DEAL WATCH

medius associates

Annual Review 2017

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Contents

Our Annual Review for 2017 is based on the individual Medius monthly Deal Watch articles which review the top pharma and biotech deals as announced by headline value plus other deals that are considered to be noteworthy. Each deal is recorded in the month of its announcement. The headline value is as quoted in the various press releases, i.e. it is based on the sum of any initial (upfront / signature) payments, option fees, R&D funding, development milestone payments, sales threshold and other success or contingent payments, as cash or equity. The headline value does not include royalty payments. Where relevant and possible, a per programme figure is also quoted.

Whilst this review is not an exhaustive analysis of every deal announced during 2017, our intention is to capture the dominant trends and highlight novel approaches that may be of interest to the business development / licensing professional. Every effort is made to ensure that the information provided in this report is accurate. The views expressed in this report are those of the Deal Watch authors; no representation is made by Medius or any of the companies referred to in this document.

Executive Summary

2017 has seen a continuation of the decline in overall volume of deals which was noted during 2016 from 2015 with a commensurate drop in values. Other key observations on the trends seen during 2017 include:

- ◊ The **merger mania** pace of deal activity from several years ago continues to slow. This has largely been influenced by a combination of political uncertainty (i.e. Trump's America, Brexit and political issues in other EU countries) and financial factors (i.e. surging stock markets and high company valuations). However M&A activity is still being driven by strategic factors such as the need for supplementing product and technology pipelines
- ◊ Similarly, the trend for **major asset swaps** to rationalise product portfolios has slowed with the obvious exchanges to maintain dominance in key therapeutic fields now in place
- ◊ **Activist investors** continue to hold power and influence the structure and deal making activities of large companies
- ◊ J&J / Janssen has taken over the **top spot** in terms of total numbers of deals from AstraZeneca
- ◊ **Chinese biopharma** have been particularly active in deal making in 2017 with Chinese companies accounting for 10% of the total number of deals reported in Deal Watch during the year
- ◊ Oncology, immuno-oncology and CNS remain the **most popular therapeutic areas** for transactions and there is a significant trend towards licensing deals for clinical stage and approved/ marketed assets
- ◊ In Medius' opinion following the tax changes in the US M&A in 2018 is **not expected to boom** as predicted by some commentators. The repatriation of cash, assuming companies decide that it is in their best interest to do so, will mainly benefit the US big pharma companies who will have competing demands to reduce debt, undertake share buybacks, increase dividends and capital expenditure
- ◊ The **generics and OTC markets** have seen consolidation over the past few years and this is expected to continue in 2018 as companies divest non-core businesses
- ◊ **Chinese companies** are expected to become increasingly important as deal makers in 2018 and may start making more company acquisitions.

2017: The Year when Companies Really Hit the *Pause* Button on M&A

Politics

At the beginning of 2017 the biopharma industry was facing a more uncertain future than usual. In the US the election of Donald Trump presaged bad news and good news: repeal of Obamacare; competitive bidding to reduce prices because the "industry was getting away with murder"; changes at the FDA and tax cuts. Europe was not immune from the populist movement that elected Trump. The rise of nationalist parties threatened the political establishment in France, Netherlands and Germany and in the EU. In addition the UK industry (and the Government) had no idea what Brexit would bring. When there is a high level of uncertainty major companies tend to delay major capital projects including M&A.

Financial markets

Against this uncertain political background there was a more certain, less volatile, financial environment. Interest rates remained low leading to a low cost of debt and stock markets surged leading to high valuations of biotech and pharmaceutical companies. A survey of fund managers in August by Bank of America Merrill Lynch found that a net 46% of them thought equities were overvalued, the biggest gap ever recorded. During the year a number of big pharma companies including Pfizer, Sanofi and GSK expressed caution about M&A given the high valuations.

Another financial factor that is working against acquisitions of privately owned biotech companies is both the availability of VC funds, at least in the US, and increased optimism by investors that an exit can be made via an IPO rather than a trade sale. An IPO may be possible on NASDAQ but is unlikely in the UK or other European markets. An analysis by Syncona, the life science venture capital fund, showed that in the period from 2013 to 2017 there were 179 biotech company IPOs in the US compared to 60 in the UK and of those 60 only 20 survive today.

Investors

Finally, in terms of the deal making environment, the role of activist investors needs to be considered. The Valeant/ Pershing Capital/Allergan debacle a few years ago has not deterred activist investors from lobbying pharmaceutical company Boards to sell the company, restructure or undertake share buy backs and increase dividends. In 2015 and 2016 the Woodford Investment Fund proposed that GSK should be broken up as "value could be created for the company's shareholders if it split itself into separate, more specialised business units". GSK listened but did not do anything. Unable to persuade GSK to break up the business, Woodford sold its holding in GSK in May 2017. In July, GSK announced restructuring changes including investment in pharmaceutical sites, changes in antibiotic manufacturing and sale of the Horlicks brand, and a strategic review of its R&D programmes. This is the first significant change enacted by the new GSK CEO appointed in March but maybe it was, at least partly, in response to Woodford's campaign. In 2016 Stada succumbed to activist investor pressure (see Generics section). With the increasing influence of activist investors, there is expected to be more pressure on companies to undertake deals such as product or business area divestments. Perhaps this is a factor driving Pfizer's rumoured sale of its consumer business?

Industry

The pharmaceutical industry is the most regulated in the world. During 2017 the regulators continued to apply sanctions against manufacturers that breached compliance regulations. This led to a shortage of supply of some drugs. In terms of pricing, in Europe drug costs remained under severe pressure from payers and legal actions were started against some companies for excessively increasing prices. In contrast, in the US where there is free pricing, there was a popular outcry against increases in drug costs. As a result companies seem to have imposed a voluntary limit on price increases of 10% as seen in early 2017 price changes. However the major impact on companies in 2017 has not been the macro-economic environment. Instead companies have risen and fallen as a result of individual circumstances such as unsustainable debt levels, new product growth, development success/failure and competition. For the companies in difficulties it has resulted in sale of assets and substantial restructuring. For example Teva announced plans to reduce its cost base by $3bn based on a 25% reduction in headcount (14,000) and closure of factories and other sites.

Impact on deal volumes

While acquisitions have still been driven by strategic factors (see below), it is probable that the combination of political uncertainty and financial factors has been the major reason why there has been a significant decrease in the number and value of M&A deals in 2017. According to the EP Vantage 2018 Preview published in December, the number and value of biopharma deals has been in decline since 2015. Comparing the first nine months of 2017 to the same period in 2016, shows a 22% decline in M&A transaction volumes and a 30% decline in value.

Table 1 : M&A transactions

	2014	2015	2016		9 months 2016	9 months 2017
Number	229	290	200		156	122
% growth	1%	27%	-31%		-30%	-22%
Value $bn	219	189	105		97	68

Source: EP Vantage 2018 Preview

There has also been a slow-down in the number of licensing deals in 2017 but not to the same degree as M&A according to data from EP Vantage.

Table 2 : Licensing deals

	2014	2015	2016		9 months 2016	9 months 2017
Number	101	135	108		87	78
% growth	+22%	+34%	-20%		-14%	-10%

Source: EP Vantage 2018 Preview

The slow-down in M&A transactions has been particularly marked amongst the top 25 companies probably because of the politico-economic factors described above. There was a 74% reduction in M&A deals by the top 25 companies compared to the 31% reported by EP Vantage. However there was a much smaller decline (9%) in partnering deals because these are driven by individual company factors rather than the politico-economic environment.

Table 3 : Number and growth of deals by top 25 companies over prior year*

Top 25 Companies	2017 number of deals	2016 number of deals	% growth 2017	% growth 2016	% growth 2015
Partnering-in	269	296	-9%	-15%	29%
Partnering-out	144	146	-1%	-19%	50%
M&A incl asset purchase	14	53	-74%	0%	39%

*Excludes medical devices, diagnostics. Source: Medtrack

M&A

M&A is not driven solely by political or financial market factors. Most often there are fundamental strategic reasons for buying companies such as geographic expansion, vertical integration, acquiring competitors, pipelines or technologies. This is reflected in the M&A transactions (excluding medtech, diagnostics and CROs) with values exceeding $1bn (see Table 4).

Table 4 : Top acquisitions 2017

Licensor/ Acquired	Licensee/ Acquirer	Product	Headline $m
Aetna	CVS Health	Health insurer acquired by PBM and retail pharmacy company	77,000
Actelion	J&J	Rare diseases, option to R&D pipeline	30,000
Mead Johnson	Reckitt Benckiser	US-based paediatric nutrition company	17,900
Kite Pharma	Gilead	CAR-T technology with lead product 'axi-cel' under priority review at the FDA	11,900
Amneal	Impax	Merger - all stock transaction creating 5th largest US generics business	9,000
Patheon	Thermo Fisher Scientific	$35 per share purchase of Patheon a contract development and manufacturing organisation	7,200
Stada	Bain Capital and Cinven	Generic and OTC product company with sales of $2.6bn	6,200
Ariad Pharmaceuticals	Takeda	Oncology portfolio including iclusig and brigatinib	5,200
Akorn	Fresenius	Manufacturing facilities and generic ophthalmic products with $1.1bn sales	4,750
Advanced Accelerator Applications	Novartis	Includes Lutathera, nuclear medicines used in treatment of tumours	3,900
Atrium Innovations	Nestlé Health	Range of nutrition and multivitamin products	2,300
IFM Therapeutics	BMS	Small molecule immunological drug development incl 2 preclinical programmes	2,320
Ignyta	Roche	Oncology product range in development incl entrectinib, a tyrosine kinase inhibitor for NSCLC	1,700
Sucampo	Mallinckrodt	Lubiprostone + orphan drug pipeline	1,200

Although not strictly biopharma, the biggest M&A deal of the year is the $77bn acquisition of the US third largest health insurer Aetna by CVS Health, a large retail pharmacy chain, home care and pharmacy benefit manager. The merger, if approved by the Competition Authorities, will provide a vertically integrated operation that will link Aetna's patient records to dispensing and purchasing of medicines. As well as synergy benefits of $750m the merger is seen as a defensive strategy by CVS to compete with Amazon who, it is rumoured, is planning to enter the prescription medicine market in 2018 (see Generics section).

Many biopharma (excl. OTC, medtech, CROs, etc.) acquisitions are driven by the need for big pharma companies to bolster their product or technology pipeline. This trend continued in 2017 with big pharma accounting for 67% of the $92bn value of biopharma company acquisitions. The deals relating to prescription medicines are summarised in Table 5 below showing the upfront payment where applicable. All the acquisitions of companies with early stage technologies are based on an upfront payment plus contingent payments.

Table 5 : Big pharma M&A activity

Target	Acquirer	Therapy area	Price $bn	Share price
Actelion excl R&D spin-out	J&J	Cardiovascular + R&D discovery	30.0	23%
Kite Pharma	Gilead	CAR-T technology + 'axi-cel' at FDA	11.9	50%
Ariad	Takeda	Oncology pipeline + products	5.2	NA
Advanced Accelerator	Novartis	Radiopharmaceuticals for oncology	3.9	NA
IFM Therapeutics	BMS	Immuno-oncology pipeline	2.3 (0.3)	NA
Ignyta	Roche	Oncology pipeline + p2 product	1.7	71%
CoLucid	Lilly	Anti-migraine p3 product	1.0	33%
Ogeda	Astellas	'Hot flashes' p2 product	0.9 (0.5)	NA
Delinea	Celgene	Inflammation/immunology pipeline	0.8 (0.3)	NA
Cell Design	Gilead	CAR-T engineering technology	0.6 (0.2)	NA
Rigontec	Merck & Co	Immuno-oncology pipeline + p1 product	0.6 (0.1)	NA
Mitobridge	Astellas*	Mitochondrial technology + p1 product	(0.2)	NA

*Exercise of option NA = not available

The highest value deal between Actelion and J&J provided an interesting case study on how to acquire a company where the target investors wanted a full price and the CEO wished to continue to independently develop its pipeline. J&J succeeded where others, e.g. Sanofi, failed by offering to exclude from the deal a spin out company. In this company, now called Idorsia, J&J held 16% of the shares with a further 16% available via a convertible loan and an option to license the lead product, aprocitentan for resistant hypertension. Eleven months later J&J exercised its option and secured the licence for $230m upfront. The original acquisition price looked expensive as it excluded the R&D pipeline but with this licence the deal looks more attractive.

Gilead hit the headlines in 2011 when it acquired Pharmasset for what was regarded at the time as a high and risky price of $11bn and a share price premium of 89%. The success of the hepatitis C drug, Sovaldi with a price of $1,000 per tablet and which achieved sales of $10bn one year after launch soon put paid to this criticism. Gilead has been under pressure ever since to spend some of its large cash pile ($32bn at end 2016) and this year finally bought Kite Pharma for nearly $12bn paying a 50% share price premium. Again, the question arises, did Gilead pay too much? Immuno-oncology is a new area for Gilead and, although Kite's chimeric antigen receptor T cell (CAR-T) therapy Yescarta was approved in October, Bloomberg reported in December that only five patients had been treated and there was a 200 patient waiting list for treatment. Whether this is because the treatment price at $373,000 is too high or the hospitals and insurers are not geared up to deal with CAR-T treatments is not known. Novartis with its leukaemia gene therapy priced at $450,000 and Spark's ophthalmic gene therapy at $850,000 will concentrate the minds of the payers. Time will tell if Gilead made another good acquisition.

The final point about M&A in the past year is the occurrence of companies being acquired following the exercise of an option by a licensee. For example four years' ago Astellas and Mitobridge (then Mitokyne) set up a R&D collaboration to discover and develop novel drugs that improve mitochondrial functions. As part of the collaboration agreement, Astellas had an option at certain points in time to acquire the company during the five year agreement and, following the lead product reaching phase 1, Astellas exercised its option to acquire the company. The original buy-out price was estimated at over $500m and now Astellas is paying $225m upfront ($165m after adjusting for its existing stake) with a further $225m contingent on "advances in clinical programs". Creative deal making is alive and well.

Asset acquisitions/divestments

Total biopharma asset acquisitions in 2017 at $11bn were 12% of the total value of biopharma M&A deals. Most asset divestments are non-core products or business areas. Some of the divestments are by companies that have trading difficulties and need to reduce debt. Valeant with $30bn debt at the end of 2016 raised $3bn by selling iNova Pharmaceuticals, skin care products to L'Oreal, and its equity interest in Dendreon. Teva with $36bn debt raised $2.5bn by selling its women's health products. These asset sales have had only a small effect in reducing debt. At the end of the 3rd quarter 2017 Valeant's debt was still $27.4bn and Teva's was $34.7bn. Both companies are restructuring with, in the case of Teva, substantial reductions in workforce. Many of the big pharma asset divestments were manufacturing facilities (see Manufacturing).

Two deals in Table 6 are **options** to acquire assets. F-Star has signed with Merck KGaA another "asset centric" deal potentially worth more than $1bn, where the immuno-oncology antibody programme assets are held in a separate legal entity which can be acquired by Merck when F-Star delivers a pre-defined data package. By using separate legal entities F-Star can sell specific IP and assets and retain the underlying company R&D. Boehringer Ingelheim has signed a similar deal with Autifony where it has an option to acquire a voltage gated potassium channel modulator programme. The initial payments prior to option exercise are around $50m to $100m.

Table 6 : Top asset acquisitions/ divestments 2017

Licensor/ Acquired	Licensee/ Acquirer	Deal type	Product	Headline ($m)
Valeant	L'Oreal	Product divestment	3 skincare brands	1,300
F-star Biotechnology (F-Star Delta)	Merck KGaA	Option to acquire asset centric vehicle F-Star Delta	5 bispecific immuno-oncology antibodies incl lead candidate FS118 (preclinical)	1,128
Teva Pharmaceutical	Cooper Surgical	Asset acquisition	ParaGard - intrauterine copper contraceptive	1,100
Upsher-Smith Generics	Sawai	Company/asset acquisition	US generics business with 30 marketed products and 30 in development	1,050
Merrimack Pharmaceuticals	Ipsen	Asset acquisition (product portfolio)	Onivyde (irinotecan liposome injection)	1,025
Valeant (Dendreon)	Sanpower Group	Asset acquisition	Dendreon oncology business	820
AstraZeneca	Aspen Global	Asset acquisition**	Portfolio of anaesthetics (marketed)	766
Autifony	Boehringer Ingelheim	Option for asset purchase	Kv3.1/3.2 positive voltage gated potassium channel modulator platform incl phase 1b compound	737
Merck KGaA biosimilars	Fresenius	Asset acquisition	Around 4 oncology and autoimmune biosimilars; first launch 2020	718
Teva Pharmaceutical	CVC Capital Partners	***Asset acquisition – product portfolio	Women's health portfolio in contraception, fertility, menopause, osteoporosis (marketed)	703
Teva Pharmaceutical	Foundation Consumer Healthcare	**Asset acquisition – product portfolio	Emergency contraception brands: Plan B One-Step and Take Action, Aftera, Next Choice One Dose (marketed)	675
Unichem Laboratories*	Torrent Pharmaceuticals	Asset acquisition of brands and manufacturing plant	120 brands of OTC, especially in cardiology, diabetes, gastrointestinal and CNS	557

*India only | **US | ***ex-US

Top 25 deal makers

AstraZeneca, for the first time in four years, was knocked off the top spot in terms of total numbers of deals. J&J / Janssen just pipped them at the post with two more deals (see Table 7). J&J started 2017 with the major acquisition of Actelion for $30bn which brought in two further deals with Idorsia, the spin out company from Actelion. But that was only the start. During the rest of the year J&J signed three more in-licensing deals worth $1bn or more with PeptiDream, Protagonist and Zymeworks. In contrast AstraZeneca's highest value deal was the out-licensing of Lynparza (olaparib) to Merck & Co for $8.5bn in a co-development and co-commercialisation collaboration. Boehringer Ingelheim, which is ranked about 15th in global pharmaceutical sales, punches well above its weight in licensing. In the last three years it has moved from 10th to 3rd position by undertaking a large number of modest value, mainly early stage deals. Another company that is performing much better than its global sales rank would suggest is Daiichi Sankyo which improved its position from 25th two years ago to 17th last year and to 9th this year, mainly driven by early stage deals.

Last year Takeda was the company with the most improved rank. This year it is Merck KGaA which has increased its rank by a massive 11 places including two major deals, the option agreement with F-Star worth over $1bn and the divestment of its biosimilars business to Fresenius for $0.8bn.

Table 7 : Companies ranked by number of M&A and partnering deals

(Companies with significant increase in rank shown in bold)

Company	2017	2016	2015	Change in rank 17 vs 16	In-licence deals
Johnson & Johnson	**1**	**7=**	**2**	**+6**	**25**
AstraZeneca	2	1	1	-1	20
Boehringer Ingelheim	3	5	10	+2	19
Takeda	4	3=	15=	-1	16
Roche	5=	9=	5	+4	18
Novartis	**5=**	**12**	**3**	**+7**	**15**
GlaxoSmithKline	**7=**	**14**	**8=**	**+7**	**11**
Bristol-Myers Squibb	7=	6	6	-1	13
Merck & Co	9=	3=	7	-6	14
Daiichi Sankyo	**9=**	**17=**	**24**	**+8**	**11**
Pfizer	11=	2	8=	-9	13
Merck KGaA	**11=**	**22=**	**20=**	**+11**	**14**
Sanofi	13=	11	4	-2	9
Lilly	13=	17=	11	+4	8
Amgen	15	15	13	0	12
Celgene	16	7=	14	-9	9
Allergan	17=	9=	12	-8	8
Astellas	17=	16	17	-1	7
AbbVie	19	13	25	-6	8
Biogen	20	21	20=	+1	9
Shire	21				6
Bayer	22=	20	15=	-2	6
Teva	22=	19	19	-3	2
Otsuka	24				
Servier	25				
No longer in top 25					
Novo Nordisk		25	18		2
Gilead		22=	20=		1
Mylan		24	23		3

= denotes equal placing in the ranking order

Top Licensing Deals 2017

Table 8 below captures the top licensing deals by headline value >$1bn. As usual the top 20 licensing deals cover multiple candidates, programmes, indications and targets. Very few deals were for single assets, for example the deal between Roche and Dermira for a monoclonal antibody targeting interleukin 13 for atopic dermatitis.

It is interesting to note that the table of top headline value licensing deals is not totally dominated by the major pharma companies as licensee. Companies such as Vir Biotechnology, which was launched in January 2017 with backing from VCs and other investors and a former Biogen executive as CEO, announced two deals with potential headlines of $1bn. Similarly Arrys Therapeutics, a newly established company focusing on immuno-oncology signed a deal worth a potential $1.2bn with AskAt based in Japan.

Pieris Pharmaceuticals had a busy year announcing deals with Servier and also AstraZeneca based on its Anticalin engineered proteins. The company's deal with Servier brought in an upfront of $31.3m and covered a package which included $338m for PRS 332 with a further $201m for other bispecific therapeutic programmes. Later in the year, Pieris secured near term payments of $57.5m from AstraZeneca for PRS 060 which is in preclinical studies for the treatment of asthma. While this deal is focused on PRS 060, it includes options to four other proteins to undisclosed targets. Pieris could receive development and commercial milestones of up to $2.1bn for all the products covered by this deal if they are successful.

PeptiDream has also had a good year of partnering based on its peptide discovery platform technology. First in April, the company struck a deal with J&J worth £1.15bn. Later in the year in November, Bayer joined the ranks with a deal valued at $1.1bn. In previous years PeptiDream has signed discovery deals with companies such as Amgen, BMS, Lilly, Genentech, GSK, Merck & Co, Novartis and Sanofi.

Upfront payments

It is usual to assume that where significant upfront payments are made that the products are often on the market, i.e. derisked from a development perspective. Those licensing deals which are for marketed products are denoted in bold text in Table 9, and account for only four out of the top 20. More surprisingly, three of these top 20 upfronts were for early stage / discovery deals: Alector/ AbbVie, CytomX/ BMS and Forma Therapeutics/ Celgene.

The lack of linear correlation between stage of development and percentage upfront commitment is further illustrated in the higher percentage deals. The highest proportion of upfront:headline was captured in the two out licences firstly from BMS to Roche for BMS 986089, an anti-myostatin adnectin for Duchenne Muscular Dystrophy, with a similar deal being struck with Biogen with a headline value of $710m and a upfront of $300m (42% of the headline value). Both deals were for rare diseases but at a moderately early stage and will if successful accrue double digit royalties. The other high proportion (upfront:headline value) deal was that of Nektar and Eli Lilly in autoimmune diseases. The $150m upfront is a serious commitment by Lilly as NKTR 358 has not yet completed phase 1 development and a further $250m has been set aside for development costs (the co-development deal allocates 75% of the phase 2 development costs to Lilly).

Table 8 : Licences and collaborations with headline values of >$1bn

Licensor	Licensee	Deal type	Product	Headline $m (upfront)
AstraZeneca	Merck & Co	Strategic collaboration in oncology	PARP & MEK inhibitors in combination with PD-L1/PD-1 (Lynparza, selumetinib, Imfinzi, Keytruda)	8,500
Assembly Biosciences	Allergan	Exclusive global licence	2 pc candidates for ulcerative colitis (ABI-M201) and Crohn's disease plus 2 compounds for IBS	3,050
Ablynx	Sanofi	Research collaboration & licence	Nanobody®-based therapeutics in immune-mediated inflammatory diseases	2,802
Pieris Pharmaceuticals	AstraZeneca	Licence, Pieris has option to co-develop and co-commercialise in US	PRS 060 at p2a in moderate to severe asthma	2,158 (45)
Immunomedics	Seattle Genetics	Licence with co-promotion option	IMMU-132 (sacituzumab govitecan), an antibody drug conjugate in metastatic triple-negative breast cancer + other solid tumours (p2)	2,057
Halozyme Therapeutics*	BMS	Licence, collaboration, option	ENHANZE technology for subcutaneous injection of immuno-oncology drugs (platform)	1,865
Pieris Pharmaceuticals	Servier	Exclusive licence outside US	PRS 332 PD-1-targeting bispecific checkpoint inhibitor and 4 other candidates	1,700
CureVac	Lilly	Licence and collaboration	5 mRNA cancer vaccines, $50m upfront plus $53m equity and $1.7bn in possible milestones	1,803 (50)
Akcea | Ionis	Novartis	Exclusive option to licence	AKCEA-APOCIII-LRx for heart failure	1,600
Loxo Oncology	Bayer	Licence to develop and commercialise	2 selective TRK inhibitors lanotrectinib and LOXO-195	1,550
CytomX	Amgen	Co-development, licence, research	Probody T Cell engaging bispecific against EGFRxCD3; $20m equity plus profit share with rights to 3 additional targets	1,465 (40)
ZymeWorks	J&J	Licence to research, develop and commercialise	Up to 6 bispecific antibodies using Azymetric™ and EFECT™ platforms	1,452
Roche	Dermira	Licence to develop and commercialise	Phase 2 mAb to block IL-13 for treatment of atopic dermatitis	1,410 (80)
BeiGene	Celgene	Acquisition of rights**	PD-1 inhibitor BGB-A317; commercial operations in China and licence to Abraxane®, Revlimid® & Vidaza® in China	1,393
AskAt	Arrys Therapeutics	Licence***	Two pre-clinical prostaglandin E2 receptor 4 antagonists	1,200+
Peptidream	Janssen	Licence	Peptide discovery platform	Up to 1,150
PeptiDream	Bayer	Drug discovery collaboration	Peptide discovery platform system for targets in oncology and cardiology	1,110
Alnylam Pharmaceuticals	Vir Biotechnology	Licence	ALN HBV02 RNAi for chronic hepatitis B includes right to opt in to profit share pre p3	1,000*
Visterra	Vir Biotechnology	Licence and option	Hierotope platform for 5 research programmes in infectious diseases, flu, RSV, candida and 2 other infectious diseases; option to invest/ co-promote	1,000*
Immatics	Amgen	Licence / joint development	Next-generation, T-cell engaging bispecific immunotherapies	1,000

All multi programme deals are valued at the maximum potential return

* Milestones only reported, upfront, bonuses and other fees were not disclosed

** PD-1: RoW outside Asia; Abraxane®, Revlimid® &Vidaza®, China only

*** Worldwide excl China

Table 9 : Top upfront payments in licence / collaboration agreements

Licensor / Partner	Product / technology	Headline	Upfront $m (as % hline)
Merck & Co	Lynparza, selumetinib, Imfinzi, Keytruda marketed product (PARP inhibitor, MEK inhibitor, PD-L1, PD-1) includes option	8,500	1,600 19%
Loxo Oncology / Bayer	Highly selective TRK inhibitors lanotrectinib and LOXO-195 in TRK fusion cancers in phase 2	1,550	400 26%
AstraZeneca / Takeda	Joint development of MEDI1341, an alpha-synuclein antibody entering phase 1 for treatment of Parkinson's disease	400	400 100%
Legend Biotech / J&J	LCAR-B38M, bi-epitope CAR-T cell immunotherapy for multiple myeloma in phase 1	350+	350
BMS/ Biogen	Anti-tau antibody, pre phase 2 for progressive supranuclear palsy	710	300 42%
Immunomedics / Seattle Genetics	IMMU-132, an ADC (sacituzumab govitecan) in metastatic triple-negative breast cancer + other solid tumours; option to co-promote in US; 3m shares + 8.7m warrants; phase 3 completed (Deal terminated)	2,057	300 15%
AstraZeneca / Recordati *	Seloken/Seloken ZOK (metoprolol tartrate and metoprolol succinate respectively) and associated Logimax fixed-dose combination (metoprolol succinate and felodipine) includes supply agreement (marketed)	300	300 100%
BeiGene / Celgene**	Cross licence, PD-1 inhibitor BGB-A317; commercial operations in China and licence to Abraxane®, Revlimid® & Vidaza® in China; BeiGene asset is in phase 2 in China, Celgene assets are marketed	1,393	263 19%
AstraZeneca / TerSera Therapeutics ***	Zoladex, goserelin acetate implant for prostate, breast cancer, benign gynaecological disorders (marketed) (AZ manufactures)	320	250 78%
Vertex / Merck KGaA	VX 970 VX 803 (phase 1) and 2 others ATR inhibitors (preclinical) option to 4 programmes	230	230 100%
Idorsia / J&J	Aprocitentan (phase 2) an orally active dual endothelin receptor antagonist for treatment of resistant hypertension (exercise of option)	230	230 100%
Alector / AbbVie	Research for a portfolio of antibody targets for Alzheimer's disease with an option to 2 targets; development is co-funded, upfront is + $20m equity	225+	205
CytomX / BMS	Probody platform up to 8 targets in discovery	648	200 31%
Forma Therapeutics / Celgene #	Drug discovery for inflammation and immunology, neurodegeneration, protein homeostasis; exercise of the option for a second collaboration	195	195 100%
BMS / Roche	Anti-myostatin adnectin, pre phase 2 in Duchenne Muscular Dystrophy	375	170 45%
MacroGenics / Incyte	PD-1 inhibitor MGA012 mAb vs programmed cell death protein 1 (PD-1) milestones of $750m and tiered royalties of 15-24% (phase 1)	900	150 17%
Nektar Therapeutics / Eli Lilly	Co-development NKTR-358, IL-2 receptor agonist for autoimmune and chronic inflammatory conditions (phase 1)	400	150 38%
Neurimmune / Biogen	Amended agreement for aducanumab Alzheimer's disease in phase 3	150	150 100%
AstraZeneca / Sanofi	Joint development of MEDI8897 monoclonal antibody to respiratory syncytial virus in phase 2b	650	129 20%
Halozyme Therapeutics / BMS	ENHANZE drug-delivery technology platform for IO drugs via sc injection option to an additional target up to 11 targets (160/target)	1,865	105 6%
Tesaro / Takeda ##	Niraparib/ Zejula™, marketed PARP inhibitor	340	100 29%

*Europe | ** China, Asia | ***North America | # ex-USA | ## Japan, S Korea, Russia, Taiwan, Australia
+indicates other undisclosed milestones

Spin Outs

Big pharma spin out companies

R&D spin outs, especially from big pharma companies, have turned out to be a rich source of new products for licensees. The quality of the early research and filing of IP by a big pharma company provides the spin out company with a sound basis for product development.

One of the earliest spin outs was Basilea, an infectious disease and dermatology NewCo spun out from Roche in 2000 and floated on the SIX Swiss stock exchange in 2004. At the time Roche assigned patents and retained a minority (46%) interest and first option to license products completing phase 2. With the option, many observers viewed the spin out as an off balance sheet R&D vehicle for Roche. But this did not turn out to be the case as Roche declined to exercise its option to the lead product, ceftobiprole, in 2004 and the product was licensed to J&J. Since then Basilea has signed over ten out-licensing deals worth around $2bn including four deals in 2017.

Another Swiss R&D spin out is Idorsia. It was spun out from Actelion in January 2017 just prior to Actelion being acquired by J&J. J&J retained an option to license the lead product and exercised this in December 2017 paying an opt in fee of $230m. Selected big pharma/ biotech spin out companies announcing deals in 2017 are shown in Table 10 below.

Table 10 : Selected deals by big pharma/biotech spin out companies in 2017

Pharma	Spin out (year)	Licensee/ target	Product / therapy area	Territory	Headline $m
Roche	Basilea (2000)	Pfizer	Cresemba	Licence extension Europe Asia Pacific	725
	Basilea (2000)	Shenzen China	Zeftera antibiotic	Licence China	152
Actelion	Idorsia (2017)	J&J	ACT-13257	Global option exercised	230
	Idorsia (2017)	Roche	Cancer	Global option to license compounds	452
GSK	Autifony (2011)	Boehringer Ingelheim	Schizophrenia	Global option to acquire assets	737
Pfizer Japan	AskAt (2013)	Arrys Therapeutics	Immuno-oncology	Global licence excl China	1,200+
Biogen	Bioverativ (2017)	True North Therapeutics	Haematology	Company acquisition	825
	Bioverativ (2017)	Bicycle Therapeutics	Haematology	Collaboration, licence	424

Spin out formation during 2017 was not confined to Actelion/ Idorsia. Early in the year Biogen's spin out Bioverativ started trading on NASDAQ with two marketed products, Eloctate for haemophilia A and Alprolix for haemophilia B, $325m of funding and a preclinical pipeline focusing on non-cancer blood disorders. Bioverativ went on to make its own deals by acquiring rare disease company True North Therapeutics in May paying $400m upfront and a potential $425m in contingent milestones. Later in the year it entered into a $424m collaboration agreement with Bicycle Therapeutics for bicyclic peptides for the treatment of haemophilia and sickle cell disease.

Also in the latter part of the year Pfizer spun out Springworks Therapeutics with rights to four Pfizer clinical stage drug candidates for underserved conditions. The Series A financing of $103m was funded by Bain Capital, OrbiMed, Pfizer and LifeArc (formerly MRC Technology). So it appears that the spin out model is alive and kicking.

Emerging Areas

China

The Chinese biopharma dragon in 2017 was even more active than in 2016. Chinese companies accounted for 10% of the total number of deals reported in Deal Watch during 2017. The deals included acquisitions, joint ventures and in- and out-licences worth $7.2bn with an average headline value of $313m.

Table 11 : Summary of deals by Chinese companies

Deal Type	Deals	Total value $bn	Average deal value $m	Highest value deal (Chinese company in bold)		
				Licensor/target	Licensee/acquirer	Value $m
Acquisition	5	2.0	405	Dendreon (Valeant)	**Sanpower**	820
Joint venture	2	0.5	235	**Guangzhou**	**Beigene**	330*
In-licence	11	1.6	146	Zion Medical	**Shenzhen**	440
Out-licence	5	3.1	619	**BeiGene**	Celgene	1,393
Total	**23**	**7.2**	**313**			

*Biologics manufacture

The out-licensing deals done by Chinese companies have a high average value of $619m and include major pharmaceutical company licensees such as J&J and Celgene. The Celgene deal with BeiGene worth $1,393m is particularly interesting because it involves a limited field for the in-licensed product and a divestment by Celgene of some commercial operations. It is described as a “strategic collaboration”. It involves the in-licensing and development of BeiGene’s PD-1 inhibitor BGB-A317 for solid tumours for all countries except Asia (excluding Japan) but BeiGene retains the global rights for haematological malignancies. It is not often that we see licences in which the rights are split within a specific therapeutic area. BeiGene also acquires Celgene’s commercial operations in China and an exclusive licence to commercialise Celgene’s approved products in China including Revlimid.

In contrast J&J's recent deal with Legend Biotech for its CAR-T drug candidate, LCAR-B38M, is simpler but reflects that Chinese companies are fully up to speed with pharmaceutical deal making including profit shares rather than royalties. J&J gets global rights to jointly develop and commercialise LCAR-B38M, which is in the clinic being investigated for multiple myeloma. There is an upfront of $353m and a 50/50 cost and profit share except in China where the split is 30% J&J. During 2018 it is anticipated that Chinese companies will continue to make a large number of deals with strategic collaborations and acquisitions paying an increasing role compared to vanilla licensing deals.

Overview of Deal Trends in 2017

In keeping with previous years we have analysed our data sets for deal trends with respect to development stage at the time of the deal, therapeutic areas, deal type and therapeutic entities. This analysis focuses on a data set of 291 deals and particularly on transactions with financials disclosed; some deals without financials are included if they illustrate interesting features. Clinical stage collaborations to assess novel combinations of immuno-oncology and oncology therapeutics which do not disclose financials are not included in this analysis.

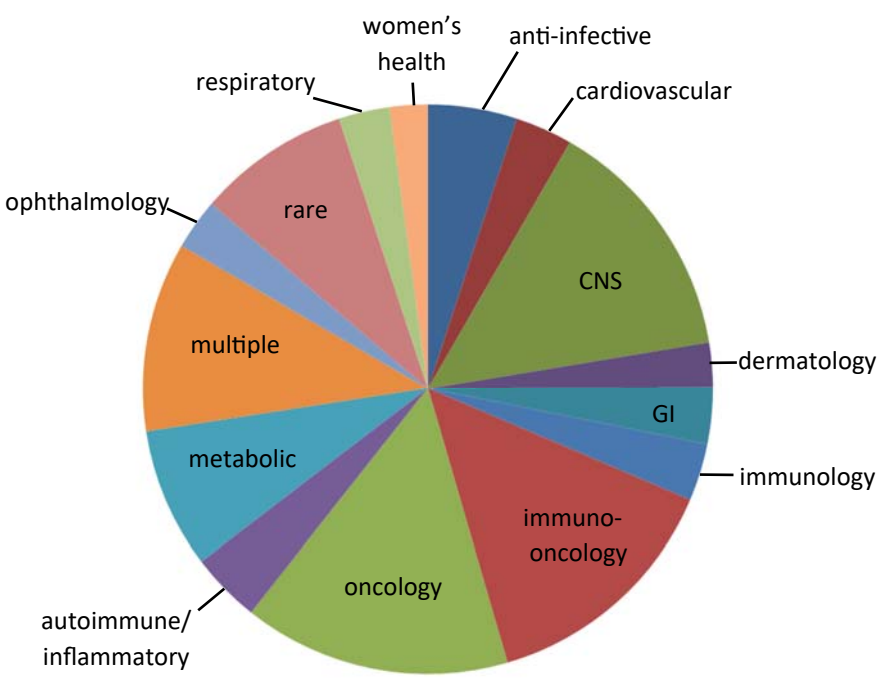
Development stage

During 2017 approximately 24% of the deals were done at discovery stage and/or involved platform technologies and 16% were at preclinical stage. Overall 42% of the deals were for clinical stage assets (i.e. 13% phase 1, 15% phase 2, 11% phase 3 and 3% pre-registration) and 19% were for approved or marketed assets. The proportion of deals by non-clinical (40%) or clinical stage (42%) is very similar to previous years. However we noted an indication that deals are being done earlier than in 2016; amongst the clinical stage deals a higher proportion of transactions is at phase 1 and phase 1/2 stage.

Therapeutic area

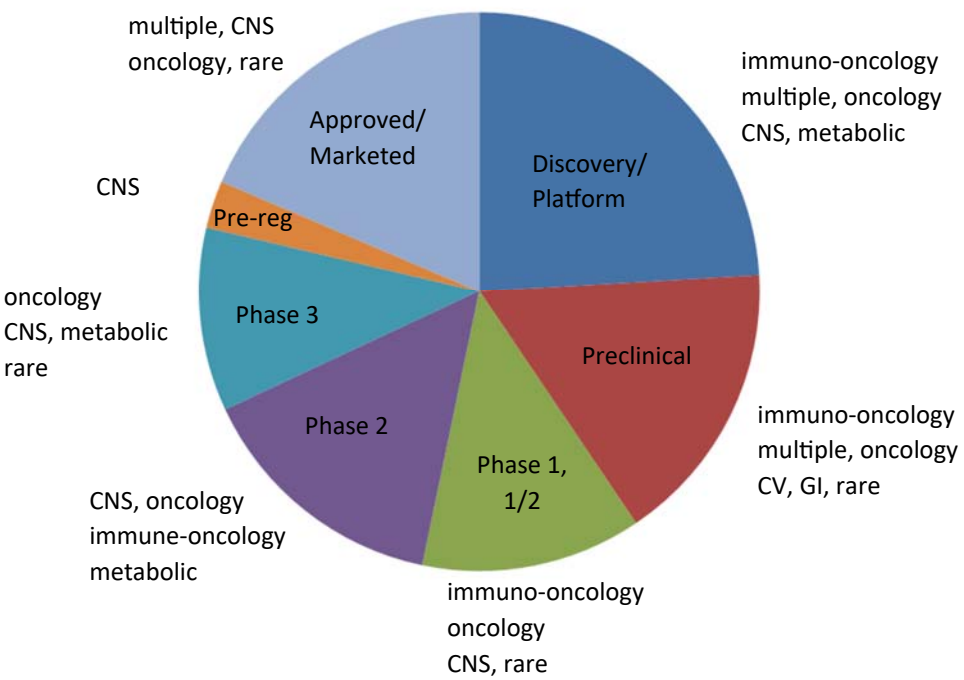
Comparison of our analysis from 2016 illustrates the recurring theme during 2017 that oncology (15%), immuno-oncology (14%) and CNS (14%) are the most popular therapeutic areas for deal making (Figure 1). So nearly 30% of all deals done in 2017 were for cancer indications. Rare diseases also continued to feature in our top 15 therapeutic areas representing 9% of the deals analysed. As always it is important to note that some deals, especially those done at discovery/ platform stage, cover multiple therapeutic areas and often the specifics of the disease targets are not disclosed. Equally transactions at the other end of the development scale for approved and marketed assets frequently cover multiple therapeutic areas. Overall approximately 11% of all deals covered multiple therapeutic areas.

Figure 1 : Top 15 therapeutic areas for deal making in 2017



Not surprisingly the popularity of therapeutic areas depends on the development stage of the deal and reflects not only the level of interest in an area but also the perceived risk in development. In 2017 immuno-oncology, a relatively new science, remained the hottest topic for non-clinical deals (21 deals), followed by oncology (15) and CNS (10), with deals for multiple therapeutic areas featuring prominently (18), especially in discovery/ platform deals (Figure 2). Amongst the clinical stage deals, CNS was the most popular area (29 deals), closely followed by oncology (27) and then immuno-oncology (18) and rare diseases (17). Transactions for approved and marketed assets focus predominantly on multiple therapeutic areas (9 deals), illustrating the fact that these tend to be acquisitions of companies or product portfolios. There were also equal numbers of deals for approved and marketed assets in CNS, oncology and CNS (6 for each).

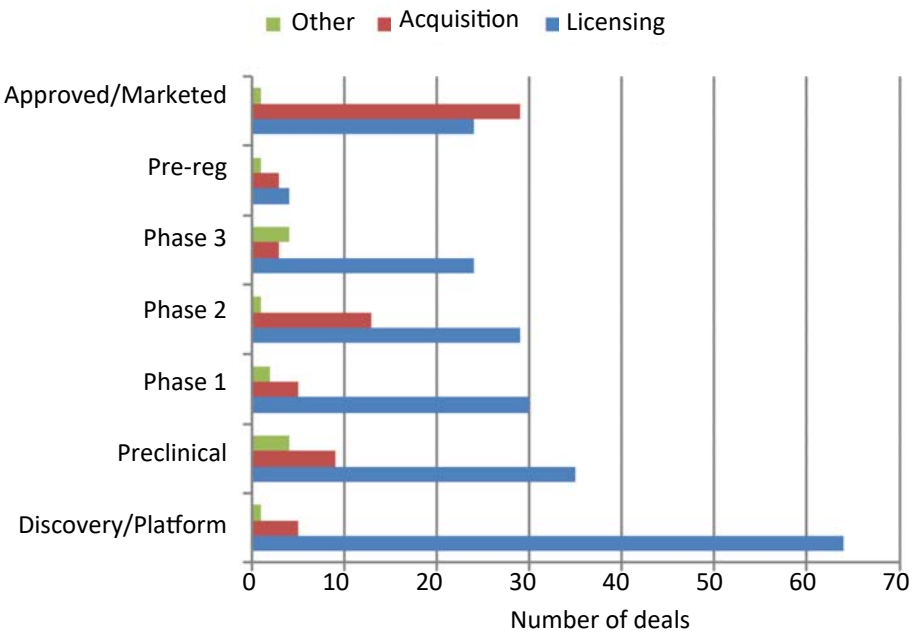
Figure 2 : Top therapeutic areas for deals in 2017 by development stage



Type of transactions

As noted earlier the number of M&A transactions is considerably reduced compared to previous years and hence the proportion of M&A to licensing deals has decreased. Conventionally when assets are in the early phases of development and hence with a higher risk of not reaching the market, licensing is the preferred form of transaction. These deals will also have predominantly back-loaded milestone structures to manage the inherent risk throughout the product development process. Figure 3 illustrates this relationship between deal type and development phase for 2017. One pattern we noted this year was that there were fewer clinical stage acquisitions and more licences, which may well be a reflection of the higher valuations for biotech companies mentioned in the early sections of this report. In previous years it appeared that a pharma might decide to buy a company for a mid to late clinical stage asset rather than license the drug candidate and then pay high royalties on sales. However this is all relative and with such high valuations an all-out acquisition may not make economic sense if taking a licence to an individual asset is feasible.

Figure 3 : Deal type by development stage



When comparing overall trends in deal type with our 2015 data set, Table 12 illustrates that whilst the proportion of licensing to acquisition deals remains reasonably consistent for non-clinical stage assets, the biggest differences are for clinical stage and approved/ marketed assets. Within clinical stage deals, review of the data suggests that the main shift from acquisitions to licensing transactions has been for phase 1 and phase 3/ pre-registration deals.

Table 12 : Comparison of deal types by stage in 2017 compared to 2015

	2017				2015			
	Non-clinical	**Clinical**	**Approved/ marketed**	**Total**	**Non-clinical**	**Clinical**	**Approved/ marketed**	**Total**
Licensing	84% no change	73% (+10%)	44% (+19%)	72% (+8%)	84%	63%	26%	65%
Acquisition	12% no change	20% (-14%)	54% (-19%)	23% (-10%)	12%	34%	73%	33%
Other*	4% no change	7% (+4%)	2% (+1%)	5% (+2%)	4%	3%	1%	3%

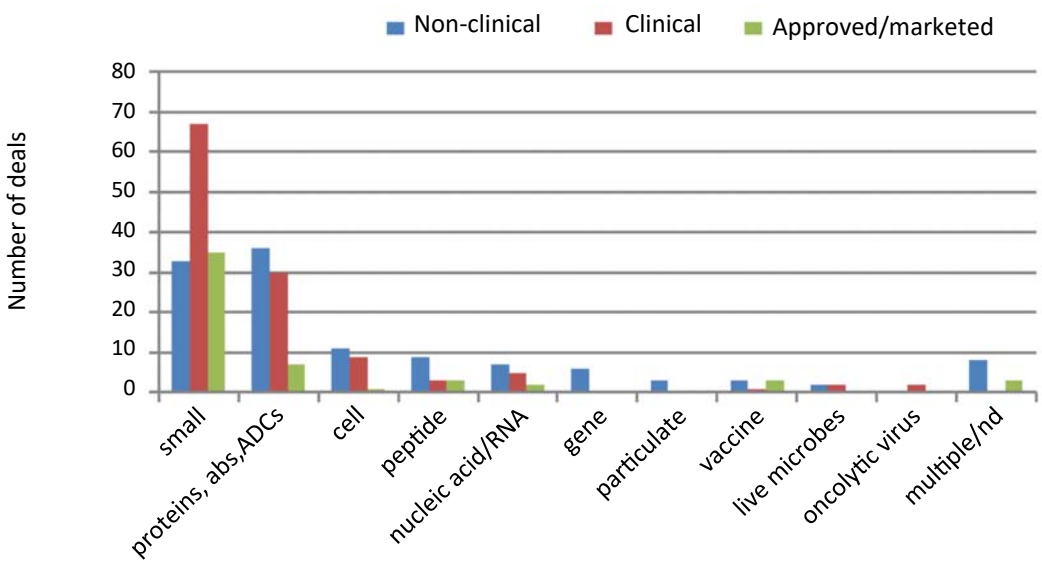
Proportion of deal types, percentages rounded up or down
* Includes joint ventures, royalty monetisations, investments

Licensing and acquisition remain the mainstays of pharmaceutical deal making. Asset acquisitions have been covered in earlier sections but it is worth noting that of the 67 acquisition deals in our 291 data set, 25 of these were for specific assets rather than whole companies. There are also other transaction types to consider although these typically represent a low proportion of deals. During 2017 there was a mixture of other deal types including royalty monetisations and joint ventures. The four royalty monetisations we reviewed, as would be expected, were focused on assets at phase 3 and later. In the largest of these Royalty Pharma acquired royalty stream rights for Perrigo's Tysabri for $2.2bn upfront and up to $650m in milestones linked to sales thresholds. The Tysabri royalties come from Perrigo's (Elan's) licence with Biogen.

Therapeutic entities

Small molecules continue to be the dominant therapeutic entity in deal making, particularly for clinical stage transactions. Overall in our data set just under 50% of the deals covered small molecules and 25% were for antibody-based therapeutics and proteins. This is reasonably consistent with previous years. Of the other types of therapeutic entity, cell-based therapies were the most popular, followed by peptides and nucleic acid-based entities (Figure 4).

Figure 4 : Assessment of deals by therapeutic entity



Looking back at our similar analyses for previous years, it is evident that cell-based therapeutics have become a consistent feature of deal making bolstered by the promising results from CAR-T therapies. Whilst there were 29 deals for cell therapy assets in 2015, the figure dropped by half to 14 deals in 2016 but increased to 21 for 2017, with similar numbers of transactions at non-clinical and clinical stage. Now that the first cell therapies are on the market with impressive clinical results in various haemato-oncology indications, it is likely that this approach to cancer treatment will continue to feature in deals.

The year CAR-T therapies became a market reality

2017 was the year when two CAR-T therapies were approved by the FDA. In August Novartis' Kymriah (tisagenlecleucel) was approved for the treatment of patients up to 25 years of age with B-cell precursor acute lymphoblastic leukemia (ALL) that is refractory or in second or later relapse. This one time immunocellular therapy uses the patient's own genetically engineered T cells to fight cancer. As such there are specific manufacturing challenges to address. Novartis has a facility in New Jersey which provides the integrated manufacturing and supply chain platform to support production of the individualised patient treatments.

Briefly, the process begins with the collection of a patient's harvested T cells by autologous leukapheresis. The cells are engineered using a lentiviral vector to produce a CAR (chimeric antigen receptor) that specifically recognises the CD19 protein present on CD19+ B lineage tumour cells as well as normal B cells. The cryopreserved engineered cells are then shipped to a clinical infusion centre for patient administration. It is the interaction between the CAR on the engineered T cells and CD19 which physically brings the CAR-T cells to the CD19+ tumour cells that results in T cell activation.

At the end of October Novartis submitted a supplemental BLA to the FDA for Kymriah for the treatment of adult patients with relapsed or refractory diffuse large B-cell lymphoma (DLBCL) who are ineligible for autologous stem cell transplant. The company has also submitted a MAA to the EMA for both the ALL and DLBCL indications.

The second CAR-T cell therapy to be approved by the FDA in October was Kite/ Gilead's Yescarta (axicabtagene ciloleucel), for the treatment of adult patients with relapsed or refractory large B-cell lymphoma, which includes DLBCL. This therapy is similar to Kymriah in that the patient's T cells are genetically engineered ex vivo (this time using retroviral vectors) to target CD19 on the cell surface of malignant B cells.

Both Kymriah and Yescarta have shown impressive results in the clinic. At the time of its approval in August Novartis announced that 83% of ALL patients who received treatment with Kymriah achieved complete remission within three months of infusion. Coinciding with the American Society of Hematology (ASH) meeting in December, Novartis announced that at six months, 30% of DLBCL patients treated with Kymriah were in complete response, with a 74% relapse-free rate after onset of response. Furthermore median duration of response was not reached.

According to Kite's press release in December, with a minimum follow-up of one year after a single infusion of Yescarta (median follow-up of 15.4 months), 42% of DLBCL patients continued to respond to therapy, including 40% with a complete remission.

It is not all plain sailing for CAR-T therapy. Over the last few years there have been a number of clinical holds placed on CAR-T trials because of patient deaths. While some trials have continued after protocol adjustments were made, others have not, for example Juno Therapeutics decided to abandon its JCAR015 programme in ALL earlier in 2017 after several patients died from cerebral oedema. Instead Juno is focusing on a number of other CAR-T programmes.

In addition to neurological toxicities, one of the main side effects reported for CAR-T therapies is cytokine release syndrome (CRS), which can be life threatening. This is an adverse effect that occurs as a result of high level immune activation when large numbers of lymphocytes (B cells, T cells, natural killer cells) and/or myeloid cells (macrophages, dendritic cells, monocytes) become activated and release inflammatory cytokines, and can lead to dangerously high fevers and precipitous drops in blood pressure.

As is often the case for emerging science, clinicians are learning how to deal with the new issues presented by CAR-T therapy and effective management of these will be key to the success of these cell therapies.

The other significant issue for CAR-T therapeutics is the price tag. As mentioned earlier the current US list price for Kymriah is $475,000 and Yescarta is priced at $373,000. These are both one-off therapies. Whilst it is around 27% more expensive, Novartis has adopted a clinical outcomes based approach to allow for payment for Kymriah only when paediatric and young adult ALL patients respond by the end of the first month. It will be interesting to see what price Novartis and Kite/ Gilead achieve in Europe.

Manufacturing

Pharmaceutical manufacturing has had a mixed year in 2017. The regulators have continued to limit supplies from manufacturing plants in breach of regulations in many different countries including the US, Europe and the Far East. The industry continues to consolidate as big pharma sell off factories (see Table 13 below). In contrast, some big pharma companies have been making significant investments especially in manufacture of biological products.

Table 13 : Selected big pharma manufacturing divestments

Big pharma	Buyer	Factory Location
AstraZeneca	Avara Pharmaceutical (US)	Spain
Bayer	Famar (GR)	Canada
Boehringer Ingelheim	Kindred Bioscience (US)	US (Kansas)
Bristol-Myers Squibb	Seattle Genetics (US)	US (Washington)
GlaxoSmithkline	Avara Pharmaceutical (US)	US (S Carolina)
Roche	Recipharm (SE)	Spain
Shire	Lonza (CH)	US (California)

Companies that have been divesting manufacturing are also making significant investments. For example GSK has announced investments in vaccine production in Germany ($175m), in Scotland for salbutamol API ($137m) and in the US for the monoclonal antibody Benlysta ($139m). One of the biggest manufacturing investments in 2017 was the $286m project between Sanofi and Lonza to expand biologic manufacture.

In parallel with big pharma divesting and investing in manufacturing, the contract development and manufacturing organisations (CDMO) companies continue to acquire production units often with products as part of the deal. Recipharm is a serial acquirer of smaller manufacturers and big pharma divestments. It has doubled sales in the last five years and has manufacturing operations in ten countries. In 2017 it acquired a factory in Spain from Roche. Patheon, another large CDMO, which acquired a plant from Roche in Italy, has been the subject of the biggest CDMO deal in 2017 with the sale of the company by its private equity owners to Thermo Fisher Scientific for $7.2bn representing 3.8x sales.

Generics

The generics market is now two distinct businesses, the traditional market based on small molecules and biosimilars. Large segments of the traditional business are under severe pricing pressure. Teva, which suffered a 7% reduction in its generics business line profit in the first nine months of 2017, reported one of the factors was “additional pricing pressure in the US market as a result of customer consolidation into larger buying groups to extract further price reductions”. According to a report from CNBC, Amazon has had discussions with generic companies in the US, Mylan and Sandoz. Maybe it is these discussions plus the expectation that companies like CVS, and perhaps Amazon, will continue to drive down medicine prices in the US that has prompted the CEO of Novartis to suggest that the company may exit the oral solid dose generic market in the US.

Many generic companies have sought to diversify away from the traditional generic business. One such company was Stada that acquired Thornton and Ross, a UK OTC company, in 2013. Following activist investor pressure, in August 2016, a shareholder vote succeeded in removing Stada's Supervisory Board Chairman and elected five new Supervisory Board members. At the AGM restrictions on the transferability of registered shares were eliminated. This paved the way for the company to be sold. It was not a surprise therefore to see that in February 2017 Stada announced that it had received two offers to acquire the company. What was a surprise was that Bain Capital and Cinven's recommended bid was not accepted by Stada's shareholders and had to be revised to secure the deal. In the end the price paid was $6.2bn representing 2.4x 2016 sales and 13x EBITDA.

Whilst the Stada deal provides an interesting case study of the effect of activist investors, the biggest news by far in the generic sector was the acquisition by Fresenius of Akorn for $4.75bn representing 4x sales and around 12x EBITDA. Not content with a major deal in traditional generics, Fresenius in the same month announced the acquisition of the biosimilar business of Merck KGaA for $0.7bn. The biosimilar products are in development so the deal is structured as $0.2bn upfront plus milestones and a single digit royalty. In terms of biosimilars, most of the deal activity during 2017 consisted of settlements between big pharma companies of alleged patent infringements and product licensing by biosimilar developers such as Celltrion. Compared to 2016, there were many fewer significant biosimilar deals in 2017 except for the acquisition of Merck KGaA's business.

Consumer Health

Consumer health deals tend to be mainly asset acquisitions such as individual brands or OTC business units divested by large companies. However 2017 proved the exception with two major company acquisitions, both in nutrition: Mead Johnson by Reckitt Benckiser and Atrium by Nestlé. Mead Johnson is a global paediatric nutrition company which was spun out of Bristol-Myers Squibb in 2009. The $17.9bn price appears to be a high price with a multiple of 4.8x sales and 17x EBITDA. Mead Johnson's net sales have declined since 2014 and in 2016 they were 8% down compared with 2015. In contrast, Nestlé's deal to acquire Atrium, at face value, looks much better as the acquisition price of $2.3bn represents a multiple of 3.3x sales.

During 2017 other smaller deals were completed such as Sanofi's $88m deal with Ipsen to divest five consumer healthcare products including Buscopan and Mucodyne. This deal reminds us that the regulators can also determine what assets need to be sold. In this case the transaction came as a result of the anti-trust requirement that Sanofi divest certain assets from the Sanofi/ Boehringer Ingelheim asset swap of December 2015, when Sanofi swapped its animal health business (Merial) for Boehringer Ingelheim's consumer healthcare business.

The change in ownership of consumer health businesses between big pharma companies is continuing. Over the past few years Novartis has joined forces with GSK, and Merck & Co has divested its OTC unit to Bayer. Now Merck KGaA's consumer health business with $1bn sales is on the market and Perrigo and Stada are said to be bidding. Recently there have been comments from Pfizer that suggest it may sell its consumer business with sales of $3.5bn. During 2018 it is expected that there will be further consolidation in the consumer health business.

"Offer them 25 billion,
but don't make a big deal out of it."

Deal Watch Authors

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Catharine Staughton supports Medius clients in various aspects of business development training, particularly in product forecasting, the financial structuring of licensing deals and all aspects of finance. Catharine gained her financial experience at Robert Fleming (now part of JP Morgan), and her business development experience at Medeva and Antisoma.

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