

J.P.Morgan

Q1 2024 Biopharma Licensing and Venture Report

April 2024

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Executive summary

Biopharma IPO and M&A activity returned in early 2024, stirring tentative optimism for licensing and private venture activity.

Biopharma deal activity started 2024 with a healthy spread of M&A and IPO completions. As venture investment for 2022 and 2023 were off the high-water mark set in 2021, the return to traditional exits bodes well for investments into the biotechnology sector.

Licensing deal comparables continued to shift a larger portion of deal value to milestones as in-licensing partners continue their trend toward risk mitigation. Upfront payments now make only 6% of total announced deal values across the board on an otherwise flat total headline dollar trend since 2020.

Here are a few highlights from our first quarter 2024 report:

- **Venture investment into therapeutics:** \$6.5 billion across 107 biopharma venture rounds in Q1 2024. This followed full-year 2023, which had \$23.4 billion from 460 rounds.
- **Biopharma licensing partnerships:** \$38.0 billion in licensing total deal values were announced in Q1 2024 to date, with 6% of that in upfront payments.
- **M&A:** Biopharma M&A saw 25 acquisitions in Q1 2024, totaling over \$16.2 billion for an increasing share of small-cap and private biopharma companies.
- **IPOs:** \$1.4 billion across seven biopharma IPOs completed on NASDAQ and NYSE in Q1 2024.

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Thank you for taking the time to read this report. We look forward to supporting you.

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Parameters

Biopharma companies are defined as firms developing therapeutics and technology platforms engaged in drug discovery, clinical R&D and commercialization.

Therapy areas, development stages, modalities, and deal structures are segmented per the DealForma database.

Financials are based on disclosed figures curated by DealForma. Multiple tranches of the same Series are counted as one together.

Data as of 3/29/2024

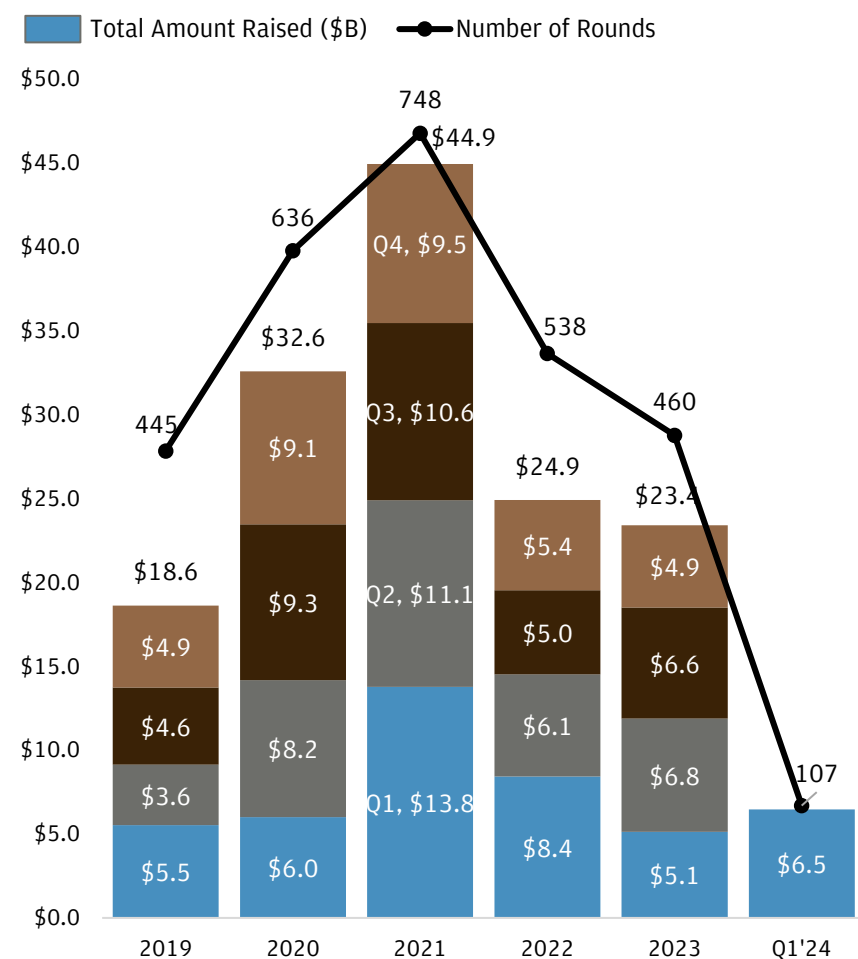
Venture investment dollars into biopharma increased quarter over quarter

Total venture dollars deployed into biopharma therapeutics and discovery platform companies increased to \$6.5 billion in Q1'24 from \$4.9 billion in Q4'23. We expect this trend to continue, as successful IPO and M&A exits have historically been a leading indicator for more robust venture activity.

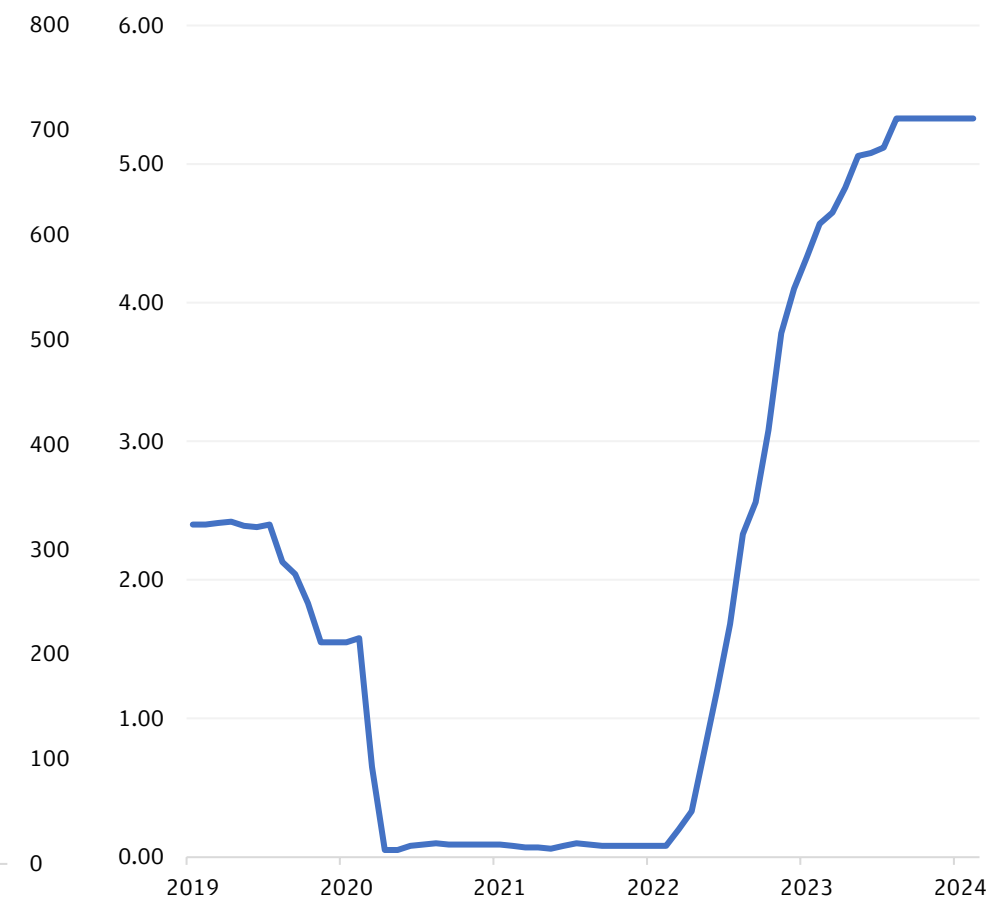
- \$6.5 billion was raised in private funding rounds in the first quarter of 2024 across 107 investments. 2023 closed with \$23.4 billion invested in 460 rounds, the lowest annual total since the 2021 peak.
- At the peak in 2021, biopharma saw \$44.9 billion across 748 venture rounds.
- The interest rate environment has closely correlated with deal activity in the space. Declining interest rates partially contributed to an uptick in activity beginning in 2020, while rising rates beginning in 2022 correlated with a slowdown in activity. Now, with rates stabilized and indications of coming rate cuts later this year, we may see biopharma deal activity increase through 2024.

Biopharma Therapeutics and Discovery Platforms Deal Activity vs. Federal Funds Rate

Total Deal Activity (\$B)



Federal Funds Effective Rate



Source: DealForma.com database; Fed rate: fred.stlouisfed.org
Financials based on disclosed figures. Data through 3/29/2024.

The most viable biopharma programs continue to attract over \$100 million up front

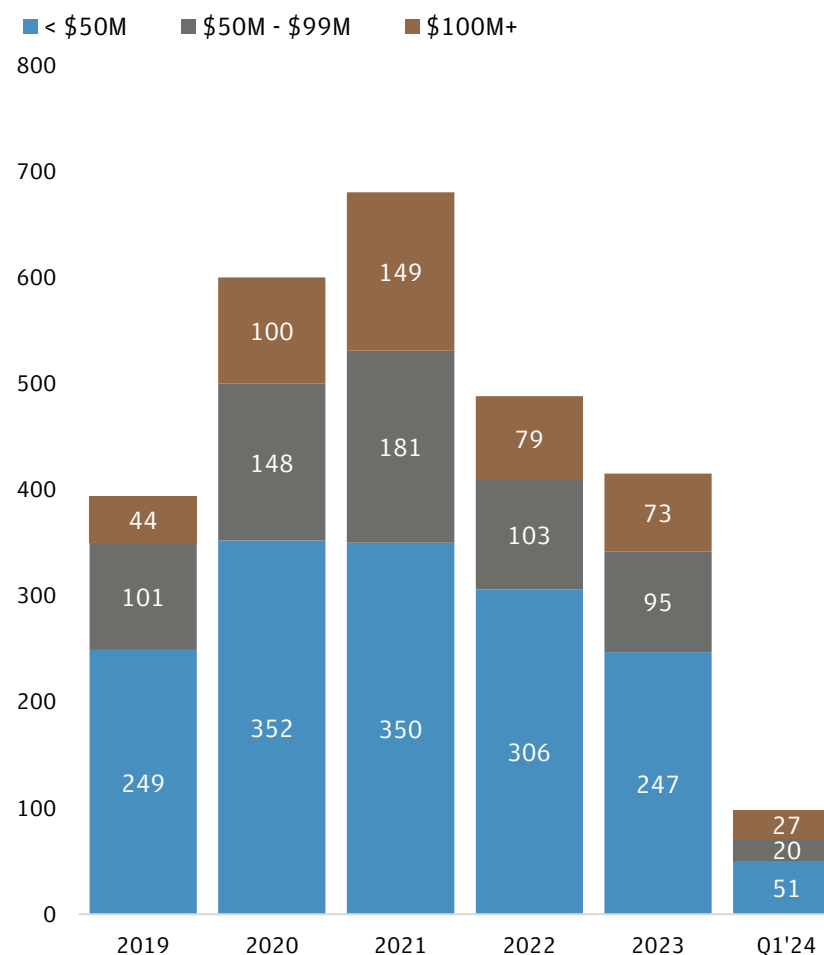
The most promising and clinically successful pipeline programs continue to attract the highest value, but there are fewer of them.

- 73 biopharma companies raised venture rounds of \$100 million or more in 2023, with an additional 27 raising in Q1 2024.
- 25 licensing deals in 2023 saw \$100 million or more in disclosed upfront payment terms, with six more this year.
- Notable 2024 biopharma venture rounds over \$100 million include Alumis' \$259 million Series C and Sionna Therapeutics' \$182 million Series C, both announced in March 2024. BioAge Labs' notable \$170 million Series D was announced in February 2024.
- The largest disclosed licensing upfront cash and equity terms in 2024 include Idorsia/Viatris, with \$350 million signed at Phase III; Protagonist/Takeda, with \$300 million also at Phase III; and Autolus/BioNTech, with \$250 million signed at Phase II.

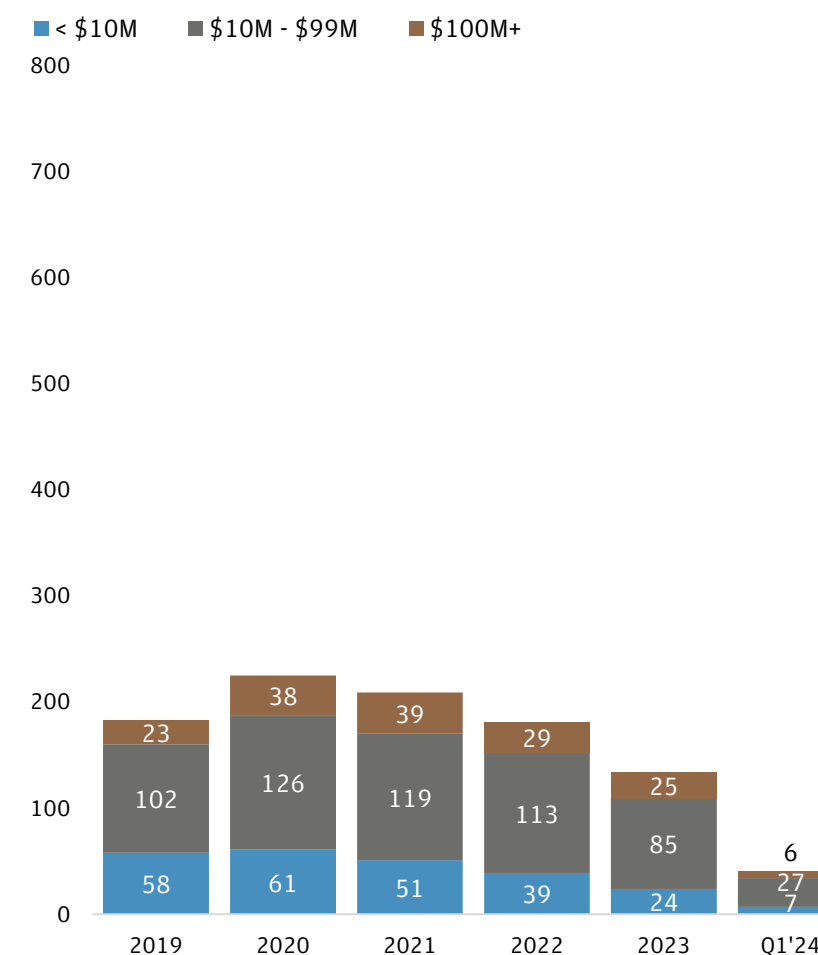
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Biopharma: Total Number of Venture Rounds and R&D Partnership & License Deals by Value Up Front

Number of Venture Investments by Round Size



Number of R&D Licenses by Upfront Size

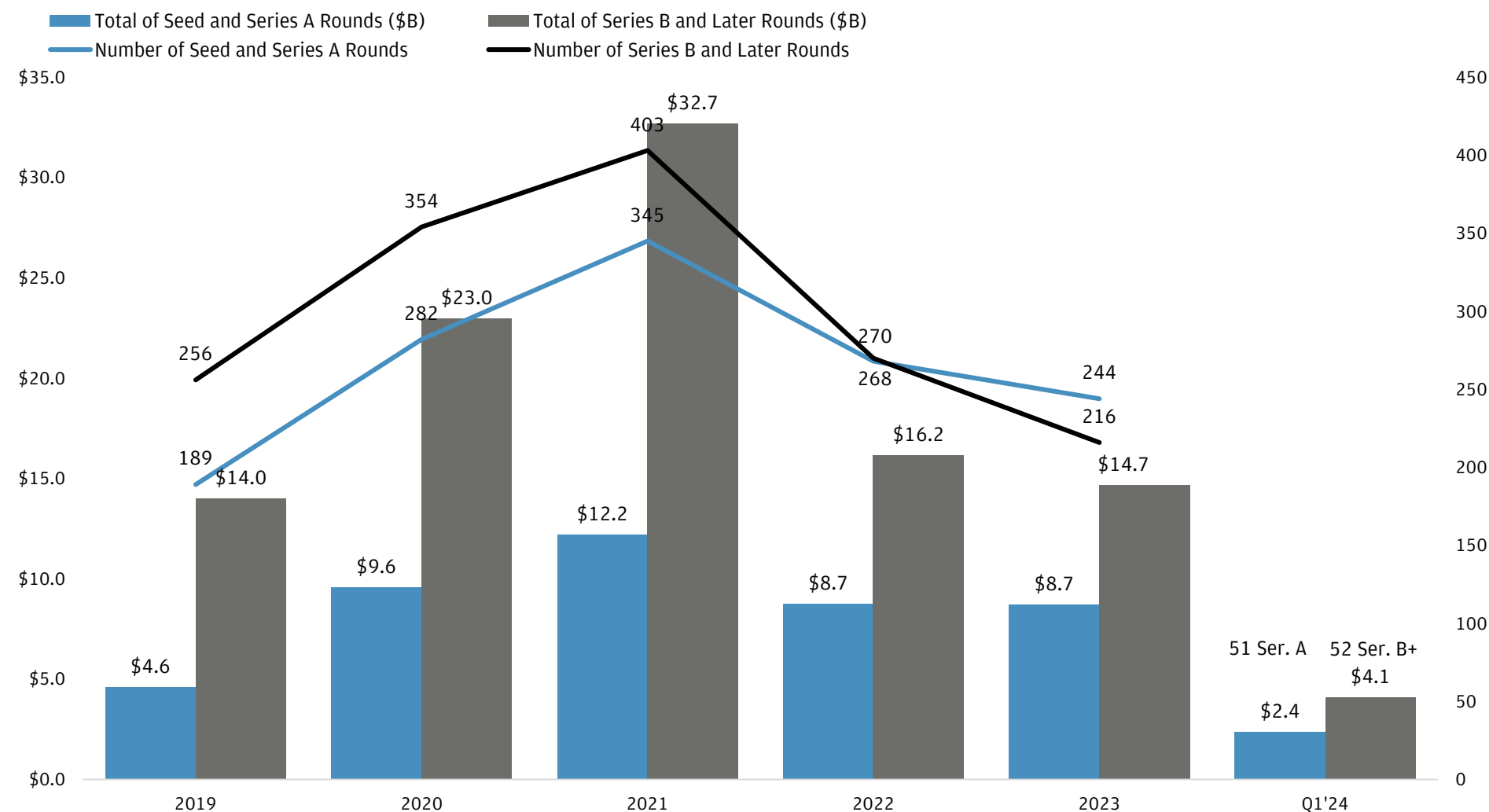


Seed and Series A gained investment share in 2023 and through Q1 2024

Biopharma seed and Series A funding totaled \$8.7 billion across 244 rounds in 2023. First quarter 2024 has \$2.4 billion in 51 first rounds, to continue to improve the share of early investments and company formations.

- The largest biopharma seed and Series A rounds in 2024 to date include Synnovation Therapeutics' \$102 million Series A, OnCusp Therapeutics' \$100 million Series A, and Alys Pharmaceuticals' \$100 million seed round.
- Interestingly, there was nearly an equal number of deals when comparing first-time financings vs. later-stage financings, speaking to the resiliency of new company creation with no shortage of investable ideas to pursue.

Seed and Series A vs. Later Series Venture Totals in Biopharma Therapeutics and Discovery Platforms



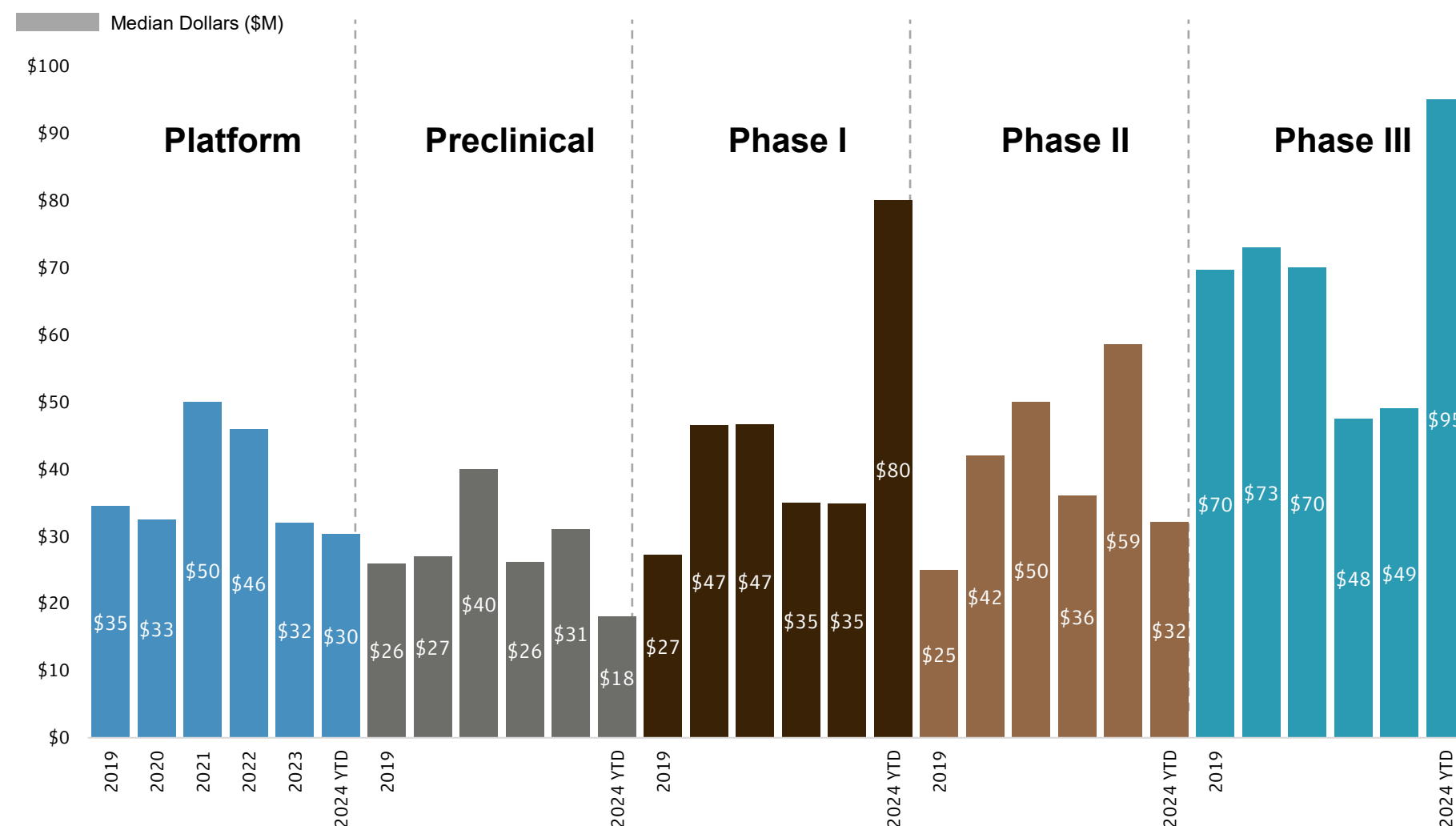
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Phase I and Phase III biotech's raised double the amount of capital compared to the 2023 average

Biopharma companies with their lead programs in Phase I saw higher median investment rounds in 2024 to date. Phase III companies received larger rounds as well, with a large portion coming from insider rounds. Early-stage companies saw smaller investment rounds compared to previous years, as investors turned their focus to pipelines which are closer to approval.

- Phase I biopharma companies raised a median round of \$80 million in 2024 through Q1, more than double the figure from 2023.
- Phase III biopharma companies saw \$95 million in venture round medians through Q1 2024, also higher than full-year 2023.

Biopharma Therapeutics and Platforms: Median Venture Rounds by Company Stage at Funding



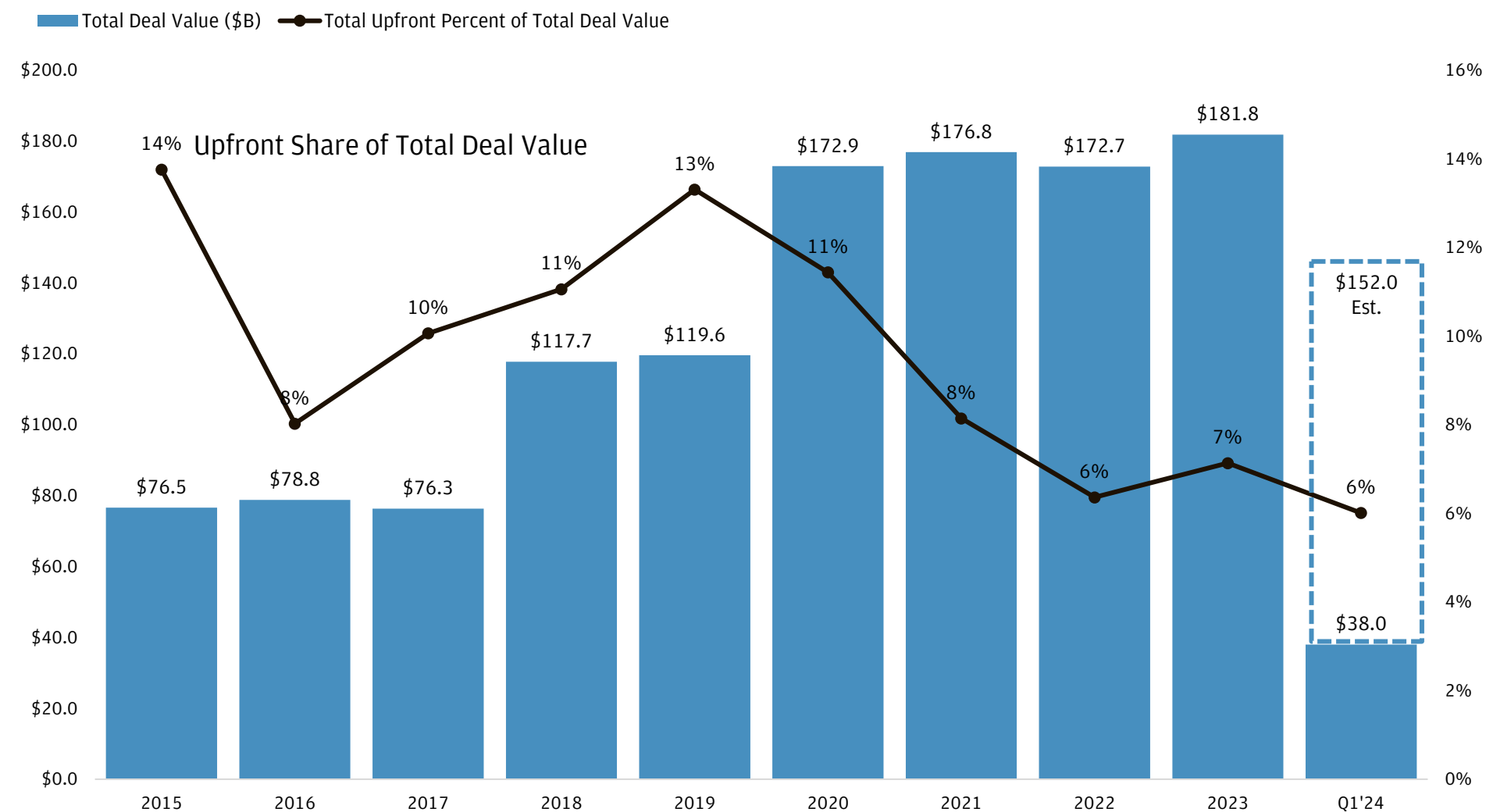
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Licensing deals continued long term trend of heavier tilt in favor of milestone-based payments.

Despite biopharma licensing and partnership total announced deal values holding steady while deal activity dropped since 2020, the share of upfront payments declined significantly. A larger share of deal value has been pushed to milestones as in-licensing partners mitigate deal economic risk. This is driven by a shift to a buyers' market and by the increase in the share of early-stage dealmaking with longer timelines to approval.

- 7% of the \$181.8 billion in biopharma licensing total announced deal value in 2023 was in upfront payments, down from the peak of 13% in 2019.
- \$38.0 billion in licensing deal values were announced in Q1 2024 with 6% of that in upfront payments.
- Milestones comprise an increasingly larger share of announced deal totals, with the largest portion of those in sales-based milestones often across multiple potential programs.

R&D Partnership & Licensing Totals (\$B) and Percentage of Up-front Payment Economics



Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Biologics attract the highest early-stage investment and licensing deal values

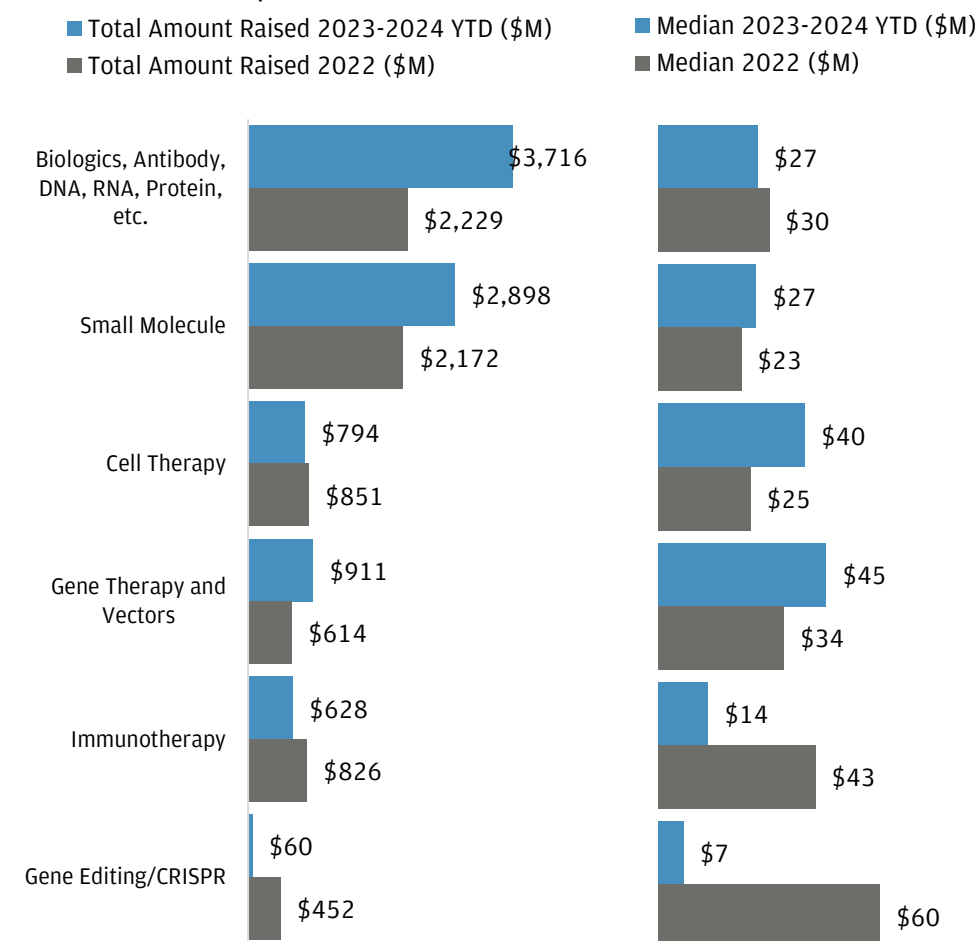
The top biopharma modalities for investment and deal flow continue to be biologics and small molecules, followed by more advanced therapies. Both venture investments at seed to Series A and licensing payments tracked higher from 2023 to Q1 2024 in the top two modalities.

- \$3.7 billion in 2023 and Q1 2024 total seed and Series A investments into biologics with a median round size of \$27 million.
- \$107.0 billion in total announced deal value for biologics from 2023 and Q1 2024 with a median upfront payment of \$47 million.

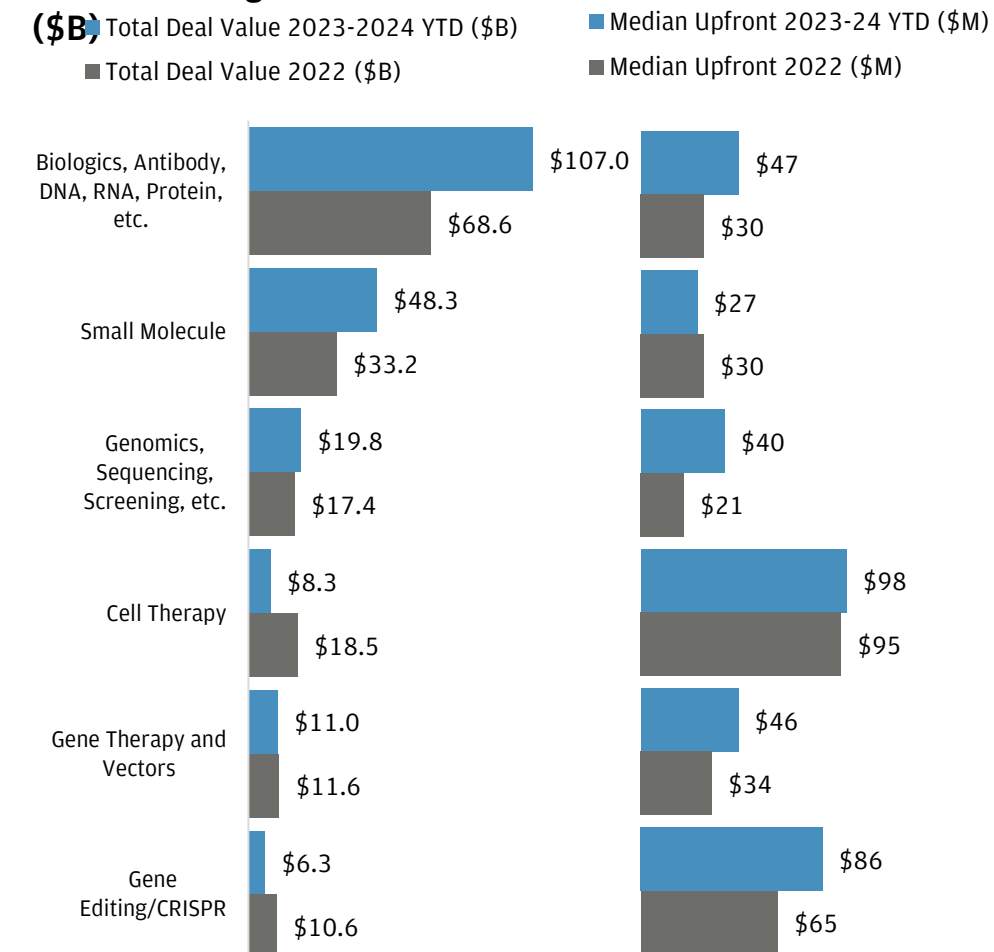
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Top Biopharma Modalities: Seed and Series A Venture Rounds and Total Announced Licensing Deal Value

Top Modalities Seed-Series A (\$M)



Top Modalities Total Licensing Deal Values (\$B)

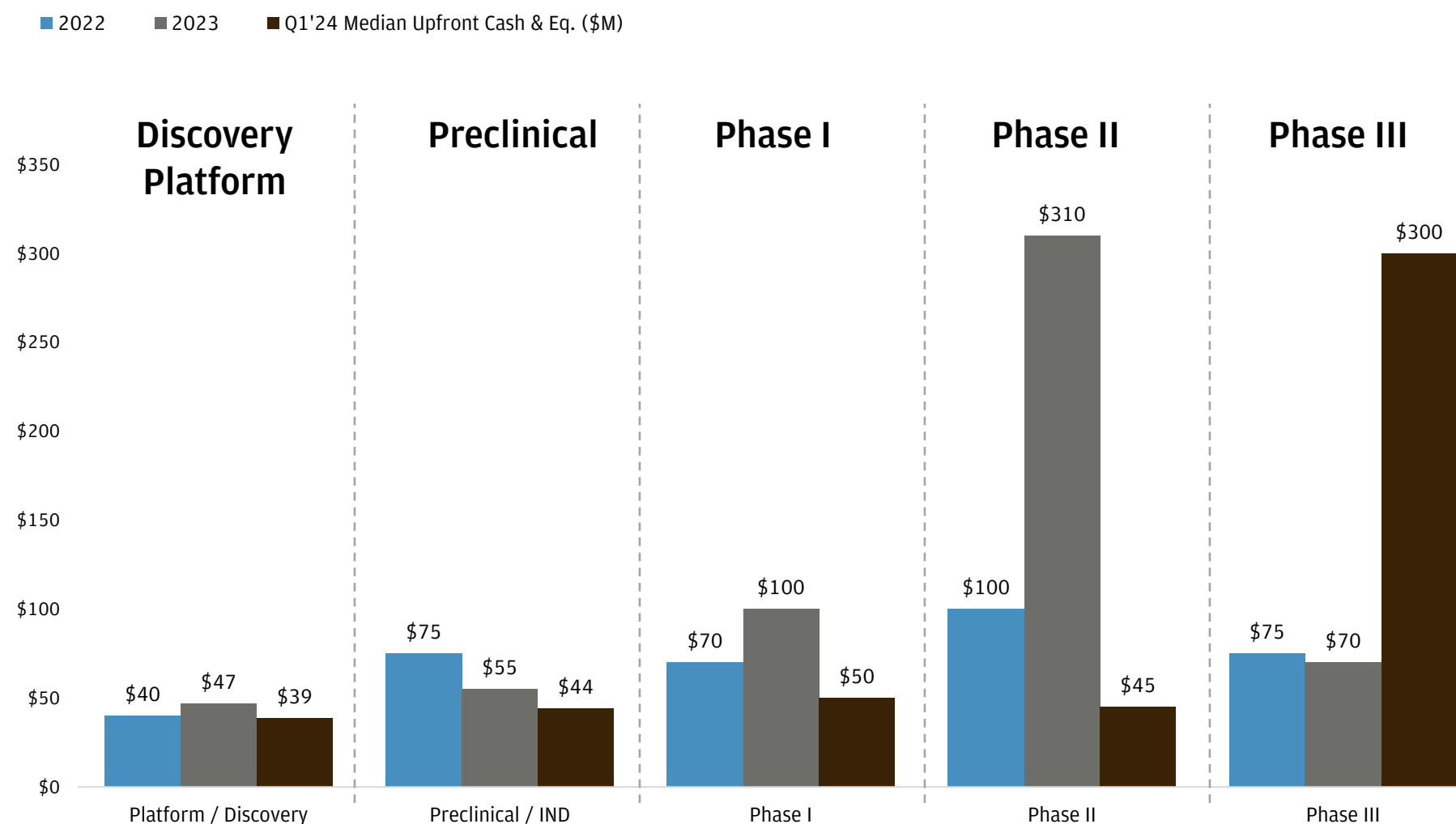


Big payments from big pharma have been reserved for Phase I and later since 2023

Large-cap biopharma (market cap of \$50 billion+) are focused on in-licensing later-stage clinical compounds to fill pipelines with therapies close to approval. The shift to later-stage clinical programs left preclinical and earlier-stage companies with smaller median licensing upfront payments in Q1 2024.

- Median upfront cash and equity payments from big pharma were down for Phase II and earlier-stage deals signed in Q1 2024 to \$45 million for Phase II, \$50 million for Phase I, \$44 million for preclinical/IND, and \$39 million for discovery platform programs.
- 15 Phase III deals were signed in Q1 2024 with the largest disclosed upfronts including Idorsia/Viatris (\$350 million) and Protagonist/Takeda (\$300 million). Despite the large deals in Q1, Phase III deals are often signed for less-than-worldwide territories and smaller upfront payments, as was the case in 2022 and 2023.
- Daiichi Sankyo/Merck saw the largest Phase II upfront licensing payment at \$4.0 billion in 2023.

In-Licensing by Big Pharma: Median Upfront Cash & Equity by Stage at Signing. 2022 to Q1'24



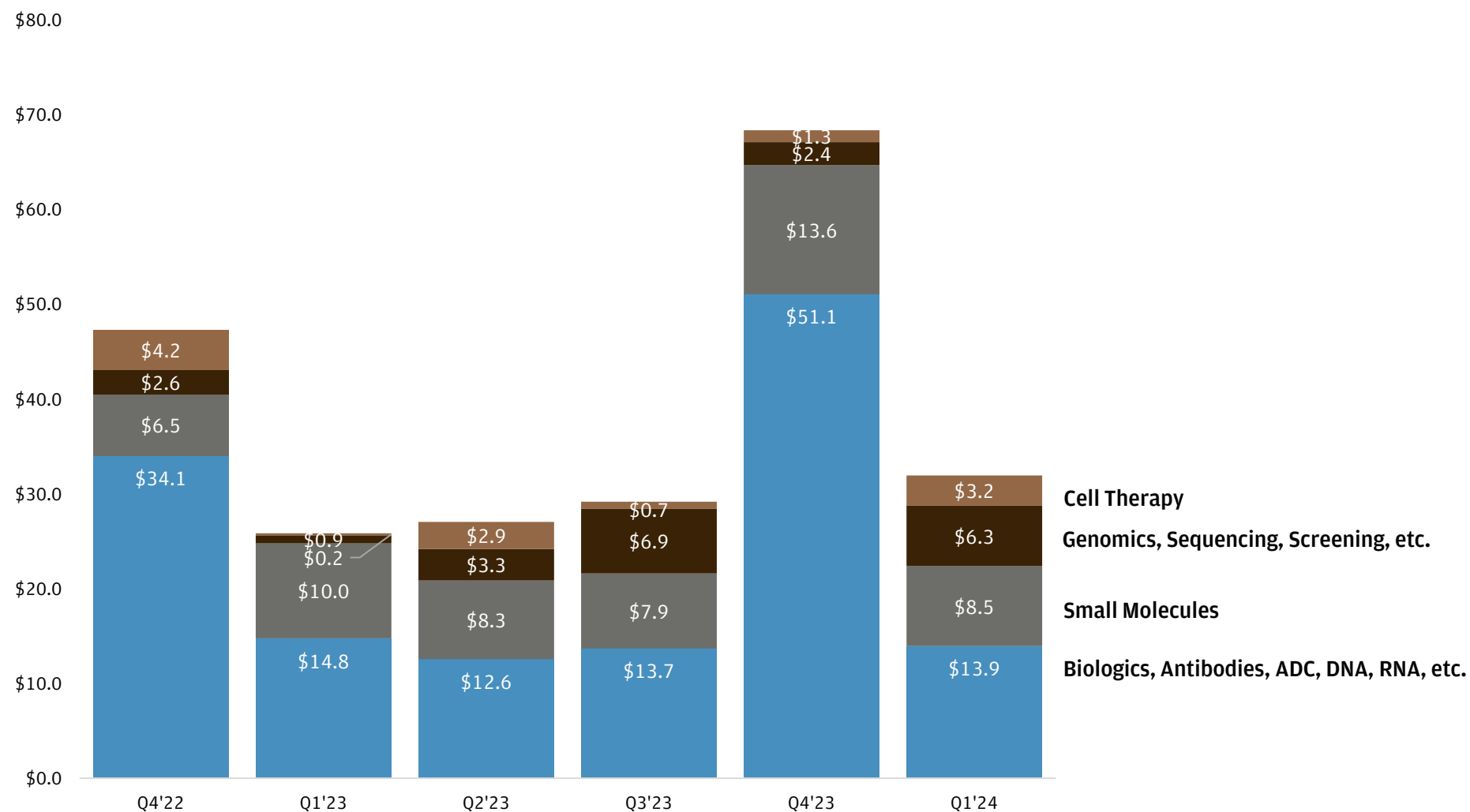
Source: DealForma.com database
Financials based on disclosed figures. Stage of lead asset in multi-asset deals. Data through 3/29/2024.

Antibody and ADC therapies drove deal totals higher; Q1 2024 shows healthy deal flow

Antibody-drug conjugates continued to see larger deal totals in 2023 and 2024 to drive total announced partnership deal values higher for biologics. In 2023, this came at the expense of cell therapies and 'omics-based platforms, as in-licensees focused on near-term opportunities to launch biologic drug compounds.

- \$92.2 billion in total announced deal value for licensing deals signed in 2023, higher than the \$67.9 billion in 2022. Antibody and ADC deals led with new deal upfronts and potential payment totals.
- Small molecule licensing deal values rose as well, from \$33.2 billion in 2022 to \$39.8 billion in 2023.

R&D Partnerships for Top Biopharma Modalities: Total Announced Deal Value (\$B)



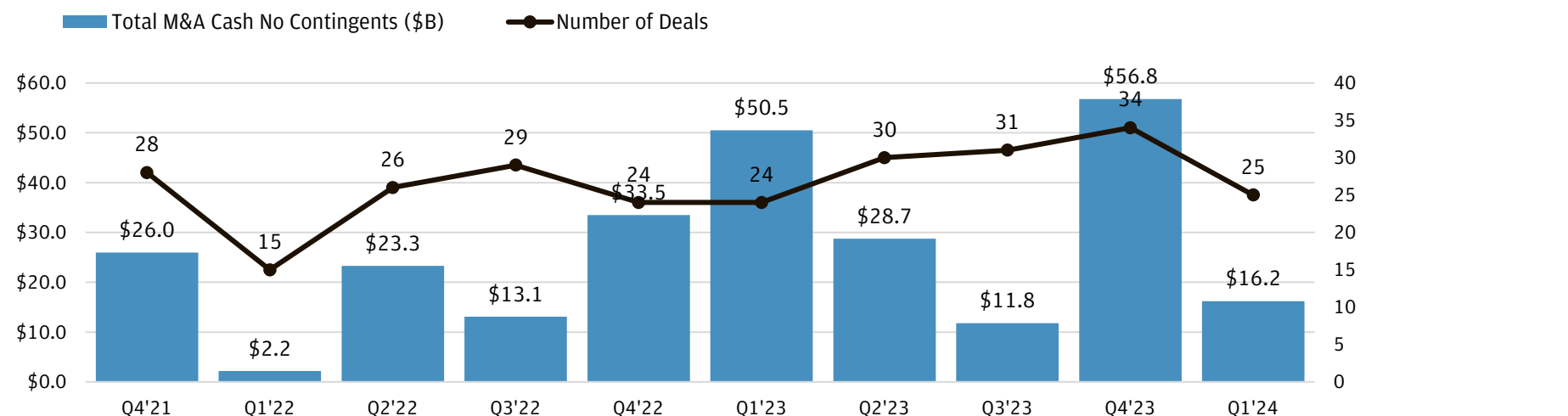
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Biopharma acquisition activity picked up in 2023 and Q1 2024, despite smaller deals

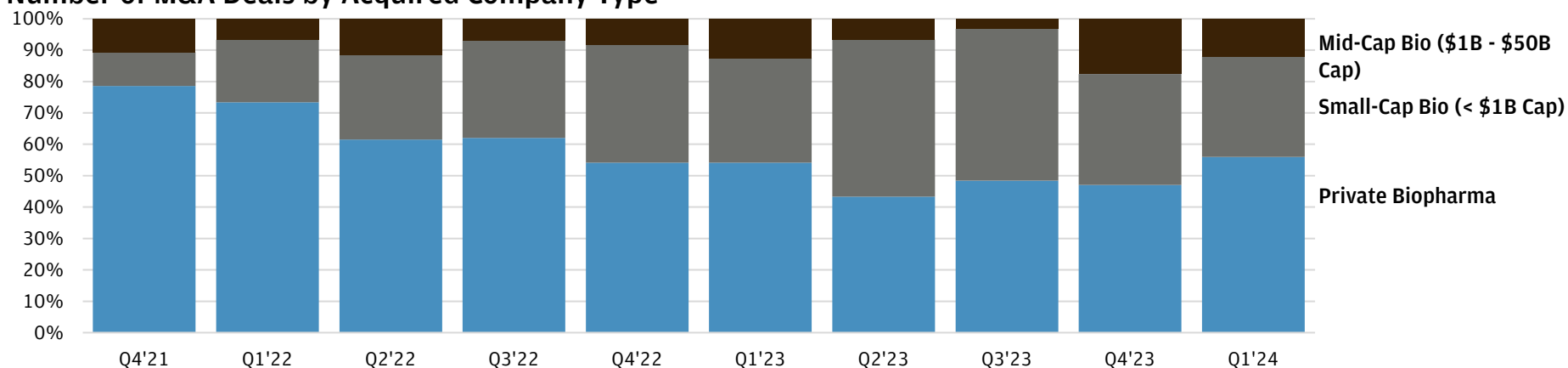
More biopharma companies were acquired in 2023 to return to near peak 2020 levels of activity. Deal values however have been smaller, as company valuations shrank since the value peak in 2019. Only a handful of 2023 and Q1 2024 acquisitions passed \$10 billion, and the majority were under \$1 billion comprised of private companies.

- 119 M&A transactions for biopharma therapeutics and platform companies were announced in 2023 totaling \$147.8 billion.
- Q1 2024 has seen 25 biopharma acquisition announcements totaling \$16.2 billion, with most of these announced in the early weeks of January.
- Private biopharma acquisition activity took an increasing share from small- and mid-cap biopharma deals to account for over half of all biopharma M&A.

Biopharma M&A: Number of Deals and Total Deal Value (\$B)



Number of M&A Deals by Acquired Company Type



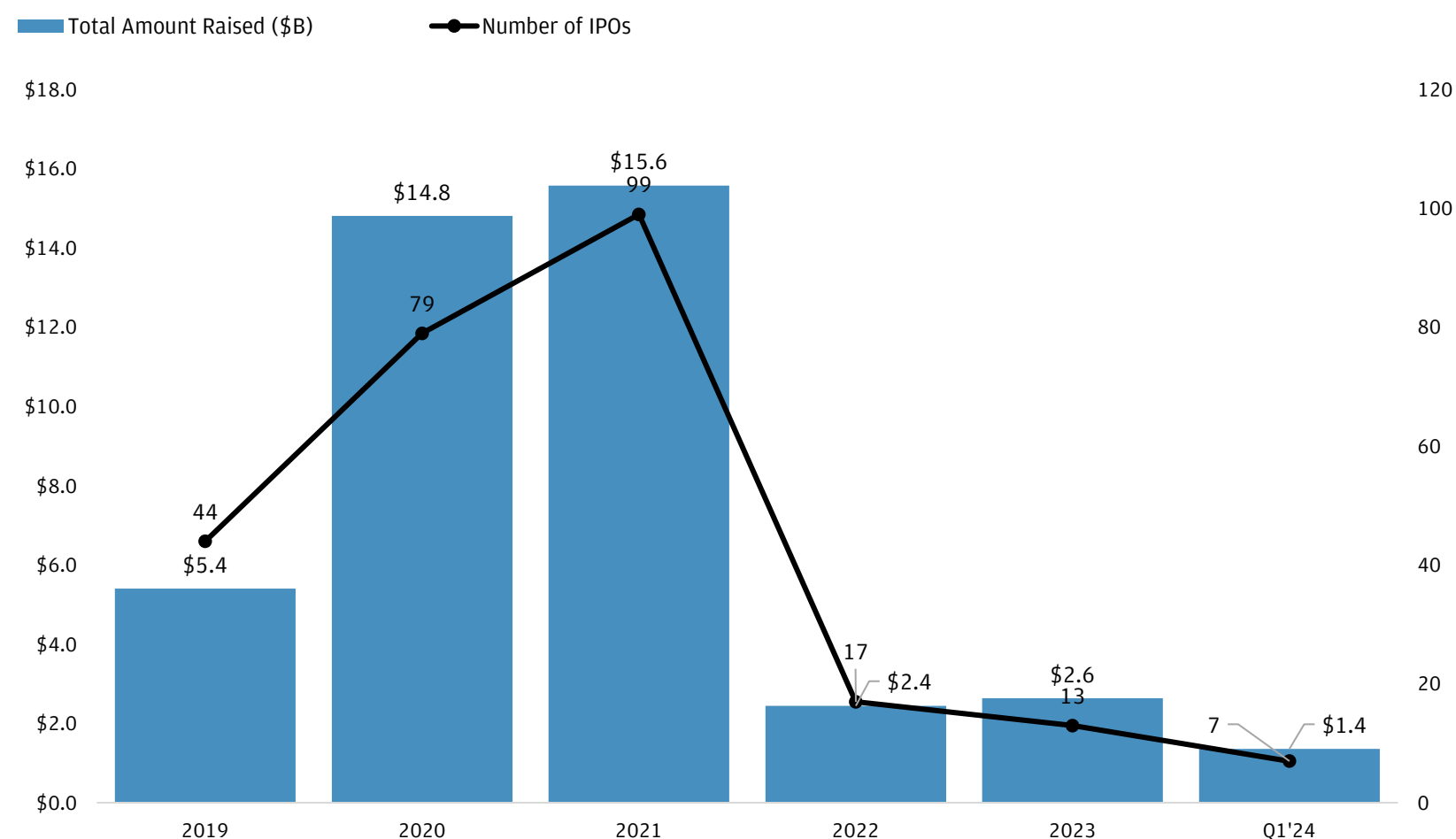
Source: DealForma.com database
Financials based on disclosed figures. Data through 3/29/2024.

Early 2024 biopharma IPO activity signals a positive return after a soft two years

The first three months of 2024 saw seven biopharma IPOs complete on U.S. exchanges, showing an early signal to a busy IPO year. The IPO window was relatively closed in 2022 and 2023 following declines in public markets for biopharma issuances.

- \$1.4 billion across seven biopharma IPOs on NASDAQ and NYSE all completed in Q1 2024.
- Six of the seven companies had clinical programs at IPO.
- Three of the seven IPOs in 2024 were trading above their IPO price as of March 29.
- The largest 2024 IPOs through March include CG Oncology, Kyverna Therapeutics, and ArriVent Biopharma, each over \$150 million.
- Notable acquisitions include Bristol-Myers Squibb's (NYSE: BMY) purchase of Karuna Therapeutics and RayzeBio for \$14 billion and \$4.1 billion, respectively, as well as Horizon Therapeutics' purchase of Viela Bio for \$3.05 billion.

NASDAQ and NYSE Completed IPOs in Biopharma Therapeutics and Platforms: Totals (\$B) and Count



Source: DealForma.com database

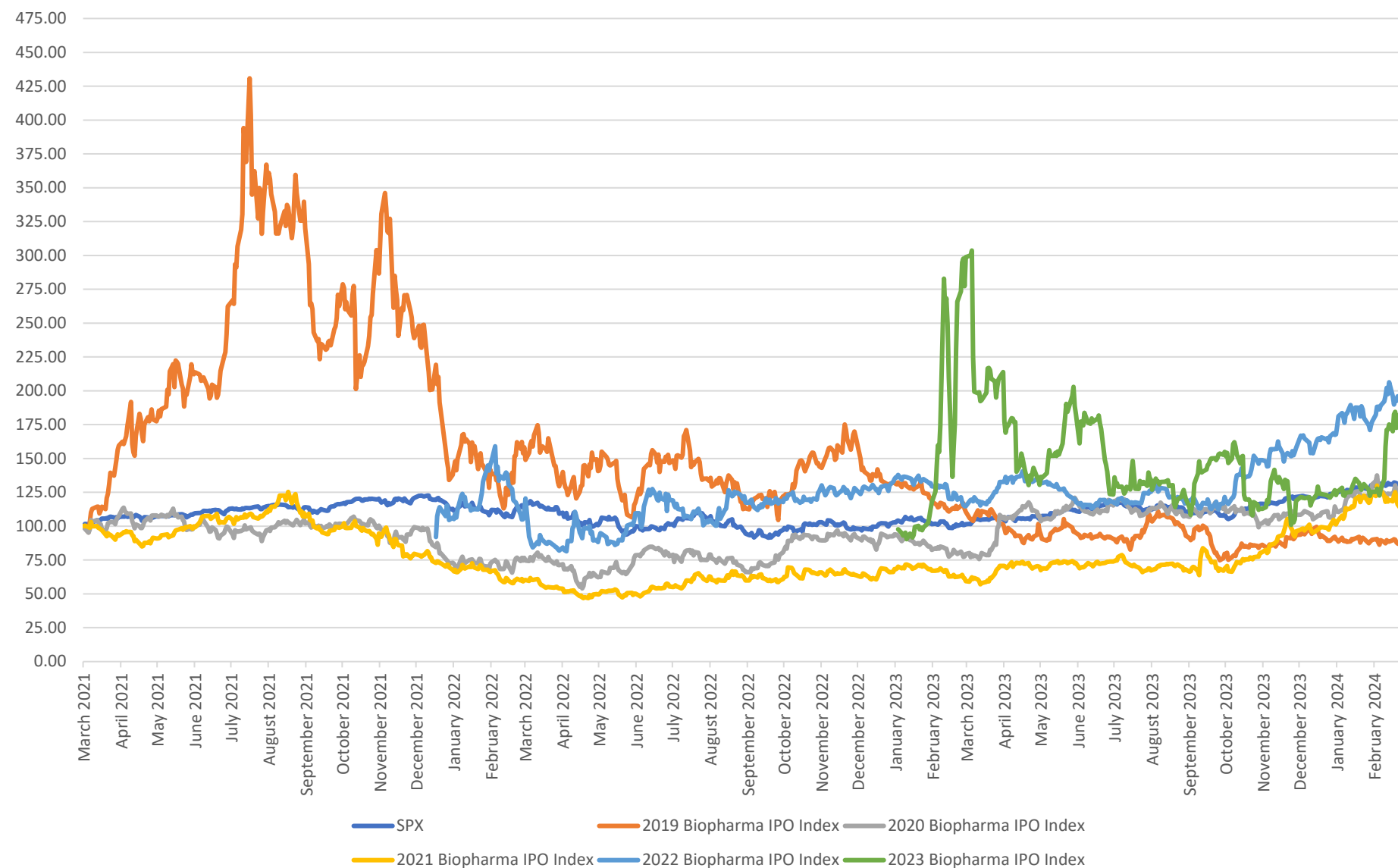
Financials based on disclosed figures. IPOs over \$15 million. Excludes Kenvue, Inc. (Q2 2023, \$4.4B) and other OTC focused companies. IPOs by completion date. Data through 3/29/2024.

Biopharma IPOs have performed adequately well relative to the broader market

Returns for recent biopharma IPOs have been notably stronger for the 2022 and 2023 cohorts, though it's important to note that their nascency does not yet allow for a full three-year analysis. Nonetheless, this cohort has outperformed the broader S&P 500 by a significant margin, led by standouts such as Apogee Therapeutics (NASDAQ: APGE) and Arcellx (NASDAQ: ACLX).

- While the 2020 and 2021 IPO cohorts have underperformed the S&P 500 over a three-year period, they have still performed positively during that time. Notable constituents include Nuvalent (NASDAQ: NUVL) and Vera Therapeutics (NASDAQ: VERA), who have performed exceptionally well recently.

Biopharma IPO Cohort 3Y Performance vs. SPX



IPO Cohort Indexes are weighted by market cap

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