

How ecosystem participation drives more value for life sciences deals

2022 EY M&A Firepower report



EY

Building a better
working world

10 years of Firepower



10-year
M&A total



10-year
average
Firepower



Highest
annual
M&A total
(2019)

insights



US\$73b

Largest
M&A
transaction
(BMS/
Celgene)

89%

Percentage
of bolt-on
deals
(2012-
2021)

8

Number of
megadeals
since
2012

“

Given the need for external innovation to achieve future growth targets – and the high price tag of M&A – strategic partnerships will be key for biopharmas. Though 2021 was a strong year for alliances and partnerships, investments have not gone far enough.

Subin Baral

Global Deals Leader, Life Sciences

A decade ago, we created a metric, the Firepower Index, to understand how life sciences companies were most likely to use M&A to drive portfolio growth. At the time, we had no idea Firepower, which we define as the capacity for dealmaking based on the strength of the balance sheet, would ignite so much interest – or be so broadly adopted.

Fast forward to 2022, and Wall Street analysts, journalists and even industry executives now regularly use the term to describe the potential demand for life sciences deals.

It's difficult to say exactly when the term became part of our industry's zeitgeist. But it has been gratifying, nonetheless. Firepower isn't just catchy; it's an easy and intuitive mechanism for better understanding the changing balance of power in our fast-moving industry.

In our 2013 report, "Closing the gap? Big pharma's growth challenge and implications for deals," we wrote that the "industry's fluid dynamics" mean the deal environment will only "be more complex and competitive." Those words are even more true today.

Regular readers will notice our use of Firepower has evolved with the industry. We now believe it's too limiting to define Firepower strictly in terms of M&A. The truth is, many of today's innovators – the source of tomorrow's growth for industry incumbents – aren't for sale. As strategic partnerships and alliances have become an even more important means of accessing new capabilities, we have therefore expanded Firepower to account for partnering.

We believe that companies will continue to transact to transform their businesses. But we also think that those transactions won't necessarily be M&A. The companies that proactively use strategic partnerships to build leadership positions will be the ones most likely to create lasting value for themselves – and more importantly, for patients.

We look forward to charting these developments in the next decade, harnessing our own intellectual Firepower to tell the story.



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Transact to transform

In 2021, the biopharma industry's M&A Firepower, defined as the capacity to conduct acquisitions based on the strength of the balance sheet, reached heights not seen since 2014. And while the pace of dealmaking accelerated in the latter half of the year, the findings in the *2022 EY M&A Firepower report* show a significant shift in capital allocation away from M&A. (See Figure 1 and text box of key definitions.)

When it comes to acquisitions, biopharma companies have reason to be cautious. Even with signs of the market softening, sellers still have the advantage. Throughout 2021, valuations for targets remained high and capital was still readily available.

The upshot for biopharma dealmakers? For acquirers interested in outright ownership of scientifically de-risked, late-stage assets, there was little choice but to pay hefty premiums. This environment increased the pressure on companies to demonstrate quick returns on their acquisitions.

At the same time, an innovation renaissance is in full bloom: novel cell and gene therapies and RNA- and DNA-based

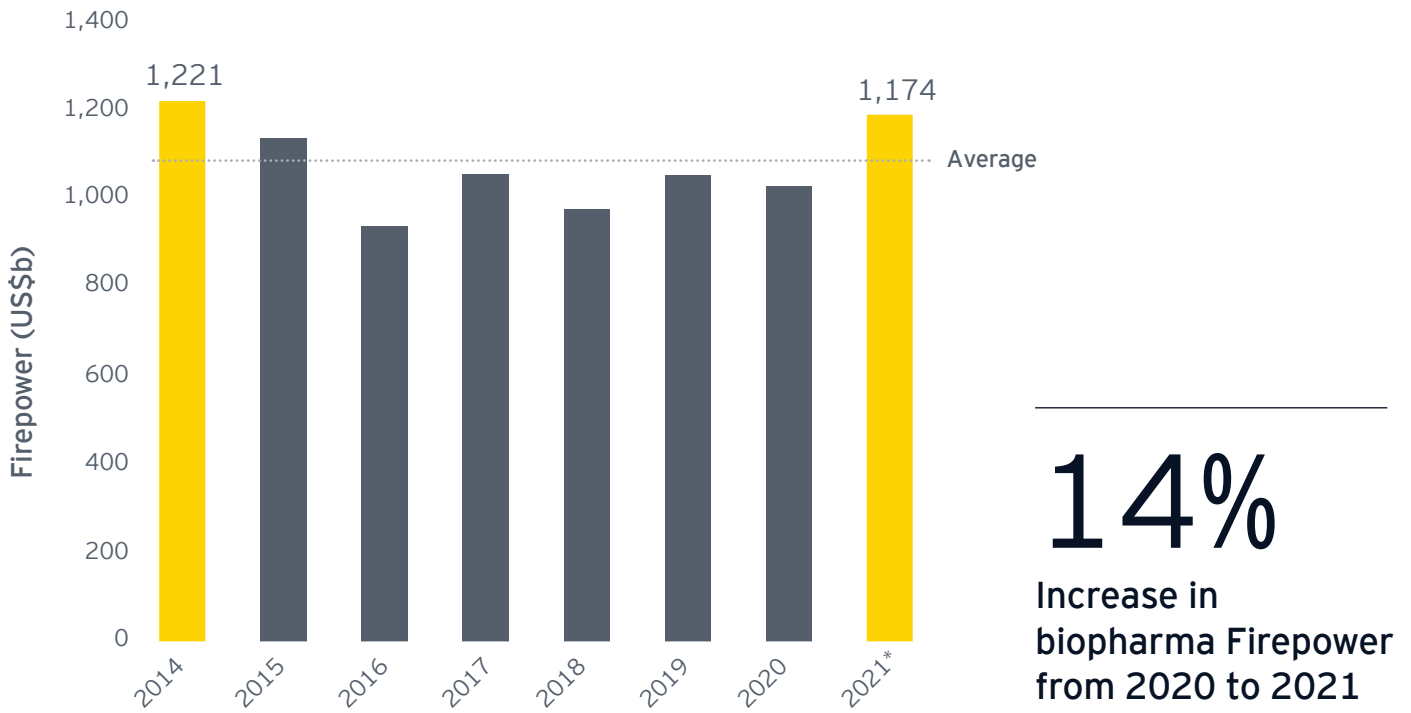
medicines promise to cure, not just treat, illness. Although leading biopharmas have made a push to bring such capabilities in house, EY research finds that they are the minority of current pipelines. To stay competitive, bigger biopharma companies have no choice but to be aggressive in their pursuit of external innovation. Simply put, they need to transact if they want to transform their businesses.

But as became clear in 2021, those transactions won't necessarily be acquisitions. Since the beginning of 2020, major biopharmas have deployed roughly 1.5 times more Firepower on alliances relative to M&A. However, EY research suggests investments in alliances and partnerships have not gone far enough in 2021, with companies prioritizing smaller deals with lower upfront values. As companies seek to allocate their capital sustainably in 2022, it will be even more important that they expand their use of alliances and strategic partnerships to form stronger ecosystems that can foster innovation and access new talent.

Key definitions

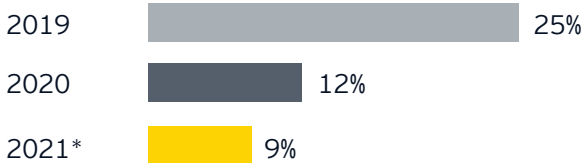
Term	Definition
Firepower	A company's capacity to fund transactions based on the strength of its balance sheet. It has multiple inputs: cash and equivalents, existing debt and market capitalization
Deployed Firepower	The ratio of capital spent on M&A and/or alliances relative to available Firepower
Growth gap	The difference in US dollars of a biopharma's sales growth relative to overall drug market sales
Megadeals	Acquisitions with valuations of roughly US\$40 billion (biopharma) and US\$10 billion (MedTech)
Bolt-on	Small to medium-sized acquisitions that account for less than 25% of the buyer's market capitalization
Financial deal	Transactions involving a financial buyer such as private equity
Transformative deal	Transaction in which the deal value is greater than 50% of the acquirer's market capitalization at the time of purchase

Figure 1. Plenty of Firepower for M&A but companies are deploying it differently in 2021



Biopharma buyers continue to shift dealmaking spending away from M&A

Firepower deployed on M&A



Firepower deployed on alliances



Source: EY, Capital IQ. 2021* data as of 15 December. Firepower is a metric to measure the strength of the balance sheet for dealmaking. It has multiple inputs including cash and equivalents and market capitalization.

An active deal market, but low total deal values

With no megamergers, the total value of biopharma M&A in 2021 was one of the lowest on record: the US\$108 billion total is roughly 40% of the value of biopharma M&A in 2019. That doesn't mean 2021 wasn't an active year for M&A. Deal volume increased year-on-year, as biopharma majors opted for smaller bolt-ons rather than transformative M&A opportunities. In all, bolt-on deals represented 88% of total deal volume in 2021. (See Figure 2.)

Betting on bolt-ons was a clear signal of biopharma companies' appetite for less risky deals. So were the types of assets they

chose to acquire. In 2021, biopharmas focused on assets with either low scientific risk or low financial risk: 70% of deals targeted either marketed assets, which command high prices but are at lower risk of crashing out before generating revenue, or preclinical and Phase I assets, which come with significant scientific risk but are less expensive.

Structured deals were another mechanism biopharmas used in 2021 to reduce the financial risk of their M&A investments. While the number of deals with earnout structures has stayed roughly static in recent years, the share of M&A spending that's tied to future clinical and other milestones reached 8% in 2021.

2021* M&A by the numbers

0
Megadeals

45%
Deal volume for
marketed assets

88%
Bolt-on volume

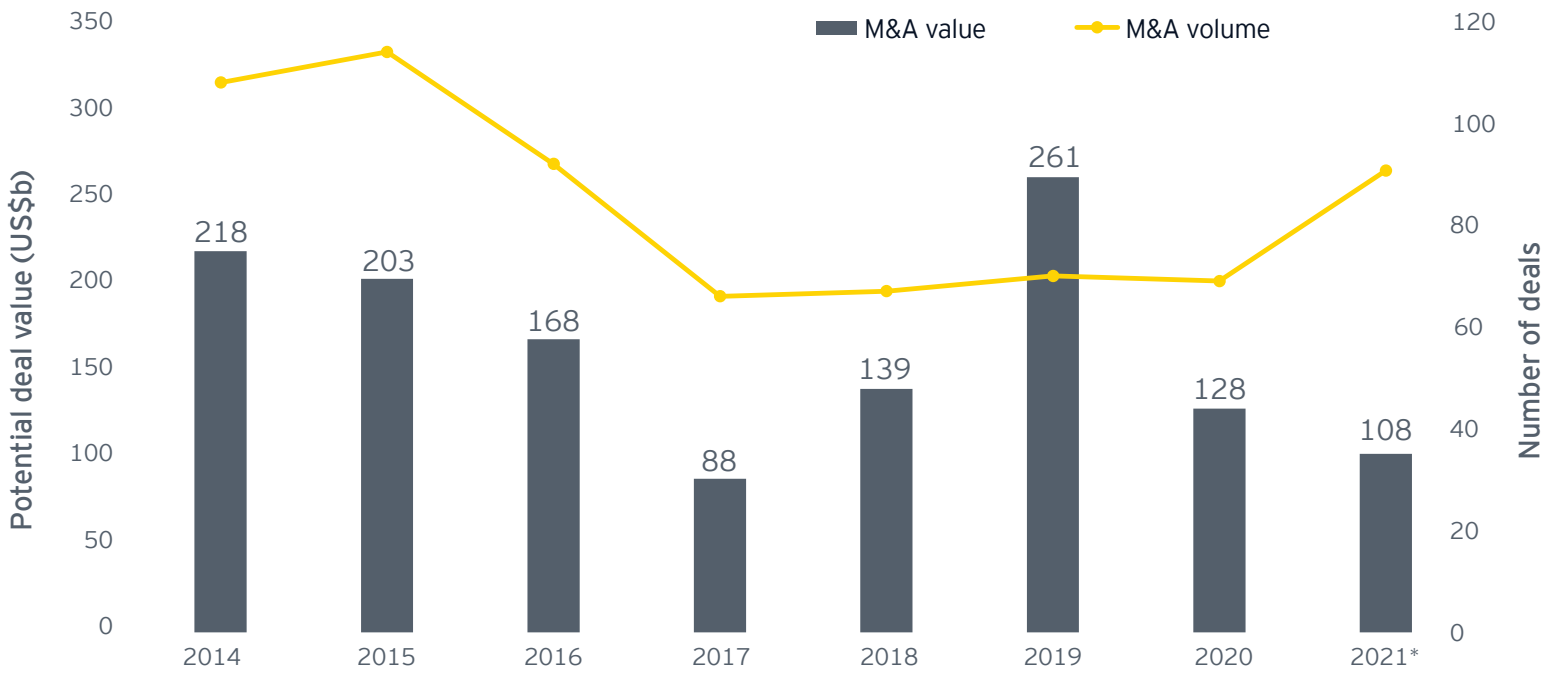
8%
Earnouts as % of
total deal volume

62%
Ave. one-day deal
premium in 2021

9%
Firepower spent
on M&A

Source: EY, Biomedtracker. 2021* data as of 15 December.

Figure 2. Total biopharma M&A value and volume (2014-21*)



Source: EY, Capital IQ. 2021* data as of 15 December.



GUEST PERSPECTIVES



Belén Garijo

Chair of the Executive Board and
CEO, Merck KGaA, headquartered in
Darmstadt, Germany

Success factors for a resilient science and technology industry

In recent years, our company has established a strong position, due not least to sound portfolio and investment choices. Since 2007, we have made acquisitions and divestments with a total value of around €46 billion. These activities were critical for our transformation into a leading global science and technology company.

Our global innovation strategy relies on both external and internal innovation. Today, we consider smaller to medium-sized acquisitions to be more likely than major transformational deals. We will place a high emphasis on organic growth across our three business sectors: Life Science, Healthcare and Electronics. Our global diversification represents a robust foundation for efficient growth, and it provides resilience. So, too, does our emphasis on partnering and sustainability.

We have seen significant growth opportunities, especially related to the life science sector, with new modality adoption in the biotech and pharma markets, as well as electronics where there is strong growth in the semiconductor field. In both of these highly relevant markets, we are making significant investments to maximize our growth potential.

This has led to a strong focus within the company around our “Big 3” – Process solutions, new Healthcare products and Semiconductor solutions. But we also have a balanced view to ensure that each business unit is driving the innovations needed to continue its growth trajectory.

In Healthcare, we will take a very focused approach to business development, targeting research areas where we already have a strong position and knowledge base. In fertility, lifestyle



We believe this focus on sustainability will translate into products, technologies and services that redefine the market and solve some of the most pressing issues confronting society, the environment and, importantly, our business performance.

Belén Garijo

Chair of the Executive Board and CEO,

Merck KGaA, headquartered in Darmstadt, Germany

choices and a later maternal age further enhance demand in an important market where we are a leader. We are also active in oncology, neurology and immunology, the fields that are driven by the remaining high unmet medical need, accounting for the highest growth in our industry.

In each area, in addition to internal investments, we are targeting smaller to medium-sized M&A opportunities that allow us to immediately accelerate innovation or introduce new technologies. Striking the right balance between external and internal innovation is something we are actively managing by developing a more agile culture to rapidly respond to evolving market dynamics. We also recently established an Innovation Board that continually advises our Executive Board to help us make informed investment decisions.

In addition, our evergreen corporate venture fund, M Ventures, plays a critical role scouting for new technologies and capabilities. This €600 million fund invests in startups and drives strong academic collaborations with leading scientists.

Being a preferred partner or acquirer

As we build our external innovation strategy, our goal is to be the preferred partner in each of our priority areas. Creating that reputation starts with having the relevant expertise in a particular field. Another advantage is having a strong collaboration culture, especially when we think about partnership models. That is why we rigorously assess the cultural fit of organizations we partner with during our due diligence process.

When we look at M&A opportunities in Health care, it's critical to be honest about the right fit. For a pharma business of our size, we need to remain focused on where we can win; trying to compete with big pharma is not realistic. So, we have to be more creative when it comes to acquiring assets, mainly through licensing. We also out-license compounds to other companies that we believe can do better commercially with certain assets than we can. Our experience has allowed us to find the best way to monetize our assets, whether internally or outside of the company.

Investing in sustainability to strengthen resilience

Sustainability is also a significant factor in our long-term resilience. Far beyond basic reporting, we see sustainability as a strategic imperative that is increasingly part of our social license to operate. For example, we recently introduced new, strategic sustainability goals, including the achievement of climate neutrality and a significant reduction of our resource consumption by 2040. At our Annual General Meeting in May 2021, we approved a new Executive Board compensation system that is directly linked to environmental, social and governance performance.

Sustainability guides our behaviors, our stakeholder interactions and the development of our people. In addition, it is becoming a key element of our R&D operations across all three business sectors. We are making these investments because we believe this focus on sustainability will translate into products, technologies and services that redefine the market and solve some of the most pressing issues confronting society. This will result in mutual benefits for society, the environment and, importantly, our business performance.

Market dynamics create complexity for acquirers

One reason for the shift away from big M&A had to do with the market dynamics. (See Figure 3.) Although the market for biotech has softened in the second half of 2021, historic levels of capital remained available to biopharma companies, whether public or private. Through 30 November 2021, biopharmas raised more than US\$80 billion in follow-on financing, venture funding and initial public offerings (IPOs), second only to the US\$90 billion raised in 2020. This capital for early- and growth-stage companies was further augmented by the expanding role of special purpose acquisition companies (SPACs), which became a force in 2020 that continued in 2021. Companies that used this vehicle to go public recently included 23andMe, Ginkgo Bioworks, BenevolentAI and Roivant Sciences. SPACs should continue to be a trend in 2022. As of 30 November, there were more than 80 health care SPACs with money to deploy.

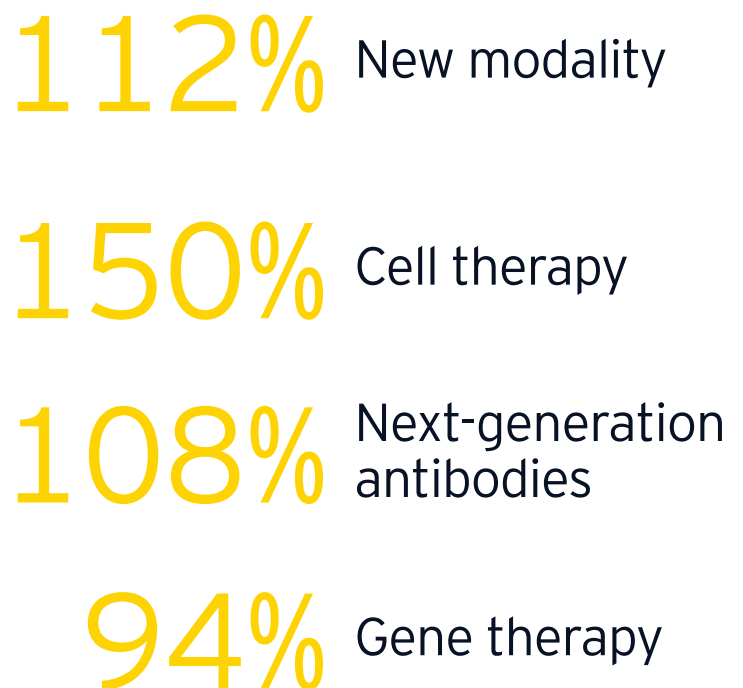
Such ample liquidity has given potential sellers multiple paths to value creation outside M&A. It also increased their expectations of the value of their assets. With little financial pressure to sell, these target biopharma companies were in a much stronger negotiating position and could demand high deal premiums, especially if their drugs belonged to new therapeutic classes expected to be important for future growth.

Indeed, EY research shows that acquirers paid, on average, a 62% premium for public companies relative to their share price one month earlier; that premium jumped to 150% for cell therapy companies, 108% for next-generation antibody players and 94% for gene therapy startups.

Given these forces, it is hardly surprising that the deal pendulum swung away from high-priced acquisitions. As the year wore on, the shift in capital allocation away from M&A became a frequent topic on earnings calls. CEOs from across the biopharma industry cited the economic hurdles associated with buying expensive late-stage assets and emphasized the need to be disciplined with their capital.

Figure 3. Market dynamics shifted biopharma away from M&A

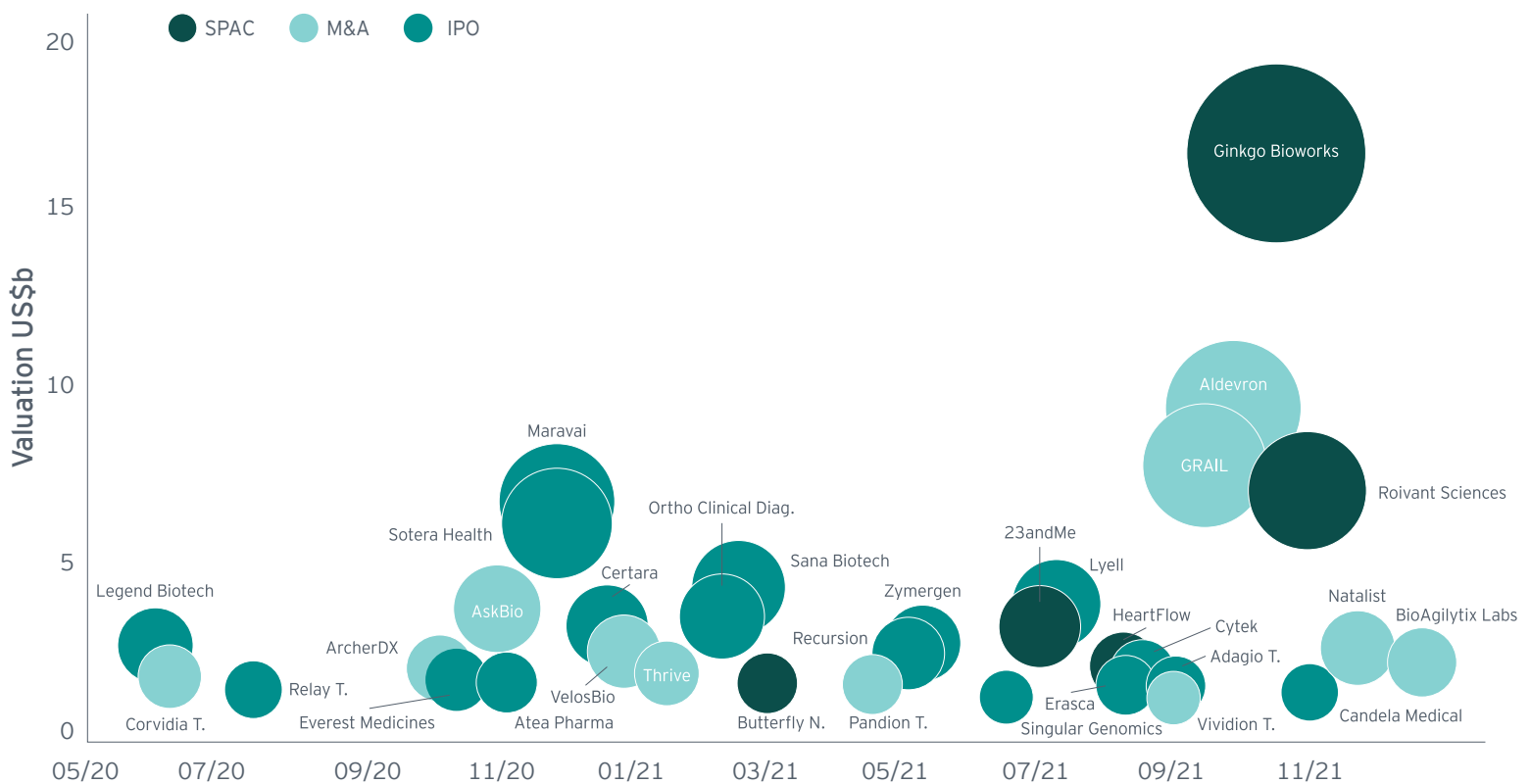
Average one-day premium for companies developing new modalities acquired between 2019 and 2021



Source: EY, Capital IQ. Analysis includes bolt-on deals (not megadeals) completed between 2019 and 30 November 2021. New modalities are defined as next-generation antibodies, cell and gene therapies, DNA- and RNA-based therapeutics, oncolytic viruses, bioengineered vaccines and gene-edited medicines. Average premiums were calculated for all deals for each of the three years. Due to the low volume of transactions of new modality companies average premiums were calculated for the 2019–2021 range.

With little financial pressure to sell, target biopharma companies were in a much stronger negotiating position, especially if their therapies belonged to new therapeutic classes expected to be important for future growth.

Life sciences IPO, SPAC and M&A trends



Source: EY, Pitchbook. Data as of 24 November 2021.

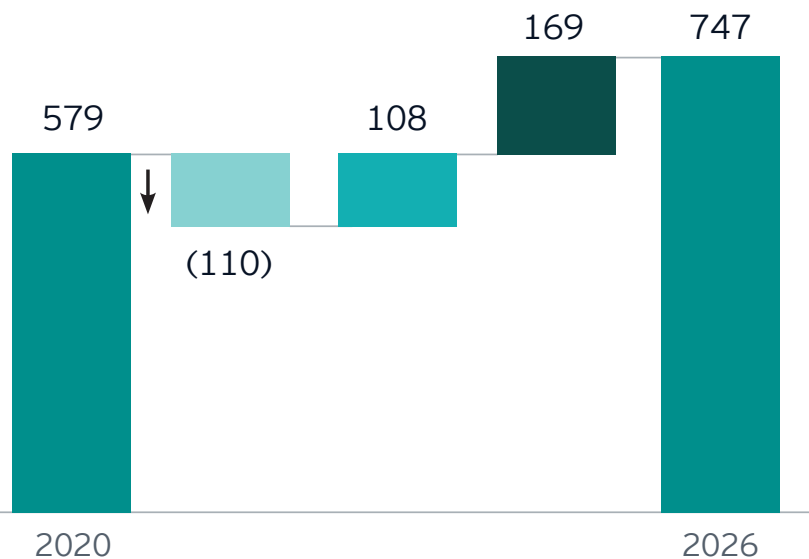
The innovation imperative

Access to future innovation is a perennial driver of deals, but a looming patent cliff increases the urgency. "Speed is critical to success in biotech, where obsolescence rates are increasing at an unprecedented pace," says Dr. Garo Armen, Chairman and CEO of Agenus, which partnered its anti-TIGIT antibody with Bristol Myers Squibb in 2021 for US\$200 million upfront. (See "Key ingredients for biotech success," by Dr. Garo Armen.)

The good news for major biopharma companies: sales of newly launched products between now and 2026 will more than offset sales lost to patent expirations based on forecasts from Evaluate Pharma. (See Figure 4.) Moreover, EY research indicates that a significant percentage of these revenues are forecast to come from biologics (43%) or new modalities (17%), including cell and gene therapies and RNA-based treatments in therapy areas that have historically had greater pricing flexibility. (See "New modalities to watch.")

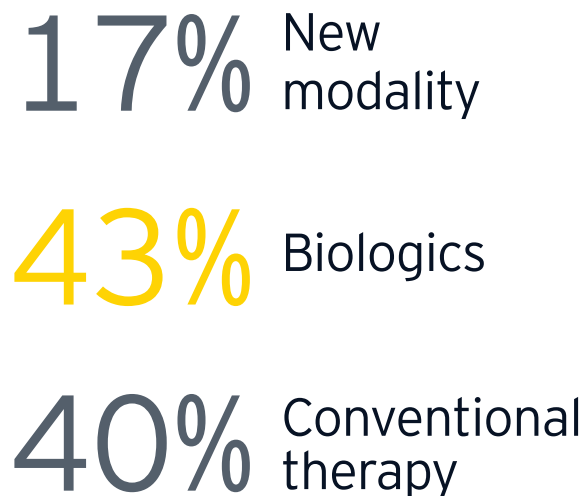
Figure 4: Sales of new products exceed sales lost to patent expirations – for now

Estimated global sales trajectory at 25 biopharma majors* (2020-26)



Source: EY analysis, Evaluate Pharma. Sales lost to patent expiry include products facing loss of exclusivity between 2018 and 2026. New product launches includes sales from products launched between 2018 and 2026. Existing product sales category captures sales all other marketed, non-generic products. The combined sales for this cohort of 25 majors represents 65% of the US\$900 million biopharmaceutical market in 2020 and an estimated 53% in 2026. * See Methodology for data set of companies.

Estimated 2020-2026 sales



Source: EY, Evaluate Pharma. New modalities are defined as next-generation antibodies, cell and gene therapies, DNA- and RNA-based therapeutics, oncolytic viruses, bioengineered vaccines and gene-edited medicines.

EY research suggests that the innovations driving biopharma's growth over the next five years will come from outside the group of established market leaders.

60%

of the sales from new product launches will be made up of biologics and new modalities.

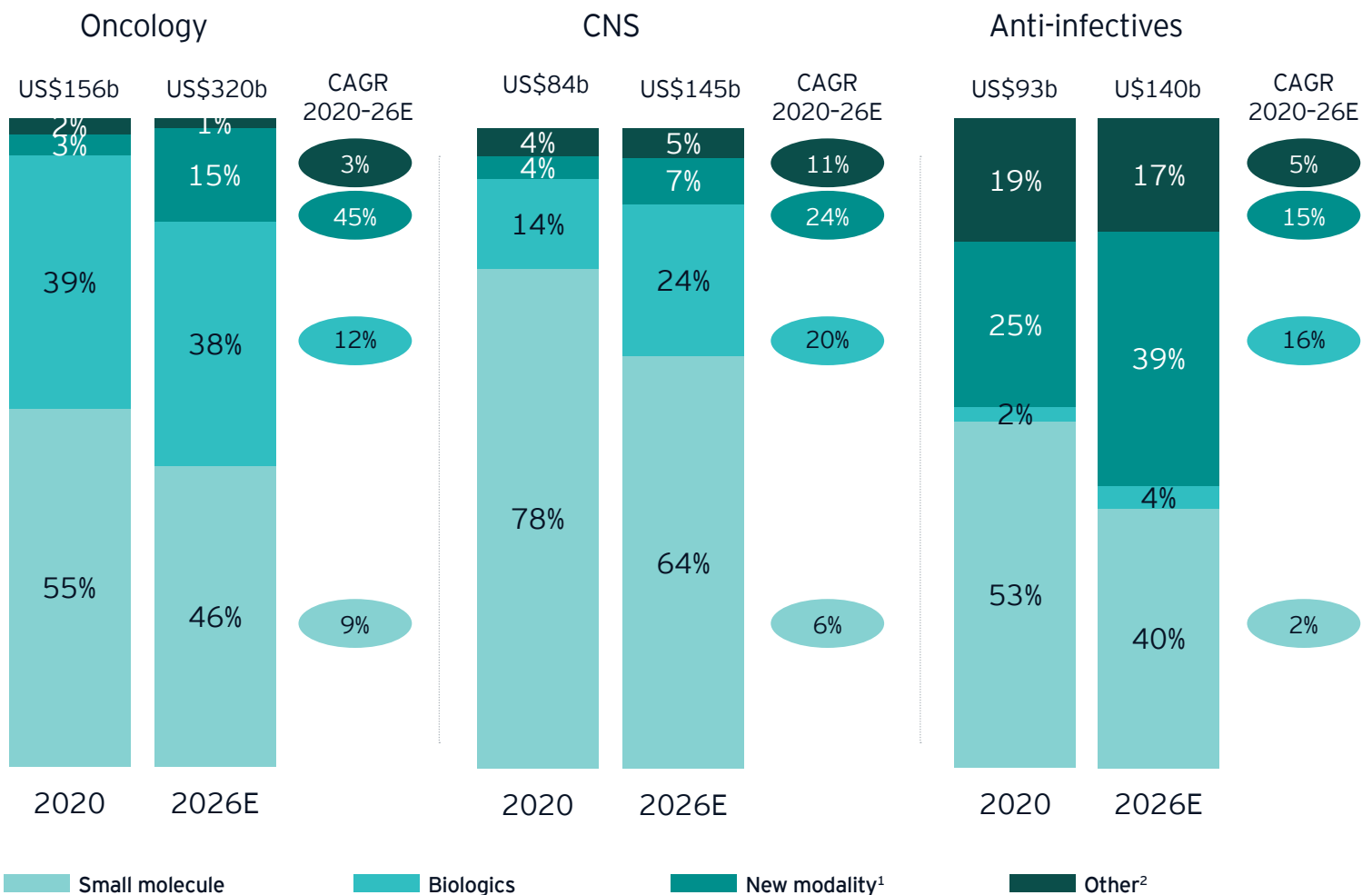


The bad news: outside COVID-19 vaccines and therapies, these new products tend to be for smaller, niche indications, meaning they don't have the same peak sales potential as products in the current portfolio. EY research suggests the compound annual growth rate (CAGR) for large biopharmas will drop precipitously in 2024, from 5.2% to 2.6%, significantly underperforming the expected 7.5% growth rate for the entire biopharma industry.

Additional EY research suggests that the innovations driving biopharma's growth over the next five years will come from

outside the group of established market leaders, and outside the established classes of biopharmaceutical products that have historically driven growth. New companies, and new product modalities, are on track to expand their market share in most major therapy areas in the next five years. Witness the changes projected for the oncology market: the CAGR through 2026 for new players is 60%, with new modalities projected to capture 15% of the market's projected US\$320 billion in that time. (See Figure 5.)

Figure 5: A greater percentage of future sales will come from new modalities, increasing the importance of external innovation



Source: EY Analysis, Evaluate Pharma. 1. New modalities are defined as next-generation antibodies, cell and gene therapies, DNA- and RNA-based therapeutics, oncolytic viruses, bioengineered vaccines and gene-edited medicines. 2. Other category includes conventional products including plant extracts, plasma-derived therapies, traditional vaccines, protein extracts and chiral chemistry based therapies. Analysis excludes over-the-counter and unclassified medicines as defined by Evaluate Pharma. Percentages may not total 100 due to rounding errors.



New modalities to watch

Multiple technologies have matured to make personalized therapies a growing reality. For bigger biopharmas there is increasing pressure on two fronts to do the following: 1. partner with or acquire startups with these personalized capabilities; 2. adapt business models to deliver personalized products and accompanying “beyond the pill” diagnostics and services.

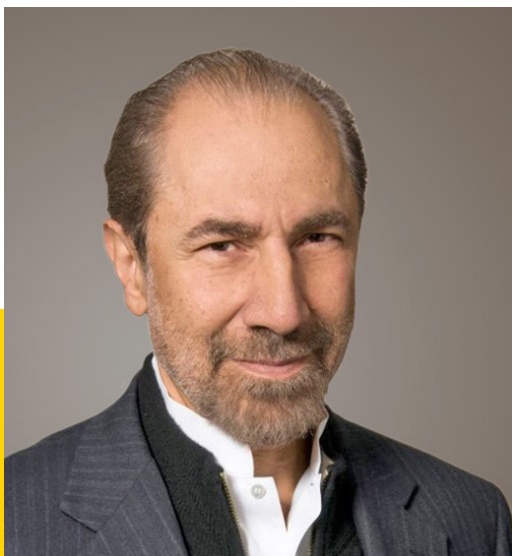
Of the critical platform technologies that have come of age, cell and gene therapy is a frontrunner, with 1,800 products already in the clinic. RNA-based therapies are also rapidly gaining prominence in the wake of COVID-19. Outside the Pfizer/BioNTech and Moderna COVID-19 vaccines, RNA technology underpins more than 200 products currently in clinical trials for a range of illnesses, including cancer, respiratory disease and heart failure.

Other new modalities gaining prominence include next-generation antibodies and protein degradation technologies, in which small molecules are created that specifically target disease-causing proteins for destruction.

In 2021, biopharma buyers signed acquisitions and alliances potentially worth more than US\$32 billion to gain access to newer antibodies, especially antibody-drug conjugates that are designed to increase the power of traditional antibodies by linking them to cell-killing agents.

In the protein degradation space, four companies have raised nearly US\$800 million in IPOs since 2020, with further validation coming from deals with companies such as Pfizer, Eli Lilly and Novartis.

GUEST PERSPECTIVES



Garo H. Armen , Ph.D.

Chairman and CEO, Agenus Inc.

Key ingredients for biotech success

In today's environment, money is a necessity; talent is a precious commodity. As we bring Agenus into the future, our priority is to strengthen our talent density. We believe our value lies in our ability to continually innovate, making scientific discoveries that can be taken into clinical trials on accelerated timelines. This ability – the strength and ingenuity of our research engine – is not something that happened by chance. We built it deliberately with our exceptional, talented team.

As an innovator, Agenus balances between partnering our assets, or developing them on our own. For the products we license out, the heavy lifting of development and commercialization is taken on by our collaborators; for those we develop and commercialize ourselves, it is critically important to have infrastructure capabilities of our own.

In the past five years, we've advanced 17 programs into the clinic. We are investing in expanding our manufacturing, quality, clinical development and commercial functions capacity. These are critical capabilities needed to bring lifesaving agents to patients with the greatest urgency. While our innovation continues to outpace our ability to pursue all our discoveries ourselves, we will continue to license a portion of our portfolio, optimizing both financial value and speed of development.

Since 2016, we've received over US\$800 million in upfront payments from partnerships. This has given us considerable resources to expand our discovery of innovative products and fund our programs slated for development and



The next wave of innovation will be driven by grassroots companies and industry players that value innovation and talent above protecting short-term revenue and profit.

Garo H. Armen , Ph.D.
Chairman and CEO, Agenus Inc.

commercialization. By looking for talent both inside and outside Agenus, we have been fortunate to work with some truly incredible immuno-oncology (IO) visionaries.

Finding the right partner

Recently, Agenus partnered to develop AGEN1777, an anti-TIGIT bispecific molecule, designed to empower the immune system to fight cancer. AGEN1777 has demonstrated exceptional activity in preclinical models, and we chose to partner with Bristol Myers Squibb (BMS), which has an impressive IO portfolio and capabilities.

Financial considerations were an important part of the partnership assessment, but they were just one factor. Given the competition in IO today, we wanted to partner with a leader whose deep understanding of the field and complementary product portfolio is built on a foundation of innovation, high talent density and a culture of intellectual curiosity. BMS checked these boxes.

BMS was also willing to prioritize AGEN1777's development, including the advancement of combination therapies. One risk of working with larger companies is increased timelines. Larger companies are generally more bureaucratic, and their decision-making processes take time.

Speed is critical to success in biotech, where obsolescence rates are increasing at an unprecedented pace. Agenus will continue to collaborate with companies such as BMS, which combine

their resource-rich capabilities and portfolios with the speed and finesse of smaller companies. This is crucially important as we drive innovation from discovery to the clinic, and then to patients, in record time.

The importance of accelerated innovation

It is difficult to overstate the value of innovation. This can most clearly be seen in the field of technology, where the companies that have built tremendous value have been those with the ability to innovate rapidly. If you consider today's highest-valued technology companies, many of them did not even exist 20 to 30 years ago; now their value surpasses US\$1 trillion. It is the strength of their vision, the talent density of their teams and their ability to drive innovation, which has allowed them to change the world in ways that were previously unimaginable.

We believe these same dynamics can drive the biopharma industry to ascend to new, groundbreaking heights over the next 10 years. The next wave of innovation will be driven by grassroots companies and industry players that value innovation and talent above protecting short-term revenue and profit.

Change is coming, and it will start in companies with high talent density, where ideas and innovation meet, and where resources are given to small teams ready to advance life-changing molecules from lab, to clinic, to patients with unprecedented inspiration and speed. We believe Agenus, alongside our partners and subsidiaries, is well-positioned to lead this effort.

Accelerating strategic partnerships

Given the need for external innovation to achieve future growth targets and the high price tags for M&A, the logical response from biopharmas would be to accelerate partnering. And that's largely what's happened. But a closer look at the 2021 data suggests biopharma companies need to move even more aggressively to signing strategic partnerships that don't simply shift the risk to biotechs but share it.

Since 2012, there's been a steady uptick in both total alliance value (including milestones) and volume. Indeed, 2020 was a record year for both metrics, with biopharmas signing 38 alliances with upfront deal values greater than US\$100 million and four greater than US\$1 billion.

The potential deal value for alliances in 2021 did not, ultimately, match 2020. While biopharmas invested more than US\$11 billion upfront on 273 partnerships in 2021, EY research shows that these alliances were smaller investments focused on

Figure 6. Another strong year for biopharma alliances, but most emphasize future payments rather than upfront money

Upfront total



Average total upfront payment

2020: US\$84m

2021*: US\$53m

Number of partnerships with upfront >US\$100m

2020: 38

2021*: 31

Number of partnerships with upfront >US\$1b

2020: 4

2021*: 0

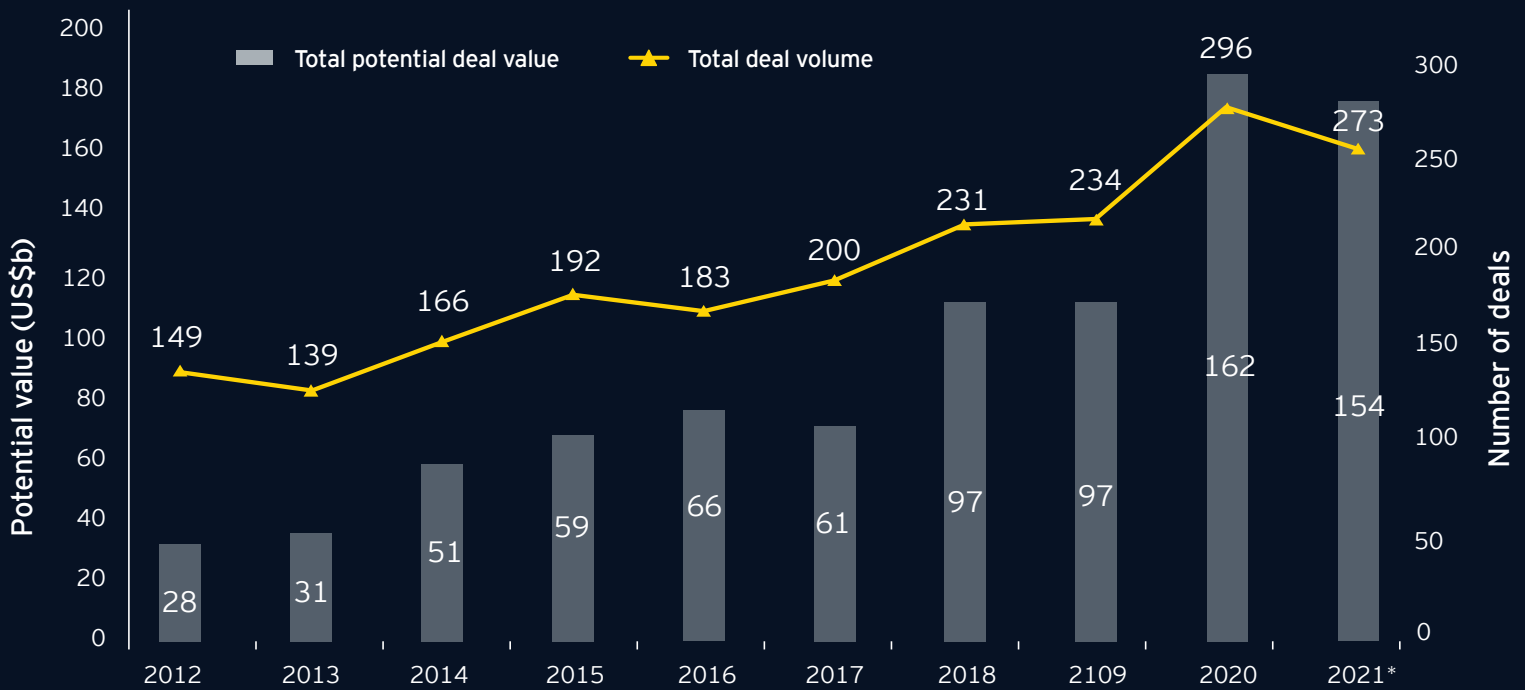
hedging development risk. In contrast to 2020, there were only 31 partnerships with upfronts greater than US\$100 million in 2021. Average upfront payments fell nearly US\$30 million year-on-year. (See Figure 6.)

Of course, alliances are another means to offset risk, giving both deal parties an opportunity to mutually demonstrate value earlier in their relationship. Bigger biopharmas can familiarize themselves with newer technologies and get comfortable with the level of scientific risk involved, while smaller companies gain insights into their bigger partners' operations, culture and capabilities.

Achieving that shared understanding prior to an alliance is critical, says Belén Garijo, Chair of the Executive Board and CEO of Merck KGaA, headquartered in Darmstadt, Germany. "That is why we rigorously assess the cultural fit of organizations we partner with as part of our due diligence process," she

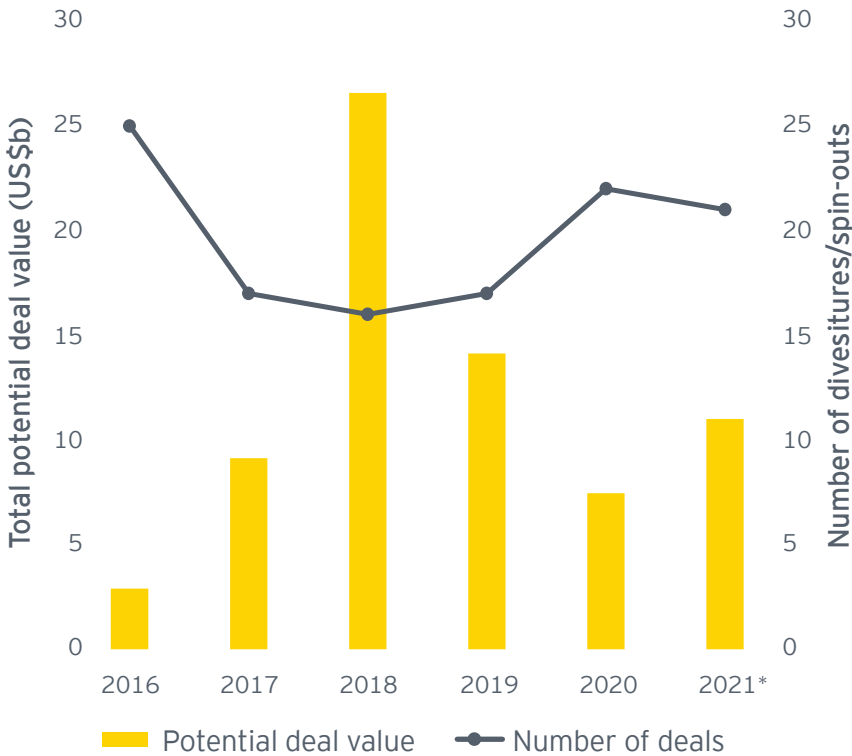
says. If both companies have skin in the game, then these relationships enable them to help ensure they find a good "fit" while maintaining their independence and continuing to do what each partner does best – whether discovering new molecules or building the commercial strategy to launch them. (See "Success factors for a resilient science and technology industry" by Belén Garijo.)

Alliances may also give companies a pathway to future M&A, though that historically is the exception not the rule. Still, we've seen the approach yield returns for many big biopharma, perhaps most famously Roche, which initially began a collaboration with Genentech in the 1980s that ultimately became an outright acquisition in 2009. More recent examples of the strategy include Pfizer's 2020 acquisition of Array BioPharma and Sanofi's 2021 purchase of Translate Bio. The latter deal originally began as a collaboration in 2018 and culminated in an acquisition when Sanofi decided it was time to

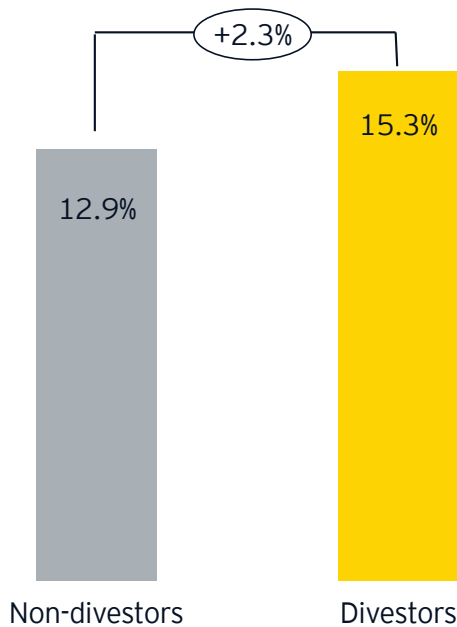


Source: EY, Informa's Biomedtracker. Chart shows potential value, including up-front and milestone payments, for alliances where deal terms are publicly disclosed. 2021* data as of 15 December.

Figure 7. Biopharma divestment activity (2016-2021*)



Biopharmas that divested increased total shareholder returns compared with non-divestors



establish an RNA center of excellence.

As companies increasingly recognize that ownership is not obligatory, divestments also gain in appeal. Divestitures unlock market value by streamlining managerial complexities and generating cash flow that can be reinvested in priority business areas. But the potential gains are even broader when one factors in the opportunity costs. Time and resources spent managing businesses that are slower growing, or have lower growth potential, is time not spent on the business areas that are the linchpin of future growth.

Biopharmas may have the opportunity to access untapped potential value in this area. The data suggests that total shareholder returns (TSR) are higher for companies that divest; however, given current fragmentation in the industry, it's also true that biopharmas have not done enough to proactively focus their business models. Indeed, the total disclosed value of divestitures through 24 November 2021 was only US\$11 billion.

In 2022, we are likely to see even more focus on divestitures. In November 2021, Johnson & Johnson announced plans to spin-off its Consumer Health division, mirroring recent consumer health divestitures executed by Pfizer and GlaxoSmithKline. Outside the consumer space, spin-offs of generics businesses are another area to watch. (See Figure 7.)

Partnerships and divestitures are two important components of portfolio optimization that allow companies to create value without requiring 100% ownership. Another mechanism gaining promise: asset-light business models, in which companies

Source: EY, Capital IQ and Biomedtracker. *Value and volume trends current as of 24 November 2021. Deal value does not include recently announced Johnson & Johnson spin of its Consumer Health division. From 2010-2020, 21 biopharma companies with market valuations greater than US\$5 billion announced divestitures, while another 13 companies did not divest. Annual total shareholder return in the last 10 year were used to calculate an average TSR.

transfer assets they need to access but not directly hold to more appropriate owners. As is true with alliances and divestitures, asset-light models create the operational flexibility and financial headroom to accelerate investment in top priorities.

Whether strategic partnerships are used as a pathway to eventual acquisition, to enable product access or for other goals, these relationships offer significant value to biopharmas. Indeed, they allow companies to stay focused on their core skills, whether those are innovation or development and commercialization.

At a time when technologies continue to converge, maintaining focus and using partnerships to explore adjacencies is the right thing to do for patients, too. Christi Shaw, CEO of Kite, a Gilead company, says its been imperative that the biopharma retain its focus on oncology and cell therapy. "Spreading ourselves too thin will only hurt the patients we can help in the short term," she says. (See "The team sport of cell therapy" by Christi Shaw.)

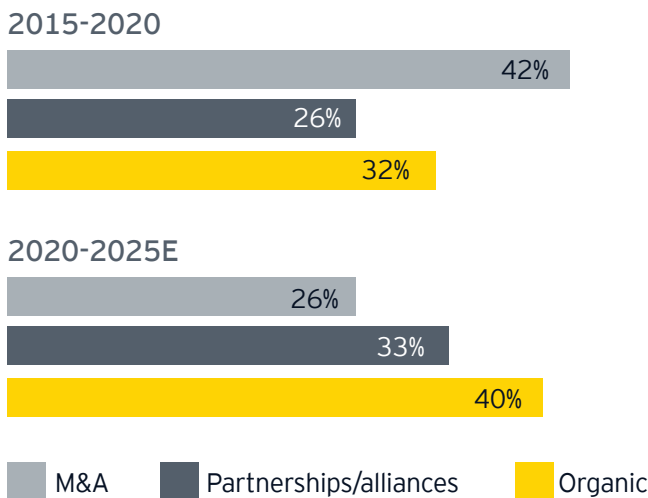
Anecdotaly, there may be no better example of the power of partnerships than the race to market COVID-19 vaccines. Historically, the vaccine market has been dominated by the few companies that have the knowledge and infrastructure to develop, validate and distribute these products at scale. Yet,

companies that looked beyond the core vaccine capabilities to leverage the potential of nascent mRNA technology, primarily via partnering, have been the most successful.

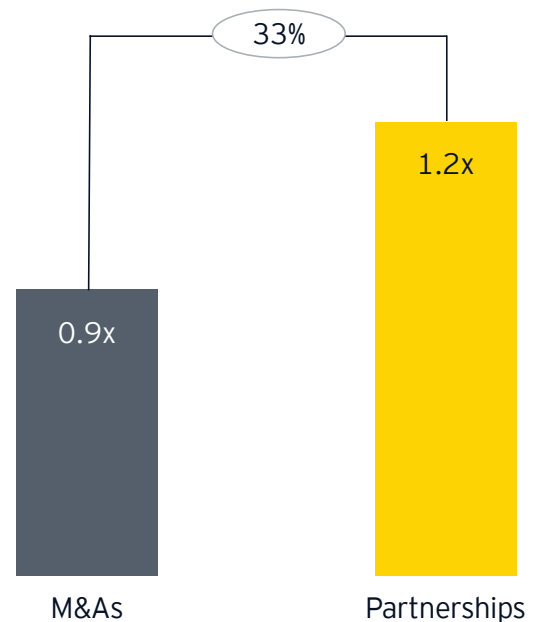
Beyond anecdotes, the data suggests that when companies deploy capital toward partnerships rather than M&A they are rewarded with a greater return on their investment. Indeed, EY research shows that the historical return on investment (ROI) for partnerships and alliances is 33% higher than for M&A. Given this data, it's not surprising that the EY analysis projects them playing a greater role than M&A in driving market share for leading biopharmas through 2025. (See Figure 8).

This is not to understate the challenges of partnering effectively. The balance may be hard to strike: with low upfronts, big companies may err on the side of hedging risk, and not give their smaller partner the support needed to reach the next inflection point. Pursuing "innovation on the cheap" in this way may be a false economy. Smaller companies must be resourced sufficiently to make progress and operate as a genuine innovation engine, without simply becoming a captive of the larger company. Yet, if biopharmas can address these challenges, the rewards are in plain view.

Figure 8. M&A and partnering relative contributions to projected growth 2015-2020, 2020-2025



Average ROI on M&A vs. partnering 2000-2015 (%)



Source: EY Analysis, Evaluate Pharma, Capital IQ. The top five therapy areas were identified for 25 biopharma companies. Products in each of these therapy areas were mapped according to their origin (organic or acquired via M&A or partnering). Market share gains were assessed using data from Evaluate Pharma. Returns on M&A and partnering calculated based on 5-year sales from all products obtained through dealmaking between 2000 and 2015 for this cohort of companies. Capital IQ and Evaluate Pharma were sources for M&A and alliance spending respectively.

GUEST PERSPECTIVES



Christi Shaw
CEO
Kite, a Gilead Company

The team sport of cell therapy

As the CEO of a leading cell therapy company, my goal is to make sure Kite delivers potentially lifesaving treatments to patients who have exhausted other options against cancer. Broadening the use of cell therapy to help more patients with earlier-stage disease and decreasing the time it takes to deliver these personalized therapies to patients are among my top priorities.

I am proud of Kite's progress in expanding the use of cell therapy to multiple cancer types. Our therapies can now be used to treat three different types of lymphoma: large B-cell lymphoma, mantle cell lymphoma, follicular lymphoma and one form of leukemia – B-cell precursor acute lymphoblastic leukemia in adults.

But as an industry we can do more. In B-cell lymphoma, for example, studies show that only 20% of patients eligible for cell therapies actually receive them. Yet, we know that these therapies can increase survival from months to years for some patients; we may even be close to delivering true cures.

We also need to get these treatments to patients quicker. Among Kite's strengths is our manufacturing speed and reliability with a 96% success rate in the US. It is approximately 16 to 17 days from the moment a patient's T cells are collected to the moment that the patient receives newly engineered CAR T cells. That is industry leading, but for patients who are critically ill, we need to move faster, and we are working to reach patients earlier in their treatment journey.



Delivering a cell therapy to a patient is a team sport. We have close relationships with logistics providers and airlines to maintain our on-time delivery schedule. We collaborate with academic centers, regulators, patient advocacy groups and health systems as well.

Christi Shaw
CEO, Kite, a Gilead Company

We continue to invest significant resources to maintain our leadership in cell therapy manufacturing. During the height of the COVID-19 pandemic, we opened a new facility in the Netherlands to better serve patients outside of the US. Another state-of-the-art manufacturing site will come online in Maryland in 2022. These commercialization capabilities – especially our technical operations – are significant differentiators for us. Despite the substantial disruptions to supply chains due to COVID-19, I am very pleased that we never missed delivering a single patient dose.

Partnering to outperform

Our commitment to supply chain and manufacturing excellence also makes Kite a partner of choice for organizations that aren't capitalized to, or don't want to, make the large financial investments required to commercialize cell therapies. We have a wealth of translational data and commercial knowledge, which means that we can help our partners accelerate their pipelines.

This ability to combine our expertise with another company's is different from the traditional business development approach. The typical options were either to invest equity in an early-stage company and remain hands off or take 100% ownership through an acquisition. Our recent deals with Daiichi Sankyo in Japan and Fosun Kite in China are true commercial partnerships. They extend beyond the transfer of technology.

Both relationships are mentorships, in which Kite and the partner are engaged in every step of the cell therapy process, with each party leveraging what they do best. These models are mutually beneficial. And we have evidence the approach works. By letting Fosun Kite lead in China, we had a very successful launch of cell therapy in that country, treating many patients in the first month.

A team sport

We don't just partner with life sciences companies. Delivering a cell therapy to a patient is a team sport. We have close relationships with logistics providers and airlines to maintain our on-time delivery schedule. We collaborate with academic centers, regulators, patient advocacy groups and health systems as well. It's truly a team effort.

Another critical partner is our parent company, Gilead. Our corporate structure means Kite has the autonomy where it really needs it – business development, R&D, technical operations and commercial decisions. We're also able to tap into key enabling functions, such as Finance, IT and HR, and avoid duplicating resources. That allows us to stay focused on how we use cell therapy in oncology to meet patients' needs.

How can we improve patient outcomes? How do we make our therapies better, faster, so that more patients may be cured and health care costs reduced? If we can answer these questions, we truly will make a difference for patients and for health care systems.

Looking ahead to 2022

As biopharmas look ahead to the coming year, the looming growth gaps associated with upcoming patent expirations will keep M&A firmly on the agenda. With new modalities set to be a key growth driver, companies will continue to invest in the “hot” new modalities.

Moreover, mid-size biopharmas are now potentially able to access the capital to execute M&A: witness the creative way MorphoSys established an innovative financing deal with Royalty Pharma, providing the company with an opportunity to buy epigenetics company Constellation. Jean-Paul Kress, MD, CEO of MorphoSys, predicts smaller biopharmas will be making more noise in the coming months. “The current market dynamics help level the financial playing field” of M&A, he says. Certainly, some mid-size biopharmas will be incentivized to accelerate M&A as a defensive move to prevent themselves from becoming acquisition targets. (See “How small life sciences companies can fuel innovation and growth,” by Jean-Paul Kress, M.D.)

Finally, private equity has demonstrated in recent years that it has the financial capital to be a buyer – or a funder of transactions. The resilience of life sciences companies during the COVID-19 pandemic (and their ability provide effective returns), plus private equity’s interest in pursuing a “buy and build” approach in specific therapy areas means private equity will likely play an even greater role in the M&A picture in the future. Indeed, in MedTech, private equity was either a buyer or a seller in 5 of the top 15 deals in the 12 months from July 2020 to June 2020. (See “The M&A trajectory for MedTech.”)

In 2022, high deal premiums will continue to be an obstacle for big biopharma buyers. Late-stage or marketed assets with strong clinical data will continue to command high prices, particularly in competitive therapy areas such as oncology. Yet, some of the largest companies have significant cash resources to deploy for M&A and there could be increasing pressure to use it to establish beachheads. Such acquisitions would reverse the declining trend for biopharma deal value witnessed in the past two years.

However, a majority of companies won’t have the capital – or the desire – to buy leadership positions in these areas. Moreover, M&A won’t address another pressing issue for biopharma: as business models shift and pressure mounts to deliver better patient outcomes and experiences, there will be even greater urgency to work with new entrants or other stakeholder partners, especially diagnostic companies and MedTechs, to personalize products and share data.

Alliances will, therefore, continue to be the primary priority. And the compromise strategies witnessed in 2021 will continue into 2022. Companies will:

- ▶ Favor bolt-on deals rather than risking megadeal expenditure for uncertain rewards
- ▶ Seek divestments, for the intrinsic financial rewards of this strategy, and to free up capital to execute M&A
- ▶ Place more emphasis on partnering, including strategic relationships with more significant upfront value and bigger potential downstream rewards

In this environment, where biopharmas pursue more strategic partnerships earlier to achieve their growth goals, M&A may find itself playing a supporting role.



GUEST PERSPECTIVES



Jean-Paul Kress, M.D.
CEO, MorphoSys

How small
life sciences
companies can
fuel innovation
and growth

Innovation drives everything. If you can generate innovation, you can access capital.

MorphoSys has a long and successful history of forging strategic partnerships with global health care companies. These partnerships funded research and enabled our growth through proprietary drug development and commercialization. Now, following our recent acquisition of Constellation Pharmaceuticals, we are aiming to become a leader in hematology and oncology.

For a company of our size, the Constellation acquisition was transformative. It gave us access to two advanced product candidates: (1) pelabresib, a potential first-in-class and best-in-class investigational BET inhibitor, currently being explored in a Phase 3 study as a first-line treatment for myelofibrosis, a rare bone marrow cancer for which only limited treatment options are available. (2) CPI-0209, a potential best-in-class investigational EZH2 inhibitor, currently being explored in a Phase 2 study for the treatment of hematological and solid tumors.

In the past, using M&A to access late-stage molecules such as pelabresib was only available to deep-pocketed big pharma companies that can bid in situations where prices are high, and competition is fierce. But the current market dynamics help level the financial playing field, giving smaller companies a chance, too. For example, we used an innovative financing deal outside the traditional capital market channels to acquire Constellation.



New ways of accessing capital mean M&A for competitive assets won't just be for bigger pharma companies anymore.

Jean-Paul Kress, M.D.
CEO, MorphoSys

Smaller companies can be great acquirers – if they have the right skills and mindset to develop assets and bring them to market.

Acquiring from a position of strength

In July 2020, we launched Monjuvi (tafasitamab-cxix) – a cancer immunotherapy under accelerated approval in the United States, which is used to treat patients with second and later lines of diffuse large B-cell lymphoma who are not eligible for autologous stem cell transplant. With a year of experience, we were in a great position to leverage our development, regulatory and commercial knowledge to generate value in the hematology-oncology sector. But to maximize this opportunity, we needed to augment our internal pipeline with external innovation.

Reasonably priced assets in late-stage development are scarce. We looked at almost 200 assets in the hematology-oncology therapeutic area before we zeroed in on Constellation. In this market environment, it's a matter of being both disciplined and flexible, carrying out your diligence proactively, and being ready for multiple scenarios.

Maximizing our opportunities

In the near future, our focus is on organic growth and adequately resourcing our capital-intensive late-stage pipeline. With three ongoing Phase 3 trials for Monjuvi and pelabresib, and two other mid-stage therapies in clinical development, we have a large clinical program for a company of our size.

As we broaden our focus from R&D to delivering commercial products, we must be extremely disciplined in our capital allocation. As such, we believe a partnership approach can help maximize our opportunities. Our goal is to create the most value for each asset in our pipeline, and we will always assess carefully when and where it makes sense to partner. We took a similar approach for Monjuvi, partnering with Incyte. It has been extremely positive for us, giving us access to more capital and helping to fuel the development of this important medicine.

Finding the right mix of partnerships and licensing

Acquiring a company or asset is higher cost with more risks and rewards. A partnership means you must coexist and cooperate; it's like a marriage for several years, and you have to work with your partner. Partnering allows other organizations to put capital and focus behind the asset in its next stage of development. At the same time, it's possible to structure the partnership to retain a meaningful stake that is value-creating.

We've always sought a strategic mix between acquisitions, in-licensing and partnerships, and we will continue to balance all these approaches as we pursue our vision of becoming a leader in hematology and oncology.

New ways of accessing capital mean M&A for competitive assets won't just be for bigger pharma companies anymore. We will see more of these creative deals to fuel growth and innovation in the future.

The M&A trajectory for MedTech

2021 M&A by the numbers

2

Megadeals

82%

Bolt-on volume

22%

Ave. one-day deal premium in 2021

16%

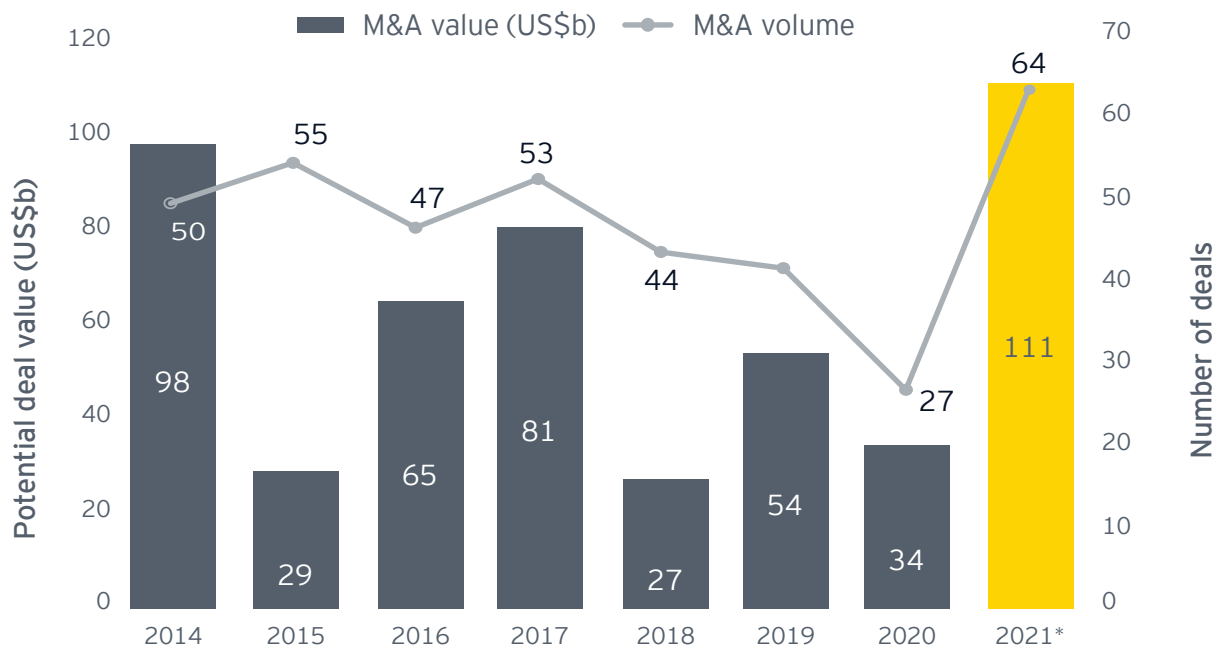
Firepower spent on M&A

As was the case for biopharma, there were multiple reasons for MedTech not to pursue big M&A in 2021, including:

- ▶ Record-level valuations, as the subsector rebounded from the pandemic dip
- ▶ High capital liquidity, with IPO deals, robust venture capital investment and growing activity from SPACs
- ▶ Hefty premiums for targets reflecting unprecedented multiples on revenue
- ▶ Smaller growth gaps as elective procedures deferred by COVID-19 resumed

Yet, despite these potential deterrents, the MedTech industry is enjoying a year of renewed M&A activity, with the industry's total deal M&A value hitting US\$111 billion through 30 November 2021. That's more than any full year since 2014 (US\$98 billion). It was also a record year for deal volumes, exceeding the level reached in 2015.

MedTech M&A trends



Source: EY, Capital IQ. 2021* data as of 30 November. Analysis includes contract development management organizations or contract research organizations deals acquired by MedTech companies.

What's fueling this M&A activity? MedTech companies have a record US\$600 billion in Firepower as of November 2021. Yet, this alone is not an explanation. Biopharma companies also had ample reserves of Firepower and chose to deploy only 9% of that capital, compared with 16% for MedTech (which has taken little interest in strategic alliances to date).

In addition to ample Firepower, the impact of the pandemic cannot be underestimated. While some companies struck deals based on immediate COVID-19 opportunities, the bigger opportunities link to how the pandemic has reshaped care models.

In particular, MedTechs have moved to acquire remote monitoring technologies that enable care to be brought into home settings. Notable moves in this space include:

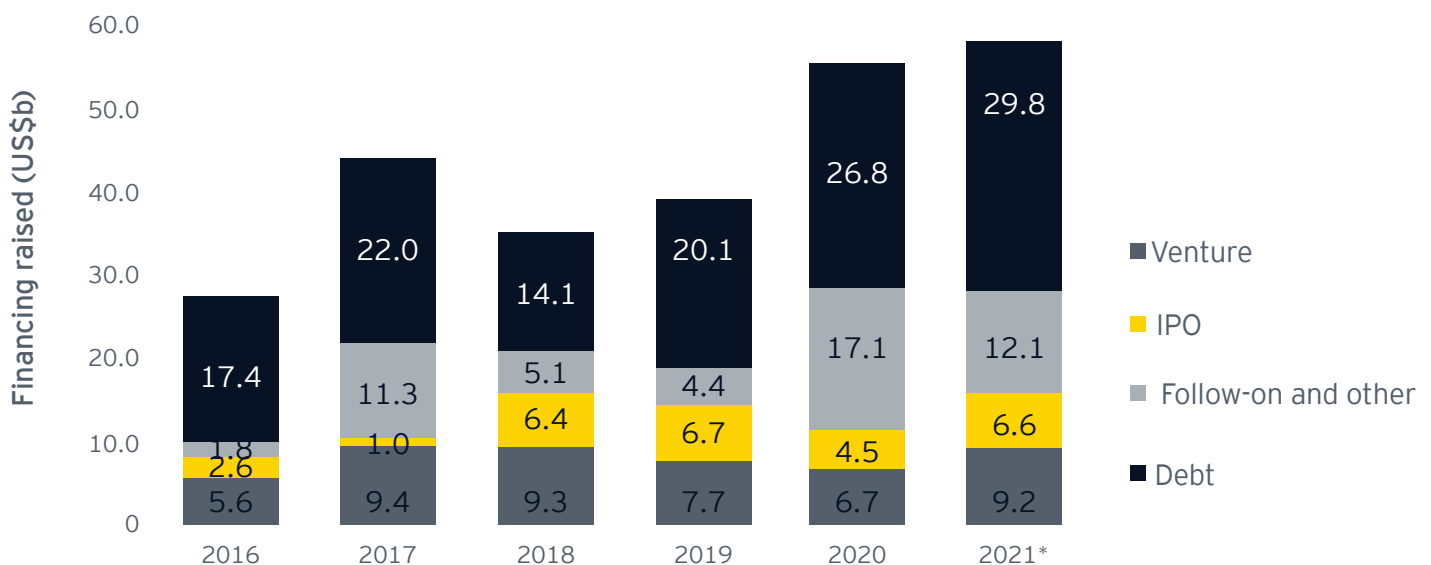
- ▶ Boston Scientific's acquisition of cardiac monitoring device maker Preventice Solutions for up to US\$1.2 billion in January 2021

- ▶ Connect America's August 2021 deal to acquire AI remote monitoring company 100Plus; 100Plus announced a further partnership with athenahealth in November 2021
- ▶ Baxter's US\$10.5 billion purchase in September 2021 of Hillrom and its suite of connected care solutions

Alongside this investment in remote monitoring, MedTech has also witnessed a significant shift in focus toward diagnostics. The fastest-growing MedTech sector in recent years, diagnostics have gained recognition as a key enabler of remote care, personalization and precision. Two US\$1.8 billion deals, Roche/GenMark and DiaSorin/Luminex, are only the leading edge of the increased M&A activity in this field.

The growing investments in remote monitoring and diagnostics are among many indications signaling a recognition within MedTech that the ongoing shift in care models may be more transformative for the industry than any single new modality or therapeutic device innovation. Changing operating models will be a significant long-term opportunity for both biopharma and MedTech – but MedTech seems to be making the first moves.

Capital raised in the US and Europe by year



Source: EY, BMO Capital Markets, Dow Jones VentureSource and Capital IQ. 2021* data as of 30 November. Numbers may appear to be inconsistent because of rounding. Private investments in public equity (PIPEs) included in "follow-on and other."



In a dynamic
M&A market,
here's what
to expect
in 2022

Divest to invest:

Portfolio optimization continues to be a top theme

M&A trends:

An uptick in M&A value as growth gaps loom

Acquire or get acquired:

Mid-size biopharmas accelerate their M&A

No bolting from bolt-ons:

Companies steer clear of megadeals' execution risks

The partnering imperative:

Companies will deploy more of their Firepower on strategic partnerships

Going forward:

The emphasis on bolt-ons and partnerships means another year of higher deal volumes and lower total deal value

Methodology

Dealmaking and financing analyses

Life sciences dealmaking and financing activities were analyzed from 1 January 2014 to 15 December 2021 using data from Capital IQ, Biomedtracker and PitchBook. The activity of special purpose acquisition companies (SPACs) was tracked using data from spacinsider.com.

M&A deals with disclosed values greater than US\$100 million were categorized according to the target's subsector (e.g., biopharma or MedTech) and by rationale as follows:

- ▶ **Asset swap:** transaction in which the companies participate as both acquirers and sellers, negotiating the exchange of assets with each other
- ▶ **Bolt-on:** small to medium-sized acquisitions that account for less than 25% of the buyer's market capitalization
- ▶ **Financial deal:** characterization used when the acquirer is a financial buyer (e.g., private equity) outside the life sciences industry
- ▶ **Geographic expansion:** acquisitions by a life sciences company specifically designed to access capabilities in a new geography. This does not include cross-border transactions that are part of larger, transformative transactions
- ▶ **Megamergers:** acquisitions with valuations of roughly US\$40 billion (biopharma) and US\$10 billion (MedTech)
- ▶ **Transformative deals:** transaction in which the deal value is greater than 50% of the acquirer's market capitalization at the time of purchase

Deal premium and stage of development analyses included only bolt-on biopharma deals. Due to the low annual transaction volume of companies developing new modalities (defined on the facing page), average premiums were calculated for the 2019-2021 range. Acquired companies were classified by the stage and therapy area according to their lead asset, as defined by Evaluate Pharma. Unless otherwise noted, these analyses excluded deals for over-the-counter, generics or animal health products.

Firepower analysis

The EY organization defines **Firepower** as a company's capacity to fund transactions based on its balance sheet. It has multiple inputs, including (1) cash and equivalents; (2) debt capacity, including credit lines; and (3) market capitalizations. The following assumptions underpin the analysis:

- ▶ A company will not acquire targets that exceed 50% of its existing market capitalization.
- ▶ When a transaction results in a new company, the debt-to-equity ratio of the combined entity cannot exceed 30%.
- ▶ Equity is measured on a market value basis.
- ▶ The methodology does not calculate the ability to perform M&A via stock-for-stock transactions. However, increases in a company's stock price do increase a company's Firepower because increased equity enables companies to borrow more to finance transactions.

Firepower trends are measured across the biopharma and MedTech subsectors, as well as for individual companies. While some life sciences companies have made acquisitions that extend beyond the upper threshold defined in the Firepower methodology, the goal is to create a uniform approach to measure relative changes in Firepower.

The EY organization defines **deployed Firepower** as the ratio of capital spent on M&A or alliances by a company or subsector in a given period relative to the available Firepower as determined by the inputs described on the facing page.

Unless otherwise noted, 31 December data was used to calculate annual Firepower results. In instances where transactions by companies in two different subsectors took place, Firepower calculations were performed for the separate entities until the close of the transaction.

Biopharma performance and growth analyses

EY researchers mapped the five-year CAGRs for 25 biopharma majors (listed to the right) from 2020 to 2026. This analysis accounted for sales lost to patent expirations and new sales from existing products or products launched in this time frame.

Forecasted sales were also mapped by product type: small molecule, biologics or new modality. New modalities are defined as therapies belonging to one of the following categories: RNA-based therapeutics, cell and regenerative therapies, gene therapies or gene-edited molecules, and next-generation biologic, including antibody-drug conjugates. Unless otherwise noted, Evaluate Pharma's estimated drug forecasts were used as the source for all sales figures and categorizations by therapy area or modality.

The 25 biopharmas included in the analysis were:

- ▶ AbbVie Inc.
- ▶ Amgen Inc.
- ▶ Astellas Pharma
- ▶ AstraZeneca PLC
- ▶ Bayer AG
- ▶ Biogen Inc.
- ▶ Boehringer Ingelheim
- ▶ Bristol Myers Squibb Co.
- ▶ Daiichi Sankyo Co. Ltd.
- ▶ Eisai Co., Ltd.
- ▶ Eli Lilly and Company
- ▶ Gilead Sciences, Inc.
- ▶ GlaxoSmithKline PLC
- ▶ Johnson & Johnson
- ▶ Merck & Co., Inc.
- ▶ Merck KGaA, headquartered in Darmstadt, Germany
- ▶ Novartis AG
- ▶ Novo Nordisk A/S
- ▶ Otsuka Pharmaceutical Co., Ltd.
- ▶ Pfizer Inc.
- ▶ Regeneron Pharmaceuticals Inc.
- ▶ Roche Holding AG
- ▶ Sanofi
- ▶ Takeda Pharmaceutical Company Ltd.
- ▶ UCB S.A.

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How EY's Global Life Sciences Sector can help your business

As populations age and chronic diseases become commonplace, health care will take an ever larger share of GDP. Scientific progress, augmented intelligence and a more empowered patient are driving changes in the delivery of health care to a personalized experience that demands health outcomes as the core metric. This is causing a power shift among traditional stakeholder groups, with new entrants (often not driven by profit) disrupting incumbents. Innovation, productivity and access to patients remain the industry's biggest challenges. These trends challenge the capital strategy of every link in the life sciences value chain, from R&D and product supply to product launch and patient-centric operating models.

Our Global Life Sciences Sector brings together a worldwide network of 23,000 sector-focused professionals to anticipate trends, identify their implications and help our clients create competitive advantage. We can help you navigate your way forward and achieve sustainable success in the new health-outcomes-driven ecosystem.

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