

**In this edition...**

We continue to make the same point in *Bioshares*, and this edition reflects this issue well; as the sector makes ongoing strong progress, share prices keep falling as the disconnect between company progress and market value persists. In this quarterly wrap, the sector has seen the 7th consecutive fall in the *Bioshares Index*. Yet this week, two companies have filed INDs with the FDA and one company file its drug for approval in Australia, in what starts a busy two year period for Australian drug developers.

The current credit crisis is taking its toll, with a huge reduction in capital inflow to the sector this year, which will see the smaller biotechs hardest hit.

**Companies covered: AAH, ACL, PXS**

	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)	-14.0%
<b>Cumulative Gain</b>	<b>78%</b>
<b>Av Annual Gain (7 yrs)</b>	<b>17.8%</b>

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Blake Industry & Market Analysis Pty Ltd  
ACN 085 334 292  
PO Box 193  
Richmond Vic 3121  
AFS Licence  
No. 258032

Enquiries for *Bioshares*  
Ph: (03) 9326 5382  
Fax: (03) 9329 3350  
Email: info@bioshares.com.au

**David Blake**  
Ph: (03) 9326 5382  
Email: blake@bioshares.com.au

**Mark Pachacz**  
Ph: (03) 9671 3222  
Email: pachacz@bioshares.com.au

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# Bioshares

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

## Quarterly Review

### Hard Times Ahead

The across the board evaporation of support for equity investments washed over into Australia's listed biotech sector with the **Bioshares Index** falling 10.9% in the September quarter. The fall followed a harsh 13.8% decline in the June quarter\* and a devastating 29.5% plunge in the March quarter. However, the fall in the *Bioshares Index* in the September quarter was surpassed by the ASX 300 Index which fell 12%.

However, investors have clearly marked large caps in the sector as safe haven stocks, with the **Bioshares Large Cap Index** posting a 12.4% gain for the quarter. **Resmed** gained an astonishing 49%, **Cochlear** commandeered a 36% increase, **Sigma Pharmaceuticals** put in a solid 21% gain with **CSL** holding back the group with a modest 4% gain.

One reason for **CSL**'s less than average performance is that it has yet to finalise the acquisition of **Talecris Biotherapeutics**, a \$3.5 billion deal announced on August 13. Depending on how the US FTC treats the deal from an anti-competitiveness perspective, some tracking sideways will be experienced in the **CSL** share price.

In keeping more with the growth in the *Bioshares Large Cap Index*, the US Nasdaq Biotech Index increased 5.4% in the September quarter. This gain could be attributed to the Nasdaq Biotech Index including a core group of revenue generating companies, which will have similarly been seen as counter cyclical safe havens while the credit crisis balloons. (The proviso on attractiveness with any pharmaceutical, biotech or healthcare stocks is that the attractiveness is also dependent on low levels of gearing or debt with a long maturity.)

However, such is the uncertain and volatile state of US financial markets that it is more likely that the Nasdaq Biotech Index will weaken in coming months. The US biotech sector faces the same problem that every other biotech sector, including Australia's, faces. The problem is a looming, prolonged funding drought of indeterminate proportions for the next twelve months. How long and in what ways will global investment markets adjust to the loss of leading investment banks is one question to be answered. Will other firms step in to take on the corporate finance roles these firms played in the biotech and pharma sector? But more importantly, and assuming confidence returns to bankers and the banking and payments systems, what will be the level and quality of

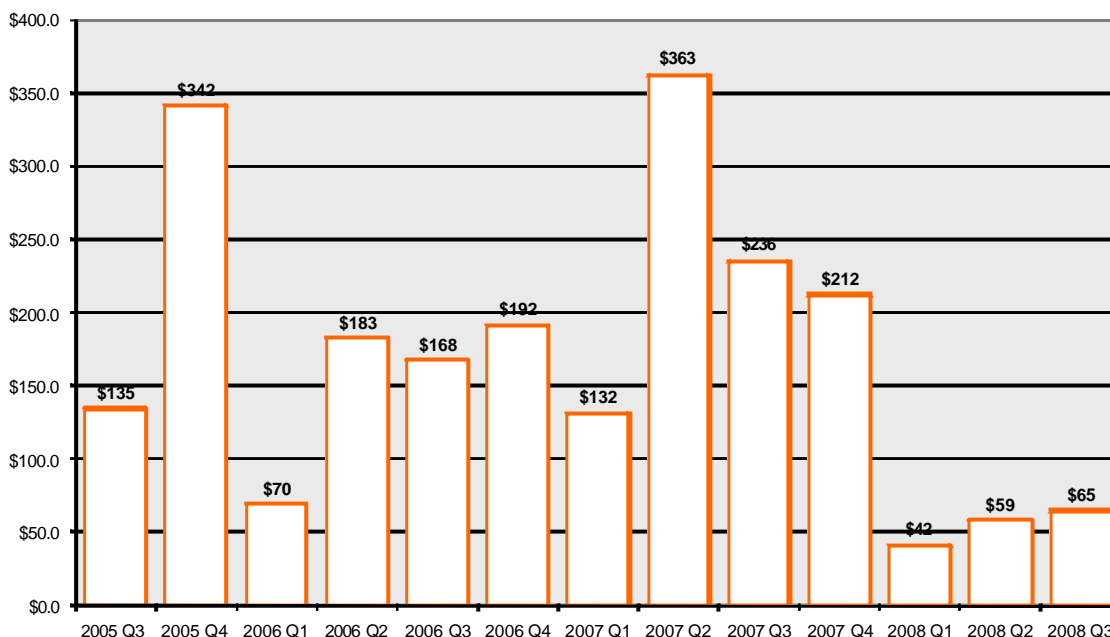
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#### Index performances by Quarter

	Q3 2007	Q4 2007	Q1 2008	Q2 2008	Q3 2008
<b>Bioshares Index</b>	-9.5%	-5.5%	-29.5%	-13.8%	-10.9%
<b>Nasdaq Biotech Index</b>	6.4%	-2.3%	-6.5%	1.6%	5.4%
<b>Bioshares Large Cap Index</b>	14.9%	3.6%	-7.3%	-7.9%	12.4%
<b>ASX 300 Index</b>	4.5%	-3.4%	-15.7%	-2.6%	-12.0%

*Note: June Quarter Bioshares Index figure performance has been revised from -14.6%*

Capital Raised by ASX Listed Life Science Firms: Sept Q '05 – Sept Q '08 (\$M)\*



\*Excludes Large Cap Firms

Capital Raisings by Australian-listed Biotech Companies Q3 2008

Company	Investment Manager or Investor	Type of raising	Funds raised (\$M)
Peplin	GBS Venture Partners, MPM Capital and New Enterprise Assoc.	Placement (USD\$24 m)	\$27.55
Chemgenex Pharm.	ABN AMRO Morgans	Placement	\$12.75
Novogen	EI Coronado Holdings LLC	Placement	\$5.50
Impedimed	Orbis Australia	Placement	\$4.20
Neuren Pharm.	Taylor Collison	Placement and SPP	\$5.00
Proteome Systems	Oppenheimer Funds	Placement	\$2.50
NuSep		SPP and Placement	\$1.75
Avastra Sleep Centres	Aus-Care Management Services	Not specified	\$1.60
Bone Medical		Placement	\$1.04
Tissue Therapies		SPP	\$0.74
Cogstate		Rights Issue (u/w)	\$0.61
Optiscan			\$0.45
Eastland Medical		Convertible Notes	\$0.40
OBJ			\$0.34
Probiomics			\$0.30
Biosignal		SPP	\$0.26
IM Medical		Standby Subscription Agree.	\$0.15
<b>Total</b>			<b>\$65.1</b>
IPOs			\$0.0
<b>Total raised in Q3 2008</b>			<b>\$65.1</b>
<b>Total raised in Q2 2008</b>			<b>\$58.8</b>
<b>Total raised in Q1 2008</b>			<b>\$41.5</b>
<b>Cumulative Raise - 2008</b>			<b>\$165.5</b>

capital available for biotech globally? Will there be a reduced number of investors who hold a reduced appetite for biotech risk? That clearly has been the case in Australia since the Opes Prima et al saga hit the Australian small caps sector in the March quarter.

### Survival

Surviving the next twelve months now appears to be the most important objective for most biotechs in Australia. This may mean that key programs are deferred, that staff are relinquished and that some assets are sold. And if survival is not feasible, then we are likely to see more than a handful go into voluntary administration in the next six months, unless the companies are turned into 'shell' vehicles and reconstituted and re-capitalised for other purposes.

At the September quarter, of 133 listed life sciences companies, 57 are capitalised less than \$10 million. The average capitalisation of these companies is \$5 million, and collectively they are worth \$292 million. Stocks in the sub- \$10 million category have become a no-go zone for investors. A downwards financing spiral will see a greater reliance on very expensive convertible note finance, coupled to very small amounts of maintenance drip feed fundings.

There are 45 companies capitalised at between \$10 and \$50 million (ave. \$26 million), which when bundled together are worth \$1,189 million.

Eleven companies sit in the \$100-\$50 million bracket, with an average capitalisation of \$70 million. A well heeled investor could acquire them for \$772 million.

In the greater than \$100 million but less than \$500 million category sit 14 companies with an average capitalisation of \$180 million, and a combined value of \$2.5 billion.

The investment theme to note is that the sector has given rise to a reasonable number of well supported stocks. Selectivity is the key word here, where investment interest has been extremely focused because of the quality of the management, proximity (time) to market for the lead market and market opportunity. Or investors have focused on the modest but growing revenue generating and profitable life science stocks. These companies have been subject to downwards price pressures along with other stocks, but not all have suffered the 80%-90% year-on-year falls associated with many of the perhaps irretrievably damaged sub- \$10 million cap stocks.

And even in difficult market conditions, it has been the stronger companies that have raised funds in any magnitude (and seemingly in defiance of gravity).

However, if the local economy stagnates in the first half of 2009, there could be great challenges for second tier companies that need to initiate funding rounds. What could make matters worse if the standard drivers of biotech investment such as clinical trial results are not positive or product registration milestones are not met.

### Capital Raisings

In the September quarter, the sector (outside of the large caps, which are typically not included in measures of Australian biotech finance flows) raised \$65 million in new capital, slightly up on the \$59 million raised in the June quarter. Peplin's US\$24 million/AU\$27.55 capital raising dominated the quarter, accounting for 42% of funds raised.

To date for 2008, \$165 million has been raised, yet if the largest three capital raisings are deducted (Heartware, Peplin, ChemGenex, as well as two IPOs, a lowly \$87 million has been raised by 39 companies.

### Outperformers

Shares in **USCOM**, a marketer of non-invasive cardiac monitors, increased by 95% in the September quarter, closing at 36 cents. The company has struggled, but a possible reason for the increase might be that the company could be an acquisition target.

**Sunshine Heart** locked in an 82% gain following that company's receipt of the go-ahead from the FDA for the feasibility trial of its C-Pulse heart assist device.

**Clover Corp**, which manufactures omega-3 food additive products from fish oil, saw its shares increase by 69% for the quarter. A factor contributing to this event no doubt was the company's posting of a \$2.8 million profit, which on an adjusted base, represented a 341% increase from the previous year.

**BioMD**, a developer of a tissue treatment technology, increased by 64% for the quarter, with some growth likely being attributed to the first human implant of tissue treated with the ADAPT process.

In total, 19 companies recorded gains of greater than 20% to their share prices in the September quarter.

### Underperformers

**Biosignal** shares fell 62% in the quarter, with company failing to secure funding and commercialisation arrangements with US investors.

**IM Medical** shares fell 63% no doubt because it posted a \$5 million loss for FY2008 and reported a 10% decline in revenues.

**KarmelSonix** shares slumped by 74%, possibly due to its need to secure additional funding through a loan and standby equity facility.

In total, 59 companies recorded decreases of greater than 20% to their share prices in the September quarter.

## Alchemia, Arana file INDs with US FDA

### Alchemia

Two Australian companies this week filed their IND (Investigation New Drug) applications with the FDA. The FDA has 30 days in which to respond and if no queries are received in that time from the regulator, the company can proceed with clinical studies in the US.

Alchemia has filed its IND application for its lead oncology drug candidate, HA-Irinotecan. The company has completed a Phase II study in Australia in 50 patients with metastatic colorectal cancer, comparing its HA-Irinotecan with irinotecan. In that study, Alchemia's HA-Irinotecan achieved a mean progression-free survival of 5.2 months, close to a three month improvement over irinotecan alone. Also important was that patients were able to stay on treatment for three times as long if the irinotecan was combined with Alchemia's HA (hyaluronic acid).

The planned Phase III study will involve 740 patients with metastatic colorectal cancer. It will once again compare Alchemia's HA-Irinotecan with irinotecan. However, the difference in this trial is that all patients will also receive another oncology drug, Erbitux. Erbitux in conjunction with irinotecan is a standard therapy for this cancer.

A positive aspect for Alchemia is that a major trial, called the EPIC study, showed that Erbitux, in combination with irinotecan, achieved a progression-free survival of 4.0 months over 2.4 months with irinotecan alone (the same as the control arm in the Alchemia study), which is 1.2 months less than the 5.2 months achieved with Alchemia's HA-Irinotecan in its Phase II trial. In pre-clinical models Erbitux has significantly increased the effect of HA-Irinotecan, which supports a likely positive outcome in this trial, although that will need to be confirmed.

The Phase III study will cost around \$50 million to conduct and only one Phase III trial will be required to submit the product for approval. The start of the Phase III trial will have to wait until Alchemia arranges for funding of the trial. With only an estimated \$13 million in cash, Alchemia is not going to conduct an equity raising to fund the trial, particularly at its current share price. A revenue stream from its fondaparinux product is expected to start next year, which will open a range of trial funding options for the company.

*Bioshares* recommendation: **Speculative Buy Class A**

### Arana Therapeutics

Arana Therapeutics has filed an IND with its lead drug candidate, ART621, for the treatment of rheumatoid arthritis (RA). The company expects to start a Phase II trial in around 200 patients (following approval to proceed from the FDA) towards the end of the year.

Results from a Phase II trial with ART621 in treating psoriasis are expected to be released in the first quarter of 2009. Patients in this trial (up to 60) will receive treatment for 12 weeks. The trial will provide information on therapeutic doses, with three different dose levels assessed. This will be helpful information for designing the RA trial. Also, any signs of efficacy in the drug will be keenly monitored. If this drug works in RA with a better drug profile than the existing anti-TNF drugs on the market, it has the potential to become a highly valuable asset for Arana. The current market for anti-TNF drugs is in excess of US\$12 billion a year.

Arana also expects to begin a Phase I trial with another anti-inflammatory drug, PMX53, in the treatment of age-related macular degeneration. This week the company also completed its successful fourth protein drug engineering program for external partners, re-engineering a monoclonal antibody drug candidate for **Vegenics** against the VEGF-D target.

Arana currently has \$182 million in cash assets with a further US\$55-\$60 million in royalties expected. The company is capitalized at \$204 million. In our view this company is becoming increasingly appealing to larger drug companies seeking to build a biopharmaceutical business arm through acquisition.

*Bioshares* recommendation: **Speculative Buy Class A**



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## Pharmaxis Submits Bronchitol to TGA

Pharmaxis is the second Australian biotech company this year to file a drug for regulatory approval, with the first company being **Chemgenex Pharmaceuticals**. Chemgenex initiated its rolling submission with the FDA for Omacetaxine in July for the treatment of chronic myeloid leukemia. Pharmaxis has filed a marketing application for Bronchitol with the TGA in Australia for the treatment of bronchiectasis, a degenerative lung condition.

Pharmaxis intends to sell the drug directly in Australia. Its new manufacturing facility is expected to be on line in mid 2009. The company will seek reimbursement for the drug in Australia through a PBS listing.

Pharmaxis is capitalised at \$457 million.

*Bioshares* recommendation: **Speculative Buy Class A**

It is the start of what will be a busy two year period for Australian biotechs reaching the final stage of their drug development process.

### 2008 drug registrations filed and expected

- Chemgenex Pharmaceuticals (Omacetaxine, CML) - Filed USA
- Pharmaxis (Bronchitol, bronchiectasis) - Filed Australia
- Alchemia (Fondaparinux, synthetic heparin) - USA

### 2009 expected drug filings

- Pharmaxis (Bronchitol, cystic fibrosis)) - Europe
- Clinuvel Pharmaceuticals (afemelanotide, EPP) - Europe
- Acrux (Testosterone MD-Lotion) - USA
- Halcygen Pharmaceuticals (SUBA-Itraconazole, fungal infections) - USA

### 2010 expected drug filings

- Peplin (PEP005, actinic keratosis) - USA
- QRxPharma (Q8003IR, pain) - USA
- Avexa (Apricitabine, HIV) - USA

**Bioshares**

**Bioshares Model Portfolio (3 October 2008)**

Company	Price (current)	Price added to portfolio	Date added
Impedimed	\$0.72	\$0.70	Aug-08
Antisense Therapeutics	\$0.05	\$0.07	Aug-08
Mesoblast	\$1.12	\$1.25	Aug-08
Avexa	\$0.16	\$0.32	Jun-08
Cellestis	\$2.05	\$2.27	April 2008
IDT	\$1.95	\$1.90	March 2008
Circadian Technologies	\$0.83	\$1.03	February 2008
Patrys	\$0.28	\$0.50	December 2007
NeuroDiscovery	\$0.09	\$0.16	December 2007
Bionomics	\$0.32	\$0.42	December 2007
Cogstate	\$0.15	\$0.13	November 2007
Sirtex Medical	\$2.26	\$3.90	October 2007
Clinuvel Pharmaceuticals	\$0.26	\$0.66	September 2007
Starpharma Holdings	\$0.30	\$0.37	August 2007
Pharmaxis	\$2.35	\$3.15	August 2007
Universal Biosensors	\$0.78	\$1.23	June 2007
Biota Holdings	\$0.67	\$1.55	March 2007
Probiotec	\$1.40	\$1.12	February 2007
Peplin Inc	\$0.39	\$0.83	January 2007
Arana Therapeutics	\$0.87	\$1.31	October 2006
Chemgenex Pharma.	\$0.73	\$0.38	June 2006
Cytopia	\$0.17	\$0.46	June 2005
Optiscan Imaging	\$0.17	\$0.35	March 2005
Acrux	\$0.95	\$0.83	November 2004
Alchemia	\$0.23	\$0.67	May 2004

### Portfolio Changes – 3 Oct 2008

**IN:**

No changes.

**OUT:**

No changes.

## **The Australian Listed Life Sciences Sector**

**September 30, 2008: Capitalisation \$35.9 billion, 133 Companies**

### Bioshares Large Cap. Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
CSL	CSL	22,463	Manufactures pharmaceutical products including vaccines and human plasma fractions	4%	4%	\$37.30
Resmed Inc.	RMD	4,366	Manufactures diagnostic and treatment equipment for sleeping disordered breathing	49%	10%	\$5.40
Cochlear	COH	3,312	Manufactures cochlear hearing implants	36%	-24%	\$59.30
Sigma Pharmaceuticals	SIP	1,030	Pharmaceutical manufacturing and wholesaling	21%	-18%	\$1.20

**Capitalisation Total** 31,171

### Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Pharmaxis	PXS	438	Marketing a lung function test, Aridol, and developing the Bronchitol product to treat cystic fibrosis, bronchiectasis and COPD.	48%	-44%	\$2.25
Blackmores	BKL	283	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	6%	-20%	\$17.37
Cellestis	CST	206	Marketing a diagnostic for latent tuberculosis	-12%	-28%	\$2.15
Arana Therapeutics	AAH	193	Developing biologic therapeutic products for the treatment cancer and inflammatory diseases	-26%	-34%	\$0.82
Heartware	HTW	192	Developing a mechanical heart pump (LVAD)	55%	0%	\$0.62
ChemGenex Pharmaceuticals	CXS	170	Developer of the drug Omacetaxine, which has potential to treat CML patients that develop the T315i mutation.	-37%	-32%	\$0.71
API	API	163	Pharmaceutical wholesaler	-13%	-67%	\$0.64
Acrux	ACR	150	A Pooled Dev. Fund commercialising a drug delivery technology that uses sunscreen penetration enhancers to aid transdermal drug delivery.	-23%	-32%	\$0.94
Mesoblast	MSB	131	Developing therapies based adult stem cells called mesenchymal stem cells, with applications in cartilage regrowth and bone repair.	21%	-31%	\$1.10
Peplin	PLI	130	Developing a plant derived compound, PEP005, to treat non-melanocytic skin cancers and other systemic cancers such as leukemia.	10%	-50%	\$0.43
Biota	BTA	124	Commercialised Relenza anti-flu drug and flu diagnostic kits. Now developing an improved version.	-11%	-59%	\$0.69
Sirtex Medical	SRX	115	The company's core technology uses radioactive particles to irradiate tumours in the liver. Approved for use in most major regions.	-31%	-48%	\$2.06
Novogen	NRT	113	Developing analogues of naturally occurring phenolic hormones to treat cancers and other conditions.	-5%	-41%	\$1.11
Universal Biosensors	UBI	110	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use.	-18%	-45%	\$0.70
Solagran	SLA	87	Developing complementary medical compounds called Bioeffectives.	27%	-65%	\$0.40
Institute of Drug Technology	IDT	87	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	10%	-7%	\$2.03

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Prana Biotechnology	PBT	79	Developing drugs to treat CNS diseases such as Alzheimer's and Parkinson's	2%	39%	\$0.43
Bionomics	BNO	75	Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy.	-6%	-14%	\$0.32
Probiotec	PBP	70	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	7%	21%	\$1.45
Clinuvel Pharmaceuticals	CUV	70	Developing an analogue of the alpha-MSH protein as a photo-protective agent	-26%	-48%	\$0.23
Avexa	AVX	69	Developing antiviral therapies for HIV and Hepatitis B and a novel antibiotic.	-48%	-73%	\$0.16
Impedimed	IPD	63	Develops devices that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	-8%	0%	\$0.72
Unilife Medical Solutions	UNI	60	Developer of retractable syringes.	-37%	12%	\$0.29
Ventracor	VCR	57	Developer of the VentrAssist device, an artificial heart assist device (LVAD).	-28%	-71%	\$0.18
Hexima	HXL	56	Research and development of genetic technologies that can enhance the resistance of crops to insects and fungal pathogens.	7%	-32%	\$0.75
Ascent PharmaHealth	APH	50	Previously GenePharm. A generic pharmaceutical manufacturer and distributor.	18%	-52%	\$0.20
Starpharma Holdings	SPL	49	Developer of pharmaceutical applications of chemical scaffolds known as 'dendrimers'.	-2%	-16%	\$0.27
QRxPharma	QRX	45	Developing a 'dual opioid' drug to treat moderate to severe pain.	2%	-59%	\$0.60
Clovercorp	CLV	45	Development and production of omega-3 food additives from tuna oil.	69%	170%	\$0.27
Phosphagenics	POH	44	Commercialising a drug delivery technology improving the delivery of vitamin E and existing pharmaceutical products through phosphorylation.	-34%	-75%	\$0.07
Progen Pharmaceuticals	PGL	43	Undertaking a review of activities and opportunities	-48%	-79%	\$0.72
Fermiscan Holdings	FER	43	Commercialising the use of x-ray diffraction to aid in the screening of breast cancer.	-57%	-70%	\$0.30
Scigen	SIE	37	Developer and manufacturer of biopharmaceuticals. Company is based in Singapore and was spun out of Sonic Healthcare in 2002.	12%	-28%	\$0.07
Living Cell Technologies	LCT	37	Developing cell therapies for diabetes, haemophilia and Huntington's disease.	-37%	-9%	\$0.16
pSiVida	PSD	37	Developing drug delivery technologies, with a special focus on ophthalmic applications. From late June pSiVida redomiciled to USA. Shares trade as 1:1 CDIs after 40:1 reconstruction	-26%	-55%	\$2.00
Nanosonics	NAN	36	Developing a novel disinfection technology. The first product is a point of care ultrasound probe disinfection unit.	-5%	-68%	\$0.19
Alchemia	ACL	35	Commercialising new solid phase carbohydrate synthesis technology. First product, a synthetic heparin, to be launched by partners in 2008.	-27%	-73%	\$0.22
Brain Resource Corp	BRC	34	Development and commercialisation of functional brain analysis techniques.	14%	-23%	\$0.38

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Patrys	PAB	34	Developing human antibody therapies for the treatment of lung, pancreatic, gastric and colon cancers	-25%	-58%	\$0.23
Cordlife	CBB	32	Rolling out tissue banking services in Australia and Asia	9%	-50%	\$0.35
Circadian Technologies	CIR	32	Developing drugs, including antibodies, around the VEGF C and VEGF D targets.	-9%	-35%	\$0.80
CathRx	CXD	31	Developing novel modular cardiac catheters for the diagnosis and treatment of abnormal heart rhythms	-9%	-71%	\$0.73
Antisense Therapeutics	ANP	30	Developing antisense compounds to treat multiple sclerosis and acromegaly.	-28%	51%	\$0.05
Avantogen	ACU	30	A developer of various cancer therapeutics	-42%	-2%	\$0.05
Sunshine Heart	SHC	29	Developing the C-Pulse heart assist device. The C-Pulse wraps around and compresses the aorta, increasing blood flow through the body.	82%	-44%	\$0.10
Bone Medical	BNE	27	Developing treatments for bone and joint degenerative diseases such as arthritis and osteoporosis.	19%	-19%	\$0.29
Eastland Medical Systems	EMS	27	Developing retractable syringes and other surgical products.	-21%	-27%	\$0.14
Genetic Technologies	GTG	25	Provides DNA paternity testing services and holds broad patents relating to the use of non-coding DNA.	-23%	-54%	\$0.07
Polartech	PLT	23	Develops and commercialises medical instruments to diagnose pre-cancer and cancer, in particular cervical cancer and melanomas.	-24%	-83%	\$0.10
Southern Dental Industries	SDI	23	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D.	12%	-61%	\$0.19
Halcyon	HGN	22	Developing an improved dosing anti-fungal drug, Subazole, based on drug delivery technology developed by Mayne Pharma.	-22%	-31%	\$0.30
Optiscan Imaging	OIL	21	Manufacture of confocal microscopes for clinical diagnosis including endoscopes through alliance with Pentax.	-23%	-55%	\$0.18
Compumedics	CMP	21	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	0%	11%	\$0.15
Cyclopharm	CYC	18	A nuclear medicine company that markets the Technegas lung imaging system	-28%	-48%	\$0.13
Neuren Pharmaceuticals	NEU	18	Developing neuroprotective therapeutics	-36%	-74%	\$0.07
Proteome Systems	PXL	17	Discovery and development of diagnostic and therapeutic products.	-42%	-74%	\$0.07
Ellex Medical Lasers	ELX	17	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	-14%	-71%	\$0.25
Somnomed	SOM	16	Commercialising an oral device for the treatment of sleep apnea and snoring.	-34%	5%	\$0.02
Labtech Systems	LBT	15	Developing the MicroStreak technology for the automation of microbiology laboratory processing	-23%	-28%	\$0.16
Phylogica	PYC	15	Developing phylomer (protein fragment shapes) compound libraries for use in human therapeutics.	30%	-62%	\$0.11



## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Viralytics	VLA	15	Developing a cancer treatment based on the application of viruses (oncolytic virus technology).	4%	-31%	\$0.05
Biotron	BIT	15	Developing anti-viral therapies and cancer screening technologies.	-7%	-32%	\$0.14
Benitec	BLT	14	R&D company focusing on gene silencing, specifically DNA delivered RNAi, technology.	-37%	-55%	\$0.05
USCOM	UCM	14	Marketing a non-invasive heart output function monitor.	95%	24%	\$0.36
Cytopia	CYT	14	Small molecule drug development company with a focus on kinase targets. Lead program, CYT997 is at the Phase II level of development.	-22%	-71%	\$0.16
Advanced Surgical Design & Manufacture	AMT	13	A developer and manufacturer of prosthetic implants and medical devices	-3%	0%	\$0.36
ITL	ITD	13	Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits.	0%	-60%	\$0.10
Medical Developments	MVP	13	Commercialising the Penthrax inhaler for temporary pain relief. Used widely in ambulances across Australia.	-35%	-42%	\$0.22
Giaconda	GIA	11	Developed novel (patented) combinations of registered drugs for the treatment of gastrointestinal disorders.	-48%	-60%	\$0.15
Cogstate	CGS	11	Marketing cognitive performance diagnostic products.	23%	23%	\$0.16
Atcor Medical	ACG	10	Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system	0%	-17%	\$0.10
Occupational & Medical Innovations	OMI	10	Developing safety devices used in the healthcare industry, including safety syringes.	32%	-68%	\$0.25
Metabolic Pharmaceuticals	MBP	10	A merger with biopolymers firm PolyNovo is pending	-24%	-46%	\$0.03
Austofix	AYX	9	Manufacturer and developer of orthopaedic fixation devices	-11%	0%	\$0.85
BioProspect	BPO	9	Developing insecticides from naturally occurring molecules	6%	-51%	\$0.02
Genera Biosystems	GBI	9	Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health.	-38%	0%	\$0.18
Anadis	ANX	9	Specialises in R&D of bovine colostrum products for therapeutic use in animals and humans.	35%	-42%	\$0.07
Imugene	IMU	9	Developing animal products such as antibiotic alternatives used in the stock feed industry using a vaccine and gene therapy approach	-13%	-71%	\$0.06
Stem Cell Sciences	STC	9	Contract research and development and sale of re-agents for use in stem cell therapy research	-15%	-65%	\$0.26
Chemeq	CMQ	8	Currently suspended from trading. Under administration.	0%	0%	\$0.08
Biodiem	BDM	8	Focused on the development of LAIV influenza vaccines	10%	-45%	\$0.11
BioMD	BOD	8	Developing a tissue engineering technology, termed ADAPT	64%	-36%	\$0.09

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Apollo Life Sciences	AOP	8	Under self-imposed administration and wind-up.	0%	-78%	\$0.04
IM Medical	IMI	7	Markets the Intelliheart Cardiovascular Diagnostic System	-63%	-89%	\$0.006
Atos Wellness	ATW	7	Manages wellness centres in Singapore, Malaysia, India, Australia, Austria and Germany	-55%	-35%	\$0.04
Vita Life Sciences	VSC	7	Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods.	-25%	-12%	\$0.15
Agenix	AGX	7	Currently suspended from trading. Acquired drug development business in China. Also developing Thromboview, a blood clot diagnostic imaging agent.	-54%	-93%	\$0.02
KarmelSonix	KSX	7	Respiratory and pulmonary devices company. Acquired technologies from PulmoSonix and Karmel Medical Acoustics Technologies.	-74%	-84%	\$0.03
Medic Vision	MVH	7	Marketing training software and hardware for surgeons (formerly Premier Bionics)	15%	-57%	\$0.08
Life Therapeutics	LFE	7	A US based company operating a plasma collection business and marketing diagnostic tests for blood-borne diseases and blood-clotting disorders.	-24%	-88%	\$0.06
Cryosite	CTE	6	Provides specialised storage services, especially for umbilical cord blood	-13%	-24%	\$0.13
Medical Therapies	MTY	6	Developing therapies to treat inflammatory diseases, using copper- and zinc- indomethacin.	-5%	-50%	\$0.05
Analytica	ALT	6	A medical devices company that has developed a retractable syringe	-13%	25%	\$0.02
OBJ	OBJ	5	Developing transdermal drug delivery technologies	-29%	-80%	\$0.01
NeuroDiscovery	NDL	5	Provides electrophysiology services to biotech and pharma, and is developing range of compounds for treating neuropathic pain.	0%	-50%	\$0.09
Avita Medical	AVH	5	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.	-44%	49%	\$0.06
Medigard	MGZ	5	Developed retractable syringe technology and other safety medical products.	27%	-13%	\$0.07
Resonance Health	RHT	5	Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels	30%	-24%	\$0.01
Virax Holdings	VHL	5	Developing a therapeutic and prophylactic vaccine for HIV.	26%	-65%	\$0.03
Biolayer	BLS	4	Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices.	-38%	-58%	\$0.03
Portland Orthopaedics	PLD	4	Developer, manufacturer and marketer of surgical hip and knee implants	13%	-93%	\$0.02
Stirling Products	STI	4	Commercialising a production animal growth promotant and meat finisher.	-50%	-60%	\$0.03
Biosignal	BOS	4	Developing compounds that interrupt the colonisation of bacteria. Applications in the oil and gas industry and with contact lenses are being studied.	-62%	-75%	\$0.03
Colltech	CAU	4	Has developed a novel technology for the extraction of collagen from sheepskins.	-32%	-63%	\$0.02

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Tissue Therapies	TIS	4	Commercialising growth factors for spray-on skin product, other wound healing and in research and industrial cell growth applications.	-11%	-83%	\$0.09
Solbec Pharmaceuticals	SBP	4	To acquire an Asian eyecare business	18%	-66%	\$0.01
Norwood Abbey	NAL	3	Developing needle-free and micro needle drug delivery technologies	-41%	-80%	\$0.01
PharmAust	PAA	3	Operates Epichem and PharmAust Manufacturing, which provide products and services to biotech and pharma companies	-9%	-50%	\$0.02
Ambri	ABI	3	Business under review, with the company's technology recently out-licensed to a private firm.	-7%	-44%	\$0.01
Dia-B Tech	DIA	3	Developing therapeutics and diagnostics in the area of diabetes.	-33%	-75%	\$0.02
Actinogen	ACW	3	Early stage developer of antibiotics that show activity against MRSA and VRE bacteria	25%	0%	\$0.08
Rockeby Biomed	RBY	3	Research, development and marketing of rapid testing technologies for infectious diseases in animals and humans.	-50%	-82%	\$0.00
Probiomics	PCC	3	Intending to acquire Minomic International, a diagnostics company	-8%	-64%	\$0.01
Telesso Technologies	TEO	3	Undertaking a strategic review of investment opportunities	-36%	-76%	\$0.05
Healthlinx	HTX	3	Detecting novel functions of known and new protein and peptides for therapeutic purposes.	-54%	-71%	\$0.03
Advanced Ocular Systems	AOS	3	Plans to spin-off eye-care assets into a listed Singapore company; generates royalty income from ophthalmic products	-50%	-93%	\$0.01
Biopharmica	BPH	3	Managing cancer treatment and detection and bacterial DNA diagnostic projects. Portfolio investment approach.	-20%	-75%	\$0.04
Narhex Life Sciences	NLS	3	Developed a low cost protease inhibitor for treatment of HIV in Chinese market.	0%	-56%	\$0.02
Helicon Group	HCG	2	Exploiting niche market opportunities for medical products in China and other Asian markets.	-54%	-76%	\$0.03
Genesis Research & Development Corp.	GEN	2	Developing RNAi based therapeutics. Interests in agricultural biotechnologies.	-11%	-68%	\$0.08
Select Vaccines	SLT	2	Development and commercialisation of infectious diseases diagnostics, vaccines and therapeutics for hepatitis-related diseases	-25%	-59%	\$0.01
Prima Biomed	PRR	2	Developing the CVac immunotherapy.	-30%	-74%	\$0.01
NuSep	NSP	2	Manufacture and sale of protein separations technologies	-58%	-77%	\$0.05
Avastra Sleep Centres	AVS	2	Consolidating sleep disorder testing centres in the USA	-58%	-98%	\$0.02
Incitive	ICV	2	Development of compounds to treat cancers and auto-immune diseases.	-41%	-70%	\$0.03
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.	-18%	-94%	\$0.02

Capitalisation Total

4,772

## Listed Biotech Investment Funds

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/08
Biotech Capital	BTC	12	A Pooled Development Fund investing in unlisted Australian biotech companies and in public biotechs, including Alchemia, Starpharma, Neurodiscovery, Phylogica and Stem Cell Sciences.	-22%	-59%	\$0.15
Xceed Capital	XCD	6	Holds a 64% stake in Polynovo, which is developing biodegradable polyurethane-based polymers. Also operates Boron Molecular, a chemistry services company.	-7%	-62%	\$0.07
Genesis Biomedical	GBL	2	Venture capital company funding a sepsis project at UWA; increasing its exposure to mining activities	0%	-57%	\$0.01

**Capitalisation Total** 19

**Capitalisation Total - All Indexs** 35,962

**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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