

# 2024



## Biopharmaceutical Sector Update

Halftime Report, July 15, 2024



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# Past Issues

If you wish to be added to the mailing list for this publication, please notify Natasha Yeung

([yeungn@stifel.com](mailto:yeungn@stifel.com)). Past issues:

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[September 5, 2023](#) (FTC, IRA, Depression)

[August 21, 2023](#) (Covid, China)

[August 7, 2023](#) (Employment, Reading)

[July 24, 2023](#) (Alzheimer's Disease)

[July 7, 2023](#) (Biotech market review – H1 '23)

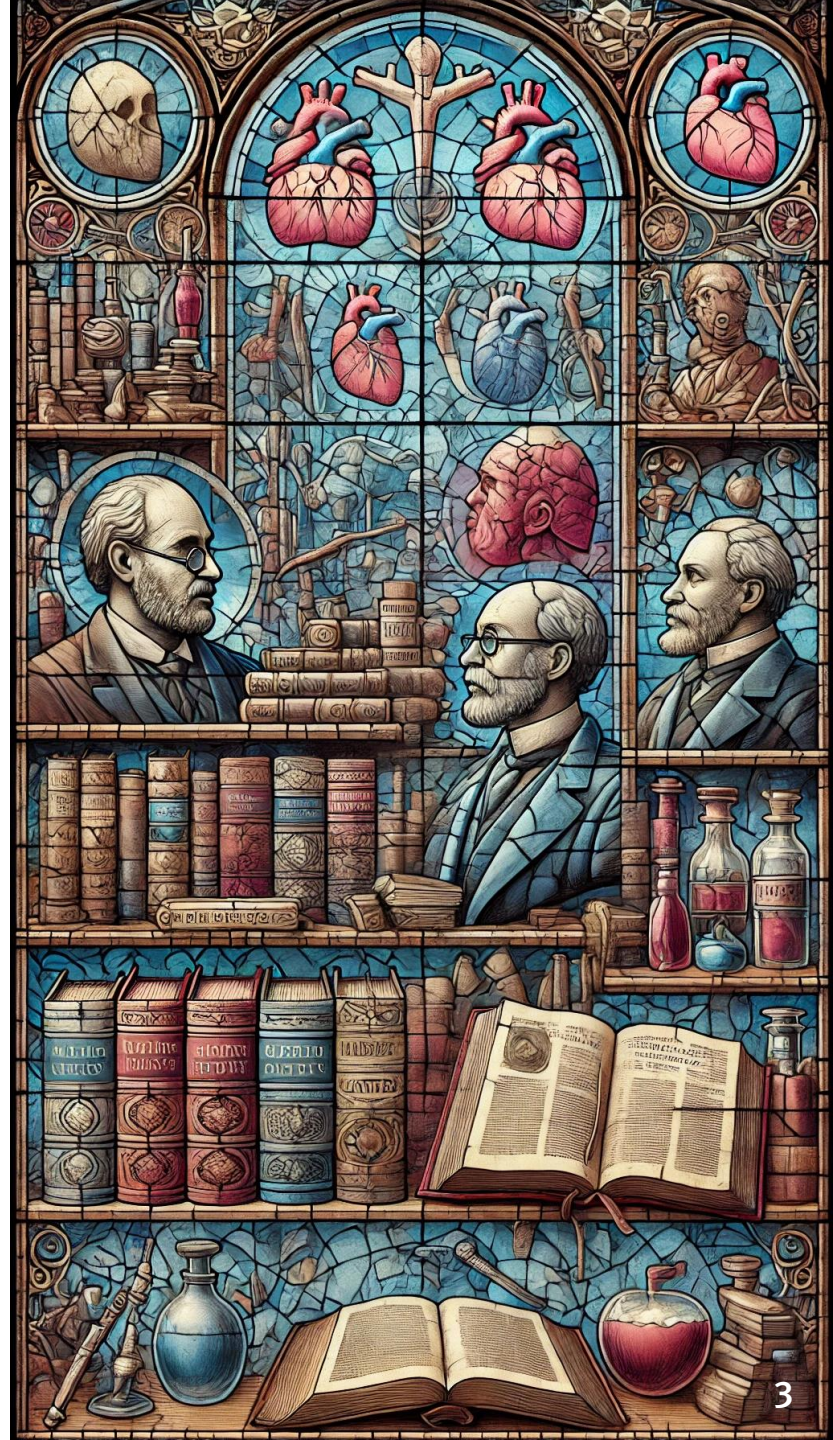
[July 1, 2023](#) (Obesity drugs)

[June 19, 2023](#) (Generative AI)

[June 12, 2023](#) (IRA, State of Industry)

[May 29, 2023](#) (Oncology update)

[May 22, 2023](#) (FTC case on Amgen/Horizon)





# Welcome to 2024 Halftime

Welcome to the Stifel Mid-2024 Halftime Report on the Biotech Market. This report takes stock of where the market is midyear and where we think it's going.

We have spoken to quite a few investors in recent weeks and can report that sentiment isn't great. But it's also not terrible. Investors were very active in Q1 in the public markets and have pulled back due to negative macro factors. The "higher for longer" Fed stance did not exactly brighten up the markets. Election year M&A dynamics haven't helped either. Why poke the antitrust bear in 2024?

We are now seeing the biotech market turn positive with much improved inflation numbers. Market performance last week was very strong (biotech EV's worldwide rose 12.8% after a great CPI number). A turning market typically comes with hope and trepidation. While investors are hoping for good results in the second half of 2024, they are not positioned aggressively. Specialist fund performance so far this year has been mixed. Many high conviction long-biased funds have done well whereas others who run large short books and trade around events have had a rough go. Today's investor is heads down - working the portfolio while considering numerous privates, PIPEs and IPOs.

We do expect that a strong biotech market recovery will take hold in 2024 but that it will be bumpy. Investors are willing to take on risk, but they do expect to get amply paid for it. The U.S. Presidential election is adding substantial uncertainty as it's not at all clear whether Biden will stay in the race. Last weekend's assassination attempt on Trump has added complexity to an already complex year. Most fund managers don't quite know what to make of the election as a factor for biotech. We do think the market is positioned to perform well after the election, no matter what the outcome. And, rationally anticipating this, we are biased positively for the XBI for the rest of the year (we still think we end up well over 100 in 2024). Biotech sector fundamentals remain highly attractive. The quality of stories is good. Science is making amazing progress. Further, wealth is rising around the world with positive implications for biopharma. This goes well beyond the U.S. In this issue, for example, we highlight progress in India. We remain highly optimistic and wish you a great remainder of 2024!





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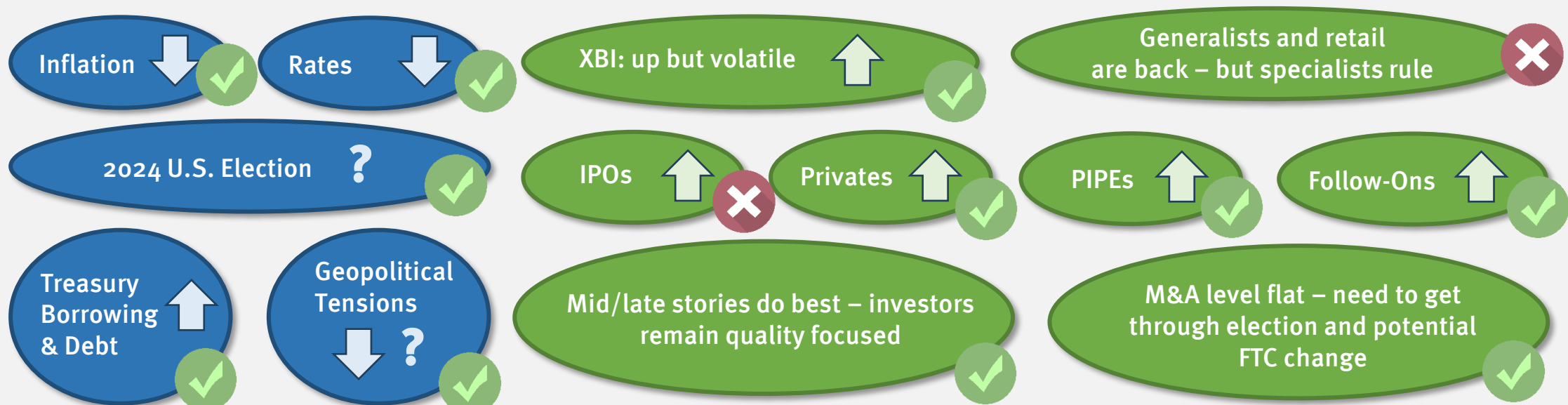


# How Did Our January 2024 Predictions Pan Out?

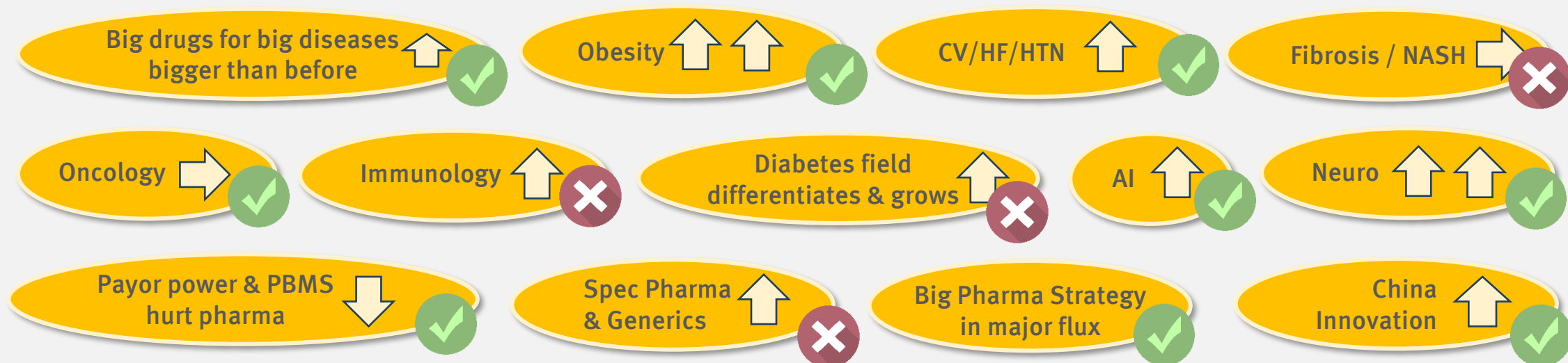




# Stifel's 2024 Predictions in January 2024 Were Largely on the Mark (20/26)



## Market Themes





# Our January Geopolitical Perspective Turned Out Largely Right

We saw 2023 bring into the open a loose axis of interests between China, Russia, Iran, North Korea and their proxies. While this axis is ultimately threatening to global stability and the markets, it is remarkable how little real progress was made by Russia and Iran in 2023. Both states appear to playing for spectacle rather than realistically aiming for ultimate victory (takeover of Ukraine or extinguishment of Israel). If our ability to predict the biotech market is limited, it is even more so in geopolitics. Nonetheless, it appears that there is a realistic possibility of less geopolitical risk in 2024 than 2023 given how the chessboard has played out in recent months. We are optimistic that 2024 will be a year of geopolitical calm.



**Jul '24: Taiwan receding although China tension remains**

## China – U.S. Friction Over Taiwan

We are not experts on China politics but recent easing of tensions between the U.S. and China has been notable. The Chinese government faces significant internal economic issues and President Xi has been continuing to focus on domestic matters while continuing to increase dialogue with U.S. counterparts. Our sense is that China is playing the long game here recognizing that the U.S. has a Presidential election coming up and that a Republican victory could be worse for them.



**Jul '24: Stalemate persists. Russian losses astronomical**

## Russia – Ukraine War

While Ukraine has not been successful in removing Russia from its soil the toll of the war on Russia is unmistakable. Russia faces high inflation and, tragically, a shrinking population due to war losses. Russia has been losing 10,000 troops per km gained around Avdiivka, Ukraine. A late December “all out” missile attack on Ukraine caused less than fifty lives lost. Ultimately, a stalemate works against the attacker, and it appears likely that the Ukraine situation will not boil over into something bigger in 2024.



**Jul '24 : Israel has crushed Hamas. Moderate elected in Iran**

## Israel – Hamas Conflict

Unlike Ukraine, the Israel war against Hamas is not a stalemate. Israel appears likely to succeed in removing Hamas from Gaza in 2024 - the only territory where they have a governance foothold. The Red Sea conflict triggered by the Houthi rebels and Iran appears to be de-escalating with a U.S. presence. Hezbollah have not attacked Israel with good reason. While wider regional conflict remains possible, most reports indicate that Iran has little stomach to ramp up offensive efforts given recent developments.



# How The Market Could Play Out in 2024

Jul '24 : This forecast turned out to be right. The PIPE / follow-on market has been very strong. The IPO market has not been.

As the saying goes history never quite repeats itself but it does rhyme.

We have been through a reasonably similar time before – the dotcom collapse of 2000/2001.

Biotech plummeted by more than 70% as genomics names like Human Genome and Incyte couldn't find interested investors in the bio-apocalypse of 2001. The market got steadily worse and hit bottom some time in mid 2002. As in 2023, the market got better in 2003 with Novartis buying Idenix and the merger of Biogen and Idec. The fundamentals were quite positive with numerous approvals that year.

A key development at that time was investors deepening appetite for taking risk. Those with long memories will remember that some great companies raised money in 2003. There were seven IPOs on the Nasdaq in '03 for more than \$25mm raised compared to only four in 2002. In 2004 we saw 27 companies go public and then 24 go public in 2005.

A key IPO in 2003 was for Myogen (bought by Gilead for \$2.5bn in 2006). We see 2024 as a year that will be similar to the 2004/2005 period. Good companies will be able to go public and the IPO market is healthy.

We see 2024 as a year when biotech and growth players in life sciences will raise substantial capital as investors have money that they need to put to work and will fear losing out on the ongoing M&A wave.



**2024 will be a big year for raising capital.**



# Macro and the Markets

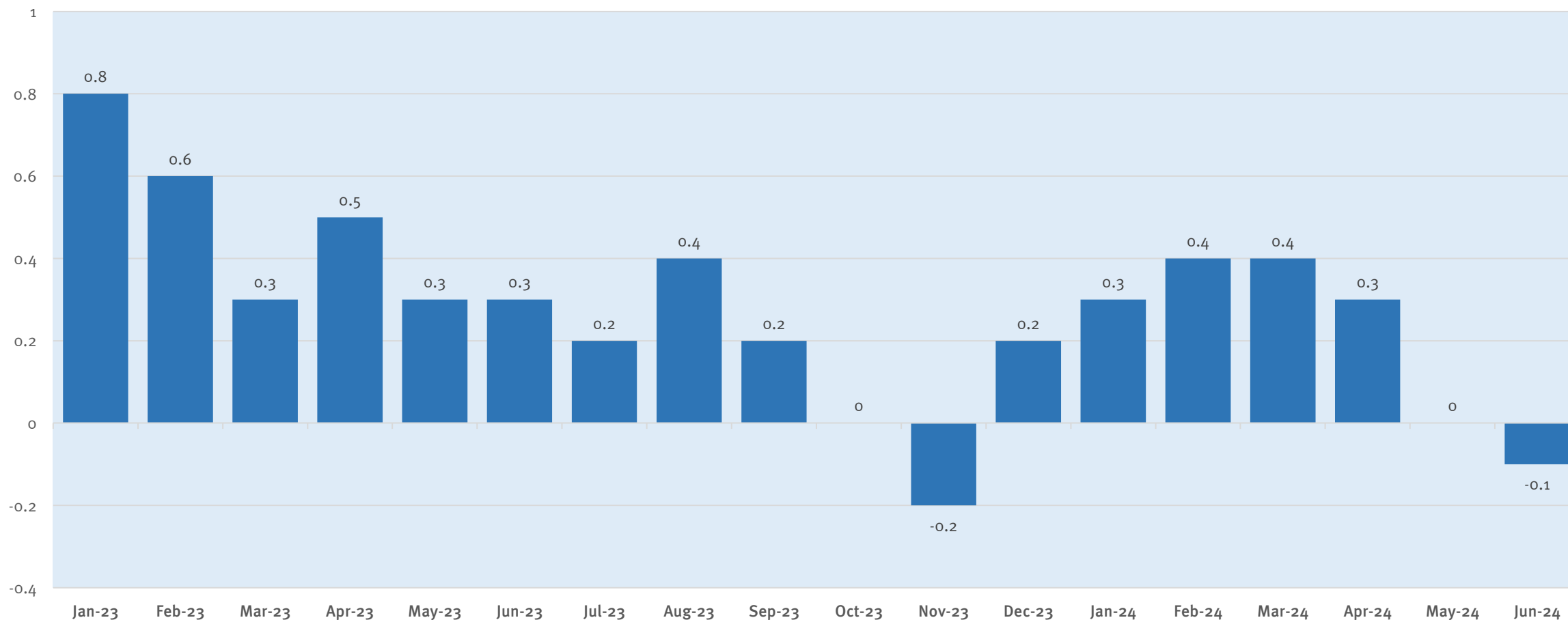




# Much Improved CPI Inflation Picture Today

The U.S. inflation picture in mid-July 2024 looks far brighter than it did three months ago or a year ago. We have had two months in a row with zero or negative inflation. Of course, as is evident in the chart, we saw this before in October and November 2023. For this reason, we do expect the Fed to want to see another month or two of flat inflation before initiating rate cuts.

Monthly U.S. CPI Percent Change (%) for All Urban Consumers, Feb 2023 to June 2024

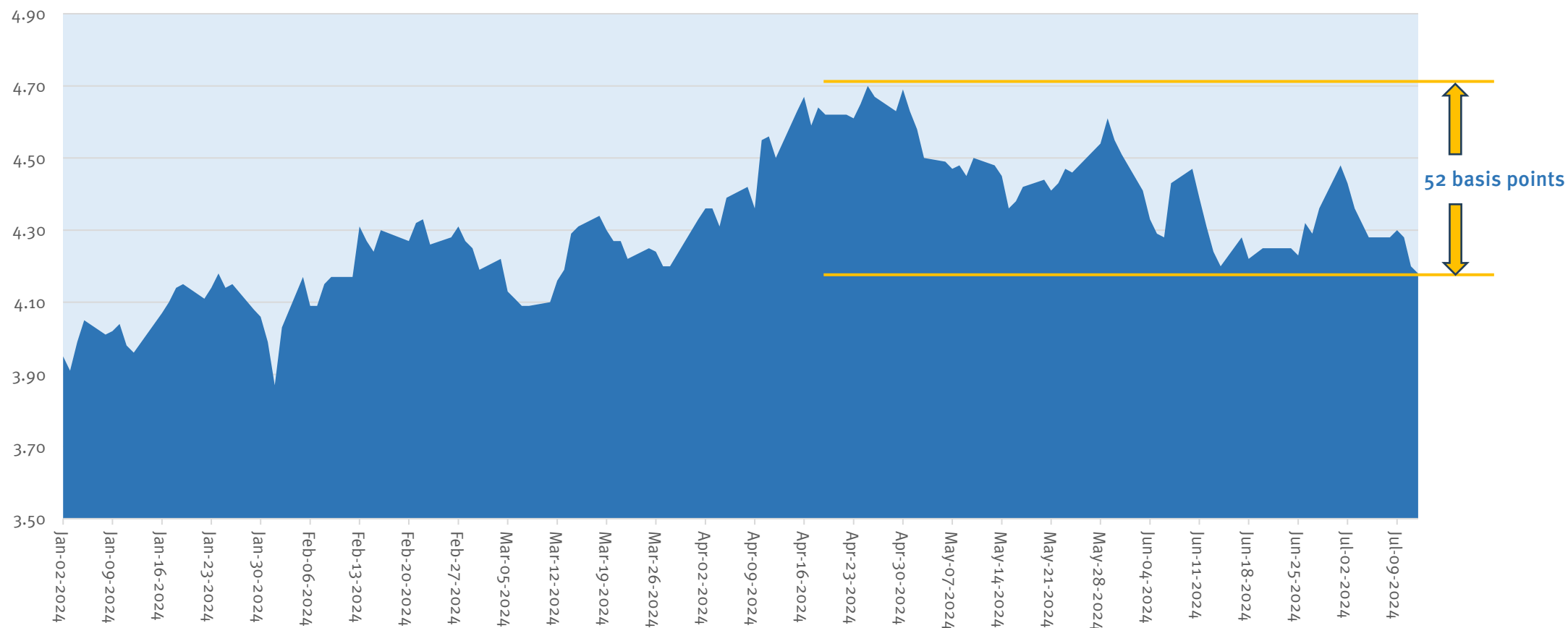




# Long Bond Rates are Coming In

The biotech story of 2024 has been very much linked to interest rates. We saw rates down on positive inflation news in January and February. The XBI took off and the PIPE / follow-on market became volcanic. In April we saw our second unpleasant inflation read in a row and the XBI headed south, the follow-on market headed south, and biotech bears started to come out of hibernation. Since mid-April the situation has markedly improved. Last week's negative CPI inflation number was particularly notable and foretells a strong biotech tape to come.

United States Treasury 10 Year Yield (%), Jan 2, 2024 to Jul 12, 2024





# US Inflation Broadly Cools, Likely Sealing Deal for Fed Rate Cut

**Molly Smith, *Bloomberg*, July 11, 2024 (excerpt)**

US inflation cooled broadly in June to the slowest pace since 2021 on the back of a long-awaited slowdown in housing costs, sending the strongest signal yet that the Federal Reserve can cut interest rates soon.

The so-called core consumer price index — which excludes food and energy costs — climbed 0.1% from May, the smallest advance in three years, Bureau of Labor Statistics figures showed Thursday. The overall measure fell for the first time since the onset of the pandemic, dragged down by cheaper gasoline.

Similar to the May CPI report — which Fed Chair Jerome Powell described this week as “really good” following an unexpected flare-up in the first quarter — the June reading will go a long way toward giving Powell and his colleagues the confidence they need to cut rates, likely starting in September. Policymakers will have a chance to signal such a move may be coming when they meet later in July, especially since unemployment has now risen for three straight months.

Powell, in testimony before lawmakers this week, avoided signaling the timing of likely rate cuts and insisted policy moves would be guided by incoming data. The Fed chief is set to speak again Monday afternoon in a moderated discussion hosted by the Economic Club of Washington, DC.





# Wholesale Prices Rose 0.2% in June, Slightly Hotter Than Expected

Jesse Pound, *CNBC*, July 12, 2024 (excerpt)

A measure of wholesale prices rose more than expected in June as Wall Street assesses when the Federal Reserve will feel comfortable cutting interest rates.

The producer price index climbed 0.2% last month, the Labor Department's Bureau of Labor Statistics reported Friday. Economists surveyed by Dow Jones were expecting a 0.1% increase for the index. The PPI is now up 2.6% over the past year.

The PPI is a gauge of prices that producers can get for their goods and services in the open market. In June, a rise in the price for services offset a decline for goods.

The hotter-than-expected PPI reading runs counter to recent data that shows inflation declining, though economists and investors tend to put more weight on the consumer-focused inflation readings.

Friday's report comes after the June consumer price index came in cooler than expected on Thursday. The CPI actually showed that headline inflation declined on a monthly basis and now sits at 3% year over year.

The central bank's next policy meeting is at the end of July, where it is widely expected to hold rates steady. Traders have increasingly dialed in on the September meeting as the likely time for the first rate cut.

Source: <https://www.cnbc.com/2024/07/12/wholesale-prices-rose-0point2percent-in-june-slightly-hotter-than-expected.html>





# U.S. Presidential Election Politics Highly Unusual

**“It’s over’: Democrats remain in panic over Biden’s reelection,” *Politico*, Jul 12, 2024 (excerpt)**

As President Joe Biden’s support continues to crumble, his party is reckoning with the possibility of a punishing defeat in November — a potential GOP wave that would not only elect former President Donald Trump but also sweep away Democrats from power in Congress.

Their angst about Biden prompted one vulnerable member of Congress, Rep. Mike Levin (D-Calif.), to ask the president directly on Friday to consider dropping out — a stunning confrontation that has deeply rattled Democrats who were already anxious about the high stakes of the moment. Biden’s response, according to a member on the call: I’m running.

And there’s a newfound urgency. Democrats are realizing that Biden’s path to victory is narrowing. His chances in critical Sun Belt states like Arizona and Nevada are dwindling, some Rust Belt states are at risk and blue safe zones like New Hampshire are suddenly in play.

All these forces are fueling a panic within the party that Biden’s meltdown could catapult Republicans into a trifecta in Washington. Some worry that Biden could drag down the rest of the ticket so badly that they not only fail to win back the House, but Trump and Hill Republicans could be handed big-enough majorities in both chambers to actually carry out huge GOP priorities.

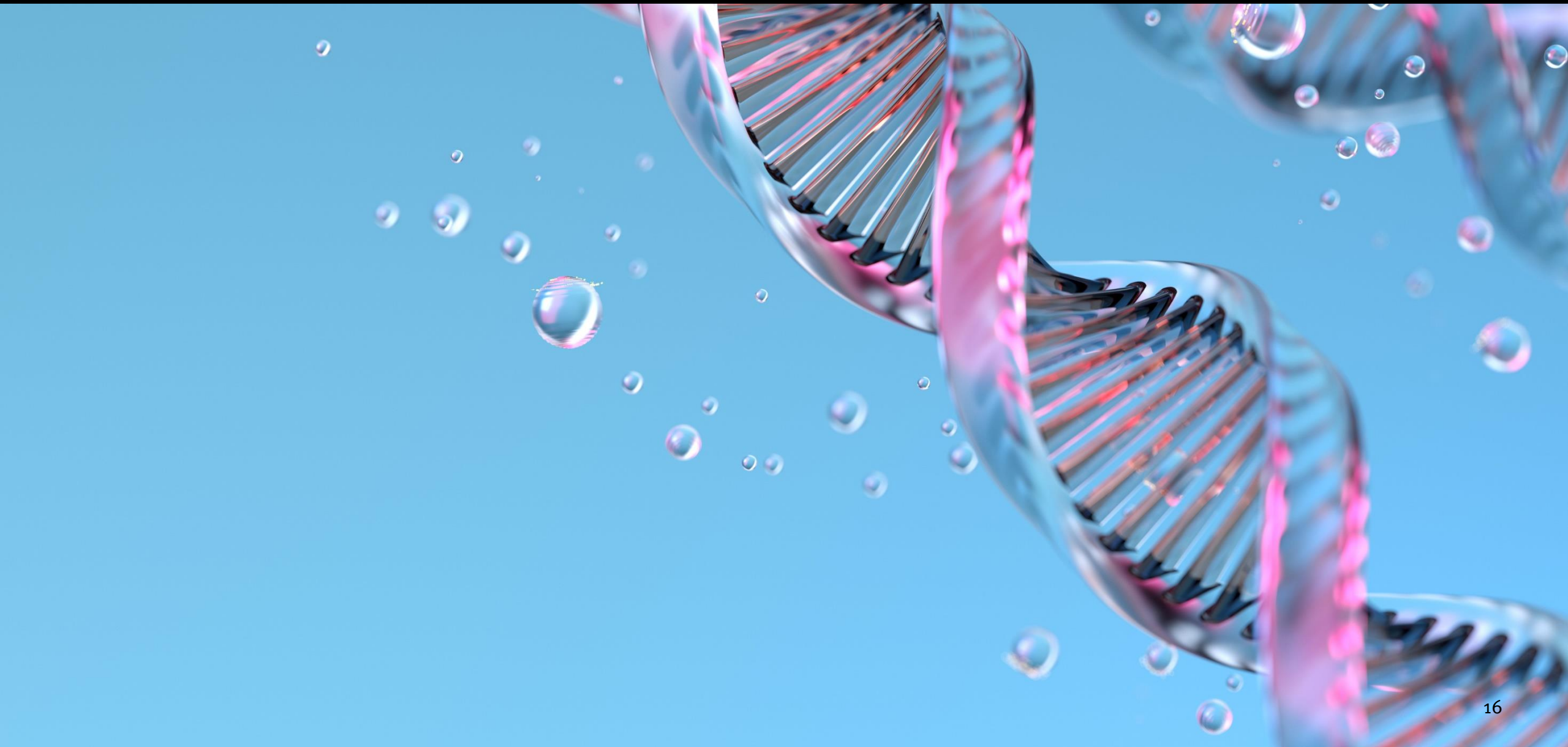
“They are nervous about the upcoming election,” Rep. Emanuel Cleaver (D-Mo.) said of his Democratic colleagues who are calling for Biden to step down from the ticket. “If anybody tells you they’re not, they’re lying.”

**Source:** <https://www.politico.com/news/2024/07/12/biden-gop-election-wave-00167944>



**To state the obvious, the U.S. election in 2024 will be consequential for the nation and the biotech industry.**

# Biopharma Market Update

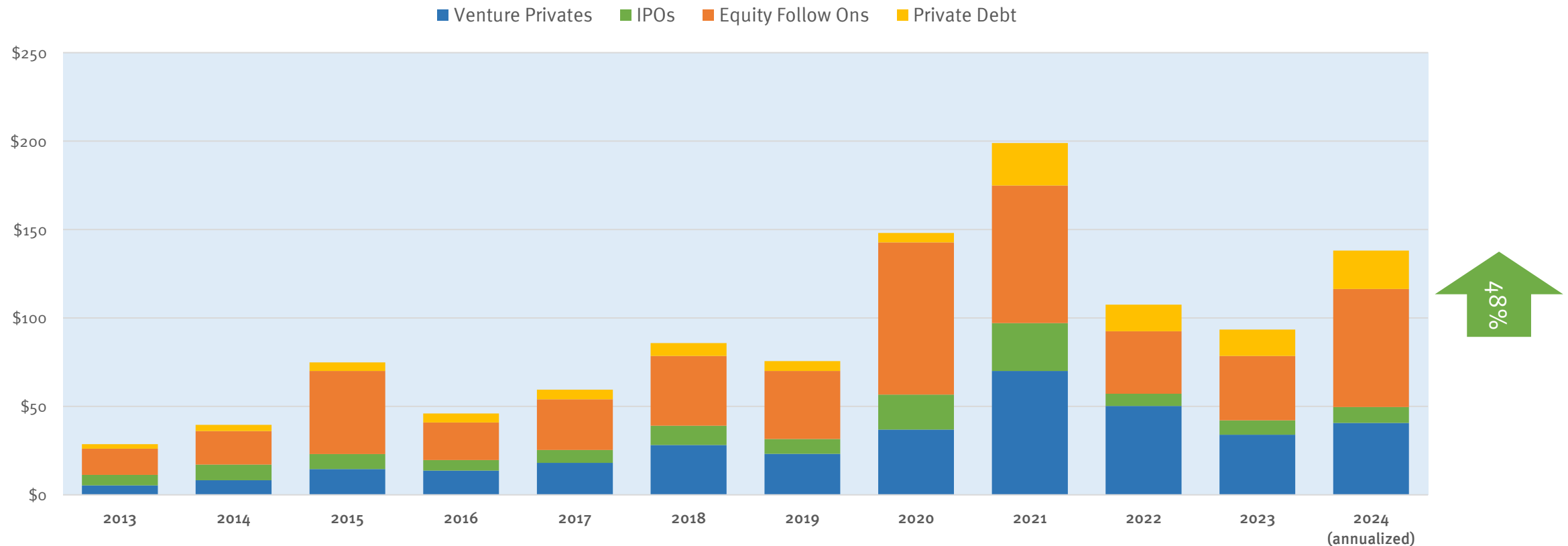




# Overall Biopharma Capital Raised in 2024 To Date is Up 48% Versus 2023

While it's not 2021, this year is shaping up to be the third most active year for biotech fundraising in history.

Equity and Private Debt Raised in the Biopharma Sector, 2013 - 2024  
(\$ Billions, Worldwide)





# The XBI Closed 2023 at 98.96 Last Week (Up 10.8% for Year)

After a tumultuous start, the XBI closed on July 12<sup>th</sup> well up from the year's start. A strong week for interest rates and inflation carried biotech and pharma stocks up substantially from their April low. The XBI has jumped 54% since the Oct 27, 2023 low point. Importantly, we have seen retracing of the divergence between tech stocks and biotechs in the last two months.

## Biotech Stocks Up Big Last Week

### Return: Jul 6 to Jul 12, 2024

Nasdaq Biotech Index: +6.8%  
Arca XBI ETF: +7.9%  
Stifel Global Biotech EV: 12.6%\*  
S&P 500: +0.8%

### Return: Jan 1 to Jul 12, 2024

Nasdaq Biotech Index: +10.8%  
Arca XBI ETF: +10.8%  
Stifel Global Biotech EV (adjusted): 24.7%\*  
S&P 500: +17.7%

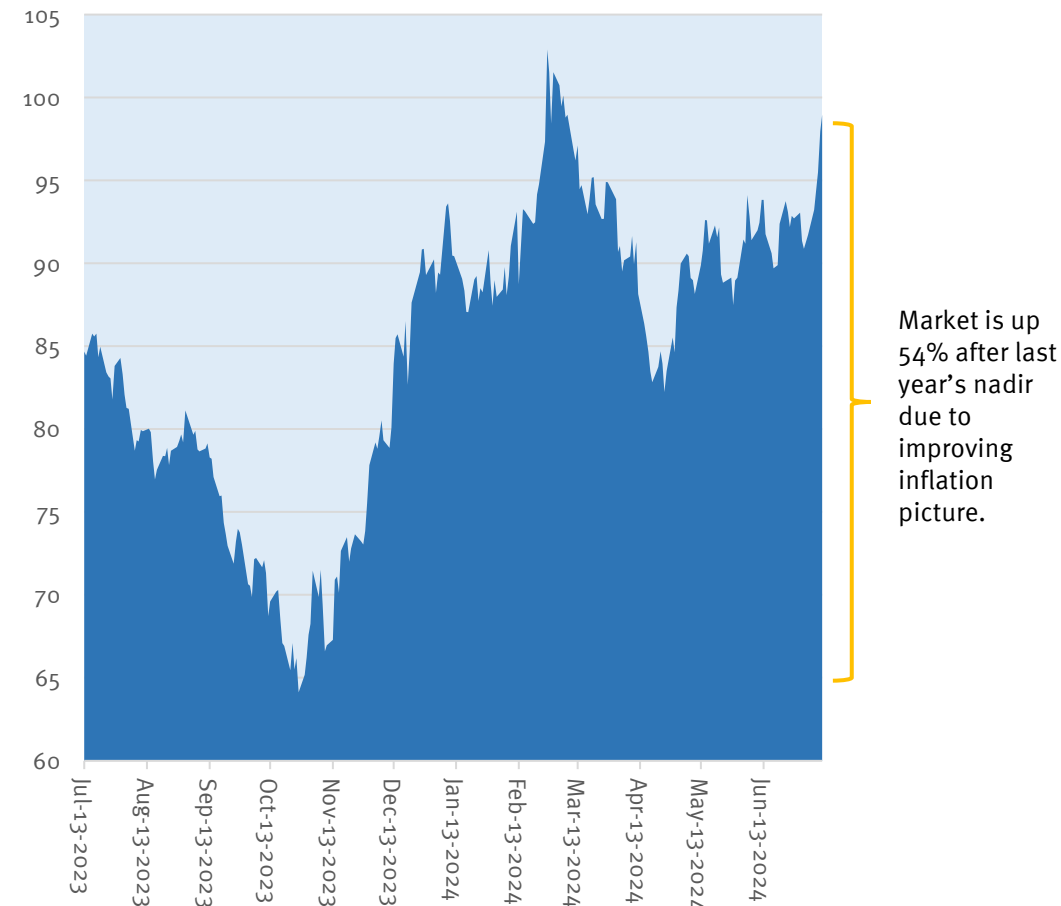
## VIX Down

Jan 20, 2023: 19.9%  
July 21, 2023: 13.6%  
Sep 29, 2023: 17.3%  
Dec 29, 2023: 12.45%  
Mar 29, 2024: 13.0%  
Apr 26, 2024: 15.0%  
May 17, 2024: 12.0%  
Jun 14, 2024: 12.7%  
Jul 12, 2024: 12.5%

## 10-Year Treasury Yield Down

Jan 20, 2023: 3.48%  
July 21, 2023: 3.84%  
Sep 29, 2023: 4.59%  
Dec 29, 2023: 3.88%  
Mar 29, 2024: 4.20%  
Apr 26, 2024: 4.66%  
May 17, 2024: 4.42%  
Jun 14, 2024: 4.2%  
Jul 12, 2024: 4.18%

## XBI, July 13, 2023 to July 12, 2024



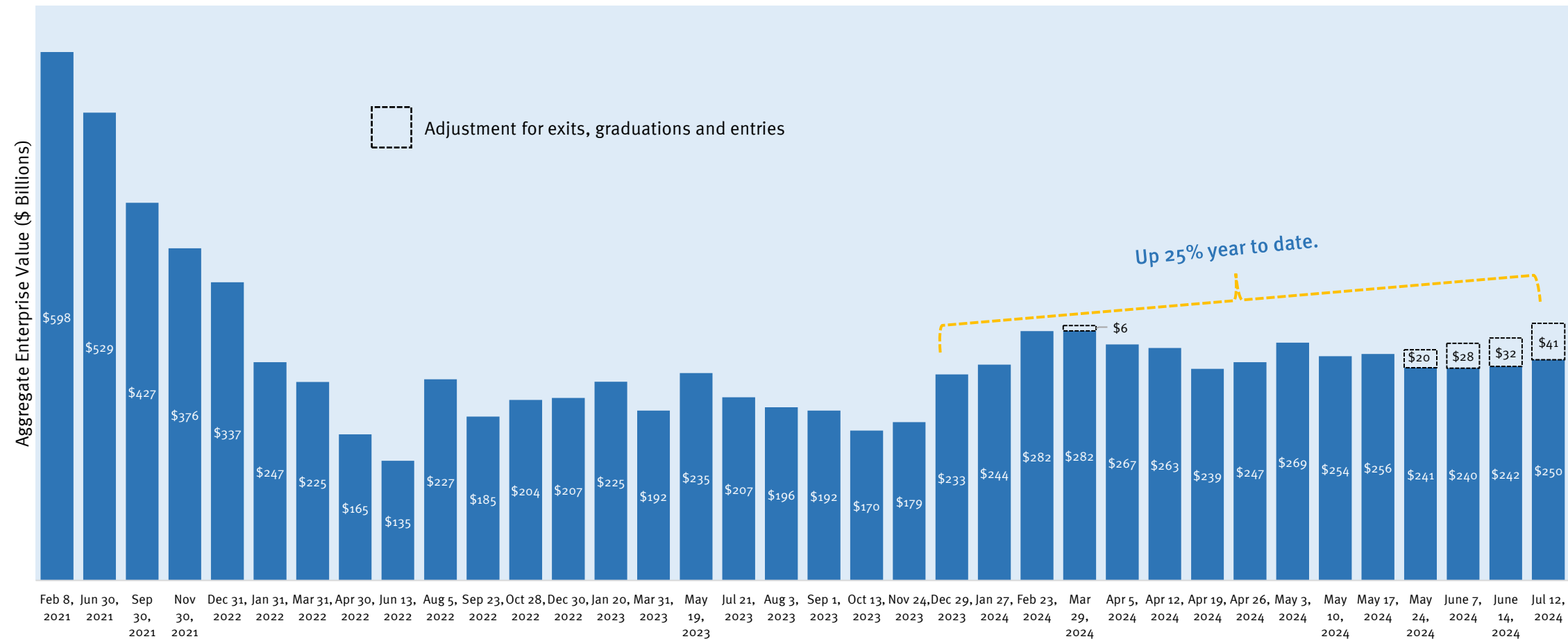
\* Change by enterprise value. The adjusted number accounts for the effect of exits and additions via M&A, bankruptcies and IPOs.



# Total Global Biotech Sector Up 25% YTD

The total enterprise value of the global biotech sector is up 24.7% this year. The sector is up 3% since the beginning of Q2.

Total Enterprise Value of Publicly Traded Global Biotech, Feb 8, 2021 to Jul 12, 2024 (\$ Billions)



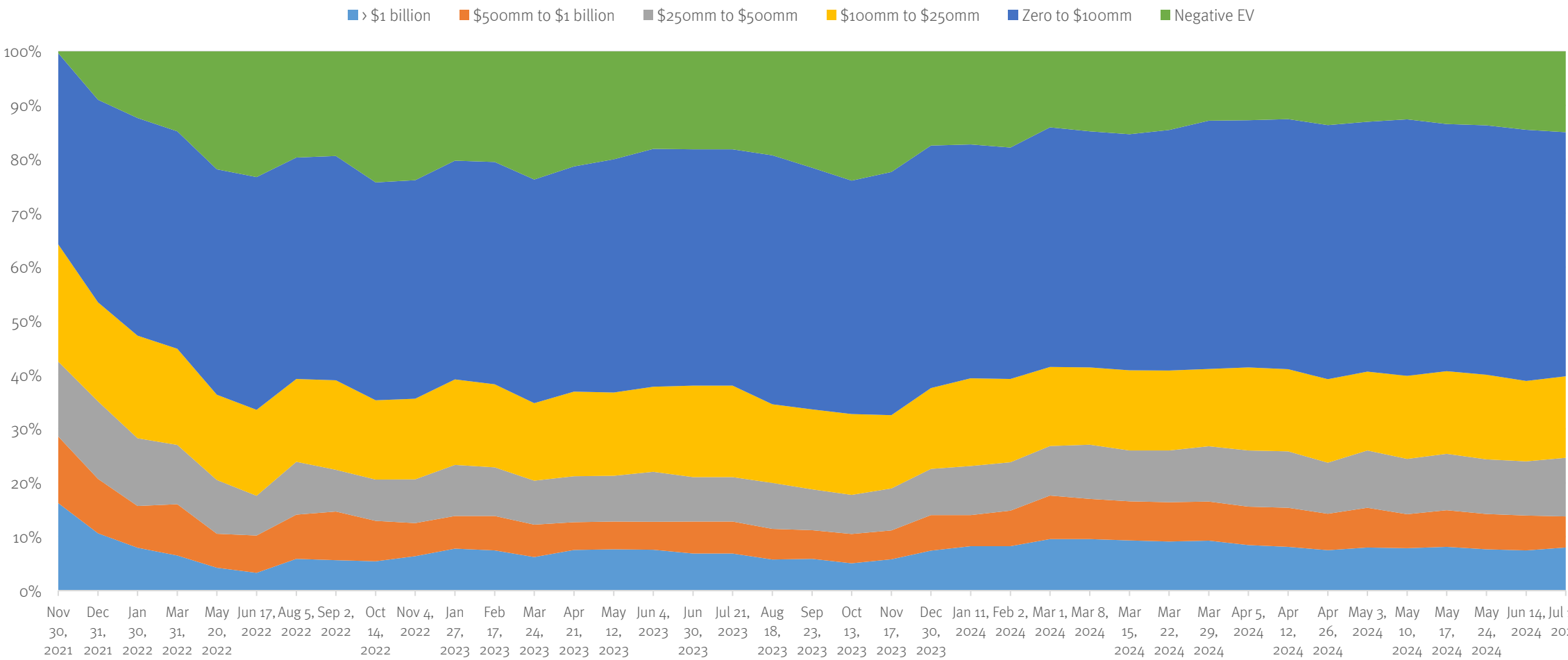
Source: CapitalIQ. Biotechs are defined as any therapeutics company without an approved product on any global stock exchange.



# Biotech Neighborhood Analysis

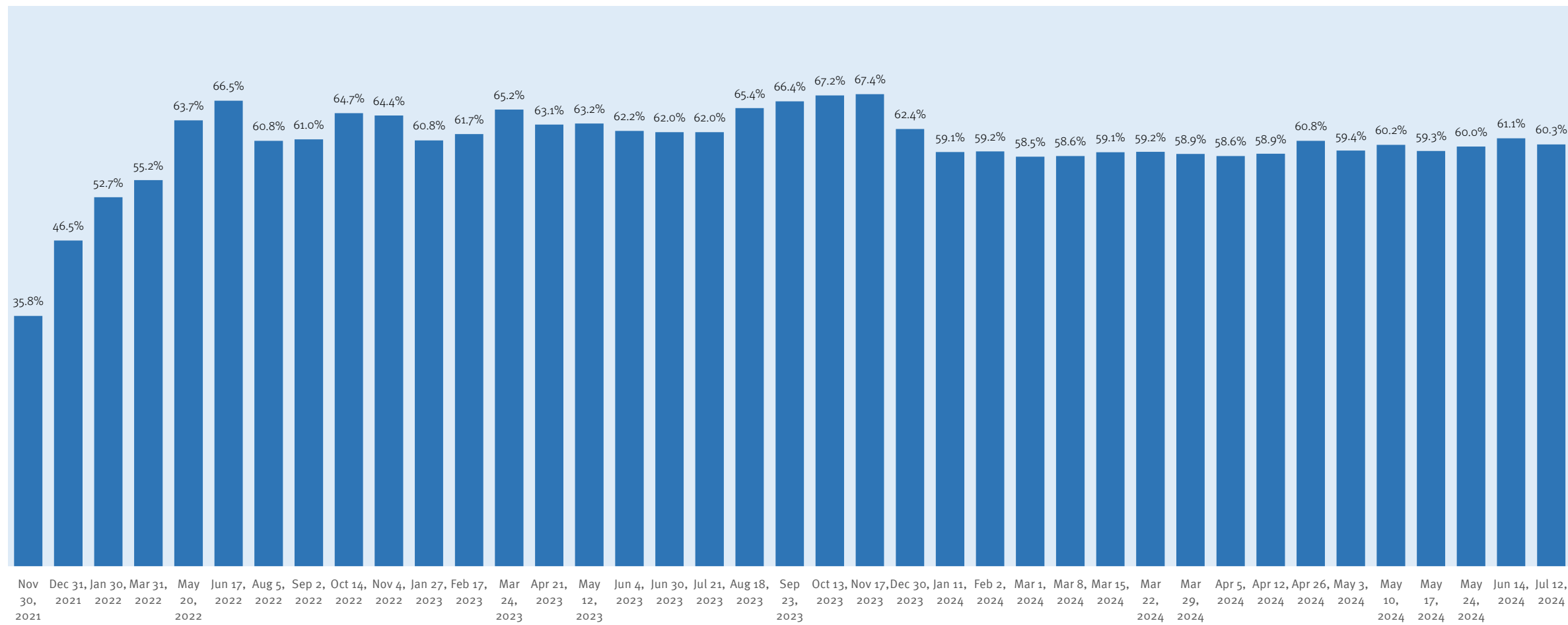
Recent weeks have seen significant reshaping of the global public biotech universe. The number of companies worth \$250mm or more has been rising as long-only funds and specialist funds have increased the size of their investments in biotech winners.

Global Biotech Universe by Enterprise Value Category, Nov 30, 2021 to Jul 12, 2024



# Small Biotech Population Holding Steady

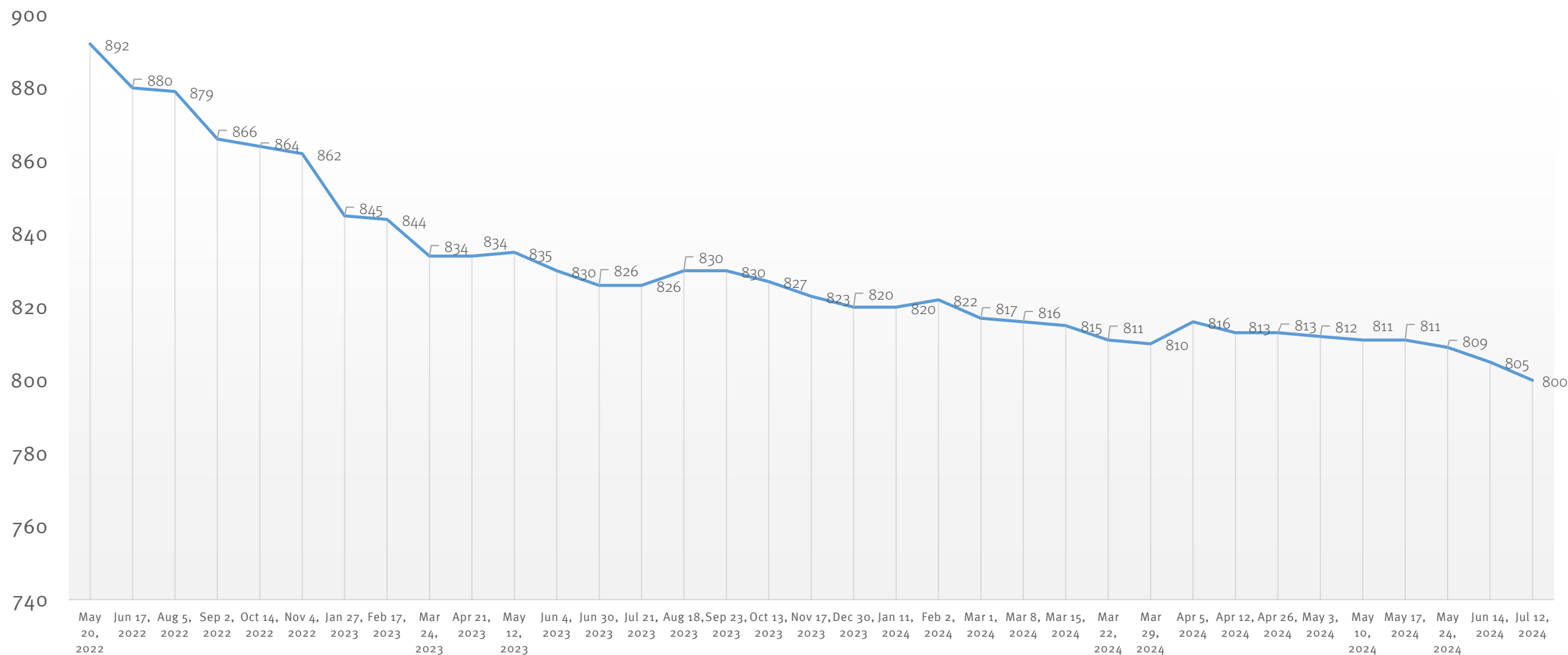
Percent of Biotechs with an Enterprise Value Under \$100mm, Nov 2021 to Jul 2024





# Public Biotech Company Count Continues to Drop

Number of Publicly Traded Biotech Companies Worldwide, May 2022 to Jun 2024

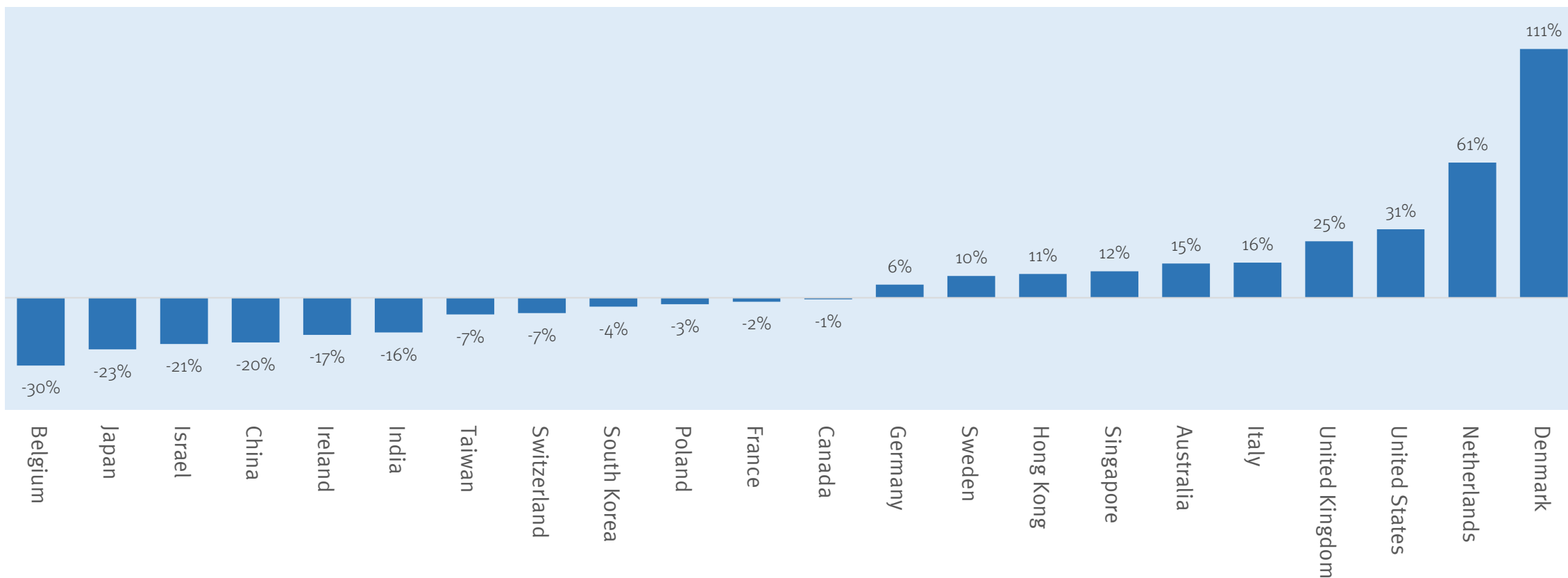


Source: CapitalIQ. Biotechs are defined as any therapeutics company without an approved product on any global stock exchange.

# Denmark, Netherlands, U.S. and UK Biotech Sectors Have Done the Best in 2024

Denmark has done best due to the performance of Zealand. Belgium has been impacted by the performance of Galapagos. Japan has been impacted by the double whammy of poor funding and a weak currency. The Chinese biotech sector has been impacted by weak capital markets.

Change in Global Biotech Valuations by Country, Dec 31, 2023 to Jul 12, 2024  
(Percent Change in Value of Company Group, N=800)



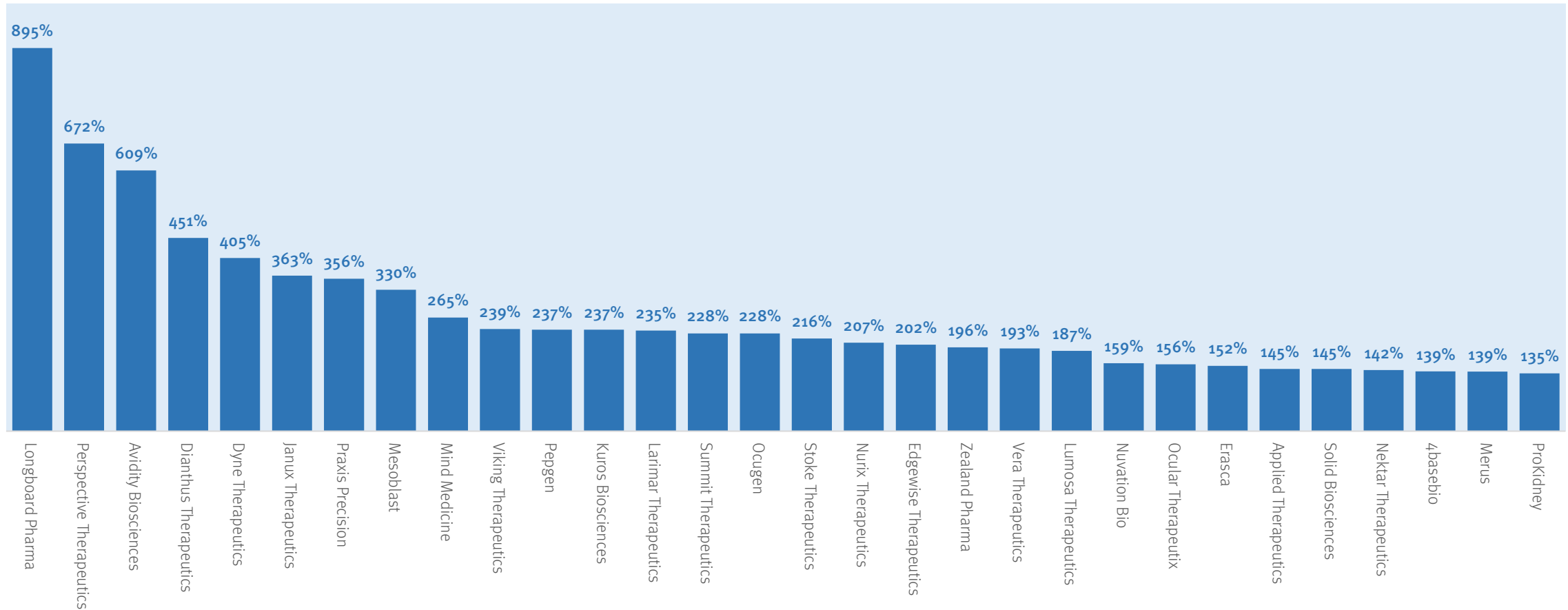
Source: CapitalIQ. Biotechs are defined as any therapeutics company without an approved product on any global stock exchange.



# Top Biotech Performers YTD Have Been Spread Across Neuro, Radiopharma, RNA, Immunology, T-Cell Engagers and Obesity

## Top 30 Biotech Performers, Dec 29, 2023 to Jul 12, 2024

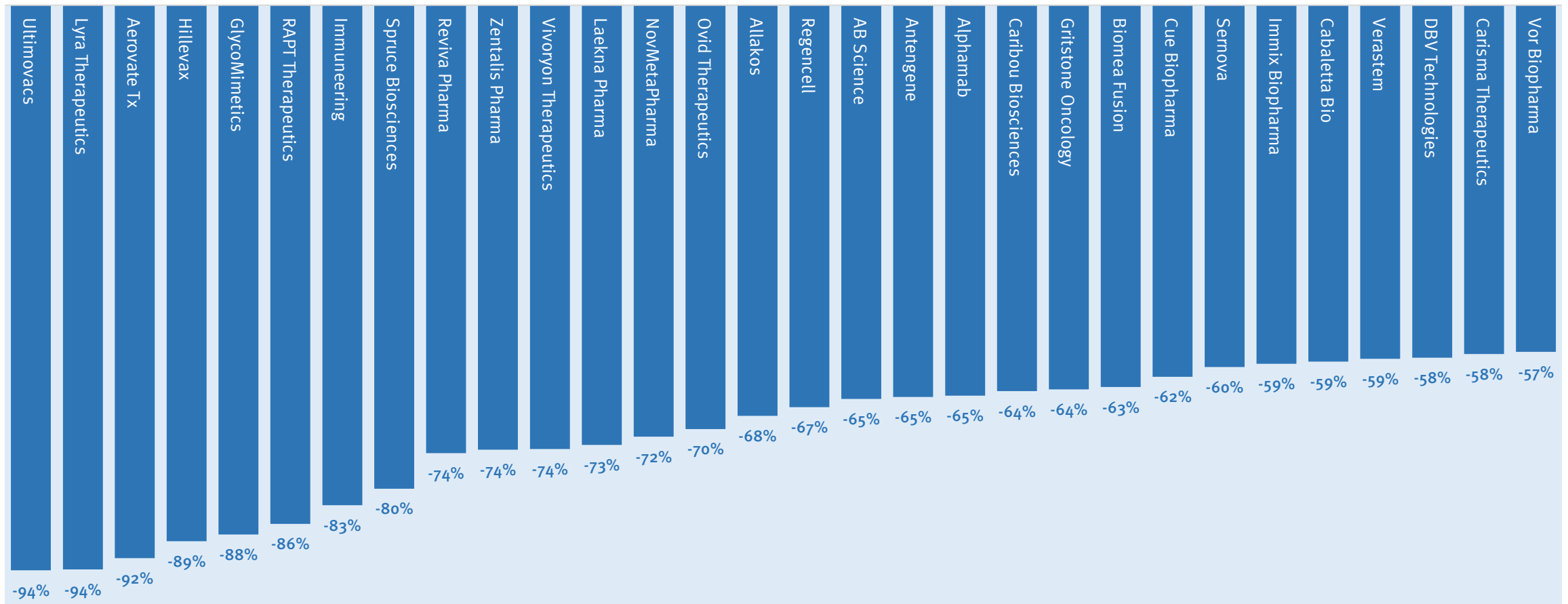
(Change in Market Cap Shown. Global selection from companies with market cap > \$100mm at start of year)



# Top Biotech Decliners YTD Have Faced Adversity From Regulatory, Clinical and Financing Factors

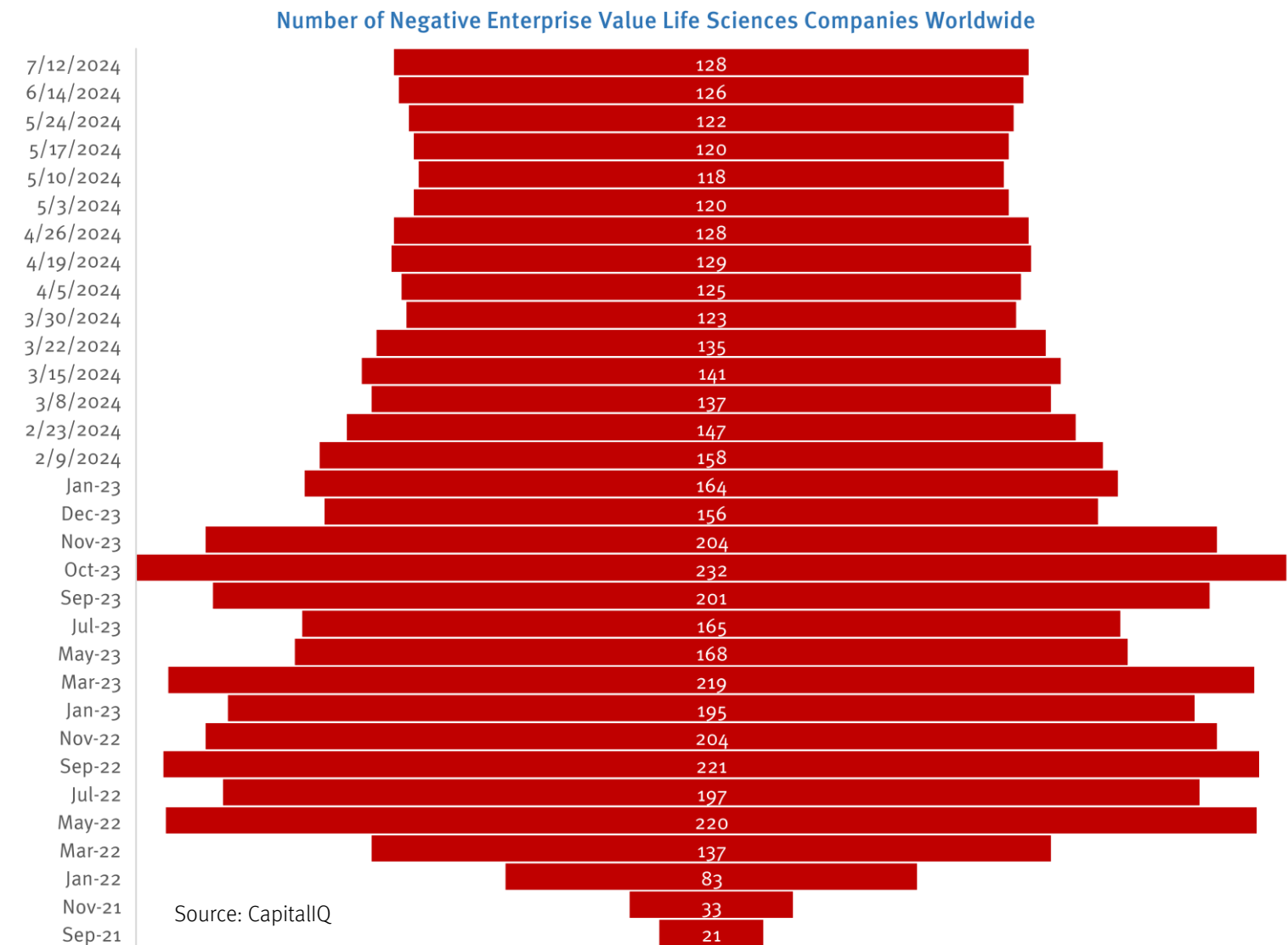
## Top 30 Biotech Decliners, Dec 29, 2023 to Jul 12, 2024

(Change in Market Cap Shown. Global selection from companies with market cap > \$100mm at start of year)





# Number of Negative Enterprise Value Life Sciences Companies Has Shrunk Significantly Throughout 2024



The count of negative EV life sciences companies worldwide fell from 156 at the start of the year to 128 by mid-July.

While the number of negative EV companies has been widening in the last few months, we expect that this will change due to an improving macro environment.

# Life Sciences Sector Up 2.8% Last Week

Last week saw the life sciences sector recross \$10 trillion in value for the first time since the Pandemic. Biotech, OTC, Pharma services and life science tools all performed well.

Sector	Firm Count	Enterprise Value (Jul 12, 2024, \$mm)	Change in Last Week (percent)	Change in Last Month (percent)	Change in Last Year (percent)
API	81	\$81,931	-0.2%	-1.5%	3.6%
Biotech	776	\$250,373	12.6%	6.2%	-5.1%
CDMO	39	\$145,788	2.4%	5.7%	-16.2%
Diagnostics	81	\$263,028	2.2%	0.9%	-8.2%
OTC	29	\$26,589	3.7%	4.6%	-12.6%
Pharma	717	\$6,692,780	2.8%	3.1%	17.6%
Pharma Services	38	\$179,925	3.5%	-0.5%	-11.2%
LS Tools	50	\$670,078	2.9%	-2.4%	-3.4%
Devices	180	\$1,693,488	1.6%	0.8%	-1.8%
HCIT	10	\$18,137	1.2%	-9.1%	-30.1%
<b>Total</b>	<b>2001</b>	<b>\$10,022,116</b>	<b>2.8%</b>	<b>2.3%</b>	<b>10.3%</b>

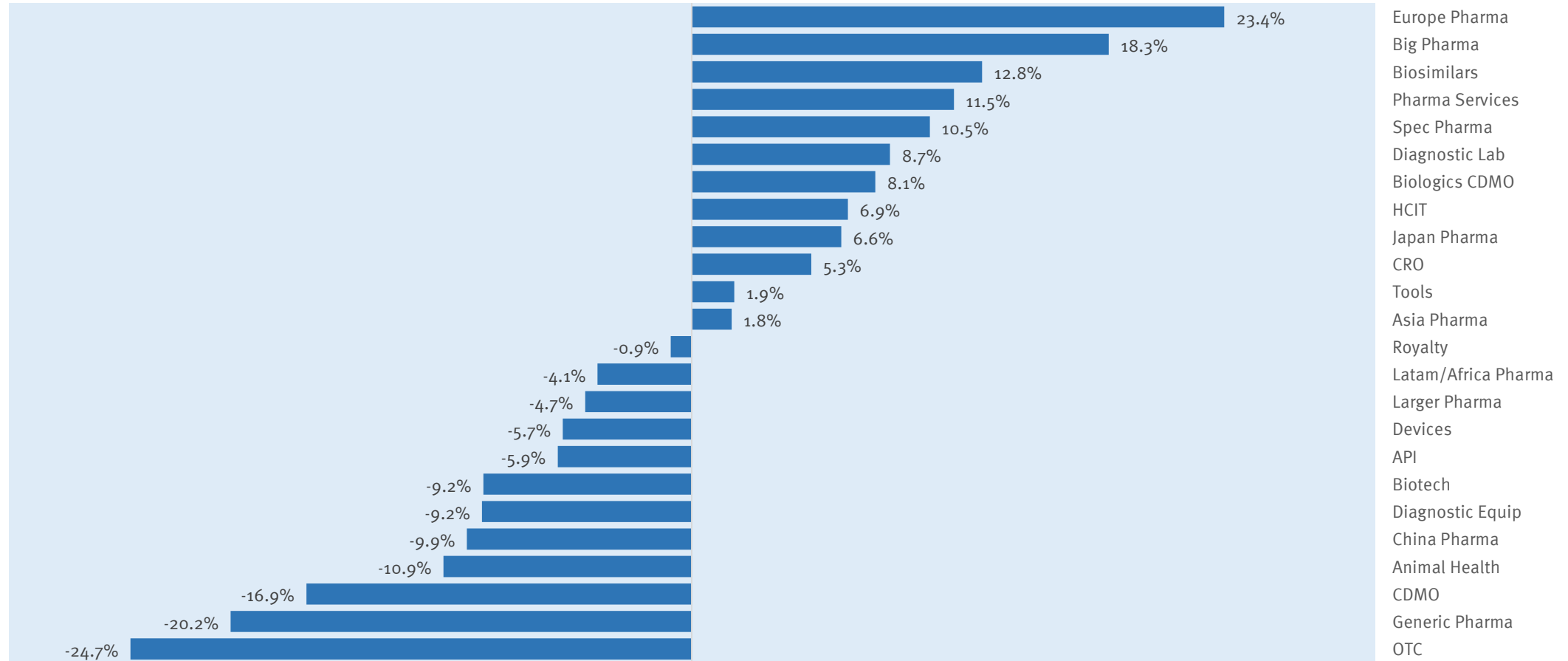
Source: CapitalIQ and Stifel analysis.



# Life Sciences Subsector Performance Year-to-Date

Europe Pharma, Big Pharma, Biosimilars, Pharma Services and Spec Pharma have all done well this year on a value-weighted basis. In contrast, OTC, generics, CDMO's, China Pharma and animal health have all underperformed thus far in 2024.

Aggregate Value Change (Dec 30, 2023 to Jul 12, 2024, \$ millions)

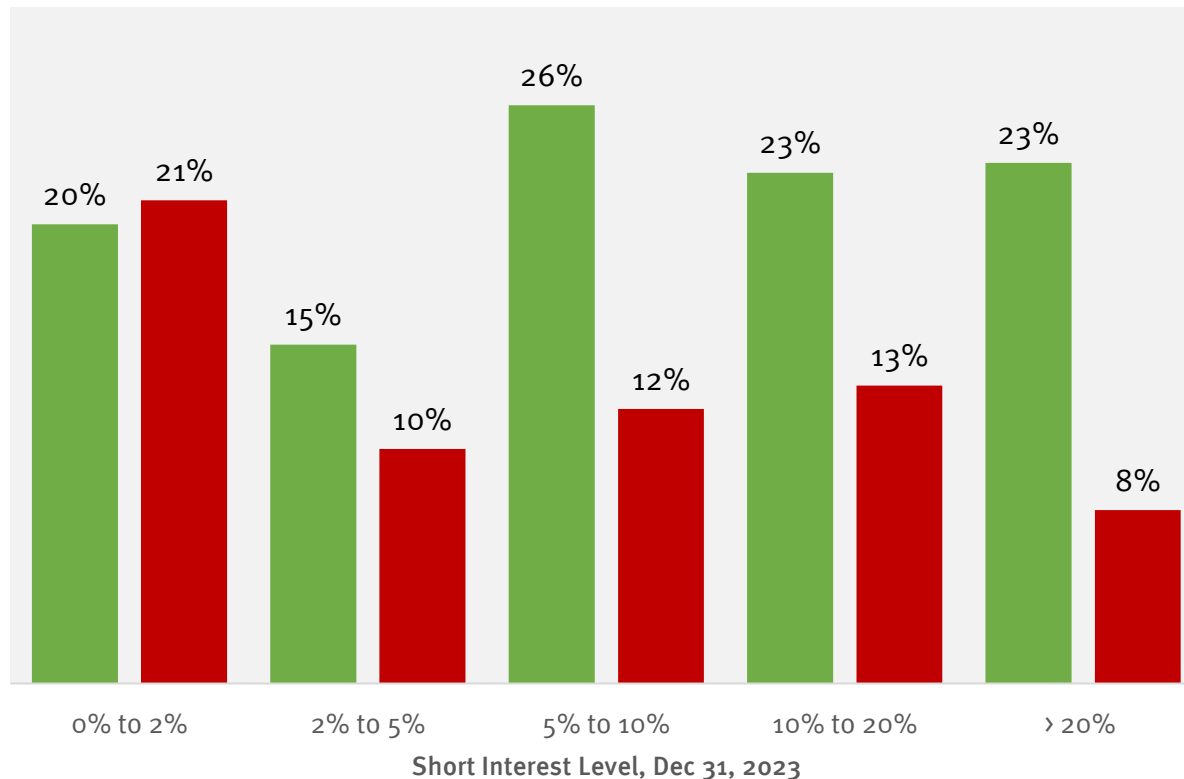


# It Hasn't Been a Great Year for the Short Game

There have been a lot more 50% up moves than down moves in heavily shorted stocks this year. A variety of substantially shorted companies like Novavax have confounded short-sellers and performed well.

**Percent of Stocks Up 50%+ or Down 50%+ YTD by Short Category at Start of Year**

■ Stock Up 50% or More ■ Stock Down 50% or More



**What looks easy in the short game doesn't always work out.**

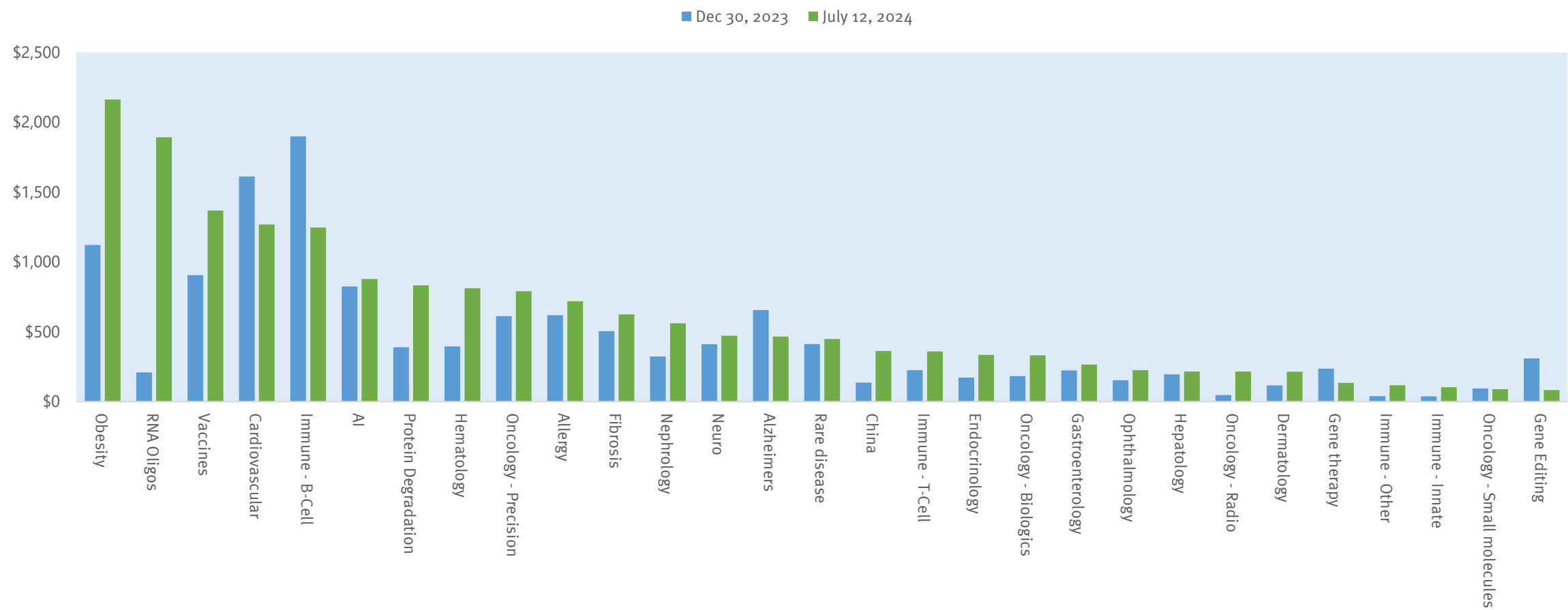




# Biotech Values Today Highest in Obesity, RNA and Vaccines

The most valued sectors in biotech today are in obesity, RNA oligos and vaccines. We have seen regression in values of cardio and B-cell companies. RNA is doing well in sympathy with strong clinical data at Avidity and Dyne. Vaccines are doing well reflecting very strong positioning of Vaxcyte. Protein degrader companies like Nurix have performed quite well in the stock market.

Average Enterprise Value by Subfield of Biotech, Jul 12, 2024 vs. Dec 31, 2023 (US Listed Biotechs, \$mm)

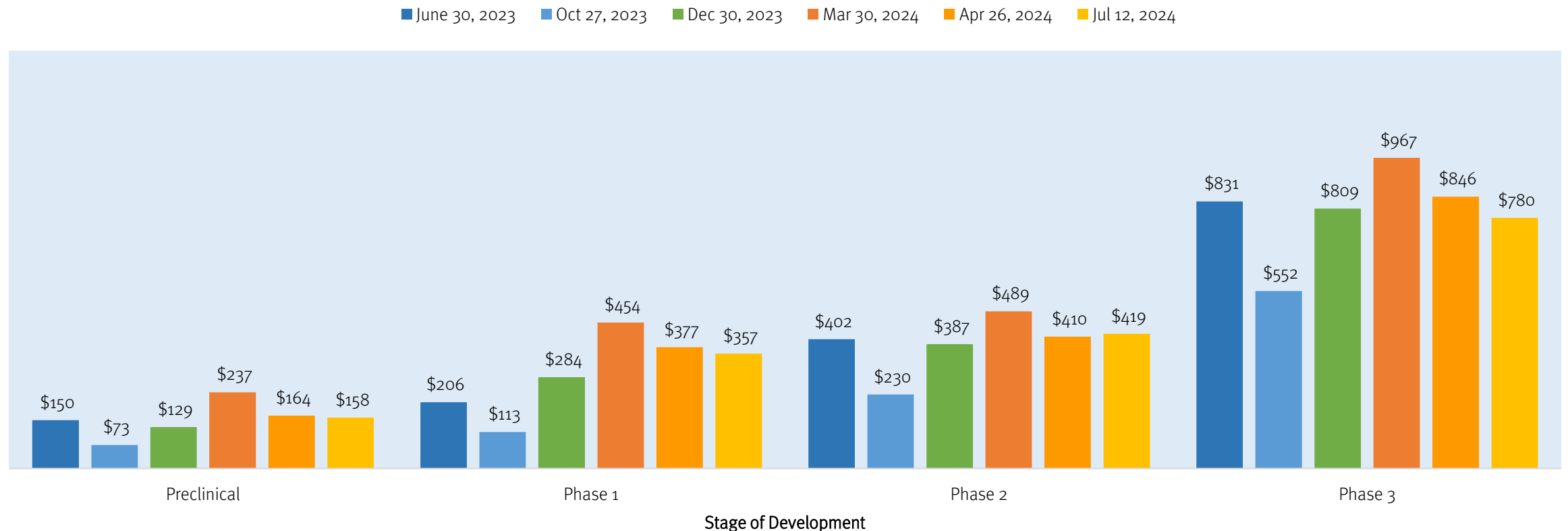


Source: S&P CapitalIQ and Stifel analysis.

# Late-Stage Biotech Values Have Come Down Substantially

The average value of a Phase 3 biotech today is \$780 million – down from \$1 billion at the end of Q1 and down from \$809 million at the start of 2024. In contrast, the average preclinical company value today of \$158 million is up from its value of \$129 million at the start of 2024.

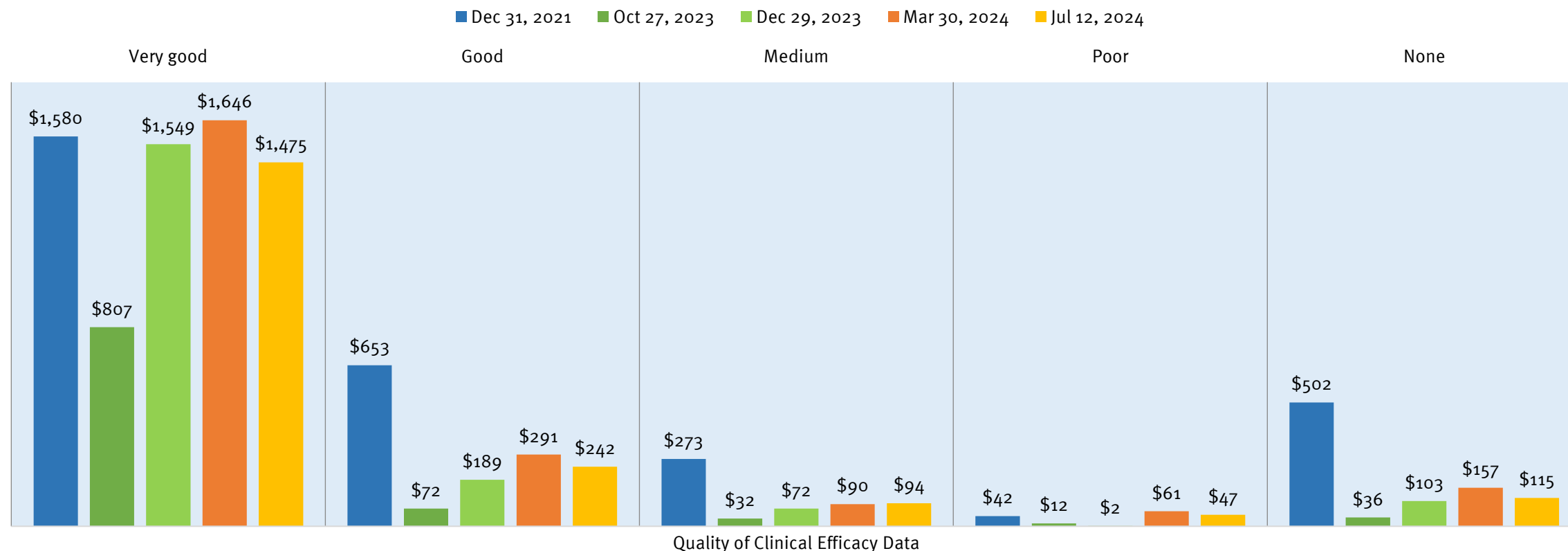
**Average Enterprise Value of a Biotech Listed on U.S. Exchanges by Stage of Development, June 30 2023 to Jul 12, 2024 (\$ Millions)**



# Strong Recovery in Quality Premium in Last Ten Weeks

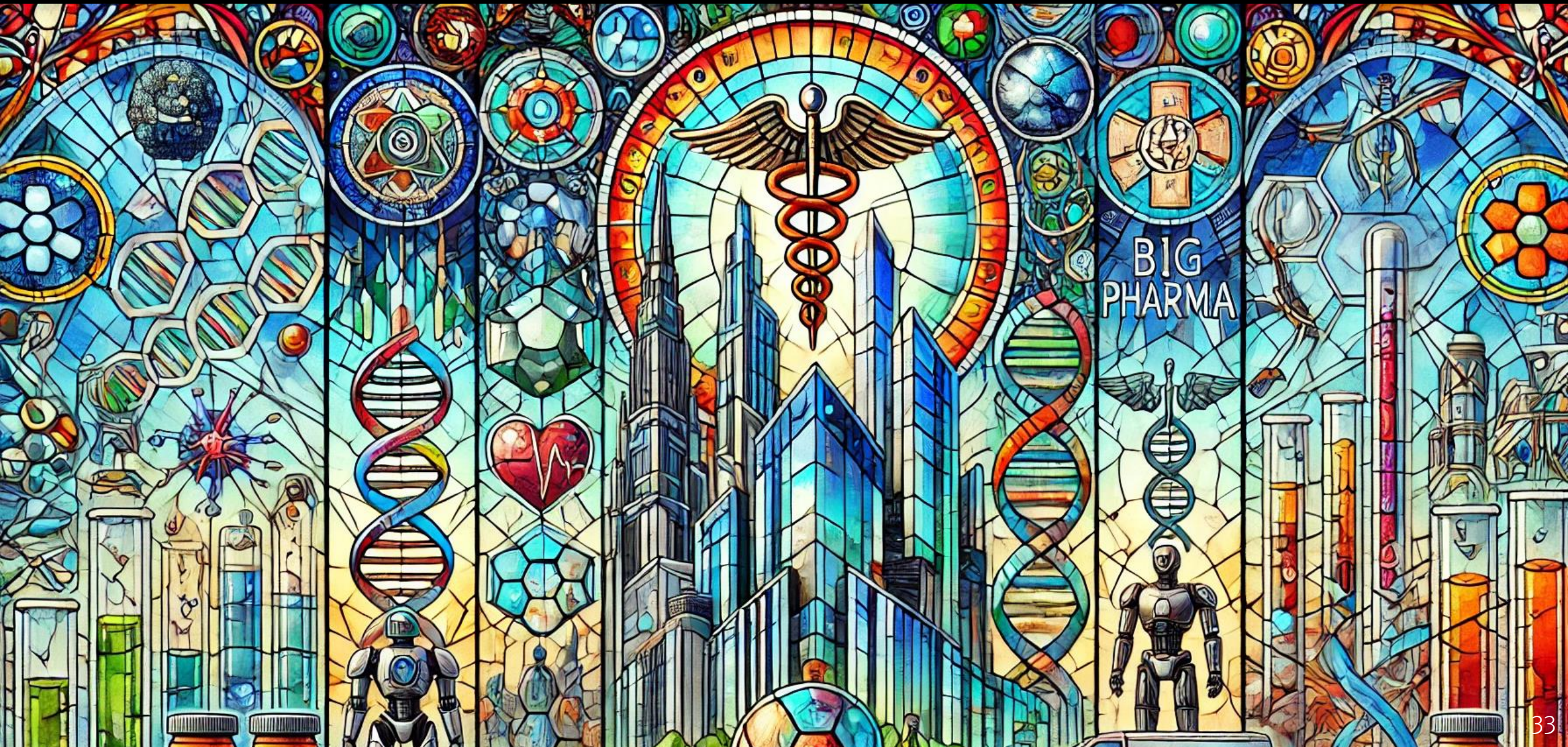
One of the distinctive characteristics of the biotech downturn of 2022 to 2023 has been an extreme quality premium. Companies with “very good” data have traded at a value of five to ten times companies with a “good” dataset. The quality premium today is not as extreme as during the peak of the downturn. Nonetheless, it has steepened since the end of Q1 – reflecting a somewhat stressed biotech market in Q2 2024. Investors today are concentrating their bets on companies that are most likely to get FDA approvals or to get acquired.

**Average Enterprise Value of a Biotech Listed on U.S. Exchanges by Quality of Efficacy Data, Dec 31, 2021 to May 10, 2024 (\$ Millions)**





# How the Top Life Sciences Players are Evolving in 2024

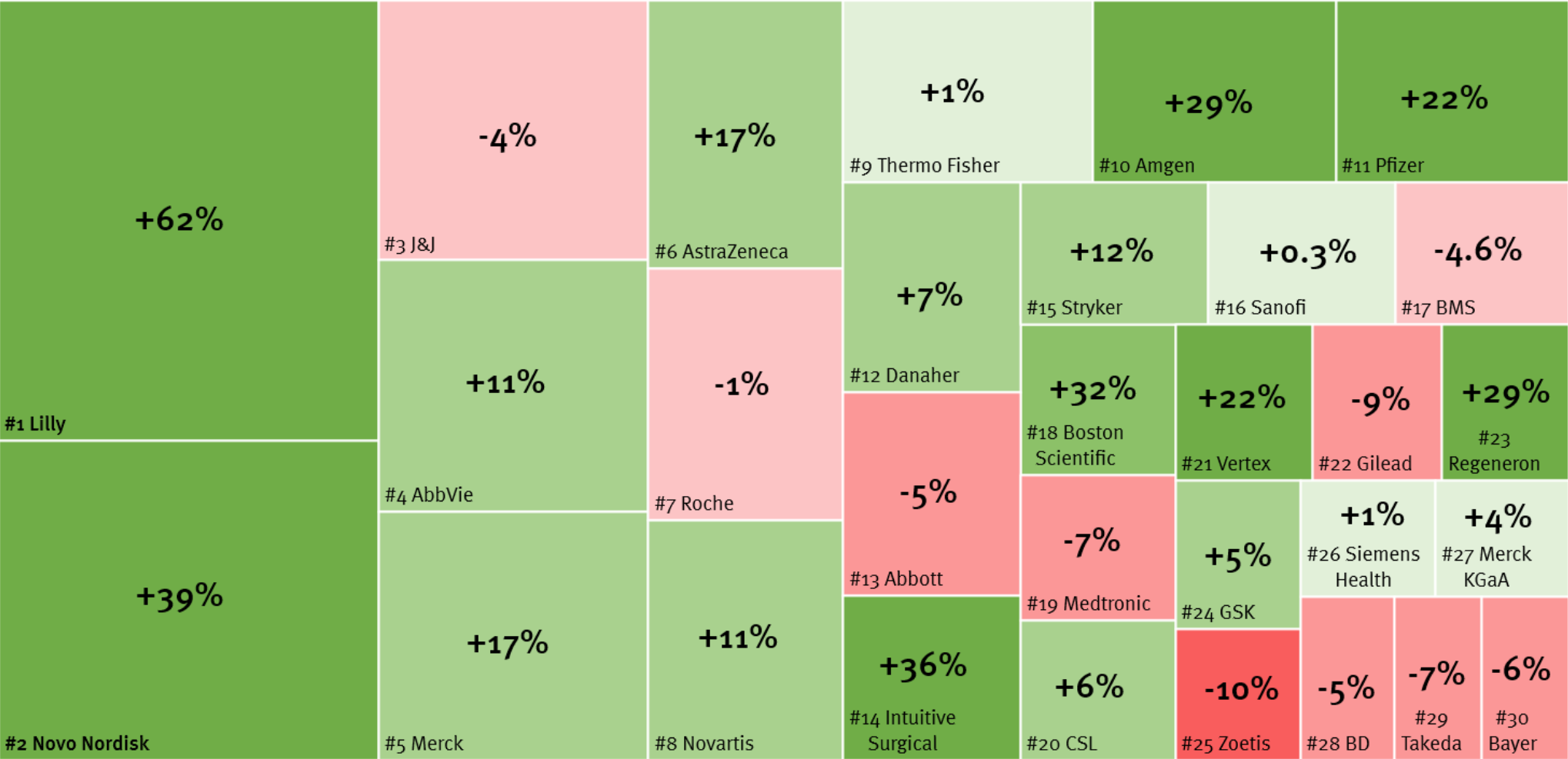




# Changing Fortunes of Top 30 Players in Life Sciences Sector

Four of the top five performers thus far in 2024 (Lilly, Novo, Amgen and Regeneron) have benefitted from exceptionally positive news on obesity drugs. The other top player, Intuitive Surgical, has had a banner year in both financial metrics and innovation (pending approval for the da Vinci 5 system). Other points to observe include Pfizer's excellent recovery and strength at AbbVie, Merck, AZ and Novartis. BMS, Takeda and Gilead have both struggled in their own ways – but each has its fate linked to an increasingly difficult oncology market.

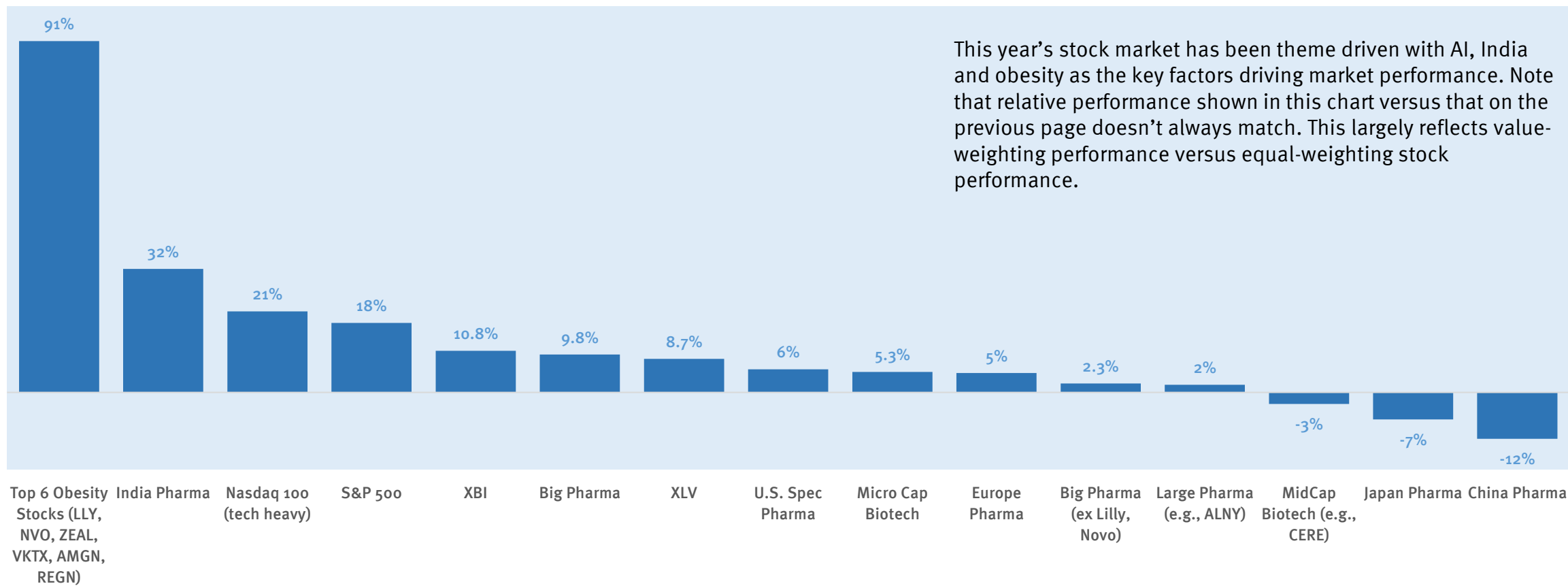
Change in Enterprise Value of Top 30 Life Science Companies Year-to-Date (sorted by EV on Jul 12, 2024)



Source: CapitalIQ and Stifel analysis.

# If You Weren't in Obesity Stocks, India Pharma or Tech So Far in 2024, it's Not Been Easy

Group Equal-Weighted Share Price Return, Dec 30, 2023 to Jul 12, 2024

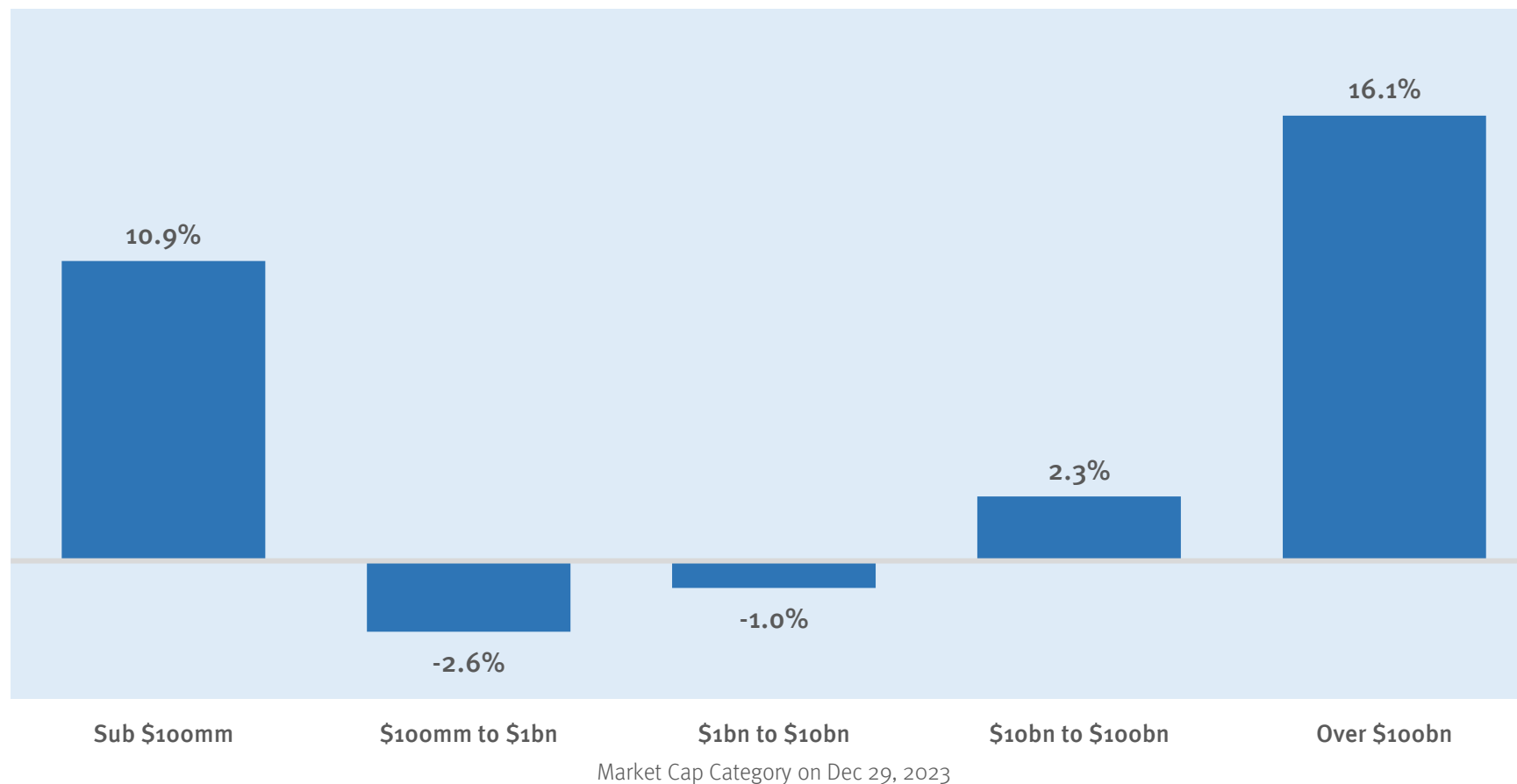


Notes: These data are from S&P CapitalIQ and are compiled into equal-weighted indices. Big pharma includes PFE, LLY, MRK, ABBV, NOVO B, ROG, JNJ, AMGN, AZN, NOVN and SAN. China Pharma includes 600276, 1093, 2186, BGNE, 000963, 600196, 000538, 600518, 002422, 000597, 3692 and ZLAB. India Pharma includes SUNPHARMA, 500257, AUROPHARMA, CIPLA, MANKIND, GLENMARK, 500124, ZYDUSLIFE. Europe Pharma includes Merck KGAA, IPN, HLUN A, BAYN, REC, SOBI, ALM, FRE, ORNBV, UCB, GRF. Japan Pharma includes Takeda, Daiichi-Sankyo, Chugai, Astellas, Eisai. Otsuka Holdings, Shionogi, Ono, Kyowa Kirin, Nippon Shinyaku, Santen and Sumitomo Pharma. Large / midcap biotech includes VRTX, ARGX, ALNY, BMRN, INCY, NBIX, OGN, IONS, EXEL, ALKS, ITCI, HRMY, INDV, BPNC, MRTX, SAGE, IDIA, APLS. US Small/midcap pharma includes SUPN, EGRX, CPRX, PCRX, IRWD, JAZZ, COLL, BHC, BLCO, ARQT, HLS, ASRT, OPTN, GTHX, ANIK, HROW, PHAT, ESPR, CALTX, AMARIN, OPK, LQDA, RIGL, EYPT, MRNS, ALIM, TRVN. LargeCap biotech includes KRTX, MDGL, CERE, CYTK, ARWR, PCVX, DNLI, VIR, CRSP, PRTA, BEAM, AKRO, IMVT, VRNA, VTYX, SWTX, SNDX and Microcap biotech includes LCTX, GLSI, GRPH, CYDY, OMER, SVRA, THRD, EVLO, TCRT, CMRX, TSHA, DTIL, OVID, TNYA, VXRT, CUE, XFOR, ATHA, TRVI, CTXR, SELB, CRMD, MTNB, AKBA. Top Six Obesity includes LLY, NVO, ZEAL, REGN, AMGN, VKTX.



# Micro Caps and Mega Caps Have Performed Best in 2024

Percent Change in Aggregate Market Cap of Global Life Sciences Companies  
By Market Capitalization Group on Dec 29, 2023  
Dec 29, 2023 to Jul 12, 2024 (N=2,046)



We have seen micro caps bounce back in 2024 and then a substantial rally in mega caps driven by performance of Novo Nordisk and Eli Lilly.

On average, companies with market caps in the \$100mm to \$100bn category have seen little value accretion thus far in 2024.

# Gap Between Top Healthcare and Tech Stocks Remains in Place

This has been a year where two big pharma stocks (Lilly and Novo) took off.

Despite this, the value gap between top five tech and healthcare companies has *stayed wide* in 2024.

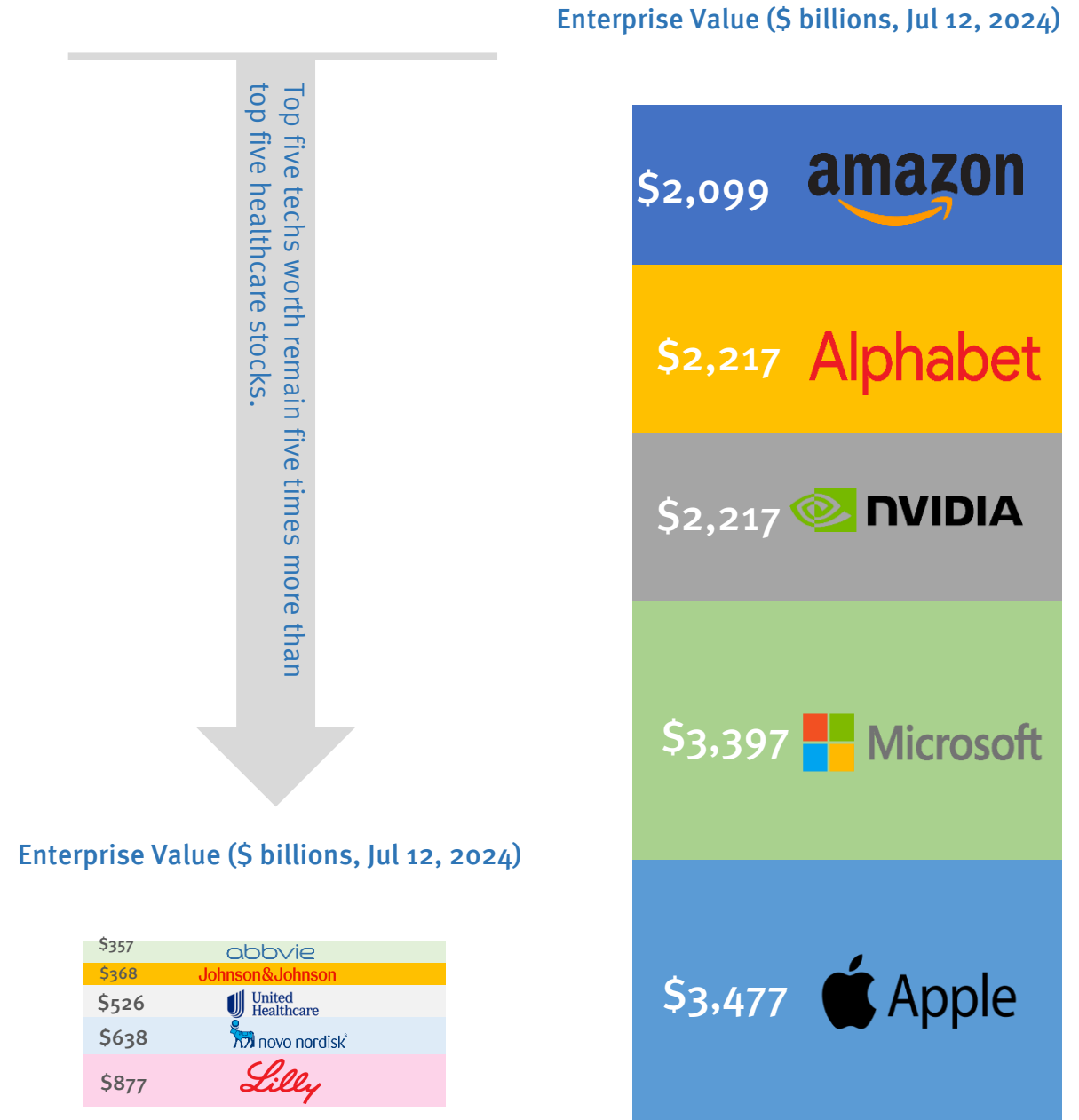
This is because tech companies have also gone up. Just a month ago, Nvidia had emerged as the world's largest company by value. Since then, Apple has come roaring back and now enjoys a market cap that 1.5 times larger than that of all five top healthcare companies (*including Lilly*).

The world's top five tech companies were worth **\$13.4 trillion** in July 2024 (up 30%)

The world's top five healthcare companies are worth **\$2.8 trillion**.

Bizarrely, the GDP contribution of healthcare is far larger than the GDP contribution of technology

Source: CapitalIQ



# Comparison Point: Tech / Healthcare Value Gap at Start of 2024

The world's top five tech companies were worth **\$10.7 trillion** at the end of 2023.

The world's top five healthcare companies were worth **\$2.2 trillion** at the end of 2023.

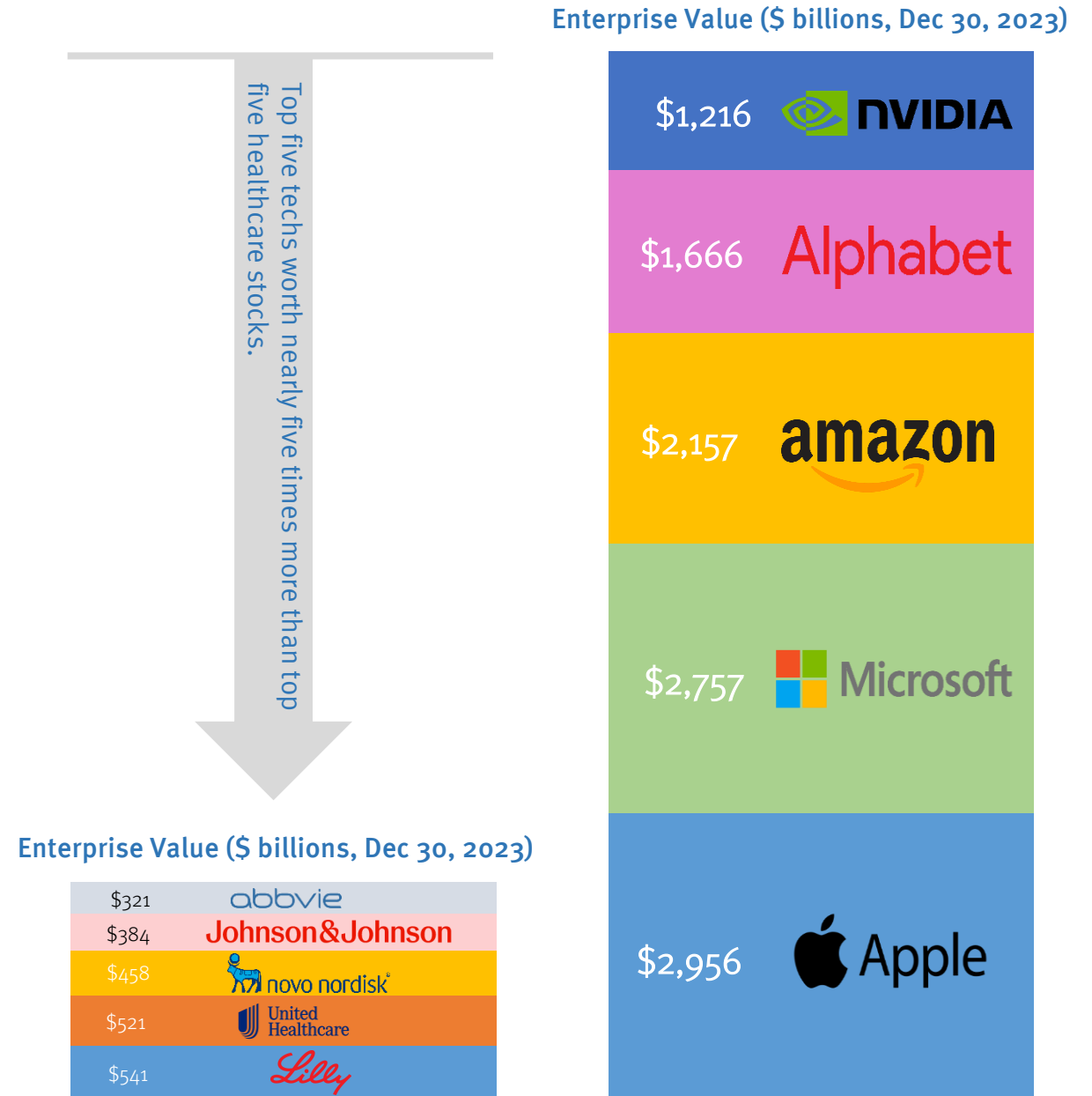
Each of the top three techs are individually larger than the top five healthcare companies **combined**.

The gap widened in 2023 from approximately 4:1 to 5:1.

But the GDP contribution of healthcare is far larger than the GDP contribution of technology

Healthcare is 20%+ of U.S. GDP whereas tech is around 7%.

Source: CapitalIQ

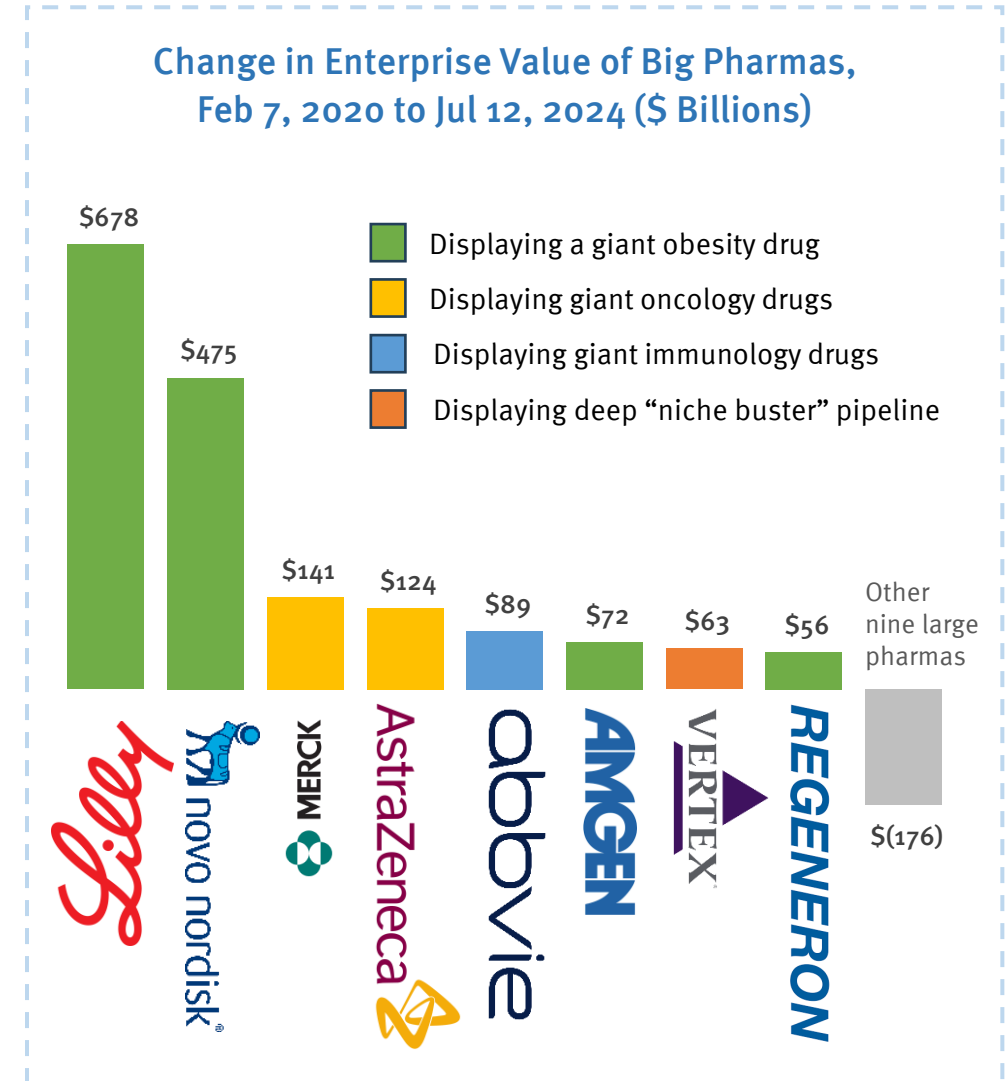




# What's Happened to Big Pharma Since the Pandemic?

The rules of the pharma game changed coming out of the Pandemic. There is a new thought process: “Go Big or Go Home”

- Real drugs for real diseases with real data are now in vogue.
- Massive “pipeline in a product” (“PiP”) drugs are in vogue.
- The big moves have been in **obesity drugs** where there is massive scale possible due to many indications and widespread application.
- Go for “efficacy on big markets” is the new mantra. Precision on narrow markets was the old mantra.
- Everything else is not so fashionable. This is visible in change in enterprise value of the top 17 pharmas since the start of the pandemic. See chart at right.
- The nine pharmas that are not successful engaging the market on a “go big” strategy are down \$176bn in aggregate market cap since the peak of the Pandemic (Feb 7, 2020).
- The lone exception to the “go big” strategy is Vertex Pharma which is doing a great job of pursuing a “niche buster” strategy – a succession of \$3bn+ drugs for indications like cystic fibrosis, sickle cell anemia, Type 1 diabetes and chronic pain.
- The story here is somewhat oversimplified insofar as J&J has a giant oncology franchise and pipeline as does Sanofi in immunology. However, these projects have been displayed and visible to investors for some time. If you will, these companies have not shown enough new pipeline to overcome other growth issues facing their franchises.



Source: CapitalIQ

# If We are in a Period of Hyperinnovation, Why is it So Hard to Generate Positive Share Returns in Pharma?

- It's hard to sustain high value if one is going through a sequence of 20-year patent monopolies, each which requires enormous amounts of time, money and risk to achieve.
- A new drug usually doesn't get close to 20 years of exclusivity. The average time for arrival of branded competition is seven years. On average, sales start to decline twelve years after launch.<sup>1</sup>
- Less than three percent of preclinical drugs are ever approved. And, after approval, less than five percent of drugs ever achieve \$1 billion in sales.
- Average returns on pharma R&D investment have been zero.<sup>2</sup>

**The key challenge is one of generating economic value.**

**Despite what the Biden Administration is saying, it is getting more difficult to make money in pharma.**

**It is difficult to create value with R&D and M&A in today's market due to high competition and low barriers to entry.**

<sup>1</sup>See IQVIA Institute, *Lifetime Trends in Biopharmaceutical Innovation*, 2017. ([link](#))

<sup>2</sup>See Standish Fleming, "Why Pharma Risk Is Inherently Unpredictable And Why It Matters," *Forbes* Nov 6, 2018. ([link](#))

# Evaluate Pharma Identifies Obesity and Immunology Drugs as Key Drivers of Long-Term Pharma Sector Growth

## Big Drugs for Big Diseases

### Obesity, inflammation drive higher pharma sales growth

Novo Nordisk and Eli Lilly's respective obesity/diabetes duos, Wegovy/Ozempic and Mounjaro/Zepbound, plus inflammatory disease blockbusters Dupixent - from Sanofi - and AbbVie's Skyrizi, will help drive annual worldwide prescription drug sales growth to almost 7.7%

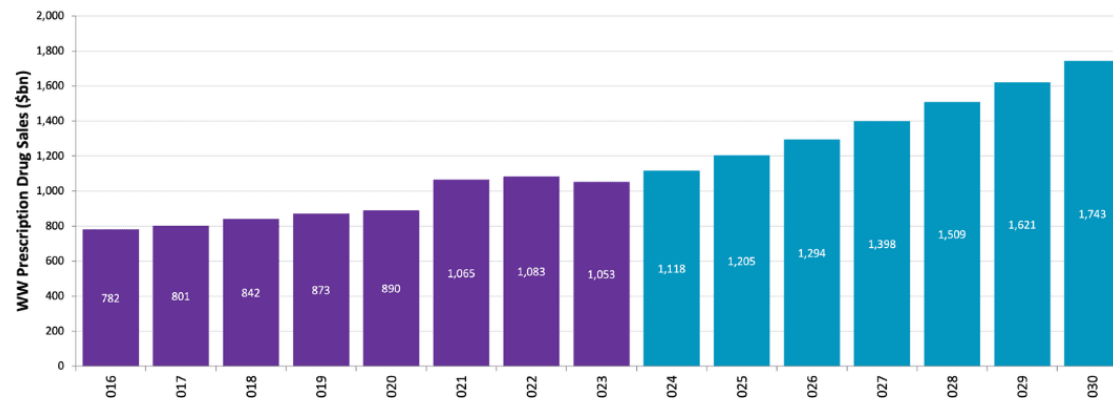
over the next five years. That's two percentage points over 2023's forecasts, and significantly outpaces five-year CAGR since 2000. (See World Preview [2023](#)). In 2030, total pharma sales will top \$1.7 trillion.

### Metabolic Diseases Drugs Will Dominate Top Product Ranks in 2030 – and Likely Beyond

Five metabolic diseases drugs will by then scoop in over \$100 billion combined, dominating the top ten drug ranking. Those are Novo's Ozempic (semaglutide) and Lilly's Mounjaro (tirzepatide) in diabetes, analogs Wegovy and Zepbound for obesity, plus Novo's follow-on combination Cagrisema (semaglutide and cagrilintide). More than one billion people worldwide – including 50% of all US adults – are classified as obese. These treatments not only help reduce weight but are also shown to cut the risk of related conditions including heart, liver and kidney disease. So \$100 billion may not be the ceiling.

**Figure 1: Worldwide Total Prescription Drug Sales (2016-230)**

Source: Evaluate Pharma© (May 2024)





# Evaluate Pharma: Lilly and Novo Nordisk to Lead Revenue Pack in 2030

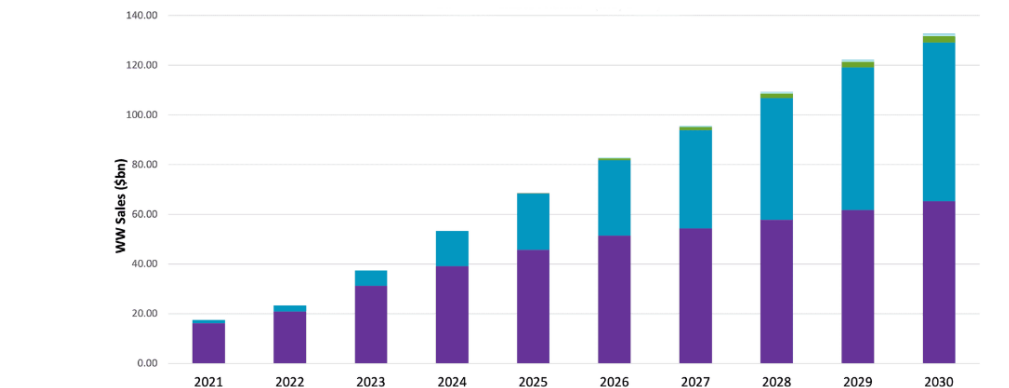
Figure 4: Worldwide Prescription Drug Sales in 2030: Top 10 Companies

Source: Evaluate Pharma© (May 2024)



Figure 5: GLP-1 Modulator Sales by Indication (2021-2030)

Source: Evaluate Pharma© (May 2024)



Note: Sales are predominantly in diabetes (purple) and obesity (blue) but by 2028 will include MASH, chronic kidney disease and chronic heart failure.

Source: <https://www.evaluate.com/thought-leadership/world-preview-2024-report/>

Figure 2: Top 10 Selling Products WW in 2030

Source: Evaluate Pharma© (May 2024)

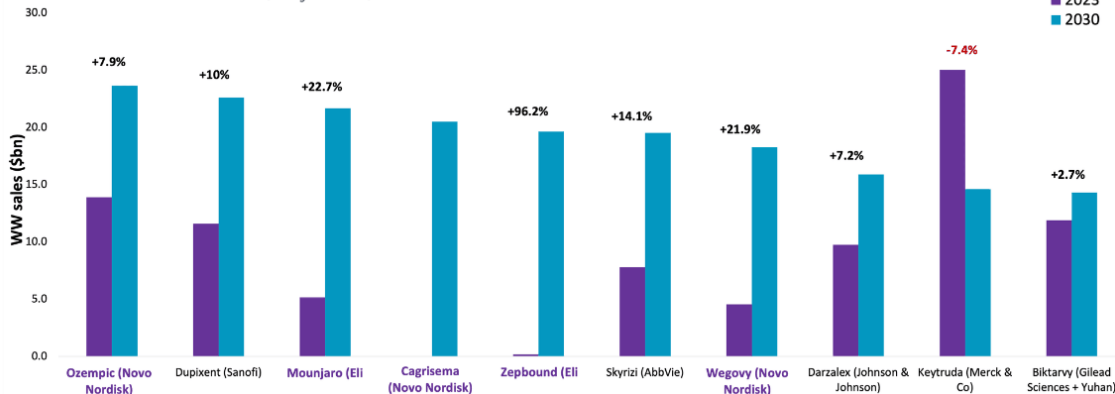
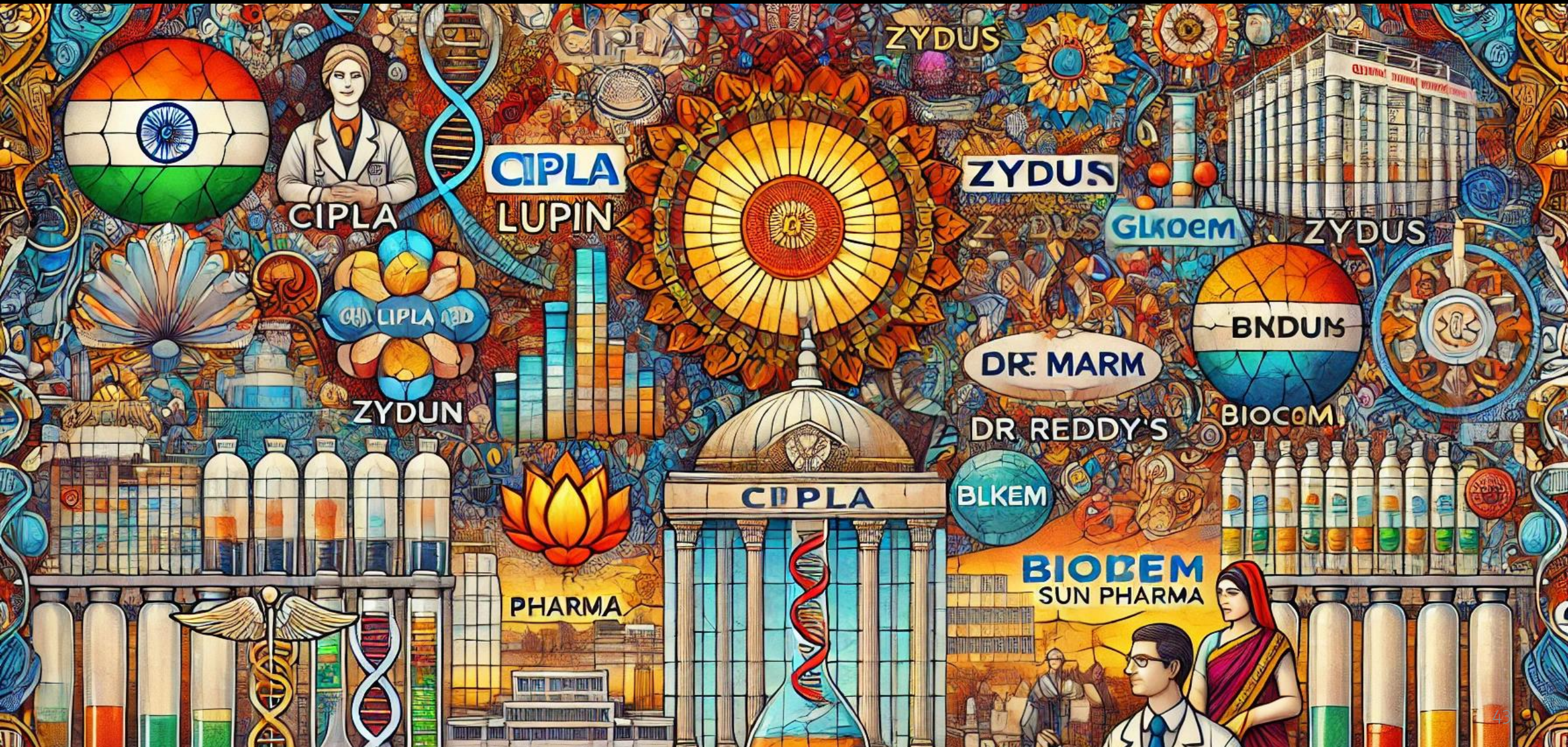


Figure 6: Top 10 Most Valuable R&D Projects (Ranked by NPV). Phase III and Filed.

Product	Company	Therapy Area	WW Product Revenues (\$bn) 2030	Today's NPV (\$bn)
Cagrisema	Novo Nordisk	Endocrine/GI	20.2	80.0
Orforglipron	Eli Lilly	Endocrine/GI	8.3	34.0
Retatrutide	Eli Lilly	Endocrine/GI	5.0	32.3
VX-121 (Vanza Triple)	Vertex	Respiratory	7.7	30.4
MK-3475 SC	Merck & Co	Oncology	8.0	19.7
Datopotamab Deruxtecan	Daiichi Sankyo	Oncology	4.4	17.5
MariTide	Amgen	Endocrine/GI	2.1	12.4
VX-548	Vertex	CNS	2.9	11.0
KarXT	BMS	CNS	3.1	10.5
Donanemab	Eli Lilly	CNS	2.5	9.0
Top 10			64	256.8
Total			343	957.1



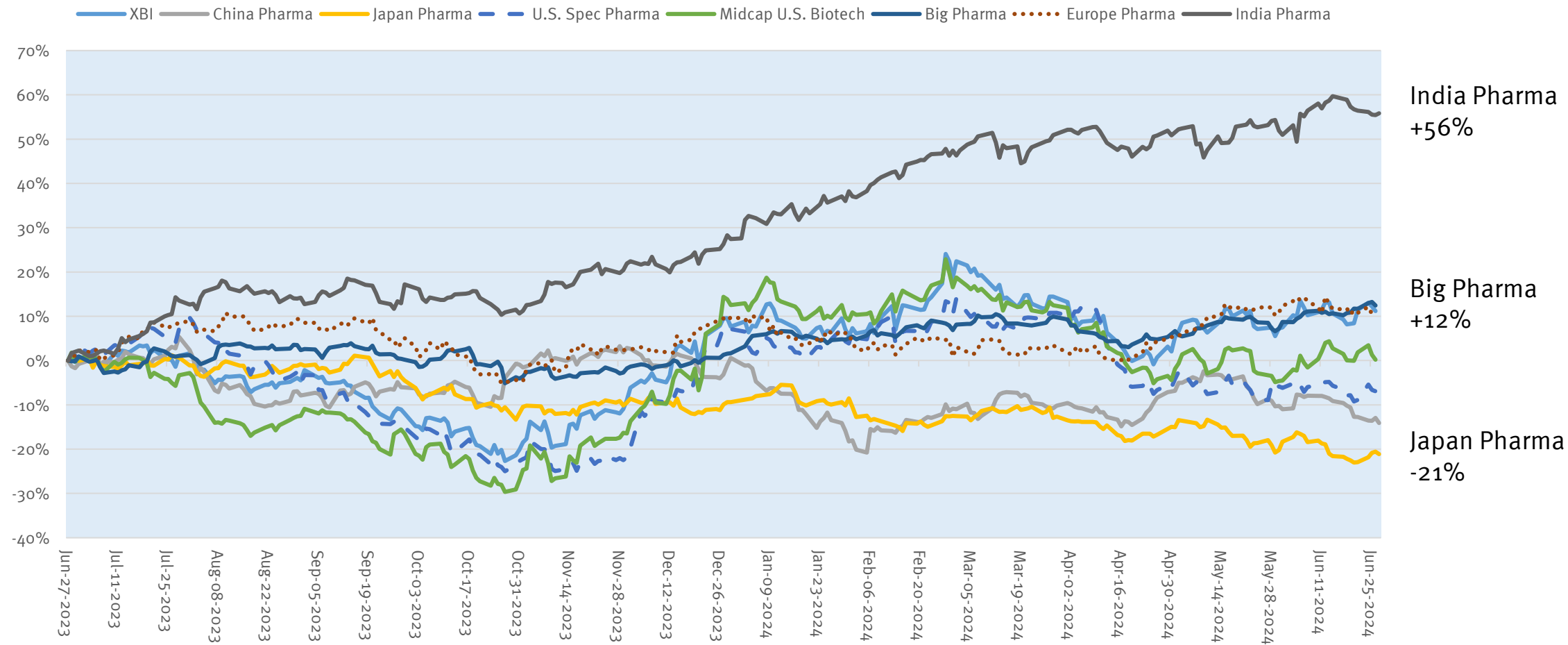
# How India Pharma is Evolving





# India Pharma Share Index Up 56% from June 2023 to June 2024

Index Share Price Return, June 26, 2023 to June 26, 2024





# Drivers of India Pharma Performance

## #1: Market Growth and Domestic Demand:

The Indian pharmaceutical market has shown significant growth potential, with an 11% year-on-year increase in 2023. Leading therapy areas like respiratory, anti-infectives, pain, and dermatology have seen substantial growth. India is the world's largest country by population and is performing well economically under the leadership of Narendra Modi.

## #2: Cost Optimization and Product Portfolio Management:

Indian pharma companies have managed to stabilize raw material costs, improve margins, and optimize their product portfolios. They have discontinued low-margin products and focused on complex molecules and specialty products, which have higher profit margins.

## #3: Regulatory Approvals and Compliance:

Indian companies dominate the ANDA (Abbreviated New Drug Application) approvals granted by the US FDA, which allows them to market generic drugs in the US, a significant revenue stream.

## #4: Supply Chain and Infrastructure Improvements:

While infrastructure challenges remain, there have been substantial investments in logistics and supply chain improvements. This includes better road connectivity, advanced refrigeration systems, and real-time monitoring to ensure the safe and timely delivery of pharmaceutical products.

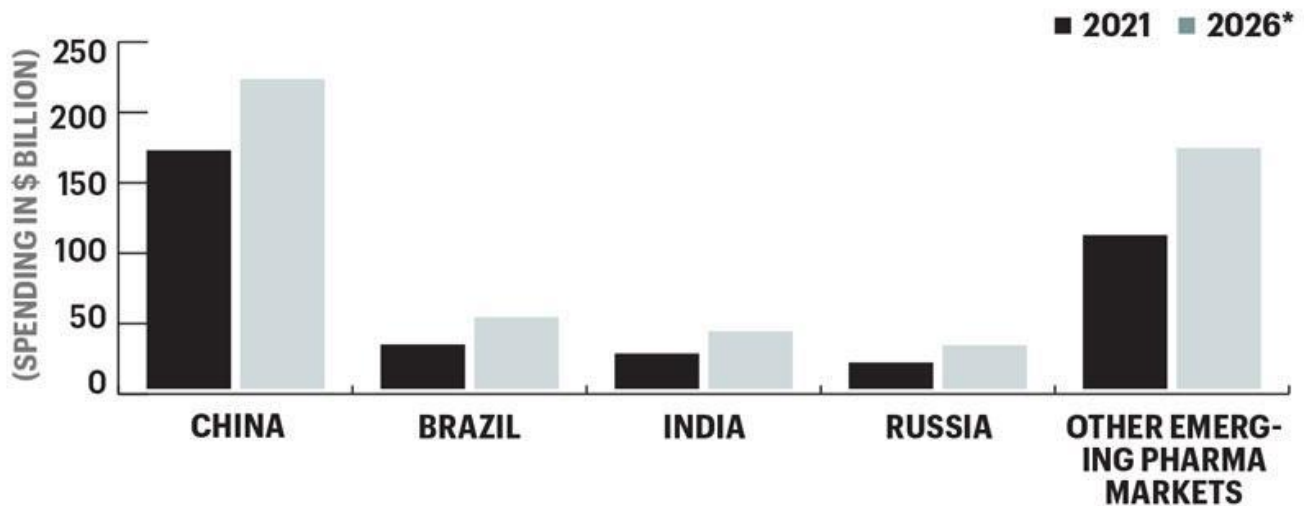
## #5: Innovations and Technological Advancements:

Indian pharmaceutical companies are investing in innovation, particularly in advanced biologics, cell and gene therapies, and other cutting-edge treatments. This focus on innovation is expected to drive future growth and enhance their competitive edge globally.

# India Pharma Market to Grow to \$120 Billion by 2030

## EMERGING PHARMA MARKETS

Pharmerging markets, which contributed 33 per cent to overall global pharmaceutical spending in 2021, are expected to grow at 5-8 per cent CAGR over the next five years



\*ESTIMATE

SOURCE SUN PHARMA ANNUAL REPORT 2022

## INDIA'S PHARMA MARKET

**\$42**

**BILLION**

SIZE OF INDIA'S  
DOMESTIC  
PHARMACEUTICAL  
MARKET IN 2021

**\$65**

**BILLION**

LIKELY SIZE OF INDIA'S DOMESTIC  
PHARMA MARKET BY 2024,  
WHICH IS EXPECTED TO GROW TO  
\$120-130 BILLION BY 2030

**6.3**

**PER CENT**

GROWTH IN MOVING ANNUAL  
TOTAL OF THE INDIAN PHARMACEUTICAL  
MARKET IN THE PAST  
12 MONTHS

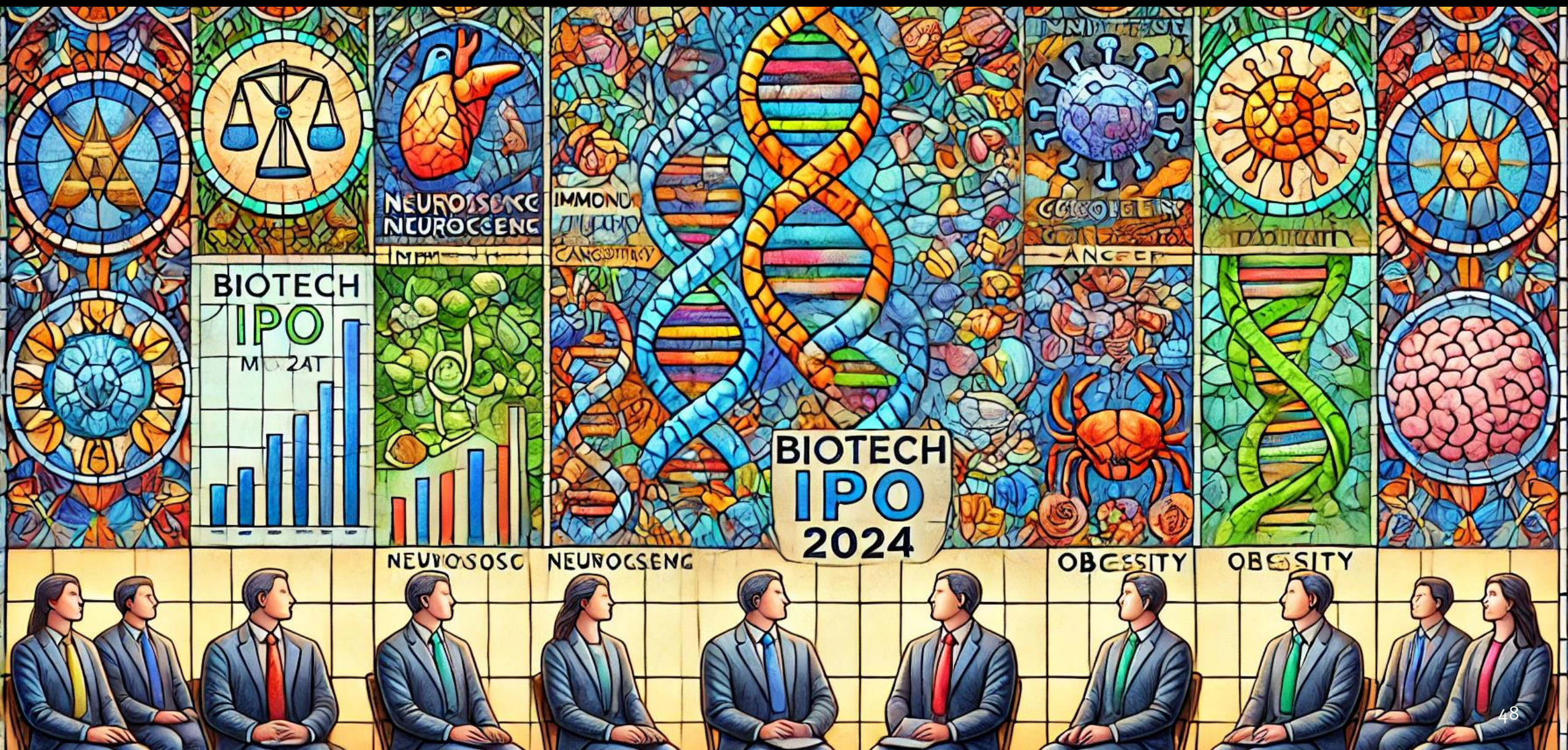
# India Pharma Market Evolving Quickly

The leadership group has changed with entry from Alkem, Mankind and Divi's in the last decade.

Enterprise Value Rank	Company	Enterprise Value (\$mm)	Trailing Revenue (\$mm)	EBITDA (\$mm)	Story
1	 <b>SUN PHARMA</b>	\$43,833	\$5,807	\$1,542	Focused on generics but doing brands in 100 nations. GLP1 (phase 2)
2	 <b>zydus</b> Dedicated To Life	\$14,365	\$2,341	\$635	Very strong generic player. In US brands. NLRP3 (phase 2), PPAR (Ph 3)
3	 <b>Cipla</b>	\$14,018	\$3,047	\$753	Emerging market powerhouse. Strong in CV/Resp meds
4	 <b>Divis</b>	\$13,953	\$939	\$264	Strong in API and intermediates. B2B model.
5	 <b>Dr.Reddy's</b>	\$12,688	\$3,343	\$946	Doing very well in India and US Generics. Strong API and OTC business.
6	 <b>torrent PHARMA</b>	\$12,316	\$1,246	\$398	Diverse product portfolio. Good acquisitions in Europe
7	 <b>Mankind</b> Serving Life	\$9,962	\$1,247	\$306	Focused on affordable generics, esp antibiotics and CV
8	 <b>LUPIN</b>	\$9,928	\$2,396	\$453	Strong generic player in US/EU. Not doing well in brands
9	 <b>AUROBINDO</b>	\$9,348	\$3,428	\$700	Has stuck to API and generics across the world. Injectibles powerhouse.
10	 <b>ALKEM</b>	\$7,454	\$1,517	\$269	Generics and neutraceuticals with an India focus



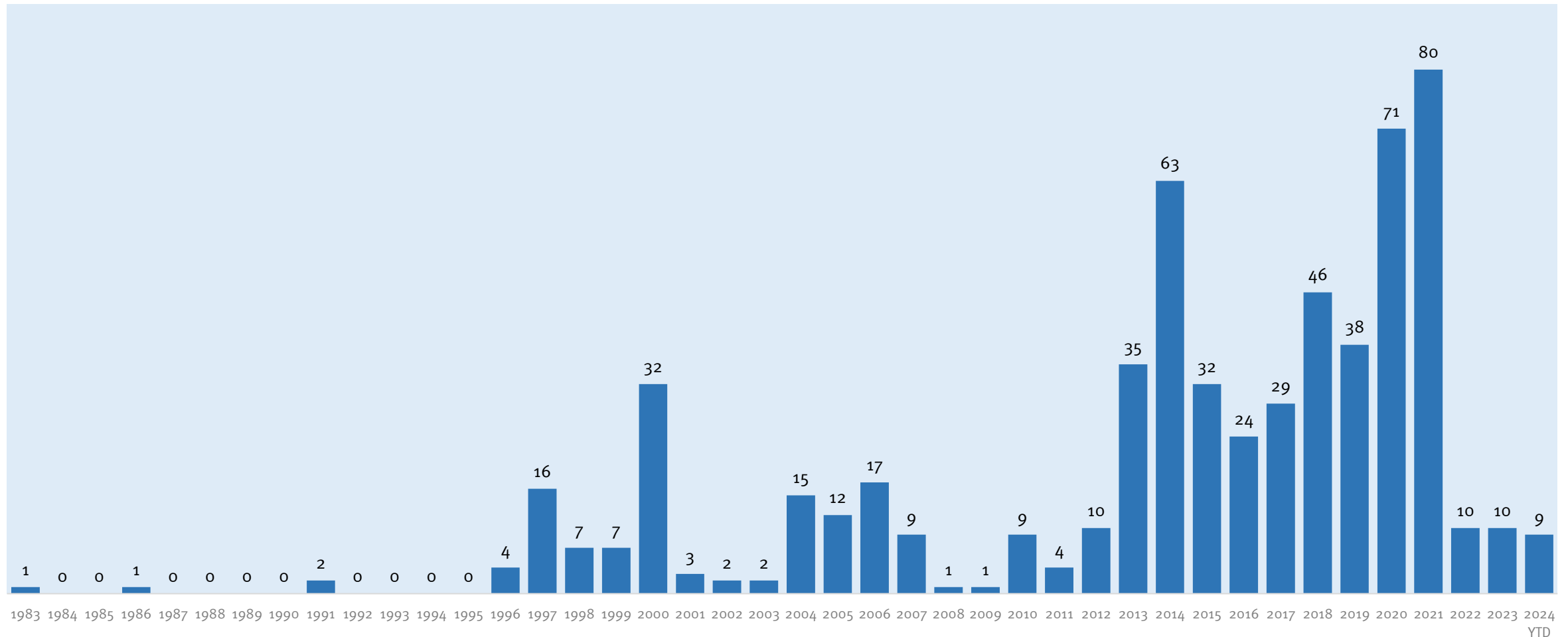
# The Biopharma IPO Market





# Aggregate Global IPO Count in 2024 is Up Substantially from 2023 Levels (on an Annualized Basis)

Count of U.S. Biotech IPOs in the 1983 to 2024 (through Jul 12, 2024)



Source: Stifel and CapitalIQ. IPOs are shown for R&D-Stage companies that went public on the NASDAQ that raised at least \$25 million.

# Class of 2024 NASDAQ IPO's Have Traded Down On Average

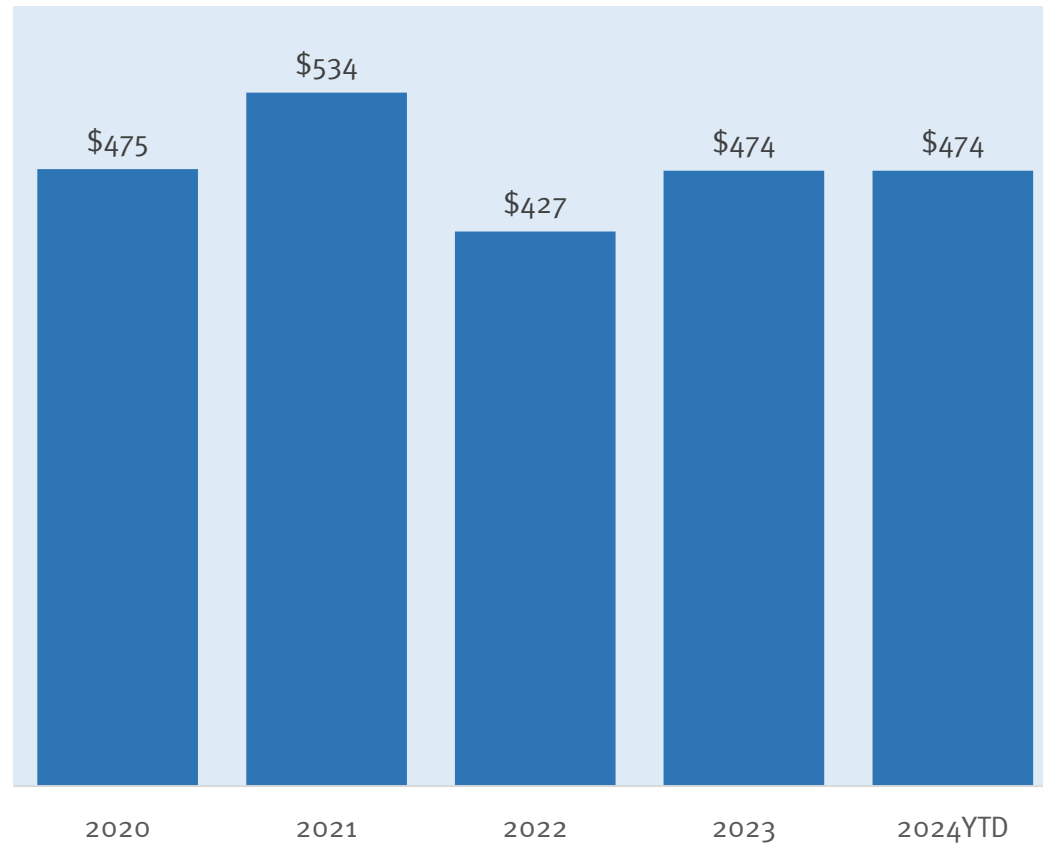
Target/Issuer	Offer Date	Ticker	Pre-Money Valuation (\$mm)	Issuance Amount (\$mm)	Offer to Current (through 7/5)	Pricing vs. Range	Step Up
Alumis	06/27/2024	ALMS	\$676	\$250	-28.4%	Low End	1.1X
Rapport Therapeutics	06/06/2024	RAPP	\$479	\$154	40.8%	Midpoint	1.2X
Contineum Therapeutics	04/04/2024	CTNM	\$319	\$110	25.2%	Low End	1.1X
Boundless Bio	03/27/2024	BOLD	\$296	\$100	-74.1%	Midpoint	1.2X
Metagenomi	02/08/2024	MGX	\$469	\$94	-72.3%	Low End	0.6X
Kyverna Therapeutics	02/07/2024	KYTX	\$652	\$319	-68.2%	Above	2.6X
Alto Neuroscience	02/01/2024	ANRO	\$322	\$129	-27.1%	High End	1.5X
ArriVent BioPharma	01/25/2024	AVBP	\$607	\$175	3.3%	Midpoint	1.1X
CG Oncology	01/24/2024	CGON	\$912	\$380	67.8%	Above	1.5X

Average	\$154	-27.1%	1.2X
Median	\$190	-14.8%	1.3X

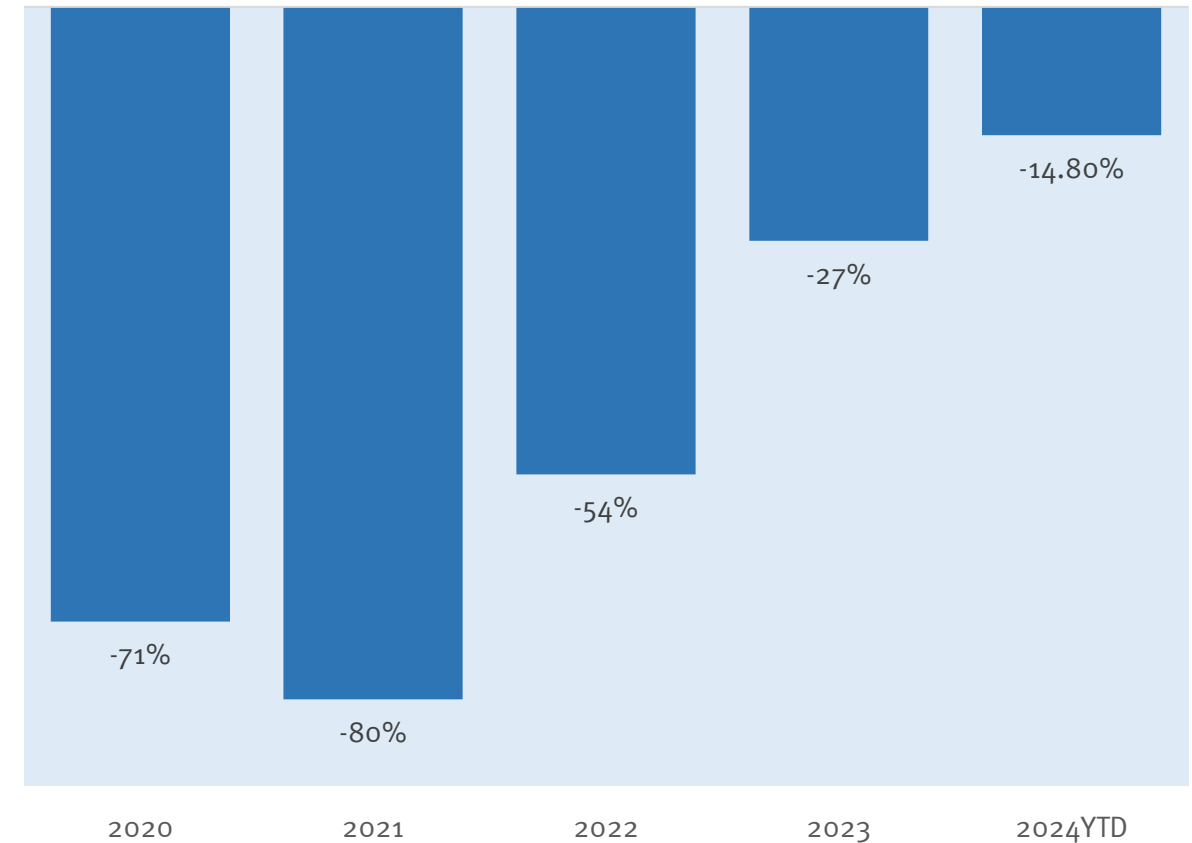


# U.S. Biotech IPO Pre-Money Valuations Have Rebounded as Deals Have Struggled

Median U.S. Biotech IPO Pre-Money Valuation (\$mm), 2020 to 2024 YTD



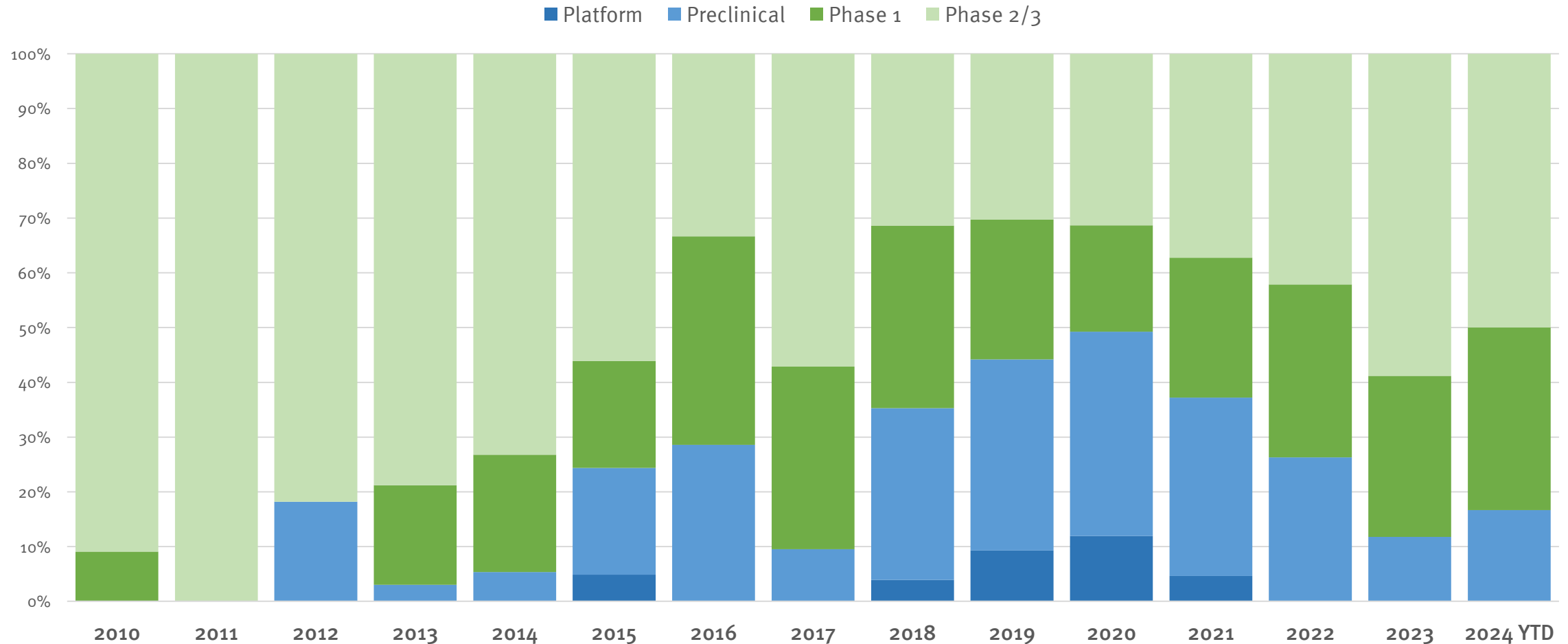
Median U.S. Biotech IPO Aftermarket Performance (%), 2020 to 2024 YTD



Source: Stifel Capital Markets Department, July 2024. Amounts raised in concurrent private placements are included as part of the IPO issuance amount. Pre-money equity values at pricing are fully diluted, accounting for options and warrants using the Treasury Stock Method. Excludes NASDAQ IPOs with total proceeds of less than \$50.0mm. Median aftermarket performance represents performance from pricing to July 5, 2024.

# U.S. IPO's in 2024 Have Been Overwhelmingly for Clinical Stage Companies

Fraction of U.S. IPOs by Therapeutic Area of Lead Product at Time of Listing, 2010 to 2024 YTD

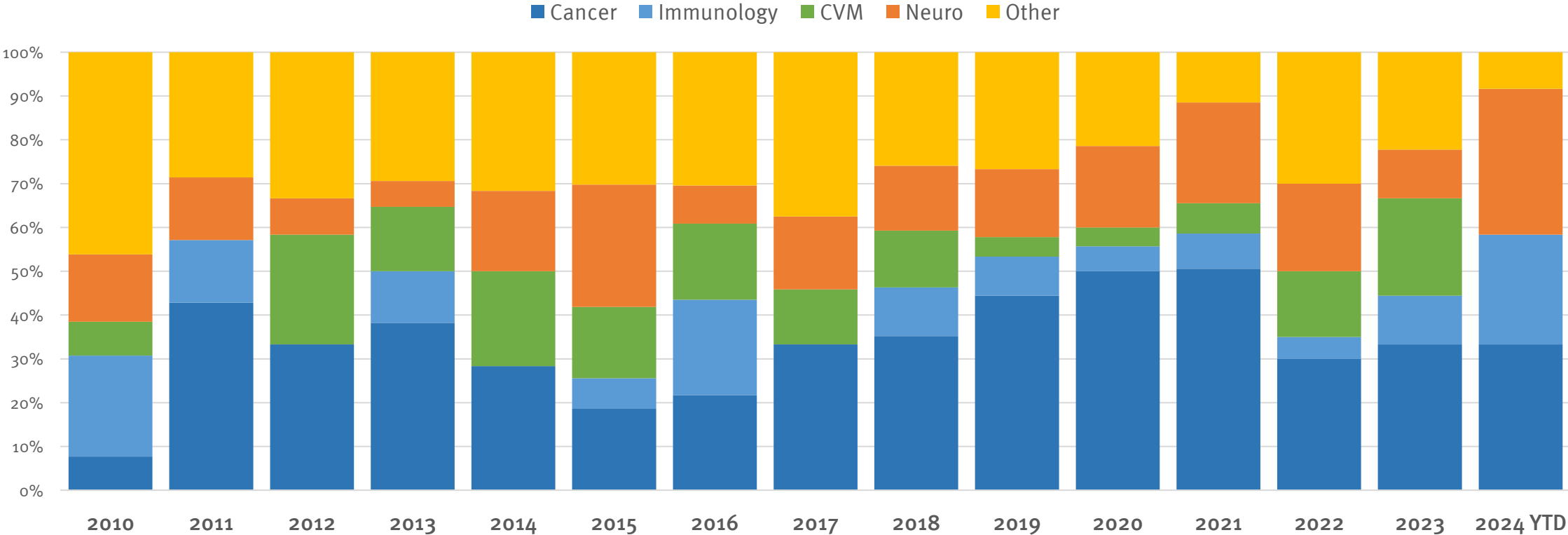


Source: DealForma. IPOs are shown for Nasdaq and NYSE listed R&D-Stage companies that raised at least \$50 million.

# The U.S. IPO Market Has Been Selectively Open to Stories in Oncology, Immunology and Neuroscience

The IPO market was accommodating in 2024 to companies pursuing oncology, neurology and immunology stories. The relative volume of oncology transactions was flat to the 2021-2023 period. Transactions in other areas (ophthalmology, urology, GI etc) all but disappeared in 2024 after having been active for years before.

Fraction of U.S. IPOs by Therapeutic Area of Lead Product at Time of Listing, 2010 to 2024 YTD



Source: DealForma. IPOs are shown for Nasdaq and NYSE listed R&D-Stage companies.. Immunology encompasses investments in autoimmune and inflammation.



# The Biopharma Follow-on Equity / Secondary Market

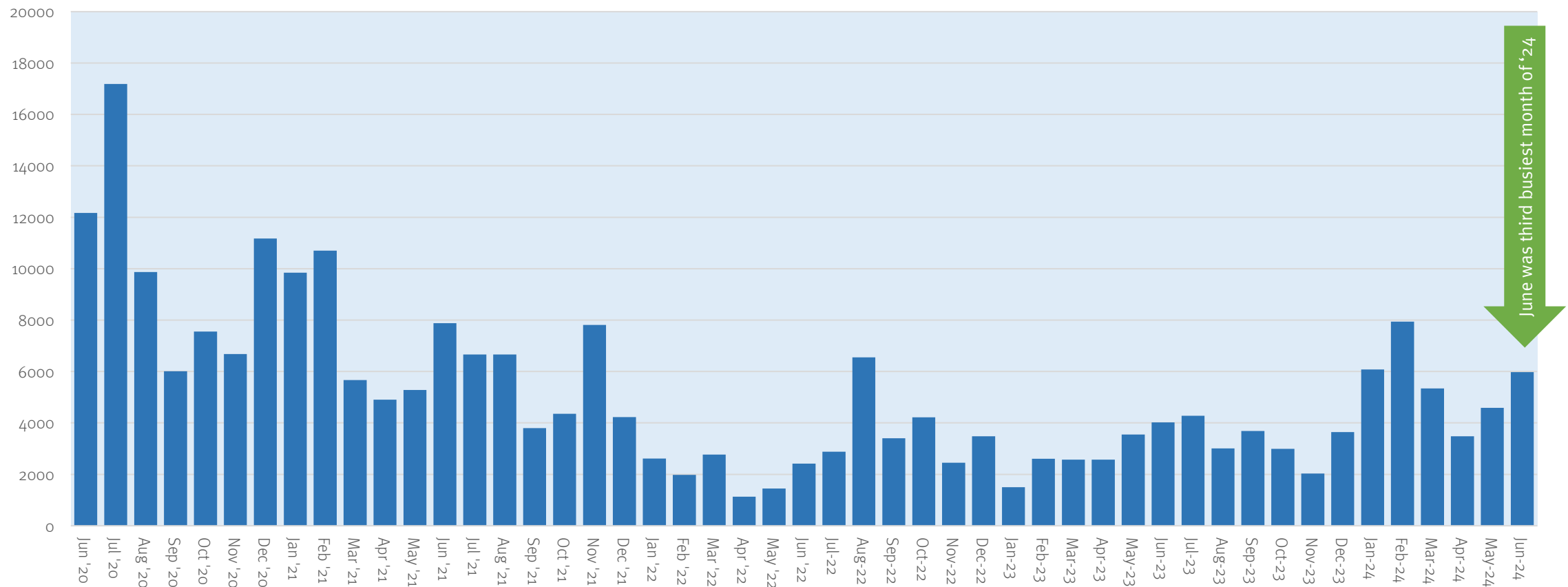




# Monthly Global Biopharma Follow-on Equity Volume

Last month saw \$6 billion in follow-on volume in the equity capital markets. The biotech equity capital markets are clearly improving after taking a breather in April. Nonetheless, market activity is below where it was in February.

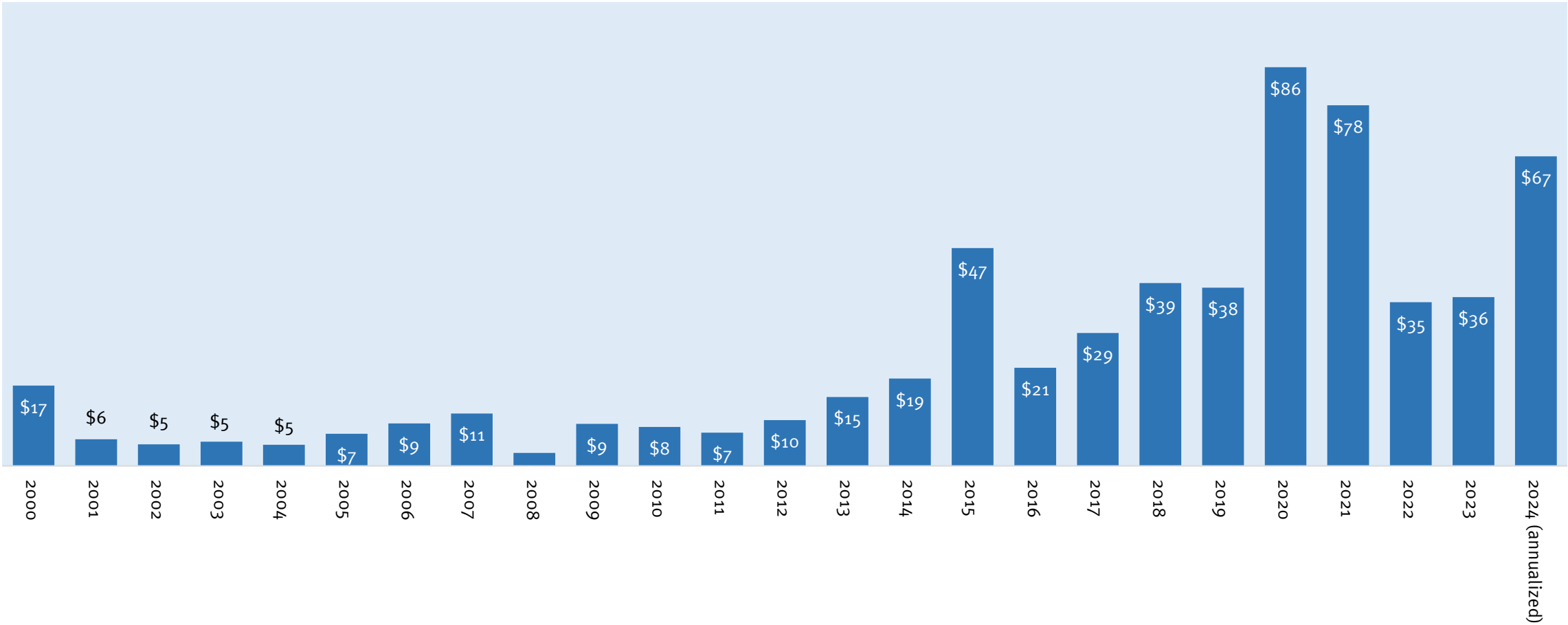
Equity Follow-On (\$volume, \$mm), Jun 2020 to June 2024



Source: Data from CapitalIQ. Follow-ons from all countries and valuations are included in this analysis.

# 2024 Biotech Follow-On Volume On Pace to be Third Busiest in History

Global Follow-on Equity Volume in the Biopharma Sector, 2000 - 2024  
(\$ Billions, Worldwide)

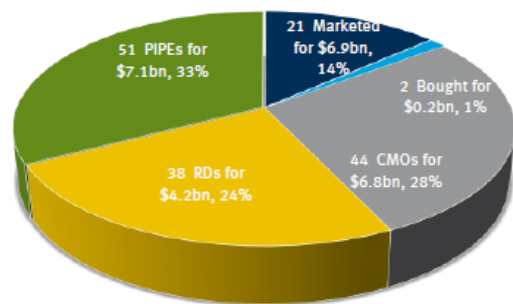
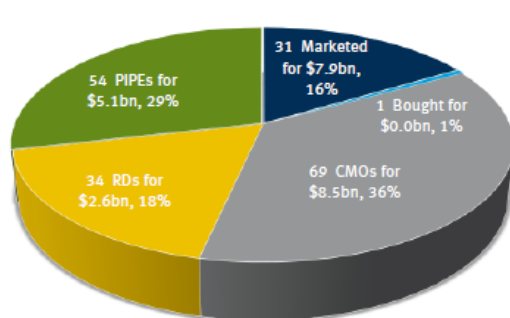


Source: Data from CapitalIQ and Stifel Database

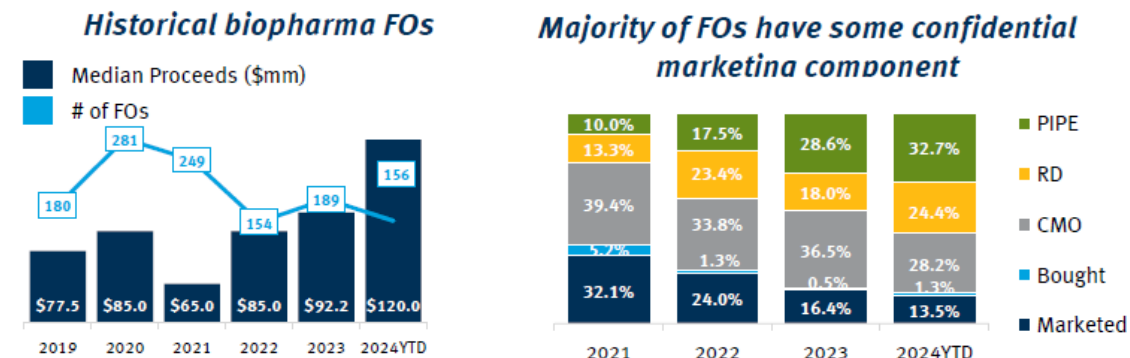


# Biotech Follow-On Metrics

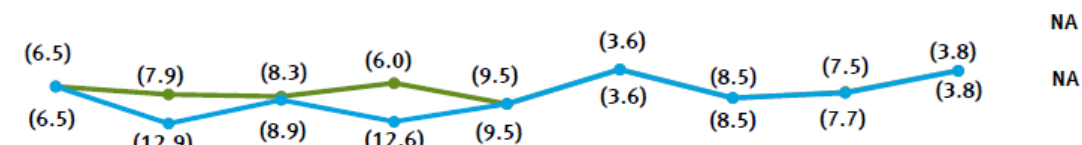
Deal Type	# of Deals	Market Cap (mm)	Deal Size (mm)	Deal Size/ Market Cap	File to Offer	% of Deals w/ Warrants	"All-In" Discount
Marketed	21	\$2,459	\$319	14.0%	(6.7%)	NA	(6.7%)
Bought	2	\$629	\$86	13.7%	(12.2%)	NA	(4.4%)
CMO	44	\$702	\$140	18.4%	(8.9%)	9.1%	(8.9%)
RD	38	\$434	\$80	22.4%	0.0%	21.1%	0.0%
PIPE	51	\$404	\$100	37.6%	0.0%	7.8%	0.0%



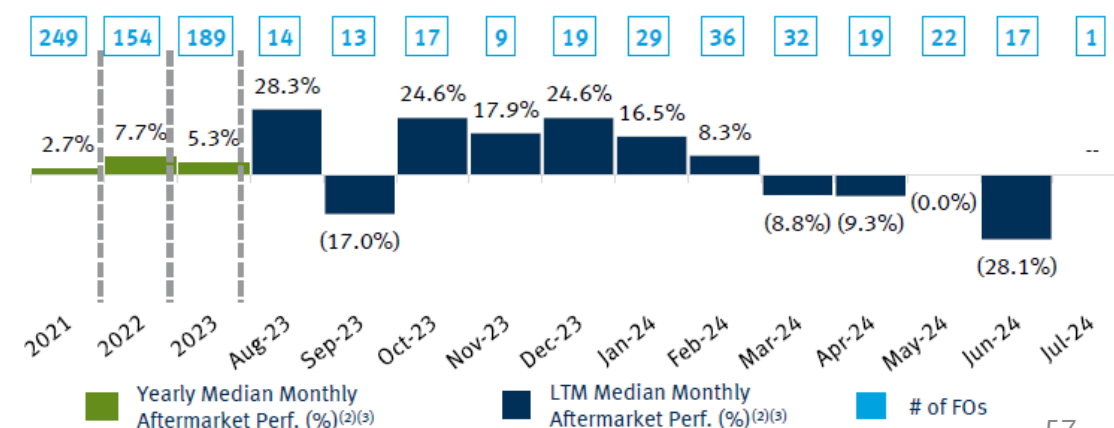
## Follow-On Market Has Been Active 2024YTD<sup>(1)</sup>



## Discounts Have Remained in Line<sup>(2)</sup>



## Aftermarket Performance Has Been Mixed<sup>(1)</sup>



Source: FactSet and Dealogic as of July 5, 2024.

Note: File to offer represents "all-in" discount for offerings with warrants.

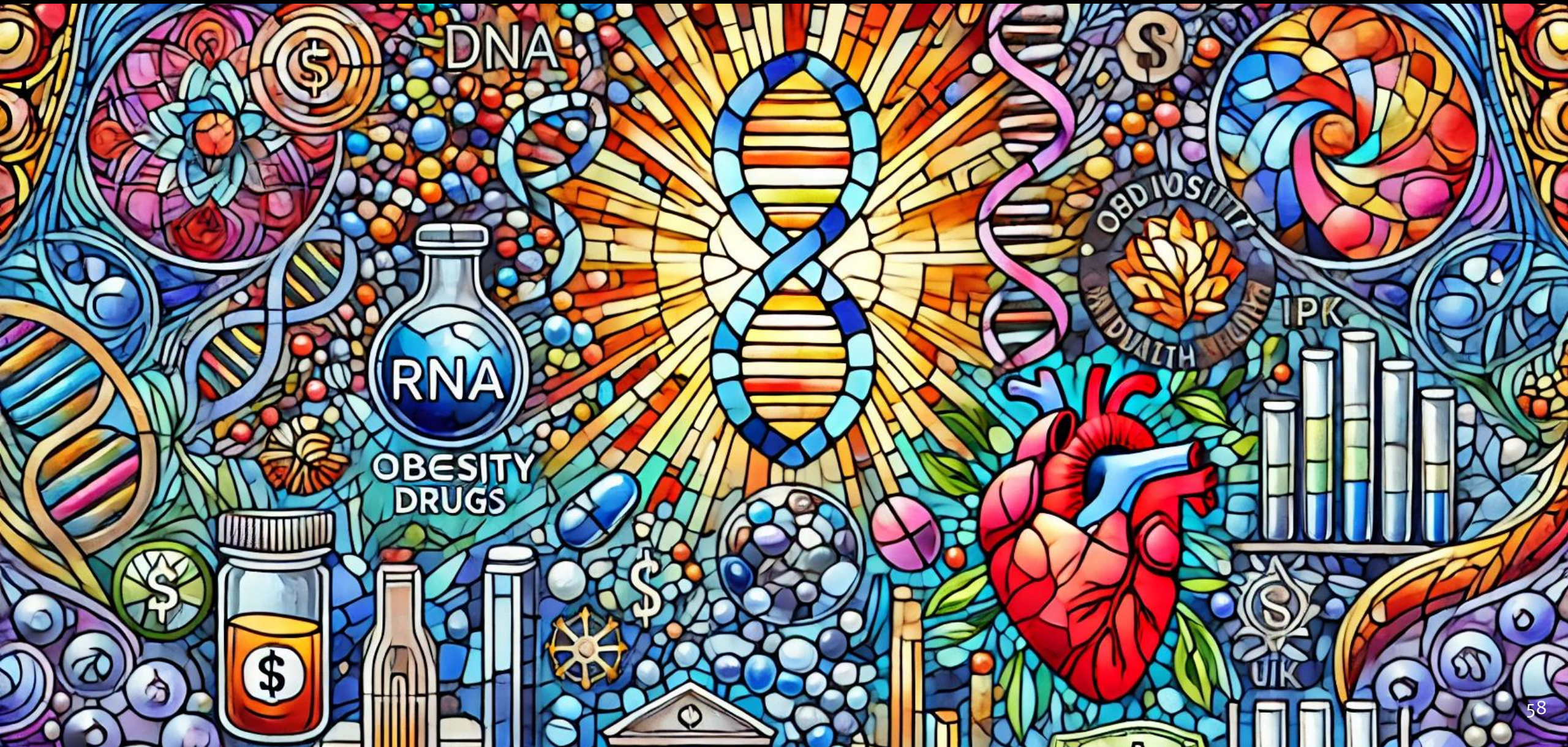
(1) Includes marketed, bought, confidentially marketed, registered direct and PIPE offerings with proceeds of \$20.0 million and greater.

(2) Only includes marketed, confidentially marketed and registered direct offerings with proceeds of \$20.0 million and greater, excludes bought and PIPE offerings.

(3) Median monthly aftermarket performance represents +30 day performance.



# Venture Equity Environment

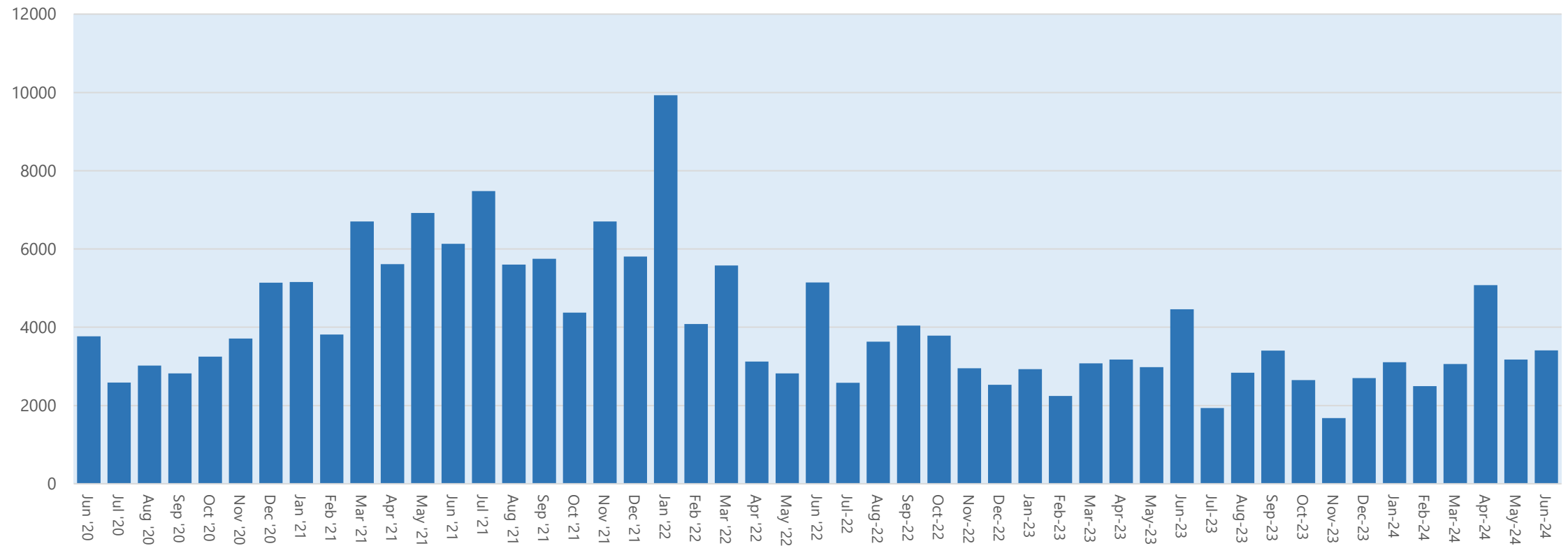




# Monthly BioPharma Private Equity / Venture Placement Volume Steady in First Half of 2024

The dollar volume of private deals in the first half of 2024 was similar to levels seen in 2023. The market has been averaging volume of \$3.5 billion a month throughout 2024.

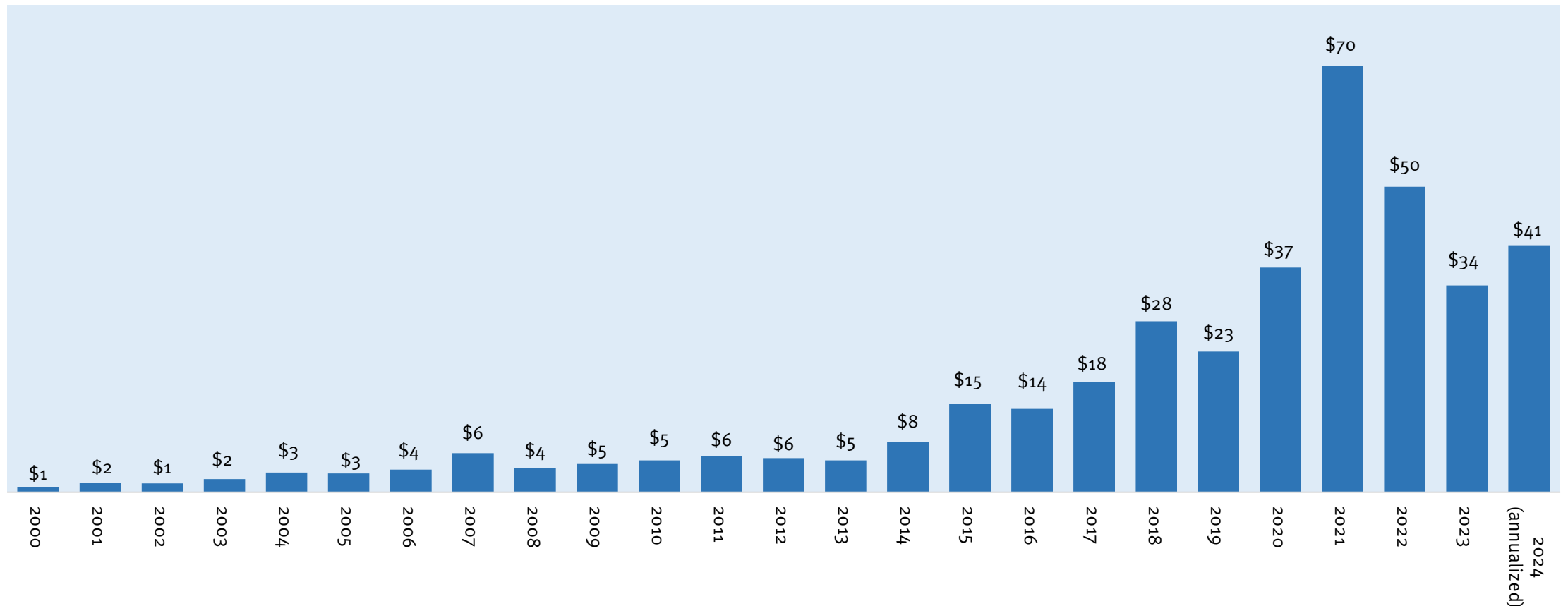
Monthly Private Equity Placement (\$volume, \$mm), Jun 2020 to June 2024





# Biopharma Sector Venture Equity Deals Total Volume Up from 2023 But Down from Pandemic Period

Venture Privates in the Biopharma Sector, 2000 - 2024 (annualized)  
(\$ Billions, Worldwide)



# Most Active Lead Investors in Venture Equity Deals YTD

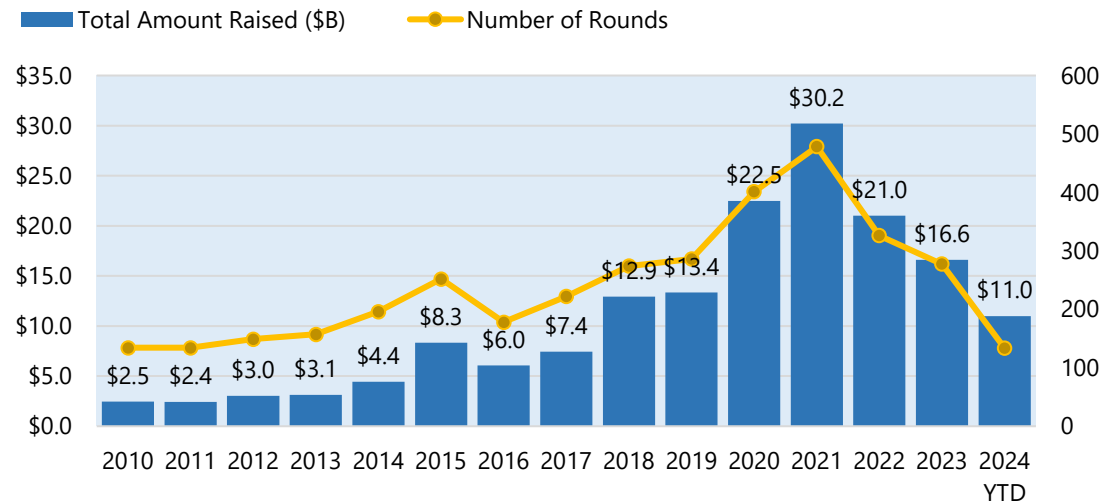
Investor	Transaction Count	Aggregate Round Size (\$mm)
ARCH Venture Partners	4	\$1,555
GV	4	\$223
West Street (Goldman Sachs)	3	\$332
Forbion	3	\$310
Novo Holdings	3	\$272
Versant Ventures	3	\$167
Sofinnova Investments	2	\$360
BVF Partners	2	\$353
RA Capital Management	2	\$230
New Enterprise Associates	2	\$225
Enavate Sciences	2	\$182
Medicxi Ventures	2	\$162
Deerfield Management	2	\$161
MPM BioImpact	2	\$143
The Column Group	2	\$135
Syncona Ltd.	2	\$106
Third Rock Ventures	2	\$102
Sofinnova Partners SAS	2	\$38
SPRIM	2	\$35
Cowin Venture Capital	2	\$34
Octopus Ventures	2	\$24
Andreessen Horowitz	1	\$372

Investor	Transaction Count	Aggregate Round Size (\$mm)
Foresite Capital	1	\$259
Temasek Holdings	1	\$205
Cormorant	1	\$200
SR One	1	\$200
Frazier Life Sciences	1	\$182
RTW Investments	1	\$162
Wellington	1	\$161
Deep Track Capital	1	\$158
F-Prime	1	\$157
Catalio Capital	1	\$150
Nextech Invest Ltd.	1	\$145
SDIC Fund Management	1	\$140
EQT Life Sciences	1	\$139
Westlake Village BioPartners	1	\$135
AyurMaya	1	\$133
TCGX	1	\$120
Viking Global Investors	1	\$120
Ally Bridge Group	1	\$112
Venrock	1	\$107
Lumira Ventures	1	\$105
Colt Ventures	1	\$100
J.P. Morgan Asset Management	1	\$100

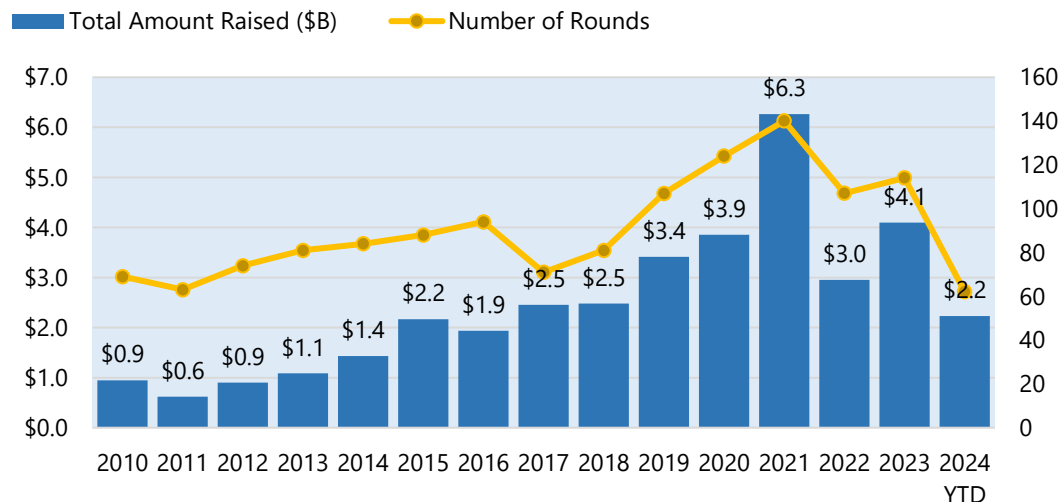
Source: DealForma. Venture investments into the biopharma sector. Data for 2024 through July 12<sup>th</sup>.

# DealForma Data: Biopharma Venture Activity by Region

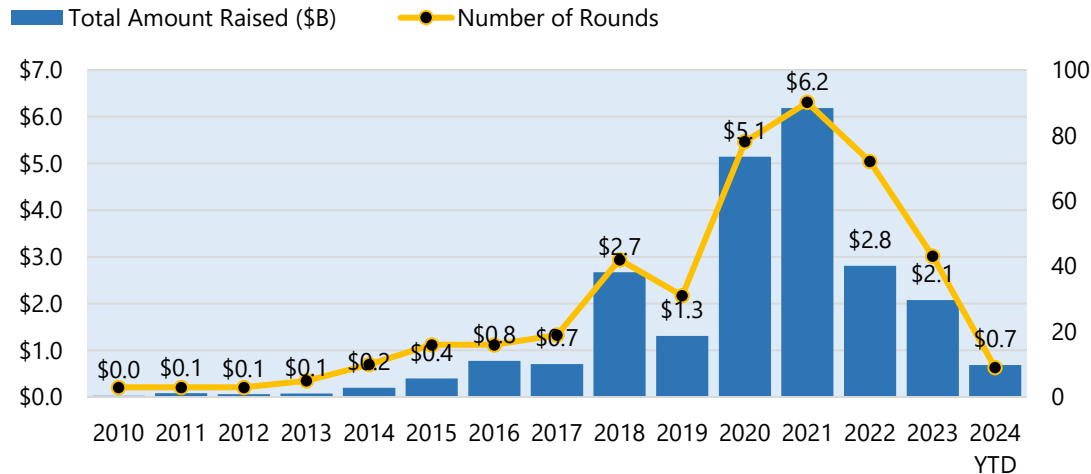
Venture **Totals** - Biopharma Tx and Platforms - **U.S.**



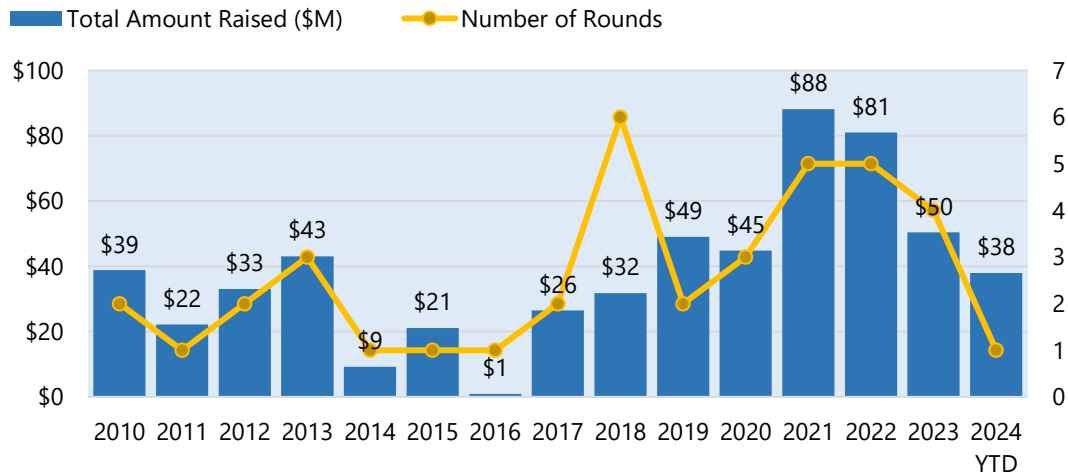
Venture **Totals** - Biopharma Tx and Platforms - **Europe**



Venture **Totals** - Biopharma Tx and Platforms - **China**



Venture **Totals** - Biopharma Tx and Platforms - **Japan**



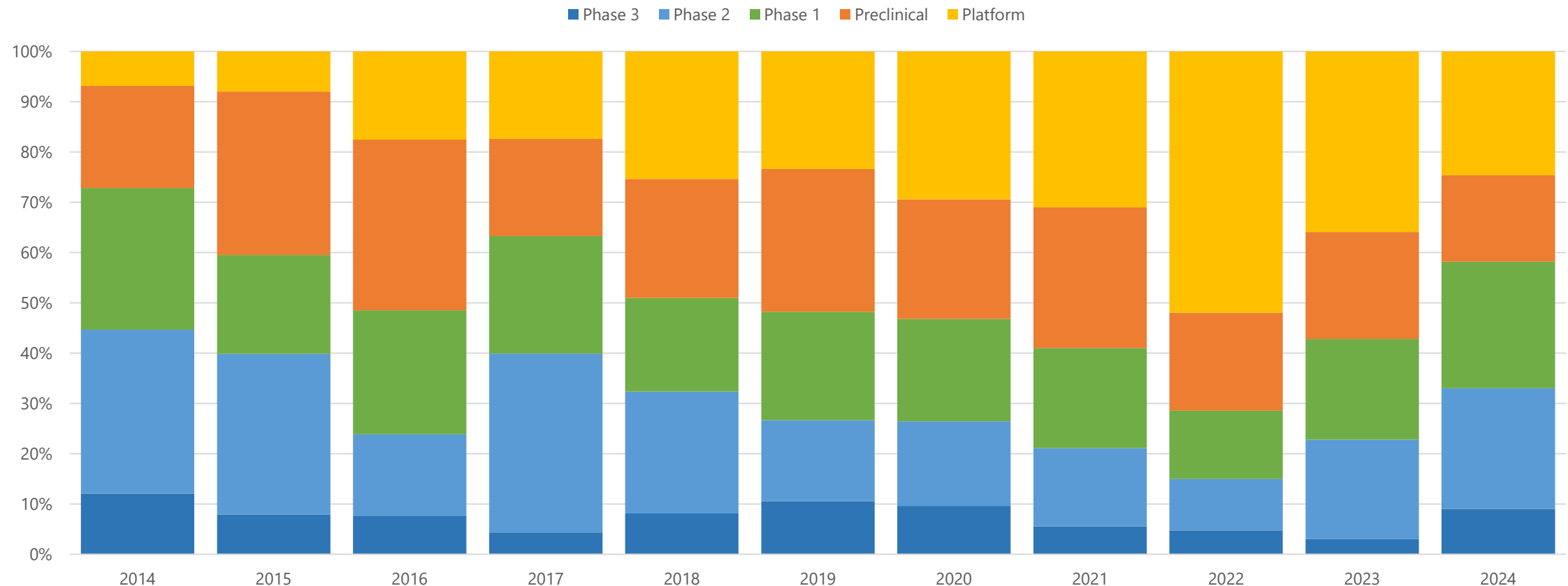
Source: DealForma. Venture investments into the biopharma sector. Data for 2024 through June 30<sup>th</sup>.



# Trend to Later Stage Venture Deals Continuing in 2024

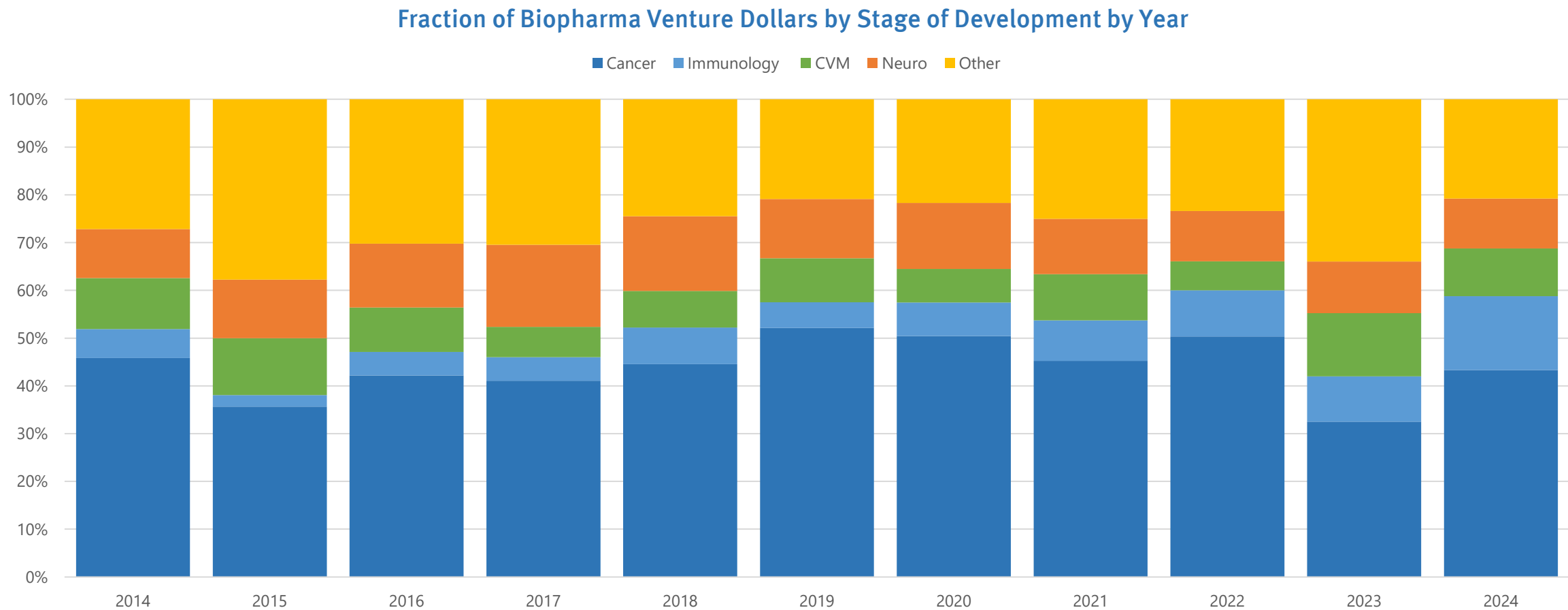
The share of venture dollars invested in later stage molecules has gone up in 2024. However, over a longer period, we saw distinctly less late-stage investments after 2019 (presumably because these companies could go public). Platform investment levels peaked in 2022 and have fallen off substantially since then. However, over the long-term, the popularity of investing in platform companies is a relatively new thing, taking off in a meaningful way only in 2016.

**Fraction of Biopharma Venture Dollars by Stage of Development by Year**



# Immunology Investment Area Up / Oncology Down in 2023

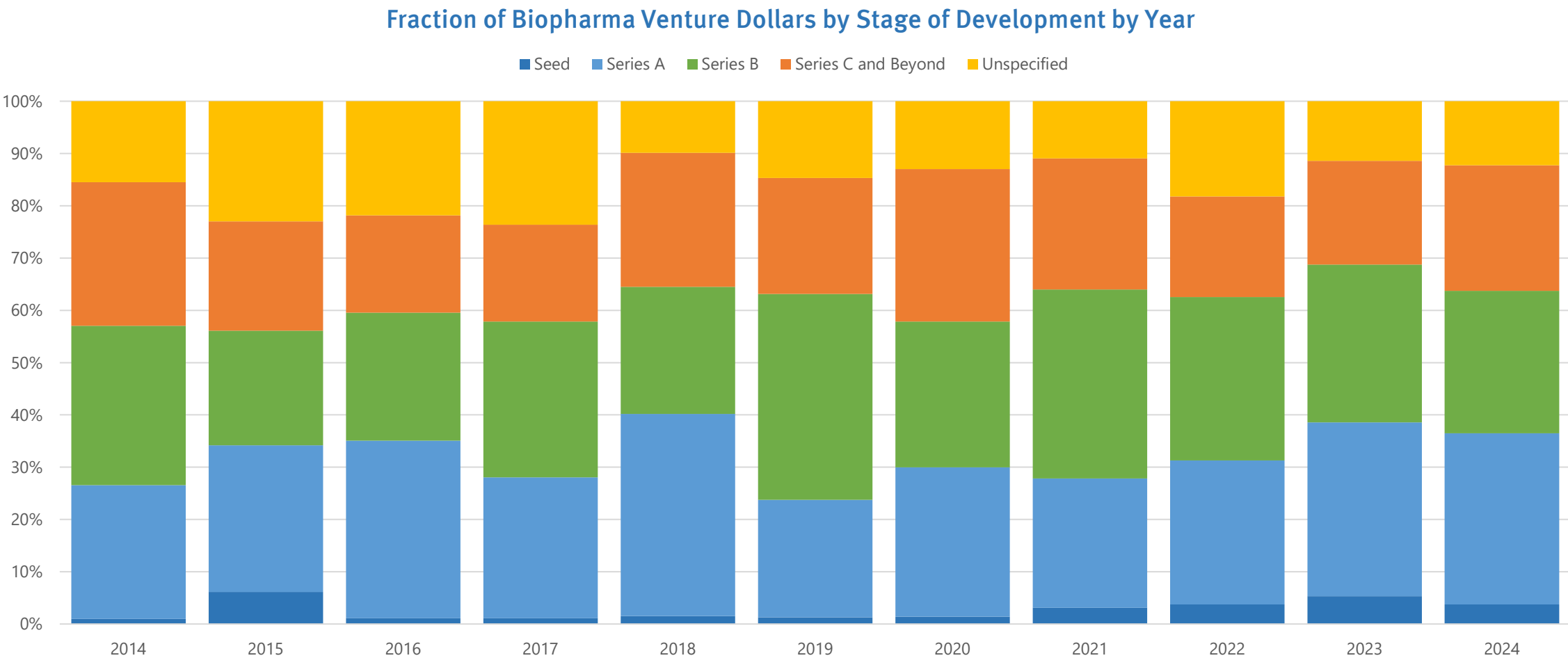
We have seen venture investments into oncology companies rebound in 2024 after shrinking in 2023. Investments into immunology have also been strong in 2024.



Source: DealForma. Venture investments into the biopharma sector. Data for 2024 through July 12<sup>th</sup>. Immunology encompasses investments in autoimmune and inflammation.

# Fewer Earlier Stage Rounds Relative to Late-Stage Deals in 2023

The share of money going into Series Seed and Series A deals has been down a bit this year. In contrast, Series C and later rounds saw substantially more share of dollars invested this year versus earlier years.

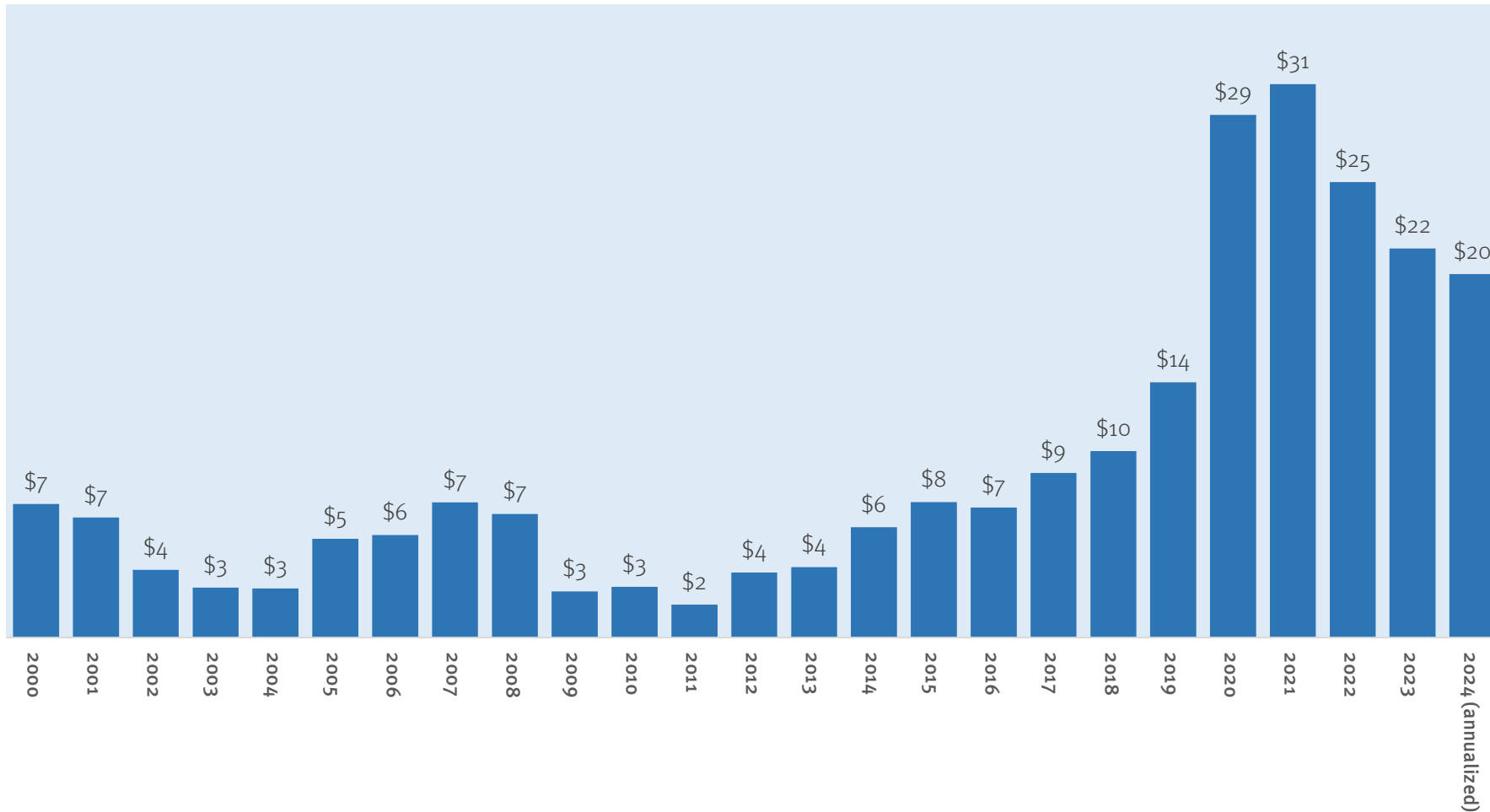


Source: DealForma. Venture investments into the biopharma sector. Data for 2024 through July 12<sup>th</sup>.



# New Capital Flows into Life Sciences Venture Funds Down in 2023 But Still Historically Strong

Biopharma Venture Capital Funds, Amounts Raise \$mm, 2000 to 2024 (annualized)



The total volume of new money flowing into life sciences venture funds is at an annualized rate of \$20 billion in 2024.

Volumes have shrunk quite a bit since the Pandemic peak in 2022.

Overall, venture fund capital raising took a major step up starting in 2020 and has not reverted.



# M&A and Licensing Environment

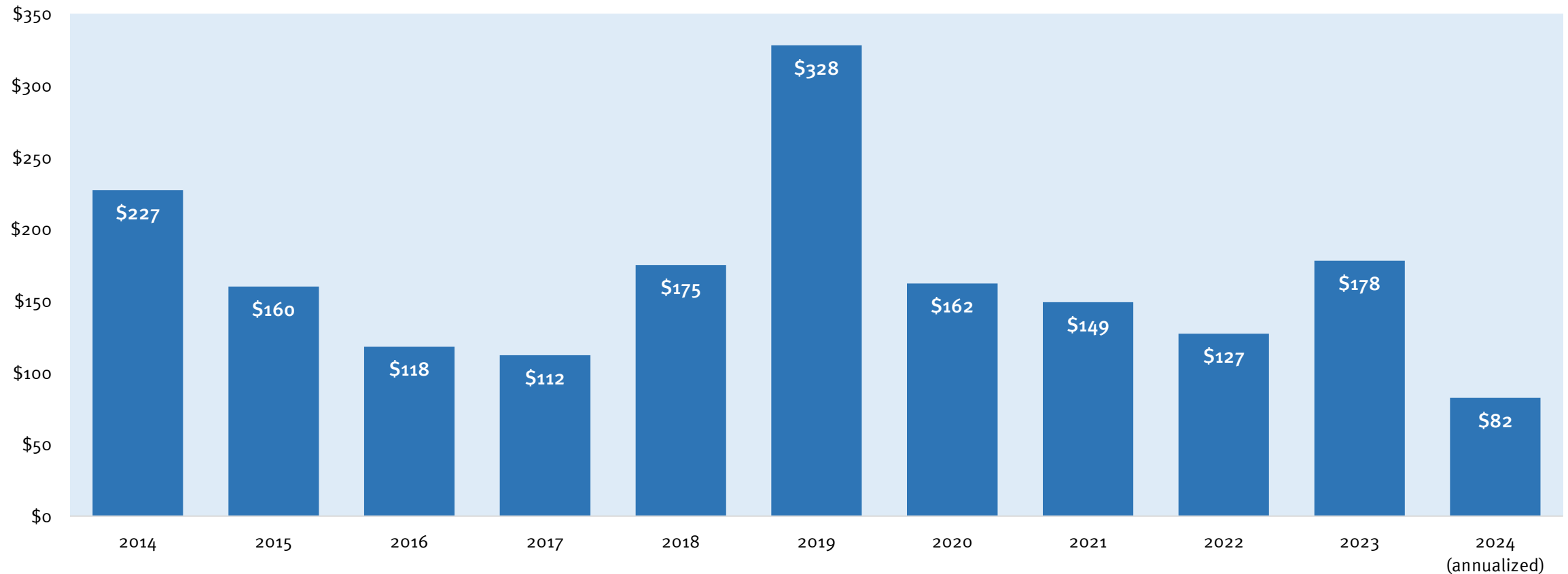




# Thus Far 2024 is Turning Out to be a Slow Year for M&A Volume

There have been no transactions announced thus far in 2024 for a biopharma company for a deal value over \$10 billion. Interestingly, the *number* of deals announced this year is normal, but the dollar volume is not - likely due to the Biden Administration's antitrust stance.

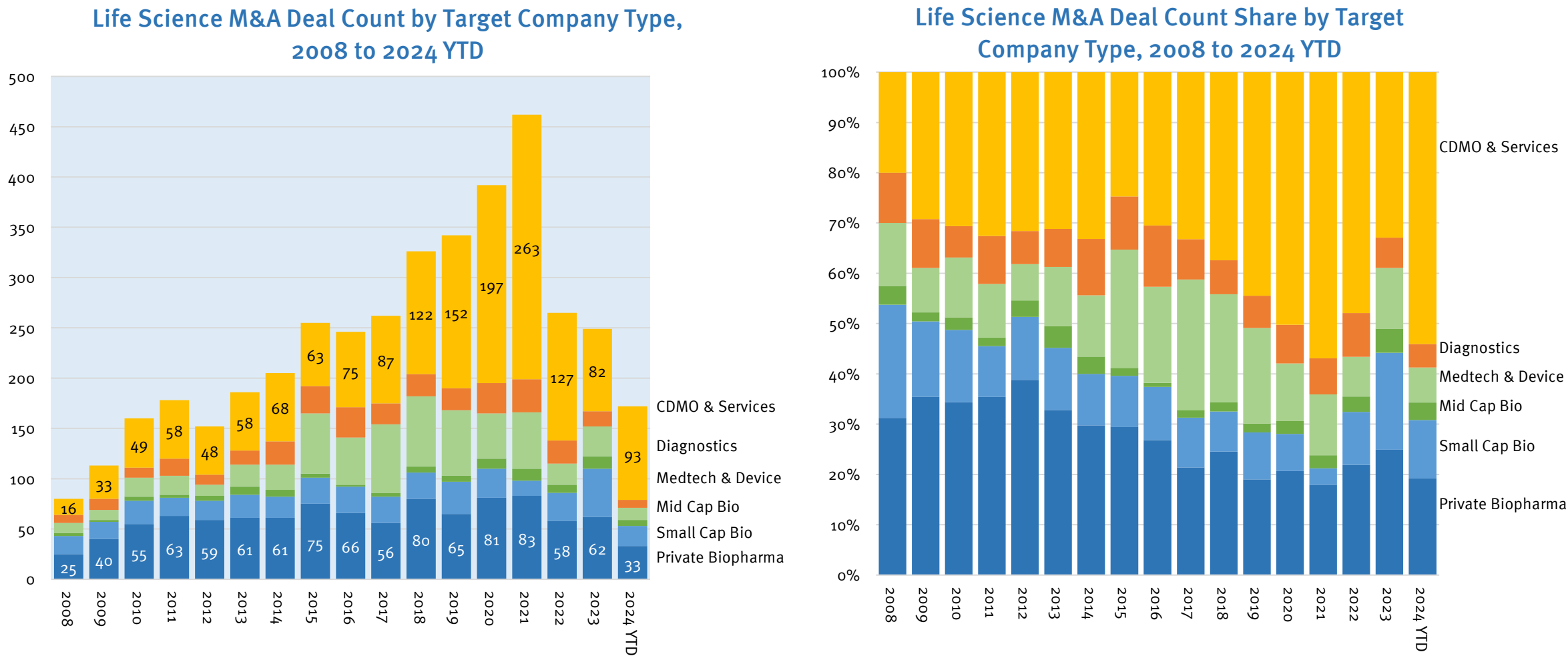
M&A Volume in the Biopharma Sector, 2014 - 2024  
(\$ Billions, Worldwide)



Source: S&P CapitalIQ and Stifel research. This includes all reported global therapeutics change of control transactions and included asset sales such as the Novartis Xiidra divestiture. Includes reverse mergers at equity value and transactions in human/animal health. Does not include SPAC mergers nor mergers in pharmaceutical services and non-therapeutic fields.



# CDMO / Pharma Services M&A Leading Market in 2024

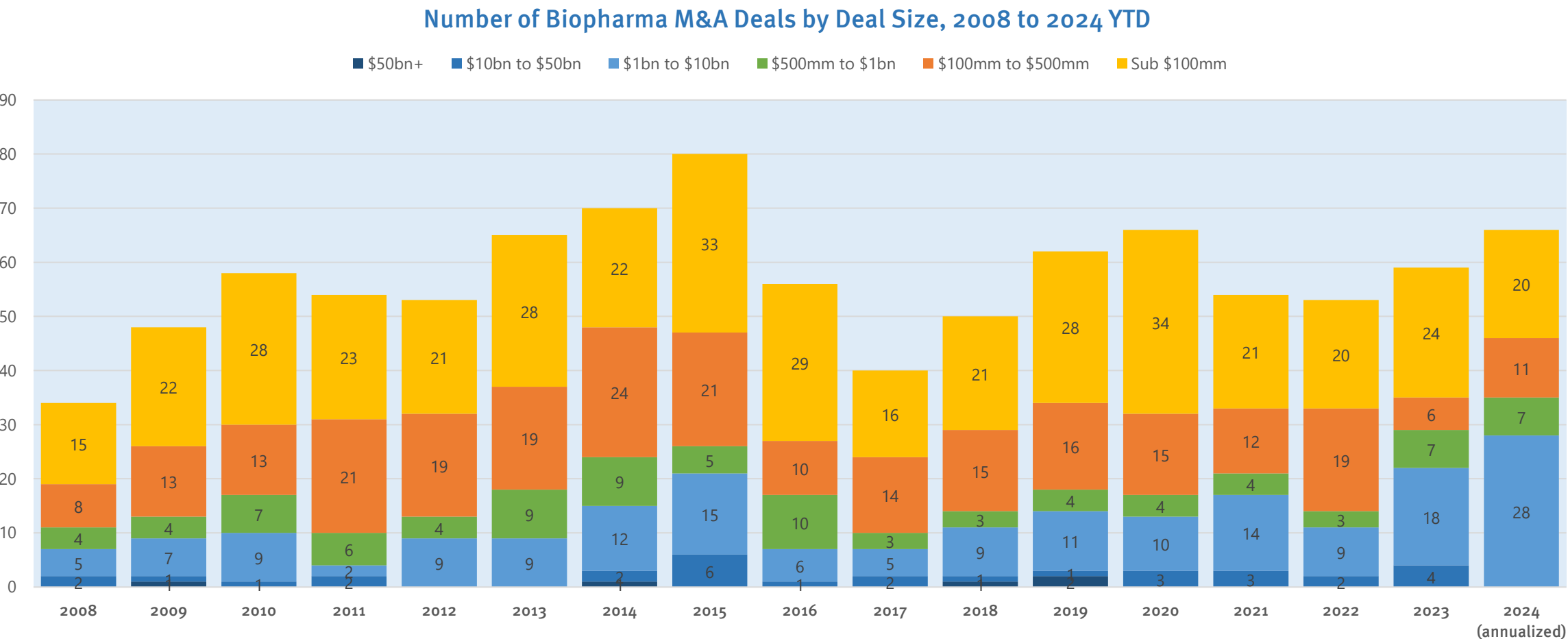


Notes: Chart and data sourced from DealForma. Whole company acquisitions included; not product assets or business units. Excludes terminated offers. Definition: Small Cap Biopharma (market cap <\$1B); Mid Cap Biopharma (\$1B-\$50B); Large Cap Biopharma (>\$50B). Excludes SPACs

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# Robust Biopharma M&A Volume in 2024 in All Size Categories Under \$10 Billion

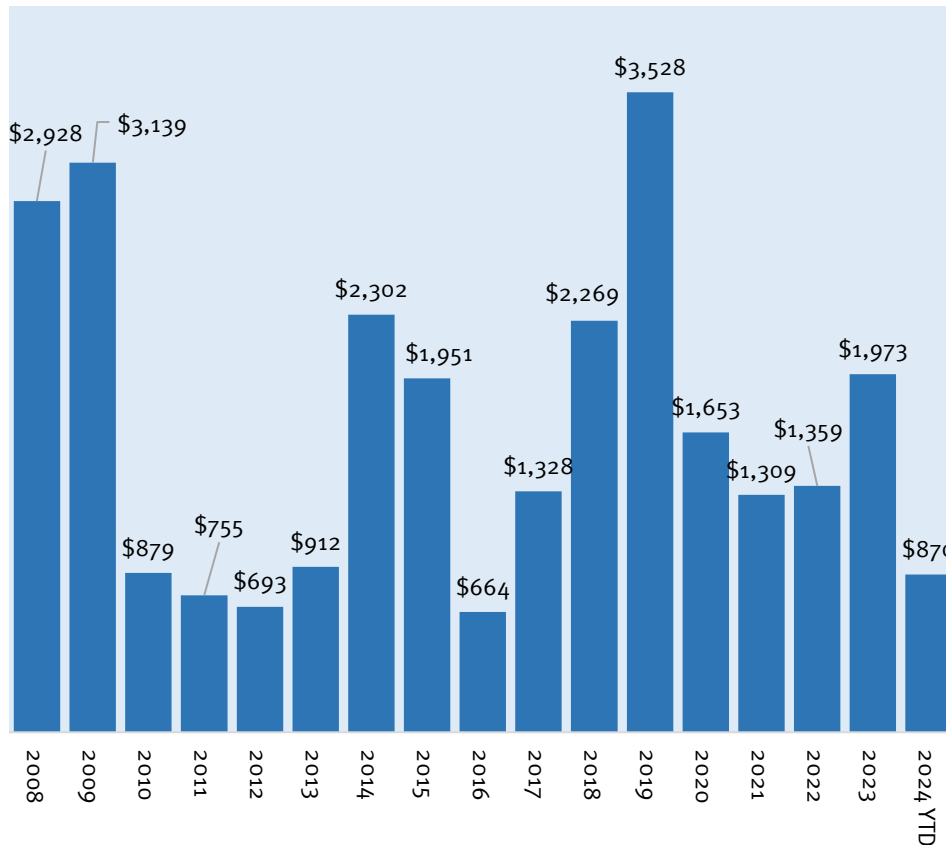
Biopharma M&A activity has been quite strong in 2024 in sub-\$10 billion deals. Larger deals have been avoided given the election year and FTC stance on antitrust. The run rate for \$1 billion to \$10 billion deals in 2024 is at an all time high.



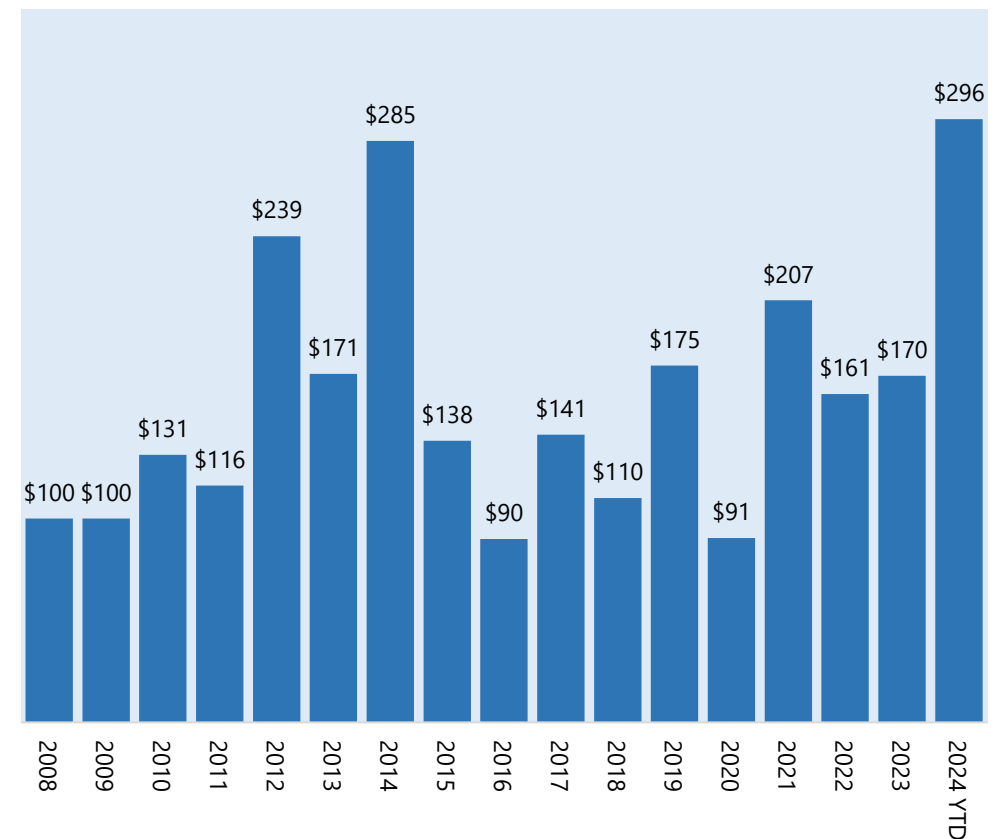
Source: DealForma. Reverse merger / SPAC deals excluded.

# Average Biopharma M&A Deal Size in 2024 is Low Versus Recent Years While Median Deal Size is at an All-Time Record

Average M&A Upfront Cash & Equity - Biopharma Therapeutics Targets, 2008 to 2024 YTD (\$mm)



Median M&A Upfront Cash & Equity - Biopharma Tx Targets (\$mm)

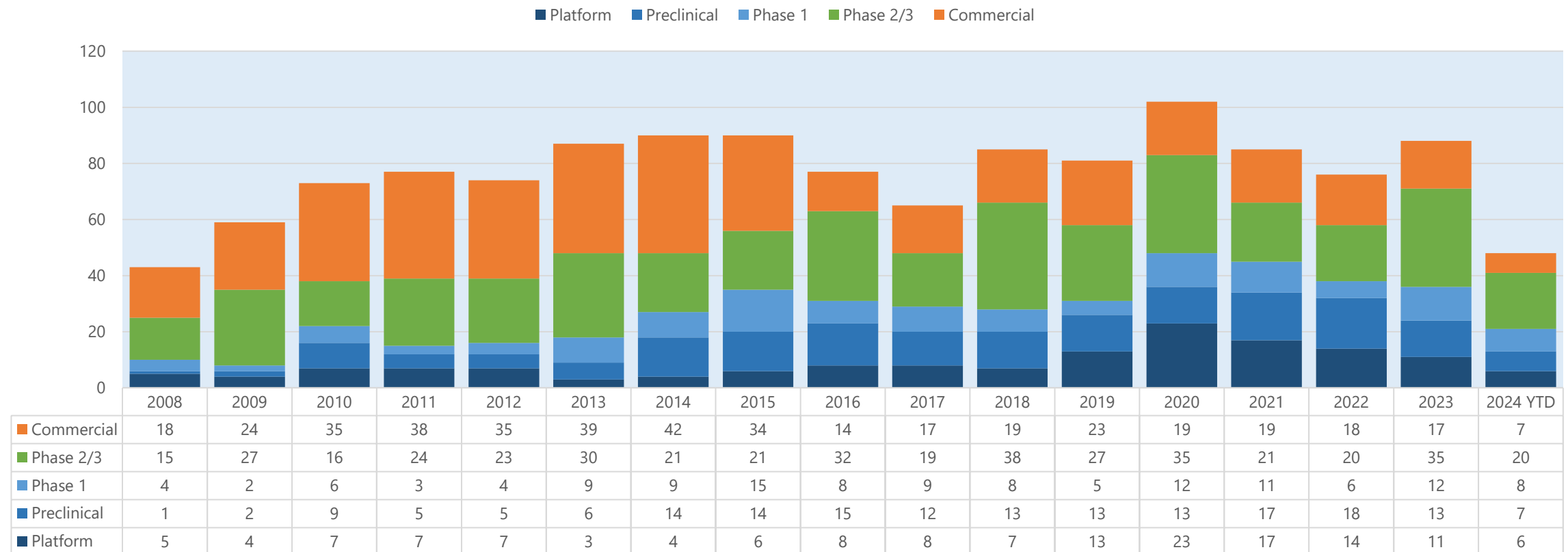




# We Have Seen a Significant Increase in Clinical Stage Versus Preclinical M&A Deals in 2024

In 2024 58% of M&A deals were for companies with clinical stage assets (Phase 1 to Phase 3). Compare this to an average of 45% in the 2019 to 2022 period. The fraction of M&A deals for approved assets is down as is the fraction of deals for platforms and preclinical assets.

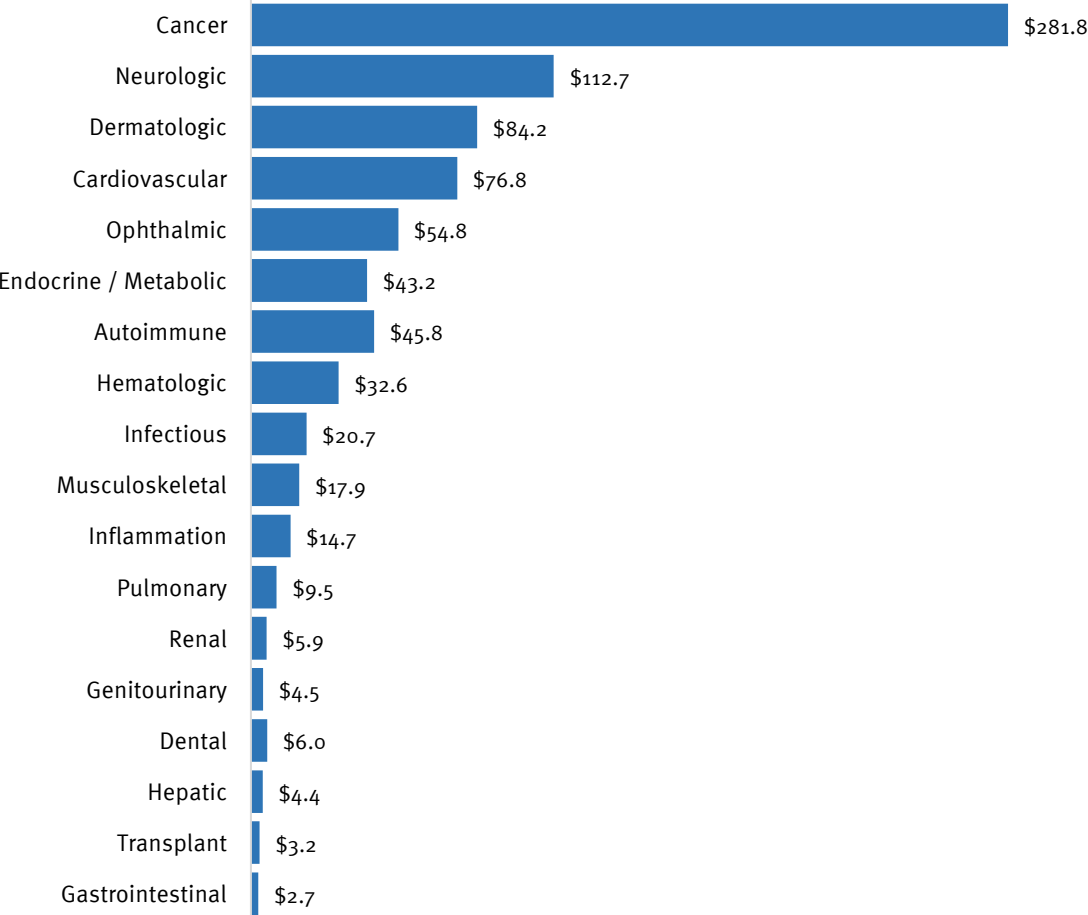
Number of Biopharma M&A Deals (\$100mm+) by Stage of Target Company, 2008 to 2024 YTD



Source: DealForma. Only included therapeutics M&A deals with upfront payments (cash or equity) valued at \$100mm or more. Reverse merger / SPAC deals excluded.

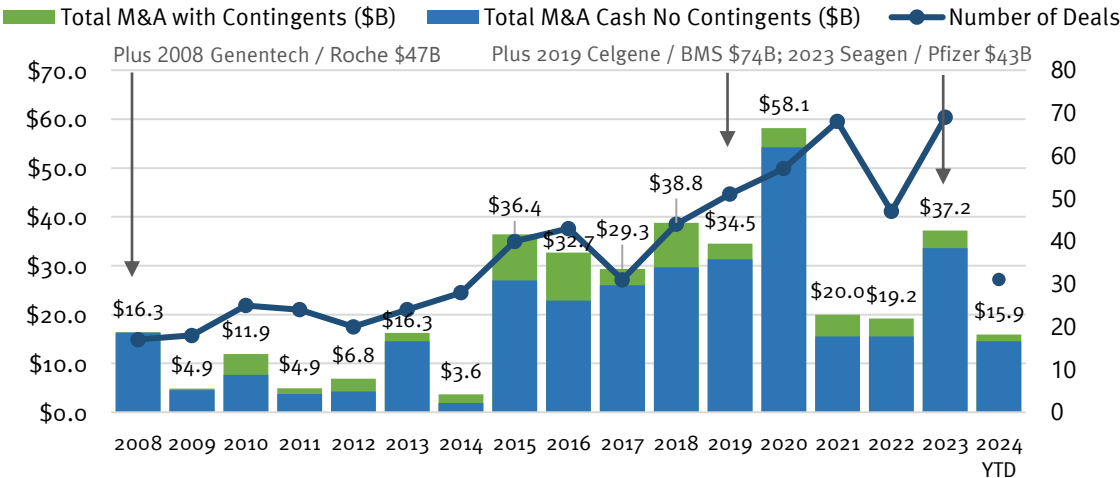
# M&A Volume by Therapeutic Area, 2019 to 2025

M&A Volume, Top Therapy Areas - 2019-2024 YTD (\$bn)

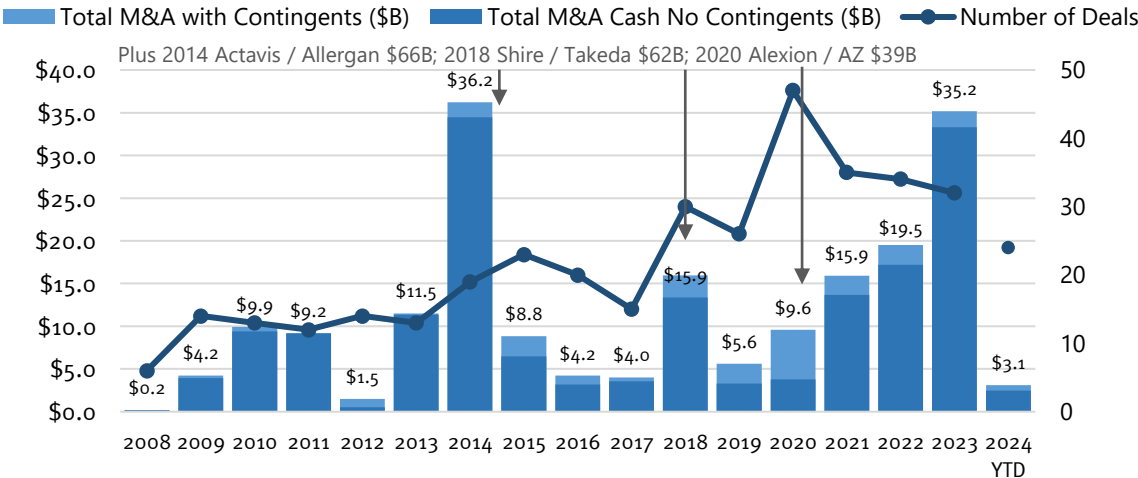


Source: DealForma.

M&A Volume - Oncology

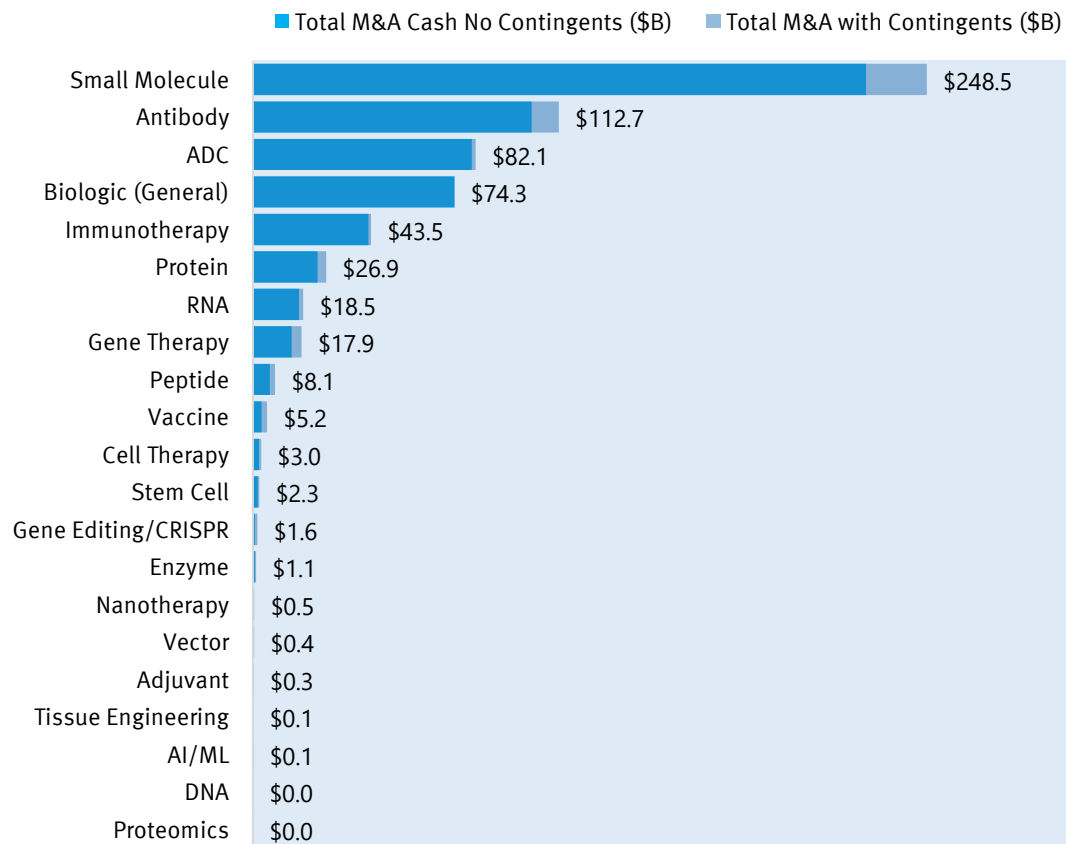


M&A Volume - Neurologic

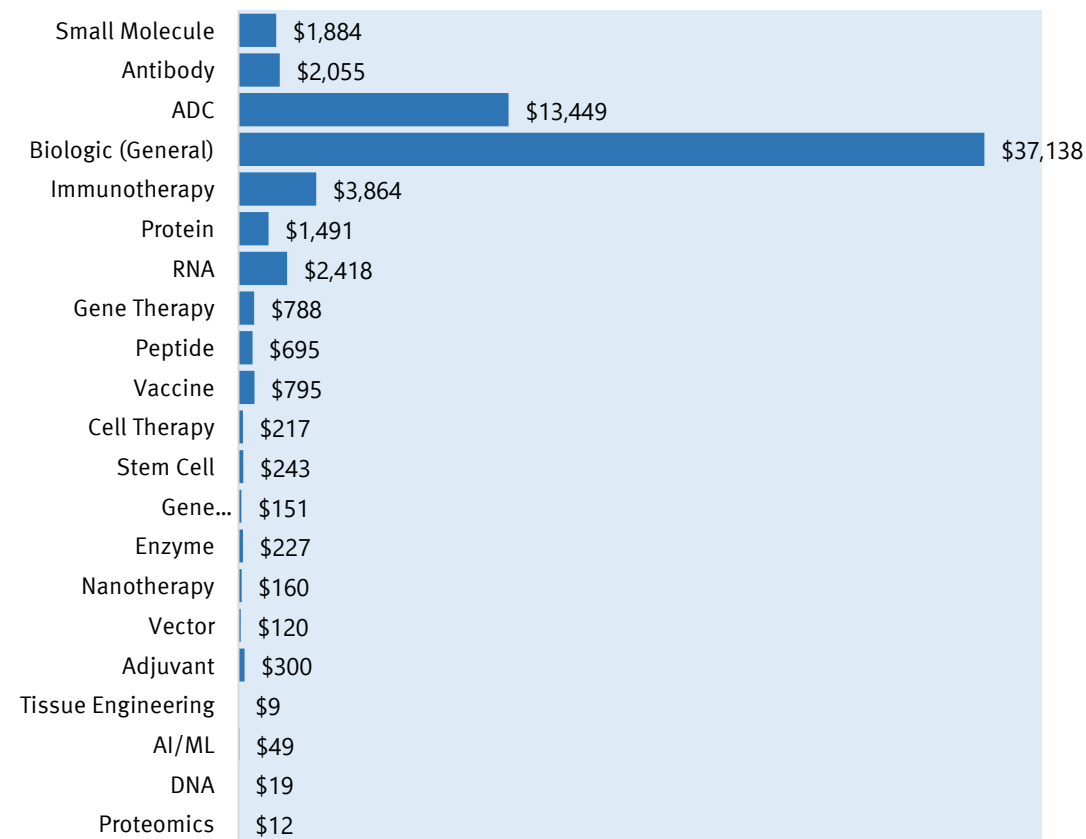


# M&A Volume by Modality, 2019 to 2025

M&A Total Volume, Top Biopharma Modalities - 2019-2024 YTD



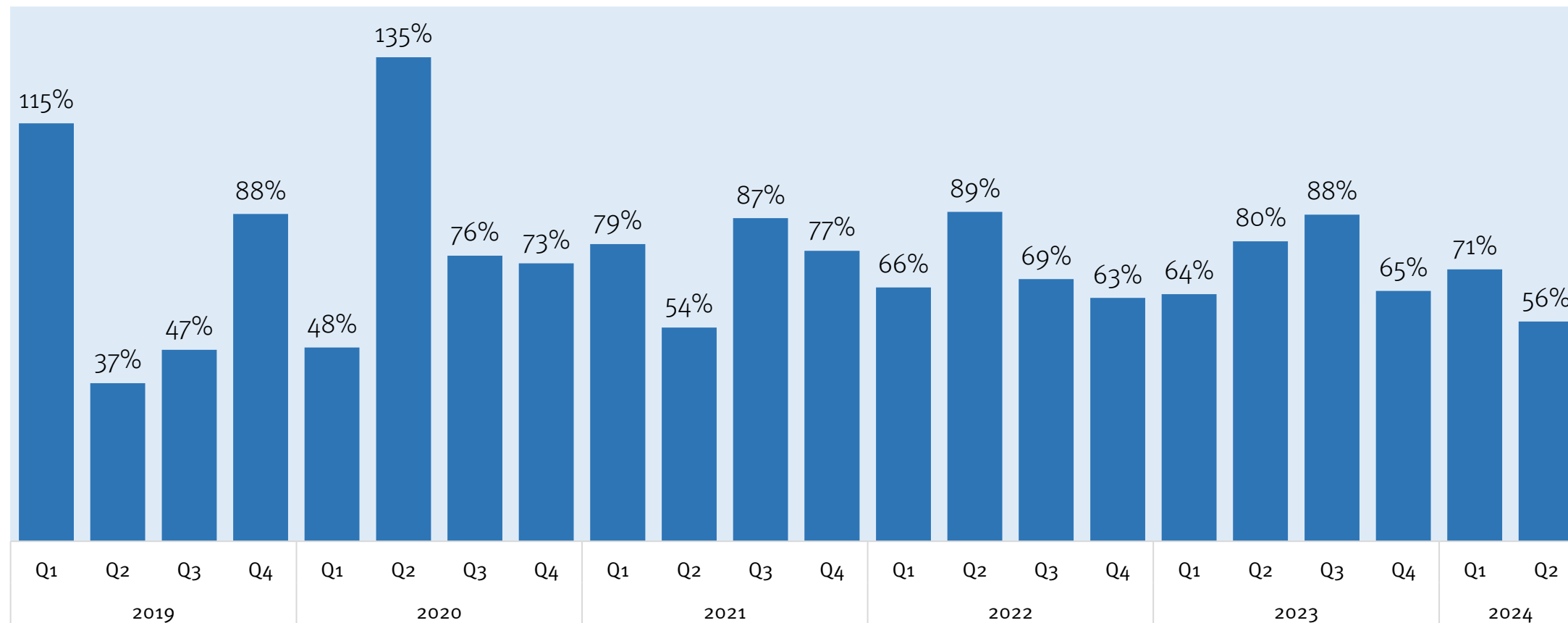
Average Upfront Cash & Equity, Top Modalities - 2019-24 YTD





# M&A Premia Down Substantially in Q2 2024

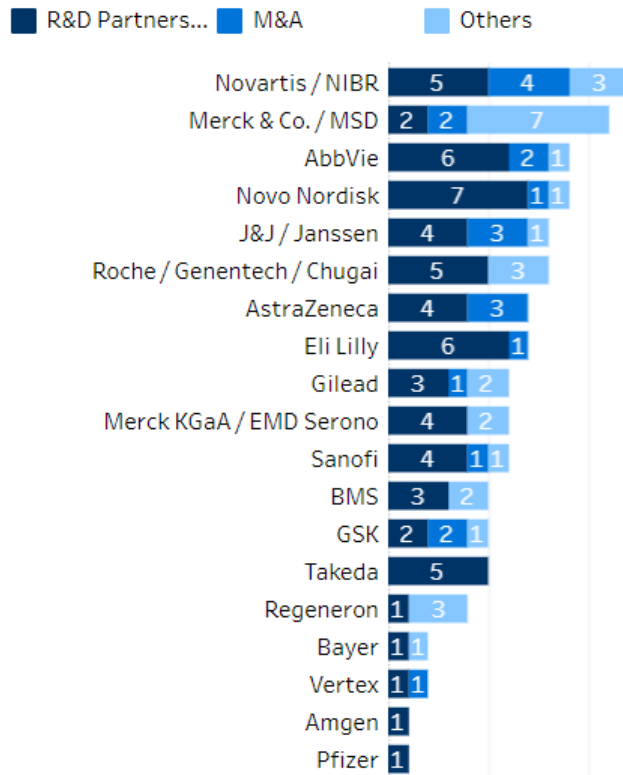
Average of 1-Day Biopharma M&A Premium, Q1 2019 to Q2 2024



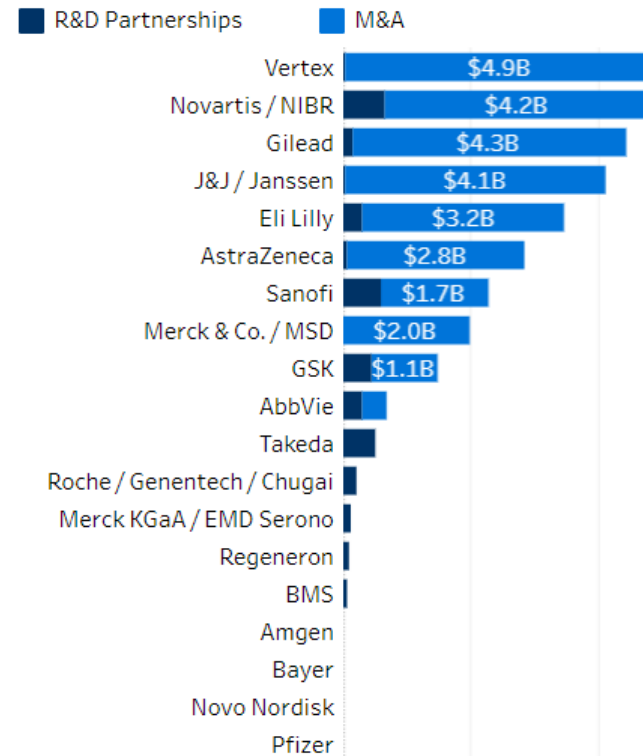
# Most Active Pharma Dealmakers in 2024

The most active players this year in terms of number of deals have been Novartis followed by Merck, AbbVie and Novo Nordisk. The biggest spender in terms of upfronts paid on R&D/licensing partnerships and M&A deals has been Vertex Pharma followed by Novartis, Gilead, J&J and Eli Lilly. Thus far, Amgen, Bayer, Novo Nordisk, BMS, Roche and Pfizer have spent very little on business development deals.

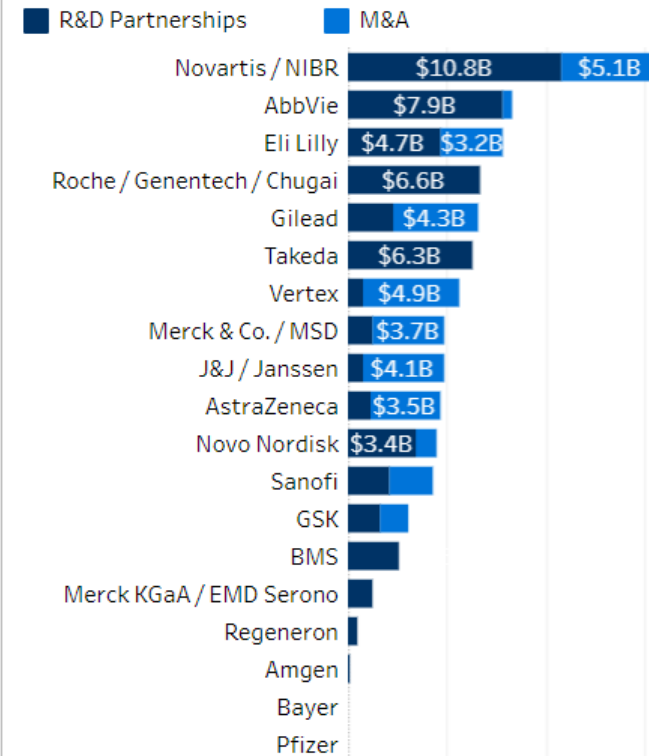
Number of Deals by Big Pharma



Total Upfront by Big Pharma R&D Deals and M&A



Total Deal Value - Big Pharma R&D Deals and M&A



# Top Life Sciences Dealmakers, 2023 to 2024 YTD

2023-2024 YTD - By Number of Deals

Buyer	Number of Deals	Total Deal Value (\$M)	Total Upfront Cash and Equity (\$M)
Novartis	6	\$9,575	\$7,850
AstraZeneca	6	\$7,630	\$5,900
Eli Lilly	6	\$6,081	\$3,842
Calibre Scientific	6	n/d	n/d
J&J	5	\$17,600	\$17,600
Merck & Co	5	\$15,298	\$12,780
Telix	4	\$221	\$101
BMS	3	\$23,900	\$22,900
AbbVie	3	\$19,013	\$18,938
GSK	3	\$3,450	\$3,050
Bruker	3	\$1,444	\$1,444
PAX Health	3	n/d	n/d
Stryker	3	n/d	n/d
Biogen	2	\$9,384	\$8,734
Astellas	2	\$6,103	\$6,103
Boston Scientific	2	\$2,110	\$2,110
Abbott	2	\$890	\$890
BioNTech	2	\$734	\$551
Carmell	2	\$468	\$219
Aditxt	2	\$100	\$100
<b>Total - These 20</b>	<b>70</b>	<b>\$124,000</b>	<b>\$113,110</b>

2023-2024 YTD - By Total Deal Value

Buyer	Number of Deals	Total Deal Value (\$M)	Total Upfront Cash and Equity (\$M)
Pfizer	2	\$43,436	\$43,436
BMS	3	\$23,900	\$22,900
AbbVie	3	\$19,013	\$18,938
J&J	5	\$17,600	\$17,600
Novo Holdings	2	\$16,500	\$16,500
Merck	5	\$15,298	\$12,780
CVS Health	1	\$10,600	\$10,600
Roche	2	\$10,350	\$9,800
Novartis / NIBR	6	\$9,575	\$7,850
Biogen	2	\$9,384	\$8,734
AstraZeneca	6	\$7,630	\$5,900
Elliott Management	1	\$7,100	\$7,100
Astellas	2	\$6,103	\$6,103
Eli Lilly	6	\$6,081	\$3,842
Danaher	1	\$5,700	\$5,700
Sanofi	2	\$5,100	\$4,600
Vertex	1	\$4,900	\$4,900
Gilead	2	\$4,300	\$4,300
Thermo Fisher	2	\$4,013	\$4,013
GSK	3	\$3,450	\$3,050
<b>Total - These 20</b>	<b>57</b>	<b>\$230,033</b>	<b>\$218,645</b>

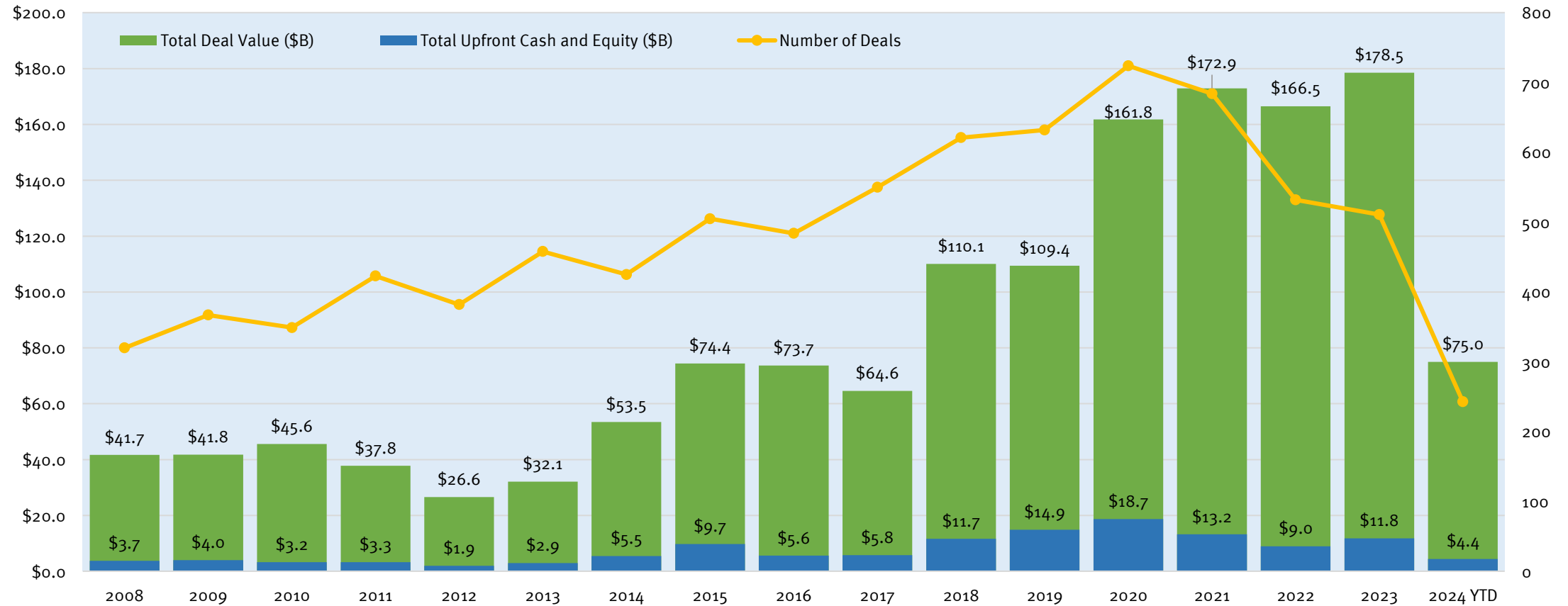
2023-2024 YTD - By Upfront Cash & Equity

Buyer	Number of Deals	Total Deal Value (\$M)	Total Upfront Cash and Equity (\$M)
Pfizer	2	\$43,436	\$43,436
BMS	3	\$23,900	\$22,900
AbbVie	3	\$19,013	\$18,938
J&J	5	\$17,600	\$17,600
Novo Holdings	2	\$16,500	\$16,500
Merck & Co.	5	\$15,298	\$12,780
CVS Health	1	\$10,600	\$10,600
Roche	2	\$10,350	\$9,800
Biogen	2	\$9,384	\$8,734
Novartis / NIBR	6	\$9,575	\$7,850
Elliott Management	1	\$7,100	\$7,100
Astellas	2	\$6,103	\$6,103
AstraZeneca	6	\$7,630	\$5,900
Danaher	1	\$5,700	\$5,700
Vertex	1	\$4,900	\$4,900
Sanofi	2	\$5,100	\$4,600
Gilead	2	\$4,300	\$4,300
Thermo Fisher	2	\$4,013	\$4,013
Eli Lilly	6	\$6,081	\$3,842
Optum	1	\$3,300	\$3,300
<b>Total - These 20</b>	<b>55</b>	<b>\$229,883</b>	<b>\$218,895</b>



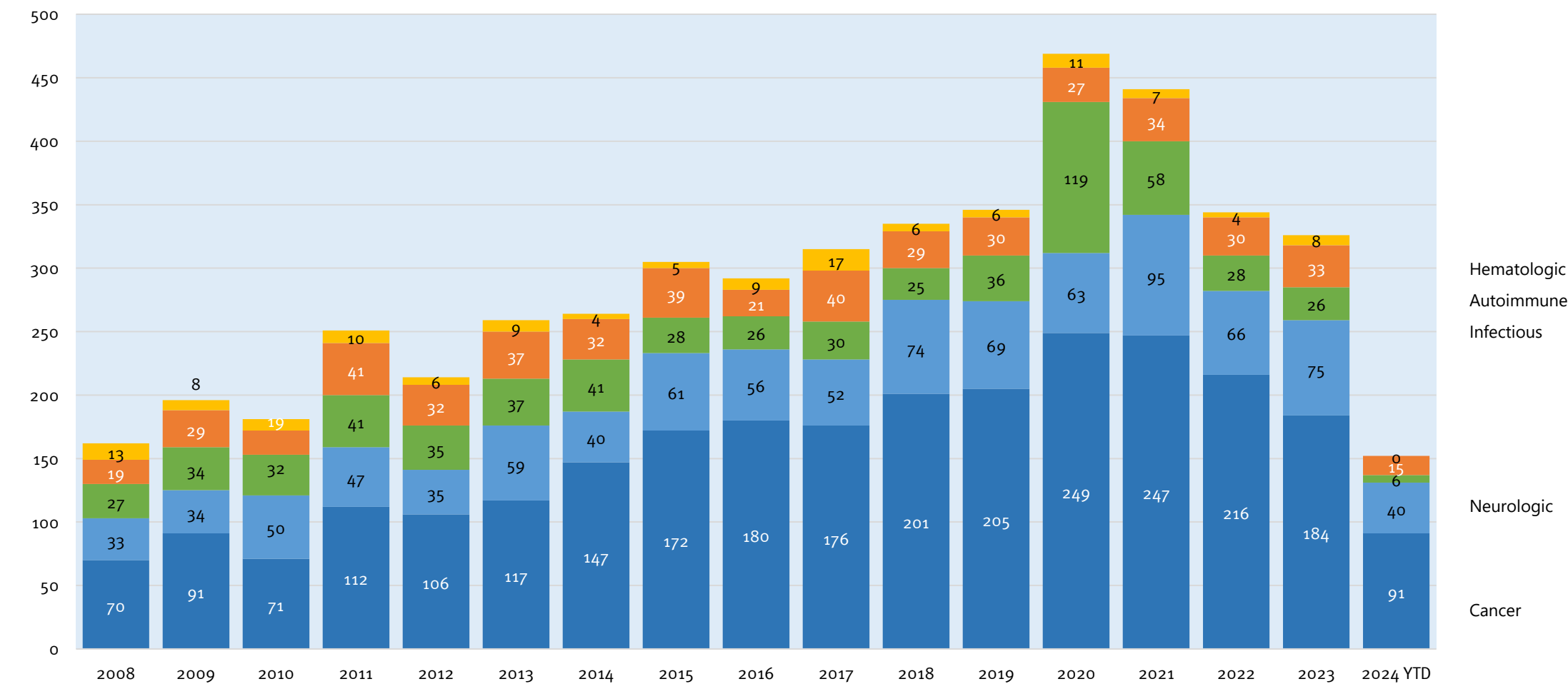
# Long-Term Secular Decline in Licensing Activity (Dollars and Deal Count) Continues in 2024

Biopharma Industry R&D Stage Licensing Statistics, 2008 to 2024 YTD (\$ Billions)



# Licensing Activity by Therapeutic Area

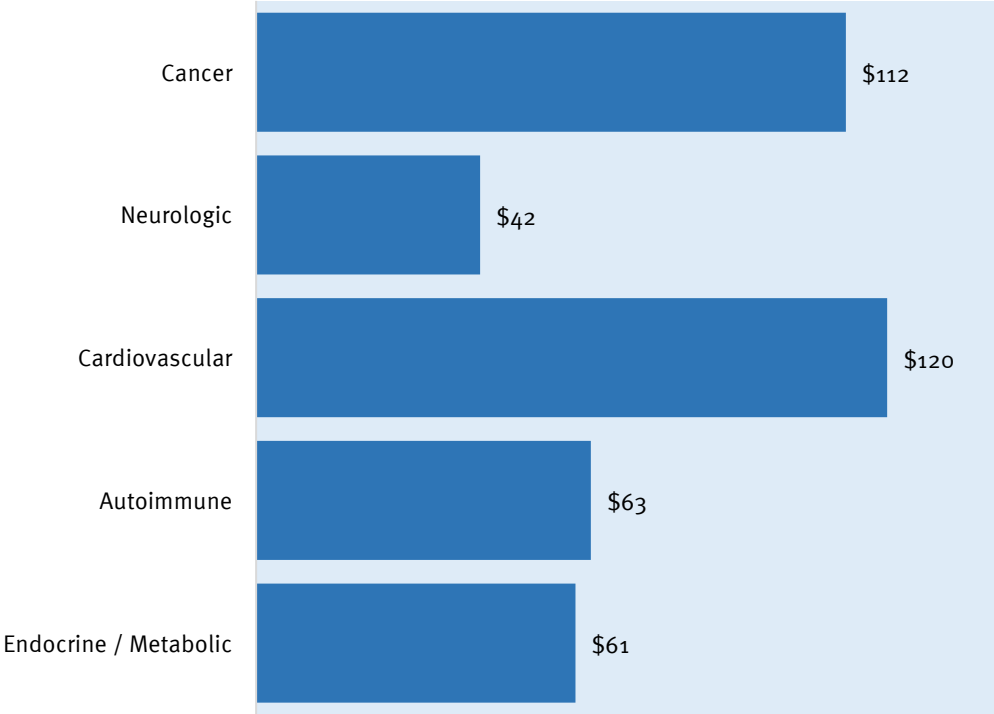
Number of Biopharma R&D-Stage Licensing Deals by Therapy Area, 2008 to 2024 YTD



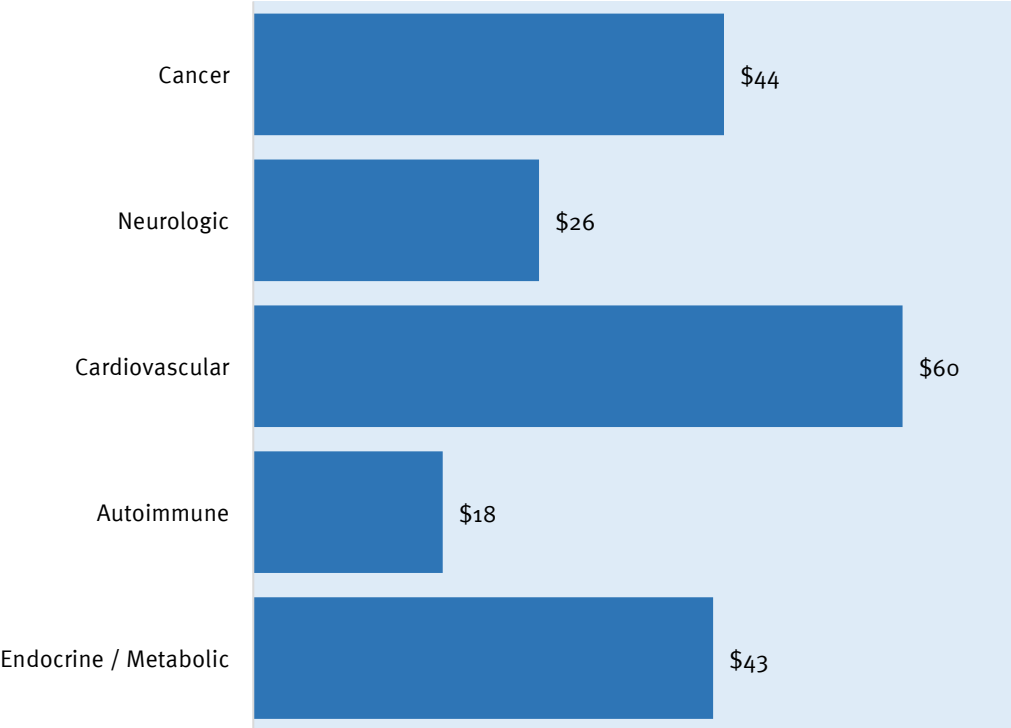
Source: DealForma.

# Cardiovascular Deals Commanding the Highest Licensing Upfronts

Average Upfronts in Biopharma Licensing Deals, Top Tx Areas - 2023-24 YTD (\$mm)



Median Upfronts in Biopharma Licensing Deals, Top Tx Areas - 2023-24 YTD (\$mm)

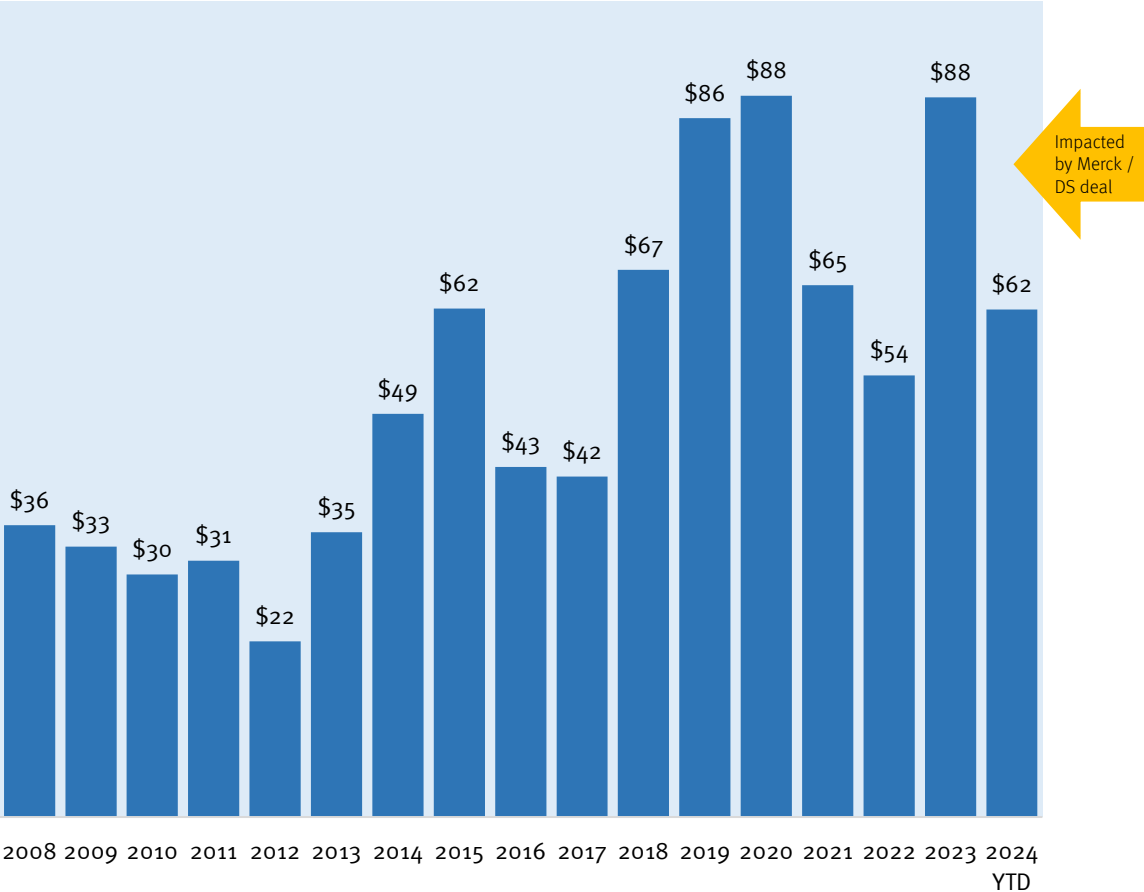


Source: DealForma.

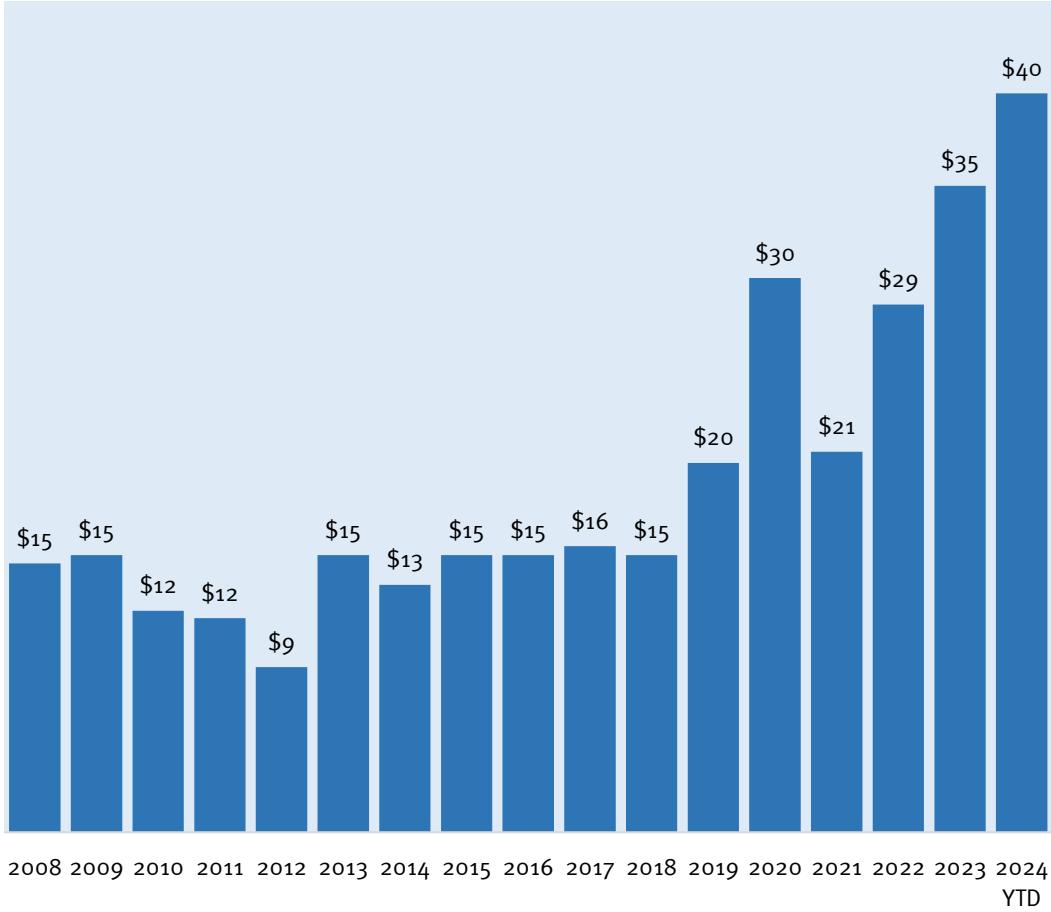


# Median Licensing Deal Upfronts Hit a Record in 2024

Average Upfront Cash & Equity – Biopharma Licensing Deals, 2008 to 2024 YTD (\$mm)



Median Upfront Cash & Equity – Biopharma Licensing Deals, 2008 to 2024 YTD (\$mm)

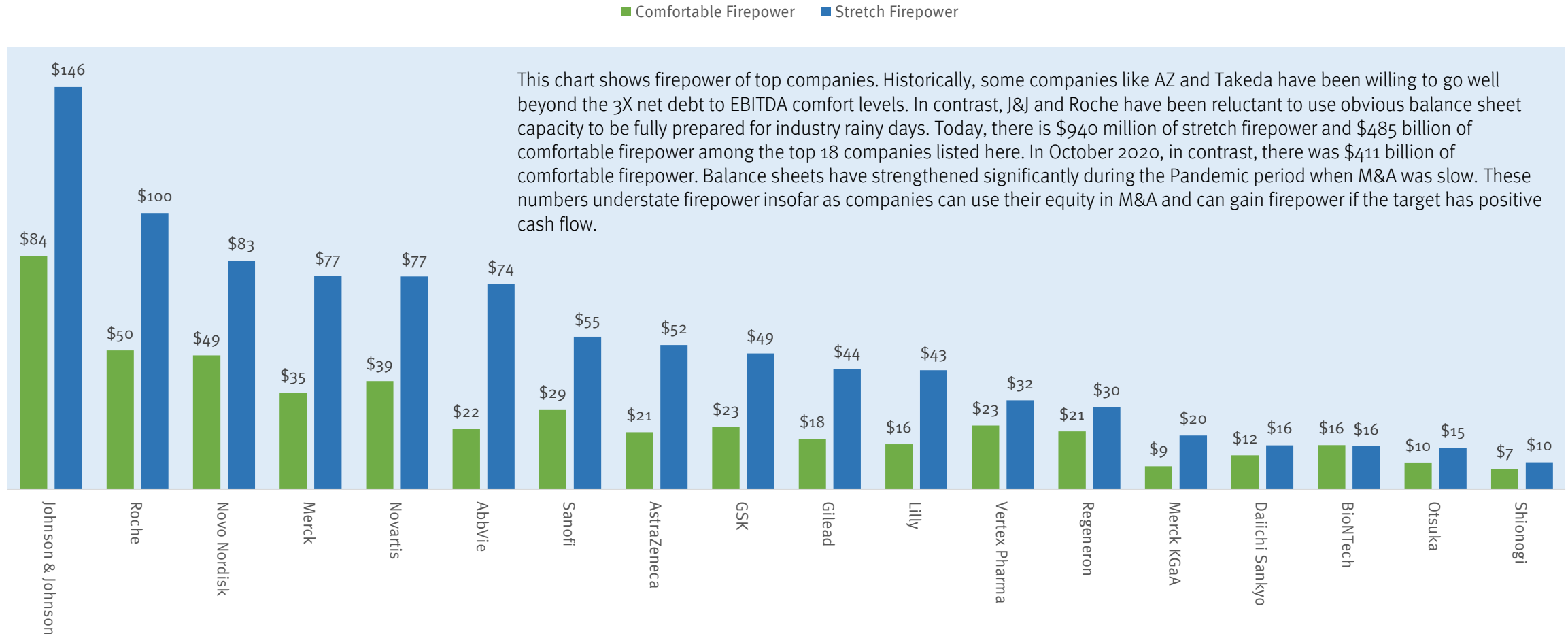


Source: DealForma.

# Massive M&A Firepower at Top 18 Pharmas

We define comfortable firepower as the amount of debt a company can take on given current EBITDA to arrive at a ratio of net debt to EBITDA of three times. Stretched firepower would take a company to a ratio of net debt / EBITDA of five times.

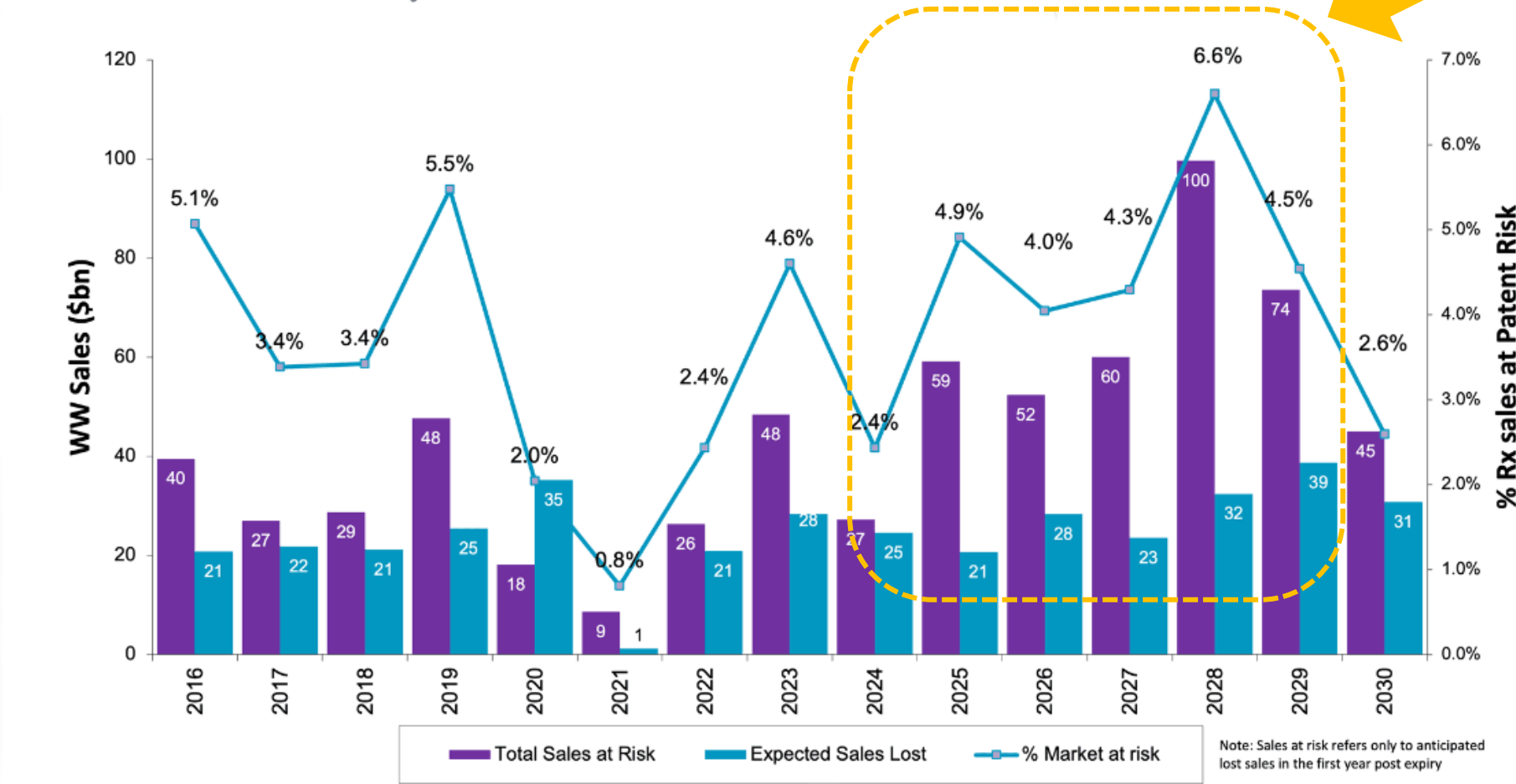
## M&A Firepower of Top 18 Pharmas, June 2024 (\$ Billions)



# Evaluate Pharma: Huge Wave of LOEs is Coming

Figure 3: Worldwide Sales At Risk\* from Patent Expiration (2016-2030)

Source: Evaluate Pharma© (May 2024)



\$350 billion of LOE's scheduled in 2025 to 2029 period. Should be a major driver of M&A activity.



# Grifols says Founding Family, Brookfield Looking to Delist Drugmaker



Reuters, July 9, 2024

LONDON/MADRID/BARCELONA - The Grifols family and Canadian fund Brookfield, opens new tab have agreed to evaluate a possible joint takeover bid for beleaguered Spanish drugmaker Grifols, opens new tab with the intent to delist it, the companies said in regulatory filings on Monday.

Grifols said its board held an extraordinary meeting over the weekend to study a preliminary offer presented by Brookfield and the Grifols founding family, which holds a stake of around 30%, according to the latest data by Spanish securities regulator CNMV.

Brookfield and the family have asked the board for access to certain company information for due diligence before potentially buying all of Grifols' shares, Brookfield and Grifols said in the filings.

Brookfield is considering investing more than 5 billion euros (\$5.41 billion) in Grifols, with part of that amount to refinance and restructure the company's debt, according to a source close to the conversations.

The Canadian-based fund will carry out the deal alongside other investors in its funds, the source said.

The Grifols family is not planning to sell its stake, the source said. Grifols' net financial debt reached 10.9 billion euros in the first quarter of this year, around 400 million euros higher than in the prior quarter. Grifols and Brookfield declined to comment.

# Fosun Pharma Buying in its Henlius Subsidiary

Reuters, June 24, 2024

Chinese conglomerate Fosun International, opens new tab will buy the remaining stake in Shanghai Henlius Biotech, it does not already own in a deal that values the Hong Kong-listed drugmaker at HK\$13.37 billion (\$1.71 billion), the companies said on Monday.

Fosun International is one of the country's biggest listed conglomerates, with a portfolio of diverse set of companies, carrying out operations from retail to real-estate.

It has been recently facing investor ire over its lack of primary focus and falling valuations of its major holding companies. The move to buyout the remaining stake in Henlius could be seen as part of Fosun's strategy to shift its focus from buying new assets and diversifying further.

"The listing status of Henlius no longer provides meaningful access to capital and imposes additional costs on Henlius," the conglomerate said in a statement.

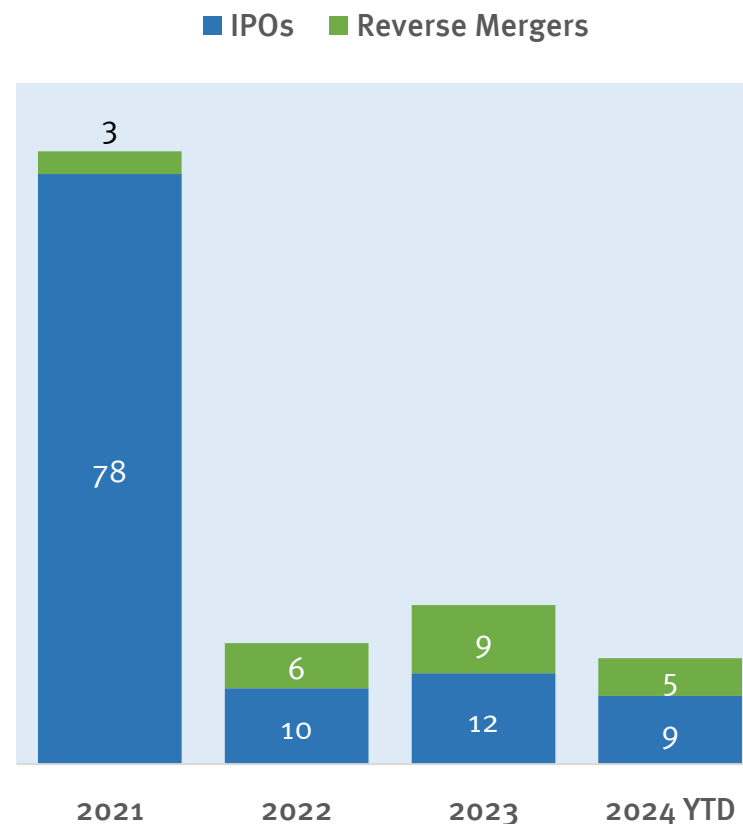
"Shareholders with blocking stakes would welcome an offer suggesting a 30-40% takeover premium," Arun George, an analyst at Smartkarma had said when Henlius went into a trading halt.

Henlius shares last traded on May 22, at HK\$18.84, before the firm issued a trading halt pending an announcement on takeovers and mergers.

# Recent Uptick in Biopharma Reverse Merger Activity as an IPO Alternative

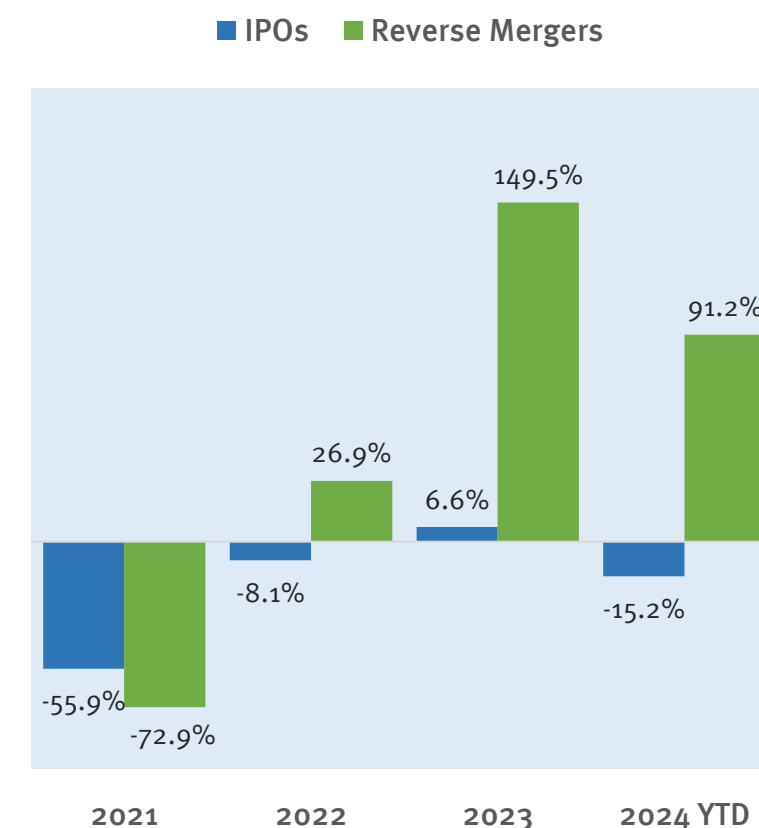
- Given recent challenges surrounding the IPO process, private companies have been exploring alternative methods of gaining access to public markets:
  - ▶ **Traditional reverse mergers:** Merger of a private company into a public company with significant cash and a listing that has typically experienced a recent product failure
  - ▶ **Sign and close reverse mergers:** Merger where a public company avoids the risk of a shareholder vote surrounding the transaction by issuing a mix of common stock (19.9%) and preferred stock
  - ▶ **SPACs:** SPAC mergers have occurred far less in '23-'24 than '20-'22, with only 4 closed de-SPAC transactions since '23 due to availability and technical issues<sup>(1)</sup>
- While biotech reverse mergers have been a common theme over the past couple of decades, recent reverse mergers have accessed IPO / mezzanine investors to raise substantial capital, attracting higher quality private companies than previously
- Despite a historically negative connotation, the success of recent reverse mergers continues to strengthen investor receptivity. Aftermarket performance of RM's has been quite good in 2023 and 2024.
- Ultimately, however, reverse mergers will trade well or poorly based on raising sufficient capital and achieving key value inflection points, similar to IPOs

Number of IPO's vs. Reverse Mergers, 2021 to 2024 YTD



Aftermarket Performance of Recent RMs and IPOs<sup>(2)</sup>

Average Offer (or Pre-Announcement Price) to Current



Source: Capital IQ, FactSet, company filings and websites as of July 13, 2024.

Note: IPO analysis includes biopharma IPOs greater than \$50mm in proceeds. Reverse merger analysis includes biopharma reverse mergers announced concurrently with a PIPE greater than \$50mm in proceeds, or transactions without a concurrent PIPE or a PIPE with less than \$50mm in proceeds if the private company target value at announcement is greater than \$50mm.

(1) Includes closed de-SPAC transactions since 2023 with net proceeds greater than \$50mm including any PIPE, FPA or trust account proceeds.

(2) Shows average price performance of IPOs vs. Reverse Mergers. Offer price of reverse mergers measured as the closing price the day prior to reverse merger announcement date.

(3) Includes PIPE proceeds greater than \$50mm raised through pending and closed reverse merger transactions. Excludes cash on balance sheet of reverse merger PublicCo.



# Selected Reverse Mergers (2021–2024YTD)

Ann. Date	Effective Date	Target (Private)	Acquiror (Public)	Ownership		Acquiror Equity Value at Ann. <sup>(1)</sup>	Target Value at Announcement		Cash of Acquiror at Ann. <sup>(2)</sup>	Cash of Acquiror at Close	Pro Forma Cash at Close <sup>(3)</sup>	Price Performance <sup>(4)</sup>				Additional Financing		
				Acquiror	Target		Shares-Based	Cash-Based				Day 1	Day 10	Day 90	Current	Timing	Type	Size
05/13/24	Pending	OnKure	Reneo Pharmaceuticals	31.0%	69.0%	\$60.5	\$134.6	\$184.4	\$82.8	NA	NA	-	5.0%	NA	(16.6%)	At Close	PIPE	\$65.0
04/11/24	06/27/24	Tenet Medicines	Ellem Therapeutics <sup>(5)</sup>	85.0%	15.0%	\$74.0	\$13.1	\$18.8	\$106.8	\$105.0	\$220.0	71.5%	44.2%	NA	166.3%	At Close	PIPE	\$120.0
04/03/24	Pending	Oruka Therapeutics	ARCA biopharma	2.4%	97.6%	\$24.8	\$1,017.1	\$1,535.3	\$37.4	NA	NA	90.1%	88.9%	122.2%	124.0%	Prior to Close	PIPE	\$275.0
01/30/24	06/20/24	Tectonic Therapeutic	AVROBIO	35.6%	64.4%	\$61.1	\$110.5	\$191.5	\$105.8	\$90.5	\$181.0	(16.1%)	(5.1%)	(11.7%)	0.2%	At Close	PIPE	\$130.7
11/16/23	03/25/24	Q32 Bio	Homology Medicines	25.0%	75.0%	\$51.0	\$152.9	\$309.9	\$103.3	\$82.7	\$130.0	(36.3%)	(35.4%)	(19.7%)	13.3%	At Close	PIPE	\$42.0
11/15/23	03/21/24	LENZ Therapeutics	Graphite Bio	35.0%	65.0%	\$135.1	\$251.0	\$451.3	\$243.0	\$184.3	\$210.0	(3.2%)	0.9%	27.5%	6.0%	At Close	PIPE	\$53.5
07/18/23	12/18/23	Neurogene	Neoleukin Therapeutics	16.0%	84.0%	\$39.6	\$208.0	\$430.8	\$82.1	\$78.5	\$200.0	(28.6%)	(26.6%)	(21.9%)	96.7%	At Close	PIPE	\$95.0
07/14/23	11/03/23	Korro Bio	Frequency Therapeutics	8.0%	92.0%	\$14.3	\$164.5	\$534.5	\$46.5	\$41.7	\$170.0	77.5%	46.3%	(22.5%)	69.4%	At Close	PIPE	\$117.0
06/22/23	10/19/23	Tourmaline Bio	Talaris Therapeutics	21.3%	78.7%	\$92.8	\$342.8	\$612.7	\$165.8	\$152.3	\$218.0	39.1%	38.2%	32.7%	(41.5%)	At Close	PIPE	\$75.0
05/03/23	09/11/23	Dianthus Therapeutics	Magenta Therapeutics	21.3%	78.7%	\$46.7	\$172.5	\$289.0	\$78.2	\$77.6	\$180.0	(11.7%)	(17.6%)	4.2%	110.1%	At Close	PIPE	\$70.0
01/17/23	06/01/23	Elcio Therapeutics	Angion Biomedica	34.1%	65.9%	\$30.7	\$59.4	\$106.5	\$55.1	\$29.2	\$56.6	(32.1%)	(33.1%)	(45.1%)	(96.0%)	—	—	—
11/21/22	03/20/23	CalciMedica	Graybug Vision	29.0%	71.0%	\$20.5	\$50.2	\$106.8	\$43.6	\$34.0	\$35.0	(21.6%)	(34.1%)	(33.2%)	(70.2%)	—	—	—
10/13/22	02/23/23	Enliven Therapeutics	IMARA	16.0%	84.0%	\$67.8	\$356.1	\$295.6	\$56.3	\$88.2	\$300.0	46.9%	51.9%	76.4%	126.5%	At Close	PIPE	\$165.0
09/21/22	03/07/23	CARISMA Therapeutics	Sesen Bio	41.7%	58.3%	\$133.5	\$186.6	\$197.9	\$141.5	\$140.0	\$180.0	(35.7%)	(36.5%)	(27.5%)	(88.6%)	At Close	PIPE	\$30.0
08/10/22	12/29/22	Disc Medicine	Gemini Therapeutics	28.0%	72.0%	\$67.5	\$173.5	\$279.4	\$108.7	\$101.7	\$175.0	23.7%	4.5%	10.9%	188.9%	At Close	PIPE	\$53.5
07/21/22	11/08/22	ARS Pharmaceuticals	Silverback Therapeutics	37.0%	63.0%	\$154.6	\$263.3	\$439.3	\$258.0	\$266.6	\$280.0	(11.1%)	17.3%	19.5%	93.4%	—	—	—
05/17/21	08/26/21	Aadi Bioscience	Aerpio Pharmaceuticals	33.2%	66.8%	\$55.0	\$110.6	\$78.5	\$39.0	\$36.8	\$170.0	69.8%	50.0%	79.3%	(91.6%)	At Close	PIPE	\$155.0
03/29/21	06/28/21	Tempest Therapeutics	Millendo Therapeutics	19.0%	81.0%	\$41.5	\$176.9	\$162.7	\$38.2	\$26.8	\$80.3	(41.3%)	(42.2%)	(48.6%)	(93.3%)	At Close	PIPE	\$30.0
<b>Summary Statistics 2021-2024YTD (n=18)</b>																		
<b>Mean</b>				<b>28.8%</b>	<b>71.2%</b>	<b>\$65.1</b>	<b>\$219.1</b>	<b>\$345.8</b>	<b>\$99.6</b>	<b>\$96.0</b>	<b>\$174.1</b>	<b>10.0%</b>	<b>6.5%</b>	<b>8.9%</b>	<b>27.6%</b>			<b>\$98.4</b>
<b>Median</b>				<b>28.5%</b>	<b>71.5%</b>	<b>\$57.7</b>	<b>\$173.0</b>	<b>\$284.2</b>	<b>\$82.4</b>	<b>\$85.4</b>	<b>\$180.0</b>	<b>(7.2%)</b>	<b>2.7%</b>	<b>(3.8%)</b>	<b>9.7%</b>			<b>\$75.0</b>

Source: Capital IQ, FactSet, company filings and websites as of June 28, 2024. Note: "NA" means not available.

(1) Reflects stock price one day prior to announcement date.

(2) Represents cash and marketable securities from the acquiror Company's latest SEC filing, as of the transaction announcement date.

(3) Represents latest pro forma cash and marketable securities at close of transaction reported in Company press releases, if disclosed.

(4) Price performance calculations are based off the unaffected price before the transaction announcement.

(5) Included because all of Ellem's programs failed and the company was functioning similar to a cash rich shell despite owning greater than 50% of the pro-forma equity in the merger with Tenet.

We analyzed all biopharma traditional reverse mergers since 2021 which met the following criteria:

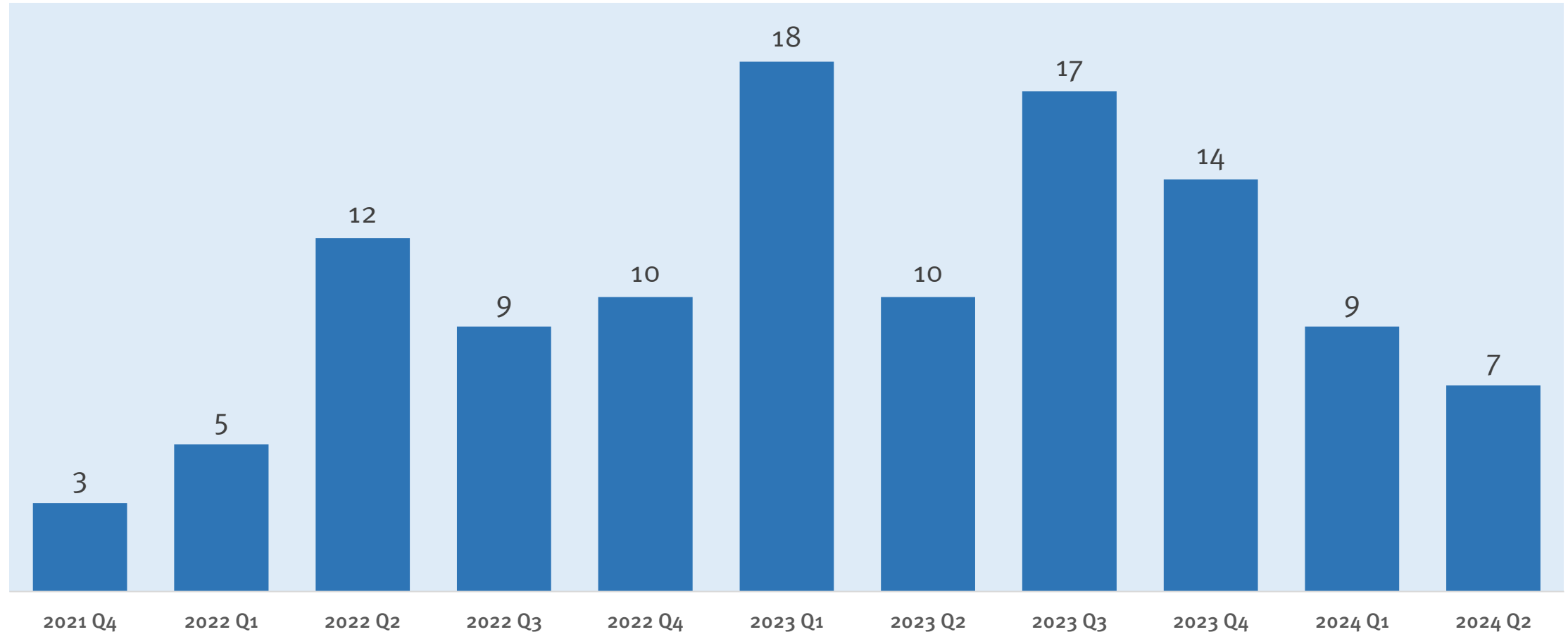
- Cash held by the public acquiror was greater than \$20.0 million at announcement
- The private target had the ability to own 50% or greater of the pro forma equity, including achievements of milestones
- PIPE funding was greater than \$50mm or
- Target value at announcement based on shares was at least \$50mm (if the PIPE was less than \$50mm or there was no PIPE)

It's clear that these mergers have performed well both on average and by median.

Most have been accompanied by substantial PIPE transactions.

# The Pace of Fresh “White Flag” Strategic Alternatives Announcements Has Slowed Down in 2024

Announcements that Companies Are Exploring "Strategic Alternatives", Q4 2021 to Q2 2024



Source: Stifel tracker built from company press releases.

# Forty-Seven Companies that Have Active Process Underway to Explore Strategic Options as of July 13, 2024

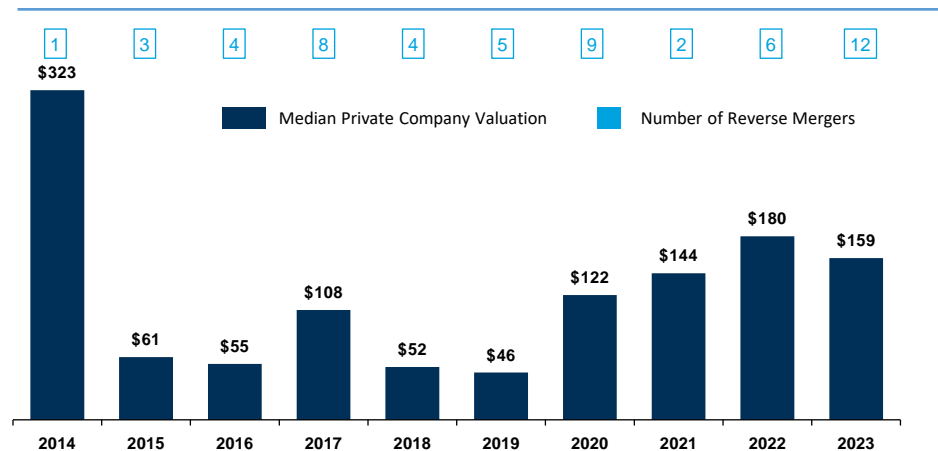
Announcement Date	Company Name	Cash on Hand, Last Reporting Period (\$mm)	Enterprise Value (\$mm), July 12, 2024
7/1/2024	TRACON	\$8	-\$5
6/28/2024	GeNeuro	\$2	\$17
6/17/2024	Aerovate Therapeutics	\$99	-\$46
6/12/2024	CARA Therapeutics	\$70	-\$43
5/21/2024	Lyra Therapeutics	\$87	-\$32
5/28/2024	Ikena Oncology	\$157	-\$65
5/22/2024	Sonnet Bio	\$4	\$1
4/8/2024	Eyenovia	\$8	\$83
3/20/2024	Cyclacel	\$3	\$0
3/14/2024	Better Therapeutics	\$7	\$8
2/29/2024	Kineta	\$2	\$8
2/15/2024	Neurometrix	\$18	-\$10
2/9/2024	Synlogic	\$32	\$0
1/31/2024	Windtree	\$3	\$1
1/24/2024	Venus Concept	\$5	\$81
1/9/2024	Pulmatrix	\$16	\$0
1/4/2024	Portage Bio	\$5	-\$2
12/22/2023	Allovir	\$141	-\$31
12/7/2023	Hepion Pharmaceuticals	\$19	-\$4
12/6/2023	Comera Life Sciences	\$2	\$4
11/28/2023	Kane Biotech	\$1	\$21
11/15/2023	Pharmacyte	\$61	-\$21
11/9/2023	Adaptive Biotech	\$309	\$508
10/31/2023	Kintara Therapeutics	\$7	\$20

Announcement Date	Company Name	Cash on Hand, Last Reporting Period (\$mm)	Enterprise Value (\$mm), July 12, 2024
10/30/2023	Zynex	\$33	\$343
10/16/2023	Athersys	\$1	\$18
10/4/2023	Brainstorm Cell Therapeutics	\$1	\$34
9/26/2023	Galecto	\$27	-\$12
8/29/2023	IRIDEX	\$5	\$32
8/14/2023	Alaunos Therapeutics	\$4	\$6
8/14/2023	Galera Therapeutics	\$13	\$147
8/8/2023	Salaris Pharmaceuticals	\$4	-\$3
8/2/2023	Vaxil Bio	\$1	\$0
7/20/2023	Arcadia Biosciences	\$9	-\$3
7/18/2023	Pieris Pharma	\$19	-\$10
6/30/2023	Spexis	\$1	\$14
6/29/2023	Aurinia Pharmaceuticals	\$319	\$570
6/24/2023	Bellorophon Therapeutics	\$4	-\$4
5/23/2023	T2 Biosystems	\$6	\$137
3/14/2023	Bellicum Therapeutics	\$6	\$0
2/8/2023	Genetether	\$2	\$1
1/10/2023	Motus GI	\$5	-\$2
12/16/2022	OncoCyte	\$6	\$48
11/10/2022	Soligenix	\$17	\$4
10/31/2022	Humanigen	\$6	\$82
9/26/2022	Exicure	\$16	-\$3
6/15/2022	Galmed	\$22	-\$12

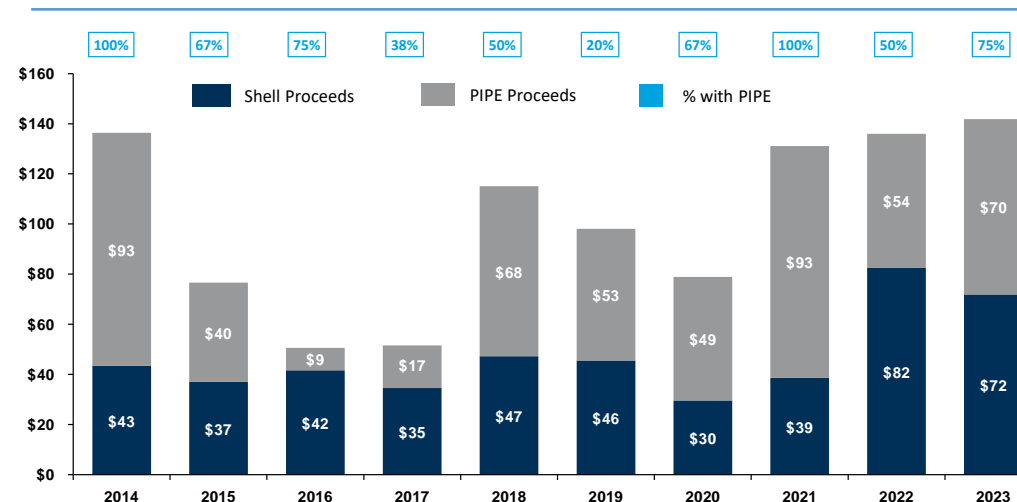
Compare this to a count of 46 companies exploring strategic alternatives in March of 2024.

# Summary Of Selected Biopharma Reverse Mergers 2014 – 2023

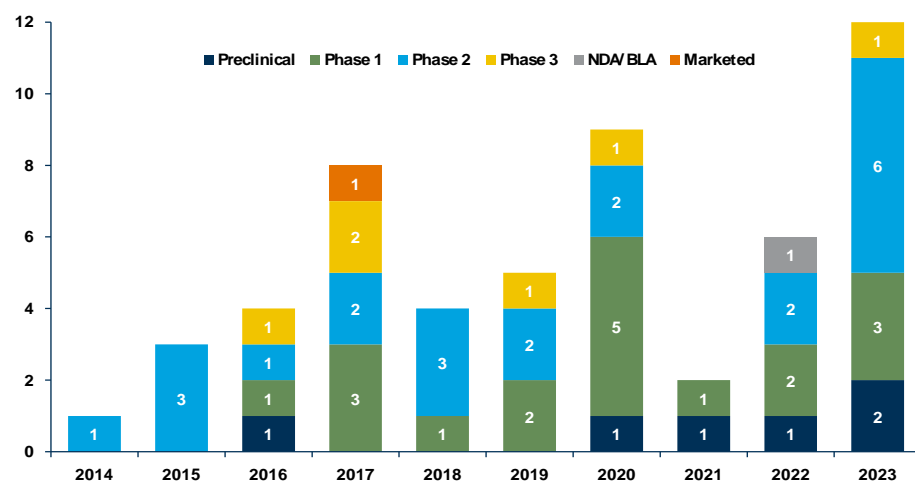
## Reverse Merger: Median Private Company Valuation



## Median Proceeds from PIPE + Shell<sup>(1)</sup>



## Reverse Mergers by Stage of Development<sup>(2)</sup>



Reverse mergers in the 2022 to 2023 period are more likely to have included a PIPE, were more likely to involve mid- or late-stage assets and involved higher private company valuations than those that were undertaken in the 2015 to 2021 period.

Source: CapitalIQ, FactSet, company filings and websites as of December 31, 2023.

Note: Includes transactions in which the cash held by the public acquiror was greater than \$20 million and had largely suspended/terminated clinical development activities and the private target had an ability to own 50% or greater of the pro forma equity including achievements of milestones.

(1) Shell proceeds means the amount of cash and cash equivalents held by the target public company at the deal announcement.

(2) Characterizes Phase 1 Ready and Phase 1/2 as Phase 1, Phase 2 Ready and Phase 2/3 as Phase 2, Phase 3 Ready as Phase 3, and NDA-/BLA-ready as NDA/BLA.



# Disclosure



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