

**In this edition...**

There goes another quarter the biotech sector did not want and did not need. Such are the times that a sector wide lift is not likely next quarter. While the sector has never been cheaper, the opportunity for investors with cash is the chance to selectively accumulate the very best biotechs, many of which are trading at bargain-basement prices.

Antisense Therapeutics posted results of its Phase IIa trial of ATL1102 in multiple sclerosis. While more data would have been welcome, the result is good enough to trigger further development by partner Teva Pharmaceuticals.

The editors

**Companies covered: ANP and Quarterly Review**

	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 - current)	-8.9%
<b>Cumulative Gain</b>	<b>89%</b>
<b>Av Annual Gain (7 yrs)</b>	<b>17.8%</b>

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# Bioshares

4 July 2008  
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*Delivering independent investment research to investors on Australian biotech, pharma and healthcare companies.*

## Quarterly Review

### Another Weak Quarter – Bioshares Index Falls 14.6%

The **Bioshares Index**, which measures the performance of the vast majority of Australian listed life science companies on quarterly, weighted basis fell 14.6% in the June quarter, 2008. This followed a 29.5% slide in the March quarter, 2008.

Since December 2007, the Bioshares Index has fallen 40% and since December 2006 the index has fallen 48%. These figures represent a grim reality that now shadows Australian biotech, with both local and international bear market influences at work.

The global biotech benchmark index, the **Nasdaq Biotech Index** rose 1.6% in the latest quarter and is down a relatively modest 5% from the close of 2007. Clearly, this more measured performance illustrates with incredible clarity how deleterious the Opes Prime stock lending fiasco and its related issues have been. It has been nothing short of a calamity as it has contributed to an evaporation of small cap stock liquidity.

#### Index performances by Quarter

	Q3 2007	Q4 2007	Q1 2008	Q2 2008
Bioshares Index	-9.5%	-5.5%	-29.5%	-14.6%
Nasdaq Biotech Index	6.4%	-2.3%	-6.5%	1.6%
Bioshares Large Cap Index	14.9%	3.6%	-7.3%	-7.8%
ASX 300 Index	4.5%	-3.4%	-15.7%	-2.6%

It is fair to say that on a share price basis, things have never been worse for Australian listed biotech stocks. The current parlous market conditions will speed up the demise or 're-configuration' of a number of companies. It is now possible that the number of ASX-listed biotech stocks included in the *Bioshares* tables could fall shortly from the current number of 131 companies to around 125 level, if certain impending solvency issues are not addressed. (It is worth noting that 48 of those 130 companies are capitalised at less than \$10 million.) As it is **Apollo Life Sciences** is winding itself up, and **RTL Corp** looks to re-badging itself as a mining services company. It is also an ominous sign when selected companies such as **Novogen** and **Neuren Pharmaceuticals** announce that patient recruitment for their respective Phase III trials can be abbreviated. Novogen's

*Cont'd over*

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### Capital Raisings by Australian-listed Biotech Companies Q2 2008

Company	Investment manager/Investor	Type of raising	Funds raised (\$M)
Heartware		Placement	\$30.0
Phosphagenics		Placement	\$9.1
Sunshine Heart		Rights Issue	\$5.4
Optiscan Imaging		Placement	\$3.0
Antisense Therapeutics	Firebird Global Master Fund, PowerOne Capital Markets	Placement	\$2.3
Life Therapeutics	Aegis Partners	Placement	\$1.2
Anadis		SPP	\$0.8
Healthlinx		Rights Issue	\$0.5
Incitive	Cygnat Capital	Placement	\$0.5
Probiomics			\$0.5
Biosignal		Placement	\$0.4
Atos Wellness		Placement	\$0.1
<b>Total</b>			<b>\$53.8</b>
IPOs			\$5.0
<b>Overall raised in Q2 2008</b>			<b>\$58.8</b>

Marshall Edwards US subsidiary will be halting enrolment at 340 instead of a planned 470 patients in its OVATURE Phase III trial. Neuren Pharmaceuticals has decided that 320 patients instead of an original planned 606 are necessary to complete its Phase III trial of Glypromate. While sophisticated clinical trial statistics may enable such abbreviations, it is also likely that funding constraints have played their part in these abbreviation decisions.

Yet despite the possibility of an extended liquidity drought situation confronting the Australian biotech sector, a number of companies continue to make strong progress. An example is **Acrux**, which reported that its Evamist estradiol transdermal spray partnered to **KV Pharmaceuticals** is now on sale in the US. This is a significant achievement for an Australian biotech company and for the sector in general.

#### Capital Raisings

Not unexpectedly, capital raisings were subdued with approximately \$59 million in working capital being raised by listed biotechs. This figure was moderately ahead of the March quarter figure of \$42 million. However, these figures are in stark contrast to recent levels of investment activity. In the year ending December 31, 2007, \$940 million was raised to support drug, device, diagnostic and animal and crop biotechnology commercialisation programs.

After one IPO on the March quarter there was one again in the June quarter, with **Genera Biosystems** raising \$5 million.

Two companies delivered an outstanding result in raising funds during one of the harshest quarters on record. **Heartware** raised \$30 million to progress the clinical development of its heart assist device and **Phosphagenics** raised \$9 million. These two (out of twelve) companies raised 70% of total funds raised.

Several companies pulled funding programs, including **Benitec** with even Heartware not proceeding with a Share Purchase Plan. And **Healthinx** was able to raise only a small portion of its intended \$4 million raising.

The concern going forward rests with a number of companies that have low cash balances with the threat of insolvency hanging overhead. We expect to update readers on these companies when June quarter cash flow statements are released close to the end of July.

#### Performance Highlights

Several stocks did perform well in the June quarter. Syringe manufacturer **Unilife** recorded an 88% gain for the quarter, an increase associated with **Sanofi Aventis** signing a 5-year exclusive agreement with Unilife for its Ready-To-Fill Syringe. Unilife received an up-front fee of \$16.4 million for the transactions, and Sanofi Aventis will cover the commercialisation costs expected to be in the range of \$24 million to \$27 million. An industrialisation agreement is expected to be signed by December, 2008.

**Halcyon Pharmaceuticals** posted a 40% gain as the US FDA signed off on the company's clinical development program for its anti-fungal product, SUBA-Itraconazole.

**ChemGenex Pharmaceuticals** also performed well in the quarter, rising 40%. With a capitalisation at June 30 of \$210 million, this company is now, outside of the large cap stocks, the sector's third largest drug developer, after **Pharmaxis** (\$296 million) and **Arana Therapeutics** (\$260 million).

ChemGenex has performed well in part because it successfully renegotiated the European rights to omocetaxine with **Stragen**, converting its royalty obligations to Stragen into an equity position held by Stragen in ChemGenex.

And **Mesoblast** caught the attention of investors with its third IND receipt from the FDA, with the stock posting a 60% gain for the quarter.

**Bioshares**

## Selected Clinical Trial Developments - June Quarter 2008

Company	Code	Product/Therapeutic	Event
AcruX	ACR	Testosterone MD-Lotion	Commenced Phase III trial in 150 hypogonadal males
Antisense Therapeutics	ANP	ATL1102 - Multiple Sclerosis	Completed 77 pt Phase IIa trial; Endpoint of reduction in lesions at 8 weeks met.
BioMD	BOD	Cardiocel	Completed first human implant of ADAPT-treated biomaterial patches
Biota	BTA	CS8958 (Anti-influenza)	Completed enrolment for Phase II at Japanese site.
Fermiscan	FER	Fermiscan Test (Diagnostic)	Completed a 35 pt study in breast cancer patients, reporting 84% sensitivity
Fermiscan	FER	Fermiscan Test (Diagnostic)	Completed a 2000 subject study, reporting 69% accuracy
NeuroDiscovery	NDL	NSL-043 (Pain)	Completed first Phase I trial in 56 healthy male subjects - oral formulation
Peplin	PEP	PEP005 (Skin lesions)	Commenced Phase IIb trial in pts with AK lesions on face and scalp (~240 pts)
Progen	PGL	PG-11047 (Cancer)	Re-initiated Phase I study in patients with advanced cancer
QRxPharma	QRX	Q8003IR (Pain)(combination of oxycodone and morphine)	Released interim data and analyses from Phase III trial in 256 patients
Virax Holdings	VHL	Cancer vaccine - TG4010 [MVA-MUC1-IL-2]	Partner Transgene completed Phase IIb trial in non small cell lung cancer - adjunct first line therapy- 148 pts; Transgene reported that endpoint of PFS at six months was met (at least 40% of pts). Measure of stat sig. not reported.

### Positive Phase II Results for Antisense Therapeutics

Antisense Therapeutics has delivered positive headline results for its Phase IIa trial of its lead compound, ATL1102, for the treatment of multiple sclerosis (MS). The trial involved 77 patients with relapsing/remitting MS over an eight week treatment period. The patients were then monitored for a further eight weeks after treatment had stopped.

The primary measure for this trial was inhibition rate of new lesions on the myelin sheath surrounding the brain. MS results from the attack by a person's own dysfunctional immune system on the myelin sheath in the central nervous system that provides insulation to neurons in the CNS.

In this trial, ATL1102 reduced the cumulative number of new lesions by 54% over the placebo group, a result that was highly statistically significant ( $p=0.01$ ). The drug also reduced by 65% ( $p=0.005$ ) more acute lesions that highlight a breakdown of the blood-brain-barrier (called Gadolinium-enhancing lesions).

ATL1102 has been designed to inhibit the production of the VLA-4 protein on the outside of lymphocytes (white blood cells). The VLA-4 protein attaches to the blood vessel wall and allows the dysfunctional migration of these immune cells to the central nervous system.

#### The VLA-4 target

ATL1102 seeks to inhibit the same target as the successful MS drug Tysabri, ( **Biogen Idec/Elan**). Tysabri is a monoclonal antibody that directly binds to VLA-4. ATL1102 is a second generation antisense drug that seeks to work inside the cell to prevent the production of VLA-4. In a very similar Phase IIa study conducted on Tysabri in 72 patients and reported in 1999, Tysabri was shown to achieve a similar reduction in preventing new lesion

formation in relapsing/remitting MS patients, achieving a 50% mean reduction in new active lesions. Tysabri was approved in November 2004, then suspended following health concerns in February 2005 and returned to the market in June 2006. In 2007, the drug generated revenues of US\$230 million for Biogen Idec, plus further revenues from Elan Pharmaceuticals

In February this year Antisense negotiated a licensing deal with **Teva Pharmaceutical Industries**, which is a major player in the MS field. Antisense Therapeutics received a US\$2 million up front payment. The deal included total potential milestone payments of up to US\$100 million plus a double digit royalty (note that one third of all income payable to **Isis Pharmaceuticals**, from where the technology originates). Following these positive results, Teva has elected to continue with the program and will pay US\$4 million (two-thirds Antisense Therapeutics and one third to Isis). We estimate the net royalty to Antisense Therapeutics will be between 8% - 10%.

The benefit of Antisense Therapeutics having completed the licensing deal with Teva earlier this year is that Teva can immediately launch into continuing the development program of what is now called ALT/TV1102. Teva take full responsibility over the program from now although an Antisense Therapeutics representative will sit on the development steering committee.

#### Shortcomings in trial data

The information released by the company was limited, with fuller data expected to be released at future scientific meetings. Information on the effect ATL1102 had on VLA-4 levels, the production of which it was seeking to inhibit, would have been of benefit to investors and clinical experts. The details on the side effects of the drug were brief, with more information on the level of thrombo-

*Antisense cont'd*

cytopenia (a reduced platelet (thrombocyte) count) experienced by patients important but lacking. Thrombocytopenia was reversible by stopping treatment and it should be noted there was a lower than expected drop out rate and overall the drug was well tolerated.

There was no information sought or received in this trial on MS relapse rate or the standard MS measure on the Expanded Disability Status Scale. However these treatment outcome measures are used in longer trials, such as 12 months, in Phase IIb or Phase III trials.

**Challenges remain for antisense drug chemistry**

Work on antisense technology as a new drug chemistry class has been continuing for over 30 years having intensified in the early 1990s. Only one drug has been approved by use, Vitravene, a *locally* delivered treatment for retinitis. However, there has still yet to be approved a *systemic* antisense drug.

Long term toxicology, particularly liver toxicity where systemic drugs accumulate, and off-target effects are issues that need to be closely assessed in development of antisense therapeutics. According to an article in *Drug Discovery Today* last month, the non-targeted effects of antisense drug candidates have been partially responsible for their lack of success in the clinic.

Although in the last 12 months some compelling efficacy data has been emerging with antisense drugs. This includes the lipid lowering antisense drug mipomersen from Isis, which has been licensed to Genzyme for US\$150M in shares and US\$175M in up front payments following very strong Phase II data. This drug targets the liver, similar to Antisense Therapeutics' second pro-

gram, ATL1103, which should begin to stimulate considerable investor interest.

**Teva commits to further development**

Teva will now move to conduct preclinical trials (chronic toxicology studies for longer trials) and then a Phase IIb dose ranging study prior to conducting final Phase III trials. Biogen Idec conducted a 900 patient Phase III trial with Tysabri in a trial that was planned to study patients over two years. However, the data was compelling enough to allow the company to file for approval after only one year of treatment. It took Biogen Idec just under three years from when the Phase III trial started until FDA approval was first received.

**Summary**

The headline result for Antisense Therapeutics' Phase II trial in MS for its lead compound ATL1002 was impressive although fuller information on the trial would be of benefit. The company's partner has elected to proceed with further development of the program which triggers a US\$4 million payment. This now frees up Antisense Therapeutics to focus on other development programs with ATL1103 for the treatment of acromegaly, being a niche orphan drug opportunity for the company, and diabetic retinopathy. The company has generated very promising pre-clinical data with this program with clinical trials expected to begin towards the end of 2009.

Antisense Therapeutics is capitalised at \$41 million with an estimated \$7 million in cash after receipt of the milestone payments from Teva. We have upgraded our recommendation to a **Speculative Buy Class B**.

Bioshares

**Bioshares Model Portfolio (4 July 2008)**

Company	Price (current)	Price added to portfolio	Date added
Avexa	\$0.30	\$0.32	Jun-08
Cellestis	\$2.50	\$2.27	April 2008
IDT	\$1.90	\$1.90	March 2008
Circadian Technologies	\$0.90	\$1.03	February 2008
Patrys	\$0.31	\$0.50	December 2007
NeuroDiscovery	\$0.09	\$0.16	December 2007
Bionomics	\$0.32	\$0.42	December 2007
Cogstate	\$0.12	\$0.13	November 2007
Sirtex Medical	\$2.92	\$3.90	October 2007
Clinuvel Pharmaceuticals	\$0.31	\$0.66	September 2007
Starpharma Holdings	\$0.31	\$0.37	August 2007
Pharmaxis	\$1.45	\$3.15	August 2007
Universal Biosensors	\$0.80	\$1.23	June 2007
Biota Holdings	\$0.80	\$1.55	March 2007
Probiotec	\$1.26	\$1.12	February 2007
Peplin Inc	\$0.40	\$0.83	January 2007
Arana Therapeutics	\$1.11	\$1.31	October 2006
Chemgenex Pharma.	\$1.15	\$0.38	June 2006
Cytopia	\$0.21	\$0.46	June 2005
Optiscan Imaging	\$0.25	\$0.35	March 2005
Acrux	\$1.11	\$0.83	November 2004
Alchemia	\$0.31	\$0.67	May 2004

**Portfolio Changes – 4 July 2008**

**IN:**  
No changes.

**OUT:**  
No changes.

## The Australian Listed Life Sciences Sector

**June 30, 2008: Capitalisation \$30.7 billion, 130 Companies**

### Bioshares Large Cap. Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
CSL	CSL	19,649	Manufactures pharmaceutical products including vaccines and human plasma fractions.	-3%	22%	\$35.70
Resmed Inc.	RMD	2,698	Manufactures diagnostic and treatment equipment for sleeping disordered breathing.	-20%	-25%	\$3.63
Cochlear	COH	2,428	Manufactures cochlear hearing implants.	-20%	-28%	\$43.65
Sigma Pharmaceuticals	SIP	849	Pharmaceutical manufacturing and wholesaling.	-21%	-54%	\$0.99

**Capitalisation Total** 25,625

### Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Pharmaxis	PXS	296	Marketing a lung function test, Aridol, and developing the Bronchitol product to treat cystic fibrosis, bronchiectasis and COPD.	-27%	-54%	\$1.52
Blackmores	BKL	264	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	-11%	-20%	\$16.40
Arana Therapeutics	AAH	260	Developing biologic therapeutic products for the treatment cancer and inflammatory diseases	21%	-23%	\$1.11
Cellestis	CST	235	Marketing a diagnostic for latent tuberculosis.	8%	-25%	\$2.45
ChemGenex Pharmaceuticals	CXS	210	Developer of the drug Omacetaxine, which has potential to treat CML patients that develop the T315i mutation.	40%	0%	\$1.12
Acrux	ACR	194	A Pooled Dev. Fund commercialising a drug delivery technology that uses sunscreen penetration enhancers to aid transdermal drug delivery.	26%	-21%	\$1.22
API	API	188	Pharmaceutical wholesaler.	-51%	-68%	\$0.73
Sirtex Medical	SRX	167	The company's core technology uses radioactive particles to irradiate tumours in the liver. Approved for use in most major regions.	-9%	-13%	\$3.00
Biota	BTA	139	Commercialised Relenza anti-flu drug and flu diagnostic kits. Now developing an improved version.	-36%	-59%	\$0.77
Universal Biosensors	UBI	133	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use.	-6%	-41%	\$0.85
Avexa	AVX	126	Developing antiviral therapies for HIV and Hepatitis B and a novel antibiotic.	-10%	-51%	\$0.31
Novogen	NRT	113	Developing analogues of naturally occurring phenolic hormones to treat cancers and other conditions.	16%	-41%	\$1.16
Mesoblast	MSB	109	Developing therapies based adult stem cells called mesenchymal stem cells, with applications in cartilage regrowth and bone repair.	60%	-55%	\$0.91
Heartware	HTW	99	Developing a mechanical heart pump (LVAD)	0%	-34%	\$0.40
Fermiscan Holdings	FER	99	Commercialising the use of x-ray diffraction to aid in the screening of breast cancer.	-13%	-67%	\$0.69
Clinuvel Pharmaceuticals	CUV	94	Developing an analogue of the alpha-MSH protein as a photo-protective agent.	-16%	-66%	\$0.31

## Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Unilife Medical Solutions	UNI	92	Developer of retractable syringes.	88%	67%	\$0.46
Progen Pharmaceuticals	PGL	83	Developing oncology therapeutics, including the anti-angiogenesis compound, PI-88.	-9%	-70%	\$1.38
Peplin	PLI	81	Developing a plant derived compound, PEP005, to treat non-melanocytic skin cancers and other systemic cancers such as leukemia.	-29%	-54%	\$0.39
Bionomics	BNO	80	Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy.	-3%	-8%	\$0.34
Institute of Drug Technology	IDT	80	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	-5%	-13%	\$1.85
Ventracor	VCR	78	Developer of the VentrAssist device, an artificial heart assist device (LVAD).	-26%	-68%	\$0.25
Prana Biotechnology	PBT	77	Developing drugs to treat CNS diseases such as Alzheimer's and Parkinson's.	-10%	20%	\$0.42
Solagran	SLA	69	Developing complementary medical compounds called Bioeffectives.	-60%	-74%	\$0.32
Phosphagenics	POH	66	Commercialising a drug delivery technology improving the delivery of vitamin E and existing pharmaceutical products through phosphorylation.	-49%	-66%	\$0.10
Impedimed	IPD	63	Develops devices that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	8%	0%	\$0.78
Probiotec	PBP	63	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	16%	13%	\$1.35
Living Cell Technologies	LCT	58	Developing cell therapies for diabetes, haemophilia and Huntington's disease.	-21%	96%	\$0.25
Hexima	HXL	52	Research and development of genetic technologies that can enhance the resistance of crops to insects and fungal pathogens.	17%	0%	\$0.70
Starpharma Holdings	SPL	49	Developer of pharmaceutical applications of chemical scaffolds known as 'dendrimers'.	-14%	-27%	\$0.28
Avantogen	ACU	48	A developer of various cancer therapeutics.	244%	69%	\$0.09
Alchemia	ACL	48	Commercialising new solid phase carbohydrate synthesis technology. First product, a synthetic heparin, to be launched by partner in 2009.	-30%	-65%	\$0.30
Patrys	PAB	46	Developing human antibody therapies for the treatment of lung, pancreatic, gastric and colon cancers	-19%	0%	\$0.30
QRxPharma	QRX	44	Developing a 'dual opioid' drug to treat moderate to severe pain.	-46%	0%	\$0.59
Antisense Therapeutics	ANP	42	Developing antisense compounds to treat multiple sclerosis and acromegaly.	30%	100%	\$0.07
Benitec	BLT	41	R&D company focusing on gene silencing, specifically DNA delivered RNAi technology.	-23%	-35%	\$0.14
Nanosonics	NAN	38	Developing a novel disinfection technology. The first product is a portable ultrasound probe disinfection unit.	-43%	0%	\$0.20
CathRx	CXD	34	Developing novel modular cardiac catheters for the diagnosis and treatment of abnormal heart rhythms	-56%	-67%	\$0.80

## Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Scigen	SIE	33	Developer and manufacturer of biopharmaceuticals. Company is based in Singapore and was spun out of Sonic Healthcare in 2002.	-33%	-35%	\$0.06
Genetic Technologies	GTG	33	Provides DNA paternity testing services and holds broad patents relating to the use of non-coding DNA.	-14%	-38%	\$0.09
Brain Resource Corp	BRC	30	Development and commercialisation of functional brain analysis techniques.	-6%	-6%	\$0.33
Polartech	PLT	30	Develops and commercialises medical instruments to diagnose pre-cancer and cancer, in particular cervical cancer and melanomas.	25%	-78%	\$0.13
Eastland Medical Systems	EMS	30	Developing an anti-malaria medicine.	21%	21%	\$0.17
Cordlife	CBB	29	Rolling out tissue banking services in Australia and Asia	-36%	-56%	\$0.32
Halcyon	HGN	29	Developing an improved dosing anti-fungal drug, Subazole, based on drug delivery technology developed by Mayne Pharma, now Hospira.	46%	0%	\$0.38
Optiscan Imaging	OIL	27	Manufacture of confocal microscopes for clinical diagnosis including endoscopes through alliance with Pentax.	-8%	-50%	\$0.24
Proteome Systems	PXL	27	Discovery and development of diagnostic and therapeutic products.	-14%	-66%	\$0.12
Clovercorp	CLV	26	Development and production of omega-3 food additives from tuna oil.	10%	52%	\$0.16
KarmelSonix	KSX	26	Respiratory and pulmonary devices company. Acquired technologies from PulmoSonix and Karmel Medical Acoustics Technologies.	-21%	-10%	\$0.10
Cyclopharm	CYC	25	A nuclear medicine company that markets the Technegas lung imaging system	9%	-50%	\$0.18
Somnomed	SOM	25	Commercialising an oral device for the treatment of sleep apnea and snoring.	78%	78%	\$0.03
Neuren Pharmaceuticals	NEU	24	Developing neuroprotective therapeutics	10%	-72%	\$0.11
GenePharm Australasia	GAA	24	An generic pharmaceutical manufacturer and distributor.	-53%	-67%	\$0.17
Bone Medical	BNE	22	Developing treatments for bone and joint degenerative diseases such as arthritis and osteoporosis.	0%	-20%	\$0.24
Labtech Systems	LBT	21	Developing the MicroStreak technology for the automation of microbiology laboratory processing	5%	-18%	\$0.20
Compumedics	CMP	21	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	0%	0%	\$0.15
Giaconda	GIA	21	Developed novel (patented) combinations of registered drugs for the treatment of gastrointestinal disorders.	-7%	-15%	\$0.28
Southern Dental Industries	SDI	20	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D.	-37%	-64%	\$0.17
Ellex Medical Lasers	ELX	20	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	-50%	-66%	\$0.29
Medical Developments	MVP	19	Commercialising the Penthrax inhaler for temporary pain relief. Used widely in ambulances across Australia.	36%	-41%	\$0.34

## Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
IM Medical	IMI	19	Markets the Intelliheart Cardiovascular Diagnostic System	-11%	-16%	\$0.016
Cytobia	CYT	18	Small molecule drug development company with a focus on kinase targets. Lead program, CYT997 is at the Phase II level of development.	-32%	-68%	\$0.21
Sunshine Heart	SHC	16	Developing the C-Pulse heart assist device. The C-Pulse wraps around and compresses the aorta, increasing blood flow through the body.	-45%	-68%	\$0.06
Agenix	AGX	16	Has acquired drug development business in China. Also developing Thromboview, a blood clot diagnostic imaging agent.	-68%	-86%	\$0.04
Biotron	BIT	16	Developing anti-viral therapies and cancer screening technologies.	7%	-40%	\$0.15
Genera Biosystems	GBI	15	Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health.	-2%		\$0.29
Viralitics	VLA	14	Developing a cancer treatment based on the application of viruses (oncolytic virus technology).	-4%	-39%	\$0.05
Advanced Surgical Design & Manufacture	AMT	14	A developer and manufacturer of prosthetic implants and medical devices	-38%	0%	\$0.37
ITL	ITD	13	Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits.	-17%	-73%	\$0.10
Metabolic Pharmaceuticals	MBP	13	Business under review.	40%	-68%	\$0.04
Atos Wellness	ATW	12	Manages wellness centres in Singapore, Malaysia, India, Australia, Austria and Germany	187%	-26%	\$0.09
Phylogica	PYC	12	Developing phylomer (protein fragment shapes) compound libraries for use in human therapeutics.	-19%	-77%	\$0.08
Austofix	AYX	11	Manufacturer and developer of orthopaedic fixation devices	-32%		\$0.95
Stem Cell Sciences	STC	10	Contract research and development and sale of re-agents for use in stem cell therapy research	-6%	0%	\$0.30
Imugene	IMU	10	Developing animal products such as antibiotic alternatives used in the stock feed industry using a vaccine and gene therapy approach	-26%	-71%	\$0.07
Atcor Medical	ACG	10	Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system	54%	-23%	\$0.10
Vita Life Sciences	VSC	10	Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods.	14%	0%	\$0.20
Biosignal	BOS	10	Developing compounds that interrupt the colonisation of bacteria. Applications in the oil and gas industry and with contact lenses are being studied.	-28%	-10%	\$0.09
Avita Medical	AVH	9	Avita Medical is the new name for the merged entity that combines Clinical Cell Culture and Visiomed. A 10:1 capital reconstruction occurred on June 10, 2008.	-29%	161%	\$0.10
Life Therapeutics	LFE	9	A US based company operating a plasma collection business and marketing diagnostic tests for blood-borne diseases and blood-clotting disorders.	-31%	-90%	\$0.07
BioProspect	BPO	9	Developing insecticides from naturally occurring molecules	-40%	-61%	\$0.02
Chemeq	CMQ	8	Currently suspended from trading. Under administration.	0%	0%	\$0.08

## Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Stirling Products	STI	8	Commercialising a production animal growth promotant and meat finisher.	-7%	-26%	\$0.05
Apollo Life Sciences	AOP	8	Currently suspended from trading. Under self-imposed administration and wind-up.	0%	-85%	\$0.04
Biodiem	BDM	8	Focused on the development of LAIV influenza vaccines	-13%	-62%	\$0.10
Occupational & Medical Innovations	OMI	8	Developing safety devices used in the healthcare industry, including safety syringes.	-57%	-68%	\$0.19
Biolayer	BLS	7	Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices.	21%	-49%	\$0.04
USCOM	UCM	7	Marketing a non-invasive heart output function monitor.	-26%	-49%	\$0.19
Cryosite	CTE	7	Building a business in the provision of services for storing umbilical cord blood through cryopreservation and ultracold technologies.	30%	-6%	\$0.15
Cogstate	CGS	7	Marketing cognitive performance diagnostic products.	30%	-30%	\$0.13
Anadis	ANX	7	Specialises in R&D of bovine colostrum products for therapeutic use in animals and humans.	-13%	-68%	\$0.05
RTL Corp	RTL	6	Re-capitalisation completed. Has acquired a mine services technology and is continuing development of the RiTract safety needle.	-15%	-15%	\$0.02
Analytica	ALT	6	A medical devices company that has developed a retractable syringe	53%	44%	\$0.02
Medic Vision	MVH	6	Marketing training software and hardware for surgeons (formerly Premier Bionics)	-24%	-78%	\$0.07
Healthlinx	HTX	6	Detecting novel functions of known and new protein and peptides for therapeutic purposes.	-21%	-33%	\$0.07
Rockeby Biomed	RBY	6	Research, development and marketing of rapid testing technologies for infectious diseases in animals and humans.	-47%	-76%	\$0.01
Colltech	CAU	6	Has developed a novel technology for the extraction of collagen from sheepskins.	-4%	-65%	\$0.02
Norwood Abbey	NAL	6	Developing needle-free and micro needle drug delivery technologies	-19%	-76%	\$0.02
Helicon Group	HCG	5	Exploiting niche market opportunities for medical products in China and other Asian markets.	0%	0%	\$0.07
Advanced Ocular Systems	AOS	5	Plans to spin-off eye-care assets into a listed Singapore company; generates royalty income from ophthalmic products	-52%	-87%	\$0.01
NeuroDiscovery	NDL	5	Provides electrophysiology services to biotech and pharma, and is developing range of compounds for treating neuropathic pain.	-25%	-50%	\$0.09
BioMD	BOD	5	Developing a tissue engineering technology, termed ADAPT	-35%	-61%	\$0.06
Dia-B Tech	DIA	4	Developing therapeutics and diagnostics in the area of diabetes.	-23%	-69%	\$0.03
Avastra Sleep Centres	AVS	4	Consolidating sleep disorder testing centres in the USA	-46%	-95%	\$0.04

## Bioshares Index

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Teleso Technologies	TEO	4	Undertaking a strategic review of investment opportunities	-52%	-61%	\$0.07
Medical Therapies	MTY	4	Developing therapies to treat inflammatory diseases, using copper- and zinc- indomethacin.	-27%	-56%	\$0.06
Medigard	MGZ	4	Developed retractable syringe technology and other safety medical products.	-27%	-56%	\$0.06
PharmAust	PAA	4	Operates Epicem and PharmAust Manufacturing, which provide products and services to biotech and pharma companies	16%	-68%	\$0.02
Resonance Health	RHT	4	Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels	-17%	-38%	\$0.01
Ambri	ABI	3	Business under review, with the company's technology recently out-licensed to a private firm.	-21%	-53%	\$0.02
Virax Holdings	VHL	3	Bio-pharmaceutical R&D company developing a therapeutic and prophylactic vaccine for HIV.	-46%	-75%	\$0.03
Biopharmica	BPH	3	Managing cancer treatment and detection and bacterial DNA diagnostic projects. Portfolio investment approach.	-26%	-79%	\$0.05
Solbec Pharmaceuticals	SBP	3	Developing plant-based compounds for the treatment of melanomas and asbestos related lung cancers.	-65%	-71%	\$0.01
Select Vaccines	SLT	3	Development and commercialisation of infectious diseases diagnostics, vaccines and therapeutics for hepatitis-related diseases	-33%	-57%	\$0.01
Prima Biomed	PRR	3	Developing the CVac immunotherapy.	-33%	-62%	\$0.01
Tissue Therapies	TIS	3	Commercialising growth factors for spray-on skin product, other wound healing and in research and industrial cell growth applications.	-32%	-83%	\$0.10
Probiomics	PCC	3	Intending to acquire Minomic International, a diagnostics company	-35%	-68%	\$0.01
NuSep	NSP	3	Manufacture and sale of protein separations technologies	0%	0%	\$0.12
Genesis Research & Development Corp.	GEN	3	Developing RNAi based therapeutics. Interests in agricultural biotechnologies.	-3%	-56%	\$0.09
Narhex Life Sciences	NLS	3	Developed a low cost protease inhibitor for treatment of HIV in Chinese market.	0%	-65%	\$0.02
Portland Orthopaedics	PLD	3	Developer, manufacturer and marketer of surgical hip and knee implants	-76%	-95%	\$0.02
Actinogen	ACW	2	Early stage developer of antibiotics that show activity against MRSA and VRE bacteria	-56%	0%	\$0.06
Incitive	ICV	2	Development of compounds to treat cancers and auto-immune diseases.	-15%	-51%	\$0.05
Brainz	BZI	1	Develops non-invasive brain monitors for the detection of brain injury designed for use at the patient's bedside. A NZ company.	-66%	-92%	\$0.02

Capitalisation Total 5,089

**Listed Biotech Investment Funds**

Company	Code	Cap. \$M	Principal Activities	Change - Quarter	Change - Year	Price 30/6/08
Circadian	CIR	35	Management and funding of R&D projects with Australian and NZ universities. Holds investments in Optiscan, Metabolic Pharmaceuticals, Antisense Therapeutics, Avexa and Vegenics.	-14%	-32%	\$0.88
Biotech Capital	BTC	16	A Pooled Development Fund investing in unlisted Australian biotech companies or in public biotechs, including Alchemia, Starpharma, Neurodiscovery, Phylogica and Stem Cell Sciences.	-12%	-47%	\$0.19
Xceed Capital	XCD	7	Holds a 64% stake in Polynovo, which is developing biodegradable polyurethane-based polymers. Also operates Boron Molecular, a chemistry services company.	-22%	-59%	\$0.07
Genesis Biomedical	GBL	2	Venture capital company funding a sepsis project at UWA; increasing its exposure to mining activities	-29%	-64%	\$0.01

**Capitalisation Total** 58

**Capitalisation Total - All Indexs** 30,771

**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**

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