

**In this edition...**

Bang! went biotech in the last quarter of 2007. Crash! went biotech in the first half of January 2008, as the Australian equities market slumped in the wake of the 2007 US sub-prime mortgage markets blow-up. Will it get worse before it gets better?

Investors should look at biotech on a stock by stock basis for the time being, and with that in mind, there are at least 18 stocks offering very good value at the moment.

Note, buying 'value' in biotech also means buying for the most part highly speculative stocks, which investors should keep in mind.

**The editors**

	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 (from 4 May '07)	-26.0%
<b>Cumulative Gain</b>	<b>141%</b>
<b>Av Annual Gain (6 yrs)</b>	<b>26.8%</b>

*Bioshares* is published by Blake Industry & Market Analysis Pty Ltd. The company also provides market and company analysis of the Australian pharmaceutical and biotech industries for local and international funds management institutions, venture capital funds and other related industry groups. For further details contact David Blake (see details below).

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# Bioshares

18 January 2008  
Edition 247

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

## The Year Ahead In Biotech 2008

The **Bioshares Index**, which measures the performance of the vast majority of Australian listed life science stocks, closed the year on a weak note, losing 5.5% for the quarter and 14.2% for the year.

The **Nasdaq Biotech Index** lost 2.3% in the December quarter, but with a 4.6% gain for the year and finishing in a far healthier position relative to the Bioshares Index. It should be noted however, that the Nasdaq Biotech Index is representative of many more mature companies than are included in the Bioshares Index. However, its value to Australian investors is that it serves as an undisputed measure of global investment sentiment towards biotech.

### Biotech Sector KPIs

	2007	2006
Num. of companies (31/12)	131	127
Biotechs >\$100M cap	25	24
Bioshares Index (% ch -yr)	-14.2%	5.2%
Nasdaq Biotech Index	4.6%	1.0%
Capital raised (\$M)	\$943	\$614
IPOs (Num)	11	14
Ave IPO raise (\$M)	\$17	\$11
CEO Separations	23	22

The **Bioshares Large Cap Index**, which measures the performance of **CSL, Resmed, Cochlear, Sigma Pharmaceuticals** and **API**, posted a gain of 3.6% for the quarter and a resounding 31% gain for the year. (The ASX 300 gained 11.8% for the year.) Much of the strength in the Bioshares Large Cap Index has been due to the performance of **CSL**, which recorded a 67% gain for the year. It was capitalised at \$20 billion as of December 31, 2007. In contrast the 122 companies that comprise the Bioshares Index, command \$7.7 billion in aggregate capitalisation.

An examination of the performance of the Top Twenty stocks for the twelve months ending December 31, 2007, shows that significant underperformance has occurred. These Top 20 stocks fell, on a sub-index basis, by 21.6%, with the negative performance accentuated by massive declines in the share prices of **Metabolic Pharmaceuticals** (-95%), **Life Therapeutics** (-79%) and **Genepharma** (-65%).

### Recent trends

Since the beginning of the year, the sector has experienced further erosion, with the Bioshares Index losing 14.5% and the Bioshares Large Cap Index also not immune to market pressures and losing 6.5%. The ASX 300 has fallen 9.4% over the same period.

Current market conditions have placed the Australian biotech sector, excluding the large cap stocks, at its worse position since December 2004. The Bioshares Index is 38% under the normalised 100 point base measure set at December 2004. What does this mean for investors?

Investors need to understand that biotech index out-performance requires sustained business performance by a majority of companies. This can emanate from positive clinical

*Cont'd over*

cal trial results, better than expected partnering deals, better than expected revenue and profit outcomes and securing appropriate funding in a timely manner. Another factor that influences index performance is the volume of reportable business activity. Due to the lengthy nature of medical product development, periods with relatively low numbers of material announcements can occur. When this drought phenomena is aggregated across a sector it has the effect of causing investors with very short term investment strategies to look elsewhere.

Sentiment effects can also have an effect on biotech stocks, such as the avian flu and flu pandemic concerns had (positively) with Biota. However, while sentiment can often lift a few stocks that operate in the same area, widespread gains are unlikely with Australian biotech stocks, because of the sector's huge diversity.

On the flip side, biotech indices can be skewed towards under-performance because of the technical risk involved in developing drugs and the marketing risk involved in developing devices and diagnostics. Probabilities of success at later stages of value creation are not in the order of 95% but can vary between 30%-50%.

For the year ahead investors must take a stock-by-stock approach to investing in the sector, and not rely on index measures to support investment decisions to enter or exit the sector. Recent market conditions have thrown up a good number of front line stocks that represent good value at current price and are listed in the following tables.

#### Value Picks - 18/1/2008

Company	Code	Cap.\$m	Price 18/1/08	Change - 31/12/07
Cytopia	CYT	42	\$0.48	-9%
Patrys	PAB	66	\$0.43	-9%
Ellex Medical Lasers	ELX	49	\$0.72	-12%
Heartware	HTW	119	\$0.48	-13%
IDT Australia	IDT	92	\$2.14	-13%
Arana Therapeutics	AAH	235	\$1.00	-13%
Peplin	PLI	152	\$0.76	-14%
Acrux	ACR	191	\$1.20	-14%
Alchemia	ACL	96	\$0.60	-14%
Hexima	HXL	70	\$0.94	-15%
Bionomics	BNO	79	\$0.36	-15%
Universal Biosensors	UBI	196	\$1.25	-16%
Progen Pharm.	PGL	128	\$2.15	-16%
Starpharma Holdings	SPL	59	\$0.33	-16%
Sirtex Medical	SRX	204	\$3.65	-19%
ChemGenex Pharm.	CXS	159	\$0.85	-19%
Ventracor	VCR	151	\$0.49	-19%
Pharmaxis	PXS	648	\$3.33	-21%
Biota	BTA	177	\$0.97	-22%

#### Outperformers – 2007

**Karmelsonix** generated the best gain for the year surging by 243%. Its first product is used for pulmonary function testing and late last year received FDA clearance for sale. Solagran shares had a similar price increase, up 242%. Solagran is commercialising products termed 'bioeffectives', sourced from conifer trees and extracted in Russia. The plant is expected to be at full manufacturing capacity by the end of the March quarter, 2008.

**Cordlife**, which is providing a cord blood storage service in Australia and throughout Australia increase by 124% for the year although has retraced some of those gains at the start of this year. **Panbio** increased by 105% following a successful acquisition by **Inverness Medical Innovations**, which has had a busy year acquiring several point-of-care diagnostic companies. **Bone Medical** was up 95%, although this stock has a very volatile history, and is beset by funding uncertainties. **Living Cell Technologies** had a 92% lift in its price after positive initial clinical results from its porcine islet technology for treatment of diabetes. **Acrux** was up 84% following several positive deals and **Avexa** increased 80% after positive Phase IIb data. And **Bionomics'** share price was up a healthy 79% for the year with the company ready to begin clinical trials with its cancer drug candidate. It will be a stock worth monitoring closely this year.

#### 2007 Outperformers

KarmelSonix	243%
Solagran	242%
Cordlife	124%
BioProspect	105%
PanBio	105%
Bone Medical	95%
Living Cell Tech.	92%
Acrux	84%
Avexa	80%
Bionomics	79%

#### 2007 Underperformers

Biolyer	-65%
Anadis	-66%
Brainz	-66%
Portland Orthopaedics	-67%
Medec	-70%
Adv. Ocular Systems	-70%
USCOM	-73%
Clinical Cell Culture	-77%
Life Therapeutics	-79%
Metabolic Pharm.	-95%

#### Underperformers – 2007

**Metabolic Pharmaceuticals** was the worst performing stock in the sector following its second major Phase II obesity trial failure. The stock lost 95% of its value over the year. Life Therapeutics was down 79%. Although sales increased by 42%, the company generated a net loss of \$15.7 million.

Companies that have failed to deliver sufficient growth on sales of new products were hard hit during the year. These include **Clinical Cell Culture** (-76%), **USCOM** (-72%), **Portland Orthopaedics** (-66%), **Brainz** (-66%) and **Biolyer** (-65%). **Advanced Ocular Systems** experienced a management restructure and is seeking to sell its remaining ophthalmic assets and acquire property investments in Perth. Its share price was down 70% over the year.

# GLOBAL MARKETS CAPITAL GROUP, LLC

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*Congratulations to our clients, Sigma Pharmaceuticals Limited and PanBio Limited on their announced transactions in December 2007*

<p>Announced</p>  <p>is being acquired by</p>  <p>A\$130,000,000</p> <p>The undersigned is acting as financial advisor to Sigma Pharmaceuticals</p>  GMCG, L.L.C.	<p>Announced</p>  <p>is being acquired by</p>  <p>A\$41,000,000</p> <p>The undersigned is acting as financial advisor to PanBio Limited</p>  GMCG, L.L.C.
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*Global Markets Capital Group specializes in locating and executing upon novel merger and acquisition opportunities for its global life science and healthcare client base*

<p>May 2007</p>  <p>has acquired</p>  <p>The undersigned acted as financial advisor to Ansell Limited</p>  GMCG, L.L.C.	<p>February 2007</p>  <p>Proposed strategic alliance and investment of up to €20,100,000 in</p>  <p>The undersigned acted as financial advisor to Genetech plc.</p>  GMCG, L.L.C.	<p>December 2006</p>  <p>has acquired</p>  <p>A\$100,000,000</p> <p>The undersigned acted as financial advisor to Novozymes A/S</p>  GMCG, L.L.C.	<p>August 2006</p>  <p>has acquired</p>  <p>A\$170,000,000</p> <p>The undersigned acted as financial advisor to BioTech Research Limited</p>  GMCG, L.L.C.	<p>July 2006</p>  <p>has acquired</p>  <p>The undersigned acted as financial advisor to Novozymes A/S</p>  GMCG, L.L.C.	<p>October 2006</p>  <p>M&amp;A advisory and valuation analysis</p> <p>The undersigned acted as financial advisor to CogState Limited</p>  GMCG, L.L.C.
<p>September 2005</p>  <p>MASDAQ listing of ADRs (American Depositary Receipts)</p> <p>The undersigned acted as advisor to Genetic Technology Limited</p>  GMCG, L.L.C.	<p>June 2005</p>  <p>MASDAQ listing of ADRs (American Depositary Receipts)</p> <p>The undersigned acted as advisor to ChemGenex Pharmaceuticals Limited</p>  GMCG, L.L.C.	<p>January 2005</p>  <p>awarded to</p>  GMCG, L.L.C. <p>for its investment banking role in the creation of</p> 	<p>December 2004</p>  <p>has been acquired by</p>  <p>A\$280,200,000</p> <p>The undersigned acted as financial advisor to The Griddles Group Limited</p>  GMCG, L.L.C.	<p>June 2004</p>  <p>has merged with ChemGenex Therapeutics Inc. to create ChemGenex Pharmaceuticals Limited</p>  <p>A\$44,000,000</p> <p>The undersigned acted as financial advisor to AGT Biosciences Ltd.</p>  GMCG, L.L.C.	

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**Capital Raisings by Australian-listed Biotech Companies Q4 2007**

Company	Investment manager/Investor	Type of raising	Funds raised (\$M)
Pharmaxis	Wilsom HTM	Placement	\$50.00
UBI	Wilsom HTM	Rights Issue	\$34.00
Mesoblast	Lodge Corporate Finance	Placement	\$13.44
Pharmaxis	Wilsom HTM	SPP	\$11.70
Polartech	-	NR rights issue	\$9.65
Living Cell Technologies	Taylor Collison	Placement	\$8.20
Prana Biotech	-	Placement	\$8.00
Biodiem	-	Placement	\$7.00
Avastra	ABN Amro Morgans	NR Rights Issue	\$5.60
Proteome Systems	-	Placement +SPP	\$5.00
Cytopia	Lodge Corporate Finance	Placement	\$5.75
Somnosed	-	Placement +SPP	\$4.80
Polartech	-	Placement	\$4.00
Viralytics	-	SPP & Placement	\$3.10
Norwood Abbey	Shadforth	Right Issue (U/W)	\$3.00
Biotron	Martin Place Securities	SPP	\$2.50
Advanced Optical Systems	-	Placement	\$2.40
Portland Orthopaedics	-	Convertible Loan	\$1.50
Bone Medical	-	Placement	\$1.25
Genesis Biomedical	SA Capital	Placement	\$0.80
Incitive	Cygnit Capital	Placement	\$0.60
<b>Total</b>			<b>\$182.29</b>
IPOs			\$30.20
<b>Overall raised in Q4 2007</b>			<b>\$212.49</b>
Funds raised in Q3 2007			\$235.87
Funds raised in Q2 2007			\$363.02
Funds raised in Q1 2007			\$131.77
<b>Total funds raised in 2007</b>			<b>\$943.15</b>

**Capital Raisings – 2007**

There was a big lift in capital inflow into the Australian biotech sector in 2007, driven by the increased funding needs of a number of local companies to conduct the pre-market phase of clinical testing of their drug candidates. From IPOs and follow-on raisings, \$943 million was raised last year, a 50% jump from the \$627 million of funds raised in 2006. And of this total, 50% was raised by 12 companies (see table).

**Progen Pharmaceuticals** and **Avexa** both raised \$79 million each during the year to fund their Phase III clinical programs for their oncology and HIV drug candidates respectively. **Pharmaxis** raised \$61.7 million with what appeared to be seamless ease to top up its funds for completion of its cystic fibrosis and bronchiectasis trials and to expand its manufacturing capacity. **Psivida** raised a total of \$43.5 million over the year to fund Phase III trials of its Medidur program for the treatment of diabetic macular oedema.

The two LVAD (mechanical heart pump) companies **Heartware** and **Ventracor** raised \$38.4 million and \$28.4 million respectively. The Heartware device has now been implanted in at least 25 patients and the Ventracor system into over 170 patients.

**Largest Capital Raisings in Sector in 2007**

Company	Funds raised (\$M)
Avexa	79.3
Progen Pharmaceuticals	79.2
Pharmaxis	61.7
Psivida	43.5
Heartware	38.4
Ventracor	28.4
CathRx	26.8
Clinuvel Pharmaceuticals	26.4
Acrux	22.5
Fermiscan	22.5
Chemgenex Pharmaceuticals	21
Novogen	21

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**IPOs – 2007**

There were eleven companies that listed in the sector in 2007 with three of those listing in the final quarter of the year. These companies raised on average \$16.9 million. This was a clear improvement on 2006, when only five companies listed raising an average \$8.5 million. In 2005 there were more listings (14) although the average capital raised through the IPO was only \$11 million.

Of the eleven companies that listed last year, only three generated positive returns for investors with an average 21% decline in newly listed biotech share prices in 2007. The best performer was Advanced Surgical Design and Manufacture, which finished the year up 53%. The company manufactures orthopedic implants among other medical devices and operates primarily in Australia.

**Total IPOs in 2007**

Company	Code	Funds Raised (M)	Issue Price	Price 31/12/07	Gain/loss
ASDM*	AMT	\$1.9	\$0.60	\$0.92	53%
Patrys	PAB	\$25.0	\$0.40	\$0.48	19%
Impedimed*	IPD	\$18.3	\$0.72	\$0.79	10%
Hexima	HXL	\$40.0	\$1.25	\$1.10	-12%
Halcyon Pharm.	HGN	\$12.5	\$0.50	\$0.43	-15%
Cyclopharm	CYC	\$11.0	\$0.30	\$0.24	-22%
Stem Cell Sciences	STC	\$12.0	\$1.07	\$0.62	-42%
QRxPharma	QRX	\$50.0	\$2.00	\$1.11	-45%
Actinogen*	ACW	\$10.0	\$0.50	\$0.24	-53%
Nusep	NSP	\$2.5	\$0.50	\$0.18	-64%
Helicon Group	HCG	\$3.0	\$0.20	\$0.07	-65%
<b>Total</b>		<b>\$186.2</b>			<b>Av. -21%</b>
	<b>Av.</b>	<b>\$16.9</b>			

\* Floated Q4 2007

At least 15 companies are believed to be considering listing in 2008 if market conditions improve during the year (see Bioshares 234) with one medical device firm, Autofix Group, slated for listing in February. By comparison, there are 18 mineral and energy exploration companies expected to list this year, six of which have already listed, including Botswana Metals which listed today.

**Bioshares Model Portfolio (18 January 2008)**

Company	Price (current)	Price added to portfolio	Date added
Patrys	\$0.43	\$0.50	December 2007
NeuroDiscovery	\$0.18	\$0.16	December 2007
Bionomics	\$0.36	\$0.42	December 2007
Cogstate	\$0.13	\$0.13	November 2007
Ventracor	\$0.49	\$0.625	October 2007
Sirtex Medical	\$3.65	\$3.90	October 2007
Clinuvel Pharmaceuticals	\$0.39	\$0.66	September 2007
Progen Pharmaceuticals	\$2.15	\$3.52	September 2007
Starpharma Holdings	\$0.33	\$0.37	August 2007
Pharmaxis	\$3.33	\$3.15	August 2007
Universal Biosensors	\$1.25	\$1.23	June 2007
Biota Holdings	\$0.97	\$1.55	March 2007
Tissue Therapies	\$0.32	\$0.58	February 2007
Probiotec	\$1.25	\$1.12	February 2007
Phylogica	\$0.16	\$0.42	January 2007
Peplin Inc	\$0.76	\$0.83	January 2007
Arana Therapeutics	\$1.00	\$1.31	October 2006
Chemgenex Pharma.	\$0.85	\$0.38	June 2006
Cytopia	\$0.48	\$0.46	June 2005
Optiscan Imaging	\$0.25	\$0.35	March 2005
AcruX	\$1.20	\$0.83	November 2004
Alchemia	\$0.60	\$0.67	May 2004

**Portfolio Changes – 18 Jan 2008**

**IN:**  
No Changes

**OUT:**  
No Changes

**Clinical Trial Developments - December Quarter 2007**

Company	Code	Product/Therapeutic	Event
AcruX	ACR	Testosterone MDLotion	Completed supplementary trial, 96 pts, of Testosterone MDLotion in interaction with deodorants and anti-perspirants
AcruX	ACR	Undisclosed product	Partner Elanco commenced a Phase III trial for an undisclosed animal health product
AcruX	ACR	Nicotine MDTs for smoking cessation	Completed Phase I trial, 16 pts, of single doses in three different spray formulations
Antisense Therapeutics	ANP	ATL1102	Completed enrollment of 77 pts in Phase II study, multiple sclerosis; 70% have completed dosing
Biodiem	BDM	BDM-E (peptide)	Announced results of 188 pt Phase I/II trial in diabetic macular oedema; endpoint not achieved
Biotron	BIT	BIT225 (Anti HIV, HCV)	Completed Phase I trial in 40 pts; four doses and placebo
Bone Medical	BNE	CaPTHymone	Commenced Phase I/II trial of CaPTHymone for osteoporosis
BioPharmica	BPH	Brain Anaesthesia Response Index (BAR Index)	Completed trial of EEG/EMG/brain function monitoring in 45 elective surgery patients
Biota	BTA	LANI (CS8958)	Commenced Phase II trial of anti-influenza drug CS8958
BrainZ	BZI	RecogniZe	Completed pilot study of neonatal seizure detection algorithm
Clinuvel Pharmaceuticals	CUV	CUV1647	Commenced Phase II study of CUV 1647 as a preventative for sun damage and actinic keratosis (AK); 150 patients
Cytopia	CYT	CYT997	Commenced Phase II study of CYT997 in up to 24 multiple myeloma patients
Dia-B Tech	DIA	ISF402	Completed Phase I study of ISF402 in 43 pts
Healthlinx	HTX	Ovplex	Completed a Phase II trial (400 sample) of ovarian cancer diagnostic panel
Peplin	PLI	PEP005	Announced preliminary results of PEP005 trial in actinic keratosis (field-directed therapy); 88 pts
Prana Biotech	PBT	PBT-2	Completed dosing in Phase IIa trial in pts with early Alzheimers disease
Phosphagenics	POH	TPM/Oxycodone	Completed Phase I safety study in 16 pts
Phosphagenics	POH	Phospha-E	Partner Nestle commenced Phase II study pf Phospha-E for management of metabolic syndrome
pSiVida	PSD	Medidur	Completed enrollment of Medidur in Phase III trial for diabetic macular oedema (900 pts)
QRxPharma	QRX	Q8003IR	Commenced enrollment in Phase III trial of 250 pts in post-surgery, acute pain setting trial
QRxPharma	QRX	Q8003IR	Commenced extension trial of Q8003IR to study patient safety from longer-term use (management of moderate to severe pain)
Sirtex Medical	SRX	Sir-Spheres	Commenced 320 pt trial of Sir-Spheres (radiation therapy), in combination with FOLFOX
Ventracor	VCR	VentrAssist	Enrolled 18 out 140 pts Bridge to Transplant (BTT) pivotal trial

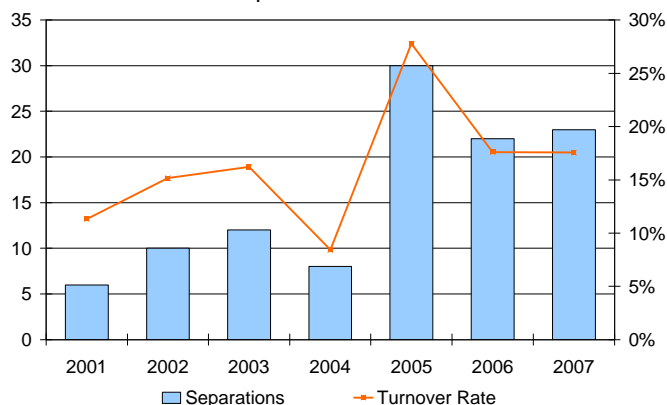
Notes: pt = patient, pts = patients

**CEO Turnover – 2007**

A measure of sector performance is the rate at which CEOs (or Managing Directors and Executive Chairman who fulfil the role of the CEO) retire, resign or are fired. With 2007 counting as a year of underperformance it was no surprise that 23 CEOs left their jobs throughout the year. This was on par with the 22 who departed in 2006, with both years recording a turnover rate of 18%. The big year for CEO departures was 2005, when the 30 CEOs moved on (a turnover rate of 28%).

Already two departures have been flagged for 2008, with Leon Serry retiring at Circadian technologies and Stewart Washer stepping down at Phylogica.

CEO Separations and Turnover





**The Australian Listed Life Sciences Sector**  
**December 31, 2007: Capitalisation \$38.1 billion, 131 Companies**

**Bioshares Large Cap. Index**

Company	Code	Cap. \$m	Principal Activities	Change - from Sept Q	Change - Yr Ago	Price 31/12/07
CSL	CSL	20,010	Manufactures pharmaceutical products including vaccines and human plasma fractions.	2%	67%	\$36.36
Resmed Inc.	RMD	4,630	Manufactures diagnostic and treatment equipment for sleeping disordered breathing.	21%	-6%	\$5.95
Cochlear	COH	4,166	Manufactures cochlear hearing implants.	-4%	29%	\$74.90
Sigma Pharmaceuticals	SIP	1,375	Pharmaceutical manufacturing and wholesaling.	9%	-47%	\$1.60
API	API	470	Pharmaceutical wholesaler.	-4%	-18%	\$1.83
<b>Capitalisation Total</b>		30,650				

**Bioshares Index**

Company	Code	Cap. \$m	Principal Activities	Change - from Sept Q	Change - Yr Ago	Price 31/12/07
Pharmaxis	PXS	821	Marketing a lung function test, Aridol, and developing the Bronchitol product to treat cystic fibrosis, bronchiectasis and COPD.	4%	42%	\$4.22
Blackmores	BKL	348	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	-1%	20%	\$21.56
Cellestis	CST	296	Marketing a diagnostic for latent tuberculosis.	3%	-19%	\$3.08
Arana Therapeutics	AAH	270	Developing biologic therapeutic products for the treatment cancer and inflammatory diseases	-7%	-29%	\$1.15
Sirtex Medical	SRX	251	The company's core technology uses radioactive particles to irradiate tumours in the liver. Approved for use in most major regions.	14%	67%	\$4.50
Universal Biosensors	UBI	232	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use.	16%	32%	\$1.48
Biota	BTA	226	Commercialised Relenza anti-flu drug and flu diagnostic kits. Now developing an improved version.	-26%	-24%	\$1.23
Acrux	ACR	222	A Pooled Dev. Fund commercialising a drug delivery technology that uses sunscreen penetration enhancers to aid transdermal drug delivery.	1%	84%	\$1.40
Avexa	AVX	219	Developing antiviral therapies for HIV and Hepatitis B and a novel antibiotic.	-10%	80%	\$0.54
Solagran	SLA	213	Developing complementary medical compounds called Bioeffectives.	4%	242%	\$1.18
ChemGenex Pharmaceuticals	CXS	196	Anti-cancer drug developer	0%	75%	\$1.05
Ventracor	VCR	186	Developer of the VentrAssist device, an artificial heart assist device (LVAD).	-2%	-45%	\$0.60
Peplin	PLI	176	Developing a plant derived compound, PEP005, to treat non-melanocytic skin cancers and other systemic cancers such as leukemia.	3%	0%	\$0.88
Mesoblast	MSB	153	Developing therapies based adult stem cells called mesenchymal stem cells, with applications in cartilage regrowth and bone repair.	-20%	-30%	\$1.28
Progen Pharmaceuticals	PGL	152	Developing oncology therapeutics, including the anti-angiogenesis compound, PI-88.	-25%	-57%	\$2.55
Fermiscan Holdings	FER	146	Commercialising the use of x-ray diffraction to aid in the screening of breast cancer.	1%	-2%	\$1.02
Phosphagenics	POH	145	Commercialising a drug delivery technology improving the delivery of vitamin E and existing pharmaceutical products through phosphorylation.	-8%	-29%	\$0.24
Heartware	HTW	136	Developing a mechanical heart pump (LVAD)	-11%	-18%	\$0.55
Novogen	NRT	121	Developing analogues of naturally occurring phenolic hormones to treat cancers and other conditions.	-34%	-52%	\$1.24

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - from Sept Q	Change - Yr Ago	Price 31/12/07
CathRx	CXD	113	Developing novel modular cardiac catheters for the diagnosis and treatment of abnormal heart rhythms	6%	6%	\$2.65
Alchemia	ACL	112	Commercialising new solid phase carbohydrate synthesis technology. First product, a synthetic heparin, to be launched by partners in 2008.	-15%	-13%	\$0.70
Nanosonics	NAN	111	Developing a novel disinfection technology	-1%	0%	\$0.59
Institute of Drug Technology	IDT	106	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	13%	21%	\$2.46
Clinuvel Pharmaceuticals	CUV	104	Developing an analogue of the alpha-MSH protein as a photo-protective agent.	-22%	-52%	\$0.35
Bionomics	BNO	93	Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy.	14%	79%	\$0.42
Prana Biotechnology	PBT	92	Developing drugs to treat CNS diseases such as Alzheimer's and Parkinson's.	63%	29%	\$0.51
QRxPharma	QRX	83	Developing a 'dual opioid' drug to treat moderate to severe pain.	-24%	0%	\$1.11
Hexima	HXL	82	Research and development of genetic technologies that can enhance the resistance of crops to insects and fungal pathogens.	0%	0%	\$1.10
Patrys	PAB	73	Developing human antibody therapies for the treatment of lung, pancreatic, gastric and colon cancers	-10%	0%	\$0.48
Starpharma Holdings	SPL	71	Developer of pharmaceutical applications of chemical scaffolds known as 'dendrimers'.	23%	-16%	\$0.40
Living Cell Technologies	LCT	71	Developing cell therapies for diabetes, haemophilia and Huntington's disease.	115%	92%	\$0.37
Unilife Medical Solutions	UNI	69	Developer of retractable syringes.	33%	53%	\$0.35
pSiVida	PSD	66	Developing and marketing drug delivery technologies, with a special focus on ophthalmic applications.	-18%	-63%	\$0.09
Agenix	AGX	65	Has acquired drug development business in China. Also developing Thrombview, a blood clot diagnostic imaging agent.	-35%	26%	\$0.17
Polartech	PLT	65	Develops and commercialises medical instruments to diagnose pre-cancer and cancer, in particular cervical cancer and melanomas.	-31%	52%	\$0.38
Impedimed	IPD	64	Develops devices that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	10%	0%	\$0.79
Probiotec	PBP	63	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	13%	19%	\$1.36
Cordlife	CBB	59	Rolling out tissue banking services in Australia and Asia	-7%	124%	\$0.65
Ellex Medical Lasers	ELX	56	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	-4%	-6%	\$0.82
Genetic Technologies	GTG	54	Provides DNA paternity testing services and holds broad patents relating to the use of non-coding DNA.	0%	-57%	\$0.15
Southern Dental Industries	SDI	52	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D.	-11%	-49%	\$0.44
Scigen	SIE	51	Developer and manufacturer of biopharmaceuticals. Company is based in Singapore and was spun out of Sonic Healthcare in 2002.	-1%	11%	\$0.09
Avastra Sleep Centres	AVS	50	Consolidating sleep disorder testing centres in the USA	-34%	22%	\$0.44
GenePharm Australasia	GAA	49	An generic pharmaceutical manufacturer and distributor.	-15%	-65%	\$0.36
Cytopia	CYT	46	Small molecule drug development company.	-4%	-17%	\$0.53
KarmelSonix	KSX	44	Respiratory and pulmonary devices company. Acquired technologies from PulmoSonix and Karmel Medical Acoustics Technologies.	9%	243%	\$0.18
Brain Resource Corp	BRC	41	Development and commercialisation of functional brain analysis techniques.	-8%	70%	\$0.45



## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - from Sept Q	Change - Yr Ago	Price 31/12/07
Benitec	BLT	41	R&D company focusing on gene silencing, specifically DNA delivered RNAi, technology.	-5%	36%	\$0.14
Proteome Systems	PXL	37	Discovery and development of diagnostic and therapeutic products.	-23%	-28%	\$0.21
IM Medical	IMI	36	Markets the Intelliheart Cardiovascular Diagnostic System	-45%	20%	\$0.030
Life Therapeutics	LFE	35	A US based company operating a plasma collection business and marketing diagnostic tests for blood-borne diseases and blood-clotting disorders.	-35%	-79%	\$0.29
Apollo Life Sciences	AOP	35	Developing portfolio of protein drugs to treat various disorders and diseases.	0%	-60%	\$0.19
Avantogen	ACU	34	A developer of various cancer therapeutics.	20%	20%	\$0.06
Advanced Surgical Design & Manufacture*	AMT	34	A developer and manufacturer of prosthetic implants and medical devices	64%	0%	\$0.92
Optiscan Imaging	OIL	33	Manufacture of confocal microscopes for clinical diagnosis including endoscopes through alliance with Pentax.	-20%	-33%	\$0.32
Cyclopharm	CYC	33	A nuclear medicine company that markets the Technegas lung imaging system	-6%	0%	\$0.24
Halcyon	HGN	32	Developing an anti-fungal drug	-1%		\$0.43
Sunshine Heart	SHC	32	Developing the C-Pulse heart assist device. The C-Pulse wraps around and compresses the aorta, increasing blood flow through the body.	-17%	-39%	\$0.15
Eastland Medical Systems	EMS	31	Developing retractable syringes and other surgical products.	-3%	44%	\$0.18
Bone Medical	BNE	30	Developing treatments for bone and joint degenerative diseases such as arthritis and osteoporosis.	11%	95%	\$0.39
ITL	ITD	28	Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits.	-8%	-56%	\$0.23
Giaconda	GIA	28	Developed novel (patented) combinations of registered drugs for the treatment of gastrointestinal disorders.	6%	-21%	\$0.38
Clovercorp	CLV	27	Development and production of omega-3 food additives from tuna oil.	65%	27%	\$0.17
Phylogica	PYC	27	Developing phylomer (protein fragment shapes) compound libraries for use in human therapeutics.	-33%	-60%	\$0.19
Neuren Pharmaceuticals	NEU	26	Developing neuroprotective therapeutics	-33%	-55%	\$0.18
Medical Developments	MVP	24	Commercialising the Pentrax inhaler for temporary pain relief. Used widely in ambulances across Australia.	11%	-33%	\$0.42
Viralytics	VLA	23	Developing a cancer treatment based on the application of viruses (oncolytic virus technology).	12%	-44%	\$0.08
Antisense Therapeutics	ANP	22	Developing antisense compounds to treat multiple sclerosis and acromegaly.	20%	5%	\$0.04
Occupational & Medical Innovations	OMI	22	Developing safety devices used in the healthcare industry, including safety syringes.	-29%	8%	\$0.55
Portland Orthopaedics	PLD	22	Developer, manufacturer and marketer of surgical hip and knee implants	-48%	-67%	\$0.14
Compumedics	CMP	22	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	15%	-3%	\$0.16
Labtech Systems	LBT	21	Developing the MicroStreak technology for the automation of microbiology laboratory processing	-2%	5%	\$0.21
Stem Cell Sciences	STC	21	Contract research and development and sale of re-agents for use in stem cell therapy research	-15%	0%	\$0.62
Imugene	IMU	20	Developing animal products such as antibiotic alternatives used in the stock feed industry using a vaccine and gene therapy approach	-29%	-41%	\$0.15
BioProspect	BPO	20	Developing insecticides from naturally occurring molecules	5%	105%	\$0.04
Biosignal	BOS	18	Developing compounds that interrupt the colonisation of bacteria. Applications in the oil and gas industry and with contact lenses are being studied.	30%	6%	\$0.18

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change from Sept Q	Change - Yr Ago	Price 31/12/07
Biotron	BIT	17	Developing anti-viral therapies and cancer screening technologies.	-12%	-22%	\$0.18
Somnomed	SOM	15	Commercialising an oral device for the treatment of sleep apnea and snoring.	0%	-5%	\$0.02
Biodiem	BDM	15	Focused on the development of LAIV influenza vaccines	-3%	-32%	\$0.20
Telesso Technologies	EIF	14	Undertaking a strategic review of investment opportunities	26%	41%	\$0.02
Medic Vision	MVH	13	Marketing training software and hardware for surgeons (formerly Premier Bionics)	-20%	-38%	\$0.14
Metabolic Pharmaceuticals	MBP	12	Developing a drug delivery technology.	-31%	-95%	\$0.04
Norwood Abbey	NAL	12	Developing needle-free and micro needle drug delivery technologies	-27%	-36%	\$0.04
Visiomed Group	VSG	12	Marketing asthma spacer devices. Merging with Clinical Cell Culture.	-11%	42%	\$0.02
Clinical Cell Culture	CCE	11	Development of skin treatment products for use in burns and other skin damage. Lead product is CellSpray. Merging with Visiomed Group.	-27%	-77%	\$0.03
Rockeby Biomed	RBV	11	Research, development and marketing of rapid testing technologies for infectious diseases in animals and humans.	-14%	-24%	\$0.02
Tissue Therapies	TIS	11	Commercialising growth factors for spray-on skin product, other wound healing and in research and industrial cell growth applications.	-29%	-35%	\$0.35
Brainz	BZI	11	Develops non-invasive brain monitors for the detection of brain injury designed for use at the patient's bedside. A NZ company.	-42%	-66%	\$0.18
Anadis	ANX	10	Specialises in R&D of bovine colostrum products for therapeutic use in animals and humans.	-17%	-66%	\$0.10
Solbec Pharmaceuticals	SBP	10	Developing plant-based compounds for the treatment of melanomas and asbestos related lung cancers.	-8%	-13%	\$0.04
USCOM	UCM	10	Marketing a non-invasive heart output function monitor.	-10%	-73%	\$0.26
Actinogen*	ACW	9	Early stage developer of antibiotics that show activity against MRSA and VRE bacteria	-53%	0%	\$0.24
Atcor Medical	ACG	9	Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system	-23%	-53%	\$0.09
Advanced Ocular Systems	AOS	9	Plans to spin-off eye-care assets into a listed Singapore company; generates royalty income from ophthalmic products	-59%	-70%	\$0.03
Virax Holdings	VHL	9	Bio-pharmaceutical R&D company developing a therapeutic and prophylactic vaccine for HIV.	-14%	-56%	\$0.08
BioMD	BOD	9	Acquired an interest in a tissue engineering technology company, Celxcel.	-29%	-9%	\$0.10
Chemeq	CMQ	8	Currently suspended from trading. Under administration.	0%	-60%	\$0.08
Cryosite	CTE	8	Building a business in the provision of services for storing umbilical cord blood through cryopreservation and ultracold technologies.	6%	6%	\$0.18
Dia-B Tech	DIA	8	Developing therapeutics and diagnostics in the area of diabetes.	-31%	0%	\$0.06
Healthlinx	HTX	8	Detecting novel functions of known and new protein and peptides for therapeutic purposes.	-9%	33%	\$0.10
Probiomics	PCC	7	A probiotics company that has launched a range of products to aid management of irritable bowel syndrome, diarrhoea and intestinal health.	21%	-33%	\$0.04
NeuroDiscovery	NDL	7	Provides electrophysiology services to biotech and pharma, and is developing range of compounds for treating neuropathic pain.	-33%	-31%	\$0.12
PharmAust	PAA	7	Operates Epicem and PharmAust Manufacturing, which provide products and services to biotech and pharma companies	5%	-65%	\$0.04
Medigard	MGZ	7	Developed retractable syringe technology and other safety medical products.	25%	0%	\$0.10
Cogstate	CGS	7	Marketing cognitive performance diagnostic products.	0%	-41%	\$0.13

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change from Sept Q	Change - Yr Ago	Price 31/12/07
Medical Therapies	MTY	7	Developing therapies to treat inflammatory diseases, using copper- and zinc- indomethacin	-14%	-45%	\$0.09
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.	-18%	0%	\$0.14
Stirling Products	STI	7	Commercialising a production animal growth promotant and meat finisher.	-16%	-45%	\$0.05
Narhex Life Sciences	NLS	6	Developed a low cost protease inhibitor for treatment of HIV in Chinese market.	11%	-52%	\$0.04
Select Vaccines	SLT	6	Development and commercialisation of infectious diseases diagnostics, vaccines and therapeutics for hepatitis-related diseases	14%	19%	\$0.03
Prima Biomed	PRR	6	Developing the CVac immunotherapy.	-22%	-58%	\$0.02
Helicon Group	HCG	6	Exploiting niche market opportunities for medical products in China and other Asian markets.	-43%		\$0.07
Genesis Research & Development Corp.	GEN	6	Developing RNAi based therapeutics. Interests in agricultural biotechnologies.	-20%	-27%	\$0.20
Colltech	CAU	6	Has developed a novel technology for the extraction of collagen from sheepskins.	-17%	-64%	\$0.03
Biopharmica	BPH	6	Managing cancer treatment and detection and bacterial DNA diagnostic projects. Portfolio investment approach.	-46%	-26%	\$0.08
Resonance Health	RHT	5	Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels	-12%	-35%	\$0.02
Ambri	ABI	5	Developing rapid diagnostic tests bases on mimicking natural biological sensing processes	-4%	-58%	\$0.02
Analytica	ALT	4	A medical devices company that has developed a retractable syringe	0%	-41%	\$0.02
RiTract	RTL	4	Developing a safety needle and needle sleeve. <b>Currently suspended from trading.</b>	0%	-60%	\$0.04
NuSep	NSP	4	Manufacture and sale of protein separations technologies	-18%	0%	\$0.18
Medec	MAA	4	Healthcare services and equipment, including treatment tables, and complementary medicines	-15%	-70%	\$0.05
Incitive	ICV	4	Development of compounds to treat cancers and auto-immune diseases.	-20%	-41%	\$0.08
Biolayer	BLS	3	Developer of a biological coatings technology that can applied to immunoassays, bio-separations, drug delivery and other medical devices.	-25%	-65%	\$0.05

**Capitalisation Total** 7,720

\* change in share price is from close of first day of listing

**1,642**

## Listed Biotech Investment Funds

Company	Code	Cap. \$m	Principal Activities	Change from Sept Q	Change - Yr Ago	Price 31/12/07
Circadian	CIR	49	Management and funding of R&D projects with Australian and NZ universities. Holds investments in Optiscan, Metabolic Pharmaceuticals, Antisense Therapeutics, Avexa and Vegenics.	-2%	-22%	\$1.21
Biotech Capital	BTC	27	A Pooled Development Fund investing in unlisted Australian biotech companies or in public biotechs, including Starpharma, Clinical Cell Culture, Phylogica and Stem Cell Sciences.	-10%	-20%	\$0.32
Xceed Capital	XBL	16	Holds a 64% stake in Polynovo, which is developing biodegradable polyurethane-based polymers. Also operates Boron Molecular, a chemistry services company.	-3%	-18%	\$0.17
Genesis Biomedical	GBL	5	Venture capital company funding a sepsis project at UWA; increasing its exposure to mining activities	-14%	-52%	\$0.02

**Capitalisation Total** 92

**Capitalisation Total - All Indexs** 38,462

**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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