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Companies covered: Quarterly Review,
ADR, AXP, LBT

	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 - May '17)	16.8%
Year 17 (May '17 - Current)	-2.6%
Cumulative Gain	738%
Av. Annual gain (14 yrs)	17.4%

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Bioshares

29 September 2017

Edition 715

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

Quarterly Review

Very Little Lustre for Biotechs in Q3 2017

A cooling of investment sentiment towards ASX-listed life science stocks was evident in decreases in the September quarter in both the *Bioshares* Index and the *Bioshares* Large Cap Index.

For the September quarter, the *Bioshares* Index recorded a 6.2% decrease and the *Bioshares* Large Cap Index a 2.6% decline. The indices were adjusted this quarter, with Sirtex Medical and Sigma Pharmaceuticals, both now with capitalisations of less than \$1 billion, being returned to the *Bioshares* Index, which is comprised of 127 stocks. Evidence of a distinct lack of lustre was to be observed in the 56% of stocks in the *Bioshares* Index which registered share price declines over the quarter.

The *Bioshares* Large Cap Index is made up of just five stocks: CSL (Cap'n – \$61 billion), Resmed (\$14 billion), Cochlear (\$9 billion), Blackmores (\$2 billion) and Mayne Pharma (\$1 billion).

CSL and Resmed experienced modest share price weakness, with both posting a 3% fall for the quarter. Cochlear was steady with a 2% gain. Blackmores surged higher with a 23% gain, however, Mayne Pharma shares slumped 39%.

Mayne Pharma, along with IDT Australia, has been impacted by intense competition amongst generic pharmaceutical companies operating in the USA, with Indian drug companies a key source of competition.

Although Blackmores reported a 42% drop in NPAT (to \$58 million) for FY2017, investors returned to the stock, breaking a long down trend in the stock, by responding to increased provisioning and measured expectations set about future performance.

CSL is currently trading on a price/earnings ratio of 34; Resmed, 33; Cochlear, 40; Blackmores, 33; and Mayne Pharma, 10.

One possible explanation for the sustained three quarters of growth of the Nasdaq Biotech Index (+7.6%) may be due to efforts by the new FDA Commissioner Scott Gottlieb to make drug development faster and more efficient, with positive clinical and commercial outcomes for new medical approaches such as CAR T also playing a role (see *Bioshares* 711).

Index Performance by Quarter (Change from previous Qtr)

	Q3 2016	Q4 2016	Q1 2017*	Q2 2017	Q3 2017 [^]
Bioshares Index	15.1%	-7.7%	2.4%	-13.9%	-6.2%
Nasdaq Biotech Index	12.4%	-8.4%	10.7%	5.7%	7.6%
Bioshares Large Cap Index	1.2%	-7.1%	19.1%	7.9%	-2.6%
ASX 300 Index	4.0%	4.0%	3.4%	-2.4%	-0.6%

*MYX and SIP included in Bioshares Large Cap Index from Q1 2017

[^]SRX and SIP moved back to Bioshares Index

Cont'd over

Bioshares Index – Top 10 Outperformers – Sept. Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 30/09/17
Patrys	PAB	15	300%	233%	\$0.020
Memphasys	MEM	2.1	200%	-40%	\$0.003
G Medical	GMV	132	153%		\$0.430
Invion	IVX	7.3	150%	25%	\$0.005
Botanix Pharmaceuticals	BOT	24	120%	10%	\$0.044
Cann Group	CAN	129	90%		\$1.190
Medical Australia	MLA	11	80%	73%	\$0.083
Starpharma Holdings	SPL	471	75%	96%	\$1.275
Bioxyne	BXN	15	71%	45%	\$0.029
Living Cell Technologies	LCT	103	64%	131%	\$0.180

Capital Raisings

ASX-listed life science companies raised \$127 million in capital during the September quarter, compared to \$225 million raised in the previous quarter.

The largest of these raisings was a rights issue conducted by Mesoblast which yielded \$51 million.

Osprey Medical raised \$22 million through a placement and \$10.3 million through a rights issue.

Neuren Pharmaceuticals completed an \$11.5 million placement, of which a \$10 million allocation was made by Lanstead Capital, which now has an 8.4% stake in the company. Lanstead invested \$1.5 million initially, with the balance of funds to follow in 18 monthly settlements. If the Neuren's share price falls below a reference price of 8.86 cents per share, then Neuren will receive less than its monthly payment, on a pro rata basis. The formula also applies in reverse: if Neuren's share price exceeds the reference price, then the company can receive more than 100% of its monthly settlement, on a pro rata basis.

One IPO was completed during the quarter, Sienna Diagnostics, which raised \$5 million. Its share price closed at \$0.14 at the end of the quarter, a 30% decrease from its offer price.

Outperformers

The stock to make the greatest share price gain for the September quarter was Patrys, which climbed 300% to close at \$0.02, although during the quarter reached a high of \$0.033, rising a spectacular 725% from a low of \$0.004.

Patrys announced positive pre-clinical data relating to its lead anti-cancer drug candidate PAT-DX1. This is a cell penetrating antibody which is a humanised version of the 3E10 antibody. PAT-DX1 works by binding to nuclear DNA (inside a cell) and interfering with DNA repair mechanisms, thereby stopping growth and replication of the cancer cells.

The settlement of a legal dispute enabled Memphasys' share price to be lifted from \$0.001 to \$0.003.

Bioshares Index - Top 10 Underperformers – Sept. Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 30/09/17
ResApp Health	RAP	40	-77%	-86%	\$0.067
StemCell United	SCU	10	-69%	92%	\$0.025
Innate Immuno-therap.	IIL	7.4	-47%	-93%	\$0.033
Compumedics	CMP	65	-43%	-43%	\$0.365
Immuron	IMC	22	-37%	-31%	\$0.170
Mesoblast	MSB	645	-34%	22%	\$1.370
pSiVida	PVA	61	-34%	-62%	\$1.560
Imagion Biosystems	IBX	26	-33%		\$0.130
AcruX	ACR	24	-33%	-56%	\$0.145
Dimerix	DXB	13	-30%	-53%	\$0.007

A relative newcomer to the ASX, G Medical, posted 153% increase for the quarter, aided by the signing of a commercial distribution agreement for China, and the receipt of FDA 510(k) clearance and CE Mark for its smartphone jacket.

Invion entered into an agreement with the CHO Group to become the ANZ distributor of a new generation photo dynamic therapy technology. Invion's shares closed the quarter up 150%, to finish at \$0.005.

Botanix Pharmaceuticals' rapid clinical development of its acne compound, BTX 1503, saw its share price locking in a 120% gain for the quarter. BTX 1503 successfully completed a Phase Ia safety study in healthy volunteers and has now progressed into a Phase Ib study in patients with acne.

Investors were drawn by a series of announcements from Starpharma, which recorded a gain for the quarter of 75%. Announcements included the results from Phase III trials of Vivagel for recurrent bacterial vaginosis, the completion of a Phase I study of DEP docetaxel, and the disclosure by licensee AstraZeneca of a drug target (BC12) against which a dendrimer construct, AZD0466, has been developed.

Underperformers

The failure of the US trial of ResApps smartphone respiratory diagnostic precipitated a 77% fall in that company's share price.

Gains made by Stem Cell United in relation to its appointment of a high profile medicinal cannabis entrepreneur, Nevil Schoenmakers, as a consultant earlier in the year had evaporated by the end of the quarter, when Schoenmakers terminated the agreement.

After losing 92% in the June quarter, shares of Innate Immunotherapeutics fell a further 47% in the September quarter, as further analysis of the company's unsuccessful Phase IIB trial of MIS416 failed to yield any additional information of use.

Capital Raisings by Australian-listed Biotech Companies Q3 2017

Company	Code	Investment Manager or Investor	Type of Raising	Funds Raised (\$M)
Mesoblast	MSB	Bell Potter Securities	Rights Issue	\$50.7
Osprey Medical	OSP	Canaccord Genuity/ Bell Potter Securities/ Evans and Partners	Placement	\$22.2
Osprey Medical	OSP		Rights Issue	\$10.3
Neuren Pharmaceuticals	NEU	Lanstead Capital/ Retttsyndrome.org	Placement	\$11.5
Polynovo	PNV	Kidder Williams/ Baillieu Holst	Placement	\$7.0
Prima Biomed	PRR	Maxim Group	Placement	\$6.5
Noxopharm	NOX		Placement	\$5.5
Bluechiip	BCT		Rights Issue	\$2.5
Bluechiip	BCT		Placement	\$0.9
Allegra Orthopaedics	AMT		Rights Issue	\$1.2
BARD1 Life Sciences	BD1		Placement	\$1.1
BARD1 Life Sciences	BD1		SPP	\$0.4
LBT Innovations	LBT		SPP	\$0.50
Allegra Orthopaedics	AMT		Placement (T1)	\$0.8
Oventus Medical	OVN		SPP	\$0.27
Recce	RCE	Lind Partners (Australian Special Opportunities Fund)	Convertible Notes	\$0.2
Sienna Diagnostics	SDX	Sequoia Corporate Finance	IPO	\$5.0
Total raised in Q3 2017				\$126.6
Total raised in Q2 2017				\$225.2
Total raised in Q1 2017				\$188.7
Total raised YTD 2017				\$540.6

Stock of the Week

AirXpanders Completes Manufacturing Transfer

AirXpanders (AXP: \$0.78) has reached a major milestone with the transfer of core manufacturing to Costa Rica.

The new facility has a production capacity four times that of the original facility in Palo Alto and will deliver manufacturing efficiencies.

The new line will also let the company overcome any potential capacity constraints, allowing a move to full commercial launch.

The facility, which has an annual capacity of up to 20,000 units of the company's AeroForm device used in breast reconstruction procedures, is now able to start supplying product said CEO Scott Dodson, for the US (and Australian) market, with inventory having been built that can now be used as finished goods. The existing facility in California will be maintained.

The Costa Rica facility is operated by a third-party contract manufacturer, MedPlast. MedPlast operates 15 manufacturing and assembly facilities, of which 10 are based in the US, and one in Costa Rica, Puerto Rico, Mexico, China, Germany and the UK.

The Costa Rica facility consists of four buildings that house 28 molding presses, a full tool room and tool makers, and an injection and insert molding capability.

It is FDA-registered with ISO 13 485 certification, and there are eight clean rooms with sterile packaging.

The average selling price of the AeroForm product is US\$2,720 which gives the new facility a potential annual production value of US\$54 million.

In the last quarter, the company sold 297 AeroForm devices (up 145% on the March quarter) and it has started work on installing a second line. The product was launched in Australia in 2015 and in the US only in January this year.

AirXpanders is capitalised at \$239 million, and holds funds estimated at US\$34 million.

Bioshares recommendation: **Speculative Buy Class A**

Stock on the Move

Adherium Shares Get Traction

Adherium's (ADR: \$0.13) share price has been in free fall until recently. The company listed on the ASX in 2015 at \$0.50 a share. The company's share price looks to have bottomed with a 46% jump in the last two weeks, and has returned to its cash backing of \$0.13 per share. The driver behind the increased interest in the stock is a change in management, which is based in California, and an expected acceleration in sales forecast by the company.

In June this year, Adherium appointed Arik Anderson as CEO who is based in San Mateo, California. This month, the company appointed Tim Marcotte as its new CFO who will also be based at the US headquarters. Marcotte has 35 years medical device experi-

ence along with CEO and COO experience. Anderson was formerly President of a surgical products division at Terumo Cardiovascular Systems which sold products into over 170 countries and a portfolio value of US\$300 million. Anderson's performance options are exercisable not at the company's current share price but at the IPO price of \$0.50.

In FY2018, Adherium expects revenue to increase by at least 150% from \$2.3 million to between \$5.7 - \$7.0 million. This will be driven by increased product sales to its partner AstraZeneca of at least 25,000 devices (SmartInhaler used to monitor asthma medication adherence), which is more than the 18,000 devices shipped in FY2017, around \$1 million in engineering and software support from AstraZeneca, with the aim being to expand Adherium technology's into other products beyond Symbicort, and selling the product to at least 2,300 patients in a direct-to-consumer sales approach in New Zealand and the US.

Adherium is capitalised at \$22 million.

Bioshares recommendation: **Speculative Buy Class A**

Stock Update

LBT Innovations' APAS Installed at First Hospital Site

LBT Innovations (LBT: \$0.315) has installed its first APAS Independence instrument in Melbourne, at St Vincent's Hospital. The site will be the first commercial hospital that will trial the product, which will be sold for around US\$300,000.

LBT is aiming to have several commercial sites operational over the next 12 - 18 months, which will serve as reference sites for other customers. While the instrument has shown a 98% sensitivity in detecting bacteria correctly on agar plates (compared to 96% with manual assessment) in a trial involving over 10,000 samples, its operational efficiencies will need to be confirmed in commercial settings (reference sites).

The company is preparing for sales to start in Australia in January, where LBT is the distributor. In Europe (and the US) the plan is to sell the product through distributors, with distribution discussions currently underway. Previously the company had planned to secure distribution arrangements by the end of Q1 FY1018.

LBT finished FY2017 with \$3.5 million in funds. Additional funds were raised in July through a share purchase plan (\$0.5 million) and \$4.35 million is expected to be received from R&D tax rebates.

The first instrument the company developed was the MicroStreak, which was sold through bioMerieux previously. Between 450 - 500 instruments were sold globally, with rights having been returned to LBT. The company has recently decided to write down intangible assets relating to MicroStreak, following a review of potential sale of licensing opportunities for this residual asset.

LBT Innovations is capitalised at \$45 million.

Bioshares recommendation: **Speculative Hold Class A**

Bioshares

Bioshares Model Portfolio (29 September 2017)

Company	Code	Price (current)	Price added to portfolio	Recommendation	Cap'n (\$M)	Date added
Clinuvel Pharmaceuticals	CUV	\$6.73	\$4.15	Spec Buy A	\$321	December 2014
Impedimed	IPD	\$0.795	\$0.245	Spec Hold A	\$299	December 2013
AirXpanders	AXP	\$0.830	\$0.745	Spec Buy A	\$239	September 2015
Bionomics	BNO	\$0.475	\$0.295	Spec Buy A	\$229	March 2016
Somnomed	SOM	\$3.85	\$0.94	Buy	\$223	January 2011
Viralytics	VLA	\$0.810	\$0.300	Spec Buy B	\$195	August 2013
Opthea	OPT	\$0.775	\$0.160	Spec Buy A	\$155	November 2014
Osprey Medical	OSP	\$0.420	\$0.695	Spec Buy B	\$137	September 2015
Pharmaxis	PXS	\$0.265	\$0.260	Spec Buy A	\$84	December 2016
Visioneering Technologies	VTI	\$0.410	\$0.435	Spec Buy A	\$81	March 2017
Volpara Health Technologies	VHT	\$0.640	\$0.375	Spec Buy B	\$71	June 2017
MediBio	MEB	\$0.440	\$0.395	Spec Buy A	\$66	September 2017
Dorsavi	DVL	\$0.285	\$0.480	Spec Buy B	\$48	December 2016
Micro-X	MX1	\$0.41	\$0.38	Spec Buy A	\$47	May 2017
AcruX	ACR	\$0.145	\$0.31	Spec Buy A	\$24	July 2017
Adalta	1AD	\$0.225	\$0.23	Spec Buy A	\$23	July 2017
Adherium	ADR	\$0.130	\$0.495	Spec Buy A	\$22	May 2016
Rhinomed	RNO	\$0.160	\$0.320	Spec Buy B	\$15	December 2015

Portfolio Changes – 29 September 2017

IN:
No changes

OUT:
No changes

Correction: The price at which MEB was added to the portfolio last week was incorrectly shown as \$0.04. The correct figure is \$0.395

Selected Clinical Trial Developments - Q3 2017

Company	Code	Product/Therapeutic	Event
AFT Pharmaceuticals	AFP	Maxigesic (IV) (post-operative pain)	Closed 276 pt, Phase III study of Maxigesic (IV-intravenous), results expected end October.
Biotron	BIT	BIT225 (HIV)	Announced full recruitment in Phase II trial of BIT225 in combination with cART (combination antiretroviral therapy). 36 pts.
Botanix Pharmaceuticals	BOT	BTX1503 (synthetic cannabidiol) (acne)	Commenced 20 pt, Phase Ib study, in pts with acne, with treatment to be administered over a four week period
Cyclopharn	CYC	Technegas (lung imaging agent - structural ventilation)	Enrolled first 2 pts in Phase III, 240 pt non-inferiority study
Factor Therapeutics	FTT	VF001-DP (wound healing, venous leg ulcers)	As of July 7, stated 280 pts pre-screened and 450 pt visits completed (in 168 pt trial), with full enrolment targeted for this year. [~40 enrolled as of July 7]
Immuron	IMC	IMM-124E (NASH)	Reported interim results for 80 of 122 pts. IMM-124E was well tolerated. There was no stat. signif. difference between groups for change in ALT levels
Mesoblast	MSB	MPC-150-IM (allogeneic mesenchymal precursor stem cells) (end stage heart failure)	Completed enrolment in 159 pt Phase IIb trial of MPC-150-IM [150 million cells dose]
Orthocell	OCC	Celgro (collagen membrane) (treatment of cartilage defects, hip joints)	Reported positive safety and tolerability for first 3 pts in 25 pt trial
Oncosil Medical	OSL	Oncosil (targeted radioactive isotope - Phosphorus32) (pancreatic cancer)	Announced 10 subjects implanted, of 23 recruited
Pharmaxis	PXS	B11467335 (NASH)	Drug asset acquiree Boehringer Ingelheim initiated Phase IIa trial, 150 pt trial
Pharmaxis	PXS	B11467335 (diabetic retinopathy)	Drug asset acquiree Boehringer Ingelheim initiated Phase IIa trial, 100 pt trial
Starpharma	SPL	VivaGel (SPL7013) (prevention of recurrence of bacterial vaginosis (BV))	Announced results of two Phase III trials: the rate of recurrence of BV reported for the US trial was 44.2% for Vivagel treated subjects and 54.3% for the placebo group (p=0.015), conferring a relative benefit of 18%. The rate of recurrence reported for the European trial was 15.7% for Vivagel treated subjects and 22.6% for the placebo group (p=0.027)
Starpharma	SPL	DEP docetaxel (advanced solid cancers)	Announced results of 27 pt Phase I trial; achieved objective of determining recommended Phase II dose; no neutropenia and also almost no hair loss observed

The ASX-Listed Life Sciences Sector
September 30, 2017: Capitalisation \$97.8 billion, 133 companies

Bioshares Large Cap. Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
CSL	CSL	60,581	Manufactures pharmaceutical products including vaccines and human plasma fractions	-3%	25%	\$133.96
Resmed Inc.	RMD	13,848	Manufactures diagnostic and treatment equipment for sleeping disordered breathing	-3%	15%	\$9.74
Cochlear	COH	9,161	Manufactures cochlear hearing implants	2%	13%	\$159.21
Blackmores	BKL	2,033	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	23%	1%	\$118.000
Mayne Pharma Group	MYX	1,012	Manufactures, develops and markets generic drugs, with operations in Australia and the USA	-39%	-67%	\$0.660

Capitalisation Total 86,634

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Sigma Pharmaceuticals	SIG	878	Pharmaceutical manufacturing and wholesaling	-8%	-42%	\$0.825
Nanosonics	NAN	781	Developing a novel disinfection technology, the first product is a point of care ultrasound probe disinfection unit, branded Trophon EPR	3%	-23%	\$2.610
Sirtex Medical	SRX	742	Sale and manufacture of radioactive particles to irradiate tumours in the liver	-18%	-58%	\$13.360
API	API	730	Pharmaceutical wholesaler	-22%	-23%	\$1.490
Mesoblast	MSB	645	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.	-34%	22%	\$1.370
Starpharma Holdings	SPL	471	Developer of pharmaceutical chemical scaffolds known as 'dendrimers'	75%	96%	\$1.275
Clinuvel Pharmaceuticals	CUV	321	Markets an analogue of the alpha-MSH protein, named Scenesse, as a photo-protective agent. Approved in Europe.	-4%	11%	\$6.730
Reva Medical	RVA	306	Developing the Fantom scaffold, its third version of a bioresorbable coronary stent	-13%	-41%	\$0.745
Medical Developments	MVP	305	Commercialising the Pentrox inhaler for temporary pain relief. Used widely in ambulances across Australia.	4%	-3%	\$5.170
Impedimed	IPD	299	Markets products that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	5%	-50%	\$0.795
Bionomics	BNO	229	Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy.	19%	8%	\$0.475
AirXpanders	AXP	223	Design, manufacture and distributor of the Aeroform, a patient controlled tissue expander, for use in breast reconstruction after mastectomy	20%	-44%	\$0.775

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Somnomed	SOM	223	Markets oral devices for the treatment of sleep apnea and snoring.	26%	11%	\$3.850
AFT Pharmaceuticals	AFP	219	Development and sale of pharmaceuticals in Australasia and Rest-of-World	-24%	-22%	\$2.250
Viralytics	VLA	195	Developing a cancer treatment based on the application of viruses (oncolytic virus technology)	-16%	-11%	\$0.810
Polynovo	PNV	166	Developing novel polymer-based products for treating wounds and burns	33%	-3%	\$0.280
Neuren Pharmaceuticals	NEU	153	Developing neuroprotective therapeutics	13%	54%	\$0.077
Opthea	OPT	144	Developing OPT-302 to treat wet AMD (an eye disease)	-4%	-1%	\$0.720
Osprey Medical	OSP	143	Markets DYEVERT, a device which reduces the amount of dye needed in imaging procedures	5%	11%	\$0.420
G Medical	GMV	132	Developing next generation mobile health and e-health devices, and cloud and medical call centres	153%		\$0.430
Ellex Medical Lasers	ELX	132	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	2%	-6%	\$1.090
Cann Group	CAN	129	Medicinal cannabis company focused on the breeding, cultivation and production stages	90%		\$1.190
Medlab Clinical	MDC	128	Development, production and marketing of nutraceuticals. Also developing cannabis product to treat cancer patients with intractable pain.	-16%	49%	\$0.715
Auscann Group Holdings	AC8	125	Developing medical cannabis products for the Australian market	8%		\$0.460
Cogstate	CGS	106	Markets cognitive performance diagnostic products	-18%	6%	\$0.940
Living Cell Technologies	LCT	103	Developing cell therapies for diabetes, Parkinson's disease and Huntington's disease	64%	131%	\$0.180
Phylogica	PYC	85	Developing peptide compound libraries for use in human therapeutics	-7%	167%	\$0.040
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.	6%	0%	\$0.265
Visioneering Technologies	VTI	79	Markets a next-generation contact lens	-4%		\$0.410
Clovercorp	CLV	74	Development and production of omega-3 food additives from tuna oil	1%	-26%	\$0.445
Volpara	VHT	71	Markets breast density assessment tools and analytics, for use with breast X-ray screening programs	28%	16%	\$0.640
MMJ Phytotech	MMJ	69	Developing medical cannabis products	2%	35%	\$0.330
OBJ	OBJ	69	Developing transdermal drug delivery technologies	-19%	-48%	\$0.039
Medibio	MEB	69	Commercialising a test for depression and anxiety	22%	5%	\$0.440
SDI	SDI	68	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D	-1%	-36%	\$0.575
Admedus	AHZ	66	Diversified medical products group. Markets Cardiocel, a bio-scaffold and is also developing a HSV-2 vaccine.	-2%	-20%	\$0.260

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Universal Biosensors	UBI	65	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use	-11%	28%	\$0.370
Anatara Life Sciences	ANR	65	Developing a natural antibiotic for the animal production industries	31%	9%	\$1.310
Compumedics	CMP	65	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	-43%	-43%	\$0.365
pSiVida	PVA	61	Developing drug delivery technologies, with a special focus on ophthalmic applications	-34%	-62%	\$1.560
Prima Biomed	PRR	61	Development of cancer immuno-therapy company, based on targeting LAG-3.	-7%	-32%	\$0.026
Cynata Therapeutics	CYP	59	Stell cell technology company aiming to produce unlimited uniform, pharmaceutical grade MSCs from a single donor.	7%	5%	\$0.655
Oncosil Medical	OSL	56	Developing Oncosil, a brachytherapy for pancreatic cancer and liver cancer	19%	-4%	\$0.115
Vita Life Sciences	VLS	53	Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods	-10%	-38%	\$0.950
Zelda Therapeutics	ZLD	52	A medical cannabis company researching treatments for cancer, dermatological indications and for sleep disorders	-7%		\$0.069
Cyclopharm	CYC	52	A nuclear medicine company that markets the Technegas lung imaging system	-9%	-38%	\$0.750
Dorsavi	DVL	48	Commercialising a wireless sensor movement monitoring system and products for use in the Elite Sports, OH&S and medical/physiotherapy markets	-2%	-42%	\$0.285
Micro-X	MX1	47	Development of a mobile medical x-ray imager for hospitals, a version for deployed military use and a mobile security back-scatter imager	-12%	16%	\$0.405
Creso Pharma	CPH	47	A developer of medical cannabis therapies. Headquartered in Zug, Switzerland. Acquired Hemp Industries, which grows hemp in Slovakia.	-8%		\$0.515
LBT Innovations	LBT	44	Developer of innovative products which deliver productivity benefits across a range of life science settings	24%	66%	\$0.315
Avita Medical	AVH	42	Markets ReCell, a skin repair product	-14%	-34%	\$0.066
Factor Therapeutics	FTT	41	Developing VF-001, for the treatment of venous leg ulcers and potentially to treat ocular conditions	-10%	4%	\$0.056
MGC Pharmaceuticals	MXC	41	A medical and cosmetic cannabis company with growing operations in Slovenia. Acquired Czech company Panax Pharma.	-13%	-5%	\$0.040
Genetic Signatures	GSS	41	Development and sale of molecular diagnostics(MDx) kits and products	0%	-22%	\$0.390
ResApp Health	RAP	40	Developing digital healthcare solutions to diagnose and manage respiratory conditions	-77%	-86%	\$0.067
Invitrocue	IVQ	38	Singapore-based analytical services company (life sciences). Listed through BUN.	42%	21%	\$0.085
ITL	ITD	38	Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits.	-24%	72%	\$0.395
Optiscan Imaging	OIL	38	Manufactures confocal microscopes for clinical diagnosis	2%	233%	\$0.100

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Imugene	IMU	36	Developing a Her2 positive cancer vaccine technology	7%	88%	\$0.015
Oventus	OVN	35	Developing an oral appliance to treat sleep apnea and snoring	15%	-46%	\$0.380
Actinogen Medical	ACW	35	Developing Xanamem for the treatment of dementia in Alzheimer's disease patients	-8%	24%	\$0.056
Medadvisor	MDR	33	Medication adherence software platform company	9%	-10%	\$0.035
Alcidion	ALC	32	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	-25%	-19%	\$0.052
Paradigm Biopharm.	PAR	32	Development of existing approved drug, pentosan polysulphate sodium to treat bone marrow oedema and allergic rhinitis	7%	-47%	\$0.310
Regeneus	RGS	31	Commercialisation of autologous adipose derived stem cells and factors. Markets HiQCell for human use and CryoShot for veterinary use.	30%	-3%	\$0.150
Asian American Medical Group	AJJ	31	Manages liver treatment centres in Asia; expanding into radiation oncology	5%	-5%	\$0.105
Orthocell	OCC	31	Developing and marketing regenerative medicine products	-15%	-29%	\$0.305
Prana Biotechnology	PBT	30	Developing drugs to treat CNS diseases such as Alzheimer's and Parkinson's	10%	-47%	\$0.056
Vectus Biosystems	VBS	29	Developing an anti-fibrotic compound, VB0004, with applications in heart and kidney disease	-11%	-7%	\$1.250
Benitec Biopharma	BLT	29	R&D company focusing on gene silencing, specifically DNA delivered RNAi technology	12%	52%	\$0.140
Probiotec	PBP	28	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	30%	30%	\$0.560
The Hydroponics Co.	THC	28	A medicinal cannabis company formed through the acquisition of Canndeo, an off-shoot of Agri Fibre Industries	-8%		\$0.270
Scigen	SIE	28	Singapore based developer and manufacturer of biopharmaceuticals, including human growth hormone, human insulin and human GCSF	-29%	456%	\$0.050
Race Oncology	RAC	27	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.	51%	39%	\$0.340
Cellmid	CDY	27	Developing therapies that target the midkine protein. Recently launched a range of hair loss products through Advangen subsidiary.	0%	-24%	\$0.025
Noxopharm	NOX	27	Developing a cancer treatment, NOX66, a formulation of idronoxil, which targets NADH oxidase 2.	-14%	80%	\$0.315
Imagion	IBX	26	Developing MagSense, a diagnostic technology which exploits the principles of superparamagnetic relaxometry	-33%		\$0.130
GI Dynamics	GID	26	Commercialising the Endobarrier, an implantable polymer liner for the management of obesity and diabetes	-26%	130%	\$0.046
SUDA	SUD	26	Developing drugs for oro-mucosal administration	11%	-5%	\$0.021

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Acrux	ACR	24	Developer of the transdermal drug products Axiron, Evamist/Ellavie and Recuvyra	-33%	-56%	\$0.145
TBG Diagnostics	TDL	24	Development of HLA SSA and SBT diagnostic kits and related services	-27%	-53%	\$0.110
Botanix Pharmaceuticals	BOT	24	Developing BTX1503 for the treatment of acne. BTX1503 combines synthetic cannabidiol with a transdermal drug delivery system, Permetrex.	120%	10%	\$0.044
Adherium	ADR	22	Commercialising the Smartinhaler range of devices that attach to prescription third-party inhalers, which improve compliance and efficacy	-4%	-64%	\$0.130
Neurotech International	NTI	22	Development and sales of Mente (and platform), a treatment for improving behaviours of people with autism and other neurological conditions	0%		\$0.250
Immuron	IMC	22	Sales and development of hyper-immune bovine colostrum products for therapeutic use	-37%	-31%	\$0.170
Sienna Cancer Diagnostics	SDI	22	Development and sale of an in vitro diagnostic, SCD-A7, as an adjunct to urine cytology, in the field of bladder cancer detection and diagnosis	-30%		\$0.140
IDT Australia	IDT	21	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	-21%	-62%	\$0.083
Novogen	NRT	19	Developing 'super' benzopyrans for the treatment of cancer	-20%	-60%	\$0.040
USCOM	UCM	19	Marketing the Uscom non-invasive heart output function monitor, BP+ non-invasive central blood pressure product and digital ultrasonic spirometry products	-11%	-33%	\$0.170
Phosphagenics	POH	19	Commercialising a platform technology (alpha-tocopherol) , for human and animal applications.	-21%	-52%	\$0.015
Mach 7	M7T	19	Sale of enterprise imaging management platform, and 3D medical specific printing and holographic projection solutions. Completed share consolidation, 10:1	-9%	-67%	\$0.160
Holista Colltech	HCT	18	Extracts collagen from sheepskins and markets natural healthcare products.	-5%	-33%	\$0.100
Adalta	1AD	17	Developing AD-114 for the treatment of idiopathic pulmonary fibrosis (IPF) and other human fibrotic diseases	-20%	-8%	\$0.225
Genetic Technologies	GTG	17	Markets Brevagen, a breast cancer risk prediction tool	0%	-56%	\$0.007
eSense Health	ESE	17	Specialises in phytochemical profiling of plants to develop and reverse engineer terpenes for medical and other applications	-5%		\$0.270
Anteo Diagnostics	ADO	16	Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices. Has divested Belgian company, DIAsource Immunoassays.	-13%	-72%	\$0.014
Recce	RCE	16	Development of an antibiotic ("RECCE") as a cancer treatment	-5%	-3%	\$0.195
Respiri	RSH	15	Respiratory and pulmonary devices company. Markets Airsona, an ehealth product.	-19%	-40%	\$0.035
Rhinomed	RNO	15	Developing nasal technologies with applications for sport performance, sleep and drug delivery, Capital reconstruction 10:1 to occur.	-14%	-20%	\$0.160
Patrys	PAB	15	Currently evaluating strategic collaborations and other complementary assets. Recently inlicensed two nucleus-penetrating antibodies, Deoxymabs 3E10 and 5C6	300%	233%	\$0.020

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Bioxyne	BXN	15	Sale and distribution of probiotics	71%	45%	\$0.029
Genera Biosystems	GBI	14	Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health.	4%	-36%	\$0.135
Allegra Orthopedics	AMT	13	A developer and manufacturer of prosthetic implants and medical devices.	-12%	7%	\$0.150
Dimerix	DXB	13	Developing a combination therapy, DMX200, to treat chronic kidney disease. 1:20 share consolidation to occur in October	-30%	-53%	\$0.007
Analytica	ALT	13	Developing the Pericoach product to aid in the management of female urinary incontinence	0%	-29%	\$0.005
Bluechiip	BCT	13	Development, manufacture and commercialisation of a tracking system for biological samples	18%	27%	\$0.033
RHS	RHS	13	Markets the pre-implantation IVF screening kit, EmbryoCollect	-10%	87%	\$0.140
Prescient Therapeutics	PTX	12	Developing compounds to treat various cancers	13%	-41%	\$0.059
Proteomics International	PIQ	12	Provider of protein chemistry analytical services. Seeking to commercialise a diabetic kidney disease diagnostic.	29%	-15%	\$0.200
Medical Australia	MLA	11	Manufacture and supply of medical devices and equipment. Being acquired by ICU Medical, a US company, by scheme of arrangement	80%	73%	\$0.083
Brain Resource Corp	BRC	10	Development and commercialisation of functional brain analysis techniques	-14%	-59%	\$0.060
Lifespot Health	LSH	10	Acquired Lifespot AG, which has been developing a system for the diagnosis and evaluation of skin diseases, and BodyTel AG, which has been developing a system for the	-24%		\$0.130
StemCell United	SCU	10	Applies a proprietary stem cell technology to culture and grow plant extracts for use in Traditional Chinese Medicine. Intends to cooperate with iCAN Israel Cannabis.	-69%	92%	\$0.025
Atcor Medical	ACG	8	Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system	-17%	-70%	\$0.029
Simavita	SVA	8	Commercialising an instrumented incontinence assessment device	-4%	-49%	\$0.026
Resonance Health	RHT	8	Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels	-21%	-39%	\$0.019
Biotron	BIT	7.5	Developing compounds to treat HCV and HIV	-5%	-63%	\$0.019
Innate Immunotherapeutics	IIL	7.4	Assessing its options following the failure of MIS416 in a Phase II clinical trial	-47%	-93%	\$0.033
PharmAust	PAA	7.3	Manages Epichem, a drug discovery business. Also developing a veterinary anti-parasitic compound (PPL-1) as a human and animal cancer therapy.	-18%	-39%	\$0.050
Invion	IVX	7.3	Seeking to partner assets including INV102, INV103 and INV104	150%	25%	\$0.005
Novita Healthcare	NHL	6.6	Formerly Avexa. Acquired Tali Health, a company focused on the diagnosis and treatment of children with intellectual disabilities (ex Monash Uni).	10%	3%	\$0.032
Cryosite	CTE	6.1	Provides specialised storage services, especially for umbilical cord blood	-19%	-35%	\$0.130

Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Antisense Therapeutics	ANP	6.0	Developing antisense compounds to treat multiple sclerosis and Duchenne Muscular Dystrophy	12%	3%	\$0.037
BARD1 Life Sciences	BD1	5.9	Developing cancer diagnostics and therapies. Lead program is the BARD1 lung cancer test. Acquired Swiss company BARD1AG.	-20%	-73%	\$0.008
Jayex Healthcare	JHL	3.5	Commercialisation of the Enlighten patient workflow platform	0%	-71%	\$0.023
Memphasys	MEM	2.1	Developing a sperm separation technology, SpermSep. Formerly NuSep.	200%	-40%	\$0.003
Medigard	MGZ	1.3	Developed retractable syringe technology and other safety medical products.	27%	-53%	\$0.014

Capitalisation Total 11,126

Listed Biotech Investment Funds or Companies

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/09/17
Biotech Capital (t/a BTC Health)	BTC	25	Provides capital and management expertise to high-growth Australian biotech, medtech and pharmaceutical companies	22%	11%	\$0.195

Capitalisation Total 25

Capitalisation Total - All Indices 97,784

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

Corporate Subscribers: Cogstate, Bionomics, Impedimed, LBT Innovations*, Viralytics, Opthea, RHS, Innate Immunotherapeutics, Anantara Life Sciences, ResApp, Pharmaxis, Starpharma, Dimerix, Cyclopharm, Adalta, Immuron, Medibio, Phylogica
*LBT was inadvertently deleted from this list from edition 688 onwards

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