

Biotech Went to Work as the World Stayed Home

How one year of the global COVID-19 pandemic has affected the biotech & pharma industry

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Key takeaways

- **The biotech & pharma industry was a beacon of hope during an unforgettably difficult year.** VC deal activity within biotech & pharma in 2020 notched a record \$28.5 billion of capital across 1,073 deals. This represents a 60.5% year-over-year increase in deal value over 2019's aggregate \$17.8 billion—the largest YoY increase to date.
- **The IPO market for VC-backed biotech companies has yet to cool down.** In 2020, IPOs by VC-backed biotech companies raised \$11.5 billion in capital across 73 biotech public listings in 2020, with total exit value reaching a record \$37.3 billion. The median biotech IPO exit size also surged to a record \$451.1 million, which represents a 34.5% YoY increase over 2019's median of \$335.3 million. Step-up multiples from the last private round's post-money valuation to the IPO's pre-money valuation also spiked in 2020, with the median sitting at 1.32x, a level not seen since 2014.
- **M&A activity stumbled as strategic acquirers turned inward during the pandemic.** In 2020, US M&A activity for VC-backed biotech & pharma companies notched \$12.4 billion in deal value across 43 transactions. Large-cap biotech & pharma companies shored up resources to ensure ongoing operations and research & development (R&D) pipelines remained intact before looking for acquisition targets.
- **IPO and M&A activity is critical for drug development.** IPO proceeds can accelerate a company's R&D efforts and substantially expand its clinical platform. M&A deals also funnel liquidity back to investors and redeploy resources, including both realized gains to GPs and investors as well as the recycling of human capital within the biotech & pharma ecosystem.
- **Five key drivers and recent trends have been shaping the industry.** First, VC-backed biotech companies are gaining access to public capital earlier. Second, companies are also going public earlier in the drug development lifecycle. Third, startups providing auxiliary functions to traditional drug discovery are experiencing a boost. Fourth, new financing structures such as special purpose acquisition companies (SPACs) are emerging as viable options. Fifth, nontraditional investor participation, particularly for corporate VCs (CVCs) and crossover investors, continues to soar.

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Introduction

As the world bears the brunt of the COVID-19 pandemic's knock-on effects, 2020 will inevitably prove to be an unforgettable year for decades to come. Work-from-home policies and travel restrictions affected the venture capital industry, as GPs were unable to meet both entrepreneurs and LPs in person. With the one-year anniversary of Sequoia's "Black Swan" note behind us, the human toll of the pandemic has also led to overwhelming stress and fatigue.¹ At time of publication, there have been over 540,000 COVID-19-related deaths and nearly 30 million cases of COVID-19 in the US.²

Yet, in a year mired in a pandemic's shadow, the biotech & pharma industry emerged as a beacon of hope for many. Investor sentiment shifted positively toward the industry, as many recognized the importance that the development of COVID-19 vaccines and treatments would bear on preventing deaths and stabilizing markets. Indeed, three vaccines—those produced by Pfizer (NYSE: PFE), Moderna (NASDAQ: MRNA), and Johnson & Johnson (NYSE: JNJ)—along with 10 drugs and biological therapeutics products, have been granted emergency use authorization by the US Food and Drug Administration (FDA) at time of publication.³ Further, the FDA approved 53 new drugs and biological products in 2020, the second-highest number ever.

While more-efficient drug development and broadening applications of scientific breakthroughs have been key drivers to the recent years' run-up in biotech activity, the pandemic accelerated investment in this area and drove dealmaking and valuations to record highs. To note, within the equities market, the modified market-cap-weighted NASDAQ Biotechnology Index (^NBI) has outperformed the S&P 500 since January 2020 as broader market volatility casts doubts on the growth of many large-cap stalwart names.

NBI outperforms S&P 500 with banner biotech & pharma year in 2020



Source: PitchBook | Geography: US
*As of March 17, 2021

1: "Coronavirus: The Black Swan of 2020," Sequoia Capital, March 5, 2020.

2: "COVID Data Tracker," CDC, March 24, 2021.

3: "Emergency Use Authorization," FDA, March 24, 2021.

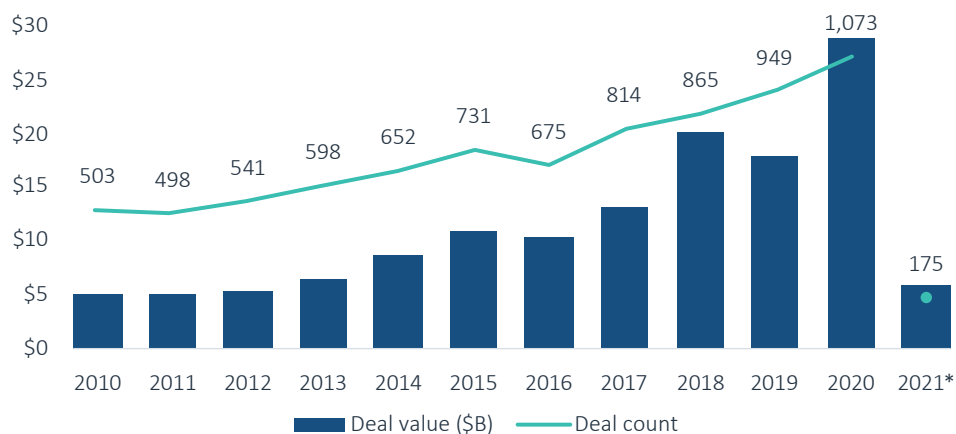
This note reviews the US equities market's impact on VC-backed biotech & pharma companies in 2020. Given the exit landscape's importance on venture-backed startups, we dive into the ways 2020's IPO and M&A activity spurred dealmaking and fundraising. Further, we discuss capital and resource allocation during these milestones and why the forced buyer business model embraced by large-cap pharmaceutical companies drove growth at the early stages of drug development. Lastly, by discussing recent financing trends, lessons learned from the global pandemic, and potential headwinds within the biotech & pharma industry, we provide an outlook on the ways 2021 will shape—or be shaped by—VC-backed biotech & pharma companies.

VC dealmaking in 2020

Despite many of the headwinds predicted during the pandemic's onset, the entire venture ecosystem experienced record levels in 2020. Data from our [Q4 2020 Venture Monitor](#) indicates that 2020 exhibited a trifecta of all-time highs: Dealmaking surpassed \$150 billion for the first time ever; massive IPOs drove exit values exceeding \$290 billion; and VCs raised over \$70 billion of new capital in fundraising activity.

VC deal activity within biotech & pharma in 2020 surpassed early-year projections, with the latest data showing a record \$28.5 billion of capital was invested across 1,073 deals. This represents a 60.5% year-over-year increase in deal value over 2019's aggregate \$17.8 billion, which is the largest YoY increase to date. Renewed investor interest for next-generation, groundbreaking biotech startups boosted much of this dealmaking fervor.

Biotech & pharma VC deal activity



Source: PitchBook | Geography: US
*As of March 1, 2021

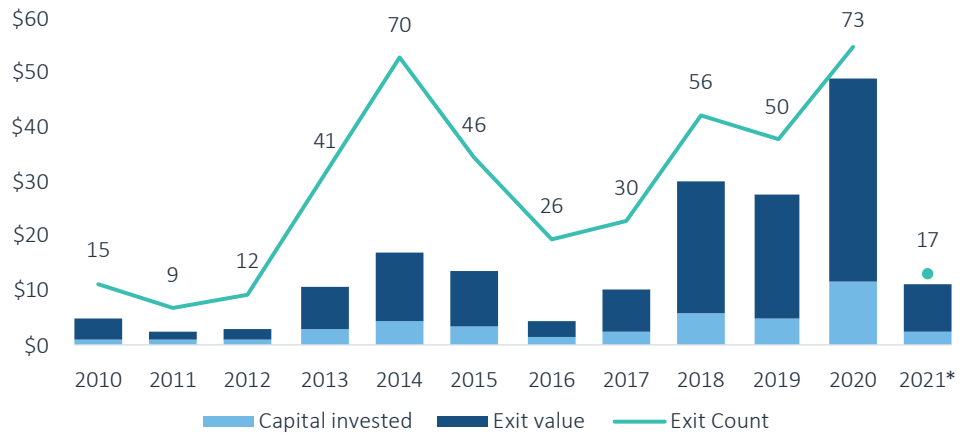
IPO activity of VC-backed biotech companies in 2020

The IPO market is intrinsically linked with a VC-backed biotech company's ability to raise the large amounts of capital needed for pursuing multiple clinical trials. The vast amount of capital, as well as the sheer volume of institutional and retail investors, allows companies to expand drug development capabilities. By focusing on the exit landscape, we can gauge public market sentiment toward these privately backed biotech companies and understand the ways investor liquidity occurs for VCs. Full-year data shows that IPOs by VC-backed biotech companies raised \$11.5 billion in capital across 73 biotech public listings in 2020, with total exit value reaching a record \$37.3 billion.

Reflecting on 2020's equities market, Q2's IPO window proved fickle, with uncertainty and volatility dancing in tandem. Our data shows that Q2 registered the lowest exit count of all VC exit activity in 35 quarters, with the bulk of IPOs conducted by pre-revenue biotech companies and SPACs. In fact, the amount of capital from [biotech exits in Q2 2020](#) surpassed that of software for the first time since Q1 2018. The reason is twofold: First, the largely defensive healthcare sector shelters pre-revenue biotech businesses from macroeconomic catalysts such as shifting consumer spending and demand. Second, biotech companies have strong intellectual property (IP) protection around their drug technologies, so even as elective procedures and clinical trials stalled briefly in Q2, companies were able to quickly resume operations with minimal impact.

As H2 2020 rolled around, the IPO freeze began to thaw, with 37 and 35 IPOs of VC-backed companies in Q3 and Q4 2020, respectively—the highest numbers observed since Q1 2014. 2020's largest biotech IPOs included Legend Biotech (NASDAQ: LEGN), a CAR T-cell therapy company focused on hematologic malignancies that raised \$423.8 million at a \$5.5 billion pre-money valuation; Atea Pharmaceuticals (NASDAQ: AVIR), an RNA therapy company focused on life-threatening viral diseases such as COVID-19 that raised \$300.0 million at a \$1.6 billion pre-money valuation; and Relay Therapeutics (NASDAQ: RLAY), a small-molecule therapeutics company focused on targeted oncology that raised \$400.0 million at a \$1.3 billion pre-money valuation.

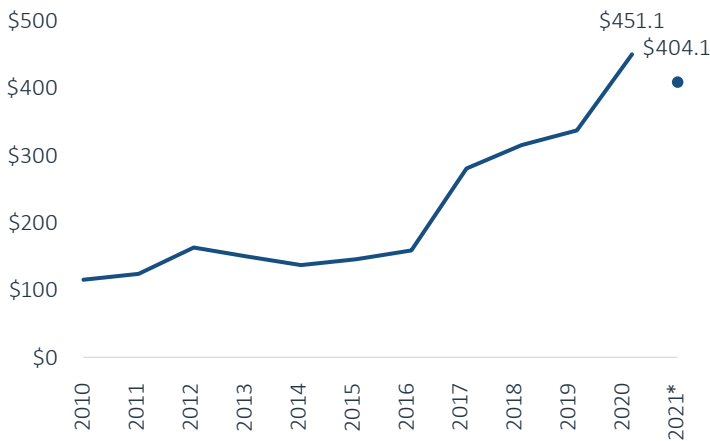
Public listing exit values and capital raised by VC-backed biotech companies (\$B)



Source: PitchBook | Geography: US
*As of March 17, 2021

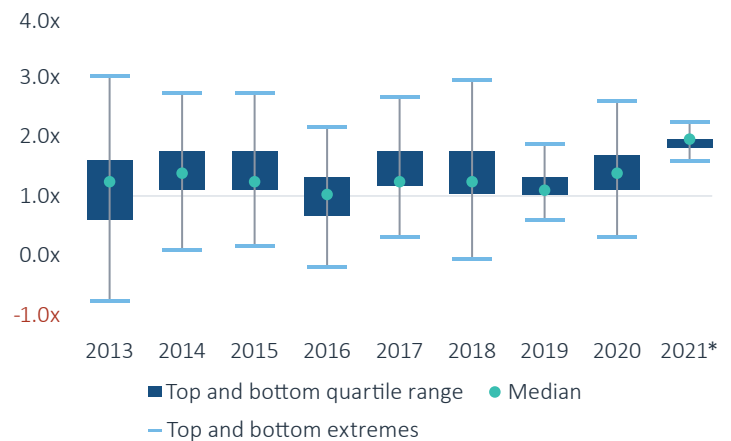
In 2020, the median biotech IPO exit size surged to a record \$451.1 million, which represents a 34.5% YoY increase over 2019’s median exit size of \$335.3 million. This healthy valuation jump can be attributed to: biotech companies commanding higher valuations during a global pandemic as many allocated R&D capital toward COVID-19 efforts; a midyear dearth of other attractive, high-conviction names; and, finally, increasingly mature drug pipelines tackling a wider range of diseases. Step-up multiples from the last private round’s post-money valuation to the IPO’s pre-money valuation also spiked in 2020, with the median sitting at 1.32x, a level not seen since 2014.

Median exit size (\$M) for biotech & pharma public listings



Source: PitchBook | Geography: US
*As of March 17, 2021

IPO valuation step-up multiples for biotech & pharma companies**



Source: PitchBook | Geography: US
*As of March 17, 2021

**Note: These valuation step-up multiples compare a given company’s IPO pre-money valuation to its last private round’s post-money valuation.

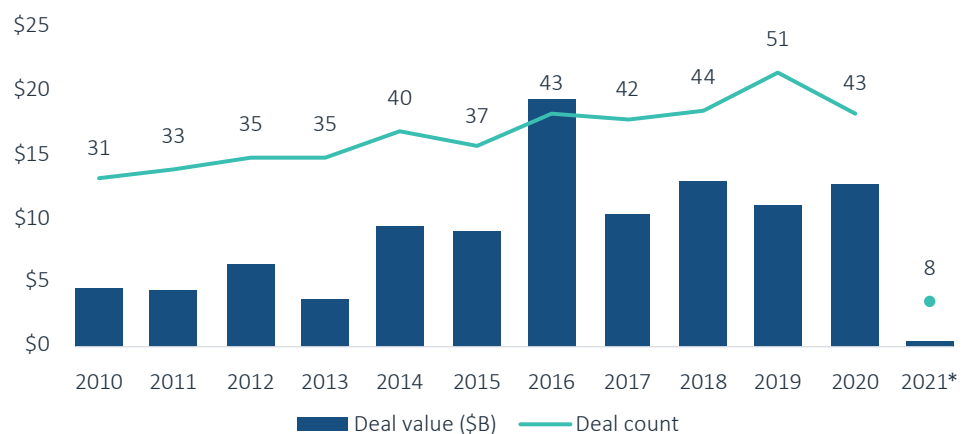
M&A activity of VC-backed biotech companies in 2020

As discussed in a past note, M&A activity is critical for drug development. The resources provided by the acquirer both accelerate the target's drug progress through clinical trials and enhance manufacturing and scale-up capabilities. M&A also helps large-cap biotech & pharma companies strategically build out their drug pipelines by acquiring promising drug assets. This forced buyer business model that has become indicative of the biotech & pharma industry necessitates that early-stage VC investors keep an eye on the M&A exit landscape. Also, because this model mitigates many downstream exit risks, it stabilizes the industry's venture-backed segment.

2020's M&A activity stumbled compared with past years. During the height of the pandemic, strategic acquirers turned inward by shoring up resources and ensuring ongoing operations and R&D pipelines remained intact before looking for acquisition targets. Further, placing an accurate valuation on a drug asset can be difficult during times of volatility, and large-cap biotech & pharma acquirers worried about overpaying for expensive drug assets—especially as the frothy IPO market continued to boost valuations.

In 2020, US M&A activity for VC-backed biotech & pharma companies notched \$12.4 billion in deal value across 43 transactions.⁴ The largest acquisitions in 2020 included Bayer's (ETR: BAYN) acquisition of Asklepios BioPharmaceutical, a North Carolina-based gene therapy company, for \$4.0 billion; Merck's (NYSE: MRK) acquisition of VelosBio, a California-based antibody-drug conjugate (ADC) company, for \$2.8 billion; and Novo Nordisk's (NYSE: NVO) acquisition of Corvidia Therapeutics, a Massachusetts-based precision cardiovascular therapy company, for \$725.0 million up front with contingent payouts of an additional \$1.4 billion.

M&A activity for VC-backed biotech & pharma companies



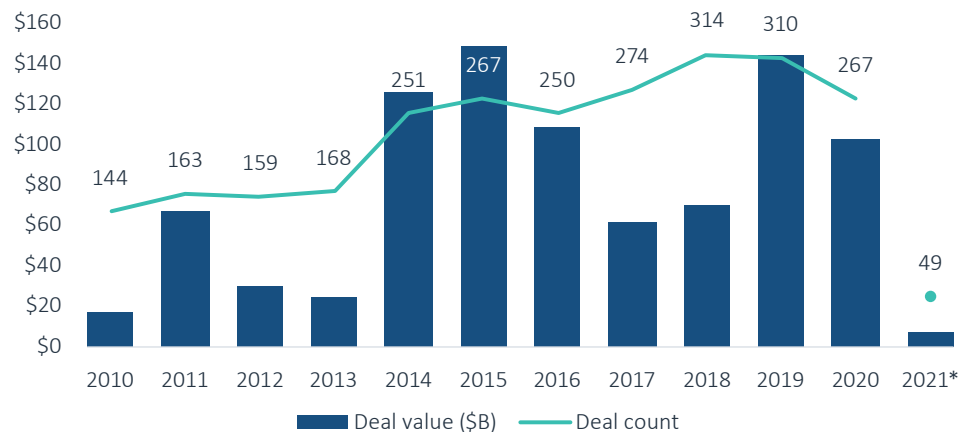
Source: PitchBook | Geography: US
*As of March 17, 2021

4: Though M&A activity includes both merger and acquisition deal types, most M&A activity for VC-backed biotech companies tends to be acquisitions given the business model and drug development timelines. However, we denote this group of transactions as "M&A activity" to include the handful of reverse mergers that occurred, as well as to provide continuity with public market M&A activity.

The entire biotech & pharma industry had an aggregate of \$101.1 billion in M&A activity across 267 transactions in 2020. This represents a -29.6% YoY value decline and a -13.9% YoY transaction count decline over 2019's \$143.6 billion across 310 transactions. However, 2020 was only the fifth time in the past decade that annual M&A activity exceeded \$100 billion. Thus, while 2020's M&A activity did not have the banner year that the IPO market had, it was still one of the more active years in the last decade.

One notable acquisition that closed in 2020 was Gilead Sciences' (NASDAQ: GILD) acquisition of Immunomedics for \$21.0 billion—the third-largest M&A biotech & pharma deal in the past five years, after Bristol Myers Squibb's (NYSE: BMY) acquisition of Celgene for \$80.3 billion in 2019 and Shire's acquisition of Baxalta for \$32.0 billion in 2016. The largest in the company's 33-year history, Gilead's acquisition boosts its stake in the ADC field by bringing Immunomedics' lead drug Trodelvy™ into its oncology drug portfolio. Other notable M&A deals in 2020 include Bristol Myers Squibb's acquisition of MyoKardia for \$13.1 billion; a corporate divestiture of The Medicines Company, a Mallinckrodt (NYSE: MNK) subsidiary, to Novartis (SWX: NOVN) for \$9.7 billion; and Johnson & Johnson's acquisition of Momenta Pharmaceuticals for \$6.5 billion.⁵

Biotech & pharma M&A activity



Source: PitchBook | Geography: US
*As of March 17, 2021

5: This data does not include AstraZeneca's (LON: AZN) agreement to acquire Alexion Pharmaceuticals (NASDAQ: ALXN) for \$39.0 billion because this deal was announced in December 2020 but has not yet closed at time of publication.

The impact of IPO and M&A activity

The exit landscape plays a critical role for all of the biotech ecosystem—but especially for venture-backed companies. VC-backed biotech companies rely on IPO and M&A transactions to help progress drugs through clinical trials. The capital available either within public markets or via partnering with a large-cap biopharmaceutical company is often far more bountiful than the capital available from venture investors.

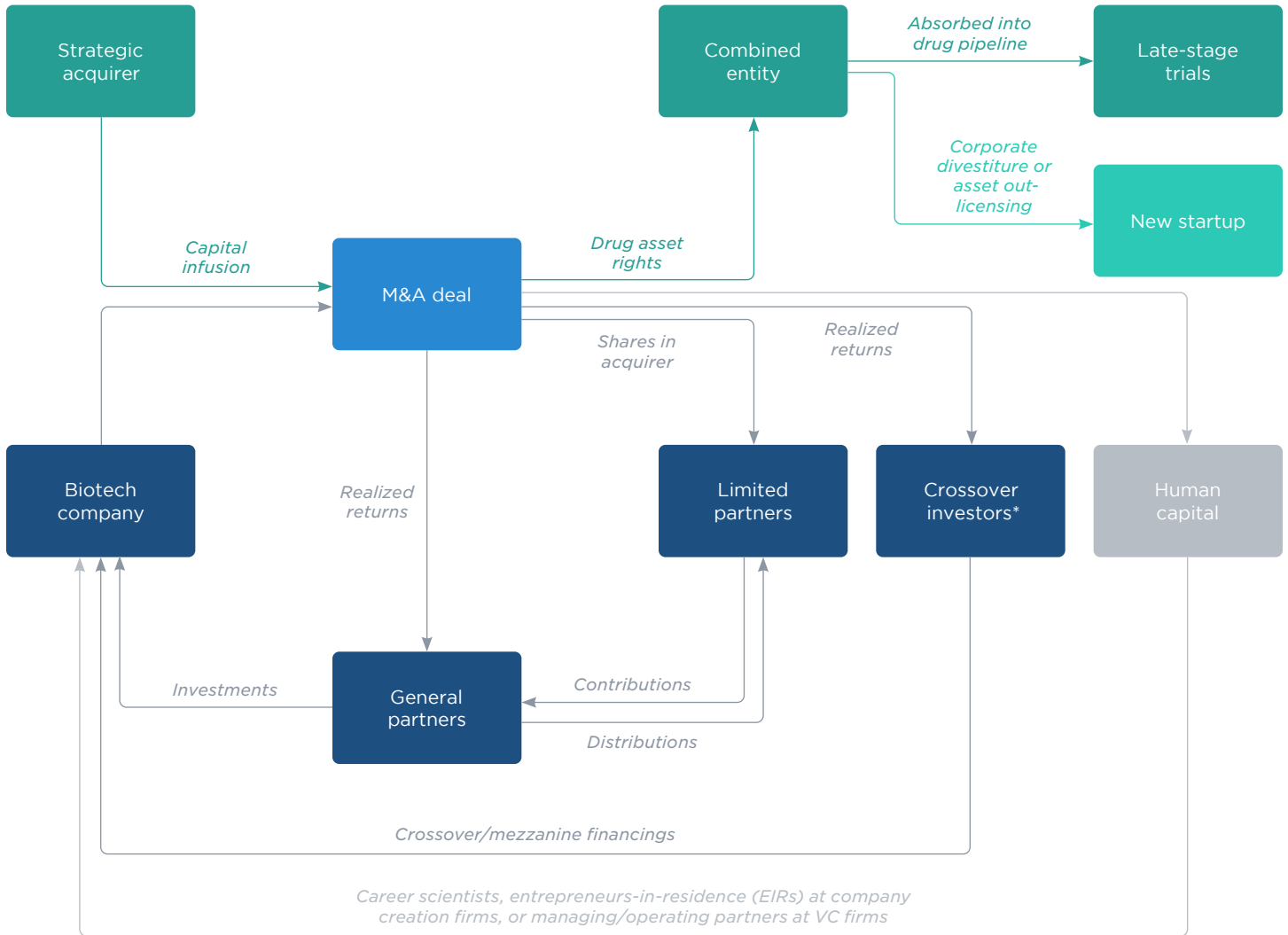
To note, an IPO is a less traditional exit for VC-backed biotech companies and their investors. In fact, given their conviction in a company's drug offerings, many private backers will hold their positions in these companies longer post-IPO. IPO proceeds can accelerate a company's R&D efforts and substantially expand its clinical platform. As a company reaches Phase 2 and Phase 3 trials, preliminary efficacy data allows companies to drum up significant interest from both institutional and retail investors in the public markets.

By gauging investor interest and valuation trends, 2020's robust IPO activity acts a forerunner for VC-backed biotech companies looking to go public in 2021. The fact that many biotech companies upsized their offering amounts is a positive sign, as public market investors see long-term growth stories with the potential to treat significant unmet medical needs.

While IPO transactions help venture-backed companies with their capital needs, M&A transactions typically help with noncapital needs like operations, manufacturing, and human capital, among others. VC-backed biotech companies' strengths typically lie in drug discovery and clinical testing. Many elements that exist later in the drug development cycle, such as large-scale manufacturing and sales & marketing, are absent from the wheelhouse of many founders and early-stage operators.

From a VC's perspective, M&A deals also funnel liquidity back to investors and redeploy resources. GPs that were previously tied up in long-term illiquid investments can realize their returns and either distribute capital back to LPs or make new investments. Crossover investors—typically public market asset managers that also invest in privately backed companies—also benefit from M&A transactions, as realized returns are, in turn, recycled back into the ecosystem through subsequent crossover and/or mezzanine financings.

Resource reallocation during the M&A process



Source: PitchBook | Geography: US

*Crossover investors are defined as primarily public market asset managers that also invest in privately backed companies.

Perhaps less tangible than capital reallocation, a key tenet of M&A transactions is the recycling of human capital. Following a major consolidation or acquisition event, an acquirer will typically shed jobs with duplicate functions. According to *The Wall Street Journal*, between 2009 and 2013, the pharmaceutical industry announced more than 150,000 job cuts in the US alone, many from within R&D divisions.⁶ Yet, a portion of that talent gets recycled into VC-backed biotech companies or other research functions. Atlas Venture Partner Bruce Booth posited that talent acquisition from large-cap pharma companies is the lifeblood of VC-backed biotech startups.⁷

6: "In Drug Mergers, There's One Sure Bet: The Layoffs," *The Wall Street Journal*, Peter Loftus, Marta Falconi, & Hester Plumridge, April 29, 2014.

7: "Talent Acquisition: Pharma Is the Lifeblood of Biotech," *Forbes*, Bruce Booth, May 19, 2014.

Additionally, there is a diaspora of former biotech & pharma executives who have been exited from past M&A deals. Many of them transition into management and leadership positions at VC-backed biotech companies either as EIRs at company creation firms or as managing and/or operating partners at VC firms. This recycling of talent propels venture-backed companies on an upward trajectory, with executive leadership from former operators and entrepreneurs. A prime example of this recycling is Sana Biotechnology (NASDAQ: SANA), whose senior leadership and board comprises several ex-Juno Therapeutics executives with previous experience in successfully building a biotech company from the ground up.

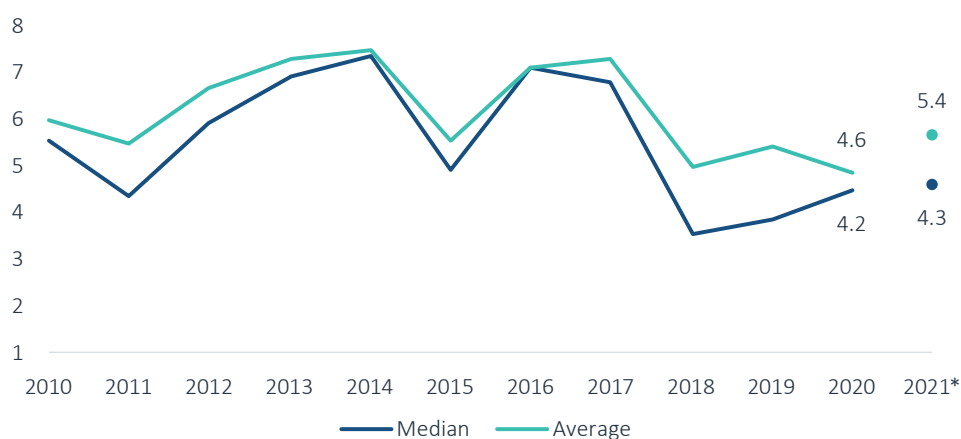
Key drivers and recent trends

Five key drivers and recent trends:

1. *Venture-backed biotech companies are gaining access to public markets earlier in the company lifecycle.*
2. *Companies are going public earlier in the drug development lifecycle.*
3. *Startups providing auxiliary functions to traditional drug discovery are experiencing a boost.*
4. *New financing structures, namely SPACs, are emerging as viable options for companies looking to gain access to public market capital.*
5. *Nontraditional investor participation, particularly from CVCs and crossover investors, continues to soar.*

Five key drivers and recent trends are occurring within the industry. First, venture-backed biotech companies are going public earlier, which allows them to gain access to the large swaths of capital available in the equities market from institutional and retail investors. Over the past several years, the time between a VC-backed biotech company's first venture round and IPO has been plunging. In 2016, the median and average times were both at 6.8 years. Since then, these times have plummeted as companies mature more quickly, make smarter use of private capital, and are ready to trade public market scrutiny for large capital infusions earlier in the company lifecycle. In 2020, the median and average times from first VC round to IPO for biotech companies were 4.2 and 4.6 years, respectively—only a small increase over 2019's 3.5 and 5.1 years.

Median and average time (years) from first VC round to IPO for biotech & pharma companies



Source: PitchBook | Geography: US
*As of March 17, 2021

Second, VC-backed biotech companies are going public earlier in the drug development lifecycle as well. In 2014, Juno Therapeutics filed to go public while its leading drug candidate was only in Phase 1 clinical trials.⁸ At the time, this practice was uncommon; most biotech companies filing to go public in 2014 were already in Phases 2 or 3 or had market-approved drugs. Just last month, Sana Biotechnology filed to go public without a single

8: "Juno Therapeutics S-1," SEC EDGAR Database, November 17, 2014.

drug candidate in clinical trials and estimates potential Investigational New Drug (IND) submission in 2022.⁹ This provocative move comes on the heels of Sana raising a \$435.0 million Series B in June 2020 and shows Sana executives capitalizing on a frothy equities market and bullish investor sentiment toward biotech.

Third, companies that provide auxiliary functions to drug development are generating big investments as entrepreneurs disrupted and rethought key pandemic-exposed elements of the supply chain. For example, Resilience, a biotech startup aiming to transform biopharmaceutical drug manufacturing, raised a \$755.0 million Series B in October 2020 led by ARCH Venture Partners and 8VC. Also, companies at the intersection of artificial intelligence & machine learning (AI & ML) and drug discovery have gained traction. Notably, Valo, a biotech company integrating ML and cloud computing to identify genetic links to diseases, raised a \$190.0 million Series B in December 2020; and Zymergen, a biotech company integrating AI algorithms and robotic genomics to identify new paths within the microbial genome, raised a \$350.0 million Series D in October 2020. While these areas hold great promise for the future of medicine, the path forward can be treacherous. IBM's (NYSE: IBM) recent exploration of a potential sale of its Watson Health business is a stark reminder of the challenges of applying AI to treat complex medical conditions.

Fourth, new financing structures have emerged as viable options for VC-backed biotech companies looking to gain access to public market capital. Most notably, SPAC issuance has exploded in the past year, with many biotech investors disclosing that most—if not all—of their portfolio companies have been approached by a SPAC sponsor at some point. As we highlighted in our [2020 SPAC Frenzy](#) note, SPACs are no longer an avenue only for distressed healthcare companies; but rather, SPACs are also a viable route for healthy companies looking to take advantage of current macroeconomic conditions, raise a significant amount of capital, or gain strategic guidance from an experienced operator. Some view SPACs with a concurrent private investment in public equity (PIPE) transaction as a more streamlined and capital-efficient route over the traditional combination of a crossover round and IPO. Further, safe harbor protections for forward guidance allow for estimated revenue projections that utilize frameworks common for modeling biotech drug sales such as discounted cash flows. At time of publication, 14 privately backed biotech companies have gone public via business combinations with SPACs since 2018. Several SPACs sponsored by biotech and life-science-focused investors—including Chardan, Deerfield, LifeSci Capital, 5AM Ventures, RA Capital, Casdin Capital, and RTW Investments, among others—are still searching for a target. We anticipate that many will announce combinations in 2021, particularly with sponsors possessing a management team adept at scaling and building biotech companies.

9: "Sana Biotechnology S-1," SEC EDGAR Database, January 12, 2021.

Biotech & pharma companies that have exited via SPAC since 2018*

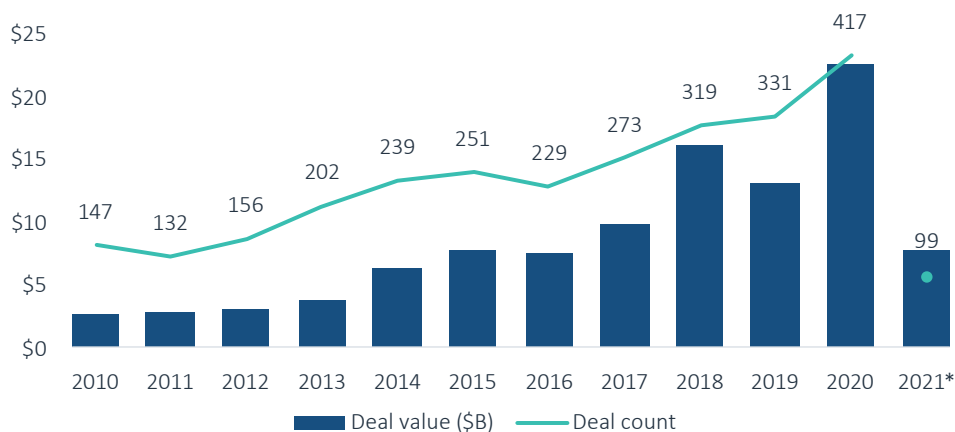
Company name	SPAC name	SPAC sponsor	Combination date	Therapeutic area(s)
Renovacor	Chardan Healthcare Acquisition 2 Corp. (NYSE: CHAQ)	Chardan Capital Markets	March 23, 2021 (announced)	Cardiomyopathy
Point Biopharma	Therapeutics Acquisition Corp. (NASDAQ: RACA)	RA Capital Management	March 15, 2021 (announced)	Pancreatic cancer
Humacyte	Alpha Healthcare Acquisition Corp. (NASDAQ: AHAC)	Constellation Alpha Holdings	February 17, 2021 (announced)	Peripheral vascular disease
Nautilus Biotechnology	Arya Sciences Acquisition Corp. III (NASDAQ: ARYA)	Perceptive Advisors	February 8, 2021 (announced)	Single-molecule proteomics
Nuvation Bio (NYSE: NUVB)	Panacea Acquisition Corp. (NYSE: PANA)	EcoR1 Capital	February 10, 2021	Gliomas, solid tumor and blood-borne cancers
Gemini Therapeutics (NASDAQ: GMTX)	FS Development Corp. (NASDAQ: FSDC)	Foresite Capital	February 5, 2021	Age-related macular degeneration
Clene Nanomedicine (NASDAQ: CLNN)	Tottenham Acquisition I Ltd (NASDAQ: TOTAU)	Norwich Investment	December 30, 2020	Neurodegenerative diseases
Reviva Pharmaceuticals (NASDAQ: RVPH)	Tenzing Acquisition Corp. (NASDAQ: TZAC)	Tenzing	December 14, 2020	Neurodegenerative diseases, pulmonary fibrosis
180 Life Sciences (NASDAQ: ATNF)	KBL Merger Corp. IV (NASDAQ: KBLM)	KBL Healthcare Ventures	November 6, 2020	Inflammation, fibrotic diseases
Cerevel Therapeutics (NASDAQ: CERE)	Arya Sciences Acquisition Corp. II (NASDAQ: ARYBU)	Perceptive Advisors	October 27, 2020	Neurodegenerative diseases
Immatix (NASDAQ: IMTX)	Arya Sciences Acquisition Corp. (NASDAQ: ARYA)	Perceptive Advisors	July 2, 2020	Carcinomas, solid tumors, non-small cell lung cancer
Immunovant (NASDAQ: IMVT)	Health Sciences Acquisitions Corp. (NASDAQ: HSAQ)	RTW Investments	December 18, 2019	Myasthenia gravis, thyroid eye disease, warm autoimmune hemolytic anemia
BiomX (NYSE: PHGE)	Chardan Healthcare Acquisition Corp. (NYSE: CHAC)	Chardan Capital Markets	October 23, 2019	Cystic fibrosis, inflammatory bowel disease, dermatitis, colorectal cancer
Xynomic Pharmaceuticals (NASDAQ: XYNO)	Bison Capital Acquisition Corp. (NASDAQ: BCAC)	Bison Capital	September 12, 2018	Lymphomas, kidney cancer

Source: PitchBook | Geography: US

*As of March 24, 2021

Fifth, nontraditional investor participation has picked up in recent years. Oftentimes, biotech startups simultaneously tackle multiple unmet medical needs and thus require significant amounts of capital to run R&D programs and early-stage clinical trials. Involvement from nontraditional investors such as hedge funds, mutual funds, and other large asset managers allows companies to raise these large checks. In 2020, deals involving nontraditional investors totaled a record \$22.6 billion across 417 deals within VC-backed biotech & pharma. This represents a 72.7% YoY increase over 2019 and a threefold increase over activity from just five years prior. In April 2021, in a separate analyst note, we will dive into crossover public-private investors.

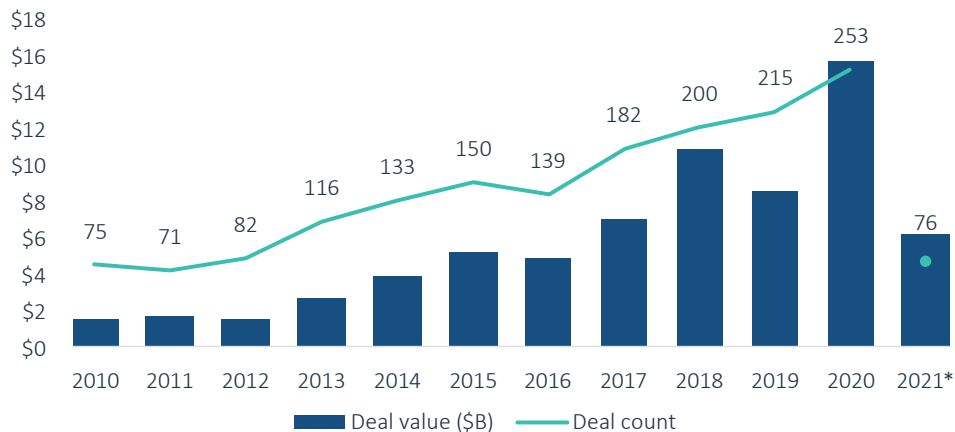
Biotech & pharma VC deal activity with nontraditional investor participation



Source: PitchBook | Geography: US
*As of March 17, 2021

CVCs have also piled into venture-backed biotech companies. Large-cap biotech & pharma companies realize that the future of their drug pipeline depends on acquiring new assets. As such, corporates have developed a pay up or miss out mentality when investing in nascent biotech startups. In 2020, CVCs were involved in over \$15 billion of deal flow within biotech &

Biotech & pharma CVC deal activity



Source: PitchBook | Geography: US
*As of March 17, 2021

pharma and invested in a record 253 deals—a sharp increase over previous years. The inability to innovate as nimbly as startups, coupled with large-cap companies' aversion to risk, has forced corporates to double down on investing in early-stage biotech startups in order to have a seat at the table.

Outlook

2021 is riding the momentum of 2020's record-setting VC dealmaking, fundraising, and exit activity. As of March 18, 2021, US biotech & pharma VC deal activity has already notched \$9.1 billion across 248 deals in 2021. On the mega-deals front, 29 have already taken place in 2021, which is tracking to exceed 2020's 75 biotech mega-deals.¹⁰ By hiring scientists, managing clinical operations, or even licensing in new drug IP to expand portfolios, these outsized financing rounds allow biotech companies to rapidly expand. We expect dealmaking will be equally robust in 2021 and **exceed \$20 billion for the second consecutive year** as investors continue to chase asymmetric returns within the high-risk, high-reward segment of the VC-backed biotech market.

Going forward, the biotech industry must continue to adapt to new situations and learn from the pandemic that dominated 2020. Because of the astounding pace at which the industry was able to sequence the novel coronavirus, design a vaccine, perform clinical trials, and obtain regulatory approval, large asset managers and institutional investors' perceptions of the biotech & pharma industry has never been higher. VC-backed biotech companies have also realized that the optimal time to raise new capital is difficult to predict—especially given the possibility for unexpected events to have deleterious effects on balance sheets. This realization has forced many capital-intensive biotech companies to rethink their approach to building out a drug platform's breadth versus depth.

We anticipate that the biotech & pharma sector in 2021 will sustain 2020's level of growth. Recent years' run-up in deal activity indicates the maturation of drug technologies, as well as a better understanding of genomics, proteomics, and transcriptomics, among others. Areas that augment key segments of the industry, such as manufacturing, diagnostics, and robotics, will likely experience a boost. While 2020 boosted the vaccines and infectious diseases sectors, several stalwart clinical indications such as oncology, cardiovascular, and neurodegenerative diseases continue to attract investment, particularly in companies that harness the nexus of biotech and software. As our algorithmic understanding matures, the application of AI & ML to transform biotech and drug development inches closer to fruition.

Several biotech industry catalysts are also scheduled for 2021. One that analysts are closely monitoring is whether Biogen (NASDAQ: BIIB) will receive FDA approval for its Alzheimer's drug, aducanumab, after showing mixed clinical efficacy data. An independent advisory panel recommended against approval in November 2020.¹¹ Because Alzheimer's currently has

10: We define "mega-deals" as deals that meet or exceed \$100 million.

11: "Update on FDA Advisory Committee's Meeting on Aducanumab in Alzheimer's Disease," Biogen, November 6, 2020.

no approved treatments, however, some analysts speculate that mounting public pressure for an Alzheimer's drug could sway the FDA in favor of approval. Another catalyst is whether Provention Bio (NASDAQ: PRVB) will receive FDA approval of its diabetes drug, teplizumab, for the delay or prevention of Type 1 diabetes. These two catalysts could supercharge the Alzheimer's and diabetes markets and pave the way for many VC-backed biotech companies tackling similar challenges.

There are potential headwinds, however. On the policy and regulatory front, a new administration can bring about unforeseen changes. Since 2019, drug pricing reform has hung in the air. A broader push to price drugs more similarly to other countries could dampen some of the current fervor within biotech & pharma. Recent reporting from *The Journal* details the ways biotech & pharma companies' margins have shrunk as intermediary rebates and discounts dictate drug prices.¹² While the Biden administration is currently addressing more immediate issues such as the financial stimulus, vaccine rollout efforts, and gun control, drug pricing discussions and potential amendments to the Affordable Care Act will likely occur once the pandemic abates.

Ultimately, we remain bullish on VC-backed biotech & pharma financings throughout 2021. Defensive in nature, biotech & pharma is insulated from macroeconomic volatility and instability. Simply put, drug development targeting myriad unmet medical needs will continue to remain a mainstay for VC investment. Several large-cap biotech & pharma companies have already increased their financial guidance and expected revenue numbers for the year, which bodes well for venture-backed biotech companies. When coupled with sustained CVC activity and interest, both M&A and joint venture partnership opportunities remain plentiful. The biotech & pharma public equities market has yet to enter major correction territory, which thereby leaves the IPO window open for VC-backed biotech companies looking to raise significant amounts of capital—particularly for companies whose drug pipeline did not depend on COVID-19.

12: "Pharma Giants Get Their Pennies Pinched on Drug Pricing," *The Wall Street Journal*, Charley Grant, March 12, 2021.