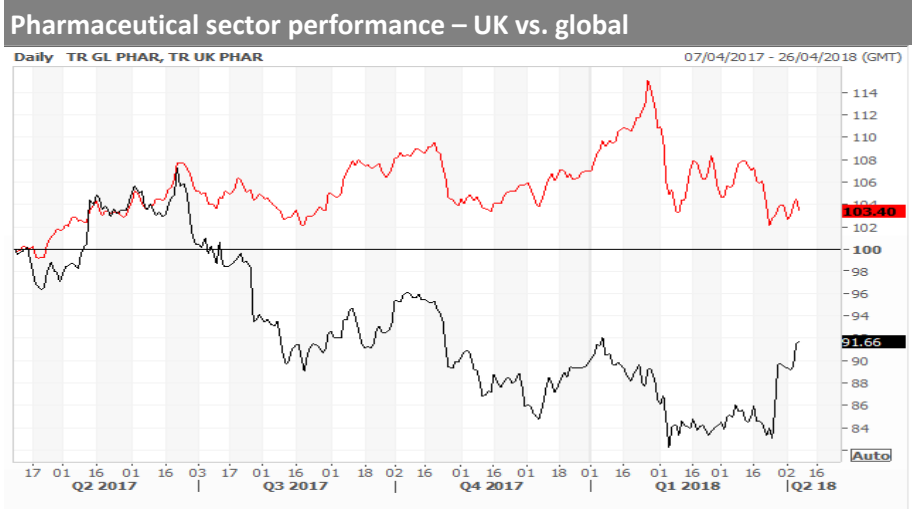


Global Pharmaceuticals

2017 industry statistics

During the last few weeks, most of the multi-national pharmaceutical companies have reported results for 2017, which has provided us with the opportunity to update our industry statistics and drug database. This report provides the first publication of global and US rankings of the top 15 drug companies for 2017. Comparisons are made with historic data to show how different company strategies have evolved. In addition, analysis has been provided for the evolution of therapeutic biopharmaceutical drugs, which saw sales rise 7% to \$197bn, representing 24% of the market, and driven by growth in antibody-derived drugs.

- ▶ **Global market:** Hardman & Co estimates that the worldwide prescription drug market had underlying growth of only 1.2% in 2017 to \$825bn, up from \$814bn in 2016. This contrasts with the 3% growth figure that has appeared in the annual reports of several drug companies.
- ▶ **US market:** The US market was an important driver of growth, rising 1.8% to \$325bn in 2017, from \$319bn in 2016, representing 39.5% of the global market. The FDA approved a record number of new drugs in 2017, with 46 approvals, backing up the Commissioner's stated goal to improve the agency's efficiency.
- ▶ **Biopharmaceuticals:** The spend on drugs classified as biopharmaceuticals grew 7% to \$197bn in 2017; these drugs now represent ca.24% of the entire market. Within this category, drugs using antibody technology grew 16.6% to ca.\$100bn.
- ▶ **Best-selling drugs:** Humira (AbbVie) remains the biggest drug, with ex-factory sales of \$18.4bn (+14.6%). The top 10 drugs in the world represent 9.5% of the entire market. On a cumulative basis, there are now six drugs in the \$100bn club.
- ▶ **R&D investment:** The top 15 drug companies re-invested 20.3% of sales back into new drug development, spending \$86.6bn out of the total spend of \$117bn by the 40 largest companies. The average R&D spend was \$5.7bn, ranging from \$9.2bn (Roche) to \$3.3bn (Gilead).



Note: Global pharma performance (red), UK pharma performance (black)
Source: Eikon Thomson Reuters

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2017 drug industry statistics

When writing research reports on our contracted companies, which are generally in the small- to mid-sized market capitalisation range, it is important to position them relative to the industry in which they operate. Apart from the Japanese, the major global pharmaceutical companies have all reported full-year results for 2017 over the past few weeks; therefore, we have taken the opportunity to update our industry database and generate the first cut of global rankings for 2017. For an industry that requires a long investment cycle – it still takes on average 10 years from discovery to launch of a new drug – decisions made many years ago have important consequences on current financial results. Therefore, looking back at operational performance over 20 years reveals how different company strategies have panned out.

Pharmaceutical database

Whatever the size of company, it is imperative to outline the commercial market opportunity that the company's (often disruptive) technology is targeting. While such work requires significant research, it often constitutes only a very small part of the overall report. It has the advantage, however, of providing us with a global commercial dataset that is reliable and independent of third-party input.

Pharmaceutical sales are defined as anything that requires a prescription (Rx) and specifically excludes Over-The-Counter (OTC) and consumer products. However, this does include generic drugs and biosimilars, both of which require a prescription.

Our database of pharmaceutical companies and drugs goes back to 1985. All the data are based on net ex-factory sales reported by companies and excludes all discounts and allowances, returns, chargebacks and government rebates, such as Medicaid and Medicare. All reported numbers are converted into USD at daily average exchange rates – available from the Bank of England website. These data have, therefore, been compiled consistently and with great care so that direct comparisons among companies can be made.

We have based our analysis on the accounts of around 40 multi-national companies, which cover ca.75% of the global pharmaceutical market and ca.90% of the US drug market. Market share statistics have been calculated from our provisional estimate for the global prescription drug market, which cannot be finalised until after the Japanese drug companies and Boehringer Ingelheim report in May 2018.

2017 global pharmaceutical market

Annual reports published by several drug companies over the last two months have cited – usually IMS – 3% growth for the global pharmaceutical industry in 2017. However, in our opinion, this looks optimistic. Hardman & Co estimates that the worldwide prescription drug market had underlying growth of 1.2% in 2017 to \$825bn, from \$814bn in 2016. There were no significant moves in exchanges rates against the US\$ which might have influenced the rate of growth.

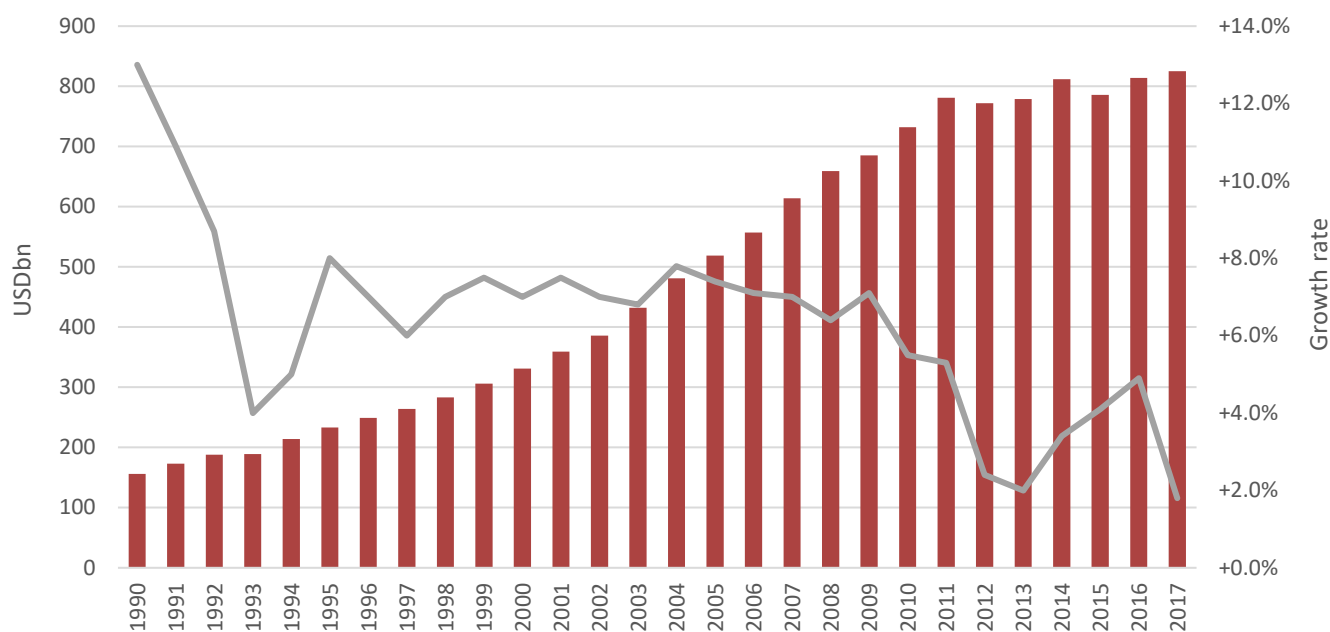
While there has been a generally positive trend in the underlying rate of growth for the industry over the last few years, in reality, it is showing compound growth over five years and 10 years of just 1.34% and 2.64%, respectively, which is much lower than many industry commentators had predicted.

2017 global market estimated at US\$825bn...

...representing underlying growth of just 1.2%...

...and compound growth of 2.64% over the last 10 years

Global prescription drug market – 1990-2017



Source: Hardman & Co Life Sciences Research

The US market remains the main growth driver, rising 1.8% in 2017

The US market has been an important contributor to growth. Based on companies that have reported to date, Hardman & Co estimates that the US prescription drug market increased 1.8% to \$325bn in 2017, up from \$319bn in 2016, and currently represents 39% of the global market.

Drug pricing is still a contentious issue

2017 was a difficult year for the industry, due largely to a background of considerable political uncertainty, government and media attention on drug pricing – particularly in relation to older drugs – and a rapidly rising number of generic and biosimilar approvals. However, we continue to believe that innovation will win out in the long-term, as evidenced by strong sales growth in biopharmaceuticals (+7%), which was led by antibody-derived drugs (+17%), and explains the continued heavy investment in R&D. Hardman & Co estimates that the top 15 drug companies had 53.0% of the world market in 2017 compared with 52.8% in 2016.

Investment in R&D remains strong

- ▶ In 2017, the top 15 companies invested 20.3% of pharmaceutical sales back into new drug development, compared with 20.5% in 2016.
- ▶ The average R&D spend of the top 15 companies was \$5.7bn – ranging from \$9.2bn (Roche) to \$3.3bn (Gilead).
- ▶ Total R&D spend of the top 15 companies was \$86.6bn (\$86.0bn) out of a total estimated spend of \$117bn by 40 companies.

Investment in R&D remains very strong...

...with companies investing 20.3% of pharma sales back into pharma R&D

Companies are continuing to invest heavily in their futures, as all managements can see that successful innovation pays off (see pages 9-11). However, in 2017, the top 15 R&D spenders kept the level of investment broadly flat at \$86.6bn (\$86.0bn in 2016). Over the last 10 years, the top 15 R&D investors have increased spend at a 3.1% CAGR from \$63.9bn (18.9% of pharma sales) to \$86.6bn (20.3%). The highest spenders were Celgene (45.6% of sales), AZN (27.9%), and Eli Lilly (25.4%); while the lowest spenders were Gilead (12.8%) and GSK (14.7%). It should be noted that the 15 constituent companies that comprise the top 15 are different each year.

2017 company highlights

Risers in 2017

- ▶ **Johnson & Johnson (JNJ):** JNJ rose from #6 to #4 in the global ranking during 2017. However, this was driven entirely by the acquisition of Actellion, demonstrated by its market share of 4.39% being the simple addition of the market share of each independent company in 2016.
- ▶ **AbbVie (ABBV):** With the world's largest drug by ex-factory sales (Humira) growing much faster (+14.6%) in 2017 than the market (1.2%), it is inevitable that this is driving market share gains and the ranking of AbbVie.
- ▶ **Eli Lilly (LLY):** Following a three-year period when the market share of LLY and its ranking have been falling, the corner appears to have been turned with the recent launches of new drugs that have penetrated the market rapidly, including Trulicity (diabetes II) and Jardiance (diabetes II).

Fallers in 2017

- ▶ **Sanofi (SAN):** SAN lost market share and one place in the global ranking because of a sales decline with Lantus (diabetes I), its largest-selling drug. The main reason for this fall was its exclusion from the formularies of CVS (from 1st January 2017) and UnitedHealthcare (1st April 2017). Newer drugs failed to compensate.
- ▶ **Gilead Sciences (GILD):** GILD fell for the second year running, slipping to #9 in 2017 (from #7 in 2016) globally, and to #4 (from #3) in the US, following the launch of new hepatitis drugs by major competitors. To compensate for this and to embrace new technology, GILD has acquired Kite Pharmaceuticals, giving it access to the emerging field of cell-based therapies.
- ▶ **Teva (TEVA):** Teva went a step too far in 2016 with the acquisition of Allergan, funded largely through debt. This has left the balance sheet over-stretched at a time when there is severe generic pricing competition and sales of all its key branded medicines are falling – notably Copaxone following patent expiry.

Global pharmaceutical industry – 2017 ranking vs. 2007

--Global rank --		Company	Sales	Market share		
2007	2017		CAGR	2007	2017	Δ
1	1	Pfizer	+0.6%	6.98%	5.50%	-1.48%
4	2	Novartis	+3.0%	5.20%	5.22%	0.02%
5	3	Roche	+3.2%	4.99%	5.08%	0.09%
8	4	Johnson & Johnson	+3.8%	4.05%	4.39%	0.34%
7	5	Merck & Co	+2.8%	4.36%	4.29%	-0.07%
2	6	Sanofi	-1.3%	6.32%	4.13%	-2.19%
3	7	GlaxoSmithKline	-2.8%	6.27%	3.51%	-2.77%
10	8	AbbVie	+5.8%	2.62%	3.42%	0.80%
27	9	Gilead Sciences	+21.3%	0.61%	3.11%	2.50%
13	10	Amgen	+4.3%	2.33%	2.64%	0.31%
6	11	AstraZeneca	-3.5%	4.68%	2.44%	-2.23%
9	12	Eli Lilly	+1.5%	2.78%	2.40%	-0.38%
12	13	Bristol-Myers Squibb	+2.1%	2.54%	2.33%	-0.21%
18	14	Teva	+8.0%	1.44%	2.30%	0.86%
14	15	Bayer	+2.7%	2.29%	2.23%	-0.06%
Global Rx market			+3.0%	57.5%	53.0%	-4.47%

Source: Company reports; Hardman & Co Life Sciences Research

Pharmaceutical industry – global ranking, 2002-17								
#	2002	Share	2007	Share	2012	Share	2017	Share
1	GlaxoSmithKline	6.90%	Pfizer	6.98%	Pfizer	6.18%	Pfizer	5.50%
2	Pfizer	6.72%	Sanofi	6.32%	Novartis	6.17%	Novartis	5.22%
3	Merck & Co	5.91%	GlaxoSmithKline	6.27%	Merck & Co	5.26%	Roche	5.08%
4	AstraZeneca	4.47%	Novartis	5.20%	Sanofi	4.95%	Johnson & Johnson	4.39%
5	Aventis	4.40%	Roche	4.99%	Roche	4.87%	Merck & Co	4.29%
6	Johnson & Johnson	4.14%	AstraZeneca	4.68%	GlaxoSmithKline	4.38%	Sanofi	4.13%
7	Novartis	3.73%	Merck & Co	4.36%	AstraZeneca	3.62%	GlaxoSmithKline	3.51%
8	Bristol-Myers Squibb	3.67%	Johnson & Johnson	4.05%	Johnson & Johnson	3.28%	AbbVie	3.42%
9	Pharmacia	3.33%	Eli Lilly	2.78%	Abbott Labs	3.00%	Gilead Sciences	3.11%
10	Lilly	3.02%	Abbott Labs	2.63%	Eli Lilly	2.58%	Amgen	2.64%
11	Roche	2.81%	Wyeth	2.59%	Teva	2.40%	AstraZeneca	2.44%
12	American Home	2.74%	Bristol-Myers Squibb	2.54%	Bristol-Myers Squibb	2.28%	Eli Lilly	2.40%
13	Schering-Plough	2.33%	Amgen	2.33%	Takeda	2.19%	Bristol-Myers Squibb	2.33%
14	Takeda	2.29%	Bayer	2.29%	Amgen	2.16%	Teva	2.30%
15	Abbott Labs	2.28%	Schering-Plough	2.07%	Boeh. Ingelheim	1.90%	Bayer	2.23%
		58.7%		60.1%		55.2%		53.0%

Source: Hardman & Co Life Sciences Research

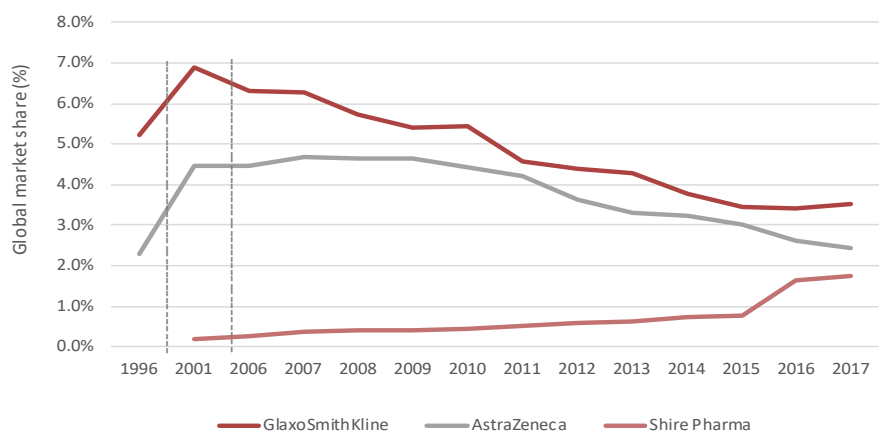
Pfizer

Pfizer (PFE) retained its #1 position in 2017, despite reporting a modest fall in sales, both globally and in the US, with market shares of 5.50% and 6.63%, respectively. Given its leading role in industry consolidation over the last 20 years, it has products in most drug categories. The performance of its drugs was mixed, but growth was seen from two of its recently launched kinase inhibitors, Ibrance (metastatic breast cancer) and Xeljanz (rheumatoid arthritis). It is interesting to note that PFE is looking to divest its consumer/OTC business, whereas others are expanding in this area.

UK drug companies

The decline in market share and the loss of position in both world and US rankings by GSK and AZN is shocking. The table above shows GSK to be global #1 just 15 years ago, and now languishing in #7 position. The story for AZN is no better, although the stock market is holding out hopes that its R&D portfolio will deliver and start to reverse recent declines. At the time of going to press, the ever-improving Shire (SHP) was being considered as a take-out target by leading Japanese company, Takeda.

Global market share – UK companies in world top 15

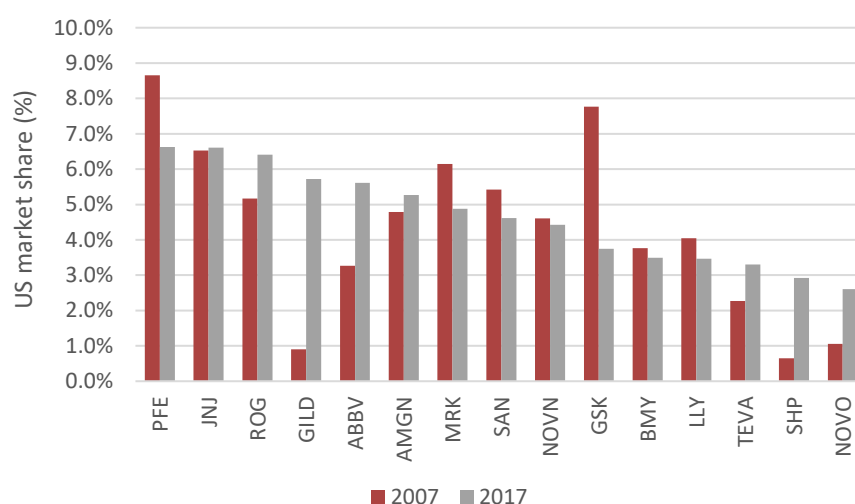


Source: Hardman & Co Life Sciences Research

Focus on the US market

- ▶ Despite no sales growth in 2017, **PFE** retained its #1 position in the US in 2017, with 6.63% (6.81% in 2016) market share.
- ▶ **GILD** has slipped back another place in the ranking to #4, as competition continues to erode its hepatitis C market share.
- ▶ **Roche** is consistently one of the leading performers, with sales growth of 15% and taking it one place up the ranking to #3.
- ▶ **AZN** continues to find itself ranked outside the top 15 in the important US market, and slipped back further in 2017 to #18 (#16).
- ▶ Hardman & Co estimates the value of the US market at \$325bn in 2017, representing 39.4% of the world market. It grew just 1.8%. Our data analysis covers ca.90% of this market.

US ranking, 2007-17 – winners and losers



Source: Hardman & Co Life Sciences Research

US pharmaceutical industry – 2017 ranking vs. 2007

----US rank ----		Company	Sales CAGR	----- Market share -----		
2007	2017			2007	2017	Δ
1	1	Pfizer	+0.4%	8.65%	6.63%	-2.03%
3	2	Johnson & Johnson	+3.2%	6.53%	6.61%	+0.08%
7	3	Roche	+5.4%	5.17%	6.41%	+1.24%
41	4	Gilead Sciences	+24.0%	0.91%	5.72%	+4.81%
13	5	AbbVie	+8.9%	3.27%	5.62%	+2.35%
8	6	Amgen	+4.1%	4.79%	5.27%	+0.48%
4	7	Merck & Co	+0.8%	6.15%	4.88%	-1.27%
5	8	Sanofi	+1.5%	5.42%	4.61%	-0.81%
9	9	Novartis	+2.7%	4.61%	4.43%	-0.18%
2	10	GlaxoSmithKline	-4.1%	7.77%	3.74%	-4.02%
11	11	Bristol-Myers Squibb	+2.4%	3.76%	3.49%	-0.27%
10	12	Eli Lilly	+1.6%	4.04%	3.47%	-0.58%
16	13	Teva	+7.0%	2.27%	3.30%	+1.03%
31	14	Shire Pharma	+19.9%	0.65%	2.93%	+2.28%
22	15	Novo Nordisk	+12.9%	1.06%	2.60%	+1.55%
US Rx market			+3.1%	66.0%	69.7%	+1.7%

Source: Company reports; Hardman & Co Life Sciences Research

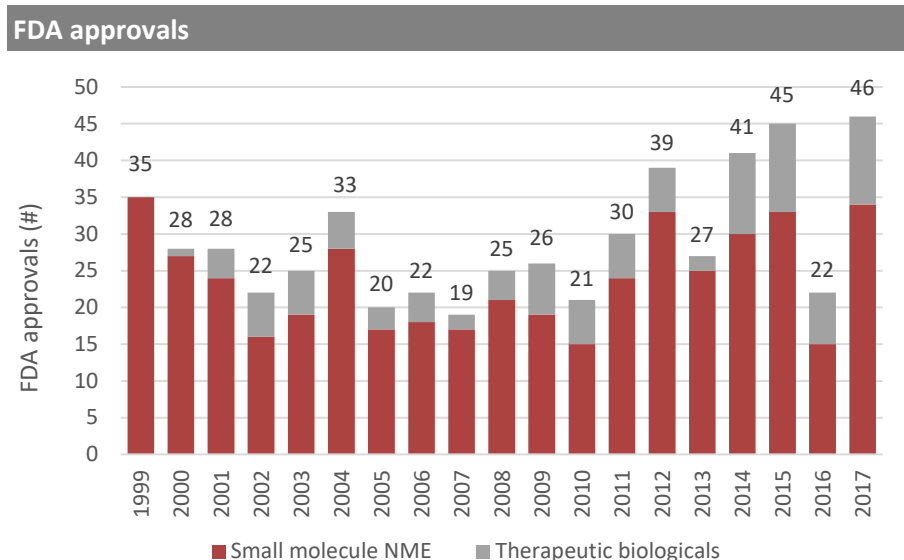
Different strategies

The last decade is ideal for highlighting the different strategies employed by company management teams. The chart and table above show the ranking of the top 15 companies by US Rx drug sales in 2017 compared with 2007, emphasising the change in market share over this period of time.

- ▶ **Organic growth:** Success is being generated largely by the launch of new drugs from in-house development, e.g. Amgen, Roche, AbbVie, GILD, Novo Nordisk.
- ▶ **Buy-and-build:** Sales growth, and entry into the leading group of companies, has been through acquisition, e.g. Teva, Shire.
- ▶ **Defensive:** Market share has been retained by acquiring smaller competitors, often to offset the loss of patent expiry on major drugs, e.g. PFE, Merck & Co.

FDA approvals in 2017

- ▶ 2017 was a record year for FDA approval of New Molecular Entities (NMEs), with 46 approvals, up 109% and beating the previous record of 45 set in 2015.
- ▶ 34 (74%) were traditional small molecules and 12 (26%) were novel biopharmaceuticals.
- ▶ In addition, there were 847 generics approved in 2017, up 37% from the previous record (633) in 2016. This is almost certainly a reflection on the introduction of user fees for generic drugs (GDUFA) in 2013, and revised in 2017.
- ▶ FDA Commissioner, Scott Gottlieb, has a stated goal to improve efficiency at the agency, particularly with respect to oncology drugs, and the rate of approvals seen in 2017 reflects this approach.
- ▶ At the end of 2017, there were 37 NMEs pending, which augurs well for a positive outcome again in 2018, although four have been issued with a Complete Response Letter.
- ▶ Interestingly, there have been 322 NMEs approved by the FDA over the last 10 years. This averages out at just 0.9 new drug approvals per company per annum.



Source: FDA; Washington Analysis Group; Hardman & Co Life Sciences Research

Top-selling drugs in 2017

- ▶ The biggest-selling drug in 2017 was **Humira** (AbbVie), with sales of \$18.4bn (+15%).
- ▶ The top 10 drugs in 2017 accounted for 9.5% of the world market.
- ▶ **Biopharmaceuticals** represented ca.24% of the world market in 2017, with sales of \$197bn, and growth of 7%.
- ▶ Within biopharmaceuticals, drugs derived from **monoclonal antibodies** (mAb) were the growth drivers, with 2016 sales of \$99bn, up 17%.
- ▶ The biggest-ever drug in history is still **Lipitor**, with cumulative ex-factory sales since launch of \$154bn.

Top 10 best-sellers

Top 10 drugs in world account for 9.5% of the market...

...with Humira alone representing 2.2%

In 2017, the top 10 best-selling drugs recorded ex-factory sales of \$78.5bn and represented 9.5% of the global pharmaceutical market. Way out in front is Humira (adalimumab; AbbVie), with reported sales of \$18.4bn and growth of 14.6%. Since it was launched 15 years ago, this drug has generated cumulative sales of \$113.1bn, joining the \$100bn club during the last year. Humira was the first 'humanised' mAb to be approved by the FDA, and is indicated for the treatment of autoimmune diseases such as rheumatoid arthritis, Crohn's disease and psoriasis.

Global top 10 best-selling drugs in 2017

Rank	Drug	Primary indication	Marketer	Sales (\$m)	Growth (%)
1 (1)	Humira	Arthritis	AbbVie	18,427	14.6%
2 (2)	Enbrel	Arthritis	Amgen/PFE	8,225	-10.7%
3 (5)	Revlimid	Multiple myeloma	Celgene	8,187	17.4%
4 (4)	Rituxan/MabThera	Non-Hodgkins lymphoma	Roche	7,508	1.3%
5 (8)	Herceptin	Cancer	Roche	7,128	3.5%
6 (7)	Avastin	Cancer	Roche	6,797	-1.3%
7 (6)	Remicade	Arthritis	JNJ	6,315	-9.3%
8 (10)	Prevnar	Pneumococcal vaccine	Pfizer	5,601	-2.0%
9 (9)	Lantus	Diabetes I	Sanofi	5,211	-17.6%
10 (11)	Lyrica	Alzheimer's disease	Pfizer	5,064	2.0%

Source: Hardman & Co Life Sciences Research

Successful innovation can transform financial performance

Revlimid (lenalidomide, Celgene) for multiple myeloma should also be highlighted for its strong growth rate of 17.4% to \$8.2bn, and demonstrating how innovation can transform a company's fortunes.

Entry of biosimilars

Biosimilars are on the way

A combination of patent expiry and increased activity at the FDA with respect to the approval of biosimilars is likely to influence the growth rate of biopharmaceuticals. The following table indicates the six current approvals in place for four of the top-selling drugs.

FDA approved biosimilars

Original brand	Biosimilars	Marketer
Humira	Amjevita and Cyltezo	Amgen and Boehr. Ingelheim
Herceptin	Ogivri	Mylan/Biocon
Avastin	Mvasi	Amgen
Remicade	Renflexis and Ixifi	Samsung Biopsis and Pfizer

Source: Washington Analysis Group and Hardman & Co Life Sciences Research

Biopharmaceuticals

Biopharmaceutical market was \$197bn in 2017...

...with growth of 6.9%

Within the overall global prescription market, drugs classified as biopharmaceuticals (ca.130 + vaccines) had reported sales of \$197bn in 2017, and now represent 24% of the entire market. The growth rate in 2017 was above average, at 6.9%. Every year since 2000, biopharmaceuticals have represented a greater proportion of the global pharmaceutical market. Over the last 10 years, the biopharmaceutical market has grown at a compound rate of 7.4%, compared with 2.0% for all other drugs.

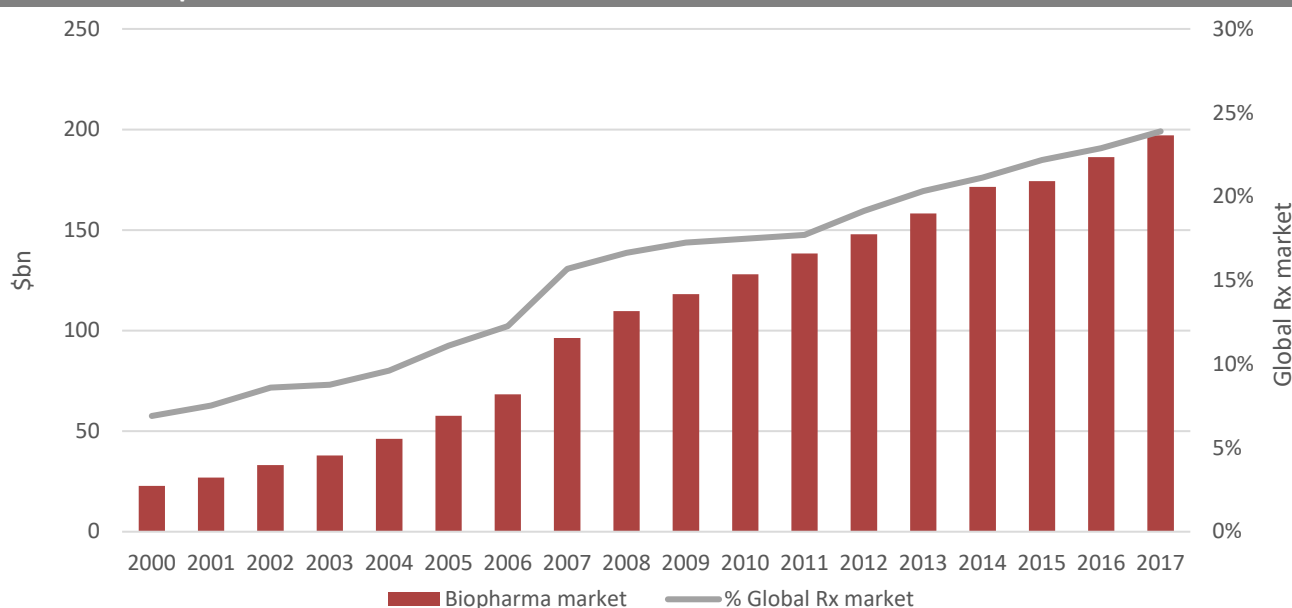
For clarification, we classify a biopharmaceutical as a drug derived from biological sources, which may be through extraction or semi-synthesised and would include the likes of monoclonal antibodies, vaccines and blood products.

Evolution of global biopharmaceuticals market – 2002 to 2017						
2017 rank	Drug	2002	2007	2012	2017	CAGR 2007-17
1	Insulin/analogues	3,873	11,572	21,987	25,378	8.2%
2	Humira	0	3,064	9,265	18,427	19.7%
3	Enbrel	961	5,435	8,514	9,034	5.2%
4	Rituxan/MabThera	1,500	4,595	7,150	7,508	5.0%
5	Remicade	648	4,042	6,278	7,128	5.8%
6	Herceptin	0	3,421	6,145	6,797	7.1%
7	Avastin	1,634	3,327	6,139	6,315	6.6%
8	Remicade	2,189	4,280	5,516	5,628	2.8%
9	Human growth hormone	7,725	8,988	5,923	5,218	-5.3%
10	Obdivo	0	0	0	4,948	-
Total biopharmaceuticals		33,201	96,325	147,832	197,080	+7.4%
% Global Rx market		8.6%	15.7%	19.1%	23.9%	

Source: Hardman & Co Life Sciences Research

The steady growth in the annual sales of biopharmaceutical drugs, together with their rising proportion of the global Rx drugs market is demonstrated in the following graphic.

Evolution of biopharmaceutical sales



Source: Hardman & Co Life Sciences Research

Antibody-derived therapeutics

There are 71 approved drugs derived from antibodies...

...which had sales of ca.\$99.5bn in 2017, with growth of 16.6%

In 2017, drugs derived from mAb were the fastest-growing sub-segment of the Rx market with growth of 16.6% to ca.\$99.5bn, and representing 12% of the entire market. There are currently 71 regulatory-approved mAb drugs. The following table shows the ranking of the top 10 drugs by ex-factory sales. The table also shows that drugs derived from antibodies have generated cumulative sales approaching a staggering \$670bn since the first one was launched in 1995. These figures are expected to rise further in coming years given the large numbers in clinical trials.

Top 10 antibody drugs – 2017							
2017 rank	Drug	Generic name	Company	2016 (\$m)	2017 (\$m)	Growth (%)	Cumulative (\$m)
1	Humira	adalimumab	AbbVie	16,078	18,427	14.6%	113,114
2	Rituxan/MabThera	rituximab	Roche	7,411	7,508	1.3%	88,458
3	Herceptin	trastuzumab	Roche	6,885	7,128	3.5%	73,769
4	Avastin	bevacizumab	Roche	6,886	6,797	-1.3%	70,888
5	Remicade	infliximab	Johnson & Johnson	6,966	6,315	-9.3%	72,813
6	Opdivo	nivolumab	Bristol-Myers Squibb	3,774	4,948	31.1%	9,203
7	Stelara	ustekinumab	Johnson & Johnson	3,232	4,011	24.1%	15,449
8	Keytruda	pembrolizumab	Merck & Co	1,402	3,809	171.7%	5,832
9	Soliris	eculizumab	Alexion Pharma	2,843	3,144	10.6%	15,533
10	Orencia	abatacept	Bristol-Myers Squibb	2,265	2,479	19.1%	6,987
Total mAb sales				85,223	99,389	16.6%	669,913

Source: Company reports; Hardman & Co Life Sciences Research

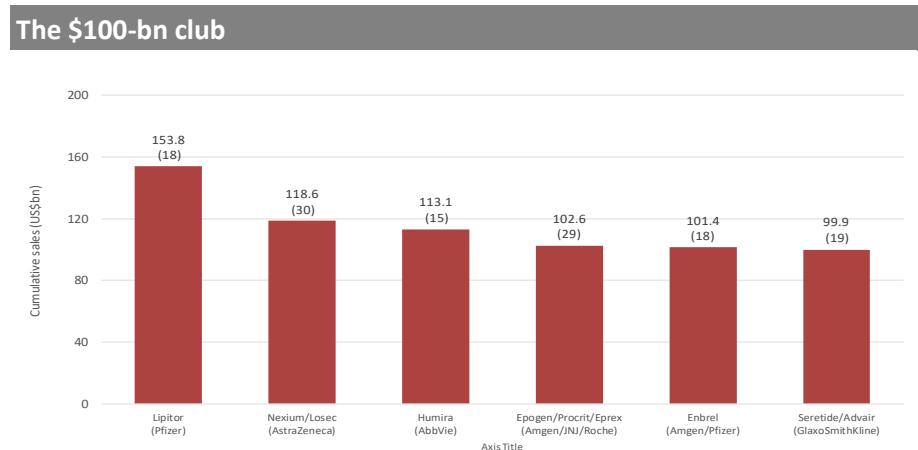
Embracing new technology has been the key to success

It is clear that certain companies embraced this technology early on and are reaping the benefits. Roche was one of the first to buy in to biotechnology through its innovative deal with Genentech. The rewards from these investments are considerable. Over the next few years, given recent approvals and anticipated approvals, we would expect to see Bristol-Myers Squibb and AZN featuring more in this list. The question for companies and investors alike is, therefore, 'what is the next technology on which companies should be focusing?'

Six drugs have generated cumulative sales of >\$100bn

The \$100bn club

Although most analysis is done on sales made in an individual year and the growth that has been generated, the strength of our database allows us to look at the ex-factory sales in a slightly different way – cumulative sales since launch. There are now six drugs that have achieved sales in excess of \$100bn since launch.



Number in brackets: full years of sales since drug launch

Source: Hardman & Co Life Sciences Research

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Dr Martin Hall has been a pharmaceutical and healthcare analyst in the City for 30 years and joined Hardman & Co in 2013.

Martin studied Pharmacy (B.Pharm.Hons) at The London School of Pharmacy, followed by a Ph.D at the Institute of Psychiatry, London, investigating the underlying mechanisms of Parkinson's Disease and schizophrenia. After post-doctoral experience at the Collège de France, Paris, and at the Parke-Davis (Warner Lambert) Research Centre in Cambridge, Martin entered the City as a pharmaceutical/healthcare analyst in 1987, working mostly at UBS and HSBC, taking the strategic view that the sector should be viewed on a global basis. From 2004 until 2012, Martin worked at Eden Financial, where he undertook bespoke research, before developing a corporate finance franchise. This work has continued at Hardman & Co since 2013.

Dr Dorothea Hill

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Dr Dorothea Hill is relatively new to the City, joining the Life Sciences team at Hardman & Co in 2016.

Dorothea's expertise lies in next-generation sequencing, following her DPhil in molecular biology at the University of Oxford. Her academic research involved the use of genomics to understand the biology of bacterial pathogens in order to inform vaccine intervention. She was part of several public-private partnerships that involved biotech companies, patient charities, and Public Health England. Prior to her PhD, Dorothea worked for the Gates Foundation/Wellcome Trust-funded MenAfriCar Consortium, characterising the meningococcal epidemiology of countries of the African Meningitis Belt prior to MenAfriVac rollout. She is the author of nine peer-reviewed publications, and has a BA(Hons) in biological sciences from St Catherine's College, Oxford.

Dr Grégoire Pavé

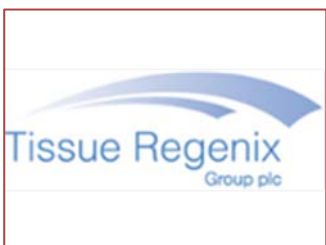
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Dr Grégoire Pavé is also relatively new to the City, joining the Life Sciences team at Hardman & Co in 2016.

Greg has considerable experience in the field of drug discovery and development. After successfully gaining his PhD in medicinal chemistry in 2003, he obtained a post-doctoral position at Imperial College London, working on natural product synthesis. He then joined Cancer Research Technology, the development and commercial arm of Cancer Research UK in 2005, where he was involved in multiple oncology projects. Greg has broad experience in drug discovery/development projects from target identification/validation all the way through to clinical trials. He has also gained valuable experience in evaluating life science projects and their commercial opportunities. He has played a role of reviewer in peer-review journals from the American Chemical Society. He is the author of 14 scientific papers and owner of four patents, and holds the IMC and PRINCE2 qualifications.

Hardman & Co Life Sciences clients



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(Disclaimer Version 4 – Effective from April 2018)

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The fact that we are commissioned to write the research is disclosed in the disclaimer, and the research is widely available.

The full detail is on page 26 of the full directive, which can be accessed here: <http://ec.europa.eu/finance/docs/level-2-measures/mifid-delegated-regulation-2016-2031.pdf>

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