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Bioshares

30 September 2016
Edition 667

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

Companies covered: PXS, 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)	70.6%
Year 4 (May '04 - May '05)	-16.3%
Year 5 (May '05 - May '06)	77.8%
Year 6 (May '06 - May '07)	17.4%
Year 7 (May '07 - May '08)	-36%
Year 8 (May '08 - May '09)	-7.4%
Year 9 (May '09 - May '10)	50.2%
Year 10 (May '10 - May '11)	45.4%
Year 11 (May '11 - May '12)	-18.0%
Year 12 (May '12 - May '13)	3.1%
Year 13 (May '13 - May '14)	26.6%
Year 14 (May '14 - May '15)	23.0%
Year 15 (May '15 - May '16)	33.0%
Year 16 (May '16 - current)	15.1%
Cumulative Gain	748%
Av. Annual gain (14 yrs)	18.5%

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Quarterly Review

Investors Pick Their Favourites – Bioshares Index Posts 15% Sept Qtr Gain

Investors increased their exposure to key stocks in the **Bioshares Index** in the September quarter, delivering a substantial increase to the index for the quarter of 15.1%. The last time an increase of this magnitude was observed was for the September quarter 2013, for which a 17.4% increase was recorded.

The quarterly increase in the Bioshares Index, which comprises of 114 smaller cap life science companies, exceeded a 12.4% increase in the **Nasdaq Biotech Index**, which retraced losses made over the last two quarters, as well as 4% increase in the **ASX 300 Index** and a surprisingly modest 1.2% gain in the **Bioshares Large Cap Index**. The Bioshares Large Cap Index comprises of CSL (-5%), Cochlear (+16%), Resmed (+2%), Sirtex Medical (+23%) and Blackmores (-11%).

Billion Dollar Nanosonics

Nanosonics, which is now capitalised at \$1 billion, accounted for 3.2 percentage points of the 15.1% increase, followed by Sigma Pharmaceuticals (\$1.5 billion), which accounted for 2.8 percentage points of the quarter increase, and Impedimed (\$593 million) with a 2.2 percentage points contribution. Shares in Nanosonics rose 55% over the quarter, Sigma's shares by 25% and Impedimed's by 68%.

Although Mayne Pharma Group was ranked first by capitalisation in the Bioshares Index with a capitalisation of \$3 billion, its 1.3 percentage points contribution to growth in the index was less than that of Nanosonics, Sigma and Impedimed. It is likely that both Sigma Pharmaceuticals and Mayne Pharma Group will be moved into the Bioshares Large Cap Index in the December quarter.

Other companies with \$200 million-plus capitalisations which drew investor interest included AirXpanders (Cap: \$327 million; quarterly share price gain, 49%), Clinuvel Pharmaceuticals (\$289 million; +40%), ResApp Health (\$289 million; +32%) and Reva Medical (\$542 million; +15%).

Cont'd over

Index Performance by Quarter (Change from previous Qtr)

	Q3 2015	Q4 2015*	Q1 2016*	Q2 2016*	Q3 2016*
Bioshares Index	7.6%	7.9%	3.0%	-2.3%	15.1%
<i>(minus BKL)</i>	-2.2%				
Nasdaq Biotech Index	-18.0%	11.7%	-23.0%	-1.2%	12.4%
Bioshares Large Cap Index	2.7%	18.4%	-4.7%	9.3%	1.2%
ASX 300 Index	-7.9%	5.5%	-3.9%	3.0%	4.0%

*BKL and SRX included in Bioshares Large Cap Index from Q4 2015

Bioshares Index – Top 10 Outperformers – Sept. Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 30/9/16
Phosphagenics	POH	39	158%	121%	\$0.031
Dimerix	DXB	22	114%		\$0.015
Cynata Therapeutics	CYP	45	102%	47%	\$0.625
Botanix Pharmaceuticals	BOT	10	100%		\$0.040
Resonance Health	RHT	12	82%	-11%	\$0.031
Compumedics	CMP	108	75%	133%	\$0.640
SDI	SDI	108	74%	56%	\$0.905
Osprey Medical	OSP	98	73%	-45%	\$0.380
Impedimed	IPD	593	68%	79%	\$1.585
Paradigm Biopharm.	PAR	51	66%	93%	\$0.580

Outperformers

Phosphagenics, a company with a chequered history, registered the largest share price gain for the September quarter of 158%. The stock reached a low of \$0.007 in January of this year. In a response to an ASX query on the stock's move from \$0.026 to \$0.034 in September, the company attributed interest in the stock to routine investor meetings attended by the CEO.

Shares in Dimerix, which is developing a combination therapy DMX-200 to treat chronic kidney disease, rose 114% over the quarter. The main contributor to this increase was positive progress with company's clinical trial of DMX-200 and clarity regarding the development of DMX-200 following a pre-IND meeting with the FDA.

Cell therapy manufacturing play Cynata Therapeutics locked in a 102% gain over the quarter, aided by the announcement of the signing of a terms sheet with Fujifilm and the receipt of trial approval for its graft-versus-host disease (GVHD) program from the UK's MHRA.

Botanix Pharmaceuticals, which executed a back-door listing through Bone Medical, saw its shares finish the quarter at \$0.04, double the price of shares issued in its over-subscribed capital raising. Botanix will be one of the more interesting medical cannabis companies to watch because it is following a formal pharmaceutical development pathway for the development of a synthetic version of cannabidiol (BTX1503) for the treatment of acne, epilepsy, pain and arthritis.

After spending the middle part of the year in the doldrums, shares in Perth-based Resonance Health posted a healthy 82% gain for the quarter. Resonance Health shares benefited from the publication of study results of its HepaFat-Scan technology. HepaFat-Scan permits the measurement of volumetric liver fat fraction using MRI, thereby avoiding the need for a liver biopsy. An expansion of a clinical trial which deploys Resonance Health's Ferriscan and Cardiac T2 services also added motives to buy the stock.

Shares of Compumedics, a Melbourne company which listed in 2000, increased by 75% for the quarter, coinciding with a \$4.5 million capital raise and a \$2 million sell down of existing shares.

Bioshares Index - Top 10 Underperformers – Sept. Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 30/9/16
Acrux	ACR	55	-54%	-42%	\$0.330
Jayex Healthcare	JHL	12	-45%		\$0.080
Reproductive Health Sc.	RHS	5	-44%	-50%	\$0.075
Actinogen Medical	ACW	27	-38%	-25%	\$0.045
StemCell United	SCU	5	-32%	-92%	\$0.013
Adherium	ADR	61	-28%		\$0.360
Atcor Medical	ACG	20	-22%	-58%	\$0.098
Unilife Corporation	UNS	56	-21%	-73%	\$0.055
Medigard	MGZ	3	-21%	0%	\$0.030
Recce	RCE	15	-20%		\$0.200

Major shareholder David Burton sold down \$1.5 million worth of shares, leaving him with a 54% stake in the company.

SDI Ltd, another longstanding Victorian manufacturer with a significant family interest (the Cheetham family has a collective interest of more than 67%), saw its shares rise 74% for the quarter. Of interest was that well-known life sciences investor David Williams and investment group Pie Funds both became substantial shareholders during July, although entities associated with David Williams later disposed of 6.7 million shares.

Underperformers

The worst performing life science stock in the September quarter was that of Acrux. Its fall of 54% over the quarter was due to a US court ruling which invalidated several patents relating to its testosterone product Axiron. Acrux and its partner Eli Lilly said they would appeal the decision. Acrux said the decision would cause a material decline in Axiron royalties. Royalty revenue from Axiron was \$25.3 million in FY2016 and \$24.3 million in 2015.

Legal troubles were also a likely factor contributing to a 45% decline in Jayex Healthcare shares, in addition to asset impairment charges. Jayex sells patient workflow and patient engagement platforms. Mediation failed between the company and the former principal shareholders of Appointuit, a company acquired by Jayex in September 2015.

Reproductive Health Science's shares fell by 44% in the September quarter, due in part to the need of the company to raise funds for working capital requirements and to fund the business development of its new DOPlify product, which is designed to complement EmbryoCollect. Both are used for pre-implantation genetic screening in IVF clinics.

Actinogen Medical suffered a setback at the close of the quarter when the FDA raised further questions about safety surveillance of Xanamem (an Alzheimer's disease drug candidate) in relation to trialling of the drug in the US. This has pushed back the start of the trial which had been expected to commence before the end of the year. Shares in Actinogen fell 38% on a quarterly basis.

Cont'd over

Capital Raisings by Australian-listed Biotech Companies Q3 2016

Company	Investment Manager or Investor	Type of Raising	Funds Raised (\$M)
Mayne Pharma Group		Rights Issue	\$254.0
Mayne Pharma Group		Instit. Rights Issue	\$347.0
Mayne Pharma Group		Placement	\$287.0
Osprey Medical		Placement	\$28.0
Osprey Medical		SPP	\$1.0
Admedus		Rights Issue	\$8.3
Admedus		Placement	\$10.0
Avita Medical	Morgans Corporate	Rights Issue	\$9.0
IDT			\$6.1
Innate Immunotherapeutics	Robert Peach, Chris Collins	Placement	\$3.0
Innate Immunotherapeutics		Rights Issue	\$2.4
Immuron		Rights Issue	\$5.3
Genetic Signatures	Bell Potter	Placement (T1)	\$5.1
Compumedics	PAC Partners	Placement	\$4.5
Medlab Clinical			\$4.4
Optiscan Imaging		Rights Issue	\$1.4
Optiscan Imaging		Placement	\$0.8
Bluechiip		Rights Issue	\$1.5
Memphasys (formerly Nusep)		Convertible Notes	\$0.9
Reproductive Health Science	Taylor Collison	Placement	\$0.5
	IPOs	Oventus	\$12.0
		Adalta	\$12.0
		Noxopharm	\$6.0
	Backdoor Listing	Race Oncology	\$4.3
Total raised in Q3 2016			\$1,014.5
Total raised in Q2 2016			\$104.4
Total raised in Q1 2016			\$135.6
Total raised YTD 2016			\$1,254.5

Capital Raisings – September Quarter

More than \$1 billion was raised by ASX listed life science companies during the September quarter, 2016, bringing the year-to-date total to \$1.255 billion. However, this headline figure was heavily skewed by \$888 million raised by Mayne Pharma to fund the acquisition of a portfolio of assets from Teva Pharmaceuticals and Allergan for US\$652 million.

Capital raised in the September quarter nett of Mayne Pharma's raising was \$126 million. Year to date capital raised, excluding

Mayne Pharma's \$888 million and Impedimed's \$75.7 million was \$291 million, with \$58 million of that figure accounted for by ten IPOs and backdoor listings.

In the September quarter, four companies completed IPOs or backdoor listings, being Oventus, Adalta, Noxopharm and Race Oncology.

Bioshares

Pharmaxis Gains Russian Approval for Bronchitol

Pharmaxis (PXS: \$0.265) has gained regulatory approval to sell its cystic fibrosis drug into Russia. While Bronchitol is no longer the leading asset for Pharmaxis, Russia will represent the largest market for the product into which the product is sold. It is also expected to tip the Bronchitol asset into a breakeven point based on take-up levels in other markets.

Pharmaxis appears to have turned the corner with positive developments across many of its assets. Next year, we anticipate that Pharmaxis will receive \$25 million (€18 million) from Boehringer Ingelheim when that company moves its drug asset acquired from Pharmaxis last year into a Phase II trial in NASH (non-alcoholic steatohepatitis) or another disease area. Longer-term use toxicology studies are currently being completed by Boehringer and the drug has been reformulated into a solid dose form from the liquid form tested by Pharmaxis.

In 1H 2017, the company expects to release results from a third Phase III trial in the US in 440 adults with cystic fibrosis. If that result is positive, FDA approval can be expected in 2H 2018, with a launch to follow we expect in 1H 2019. Upon launch, Pharmaxis stands to receive a US\$10 million milestone payment from its US licensee Chiesi Farmaceutici. US sales are expected to make Bronchitol a profit generating asset for the company.

By mid 2017, Pharmaxis expects to have completed toxicology studies with its next drug development asset, LOXL2, also for the treatment of NASH and other fibrotic-based diseases. A Phase I trial is expected to be conducted in 2H 2017 which will position the company for a licensing deal in 2018, potentially another major transaction given the continued strong interest in the NASH space (see below).

Bronchitol in Russia

In Russia, Pharmaxis has gained approval for both children and adults as Russia has used Australia as a reference country. In Europe (Germany, UK and Denmark), Bronchitol is currently approved and sold only for the treatment of adults, although a pediatric study was completed last year.

In Russia there are around 7,400 people (adults and children) living with cystic fibrosis compared to around 5,000 adults in the UK and 3,500 adults in Germany, making Russia the largest current market for the drug. However, treatment of the disease is inferior in Russia compared to western countries such as the UK, where the average life expectancy is 41 years compared to only 30 years in Russia.

The main treatment for mucous clearance CF in Russia is Pulmozyme. Sales last year for these types of drugs reached US\$29 million. There appears to be strong interest in Russia in a new treatment option for people living with CF judging by the following comments in the company's press release.

"We urgently wait for Bronchitol's inclusion in the 7 Nosologies Program and the supply of the product in Russia so it can be included in the basic treatment of our patients," said the Head of

CF Laboratory Scientific Research Center of Pulmonology MOH Russia.

The President of the Russian Association of Patients with Cystic Fibrosis said: "The staff of the Russian and Moscow centres of cystic fibrosis are very pleased that Bronchitol has State registration in Russia and that our patients will have access to a new innovative product."

Bronchitol will sell in Russia at the European price, which ranges between €20 - €25 a day (\$10,700 - \$13,400 a year). It is the first drug to be approved in Russia under a new orphan drug law introduced at the start of this year. Having been approved, the drug will now be considered for reimbursement under guaranteed funding from the 7 Nosologies Program that allows for free access to patients for the treatment of seven orphan diseases.

In Russia, the treatment of adults with CF is very concentrated with three main centres, whilst there are 40 centres that treat children with CF. In addition to the 7,400 registered people with CF in Russia, there are believed to be a further 3,000 - 4,000 unregistered patients living in rural areas. Bronchitol's portability (as opposed to pulmozyme which is delivered through a nebulizer) may make it more accessible or convenient to patients living in rural areas.

Pharmaxis' CEO Gary Phillips said that there were several centres in Russia in the company's clinical trial 303 in CF and that their experience with the drug was positive. Pharmaxis will start selling the drug into Russia by year's end and the company expects to sell the drug through a tender process in Q1 2017.

The Russian approval process started around three years ago. Phillips said the Russian drug approval process has been very professional. Pharmaxis has a logistics only distributor for Russia and will use four Medical Science Liaison people to support use of the product into the clinics.

NASH Remains a Hot Space for Biotech and Pharma Companies

Earlier this month, Allergan announced that it would acquire a biotech specialising in the NASH space, Tobira Therapeutics, for up to \$1.7 billion. What makes the deal really surprising is that in July Tobira announced that its Phase IIb trial in 289 patients with liver fibrosis failed to hit its primary endpoint, which was a two point reduction in the NAFLD Activity Score.

However, the trial was successful in one of the secondary endpoints, that being a lowering of liver scarring without a worsening in NASH. Tobira's share price has soared 748% as a result.

The deal highlights the continuing interest in the NASH space and the paucity of drug development programs in this space. Pharmaxis has not one, but two programs in the NASH field. The first was sold to Boehringer Ingelheim last year for an upfront payment of \$39 million and a total potential transaction value of over \$750 million. That program was only at Phase I stage of development.

Cont'd over

Bioshares Model Portfolio (30 September 2016)						Portfolio Changes – 30 September 2016
Company	Price (current)	Price added to portfolio	Recommend- ation	Cap'n (\$M)	Date added	
Factor Therapeutics	\$0.054	\$0.054	Spec Buy B	\$39	September 2016	IN: Factor Therapeutics has been added to the Model Portfolio (see commentary in <i>Bioshares</i> 665) OUT: pSivida has been removed from the Model Portfolio (see commentary in <i>Bioshares</i> 666)
GI Dynamics	\$0.020	\$0.024	Spec Buy B	\$10	May 2016	
Adherium	\$0.360	\$0.495	Spec Buy A	\$60	March 2015	
Bionomics	\$0.440	\$0.295	Spec Buy A	\$212	March 2016	
Reproductive Health Science	\$0.075	\$0.150	Spec Buy B	\$5	December 2015	
Rhinomed	\$0.020	\$0.032	Spec Hold B	\$16	December 2015	
AirXpanders	\$1.390	\$0.745	Spec Hold A	\$328	September 2015	
Osprey Medical	\$0.380	\$0.695	Spec Buy B	\$73	September 2015	
Clinuvel Pharmaceuticals	\$6.06	\$4.15	Spec Buy A	\$289	December 2014	
Innate Immunotherapeutics	\$0.500	\$0.190	Spec Buy A	\$98	November 2014	
Opthea	\$0.730	\$0.160	Spec Buy A	\$110	November 2014	
Impedimed	\$1.585	\$0.245	Spec Buy A	\$591	December 2013	
IDT Australia	\$0.220	\$0.260	Spec Buy B	\$54	August 2013	
Viralytics	\$0.915	\$0.300	Spec Buy B	\$220	August 2013	
Somnomed	\$3.47	\$0.94	Buy	\$191	January 2011	
Cogstate	\$0.890	\$0.13	Spec Buy A	\$106	November 2007	

– *Pharmaxis cont'd*

The second is Pharmaxis's LOXL2 program. It seeks to address liver fibrosis at its core by disrupting the cross links in the tissue that form fibrotic tissue. Other NASH programs have a less direct mechanism of action, by seeking to achieve an anti-inflammatory effect in the liver. Pharmaxis has four preclinical programs that it wants to progress to the clinic starting with the LOXL2 program next year.

Pharmaxis is capitalised at \$84 million. It held cash of \$39 million at the end of June.

Bioshares recommendation: **Speculative Buy Class B**

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Selected Clinical Trial Developments - Q3 2016

Company	Code	Product/Therapeutic	Event
Bionomics	BNO	BNC210 (generalised anxiety disorder)	Successfully completed Phase II trial; 24 subjects. BNC210 outperformed lorazepam on two primary measures
Benitec BioPharma	BLT	TT-035 (HCV)	Phase I trial met its primary safety endpoint but did not meet deliver a significant reduction in viral load, a secondary endpoint
Antisense Therapeutics	ANP	ATL1103 (acromegaly)	Announced interim results from higher dose (300mg twice weekly), three pt study; results from two pts showed that the drug appeared safe and effective at the higher doses
Neuren Pharmaceuticals	NEU	trofinetide (NNZ-2566) (Rett syndrome)	Expects to expand Phase II trial beyond 64 completing subjects; 49 subjects randomised to date
TBG Diagnostics	TDL	PG545(cancer)	Completed Phase I study in 23 patients; Declared 100mg as maximum tolerated dose

The ASX-Listed Life Sciences Sector
September 30, 2016: Capitalisation \$86.9 billion, 120 companies

Bioshares Large Cap. Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Blackmores	BKL	2,008	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	-11%	-20%	\$116.580
Cochlear	COH	8,093	Manufactures cochlear hearing implants	16%	69%	\$140.99
CSL	CSL	48,782	Manufactures pharmaceutical products including vaccines and human plasma fractions	-5%	20%	\$107.00
Resmed Inc.	RMD	11,928	Manufactures diagnostic and treatment equipment for sleeping disordered breathing	2%	17%	\$8.48
Sirtex Medical	SRX	1,820	The company's core technology uses radioactive particles to irradiate tumours in the liver. Approved for use in most major regions.	23%	-4%	\$31.550

Capitalisation Total 72,632

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Mayne Pharma Group	MYX	2,984	Manufactures, develops and markets generic drugs, with operations in Australia and the USA	5%	95%	\$2.000
Sigma Pharmaceuticals	SIP	1,525	Pharmaceutical manufacturing and wholesaling	25%	90%	\$1.42
Nanosonics	NAN	1,009	Developing a novel disinfection technology, the first product is a point of care ultrasound probe disinfection unit	55%	157%	\$3.390
API	API	944	Pharmaceutical wholesaler	15%	27%	\$1.930
Impedimed	IPD	593	Markets products that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	68%	79%	\$1.585
Reva Medical	RVA	542	Developing the Fantom scaffold, its third version of a bioresorbable coronary stent	15%	59%	\$1.270
Mesoblast	MSB	427	Developing cellular medicines based on its proprietary mesenchymal lineage adult stem cells for high, unmet medical needs including advanced heart failure, chronic low back pain, acute graft versus host disease and inflammatory conditions such as biologic refractory rheumatoid arthritis.	4%	-65%	\$1.120
Airxanders	AXP	327	Design, manufacture and distributor of the Aeroform, a patient controlled tissue expander, for use in breast reconstruction after mastectomy	49%	91%	\$1.385
Medical Developments	MVP	310	Commercialising the Pentrox inhaler for temporary pain relief. Used widely in ambulances across Australia.	-13%	62%	\$5.320
Clinuvel Pharmaceuticals	CUV	289	Developing an analogue of the alpha-MSH protein, named Scenesse, as a photo-protective agent. Approved in Europe.	40%	118%	\$6.060

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
ResApp Health	RAP	289	Developing digital healthcare solutions to diagnose and manage respiratory conditions	32%	1253%	\$0.487
AFT Pharmaceuticals	AFP	281	Development and sales of pharmaceuticals in Australasia and Rest-of-World	-2%	0%	\$2.900
Starpharma Holdings	SPL	237	Developer of pharmaceutical and agricultural applications of chemical scaffolds known as 'dendrimers'	1%	-17%	\$0.650
Viralytics	VLA	220	Developing a cancer treatment based on the application of viruses (oncolytic virus technology)	-7%	55%	\$0.915
Bionomics	BNO	212	Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy.	54%	-7%	\$0.440
Somnomed	SOM	197	Markets oral devices for the treatment of sleep apnea and snoring.	-3%	51%	\$3.470
Polynovo	PNV	162	Developing novel polymer-based products for treating wounds and burns	4%	115%	\$0.290
pSiVida	PVA	140	Developing drug delivery technologies, with a special focus on ophthalmic applications	0%	-18%	\$4.100
Ellex Medical Lasers	ELX	132	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	21%	190%	\$1.160
OBJ	OBJ	122	Developing transdermal drug delivery technologies	-9%	27%	\$0.075
Innate Immunotherapeutics	IIL	111	Developing MIS416 to treat secondary progressive multiple sclerosis	27%	170%	\$0.500
Opthea	OPT	110	Developing OPT-302 to treat wet AMD (an eye disease)	47%	284%	\$0.730
Compumedics	CMP	108	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	75%	133%	\$0.640
SDI	SDI	108	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D	74%	56%	\$0.905
Clovercorp	CLV	99	Development and production of omega-3 food additives from tuna oil	64%	186%	\$0.600
Cogstate	CGS	99	Markets cognitive performance diagnostic products	14%	305%	\$0.890
Osprey Medical	OSP	98	Developing the AVERT system to limit the incidence of contrast induced nephropathy	73%	-45%	\$0.380
Vita Life Sciences	VSC	87	Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods	14%	51%	\$1.530
Neuren Pharmaceuticals	NEU	86	Developing neuroprotective therapeutics	-9%	-40%	\$0.050
Pharmaxis	PXS	84	Markets the lung function test, Aridol. Bronchitol is approved in Europe for the management of cystic fibrosis. Developing a suite of compounds from amine oxidase platform.	4%	15%	\$0.265
Prima Biomed	PRR	79	Development of cancer immuno-therapy company, based on targeting LAG-3.	-7%	-34%	\$0.038

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Medlab Clinical	MDC	78	Development, production and marketing of nutraceuticals	4%	159%	\$0.480
Dorsavi	DVL	73	Commercialising a wireless sensor movement monitoring system and products for use in the Elite Sports, OH&S and medical/physiotherapy markets	53%	78%	\$0.490
Cyclopharm	CYC	71	A nuclear medicine company that markets the Technegas lung imaging system	22%	122%	\$1.200
Admedus	AHZ	64	Diversified medical products group. Investor in Coridon, a vaccine technology company.	0%	-48%	\$0.325
Adherium	ADR	61	Commercialising the Smartinhaler range of devices that attach to prescription third-party inhalers, which improve compliance and efficacy	-28%		\$0.360
Volpara	VHT	60	Markets breast density assessment tools and analytics, for use with breast X-ray screening programs	10%		\$0.550
Anatara Life Sciences	ANR	59	Developing a natural antibiotic for the animal production industries	-5%		\$1.200
Anteo Diagnostics	ADO	57	Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices. Has acquired Belgian company,	25%	-47%	\$0.050
Oncosil Medical	OSL	56	Developing Oncosil, a brachytherapy for pancreatic cancer and liver cancer	-14%	-17%	\$0.120
Unilife Corporation	UNS	56	Developer of retractable syringes. Suspended from quotation.	-21%	-73%	\$0.055
Prana Biotechnology	PBT	55	Developing drugs to treat CNS diseases such as Alzheimer's and Parkinson's	5%	-19%	\$0.105
AcruX	ACR	55	Developer of the transdermal drug products Axiron, Evamist/Ellavie and Recuvyra	-54%	-42%	\$0.330
IDT Australia	IDT	55	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	-2%	-38%	\$0.220
Oventus	OVN	51	Developing an oral appliance to treat sleep apnea and snoring	42%		\$0.710
Universal Biosensors	UBI	51	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use	-9%	-16%	\$0.290
Paradigm Biopharm.	PAR	51	Development of existing approved drug, pentosan polysulphate sodium to treat bone marrow oedema and allergic rhinitis	66%	93%	\$0.580
Cynata Therapeutics	CYP	45	Stell cell technology company aiming to produce unlimited uniform, pharmaceutical grade MSCs from a single donor.	102%	47%	\$0.625
Novogen	NRT	45	Developing 'super' benzopyrans for the treatment of cancer	3%	-31%	\$0.100
Medibio	MEB	45	Commercialising a test for depression and anxiety	29%	-7%	\$0.420

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Genetic Signatures	GSS	42	Development and sale of molecular diagnostics(MDx) kits and products	-6%		\$0.500
Micro-X	MX1	42	Development of a mobile medical x-ray imager for hospitals, a version for deployed military use and a mobile security back-scatter imager	17%		\$0.350
Factor Therapeutics	FTT	39	Developing VF-001, for the treatment of venous leg ulcers and potentially to treat ocular conditions	59%	29%	\$0.054
Orthocell	OCC	39	Developing and marketing regenerative medicine products	48%	-36%	\$0.430
Phosphagenics	POH	39	Commercialising a platform technology (alpha-tocopherol) , for human and animal applications.	158%	121%	\$0.031
Living Cell Technologies	LCT	39	Developing cell therapies for diabetes, Parkinson's disease and Huntington's disease	5%	111%	\$0.078
Alcidion	ALC	39	Markets a health informatics platform, which incorporates an intelligent EMR, clinical decision support engine, data Integration capability, smartforms, terminology support and standards based web services	45%	0%	\$0.064
MMJ Phytotech	MMJ	36	Developing medical cannabis products	0%	-14%	\$0.245
Asian American Medical Group	AJJ	33	Manages liver treatment centres in Asia; expanding into radiation oncology	10%	29%	\$0.110
Avita Medical	AVH	33	Markets ReCell, a skin repair product	9%	22%	\$0.100
Regeneus	RGS	32	Commercialisation of autologous adipose derived stem cells and factors. Markets HiQCell for human use and CryoShot for veterinary use.	24%	35%	\$0.155
Vectus Biosystems	VBS	32	Developing an anti-fibrotic compound, VB0004, with applications in heart and kidney disease	-1%		\$1.350
Phylogica	PYC	30	Developing peptide compound libraries for use in human therapeutics	15%	25%	\$0.015
Cellmid	CDY	30	Developing therapies that target the midkine protein. Recently launched a range of hair loss products.	0%	14%	\$0.033
TBG Diagnostics	TDL	29	Formerly Progen Pharmaceuticals (PGL). Now focused on development of HLA SSA and SBT diagnostic kits and related services. To acquire 51% of RBC Biosciences.	18%	42%	\$0.235
USCOM	UCM	28	Marketing the Uscom non-invasive heart output function monitor, BP+ non-invasive central blood pressure product and digital ultrasonic spirometry products	2%	96%	\$0.255
Genetic Technologies	GTG	27	Markets Brevagen, a breast cancer risk prediction tool. Plans to divest its genetics business to Primary Health Care.	-16%	-6%	\$0.016
Actinogen Medical	ACW	27	Developing Xanamem for the treatment of dementia in Alzheimer's disease patients	-38%	-25%	\$0.045

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Medadvisor	MDR	27	Medication adherence software platform company	3%	15%	\$0.039
Holista Colltech	HCT	25	Extracts collagen from sheepskins and markets natural healthcare products.	-17%	3%	\$0.150
SUDA	SUD	25	Developing the anti-malarial product ArTiMist. Acquired drug delivery technology and suite of products in development from Novodel	10%	-19%	\$0.022
Respiri	RSH	25	Respiratory and pulmonary devices company. Recently launched Airsona, an ehealth product. Formerly iSonea.	61%	-11%	\$0.058
Dimerix	DXB	22	Developing a combination therapy, DMX200, to treat chronic kidney disease.	114%		\$0.015
Mach 7	M7T	22	Sale of enterprise imaging management platform, and 3D medical specific printing and holographic projection solutions	32%	-40%	\$0.049
LBT Innovations	LBT	22	Developer of innovative products which deliver productivity benefits across a range of life science settings	31%	81%	\$0.190
Probiotec	PBP	22	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	-16%	72%	\$0.430
Brain Resource Corp	BRC	22	Development and commercialisation of functional brain analysis techniques	7%	-26%	\$0.145
Genera Biosystems	GBI	21	Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health.	5%	-26%	\$0.210
Prescient Therapeutics	PTX	21	Developing compounds to treat various cancers	14%	43%	\$0.100
ITL	ITD	21	Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits.	39%	0%	\$0.230
Atcor Medical	ACG	20	Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system	-22%	-58%	\$0.098
Immuron	IMC	19	Sales and development of hyper-immune bovine colostrum products for therapeutic use	-2%	-46%	\$0.245
Adalta	1AD	19	Developing a protein drug, AD-114 for the treatment of idiopathic pulmonary fibrosis (IPF) and other human fibrotic diseases	-2%		\$0.245
Biotron	BIT	16	Developing compounds to treat HCV and HIV	-13%	-19%	\$0.052
Rhinomed	RNO	16	Developing nasal technologies with applications for sport performance, sleep and drug delivery	5%	-41%	\$0.020
Recce	RCE	15	Development of an antibiotic ("RECCE") as a cancer treatment	-20%		\$0.200

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Analytica	ALT	15.2	A medical devices company developing the Pericoach product to aid in the management of female urinary incontinence	40%	17%	\$0.007
Imugene	IMU	14	Developing a Her2 positive cancer vaccine technology	0%	-11%	\$0.008
Benitec Biopharma	BLT	13	R&D company focusing on gene silencing, specifically DNA delivered RNAi technology	-5%	-79%	\$0.092
Noxopharm	NOX	13	Developing a cancer treatment, NOX66, a formulation of idronoxil, which targets NADH oxidase 2.	-13%		\$0.175
Race Oncology	RAC	13	Completing the development of a chemotherapy drug, called Bisantrene, which was the subject of more than 40 phase II clinical studies during the 1980s and 1990s.	0%	-14%	\$0.245
Simavita	SVA	13	Commercialising an instrumented incontinence assessment device	2%	-89%	\$0.051
Resonance Health	RHT	12	Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels	82%	-11%	\$0.031
Jayex Healthcare	JHL	12	Commercialisation of the Enlighten patient workflow platform	-45%		\$0.080
Proteomics International	PIQ	12	Provider of protein chemistry analytical services. Seeking to commercialise a diabetic kidney disease diagnostic.	-11%	-6%	\$0.235
Botanix Pharmaceuticals	BOT	10	Developing BTX1503 for the treatment of acne. BT1503 combines synthetic cannabidiol with a transdermal drug delivery system, Permetrex.	100%		\$0.040
GI Dynamics	GID	9	Commercialising the Endobarrier, an implantable polymer liner for the management of obesity and diabetes	-17%	-43%	\$0.020
Cryosite	CTE	9	Provides specialised storage services, especially for umbilical cord blood	-5%	-33%	\$0.200
Allegra Orthopedics	AMT	9	A developer and manufacturer of prosthetic implants and medical devices.	-7%	-44%	\$0.140
Optiscan Imaging	OIL	8	Manufactures confocal microscopes for clinical diagnosis	50%	-39%	\$0.030
PharmAust	PAA	8	Manages Epichem, a drug discovery business. Also developing a veterinary anti-parasitic compound (PPL-1) as a human and animal cancer therapy.	-1%	-18%	\$0.082
Invitrocue	IVQ	7	Singapore-based analytical services company (life sciences). Listed through BUN.	15%	0%	\$0.070
Medical Australia	MLA	7	Manufacture and supply of medical devices and equipment.	17%	-4%	\$0.048
Antisense Therapeutics	ANP	6	Developing antisense compounds to treat multiple sclerosis and acromegaly	16%	-58%	\$0.036
Bluechiip	BCT	5	Development, manufacture and commercialisation of a tracking system for biological samples	18%	-16%	\$0.026

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Scigen	SIE	5	Developer and manufacturer of biopharmaceuticals. Company is based in Singapore and was spun out of Sonic Healthcare in 2002.	-10%	13%	\$0.009
Reproductive Health Sc.	RHS	5	Markets the pre-implantation IVF screening kit, EmbryoCollect	-44%	-50%	\$0.075
Invion	IVX	5	Evaluating Xtoll biologic for lupus and developing the drugs Nadalol and Zarfirukast for respiratory conditions	0%	-69%	\$0.004
StemCell United	SCU	5	Applies a proprietary stem cell technology to culture and grow plant extracts for use in Traditional Chinese Medicine	-32%	-92%	\$0.013
Patrys	PAB	4	Currently evaluating strategic collaborations and other complementary assets. Recently incensed two nucleus-penetrating antibodies, Deoxymabs 3E10 and 5C6	20%	-50%	\$0.006
Bioxyne	BXN	4	Sale and distribution of probiotics	-13%	100%	\$0.020
Avexa	AVX	3	Acquired Tali Health, a company focused on the diagnosis and treatment of children with intellectual disabilities (ex Monash Uni).	3%	-83%	\$0.031
Medigard	MGZ	3	Developed retractable syringe technology and other safety medical products.	-21%	0%	\$0.030
Memphasys	MEM	2	Developing a sperm separation technology, SpermSep. Name change from Nusep eff July 1, 16	-17%	-82%	\$0.005

Capitalisation Total 14,328

Listed Biotech Investment Funds or Companies

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/9/16
Biotech Capital	BTC	11	Actively seeking new investment opportunities in the life sciences sector.	0%	11%	\$0.105

Capitalisation Total 11

Capitalisation Total - All Indices 86,971

Removed: Agenix (AGX) [Change of Business]

How Bioshares Rates Stocks

For the purpose of valuation, Bioshares divides biotech stocks into two categories. The first group are stocks with existing positive cash flows or close to producing positive cash flows. The second group are stocks without near term positive cash flows, history of losses, or at early stages of commercialisation. In this second group, which are essentially speculative propositions, Bioshares grades them according to relative risk within that group, to better reflect the very large spread of risk within those stocks. For both groups, the rating “Take Profits” means that investors may re-weight their holding by selling between 25%-75% of a stock.

Group A

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

- Buy** CMP is 20% < Fair Value
- Accumulate** CMP is 10% < Fair Value
- Hold** Value = CMP
- Lighten** CMP is 10% > Fair Value
- Sell** CMP is 20% > Fair Value
(CMP–Current Market Price)

Group B

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

Speculative Buy – Class A

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

Speculative Buy – Class B

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

Speculative Buy – Class C

These stocks generally have one product in development and lack many external validation features.

Speculative Hold – Class A or B or C

Sell

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