

J.P.Morgan

Biopharma Therapeutics Licensing Deals and Venture

April 2022

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Executive summary

Life sciences deals and funding started to come down from earlier records

Following multiple record years for licensing and venture funding, biopharma dealmaking is off to a slower start in 2022. Most deal categories showed a decline, except for licensing in specific therapy areas, advanced modalities and late-stage venture investment.

Here are a few of the highlights our subsector report uncovers:

- **Biopharma venture investment:** Quarterly funding activity returned to mid-2020 levels, which is still healthy growth from prior years but a slight decline from the 2021 peak. First quarter 2022 finished at \$6.3 billion in venture investment for biopharma therapeutics and discovery platforms.
- **Cell and gene therapy:** These sectors attracted the largest median upfront dollars in licensing agreements with big pharma, as did deals for early-stage discovery programs and platforms.
- **R&D licensing partnerships:** The number of deals continued to fall quarter-over-quarter after record-setting activity in 2020 and first quarter 2021.
- **IPO and M&A:** Biopharma tracked lower in IPO and M&A activity in first quarter 2022 as biotech stock declines continued.

What does this mean for the rest of 2022?

- **The pressure is on clinical programs** as an already sensitive public market leaves no room for missed scientific milestones and valuation catalysts.
- **Licensing and private fundraising** will continue to support early-stage science and company growth given the challenges in M&A exits and IPOs.

At J.P. Morgan, we have a team of relationship bankers and specialists dedicated to the life sciences and healthcare sectors. We believe deeply in the pivotal contributions these entrepreneurs add to society, shareholders and employees alike.

Regardless of the size or stage of your company, we're committed to your success. We're prepared and equipped to help you meet your strategic, financial and technical objectives.

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

Sincerely,
Kathryn McDonough
Co-Head of Healthcare, Commercial Banking
J.P. Morgan

Parameters

Biopharma companies are defined as firms developing therapeutics and technology platforms engaged in drug discovery, clinical R&D and commercialization. Medtech companies are defined as firms developing medical devices, diagnostics, digital health therapeutics and research tools. Therapy areas, development stages and modalities 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 4/7/2022

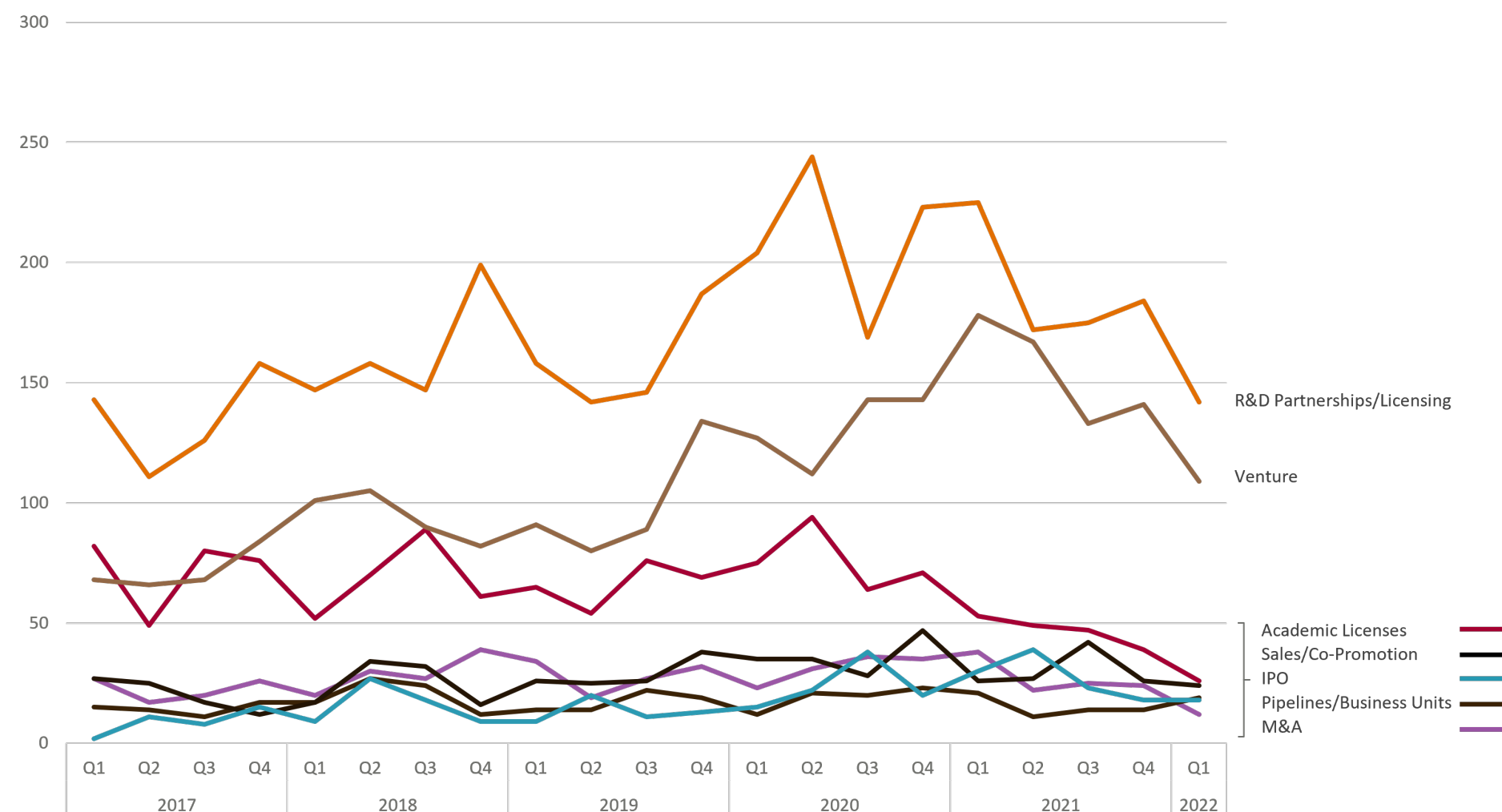
Biopharma dealmaking in perspective

Biopharma R&D licensing partnership and fundraising activity surged in 2020 and set new records in 2021. Quarterly deal flow, however, began to cool off in late 2021 and continued to do so through the first quarter of 2022.

- 350 total transactions across venture rounds and IPOs, deals, and M&A in the first quarter.
- 142 biopharma R&D licensing partnerships signed—at lower levels last seen in mid-2019.
- 109 venture rounds completed for drug and platform developers, down from the 178 peak in funding rounds in Q1 2021.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma Therapeutics and Discovery Platform Deal Flow: Total Number of Deals



Biopharma Licensing and M&A

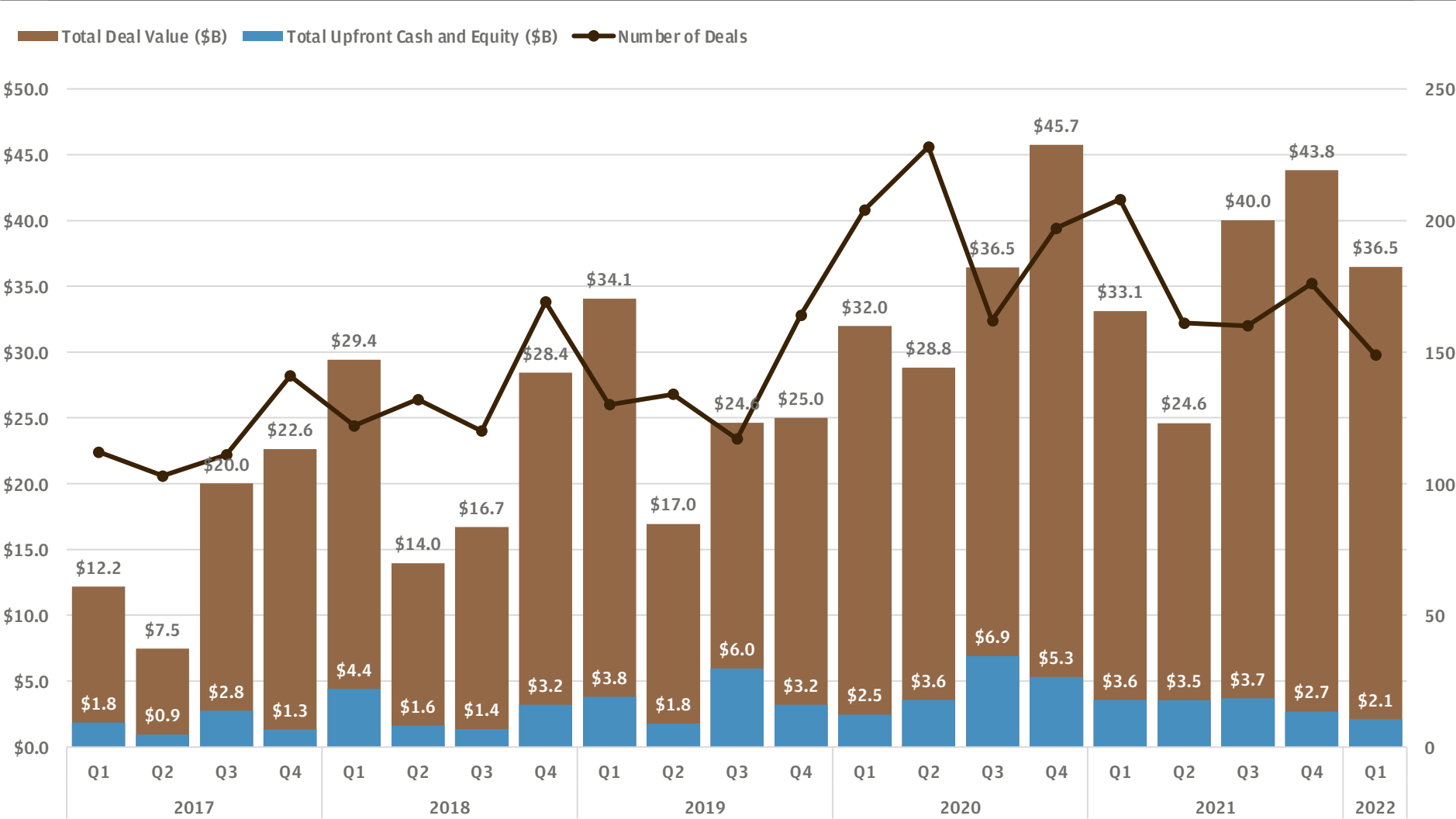
Biopharma licensing upfront totals tracked lower with deal counts off after a record year

Quarterly biopharma R&D licensing partnership activity ticked lower across deal counts and total announced upfronts and deal values. But per-deal upfronts came in slightly higher.

- 149 biopharma R&D licensing partnerships were signed in Q1 2022, down from 176 in the prior quarter and 208 in Q1 2021.
- \$2.1 billion in total upfront cash and equity for licensing therapeutics and discovery platforms, down slightly from the fourth quarter of 2021.
- \$36.5 billion in total announced deal values as milestones continued to make up the value difference and mitigate risk in early programs.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma Therapeutics and Platforms: R&D Partnership/Licensing Totals (\$B) and Number of Deals



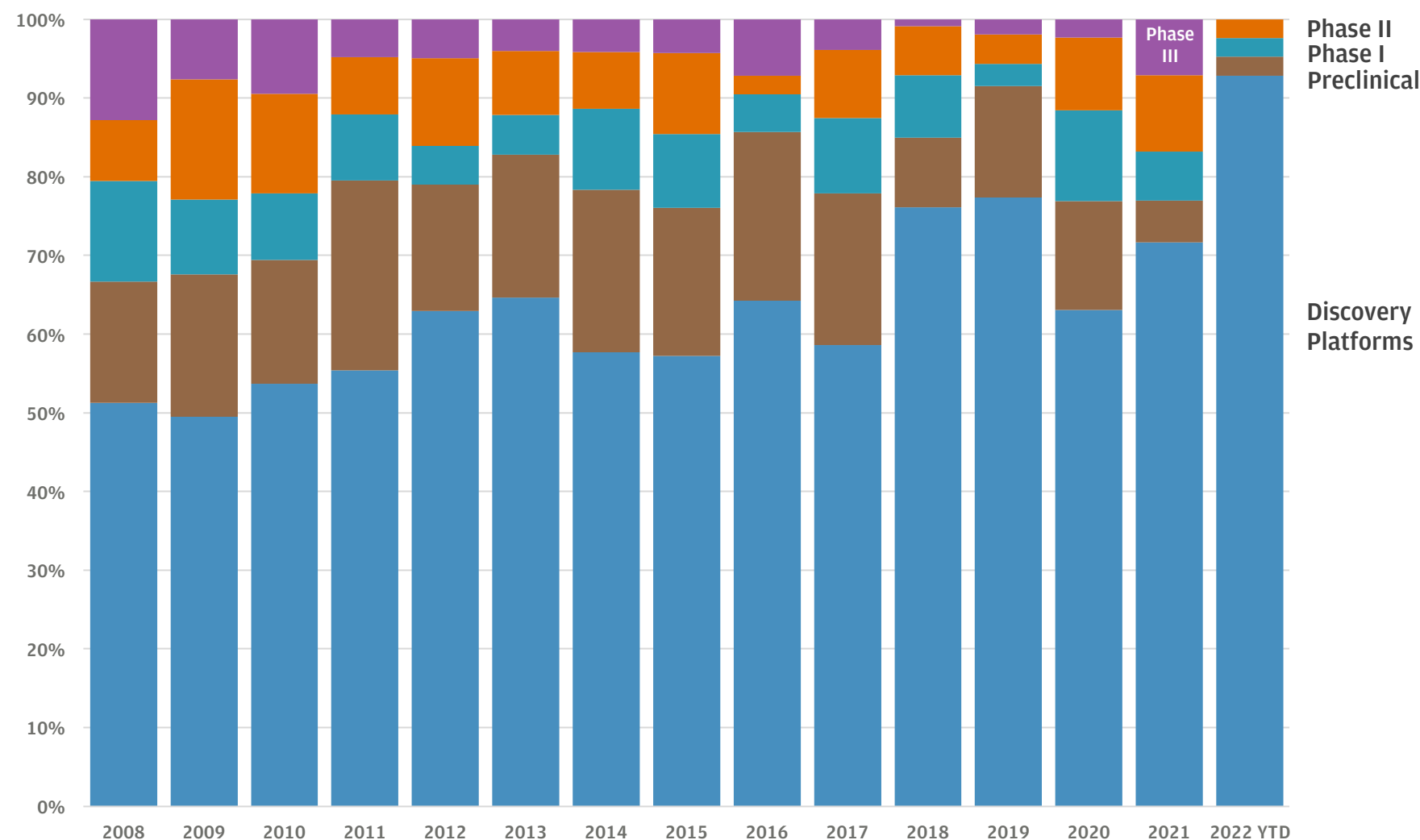
Big pharma is in-licensing earlier into discovery and technology platforms

Large-cap biopharma (\$50 billion+) has been signing deals earlier in development since the early 2000s. As high as 90% of deals happened in preclinical and earlier stages in 2019. Q1 2022 has seen much of the same following two years of COVID-related dealmaking and a recent return to licensing discovery programs.

- Large-cap biopharma in-licensed 42 deals in Phase III and earlier stages year-to-date.
- Over 90% of Q1 2022 in-licensing partnerships signed into large-cap biopharma were for discovery platforms, despite the lowest quarterly deal activity from large-cap partners.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

In-Licensing by Large-Cap Biopharma (\$50B+): Share of R&D Partnerships by Stage at Signing



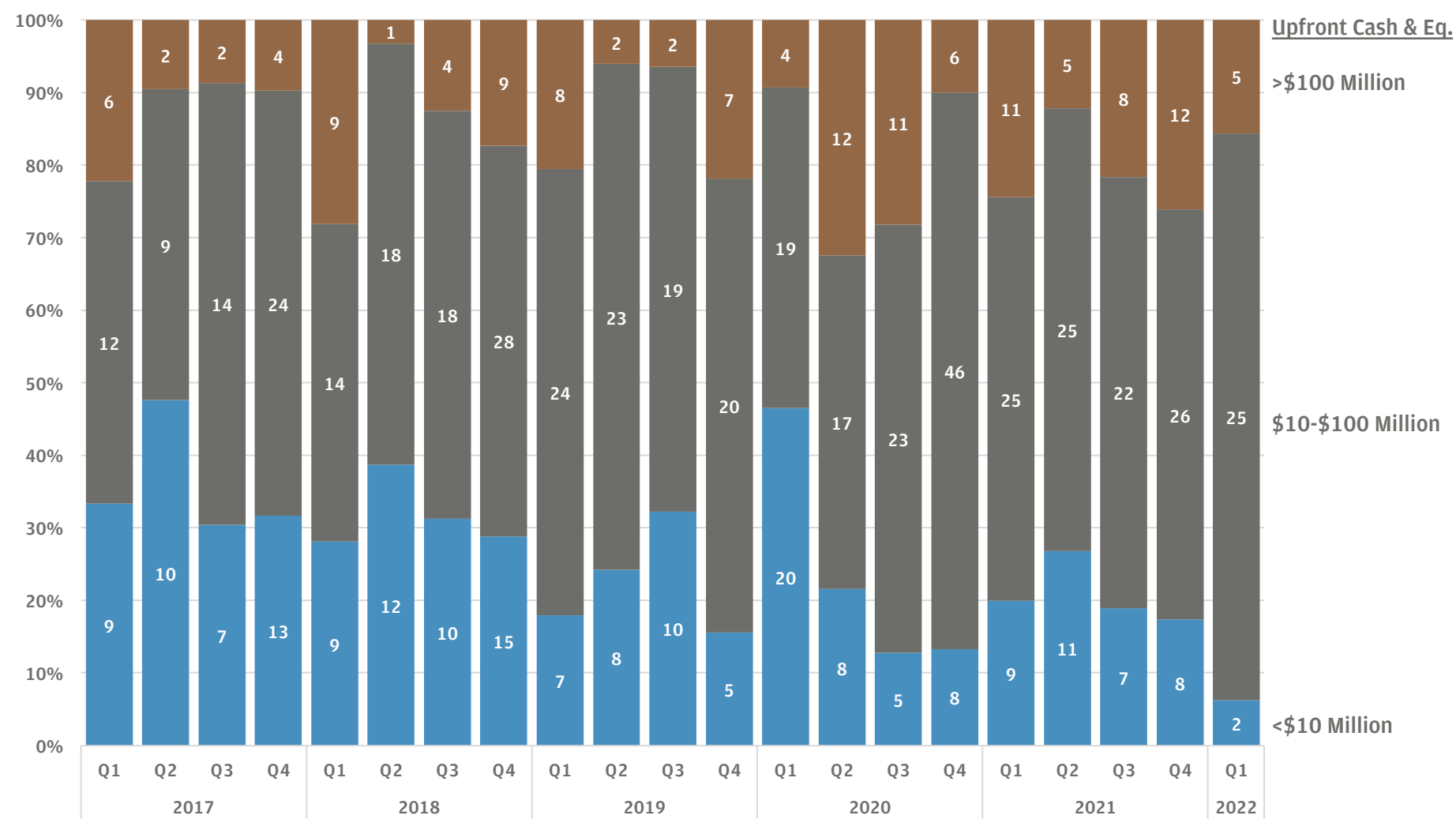
Biopharma out-licensors are receiving larger upfront cash and equity investments in deals

Most biopharma R&D licensing partnerships bring in double-digit upfront payment terms to the out-licensor, and some programs bring over \$100 million up front.

- In the first quarter of 2022:
- There were 25 biopharma R&D licensing deals with \$10 million to \$100 million in upfront cash and equity, which is in line with previous quarters.
 - Five deals had over \$100 million in upfront cash and equity.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

High-Dollar In-Licensing: Share of Deals by Range of Upfront Cash & Equity



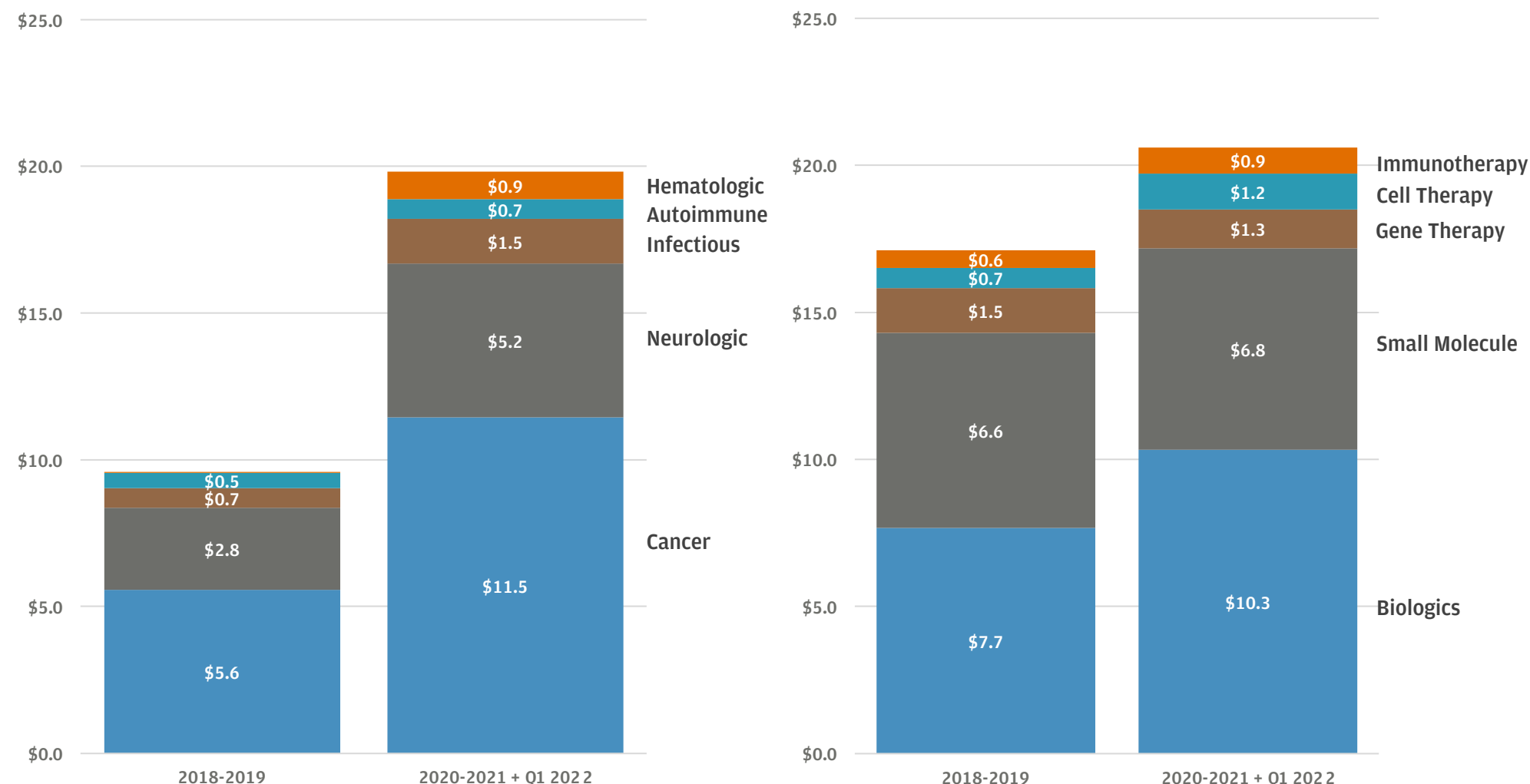
Large-cap biopharma is doubling up on oncology and neurology across all modalities

Tracking large-cap biopharma's deal activity among therapy areas and treatment modalities is top of mind to all business developers. Most of the top five within each category saw increased upfront cash and equity totals since 2019.

- \$11.5 billion in upfront cash and equity for cancer program in-licensing by large-cap biopharma in 2020, 2021 and the first quarter of 2022, over double the total in 2018 to 2019.
- Hematology dealmaking is now close to \$1 billion, up from nearly zero before 2020.
- Cell therapy and immunotherapy continued to be the growing modalities for dealmaking, bringing in \$1.2 billion and \$900 million in 2020 through 2022 to-date, respectively.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Top Therapy Areas and Modalities In-Licensed by Large-Cap Biopharma: Total Upfront Cash & Equity (\$B)



In-licensing for cell and gene therapies saw higher median upfront payments in Q1 2022

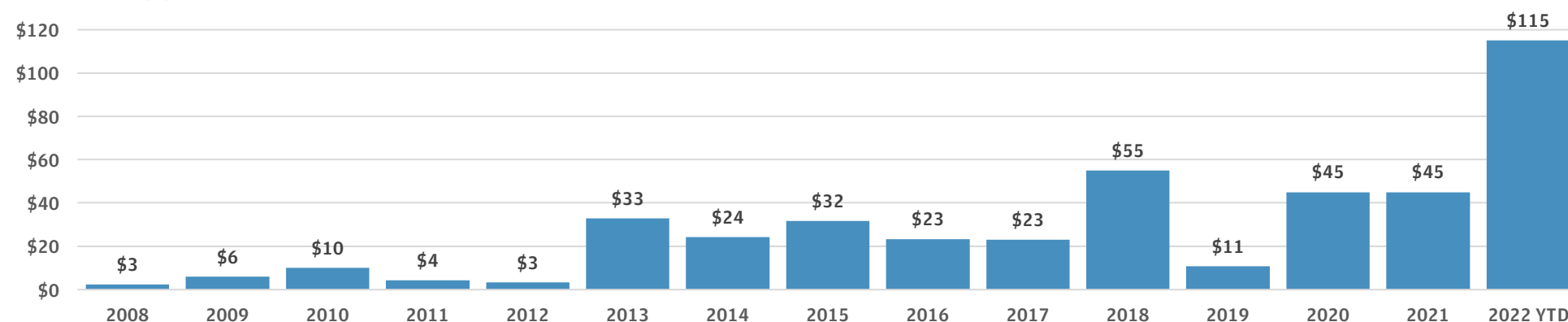
Advanced modalities such as cell therapy and gene therapy continued to attract higher R&D licensing deal upfronts. The median upfront cash and equity values increased for both in the first quarter of 2022.

- \$115 million median upfront cash and equity across 14 deals in 2022 YTD for cell therapy in-licensing, more than double the \$45 million median in 2021.
- \$54 million median upfront cash and equity across 8 deals in 2022 YTD for gene therapy in-licensing, 42% higher than the \$38 million median in 2021.
- Cell and gene therapy deal upfronts continued to lead other modalities with the highest median upfront values.

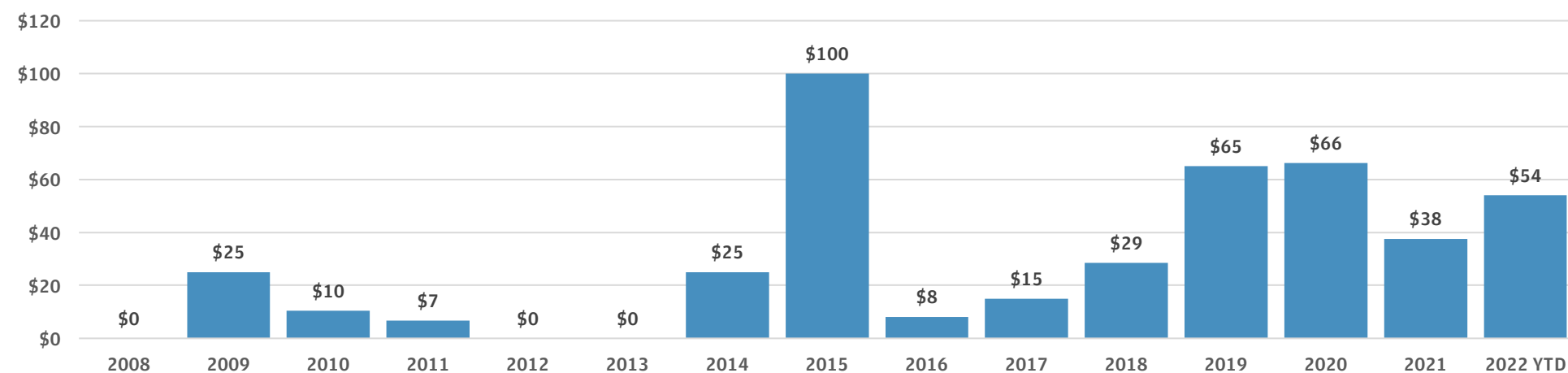
Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Cell and Gene Therapy In-Licensing: Median Upfront Cash & Equity (\$M)

Cell Therapy



Gene Therapy



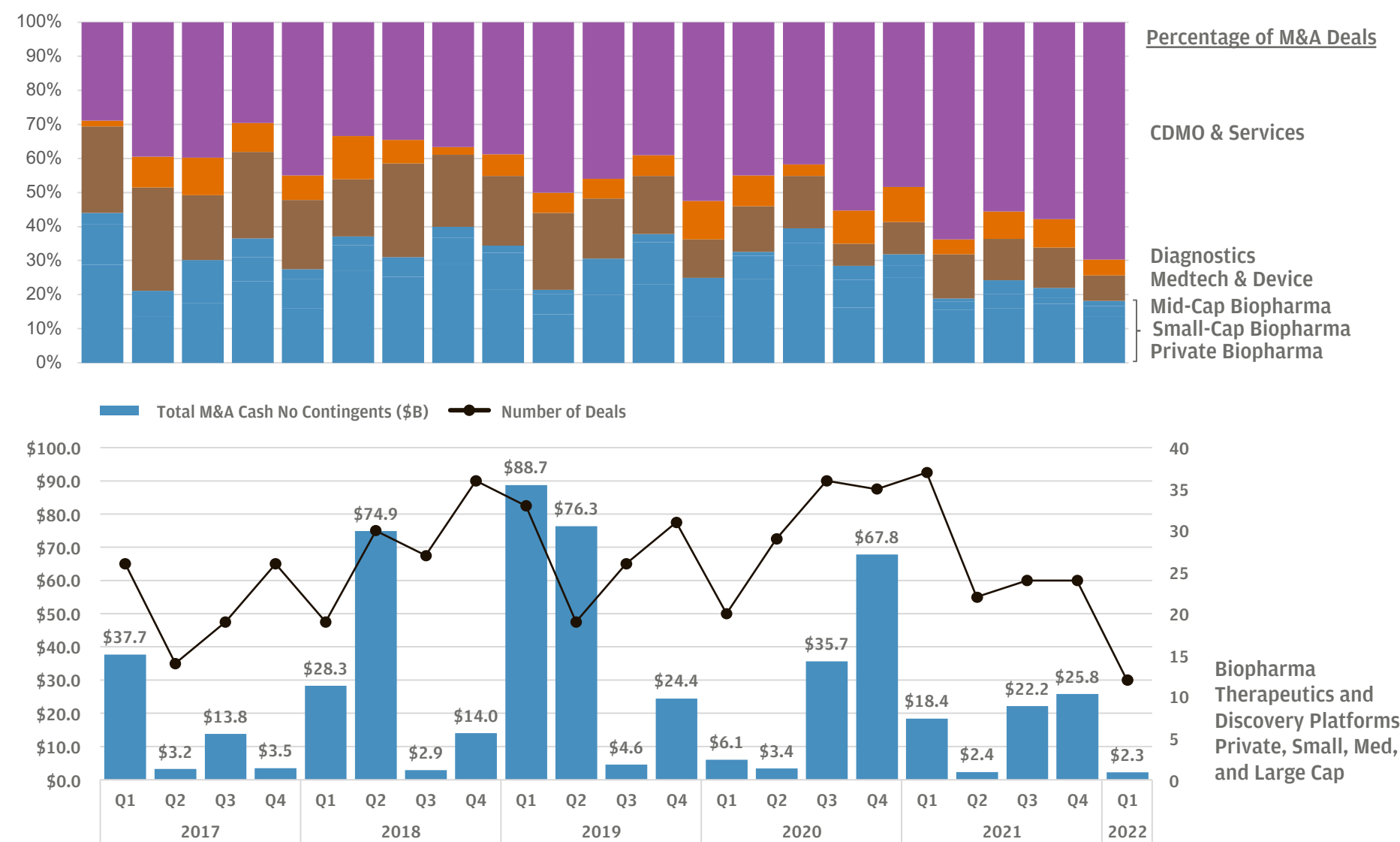
Quarterly biopharma M&A set in lower while CDMO and services M&A continued to grow

Merger and acquisition activity for biopharma continued to track lower deal counts and values while the same for contract development and manufacturing organizations (CDMOs) increased.

- 12 M&A transactions for biopharma therapeutics and platform companies were announced in Q1 2022, the lowest since 2016.
- \$2.3 billion in total M&A upfront cash and equity for biopharma companies, lower than Q2 2020, not counting contingent values.
- 46 CDMO M&A transactions in Q1 2022, totaling 70% of the M&A in healthcare and life sciences.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma M&A Activity Compared with Other Healthcare and Life Sciences Subsectors



Biopharma Venture Highlights

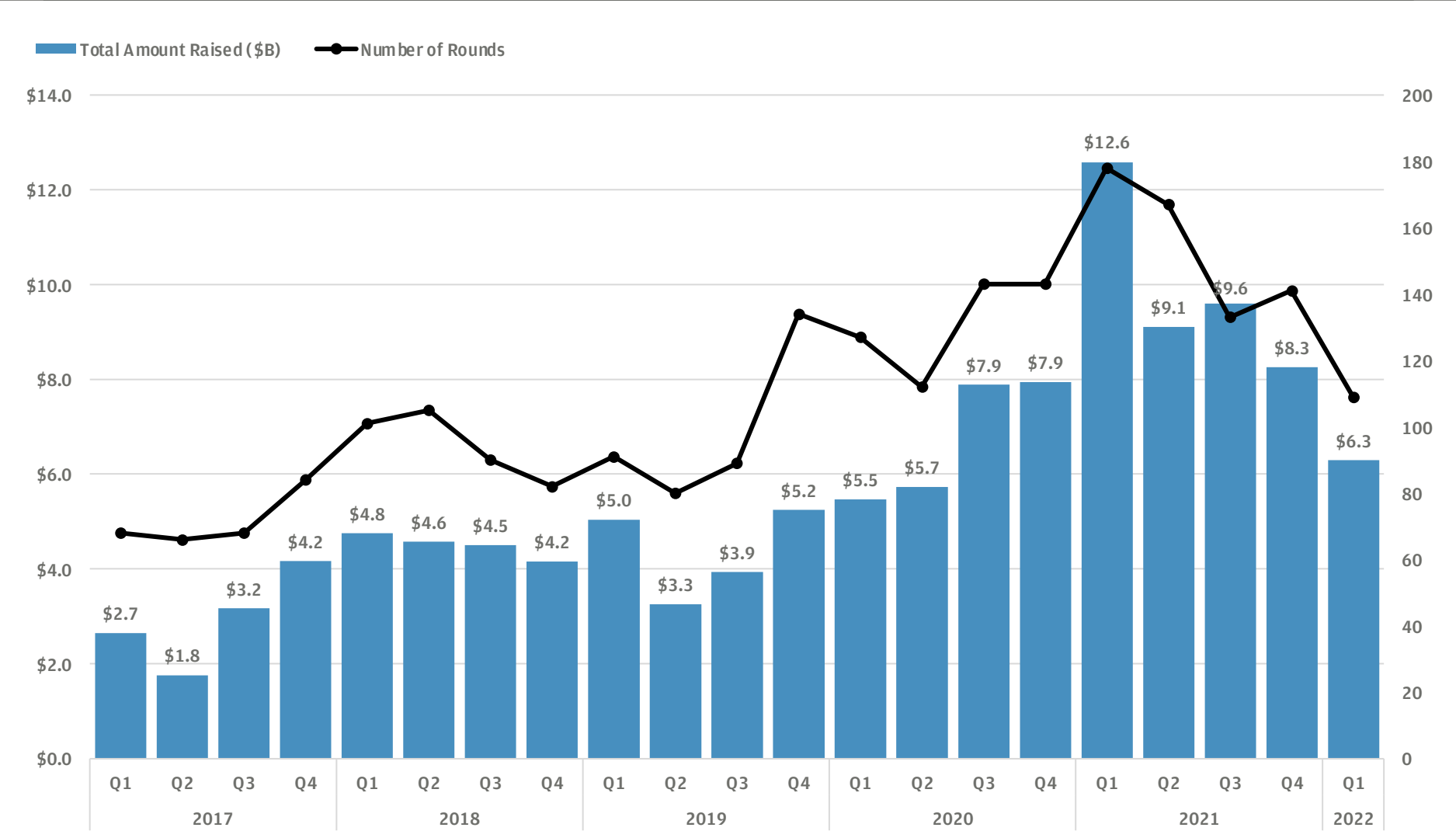
Biopharma venture investment activity is back to Q2 20 levels; down from the Q1 21 peak

Quarterly venture investment activity in biopharma continued to track lower from the Q1 2021 record, though still higher than 2020 and earlier.

- \$6.3 billion was raised in private funding rounds in the first quarter of 2022.
- 109 rounds were raised this quarter, down from 141 in the fourth quarter of 2021.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma Therapeutics and Platforms: Venture Totals (\$B) and Number of Rounds



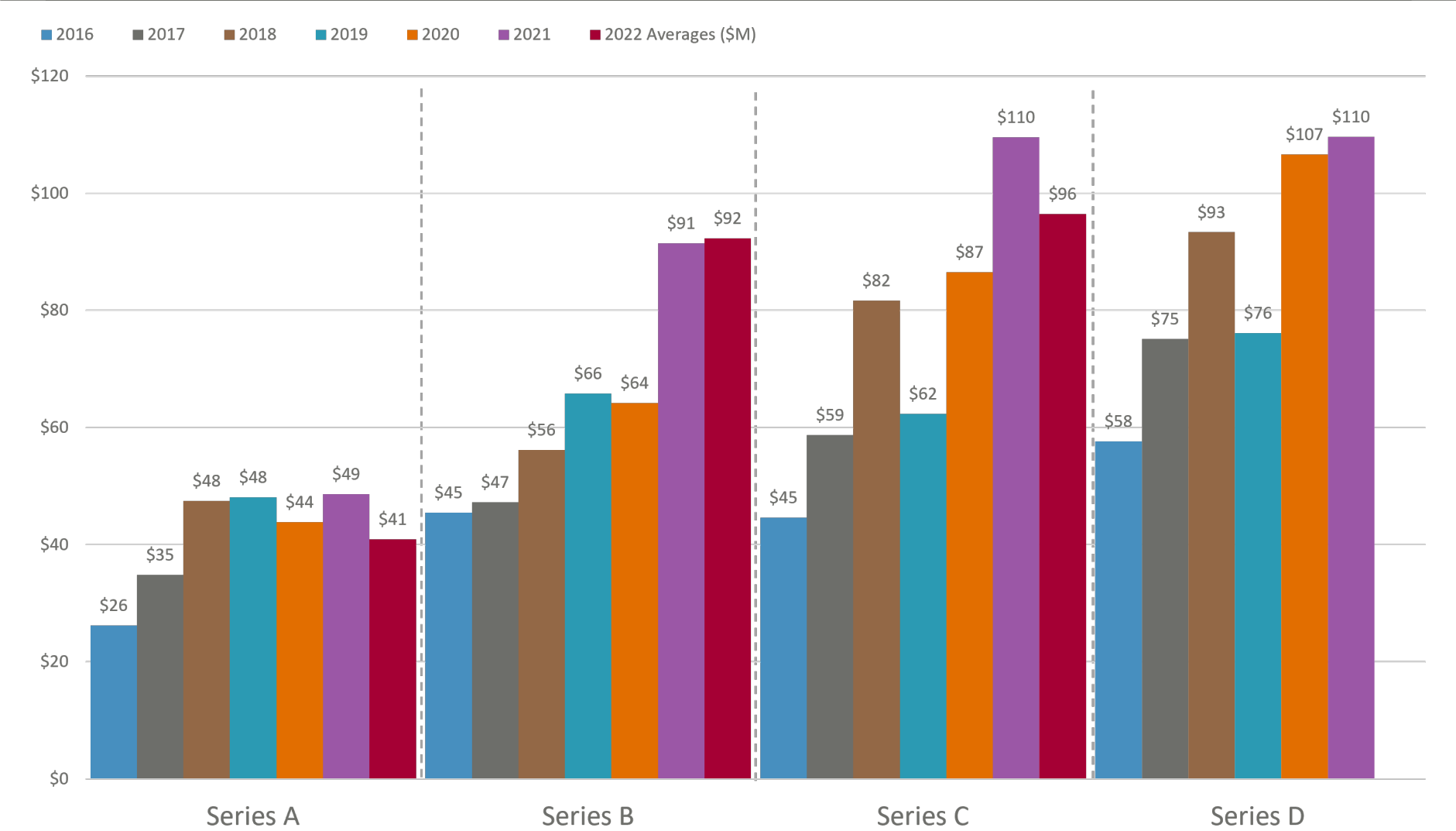
Averages sizes for later rounds continued to grow for existing biopharma companies

Biopharma venture averages tracked higher for later series as existing companies raised second and third rounds, taking advantage of abundant capital.

- The Series B average saw a slight increase to \$92 million in the first quarter of 2022.
- The Series C average dipped to \$96 million.
- Series D averages continued to rise, though in fewer rounds. Q1 2022 had one Series D at \$236 million, which is not charted.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma Therapeutics and Platforms: Average Venture Rounds by Series

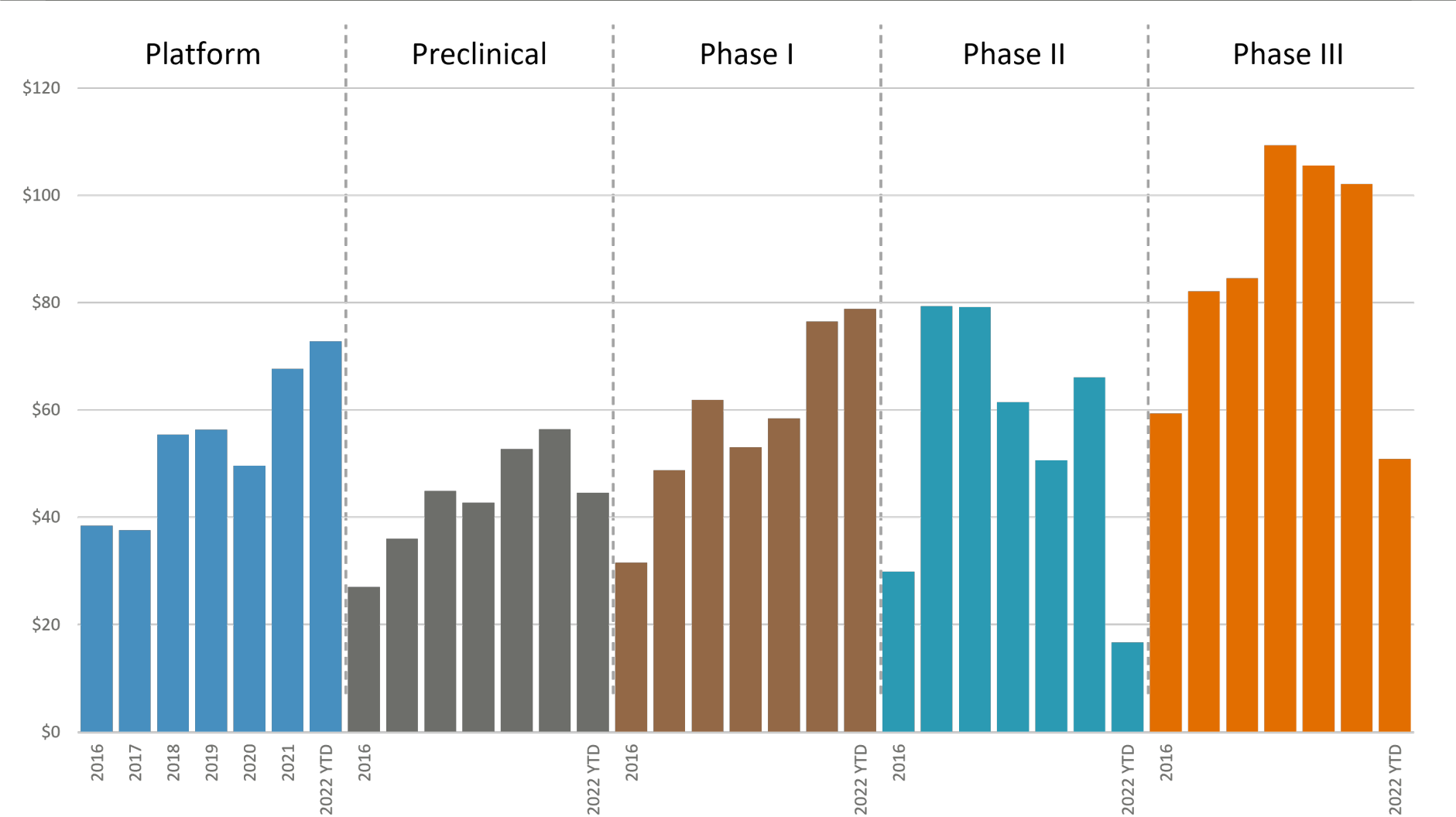


Early-stage biopharma venture round averages continued to increase

- Phase I and earlier-staged biopharma companies continued to see larger venture averages when looking at a company’s most advanced stage at funding.
- Platform and discovery-stage biopharma companies are seeing an average round of \$73 million through the first quarter of 2022.
 - Phase I venture round averages rose to \$79 million.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Biopharma Therapeutics and Platforms: Average Venture Rounds by Company Stage (\$M)



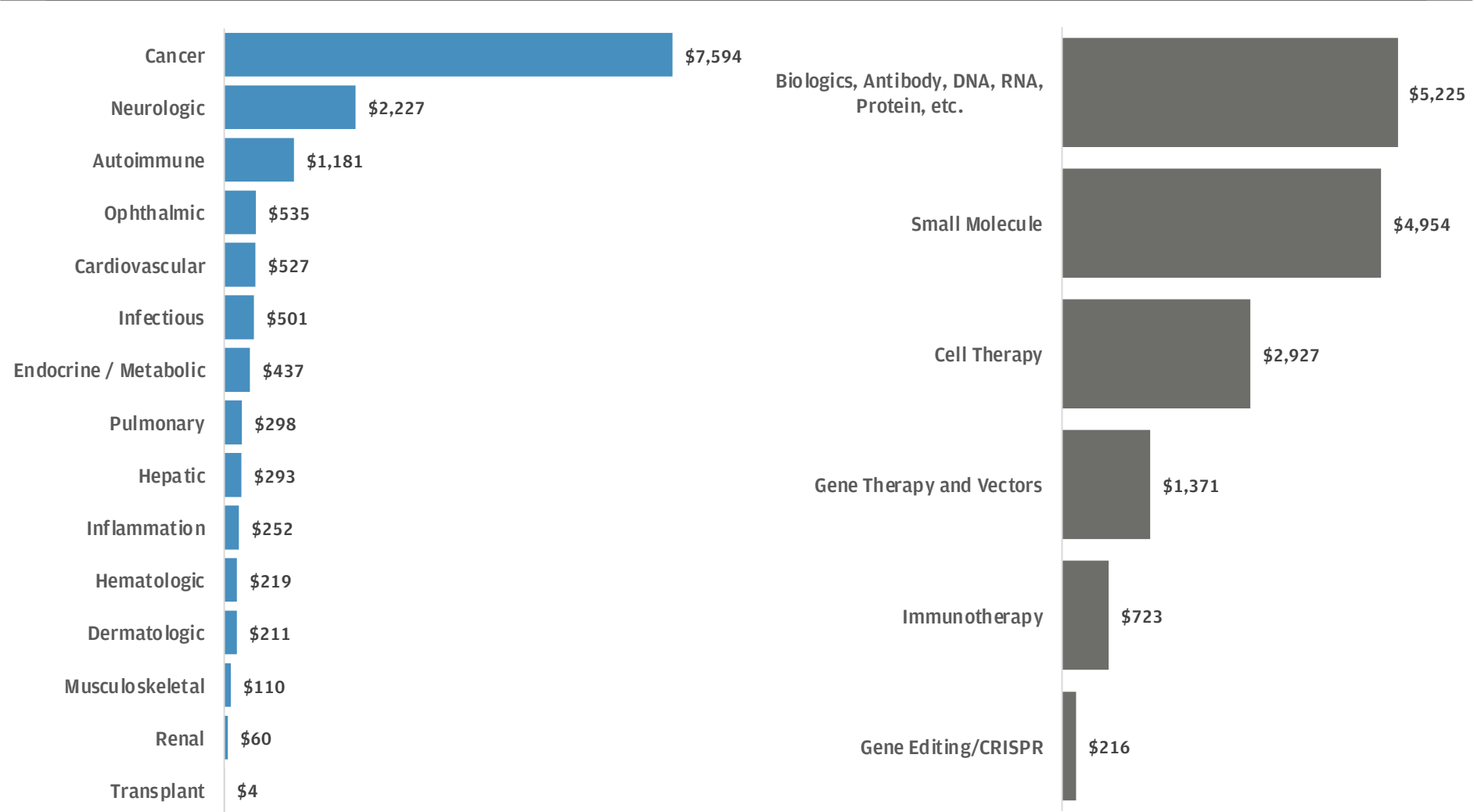
Seed and Series A rounds into cancer biopharma exceeded all other therapies combined

Biopharma companies developing cancer therapies attracted half of all initial venture funding since 2020, along with established biologics and small molecule drugs leading newer modalities.

- \$7.6 billion in seed and Series A rounds focused on cancer from 2020 to the first quarter of 2022.
- \$14.4 billion in total seed and Series A across all therapy areas.
- Biologics and small molecule drug developers saw \$5.2 billion and \$4.9 billion in initial funding rounds, followed by cell and gene therapy.

Source: DealForma.com database
Financials based on disclosed figures. Data through 4/7/2022.

Top Therapeutics Areas and Modalities: Total Seed and Series A for 2020-2022 YTD (\$M)



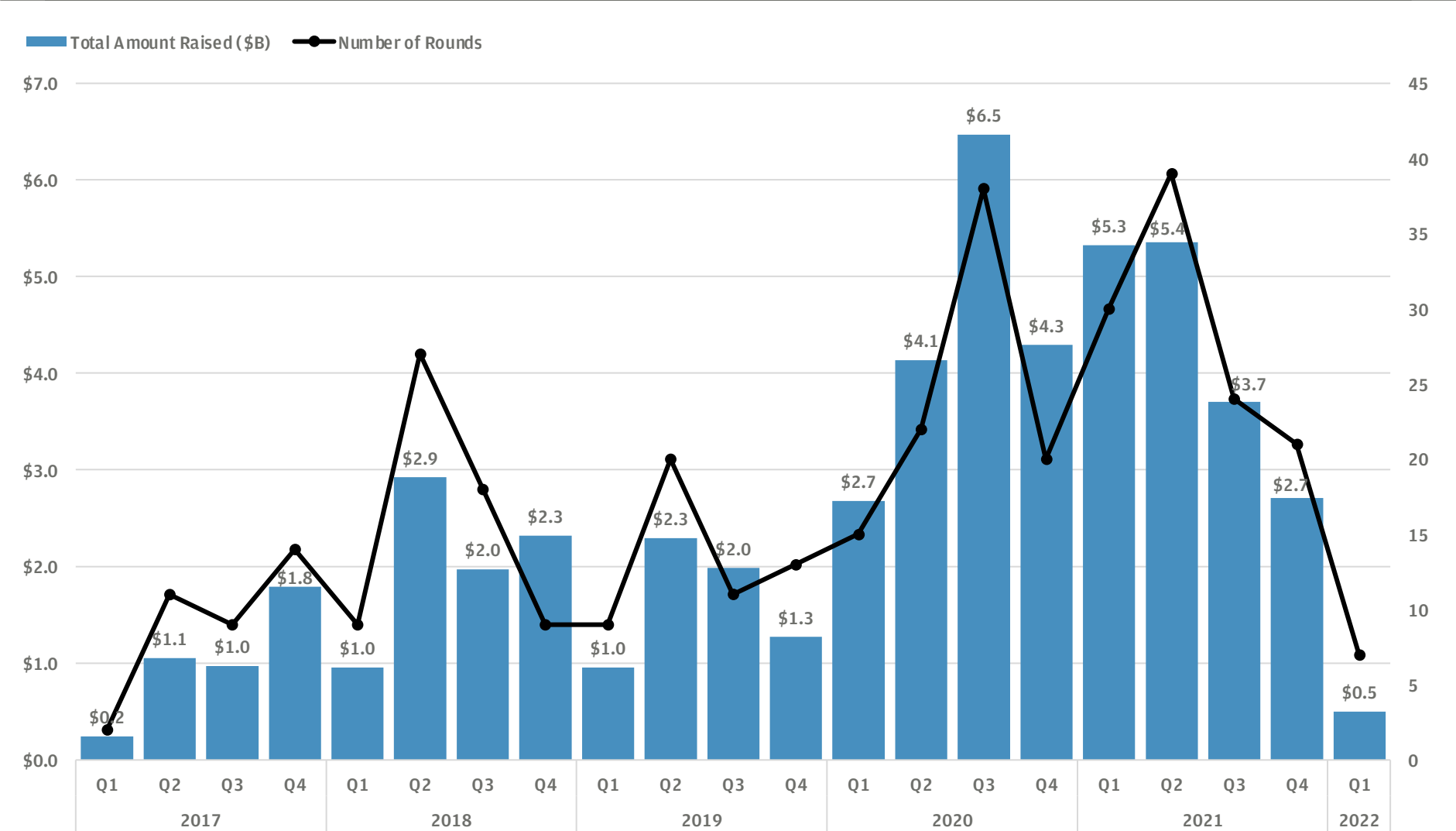
Biopharma IPO activity continued to drop from recent record quarters

Biopharma company IPO activity dropped considerably in the first quarter of 2022, as the number of new filings and IPO completions came in much smaller.

- \$500 million in seven newly-filed and completed IPOs in the first quarter of 2022.
- An additional handful of companies, which initially filed in 2021, completed their IPOs this year.

Source: DealForma.com database
Financials based on disclosed figures. IPOs by first filing date. Data through 4/7/2022.

Active & Completed IPOs in Biopharma Therapeutics and Platforms: Totals (\$B) and Number of Rounds



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