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In this edition...
As daily turbulence in the share market remains, Australian biotechs continue to progress through milestones on the path to bringing their novel products to market. Interim results have surfaced on Sunshine Heart's 20 patient feasibility study. It appears to be a mixed result, with a fuller picture available when final results are released in coming weeks.

Antisense Therapeutics is ahead of schedule in its Phase I study with its novel antisense drug candidate, which should have a good chance of some early success. And Immuron is due to start a clinical trial for its oral immunotherapy product for influenza infection.

The Editors
Companies Covered: ANP, IMC, SHC

	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 - May '10)	49.2%
Year 10 (May '10 - May'11)	45.4%
Year 11 now commenced	-27.4%
Cumulative Gain	**206%**
Av. annual gain (10 yrs)	**21.2%**

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Bioshares

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

Sunshine Heart – Initial Data from Feasibility Study Released

Initial results from Sunshine Heart's (SHC: 3.9 cents) 20 patient feasibility study of its C-Pulse Heart Assist device were released this week by the study's co-lead principal investigator, heart surgeon Dr William Abraham. Results were not released at the Heart Failure Society meeting this week as expected, with full results expected to be released on November 8 at the Transcatheter Cardiovascular Therapeutics meeting.

Interim results
On the efficacy side, the results look very encouraging. Nineteen patients either improved or remained at the same level of heart failure classification. Most patients enrolled were Class III heart failure stage patients with two being Class IV stage. The C-Pulse is primarily designed for use by Class III patients, where the LVAD heart pump, such as that being developed by Heartware, is designed for the more ill Class IV patients.

Two patients were disconnected permanently from the device, with one improving to the stage of not having heart failure. Three patients were successfully transplanted with a natural heart, with one of these patients being supported by the C-Pulse device for 22 months.

Overall improvement included quality of life, improvement in heart ejection fractions, six minute walk times or reductions in medications. However no specific data was released, and this is expected to be available in early November.

On the safety side, there were some issues. Six patients had superficial infections at the point the drive-line connected to the device passes through the skin. These were all successfully treated with antibiotics. One patient experienced post operative bleeding not related to the device. There were no strokes or heart attacks.

The most serious safety issue was the death of one patient. This patient died after a long infection in the chest cavity. The death occurred when surgeons attempted to remove the device, with a tear occurring in the aorta. It is believed correct treatment protocol was not followed by the patient on a number of points, including following prescribed treatment of infection. The death was not directly related to device failure and it is believed the weakening of the aorta was due to the infection rather than the device. The sternum was also seriously damaged by the infection.

Discussion
A higher mortality rate in Class IV heart failure patients who receive LVADs is acceptable than for Class III heart failure patients who are less sick and receive the C-Pulse system. Class III patients have a 12 month mortality rate of around 20%-30% with no device assisting cardiac intervention. What is an acceptable level of risk for the C-Pulse system is currently unclear. For heart transplant recipients, it's known there is an 85% survival rate at one year, which appears to be an acceptable outcome.

Cont'd over

– SHC from page 1

Infection was an issue in the first clinical study involving five patients and this feasibility study delivered a clear improvement in how infections can be prevented and managed. It's very likely the company will continue to improve the way in which the device is implanted and how infection issues can be better managed.

Drive-line infections are similarly common with LVAD implants. Sunshine Heart is completing the development of C-Patch system that will better secure the drive-line to the patient, reducing movement and thereby reducing the chance of infection. This C-Patch attachment is expected to be available for the pivotal study.

The drive-line infection issue will never be removed until there is no drive-line across the skin, and Sunshine Heart is working on a fully implantable system

Infections are common with any surgical procedure and this fact should be kept in mind when assessing infection issues with the C-Pulse system.

There has been no evidence of aortic damage directly attributable to the C-Pulse system, which is a very important aspect of device safety. However safer removal procedures of the device (which the body coats in a fibrous tissue) following broader infection may also need to be addressed.

The company had previously expected to release its results from this study at the Heart Failure Society meeting in Boston this week at the 'late breaking news' session, however it was informed this session was only for pivotal study results.

Summary & recommendation

There is some reason for investors to be cautious following the interim release of results. A clearer understanding of the risk-benefit ratio of the C-Pulse system is required, and this should occur once the complete results of the feasibility study have been released.

Bioshares recommends investors **Exit** and **Wait** for full study results before re-investing in this stock.

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Antisense Therapeutics Update

Antisense Therapeutics (ANP: 0.8 cents) has completed the first stage of its Phase I ATL1103 trial. This is the lead drug candidate for Antisense and there is good reason to expect that Phase I study should deliver some interesting and meaningful early results.

ATL1103 is being trialled to reduce circulating IGF-1 levels. High IGF-1 levels are associated with a number of disorders, including acromegaly and diabetic retinopathy.

The first stage of the Phase I study looked at four doses of ATL1103, starting at 25mg and ending at 400mg. There were no serious adverse advents reported. There were 'general safety observations' in the group consistent with antisense drugs. Two of the volunteers received a placebo and four received different doses of ATL1103.

The second part of this study involves 12 volunteers, eight of whom will receive 250mg of the drug consisting of six doses (at one, three, five, seven, 14 and at 21 days). This part of the trial started earlier this month. Antisense CEO Mark Diamond now expects the trial to completed by year's end with results also available this year.

Whilst safety will be the primary consideration, the trial should also give some clear information on whether circulating IGF-1 levels are inhibited.

Stem Cell Expansion Application

Antisense has found an additional application for one its earlier antisense drug candidates, ATL1102. This drug candidate inhibits the production of VLA-4 receptor. ATL1102 has completed a Phase II study in patients with multiple sclerosis with a successful outcome. The drug candidate was licensed to Teva Pharmaceutical Industries, which handed the program back to Antisense, indicating that further preclinical toxicology studies would be required.

Others have shown that inhibiting VLA-4 has an effect on increasing stem cell mobilisation from the bone marrow. When Antisense looked back at its preclinical and Phase II data, it confirmed that there was if fact an increase in stem cell mobilisation. Tysabri, a monoclonal drug on the market for multiple sclerosis, has been investigated for its effect on stem cell mobilisation and was shown to do just that. However its safety profile deters its use in that setting. Antisense's ATL1102 may have a better market opportunity, given its shorter half-life and potentially safer and more controllable effect, which is preferred for patients, prior to undergoing chemotherapy, to collect the patient's hematopoietic stem cells.

Antisense will seek to either license ATL1102 for this application, or license it for both stem cell mobilisation and the treatment of multiple sclerosis, or conduct further studies in-house.

Antisense Therapeutics is capitalised at only $8 million. At the end of June it had $2.3 million in funds.

Bioshares recommendation: **Speculative Buy Class C**

Bioshares

Immuron to Commence Influenza Immunotherapy Trial

Immuron (IMC: 6.3 cents) develops and markets products that harness passive immunity to treat a range of conditions. It markets Travelan, a product used to treat traveler's diarrhea, which may also be used by residents in areas subject to poor sanitation. The company is currently expanding its network of licencees for the product.

Immuron will shortly commence a Phase I/IIa trial of IMM255, a product in development to boost the body's immunity against influenza infection. The study will take place at the Hadassah Medical Centre in Israel, initially in healthy patients.

IMC225 is not a vaccine but is an oral therapy candidate that inhibits influenza infection and boosts the immune systems response to the infection.

In the past it has been shown that monoclonal antibodies can be developed to combat influenza infection. A problem for this monoclonal antibody approach to treatment is that monoclonal antibodies target only one epitope on the influenza virus, a situation that remains acceptable until the virus mutates, making the epitope redundant from a targeting perspective. An even greater problem relates to the cost of developing monoclonal antibodies for influenza treatment. The cost of manufacturing, from very large scale production runs to address large population requirements each year to target a new epitope, would be not economic in the influenza setting.

A preferred approach to countering the epitope mutation problem (also known as antigenic drift) would be to administer a cocktail of monoclonal antibodies which would make the manufacturing cost even more expensive.

An alternative approach as proposed by Immuron is to harvest polyclonal antibodies (IgG) from bovine colostrum, a milk rich in immune enhancing molecules that are passed on from a cow to a calf after birth to passively immunize the calf. The same method is used by humans and other mammals to immunize newborns. Modern dairy cattle produce excessive quantities of colostrums and one cow could supply an estimated 500 doses of a therapeutic colostrum extract.

Immuron's IMC255 is semi-processed colostrum matter which contains polyclonal antibodies. The colostrum is sourced from dairy cows vaccinated with a strain of the influenza virus. [Polyclonal antibodies are produced from many different B-cells in a mammal; monoclonal antibodies are produced from the one B-cell, a single cell line.]

Key Study in Mice

In a study in mice ("Prevention and Treatment of Influenza with Hyperimmune Bovine Colostrum", Ng et al, PLOS V5/10) it was shown that ascending doses of anti- influenza (HIN1-PR8 strain) antibodies in the upper respiratory tract had a significant effect on nose viral titers, with the 200 ug dose causing a 100 fold reduction compared to the placebo group. However, antibody fragments were shown to have no effect on reducing viral load at similar doses. Multiple dosing did not appear to improve the performance of either the antibodies or antibody fragments.

The study also looked at dosing in the lower respiratory tract, which showed that 100% of mice treated 24 hours after infection with 1 mg of the anti-influenza antibody had undetectable levels of virus five days post administration, with half of the mice treated with 500 ug and 800 ug doses being clear of virus after five days. Lower doses of 200 ug and 100 ug had no effect on lung viral load. Some viral clearance was obtained when the antibody fragment was administered.

When the anti-influenza antibody was administered two days after infection, a reduced effect of 50-fold reduction in viral load was observed.

Preventive Effect

The study also examined the preventive effect of the anti-influenza antibody when administered in the lower respiratory tract. Mice were dosed at one, two, three or seven days prior to infection. It was shown that administration of the anti-influenza antibody as early as three days prior to infection inhibited virus growth in the lungs, and even administration at seven days prior had the same effect. At days one and two, very low titers of virus were observed. The antibody fragment showed some preventative effect but not at the same level as observed with the full antibodies.

One interesting result observed was that antibodies (IgG) sourced from non-immunised cows also had a 10-fold effect on lessening viral load in the lungs if delivered one or two days before infection, although non-immune antibody fragments did not have an effect.

The researchers suggested that the longer duration seven day effect would probably not translate from mice to humans, with comparability likely to be similar to the slightly lesser effect achieved by antibody fragments. The reason the antibody fragment approach was explored is because an immune response can be developed against certain regions of an administered whole antibody of a different species.

The study provides evidence to support the hypothesis that an orally delivered colostrum product from vaccinated cows may be effective in both treating and preventing influenza in humans, with a two arm effect working to inhibit the influenza infection and secondarily through augmenting cellular immunity.

The company has now completed studies in ferrets, a standard animal model for studying influenza therapeutic candidates, paving the way for the initiation of a Phase I/II study.

The Product Opportunity for IMC255

The product opportunity available to Immuron is an over-the-counter lozenge style influenza prevention product that can sit in home medicine cabinets so that people can access a relatively low-cost influenza preventative. However, in some countries, medical regulations would require such a product to be obtained by prescription.

Cont'd over

Bioshares Model Portfolio (23 September 2011)

Company	Price (current)	Price added to portfolio	Date added
Mayne Pharma Group	$0.360	$0.435	September 2011
Genetic Technologies	$0.17	$0.18	August 2011
Acrux	$3.12	$3.37	June 2011
Psivida	$4.35	$3.95	May 2011
Bioniche	$0.70	$1.35	March 2011
Somnomed	$1.07	$0.94	January 2011
Phylogica	$0.056	$0.053	September 2010
Biota Holdings	$0.83	$1.09	May 2010
Tissue Therapies	$0.43	$0.21	January 2010
Atcor Medical	$0.08	$0.10	October 2008
Impedimed	$0.50	$0.70	August 2008
Bionomics	$0.45	$0.42	December 2007
Cogstate	$0.16	$0.13	November 2007
Sirtex Medical	$4.41	$3.90	October 2007
Clinuvel Pharmaceuticals	$1.46	$6.60	September 2007
Pharmaxis	$0.66	$3.15	August 2007
Universal Biosensors	$0.99	$1.23	June 2007
Alchemia	$0.31	$0.67	May 2004

Portfolio Changes – 23 September 2011

IN:
No changes.

OUT:
Sunshine Heart has been removed from the portfolio. See analysis on page 1.

Why this is a realistic prospect for Immuron is that it has established, over more than a decade of work, a large volume, low cost-of-goods manufacturing system based on harvesting colostrums from dairy cattle. A barrier to entry to the market exists because of Australia's clean status for bovine husbandry.

Although the potential exists for many customers to purchase IMC255 or similar, not all stocks will be used during an influenza season. Hence the product must be priced from personal 'self-insurance' point of view. For the product to work, an OTC influenza prevention product must be priced so that very large quantities of domestic stocks can be written off each year without consumers necessarily accessing the product and that consumers will not feel like they have wasted their money. Immuron's manufacturing base allows them to address the economics of the problem.

While the path to getting an OTC product on the market should be much shorter than a prescription product, the company may consider an ongoing clinical program to explore the effects of vaccination of cows with different flu strains, as well as studies in children and elderly subjects. Data from studies may add to both the marketing claims for IMC255, lead to new products and line extensions and also address potential concerns regulators may have with the product.

Summary
Immuron is developing an interesting investment proposition with its influenza product to add to its IMM124-E product which is to be trialed in a Phase II for treating non-alcoholic fatty liver disease. The main investment concern with Immuron is cash at hand at June 30, 2011 which was $0.75 million.

However, the company is currently conducting a rights issue to raise up to $4.3 million. The rights issue, which is not under-written, entitles shareholders to receive a new share for every five, at 7 cents, in addition to a free attaching option for every three new shares. Immuron is capitalized at $24 million.

Bioshares recommendation: **Speculative Hold Class B** [Review pending completion of capital raise]

Bioshares

Corrections and Clarifications:
In the table "Results Summary June 30 Reporting Companies – FY201", due to an error in transcription, the FY2011 result for Genetic should have read $0.91 million not -$0.91 million. As a consequence, the number of companies reporting profits for FY2011 was 17, not 16.

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. For both groups, the rating "Take Profits" means that investors may re-weight their holding by selling between 25%-75% of a stock.

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

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