

In this edition...

Australia's large cap life science stocks have had a magnificent December quarter and a superlative year. The Bioshares Large Cap Index rose 14.7% for the quarter and 60% for the year.

In contrast, the pack of 90 of stocks that make up the Bioshares Index lost 8.7% over the December quarter. Slowness on the part of Mesoblast and GI Dynamics to finalise certain clinical programs explained some of the index weakness.

Novogen and Resonance Health were the strongest performers in the quarter just finished, and USCOM and Sirtex Medical were the year's prize performers with gains of 199% and 193% respectively.

Opportunities lie ahead in 2013 for biotech investors willing to plunge in and buy choice stocks if broader market conditions deteriorate.

Companies Covered: 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 - current) | -13.4% |
| Cumulative Gain | 199% |
| Av. annual gain (11 yrs) | 17.8% |

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Bioshares

31 December 2012
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Delivering independent investment research to investors on Australian biotech, pharma and healthcare companies.

Quarterly Review

Small Cap Biotech Weakness Offset by Strong Growth in Large Cap Stocks in Dec Quarter

Australian listed biotech stocks lost ground in the December quarter, 2012, as the **Bioshares Index** fell 8.7% from the close of the previous quarter. This fall was matched by a smaller decline in the **Nasdaq Biotech Index**, which decreased by 3.7% for the quarter. It should be noted that the Nasdaq Biotech Index has had an exceptional year, recording a 32% increase. From two years ago, the Nasdaq Biotech Index increased by 47%.

In contrast to the weakness in the Bioshares Index, investment demand for the large cap biotech stocks remained unsatiated in the December quarter. These stocks include CSL, Resmed, Cochlear and Sigma Pharmaceuticals and their performance as a group is measured by the **Bioshares Large Cap Index**. This index rose by 14.7% for the quarter and by 60% for the year.

CSL (CSL: \$53.90) posted a quarterly gain of 17% and an annual gain of 68%, driven by the company's flagging of strong results for FY2013. Cochlear (COH: \$79.10), which suffered a product recall in 2011 and a slump in its share price to a low of \$45.11, saw its share price climb 18% for the quarter and 28% for the year.

The quarterly decline in the Bioshares Index was due, in part, to underperformance by Mesoblast (MSB: \$5.30) which lost 21% and GI Dynamics (GID: \$0.55), which fell 50%. Both have had clinical trial plans that have been slow to finalise. Mesoblast's partner Teva Pharmaceuticals appears to be committed to supporting the further clinical development of Revescor in heart failure patients. However, details of clinical trials that confirm this commitment, especially a clinical trial time line, have yet to be revealed.

GI Dynamics' US development plans for its EndoBarrier product, a sleeve which is implanted in the upper GI tract and which aids in the management of obesity and diabetes, were changed such that it could dispense with a pilot trial and move to a much larger pivotal trial. An expectation that development costs will increase, coupled to the release of some stock holdings from escrow in November, are factors that could explain the weakness in GI Dynamics' share price.

The weaker quarterly performance of the Bioshares Index can also be attributed to a series of clinical trial failures and regulatory delays experienced by some companies.

Cont'd over

Index performances by Quarter

| | Q4 2011 | Q1 2012 | Q2 2012 | Q3 2012 | Q4 2012 |
|---------------------------|---------|---------|---------|---------|---------|
| Bioshares Index | -6.6% | 9.2% | -12.8% | 5.5% | -8.7% |
| Nasdaq Biotech Index | 11.9% | 18.1% | 5.5% | 10.0% | -3.7% |
| Bioshares Large Cap Index | 5.6% | 11.8% | 7.8% | 15.8% | 14.7% |
| ASX 300 Index | 1.5% | 6.7% | -5.9% | 7.1% | 5.8% |

Strongest Quarterly Performers

The stock which recorded the greatest increase over the December quarter was Novogen (NRT: \$0.165). The increase in the Novogen share price of 152% was stimulated by the company's acquisition of Triaxial Pharmaceuticals and a return to the board of the company's founder Dr Graham Kelly. Triaxial has been developing a class of anti-cancer compounds known as super benzopyrans. Novogen terminated a merger proposal with sleep apnea device company Kai Medical in late September. Novogen, which is capitalised at \$20 million, holds a 63.5% stake in the Nasdaq-listed Marshall Edwards Inc, which was established to hold Novogen's oncology assets and programs. In August, MEI announced the in-licensing of an anti-cancer compound, pracinostat, from S*BIO Pte Ltd.

Shares in Perth-based Resonance Health (RHT: \$0.018) climbed 100% over the quarter, driven by FDA interest in its non-invasive liver scanning product Ferriscan.

The Asian American Medical Group (formerly the Asian Centre for Liver Diseases and Transplantation) (AJJ: \$0.16) announced a tie-up with the University of Pittsburgh Medical Center to establish a comprehensive transplant centre in Singapore. Shares in AJJ rose 78% over the quarter.

Biotron (BIT: \$0.13) registered a 50% increase in its stock price, aided by start of a trial of its antiviral compound BIT225 in patients co-infected with HIV and HCV and the commencement of three month toxicology studies.

Sirtex Medical (SRX: \$13.13) is now capitalised at \$732 million. Its shares increased 38% during the quarter and by 193% over the year (beaten only by a 199% increase in USCOM shares). Sirtex has now captured the interest of a greater number of institutional brokers and their clients. The stock is expensive on a price/earnings ratio of 40 and we recently recommended that investors **Take Profits** on Sirtex and switch to Somnosed. Sirtex Medical has the potential to dramatically lift revenues and profits, however, that is dependent on the publication of results of clinical trials that are still some years away from completion.

Capital Raisings

ASX-listed life science companies raised \$127 million in fresh capital during the December quarter, with Mayne Pharma accounting for \$84 million of that total.

Mayne Pharma conducted two capital raisings, the first of which secured \$66 million which was applied to its acquisition of a private US generics company, Metrics, with the balance of the up-front deal payment paid through debt. A second capital raising brought in \$18 million to fund the acquisition of the Australian rights to Kapanol from GlaxoSmithKline. Kapanol is a modified release morphine drug manufactured by Mayne and was originally developed by Mayne Pharma's predecessor F.H. Faulding.

Universal Biosensors topped up its cash reserves by \$13 million to ensure it has a strong working capital base to support the development of a range of new products.

For the year ending December 31, 2012, \$257 million was raised by Australian listed biotechs, a figure significantly less than the \$630 million raised in 2011.

To the US?

Biota delisted from the ASX during the quarter and through its merger with Nabi Biopharmaceuticals was renamed Biota Pharmaceuticals. It is now listed solely on the Nasdaq under the code BOTA (with 28.137 million shares on issue). The company was capitalised at US\$112 million at December 31, 2012.

A quarter previously, in Australia, *on the ASX*, Biota was capitalised at \$127 million.

Alchemia's attempt in the second half of 2012 to demerge its oncology assets into Audeo Oncology and list that entity on both the Nasdaq and the ASX did not succeed, with investors pulling away at the last moment. Alchemia's (ACL: \$0.385) share price fell 26% over the quarter but was 28% higher on an annual basis.

Taken together, both events would appear to indicate a weak appetite for assets originating from Australia in the eyes of US Nasdaq focused investors.

How can such disinterest must be reconciled to the strength of the Nasdaq Biotech Index? The answer is that the growth in the Nasdaq has been propelled by interest in larger and more mature companies, a number of which have been acquired at handsome multiples in the last 24 months. The Nasdaq Biotech Index has a bias to profitable and more mature businesses, which means that its performance is often more similar to that of the Bioshares Large Cap Index.

Outlook

The bull run on the large cap life science stocks could abate in 2013 as investors consider the premiums being paid for these stocks. The safe haven element of these stocks could also lose appeal if global economic conditions improve, even if slightly.

Uncertainty surrounding US economic policy settings is likely to place a brake on equity markets. However, weakened demand for shares in general will flow on into small cap biotech stocks which may mean that some stocks will become very attractive at bargain basement prices, similar to the levels that took hold during 2008.

One strategy for biotech investors to be aware of is to monitor stocks that have been ignored or discarded by the market, perhaps due to a regulatory setback for example, but offer upside from market oriented near-to-mid term value inflexion points, such as passage through a regulatory path or receipt of reimbursement decisions.

Two stocks that illustrate this point are Pharmaxis, which gained 19% during 2012, following a 65% decrease in 2011, and QRxPharma, which clawed back 32% in the September quarter, but remains down 40% from a year ago. Both companies have experienced regulatory setbacks, Pharmaxis with the EMA in 2011 and QRxPharma with the FDA in 2012.

Capital Raisings by Australian-listed Biotech Companies Q4 2012

| Company | Investment Manager or Investor | Type of raising | Funds raised (\$M) |
|--------------------------------|---------------------------------------|------------------------------------|---------------------------|
| Mayne Pharma | | Placement [Kapanol Acq.] | \$18.00 |
| Mayne Pharma | Credit Suisse / UBS | Institutional Placement | \$9.05 |
| Mayne Pharma | Credit Suisse / UBS | Institutional Rights Issue | \$5.69 |
| Mayne Pharma | Credit Suisse / UBS | Retail Rights Issue | \$24.74 |
| Mayne Pharma | Credit Suisse / UBS | Conditional Placements (Instos) | \$19.09 |
| Mayne Pharma | Corbett/Mathieson/Richards | Conditional Placements | \$3.80 |
| Mayne Pharma | Metrics | Placement | \$3.50 |
| Universal Biosensors | Wilson HTM / Veritas Securities | Placement | \$12.00 |
| Universal Biosensors | Wilson HTM / Veritas Securities | SPP | \$1.16 |
| Avita Medical | Octa Phillip Securities | SPP | \$3.11 |
| Avita Medical | Octa Phillip Securities | Placement | \$1.19 |
| Avita Medical | Octa Phillip Securities | Placement | \$7.30 |
| Cyclopharm | CVC Managers | Rights Issue (u/w) | \$2.093 |
| Bluechiip | | SPP | \$0.59 |
| Bluechiip | | Placement | \$1.50 |
| Prana Biotech | JM Financial Group | Placement | \$6.00 |
| Viralytics | | SPP | \$3.50 |
| Allied Health Care | | Placement | \$1.70 |
| Genera Biosystems | | Placement | \$0.74 |
| Cellmid | | Options Rights Issue | \$0.54 |
| Nusep | | Placement | \$0.42 |
| Healthlinx | La Jolla Cove Investors Inc | Convertible Note (part conversion) | \$0.34 |
| Bone Medical | La Jolla Cove Investors Inc | Convertible Note (part conversion) | \$0.16 |
| USCOM | | Placement | \$0.32 |
| Consegna Group | | Placement | \$0.31 |
| SUDA (form. Eastland Medical) | | Conv. Notes | \$0.15 |
| Optiscan | | Conv. Notes | \$0.05 |
| Total raised in Q4 2012 | | Total | \$127.0 |
| Total raised in Q3 2012 | | | \$53.0 |
| Total raised in Q2 2012 | | | \$64.1 |
| Total raised in Q1 2012 | | | \$12.6 |
| Total - 2012 (CY) | | | \$256.8 |

Bioshares Model Portfolio (31 December 2012)

| Company | Price (current) | Price added to portfolio | Date added |
|--------------------------|-----------------|--------------------------|----------------|
| Psivida | \$1.30 | \$1.550 | November 2012 |
| Benitec | \$0.014 | \$0.016 | November 2012 |
| Nanosonics | \$0.485 | \$0.495 | June 2012 |
| Osprey Medical | \$0.42 | \$0.40 | April 2012 |
| QRxPharma | \$0.90 | \$1.66 | October 2011 |
| Somnomed | \$0.82 | \$0.94 | January 2011 |
| Cogstate | \$0.330 | \$0.13 | November 2007 |
| Clinuvel Pharmaceuticals | \$1.83 | \$6.60 | September 2007 |
| Pharmaxis | \$1.24 | \$3.15 | August 2007 |
| Universal Biosensors | \$0.92 | \$1.23 | June 2007 |
| Alchemia | \$0.385 | \$0.67 | May 2004 |

Portfolio Changes – 31 December 2012

IN:
No changes

OUT:
No changes

Selected Clinical Trial Developments - Q4 2012

| Company | Code | Product/Therapeutic | Event |
|--------------------------|------|---|---|
| ASDM | AMT | PAD Device (reperfusion of limbs) | Recruitment is slow in 40 pt trial |
| Avita Medical | AVH | ReCell (venous leg ulcers) (autologous cell therapy) | Commenced 5 site European study, 65 pts |
| Biotron | BIT | BIT225 (HIV+HCV) | Completed Phase Ia proof-of-concept trial; 12 coinfecting HCV, HIV+ pts. In combination w ith ribavirin (post BIT225 treatment). 300mg tw ice daily for 10 days |
| Bone Medical | BNE | CaPTHymone (osteoporosis) [oral parathyroid hormone] | Commenced clinical trial |
| Bionomics | BNO | W-2143 (BNC210) (anxiety) | Program partner Ironwood Pharm. initiated Phase I trial (under US IND) |
| Calzada | CZD | Novosorb BTM (w ound repair device) (donor site repair) | Demonstrated successful integration in 2 pts |
| Clinuvel Pharmaceuticals | CUV | Scenesse (afamelanotide implant) (vitiligo) | Achieved endpoints in Phase IIa study (CUV102); 41 pts completed treatment from 54 enrolled |
| Cyclopharm | CYC | Technegas (structured ultra-fine dispersion of radioactive labeled carbon) | Commenced US registration trial; 750 pts |
| Ellex Medical Lasers | ELX | Ellex 2RT (Retinal rejuvenation therapy) (Early age-related macular degeneration) | Commenced recruitment for trial |
| Living Cell Technologies | LCT | DIABECCELL (encapsulated pig pancreatic islet cells) (diabetes) | Commenced Phase IIB trial (Argentina); 20 pts to receive tw o implants of 10,000 IEQ/kg |
| Prana Biotech | PBT | PBT2 (Huntington disease) | Completed recruitment in Phase IIa trial; 100 pts |
| Prana Biotech | PBT | PBT2 (Alzheimer's disease) | Completed recruitment in Phase II imaging trial; 41 pts |
| Progen Pharmaceuticals | PGL | PI-88 (melanoma) | Phase II trial did not meet primary or secondary endpoints (in combination w ith dacarbazine) |
| Starpharma Holdings | SPL | Vivagel (bacterial vaginosis) | Primary endpoint of clinical cure at 2-3 weeks in tw o Phase III trials not met; ~250 pts in each trial |

Publication Schedule

The next of edition of Bioshares (487), dated January 18, will be emailed to subscribers on January 21, 2013.
(Bioshares is published 48 times a year)

The Australian Listed Life Sciences Sector

December 31, 2012: Capitalisation \$46.4 billion, 95 companies**

Bioshares Large Cap. Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|-----------------------|------|----------|--|------------------|---------------|----------------|
| CSL | CSL | 26,883 | Manufactures pharmaceutical products including vaccines and human plasma fractions | 17% | 68% | \$53.90 |
| Resmed Inc. | RMD | 5,636 | Manufactures diagnostic and treatment equipment for sleeping disordered breathing | 2% | 60% | \$3.94 |
| Cochlear | COH | 4,511 | Manufactures cochlear hearing implants | 18% | 28% | \$79.10 |
| Sigma Pharmaceuticals | SIP | 861 | Pharmaceutical manufacturing and wholesaling | 15% | 34% | \$0.74 |

Capitalisation Total 37,892

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|-------------------------|------|----------|--|------------------|---------------|----------------|
| Mesoblast | MSB | 1,522 | Developing therapies based on mesenchymal pre-cursor stem cells, with applications in cartilage regrowth and heart and bone repair. | -21% | -23% | \$5.30 |
| Heartware International | HIN | 1,118 | Marketing a mechanical heart pump (LVAD) | -14% | 17% | \$2.21 |
| Sirtex Medical | SRX | 732 | The company's core technology uses radioactive particles to irradiate tumours in the liver. Approved for use in most major regions. | 38% | 193% | \$13.13 |
| Blackmores | BKL | 569 | Manufactures vitamin, mineral and herbal supplements and skin & hair products in Australia and N.Z. | 8% | 18% | \$33.65 |
| Acruz | ACR | 475 | Developer of the transdermal drug products Axiron, Evamist/Ellavie and Recuvyra | -11% | -1% | \$2.85 |
| Pharmaxis | PXS | 383 | Markets the lung function test, Aridol. Bronchitol, for the treatment of treat cystic fibrosis, is approved in Europe. | 7% | 19% | \$1.24 |
| Starpharma Holdings | SPL | 369 | Developer of pharmaceutical applications of chemical scaffolds known as 'dendrimers'. | -13% | 14% | \$1.30 |
| API | API | 210 | Pharmaceutical wholesaler | 9% | 77% | \$0.43 |
| Reva Medical | RVA | 175 | Developing a bioresorbable coronary stent | -22% | -15% | \$0.53 |
| Mayne Pharma Group | MYX | 164 | Developing an improved dosing anti-fungal drug, Subazole and operating manufacturing services. Acquired Metrics, a private US generics business. | -19% | -23% | \$0.30 |
| Unilife Corporation | UNS | 161 | Developer of retractable syringes | -27% | -32% | \$0.345 |
| Universal Biosensors | UBI | 159 | Development, manufacture and commercialisation of a range of in vitro diagnostic tests for point-of-care use | 6% | 22% | \$0.92 |

** The count for the previous (September) quarter should have read 98 companies rather than 96.

Three companies have been removed from the table this quarter: Biota, CathRx and Solagran.

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|--------------------------|------|----------|---|------------------|---------------|----------------|
| GI Dynamics | GID | 158 | Commercialising the Endobarrier, an implantable polymer liner for the management of obesity and diabetes | -50% | -41% | \$0.55 |
| Phosphagenics | POH | 148 | Commercialising a platform technology (alpha-tocopherol) that improves the delivery of pharmaceutical and other products across the skin. | 16% | -31% | \$0.15 |
| Bionomics | BNO | 131 | Developing drugs to treat cancer and CNS diseases, and has also developed a gene diagnostic for epilepsy. | -4% | -39% | \$0.36 |
| QRxPharma | QRX | 130 | Developing a 'dual opioid' drug to treat moderate to severe pain. | 32% | -40% | \$0.90 |
| Nanosonics | NAN | 127 | Developing a novel disinfection technology, the first product is a point of care ultrasound probe disinfection unit | -1% | -19% | \$0.49 |
| Prima Biomed | PRR | 117 | Developing the CVac immunotherapy. | -44% | -31% | \$0.11 |
| Alchemia | ACL | 108 | Biopharmaceutical company with a revenue generating product, generic fondaparinux. Lead product HA-Irinotecan in a pivotal Phase III trial for colorectal cancer. | -26% | 28% | \$0.39 |
| Clovercorp | CLV | 96 | Development and production of omega-3 food additives from tuna oil. | 8% | 93% | \$0.58 |
| Medical Developments | MVP | 94 | Commercialising the Pentrox inhaler for temporary pain relief. Used widely in ambulances across Australia. | 34% | 188% | \$1.67 |
| Prana Biotechnology | PBT | 72 | Developing drugs to treat CNS diseases such as Alzheimer's, Parkinson's and Huntington's disease | -7% | 35% | \$0.21 |
| Clinuvel Pharmaceuticals | CUV | 63 | Developing an analogue of the alpha-MSH protein, named Scenesse, as a photo-protective agent | 17% | 18% | \$1.83 |
| Sunshine Heart | SHC | 61 | Developing the C-Pulse heart assist device. The C-Pulse wraps around and compresses the aorta, increasing blood flow through the body. | -18% | -8% | \$0.03 |
| Tissue Therapies | TIS | 53 | Developing the VitroGro product for ulcer and wound healing | -22% | -19% | \$0.31 |
| Anteo Diagnostics | ADO | 48 | Developer of a biological coatings technology that can be applied to immunoassays, bio-separations, drug delivery and other medical devices | 7% | -15% | \$0.06 |
| Avita Medical | AVH | 44 | Markets ReCell, a skin repair product | -11% | -4% | \$0.14 |
| Osprey Medical | OSP | 42 | Developing the CINCOR system to limit the incidence of contrast induced nephropathy. | 5% | | \$0.42 |
| Neuren Pharmaceuticals | NEU | 41 | Developing neuroprotective therapeutics | 30% | 30% | \$0.04 |
| SDI | SDI | 37 | Manufacture & distribution of amalgam (fillings) & other dental materials and product R&D. | 34% | 110% | \$0.32 |

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|------------------------------|------|----------|--|------------------|---------------|----------------|
| Somnomed | SOM | 35 | Markets oral devices for the treatment of sleep apnea and snoring. | -1% | -10% | \$0.82 |
| Bioniche | BNC | 33 | Developing a bladder cancer treatment and food safety vaccine; sale of veterinary products | -20% | -51% | \$0.32 |
| Genetic Technologies | GTG | 33 | Provides DNA paternity testing services and holds broad patents relating to the use of non-coding DNA. | -35% | -35% | \$0.07 |
| Vita Life Sciences | VSC | 32 | Development, manufacture and distribution of prescription and OTC medicines as well as complementary and alternative medicines, dietary supplements and health foods | 34% | 97% | \$0.57 |
| pSiVida | PVA | 30 | Developing drug delivery technologies, with a special focus on ophthalmic applications | -19% | 4% | \$1.30 |
| Asian American Medical Group | AJJ | 30 | Manages liver treatment centres in Asia . Recently changed name from Asian Centre for Liver Diseases and Transplantation | 78% | 60% | \$0.16 |
| Viralytics | VLA | 29 | Developing a cancer treatment based on the application of viruses (oncolytic virus technology) | 26% | -90% | \$0.34 |
| Cogstate | CGS | 25 | Marketing cognitive performance diagnostic products | -13% | 38% | \$0.33 |
| Brain Resource Corp | BRC | 22 | Development and commercialisation of functional brain analysis techniques | -2% | 7% | \$0.25 |
| Probiotec | PBP | 22 | Manufacturer, marketer and distributor of a range of over the counter (OTC) pharmaceuticals, complementary medicines and speciality ingredients | 22% | 5% | \$0.42 |
| Scigen | SIE | 22 | Developer and manufacturer of biopharmaceuticals. Company is based in Singapore and was spun out of Sonic Healthcare in 2002. | -11% | -41% | \$0.04 |
| OBJ | OBJ | 22 | Developing transdermal drug delivery technologies | 36% | 6% | \$0.02 |
| Invion | IVX | 22 | Formerly Cbio. Evaluating Xtoll biologic for lupus and developing an approved heart drug, Nadalol, for COPD and asthma. | 0% | -10% | \$0.06 |
| SUDA | SUD | 21 | Developing the anti-malarial product ArTiMist. Recently changed name from Eastland Medical Systems | -3% | 62% | \$0.03 |
| Biotron | BIT | 20 | Developing compounds to treat HCV and HIV. | 50% | 8% | \$0.14 |
| ITL | ITD | 20 | Develops and distributes medical devices such as safety equipment to prevent needle stick injuries and sterile preparation kits. | 2% | 86% | \$0.21 |
| Novogen | NRT | 20 | Acquired Triaxial Pharmaceuticals | 152% | 65% | \$0.17 |
| Patrys | PAB | 19 | Developing human antibody therapies for the treatment of lung, pancreatic, gastric and colon cancers | 0% | 12% | \$0.04 |

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|--------------------------|------|----------|---|------------------|---------------|----------------|
| Allied Health Group | AHZ | 19 | Diversified medical products group. Investor in Coridon, a vaccine technology company. | -9% | -48% | \$0.02 |
| Bluechiip | BCT | 19 | Development, manufacture and commercialisation of a tracking system for biological samples | -24% | -17% | \$0.19 |
| Progen Pharmaceuticals | PGL | 18 | A developer of cancer therapeutics, including PI-88 and PG545 | 15% | 50% | \$0.30 |
| Living Cell Technologies | LCT | 18 | Developing cell therapies for diabetes, haemophilia and Huntington's disease | -2% | 9% | \$0.05 |
| Cryosite | CTE | 18 | Provides specialised storage services, especially for umbilical cord blood | 31% | 162% | \$0.38 |
| Circadian Technologies | CIR | 17 | Developing drugs, including antibodies, around the VEGF C and VEGF D targets | -3% | -26% | \$0.35 |
| Calzada | CZD | 16 | Holds a 100 % stake in PolyNovo, a polymer chemistry company. | 2% | -16% | \$0.05 |
| Ellex Medical Lasers | ELX | 16 | Develops, manufactures and markets solid state ophthalmic lasers used to treat secondary cataracts and retinal disorders. | 12% | 46% | \$0.19 |
| Avexa | AVX | 16 | Developing an HIV drug, apricitabine. Has invested in a US coal company. | -5% | -39% | \$0.02 |
| Antisense Therapeutics | ANP | 16 | Developing antisense compounds to treat multiple sclerosis and acromegaly | -42% | -52% | \$0.01 |
| Isonea | ISN | 15 | Respiratory and pulmonary devices company. Recently completed 1:20 share consolidation. | 8% | -50% | \$0.07 |
| Benitec Biopharma | BLT | 15 | R&D company focusing on gene silencing, specifically DNA delivered RNAi technology | -13% | -7% | \$0.01 |
| Impedimed | IPD | 14 | Develops devices that aid the diagnosis of secondary lymphoedema, muscle wasting and other disorders | -53% | -85% | \$0.08 |
| Optiscan Imaging | OIL | 14 | Manufacture of confocal microscopes for clinical diagnosis | -2% | -30% | \$0.09 |
| USCOM | UCM | 13 | Marketing a non-invasive heart output function monitor | 21% | 199% | \$0.20 |
| Analytica | ALT | 12 | A medical devices company that has developed a retractable syringe | 5% | 16% | \$0.02 |
| Compumedics | CMP | 12 | Develops, manufactures and markets sleep diagnostic and monitoring equipment. | 6% | -18% | \$0.07 |
| Phylogica | PYC | 11 | Developing peptide compound libraries for use in human therapeutics. | -17% | -38% | \$0.03 |

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|--|------|----------|--|------------------|---------------|----------------|
| Atcor Medical | ACG | 11 | Markets the SphygmoCor device, a noninvasive technology that provides information regarding the functioning of the cardiovascular system | 17% | -15% | \$0.07 |
| Genera Biosystems | GBI | 10 | Develops, manufactures and distributes advanced molecular diagnostic tests, with a particular focus on women's health. | -20% | -17% | \$0.12 |
| Cyclopharm | CYC | 10 | A nuclear medicine company that markets the Technegas lung imaging system | -17% | -15% | \$0.17 |
| NuSep Holdings | NSP | 10 | Manufacture and sale of protein separations technologies | 32% | 7% | \$0.08 |
| IDT Australia | IDT | 10 | Manufacturer of pharmaceutical ingredients to international standards for major pharmaceutical groups. | -2% | -44% | \$0.22 |
| Cellmid | CDY | 8 | Developing therapies that target the midkine protein. Recently launched a range of hair loss products. | 0% | -6% | \$0.02 |
| Cordlife | CBB | 7 | Rolling out tissue banking services in Australia and Asia | -10% | -34% | \$0.05 |
| Resonance Health | RHT | 6 | Marketing the FerriScan technology, a non-invasive tool for measuring liver iron levels | 100% | 38% | \$0.02 |
| Biodiem | BDM | 6 | Focused on the development of LAIV influenza vaccines | -32% | -50% | \$0.04 |
| LBT Innovations | LBT | 6 | Developed the MicroStreak technology for the automation of microbiology laboratory processing. Now developing an Automated Optical Plate Sorting system. | 14% | 50% | \$0.06 |
| Immuron | IMC | 4 | Sales and development of hyper-immune bovine colostrum products for therapeutic use | -41% | -80% | \$0.01 |
| Holista Colltech | HCT | 4 | Has developed a novel technology for the extraction of collagen from sheepskins | 30% | -37% | \$0.07 |
| Advanced Surgical Design & Manufacture | AMT | 4 | A developer and manufacturer of prosthetic implants and medical devices | -22% | -45% | \$0.11 |
| Medical Australia | MLA | 4 | Manufacture and supply of medical devices and equipment. Not previously included in these tables. Previously known as BMDI Tuta and IMD Group | -33% | -56% | \$0.01 |
| Consegna Group | CGP | 3 | Asset development company, with interests in Vibrovein and BreatheAssist and investment in Imugene. | -77% | -93% | \$0.003 |
| Imugene | IMU | 3 | Now a drug delivery technology company. Has acquired Linguet asset from CGP | -35% | -8% | \$0.01 |
| NeuroDiscovery | NDL | 2 | Focusing on pain drug development following management buyout of electrophysiology business | -4% | -22% | \$0.03 |
| Acuvax | ACU | 2 | Acquired Biohealth, an immunotherapy company | 0% | 0% | \$0.001 |

Bioshares Index

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|--------------|------|----------|---|------------------|---------------|----------------|
| Bioxyne | BXN | 2.2 | Developing an immunotherapeutic (HI164 OV) to treat COPD. | -53% | 0% | \$0.01 |
| Medigard | MGZ | 1.5 | Developed retractable syringe technology and other safety medical products. | 45% | 0% | \$0.02 |
| Healthlinx | HTX | 1.4 | Detecting novel functions of known and new protein and peptides for therapeutic purposes. | 0% | -83% | \$0.00 |
| Bone Medical | BNE | 1.0 | Developing treatments for bone and joint degenerative diseases such as arthritis and osteoporosis. | -33% | -60% | \$0.00 |
| Agenix | AGX | 0.9 | Developing a compound to treat Hepatitis B, AGX1009. Also seeking a partner in China to develop Thromboview, an imaging agent. Completed 1:25 share consolidation | -69% | -92% | \$0.023 |
| Actinogen | ACW | 0.9 | Early stage developer of antibiotics that show activity against MRSA and VRE bacteria | -71% | -80% | \$0.01 |

Capitalisation Total 8,461

Listed Biotech Investment Funds or Companies

| Company | Code | Cap. \$m | Principal Activities | Change - Quarter | Change - Year | Price 31/12/12 |
|-----------------|------|----------|--|------------------|---------------|----------------|
| Biotech Capital | BTC | 3 | The entity is engaged in the orderly sale of assets. | -13% | -51% | \$0.04 |

Capitalisation Total 3

Capitalisation Total - All Indices 46,355

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: Pharmaxis, Starpharma Holdings, Cogstate, Bionomics, Biota Holdings, Impedimed, QRxPharma, LBT Innovations, Mesoblast, Tissue Therapies, Viralytics, Phosphagenics, Immuron, Phylogica, Bluechiip, pSivida, Antisense Therapeutics, Benitec BioPharma, Allied Healthcare Group, Calzada, Bioniche, Atcor Medical, Invion

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