LIFE SCIENCES
2025 OUTLOOK

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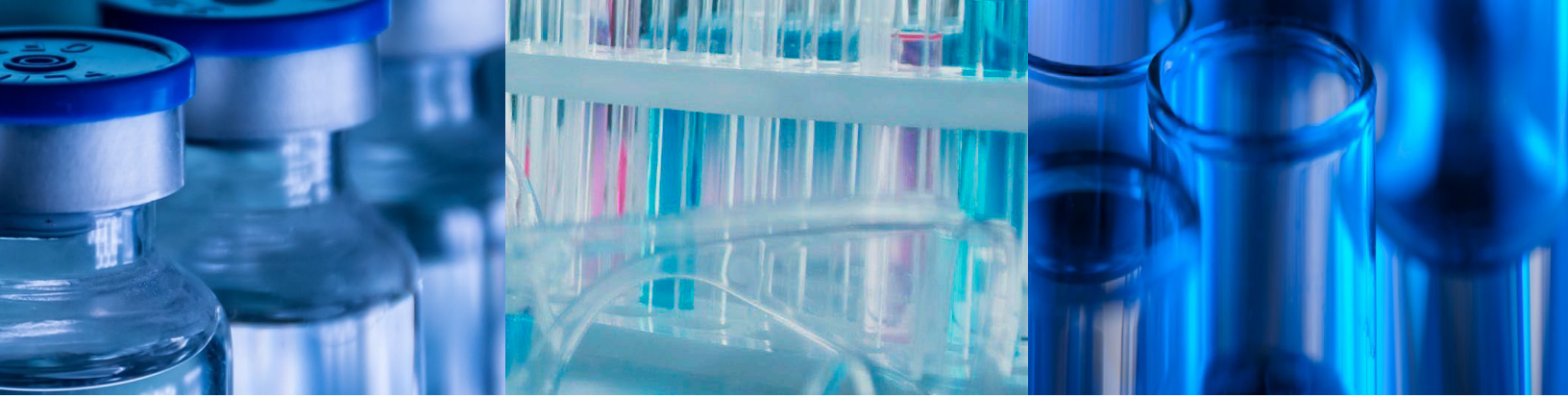
Contents



Introduction

2025 Life Sciences Industry Outlook

The life sciences industry is entering 2025 with a largely favorable set of catalysts for the coming year, but also with some larger risks that will impact companies differently. Key developments in 2024 laid the groundwork for the coming year, including the following:

- a modest year-over-year increase in M&A activity in 2024, which should continue and accelerate in 2025 with a more favorable regulatory environment;
- a modest increase in capital markets activity in 2024, including a nearly 55% increase in initial public offerings (off a low base level to start), which is also expected to continue to gain momentum in 2025;
- continued growth in non-dilutive financing through debt, royalty financings and synthetic royalty financings, with a deeper pool of capital on the investor-side and a favorable macro-economic environment, provided that inflation does not return, and interest rates increase;
- continued momentum in licensing activity in 2024, including an increase in out-licensing deals from China, which is expected to continue into 2025 depending on geopolitics; and
- significant strides in artificial intelligence (AI) applications, including the release of AlphaFold3, which predicts not only structures of proteins, but also the interaction of complex proteins, potentially dramatically accelerating drug discovery, as well as the development of AI tools to help design and manage clinical trials, lowering costs and increasing the likelihood of success.

Against this backdrop, we must also take into account the expected impacts of a shifting geopolitical environment and regulatory landscape driven by the incoming Trump administration. The life sciences sector stands to gain from continued innovation and a number of positive tailwinds, but must also navigate risks related to macroeconomic volatility, potential supply chain disruptions, and evolving public policy priorities. This report provides an integrated outlook on the industry's key areas, including mergers and acquisitions (M&A), capital markets, royalty finance, collaborations and licensing, regulatory policies, and AI, identifying trends and uncertainties that will shape the year ahead.

Mergers and Acquisitions

M&A activity in 2024 was steady, with a modest increase from 2023, but still less dynamic than in prior years. Deal values remained restrained by cautious regulatory oversight, higher interest rates, and macroeconomic headwinds. Smaller transactions were more prominent, with companies focusing on incremental pipeline enhancements, particularly in the autoimmune and cardiometabolic field. As we move into 2025, a more predictable regulatory environment and potentially declining interest rates may lay the groundwork for a bigger uptick in M&A activity, although it remains far from certain whether we will see a dramatic surge in M&A volume.

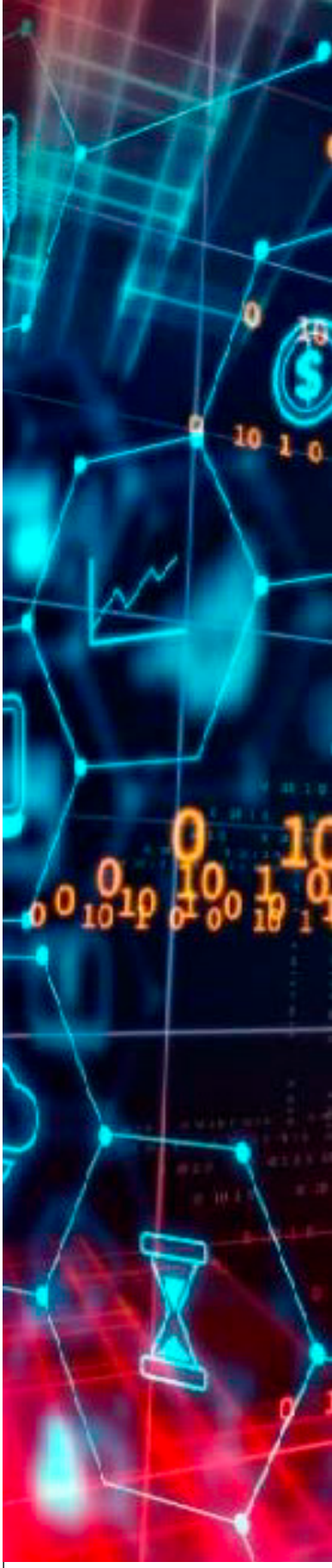
Key drivers for 2025 will include potentially lower borrowing costs, pipeline pressures from a looming $300-billion patent cliff for large pharma, and an anticipated return to regulatory norms at the FTC under the Trump administration, all of which is expected to better enable larger, transformative deals. Therapeutic areas such as oncology, radiopharmaceuticals, and cardio-metabolic conditions—bolstered in particular by the success of GLP-1 drugs (a $50 billion market in 2024)—are likely to see heightened activity. Notably, the impact of GLP-1 drugs is expected to extend beyond traditional therapeutic areas, influencing related markets such as medical devices and surgical procedures by potentially reducing demand for bariatric surgeries and other obesity treatments, as well as treatments for conditions that are caused by metabolic dysfunction (e.g., insulin resistance) that accompanies obesity.

Notable 2024 deals included Vertex Pharmaceuticals' acquisition of Alpine Immune Sciences for $4.9 billion and Gilead's $4.3 billion acquisition of CymaBay Therapeutics, each of which underscored an appetite for strategic growth, albeit through mid-sized acquisitions. Eli Lilly's $3.2 billion acquisition of Morphic and Novartis' $2.9 billion acquisition of MorphoSys also highlighted the ongoing demand for innovative assets to fill pipeline gaps. In addition, private equity's role in M&A is expanding, targeting scalable platforms like CROs and specialty biotechs. The trend of bolt-on acquisitions is expected to continue into 2025, with companies leveraging smaller, strategic transactions, particularly in the private company space, to bolster their pipelines and expand technological capabilities. Larger deals, aimed at addressing high-value areas like neurology, advanced diagnostics, and rare diseases, may also feature prominently. Additionally, platform technologies such as CRISPR-based gene editing and cell therapies are emerging as critical areas for consolidation as companies seek to diversify their therapeutic portfolios and gain capabilities in these cutting-edge fields.

Reverse merger activity remained robust in 2024, with failed companies seeking a path to recycle cash and a glut of private companies aiming to reach the public markets against the backdrop of a lukewarm capital market environment. These trends are expected to continue as concurrent PIPEs allow private companies to lock in a valuation earlier than the traditional IPO process and make reverse merger a viable IPO alternative, such as the Q4 2024 reverse mergers and concurrent PIPEs for Jade Biosciences ($300 million PIPE) and Crescent BioPharma ($200 million PIPE).

Risks to the 2025 M&A environment include geopolitical disruptions, fluctuating valuations, inflation (and the impact on interest rates) and uncertainty surrounding regulatory priorities, particularly around drug pricing and access. Nonetheless, a reasonably favorable macroeconomic environment, a more favorable regulatory environment, ongoing innovation and the ever-looming patent cliffs for large pharma are expected to drive a more robust M&A environment in 2025.

Capital Markets

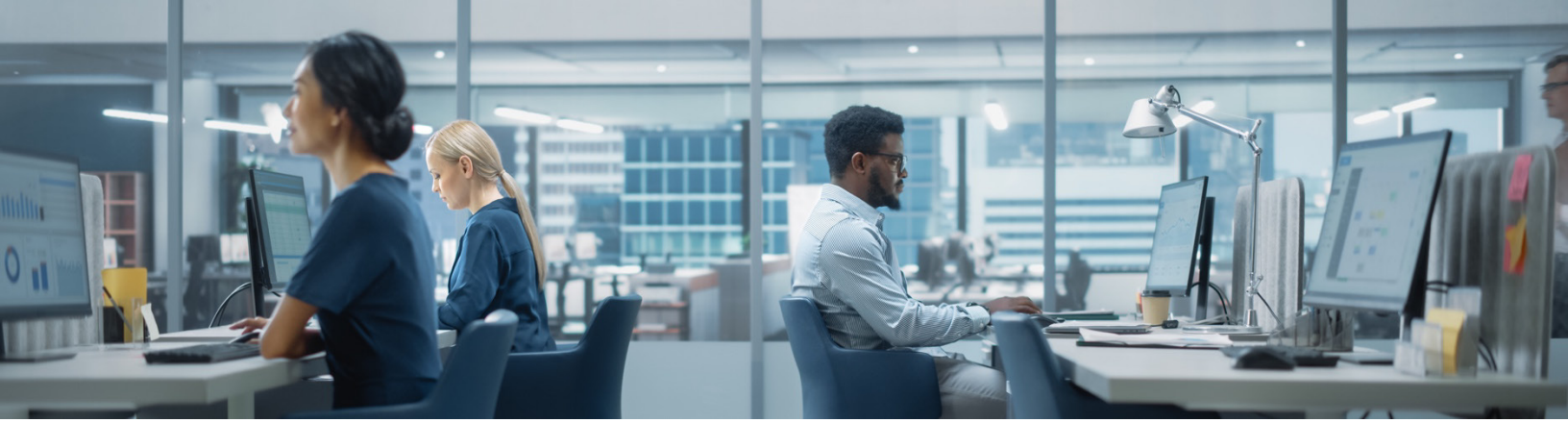


2024 marked the beginning of recovery for life sciences capital markets, with biotech equity capital markets activity increasing to 260 transactions raising an aggregate of $47 billion, compared to 197 deals raising $29 billion in 2023. 2024 biotech equity capital markets (ECM) activity was the third highest in terms of number of deals and second highest in amount raised since 2014—eclipsed only by the deal frenzy of 2020 and 2021. On the private capital markets side, venture capital investment reached $34 billion, favoring high-demand therapeutic areas, including oncology, gene therapy, and immunology, though funding remained concentrated in late-stage companies with de-risked assets. Further demonstrating this favorable momentum, 48% of senior leaders and investors from across the global healthcare sector surveyed by Jefferies in 2024 said that the economic environment and outlook is having a major adverse impact on the ability of healthcare companies to raise capital, compared to 68% in 2023. Despite market volatility and slowing in the fourth quarter of 2024 during the election cycle, continued (albeit modest) interest rate cuts, easing inflation and improving economic conditions are expected to set the stage for a resurgence of capital markets activity in 2025. However, a resurgence of inflation in 2025 would likely slow or reverse this projected growth.

IPO activity continued to increase modestly in 2024 with 17 deals, compared to 11 in 2023. The number of preclinical companies accessing the IPO markets dropped to its lowest level since 2017 (6% versus a 10-year high of 27% in 2021). The true star of 2024—and a shining endorsement that biotech investors are ready to open their wallets again—was the follow-on market. 2024 represented the busiest year for follow-on issuances since 2020, with 236 offerings raising an aggregate of $41.4 billion in proceeds. Deal execution trended towards confidentially marketed offerings, with wall-crossed deals, PIPEs and registered direct offerings representing 80% of the total number of follow-ons in 2024.

These confidentially marketed offerings allow companies to preview clinical trial results or other material announcements, test investor interest, explain complicated data sets, and refine messaging prior to public disclosure. These also allow companies to announce fully priced offerings concurrent with releasing data, often addressing a financing overhang and the frequent drop on positive data as investors expect a financing (and additional dilution) to follow. Despite these advantages, PIPEs have continued to be criticized by some market observers as inherently unfair to retail investors who are not provided the opportunity to invest. We do not expect the SEC in the new administration to further regulate PIPEs, although how investment funds trade in other stocks may come under scrutiny for so-called “shadow trading.”

Given this positive momentum from 2024, we expect 2025 will likely see growth in both public and private investment avenues. Early-stage biotechs are projected to gain renewed interest as economic conditions stabilize, though investors may remain selective, prioritizing high-value and/or de-risked assets with clear paths to commercialization. Although 2025 may start off slowly, IPO activity is likely to expand further, with a backlog of companies that delayed public offerings in recent years now aiming to enter the market. In the Jefferies survey, 64% of respondents indicated that they expect the IPO market to return in 2025, compared with less than half in 2023. The competitive IPO market is expected to highlight therapeutic innovation and strategic differentiation, with oncology, immunology, cell and gene therapies, and AI-driven drug discovery as leading sectors.



Meanwhile, emerging areas like de-extinction science and other novel therapeutic modalities may begin to capture investor attention and drive further interest and investments in synthetic biologic and genetic engineering.

Notable 2024 deals included CG Oncology's $437 million upsized IPO in January 2024 and $238 million follow-on in December 2024, which demonstrated investor appetite for promising companies, and significant VC rounds for AI-driven platforms like Insilico Medicine, which exemplified investor confidence in high-value sectors. Moderna's $1 billion investment in next-generation vaccines underscored the sector's innovative potential. Companies leveraging innovative approaches such as digital health tools, precision medicine platforms, and automation technologies also garnered attention from investors, further diversifying capital market activities.

While optimism remains high, uncertainties persist. Geopolitical tensions, including potential new tariffs and supply chain disruptions, which also threaten to increase inflation and interest rates, may negatively impact investor sentiment. Regulatory scrutiny over drug pricing and patent protection could introduce additional complexities. Furthermore, challenges in achieving measurable returns from emerging technologies, such as generative AI applications in drug discovery, could temper enthusiasm.

The outlook for 2025 is optimistic overall, with the interplay of innovation, favorable economic conditions, and investor interest driving momentum. Companies equipped to adapt to shifting conditions and demonstrate tangible progress in innovative areas will be best positioned to capture growth opportunities. The integration of sustainability and ESG metrics into investment decisions is also likely to shape capital flows, with life sciences companies that align with these priorities gaining a competitive edge.

Special thanks to Jefferies for contributing data regarding 2024 biotech new issuances.

Royalty Finance

Royalty finance continued to be a critical source of funding for the market in 2024, providing non-dilutive capital to life sciences companies seeking non-dilutive capital or funding to offset R&D expenditures. The overall deal volume in this space increased slightly year-over-year across a broad base of investments, reflecting a steady deal environment and continued deployment of capital in this asset class. Significant transactions included Servier's $905 million royalty monetization and Sanofi's $525 million royalty monetization, both with Royalty Pharma, as well as BridgeBio's $500 million synthetic royalty financing with Blue Owl and CPP Investments. These deals, along with the other traditional and synthetic royalty finance deals completed in 2024, highlight the appeal of monetizing predictable revenue streams for both sellers and investors. Aggregate transaction volume across the largest and most active royalty investment funds increased slightly to $5.5 billion in 2024 from $5.3 billion in 2023, based on publicly announced transactions.[1]

The robust demand for royalty assets is expected to continue in 2025, with increased activity in royalty monetizations, synthetic royalty financings, and royalty/debt hybrid structures. Both biotech and large pharma companies with late-stage clinical pipelines or marketed products will continue to selectively leverage these assets to provide upfront capital to fund the completion of clinical programs to regulatory approval, fund commercialization, or underwrite the development of other programs. The evolving landscape for royalty finance has also been marked by a growing investor base, with institutional investors seeking returns uncorrelated with the broader stock market or economy and that can be either higher risk (with a greater potential return) or lower risk with a predictable set of future cashflows (and a corresponding lower rate of return). Therapeutic areas such as ADCs and gene therapies are expected to attract substantial interest from investors, driven by advancements in precision medicine and personalized therapies.

Clinical funding partnerships are also projected to grow in 2025, allowing companies to fund clinical development of late-stage programs with non-dilutive capital. This approach is particularly beneficial for smaller biotechs seeking to minimize dilution, but is also utilized by large pharma to improve P&L statements. Notable 2024 deals like Blackstone's $750 million agreement with Moderna to fund the development of its flu vaccines underscore the potential of these partnerships to fund innovative assets.

Challenges to the royalty deal environment in 2025 include interest rates (which impact discount rates and valuations), regulatory uncertainty, including the status of the Inflation Reduction Act, and the strength of equity capital markets, which offer a competing avenue to raise capital. Geopolitics may also impact royalty finance for cross-border drug programs or royalty entitlements, potentially favoring assets that are principally valued based on U.S. rights.

Despite these challenges, the appeal of predictable cash flows that are uncorrelated with the capital markets and offering reduced dilution to the sellers should continue to drive a steady volume of financing transactions in the new year. Where market conditions are mixed – such as with interest rates and equity valuations in a mid-range setting – we may see an increase in innovative hybrid financing models, such as equity-linked structures, further diversifying capital-raising strategies.

[1] Gibson Dunn survey of publicly announced royalty finance transactions by the largest / most active funds in the space.

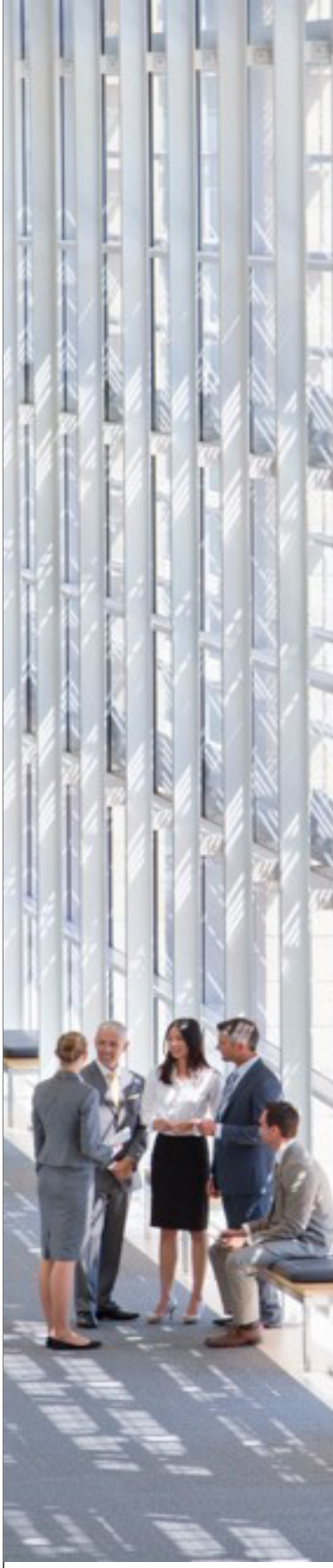
Collaborations and Licensing

Licensing activity in the life sciences sector saw continued momentum in 2024, driven by advancements in antibody-based therapies, immuno/oncology, rare diseases, cell and gene therapies, and AI integration in R&D. Biotechs continue to drive innovation, accounting for 72% of all new regulatory filings.[2] The anticipation of patent cliffs at the end of the decade, and the concomitant need to restock drug pipelines in turn drive growth in collaborations and licensing deals. Sarepta Therapeutics' transformational transaction with Arrowhead Pharmaceuticals with near-term payments to Arrowhead in excess of $1 billion and total potential payments of more than $11 billion, saw Sarepta adding to its early- and mid-stage pipeline 4 clinical-stage and 3 preclinical-stage programs in muscle, central nervous system (CNS), and rare pulmonary disorders, and future IND-ready constructs for six targets across skeletal muscle, cardiac and CNS.

Cross-border licensing from China has seen substantial growth, reflecting the country's robust innovation ecosystem despite geopolitical tensions. In recent years, the nature of transactions between other countries and China has shifted. Historically, U.S., European or Japanese pharmaceutical companies sought to partner their drug programs for commercialization in China. More recently, innovative drugs coming out of China are being licensed or sold to development partners in the U.S. or Europe. Merck diversified its oncology pipeline through the exclusive in-license of a Phase 1 PD-1/VEGF bispecific antibody from LaNova Medicines in exchange for $588 million upfront and up to $2.7 billion in potential milestone payments. Based on the pace of innovation in China, this trend should continue, although likely to be impacted by changing geopolitics. These cross-border licensing transactions will play a critical role in fostering global collaboration, particularly in oncology (including ADCs) and high-growth therapeutic areas such as cell and gene therapies and rare diseases.

Despite increases in certain areas, overall deal volume and deal value decreased in 2024.[3] The percentage of deal value tied to upfront payments decreased to 5% in 2024 from 7% in 2023.[4] A larger percentage of deal value shifted to milestone payments and a larger percentage of large pharma deals focused on Phase III assets, demonstrating a desire from in-licensing partners to limit deal risk. Takeda's 50:50 U.S. co-development, co-commercialization and profit-share, and rest of world exclusive license for Protagonist's Phase 3 Rusfertide in Polycythemia Vera exemplified this model.

Looking ahead, the coming years are expected to witness transformative shifts in licensing activity, with trends shaped by a combination of innovation, digital transformation, and geopolitical factors. AI-driven insights will increasingly influence licensing strategies, with companies leveraging generative AI to identify high-potential assets and optimize R&D portfolios. The looming patent cliff will continue to spur interest by large pharma in licensing to fill pipeline gaps, alongside increased mergers and acquisitions. In turn biotechs are predicted to adopt a more aggressive approach toward licensing as they try to meet growing patient demands, shorten development timelines, and more generally seek to generate revenue and fund ongoing R&D initiatives.



[2] IQVIA; Atlas Venture analysis of FDA approvals in 2024 (CDER and CBER); Data as of 9/19/2024, https://www.youtube.com/watch?v=szwRUERnoOM at 39:30.
[3] *Biopharmaceutical Sector Update*, October 2024, Stifel, https://www.stifel.com/newsletters/investmentbanking/bal/marketing/healthcare/biopharma_timopler/ biopharmamarketupdate_10.07.2024.pdf.
[4] *Q3 2024 Biopharma Licensing and Venture Report*. October 2024, J.P. Morgan, https://www.jpmorgan.com/content/dam/jpmorgan/documents/cb/insights/outlook/jpm-biopharma-deck-q3-2024-final-ada.pdf.

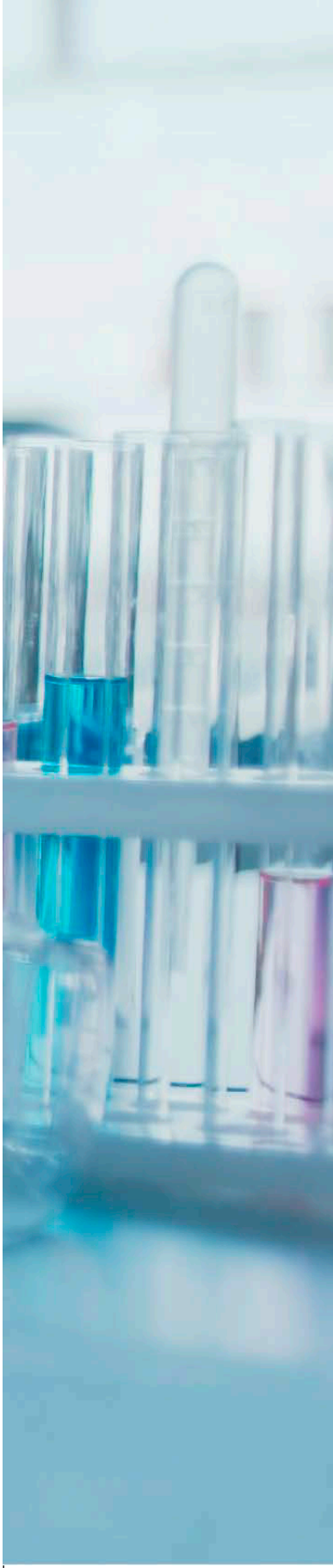
Regulatory Environment

The regulatory environment for life sciences in 2025 will be heavily influenced by the incoming Trump administration's policies, which are expected to focus on deregulation while increasing scrutiny on foreign manufacturing dependencies and trade practices. Key areas of interest include drug pricing, antitrust oversight, and policies to boost domestic production of critical pharmaceutical components.

Drug pricing reforms could potentially involve rolling back provisions of the Inflation Reduction Act (IRA), thereby alleviating pricing pressures for manufacturers but at the risk of raising public concerns about affordability. While industry groups will be lobbying for changes to the IRA, including as part of any reconciliation package, we expect that this is not likely to be a priority to the incoming administration or Congress. Accordingly, we believe there is a low probability of any meaningful amendments to the Medicare price negotiation provisions in the IRA. Meanwhile, the administration's less stringent approach to antitrust enforcement is likely to encourage M&A activity, particularly for transformative deals addressing pipeline gaps, as discussed above. This could spur confidence in dealmaking for high-value assets, particularly in areas like oncology and rare diseases.

Geopolitical tensions are expected to persist and likely escalate, with expected tariffs on Chinese imports, potentially including pharmaceutical components, likely to disrupt global supply chains. The BioSecure Act, which aims to incentivize domestic manufacturing, could pose challenges for Chinese manufacturers like WuXi, while offering opportunities for U.S. or Europe-based production. If the BioSecure Act is introduced again in Congress, we expect that it would find a broad base of support among many in Congress and President Trump. However, Senator Rand Paul, the incoming chair of the Senate Homeland Security and Governmental Affairs Committee (the committee of relevant jurisdiction) is on record as being opposed to the act, which may complicate its passage in the Senate. If the bill advances out of committee, the likelihood of passage and being signed into law is reasonably high given the political realities of US-China relations and a desire to encourage onshoring and/or friend-shoring of key manufacturing activities, including the production of drugs and biologics.

At the FDA, we expect that the agency will continue to prioritize expedited approvals for innovative therapies and streamlined clinical trial processes. This aligns with efforts to fast-track cutting-edge treatments like gene therapies and mRNA vaccines, building on the FDA's newly adopted START program.



The Role of AI in Life Sciences

Artificial intelligence (AI) has emerged as a potentially transformative force in life sciences, with the promise of delivering significant advancements in drug discovery and clinical trial optimization. Generative AI has been particularly impactful, enabling companies to reduce R&D timelines and costs while propelling more AI-discovered drugs into the clinic. The compound annual growth rate for the number of AI-discovered molecules in clinical trials from 2014 to 2023 is approximately 60%, with an exponential ramp after 2020 (and with the most significant acceleration starting in 2022). But AI-discovered molecules are not just accelerating the timeline to enter the clinic, they are performing better in clinical trials. A 2024 study found that AI-discovered molecules had an 80-90% success rate in Phase 1 clinical trials, which is well above the historical industry averages.[5]

In 2025, AI adoption is expected to expand across the drug discovery and development cycle. Drug discovery and personalized medicine will remain key areas where AI can accelerate development, with AI enabling tailored therapies and more efficient trial designs. AI's ability to analyze large datasets from clinical, genetic, epigenetic, and real-world evidence will drive innovation in treatment protocols. Operationally, AI is expected to enhance regulatory compliance, cost management, and supply chain efficiency, addressing some of the industry's most pressing challenges.

AI investments are projected to rise, with nearly 60% of executives planning increased spending on AI-enabled solutions. Companies that integrate AI most effectively will gain a competitive edge, achieving material cost reductions in operational areas and potentially significantly accelerating time-to-market for new products. Use cases such as generative AI for molecule design, AI-enabled trial monitoring, and patient stratification are expected to see broader implementation.

Scaling AI systems remains a challenge, requiring robust data gathering and potentially new support infrastructure. Companies must also address ethical concerns and transparency in AI decision-making to build trust with stakeholders (including the patient community and KOLs), as well as regulators. Regulatory uncertainties around AI adoption in healthcare, including data privacy, informed consent and potential errors or bias in algorithms, has the potential to add another layer of complexity, necessitating careful navigation.

[5]Jayatunga MK, Ayers M, Bruens L, Jayanth D, Meier C. *How successful are AI-discovered drugs in clinical trials? A first analysis and emerging lessons*. Drug Discovery Today. 2024 Jun;29(6):104009. doi: 10.1016/j.drudis.2024.104009.

AlphaFold 3, which was unveiled in 2024, is an AI model capable of accurately predicting 3D protein structures as well as interactions of complex biomolecular assemblies, including proteins, DNA, RNA, and ligands, allowing researchers to visualize how various molecules fit together within a cellular context. This development has the potential to significantly advance drug discovery and understanding of biological processes. Unlike previous versions of AlphaFold, AlphaFold 3 can predict how multiple proteins interact with each other within a complex. This model has proven to be highly accuracy in predicting the structure of various biomolecular complexes, including those with previously unseen interactions. By understanding how drugs bind to proteins, AlphaFold 3 has the potential to significantly accelerate drug design and development.

Advances in explainable AI are also expected to address regulatory concerns by improving the interpretability of AI-driven decisions. Meanwhile, AI is playing a growing role in clinical trial design, particularly in optimizing patient recruitment and ensuring trial diversity.

In 2025, AI's transformative potential will shape the competitive landscape in life sciences. Companies that address the challenges of scaling, governance, and regulatory alignment will set new benchmarks for innovation and operational efficiency. AI's impact on medical breakthroughs, productivity, and patient outcomes will continue to redefine industry standards. Collaboration between technology companies and biopharma firms is expected to deepen, fostering innovation in areas such as digital therapeutics and real-world evidence generation.

Conclusion

The life sciences industry is poised for an eventful year in 2025, driven by accelerating innovation (at times powered by increasingly powerful AI models), strategic imperatives driving deal-making activity, continued innovation in capital formation, and a more hospitable deal environment. Weighing against the industry is a set of geopolitical challenges, accelerating de-globalization, potential populist policies, and the potential resurgence of inflation and a flat or even rising interest rate environment.

Despite these challenges, we remain optimistic that 2025 will be a good year for the industry, with innovation propelling the market forward, although with continued segmentation in biotech between the haves and have-nots in terms of valuations, the ability to raise capital, and M&A prospects. Large pharma will be more active in a more hospitable regulatory environment and a return to regulatory norms and the FDA continue to focus on finding ways to facilitate the development and expedite the approval of drugs for serious or life-threatening conditions, particularly for rare diseases. Adding to this, AI will become more a daily part of the industry and will improve efficiency, lower development costs, and accelerate development timelines, albeit in a piecemeal fashion.

Companies that best adapt to this new paradigm will be well-positioned to lead in 2025.

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