



June 13, 2021

Federal Trade Commission
Office of the Secretary
600 Pennsylvania Ave NW
Washington, DC 20580

Re: Request for Comment on Pharmaceutical Task Force, Project No. P212900

Dear Commission,

The Biotechnology Innovation Organization (BIO) appreciates the opportunity to provide comments to the Federal Trade Commission's Pharmaceutical Task Force's request for public comment.

BIO is the world's largest life sciences trade association representing nearly 1,000 biotechnology companies, academic institutions, state biotechnology centers and related organizations across the United States and in more than 30 other nations.

BIO members are involved in the research and development of innovative biotechnology products that will help to solve some of society's most pressing challenges, such as managing the environmental and health risks of climate change, sustainably growing nutritious food, improving animal health & welfare, enabling manufacturing processes that reduce waste & minimize water use, and advancing the health and well-being of our families by innovating the next generation of treatments, diagnostics, and cures that will secure the health and safety of our Nation.

Even in today's uncertain times, America's small biotechnology (biotech) companies, both public and private, continue to lead efforts to address the most devastating health risks and diseases in the world.

In fact, 76% of all therapeutics and vaccines in development to treat to prevent COVID-19 originated from small biotech companies.¹ Small biotech companies are also responsible for 80% of all scientific R&D.²

All of these companies depend on a highly specialized investment ecosystem, which mergers and acquisitions from larger entities play a crucial and fundamental role. Eliminating or restraining the opportunity for mergers and acquisitions will severely impede the ecosystem that has catapulted the U.S. life sciences and biomedical innovation ecosystem into its current leadership position in the world, which, was not always the case. Policies that have fostered entrepreneurial risk taking and early-stage investment have allowed this ecosystem to flourish.

¹ <https://www.bio.org/policy/human-health/vaccines-biodefense/coronavirus/therapeutic-development/bio-covid-19-therapeutic-development-tracker>

² <https://www.iqvia.com/insights/the-iqvia-institute/reports/emerging-biopharmas-contribution-to-innovation>



It is no surprise that the country with the deepest, most robust capital markets in the world is also home to the most resilient and successful biomedical innovation ecosystem. Many countries, both historical partners and rising rivals, seek to replicate our system.

It is incumbent upon us to ensure its continued success and not to restrain it.

In this letter, we hope to provide data and evidence to show the resilience of the system in its current form and that current frameworks for theories of harm are adequate. We will provide data to show that contrary to popular opinion, innovation has flourished under the current system, that research and development has increased not decreased, and that more transformative, disease modifying therapeutics are being brought to market than ever before.

**"CANCER DRUGS HAVE GOTTEN
SO MUCH BETTER."**

Dr. Richard Pazdur, **Director of the FDA's Oncology
Center of Excellence**

An Overview of the Drug Development Ecosystem

The underlying factor for success for the United States biopharmaceutical industry has been its ecosystem and the characteristics that define it. It is an ecosystem that allows for not only breadth of investment and partnerships for small companies, but most importantly, for failure on a grand scale.

More than 90% of clinical programs fail in this industry.

For small start-ups that begin in the preclinical stages, the failure rate for programs can exceed 99%. As these small companies are the engine for the entire industry, it is imperative that investors have reason to take on such risk. One factor that allows them to take such risk is access to thousands of ideas and diverse funding sources that will provide the best chances of success.

Without the breadth of investment opportunities, the risk would be too high and investment would dry up.

This is the first pillar of the ecosystem – early-stage, high risk investment. The funding sources within this critical pillar are also diverse with traditional venture capital working with corporate venture capital arms to family offices and angel investors funding seed-stage start-ups. Venture funding to emerging therapeutic companies totaled a record \$17.9 billion in 2020.

The second pillar is government funding. Companies can receive direct grants through the United States government (for example, through small SBIR loans), but the majority of the funding for the ecosystem is to academic labs that allow for a greater understanding of the basic biology of disease. This is not applied research, but fundamental research that provides a substrate upon which entrepreneurs can begin their journey of drug design.



Without this pillar, no companies would spawn into existence. A subset of the NIH \$36 billion budget is spent on these research grants.

The third pillar is the public markets. Public company investors play a critical role in supplying large sums of capital for clinical trial and even drug launch operations. Companies without access to initial public offering or follow-on public offerings could never amass the critical bolus of funding to prove their therapeutics work. This means solid financial regulations based on free markets is imperative.

The fourth pillar of the ecosystem is the larger biopharmaceutical companies. Although only 70 companies exist with more than \$1 billion in revenue, these companies are critical to financial and scientific support of small companies through partnerships. In 2020 alone, 238 licensing transactions for R&D-stage assets accounted for a total of \$154 billion in potential value. **In upfront cash³, this amount was \$15.9 billion, almost equal to the total of U.S. venture capital investment.**

Company partnerships and collaborations between companies drive 45% of clinical programs today. Combined, the industry now spends \$188 billion on R&D.⁴

Other components of the ecosystem are crucial, but outside the scope of this letter. They include the patients, which all the above activities aim to serve eventually; the payors, those entities like Medicare and private insurers that will support access to the medicines; the regulators, that ultimate decide the safety and effectiveness of treatments; the supply chain, which includes raw material access to contract organizations that run trials and make bulk ingredients.

For the ecosystem to sustain itself, there must be a return on capital and a redeployment of that return. The early-stage investors rely on acquisitions and/or other investors to obtain said return. Large biopharmaceutical company acquisitions play a role in this and also provide greater speed, probability of success, and reach to patients for the therapeutic candidates originating in small companies.

Theories of Harm in Pharmaceutical Merger Evaluation

As noted above, 77% of all global research and development spending in pursuit of novel therapeutics comes from small biotechnology companies.⁵

The central role of small life sciences innovators has been acknowledged by all academics and legal scholars that have opined on the pharmaceutical mergers and the innovation ecosystem.

Many of these publications have been cited by the Commission and members of Congress. However, what is troubling is that idiosyncratic sentences and phrases were chosen to support the current philosophy of competition in the biopharmaceutical space while omitting

³ An upfront payment is a transaction where partners provide a portion of funding immediately when the funding deal is closed. For context, most pharmaceutical partnership deals have a combination of upfront payments and milestone-driven payments. In the latter case, funding is provided once the recipient meets certain predefined scientific goals.

⁴ <https://www.evaluate.com/thought-leadership/pharma/evaluatepharma-world-preview-2020-outlook-2026>

⁵ *ibid*

integral pieces of information that either form the fundamental basis of the academic study cited or explain the relationships that belie the robustness of the industry.

In summary, many of the studies used as academic ballast to support the current policy narrative are misused. In the following pages, BIO endeavors to correct the record on some of the more nuanced points included in many of these studies that have been omitted and should be brought forward as they are core arguments that illustrate the fundamental basis of the biomedical innovation ecosystem.

A seminal academic work often cited by the Commission in dissenting opinions and members of Congress, Haucap et al^{6,7}, has been used as an academic basis to form current perspectives that mergers and acquisitions in the biopharmaceutical space erode innovation and must therefore be altered using the levers of competition policy.

However, the research publication makes three important points that have been overlooked and illustrate BIO's concern about the potential unintended consequences on small, life sciences innovators that may result from altering the current ecosystem.

Notably, these three points are also critical inputs in the economic models built and the outcomes shared as lessons learned by Haucap et al.

1. Haucap et al **specifically excludes small biotechnology companies** from their study. In their paper, the authors exclude any biopharmaceutical company

“Finally, firms with a mean value of **sales below 2 million Euros** based on all available firm-years **are excluded** to ensure a minimum of comparability between treatment and comparison group in terms of firm size.”

For context, there are only 70 companies globally with more than \$1 billion in revenue. There are nearly the same number of companies with \$10 million to less than \$1 billion of product sales. However, there are more than 3,500 companies with no revenue at all. Many of these companies resemble more of a project than a company, comprised mainly of scientists and small executive team.

Furthermore, the authors go on to validate that the critical takeaways from their study apply to relative equals.

“Acquirers are the largest firms within the sample measured by the amount of sales. On average, **acquisition targets are relatively large but less profitable than firms in other markets and have similar values of sales** compared to non-merging competitors.”

This means that the Commission and Congress are using the incorrect economic models to support current thinking on theories of harm.

This study, again widely cited by the Commission and members of Congress, are clearly analyzing competition and impacts on innovation based on mergers of equals and not based on the mergers and acquisitions that drive the current robust

⁶ <https://hbr.org/2016/08/research-innovation-suffers-when-drug-companies-merge>

⁷ <https://ideas.repec.org/p/zbw/dicedp/218.html>

ecosystem, which are acquisitions of small companies by large pharmaceutical entities.

2. Haucap et al **specifically excludes the U.S. biopharmaceutical market** in their analysis and only focus on that of the European Union.

“We therefore exclude most innovation activity that is unrelated to the geographical and product markets that have raised anti-competitive concerns.”

These are two very different markets with very different innovation landscapes and very different incentive mechanisms bolstering their ecosystems.

More than 75% of acquired therapeutic companies are based in the U.S. This has much to do with the superior drug candidates created from the winning innovation ecosystem described above.

Going back to the first critical pillar of that ecosystem, venture capital, the U.S companies receive \$17.9 billion in 2020 versus China with \$6.5 billion. This large sum in the U.S. is the originating driver of our diverse success. However, it should be noted that just 10 years ago China was at \$0.1 billion and is increasing its investment to build a similar ecosystem.

3. Haucap et al **incorrectly use granted patents as measures of innovation**. Not all science is patentable as most translational science fails under the weight of all that is unknown about the nature of disease and the physiological universe of the human body.

Nonetheless, despite the millions spent, we can still gain valuable information that incrementally advances the scientific body of knowledge that will allow for future discoveries by subsequent generations of scientists.

For example, chimeric antigen receptor t-cells (CAR-Ts) are currently the latest generational leap in medical oncology that is treating a myriad of permutations of cancers and saving and improving hundreds of lives. Yet this technology once was hypothesized in the treatment of HIV and was shelved until scientists were able to adapt the technology in the treatment of cancers.

Millions of dollars were spent on the research and acquisitions of technologies in the space until the technology was ready for patients.

The resilience of our ecosystem is dependent on these mergers and acquisitions occurring to advance science. Introducing barriers for the acquisition of small companies will erode the delicate balance that currently defines this great system of ours.

Range of Pharmaceutical Merger's Effects on Innovation

The acquisition by large pharmaceutical players of small innovators is the life blood of the life sciences ecosystem.

Claims by Congress and other that biopharmaceutical innovation has collapsed over the last decade is patently false and using such claims to validate arguments to disrupt the current ecosystem is dangerous.

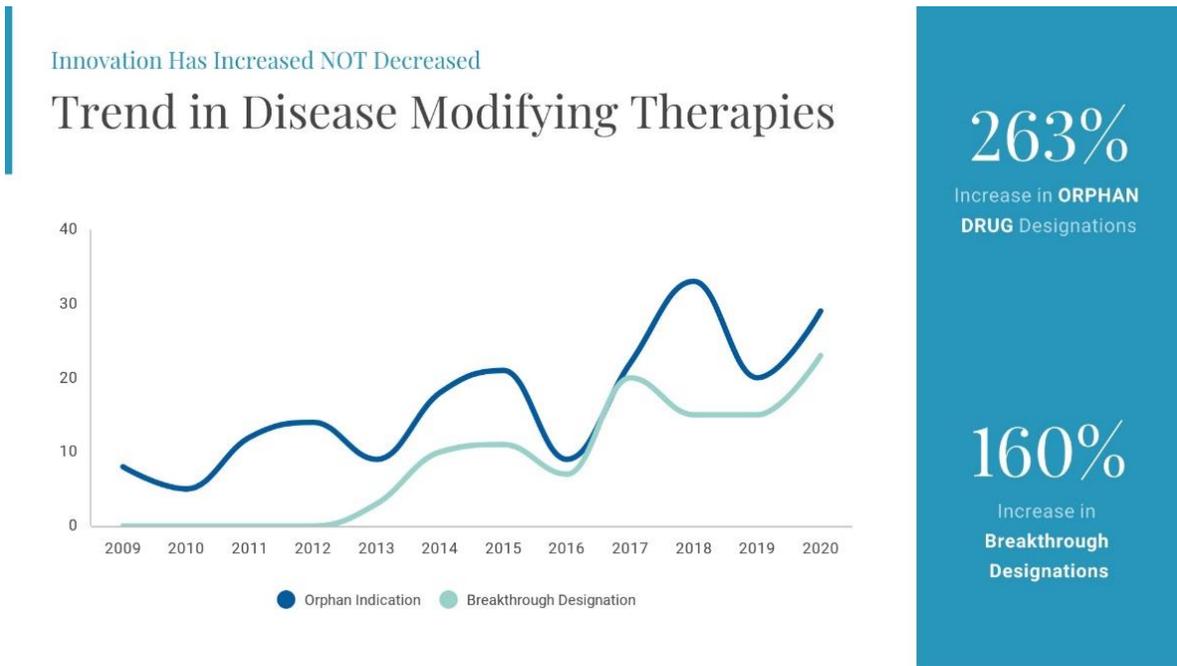
Below is a quote that succinctly describes the ecosystem using an article cited in reports generated by Congress

“The short story is that **small pharma brings nimbleness and a focused-approach to science** that is uninhibited by the bureaucracy of large pharma, and **large pharma provides the funding** and the sales and marketing muscle to bring these innovative drugs to patients. This symbiotic relationship has proven to be a win-win.

There will still be challenges that will require scale to be overcome. **Small entrepreneurial companies can do quite a lot, but they won’t be able to completely replace the capabilities of their big pharma counterparts.**”⁸

The following data taken from the FDA’s databases and FactSet illustrate our point that the current ecosystem is a symbiotic relationship between small life sciences entrepreneurs and large pharmaceutical companies with mergers and acquisitions playing a central role in this dynamic.

The number of new, disease modifying drugs that have earned FDA’s designations given for such therapies has increased, not decreased, over the last decade. New orphan drug designations, which are granted to treat ultra-rare diseases, increased 263% since 2009, while breakthrough designations, which are granted for truly groundbreaking drugs across a variety of ailments, has increased 160%.



⁸ <https://www.pharmavoice.com/article/2020-01-pharma-innovation>

Below, more fully detail, the various designations that the FDA provides for various levels of new and important drugs, which as you Commission can see, has grown substantially over the last decade.

Innovation is thriving in the current model.

Trends in FDA's Designation

The below are the various ways the FDA designates treatments for rare, neglected, and paradigm changing treatments



Mergers and acquisitions of small biotechnology companies by large pharmaceutical companies has been a critical driven underlying the financing of such a robust and flourishing innovation ecosystem.

“The locus of innovation is shifting from inside large firms to smaller start-ups and to firms operating in nontraditional geographic markets and complementary product markets. As a result, the pharmaceutical industry appears to be in significant structural transition, and the surge of acquisitions reflects that transition.⁹”

CAR-T, mRNA, immunotherapies, cell therapies, gene therapies, CRISPR-derived therapies and diagnostics, radioligand therapies, microbiome therapies, fertility drugs and procedures, and many more technologies have proliferated and been brought to market over the last decade.

Treatments for multiple sclerosis, autoimmune diseases, lung cancer, pancreatic cancer, blood cancers, and sickle cell anemia have all come to market, improved life expectancy, and saved lives over the last ten years.

⁹https://www.researchgate.net/publication/317398212_Pharmaceutical_MA_Activity_Effects_on_Prices_Innovation_and_Competition

To say that biomedical innovation has collapsed over the last decade is misguided and patently false.

What challenges arise when mergers involve proprietary drug discovery and manufacturing platforms?

The nature of markets is to finance business models and let consumer markets decide the winner. Proprietary drug discovery platforms are evolving and what worked in the 1990s was replaced in 2010s and will once again be replaced in the 2020s as artificial intelligence-assisted and synthetic biology-mediated platforms emerge.

The market will ultimately decide which platform will become the standard bearer of quality and cost efficiency in the next decade. To interfere with these forces would be to interfere the most efficient mechanism for capital formation on the planet.

A platform or process that becomes a standard will be adopted, with idiosyncratic differences, by all players. It will be developed by a small biotechnology company and integrated into a large pharmaceutical player.

BIO's hope is that whatever the result, the technology is based in the United States, supporting the domestic economy.

In pharmaceutical merger review, how should we consider the risks or effects of conduct such as price setting practices, reverse payments, and other ways in which pharmaceutical companies respond to or rely on regulatory processes?

While the biopharmaceutical industry must rely on some regulatory processes as part of its core business model, the industry is also subservient to other elements.

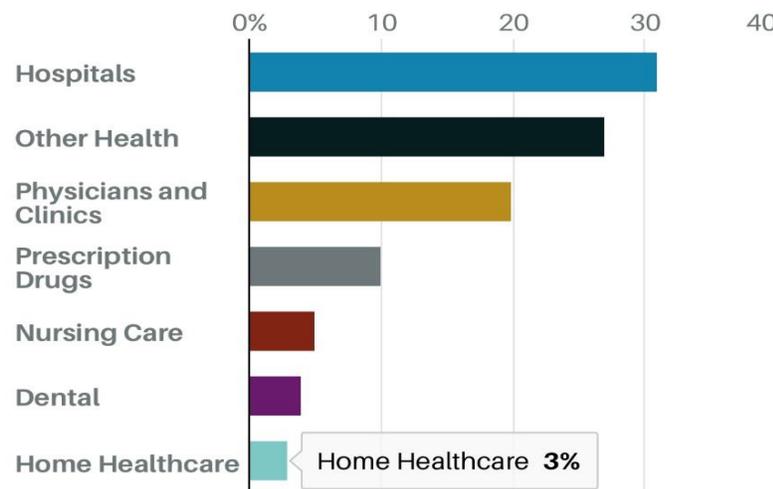
"...increases in list prices for drugs can be somewhat misleading because they represent actual market prices. Insurance companies, hospital systems, pharmaceutical benefit managers ("PBMs"), and other payors with market power commonly negotiate deep discounts from list prices through a system of rebates and chargebacks. **The health care industry has seen high levels of provider and payor consolidation in the last two decades due to inadequate antitrust enforcement. This consolidation raised health care prices for consumers** while simultaneously enhancing market power of providers and payors when demanding discounts from pharmaceutical manufacturers.⁷"

The conduct of pricing on other such processes should be considered for the entire healthcare industry and not just the biopharmaceutical industry in isolation as this does not focus on the main cost drivers in the healthcare industry and a central determinant in biopharmaceutical pricing.

The below chart, taken from Barron's, illustrates the cost drivers of the Nation's healthcare system. As hospitals and provider groups, as noted in the academic literature cited above, have consolidated, biopharmaceutical price setting tactics have had to adapt.

Drug costs is not the largest contributor to healthcare costs, but are one of the fastest growing.

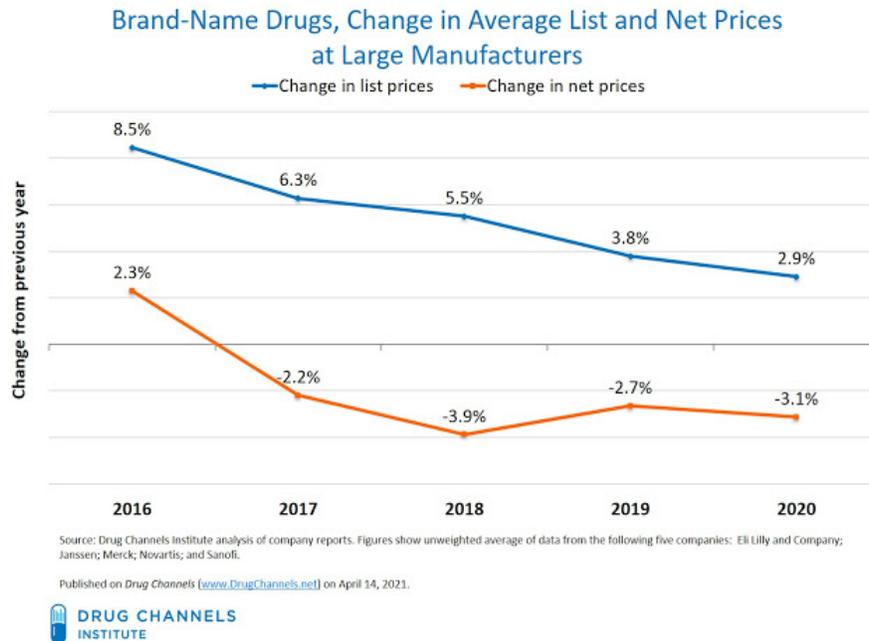
Relative Contributions to National Health Services, 2019



Source: Health System Tracker

Finally, the link between biopharmaceutical mergers and pricing is contested by data. There have been 22 acquisitions with values greater than \$5 billion since January 2016. The majority are for on-patent innovative biopharmaceuticals. As shown in the chart below¹⁰, the industry has not seen drug price increases, but a decline in average list and net prices.

¹⁰ <https://www.drugchannels.net/2021/04/gross-to-net-bubble-update-net-prices.html>



How should we approach market definition in pharmaceutical mergers, and how is that implicated by new or evolving theories of harm?

Current theories of harm as they relate to the merger or acquisition of small and emerging biotechnology companies by large pharmaceutical partners do not merit change. BIO contends that the current ecosystem and symbiotic relationship between these two players is crucial to foster biomedical innovation that benefits patients.

Most academicians and legal scholars acknowledge that this aspect of the market is necessary for biomedical innovation that leads to the dramatic increase in novel drugs that treat previously unaddressed diseases and target previously undruggable targets.

Evolving theories of harm should consider all work in the field, including those legal studies that consider the current structure and function of biopharmaceutical markets and innovation financing.

“Concerns about harm to innovation could be relevant in specific mergers or acquisitions if the consolidating firms are the primary innovators in the area, the firms innovate internally, and there are essentially no sources of external innovation. **However, such scenarios are increasingly rare in the current ecosystem.**¹¹”

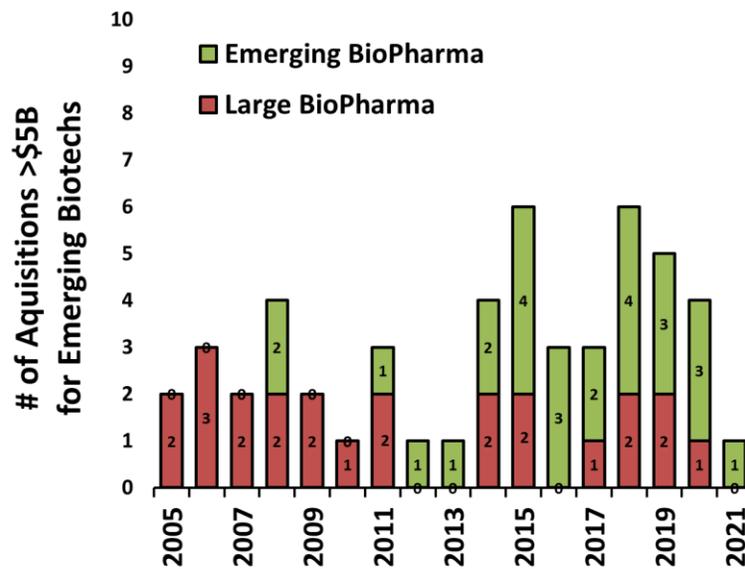
There is little desire by industry and patients to revert back to the world order that many in Washington wish to see. It is financial impossible for one company to be responsible for the

¹¹ <https://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=1356&context=jhclp>

entire body of work, 10-15 years of time, and “estimated \$1.04 billion to \$2.6 billion to develop and bring each new drug to market.¹²”

The fragmentation of the industry, both in term of division of labor and financing, has occurred for a variety of reasons. Venture capital and pharmaceutical partnerships have become the foundation upon which biomedical innovation is advanced into clinical trials. Increased FDA requirements and lower approval rates mean significant costs to entrepreneurs and, as such, are costs and processes that are most readily handled by the experienced hands of the large pharmaceutical industry.

It should also be noted that biotechnology companies listed on exchanges have also become acquisitive in recent years and have in fact come to dominate acquisitions for biotechnology companies with market capitalization greater than \$5 billion.



It is not always the case that these acquirers are significantly larger, by market size or by revenues. Rather they are seeking missing components to their R&D pipelines, add-on discoveries, or such value-enhancing strategies that were typically associated with acquisitions made by large pharmaceutical companies.

The availability of capital in public markets has allowed smaller and med-sized players to use strategies that were once only allowed to be leveraged by larger partners. Boards and substantial stakeholders, many of which are biotechnology-specific investors, have approved of these mergers and the synergies enhance the probability of bringing a drug to market.

Further, the large company part of the biopharmaceutical industry is also no longer dominant player in product markets.

“Since the 1980s, the biotech industry has evolved to play a critical role in the pharmaceutical industry. [The worldwide](#)

¹² ibid



sales of biotech drugs have reached nearly \$300 billion, accounting for over 20 percent of worldwide drug sales. Venture capital investment has risen correspondingly to fund the biotech industry. **Whereas annual VC funding in the biotech sector rarely exceeded \$1 billion in the 1980s and early 1990s, VC funding hit an all-time high in 2015, with over \$7.5 billion raised** for biotech companies in the pharmaceutical industry.⁸

New theories of harm should be predicated upon the market as it is and how it is used in generating the volume of innovation that has enabled the United States to continue to lead the world in biomedical innovation. The biopharmaceutical ecosystem is no longer what it once was, and it is not going back. Theories of harm should take this into account and seek to protect U.S. industrial advantages.

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