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# Bioshares

1 July 2019  
Edition 798

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

Companies covered: **Quarterly Review**,  
**BNO**

	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 - May '18)	-7.1%
Year 18 (May '18 - May '19)	-2.3%
Year 19 (May '19 - Current)	0.8%
<b>Cumulative Gain</b>	<b>687%</b>
<b>Av. Annual gain (18 yrs)</b>	<b>16.0%</b>

Bioshares is published by Blake Industry & Market Analysis Pty Ltd.

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Individual Subscriptions (48 issues/year)  
**\$500** (Inc.GST)  
Edition Number 798 (1 July 2019)

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## Quarterly Review

### **Bioshares Index up 21% in June Quarter**

The **Bioshares Index** posted a strong gain in the June quarter, rising by 20.9% from the previous quarter.

Gains by Nanosonics (+28.9%), Clinuvel Pharmaceuticals (+37.5%), Polynovo (+105.3%), Avita Medical (+47.4%) and new listing Next Science (+311% from its \$1 offer price), accounted for 18 percentage points of the 20.9% gain in the quarter.

The Bioshares Index, which comprises 120 life science stocks, outperformed the **Bioshares Large Cap Index**, which increased 12% for the quarter.

The Bioshares Index also outperformed the ASX 300 Index, which rose by 7.2% for the quarter.

CSL shares rose 10%, with the company finishing the quarter with a capitalisation of \$97 billion. Both Resmed's and Cochlear's shares increased by 19% for the quarter, Blackmores backtracked by 3% and Mayne Pharma stock slumped by 27%.

Investment sentiment towards botanical and medicinal stocks softened in the June quarter, with the **Bioshares Botanical Index** (18 stocks) registering a 2.6% gain.

The **Nasdaq Biotech Index** slipped, somewhat uncharacteristically, by 2.4% in the March quarter. This decrease followed a robust 15.4% gain in the March quarter. An estimated 22 life science companies IPO'd on the Nasdaq in the June quarter (raising US\$2 billion), compared to an estimated 11 companies pricing IPOs in the previous quarter (raising US\$700 million). Some of the weakness in biotech investment sentiment in the June quarter in the USA could be attributed to investors facing an excess of supply of new opportunities.

### Capital Raisings

The funding tap for ASX biotechs was opened wide in the June quarter, with some impressive capital raisings completed. Paradigm Biopharmaceuticals' \$77.8 million capital raise accounted for 25% of the \$308.5 million raised during the quarter. Elixinol Global raised \$50 million (after raising \$40 million in September 2018 and completing a \$20 million IPO in January 2018.) Volpara Health Technologies raised \$45 million through a placement, with a further \$10 million from a rights issue flowing through in this quarter. A single IPO was completed, with Next Science raising \$35 million.

### Index Performance by Quarter (Change from previous Qtr)

	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019
Bioshares Index	0.4%	8.3%	-19.5%	16.2%	20.9%
Bioshares Large Cap Index	20.5%	5.6%	-7.5%	1.4%	12.0%
Bioshares Botanicals Index	-1.9%	-5.2%	-20.3%	17.3%	2.6%
<b>Nasdaq Biotech Index</b>	<b>2.8%</b>	<b>11.2%</b>	<b>-20.6%</b>	<b>15.4%</b>	<b>-2.4%</b>
ASX 300 Index	7.5%	-0.2%	-8.8%	9.5%	7.2%

## Bioshares Index – Top 10 Outperformers – June Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 28/6/19
Next Science	NXS	738	311.0%		\$4.110
Orthocell	OCC	56	264.3%	59.4%	\$0.510
Mach 7 Technologies	M7T	71	156.8%	126.2%	\$0.475
ResApp Health	RAP	135	126.7%	44.4%	\$0.195
Polynovo	PNV	1,018	105.3%	187.9%	\$1.540
Alcidion	ALC	76	92.3%	140.4%	\$0.125
BARD1 Life Sciences	BD1	40	81.3%	107.1%	\$0.029
Botanix Pharmaceuticals	BOT	139	56.5%	63.6%	\$0.180
LBT Innovations	LBT	23	51.3%	0.0%	\$0.115
Lifespot Health	LSH	6	48.1%	-30.4%	\$0.080

## Outperformers

The best performing stock in the **Bioshares Index** in the March quarter was newcomer **Next Science**, which recorded a 311% gain from its IPO price of \$1.00. Next Science has developed an anti-bacterial product that combines benzalkonium chloride with other agents. The company has several agreements in place for the selling of two products, Bactisure and BlastX. (See *Bioshares* 785 for our IPO Profile of Next Science.) The company's capitalisation of \$738 million is now embedded with very high expectations for sales growth and market development.

Regenerative technologies company **Orthocell** saw its shares appreciate 264% for the quarter. The company's release of positive news for four patients from a long running clinical trial of its collagen medical device, CelGro, for use in nerve regeneration, was followed by a \$10 million capital raising. Fifteen patients have now been treated from a total of 20 planned. The company said that the patients "regained muscle function and/or sensation of affected limbs and have commenced return to work, sport and activities of daily living following CelGro nerve regeneration treatment."

**Mach7 Technologies** reported a 19% growth in sales orders in the March quarter, along with recording its highest ever quarter for cash receipts. These positive financial trends, coupled to board and management changes over H1 2019, contributed to a 157% increase in shares of M7T over the quarter.

**ResApp Health** shares staged a comeback in the June quarter, increasing by 127% from the previous quarter. Key share price drivers in the quarter were the company's submission of a de novo 510(k) submission for its Smartcough smart phone diagnostic aid for paediatric respiratory conditions, journal publications, initiation of a wearable devices development program and the release of further data from clinical trials.

**Polynovo** shares increased by 105% during the quarter. The company manufactures bio-resorbable polymers which can be applied to burn treatment. The company's reporting of strong monthly sales figures helped drive the share price. The company also conducted a roadshow in New York, had seven papers and posters presented at the American Burn Association meeting and participated in the Macquarie Emerging Leaders Forum in Melbourne.

## Bioshares Index – Bottom 10 Underperformers – June Quarter

Company	Code	Cap. \$m	Change - Quarter	Change - Year	Price 28/6/19
Actinogen Medical	ACW	11	-81.5%	-79.2%	\$0.010
Bionomics	BNO	17	-74.4%	-94.0%	\$0.032
Benitec Biopharma	BLT	15	-54.4%	-57.8%	\$0.057
Anatara Life Sciences	ANR	13	-48.0%	-59.8%	\$0.255
Medibio	MEB	2	-47.1%	-93.3%	\$0.009
Impedimed	IPD	44	-46.5%	-70.9%	\$0.115
Immuron	IMC	17	-44.2%	-64.7%	\$0.120
Osprey Medical	OSP	33	-43.0%	-48.7%	\$0.077
Novita Healthcare	NHL	4	-40.0%	-65.7%	\$0.012
Race Oncology	RAC	4	-39.1%	-74.8%	\$0.053

## Underperformers

**Actinogen Medical's** shares were sold off (an -81.5% quarterly decline) following the release of negative results of its Phase II trial of Xanamem in Alzheimer's disease patients. The company is continuing its exploration of higher doses of Xanamem in addition to conducting a target occupancy study of the drug candidate.

**Bionomics** suffered a further setback with its BNC210 program, resulting in a 74.4% share price decline. Late in the quarter, the company said that its trial of BNC210 in elderly patients with agitation showed BNC210 did not differentiate from placebo on both primary and secondary endpoints. The company is continuing with the development of a solid dose formulation of BNC210 which it believes will overcome the drug's problem of inadequate exposure in circulation. The company is also maintaining a focus on evaluating the reformulated drug in PTSD. In our view the company would be better placed to evaluate a reformulated BNC210 in patients with far more homogeneity and in areas where BNC210 has already been shown to have some effect, such as anxiety or depression. (*Bioshares* recommendation: **Sell**)

**Benitec Biopharma's** shares lost 54.5% over the quarter, with the termination of the company's agreement with Axovant Sciences for the development of AXO-AAV-OPMD (Oculopharyngeal Muscular Dystrophy). Reasons for the handback were not provided, but a possible reason is that the adeno-associated virus (AAV) vector lacked the capability to insinuate the gene therapy (construct) in the target tissue. The company said that it is conducting analysis to "potentially improve the biological efficacy of the compound via further optimisation of the proprietary delivery method employed to dose the target tissue."

**Anatara Life Sciences** was another company whose share price suffered from licensing termination during the quarter. Anatara's shares fell by 48%, which was precipitated by global animal health products company Zoetis' decision to hand back Detach. Zoetis held a worldwide exclusive license for Detach for use in horses and livestock. Detach was approved by the Australian Pesticides and Veterinary Medicines Authority as an aid in managing diarrhoea in piglets. Anatara's main focus now is the development of a dietary supplement for gastro-intestinal conditions.

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**Capital Raisings by Australian-listed Biotech Companies Q2 2019**

Company	Code	Investment Manager or Investor	Type of Raising	Funds Raised (\$M)
Paradigm Biopharmaceuticals	PAR	Bell Potter	Placement	\$51.5
Paradigm Biopharmaceuticals	PAR	Bell Potter	Rights Issue	\$26.3
Eixinol Global	EXL	Bell Potter	Placement	\$50.0
Volpara Health Technologies	VHT	Bell Potter / Morgans Corporate	Placement	\$45.0
Orthocell	OCC	Bell Potter	Placement	\$10.6
BTC Health	BTC	Sigma Healthcare	Placement	\$8.0
Adalta	1AD	Aurenda Partners / Bell Potter	Rights Issue	\$2.0
Adalta	1AD	Aurenda Partners / Bell Potter	Placement	\$5.0
BARD1 Life Sciences	BD1	Merchant Opportunities Fund	Placement	\$5.0
LBT Innovations	LBT	Hawkesbury Partners	Placement	\$5.0
Total Brain	TTB	Blue Ocean Equities	Placement (T2)	\$1.0
Total Brain	TTB	Blue Ocean Equities	Rights Issue	\$1.9
Total Brain	TTB	Blue Ocean Equities	Conditional Placement	\$1.3
Memphasys	MEM	Patersons Securities	Rights Issue	\$3.6
SUDA Pharmaceuticals	SUD		Rights Issue	\$3.4
THC Global	THC		SPP	\$3.0
Anteo Diagnostics	ADO		Rights Issue	\$2.6
Prescient Therapeutics	PTX	Bell Potter / Aurenda Securities	Rights Issue	\$2.1
Pharmaust	PAA	Alto Capital	Rights Issue	\$2.0
Optiscan Imaging	OIL	Paterson Securities	Placement	\$1.7
BTC Health	BTC		SPP	\$1.2
Asian American Medical Group	AJJ		Placement	\$1.1
Visionearing	VTI	Thorney Investment Group	Placement	\$1.0
Anteo Diagnostics	ADO		Placement	\$1.0
Analytica	ALT		Rights Issue	\$0.9
Pharmaust	PAA	Alto Capital	Rights Issue Shortfall	\$0.7
Amplia Therapeutics	ATX		Placement	\$0.4
Next Science	NXS	Paterson Securities	IPO (100 cps)	\$35.0
<b>Total raised in Q2 2019</b>				\$272.3
<b>Total raised in Q1 2019</b>				\$36.2
<b>Total raised YTD 2019</b>				\$308.5

**Bioshares Model Portfolio (1 July 2019)**

Company	Code	Price (current)	Price added to portfolio	Recommendation	Cap'n (\$M)	Date added
Volpara Health Technologies	VHT	\$1.695	\$0.375	Spec Hold A	\$367	June 2017
Telix Pharmaceuticals	TLX	\$1.280	\$0.910	Spec Buy A	\$279	May 2019
Opthea	OPT	\$0.670	\$0.160	Spec Buy A	\$167	November 2014
Alcidion	ALC	\$0.130	\$0.053	Hold	\$105	April 2019
Pharmaxis	PXS	\$0.255	\$0.260	Spec Buy A	\$101	December 2016
Immutep	IMM	\$0.025	\$0.032	Spec Buy A	\$96	March 2019
Somnomed	SOM	\$1.520	\$0.94	Spec Buy A	\$95	January 2011
Bluechiip	BCT	\$0.082	\$0.053	Spec Hold B	\$43	December 2018
Micro-X	MX1	\$0.215	\$0.38	Spec Buy A	\$33	May 2017
Rhinomed	RNO	\$0.220	\$0.24	Spec Buy B	\$31	Jun-19
Acrux	ACR	\$0.185	\$0.31	Spec Buy A	\$31	July 2017
Adalta	1AD	\$0.150	\$0.23	Spec Buy A	\$25	July 2017
Cogstate	CGS	\$0.190	\$0.24	Accumulate	\$23	April 2019
Dimerix	DXB	\$0.090	\$0.09	Spec Buy B	\$14	December 2018

**Portfolio Changes – 1 July 2019**

**IN:**  
No changes

**OUT:**  
No changes

**Stocks Removed from Bioshares Portfolio in TTM**

Date removed	Stock
June 2019	CUV
March 2019	CYP
March 2019	CGS, MGZ
February 2019	RNO
November 2018	FTT
October 2018	BNO
September 2018	DVL, MEB, OSP

**Selected Clinical Trial Developments - Q2 2019**

Company	Code	Product/Therapeutic	Event
Actinogen Medical	ACW	Xanamem (Alzheimer's disease)	Phase II trial failed to meet efficacy endpoint (at 10mg dose).
Antisense Therapeutics	ANP	ATL1102 (Duchenne Muscular Dystrophy)	Reported full enrollment in 9 pt trial. (Pts are non-ambulant)
Bionomics	BNO	BNC210 (Agitation in the elderly)	Phase II trial failed to meet efficacy endpoint. 38 pts. Twice daily administration of 300mg as a suspension solution, for 5 days.
Dimerix	DXB	DMX200 (focal segmental glomerulosclerosis)	Reported that recruitment for 10 pt, crossover Phase II study is expected to be completed in July. Results now expected in Q2 2020.
Dimerix	DXB	DMX200 (diabetic kidney disease)	Reported that recruitment for 40 pt, crossover Phase II study is expected to be completed in Q3. Results now expected in Q2 2020.
Immutep	IMM	eftilagimod alpha (IMP321) (in combination with paclitaxel) (metastatic breast cancer)	Completed enrolment in 226 Phase II study.
Kazia Therapeutics	KZA	GDC-0084 (gliolastoma)	Completed maximum tolerated dosing (MTD) component of Phase II study. 8 pts. Determined an MTD of 60mg. DLT's included oral mucositis and hyperglycemia.
Medlab Clinical	MDC	NRGBiotic (probiotic) (Bifidobacterium bifidum, Lactobacillus acidophilus, magnesium orotate, Streptococcus thermophilus, ubidecarenone)	Commenced second round of recruitment for randomised, placebo controlled, 130 pt Phase IIa trial. 32 pts have completed first round. Trial commenced in June 2018. Date of last data collection anticipated for Sept 2019
NoxoPharm	NOX	Veyonda (idronoxil) (in combination with low dose radiation) (metastatic, castration-resistant prostate cancer)	Completed patient enrollment for dose expansion phase (1200mg). 12 pts. Topline 6mth data expected in November.
Opthea	OPT	OPT-302 (VEGFC,D inhibitor) (soluble receptor trap; molecule) Wet AMD	Completed final pt visit in Phase II b trial, of 366 treatment naïve pts. Treatment arms: OPT-302 administered at 0.5mg or 2.0mg in combination with VEGF-A inhibitor Lucentis, or Lucentis alone. 348 pts completed week 24 visit.
Orthocell	OCC	CelGro (collagen device) (nerve regeneration) (soft tissue reconstruction)	Reported results for 4 pts (8 peripheral nerves), 15 of 20 treated. Muscle function and/or sensation in affected limbs was regained after 24 months.
Paradigm Biopharmaceuticals	PAR	Pentosan polysulphate sodium, injected (PPS) (Ross River virus) (debilitating musculoskeletal pain)	Met primary safety endpoint in Phase IIa randomised trial. Met secondary efficacy endpoint: at 3mths, 72.7% (8/11) subjects in treatment group showed new remission of symptoms, compared to 14.3% (1/7) in placebo arm (p<0.05)
Rhythm Biosciences	RHY	ColoSTAT (early detection of colorectal cancer) (blood test)	Initiated Monash Health as second clinical trial site. 1,000 pt trial. Signed on the Alfred Hospital as a third site.

## The ASX-Listed Life Sciences Sector

June 28, 2019: Capitalisation \$152 billion, 144 companies

### Bioshares Large Cap. Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
CSL	CSL	97,425	Manufactures pharmaceutical products including vaccines and human plasma fractions	10%	12%	\$215.00
Resmed Inc.	RMD	24,613	Manufactures diagnostic and treatment equipment for sleeping disordered breathing	19%	22%	\$17.17
Cochlear	COH	11,938	Manufactures cochlear hearing implants	19%	3%	\$206.84
Blackmores	BKL	1,561	Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z.	-3%	-37%	\$89.91
Mayne Pharma Group	MYX	807	Manufactures, develops and markets generic drugs, with operations in Australia and the USA	-27%	-41%	\$0.510

**Capitalisation Total** 136,344

### Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Nanosonics	NAN	1,686	Developing a novel disinfection technology, the first product is a point of care ultrasound probe disinfection unit, branded Trophon EPR	28.9%	77.8%	\$5.620
Clinuvel Pharmaceuticals	CUV	1,615	Markets an analogue of the alpha-MSH protein, named Scenesse, as a photo-protective agent. Approved in Europe.	37.5%	205.9%	\$33.680
Polynovo	PNV	1,018	Developing novel polymer-based products for treating wounds and burns	105.3%	187.9%	\$1.540
Avita Medical	AVH	786	Markets ReCell, a skin repair product	47.4%	508.7%	\$0.420
Next Science	NXS	738	Commercialisation of anti-biofilm products	311.0%		\$4.110
Mesoblast	MSB	735	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.	2.8%	-0.3%	\$1.475
API	API	650	Pharmaceutical wholesaler. <b>Merging with Sigma Pharmaceuticals.</b>	-12.9%	-22.4%	\$1.320
Sigma Pharmaceuticals	SIG	588	Pharmaceutical manufacturing and wholesaling. <b>Merging with API.</b>	5.7%	-31.5%	\$0.555
Starpharma Holdings	SPL	506	Developer of pharmaceutical chemical scaffolds known as 'dendrimers'	42.4%	16.7%	\$1.360
Volpara Health Technologies	VHT	360	Markets breast density assessment tools and analytics, for use with breast X-ray screening programs	20.4%	113.3%	\$1.685
Medical Developments	MVP	347	Commercialising the Pentrox inhaler for temporary pain relief. Used widely in ambulances across Australia.	6.4%	-8.6%	\$5.300
Clovercorp	CLV	319	Development and production of omega-3 food additives from tuna oil	-6.8%	18.8%	\$1.930
AFT Pharmaceuticals	AFP	283	Development and sale of pharmaceuticals in Australasia and Rest-of-World	47.3%	45.5%	\$2.910
Telix Pharmaceuticals	TLX	271	Development of molecularly-targeted radiation (MTR) therapies and diagnostics	47.6%	85.1%	\$1.240
Paradigm Biopharm.	PAR	269	Development of pentosan polysulphate sodium to treat bone marrow oedema and joint pain	-25.7%	115.4%	\$1.400

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Opthea	OPT	167	Developing OPT-302 to treat wet AMD (an eye disease)	-2.2%	27.6%	\$0.670
Genetic Signatures	GSS	140	Development and sale of molecular diagnostics (MDx) kits and products.	22.7%	264.9%	\$1.350
Botanix Pharmaceuticals	BOT	139	Developing BTX1503 for the treatment of acne. BTX1503 combines synthetic cannabidiol with a transdermal drug delivery system, Permetrex.	56.5%	63.6%	\$0.180
ResApp Health	RAP	135	Developing digital healthcare solutions to diagnose and manage respiratory conditions	126.7%	44.4%	\$0.195
Cynata Therapeutics	CYP	127	Stell cell technology company aiming to produce unlimited uniform, pharmaceutical grade MSCs from a single donor.	0.4%	-8.8%	\$1.245
Neuren Pharmaceuticals	NEU	115	Developing neuroprotective therapeutics.	-1.3%	-61.4%	\$1.145
Compumedics	CMP	108	Develops, manufactures and markets sleep diagnostic and monitoring equipment.	31.2%	10.9%	\$0.610
SDI	SDI	105	Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D	16.4%	77.0%	\$0.885
Cyclopharm	CYC	101	A nuclear medicine company that markets the Technegas lung imaging system	34.2%	47.0%	\$1.470
Pharmaxis	PXS	101	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.	-3.8%	-17.7%	\$0.255
Probiotec	PBP	94	Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients	0.0%	36.5%	\$1.570
Somnomed	SOM	91	Markets oral devices for the treatment of sleep apnea and snoring.	-16.2%	-34.1%	\$1.450
Immutep	IMM	85	Developing immuno-oncology drug candidates IMP761 and IMP321 (eftilagimod alpha)	-24.2%	-19.4%	\$0.025
Invion	IVX	82	Development of Photosoft, a photosensitiser derived from chlorophyll, which it is believed can accumulate selectively in tumours and be manipulated for therapeutic purposes.	25.0%	-55.9%	\$0.015
G Medical	GMV	80	Developing next generation mobile health and e-health devices, and cloud and medical call centres	-23.6%	-10.6%	\$0.210
Ellex Medical Lasers	ELX	76	Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders.	-13.1%	-13.1%	\$0.530
Alcidion	ALC	76	Specialist health IT solution provide. Recently acquired MKM Health and Patient Track Holdings.	92.3%	140.4%	\$0.125
Phylogica	PYC	71	Developing peptide compound libraries for use in human therapeutics	16.0%	11.5%	\$0.029
Mach 7 Technologies	M7T	71	Development and sales enterprise imaging management platform	156.8%	126.2%	\$0.475
Reva Medical	RVA	70	Developing the Fantom scaffold, its third version of a bioresorbable coronary stent. <b>SUSPENDED FROM TRADING</b>	0.0%	-24.4%	\$0.170
Medadvisor	MDR	70	Medication adherence software platform company	10.9%	4.1%	\$0.051
Star Combo Pharma	S66	60	Develops, manufactures and markets nutritional and OTC products	19.8%		\$0.695
Noxopharm	NOX	58	Developing a cancer treatment, NOX66, a formulation of idronoxil, which targets NADH oxidase 2.	18.8%	-22.1%	\$0.475
Imugene	IMU	58	Developing a Her2 positive cancer vaccine technology	-15.8%	-44.8%	\$0.016
Orthocell	OCC	56	Developing and marketing regenerative medicine products	264.3%	59.4%	\$0.510

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Respiri	RSH	46	Respiratory and pulmonary devices company. Markets Airsona, an ehealth product.	10.0%	-9.3%	\$0.088
Impedimed	IPD	44	Markets products that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders	-46.5%	-70.9%	\$0.115
Resonance Health	RHT	42	Markets FerriScan, a non-invasive tool for measuring liver iron levels	14.1%	337.5%	\$0.105
Bluechiip	BCT	41	Development, manufacture and commercialisation of a tracking system for biological samples	-11.4%	44.4%	\$0.078
Asian American Medical Group	AJJ	41	Manages liver treatment centres in Asia; expanding into radiation oncology	33.3%	14.3%	\$0.120
Vita Life Sciences	VLS	40	Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods	-12.1%	-8.8%	\$0.725
BARD1 Life Sciences	BD1	40	Developing cancer diagnostics and therapies. Lead program is the BARD1 lung cancer test.	81.3%	107.1%	\$0.029
Biotron	BIT	39	Developing a drug to treat HIV	-12.0%	247.4%	\$0.066
IDT Australia	IDT	39	Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups.	10.0%	71.9%	\$0.165
Universal Biosensors	UBI	39	Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use	8.5%	-7.7%	\$0.217
Admedus	AHZ	35	Markets Cardiocel, a bio-scaffold	42.9%	-73.9%	\$0.060
Invitrocue	IVQ	35	Singapore-based analytical services company (life sciences)	-12.0%	-40.0%	\$0.066
Micro-X	MX1	34	Development of a mobile medical x-ray imager for hospitals, a version for deployed military use and a mobile security back-scatter imager	-17.6%	-18.5%	\$0.220
Oncosil Medical	OSL	33	Developing Oncosil, a brachytherapy for pancreatic cancer and liver cancer	-1.9%	-77.0%	\$0.053
Osprey Medical	OSP	33	Markets DYEVERT, a device which reduces the amount of dye needed in imaging procedures	-43.0%	-48.7%	\$0.077
Exopharm	EX1	33	Development of technology for improving the purification of exosomes, which are extra-cellular vesicles which transport bioactive molecules through out the body.	2.5%	0.0%	\$0.410
Rhinomed	RNO	32	Developing nasal technologies with applications for sport performance, sleep and drug delivery.	15.4%	28.6%	\$0.225
Acrux	ACR	31	Developer of topical generic drugs	0.0%	27.6%	\$0.185
Proteomics International	PIQ	28	Provider of protein chemistry analytical services. Seeking to commercialise a diabetic kidney disease diagnostic.	16.7%	75.0%	\$0.350
GI Dynamics	GID	28	Commercialising the Endobarrier, an implantable polymer liner for the management of obesity and diabetes	38.1%	-14.7%	\$0.029
Optiscan Imaging	OIL	27	Manufactures confocal microscopes for clinical diagnosis	38.1%	-10.8%	\$0.058
Patrys	PAB	27	Developing novel antibody therapies for a range of oncology indications. Focussed on 3E10, a cell penetrating antibody.	4.2%	-56.1%	\$0.025
Oventus	OVN	24	Developing an oral appliance to treat sleep apnea and snoring	-14.8%	-29.2%	\$0.230
Adalta	1AD	24	Developing AD-114 for the treatment of idiopathic pulmonary fibrosis (IPF) and other human fibrotic diseases	-31.9%	-56.8%	\$0.160
Cogstate	CGS	23	Markets cognitive performance diagnostic products	-15.2%	-74.3%	\$0.195
LBT Innovations	LBT	23	Developer of innovative products which deliver productivity benefits across a range of life science settings	51.3%	0.0%	\$0.115

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Recce	RCE	23	Development of an antibiotic ("RECCE") as a cancer treatment	7.5%	13.2%	\$0.215
Kazia Therapeutics	KZA	22	Developing GDC-084 for the treatment of glioblastoma multiform (a brain cancer)	-23.9%	-17.6%	\$0.350
Visioneering Technologies	VTI	22	Markets a next-generation contact lens	-21.7%	-85.0%	\$0.054
Emvision	EMV	21	Exploiting low energy non-ionising microwave radiation to create 3D images, with the goal of developing a device to support the diagnosis of the two main types of stroke	-5.2%	0.0%	\$0.365
Total Brain	TTB	20	Development and commercialisation of functional brain analysis techniques. Formerly Brain Resource Corp.	-7.1%	-36.6%	\$0.026
AirXpanders	AXP	20	Design, manufacture and distributor of the Aeroform, a patient controlled tissue expander, for use in breast reconstruction after mastectomy. <b>SUSPENDED FROM TRADING</b>	0.0%	-62.0%	\$0.035
Anteo Diagnostics	ADO	19	Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices	-23.5%	-13.3%	\$0.013
USCOM	UCM	19	Markets Uscom, a non-invasive heart output function monitor, BP+ non-invasive central blood pressure product and digital ultrasonic spirometry products	-17.6%	-15.2%	\$0.140
Antisense Therapeutics	ANP	19	Developing antisense compounds to treat multiple sclerosis and Duchenne Muscular Dystrophy	18.4%	80.0%	\$0.045
Rhythm Biosciences	RHY	18	Developing Colostat, a blood test for the early detection of colorectal cancer	12.5%	-12.2%	\$0.180
CardieX	CDX	18	Development of wearable blood pressure measurement devices	-31.6%	0.0%	\$0.026
Regeneus	RGS	18	Commercialisation of autologous adipose derived stem cells and factors. Markets HiQCell for human use and CryoShot for veterinary use.	-22.7%	-29.2%	\$0.085
Genera Biosystems	GBI	17	Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health. <b>SUSPENDED SINCE JULY 2018</b>	0.0%	0.0%	\$0.160
Bionomics	BNO	17	Discovery and development of drugs to treat CNS diseases	-74.4%	-94.0%	\$0.032
Immuron	IMC	17	Sales and development of hyper-immune bovine colostrum products for therapeutic use	-44.2%	-64.7%	\$0.120
Heramed	HMD	17	Commercialising a home pregnancy monitoring technology	-28.3%		\$0.190
Alterity Therapeutics	ATH	16	Developing PBT434 for synucleinopathies. Formerly Prana Biotech	-34.1%	-34.1%	\$0.029
Sienna Cancer Diagnostics	SDX	16	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	-7.6%	-7.6%	\$0.061
Genetic Technologies	GTG	16	A diversified molecular diagnostics company embracing blockchain technologies across genomic testing platforms. Markets Brevagenplus, a breast cancer risk prediction tool.	-25.0%	-40.0%	\$0.006
Prescient Therapeutics	PTX	15	Developing compounds to treat various cancers	-24.0%	-65.5%	\$0.038
Benitec Biopharma	BLT	15	Developing innovative therapies based on a combination of gene therapy with ddRNAi gene silencing technology	-54.4%	-57.8%	\$0.057
Cellmid	CDY	15	Develops and markets therapies and diagnostic tests for fibrotic diseases, cancer, ischemic diseases of the heart and hair loss.	-20.5%	-62.8%	\$0.175
Analytica	ALT	14	Markets the Pericoach product to aid in the management of female urinary incontinence.	0.0%	-33.3%	\$0.004

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Memphasys	MEM	14	Developing a sperm separation technology, SpermSep. Completed a 1:15 share consolidation.	8.7%	66.7%	\$0.025
Living Cell Technologies	LCT	14	Development of NTCELL for the treatment of Parkinson's Disease, and potentially for eye and ear diseases	-35.1%	-4.0%	\$0.024
Dimerix	DXB	13	Developing a combination therapy, DMX200, to treat chronic kidney disease.	-1.2%	-10.5%	\$0.085
Anatara Life Sciences	ANR	13	Following the licensing of its animal health product to Zoetis, is now developing a gastrointestinal dietary supplement (human health)	-48.0%	-59.8%	\$0.255
Bioxyne	BXN	12	Sale and distribution of probiotics	-14.3%	-64.0%	\$0.018
Actinogen Medical	ACW	11	Developing Xanamem for the treatment of dementia in Alzheimer's disease patients	-81.5%	-79.2%	\$0.010
Suda Pharmaceuticals	SUD	11	Developing drugs for oro-mucosal administration. Recently acquired IP for anagrelide, with intent to develop it as an anti-cancer therapy	-25.0%	-62.5%	\$0.003
PharmAust	PAA	11	Developing a veterinary anti-parasitic compound (PPL-1) as a human and animal cancer therapy. Also operates Epichem, a medicinal chemistry service business.	0.0%	-7.3%	\$0.038
Bio-Gene Technology	BGT	10	Commercialisation of the insecticides Flavocide (synthetic) and Qcide (plant-derived), in the fields of human health and crop protection.	-9.1%	-45.5%	\$0.090
Dorsavi	DVL	10	Commercialising a wireless sensor movement monitoring system and products for use in the Elite Sports, OH&S and medical/physiotherapy markets	22.0%	-58.3%	\$0.050
Holista Colltech	HCT	10	Extracts collagen from sheepskins and markets natural healthcare products.	-38.2%	-43.2%	\$0.042
Stem Cell United	SCU	9	Applies a proprietary stem cell technology to culture and grow plant extracts for use in Traditional Chinese Medicine.	-30.0%	-44.0%	\$0.014
Allegra Orthopedics	AMT	9	A developer and manufacturer of prosthetic implants and medical devices.	-25.0%	-14.3%	\$0.090
Jayex Healthcare	JHL	8	Commercialisation of the Enlighten patient workflow platform	37.1%	92.0%	\$0.048
Vectus Biosystems	VBS	8	Developing an anti-fibrotic compound, VB0004, with applications in heart and kidney disease	-24.4%	-60.0%	\$0.340
Neuroscientific Biopharm.	NSB	8	Developing EmtinB, an LRP-1 receptor agonist for the treatment of Alzheimer's disease	-19.4%		\$0.145
TBG Diagnostics	TDL	8	Development of HLA SSA and SBT diagnostic kits and related services	-12.5%	-44.4%	\$0.035
Simavita	SVA	7	Commercialising an incontinence assessment technology. <b>SUSPENDED FROM TRADING</b>	0.0%	6.3%	\$0.017
Lifespot Health	LSH	6	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 management, diagnosis and evaluation of chronic disease	48.1%	-30.4%	\$0.080
Imagion Biosystems	IBX	5	Developing MagSense, a diagnostic technology which exploits the principles of superparamagnetic relaxometry	-36.0%	-64.4%	\$0.016
Adherium	ADR	5	Commercialising personal digital medication monitoring systems to improve patient compliance and medication efficacy	3.6%	-75.8%	\$0.029
Avecho Biotechnology	AVE	5	Commercialising a drug delivery system. Formerly Phosphagenics	0.0%	-81.3%	\$0.003
Race Oncology	RAC	4	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.	-39.1%	-74.8%	\$0.053

## Bioshares Index

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Amplia Therapeutics	ATX	4	Developing drug candidates to treat fibrotic cancers and fibrosis. Formerly Innate Immunotherapeutics.	-30.7%	-66.0%	\$0.097
Novita Healthcare	NHL	4	Design and development of training exercises that target core issues in early childhood and academic skills. Acquired Newly, and online matching marketplace which connects carers and aged care and disability support services	-40.0%	-65.7%	\$0.012
Factor Therapeutics	FTT	3	Business under review following the failure of wound therapy VT001 to meet endpoints in Phase II trial	33.3%	-91.5%	\$0.004
Medigard	MGZ	3	Developing an injectable drug KT009 (endogenous recombinant protein GDF-6) to treat intervertebral disc degeneration. <b>SUSPENDED FROM TRADING</b>	0.0%	25.0%	\$0.020
Cryosite	CTE	2	Provides specialised storage services, especially for umbilical cord blood	11.1%	-44.4%	\$0.050
Medibio	MEB	2	Commercialising a test for depression and anxiety	-47.1%	-93.3%	\$0.009
Neurotech International	NTI	2	Development and sales of Mente (and platform), a treatment for improving behaviours of people with autism and other neurological conditions	12.5%	-88.8%	\$0.018
OBJ	OBJ	2	Developing transdermal drug delivery technologies	-22.2%	-50.0%	\$0.014

**Capitalisation Total**                      **14,031**

## Listed Biotech Investment Funds or Companies

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 30/6/19
BTC Health	BTC	15	Provides capital and management expertise to high-growth Australian biotech, medtech and pharmaceutical companies	-26%	-58%	\$0.085

**Capitalisation Total**                      **15**

*Cont'd over*

**Botanical Product Companies (Cultivated Production)**

Company	Code	Cap. \$m	Principal Activities	Change - Quarter	Change - Year	Price 28/6/19
Elixinol Global	EXL	517	A supplier of hemp and medicinal cannabis products	-17.4%	159.5%	\$3.750
Cann Group	CAN	278	Medicinal cannabis company focused on the breeding, cultivation and production stages. Holds Australian ODC cultivation (MC) and research license (CR).	-14.8%	-44.0%	\$1.960
Althea Group	AGH	205	Supply of branded medicinal cannabis products in Australia. To cultivate, extract and manufacture medicinal cannabis. Holds ODC manufacturing license.	180.6%		\$1.010
THC Global Group	THC	167	A medicinal cannabis company formed through the acquisition of Canndeo, an off-shoot of Agri Fibre Industries. Holds Australian ODC cultivation (MC) and research license (CR).	47.6%	85.1%	\$1.240
Auscann Group Holdings	AC8	106	Developing medical cannabis products for the Australian market. Holds Australian ODC cultivation (MC) and manufacture license and TGA manufacture license.	-9.5%	-73.4%	\$0.335
Palla Pharma	PAL	86	Licensed poppy producer. Narcotic raw material processor. Holds Australian ODC cultivation (MC) and research license (CR). Formerly TPI Enterprises.	-11.7%	-23.2%	\$1.060
Medlab Clinical	MDC	74	Development, production and marketing of nutraceuticals. Also developing cannabis product to treat cancer patients with intractable pain.	-5.4%	-36.4%	\$0.350
Creso Pharma	CPH	70	Development of cannabis and hemp derived therapeutic, nutraceutical, and life style products with wide patient and consumer reach for human and animal health. <b>To be acquired.</b>	45.8%	-16.0%	\$0.525
MGC Pharmaceuticals	MXC	63	A medical and cosmetic cannabis company with growing operations in Slovenia. Acquired Czech company Panax Pharma.	48.6%	-21.2%	\$0.052
Cann Global	CGB	60	To acquire 100% of Medcan Australia and 100% of Medical Cannabis Ltd. Medcan Australia has been granted an export and import license by the ODC. Relisting expected in 2019.	0.0%		\$0.037
MMJ Phytotech	MMJ	56	Developing medical cannabis products for the Canadian market	2.1%	-26.9%	\$0.245
Zelda Therapeutics	ZLD	30	A medical cannabis company researching treatments for cancer, dermatological indications and for sleep disorders	-24.5%	-55.6%	\$0.040
Bod Australia	BDA	24	Developer and distributor of natural, evidence-based cosmetics and natural medicines. Holds medicinal cannabis import license. Overseas partner is Linnea SA.	-8.1%	-37.0%	\$0.340
Impression Healthcare	IHL	23	Seeking to obtain Commonwealth and state licenses to import, store, distribute and export medicinal cannabis, while diversifying from its dental products business	66.7%		\$0.040
CannPal Animal Therap.	CP1	14	Research and development of cannabis-based therapeutics for companion animals	25.0%	-21.1%	\$0.150
Affinity Energy and Health	AEB	9	Investor in Uruguayan company Biogenics. Has applied to the Australian ODC to cultivate and produce medicinal cannabis. <b>SUSPENDED FROM TRADING</b>	0.0%	-55.0%	\$0.009
Fiji Kava	FIJ	6	Cultivation and development of kava (piper methysticum) as an alternative treatment for anxiety, pain and insomnia.	0.0%		\$0.080
eSense Health	ESE	3	Specialises in phytochemical profiling of plants to develop and reverse engineer terpenes for medical and other applications.	-26.1%	-76.4%	\$0.017

**Capitalisation Total** 1,791

**Capitalisation Total - All Indices** 152,180

**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 Some 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, LBT Innovations, Opthea, ResApp Health, Pharmaxis, Dimerix, Adalta, Actinogen Medical, Patrys, Cyclopharm, Emvision, Antisense Therapeutics

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