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In this edition...
The week just passed saw Pharmaxis raise $47 million and the total funds raised to date for biotech reach $119 million, up from $27 million in the first quarter of 2009. Positive news flow has been met with market interest, and share prices have moved up, prompting the capital flow. For the Tier-1 companies the future is looking brighter.

Tyrian Diagnostics is shaping up as a biotech with a realistic grip on its strengths and opportunities in developing point-of-need disease tests. The fundamentals remain strong for Cogstate with revenue expected to double this year. And four Australian companies presented data at ASCO, a major cancer conference, which is also discussed in this edition.

The Editors
Companies Covered: ACR, BNO, CGS,CXS,CYT, GTG (Immunaid), UBI

	Bioshares Portfolio
Year 1 (May '01 - May '02)	21.2%
Year 2 (May '02 - May '03)	-9.4%
Year 3 (May '03 - May '04)	70.0%
Year 4 (May '04 - May '05)	-16.3%
Year 5 (May '05 - May '06)	77.8%
Year 6 (May '06 - May '07)	17.3%
Year 7 (May '07 - May '08)	-36%
Year 8 (May '08 - May '09)	-7.3%
Year 9 (May '09 - Current)	12.9%
Cumulative Gain	**119%**
Av Annual Gain (8 yrs)	**14.7%**

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Bioshares

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Delivering independent investment research to investors on Australian biotech, pharma and healthcare companies.

Capital Begins to Flow Back into Biotech

In the first quarter of 2009, only $27 million was raised by listed biotechs in Australia. This is far cry from the near $1 billion raised by the sector in 2007. However, investor appetite for biotechs has improved considerably in the last two months, with $119 million raised in this quarter to date.

The increased capital flow into the sector has been assisted by the strong gains in stocks in the sector, largely from the leading pack of Tier-1 biotechs. According to Shane Storey, senior research analyst at **Wilson HTM**, the biotech sector in Australia bottomed in November last year. Finally, "the market is reacting to news in a rational way", says Storey, after being dysfunctional in 2008, where positive announcements were not matched by share price changes.

Wilson HTM has been one of the major investment banks in the sector. It has raised or underwritten funds for **Pharmaxis** ($47 million), **Impedimed** ($15 million) and **CathRx** ($6.9 million). Storey says that these funds could have been raised earlier this year but the improved market conditions means the discount now is lower than what may have been demanded by investors earlier in the year, although the CathRx rights issue is being conducted at a very large discount (25 cents a share).

The challenge now is to convince investors that they haven't missed the boat with the rebound in the sector. Story believes we could be in a two year bull run for the sector, given the unprecedented level of later stage activity for Australian biotech. However he cautions that a failure by one of the leading Tier-1 companies could deliver a shock to the sector.

Approaching is a potential industry changing event says Storey, where next year we should see several companies bring there drugs to market, including **Chemgenex Pharmaceuticals**, **Pharmaxis**, **Biota Holdings** (LANI) and **Acrux**, with **Peplin** (and others) to follow. When one of these companies can begin to generate in excess of $150 million in revenue a year from a locally developed drug, it will set an important precedent claims Storey. What the sector needs is predictable events, predictable successes, not M&A, which is an unpredictable outcome. Institutional investors want to start making 'predictable' returns from sustainable, profitable, high growth business in the sector, which will change the way the sector is perceived by investment markets.

Scott Power, research director at **ABN Amro Morgans**, says that the number of mature companies approaching profitability is attracting a broader range of investors to the sector. As long as these companies continue to hit their milestones, that inflow of new investors should continue believes Power.

Following the acquisition of **Arana Therapeutics**, Power says his firm is seeing clients with serial successes, moving from Arana to **Alchemia**, then **Pharmaxis** and **Acrux**, with solid gains being made by his clients also in other stocks such as **Biota Holdings**, **Avexa**,

Cont'd on page 4

Tyrian Diagnostics – Ready For Diagnostics Product Rollout

Tyrian Diagnostics is on the way to becoming an engine room for diagnostic product development. Its first diagnostic product, ReadRite alpha amylase test for analyzing wheat grain quality, has been selling in Canada and has been extremely well received by end users. The successful outlook for this product has prompted a second product development deal with **Bayer CropScience**. The business model for Tyrian, as a serial developer of diagnostic products surrounding its proprietary point-of-need tests, has been established with a clear growth path to profitability for the company.

Tyrian received the first manufacturing order for ReadRite from Bayer in December last year and Bayer has started selling the test into Canada. According to the company, the on-site test is performing exceptionally well, in fact as well as the time-consuming laboratory test, which has given Tyrian the confidence to forecast future revenue from its first commercial test.

The market for the test into Canada, the US, Europe and Australia is 17 million tests a year. At US$20 a test, that represents a potential market to Bayer of US$340 million. At a 10% market penetration – forecast within the third year (2012) – Tyrian would receive around $3 million in revenue, with about $2 million as a gross profit margin. The 10% market penetration for the test is a conservative estimate, and gaining 30% of these markets is not unrealistic.

This proprietary diagnostic platform allows the company to roll out at least two new tests a year, using existing markers with its diagnostic hardware. Its test can also be analysed through a digital reader, where multiple tests can be analysed and provide a quantitative result. Through third party manufacturers, Tyrian makes the diagnostic tests and the readers for Bayer.

Over the next three years, Tyrian plans to bring out two new tests a year, using existing markers and sold through larger partners such as Bayer.

TB (active) test progress

In January this year, Tyrian completed its development of the active tuberculosis test. The company achieved its fourth milestone with its partner, **Becton Dickinson**. However the level of sensitivity with this test required was not met. The program has now been handed over to BD to complete. Tyrian has also identified a potential molecular diagnostic test for TB.

The DiagnostIQ platform

The Tyrian platform test (such as that used with ReadRite) test uses a pre-incubation step, where the first reaction takes place. After a short period of time, the incubation chamber is pressed down onto an antibody capture membrane. This core proprietary invention of the Tyrian's diagnostic platform allows a vertical flow through disposable test to accept whole blood samples or high particulate load samples, such as crushed wheat grain, to be analysed whilst still keeping high sensitivity in a rapid flow through test product. The Tyrian platform also has the advantage of being able to incorporate several tests into the one flow through diagnostic.

The future for Tyrian

Tyrian diagnostics has now found its core strengths and will build the company around these strengths. Its proprietary DiagnostIQ platform allows an effective process line of diagnostic products to be rolled out each year, which cumulatively should turn Tyrian into a profitable business with continued growth potential. The company will now not work on biomarker discovery. It will use its expertise in sample preparation, particularly sputum preparation, to also deliver a number of point-of-care respiratory-based disease tests that will be ideally suited to its flow through diagnostic platform that is designed to accommodate such heterogenous samples such as sputum or grains for agricultural testing.

In the first nine months of this year, the company's cash inflow totalled $1.2 million. Tyrian had $4.8 million in cash at the end of March and is capitalised at $7 million.

Bioshares recommendation: **Speculative Buy Class B**

Bioshares

Cogstate – Demand Remains Strong

One of the facets that characterizes companies selling products into the healthcare/pharmaceutical industry is the resilient nature of these businesses largely during all parts of the global economic cycle. Cogstate, which sells its product/service to pharmaceutical companies, has shown consistent and strong growth in sales over the last two years.

In the 2008 financial year, the company generated revenue of $3.9 million with a net loss of $0.75 million. This year we anticipate revenue will double, with sales contracts in April and May alone of this year totaling $3.5 million, almost that achieved in FY2008. The company is maintaining a profit outlook of $1.5 - $1.75 million for this financial year.

What is driving the strong growth in the company's business? Two factors. The first is that Cogstate is clearly building its profile in the cognitive testing arena. We estimate that Cogstate is now the number two player in cognitive testing market for clinical trials. However we believe the company is on track to become the market leader because of the investment the company has made in its scientific team. Where its competitors have only one key scientist (estimate), Cogstate has a scientific team of six, having last year recruited Dr John Harrison. Harrison is regarded as an expert in the Alzheimer's filed, having developed the NTB (Neuropsychological Test Battery) for Alzheimer's testing in 2007. The NTB test is becoming an increasingly accepted test, used also by Prana Biotechnology in its Phase II trial.

Whilst the investment in the scientific team gives Cogstate a higher cost base than its competitors, this is set to pay off once a sales threshold for the company is passed, which we would suggest has now occurred.

Cont'd on page 5

ASCO 2009

The American Society of Clinical Oncology's (ASCO) annual conference was held recently, from May 29 to June 2. This is one of several high profile conferences in which oncologists discuss the latest developments in cancer therapies and treatment concepts in clinical phase development. Another leading clinical oncology event is the biennial European Cancer Society/European Society for Medical Oncology conference, to be held in September this year.

The status of these conferences is very high as they bring together a critical mass of researchers and cancer drug developers together in the one spot, across the many specialist sub-sets of cancer types and interventions. An invitation to a clinical investigator to deliver an oral presentation is considered a somewhat prestigious honour because many thousands of scientific abstracts are published as part of the conference proceedings.

ASCO is an equally significant event for small cancer drug developers and for the large pharmaceutical companies. The release of research findings, where possible, are timed around this event, where high level publicity can be obtained.

This year four Australian companies, **Bionomics**, **ChemGenex Pharmaceuticals**, **Cytopia** and **Immunaid** saw data from clinical phase cancer therapy programs in which they have an interest discussed by investigators or presented in abstracts.

Chemgenex Pharmaceuticals

A clinical investigator of ChemGenex's omacetaxine, Jorge Cortes of the **M. D. Anderson Cancer Center**, was invited to give an oral presentation. He discussed results previously presented to the American Society of Hematology conference in December 2008. These were interim results of the company's trial of omacetaxine in chronic myeloid leukemia (CML) patients who tested positive for the T315I mutation, which renders many patients insensitive to tyrosine kinase inhibitors such as Sprycel, Gleevec and Tasigna. Administration of omacetaxine delivered a complete hematological (CH) response rate of 85% for the 40 patients with chronic-phase CML, a 31% CH response rate in patients in the accelerated phase and 20% CH in patients in the blast phase. The median duration of CH response was 8.9 months.

While it might seem that the re-presentation of interim results that have been available for some months might appear redundant, the benefit to ChemGenex is the increased exposure that the ASCO presentation generates in the wider oncology world.

ChemGenex expects to complete the CML /T315I trial by 2009 Q3.

Bionomics

Bionomics released interim data from its Phase I trial of BNC105P, a vascular disruption agent in an abstract format. The trial commenced in February 2008 and is expected to enrol up to 30 patients. In nine patients enrolled in the safety and dose escalation study, four grade 1 toxicities were reported, including fatigue, nausea, rash and one grade 2 toxicity of mucositis. No cardiovascular toxicities were reported. Doses started at 2.1 mg/m2 and progressed to 18.9 mg/m2. Disease stabilisation occurred in two patients, one with mesothelioma (up to week 22) and one other with renal cancer.

Cytopia

Cytopia discussed in a conference abstract the Phase I trial of CYT997, administered orally to twenty one patients with advanced solid tumours. These results were previously released to the market on February 5, 2009. The investigators concluded that doses up to 118mg/m2 were well tolerated, with the maximum tolerated dose of 164mg/mg2. At this dose, three toxicities were observed.

Also this week, Cytopia announced that its research services funded under its JAK3 transplant drug collaboration with **Novartis** would not continue, resulting in a loss of 18 jobs. However, Novartis would continue development activities under the program (which is overseen by a joint committee on which Cytopia is represented), and Cytopia would stand to receive milestones and royalties on any successfully developed compounds.

Cytopia will cease to do drug discovery work in-house and will focus its resources on its CYT997 clinical program, which includes two Phase II trials in relapsed glioma and multiple myeloma respectively, and the Phase I trial (commencing H2 2009) of CYT387, an orally available JAK2 inhibitor that will be evaluated to treat myelofibrosis patients.

Immunaid

Immunaid is a company in which **Genetic Technologies** holds a 65% interest. Immunaid was founded in March 2001.

The Immunaid approach to cancer therapy is based on the hypothesis that the immune system exhibits dynamic characteristics. The immune system is homeostatic, which means that after dealing with an antigenic challenge it resets itself. Immunaid believes that the immune system operates on a fourteen day cycle but this is compressed to seven days in states of advanced cancers. The Immunaid approach aims to unlock control of the effector part of the immune system from control by the 'regulatory' branch (which stymies attempts to attack tumours which are considered part of the 'self' and therefore tolerated), leading to a successful attack on tumour cells by co-opted immune system attack cells. In late stage cancer patients according to Immunaid, there exists a 12 hour window each seven days when the regulatory cells are sensitive to chemotherapy.

The Immunaid therapeutic approach joins observations about the functions of regulatory T-cells, the homeostatic attributes of the immune system, low dose chemotherapy, together with the increasingly powerful understanding of the value of C-reactive protein as a marker of acute-phase inflammation.

Regulatory T cells are part of the immune system that suppress self-antigen-reactive T cells and maintain self tolerance. The role of regulatory T cell is generally a good thing, but not in the case of a proliferative disease such as cancer.

Cont'd over

The Immunaid cancer therapy has a priority date of Feb 14, 2002 on its US patent application (20050180971). A patent has been granted in Australia which expires in 2023. The patent describes a method for treating a cancer patient based on the observation that T effector cells that are primed to attack cancer cells and expand in number before T regulator cells begin a process to suppress the attack on cancer cells.

The therapy is based on initially reducing the tumour burden using surgery, the administration of an anti-cancer compounds or radiotherapy, or a combination of all three. A key aspect of the approach is the timing of the administration of an agent that suppresses and destroys the T regulator cells to the point that T effector cells initiate the cascade that results in the destruction of tumour cells. Agents that inhibit T regulator cells include compounds such as cyclophosphamide, or similar alkylating agents which disrupt tumour DNA.

The approach relies on measuring levels of C-reactive protein to determine the timing of interventions. CRP is key to the viability of the Immunaid approach. CRP is now emerging as a, if the not, the number one bio-marker of acute phase inflammatory response. CRP is emerging as a highly useful indicator of cardiovascular risk if the results of the JUPITER statin study are anything to go by. CRP has a plasma half life of about 12 hours, compared to SAA (serum amyloid A) (~70-120 minutes), AAG (alpha acid glycoprotein) (~3 days), lactate dehydrogenate (~3 days) and BMG (beta-microglobulin) (2-8 days). CRP is also a noted as chemically stable protein and in normal conditions is stable over long periods. CRP levels are not affected by food intake in the way that cholesterol levels are.

ASCO Abstract

Investigators at the Mayo Clinic reported on a pilot trial "Possible therapeutic reversal of immune suppression in patients with metastatic melanoma by timed delivery of temozolomide chemotherapy", designed according to Immunaid's concept of timed intervention with chemotherapy. Over a two week period, twelve patients were measured for CRP levels to determine peak levels of CRP. It was found that CRP levels oscillated with an average periodicity of 7.8 days. Dosing of 200mg/m2 for 5 days for every 28 days was initiated at the time when CRP was estimated to peak.

However, two patients who were treated before the peak in CRP levels remained progression free for greater than two years. All other patients (excluding one early drop out) were treated post-CRP peak levels, and this set of nine patients had disease progression less than but not greater than five months.

Ovarian cancer trial

A trial in ovarian cancer patients is being conducted at the **Royal Womens Hospital** in Melbourne, where the investigator is Dr Michael Quinn. In this open label trial, 100mg of cyclophosphamide is administered orally for 3 days each week of a 2 week cycle for at least 3 cycles. Cylcophosphamide has previously been shown to at low doses to be an immune-potentiator (at higher doses the reverse occurs), impacting quite directly on T regulator cells. Although other researchers have discerned that metronomic (periodic timing) administration of low dose cyclophosphamide represents a therapeutic improvement, they do not appear to have linked such an approach with the use of CRP as a marker that can define the time of optimal administration.

In addition to the current ovarian cancer study, further clinical studies of the Immunaid therapeutic approach would be required to produce data with statistical power to persuade oncologists of the potential benefits of the approach. However, we expect that such trials conducted by rival investigators will get underway in the not too distant future as the acceptance of CRP as the necessary clinical tool becomes more widespread.

Commercialisation of the Immunaid approach to treating cancer is problematic. It has the potential to improve the response rates of numerous anti-cancer compounds, yet barriers to competition are weak unless oncologists respect the legal property rights of the company, in the territories in which they are established. The concept of hospitals licensing therapeutic methods may be technically straight forward but culturally unacceptable in many parts of the world. An alternative is that the therapy is made available in centres owned by Immunaid or commercial partners. The chief concern with Immunaid's therapeutic methods 'asset' from a commercial point of view is that rival researchers might easily devise and patent similar therapeutic methods that do not infringe Immunaid's patents. Method of use patents are in general far less robust than composition of use (product) patents.

Implications

Emerging out ASCO this year for Australian investors is the potential growth in the value of C-reactive protein as a clinical tool. The company that becomes of immediate interest to investors is **Universal Biosensors** (UBI), which is developing a point-of-care CRP diagnostic. A blue sky opportunity beyond that company's glucose test strip deal with **Johnson & Johnson's Lifescan** lies in the immersion of CRP into the practice of oncology, where the development of a POC CRP test could enable cheaper and more convenient hospital testing, or at-home administration of anti-cancer compounds or other drugs that would benefit from a pause in the immune systems' self-regulation activity, for example HIV.

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From page 1

Chemgenex and **Peplin** in recent months. Investors in the sector have become more upbeat and more attracted to the long term news of the sector.

The sale of Arana Therapeutics has been a small trigger says Power, but the change in market conditions has seen investors prepared to pay more for more risk.

Will the current run in the sector continue? Power says whether this run continues or not will depend on the broader market. He believes we have seen the worst of it but the sector and the broader market may give back a bit of the recent gains. But a major success such as the sale of one of the later stage assets could set the sector off for another six months!

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Cogstate cont'd

The second factor driving the company's business is the natural growth and the move of the industry away from pencil and paper tests to computerized testing. Whether Cogstate is taking market share away from its competitors is unknown, however it appears the market is showing healthy and sustainable growth.

In October last year we counted just under 100 clinical trials in the US underway or planned in Alzheimer's disease, which is one of the core markets for Cogstate, together with schizophrenia. There were 21 Phase III trials registered with the NIH, yet Phase III trials do not use electronic cognitive testing platforms yet, with the standard being the ADAS-cog test, which is a cruder test for measuring changes in cognitive function.

We expect the accepted test platform for Alzheimer's disease drugs will change as other tests such as NTB or computer-based tests such as that provided by Cogstate and its competitors will gain acceptance by regulators. This could double the market cognitive testing in Alzheimer's disease.

Summary

Cogstate is moving into a position where demand for its services will naturally increase because its profile with customers has improved, and because the market for electronic means of cognitive testing continues to ramp up. The lack of adequate therapeutics coming to market for Alzheimer's disease will drive more refined methods of testing for cognitive change to be employed. And Cogstate's expenditure on its scientific infrastructure and product development is now delivering on that investment.

At the end of March Cogstate had $2.7 million in cash with a further $1.3 million in trade debtors. In this financial year it has signed $9.0 million worth in contracts, with $5.4 million of that to be recognised largely in FY2010.

Bioshares recommendation: **Buy**

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Acrux Update

Acrux this week signed a distribution deal in South Africa with Aspen Pharmacare for its spray-on HRT product, Ellavie. It comes at a time when interest in Acrux is very lively. From a low of 38 cents, the stock has shot up to $1.31. We expect the next six months will be a very active period for the company.

Expected news includes: more distribution deals for Ellavie (in Europe); escalating sales of the product in the US (Evamist); completion of the male testosterone product Phase III trials in the US; and progress on potential licensing of this product.

Bioshares recommendation: **Speculative Buy Class A**

Bioshares Model Portfolio (5 June 2009)

Company	Price (current)	Price added to portfolio	Date added
ASDM	$0.33	$0.30	December 2008
QRxPharma	$0.45	$0.25	December 2008
Hexima	$0.40	$0.60	October 2008
Atcor Medical	$0.21	$0.10	October 2008
CathRx	$0.46	$0.70	October 2008
Impedimed	$0.75	$0.70	August 2008
Mesoblast	$0.83	$1.25	August 2008
Cellestis	$2.88	$2.27	April 2008
IDT	$1.53	$1.90	March 2008
Circadian Technologies	$0.75	$1.03	February 2008
Patrys	$0.09	$0.50	December 2007
Bionomics	$0.24	$0.42	December 2007
Cogstate	$0.27	$0.13	November 2007
Sirtex Medical	$3.09	$3.90	October 2007
Clinuvel Pharmaceuticals	$0.35	$0.66	September 2007
Starpharma Holdings	$0.33	$0.37	August 2007
Pharmaxis	$2.55	$3.15	August 2007
Universal Biosensors	$1.16	$1.23	June 2007
Biota Holdings	$1.22	$1.55	March 2007
Probiotec	$1.91	$1.12	February 2007
Peplin Inc	$0.67	$0.83	January 2007
Arana Therapeutics	$1.40	$1.31	October 2006
Chemgenex Pharma.	$0.57	$0.38	June 2006
Cytopia	$0.11	$0.46	June 2005
Acrux	$1.31	$0.83	November 2004
Alchemia	$0.39	$0.67	May 2004

Portfolio Changes – 5 June 2009

IN:
No changes

OUT:
No changes

How Bioshares Rates Stocks

For the purpose of valuation, *Bioshares* divides biotech stocks into two categories. The first group are stocks with existing positive cash flows or close to producing positive cash flows. The second group are stocks without near term positive cash flows, history of losses, or at early stages of commercialisation. In this second group, which are essentially speculative propositions, *Bioshares* grades them according to relative risk within that group, to better reflect the very large spread of risk within those stocks.

Group A

Stocks with existing positive cash flows or close to producing positive cash flows.

Buy	CMP is 20% < Fair Value
Accumulate	CMP is 10% < Fair Value
Hold	Value = CMP
Lighten	CMP is 10% > Fair Value
Sell	CMP is 20% > Fair Value

(CMP–Current Market Price)

Group B

Stocks without near term positive cash flows, history of losses, or at early stages commercialisation.

Speculative Buy – Class A
These stocks will have more than one technology, product or investment in development, with perhaps those same technologies offering multiple opportunities. These features, coupled to the presence of alliances, partnerships and scientific advisory boards, indicate the stock is relative less risky than other biotech stocks.

Speculative Buy – Class B
These stocks may have more than one product or opportunity, and may even be close to market. However, they are likely to be lacking in several key areas. For example, their cash position is weak, or management or board may need strengthening.

Speculative Buy – Class C
These stocks generally have one product in development and lack many external validation features.

Speculative Hold – Class A or B or C

Sell

Corporate Subscribers: Phylogica, Pharmaxis, Cytopia, Arana Therapeutics, Starpharma Holdings, Cogstate, Optiscan Imaging, Bionomics, ChemGenex Pharmaceuticals, Circadian Technologies, Biota Holdings, Stem Cell Sciences, Halcygen Pharmaceuticals, Peplin, BioMD, Impedimed, QRxPharma, Patrys, Labtech Systems, Hexima, Tyrian Diagnostics, Mesoblast, Atcor Medical

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