

29 July 2019

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Fund Details

Ticker	BIOG
Share Price	778.0p
Estimated NAV	840.3p
Discount	-7.4%
Avg 12m discount	-7.3%
Z Score	-0.2
Market Cap	£367m
Shares in Issue	47.2m
Dividend yield	0%
Ongoing Charges (exc. perf fee)	1.1%
Gearing	6.2%
AIC Sector	Biotech & Healthcare

Source: Morningstar, Bloomberg,
Biotech Growth Trust
Data as at 26 July 2019

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The Biotech Growth Trust*

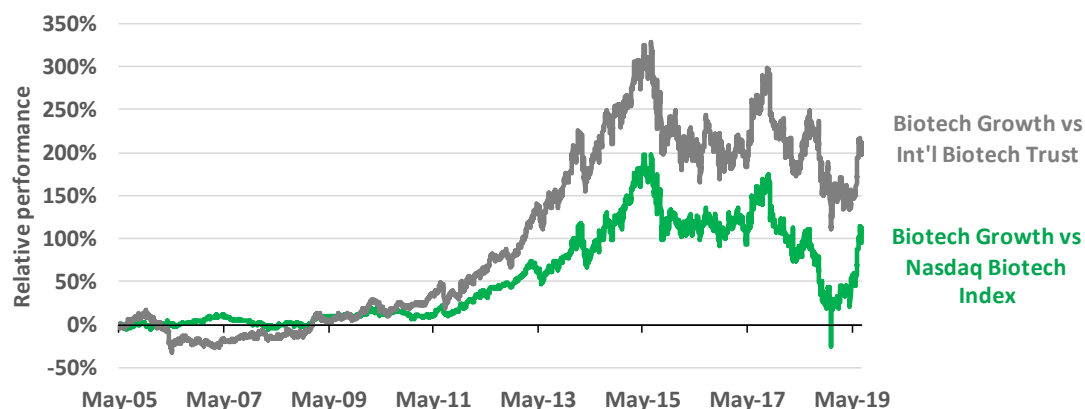
Seeking to capture “golden era” of scientific innovation

The Biotech Growth Trust has endured a difficult period of performance, although its long-term record under its specialist investment adviser, OrbiMed, remains strong. Returns have lagged both its closest peer and benchmark over the last few years, partially as a result of an overweight allocation to large-cap biotech companies, which have been de-rated. Interestingly, while the fund's managers continue to believe that these stocks offer value compared with the broader US equity market, the weighting has been reduced in favour of small/mid-cap stocks as a re-rating in the run-up to the US Presidential election in 2020 is seen as less likely. Exposure to large-cap biotech has fallen from 54% to 37% over the last 12 months and compares with a weighting of approximately 50% in the Nasdaq Biotechnology Index.

We believe that it is appropriate to use the expertise of specialist investors to access this complex area of the market and recognise that OrbiMed has an advantage in this regard, given its sector-focus, experience and resources. The Biotechnology sector continues to see considerable development and Geoff Hsu, the fund's co-manager, describes the current environment as being a “golden era” of scientific innovation. One-quarter of the portfolio is now exposed to gene therapy, with holdings such as Sarepta Therapeutics (7% of NAV), Neurocrine Biosciences (7%) and MeiraGTx (5%). Gene editing is also seen as having huge potential, with key holdings including Vertex Pharmaceuticals (11%), as is precision medicine for cancer treatment. Holdings that are developing treatments in this area include Amgen (4%), Deciphera Pharmaceuticals (4%) and Turning Point Therapeutics (1%). The portfolio is also exposed to increasing biotech innovation in China and the fund has participated in three recent IPOs: Shanghai Junshi Biosciences, CanSino Biologics and Hansoh Pharmaceuticals. 5% of the fund's net assets are now invested in the Far East and this could increase, with OrbiMed benefiting, in our opinion, from offices in Shanghai and Hong Kong.

With President Trump now in full election campaign mode and a wide field of candidates, with a differing range of views on healthcare, vying for the Democratic nomination we would expect political rhetoric on drug pricing to continue to cause volatility in the Biotechnology sector. In our view, the manager makes a compelling argument for this simply being ‘noise’ and for the fundamentals of the sector being strong. In this case, the political noise could create buying opportunities for the sector between now and November 2020. The fund itself currently trades on a discount of 7%, which is slightly below the Board's targeted 6% floor that is supported by an active share buyback programme.

Relative NAV total return performance under OrbiMed



Source: Winterflood, Morningstar data from OrbiMed appointment on 18 May 2005 to 26 July 2019

On 11 July we attended a presentation by Geoff Hsu at the Biotech Growth Trust AGM. We provide a summary of the presentation below as well as an update on the fund.

Portfolio & Outlook

Concentrated top 10

The portfolio continues to be a blend of large cap profitable companies and smaller companies either with newly launched/late stage development products as well as promising early stage companies developing products using new science. The fund is relatively concentrated with almost 60% of net assets invested in the top 10 holdings. At the end of June, the fund had gearing of 6.2%, which is expected to be maintained within the range of 5-10%.

Aim to identify catalysts

Part of the fund's strategy involves the manager identifying catalysts for emerging biotechnology companies. These can provide opportunities with asymmetric risk/return profiles with the manager trying to predict the outcome of these events, which are often clinical trials.

Top Ten Holdings	% of NAV	Benchmark (%)	Active weight (%)	Mkt Cap (US\$bn)	Bloomberg Estimated P/E Ratio
Vertex Pharmaceuticals	10.5	6.0	+4.6	42.7	37
Sarepta Therapeutics	7.0	1.5	+5.5	11.1	-
Neurocrine Biosciences	6.7	1.0	+5.7	8.0	76
Alexion Pharmaceuticals	5.5	3.9	+1.6	25.7	11
Gilead Sciences	5.3	7.9	-2.6	85.1	10
Athenex	5.1	0.2	+4.9	1.4	-
MeiraGTx	4.5	-	+4.5	0.9	-
Illumina	4.4	6.9	-2.5	44.2	47
Amgen	4.4	8.1	-3.7	106.9	12
Deciphera Pharmaceuticals	4.0	0.1	+3.9	0.8	-
Total	57.3				

Source: The Biotech Growth Trust, Bloomberg

Data as at 30 June 2019 apart from market caps and Bloomberg estimated P/E ratios which are at 26 July 2019

Large cap weighting reduced

37% invested in
US large-cap down from
66% two years ago

The manager continues to think that large cap biotechnology stocks offer value and he does not believe that the current differential in valuation between the mega-cap biotech stocks and the broader US equity market is sustainable (P/E ratio of c.10x vs c.16x). However, he believes that for these stocks to be re-rated the involvement of generalist investors will be required and this may not happen in the run-up to the US Presidential election in 2020 (see below). The manager has therefore continued to reduce the fund's weighting to this segment of the market, in favour of small/mid-cap stocks. At the end of June exposure to US large-cap biotech had fallen to 37%, down from 54% 12 months ago and 66% at the end of June 2017. This compares with a weighting of around 50% in the Nasdaq Biotechnology Index, although this will reduce once the acquisition of Celgene by Bristol-Myers Squibb is completed.

Political rhetoric to continue

Negative sentiment has
contributed to de-rating

The manager believes that negative political rhetoric and the resulting concern around drug pricing are at least partially responsible for the negative sentiment towards the sector and falling multiples, which are at a 25-year low, both relative to history and to other sectors.

Overall political environment
viewed as benign

However, in the manager's assessment President Trump's pricing proposals so far are largely benign for the industry. Nevertheless, political rhetoric on drug pricing is expected to continue as the November 2020 Presidential election approaches. In Geoff Hsu's view this is just noise, with little possibility of dramatic change. He believes that Congress will remain split and this is likely to preclude any substantial changes to the healthcare system in relation to drug pricing. In his view the 'Medicare for All', which has been proposed by some Democratic candidates, is unlikely to come to fruition. The manager believes that President Trump could use an Executive Order for a demonstration pilot project relating to drug pricing, but he does not think that this would have a significant impact.

Regulatory climate remains favourable

Cheaper and quicker to
get drugs approved

A new approach to drug approvals at the Food & Drug Administration (FDA) in the US under the leadership of Scott Gottlieb led to the highest level of new molecular entity approvals in the last 20 years being set in 2017 (46), which was subsequently beaten in 2018 (59). Although Scott Gottlieb announced his resignation in March, his successor has stated that he expects to continue with the policies that have seen the number of drug approvals grow. The manager highlights that these policies have reduced the time, cost and approval risk for new drugs in development and this has benefited the biotech industry. However, the increased number of approvals has a competitive impact on drug pricing and so innovation becomes increasingly important.

"Golden era" of scientific innovation

Progress in new areas

Geoff Hsu describes the current environment as being a "golden era" of scientific innovation. The number of late-stage pipeline products is around 40% higher than it was 10 years ago, with significant growth in oncology products. The manager highlighted several new emerging platform technologies and therapeutic classes that he believes could produce treatments generating annual revenue in excess of US\$8bn: Cellular Therapy (CAR-T), RNA Modification, Cystic Fibrosis, Gene Therapy and Gene Editing.

Quarter of portfolio
exposed to gene therapy

The manager particularly highlighted Gene Therapy, which uses a modified virus to introduce a healthy gene to patients. Companies operating in this area currently represent approximately one-quarter of the portfolio and span a variety of disease areas, although not all of these holdings are purely focused on Gene Therapy. Holdings with exposure include **Sarepta Therapeutics** (7.0% of NAV at 30 June), **Neurocrine Biosciences** (6.7%) and **MeiraGTx** (4.5%). There are currently a couple of dozen (recently) listed companies focused on this area, but in the manager's view large pharma needs to get a foothold in what is expected to be a US\$10bn+ market and he anticipates further M&A.

Q4 2019 key for
Gene Editing

The manager also highlighted Gene Editing as having an overall market potential of more than US\$25bn and he thinks 2019 will be a pivotal year. In Q4 2019 **Vertex Pharmaceuticals** (10.5% of NAV at 30 June) and **CRISPR Therapeutics** will report results from the first proof-of-concept trial for CRISPR-Cas9 gene editing in the treatment of beta thalassemia, a blood disorder that reduces the production of haemoglobin.

Precision medicine
targeting tumours

The manager also highlighted Precision Medicine for Cancer as a developing area with genome sequencing of tumours being used to expand 'targeted therapies'. These are tailored to the specific mutations in a patient's tumour and therefore potentially have higher success rates than conventional non-specific chemotherapy. Holdings developing treatments in this area include **Amgen** (4.4% of NAV at 30 June), **Deciphera Pharmaceuticals** (4.0%) and **Turning Point Therapeutics** (0.9%). The dramatic fall in the cost of genome sequencing has opened up this area of innovation and the fund also holds a position in the market leader in genetic sequencing, **Illumina** (4.4%).

Increasing opportunity in China

China allocation
increased to 5%

The manager is seeing a trend of increasing biotech innovation in China. This has been driven by several factors including tighter approval standards, which are at the same time trying to speed up the process for innovative drugs. Biotech companies without revenue are also now able to list in Hong Kong, thereby increasing financing options for Chinese biotech companies. The fund has participated in three recent IPOs (**Shanghai Junshi Biosciences**, **CanSino Biologics** and **Hansoh Pharmaceuticals**), which have since increased in share price terms by 60%, 69% and 54% respectively. At the end of June, the fund had 5.2% of net assets allocated to the Far East, up from 1.6% 12 months earlier. The manager believes that this could continue to increase, although he intends to remain selective in his approach. He believes that OrbiMed has a competitive advantage given that it has had an office in Shanghai since 2007 and opened an office in Hong Kong in 2017. These offices house two public equity research analysts.

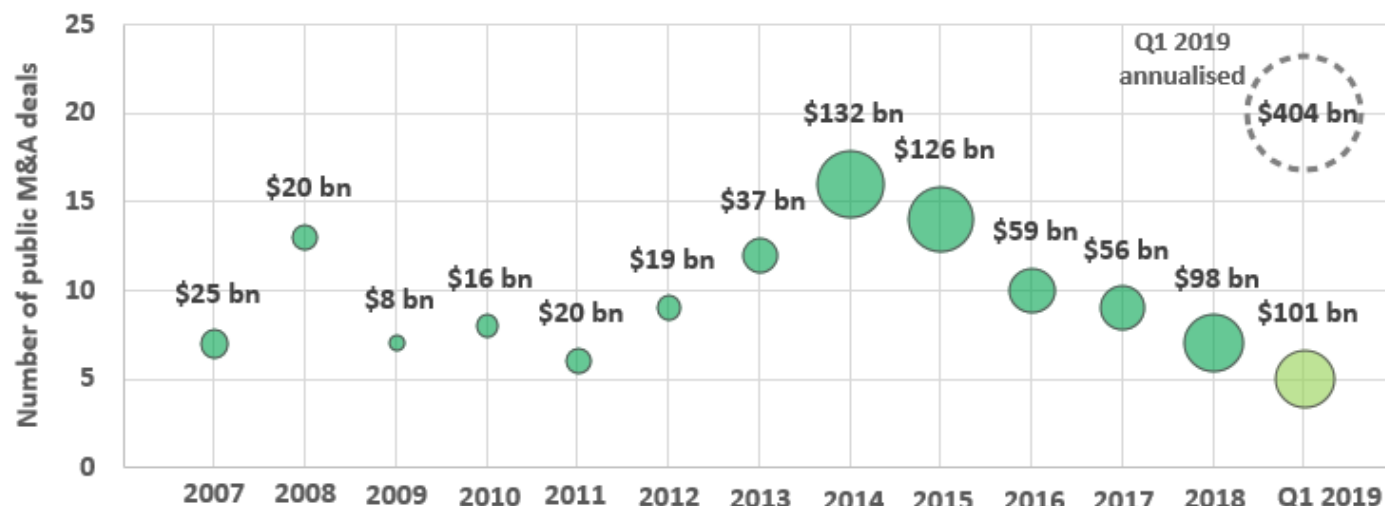
M&A accelerating

M&A driven by low P/Es
and competitive threats

After a lull in M&A activity in the second half of 2018 it has picked up in 2019, as shown in the chart below. The manager describes the current appetite for M&A as strong and thinks that the pace may be picking up. In his view this is driven by competitive threats to legacy products of Big Pharma and Big Biotech. P/E multiples in large cap biotech are at historic lows and the acquisition of

Celgene for US\$74bn by Bristol-Myers Squibb demonstrates that they are vulnerable targets. He noted that large cap company share prices can benefit from M&A whether they acquire growth assets, via earnings and P/E multiple expansion, or are themselves acquired.

Biotech M&A History



Source: OrbiMed Advisers Note: the size of the circles indicates the total size of deals

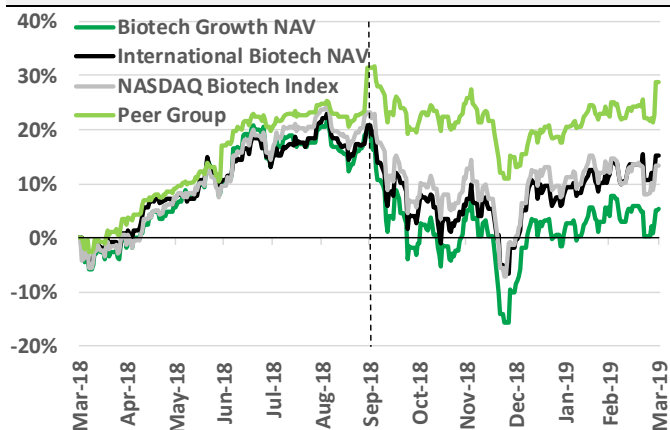
Performance

Weak FY2018/19 but improvement since

Underperformed in
FY2019

The fund's performance over the 12 months to 31 March 2019 – its financial year – was somewhat disappointing, with the NAV return of 5.3% lagging the NASDAQ Biotechnology Index return of 13.3%. However, for the second financial year in a row it was very much a period of two halves. In the first half, the NAV increased by 19.8% before falling 12.2% in the second half, with performance of the biotechnology sector particularly weak in Q4 2018 along with other markets. Disappointingly the fund's NAV lagged both the benchmark and its closest peer both on the way up and on the way down.

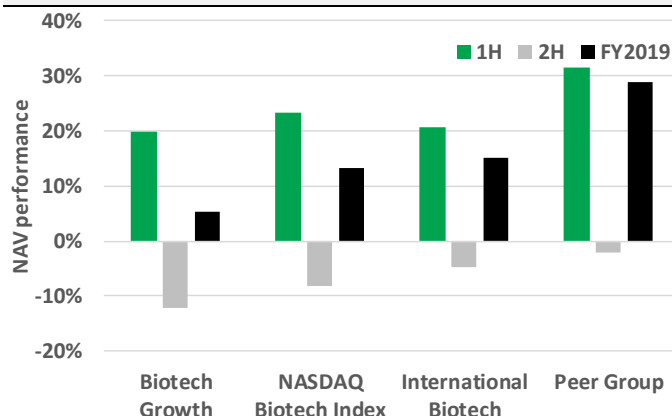
Performance in FY2018/19



Source: Winterflood, Morningstar

Note: The fund's financial year runs to 31 March. The dashed line marks the half-year point.

A financial year of two halves



Source: Winterflood, Morningstar

Underweight to non-therapeutics companies detracted

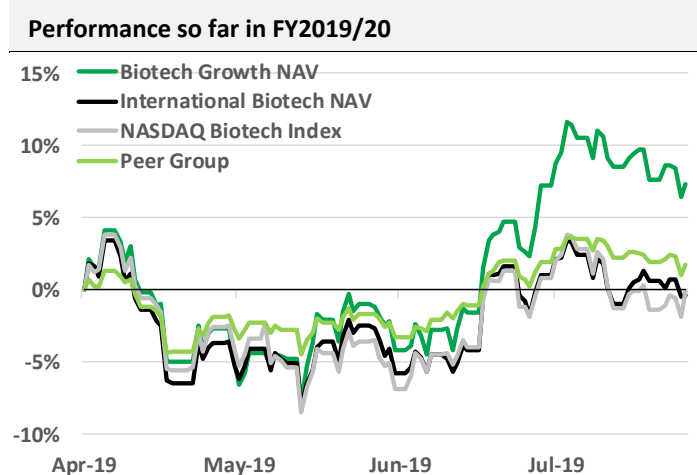
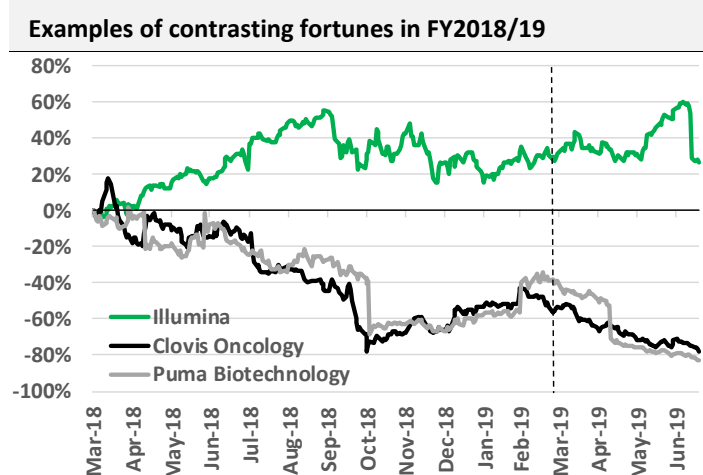
Weak share prices of commercial emerging biotech companies hurt performance

Emphasis on therapeutics companies to continue

The manager attributed the fund's underperformance in the 12 months to 31 March to the weak performance of many commercial emerging biotech companies and the underweight allocation to non-therapeutics companies, which performed well in the period.

The manager commented that newly commercial biotech companies have historically been likely acquisition targets, but fears over competition, concerns about peak sales potential, and lack of M&A hampered performance of many of these companies in the period. Companies such as **Puma Biotechnology** (-38% in FY2018/9 in Sterling) and **Clovis Oncology** (-53%), both viewed by the manager as potential M&A targets, were particularly negative for relative performance and have continued to be since the financial year end, falling a further 75% and 57% respectively. The manager has now recognised that certain assets will not be able to achieve their theoretical sales potential unless they are marketed by larger companies and has become more careful about investing in 'launch stories'.

Although the fund held a significant position in **illumina**, the genetic sequencing tool company, it was underweight non-therapeutics overall. Life science tools companies and service companies helping biopharma businesses conduct clinical trials performed well in the 12 months to 31 March 2019. The manager believes this is at least partly due to the lack of exposure to drug pricing for companies in these sectors. However, the manager intends to maintain the fund's emphasis on therapeutics companies as he expects them to outperform over the longer-term. The chart on the left illustrates the differing fortunes over the period of the three companies discussed above.



Performance improved since FYE

Biotech Growth's NAV performance has improved since its financial year-end, both in absolute and relative terms, as shown in the chart above. The strength of the fund's NAV performance since 31 March 2019 has meant that it has now made up the underperformance against the benchmark in the in the previous 12 months.

Number of contributors to outperformance since FYE

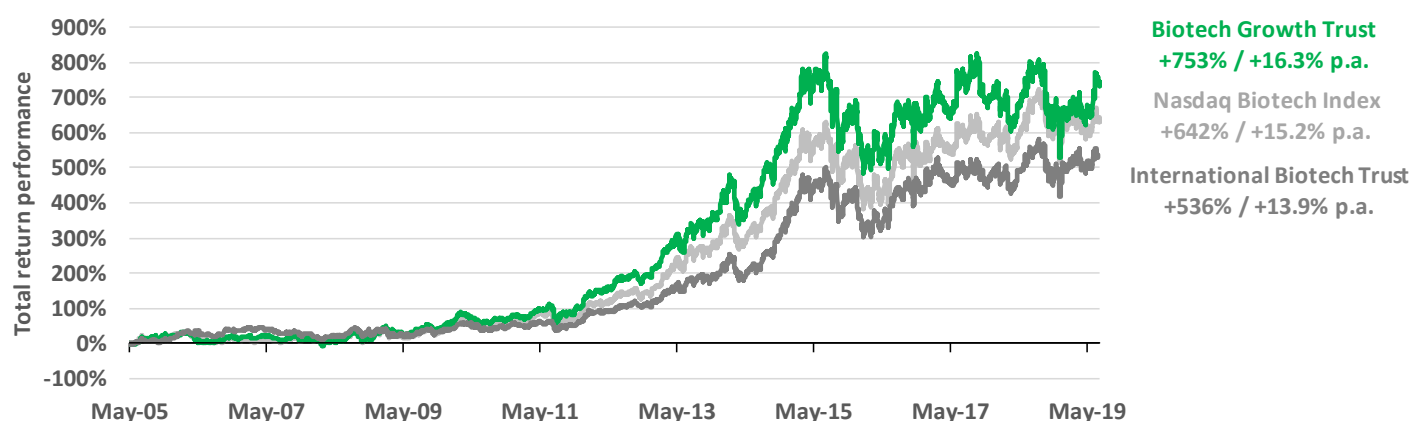
Significant positive contributions to performance since the end of March this year have come from **MeiraGTX** (+68% in £ terms, expansion of trial and positive results), **Athenex** (+57%, concerns over chemotherapy dosing strategy faded and positive response to private placement), **Sarepta** (+29%, competitor published weak clinical results), which are all now top 10 holdings, and **Turning Point Therapeutics** (+127%, strong performance since IPO in April).

Longer-term performance record under pressure

Outperformance since OrbiMed appointed in 2005

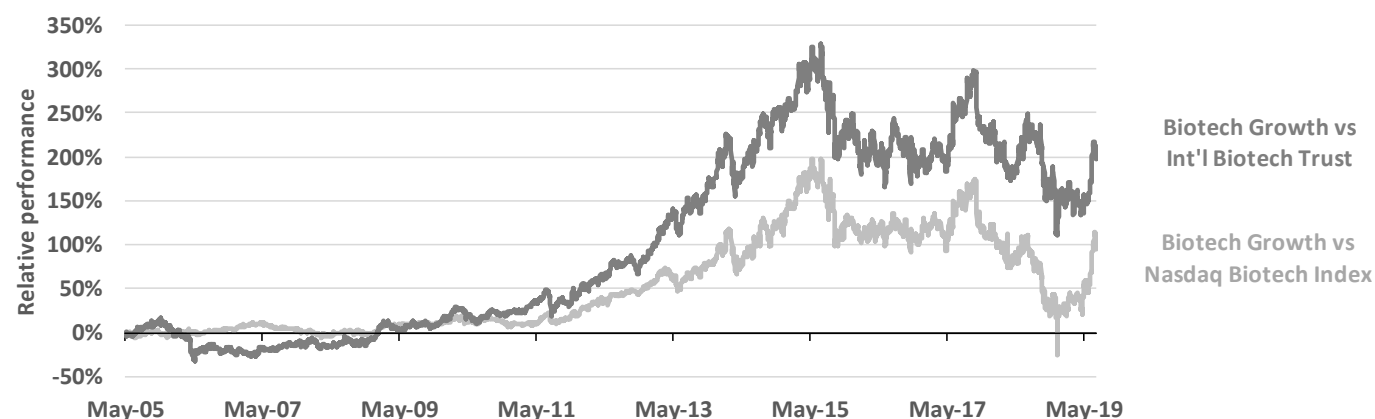
As the first chart on the next page shows, Biotech Growth Trust has a strong long-term performance record against both its benchmark and its closest peer. Since OrbiMed were appointed in May 2005 the fund's NAV has increased by 737%, equivalent to 16.2% p.a. This compares with +642% for the index in Sterling terms and +532% for the fund's closest peer, International Biotechnology Trust.

NAV performance since OrbiMed appointed



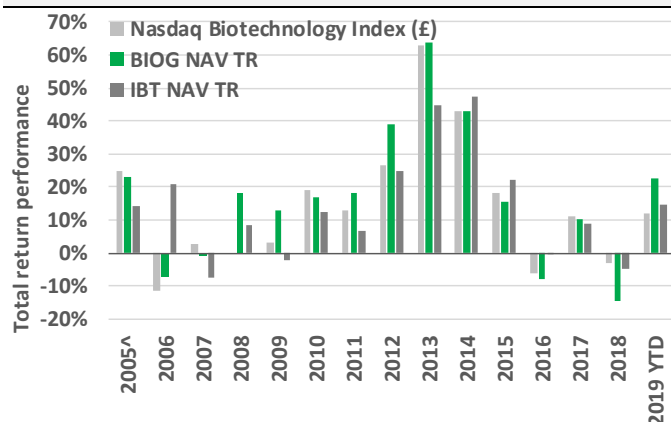
Source: Winterflood, Morningstar data from OrbiMed appointment on 18 May 2005 to 26 July 2019

Relative NAV performance since OrbiMed appointed



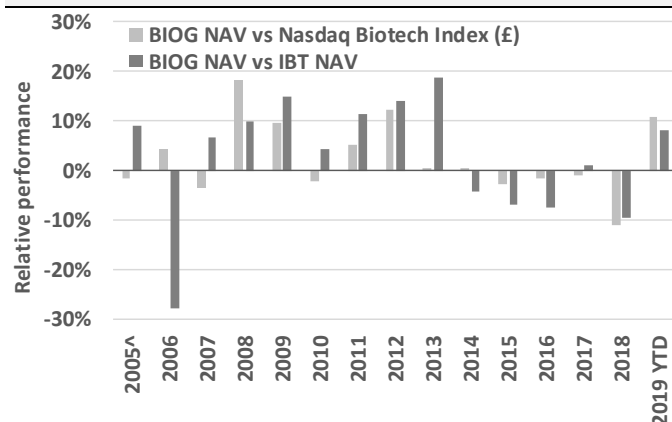
Source: Winterflood, Morningstar data from OrbiMed appointment on 18 May 2005 to 26 July 2019

Calendar year performance under OrbiMed



Source: Winterflood, Morningstar
^OrbiMed appointed manager on 18 May 2005

Calendar year relative performance under OrbiMed



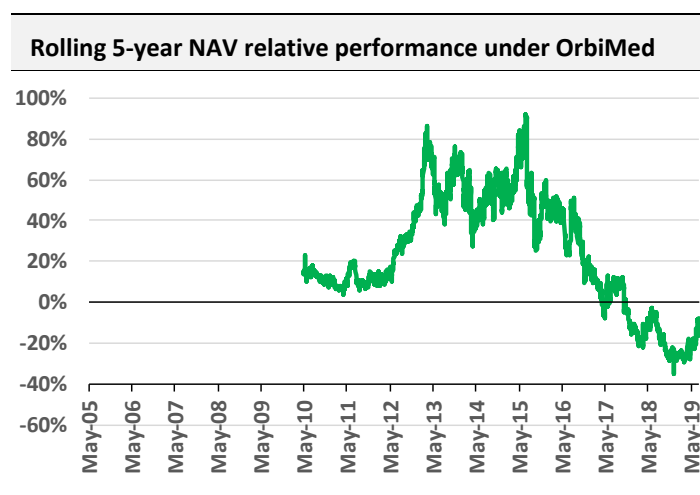
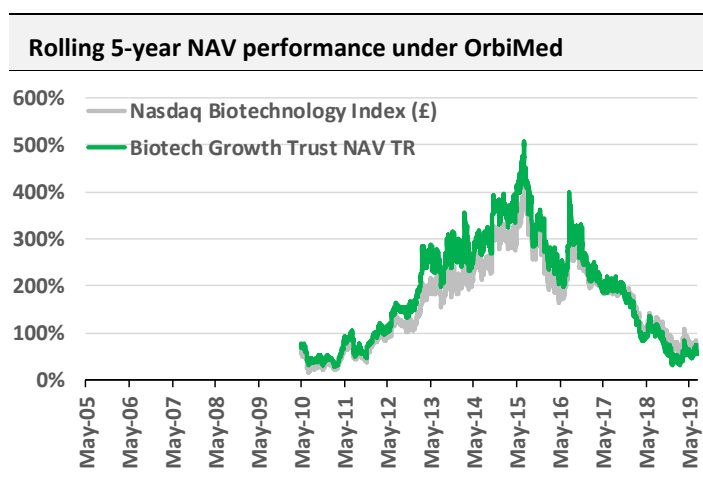
Source: Winterflood, Morningstar
^OrbiMed appointed manager on 18 May 2005

Weaker performance between 2014 and 2018

However, the level of outperformance has been eroded by weaker relative returns against both the Nasdaq Biotechnology Index and the fund's closest peer between 2014 and 2018 (see middle and lower right charts on the previous page). The last of these calendar years was the most disappointing with the fund's NAV falling by 14% compared with -5% for International Biotechnology Trust and -3% for the Nasdaq Biotechnology Index. As discussed above, 2019 has been a much stronger year for the fund so far and in NAV terms it has recovered the absolute losses from 2018 and has partially recovered the relative losses as well.

Performance record eroded

We can also see this theme of weaker relative returns by looking at the rolling performance of the fund against its benchmark. The charts below show how the fund's very strong 5-year relative performance record has been eroded since mid-2015 and coincides with the weakening of the absolute performance of the sector.



Board held extensive discussions with manager

In the annual report for the financial year to 31 March 2019 the Chairman commented that the Board has held extensive discussions with the manager *"in order to understand how a process which has had great long-term success has hit such choppy water."* In the Board's view it is clear that there is no obvious simple factor and it notes that the team and investing strategy are unchanged. However, it highlighted a shift in investor sentiment and a change in market behaviour, which has diluted the impact of the proprietary research conducted by the manager.

Overweight allocation to large-cap biotech has hindered performance

The manager attributes much of the underperformance over the last couple of years to the fund's overweight allocation to large-cap biotech companies, which represented between 55% and 65% of the portfolio over the last two years. Over this period large-cap biotech has underperformed emerging biotech and has been de-rated to trade at historically low P/E multiples, with disappointing clinical results for Celgene and Biogen contributing to the souring of generalist investor sentiment towards large-cap biotech.

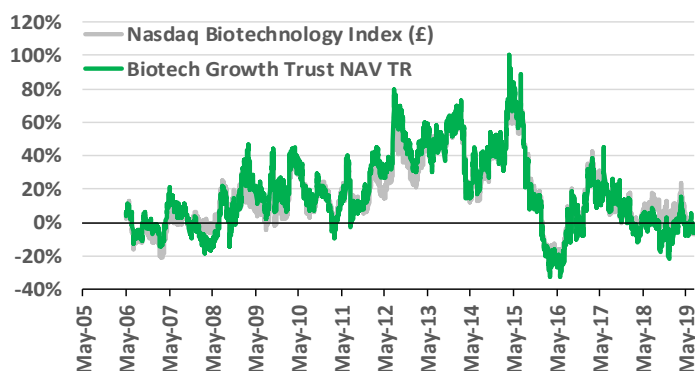
Performance improved in 2019

While 2018 was an obviously disappointing year for performance, the fund has struggled to meaningfully outperform either its benchmark or closest peer since 2013. However, 2019 appears to be the year that might break this trend.

One-year rolling relative NAV performance mainly negative since 2015

The one-year charts on the following page show that the fund's performance has been volatile in both absolute and relative terms over shorter periods, which in our view is consistent with the risk profile of the fund and the sector. Since the appointment of OrbiMed as manager in 2005 the fund's rolling one-year relative NAV performance was for the most-part positive, with the notable exception of 2008/9, until mid-2015. Since then the fund's one-year rolling relative NAV performance record has generally been negative.

Rolling 1-year NAV performance under OrbiMed



Source: Winterflood, Morningstar

^OrbiMed appointed manager on 18 May 2005

Rolling 1-year NAV relative performance under OrbiMed



Source: Winterflood, Morningstar

^OrbiMed appointed manager on 18 May 2005

Biotechnology & Healthcare sector – NAV and share price total return performance (%)

	NAV						Share price					
	1m	3m	6m	1y	3y	5y	1m	3m	6m	1y	3y	5y
BB Healthcare	-1.0	-2.5	5.0	1.4	n/a	n/a	-2.3	-1.6	2.8	2.4	n/a	n/a
Biotech Growth Trust	4.9	10.3	11.8	-4.7	13.9	57.4	5.4	10.5	12.4	-5.1	12.3	59.9
International Biotechnology Trust	1.4	3.4	6.2	-2.6	22.1	99.3	2.2	3.8	7.6	2.3	38.6	146.8
Polar Capital Global Healthcare	10.1	7.6	11.0	6.2	21.6	67.2	3.0	10.3	9.8	6.4	21.5	64.2
Syncona	0.0	0.0	11.5	12.3	86.3	106.0	15.0	2.4	-2.6	2.2	104.4	127.0
Worldwide Healthcare Trust	2.7	5.4	8.1	-1.0	25.7	103.9	3.2	6.6	8.6	-0.9	37.5	117.2
Peer Group Weighted Average	1.5	3.7	9.8	7.0	37.6	111.0	6.6	4.3	3.7	1.5	38.8	112.8
Nasdaq Biotechnology Index (£)	1.9	2.5	2.5	-4.8	21.3	74.0	1.9	2.5	2.5	-4.8	21.3	74.0
MSCI World Health Care Index (£)	2.9	8.8	12.3	10.5	30.1	94.1	2.9	8.8	12.3	10.5	30.1	94.1

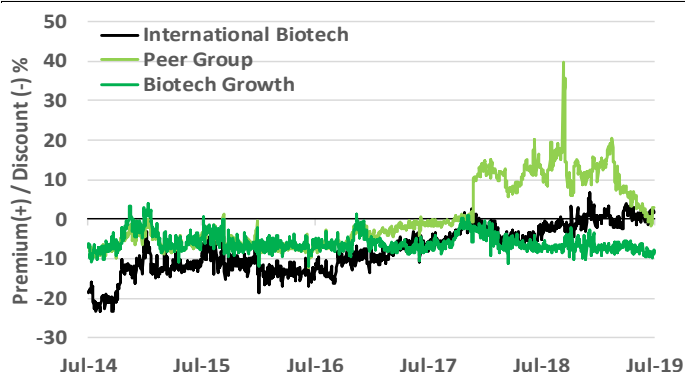
Source: Morningstar data to 26 July 2019

Rating

Peer group rating skewed
by Syncona

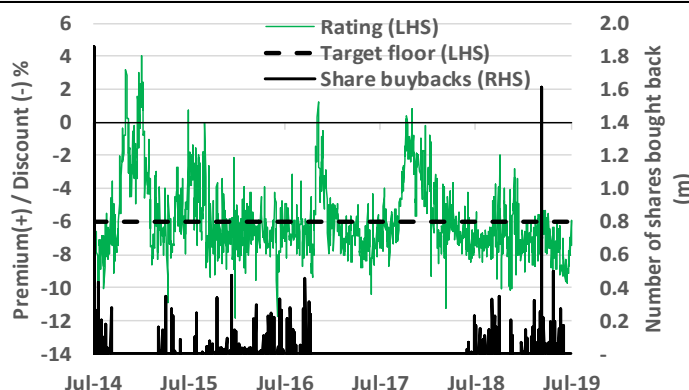
Until 2017 Biotech Growth Trust's rating had historically been in line with the peer group average, which includes funds investing in the broader healthcare sector, and at a premium to its closest peer, International Biotechnology Trust. However, the latter was re-rated when it introduced a dividend paid from capital, which is set at 4% of NAV each year, and currently trades on a small premium to NAV. Since the end of 2017 the peer group average rating has also been significantly skewed following the addition of Syncona, which until recently traded on a significant double-digit premium and is the largest fund in the peer group.

Five-Year Rating History



Source: Morningstar data to 18 July 2019

Rating and share buybacks over last 5 years



Source: Winterflood, Morningstar. Discount data to 26 July 2019. Share buyback data to 30 June 2019

Current discount beyond
Board's target floor

Biotech Growth Trust's shares are currently trading on a discount of 7%, which is broadly in line with the average over the last 12 months. The Board aims to limit the discount to no more than 6% using share buybacks. As shown in the chart above the Board has been active in buying back shares and the discount has generally remained within or around the targeted floor. In the first half of 2019 the fund has bought back 5.2m shares at a cost of £37m.

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