

Focus on fundamentals to bounce back

EY Biotech Beyond Borders Report 2025

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To our clients and friends

The 35th annual Biotech Beyond Borders Report finds the biopharma industry at a crossroads with history. The last 12 months have looked very different from our previous forecast in the June 2024 edition of this report. Access to capital — the lifeline of the sector — is constrained, whether from dilutive financing offered by venture capital (VC) firms, family offices and angels, or non-dilutive grants offered by the National Institutes of Health (NIH), Advanced Research Projects Agency for Health (ARPA-H) or Biomedical Advanced Research and Development Authority (BARDA). Meanwhile, the IPO window appears to be shut for the foreseeable future.

This environment is further exacerbated by the unique nature of the current macroeconomic uncertainty, as demonstrated by the 0.2% slowdown in gross domestic product (GDP) in the first quarter of 2025.* On the policy and regulatory front, there are questions around the ability of the U.S. Food and Drug Administration (FDA) to oversee clinical and preclinical development. Further clarity from the Centers for Medicare & Medicaid Services (CMS) on several potential changes to the drug pricing sections of the Inflation Reduction Act (IRA), including removal of the pill penalty, are needed. Other areas that require attention include the implications of the executive order on implementing a most-favored-nation pricing scheme and whether the Federal Trade Commission (FTC) will return to historical norms when overseeing mergers & acquisitions (M&A) activity.

Finally, the tariff turmoil impacts the cost structure of larger biopharmas. Companies are grappling with the challenges tariffs could present to established and globally optimized supply chain networks. The shifting tariff landscape complicates relationships with the European Union (EU) and especially with China. They have been a large target market for the biopharma industry for the last 20 years but has also been investing in increasingly formidable drug discovery and development capability since the government prioritized the sector in 2015. Western biotechs are increasingly having to compete with rising innovation out of China.

This is not a time for making predictions, as they don't age well. However, as in any challenging environment, there will be opportunities for the bold. Companies with de-risked assets will continue to tap into capital from Big Pharma companies with formidable fire power, and there is potential for M&A to thrive once uncertainty lifts.

While this environment means there is no one-size-fits-all guidance, to the executives and clients reading this report now, we say, focus on fundamentals to bounce back. Companies that are pre-revenue will need to judiciously allocate resources and possibly cut costs to demonstrate the ability to reach the next value inflection point and often beyond. Portfolio optimization to prioritize the most promising assets will be a key area of focus for many companies for the remainder of 2025. For established companies with product revenues, scenario planning around workforce changes, manufacturing networks and a tax-efficient supply chain strategy will be top of mind.

Generative artificial intelligence (GenAI) and now agentic AI have the potential to offer the industry immense productivity gains. AI is increasingly finding its way into organizations – from automating core processes such as back-office tasks and workflows to providing high-value efficiencies in therapeutic targeting, clinical trial design, product approval submissions and commercialization. Unlike prior technological promises, AI is here to stay and is rapidly reshaping the way the industry does business.

In this report, we take a closer look at how the world has changed and how that shift has impacted the biopharma sector at large, as well as the strategies that will position the industry for long-term success even as uncertainty persists.



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Year in review

When it comes to biotech, sentiment and numbers do not always align. If one looks purely at the numbers, 2024 was not a bad year for biotech. But try telling that to the many emerging or early-stage biotechs that are struggling. Since the days of plenty seen during the pandemic, biotech has been going through a down cycle, but numbers show financing returning to the sector in 2024. Yet, a clear picture of haves and have-nots has persisted, with only a small number of companies having access to capital while others need to cut costs and create operational efficiencies.

This picture is further complicated by macroeconomic uncertainty. The advent of tariffs into the economic policy landscape has greatly increased uncertainty and market volatility for both companies and investors, creating an environment that makes corporate M&A and IPOs highly unlikely. Questions around non-dilutive funding also intensified when the administration began cutting funding to the NIH, which is the biggest public funder of biomedical research in the world and awarded nearly \$37 billion in research grants in 2024.¹ These grants serve as a major financial resource for many early stage biotechs, supporting 408,000 jobs and generating \$94 billion in new economic activity nationwide.²

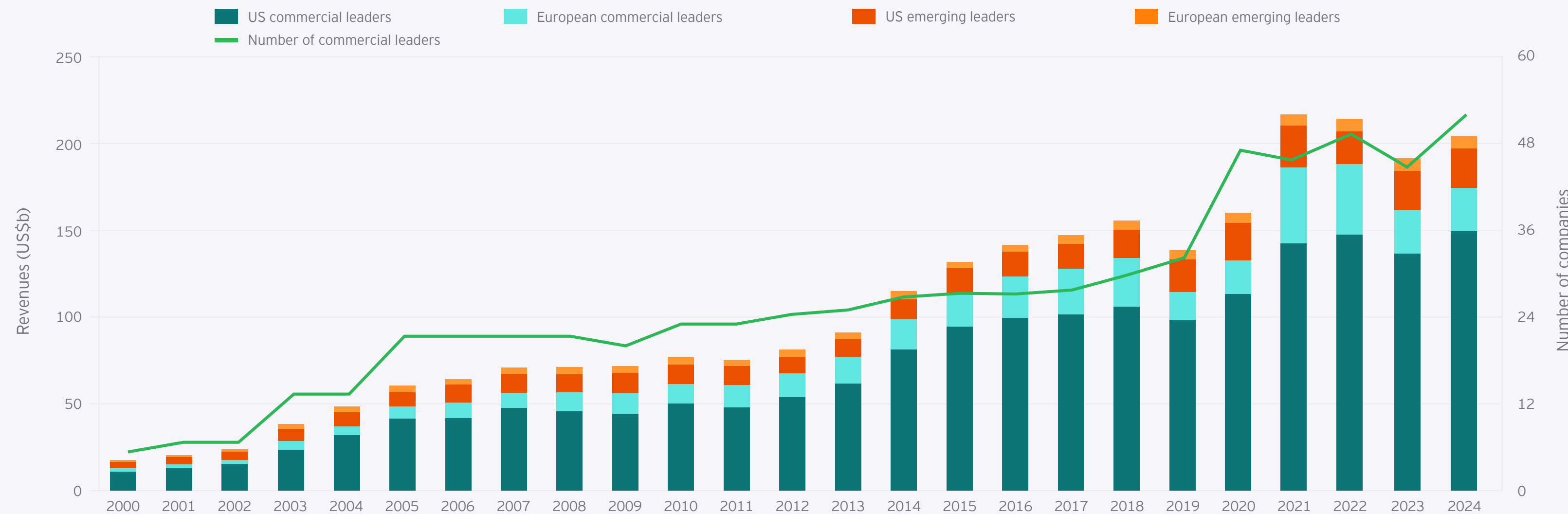
When the previous edition of this report was published in mid-2024, sentiment was still optimistic. Industry watchers and biotech executives were still holding out hope that a drop in interest rates, an FTC that would go back to its historical regulatory behavior and some clarity around the US presidential election would push the financing floodgates open. Part of this optimism centered around the idea that large pharmaceutical companies are facing a growth gap of more than \$300 billion in revenue through 2028 as some of the best-selling drugs of the last decade face patent expiries and potential generic or biosimilar competition. The base case has always been that pharma would have to look to inorganic growth to make up for lost revenues.

While interest rates did fall in 2024, and the business community celebrated likely deregulation under a second Trump administration, no flooding of biotech coffers occurred. And Big Pharma has largely stayed away from large-scale M&A, opting instead for smaller, more strategic deals (see the [EY Firepower report 2025 on M&A](#)). The outlook was made murkier in early 2025 when many of the administration's new policies began to take shape and impact the financial markets.

Despite pessimistic views of the biotech market, US and European public biotech revenues were strong in 2024, growing 6.8% year over year to \$205 billion. Public company revenue over the last four years was nearly

\$50 billion more annually than in the four years prior. Yet 2024 still had companies operating at a loss, reporting an aggregate loss of \$26.8 billion. This occurred as R&D expenses increased nearly 7% to \$102.2 billion and public biotechs tried to cut expenses by trimming personnel in order to lower their burn rate. Consequently, the overall biotech workforce dropped by 4.8% to 288,195 employees. The number of public companies also continued to decline, dropping from 939 in 2022 to 783 in 2024. This downward trend can be also explained by the number of new companies that went public during the boom years of 2020-21, enabled by cheap capital, and was not driven by fundamentals or scientific rationale, and many have since failed.

US and European public company revenue 2000-24



Sources: EY analysis, Capital IQ and company reports. Commercial leaders are companies with revenues >=US\$500m.

US\$205b

US and European 2024 public biotech revenues

288,195

Total public biotech workforce in 2024, down 4.8% since 2022

US\$107b

Public biotech R&D expenses in 2024

¹ "NIH's role in sustaining the U.S. economy," *United for Medical Research website*, https://www.unitedformedicalresearch.org/wp-content/uploads/2025/03/UMR_NIH-Role-in-Sustaining-US-Economy-FY2024-2025-Update.pdf, 2025.

² Ibid.

There were 30 IPOs in 2024, raising an aggregate of about \$4 billion. This activity was a 39% increase from the \$2.9 billion raised by 18 companies going public in 2023 and up from the \$1.5 billion raised in 2022. Despite the significant increase over the two prior years, IPOs are still well below the 10-year average of 54 annually from 2010 to 2020. The IPO market seemed like a glimmer of hope in early 2024, but the flood of IPOs that was expected after the Federal Reserve lowered interest rates in September 2024 failed to materialize. Some industry watchers thought money would start flowing after the US presidential election in November, but once again, IPOs failed to pick up. In 2025, the IPO backlog continued to increase. Companies that are able to obtain late-stage financing are doing so rather than risking the volatility of trading on the open market, if an IPO is even an option. Some companies in the IPO queue continue to seek opportunities to partner with Big Pharma and look for sources of alternative funding such as sales of future royalties, and they are taking a much closer look at cost reduction opportunities.

Royalty transactions and similar monetization of revenue streams have been estimated to provide approximately \$14 billion in per-year deal flow, with the total value of these deals growing at a compound annual rate of 45% due to the following reasons:

- These types of deals offer returns and terms that depend on the risk and return profile of a particular drug candidate or program rather than the macroeconomic factors generally at work in the capital markets.
- Royalty transactions allow buyers and sellers to add or deploy capital that is decoupled from rapid changes in the interest rate environment.
- Finally, shareholders view these transactions as non-dilutive and efficient sources of capital, and so they generally react positively to royalty deal announcements.

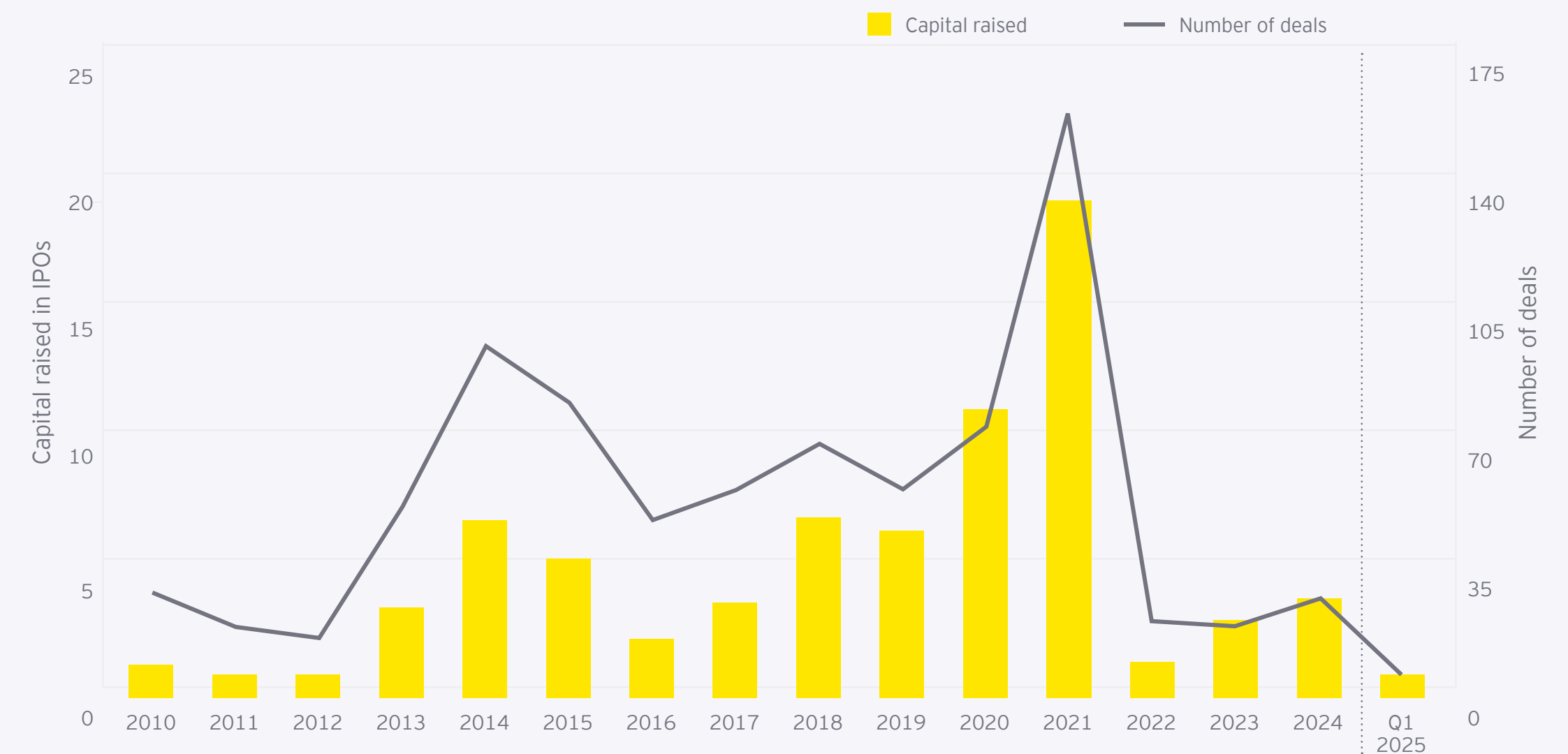


CG Oncology had the largest IPO of 2024, raising \$437 million. A third of the companies that made their public debut in 2024 were oncology companies, further demonstrating the strength of this space.

Kyverna Therapeutics, an early-stage company developing CAR-T therapies for autoimmune diseases, raised the second largest amount for the year, bringing in \$367 million. Oncology company Bicara Therapeutics raised \$362 million in the third largest IPO of the year during the third quarter. Like Kyverna, Bicara's therapies are in the early stages of development.

Only eight of the 30 companies that made a public debut in 2024 finished the year trading above the closing price on their initial offering date while others lost more than 80% of their value. In line with the last two years, more than half of publicly traded biotechs finished 2024 with two years or less of cash runway. Despite funding being plentiful for a small number of companies, most companies are in the position of having to conserve cash.

US and European biotechnology IPOs by year (2010-Q1 2025)



Sources: EY analysis and Capital IQ.

The first quarter of 2025 continued at much the same slow pace as the year prior, with only six companies raising a total of \$860 million through a public offering before the market entered bear territory at the beginning of April.

There has been a notable return to pre-pandemic norms, as 17 of the 30 biotech companies choosing to conduct an IPO in 2024 are in Phase II of development or later with their lead candidate. As investors have become more cautious about where they put their money, we are seeing a move back toward greater emphasis on scientific milestones. During the sugar high of 2020 and 2021, the market saw an outsized number of pre-clinical companies pursuing IPOs at incredibly large valuations. Most of those companies went on to perform poorly.

Shifts toward companies with more mature pipelines, clear clinical milestones, experienced management teams and strong scientific rationale are likely to continue as an environment of haves and have-nots has materialized.

Follow-on financings were a particularly big problem in 2024, with biotechs reporting the worst year for follow-ons since 2016. Follow-on and other financings came in at only \$19.9 billion, about \$10 billion lower than in 2023, and a third of what was seen during the boom years.

Biotech companies are now having to make funds last longer between raises or inflection points. The sector is seeing a pullback from the extravagance of the boom years and a greater focus on fundamentals. Companies are now required to focus more on capital and operational efficiency.

A Dose of Insight



Edd Fleming
EVP of Commercialization
Enavate Sciences

Investors are more focused on capital allocation

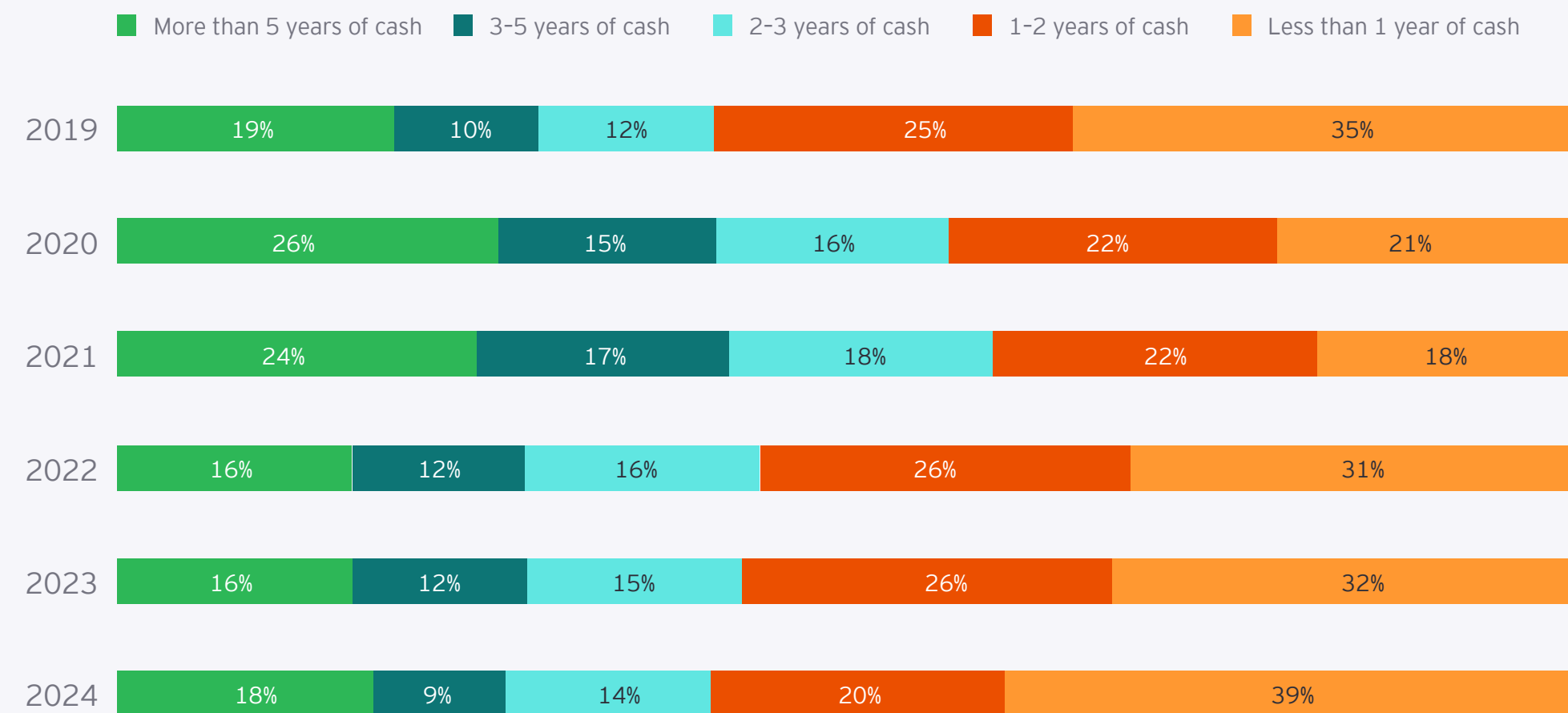
The financing environment is much tougher now, without a doubt. For our portfolio companies, we are focused on getting to appropriate valuations and on the use of proceeds, which drives into traunching. So even just two years ago, traunching was used intermittently, but companies had the ability to push back on it or tie it to things that were less directly value-enhancing. Whereas now, it's very tightly anchored to the fundamental de-risking event or the value inflection point.

I think that's a good thing for the company and the investor – not just the investor – because it creates a much more ruthless focus on where you are spending your money, how you are spending your money.

Valuations have certainly come down. There's still a lot of money looking for good investments in the venture space, but there is a lot of downward pressure on valuations. And so even for companies that are out of or have already adjusted for that '21 bubble, you're seeing in a lot of cases companies with clinical progress still taking down-rounds.

But what we haven't seen yet are exotic instruments like super-preferred stock. I think that was a thing back in the 2010s range. We haven't used or seen warrant coverage, but we aren't investing in distressed companies. It's really just been much more focused. Also included in the valuation is this pressure on discounts to convertible loans. A lot of companies now are requiring existing investors to fund the company to another milestone to justify a new round and they'll put in a convertible loan that'll have a big discount to the next loan. There are a lot of times where those discounts are being cut away on the next raise, even though they're embedded in the bond. It's further downward pressure on the valuation overall.

Biotech survival index, 2019-24



Sources: EY analysis, Capital IQ and company financial statement data. Chart shows percentage of biotech companies with each level of cash. Numbers may appear inconsistent because of rounding.

A Dose of Insight



Raymond Stevens
CEO
Structure Therapeutics

Monitoring, but not reacting to, policy uncertainty

We are very aware of the shifts at FDA and are monitoring this situation very closely. Fortunately, we have not seen any disruption to any of our regular interactions with the agency. Earlier this year in January, the FDA issued revised draft guidelines for the development of obesity and chronic weight management medications. These updated guidelines are very clear and, importantly, are well aligned with how we had already been planning our clinical program. We have not had to make any changes as a result.

We haven't seen an impact on our ability to hire skilled talent or on our supply chain. Structure is fortunate to operate globally, with strong teams both in the US and abroad, and we are continuing to grow our team. On the talent front, the biotech industry remains very competitive, but our mission, culture and focus on solving meaningful problems – such as improving access to obesity therapies – continue to attract exceptional people.

We have always taken the approach of raising capital when you can, not when you must. Following positive Phase 2a data in 2024, we raised \$547 million, which has put us in a solid financial position with \$883.5 million as of the end of last year. Companies that need to raise capital in today's environment are in a tough position; fortunately, we have a solid cash runway that enables us to really focus on execution and moving our programs forward.

Trend continues in venture capital

Maybe the lone bright spot in the biotech world, despite somewhat dire sentiments from many in the industry, has been venture capital. Funding has largely recovered, although it has taken on a new normal, skewing toward larger rounds to significantly fewer companies.

Venture capital raised by biotechs in 2024 was above pre-pandemic levels and nearly reached levels seen in the boom year of 2021. In 2024, early venture rounds (seed and first round investments) reached \$15.5 billion, while late-stage rounds (all other funding rounds) brought in \$7.6 billion. This activity is above the \$15 billion and \$5.2 billion, respectively, that were raised in 2019. The notable difference is the number of transactions and the average size of transactions. In 2019, there were a total of 961 funding rounds at an average size of \$21 million. In 2024, there were a total of 644 funding rounds at an average size of \$36 million. Outsized raises have been dominating the venture landscape over the last couple of years as investors choose to place fewer, but larger,

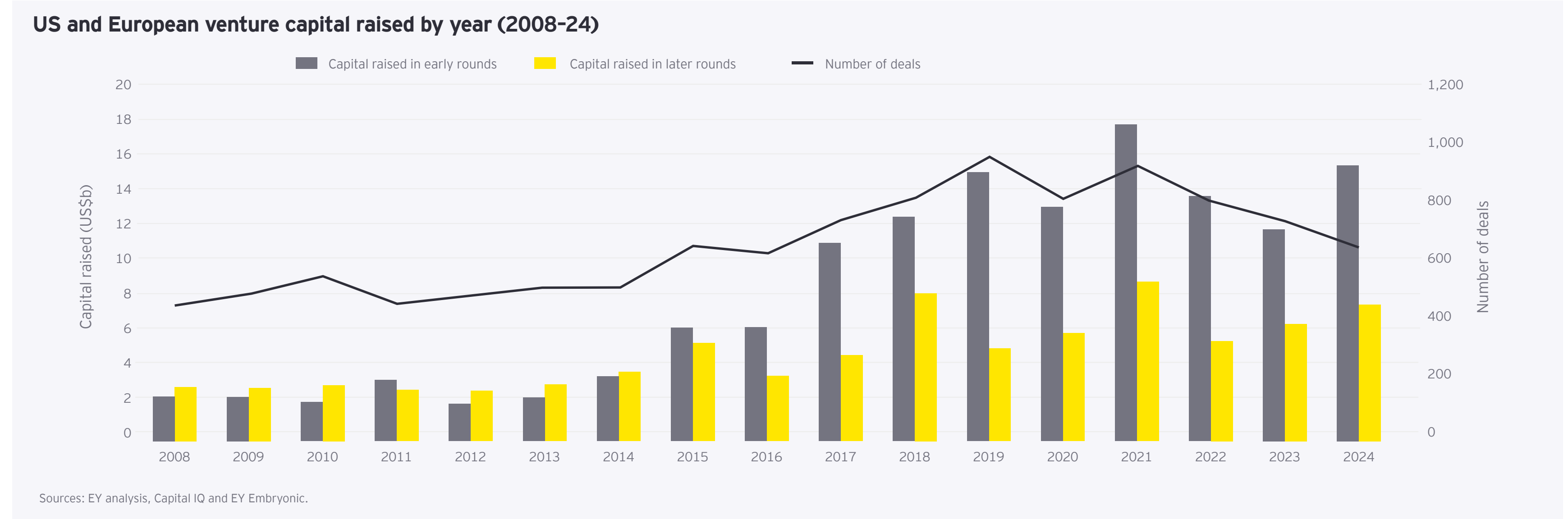
bets with a large slate of co-investors. This trend parallels the levels of uncertainty seen in the broader economic environment, with investors seeking certainty in strong scientific rationale and well-worn management teams.

Companies such as Xaira Therapeutics significantly skewed the numbers in 2024, raising an eye-popping \$1 billion. Xaira is combining machine learning and AI with product development to handle drug discovery. Not only that, but it also has Marc Tessier-Lavigne, former chief scientific officer of Genentech and former president of Stanford University, at the helm. It has other notable names on its board of directors as well: former FDA chief Scott Gottlieb and former Johnson & Johnson CEO Alex Gorsky.

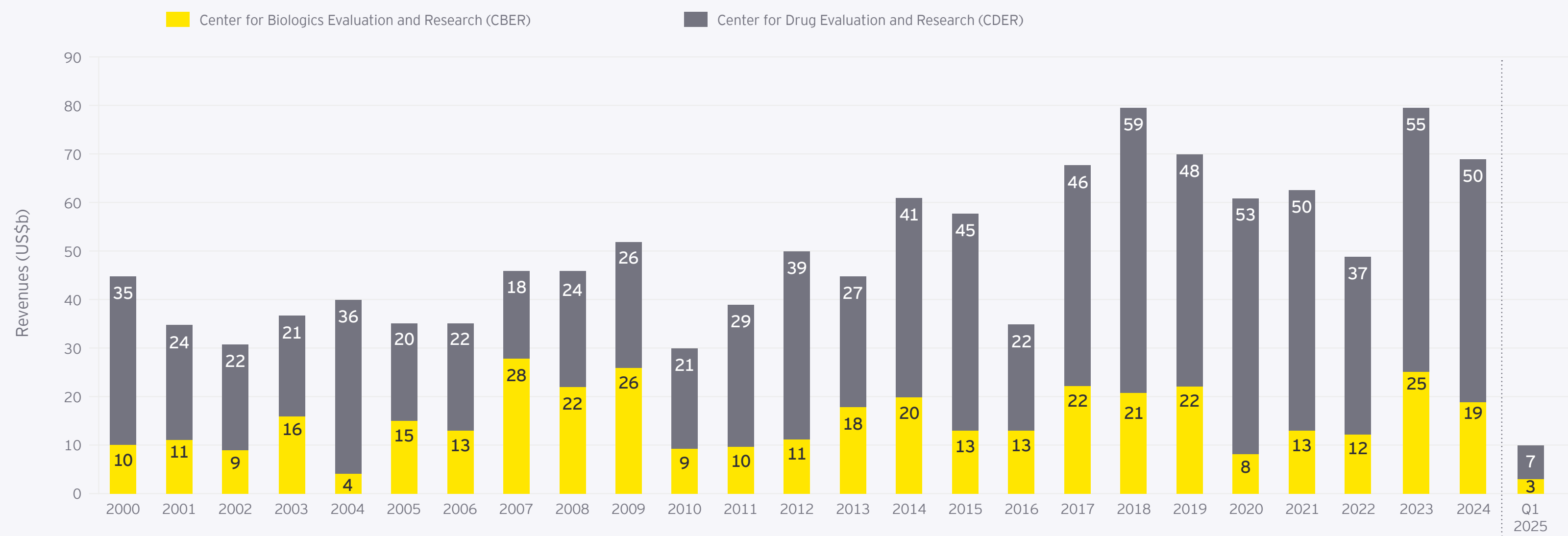
Another significant first round of funding was Mirador Therapeutics, raising \$400 million in its Series A. The biotech is led by Mark McKenna, an experienced executive in the biotech space who sold his former company, Prometheus Bio, to Merck & Co. for \$10.8 billion in 2023.

644

Total number of venture funding rounds in 2024



US FDA product approvals 2000-Q1 2025



Sources: EY analysis and FDA website.

In the first quarter of 2025, there were 148 funding rounds in the US and Europe, bringing in \$6.4 billion. Eikon Therapeutics, led by former Merck research head Roger Perlmutter, brought in another \$350 million in Series D funding, bringing its total venture capital raise to \$1.1 billion since its inception in 2019. Eikon’s funding round has only been eclipsed so far by the \$410 million Series A raise of Verdiva Bio. Based in London and San Francisco, Verdiva is developing therapies for the highly lucrative and competitive space of obesity.

The third largest round in the first two months of 2025 was raised by Kardigan, a biotech focused on cardiovascular therapies, which brought in \$300 million in its Series A. Leading the company is a team from MyoKardia, a company that was acquired by Bristol Myers Squibb for \$13 billion in 2020.

Last year, the FDA – through its Center for Drug Evaluation and Research (CDER) and its Center for Biologics Evaluation and Research (CBER) – approved 69 novel drug or biologic products, putting it in the top five highest years for approvals ever. Of the 50 novel drugs approved by CDER last year, 31 were small molecules, which continue to dominate, despite interest in new modalities. Additionally, about half of the drugs approved by CDER were first in class, illustrating the high levels of innovation by the industry. Oncology products and rare disease therapies were the most prevalent.

With the FDA approving more drugs than ever before, pharmaceutical companies are launching more drugs than in previous decades, and that trend is only expected to increase over the next five years. At the

same time, more drug launches – approximately 70% – have been missing expectations due to the increased competition and increasingly complex and noisy market conditions. Pharmaceutical companies should consider commercial launch plans well before approval and need to be continuously more sophisticated around strategy, incorporating more real-world evidence and AI capabilities.

Though the financials and healthy innovation landscape paint a picture of an industry at the beginning of recovery after a couple hard years, the new norms of biotech investing mean that many companies are still struggling. Uncertainty in the broader business market and a continued shift toward de-globalization are likely to mean that this story of biotech haves and have-nots will continue in the near term.

Looking forward, companies will need to focus on fundamentals to bounce back in an uncertain business environment. Later in this report, we explore the shifting business landscape in more depth and focus on strategies that can help companies navigate these critical times, including:

- **Navigating de-globalization:** How should companies think about supply chain networks, manufacturing and workforce in a rapidly de-globalizing world? What tax strategies can help soften the impact of a trade war?
- **Rethinking capital allocation:** How have companies been spending their cash on hand over the last 18 months? What capital investments make sense in this changing business landscape?
- **Portfolio prioritization:** Given the cash crunch, how can biotechs prioritize their most promising clinical asset over others to enable an efficient use of capital until their next value inflection point?
- **Creating operational efficiency:** How can biopharmas improve their operational efficiency and contain costs in the new economic climate? How can technology such as AI shift costs?

Biopharma companies continue to face a challenging financing environment that has only been made more complicated by a rapidly changing world and political environment. The ongoing hurdle for companies will be for biopharmas to adapt their business models to a new, highly compartmentalized world and to update tax and operational strategies to fit the demands of the new norm.



How to manage uncertainty amid rapidly shifting policy

The advent of the new presidential administration has brought a range of policies – from tariffs to immigration enforcement to funding cuts – that will have broad consequences on the business community at large, the global economy and the pharmaceutical sector. These rapid, and sometimes unforeseen, shifts in regulation and government will likely have cascading effects that may endure for generations, molding the global business community in lasting ways.



While pharmaceutical companies were historically exempt from any tariffs and were not included in the first round of announcements, a Section 232 Review under the Trade Expansion Act of 1970 was initiated in April 2025. An initial estimate in a report commissioned by the Pharmaceutical Research and Manufacturers of America (PhRMA) puts the tariff impact for the US pharmaceutical industry at \$51 billion for a 25% tariff level (similar to steel and aluminum).³ The industry was already feeling the impacts to packaging and secondary inputs from non-pharma-specific broad-based tariffs. Biopharma companies are likely to see the biggest impacts from tariffs targeting China, India and the EU – where many drugmakers hold intellectual property (IP) and conduct manufacturing. The implications of tariffs will apply very differently to each company based on its business model and/or current supply chain setup.

The volatility these changes have caused has made short-term investment and decision-making difficult for business leaders, causing many companies across industries to lower their first-quarter guidance or pull back guidance predictions altogether.

These policy implications will have long-lasting effects that could encourage non-US-based multinational pharmaceutical companies to set up a manufacturing base in the US or face the threat of added taxes. However, these moves are not made quickly, require significant capital and need clarity around long-term policy. At the time of publication of this report, tariff announcements were in flux. Depending on how the industry is regulated, likely in early July, there could be long-lasting effects on capital allocation and supply chain network design.

Wide-ranging impact

Even tariffs on the secondary inputs of the drug development process could raise costs for patients around the world and worsen drug shortages. Already, biotech and pharmaceutical companies of all sizes are concerned about the increase to operating costs caused by tariffs on everyday business items such as laptops, office supplies and basic lab equipment.

The impact will vary significantly for generic, branded or biologic therapeutics. Nearly 300 drugs were in shortage in the US as of the start of the second quarter of 2025. While this list often fluctuates, it is driven by changes in demand, as well as manufacturing and supply issues. Certain classes of drugs will be harder pressed by tariffs and unlikely to absorb the added cost. The medicines most commonly on the shortage list include hard-to-manufacture biologics and generic sterile injectables, such as IV-administered drugs often used in hospitals.

The impact will differ depending on the type of drug and where it is produced. Low-cost generics, which make up 90% of medicines prescribed in the US and are largely manufactured in India, could face outsized impact.

About 50% of patented medicines in the US are already manufactured in the US while 35% are imported from the EU, primarily Ireland,

Germany and Switzerland.⁴ Some large pharmaceutical companies have already announced plans to invest in a larger US manufacturing footprint.

Given that the country of origin for most drug products is where the active pharmaceutical ingredient (API) is made, and because moving API is challenging for regulatory and licensing reasons, should locations with material API activity, such as the EU, be targeted, duty mitigation would likely have to rely on valuation planning.

The shift in trade policy could put companies in the position of making more drugs closer to where they will be sold. Since the beginning of the 21st century, this localized development strategy has been used by large pharmaceutical companies that wanted access to the large untapped patient population in China but also wanted to minimize the risks of data and IP leakage there. Being “in China for China” has also allowed companies to maximize their use of local talent and expertise. This regionalized manufacturing strategy could be a model for how companies operate in a more de-globalized world.

Irrespective of the day-to-day shifts in policy, there are steps executives can take now to maintain the growth trajectory of their business as the shift toward de-globalization continues.

A Dose of Insight



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Federal policy impacting biopharma

The second Trump administration has hit the ground running, advancing a policy and operational agenda that is poised to reshape how key federal agencies, such as the FDA, operate and how policy affecting biopharmaceutical companies is implemented. Perhaps the biggest policy story of the administration thus far has been President Trump’s new tariff regime.

Biopharmaceutical companies are already feeling the effects of new tariffs on Canada, Mexico, China and other nations subject to universal 10% tariff rates. While pharmaceutical products have historically been exempt, materials used to package and produce drugs could be impacted. The industry will be further affected by impending sector-specific tariffs. The Trump administration announced in April that it initiated Section 232 investigations into pharmaceuticals – a key step to enact tariffs targeting the industry.

In addition to tariffs, biopharmaceutical companies should be monitoring changes at the Department of Health and Human Services (HHS) and the FDA for short-term disruptions to reviews and approvals. The administration also has unveiled a policy agenda to lower drug prices through controlling spending on hospital drugs, addressing pharmacy benefit managers and other “middlemen” impacting the pharmaceutical supply chain, in addition to putting its own stamp on the Inflation Reduction Act’s negotiation program. The administration and Congress are also expected to continue efforts to bring US biodata under the umbrella of national security, and companies could be further affected as Congress and the administration look to put limits on US federal health care programs.

The evolving policy landscape creates new regulatory and supply chain uncertainty for biopharmaceutical companies. Proactive companies will need to sift through the noise to pull out what are areas of true risk and opportunity. Companies should already be thoroughly examining of their supply chains, manufacturing footprints and customer needs in order to respond thoughtfully as policy shifts.

³ “Impacts of potential tariffs on the US pharmaceutical industry,” EY, April 24, 2025.

⁴ Ibid.



Recommended moves

While uncertainty is likely to remain high for the foreseeable future, there are considerations business leaders can take to have limited exposure, regardless of policy specifics.

- **Understand your current exposure:**

Pharma leaders also should analyze their current state supply chain and overlay with US customs and global trade parameters (e.g., duty rates, free trade agreements) to establish baseline cost model, leveraging US Automated Commercial Environment (ACE) data.

- **Revisit investment strategies:**

Pharmaceutical companies will need to rethink investments and cost structures, modeling different scenarios for offsetting the margin pressures that were already affecting industry bottom lines and driving an increased focus on operational efficiency. The next five years will see double the number of launches than the previous decade, and these investment plans and market forecasts will require immediate attention.

- **Look for exemptions:** Companies need to examine the Harmonized Tariff Schedule (HTS) codes listed in Annex II, which lists the products exempted from the tariffs put in place on April 2. They should also confirm whether their products are USMCA eligible,⁵ which would exempt them from the reciprocal tariffs put on Canada and Mexico.

- **Model out the potential outcomes:**

Another key action will be to perform an impact assessment and model potential scenarios, such as different duty rates based on country of origin, to understand the highest-priority trade lanes and potential applicable planning mechanisms and conduct a risk analysis.

- **Conduct customs mitigation and risk planning:**

Engaging in origin and valuation planning, as well as weighing the foreign trade zone and substitution duty drawback, can also be beneficial.

- **Re-evaluate your supply chain:**

Companies should consider alternative sourcing scenarios. Holistically assessing supply chain, logistics and procurement factors and overlaying them with US global trade and customs parameters can help pharma leaders evaluate and possibly reorganize trade flows.

- **Consider third-party risk management:**

Branching out to new geographies and suppliers will introduce financial, regulatory, and anti-bribery or anti-corruption risks and will need to be factored in to the new model.

The second Trump administration's policies have ushered in a new era of uncertainty for the pharmaceutical sector and the broader business community. The shift toward protectionism and the implementation

of tariffs have created a complex landscape that requires companies to adapt swiftly to avoid potential pitfalls. As the global economy grapples with these changes, pharmaceutical companies must navigate the intricacies of tariff exemptions, supply chain vulnerabilities and evolving trade agreements. The emphasis on domestic manufacturing and national security considerations further complicates the environment, necessitating a proactive approach to risk management and strategic planning.

To thrive in this challenging landscape, business leaders must embrace a multifaceted strategy that includes thoroughly analyzing current exposures, modeling potential outcomes and re-evaluating supply chains. By identifying exemptions and leveraging available resources, companies can mitigate risks associated with tariff fluctuations and maintain a competitive edge. Ultimately, the ability to adapt to these rapid changes will determine the resilience and growth trajectory of pharmaceutical companies and other industries as they confront the realities of a de-globalizing world. The proactive measures taken today will not only safeguard against immediate challenges but also position businesses for long-term success in an increasingly segmented global marketplace.



⁵ The USMCA is the United States-Mexico-Canada Agreement.

With a dearth of dealmaking, focus on efficient capital allocation

With uncertainty looming large for the business sector in general, it's particularly difficult for companies to conduct transactions. Under the Biden administration, fears about Federal Trade Commission interference were ever present. While those fears have abated somewhat, the increased levels of uncertainty around changes at the HHS, as well as the impact of a trade war, have further muddied the strategic thinking around dealmaking and capital allocation.



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Dealmaking over the last 18 months has seemed like a trickle as large pharmaceutical companies focus on smaller, more strategic deals and shy away from the megadeals that make headlines. This trend was greatly influenced by FTC scrutiny as the agency moved to block many larger deals that could create monopolies in a therapeutic area and even some smaller tie-ups that had the potential to give one company pricing power for a class of drugs. Pharma companies have largely tried to fly under the radar, acquiring single assets or making alliances and moving away from acquisitions that would require broad integration of another company.

While M&A volume between pharma and biotech was down only slightly in 2024 – 54 deals vs. 61 for 2023 – deal value dropped dramatically to \$77 billion, down from \$153.5 billion in 2023. Beyond Borders data only looks at deals between pharma and biotech or biotech and biotech, excluding deals that occur between two pharmaceutical companies. It also excludes deals under \$100 million.

Number of alliances in 2024; potentially worth US\$144.2b in biobucks

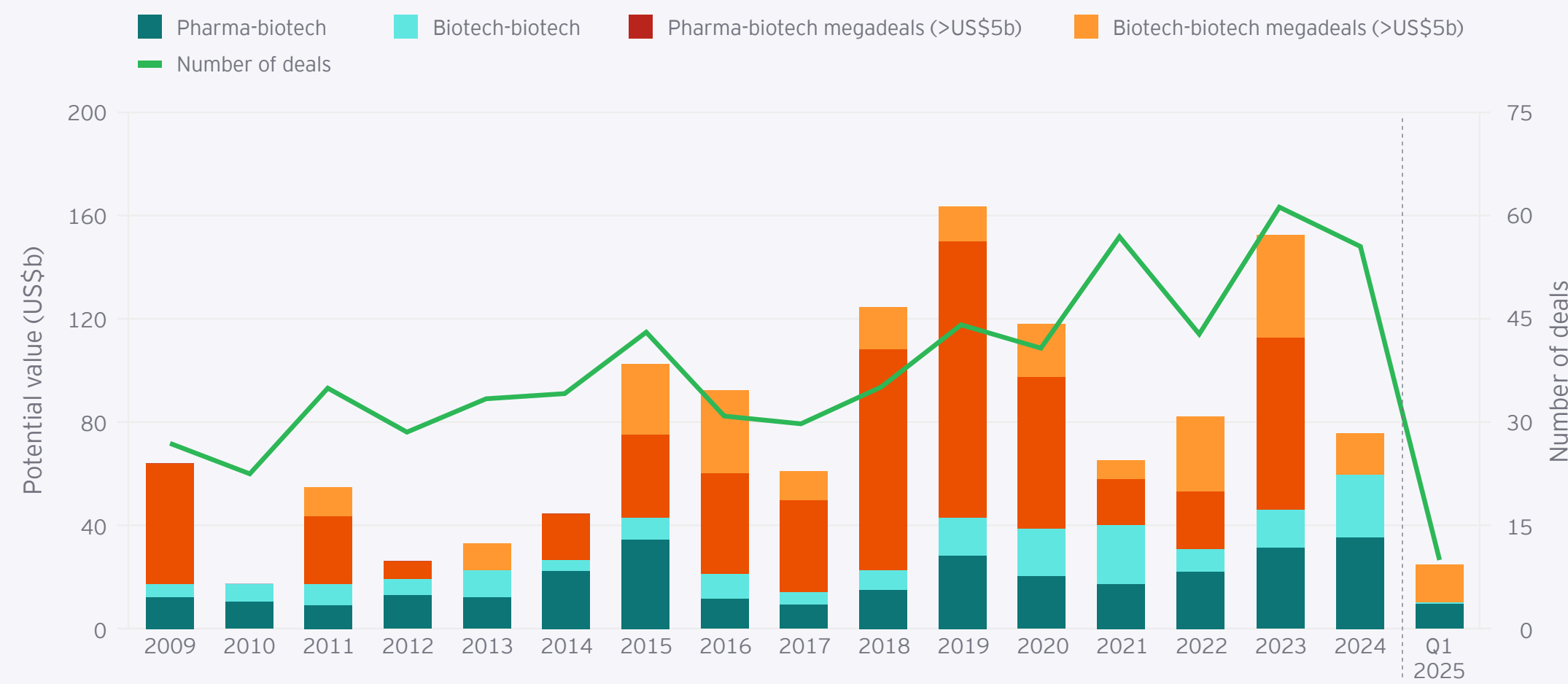
The sharp drop in deal value can be attributed to a lack of large deals in 2024. The year prior included Pfizer's acquisition of Seagen for \$43 billion, greatly skewing the numbers. The year 2023 also included a number of other deals over \$5 billion in value.

There was only one megadeal, or deal that exceeded \$5 billion in value, in 2024: the Novo Holdings acquisition of the contract development and manufacturing organization Catalent. In this deal, Novo Nordisk's investment arm (Novo Holdings) paid \$16.5 billion to acquire all of the contract development and manufacturing organization (CDMO) sites and assets to address the shortage of its GLP-1 receptor agonist. Shortly after the close of the transaction, Novo Holdings sold three fill-finish sites to the pharmaceutical manufacturing arm of Novo Nordisk for \$11 billion. The deal did raise questions at the FTC, which had concerns about how an acquisition of the CDMO would ultimately impact the production of other drugs made at Catalent facilities. Despite these concerns, the deal was allowed to close.

The Novo-Catalent takeover was an outlier for the year. Every other deal fell below the \$5 billion mark as pharma companies focused on smaller, more strategic acquisitions and alliances.

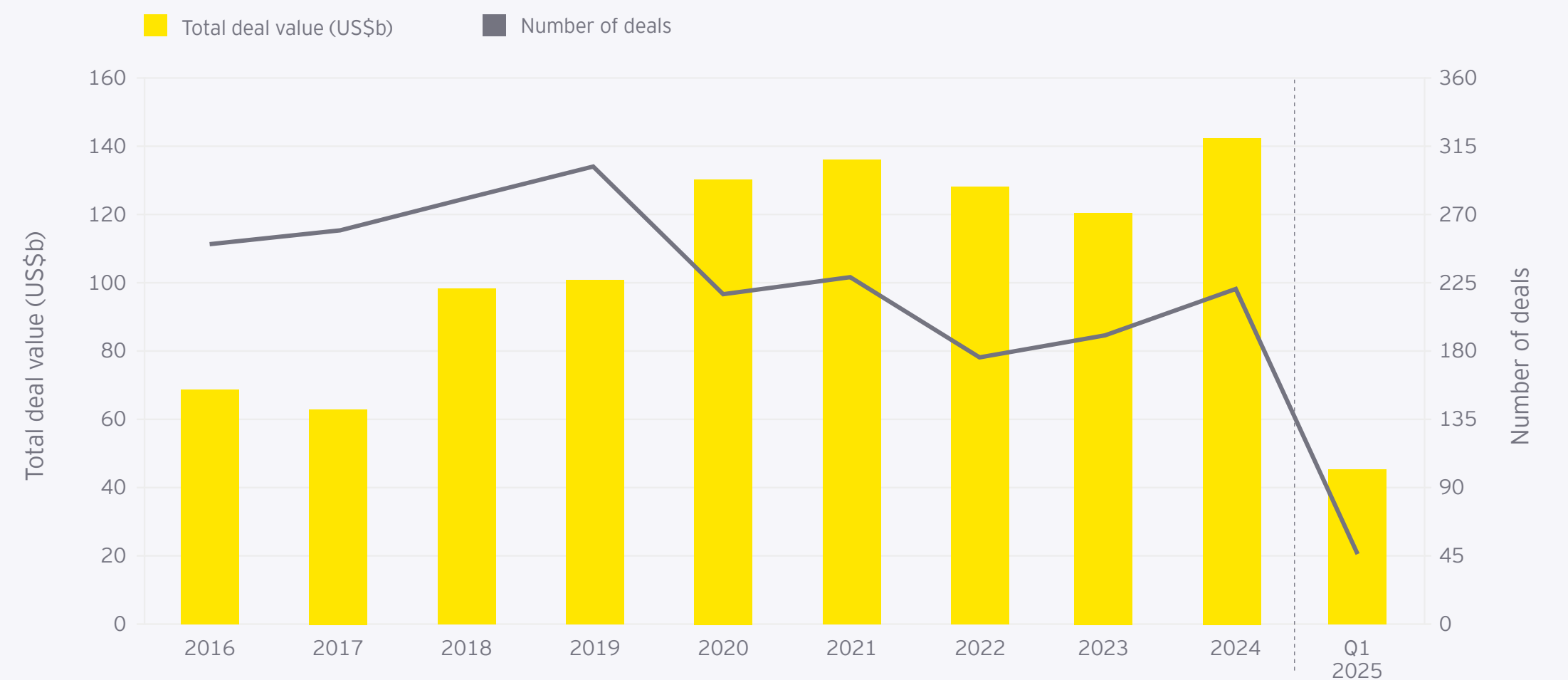
Alliances were the dealmaking strategy of choice in 2024, with pharma executing 220 alliances potentially worth \$144.2 billion in biobucks – the highest value in the last 10 years. This figure exceeds the 196 alliances signed in 2023 that have the potential to net \$122 billion. Alliances hold appeal for pharmaceutical companies because they allow large pharma access to new and exciting technology while assuming less risk. Up-front payments accounted for about 7% of total deal value in 2024. This trend means that pharmaceutical companies are placing most of the value on clinical or regulatory milestones. These deals are weighted in pharma's favor and mean small biotechs risk access to funding should they experience a clinical misstep.

US and European M&As 2009-Q1 2025



Sources: EY analysis, Capital IQ, Biomedtracker and EY Embryonic. Chart excludes transactions where deal terms were not publicly disclosed. Chart excludes Thermo-Fisher/Life Technologies transaction (US\$13.6 billion) because the acquirer is neither a pharma nor a biotech.

US and European strategic alliances based on biobucks, 2016-Q1 2025



Sources: EY analysis and Biomedtracker. Total potential value includes up-front, milestone and other payments from publicly available sources.

A Dose of Insight



Edd Fleming
EVP of Commercialization
Enavate Sciences

Eyes on changes at FDA

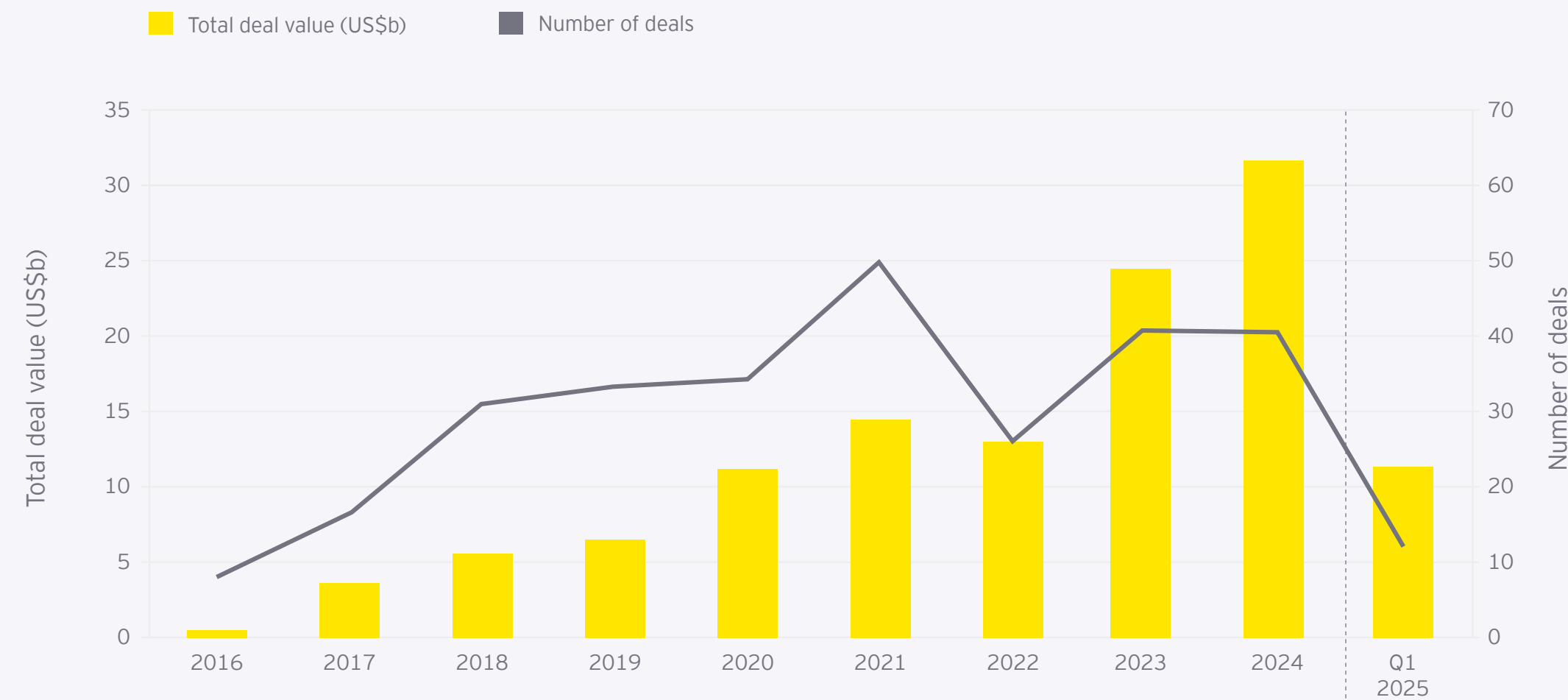
Every company is nervous but moving forward with their FDA dialogues and submissions and paying very close attention to the timelines to identify evidence of delays. But so far, there hasn't been much public evidence of a slowdown. There was a single Prescription Drug User Fee Act delay last week, but the reasons were not clear. Privately, there have been delays in responses to meeting minutes after FDA trial meetings beyond what we have grown accustomed to. However, they are not delayed to the level that it will affect the companies yet. It may just be a signal of how they are handling the workload after a reduction in staffing. So, no trend yet, but all eyes are on it.

Despite turmoil in the broader political landscape, as well as indications from the US government that it's going to move forward with protectionist policies, deals with China have been thriving. This trend picked up speed in 2023 with AstraZeneca's \$1.2 billion buyout of Gracell Biotech, the first outright acquisition of a Chinese biotech by a large pharma. Out-licensing of Chinese drugs overtook in-licensing to China for the first time in 2021, but the trend is accelerating, with over \$100 billion in potential value poured into partnerships with China-based companies in the past four years. There were 40 alliances struck with Chinese biotechs in 2024 (the same as 2023), totaling \$31.5 billion in value, up from \$24.3 billion in 2023. As of the end of the first quarter of 2025, 13 more alliances have been struck with Chinese biotechs worth nearly \$18 billion, already far surpassing pre-pandemic full-year totals.

A report released in April from the National Security Commission on Emerging Biotechnology, which was established by the United States Congress in 2022, warned that the US biotechnology sector is in danger of falling

behind China within the next three years. The report argues that the US needs to invest \$15 billion over the next five years into the sector and be proactive about developing a pre-commercial manufacturing infrastructure. This guidance comes at a time when exactly the opposite is happening. Congress has been slow to move the BIOSECURE Act through legislative channels – which blocks US funding to certain “foreign adversary biotech companies” – and while the bill did not move forward at the end of 2024, it (or something similar) appears likely to pass in 2025. At the same time, the Trump administration has proposed tariffs on China as high as 145%, while simultaneously making major cuts to HHS, including the FDA. The agency has seen a number of high-profile exits. Staff cuts at the FDA have also prompted concerns from industry executives who question whether core agency functions, such as site audits, drug approvals and clinical hold remediation, will move forward with expedience and efficiency. Many leaders are questioning whether the layoffs and exits will result in a loss of institutional knowledge.

China strategic alliances based on biobucks, 2016-Q1 2025



Sources: EY analysis and Biomedtracker.

A Dose of Insight



David de Vries
Co-founder and CEO
Tr1X Bio

Prioritizing capital efficiency amid tight markets

Since founding Tr1X in 2021, we have intentionally structured our strategy around the expectation of tighter capital markets compared to the pandemic-era peak. Our disciplined approach – prioritizing capital efficiency and rigorous execution – has enabled us to progress rapidly from discovery to clinical stage within just three years, entirely funded by our Series A financing. While changes at the NIH and shifts in the broader macroeconomic environment naturally prompt some caution, we remain confident in our strategic direction and financial discipline. We will continue focusing investments on programs with the highest potential impact, seeking a diversified mix of funding sources, including strategic partnerships, milestone-driven collaborations and targeted non-dilutive funding opportunities. Importantly, we remain bullish on the resilience and vibrancy of the broader biotech ecosystem. The collaborative nexus of industry, academia, government, entrepreneurs and investors continues to serve as a robust foundation for innovation. Our alignment with this ecosystem positions us to continue delivering transformative, life-saving therapies to patients in the United States and globally.



If not on deals, then where?

As financing in the US and Europe remains muted and pharmaceuticals defer major acquisitions, both biotech and pharma companies need to reconsider their capital allocation strategies and how they are making investments.

If pharma companies aren't spending money on inorganic growth, that begs the question, where are they allocating their capital? According to EY research, large pharmaceutical companies are giving back nearly a quarter of their capital to shareholders, with 19% going to dividends and another 5% spent on share buybacks in 2024. This activity is down from the 31% that pharma returned to shareholders in 2021 but in line with annual levels of capital returned during the last decade. Meanwhile, only 17% of capital spend was allocated to M&A.

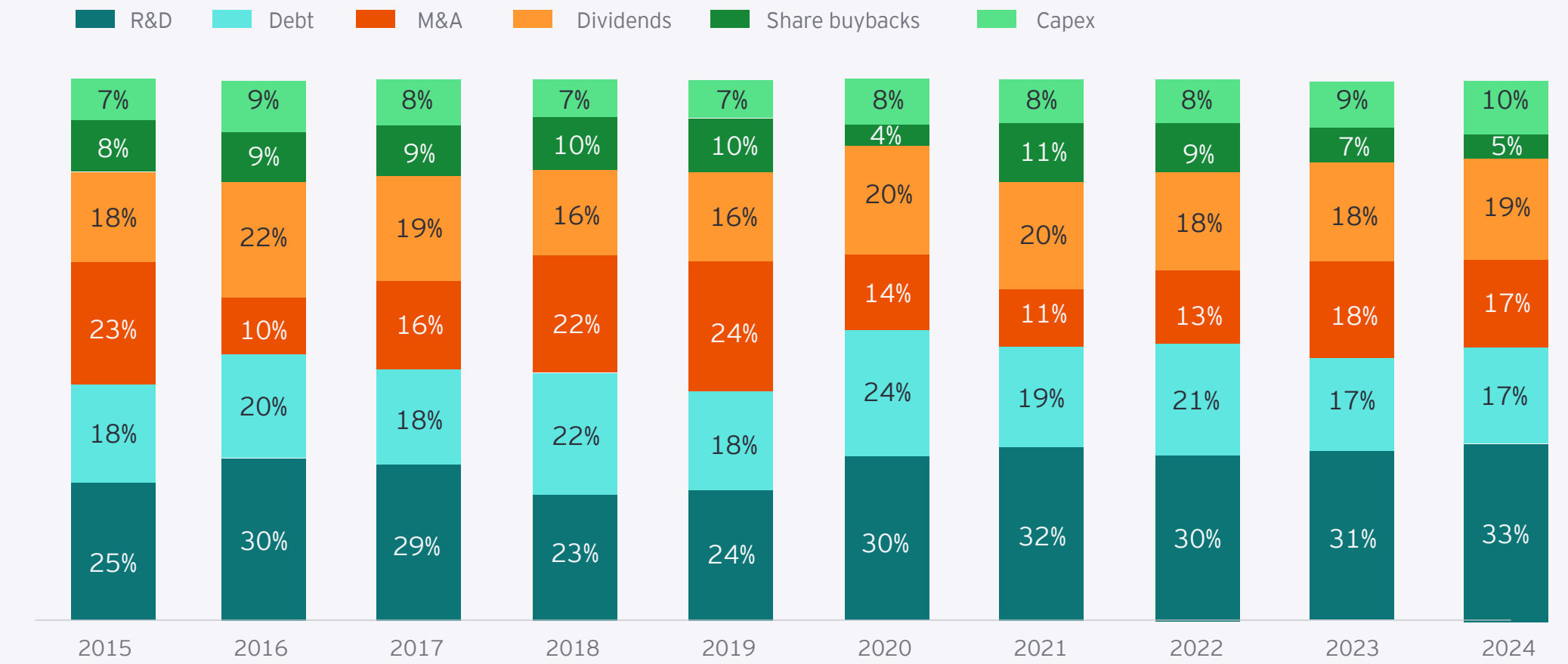
M&A has fallen down the priority list for pharma spending, despite the large piles of cash most of the top 20 pharmaceutical companies are sitting on. Large pharmaceutical companies have plenty of cash on hand, and we estimated the firepower of the major players was about \$1.275 trillion at the start of 2025 (see the [EY Firepower report 2025](#)).

The largest chunk of capital is still being spent on R&D, with 33% going to internal research and development during 2024, up from 25% in 2015. Meanwhile, R&D as a percentage of sales rose from 17% to 23%.

Interestingly, in the pre-COVID-19 era, companies were spending more on enriching shareholders through dividends and share buybacks, as compared to innovation via R&D. Post-pandemic, there seems to be a shift toward R&D prioritization as many large pharmaceutical companies face a growth gap. For the top 25 pharmaceutical companies, the growth gap is expected to grow from \$60 billion in 2026 to \$120 billion in 2028 as the industry faces one of the steepest patent cliffs in history.

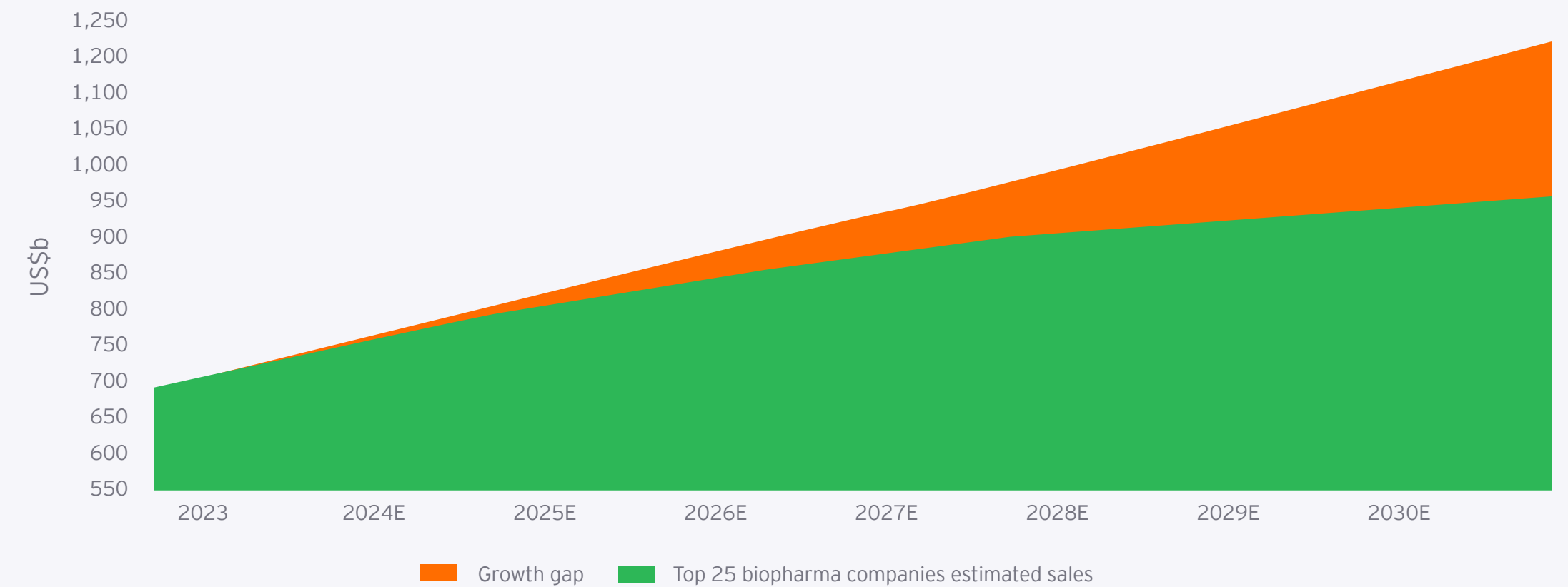
The growth gap, which we are seeing because of the patent expiries of some of the best-selling biologics of the last decade, is concentrated in a small number of companies. Much like the haves and have-nots of biotech, some large biopharmas have plenty of cash on hand and few patent expiries looming, while others – typically the most successful companies of the previous 10 years – have large chunks of revenue at risk. Of the companies that have the greatest growth gaps, some have planned accordingly, making strategic acquisitions that will soften the revenue erosion, while a handful of others are facing steep declines in their top-line performance.

Big Pharma capital allocation, last 10 years (%)



Sources: EY analysis and Capital IQ. Figures may not total 100% due to rounding.

The growth gap for the top 25 biopharma companies is expected to expand from US\$80 billion in 2027 to US\$240 billion by 2030 due to patent expiries



Sources: EY analysis and Capital IQ. Note: Growth gap analysis is based on December 2014 Evaluate pharma data and excludes the impact of COVID-19 vaccines.

A Dose of Insight



Muna Tuna

Commercial and Market Access Leader
Ernst & Young LLP

Pharma facing uncertainty in access and pricing

Pharmaceutical companies are facing an increasingly uncertain pricing environment. We are still waiting to see the full impact of maximum fair price (MFP) effectuation, especially in Medicare Part B, and the Trump administration has proposed several mechanisms to lower the cost of drugs for patients, including revisiting international reference pricing and most-favored-nation pricing. This discussion is all taking place against the backdrop of a trade dispute that will increase the cost of inputs. While the administration is looking to reduce drug pricing, the tariffs could impact the cost of numerous small molecules and have an unintended impact on generic launches.

For all of these reasons, it's imperative that pharmaceutical companies clearly communicate the value proposition of their product and develop evidence to effectively differentiate their drug from a sea of competitors throughout the lifecycle. The strategies for evidence generation need to evaluate the clinical trials as well as real-world evidence to address the stakeholder evidence requirements across the ecosystem, including payers, health systems, guidelines and professional organizations.

It's more important than ever that companies leverage AI technology to delve deeper into clinical and economic insights and deliver tailored insights to health systems, payers, ecosystem influencers as well as prescribers and patients. Activation of health system accounts leveraging account insights, relevant data and evidence can help build the market environment to facilitate access and reduce friction from prescription to fulfillment.

EY research also indicates that large pharmaceutical companies have increased their spending on capital expenditures – jumping up to 10% in 2024 – and are likely to trend higher in 2025. Several large pharmaceutical companies, including Johnson & Johnson and Novartis, have announced plans to build large-scale manufacturing and R&D hubs in the US in response to President Trump's increased emphasis on products made in America and the potential for tariffs to hurt their businesses.

The disruption of global supply chains, considerations around nearshoring or reshoring manufacturing, the building of strategic stockpiles of certain drugs, and the securing of APIs could lead some biopharma companies to redirect investment to localize manufacturing. While shifting manufacturing facilities to the US or other countries is a bold move, it's not one every company can consider right now. Biopharma companies can take steps so that their capital allocation strategy supports the company's long-term growth, despite the volatile tax and trade environment:

- **Align to long-term goals:** Key to improving the capital allocation process is to align investments to the company's long-term strategy. To do this, life sciences companies need to decide which changes spawned by recent protectionist and de-globalization policies will stick and which are temporary.

- **Rebalance assets:** Realigning the company portfolio to focus on core businesses is another key consideration. This effort could mean divesting businesses that are not central to the long-term mission or shifting investment to two or three therapeutic areas that are most promising. EY analysis of the top 20 biopharmas and medical technology companies by sales over the last five years shows that those companies concentrating their R&D efforts on a smaller number of therapeutic categories had a stronger performance across a number of performance metrics. The data supports the idea that a greater therapeutic focus drives expertise and leadership in a given niche. Companies that are more highly specialized also have the opportunity to create strong brand awareness and relationships with key opinion leaders to drive commercialization success.

- **Communicate a consistent message:** It's vital to prepare key stakeholders such as suppliers and employees for shifts in capital allocation strategy. Companies need to discuss demand and supply planning, procurement, distribution and inventory plans with suppliers so they can be aligned with how the company plans to meet its goals. Communicating plans to employees and showing them that they are a valued part of the company's strategic focus will be key. Skilled workers are critical in this time of volatility and become increasingly hard to come by as tougher immigration policies make it more difficult to retain foreign talent.

The evolving landscape of capital allocation within the pharmaceutical industry reflects a significant shift toward prioritizing research and development over traditional methods of shareholder enrichment. As large pharmaceutical companies grapple with an impending growth gap exacerbated by patent expiries, the increased investment in R&D – rising from 25% in 2015 to 33% in 2024 – indicates a strategic pivot aimed at fostering innovation and enabling long-term sustainability. This reallocation of resources is essential for navigating the complexities of a post-pandemic market, where the pressures of competition and the need for novel therapies are more pronounced than ever.

Moreover, the emphasis on aligning capital allocation strategies with long-term goals underscores the necessity for pharmaceutical companies to adapt to changing economic conditions and regulatory environments. By focusing on core therapeutic areas and enhancing communication with stakeholders, companies can better position themselves to capitalize on emerging opportunities while mitigating risks associated with supply chain disruptions and shifting market dynamics. As the industry continues to evolve, companies that successfully rebalance their assets and invest in strategic initiatives will likely emerge as leaders in a highly competitive landscape, ultimately driving growth and innovation in the biopharmaceutical sector.



Biopharma must leverage AI to lower its cost base

The biopharma industry needs to reimagine the business model in the wake of tariffs and changing macrodynamics as well as the pressing need to keep innovation to address its growth gap. Biotech and pharmaceutical companies are already realizing the scale of the coming change: the EY-Parthenon CEO Outlook Survey for May 2025 indicates that 94% of life sciences CEOs are concerned about tariff increases affecting operations and sales in the next 12 months.⁶ The US industry advocacy body Biotechnology Innovation Organization (BIO) sounded the warning in March 2025, reporting its own survey findings that 94% of US biotechs expected tariffs to drive up manufacturing costs, almost 90% depend on imported components from China, Canada or the EU.⁷

⁶ "How do CEOs chart a path to growth when the map keeps changing?" *EY website*, https://www.ey.com/en_uk/ceo/ceo-outlook-global-report, May 5, 2025.

⁷ "New survey: U.S. biotechs warn tariffs could impede access to cures, stifle innovation," *BIO website*, <https://www.bio.org/press-release/new-survey-us-biotechs-warn-tariffs-could-impede-access-cures-stifle-innovation>, March 26, 2025.



Maintaining normal operations in the face of these disruptions could mean escalating prices, but the advent of the tariff regime has not found the industry in a position of strength when it comes to costs. According to an EY CEO survey for January 2025, cost containment was high on the CEO agenda even at the beginning of the year, with nearly one-third of life sciences CEOs seeing rising costs and the need to unlock savings as among their three biggest business priorities (the outright top priority for just under one-sixth of CEOs;⁸ see the top-right chart). This trend follows a decade during which global events from pandemics to wars and the decline of the globalized trade model heaped cost pressures on the industry, with raw materials costs rising 50%-160% and energy becoming 30%-65% more expensive.⁹ In addition, the decade saw rising costs and associated challenges around workforce management as well as the ongoing effects of global inflation (which have driven another 7% cost increase for the sector).¹⁰

Biotech needs financing to cover these costs, but funding has not risen in line with costs. Biotechs have continued to suffer the downturn following the enormous surge

in investment opportunities at the start of the decade. Innovation capital – capital raised by companies with revenue under \$500 million – grew for the third consecutive year in 2024, but it was still only at approximately 50% of the levels seen in 2021 (see the bottom-right chart).

Government funding is also likely to be at risk under the new administration, as illustrated by the drastic cuts in funding to the NIH, which in recent years has supplied over \$1.4 billion in annual biomedical grants¹¹ and is the largest global funder of biomedical research, including for early-stage biotechs. Parallel cuts in government funding for biotech are reported in Europe,¹² and the combined impact of these reductions with the uncertainties of the venture capital funding landscape reinforces the challenges facing biotech. While alternative financing structures, including royalty models potentially covering future financing streams, could be one pathway to rebuilding financing, the industry is likely to be facing tight spending constraints for the foreseeable future and needs a new approach to managing its cost base.

⁸ "EY-Parthenon CEO Outlook Survey," EY website, <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/campaigns/ceo/documents/ey-ceo-outlook-pulse-survey-global-report-january-2025.pdf>, January 2025.

⁹ "Open letter from Medicines for Europe Executive Committee," Medicines for Europe website, https://www.medicinesforeurope.com/wp-content/uploads/2022/06/EPSCO-Council_-_Medicines-for-Europe-Executive-Committee-OPEN-letter-on-inflation-impacting-the-supply-of-essential-medicines.pdf, June 9, 2022.

¹⁰ Ibid.

¹¹ "How Trump 2.0 is slashing NIH-backed research – in charts," Nature website, <https://www.nature.com/articles/d41586-025-01099-8>, April 10, 2025.

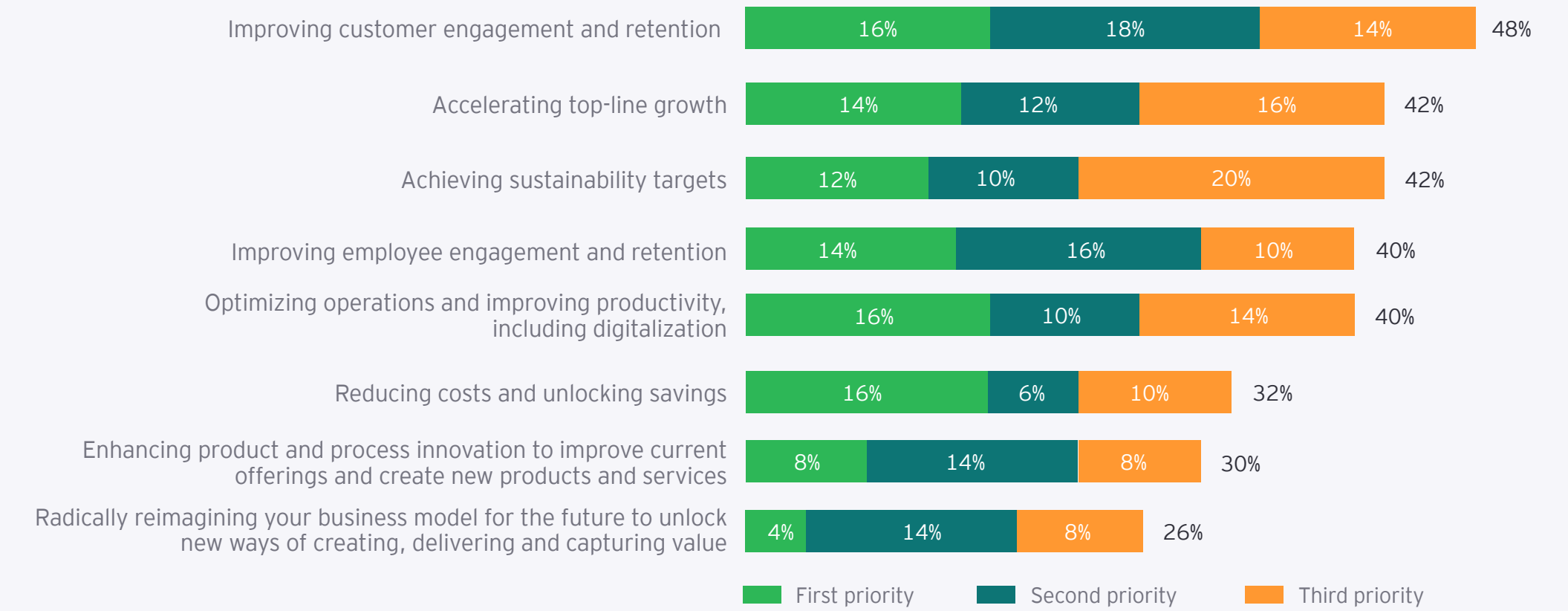
¹² "Funding drought: how can biotech and biopharma keep trials running?" Clinical Trials Arena website, <https://www.clinicaltrialsarena.com/features/funding-biotech-biopharma-struggles/>, March 20, 2025.

CEO Confidence survey question on transformation initiatives

(Life sciences CEOs, n=50, January 2025)

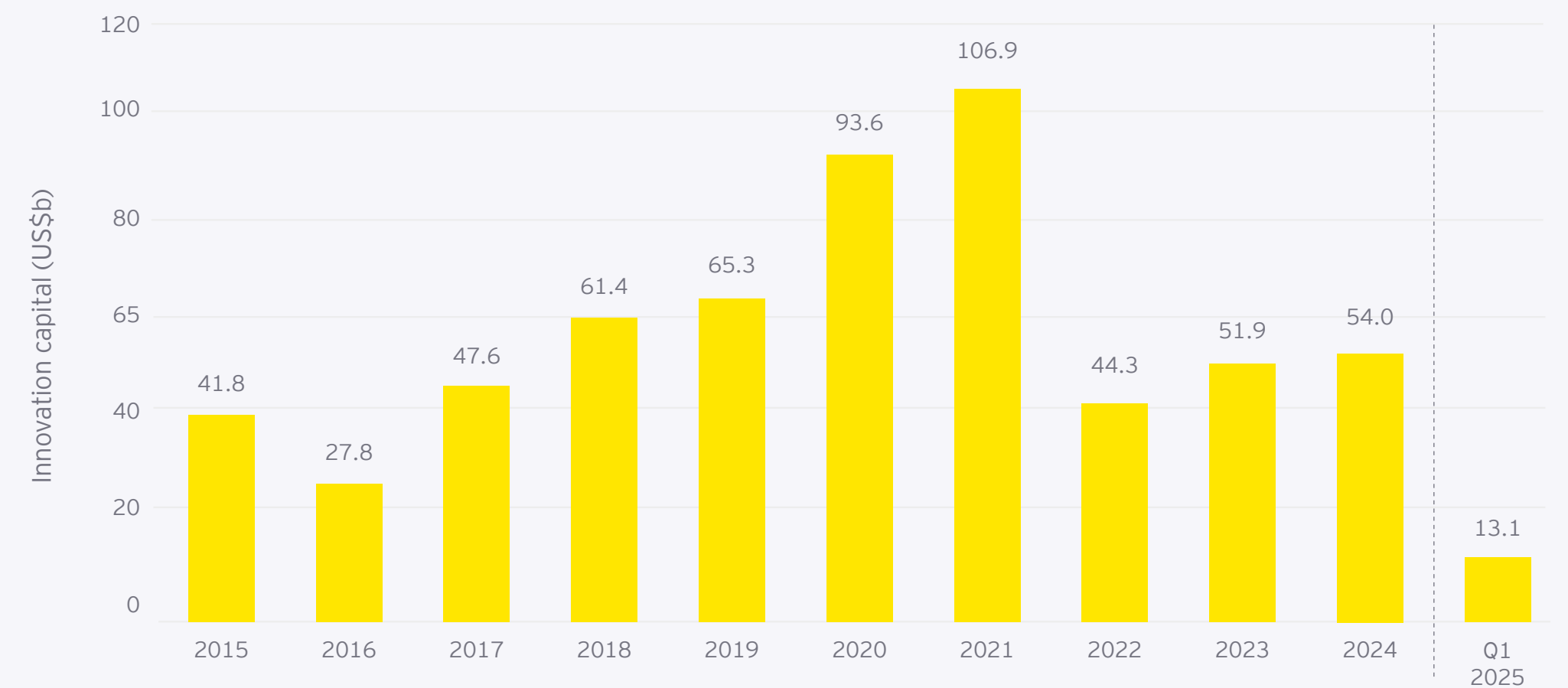
What are the most important outcomes that your transformation initiatives are trying to achieve in the next 12 months?

(The respondents were asked to select up to three responses and rank them in order of priority)



Sources: EY-Parthenon CEO Outlook Survey.

Biotech innovation capital in US and Europe 2015-Q1 2025



Sources: EY analysis and Capital IQ.



Can AI be a game-changer for biotech?

Across all industries, AI increasingly serves as a key lever for reducing costs and increasing efficiencies. A recent EY survey of senior leaders across industries suggested that over half will move at least 25% of their total budget toward AI investment over the next 12 months and are already seeing functional gains as a result of existing spend, with 77% of leaders reporting improved operational efficiency as a result of AI.¹³

In biopharma and other industries, companies are partnering to access AI capabilities (the 2024 EY CIO Sentiment Survey indicates that 90% of life sciences CIOs report leveraging AI via partners¹⁴), and an emerging ecosystem of tech players is already taking shape in the biopharma space. To date, there have been few direct acquisitions of AI platforms, but biopharma companies have poured over \$600 billion in potential alliance investment (the up-front commitment is low, with downstream results unlocking the full value) since 2020.¹⁵ Unsurprisingly given the research-driven nature of biopharma – as noted in this report, R&D investment is currently reasserting its central importance in biotech capital allocation – around 87% of this alliance investment has focused on AI platforms to accelerate R&D.¹⁶

Biotechs live or die by innovation. The importance of R&D is existential, and anything that can shorten development times will offer a significant upside. For example, if biotechs could shorten the time to meeting clinical development milestones, they could boost their valuations, strengthen their balance sheets, and improve both their access to capital and their options for M&A exits. While much investment focus has gone toward the use of AI to identify new drug candidates, AI could also play a major role in accelerating the clinical development process in other ways, including:

- Speeding up patient recruitment, with matchmaker AI platforms already making inroads into the challenges of bringing sufficient patients into trials

- Allowing remote capture of data and the digital decentralization of trials from sites for improved efficiency
- Enabling protocol development so initial trials can address a drug’s initial indication with higher confidence, allowing companies to more efficiently progress their assets

The scope of AI to accelerate R&D in these ways depends in part on the stance regulators choose to take on data usage and trial parameters, and the current upheaval within US regulatory bodies leaves some uncertainty over the future direction the FDA and other agencies will take.

77%
of leaders reported gains in operational efficiency as a result of AI

¹³ “Execs double down on AI: explore 5 AI adoption strategies for success,” EY website, https://www.ey.com/en_us/services/emerging-technologies/five-ai-adoption-strategies-survey, July 15, 2024.

¹⁴ “2024 EY CIO Sentiment Survey,” EY website, https://www.ey.com/en_us/cio/cio-insights-survey, 2024.

¹⁵ Ibid.

¹⁶ “EY Firepower report: life sciences dealmaking - trends in 2025,” EY website, https://www.ey.com/en_us/firepower-report, 2025.

A Dose of Insight



David de Vries
Co-founder and CEO
Tr1X Bio

Partners looking beyond proof-of-concept

By offering the possibility of a cure, cell therapies represent the future standard of care for numerous debilitating chronic diseases currently managed by costly, lifelong therapies that do not address underlying biology. Conventional treatments typically provide only incremental, symptom-focused benefits, often accompanied by side effects impacting patient quality of life. Following an initial wave of excitement and investment, cell therapies are now firmly in a “prove it” stage. At Tr1X, we believe our differentiated clinical and manufacturing profile effectively addresses key barriers – such as response durability, safety and scalability – that have historically impeded cell therapy development and commercialization. Our pharma and biotech partners remain enthusiastic about the transformative potential of cell therapies, particularly regulatory T-cell therapies for autoimmune and inflammatory diseases. Beyond proof-of-concept clinical data, partners increasingly emphasize the importance of manufacturing reliability, scalability, cost efficiency and clear commercialization pathways.

A Dose of Insight



Yasmine Rafidi
VP of Finance
Akero Therapeutics

Growth built on efficiency

In today's dynamic business environment, life science companies must continually assess and optimize their sourcing models to strike the right balance between internal full-time equivalents (FTEs) and reliance on third-party vendors. This assessment is crucial for ensuring that resources are allocated efficiently and that the organization can respond swiftly to changing market demands. By carefully evaluating the strengths and weaknesses of both internal teams and external partners, companies can create a sourcing strategy that maximizes value while minimizing costs.

Further, the decision to invest in software and automation rather than simply increasing headcount as well as making capital investments becomes paramount. Delaying additional FTE hires and considering managed services as sourcing option allow organizations to immediately obtain focus on developing more mature and structured processes that can support rapid scaling. By continuously implementing tools that reduce manual processes and enhance accuracy, companies can streamline operations and improve overall productivity. This strategic approach not only helps in managing costs but also prepares the organization for future growth by establishing a solid foundation built on efficiency.

For example, we partnered with a firm specializing in managed services associated with clinical trial accounting and forecasting process optimization and technology integration to implement a cutting-edge technology solution specifically tailored for managing research and development accruals. This collaboration was pivotal in allowing us to immediately tap into designing and executing best-in-class process, controls and technology that enabled Akero to scale rapidly in response to a significant surge in research and development expenditures. Akero was able to streamline its accrual management, ensuring accuracy and efficiency in tracking R&D costs. This strategic partnership not only facilitated a more agile response to increased spending but also established a robust framework that supports ongoing growth and innovation within the company, positioning Akero to meet its ambitious research objectives effectively.

Beyond R&D: the AI opportunities for biotech

Yet the industry may be over-indexing on the R&D opportunities of AI relative to AI use cases elsewhere along the value chain. For example, the EY CIO survey data suggests that, compared to peer industries, life sciences companies overall invest 5% more of their AI spend into R&D. AI may present more near-term opportunities for biotechs seeking to limit their costs.

While commercialization challenges, which are attracting growing interest as a focus for AI optimization, are only a priority for biotechs with launched or near market-ready assets, manufacturing and supply issues are relevant to biotechs at all stages of the product development cycle. To that end, a recent survey reported that 80% of biotechs believe they will need up to a year to find supply alternatives in the wake of tariff impositions, with 44% suggesting it would take two years.¹⁷ Biotechs may be able to reduce these delays and boost efficiency by working with specialized partners. Already, the biopharma industry collaborates heavily with contract research, contract manufacturing, and contract development and manufacturing organizations (CROs, CMOs and CDMOs) across the value chain. As they seek to mitigate their exposure to operational disruptions, biotechs may find it more effective to scale up their outsourcing efforts. AI can streamline the shift toward a networked model where biotechs lean on partners for significant operational support. By allowing improved real-time and predictive visibility, communication, and data exchange and analysis, AI technologies enable effective coordination between a biotech player and a range of partners and collaborators.

However, perhaps the biggest opportunity of all for rightsizing the cost base and streamlining operations lies in the back office. For example, AI can enable the automation of documentation and literature review, a significant cost line in an industry as highly regulated as biotech.

For at-scale biopharma companies, the need for global business services (GBS) is also becoming more economically compelling. Over 90% of the life sciences CEOs we surveyed agree that GBS "will be key to containing rising operational costs," but 40% of biopharma GBS is stuck in a legacy archetype, a shared services approach focused on consolidating basic transactional tasks in low-wage countries.¹⁸ Growing biotechs have yet to reach the levels of siloed operational complexity that cause challenges for major pharmaceutical companies, but these smaller players have an opportunity to move directly to a more technologically advanced services model based on greater automation and ultimately AI-driven operations and autonomous decision-making.

Wherever they deploy AI, biotechs need to draw on the potential of this technology to shape a new trajectory for future growth. Instead of following the template of previous biotechs that have grown into Big Pharma competitors in their own right – and now face the operational challenges confronting Big Pharma in a fast-shifting business environment – biotechs should embrace the opportunities to build a networked model for future growth. From the back office through the challenges of R&D, manufacturing and supply through to front-office commercialization, biotechs need to find the right AI collaborators and build the wider partner ecosystem that can help them control costs and offset the shocks of the current high-cost, high-volatility operating environment.

¹⁷ "New survey: U.S. biotechs warn tariffs could impede access to cures, stifle innovation," *BIO website*, <https://www.bio.org/press-release/new-survey-us-biotechs-warn-tariffs-could-impede-access-cures-stifle-innovation>, March 26, 2025.

¹⁸ "Pharma GBS must act like a business executive, not a task operator, to stay relevant," *HFS Research website*, <https://www.hfsresearch.com/research/pharma-gbs-must-act-like-a-business-executive-not-a-task-operator-to-stay-relevant/>, April 2, 2025.

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FINANCIALS

- The public biotech industry recorded solid 6.8% topline growth to reach \$205 billion in revenues in 2024, but recorded negative net income for the third consecutive year, with collective bottom line growth of -\$34.3 billion.
- Biotech market capitalization fell by 5.4% to reach \$1.26 trillion, while the industry's total raised capital dropped by 21%. Comparing these figures to the industry's recent peak in 2021, market capitalization is down 21% from those heights, and total capital raised has dropped 46%.
- In many other respects the industry contracted in 2024: The number of public companies in the sector fell 11.9% to 783, while their collective total number of employees fell 3.1% to 288,195.

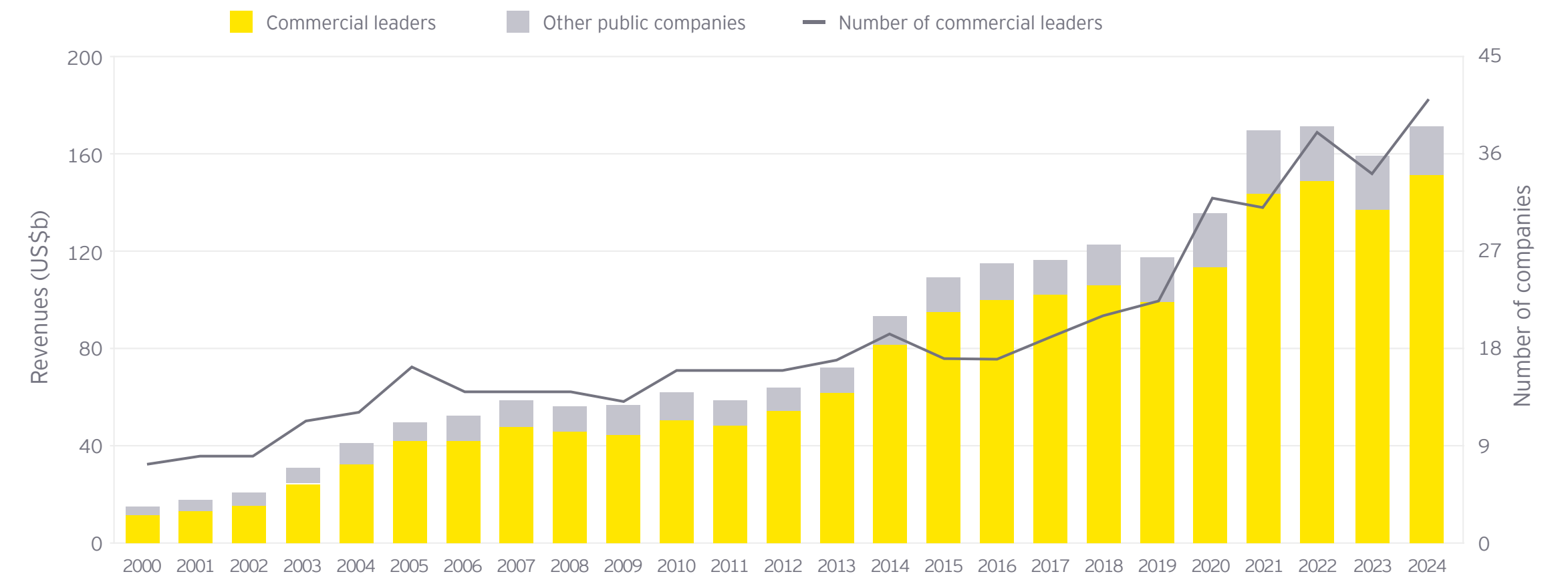
US and European biotechnology at a glance (US\$b)

	2024	2023	2022	2021	Change (2023-24)
Revenues	205	192	214	217	6.8%
R&D expense	107	96	95	91	11.5%
Net income	-34	-43	-30	0.3	-20.9%
Market capitalization	1,258	1,330	1,303	1,593	-5.4%
Number of employees	288,195	297,489	302,580	291,189	-3.1%
Financing					
Capital raised by public companies	48	61	36	90	-21.3%
Number of IPOs	30	18	22	158	66.7%
Number of companies					
Public companies	783	889	939	961	-12.3%

Sources: EY analysis, Capital IQ and EY Embryonic. | Numbers may appear inconsistent because of rounding.

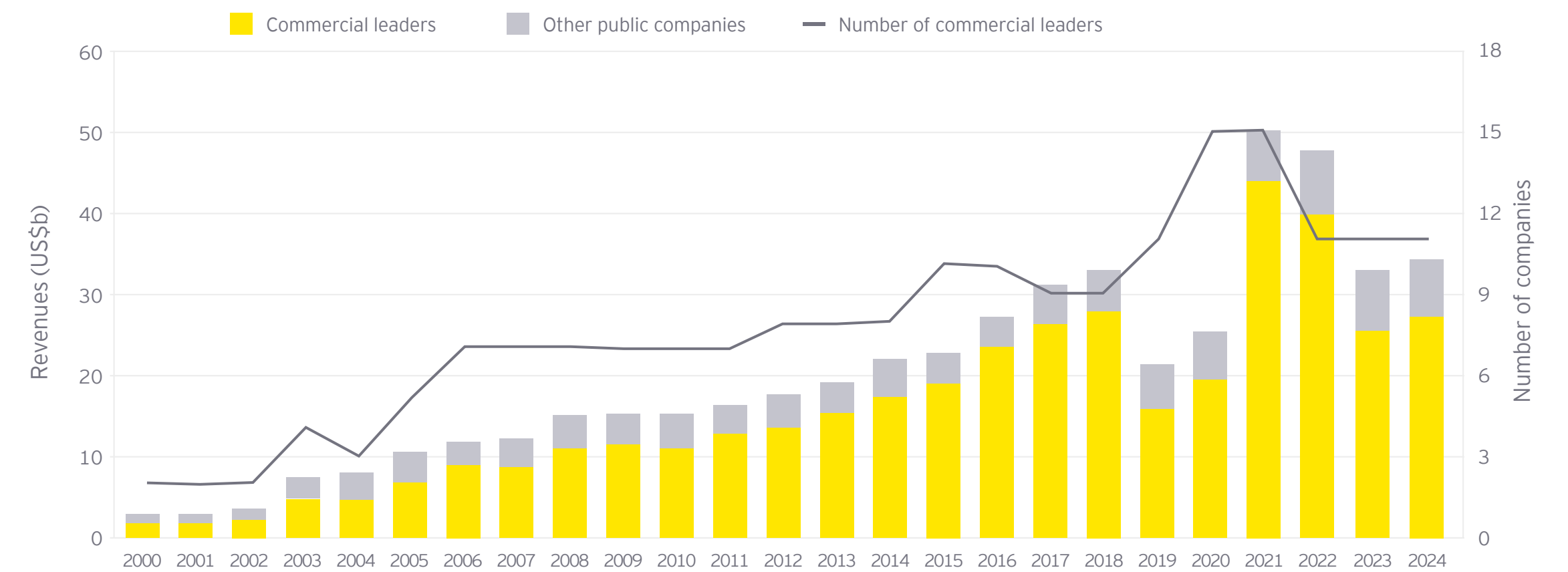
- Commercial leaders (that is, the major players, with revenues of \$500 million per year or more) accounted for 87% of total biotech sales in 2024. Revenues for the commercial leader group grew 10%, though net income fell 60%, with a bottom line of \$7.2 billion from total commercial leader sales of \$178.5 billion.
- The sector's declining profit margins can be attributed both to the cost pressures affecting the industry and to the increased investment in R&D among this group; commercial leader R&D spend grew 37% and represented 37% of the group's revenues, compared to 29% in 2023.
- In all, 52 biotechs among the cohort of 783 qualified for the commercial leader designation in 2024, 41 in the US (up from 34 in 2023), and 11 in Europe (no change on 2023). In all, US biotechs accounted for 83% of all industry revenue across the US and Europe, with US commercial leaders alone accounting for 74% of the total.

US public company revenue 2000-24



Sources: EY analysis, Capital IQ and company websites. | Commercial leaders are companies with revenues >=US\$500 million.

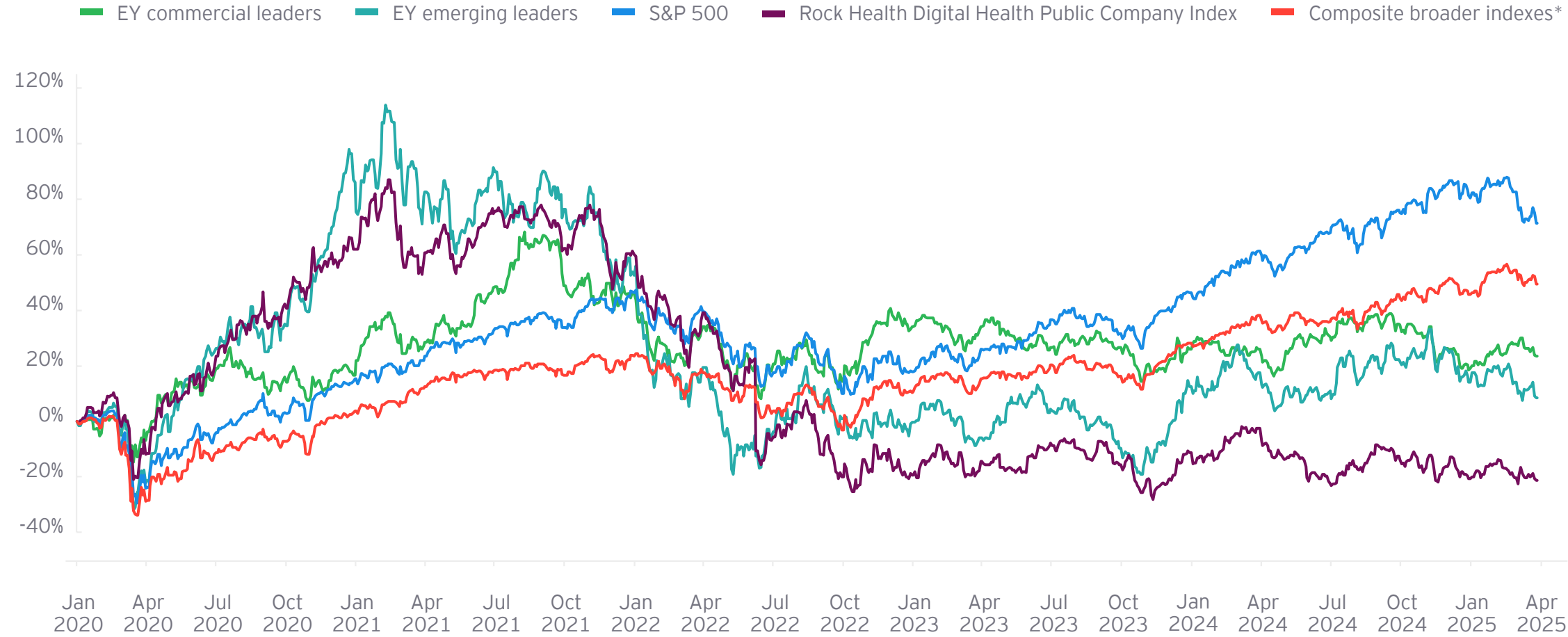
European public company revenue 2000-24



Sources: EY analysis, Capital IQ and company websites. | Commercial leaders are companies with revenues >=US\$500 million.

FINANCIALS

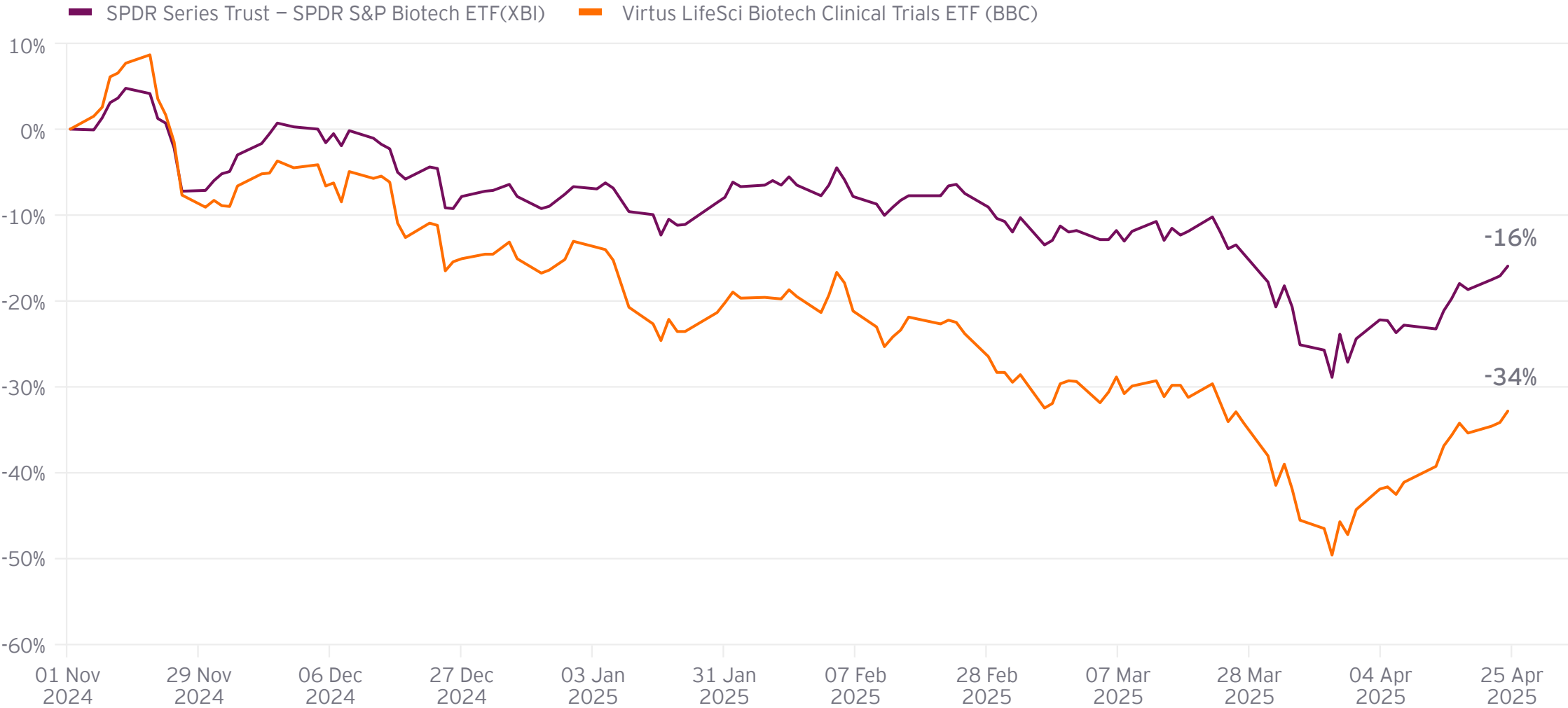
US and European biotech market capitalization relative to leading indexes, 2020-Q1 2025



Sources: EY analysis and Capital IQ. | Commercial leaders are companies with revenues >=US\$500 million.
 * "Composite broader indexes" refers to the daily average of leading US and European indexes: Russell 3000, Dow Jones Industrial Average, NYSE, S&P 500, CAC-40, DAX and FTSE 100.

- Commercial leaders and other biotechs (“emerging leaders”) enjoyed relatively stable capitalization across 2024, and there was a visible boost following the US election of November 2024, with expectations that deregulatory moves could benefit the sector. Subsequently, biotech stocks plunged over concerns around the policy direction the new administration has taken. The announcement of tariffs in April 2024 drove another steep drop in biotech valuations, but viewed in context this was only a continuation of the valuations trend prior to the imposition of the new trade barriers.
- After dropping further in the wake of the first wave of tariffs, biotech stocks rebounded slightly on the April 9 announcement of a 90-day freeze on the imposition of President Trump’s Reciprocal Tariff Policy against all countries other than China. However, the rapid swings seen in biotech stock prices throughout April highlight the volatility of these prices, and the broader indexes, in the present political climate. The sector, like the wider economy, is highly exposed to dramatic swings in investor sentiment on the basis of unpredictable policy announcements alone.
- The biotech valuation announcements also need to be seen in context of a broader pattern of decline in 2025; stock prices are bouncing around a much reduced baseline relative to 2024 valuations, indicating just how much the initial moves of the new administration have negatively affected investor sentiment.

Declining biotech stocks, November 2024-April 2025



Sources: EY analysis and Capital IQ.
 Charts includes companies that were active on 30 December 2024.

FINANCIALS

Top 10 changes in the US and European market capitalizations, 2019-24 (US\$m)

Company	Market cap 31 December 2024	Market cap 31 December 2019	US\$ change	CAGR (2024-19)
Vertex Pharmaceuticals	103,707	56,303	47,404	13%
Regeneron Pharmaceuticals	76,639	41,049	35,591	13%
Gilead Sciences	115,118	82,209	32,908	7%
argenx SE	37,499	6,891	30,608	40%
BioNTech SE	27,318	7,666	19,653	29%
Natera	20,899	2,612	18,287	52%
Alnylam Pharmaceuticals	30,350	12,840	17,510	19%
Summit Therapeutics	13,160	537	12,622	90%
Novonosis	26,297	13,771	12,526	14%
United Therapeutics	15,752	3,865	11,887	32%

Sources: EY analysis and Capital IQ.

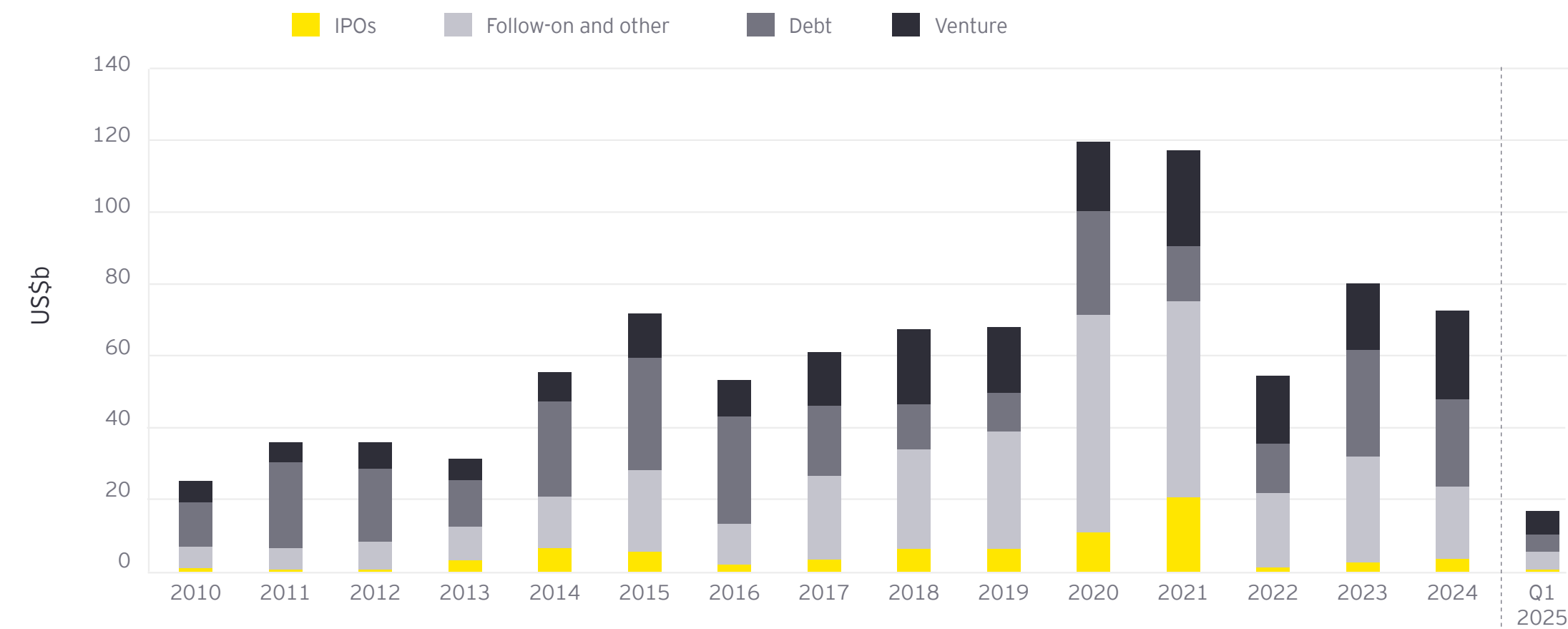
- Over the past five years, the biggest cap changes in absolute terms have been driven by some of the largest biotech commercial leaders, namely Vertex, Regeneron and Gilead. After Amgen, these three are the sector's biggest players by revenue.
- Two European companies are also among the top five biotechs ranked by market cap growth, with argenx of Belgium recording 40% five-year market cap compound annual growth rate (CAGR) on the strength of the 2021 market approval for its first-in-class antibody fragment against Ig-G autoantibodies, and Germany's BioNTech among the leading players after its prominent role in developing key vaccines during the COVID-19 pandemic.
- Still more dramatic market cap growth has come from Summit Therapeutics, with a 90% market cap CAGR since the end of 2019; Summit's stock price soared in 2024 based on clinical data suggesting its bispecific antibody ivonescimab could outperform the leading immunotherapy oncology treatment, Merck's Keytruda.



FINANCING

Biotech financing, 2010-Q1 2025

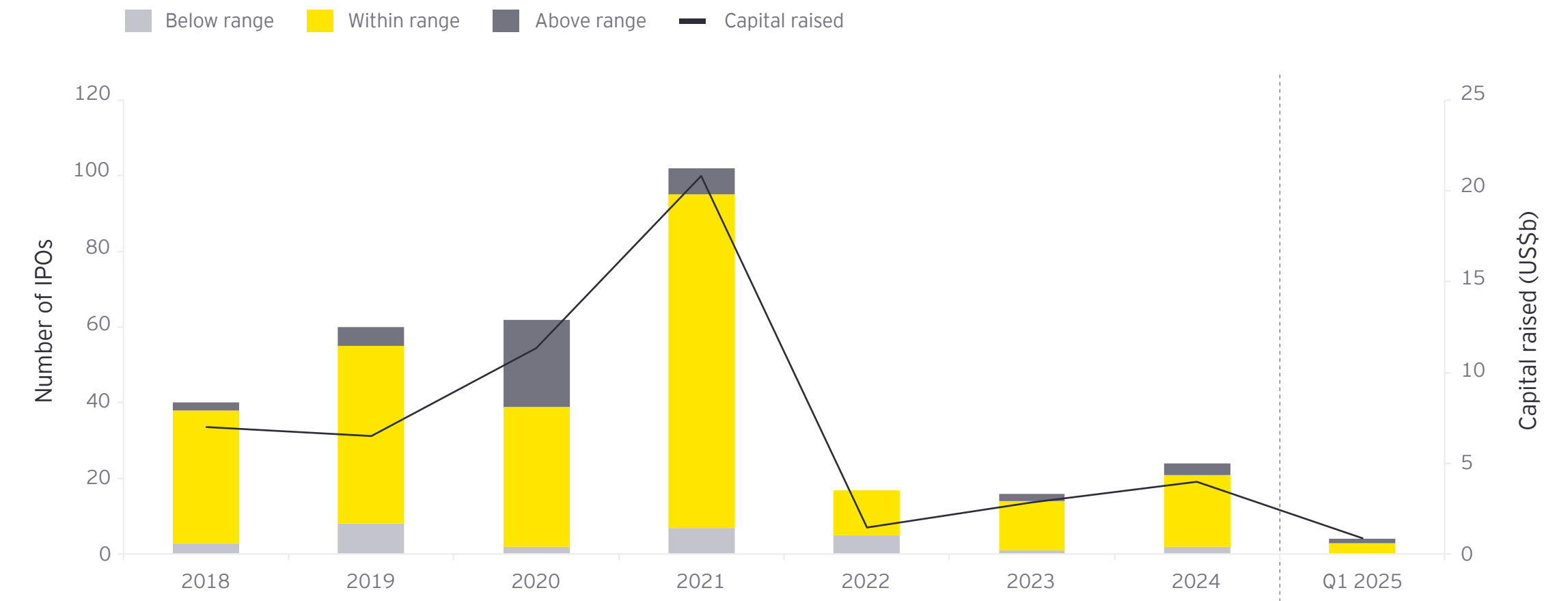
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Q1 2025
IPOs	1,325	863	909	3,546	6,856	5,419	2,283	3,693	7,001	6,485	11,352	20,801	1,479	2,865	3,995	860
Follow-on and other	5,869	5,860	7,672	9,314	14,418	22,665	11,247	23,260	27,604	32,800	60,331	54,663	20,744	29,347	19,924	5,069
Debt	12,507	23,981	14,554	12,979	26,266	31,313	29,849	19,600	12,504	10,645	29,102	15,272	13,670	29,877	24,367	4,727
Venture	5,811	5,586	5,670	5,877	8,065	12,225	10,047	14,858	20,806	18,381	19,148	26,640	18,950	18,385	24,691	6,439
Total	25,513	36,291	28,805	31,718	55,604	71,622	53,426	61,412	67,915	68,312	119,933	117,375	54,843	80,474	72,977	17,095



Sources: EY analysis, Capital IQ and VentureSource.
Numbers may appear inconsistent because of rounding. Convertible debt instruments included in "debt."

- Biotech fundraising levels fell 9% in 2024, primarily as a result of a \$9.4 billion (32%) decline in follow-on financing; debt financing levels also dropped by 18% (\$5.5 billion).
- The IPO market grew 39%, though biotech IPOs are still generating less than one-fifth of the levels raised at their 2021 peak. Meanwhile venture financing rose 34% to \$24.7 billion, the highest recorded level aside from 2021 and the first time VC totals have seen positive growth since 2021, following two years of decline.
- The first quarter of 2025 saw financing levels continue approximately in line with the 2024 performance; however, the impact of the dramatic policy announcements, particularly around tariffs, at the beginning of Q2 2025 has yet to be priced in. Minimally, the instability may increase the challenges for biotechs seeking to raise money.

US and European biotechnology IPO pricing by year (2018-Q1 2025)



Sources: EY analysis and Capital IQ.

FINANCING

- The \$4.0 billion raised in IPO financing came entirely from the US, with no European biotech raising more than \$68 million (the 19th-ranked biotech IPO of 2024). The leading three offerings, CG Oncology, Kyverna and Bicara all focus on the oncology space. The leading non-oncology IPO was Septerna, developing G protein-coupled receptors as an oral therapy for hypoparathyroidism.



US and European IPOs, 2024

Name	Region	Therapeutic focus of lead candidate	Clinical stage of lead candidate	Gross raised (US\$m)	Quarter
CG Oncology, Inc.	US-Southern California	Oncology	Phase III	\$437	Q1
Kyverna Therapeutics, Inc.	US-Northern California	Autoimmune	Phase I/II	\$367	Q1
Bicara Therapeutics Inc.	US-Massachusetts	Oncology	Phase I/Ib	\$362	Q3
Septerna, Inc.	US-Northern California	Immunology and inflammation	IND enabling	\$331	Q4
Upstream Bio, Inc.	US-Massachusetts	Respiratory	Phase II	\$293	Q4
Zenas BioPharma, Inc.	US-Massachusetts	Immunology	Phase III	\$259	Q3
BioAge Labs, Inc.	US-Northern California	Other (obesity)	Phase II	\$228	Q3
Alumis Inc.	US-Northern California	Immunology	Phase III	\$210	Q2
MBX Biosciences, Inc.	US-Indiana	Other (endocrine and metabolic health)	Phase II	\$188	Q3
ArriVent BioPharma, Inc.	US-Pennsylvania	Oncology	Phase III	\$175	Q1
Artiva Biotherapeutics, Inc.	US-Southern California	Autoimmune	Phase II	\$167	Q3
Rapport Therapeutics, Inc.	US-Massachusetts	Central nervous system (CNS)	Phase I	\$156	Q2
Alto Neuroscience, Inc.	US-Northern California	Neurology	Phase II	\$148	Q1
Fractyl Health	US-Massachusetts	Other (Metabolic health)	Pivotal	\$110	Q1
Contineum Therapeutics, Inc.	US-Southern California	Autoimmune	Phase I	\$110	Q2
Boundless Bio	US-Southern California	Oncology	Phase I	\$100	Q1
Metagenomi, Inc.	US-Northern California	Immuno-oncology	Pre-clinical	\$94	Q1
Camp4 Therapeutics Corporation	US-Massachusetts	Other (metabolic disease)	Phase I	\$75	Q4
Cinclus Pharma Holding AB (publ)	Sweden	Other (stomach acid-related disorders)	Phase III	\$68	Q2
Actuate Therapeutics, Inc.	US-Texas	Oncology	Phase II	\$22	Q3
Pentixapharm Holding AG	Germany	Oncology	Phase III	\$22	Q3
eXoZymes, Inc.	US-Southern California	Other	NA	\$15	Q4
Oncinvent ASA	Norway	Oncology	Phase II	\$12	Q4
Jupiter Neurosciences, Inc.	US-Florida	Neurology	Phase II	\$11	Q4
Telomir Pharmaceuticals, Inc.	US-Maryland	Other (age-related disorders)	Pre-clinical	\$7	Q1
Chromocell Therapeutics Corporation	US-New Jersey	Multiple	Phase I	\$7	Q1
OS Therapies Incorporated	US-Maryland	Oncology	Phase IIb	\$6	Q3
Kairos Pharma, Ltd.	US-Southern California	Oncology	Phase II	\$6	Q3
Impact BioMedical Inc.	US-Texas	Multiple	NA	\$5	Q3
Polyrizon Ltd.	Israel	Other	NA	\$4	Q4

US and European IPOs, Q1 2025

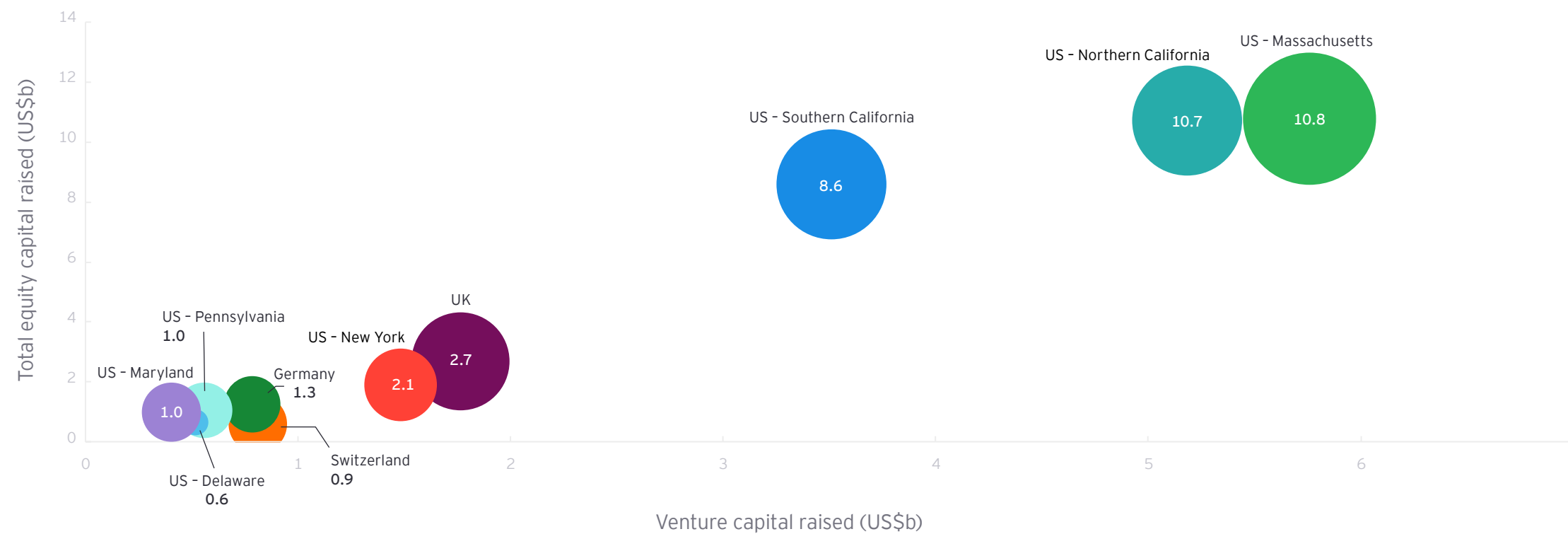
Name	Region	Therapeutic focus of lead candidate	Clinical stage of lead candidate	Gross raised (US\$m)	Quarter
Metsera, Inc.	US-New York	Other (obesity; GLP-1)	Phase IIb	\$316	Q1
Sionna Therapeutics, Inc.	US-Massachusetts	Respiratory	Phase II	\$219	Q1
Maze Therapeutics, Inc.	US-Northern California	Renal	Phase II	\$140	Q1
Aardvark Therapeutics	US-Southern California	Rare disease	Phase III	\$94	Q1
BioVersys AG	Switzerland	Infectious disease	Phase III	\$88	Q1
Cardiogeni PLC	UK	Cardiovascular/vascular	Phase II	\$2	Q1

Sources: EY analysis, Capital IQ and EY Strategy Edge.

FINANCING

- Excluding debt financing, the fundraising rankings were dominated by Massachusetts and the northern and southern California biotech core territories. In all, these three areas accounted for 376 non-debt financings, raising \$14.5 billion of biotech VC (about 59% of the VC total), and \$30.1 billion in equity financing overall, about 62% of the industry total. Outside of the US, the UK was prominent, generating \$1.8 billion in VC.

Capital raised by leading US and European countries, 2024



Sources: EY analysis, BMO Capital Markets, Dow Jones VentureSource and Capital IQ.
Size of bubbles shows relative number of financings per region.

- Though VC funding bounced back in 2024, investors were more discriminating, targeting high-profile opportunities staffed by established teams with significant past credentials. The most prominent example in 2024 was the \$1 billion financing round by Xaira Therapeutics, a biotech led by Genentech's former chief scientific officer and drawing on technologies developed by Illumina.
- Xaira is focused on drug discovery, using AI technology, also the focus for Isomorphic Labs, the London-based startup developed by Alphabet; through major alliances with multiple Big Pharmas, Isomorphic has become one of the most prominent players in the crowded field of AI-driven drug R&D.
- Also notable among the leading financing rounds was the presence of two companies focused on obesity treatments, Verdiva Bio and Kailera. The availability of funds for this therapeutic area reflects the clinical and commercial breakthroughs achieved by the GLP-1 class of drugs in the past three years, though the largest financing round for a biotech targeting a specific therapeutic area went to oncology-focused Treeline Biosciences.

Top US and European venture capital rounds, 2024

Name	Region	Therapeutic focus of lead candidate	Clinical stage of lead candidate	Gross raised (US\$m)	Quarter	VC round type
Xaira Therapeutics, Inc.	US-Northern California	Other (AI drug discovery)	NA	\$1,000	Q2	1st round
Treeline Biosciences, Inc.	US-Massachusetts	Oncology	NA	\$422	Q4	3rd round
Mirador Therapeutics	US-Southern California	Immunology	NA	\$400	Q1	1st round
Kailera Therapeutics	US-Massachusetts	Other (obesity)	Phase III	\$400	Q4	1st round
Formation Bio, Inc.	US-New York	Dermatology	Phase III	\$372	Q2	Late stage
Candid Therapeutics, Inc.	US-Southern California	Autoimmune	Phase I	\$370	Q3	1st round
Uniquity Bio, Inc.	US-Pennsylvania	Inflammatory	Phase II	\$300	Q2	1st round
GondolaBio, LLC	US-Delaware	Multiple	NA	\$300	Q3	1st round
Metsera, Inc.	US-New York	Other (obesity and metabolic health)	Phase I	\$290	Q2	1st round
Cardurion Pharmaceuticals, Inc.	US-Massachusetts	Cardiovascular	Phase II	\$260	Q3	2nd round
Alumis	US-Northern California	Immunology	Phase II	\$259	Q1	3rd round
Freenome Holdings, Inc.	US-Northern California	Oncology	NA	\$254	Q1	Late stage
AltruBio Inc.	US-Northern California	Immunology	Phase IIa	\$225	Q2	2nd round
Seaport Therapeutics, Inc.	US-Massachusetts	Neurology	Phase I	\$225	Q4	2nd round
Metsera, Inc.	US-New York	Other (obesity)	Phase IIb	\$215	Q4	2nd round
ITM Isotopen Technologien München Aktiengesellschaft	Germany	Oncology (neuroendocrine tumors)	Phase III	\$205	Q2	Undisclosed
Zenas BioPharma, Inc.	US-Massachusetts	Immunology	Phase III	\$200	Q2	3rd round
Marea Therapeutics, Inc.	US-Northern California	Cardiometabolic	Phase II	\$190	Q2	1st and 2nd rounds
Bluejay Therapeutics, Inc.	US-Northern California	Immunology	Phase IIa	\$182	Q2	3rd round
Sionna Therapeutics, Inc.	US-Massachusetts	Other (cystic fibrosis)	Phase I	\$182	Q1	3rd round

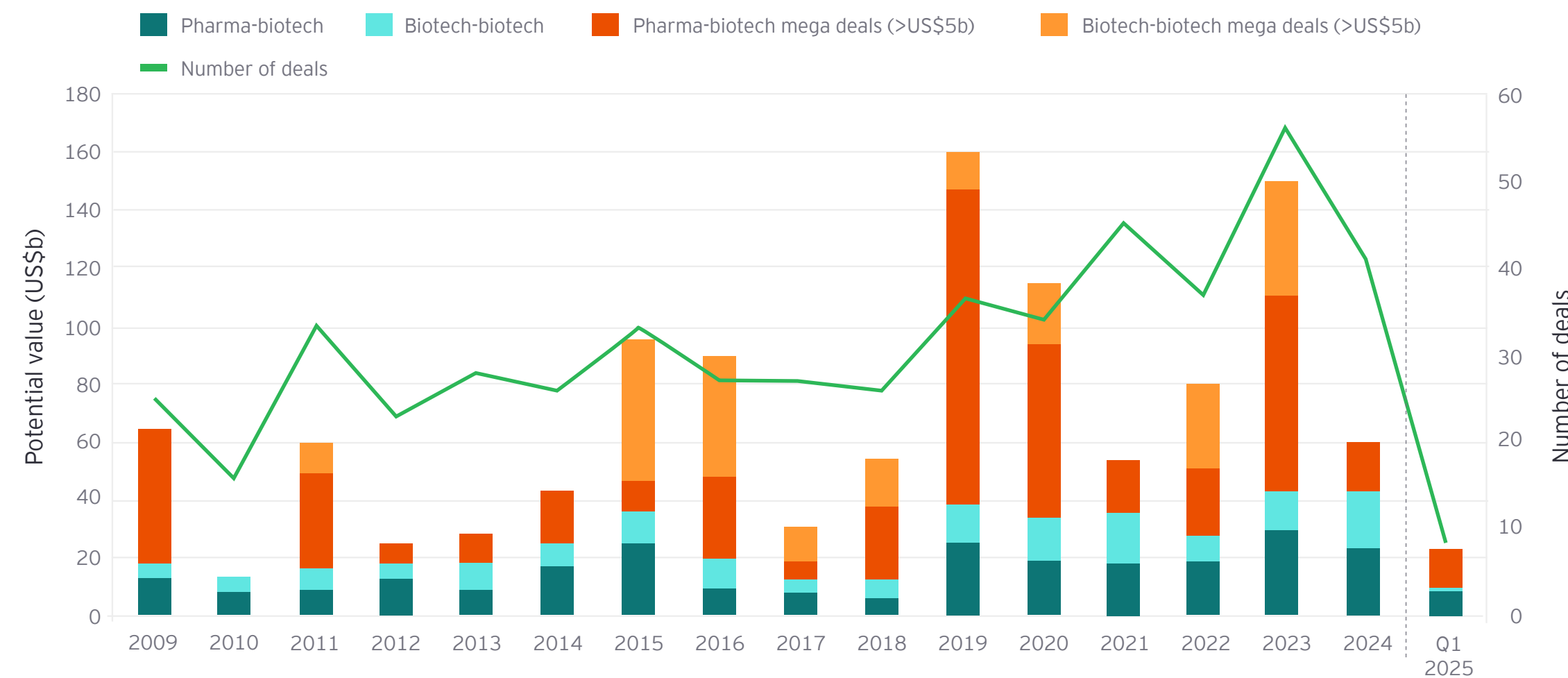
Top US and European venture capital rounds, Q1 2025

Name	Region	Therapeutic focus of lead candidate	Clinical stage of lead candidate	Gross raised (US\$m)	Quarter	VC round type
Isomorphic Labs	UK	Other	NA	600	Q1	1st round
Verdiva Bio Limited	UK	Other (obesity)	Phase II	410	Q1	1st round
Eikon Therapeutics, Inc.	US-Northern California	Oncology	Phase III	351	Q1	Late stage
Kardigan	US-Northern California	Cardiovascular/vascular	Late stage	300	Q1	1st round
Aviceda Therapeutics, Inc.	US-Massachusetts	Ophthalmology	Phase II/III	208	Q1	3rd round
Abcuro, Inc.	US-Massachusetts	Autoimmune	Phase II/III	200	Q1	3rd round
Tenvie Therapeutics	US-Northern California	CNS	IND enabling	200	Q1	1st round
Windward Bio AG	Switzerland	Immunology	Phase II	200	Q1	1st round
Callio Therapeutics, Inc.	US-Washington	Oncology	Pre-clinical	187	D1	1st round
Timberlyne Therapeutics	US-Southern California	Multiple	NA	180	Q1	1st round
Tune Therapeutics	US-Washington	Infectious disease	Clinical	175	Q1	2nd round
Ouro Medicines	US-Northern California	Oncology	Phase II	120	Q1	1st round
Curevo, Inc.	US-Washington	Infectious disease	Phase II	110	Q1	2nd round
Alzheon, Inc.	US-Massachusetts	Neurology	Phase III	109	Q1	Late stage
Umoja Biopharma	US-Washington	Multiple	Phase I	100	Q1	3rd round
Latigo Biotherapeutics, Inc.	US-Southern California	Neurology	Phase II	100	Q1	2nd round
Atalanta Therapeutics	US-Massachusetts	CNS	IND enabling	97	Q1	2nd round
Orbis Medicines	Denmark	Other	NA	94	Q1	1st round
Newleos Therapeutics, Inc.	US-Massachusetts	CNS	Phase I	94	Q1	1st round
Character Biosciences	US-New Jersey	Ophthalmology	IND Enabling	93	Q1	2nd round

Sources: EY analysis, Capital IQ and EY Strategy Edge.
Early stage includes venture capital investments that occur in the first or second venture rounds. Late stage include third and additional round.

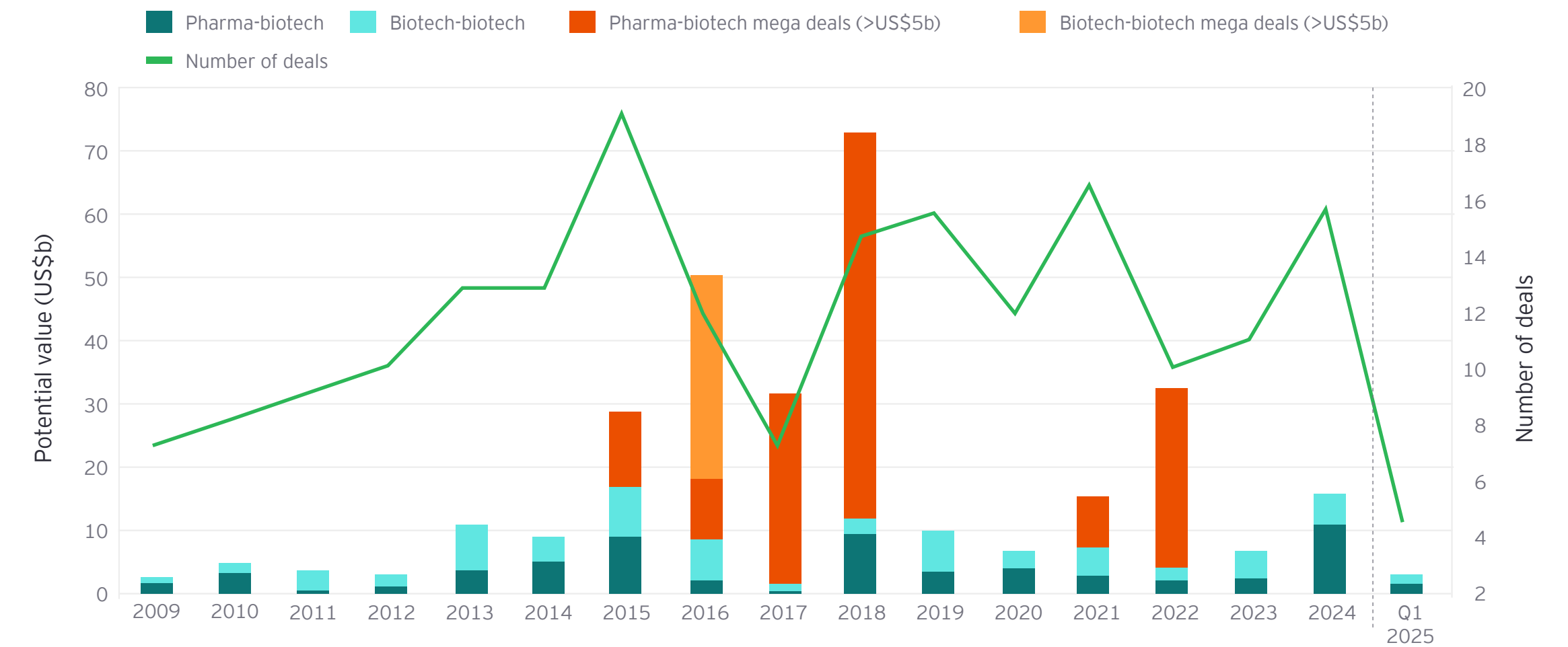
- 2024 saw limited M&A activity, after the surge of 2023, which saw nine deals of over \$5 billion in which a Big Pharma player acquired a biotech. Most prominent among this crop of 2023 acquisitions was Pfizer's \$43 billion move for Seagen and its antibody-drug conjugate technology, but Bristol Myers Squibb also invested \$23.9 billion in three deals for Karuna Therapeutics, Mirati Therapeutics and RayzeBio, while AbbVie spent \$18.8 billion to take out ImmunoGen and Cerevel, and Merck & Co, Biogen, Roche and Astellas also broke the \$5 billion mark.
- In 2024, by comparison, there were no acquisitions valued at over \$5 billion, the largest being the \$4.9 billion that Vertex paid for Alpine Immune Sciences and its kidney disease pipeline assets. The Johnson & Johnson acquisition of Intra-Cellular Therapies for \$14.6 billion in January 2025 bucked the trend, but the pattern since the end of 2023 has been for acquirers to seek smaller bolt-on acquisitions to enhance their portfolios, rather than seeking out major assets.

US M&As (2009-Q1 2025)



Sources: EY analysis, Capital IQ, EY Embryonic, Biomedtracker and company news.

European M&As (2009-Q1 2025)



Sources: EY analysis, Capital IQ, EY Embryonic, Biomedtracker and company news.

- This change in dealmaking approach is likely the result of several factors: a relative dearth of high-opportunity market-ready assets in the wake of the 2023 spending spree; the fact that some of the leading pharma companies with the most pressing need to make acquisitions to offset revenue loss to forthcoming patent expiries had already spent their available dealmaking capital in 2023; and the fact that the broader climate of economic uncertainty, particularly in the wake of the US election, has a probable deterrent effect on ambitious dealmakers.

- Among the relatively low-key deals of 2024-25, Johnson & Johnson's acquisition of neuropsychiatric/neurological-focused biotech Intra-Cellular Therapies is a stand-out, confirming the return of the CNS to the list of big therapeutic area targets in recent years. In general, while oncology has dominated dealmaking spend in recent years, the deals of 2024-25 saw a diversification of therapeutic area targets.
- Other large deals of 2024 saw Gilead pay \$4.3 billion in February to acquire CymaBay and its treatment for primary biliary cholangitis (PBC) (granted accelerated FDA approval in August) consolidating Gilead's position in liver disease therapeutics, Eli Lilly paid \$3.2 billion to acquire Morphic and its oral pipeline candidate for inflammatory bowel diseases, and Merck paid \$3 billion for the ophthalmology-focused EyeBio.

US and global M&As 2024

Company	Country	Acquired or merged company	Country	Total potential value (US\$m)	CVRs/ milestones (US\$m)
Novo Holdings A/S	Denmark	Catalent, Inc.	US	16,500	-
Vertex Pharmaceuticals Incorporated	US	Alpine Immune Sciences, Inc.	US	4,900	-
Gilead Sciences, Inc.	US	CymaBay Therapeutics, Inc.	US	4,300	-
Eli Lilly and Company	US	Morphic Holding, Inc.	US	3,200	-
Merck & Co., Inc.	US	Eyebiotech Limited	UK	3,000	1,700
Novartis AG	Switzerland	MorphoSys AG	Germany	2,774	-
H. Lundbeck A/S	Denmark	Longboard Pharmaceuticals, Inc.	US	2,600	-
Ono Pharmaceutical Co., Ltd.	Japan	Deciphera Pharmaceuticals, Inc.	US	2,400	-
Johnson & Johnson	US	Ambrx Biopharma Inc.	US	2,000	-
Genmab A/S	Denmark	ProfoundBio (Suzhou) Co., Ltd.	US	1,800	-
Biogen, Inc.	US	Human Immunology Biosciences, Inc.	US	1,800	650
Novartis AG	Switzerland	Mariana Oncology	US	1,750	750
Sanofi	France	Inhibrx, Inc.	US	1,700	-
Roche Holdings, Inc.	US	Poseida Therapeutics, Inc.	US	1,500	-
GSK plc	UK	Aiolos Bio, Inc.	US	1,400	400

Sources: EY analysis, Capital IQ and company news.

"Total potential value" includes up-front, milestone and other payments from publicly available sources. | Contingent Value Right (CVR).

US and global M&As 2025

Company	Country	Acquired or merged company	Country	Total potential value (US\$m)	CVRs/ milestones (US\$m)
Johnson & Johnson	US	Intra-Cellular Therapies	US	14,600	-
Novartis	Switzerland	Anthos Therapeutics, Inc.	US	3,100	2,150
Eli Lilly & Company	US	Scorpion Therapeutics	US	2,500	-
GlaxoSmithKline (GSK)	UK	IDRx, Inc.	US	1,150	150
Taiho Pharmaceutical	Japan	Araris Biotech AG	Switzerland	1,140	740
AstraZeneca	UK	EsoBiotec B.V.	Belgium	1,000	575
Jazz Pharmaceuticals plc	Ireland	Chimerix	US	935	-
Sun Pharmaceutical Industries Limited	India	Checkpoint Therapeutics	US	416	-
Paratek Pharmaceuticals	US	Optinose	US	330	-
Bristol Myers Squibb	US	Zseventy bio	US	286	-

Sources: EY analysis, Capital IQ and company news.

"Total potential value" includes up-front, milestone and other payments from publicly available sources.

- In 2025, three other Big Pharma players, in addition to Johnson & Johnson, paid over \$1 billion for an acquisition in Q1: Eli Lilly (\$2.5 billion for Scorpion, targeting breast cancer) and GlaxoSmithKline (\$1.2 billion for IDRX, a gastrointestinal cancer play) both targeted oncology indications while AstraZeneca paid \$1 billion for EsoBiotec, focused on cell therapy, and Novartis paid \$3.1 billion for Anthos, developing a next-generation blood thinner. This deal was notable since Novartis itself teamed up with Blackstone in 2019 to spin out Anthos as an independent company to develop a specific asset, before buying it back in 2025, indicating the complex ways pharma companies and financial investors may interact to advance innovation.

ALLIANCES

Alliances with big up-front payments, 2024 (US and global)

Company	Country	Partner	Country	Up-front payments (US\$m)
Novartis AG	Switzerland	PTC Therapeutics, Inc.	US	1,000
Genentech, Inc.	US	Regor Therapeutics Group	US	850
Arrowhead Pharmaceuticals, Inc.	US	Sarepta Therapeutics, Inc.	US	825
Sanofi	France	Novavax, Inc.	US	500
Coherus BioSciences, Inc.	US	Intas Pharmaceuticals Ltd.	India	483
Viartis Inc.	US	Idorsia Pharmaceuticals Ltd.	Switzerland	350
Kyowa Kirin Co., Ltd.	Japan	Kura Oncology, Inc.	US	330
Takeda Pharmaceutical Co. Ltd.	Japan	Protagonist Therapeutics, Inc.	US	300
Takeda Pharmaceutical Co. Ltd.	Japan	Keros Therapeutics	US	200
Nestle Health Science	Switzerland	Seres Therapeutics, Inc.	US	175
Chiesi Farmaceutici S.p.A.	ITALY	Gossamer Bio, Inc.	US	160
Novartis AG	Switzerland	Monte Rosa Therapeutics, Inc.	US	150
AbbVie Inc.	US	FutureGen Biopharmaceutical (Beijing) Co., Ltd.	China	150
Novartis AG	Switzerland	Arvinas, Inc.	US	150
Shionogi & Co. Ltd.	Japan	Maze Therapeutics	US	150

Sources: EY analysis, Biomedtracker and company news.
Deals that fall into the alliance category include alliances/collaboration, licensing arrangements, fee-for-service collaborations, swap/cross licensing arrangements, exclusive licensing arrangements, early licensing arrangements, distribution/marketing agreements, asset acquisitions, joint ventures, commercial rights exchanges, and option agreements.

Alliances with big up-front payments, 2025 (US and global)

Company	Country	Partner	Country	Up-front payments (US\$m)
Roche Holding AG	Switzerland	Zealand Pharma A/S	Denmark	1,650
Sanofi	France	Dren Bio, Inc.	US	600
AbbVie Inc.	US	Gubra ApS	Denmark	350
Ionis Pharmaceuticals, Inc.	US	Ono Pharmaceutical Company, Ltd.	Japan	280
Gilead Sciences, Inc.	US	LEO Pharma A/S	Denmark	250
MeiraGTx Holdings plc	US	Hologen Ltd	Guernsey	200
Biogen, Inc.	US	Stoke Therapeutics, Inc.	US	165
Nippon Shinyaku Co., Ltd.	Japan	Regenxbio Inc.	US	110
Eli Lilly and Company	US	Mediar Therapeutics, Inc.	US	99
Sciwind Biosciences Co., Ltd.	China	Verdiva Bio Limited	UK	70
Les Laboratoires Servier	France	Black Diamond Therapeutics, Inc.	US	70
Vertex Pharmaceuticals Incorporated	US	Orna Therapeutics (through its ReNAGade Therapeutics Inc. subsidiary)	US	65
AbbVie Inc.	US	Xilio Therapeutics, Inc.	US	52
Duality Biologics	China	Avenzo Therapeutics Inc.	US	50
Lepu Biopharma Co., Ltd.	China	ArriVent Biopharma, Inc.	US	47

Sources: EY analysis, Biomedtracker and company news.

ALLIANCES

Big biobucks alliances, 2024 (US and global)

Company	Country	Partner	Country	Total potential value (US\$m)	Up-front payments (US\$m)
Arrowhead Pharmaceuticals, Inc.	US	Sarepta Therapeutics, Inc.	US	11,375	825
Bristol Myers Squibb	US	Prime Medicine, Inc.	US	3,555	55
Novartis AG	Switzerland	Dren Bio, Inc.	US	2,975	125
Novartis AG	Switzerland	PTC Therapeutics, Inc.	US	2,900	1,000
Viartis Inc.	US	Idorsia Pharmaceuticals Ltd	Switzerland	2,750	350
Novartis AG	Switzerland	Monte Rosa Therapeutics, Inc.	US	2,250	150
Astellas Pharma, Inc.	Japan	AviadoBio Ltd.	UK	2,230	50
Takeda Pharmaceutical Co. Ltd.	Japan	AC Immune SA	Switzerland	2,200	100
Roche Holding AG	Switzerland	MOMA Therapeutics, Inc.	US	2,066	66
ImmuneOnco Biopharmaceuticals (Shanghai) Inc.	China	Instil Bio, Inc.	US	2,050	50
AbbVie Inc.	US	Gilgamesh Pharmaceuticals, Inc.	US	2,015	65
Genentech, Inc.	US	Sangamo Therapeutics, Inc.	US	1,950	50
AbbVie Inc.	US	MedinCell SA	France	1,935	35
Merck & Co., Inc.	US	Mestag Therapeutics	UK	1,900	-
Flare Therapeutics Inc.	US	Roche Holding AG	Switzerland	1,870	70

Sources: EY analysis, Biomedtracker and company news.

- Across the whole of 2024, the total potential value of biopharma alliances amounted to around \$169.3 billion, but only 8% of that value was paid up-front. These deals have mostly involved limited initial payments to biotechs, with most of the potential deal value locked up in “biobucks”, payments contingent on future clinical milestones being met. The largest alliance deal of 2024-25 saw Sarepta sign an alliance worth a potential \$11.4 billion (\$825 million, or just over 7% of which was paid up-front) for Arrowhead’s small interfering RNA (siRNA) programs in multiple therapeutic indications. RNA-based therapeutics were also the focus of Vertex’s alliance with Orna Therapeutics, the second-largest alliance deal of 2025 to date.
- The Sarepta deal indicates another key trend in alliance deals: While in their M&A strategies, pharma acquirers have taken a relatively cautious approach to new modality biotechnology platforms; they have been more willing to invest in alliance partnerships that allow them access to these potentially path-breaking innovations. As well as RNA therapeutics, other new modalities were among the key alliance target, with Bristol Myers Squibb paying \$55 million up-front (with a total potential deal size of over \$3.5 billion) to acquire access to Prime Medicine’s gene editing technologies for developing T cell therapies in immunology and oncology indications.

Big biobucks alliances, 2025 (US and global)

Company	Country	Partner	Country	Total potential value (US\$m)	Up-front payments (US\$m)
Roche Holding AG	Switzerland	Zealand Pharma A/S	Denmark	5,250	1,650
Vertex Pharmaceuticals Incorporated	US	Orna Therapeutics (through its ReNAGade Therapeutics Inc. subsidiary)	US	4,350	65
Sciwind Biosciences Co., Ltd.	China	Verdiva Bio Limited	UK	2,470	70
AbbVie Inc.	US	Gubra ApS	Denmark	2,225	350
AbbVie Inc.	US	Xilio Therapeutics, Inc.	US	2,152	52
Sanofi	France	Dren Bio, Inc.	US	1,900	600
Gilead Sciences, Inc.	US	LEO Pharma A/S	Denmark	1,700	250
AbbVie Inc.	US	Neomorph, Inc.	US	1,640	-
Boehringer Ingelheim GmbH	Germany	Synaffix B.V.	Netherlands	1,300	-
Eli Lilly and Company	US	Magnet Biomedicine	US	1,290	40
Lepu Biopharma Co., Ltd.	China	ArriVent Biopharma, Inc.	US	1,207	47
Duality Biologics	China	Avenzo Therapeutics Inc.	US	1,200	50
AbbVie Inc.	US	Simcere Pharmaceutical Group	China	1,055	-
Roche Holding AG	Switzerland	Oxford BioTherapeutics	UK	1,036	36
Novartis AG	Switzerland	Light Horse Therapeutics Inc.	US	1,025	25

Sources: EY analysis, Biomedtracker and company news.

- The largest alliance deal of the first quarter of 2025 saw Roche investing \$1.7 billion up-front (with \$5.3 billion total potential investment) in a partnership with Zealand Pharma to develop a candidate drug in obesity. As with the VC deals seen in the 2024-25 period, this alliance underscores the huge emergent potential of the anti-obesity market. Zealand’s drug is an amylin analogue, and the potential to combine it with Roche’s own GLP-1 agonist is perceived as a potential differentiator in this increasingly lucrative but competitive space.

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James Evans, EY Global Life Sciences Senior Analyst, contributed to the report's analysis and wrote its databook and an EY perspective.

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