Biotechnology Innovation Organization

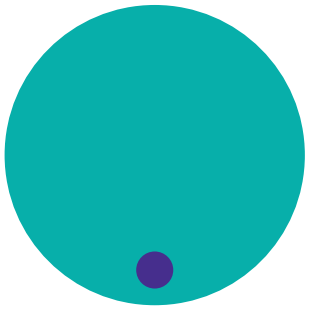
PRIVATE SECTOR'S CRITICAL ROLE IN BIOMEDICAL INNOVATION

There is a misguided perception that NIH funding, not private market investment, is largely responsible for the creation and approval of new therapies. A new study by Vital Transformation[1] tests that hypothesis by tracking more than 20,000 patents linked to NIH grant over a 20 year period, identifying those associated with clinical trials and approved medicines, and quantifying the public and private investments made for those investigational and approved medicines.

Key findings include:
23,230 NIH Grants in the year 2000 were linked by **NIH supported patents to 41 investigational drugs**, only **18** of which gained FDA approval by 2020.

None of these medicines reached approval without significant private investment

In fact, total private investment for the 18 approved medicines exceeded NIH funding by orders of magnitude: **$44.2 billion in private investment** compared to **$670 million in NIH.** As industry's share of total investment increased, so did the likelihood of approval.



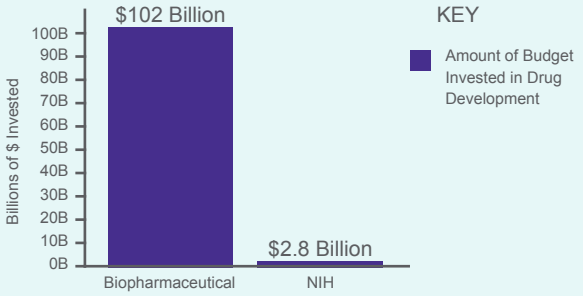
98.5%
Private Investment

1.5%
NIH Investment

These findings are consistent with scholarship describing the complementary roles of public and private R&D funding, and the significant **long-term investments** shouldered by industry with **no guarantee of approval.** In fact, just **7.9% of medicines** in clinical development are ultimately **approved by the FDA.**[2]

The biopharmaceutical industry's role in the U.S. research ecosystem is to undertake the clinical research required to advance basic science research into safe and effective treatments available to patients. In 2018, the **biopharmaceutical industry invested $102 billion** in R&D, most of which was **focused on clinical research.**[2] Meanwhile, the entire NIH budget in 2018 was **$35.4 billion**, only 8% of which was focused directly on **clinical research.**[3]

$ Invested in R&D in 2018



References

[1] Vital Transformation, Who Developments Medicines?" An Analysis of NIH Grants. May 10, 2021

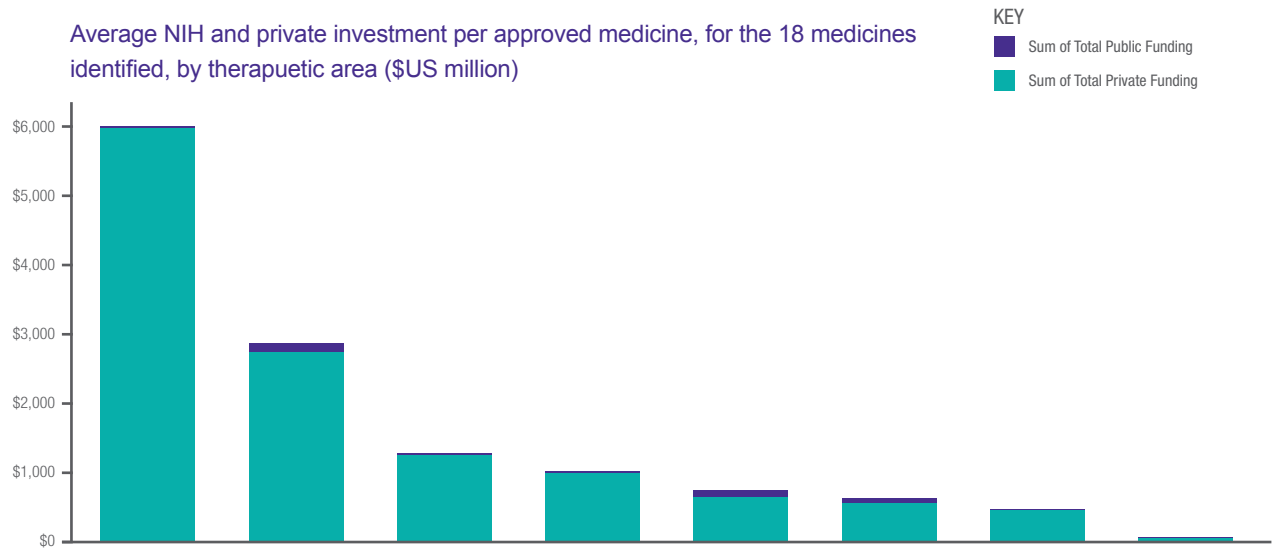
[2] https://go.bio.org/rs/490-EHZ-999/images/ClinicalDevelopmentSuccessRates2011_2020.pdf?_ga=2.80417235.59157246.1638461634-2072271191.1627337625

[3] Research!America, U.S. Investments in Medical and Health Research and Development 2013 2018, Fall 2019

[4] PhRMA, ChartPack: Biopharmaceuticals in Perspective, Fall 2020

Private investment far exceeded NIH funding regardless of clinical area

Average NIH and private investment per approved medicine, for the 18 medicines identified, by therapeutic area ($US million)



	Oncology	Neurology	Endocrinology	Immunology	Cardiology	Neonatology	Hematology	Dermatology
Average of Total Public Funding	$5	$5	$5	$5	$5	$5	$5	$5
Average of Total Private Funding to Approval	$5,486	$2,536	$1,190	$951	$625	$558	$454	$97
Number of Products	5	4	3	1	1	1	2	1

Even for therapies not resulting in an FDA-approved medicine, private investment was much larger than NIH funding, regardless of when projects were terminated

Total aggregate project funding by highest phase of development reached, for projects not resulting in an FDA-approved medicine ($US million)