than 10-fold, some investee companies will fail. Biotech Capital expects to make between 10 – 20 investments overall and has an investment horizon between three to five years.

#### **Advantages of investing in listed venture capital companies**

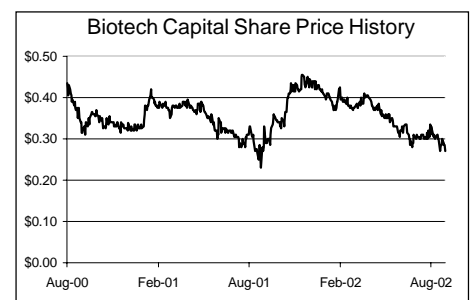
Biotech Capital has a number of advantages over other venture capital (VC) vehicles. As mentioned earlier, the company

has been structured as a Pooled Development Fund so all distributions and gains are tax-free. Biotech Capital is also a listed entity which allows its shares to be traded on the stock market. Shareholders in many other VC vehicles do not have such liquidity benefits.

Venture capital companies have access to investments that are not available to the general public (i.e. limited to professional investors in tranches greater than \$500,000 where a full prospectus is not legally required). The venture capital companies can write specific provisions into the terms of the deal that allows them to exercise greater control and have greater input and protection over their investments. These provisions are of paramount importance to venture capital companies. They are a trade off for not being able to exit their investment at any particular time as would be the case of investing in listed companies, although poor liquidity in more speculative stocks can make large exits from a listed company difficult as well.

#### **VC investment provisions**

One provision generally negotiated by venture capital companies is protection from being disadvantaged through further capital raisings by the investee company. This can include a first right of refusal for a subsequent raising, ratchets which ensures the dollar value of the investment is maintained if money is raised down the track at a lower price (by issuing more shares to the venture capital group at no cost), and anti-dilution clauses where more shares are issued to the venture capital company to maintain say a 10% holding. Biotech Capital seeks to incorporate one



Current price: 29 cents

or more of these provisions when negotiating new investments.

Other investment clauses may include clawbacks, where the original owners of the business may lose shares to investors if milestones are not met. Other more common clauses include CEO (and key staff) handcuffs to lock in key employees and restrict the sell down of stock by original investors; exit provisions, where a clear exit strategy and timeline is specified; control of the Board and company if this does not occur as agreed; the ability to hire and fire key staff and CEO, take Board positions, and receive preferred returns in the event the company is sold. These provisions allow the downside risk of private investments to be minimised as well as gaining the ability to take greater control of the company should the development of the business go astray.

The other advantage of allowing venture capital companies to select and manage the investments is gaining the benefit of well experienced investment managers who conduct thorough assessments of their potential investee companies (due diligence) and have access to specialist networks.

Biotech Capital has an extensive due diligence process that can take up to six weeks, using independent patent attorneys and technical experts (**Foursight & Associates** which includes the likes of **Sir Gustav Nossal** and **Dr John Stocker**) and this is followed up with a further four to six weeks of deal structuring and negotiations.

#### Disadvantages of investing through a venture capital group

Portfolio investment companies tend to trade at a discount to their book value. This applies to other portfolio companies in the sector such as **Circadian Technologies** and **Medica Holdings**, and this is currently the case with Biotech Capital which has a book value of 48 cents (with total assets of 54 cents per share if its investment in Proteome Systems is calculated on the last valuation) and is currently trading at 29 cents. Whether this discount is justified is the subject of an ongoing debate in the market. The argument that the portfolio companies would be required to pay tax on their investments if realised and the investments should reflect post-tax values is lessened with PDF's which are subject to a 15% tax on returns from investments, compared to a 30% rate for standard companies.

The investment time frame for venture capital companies is generally in the order of five to seven years. An investment return from Biotech Capital is in the order of three years, given the company is two years into its investment cycle, although regular exits from its investments should begin to occur before that time.

Although the investment return sought by venture capital companies is in the order of 30% - 40%, it should be remembered that they are considered high risk companies. Biotech Capital has aimed to temper this risk by investing in as many as 20 companies. There is also a spread in the commercial maturity of these businesses and a spread of investments across sub-sectors of the life science industry.

Another disadvantage to investing in venture capital companies is there is no control over specific investments the company makes.

#### Investments to date

To date, Biotech Capital has made six investments totalling \$20 million or half of its funds raised. Each of these investments is assessed and covered in depth in the remainder of this report. Its first investment, in **Proteome Systems**, has shown to be a good choice. Proteome Systems is led by a strong management team which has made good progress commercially at an international level. Although the entry price into this company may have been high at the time (at a valuation of US\$100 million), Proteome Systems was recently valued at US\$175 million at its last capital raising in June.

Its second investment, in **Pacific Knowledge Systems (PKS)**, was made at the tail end of the technology boom in late 2000 at what now looks to be a high valuation for that company (\$20 million),

although with investment provisions (exercising a convertible note) this entry price has been reduced (\$12 million). The company would likely find it difficult to raise funds at that price or higher today and the next eight months will be crucial to the company's success.

Biotech Capital's investment in **Alchemia** in March 2001 was a disappointment only in the sense that the company could only invest \$2 million, due to the strong interest from other venture capital companies. Alchemia continues to make strong progress with its diverse business model and a public listing is likely as soon as the next biotech IPO window opens. Biotech Capital invested at a valuation of \$60 million and there is a very high chance it will receive a solid return on its original investment. The potential exists for Biotech Capital to make a follow-on investment in Alchemia before the company lists.

In that same month, the company invested in Melbourne based **XRT**. XRT's core technology is in high resolution imaging and although the technology's immediate application is not in the life sciences industry but in semiconductor manufacturing, Biotech Capital's early vision with this company has a high chance it will be well rewarded over the next few years. There are no immediate plans to list this company and an exit may be further down the track than with Alchemia or Proteome Systems. XRT may well be one of the jewels in Biotech Capital's crown.

#### Investments made by Biotech Capital

Company	Location	Date of Investment	Money invested	Valuation of Company	Options attached	Subsequent valuation	Current value of investment
Proteome Systems	Sydney	August 2000	\$5.375 m	\$166 m or \$6 per share (& \$2.375 m at \$9.50/share)	1 for 2 option at 15% discount to subsequent raising (now exercised)	\$12.50 per share	\$9.38 m
Pacific Knowledge Systems	Sydney	December 2000	\$2.075 m	\$12 m	Convertible note	-	\$2.0 m
Alchemia	Brisbane	March 2001	\$2.0 m	\$60 m	-	-	\$2.0 m
XRT	Melbourne	March 2001	\$4.0 m	\$20 m	-	-	\$4.0 m
Xenome	Brisbane	November 2001	\$3.5 m	\$12.4 m	-	-	\$3.5 m
Biocomm Services	Melbourne	June 2002	\$3.0 m	\$12.5 m or \$1 per share	300,000 5 year options at \$1	-	\$3.0 m
			<b>total \$19.95 m</b>			<b>total \$23.88 m</b>	

\* Based on Proteome Systems' latest valuation

cash on hand \$19.13 m  
**Total assets\* \$43.01 m**

In November 2001, Biotech Capital made its fifth investment, in the Queensland based company, **Xenome**. Biotech Capital's entry price of approximately \$12.4 million represented extremely good value and came about because of necessity and a lack of other venture capital investors. Although this company is less advanced than Alchemia or Proteome Systems, it's very likely that its \$3.5 million investment will be judged in the future not only as a solid investment but also very well timed.

Biotech Capital's sixth investment, in **Biocomm Services**, was certainly not only a very good investment deal for the company but also a move to secure its pipeline of future investments. Together with three other investors, Biotech Capital has invested in Biocomm, a technology commercialisation company. The investment provides Biotech Capital with access to an impressive base of Victorian medical research institutes and universities. It is a longer-term investment for the company.

#### Board and Management

The managing director of Biotech Capital is **Harry Karelis**. Karelis, with undergraduate specialisations in microbiology and biochemistry and an MBA, has combined a science knowledge base with professional qualifications in investment. Karelis' funds management and international banking experience is an important asset for Biotech Capital, as are his extensive international links in both the finance and biotech industries.

Biotech Capital is chaired by **Bill Ireland**, the managing director of **Challenger International Ltd** and other directors include **Alistair Davidson** (chartered accountant) and **Irene Yun Lee** (lawyer and company director). The board recently rounded out its skill sets with the addition of **Professor Tony Basten**. Basten is the director of the **Centenary Institute of Cancer Medicine and Cell Biology** in Sydney. He contributes important medical research and clinical research experience, a perspective not always present on the boards of biotech companies.

Biotech Capital is run leanly in terms of personnel – Karelis employs one associate to assist in reviewing investment opportunities. However, investment proposi-

tions are also assessed through external sources, for technological merit and for intellectual property criteria.

#### Special Advisory Consultants

Biotech Capital has retained the services of **Foursight Associates** to assess investments from a technological perspective. This consultancy service comprises four Australian scientists: **Sir Gus Nossal**, **Dr David Pennington**, **Dr John Stocker** and **Professor Graham Mitchell**. Between them, the principals of Foursight possess a vast quantum of experience in basic and applied research and in the commercialisation of biotech opportunities. Apart from Sir Gus Nossal, all hold or have held board positions on many listed and unlisted Australian biotech and healthcare companies. The quality of their global scientific and business connections is integral to indirect and direct modes of appraising potential investment prospects.

#### Overall Assessment

Biotech Capital represents an exceptional investment platform that reaches into Australia's life science industry. To date its investment selection process has been conditioned by patience and has been well judged. In our view, only one investment (PKS), is not performing to original expectations. This patient draw down of funds has also allowed the company to return interest earned to shareholders in a special dividend payment. The company has access to some of Australia's leading scientists for technical assessment of opportunities and is managed by **Challenger Biotech Management**, which is a part of the **Challenger International Group**, a diversified financial services company

#### Assessment of individual investments

Company	Comments	Score (from 5)*
Alchemia	Excellent investment	4.5
XRT	Excellent investment	4.5
Proteome Systems	Excellent company. High burn rate and high entry point	4.0
Xenome	Excellent entry point and exciting company	4.0
Biocomm Services	Access to investment opportunities and good investment	4.0
PKS	Next 8 months crucial	2.0

\*Score is based on entry price and quality of investment

with approximately \$10 billion under management. On the downside the company's investments are speculative and the investment profile is of a long-term nature.

Based on book value, the company is valued at 48 cents a share, which suggests it is trading at a **40% discount**. This offers a very favourable entry point into this stock for investors with a longer-term investment horizon. Although the company invests in high-risk businesses, this risk is mitigated by its portfolio approach.

#### Bioshares

*Bioshares has been commissioned by Biotech Capital to prepare this report. The comments and assessments made in this report are frank and independent.*

## Proteome Systems – Industrialising Proteomics on a Global Scale

### Background

Proteome Systems Ltd was formed in 1999 when a group of researchers at the **Australian Proteomics Analysis Facility** at **Macquarie University** in Sydney decided to go out on their own and develop the necessary hardware to industrialise the field of proteomics. Proteomics is a discipline that involves the separation, analysis and characterisation of proteins.

At the tail end of the genomics 'revolution' in the late 1990s, it became more obvious that genomics would not provide all the solutions in determining the origins and mechanisms of all diseases. Although genes actually code for proteins, proteins in fact are the work engine of the body. Most drugs available today act on proteins and many drugs are proteins themselves. Although the 1990s had delivered the hardware to sequence the human genome, technology was seriously lacking in conducting similar industrialised protein analysis. Today the situation has not changed significantly.

From the outset, Proteome Systems' goal has been to move quickly and introduce rapid advances in the field of proteomics instrumentation. Commercial biotechnology is an industry that has made enormous advances in the last 10 years and the fear of being superseded by emerging technologies has always been very real. The sequencing of the human genome has directed a large spotlight onto the industry which has resulted in tens of billions of dollars of funds flowing into the sector, predominantly in the US. To compete with cashed-up competitors overseas, Proteome Systems has needed to leverage its position through commercial collaborations and the acquisition of skilled technical teams.

### Collaborations and acquisitions

The company's main technology development and marketing collaboration is with Shimadzu in Japan, a world leading manufacturer of analytical instruments. **MicroFab Technologies** is another collaborator for components for some of the main equipment, and **Sigma-Aldrich**, a US\$1.1 billion life science company, will manufacture and distribute consumables developed by Proteome Systems.

**Millipore Corporation** in the US will also distribute a range of consumables manufactured by Proteome Systems.

In its discovery program, Proteome Systems is collaborating with **Cystic Fibrosis Foundation Therapeutics Inc** to deliver novel targets for treatment and assessment of disease progression. The company has an in-house discovery program in the area of tuberculosis for a rapid point-of-care test for active TB which the company is looking to partner. Proteome Systems also has a discovery program in aging neurodegenerative diseases with **Eukarion** and the **Buck Institute for Age Research** in the US.

#### Fact box

- Proteome Systems was founded in January 1999
- Initial investment by BTC of \$3 million in Proteome Systems at \$6 per share (valuation of \$166 million)
- Proteome Systems has subsequently raised further funds from other investors at \$12.50 per share (valuation of US\$175 million) although the company is in the final stages of a new valuation
- Biotech Capital recently exercised its options to purchase further shares in Proteome Systems at a discount, to the value of \$2.375 million (at \$9.50 per share)
- Current value of Biotech Capital's initial investment (of \$5.375 million) based on the last capital raising – \$9.38 million
- In FY2002, the company generated revenue of \$7.9 million with a net loss of \$16.7 million and cash (and equivalent) of \$6.7 million at 30 June, 2002. It has guaranteed funding over the short term to increase cash reserves to \$17.9 million
- The company employs approximately 120 people, 20 in Boston and 100 in Sydney

Proteome Systems is expected to announce further discovery programs in the near future.

In the area of diagnostics, the company has a development collaboration with **C-Qentec** (part of **Bayer Crop Science**) for a rapid test farmers can use to assess wheat crop maturity (alpha-amylase test). Trials are expected to be completed by mid October this year and Proteome Systems plans to deliver 5,000 of the tests to C-Qentec at the beginning of November.

In the area of contract discovery work, Proteome Systems has formed a joint venture with **Itochu Corporation** in Japan to provide proteomics discovery services to Japanese companies, universities and institutions. The JV is a means to market the company's proteomics platform in Japan, a market which is half the size of the US. It will also increase the market for the company's range of consumable products.

In the US, Proteome Systems has established a joint venture with **Charles River Laboratories International**, with Proteome Systems owning 20%. Charles River provides a broad range of research services and products to the biotech and pharmaceutical industry. The JV is a positive development on a number of fronts: it will conduct contract research in proteomics, powered by Proteome Systems' **ProteomIQ** platform; it will use consumables supplied by Proteome Systems; and it will serve as an important demonstration facility in the US for the US\$2 million plus ProteomIQ system.

In July last year, Proteome Systems decided to acquire an instrumentation development company, **Niche Innovation**, to bring manufacturing expertise in-house. The company also recruited a specialist proteomics team in 2000 of approximately 15 people, from a proteomics competitor, **Genomics Solutions** in the US. This team has become the company's US subsidiary and manufactures and develops the company's range of consumable products.

### Proteome Systems' hardware

Proteome Systems is developing instruments that will industrialise proteomics,

### Assessment

Proteome Systems was formed by a group of university researchers whose ambition was to industrialise the field of proteomics. The team has successfully made the transition from academia to become a commercial instrumentation manufacturer that operates in a global market. In the short term the company will need to ensure it has sufficient funds to continue its product rollout and discovery program. The mantle is well within the company's grasp to become the world's leading proteomics instrumentation provider. Success there will allow the company to further leverage its skills base in protein diagnostics and therapeutics R&D.

Proteome Systems will likely list in the US or in Australia in the next two years although an additional private capital raising before that is also likely. On paper BTC has made a capital gain of \$4 million on its initial investment. The listing price for Proteome Systems will almost certainly be higher and we believe BTC will exit its investment upon Proteome Systems listing. There is a strong possibility BTC will see a good return from this investment within the next two years.

which in the past has been encumbered by manual and slow processes not amenable to automation and limited to the domain of academic researchers. The devices range from an all in one sample preparation and gel array unit (the electrophoresis blotter, IPG and multi-compartment elcetrolyser), the **Xcise** unit (a robotic extraction and chemical handling systems) to the Chemical Inkjet Printer (**ChIP**). Trade prices for the devices (which have yet to be finalised) range from approximately US\$20,000 for the electrophoresis blotter, to US\$230,000 for the Xcise unit and US\$250,000 for the chemical printer. These instruments combine with **Shimadzu** mass spectrometers, a **ThermoFinnigan** liquid chromatography unit and an **IBM** work station to form the ProteomIQ integrated proteomics platform.

The Xcise units and electrophoresis blotters are now in production and the ChIP is

### Pros

- Proteome Systems is positioning itself as the world's leading provider of proteomics equipment. It has no main instrumentation competitors in the area of 2D gels and the company is also making its instrumentation compatible with HPLC equipment
- The proteomics market is poised for very strong growth, from US\$700 million in 1999 to an estimated US\$5.8 billion by 2005. While there are many instrumentation providers for genomics research – and that market appears to have become saturated at present – an accepted proteomics instrumentation platform for conducting high throughput industrial proteomics has yet to be established. The main competitors to Proteome Systems are Applied Biosystems which is developing an alternative technology called ICAT and CIPHERGEN which is developing a protein chip. All systems have their own pros and cons
- Proteome Systems has a very strong R&D management team. Its CEO, Keith Williams, has over 25 years experience in the field, and the company has developed the full spectrum of skills from bioinformatics, design and manufacture to discovery
- The company has shown the capacity to generate substantial international sales with only a short commercial history. One of its leading instruments, the Xcise unit, is now in production and several units have already been sold
- The company has quickly realised that to leverage its expertise, international collaborations are extremely helpful.

expected to be available for commercial release in the second quarter of next year, although it will be set up in beta sites beforehand. The JV with Charles River is expected to purchase ProteomIQ platforms from Proteome Systems, which will generate significant revenue and profit for the company.

### Cons

- Proteome Systems has a large nett burn rate by Australian standards. It generated a loss of \$16.7 million in the last financial year. It has access to sufficient funding for the next 12 months at the current burn rate although if sales do not increase significantly in the next year it will need to raise further funds and/or review its expenditure budget. Current market conditions are not amenable to a stockmarket listing and any funds will need to be raised privately
- The downturn in spending on equipment by pharmaceutical and biotech companies may result in a slower take-up of Proteome Systems' products. Research costs are increasing for pharmaceutical companies without a payoff in increased product approvals and biotech companies are weary of their burn rates with the public capital markets largely closed for raising funds
- Other proteomics companies, such as **Genomics Solutions** in the US, **Oxford Glycoscience** in the UK and **GeneProt** in Switzerland, have had difficulties in commercialising their proteomics platforms. Proteome Systems will need to buck this trend

## ***XRT – The Biggest Development in X-ray Technology in 105 years***

### **Background**

XRT was officially founded in 1996 to commercialise a novel imaging technology that was developed at the **CSIRO**. The main product the company has developed is what's termed an **X-ray ultraMicroscope** (XuM) which is sold as an attachment to existing scanning electron microscopes (SEMs). The XuM allows the internal structure of solid samples to be distinctly imaged down to a resolution of 200 nanometers, with a penetration capability that is not possible with optical imaging techniques. This breakthrough technology has multiple applications and has been well protected by the company through international patents.

### **XRT's technology**

The technology applies phase contrast imaging (PCI) to X-rays, similar to what listed company **Iatia** is doing with light waves in microscopes. PCI allows not only absorption of the X-rays to be measured, but also the refraction (or bending) of the X-rays as they pass through solid objects. This allows the variation in density throughout a sample to be measured and produces a very high resolution image of even weakly absorbing or non-absorbing objects.

The advantages of using X-rays with PCI is firstly the ability for the X-rays to pass through solid objects and image their internal structure, and secondly, the phase contrast image delivered with X-rays is always in focus. The addition of phase contrasting to X-ray allows exquisite imaging that surpasses standard X-ray imaging, which has not changed significantly since its inception over 100 years ago.

### **Technology applications**

The first application for the XuM instrument is for fault analysis within the semiconductor industry. The company has sold its first instrument to a semiconductor manufacturer and is currently completing a development program with that company to make it an efficient and effective tool for that specific use. The alliance will be helpful to XRT in generating further sales within that industry.

The current process for detecting chip problems takes up to 12 hours requiring the cir-

cuit layers to be delicately cross-sectioned before surface analysis can be conducted. XRT's CEO, **Grant Dow**, says the XuM is the only sub-surface analysis technique that is being considered in that industry and it could cut process fault detection times by two thirds. The immediate application is only in failure analysis but future applications within that industry include quality control of production batches.

A major opportunity for the company is in medical imaging. The technology will be useful in providing high resolution of bones and in particular of soft tissues such as cartilage and blood vessels as well as the possible detection of cancers within the body. The company says the technology has a spatial resolution that is over 1000 times greater than that achieved with MRI machines and CT scanners. The technology is currently being used to train surgeons for Cochlear ear implants however for more general hospital use, the technology is a further three to four years away from commercialisation.

#### **Facts**

- In February 2001, Biotech Capital invested \$4 million into XRT at a valuation of \$20 million
- The company is currently negotiating a capital round to raise up to \$8 million. This will be the fourth capital raising for the company
- XRT has 25 employees
- In FY2002 XRT generated \$1.4 million of revenue. The company has an annual burn rate of approximately \$3 million
- XRT has signed a global distribution agreement for its product (XuM) with **EDAX Inc** based in New Jersey
- Its first sale was in November 2001 to a semiconductor manufacturer in Oregon, with whom XRT is completing a joint development program

Other applications of the technology include in the aerospace industry for detecting microscopic defects, material science imaging in areas such as polymers and minerals, and small animal imaging. There is likely to be a very high interest in this technology from research institutions across many disciplines.

### **Distribution agreement with EDAX**

In August this year the company signed a distribution agreement with a US company, EDAX Inc. XRT says the arrangement is good fit for a number of reasons. EDAX has existing distribution networks in the US, Japan, China and Europe. EDAX's product range is also complementary to XRT's product, selling different, non-competing accessories for SEMs. The EDAX sales force is relatively small, with 15 people, although it generated sales last year in the order of US\$50 million from only three product lines.

The initial launch of XuM will be at a major international electron microscopy conference in the US in November this year. Other products in the pipeline include a stand alone XuM that does not require a host SEM, a larger phase contrast device for imaging small animals in pre-clinical trials, and within three to four years the company anticipates the technology will be ready for human imaging, called phase contrast radiography.

### **Scientific Advisory Board**

The company's Scientific Advisory Board includes a group of high-profiled and experienced academic and commercial people who work in the field. **Dr Steven Wilkins**, the inventor of the technology is Chief Research Scientist at CSIRO Manufacturing and Technology. Wilkins' work in this area first reached prominence when it made the front cover of Nature magazine in 1996. **Professor Robert Lewis** is the Chair of Synchrotron Physics at Monash University. **Dr Anatoly Snigirev** is a beam line scientist at the European Synchrotron Facility in Grenoble, France. He is widely published in X-ray optics and particularly in X-ray imaging relating to synchrotron applications. **Dr Lynwood Swanson** is co-

**Assessment**

XRT holds a monopoly position with its scientific imaging accessory product. The uniqueness of this device, the technical breakthrough it provides and its multitude of diverse applications will help ensure the successful commercialisation of this invention. Biotech Capital has been an early investor and should be well rewarded for its foresight in investing in this truly world class and leading-edge technology. It is likely to be one of the jewels in Biotech Capital's crown.

founder of FEI Company, a leading supplier of technology solutions to the semiconductor industry.

**Current patent position**

The company has patents issued in the US covering its technology, with patents pending in Europe, Russia and throughout areas of Asia.

**Pros**

- XRT is expected to have a monopoly position with its XuM product
- The company is confident sales for the current financial year will reach \$3 million, with 8 – 10 systems expected to be sold over the next eight months
- The company has by all accounts selected an appropriate global distribution company for its product which has a complementary product catalogue to the XuM product
- Through a development agreement with an undisclosed semiconductor manufacturer, XRT is ensuring its XuM product is specifically adjusted to the needs of that industry
- The initial focus on the semiconductor industry will ensure the high price for the XuM equipment is not a limiting consideration
- The application for this technology is extremely diverse
- The company has a strong and experienced board and management team
- The company has a low burn rate with a conservative approach to spending

**Cons**

- A scanning electron microscope sells for between US\$200,000 – US\$350,000 and the XuM attachment sells to the end user for approximately US\$200,000. The high capital cost of this equipment may restrict the product take-up
- The company's reliance on one company to sell the XuM product for XRT globally limits the control XRT has in selling its instrument, although it is a non-exclusive agreement
- At this stage, the company has only one major product on the market that is sold as an accessory to existing scientific imaging equipment, although there is accompanying software that has been developed and the possibility of providing image analysis services and licensing of the technology may exist for particular industry applications. Other products are in development
- The technology is limited at the moment to imaging smaller sized objects and is not yet ready for production quality control
- Application in human imaging is three to four years away from commercialisation

## ***Pacific Knowledge Systems – Its New Programming Platform is Proving Difficult to Commercialise***

### **Background**

Pacific Knowledge Systems (PKS) is a software development company that specialises in providing services to the pathology industry. The company was formed in 1996 and its software has now been installed in five pathology laboratory laboratories across Australia. The software is based on a new programming system, called **Ripple Down Rules**, which was developed using a modular construction that allows easy program modification by operational users.

The software platform is applicable to many other industries where large numbers of variables need to be measured and assessed and where program modification is a frequent necessity. PKS is currently running a pilot program with **C-Qentec** (part of the **Bayer** group) in Australia to assess the suitability of the software for use in soil diagnostics. However the first and foremost application is in pathology.

Pathology laboratories conduct over a thousand different tests and the rules governing the meaning of these results, which are an ever-changing canvas, can number in the tens of thousands. Increasing medical knowledge of disease and the cross-linked relationship between different illnesses and symptoms creates an industry that can greatly benefit from 'intelligent' systems that can incorporate the decision making process of human experts. That benefit is even greater if the expert system can be modified quickly and simply by operators without a high degree of IT expertise.

PKS's pathology product, called **Lab Wizard**, interprets results and can make recommendations for further testing based on programmed rules installed by the pathology laboratory. It can make comparisons against previous results, send immediate alerts to the doctor, initiate or cancel further testing, warn against adverse medication interactions and provide initial comments to the doctor.

PKS will charge users a small up-front licensing fee for using the software and the bulk of the revenue will come from ongoing charges based on the number of tests

processed using the software. Although this may favour smaller operators, larger operators may prefer to buy the product outright or elect to develop their own programs in-house.

### **The market**

The Australian pathology market is divided evenly into two groups: the private sector and the public hospital system. PKS currently has about 20% of the local private market, which overall is estimated to be worth a total of \$5 million a year. This is not a large market and exporting this product to the US is of greater importance.

PKS has signed a letter of intent with the **Mount Sinai Hospital** in New York which has agreed to evaluate Lab Wizard. PKS must build an interface for the hospital's computer system, and the installation is expected to be completed before the end of this year with the system to be up and running early next year. PKS has also entered into an agreement with **Promedica Health System** in the US to deploy a portal using Lab Wizard. To have the software successfully implemented in two key US hospitals will be a crucial milestone for the company in exporting

its software product. The Australian market, although small, is also important in bringing the company to a break-even point and in bedding down the technology.

The technology is currently in use in five pathology service laboratories across Australia at **Gribbles Pathology** (Melbourne), **Southern Pathology** (Woolongong), **Clinipath** (Perth), **ACT Pathology** and the **Institute of Medical and Veterinary Science** in Adelaide. Having secured Gribbles Pathology as a customer has important implications for the company with a possible roll out of the Lab Wizard product into Gribbles' Asian operations.

### **Financing**

The company has 14 shareholders, two of whom are venture capital groups, Biotech Capital and the Rothschild Australian Bioscience Fund. At its last capital raising in December 2000, Biotech Capital invested \$2 million at a \$12 million valuation (taking into account a convertible note recently exercised). The company currently has sufficient funds to operate with a commitment from existing shareholders for further funds to allow the company to reach its break-even point, expected in October next year.

Development of the Lab Wizard has been completed and the company has trimmed R&D staff numbers, reducing the company's burn rate and concentrating on commercialising the technology. The company is run on a shoestring budget and generated only a small loss last year of \$300,000. It is minimising its commercialisation costs by focusing its efforts on a small number of major centres in the US rather than an expensive marketing team. On the downside, the limited funds means markets such as Europe cannot be explored at this stage. If a prompt acceptance can not be achieved in the US it may be a difficult road ahead for the company. Competing products may arrive that will reduce Lab Wizard's appeal.

The success with Lab Wizard in Australia or the US depends upon getting doctors

### **Facts**

- BTC invested \$2 million in PKS in December 2000 at an effective valuation of \$12 million
- PKS generated revenue of \$500,000 in FY2002, up from \$160,000 the previous year, and recorded a loss of \$300,000
- The company has sufficient funds committed to reach an expected breakeven point in October 2003
- The company currently has five employees/contractors
- The Lab Wizard software system is currently being used in five pathology labs in Australia
- Other major shareholders include another venture capital group, the Rothschild Australian Bioscience Trust

**Assessment**

PKS has undergone substantial changes to reduce its burn rate and re-focus its marketing approach. It expects to break even by October next year. The exit strategy for Biotech Capital will more than likely occur through a trade sale of the company to another group. The investment made in PKS in 2000 was at the tail end of the technology sector boom and if the company raised funds now, it would almost certainly be at a lower price. The next eight months will be critical for the company, particularly setting up the technology in two main sites in the US. Limited funding may hinder an accelerated commercialisation process.

to request the product. Once this occurs, all pathology laboratories will need to employ this software program (or similar) not to lose a competitive advantage. In a recent survey conducted by an independent market research company, 57% of doctors contacted had noted significant improvement in the quality and usefulness of the reports when Lab Wizard was used and 60% noted evidence of improved patient outcomes due to the improved reporting as a result of using Lab Wizard. However to have the doctors request this service, firstly it must be available and secondly the doctors need to be aware of the product. These are two key challenges for the company, that has few funds available to accelerate the roll out.

**Pros**

- PKS is due to receive a US patent over its Ripple Down technology shortly
- The Lab Wizard software system has now been taken up by five pathology labs in Australia including Gribbles Pathology
- The company has signed a Letter of Intent with the **Mount Sinai Hospital** in the US to trial the company's Lab Wizard product
- The product development has essentially been completed so there is minimal technology development risk
- The company has a low burn rate, recording a loss of only \$300,000 last year
- Securing a foothold in a very competitive market such as Australia may force all pathology labs to adopt this software or a similar internally developed program, to cater for demand from doctors who recognise the benefits of an 'intelligent' processing system
- The Ripple Down programming platform has diverse applications across many industries
- It may take competitors three to four years to replicate a similar program to Lab Wizard

**Cons**

- Pathology labs may develop their own software systems rather than pay ongoing fees to use the PKS system. The **Mayne Group** currently spends more than \$10 million a year on IT and is likely to continue with internal software development
- In the last 12 months, two Mayne Group pathology laboratories (**Western Diagnostics Pathology** in Perth and **Dorevitch Pathology** in Melbourne), **General Pathology Laboratories** in Perth and **St Vincent's Pathology** in Melbourne have discontinued using the software.
- The market for Lab Wizard in the pathology industry in Australia is small, estimated at \$10 million for both public and private pathology service providers
- The charge-per-usage-rate approach does not suit some labs that would prefer to buy the software outright although it is more suitable to smaller labs
- Software interfaces need to be built for many hospitals with incompatible networks
- The company's lack of resources means marketing is restricted to the Australian private pathology market and US market at this stage

## Alchemia – A Novel Synthesis Technique on its Way to Revolutionise Carbohydrate Drug Development and Manufacturing

### Background

Carbohydrate drugs have been in clinical use for many years. One of the most well known is heparin, used for decades to alleviate clotting. This drug, however, has unwelcome side-effects and is not produced using cost effective manufacturing techniques. Low molecular weight versions such as Fragmon, Fraxiparin and Lovenox have been developed to overcome heparin's drawbacks. However, these new versions still do not offer optimal therapeutic profiles. Another successful carbohydrate drug is Amgen's Epopen.

Carbohydrate drug development also reached a highpoint with the development of Biota's Relenza, one of the worlds first approved rationally designed drugs, and partly explains Australia's expertise in the field. Therapeutic development programs that have their origins in carbohydrate chemistry research are also found in Progen, Meditech Research and Prima Biomedical.

Carbohydrates, more simply known as sugar molecules, are often referred to using the word 'glyco' as part of a longer description. The carbohydrate world encompasses molecules such as glyco-proteins and glyco-lipids. A carbohydrate attached to another non-carbohydrate is called a glycoconjugate.

Glycoconjugates have important functions in host cell attachment, in regulating bacterial growth and replication, and in cell wall synthesis processes.

Carbohydrates play a role in many cell to cell interactions and participate in defending cells against attacks by bacteria and viruses. However, they are also able to be subverted by pathogens to enable infection. This is why one of the most promising areas of carbohydrate drug development is in the area of infectious diseases and vaccine development. Alchemia has a confidential program in this area with an undisclosed partner.

### Alchemia's VAST technology

Alchemia's major contribution to commercialisation opportunities in the world of carbohydrate chemistry resides in its combinatorial chemistry program which it calls its

VAST technology (VAST – Versatile Assembly on Sugar Templates). Alchemia has developed universal building blocks based on fundamental sugar molecules. Every sugar molecule has five modification points. Alchemia has devised methods to control the linkages around these points. More importantly, it can control assembly of molecules using base structures (scaffolds) so that they are more drug-like rather than random compositions.

Alchemia's ability to develop libraries of potentially therapeutically interesting compounds progressed further this year when it signed several agreements to screen various compounds against targets held by other companies.

The first of these was with the Belgian company Euroscreen, the second with Celtor. Both companies have expertise

in the screening of a class of receptors called G-protein coupled receptors. GPCRs as drug targets accounted for US\$23.5 billion in drug sales in 2000. They are appealing as a source of potential new drugs because as many as 160 (out of 750) GPCR receptors have yet to have their function or natural ligand identified. Regrettably, Celtor has become a casualty of the downturn in global technology markets and has folded.

### Neose Technologies

One of the most comparable companies to Alchemia is US based and Nasdaq listed Neose Technologies. The differences between the two are more of a complementary nature rather than competitive nature. Neose has developed enzymatic methods for manufacturing carbohydrates and its leading technology, *Glycoadvance*, is centred on the glycosylation of proteins in order to improve their stability and activity. In contrast, Alchemia's technology is entirely synthetic and can modify structures in ways that *Glycoadvance* can not. The compounds Alchemia can generate exhibit greater novelty and fill chemical space in a more diverse way.

### Clostridium difficile

*Clostridium difficile* is a bacteria known to cause antibiotic associated diarrhea in infants. A significant market opportunity exists for an additive to infant formula that neutralises such an infection. Alchemia has patented such an agent and has been developing scale-up processes for such a compound which Dow Chemical will manufacture. Interestingly, Alchemia received an unexpected boost when a rival carbohydrate company treatment for *c. difficile* infection (Synsorb) failed to generate enrolments for a Phase III trial. However, Alchemia's product is not designed as a therapeutic but as a prophylactic.

### Patents

Alchemia has actively sought patent protection for its inventions and now has a family of 20 patents in various stages of prosecution. Two patents have been allowed in the US.

### Facts

- Alchemia was founded in 1995 by scientists from the University of Queensland and the University of London to apply and commercialise methods in carbohydrate chemistry to drug discovery and development
- Early stage investors included **Australian Technology Group** and **Medica Holdings**, with investors coming in at later rounds including Biotech Capital, **AMWIN**, **Rothschild Biosciences** and **CM Capital**
- Biotech Capital invested \$2 million in March 2001 to acquire a 3.3% stake
- To date Alchemia has raised \$23 million in equity finance
- Alchemia has a staff of 48 chemists, scientists and administrative personnel and funds a number of research positions at the University of Queensland
- The company has operations at Eight Mile Plains in Brisbane and a business office in Redwood City, California

**Assessment**

Biotech Capital invested in Alchemia in the company of several other venture capital funds. In fact there are few other Australian biotech companies with as many VC investors on board. In the absence of information about some of Alchemia's confidential business dealings (of which there are several), investment pointers such as the presence of VCs on the share register increase in importance.

While Alchemia's contract manufacturing agreement with the Dow Chemical Company has yet to generate income from contract programs, the acceptance by Dow of Alchemia's technology platform is significant validation and a vote of confidence in the company's technology base.

Alchemia's much anticipated IPO has been a source of disappointment to followers of the company. However, this does not detract from the quality of the company which *Bioshares* rates as an excellent investment.

**The Dow deal**

After 12 months of confidential studies, one of the world's largest chemical firms, the Dow Chemical company, signed a contract manufacturing agreement with Alchemia in December 2000.

The deal was a major advance in several ways for Alchemia especially as it gave peer recognition of Alchemia's achievements in developing solid phase low cost scalable methods for the synthesis of carbohydrate molecules.

The deal allows third parties to have their drugs manufactured by Dow using Alchemia's methods and solves Alchemia's problem of lacking its own contract manufacturing capabilities.

**Pros**

- Alchemia can deliver investment returns through the exploitation of at least four different aspects of carbohydrate chemistry: chemical compound library development; affordable synthesis and scale-up methods; drug discovery (through screening collaborations); and drug delivery systems
- An attractive aspect to Alchemia's carbohydrate chemistry base is a capacity to generate greater numbers of pharmacological relevant compounds spread over diverse chemical space than even rival systems such as those based on peptide chemistry
- Alchemia has taken a globally leading position in developing solutions to problems associated with carbohydrate drug discovery development. It has few competitors
- The presence of five VC investors on the shareholder register of Alchemia is noteworthy and indicative of the potential of the firm
- Completion of a 12 month pilot study with Dow Chemical and subsequent signing of a contract manufacturing agreement (CMA) in December 2000 represents a very high level of validation of Alchemia's scalable solid phase carbohydrate synthesis technology
- More recent validation has occurred with the signing of screening collaborations with Euroscreen and Celtor (although Celtor has just recently fallen victim to unfavourable market conditions)

**Cons**

- The current climate in equity markets around the world has created uncertainty for companies such as Alchemia that are verging on making an initial public offering (IPO). An implication is that existing shareholders such as VC investors may be required to supply top-up funding until the IPO market brightens
- With such a rich set of choices before it, a challenge for Alchemia has been the need to define the best set of development opportunities to focus on. While many companies would envy such a position, it brings particular challenges to staff and management. The appointment of consultants was brought about to address some of these challenges
- Carbohydrate drug development has been impeded by the natural complexity of working with chemical building blocks capable of many permutations. Although the complexity is the basis of interest in carbohydrate drugs, it will continue to pervade this discovery area, with the potential to slow down discovery and development
- Combinatorial chemistry companies remain out of favour in the world of drug discovery. However, Alchemia's capabilities can deliver more intelligently designed libraries of molecules.

## ***Xenome – Novel Drugs to Treat Pain Developed from Marine Cone Snails May Produce Potent Pharmaceuticals***

### **Background**

Australia is rich in diverse flora and fauna, including many venom producing species. Research into venoms, especially snake venoms has been conducted at the **University of Queensland** for a number of years and interest has been extended to other species to discover and study interesting pharmacological properties of venoms.

Cone snails have evolved a complex range of peptide toxins that are used to stun small fish and enable ingestion by the mollusc. UQ researchers, using cone snails from the Great Barrier Reef, became leaders in conotoxin research, prompting the establishment of Xenome to develop potential human therapeutics based on conotoxins. Inspiration also was found in the development of a conotoxin (ziconotide) by **Neurex** (later **Elan**) for the treatment of intractable pain. Although this drug has not received final approval from the FDA, its passage through clinical trials is ground breaking and relevant to Xenome. It has put a new class of compounds in front of the FDA and allowed Xenome to become aware in advance of issues it must address in clinical development.

There are now at least 18 classes of conopeptides. Conopeptides regulate or block the activity of ion-channels and receptors involved in neurotransmitter release, recognition and turnover. Depending on which ion channel or receptor they act on is how they are characterised. For example, rho-conopeptide blocks the alpha-1 adrenoceptor; chi-conopeptides block the noradrenaline uptake receptor. The biological (receptor and cellular) specificity of conopeptides, rather than shot-gun effect, is one of the key attractions for studying and developing drugs based on conopeptides.

### **Pipeline**

In a relatively short space of time Xenome has established a drug development program, and has started to fill its pipeline.

Xenome's lead drug candidate, XEN-2174, is targeted to the noradrenaline transporter. It is still to complete pre-clinical studies, with commencement of Phase I trials expected in the March quarter 2003. It could be effective in treating a range of disor-

ders including depression, urinary incontinence and attention deficit disorder, but the company is biasing this molecule towards the treatment of neuropathic pain. The market for neuropathic pain exists in scale as a consequence of the incidence of diabetes. Neuropathic pain occurs as a result of nerve damage.

### **The market for pain drugs**

The market for pain drugs is substantial. Sales of non-steroidal anti-inflammatories, narcotics and anti-migraine treatments reached US\$22 billion in 2000. This market is expected to expand to US\$30 billion in 2007. The gap in the market that Xenome may be successful in tackling is to develop analgesics that have high efficacy and low side effects.

### **Collaborations**

Xenome has established three collaborations to date, and may consummate several more in the medium term. In February 2002, it commenced a two year non-exclusive screening program with Melbourne based cancer and inflammatory disease drug developer, **Cytopia**.

The second collaboration the company established was in March 2002 with European analgesic drug discovery company, **Ionix Pharmaceuticals**. Ionix will screen Xenome's toxin peptides against an Ionix proprietary ion channel drug target that is related to peripheral pain.

Also in March of 2002, Xenome announced its third collaborative program with **Icegen** (North Carolina, USA) to screen molecules from Xenome's libraries against Icegen's proprietary ion channel drug targets, relevant to multiple therapeutic areas. Xenome will jointly share any IP generated from the program with Icegen.

### **What's ahead**

Xenome will need to raise additional funds in the near future, to fund clinical trials, expand its pipeline and further secure the company. It is examining a number of options in this regard. Biotech Capital invested in the company on favourable terms, and upside in this investment may be reflected in capital raisings that are likely to occur in the near future.

### **Assessment**

Xenome has made solid progress since its establishment in 2000. It is a modest company with a clear point of difference to other drug discovery firms. The chemistry is novel and based on the fact that venom peptides have evolved over billions of years to modulate bio-chemical pathways associated with pain. There is also the potential for a raft of compounds to be developed which can be directed at large medical markets. Biotech Capital has made a well-placed investment in Xenome.

The listing prospects for Xenome are favourable in that the company has a clear technological focus and product endpoints (drugs to treat pain and other CNS diseases). The company also offers an easy-to-communicate and easy-to-understand story for potential retail investors via an IPO, and its 50% rights to Amrad's AM336 compound in advanced clinical trials may bring an early revenue stream to the company.

### **Facts**

- Founded in January 2000, as a spin-out of the University of Queensland to develop drugs derived from venom peptides
- Staff now number 17
- Xenome's CEO is Dr Tony Evans, formerly the head of the **CRC for Diagnostic Technologies**, and prior to that, Director of Business Development at **Onyx Pharmaceuticals** in California
- Funding to-date is \$7.4 million (including a \$1.65 million grant)
- Shareholders are **Biotech Capital, University of Queensland, Medica Holdings** and founding scientists
- Biotech Capital invested \$3.5 million in September 2001 to gain a 27% stake in Xenome, valuing the company at \$12.4 million
- Cash position: approx \$3 million

**Pros**

- Conopeptides, also known as conotoxins which are derived from marine cone snails, are a novel source of therapeutics with the potential to treat a wide range of diseases, including chronic pain, stroke, depression, epilepsy and cardiovascular disorders. Xenome has a leading position in this area
- Xenome has formed three collaborations to date with Ionix (Cambridge, UK), IcaGen (North Carolina, USA) and Cytopia (Melbourne, Australia)
- The interest in ion-channels as potential drug targets has increased significantly over the last few years. Many drugs already act on ion-channels. Many more ion-channels have been characterised. A trend supporting interest in ion channel drug research is the development of high throughput research tools being developed by companies such as Axon Instruments and Molecular Devices
- Xenome has few competitors in the area of venoms based drug development
- Xenome has developed in-house robotics for the high throughput parallel synthesis of conopeptides. This enables Xenome to greatly enhance its ability to develop potential drugs based on conopeptides in a cost-effective manner
- The degree of unmet need for pain drugs is large as is the existing market for pain drugs, indicating the appropriateness of market orientation
- Xenome is led by an able and experienced management team. The CEO, Dr Tony Evans, provides a valuable set of networks and commercial background to the company
- Xenome is the recipient to potential income emanating from the commercialisation of Amrad's pain drug, AM336, with 50% rights to this compound

**Cons**

- Xenome faces competition from developers of drugs from other toxin sources, such as snakes, spiders and scorpions. However this competition remains limited at this stage, and few match the incredible abundance found in cone snails. Xenome also has a position in spider toxins
- Xenome faces competition from other developers of pain drugs including companies developing drugs that target opioid receptors
- The greatest hurdle for Xenome is to develop drugs with an appropriate safety profile. Drug delivery is also a significant challenge for peptide drugs
- Human clinical trials for pain drugs can be challenging. Although the alleviation of pain can be easily ascertained, the experience of pain is complex and difficult to standardise from one patient to another. This adds to the regulatory challenges for new pain drugs
- Xenome has yet to benefit from validation brought by collaborative interest garnered from a potential pharmaceutical partner
- Xenome is not a one drug company, but dependent on the one technology paradigm (drugs from venoms). However, one snake venom drug, captopril, has already been commercialised from the venom of the Brazilian pit viper

## ***Biocomm Services – Feeding Biotech Capital’s Investment Pipeline Well into the Future***

### **What is Biocomm?**

Biocomm Services Pty Ltd (Biocomm) was originally an initiative of the State Government of Victoria, named Biocomm International. The Government sought to create a suitable structure to address shortcomings in the commercialisation of biotechnology in Victoria, in particular to provide seed funding to emerging biotechs. Ultimately it created a tool to improve economic outcomes relating to biotechnology in Victoria. Biocomm Services was established in 2002, with an initial funding round from the Victorian government of \$4 million for a four year period. These funds were designed to meet the operational costs of the organisation.

The original focus of Biocomm was to build a bridge between seed capital funding and commercialisation opportunities arising from research in Victorian medical research bodies. The original concept was that Biocomm would act as a single point of contact, be a proactive assessor of opportunities, assist in the preparation of feasibility studies and market research and act as a partnering and funding broker. This concept remains incorporated in Biocomm, which underwent a restructure in the first half 2002. This saw several venture capital firms, Biotech Capital, Rothschild Bioscience and Queensland Investment Corporation, and Macquarie Bank invest in Biocomm. The evolution from Biocomm’s point of view meant that a source of funding was tied into the endeavour, and in that way optimising potential outcomes.

Biocomm now has a \$11.5 million capital pool that can be applied as seed funding to promising opportunities. To obtain funding for these opportunities, Biocomm’s executives present a structured opportunity to the company’s four investors.

Biocomm is headed by Dr Andy Gearing, a former Business Development Manager at **British Biotech**. The Chair of Biocomm is Stan Yakatan, who is a principal of US advisory firm **Katan Associates**. The company recently appointed Lawrence Bremner as Chief Operating Officer. Bremner was formerly the Executive Director of the **Calgary Innovation Centre**, and brings

experience in pharmaceutical sales and marketing to the position. Additional staff include PhD qualified executives with MBA, law and accounting qualifications and total staff now number eight people. Biocomm is now an internationally focussed company that may eventually list on a stock exchange.

### **Background**

The Victorian Government has previously tried to address biotech commercialisation challenges through the creation of **Amrad** in 1986. Amrad has not succeeded as was hoped but it has provided a range of valuable lessons to the local biotech sector. One lesson is reflected in Biocomm Services – that commercialisation prospects will have a stronger chance of success if technology originators and providers meet in an appropriate setting where risk and return is evenly balanced and is sensibly structured.

Amrad never really had the resources and outlook to optimally commercialise biomedical discoveries. It was seen as a source of almost free IP management, re-

search funding and not seed funding for members of its research agreements. It was structured as a diversified business. In contrast, Biocomm has brought in appropriate human resources and linked the technology structuring to venture capital providers and networks, and has toned down government connections to activities best served by private sector risk takers.

### **Why would a listed VC fund manager such as Biotech Capital invest in Biocomm?**

Many biotechnology firms typically take a novel medical or technology discovery, protect it with patents, then validate it or seek proof-of principle prior to seeking approving authority registration and out licensing the invention to marketing partner. Biotech firms that can’t obtain marketing control may seek to perpetuate their existence through creating a pipeline of drugs, devices or diagnostics in various stages of development.

In contrast venture capital firms generate returns by financing start-up companies from the early stages of development to more advanced stages but not necessarily maturity. Venture capital is fundamentally more risky, since there are more uncertainties to quantify in the development of a new therapeutic or medical device and their respective paths to market. Nevertheless, progress can be made to the point where the risk profile of a company can be lowered so that it is attractive to other classes of investors. These investors may be mature biotech, pharmaceutical or healthcare firms, institutional fund managers, private individuals or companies subscribing to IPO offerings.

There are certain skill sets, sets of disciplines and risk attitudes associated with VC investments, just as there are with other investment styles. Sustainable investment operations can be built out of such specialisations. Hence the need to have an ongoing source of new investment opportunities to take the place of ‘matured’ investment opportunities. In Biotech Capital’s case, this is now met, by no means exclusively, through its investment in Biocomm.

### **Facts**

- Biotech Capital invested \$3 million in Biocomm in June 2002, to gain a 24% stake.
- Biocomm now has an \$11.5 million capital pool to fund biomedical commercialisation opportunities at the seed funding stage
- Biocomm was founded in May 2000 by the Victorian State Government, but restructured in February 2002
- To date, Biocomm has identified 10 new company opportunities and has completed one licensing deal
- A key staff appointment was made with the recruitment of Canadian Lawrence Bremner as Chief Operating Officer in September 2002, with a brief to boost the creation of new companies

**Assessment**

Biotech Capital's investment in Biocomm when first made appeared inconsistent for a biotech investment fund. This was because Biocomm itself was undergoing a restructure and it took four months to finalise arrangements between a number of parties. As Biocomm Mark II was revealed in June 2002, and with further investigation, it is evident that the Biocomm stake is consistent with Biotech Capital's objectives and should offer returns through several different avenues. Its primary benefit is that for a modest sum, Biotech Capital has secured access at to emerging biomedical investment opportunities in Australia. It is an investment that complements existing investments and lowers the costs of investment searches and transactions. Search and transaction costs are a key cost for venture capital investors and Biotech Capital has acted strategically to minimise future costs in this way.

*Bioshares* expects Biocomm to yield a range of returns and positive investment outcomes over many years, setting up Biotech Capital with a viable long term future as a specialist investment fund. Investors in Biocomm stand to gain royalty income and revenue from licensing opportunities. Investors may also obtain equity stakes in start-up companies and preferential treatment in future rounds of capital raisings. Investors may also benefit from fee for service income generated by the ordinary business of the enterprise.

**Pros**

- Biocomm is, in venture capital terms, a well-spring for 'deal flow', ie new investment opportunities
- Biocomm is led by two internationally experienced executives
- The attraction of subscribers to Biocomm is that intellectual property search costs, due diligence and market research costs, and other similar technology structuring costs can be significantly lowered in the hands of a group of dedicated professionals
- Investors in Biocomm can access discoveries, inventions, and innovations at an earlier stage of development from 24 Melbourne-based medical research organisations
- Importantly investors can access, or be aware of, potential commercialisation opportunities ahead of investors outside of the Biocomm structure
- An important feature with Biotech Capital's investment in Biocomm is that funds are not applied to operational costs; they are held in a fund that is only drawn down to service investments in new companies
- Biocomm itself may list through an IPO, offering a further investment crystallisation opportunity for Biotech Capital
- Biocomm has the endorsement of a state government that is motivated to improve economic outcomes from the biotech sector, which translates into more jobs and more companies

**Cons**

- Biocomm may approve investments in companies not deemed to be attractive by Biotech Capital. However there are investment protection mechanisms in place to mitigate this risk
- Successful commercial outcomes from new company creations will predominantly be of 'very long term nature' as opposed to the more standard 'long term' horizon most biotech investors are familiar with
- Biocomm has non-exclusive arrangements with members. There is no guarantee that the best opportunities will be offered to Biocomm's owners

**Disclaimer:**

David Blake, director of Blake Industry & Market Analysis, is a long-term indirect holder of Biotech Capital shares. Information contained in this report is not a complete analysis of every material fact respecting any company, industry or security. The opinions and estimates herein expressed represent the current judgement of the publisher and are subject to change. Details contained herein have been prepared for general circulation and do not have regard to any person's or company's investment objectives, financial situation and particular needs. Accordingly, no recipients should rely on any recommendation (whether express or implied) contained in this document without consulting their investment adviser (Corporations Law s.851). The persons involved in or responsible for the preparation and publication of this report believe the information herein is accurate but no warranty of accuracy is given and persons seeking to rely on information provided herein should make their own independent enquiries. Details contained herein have been issued on the basis they are only for the particular person or company to whom they have been provided by Blake Industry and Market Analysis Pty Ltd.

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