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Biopharma and Medtech Deals and Funding

2022 Annual Outlook

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Executive summary

Life sciences still going strong entering 2022

2021 was another banner year for dealmaking in the life sciences sector. Biopharma therapeutics and discovery platform companies led the way in licensing and venture capital attraction—while medtech activity remained well above its pre-pandemic levels.

Here are a few of the highlights our Annual Outlook uncovers:

- **Biopharma venture investment:** Funding for 2021 hit $39 billion, surpassing the $26 billion raised in 2020.
- **Cell and gene therapy:** These sectors attracted the largest median upfront dollars in licensing agreements with big pharma.
- **Medtech:** Diagnostics and digital health therapeutics were the most active subsectors, for both venture capital and partnerships in 2021.
- **R&D partnerships:** The number of deals fell slightly last year, coming off an abundance of activity in 2020 fueled largely by the COVID-19 pandemic.

What does this all mean for 2022?

- **The sector is flush with cash,** creating a seller's market and setting the stage for more acquisitions.
- **With many bio-tech stocks** trading off their 52-week highs, it will be interesting to see if the pre-clinical, early-stage IPOs continue in 2022.

At J.P. Morgan, we have a team of bankers and specialists dedicated to the life sciences and healthcare sectors. We believe deeply in the pivotal contributions these clients 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 1/7/2022

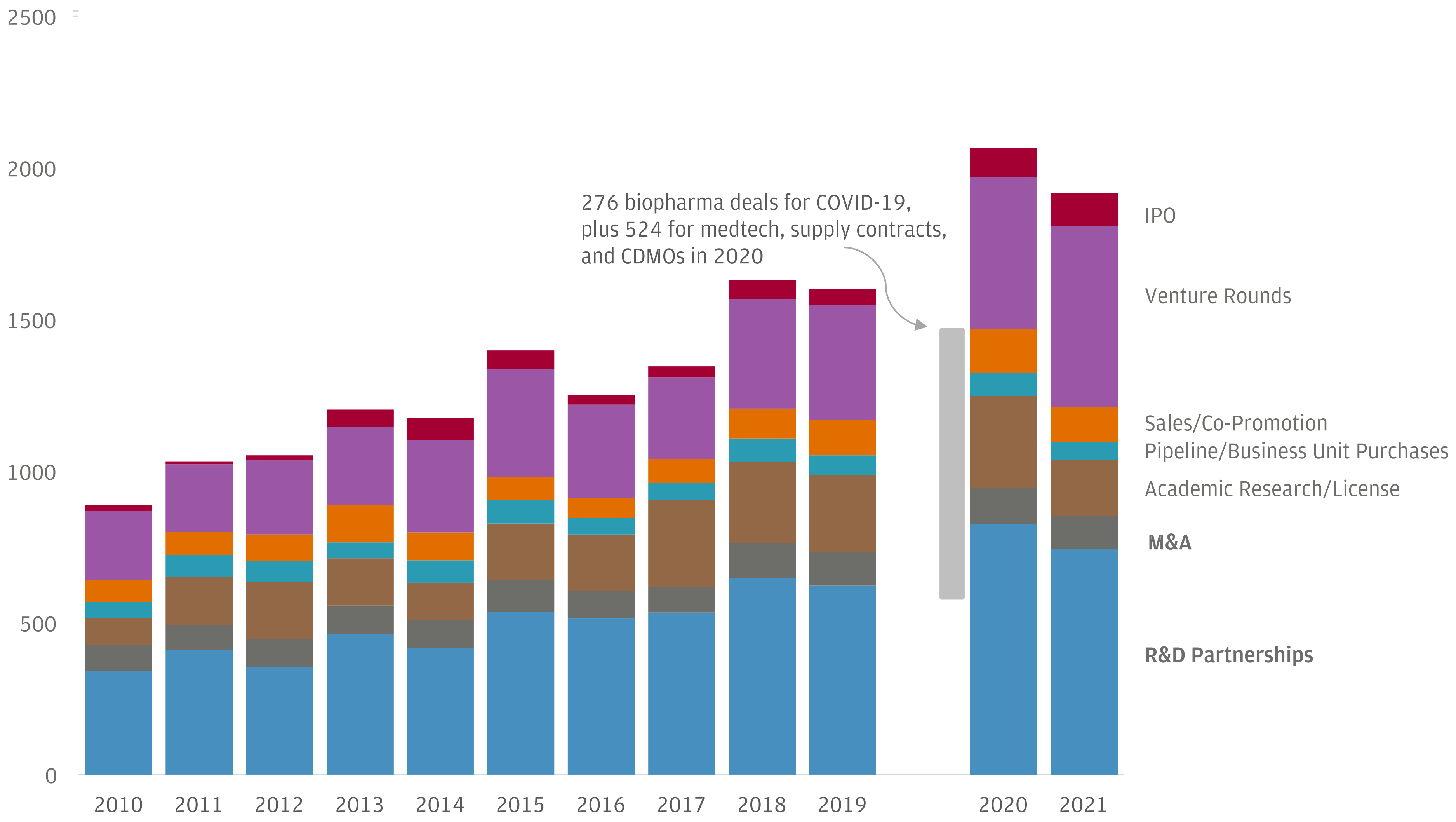
Biopharma Partnerships and M&A

Biopharma dealmaking in perspective

Biopharma dealmaking activity was down slightly in 2021, back to longstanding disease areas after a deep focus on deals specific to COVID-19 in 2020.

- 1,918 total transactions across venture rounds and IPOs, deals and M&A in 2021.
- 745 biopharma R&D partnerships signed in 2021, down from the peak of 828 in 2020, which included 276 deals for COVID-19 therapeutics, vaccines, and diagnostics, plus 524 across medtech, manufacturing, supply, and other contract services.
- 595 venture rounds completed for drug and platform developers, beating full-year 2020.

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



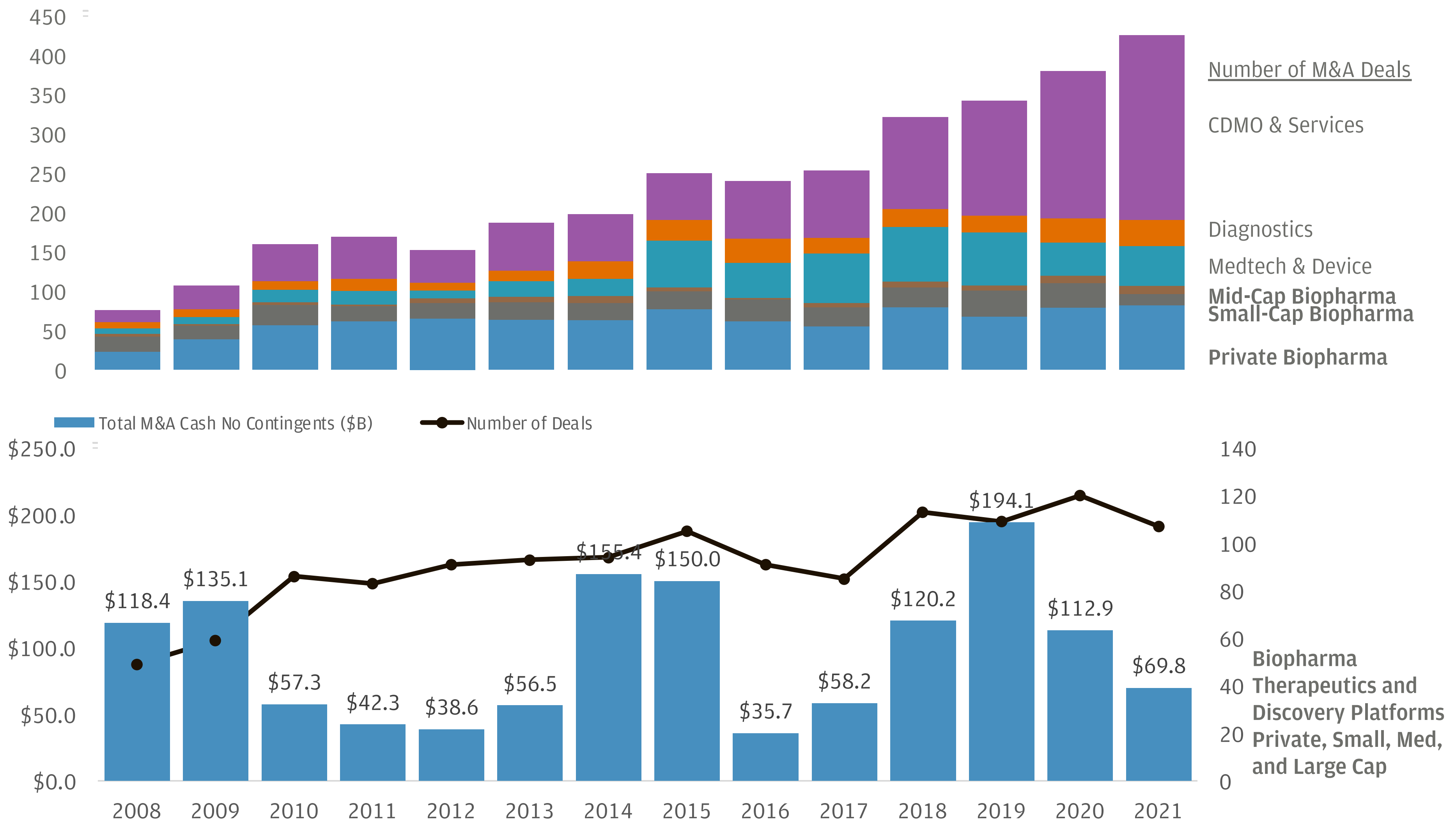
Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Waiting for biopharma mega-mergers despite higher activity in other subsectors

Merger and acquisition activity continued across all healthcare and life sciences subsectors as the number of deals tracked higher driven mainly by CDMO and service companies. Biopharma deal values, however, continued lower.

- 107 M&A transactions for biopharma therapeutics and platform companies were announced in 2021, off slightly from the peak in 2020.
- $69.8 billion in total M&A upfront cash and equity for biopharma companies, down 38% from 2020, not counting contingent values.

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



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

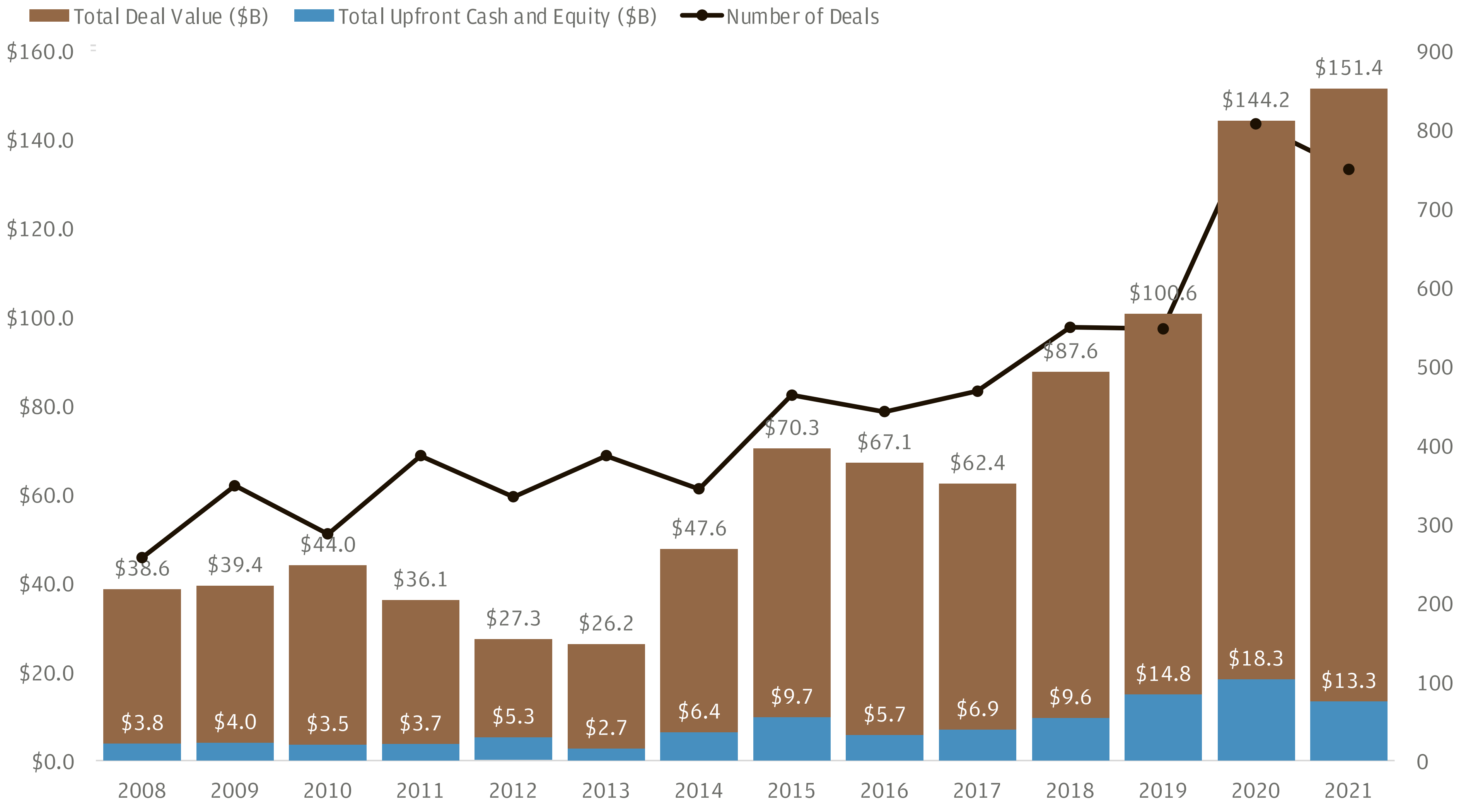
Biopharma licensing upfronts cooled off on fewer deals

Licensing activity for therapeutics and platforms finished 2021 lower than last year, in part due to 2020 having 380 deals specific to COVID-19—plus other therapy areas and another 500 deals. Deal counts and total upfront payments were lower, while deals with larger milestones and contingencies were higher.

- 749 biopharma therapeutics and platform R&D partnerships were signed in 2021, down from 807 in the prior year.
- $13.3 billion in total upfront cash and equity for licensing transactions, down 27% from 2020.
- $151.4 billion in total announced deal values as in-licensees mitigated risk into milestones, especially as more deals moved earlier to preclinical stages.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

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



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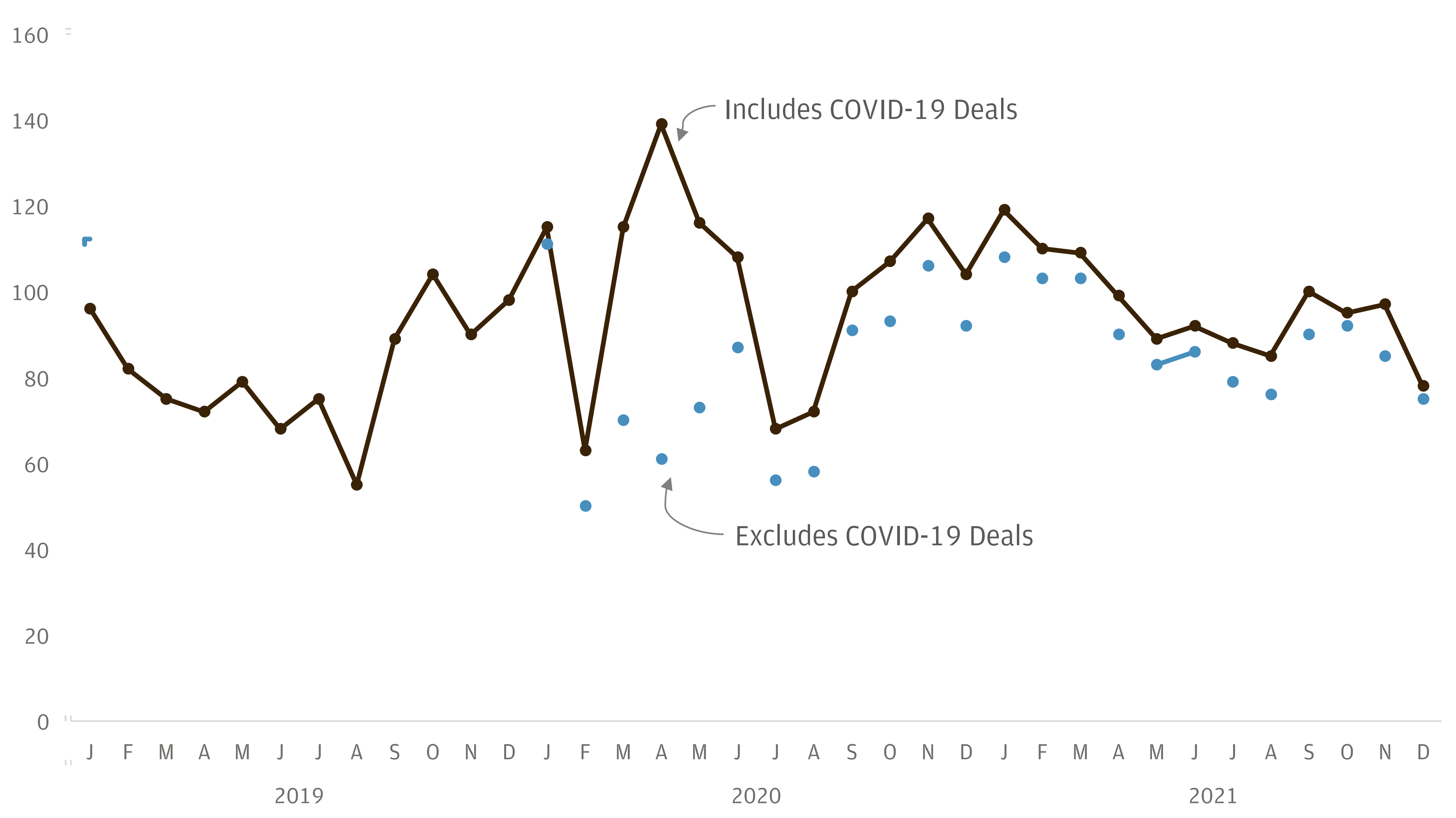
COVID-19 specific deals stacked on top of other R&D partnerships in 2020

Biopharma dealmakers started signing deals specifically for COVID-19 therapeutics, vaccines, and diagnostics as early as January 2020. The extra deal flow was significant through the first half of 2020. This added deals atop partnerships signed for other indications, modalities, and technologies.

- 276 R&D partnerships were signed in 2020 specifically for COVID-19 related therapies, vaccines, and diagnostics.
- Another 524 deals were signed for other activities around COVID-19 such as manufacturing and supply contracts, grants, and academic research.
- In total, 800 deals were signed in addition to ongoing deal flow in other therapy areas before and after 2020.

R&D Partnerships for COVID-19 therapeutics, vaccines, and diagnostic: Monthly Number of Deals



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

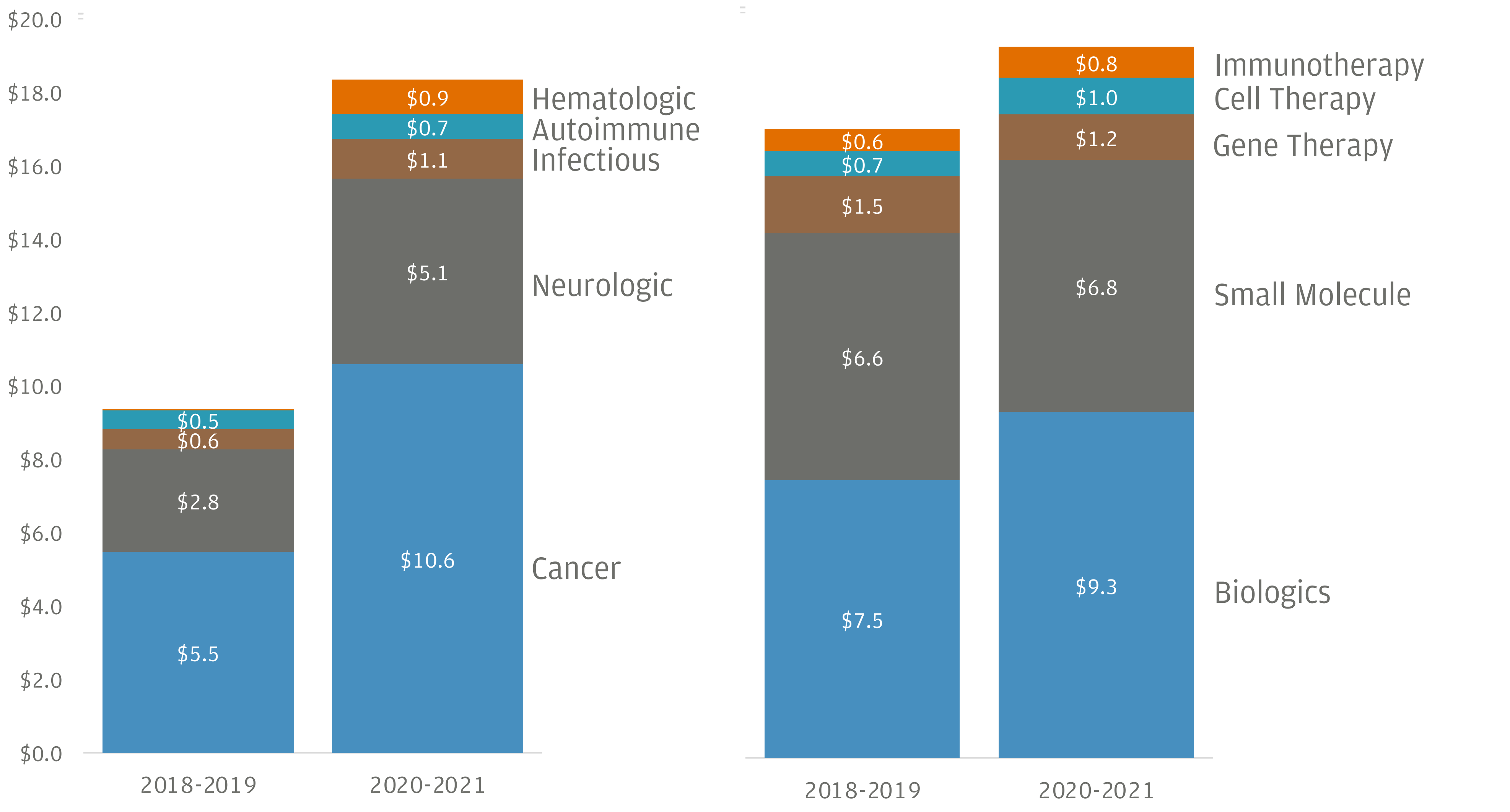
Large-cap biopharma is doubling up on oncology and neurology across all modalities

The top five therapy areas saw nearly double the amount of upfront licensing invested from large-cap biopharma in the last two years. Growth was consistent across all therapeutic modalities with cell and gene therapy now receiving considerable upfront cash and equity.

- $10.6 billion in upfront cash and equity for cancer program in-licensing by large-cap biopharma in 2020 and 2021.
- Nearly double the upfront payments across the top five therapy areas, from $10 billion in 2018-2019 to $19 billion in 2020-2021

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

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



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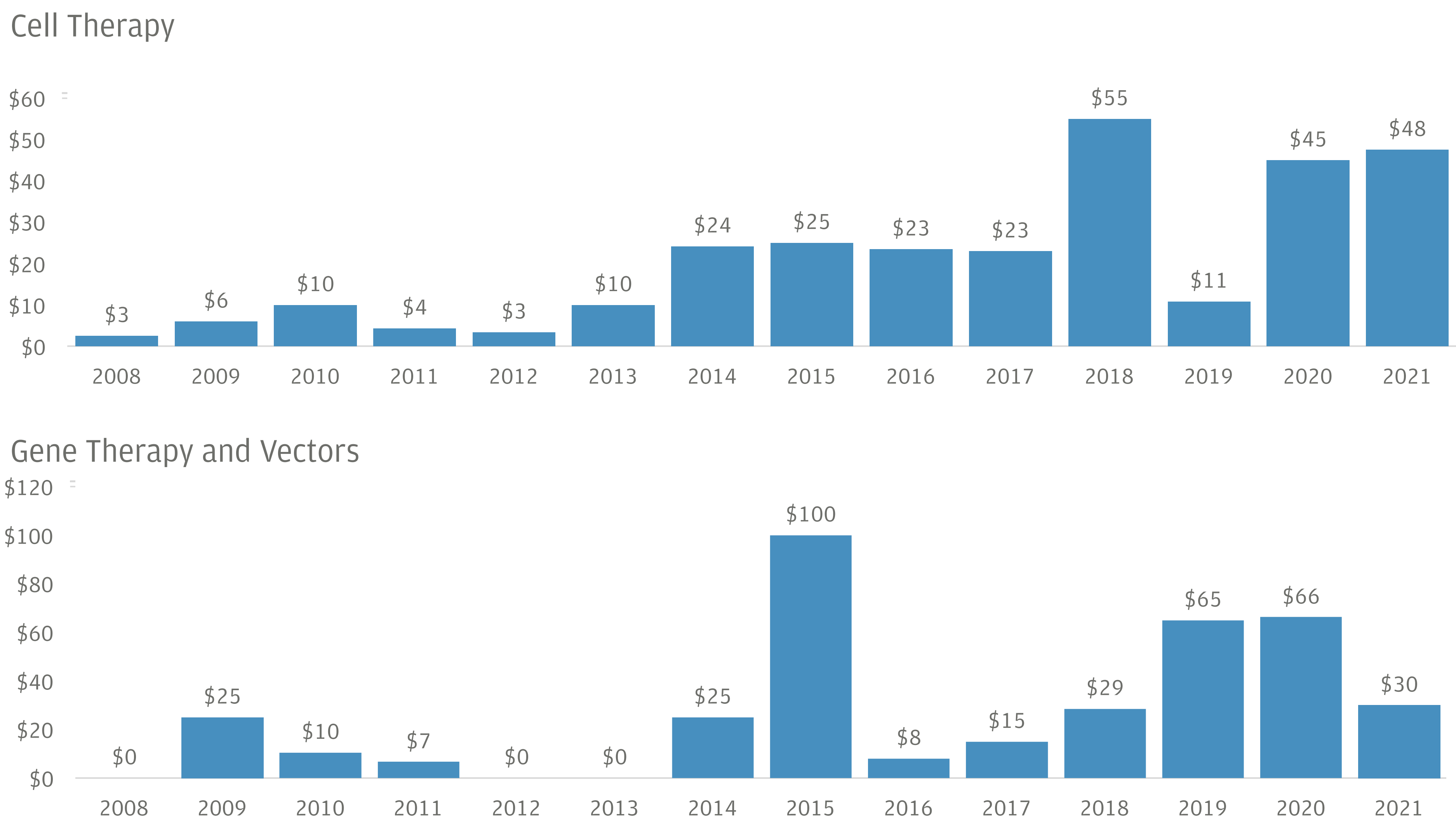
Cell and gene therapy bring the highest median upfront payments in licensing

The number of new deals being announced for advanced therapies such as cell therapy and gene therapy has gone up over the last five years. These deals often garner higher licensing upfront payments. Across all treatment modalities, median upfront cash and equity for cell and gene therapy deals ranked the highest.

- $48 million median upfront cash and equity for 2021 cell therapy in-licensing, slightly higher than in 2020.
- $30 million median upfront cash and equity for 2021 gene therapy in-licensing. This came in lower on more deals—but note that medians were over $65 million in recent years.

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



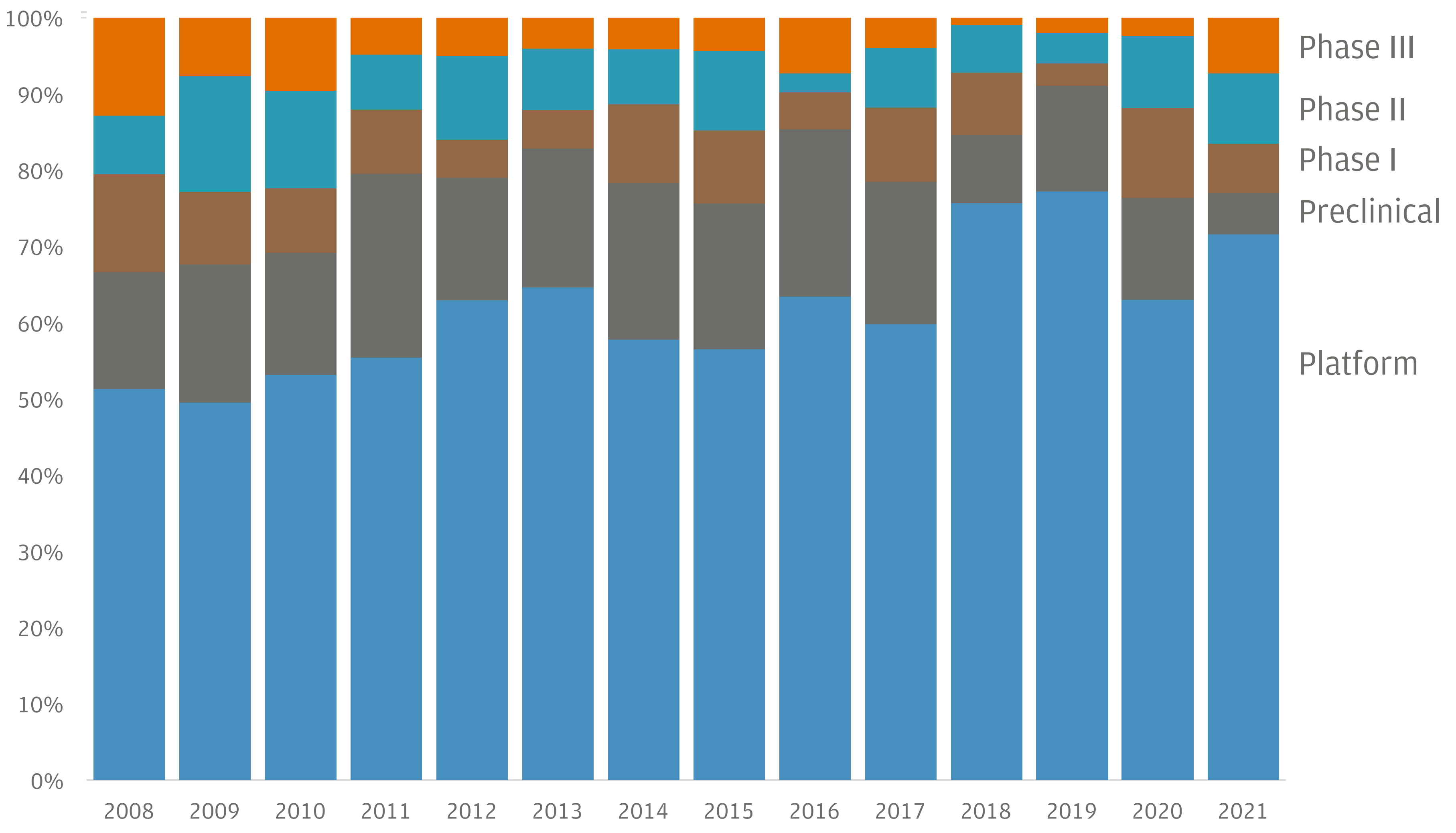
Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Big pharma is in-licensing earlier

Big pharma's interests are an important topic on every business developer's mind. By stage of development, large-cap biopharma ($50 billion+) has been going earlier in their transactions.

- Large-cap biopharma in-licensed 109 deals in Phase III and earlier stages year-to-date.
- 72% of in-licensing partnerships signed into large-cap biopharma are for discovery platforms.

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



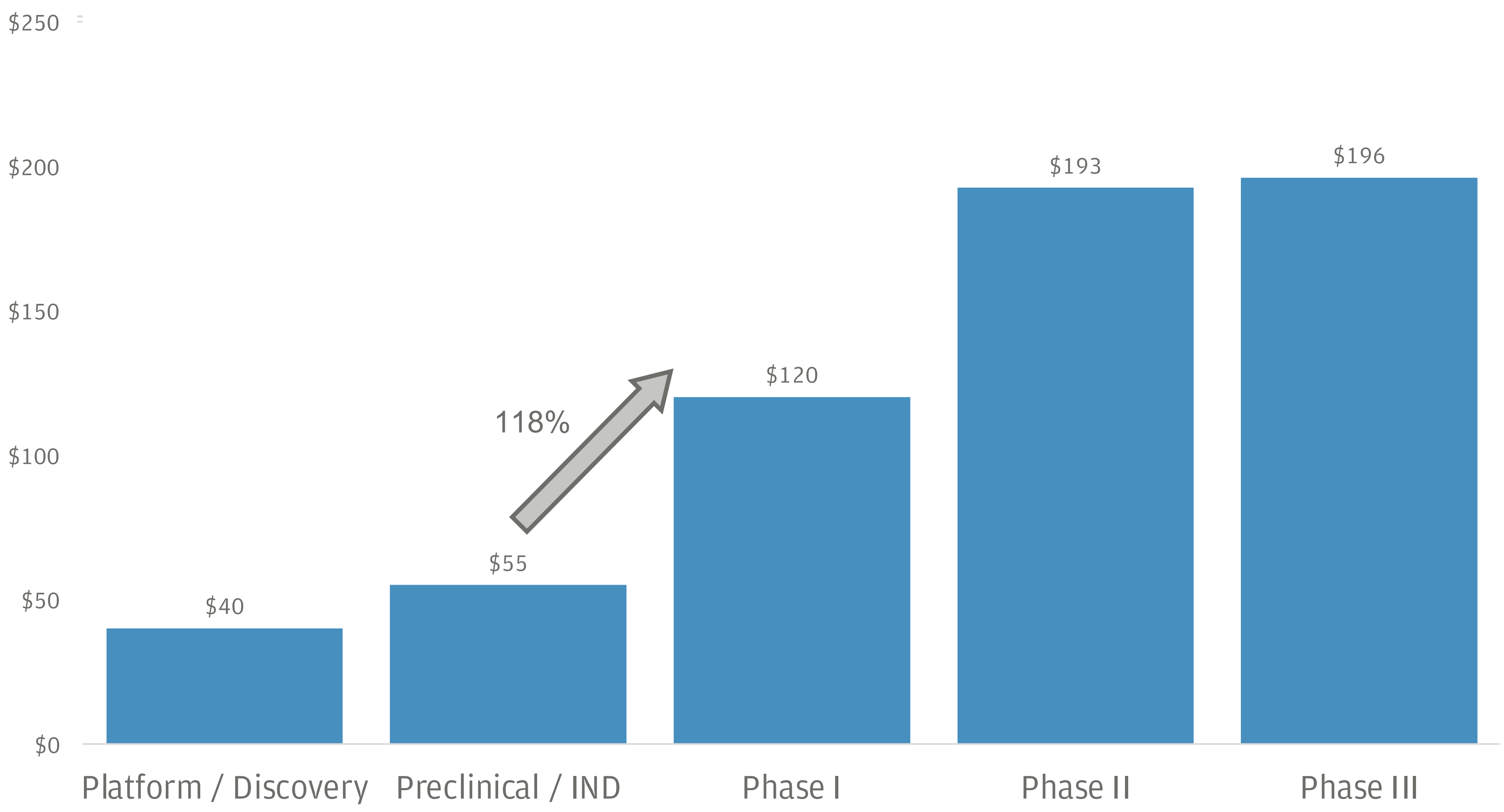
Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Big pharma is also paying more upfront for in-licensing Phase I assets

Business developers planning to out-license to big pharma factor in when to do so. There is cost and risk associated with advancing an asset to the next stage of development. Until 2015, Phase II data presented the value inflection point for out-licensing. Recently, however, Phase I assets have brought in the largest jump in upfront cash and equity.

- $120 million median upfront cash and equity for Phase II assets license deal signing.
- 118% jump from preclinical stage deals to Phase I.
- The 60% jump in upfronts to Phase II then levels off for Phase III when regional and territory-split deals factor in.

In-Licensing by Large-Cap Biopharma ($50B+): Median Upfront Cash & Equity by Stage, 2015-2021 ($M)



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

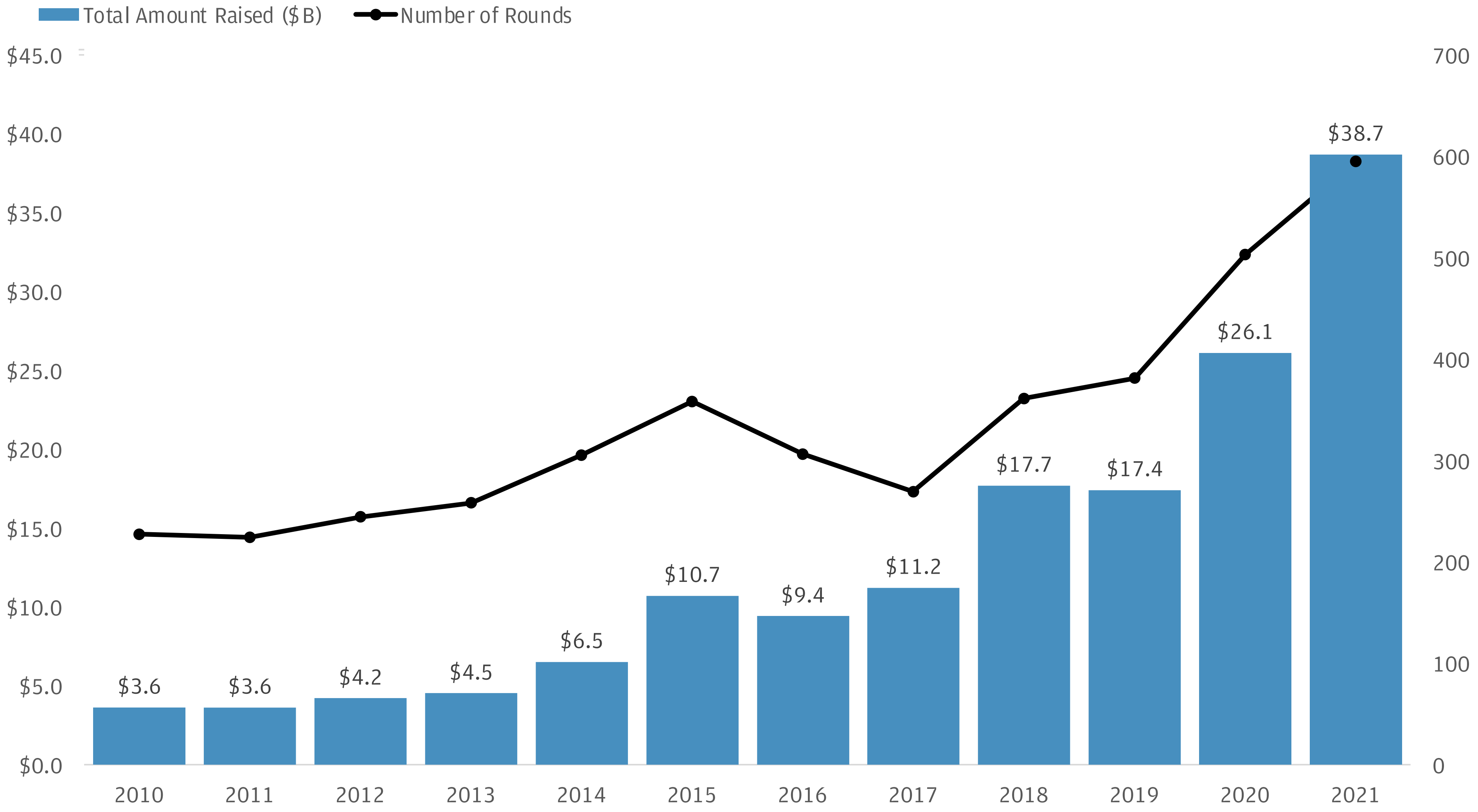
Biopharma Venture Highlights

Biopharma venture investment charged higher to set record

Venture investment activity in biopharma continued to set records for the number of rounds and total dollars raised.

- $38.7 billion was raised in private funding rounds into biopharma therapeutics and platform companies in 2021.
- 595 rounds of funding for discovery and clinical-stage companies.

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



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

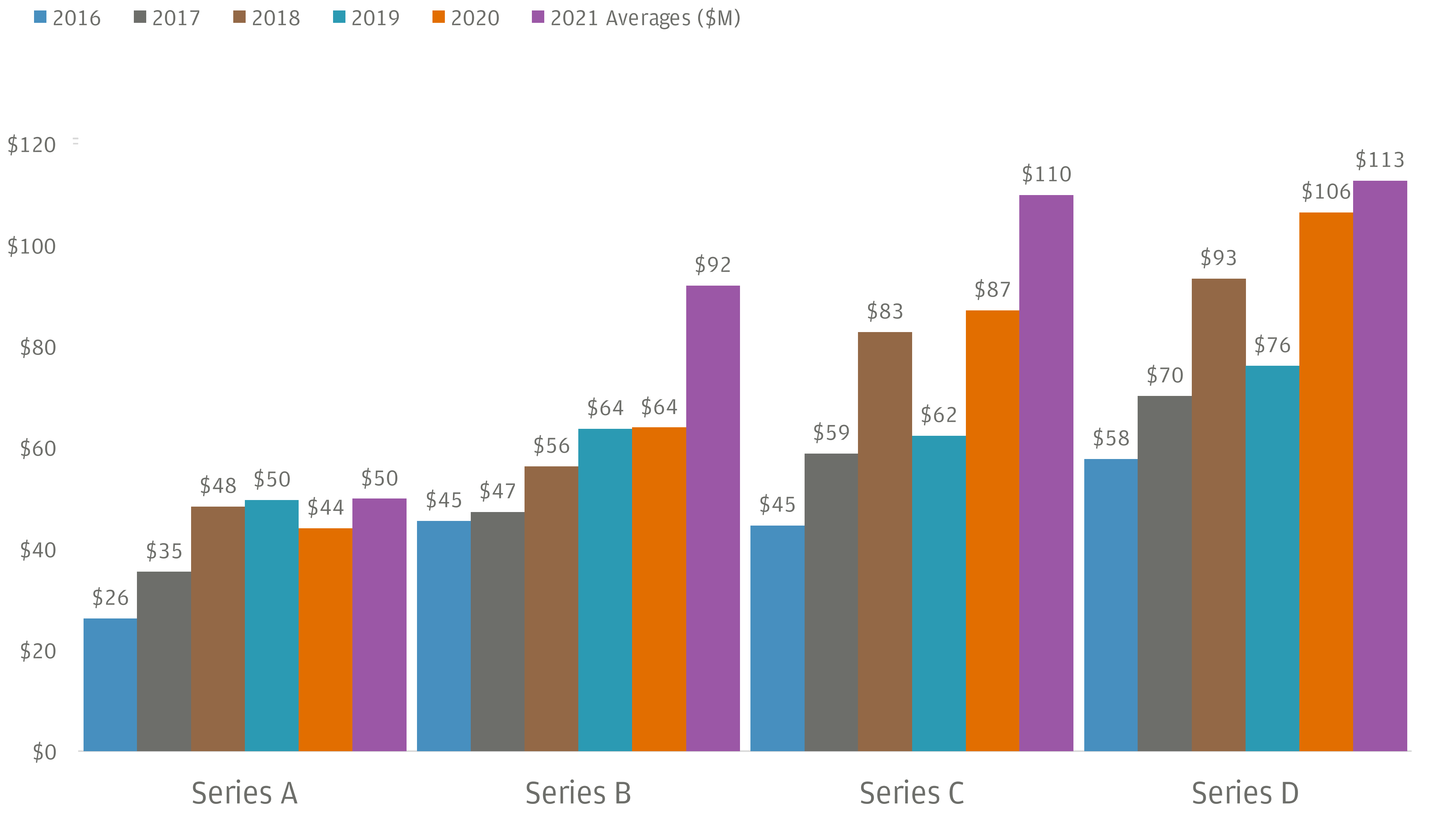
Big gains in Series B and C round averages for biopharma

With abundant venture capital flow starting in 2017, biopharma firms are now back for second and third rounds as Series B and C averages topped prior years.

- Series B saw a 44% increase to a $92 million average in year-to-date growth.
- Series C average increased 26% to $110 million.
- First-round averages have been within range since climbing in 2018. Series A rounds averaged $50 million.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Biopharma Therapeutics and Platforms: Average Venture Rounds by Series ($M)



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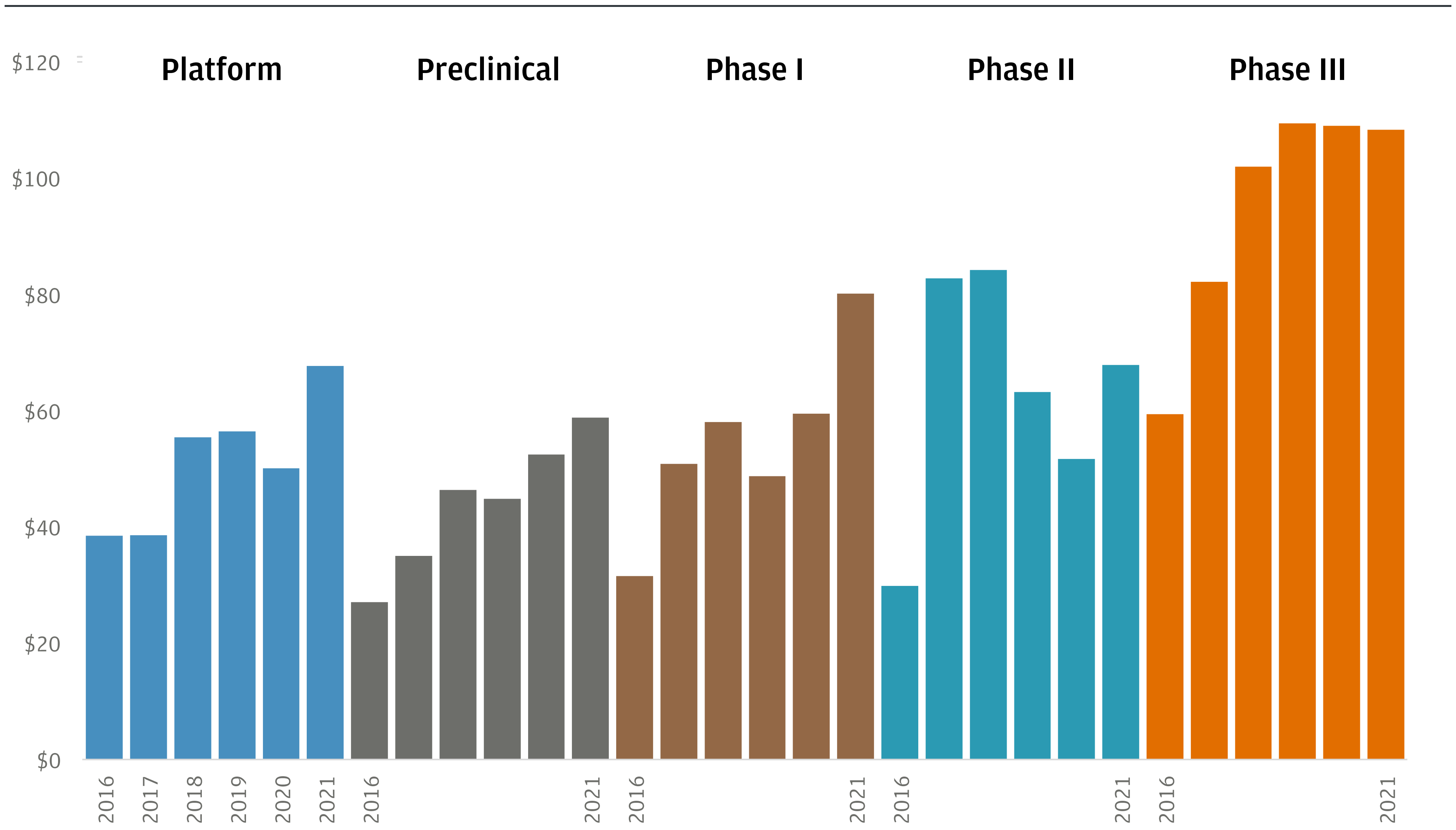
Early-stage biopharma venture round averages continued to increase

Phase I and earlier-staged biopharma companies continued to see larger venture round averages.

- Platform and discovery-stage biopharma companies are seeing an average round of $68 million.
- Year-over-year growth in preclinical averages to $59 million and Phase I venture rounds to $80 million.



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

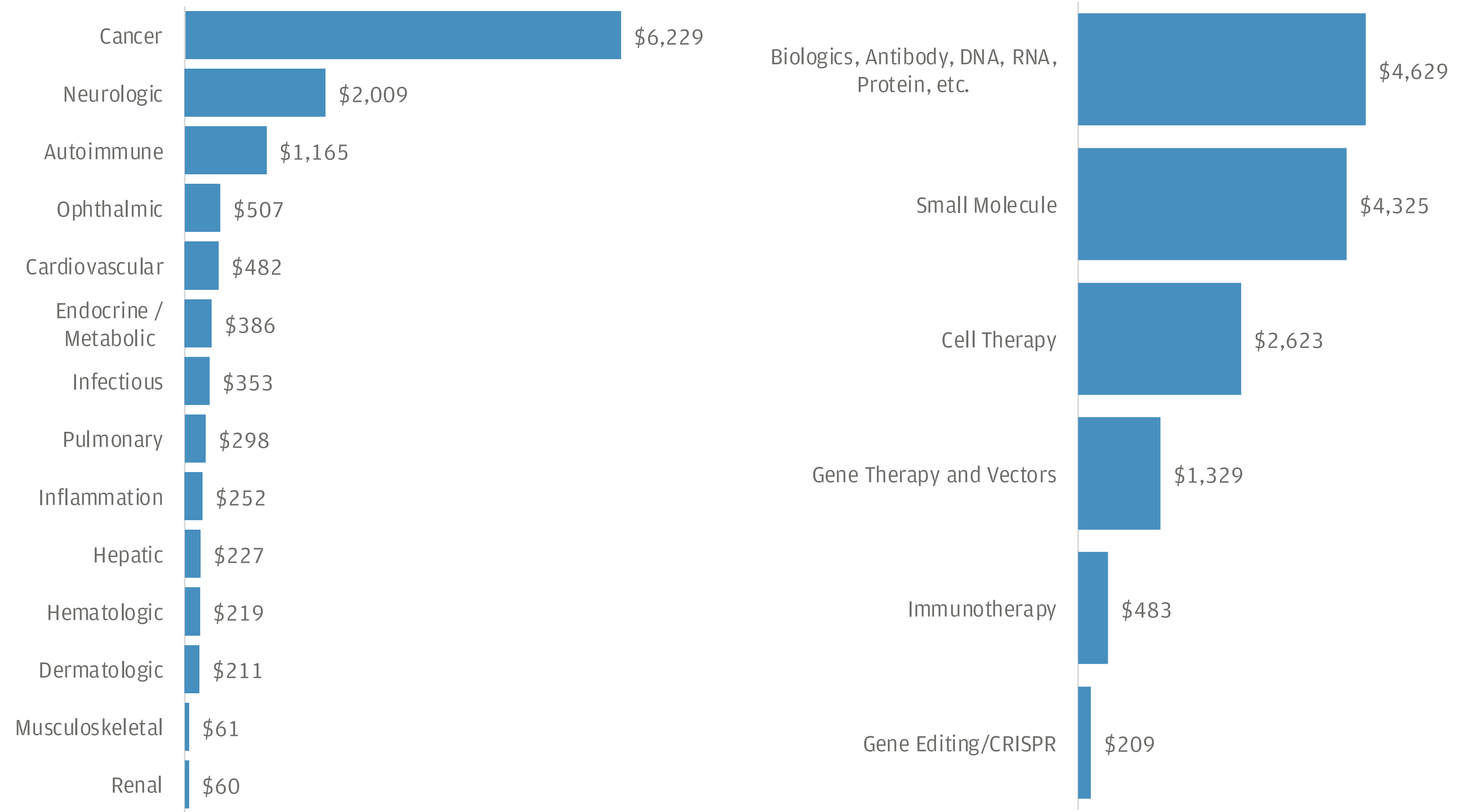
Top therapy areas and modalities attract seed and Series A rounds

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

- $6.2 billion in seed and Series A rounds focused on cancer in 2020 and 2021.
- $12.5 billion in total seed and Series A across all therapy areas.
- Biologics and small molecule drug developers saw $4.6 billion and $4.3 billion, respectively, in initial funding rounds followed by cell and gene therapy.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Top Therapeutics Areas and Modalities: Total Seed and Series A for 2020-2021 ($M)



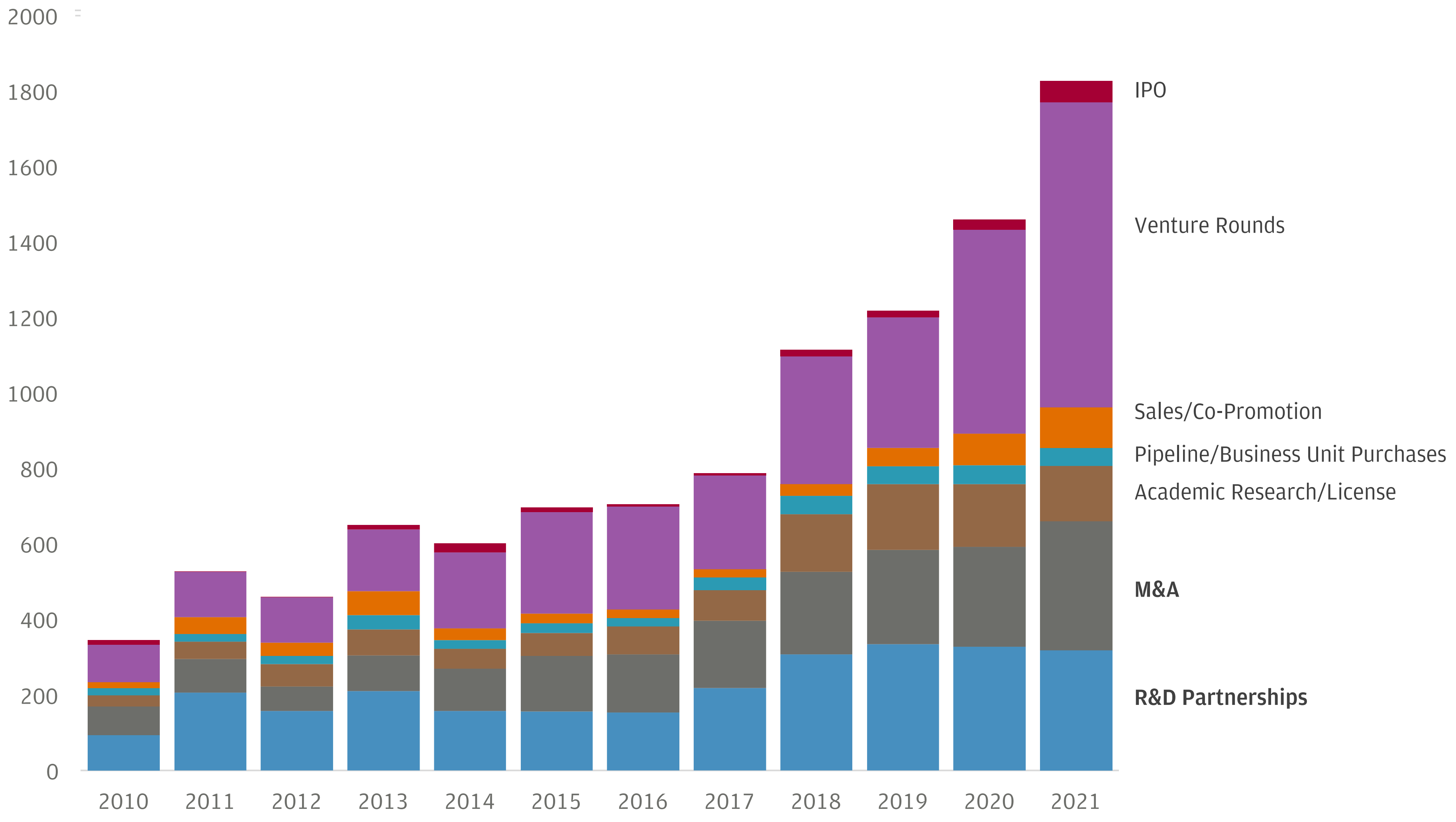
Medtech Partnerships and M&A

Medtech dealmaking in perspective

Venture fund raising has dominated the deal space in medtech since the start of 2020 due in part to activity around COVID-19 diagnostics and digital tech.

- Medtech venture activity in 2021 followed a record 2020 with 809 rounds across device, diagnostics, digital therapeutics and research tool developers.
- 342 mergers and acquisitions and 318 R&D partnerships led business and corporate development activity in 2021.

Medtech, Diagnostics, Digital Therapeutics and Tools Deal Flow: Total Number of Deals



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

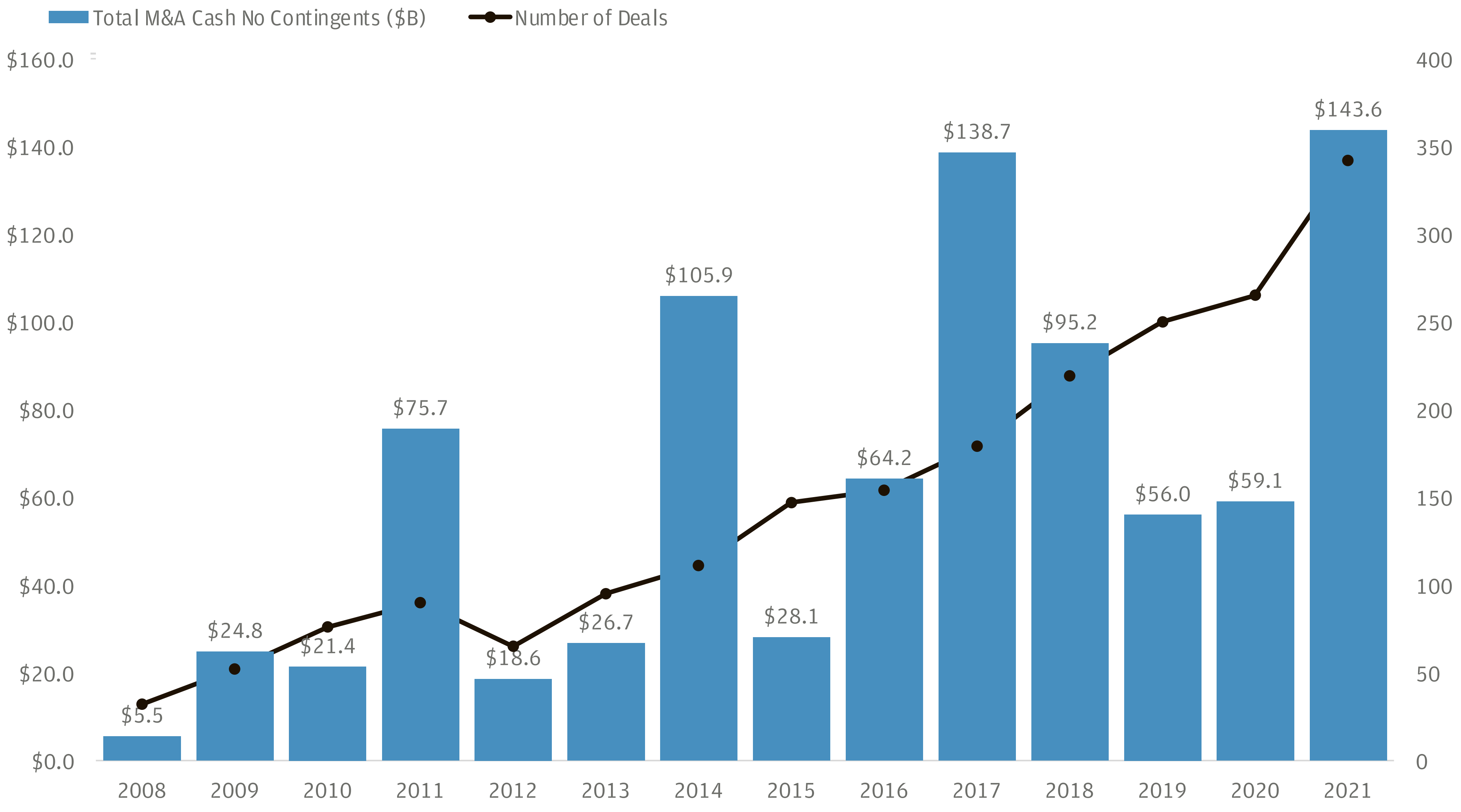
M&A in medtech, diagnostics and tools has been more active than biopharma

Medtech M&A activity and values jumped in 2021, keeping this subsector much more active than biopharma therapeutics and platforms.

- 342 mergers and acquisitions were announced in 2021, setting a record over the 265 in 2020.
- $143.6 billion in total M&A upfront cash and equity not counting contingent payments, which could add up to $17 billion to the 2021 offer total.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

M&A Activity in Medtech, Diagnostics, Digital Therapeutics and Tools



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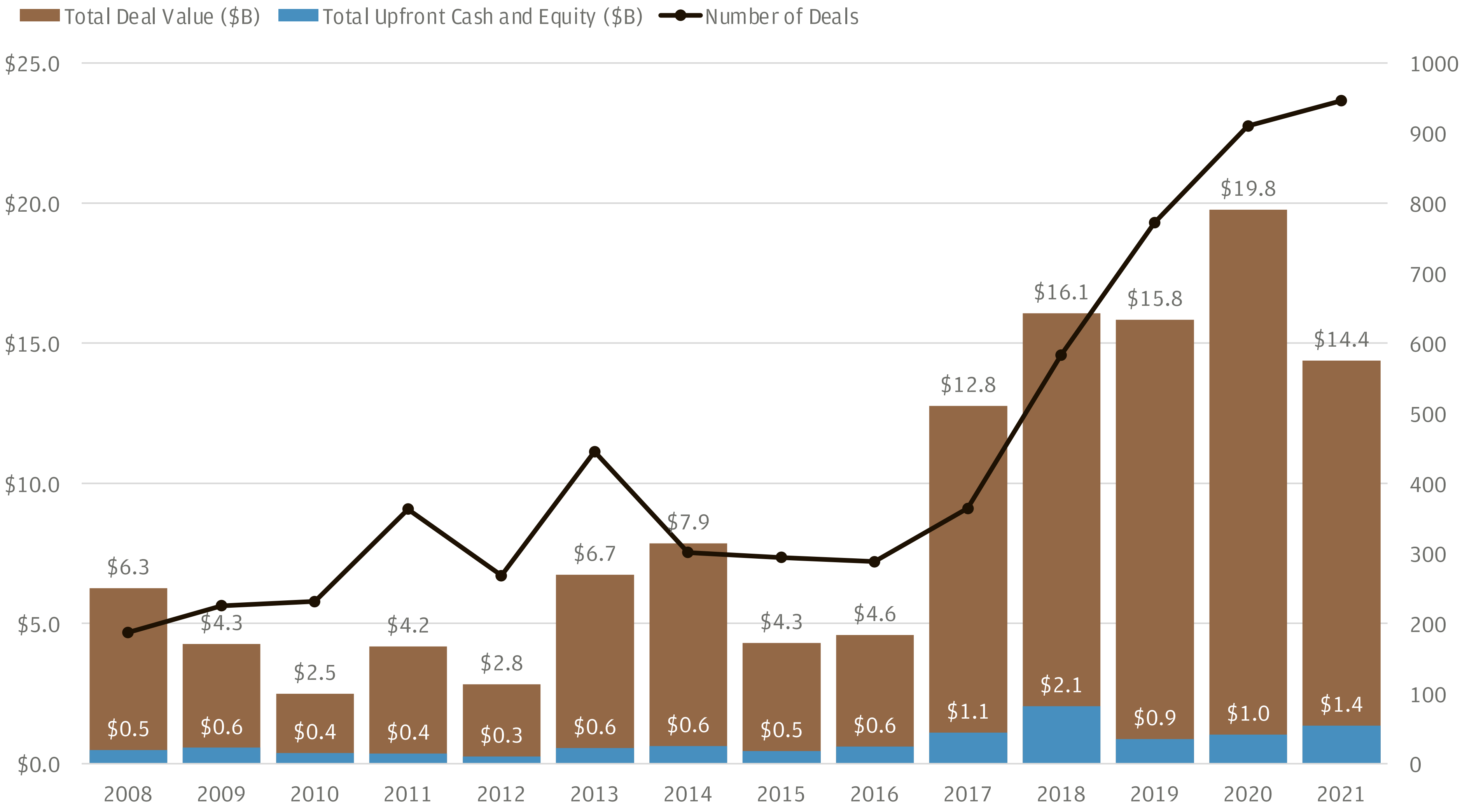
Licensing, commercialization partnerships and contracts drove medtech activity higher

Partnerships to develop medtech and diagnostics are often signed with large-cap biopharma with access to large amounts of patient data and the need to organize and prioritize clinical trials.

- 946 medtech partnerships and service contracts were signed in 2021, up slightly from 2020, which was already an active year in part to COVID-19 diagnostics deals.
- $14.4 billion in total announced deal value, with $1.4 million in committed upfront cash and equity. Total announced deal values were lower, though committed upfront payments continued upward.

Medtech, Diagnostics, Digital Therapeutics and Tools: Partnership and Contract Service Totals ($B)



Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Medtech Venture Highlights

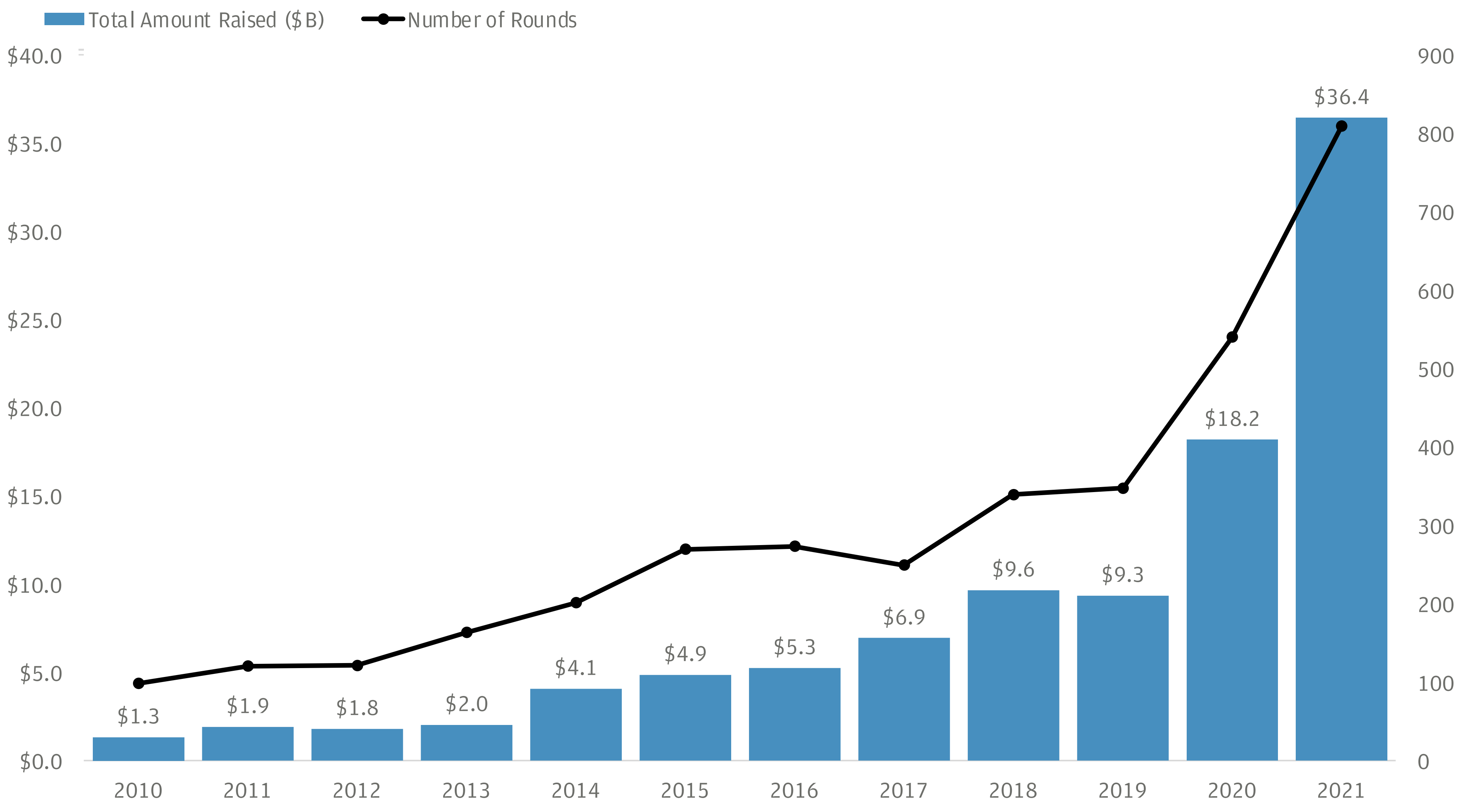
Medtech venture investment kept up with biopharma in record annual growth

Full-year 2021 medtech venture funding kept up with biopharma in setting records for the number of rounds and dollars invested in diagnostics, digital health and computational tools.

- $36.4 billion in total medtech venture funding in 2021, following $18.2 billion in 2020.
- 809 funding rounds for the year, with most of the rounds completing in the second quarter.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Medtech, Diagnostics, Digital Therapeutics and Tools: Venture Totals ($B) and Number of Rounds



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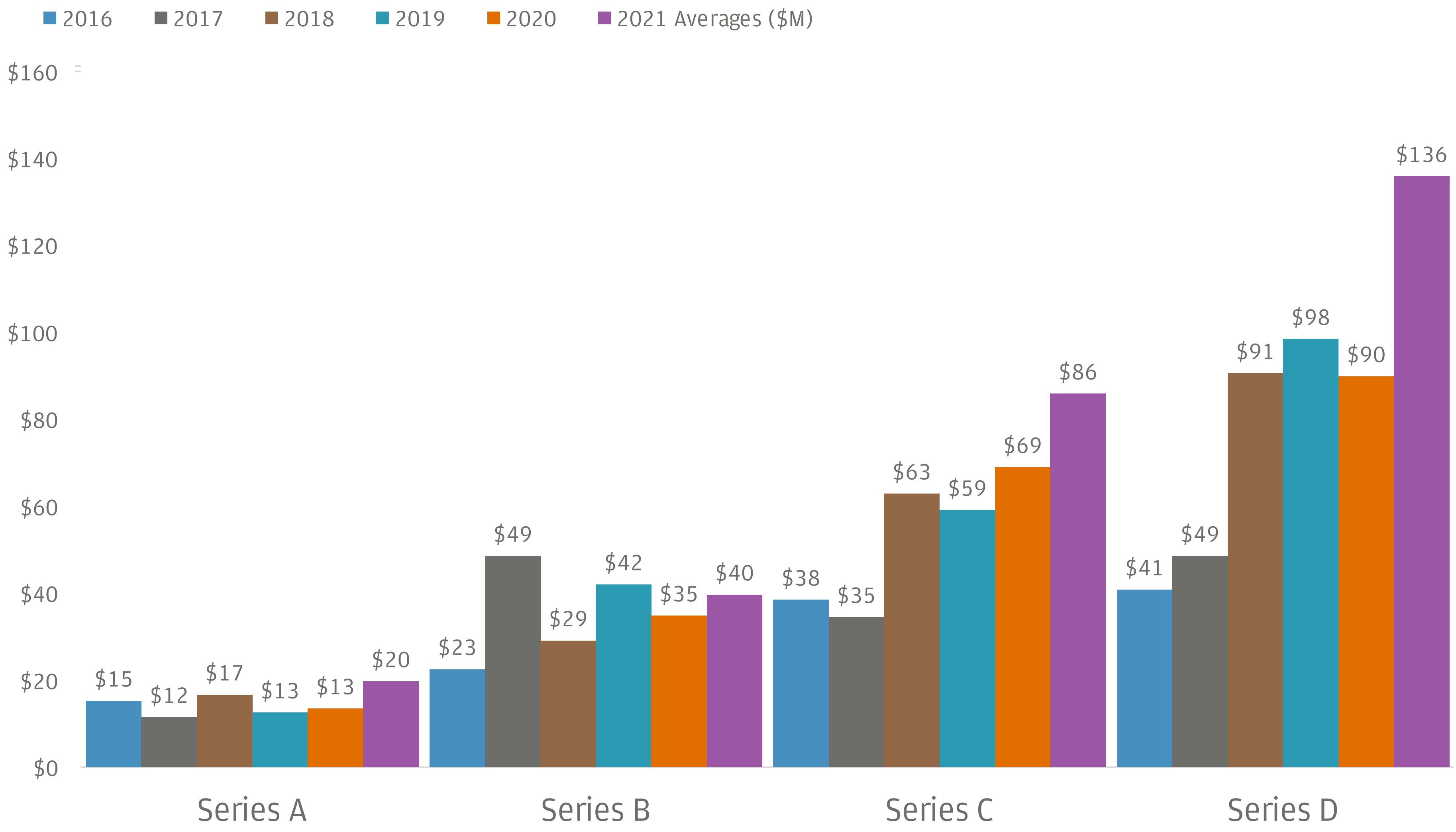
Medtech venture averages grew in later stage and crossover rounds

Averages for all rounds of venture funding grew in 2021, with the largest increase in Series D rounds.

- $20 million average Series A for medtech extending to $136 million average Series D in 2021.
- Diagnostics and digital therapeutics led investment activity driven by advances in biomarkers, telemedicine and digital health.

Source: DealForma.com database
Financials based on disclosed figures. Data through 1/7/2022.

Medtech, Diagnostics, Digital Therapeutics and Tools: Average Venture Rounds by Series



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