Potential Impact of Recent Federal Actions on Massachusetts Biopharma

May 1, 2025

MASSBIO

Executive summary

AS OF APRIL 22, 2025

Biopharma and NIH impact on patient lives

- **Pharmaceutical innovation has increased US life expectancy by 1.2 years** from 1990 – 2015
- **Over 20 million patients are treated annually** with prescription medicines developed using NIH funding
- **99% of FDA drugs approved from 2010 – 2019 relied on NIH funding**, with an average of ~$600M NIH funds spent per approval

Potential impact of federal actions on biopharma innovation

NIH funding cuts

- **In MA, $0.68B of funding for biomedical research is at-risk**, with an additional $2.26B frozen at Harvard
- **Every $1M of federal funding contributes to $2.56M of economic activity** and creates 8.2 jobs in MA
- **Over 90% of this funding goes to hospitals and academic institutes**, supporting ~6% of OpEx at Academic Medical Centers

FDA reduction in force

- **3,500 FDA job cuts announced on Apr 1**, with >50% of senior leadership departing in the past 6 months
- **50% of MassBio survey respondents report being negatively impacted by FDA RIFs**, with 67% highly concerned about future drug approval delays

Pharma tariffs

- **Pharmaceutical tariffs, which observers say could be implemented within the next 2 months,** could disrupt supply chains, with 70% of APIs used in the US currently imported and ~$178B of pharma products imported in 2023
- **Tariffs could increase health system costs by 15%** and potentially exacerbate existing shortages of generics

Outlook of biopharma ecosystem

- **Biopharma may choose to reduce focus on early-stage research** in current uncertain environment, with early signs that 2025 pharma deal value is skewing towards de-risked, late-stage assets
- **Hospitals may have reduced capacity for clinical trials**, based on reductions in funding and higher material costs
- **Re-investment in US R&D capabilities remain critical to its global leadership in biopharma** given the increasing rise of biopharma in Asia and China, with China contributing 1/3rd of the pipeline of innovative assets in 2025

US life expectancy has increased by 1.2 years due to pharmaceutical innovation, supported by NIH funding

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Pharmaceutical impact on patient lives

1.2 years

Increased US life expectancy attributed to pharmaceutical innovation from 1990 to 2015[1]

>20M

Annual patients treated with prescription medicines developed using NIH funding[2]

NIH funding in drug development

99%

of FDA drugs approved from 2010 to 2019 relied on NIH funding[3]

~$600M

Average NIH funding spent on each drug approval[4]

Majority of NIH funding supports pre-clinical basic research in drug development[5]

Robust pipeline of pre-clinical research is necessary for development of new medicines since **90% of drugs fail in clinical development**[6]

1. PMID: 32897792 | 2. IQVIA Institute for Human Data Science "The Use of Medicines in the U.S. 2024" (last accessed April 9, 2025), 240M patients purchased prescription drugs in 2023 (IQVIA LAAD Sample Claims Data, Dec 2023), of which 8.5% were branded non-generic drugs in 2023 (IQVIA National Prescription Audit, Dec 2023); and ~100% were developed using NIH funding (PMID: 29440428, 37115539) | 3. PMID: 37115539 | 4. PMID: 37115539 | 5. PMID: 37450296 | 6. PMID: 35865092

Massachusetts (MA)

2 case studies lives impacted from 2020-2024 by therapeutics developed using NIH funding in MA

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Case	Description	MA players	Estimated number of patients impacted
1 **Immune checkpoint inhibitors for cancer**	• **Ground-breaking research on CTLA-4 and PD-1 immune checkpoint inhibition** was carried out in MA[1,2] • **Led to multiple successful cancer therapeutics**	**Harvard Medical School** (Researchers: Arlene Sharpe, Glenn Dranoff)	>1M over 5 years[3]
2 **GLP-1 based drugs for diabetes & weight loss**	• **Break-through, widely successful treatment for diabetes, obesity, and medical complications of obesity** • **GLP-1 was co-discovered by a professor in MA,** who won the Lasker award and Breakthrough prize[4] • **Research led to GLP-1 based drugs**	**Massachusetts General Hospital** (Researcher: Joel Habener)	~15M over 5 years[3]

1.Harvard Medical School "Timeline of Discovery" (last accessed April 9, 2025) | 2. Harvard Medical School news article "Cancer Immunotherapy on the Cusp" (last accessed April 9, 2025) | 3. Komodo US claims data, total 5-year patients from 2020-2024 numbers scaled by estimating that only 40% of Medical benefit claims and only 70% of Pharmacy benefits claims are captured in claims data (last accessed April 2025) | 4. Harvard Medical School news article (last accessed April 14, 2025)

Current estimated exposure of up to ~$2.92B in federal funding for MA biomedical research

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Agency	Key potential reductions	Date materialized	Estimated exposure
NIH	• **15% cap on F&A** (indirect costs)[1]	Feb 2025	$0.62 B
	• **Termination of active research grants** not aligned with agency priorities (e.g., DEI, gender ideology, COVID-19, foreign agencies)[2,3]	Mar 2025	⊕ $0.04 B
	• **Cancellation of active grants** (e.g., Columbia University, University of Pennsylvania) – $2.26 B frozen at Harvard University[4,5]	Apr 2025	⊕ Up to $2.26 B* *Unspecified portion of frozen funding supports biomedical research
			~$0.66 to 2.92 B
NSF	Proposed ~60% reduction in NSF funding[6]	TBD	TBD
DOD	~60% reduction in CDRMP funding[7,8]	Mar 2025	$0.02 B
Other	Loss of revenue due to proposed loss of tax-exempt bonds for universities[9]	TBD	TBD
		Total:	**~$0.68 to 2.92 B**

2.56

GDP multiplier[10]

Ratio of $1 in NIH funding to economic activity, $

8.2

Jobs multiplier (MA)[10]

Jobs created per $1M in NIH funding

1. NIH Report – all NIH awards for MA in 2023 – estimated funding lost from capping indirect costs of annual NIH funding at 15% (last accessed April 9, 2025) | 2. HHS.gov - analysis of HHS terminated grants (last accessed April 9, 2025) | 3. Airtable - NIH Grant Terminations in 2025 - additional crowd sourced list of terminated grants, analyzed for organizations in MA (last accessed April 9, 2025) | 4. Department of Education (last accessed April 9, 2025) | 5. HHS Press Release (last accessed April 9, 2025) | 6. Ars Technica (last accessed April 9, 2025), estimated percentage reduction in NSF funding applied to NSF funding per state from NSF.gov (last accessed April 9, 2025) | 7. Health.mil (Congressionally Directed Medical Research Programs budget) (last accessed April 9, 2025), national funding loss scaled to state level using percentage of defense spend by state, oldcc.gov (last accessed April 9, 2025) | 8. Science (last accessed April 14, 2025) | 9. American Council on Education "Tax Reform and Higher Education in 2025" (last accessed April 9, 2025) | 10. United for Medical Research (UMR) "NIH'S ROLE IN SUSTAINING THE U.S. ECONOMY: 2025 Update" (last accessed April 9, 2025)

13 hospitals/Academic Medical Centers account for 51% of 2023 NIH funding received in Massachusetts

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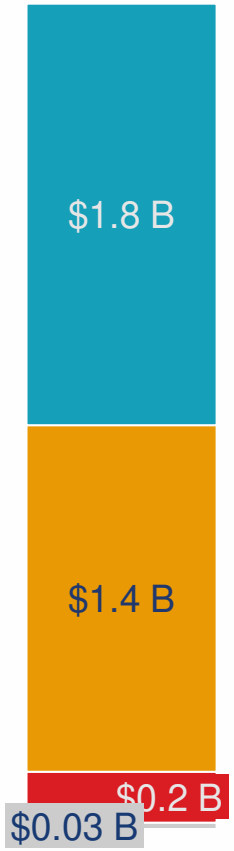
Deep dive follows



Institution type[1]	% of total funding	Count	Example institutions
Hospital/ Academic medical center	51%	13	• Mass General Hospital • Brigham and Women's Hospital • Dana Farber Cancer Institute
Academic	42%	34[2]	• Harvard University • Tufts University • Broad Institute • U Mass Medical School
Business	6%	154	Biotechs (e.g., Accurius Therapeutics, Oasis Pharmaceuticals, Spero Therapeutics)
Non-profit	1%	16	• American Physicians Scientists Association • International Society Of Vaccines • Silent Spring Institute

Key takeaways

- >90% of NIH funding in MA is awarded to hospitals or academic institutes, totaling ~$3.2B in 47 institutions[1]
- Average funding varies by institution type[1]
  - ~$130 M per hospital
  - ~$42 M per academic institution
  - ~$1.4 M per business

1. NIH Report – all NIH awards for MA in 2023 (last accessed April 9, 2025) | 2. Institutes and schools of medicine affiliated with universities counted separately from main universities

Across these 13 Academic Medical Centers, NIH funding supports up to 13% of current Operating Expenses

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>=5% NIH funding

Hospital	2023 NIH funding (USD)[1]	NIH funding as % of total operating expenses[2]	Active clinical trials	
			Non-Industry[3]	Industry[3]
Massachusetts General Hospital	675 M	12%	801	10
Brigham and Women's Hospital	403 M	10%	430	3
Boston Children's Hospital	239 M	10%	268	3
Dana-Farber Cancer Institute	163 M	5%	416	8
Beth Israel Deaconess Med Center	126 M	5%	187	4
McLean Hospital	45 M	13%	58	1
Massachusetts Eye and Ear	33 M	8%	36	0
Tufts Medical Center	28 M	2%	57	1
Boston Medical Center	25 M	1%	77	1
Spaulding Rehabilitation Hospital	7 M	3%	38	0
Baystate Medical Center	6 M	0%	12	0
	1,796 M	**6%**	**2,380**	**31**

Key takeaways

- NIH funding supports ~6% of annual operating expenses at Academic Medical Centers[2]
- Proposed federal cuts could reduce MA NIH funding by ~$0.7B, or 20% of total[1]
- This corresponds to a ~1% absolute reduction in operating margin vs. median operating margin for MA hospitals at ~1.0%[4]
- NIH funding cuts could dramatically reduce clinical trial activity

1. NIH Report – all NIH awards for MA in 2023 (last accessed April 2025) | 2. Definitive Healthcare, financial data on hospitals including total operating expenses (last accessed April 4, 2025) | 3. Clinicaltrials.gov, to identify active clinical trials at each hospital, we searched Clinicaltrials.gov for interventional and observational trials with one of the following statuses (Not yet recruiting, Recruiting, Active, not recruiting, Enrolling by invitation) where the sponsor and/or collaborator was the indicated hospital, and the number of search results was taken as the number of active clinical trials, which were subdivided by funder type into Industry and all others (non-Industry) (last accessed April 14, 2025) | 4. Center for Health Information and Analytics (last accessed April 4, 2025)

HHS announced ~3,500 FDA job cuts on March 27, 2025, with additional voluntary departures reported

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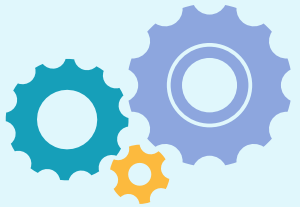
~3,500 job cuts for FDA[1]

- **Dismissal of "all staff responsible for managing records** such as new product applications"[2]
- **Elimination of library personnel** (responsible for supporting reviewers and investigators with research)[3]
- **Deep reduction in ORP lawyers** responsible for draft guidances[4]
- **Force reduction in user fee programs** and teams specifically[5]

Additional voluntary departures

- **Departure of 50%+ senior leadership in past 6 months,** incl. high-profile leaders (e.g., Peter Marks)[3]
- **Additional employee buyouts** from January – February 2025[3]
- **Resignations from return-to-office policy** for jobs that were previously fully remote[6]



1. HHS press release: HHS Announces Transformation to Make America Healthy Again, March 27, 2025 (last accessed: April 7, 2025) | 2. NPR: The FDA will lose 3500 jobs as part of the HHS cuts, March 30, 2025 (last accessed: April 7, 2025) | 3. STAT News: A running list of senior FDA officials who have left the agency, April 3, 2025 (last accessed April 9, 2025) | 4. Bloomberg: HHS lays off lawyers who were defending Medicare drug price cuts, February 27, 2025 (last accessed April 9, 2025) | 5. AgencyIQ: Following layoffs, the future of FDA's user fee programs is in extreme jeopardy, April 3, 2025 (last accessed April 9, 2025) | 6. Regulatory Focus: Some FDA staff considering quitting due to Trump's RTO policy, March 19, 2025 (last accessed April 14, 2025)

Disruptions to FDA review pipeline have been reported, with experts believing additional changes may occur

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Existing disruptions to review pipeline reported

Lengthening product review timelines, e.g.,:

- **Alleged missed deadline** for Novovax COVID-19 vaccine as of April 2, 2025[1]
- **~2x increase in # of assigned applications** for some remaining FDA reviewers[2]

> "We have 180 days to complete those (existing) reviews, and we're not going to come anywhere close to that." Current FDA reviewer[2]

Experts believe additional changes may occur

> "The FDA had canceled some meetings with companies or reverted to providing written responses only" Eva Temkin, Arnold & Porter lawyer[2]

> "[The cuts] disproportionately affect cutting-edge technologies…like AI and nutrition, in which FDA has been working to increase capacity" Patti Zettler, former deputy general counsel at HHS[3]

1. FIERCE Pharma (last accessed April 9, 2025) | 2. Reuters (last accessed April 9, 2025) | 3. MedTechDive (last accessed April 9, 2025)

High degree of uncertainty over drug development timelines among biotechs surveyed by MassBio and Biocom California

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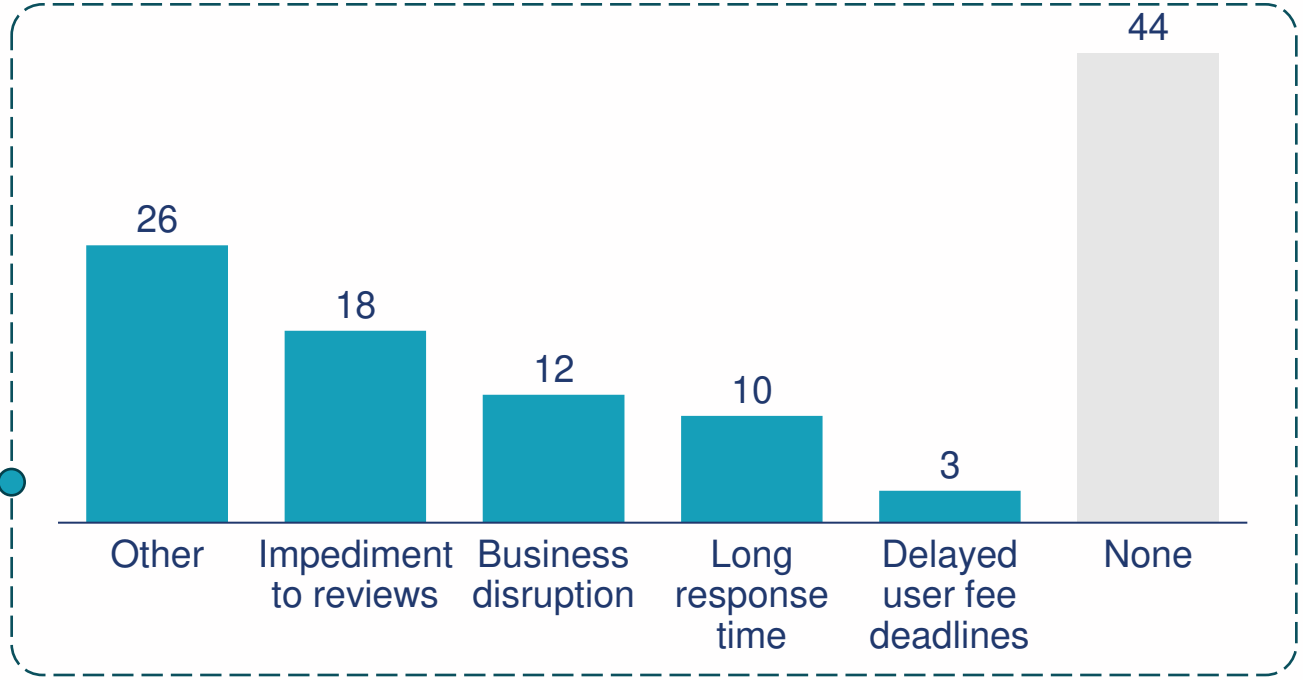
Among 88 biopharma firms...

67% **Respondents are "highly concerned"** FDA's Mar. 31 RIF will result in drug approval delays

50% **Respondents reported at least one impact felt** from FDA RIFs

Reported impacts from FDA March 31st RIF fall into 5 categories, count (multiple choices could be selected)



Uncertainty is the bane of investors. While we have not seen direct impact yet on our portfolio companies from the changes over the last few weeks, **if the entropy at the FDA persists, there will be delay**

Bruce Booth, Partner at Atlas Ventures

Source: MassBio/ Biocom California Impact of FDA Changes on Innovation survey completed between April 16-22, 2025 (n = 88)

73% of surveyed biotech report expected impact on their corporate strategy, including a reduced ability to raise capital

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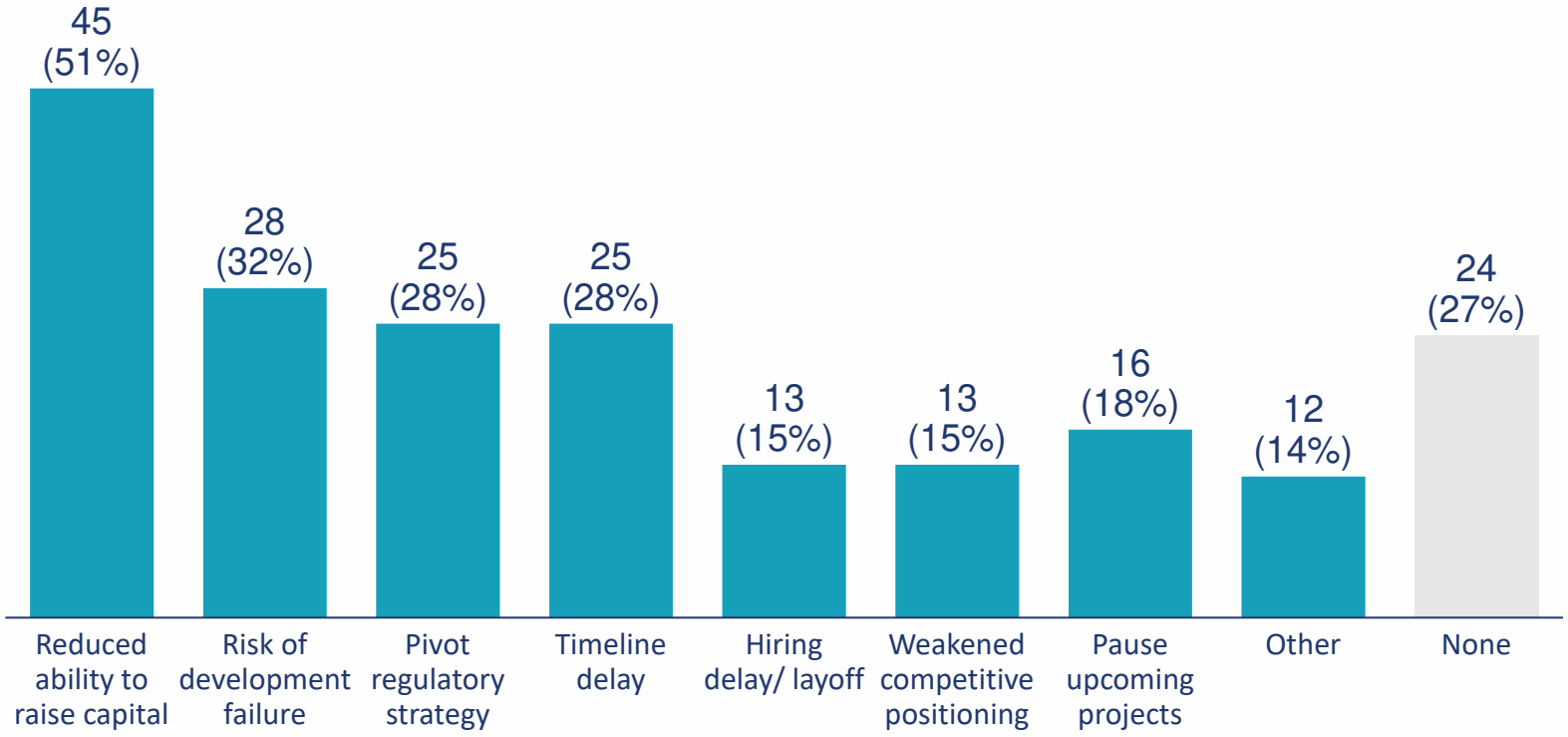
Potential strategic impact on biotechs[1], count (% of all firms; multiple choices could be selected)



> Access to capital is definitely drying up for earlier-stage companies. Most funds are shifting to near-clinic or in-clinic assets…We may see a focus again on smaller teams… operating virtually with a lean core management team and CROs
>
> *Christine Brennan, Managing Director of Vertex Ventures Healthcare*

> **Biotech is a high-risk, long cycle industry…VC funding is the first to go in times of instability**… companies will cut early-stage research when squeezed so the visibility will be delayed, but the pipeline cannot be replenished.
>
> *David Meeker, President & CEO of Rhythm*

Most impacted phase of development was **pre-investigational new drugs, at 38 of 88 responses (43%)**

1. 64% of survey respondents were earlier-stage biotech (≤ 20 employees)
Source: MassBio/ Biocom California Impact of FDA Changes on Innovation survey completed between April 16-22, 2025 (n = 88)

Prior to recent federal changes, biotechs already faced challenges raising capital, as deals shifted towards de-risked, late-stage assets (Ph3/Commercial)

Locust Walk 2025 Q1 report, global trends in biopharma transactions[1]

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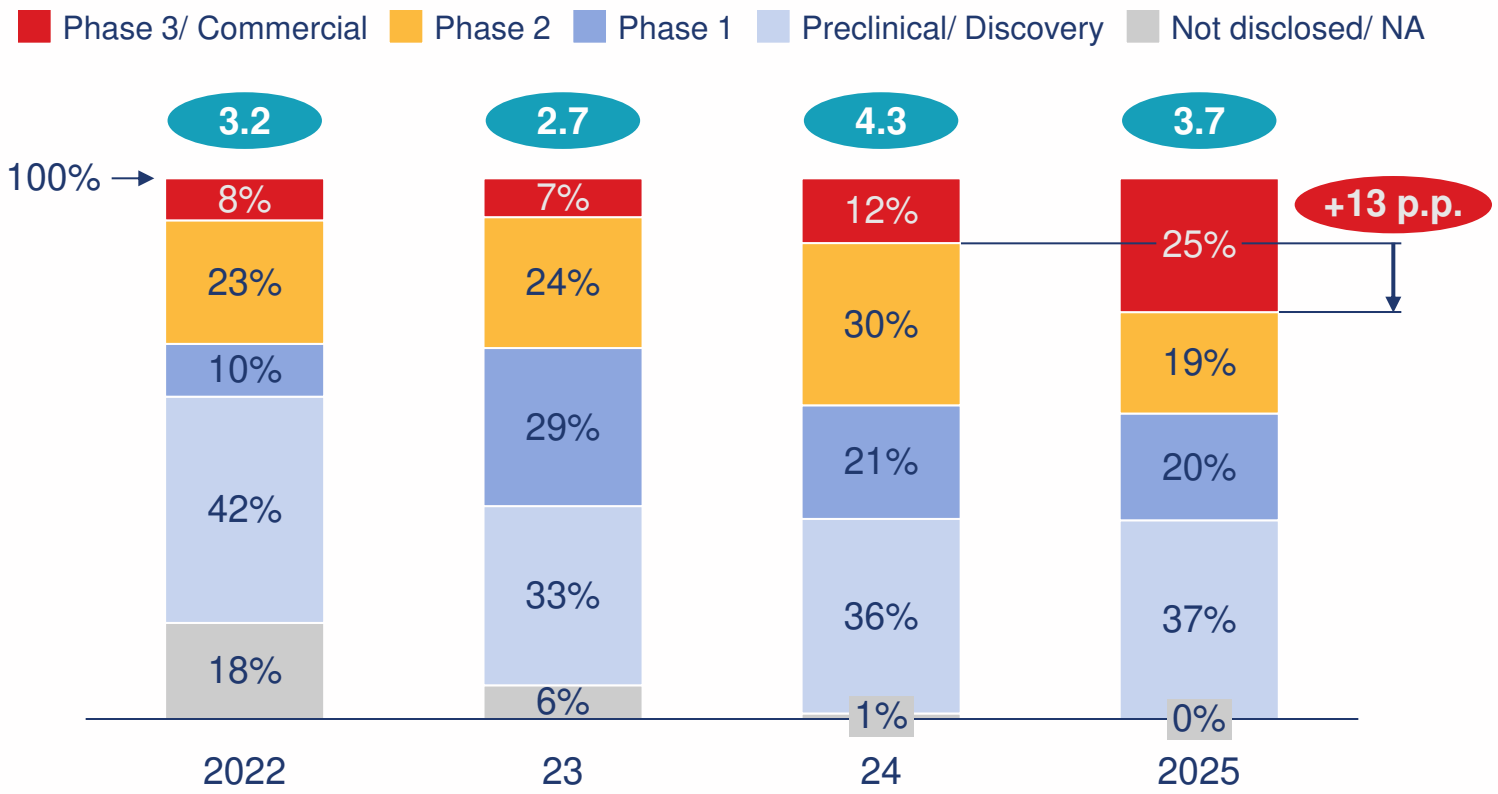

- **Late-stage (Phase 3/ commercial) assets reached 25% of total deal value** (previous 3-year peak of 12%)
- **Total biopharma quarterly deal value decreased by 14%** from 2024 to 2025
- **Total biopharma VC deal volume dropped 5%** last quarter
- **Series C and later financing accounted for >1/3 of total deal value** for the first time in 4 years

Before the recent changes, it was **already getting difficult for venture funds to raise capital.** While we do not know what will happen, we may even see smaller venture funds closing if this much uncertainty continues.

Christine Brennan, Managing Director of Vertex Ventures Healthcare

1. Locust Walk Q1 Report

Administration has indicated that pharmaceutical tariffs to be expected "within the next month or two"[1] could "disrupt complex supply chains"[7]

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Current U.S. pharma import dependency

~70%

Active pharmaceutical ingredients (APIs) used in U.S. are imported[4]

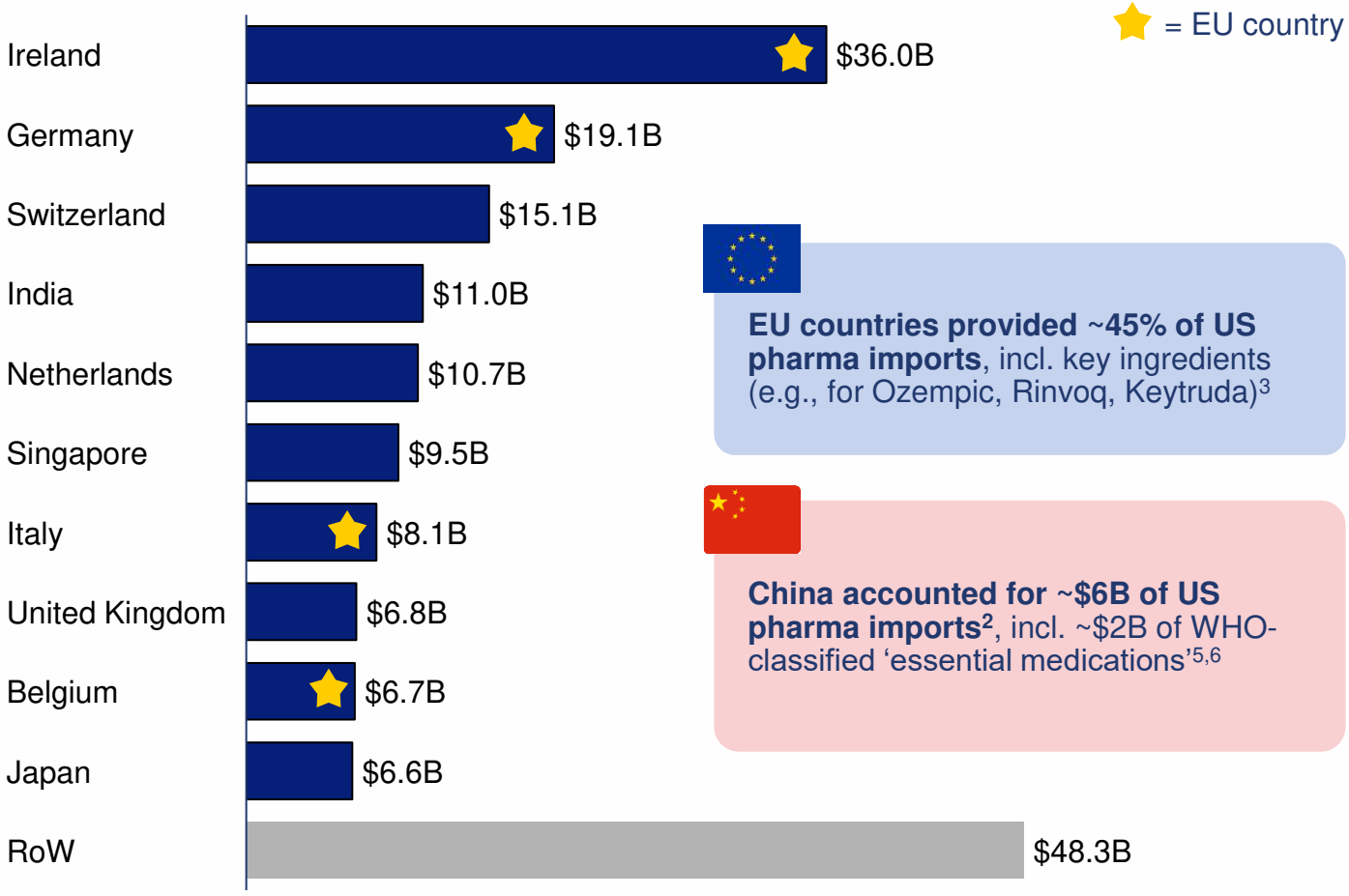
90%+

Of top prescribed antibiotics & anti-viral agents have no U.S. manufacturer[5]

~83

Of top 100 prescribed generics are import-dependent (e.g., for APIs)[5]

~$178B of pharma products imported into U.S. in 2023 (HS code 30)



EU countries provided ~45% of US pharma imports, incl. key ingredients (e.g., for Ozempic, Rinvoq, Keytruda)[3]

China accounted for ~$6B of US pharma imports[2], incl. ~$2B of WHO-classified 'essential medications'[5,6]

1. Fierce Pharma & ABC News; 2. Reuters; 3. Reuters; 4. FDA Fiscal Year 2023 Report; 5. Active Pharmaceutical Ingredient Innovation Center report; 6. Peterson Institute for International Economics; 7. CNBC

Wide range of potential impacts across stakeholders for proposed pharmaceutical tariffs of 25% or higher[1]

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Large pharma

Cuts to R&D

"We have to eat the cost of tariffs and make trade-offs... I predict R&D will come first."

David Ricks, Eli Lilly CEO[2]

Biotechs

Reduced capital flow

~90% — **U.S. biotechs rely on imports** for 50%+ of their FDA-approved products[3]

~50% — **Would need to find new partners** & delay regulatory filings due to EU tariffs[3]

Medical centers

Broad cost increases

~15% — **Increase in hospital and health system costs** in next 6 mo. due to tariff costs[4]

94% — **Healthcare administrators anticipate delays** in equip. upgrades to offset costs[5]

Patients

Price increases & shortages

17.5% — **Increase in price of generics** from levying a 25% tariff predicted by researchers[6]

"Generic mfrs. dropping out exacerbate[s] existing shortages."

Tom Kraus, ASHP VP

1. Fierce Pharma; 2. BBC & Bloomberg; 3. BIO (Biotechnology Innovation Organization (BIO) Survey results; 4. Black Book Market Research Report; 5. Healthcare Finance; 6. USA Today & ING Research;

Industry experts and medical staff express concern over factors they say may decrease hospital capacity for clinical trials

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Factor	Potential impacts from expert reports
Reduced research funding	• **Reduce staff capacity** (e.g., through hiring freezes or layoffs affecting study staff)[1] • **Limit infrastructure maintenance** (e.g., cap on overhead costs limiting lab capacity/ upgrades)[2]
Tariff-related costs	• **Limit access to generics used as comparators in key clinical trials** for smaller biotechs[3] • **Increase trial supply cost and decrease availability** (e.g., medical devices imports from Mexico, higher glove and IV prices)[3]

1. Pharmaceutical & Healthcare Industry expert insights; 2. Black book market research; 3. Clinical Trials Arena;

> **"Increased tariffs will raise hospital spending on essential research tools.** These disruptions could hinder the efficient conduct of trials."
>
> *Manufacturing solutions firm President*[3]

> **"Some hospitals are requesting 2-3x more in investigator grants** from pharma sponsors."
>
> *Pharmaceutical industry expert*

> While industry-sponsored research continues to go on at this time, there is no doubt that with public and late-stage private companies struggling to raise capital, the **total volume of clinical trial activity** could decline back to 2017-18 levels
>
> *Biotech VC partner*

Increased innovative pipeline contribution from Asia (especially China) is raising the bar for global leadership in biopharma innovation

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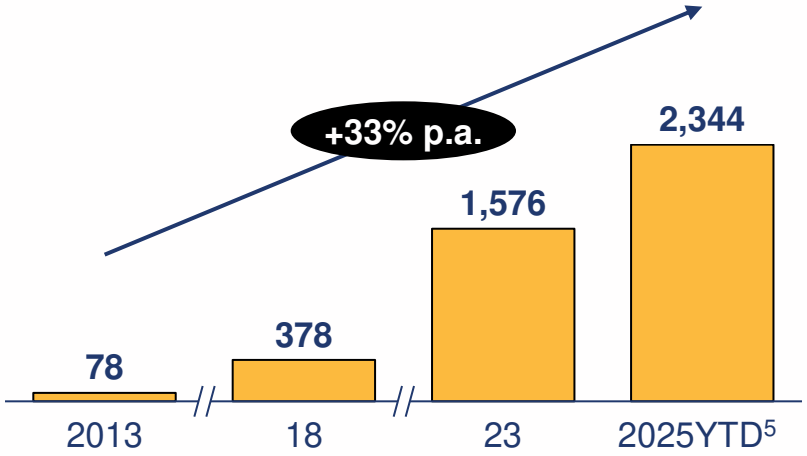
China contributes to ~1/3rd of global innovative pipeline assets[1] in 2025

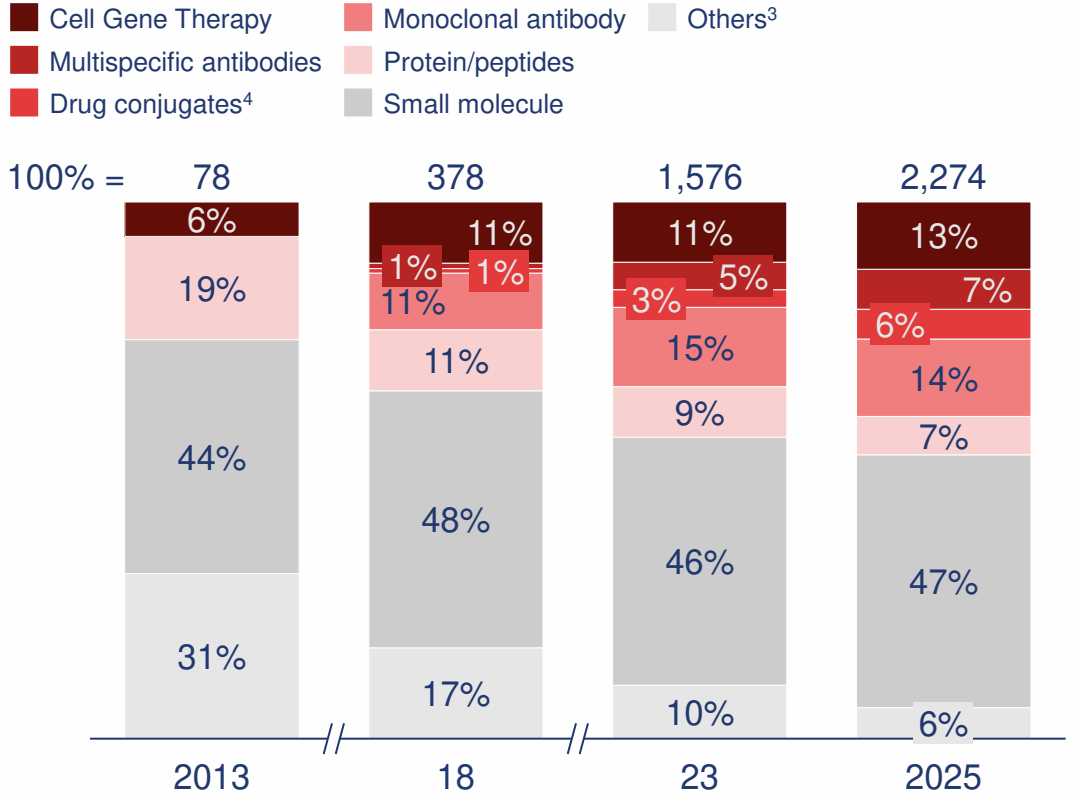
Number of innovative pipelines assets[1] in China, # of assets



	2013	18	23	2025YTD5
% of China contribution to global	2%	8%	24%	29%
% of US contribution to global	47%	46%	40%	36%

~1/4th of innovative pipeline assets from China are in next-gen[2] modalities

Number of innovative pipelines from China by modality, # of assets



1. Innovative pipelines from clinical phase 1 to pre-registration. Excluding natural products, biosimilar, reformulation, and Gx drugs
2. Next-gen modalities incl. CGT, bsAb/msAb, ADC and other drug conjugates
3. Incl. Nature product, probiotics, vaccines, oncolytic virus and nuclear medicine, or undisclosed
4. Including ADC and XDC
5. As of Apr 2025

Source: Pharmaprojects

Impact on biopharma in other states: NC, OH, PA, TX

North Carolina (NC): Current estimated exposure of ~$0.51B in federal funding for biomedical research

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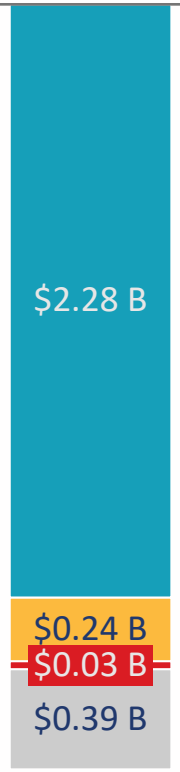

Agency	Key potential reductions	Date materialized	Estimated exposure
NIH	• **15% cap on F&A** (indirect costs)[1] • **Termination of active research grants** not aligned with agency priorities (e.g., DEI, gender ideology, COVID-19, foreign agencies)[2,3] • **Cancellation of active grants** (e.g., Columbia University, University of Pennsylvania) – no schools in NC currently under review[4]	Feb 2025 Mar 2025 TBD	$0.30 B ⊕ $0.18 B ⊕ *TBD* ~$0.48 B
NSF	Proposed ~60% reduction in NSF funding[5]	TBD	TBD
DOD	~60% reduction in CDRMP funding[6,7]	Mar 2025	$0.03 B
Other	Loss of revenue due to proposed loss of tax-exempt bonds for universities[8]	TBD	TBD
			Total: ~$0.51 B

2.56

GDP multiplier[9]

Ratio of $1 in NIH funding to economic activity, $

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Jobs multiplier (NC)[9]

Jobs created per $1M in NIH funding

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North Carolina: Top 10 institutions by NIH funding

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Institution	2023 NIH funding (USD)[1]	Institution type
Duke University	702 M	Academic & Hospital
Univ Of North Carolina Chapel Hill	560 M	Academic & Hospital
Research Triangle Institute	551 M	Non-profit
Wake Forest University Health Sciences	151 M	Academic & Hospital
Ppd Development Lp	58 M	Business
North Carolina State University Raleigh	43 M	Academic
Rho Federal Systems Division, Inc.	34 M	Business
Family Health International	24 M	Non-profit
Epicypher, Inc.	13 M	Business (Biotech)
East Carolina University	9 M	Academic & Hospital
Top 10	**2,144 M**	
All	**2,282 M**	

1. NIH Report – all NIH awards for NC in 2023 (last accessed April 2025)

Key takeaways

- **Proposed federal cuts could reduce NC NIH funding by ~$0.5B**, or 20% of total[1]
- Two academic-hospital complexes comprise 55% of NIH funding received in NC

Ohio (OH): Current estimated exposure of ~$0.23B in federal funding for biomedical research

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Ohio: Top 10 institutions by NIH funding

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Institution	2023 NIH funding (USD)[1]	Institution type
Ohio State University	253 M	Academic & Hospital
Case Western Reserve University	195 M	Academic & Hospital
Cincinnati Childrens Hosp Med Ctr	170 M	Hospital
Cleveland Clinic Lerner Com-Cwru	137 M	Hospital
University Of Cincinnati	85 M	Academic & Hospital
Research Inst Nationwide Children's Hosp	67 M	Academic
Battelle Centers/Pub Hlth Res & Evaluatn	12 M	Non-profit
University Of Toledo Health Sci Campus	11 M	Academic & Hospital
Northeast Ohio Medical University	8 M	Academic & Hospital
Ohio University Athens	7 M	Academic & Hospital
Top 10	**943 M**	
All	**1,006 M**	

Key takeaways

- **Proposed federal cuts could reduce OH NIH funding by ~$0.2B**, or 20% of total[1]
- Two academic-hospital complexes and one hospital comprise 60+% of all NIH funding received in OH

1. NIH Report – all NIH awards for OH in 2023 (last accessed April 2025)

Pennsylvania (PA): Current estimated exposure of ~$0.65B in federal funding for biomedical research

AS OF APRIL 18, 2025

Agency	Key potential reductions	Date materialized	Estimated exposure
NIH	• **15% cap on F&A** (indirect costs)[1] • **Termination of active research grants** not aligned with agency priorities (e.g., DEI, gender ideology, COVID-19, foreign agencies)[2,3] • **Cancellation of active grants** (e.g., Columbia University) – University of Pennsylvania lost $175M in grants[4,5]	Feb 2025 Mar 2025 Mar 2025	$0.40 B ⊕ $0.02 B ⊕ $0.18 B ~$0.60 B
NSF	Proposed ~60% reduction in NSF funding[6]	TBD	TBD
DOD	~60% reduction in CDRMP funding[7,8]	Mar 2025	$0.05 B
Other	Loss of revenue due to proposed loss of tax-exempt bonds for universities[9]	TBD	TBD
			Total:~$0.65 B

2.56

GDP multiplier[10]

Ratio of $1 in NIH funding to economic activity, $

8.9

Jobs multiplier (PA)[10]

Jobs created per $1M in NIH funding

1. NIH Report – all NIH awards for PA in 2023 – estimated funding lost from capping indirect costs of annual NIH funding at 15% (last accessed April 9, 2025) | 2. HHS.gov - analysis of HHS terminated grants (last accessed April 9, 2025) | 3. Airtable - NIH Grant Terminations in 2025 - additional crowd sourced list of terminated grants, analyzed for organizations in PA (last accessed April 9, 2025) | 4. Department of Education (last accessed April 9, 2025) | 5. Inside Higher Ed (last accessed April 9, 2025), estimated percentage reduction in NSF funding applied to NSF funding per state from NSF.gov (last accessed April 9, 2025) | 6. Ars Technica (last accessed April 9, 2025) | 7. Health.mil (Congressionally Directed Medical Research Programs budget) (last accessed April 9, 2025), national funding loss scaled to state level using percentage of defense spend by state, oldcc.gov (last accessed April 9, 2025) | 8. Science (last accessed April 14, 2025) | 9. American Council on Education "Tax Reform and Higher Education in 2025" (last accessed April 9, 2025) | 10. United for Medical Research (UMR) "NIH'S ROLE IN SUSTAINING THE U.S. ECONOMY: 2025 Update" (last accessed April 9, 2025)

Pennsylvania: Top 10 institutions by NIH funding

AS OF APRIL 18, 2025

Institution	2023 NIH funding (USD)[1]	Institution type
University Of Pennsylvania	703 M	Academic & Hospital
University Of Pittsburgh At Pittsburgh	658 M	Academic & Hospital
Children's Hosp Of Philadelphia	166 M	Hospital
Pennsylvania State University	81 M	Academic & Hospital
Temple Univ Of The Commonwealth	80 M	Academic & Hospital
Pennsylvania State Univ Hershey Med Ctr	71 M	Academic & Hospital
Thomas Jefferson University	68 M	Academic & Hospital
Drexel University	65 M	Academic & Hospital
Wistar Institute	42 M	Academic
Carnegie-Mellon University	42 M	Academic
Top 10	**1,978 M**	
All	**2,229 M**	

1. NIH Report – all NIH awards for PA in 2023 (last accessed April 2025)

Key takeaways

- **Proposed federal cuts could reduce PA NIH funding by ~$0.6B**, or 27% of total[1]
- Two academic-hospital complexes comprise 60+% of all NIH funding received in PA

Texas (TX): Current estimated exposure of ~$0.52B in federal funding for biomedical research

AS OF APRIL 18, 2025

Agency	Key potential reductions	Date materialized	Estimated exposure
NIH	• **15% cap on F&A** (indirect costs)[1] • **Termination of active research grants** not aligned with agency priorities (e.g., DEI, gender ideology, COVID-19, foreign agencies)[2,3] • **Cancellation of active grants** (e.g., Columbia University, University of Pennsylvania) – no schools in TX currently under review[4]	Feb 2025 Mar 2025 TBD	$0.33 B ⊕ $0.09 B ⊕ *TBD* ~$0.42 B
NSF	Proposed ~60% reduction in NSF funding[5]	TBD	TBD
DOD	~60% reduction in CDRMP funding[6,7]	Mar 2025	$0.10 B
Other	Loss of revenue due to proposed loss of tax-exempt bonds for universities[8]	TBD	TBD
			Total:~$0.52 B

2.56

GDP multiplier[9]

Ratio of $1 in NIH funding to economic activity, $

12.3

Jobs multiplier (TX)[9]

Jobs created per $1M in NIH funding

1. NIH Report – all NIH awards for TX in 2023 – estimated funding lost from capping indirect costs of annual NIH funding at 15% (last accessed April 9, 2025) | 2. HHS.gov - analysis of HHS terminated grants (last accessed April 9, 2025) | 3. Airtable - NIH Grant Terminations in 2025 - additional crowd sourced list of terminated grants, analyzed for organizations in TX (last accessed April 9, 2025) | 4. Department of Education (last accessed April 9, 2025) | 5. Ars Technica (last accessed April 9, 2025), estimated percentage reduction in NSF funding applied to NSF funding per state from NSF.gov (last accessed April 9, 2025) | 6. Health.mil (Congressionally Directed Medical Research Programs budget) (last accessed April 9, 2025), national funding loss scaled to state level using percentage of defense spend by state, oldcc.gov (last accessed April 9, 2025) | 7. Science (last accessed April 14, 2025) | 8. American Council on Education "Tax Reform and Higher Education in 2025" (last accessed April 9, 2025) | 9. United for Medical Research (UMR) "NIH'S ROLE IN SUSTAINING THE U.S. ECONOMY: 2025 Update" (last accessed April 9, 2025)

Texas: Top 10 institutions by NIH funding

AS OF APRIL 18, 2025

Institution	2023 NIH funding (USD)[1]	Institution type
Baylor College Of Medicine	334 M	Academic & Hospital
Ut Southwestern Medical Center	291 M	Academic & Hospital
University Of Tx Md Anderson Can Ctr	192 M	Hospital
University Of Texas Hlth Sci Ctr Houston	150 M	Academic & Hospital
University Of Texas Hlth Science Center	131 M	Academic & Hospital
University Of Texas Med Br Galveston	110 M	Academic & Hospital
University Of Texas At Austin	107 M	Academic & Hospital
University Of North Texas Hlth Sci Ctr	76 M	Academic & Hospital
University Of Houston	45 M	Academic
Methodist Hospital Research Institute	37 M	Academic
Top 10	**1,473 M**	
All	**1,846 M**	

Key takeaways

- **Proposed federal cuts could reduce TX NIH funding by ~$0.4B**, or 20% of total[1]

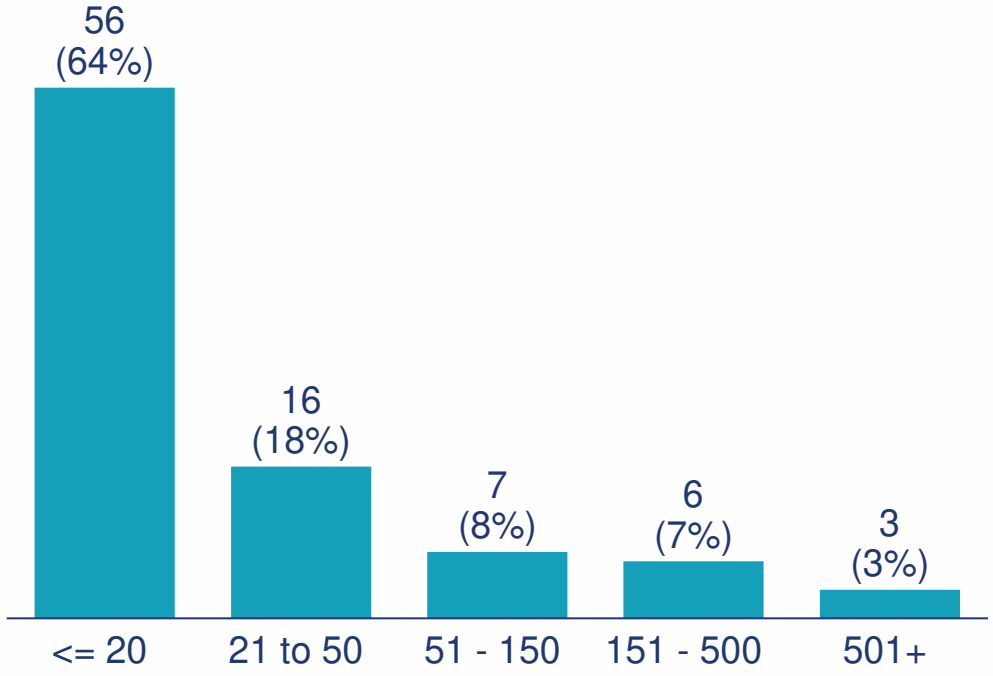
1. NIH Report – all NIH awards for TX in 2023 (last accessed April 2025)

Appendix

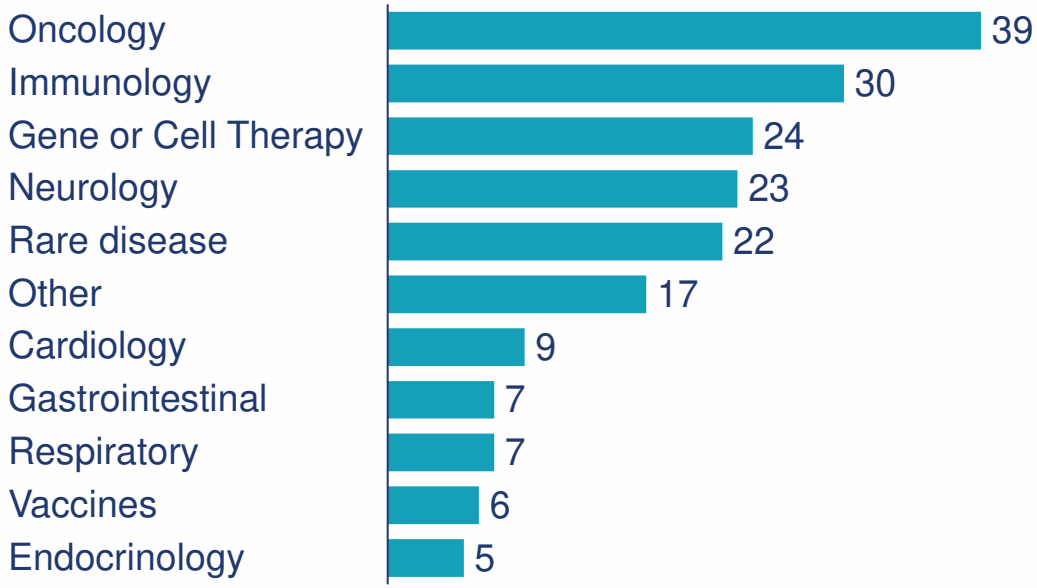
MassBio and Biocom California Impact of FDA Changes on Innovation survey, completed April 16-22, 2025

AS OF APRIL 22, 2025

Survey respondents by company size, # of employees, count (% of total)



Survey respondents by therapeutic area (TA), count (multiple responses could be selected)



Early biotechs represented 64% of responses; respondents spanned a diverse range of TAs

Source: MassBio/ Biocom California Impact of FDA Changes on Innovation survey completed between April 16-22, 2025 (n = 88)

Massachusetts: Top 10 institutions by NIH funding

AS OF APRIL 18, 2025

Institution	2023 NIH funding (USD)[1]	Institution type
Massachusetts General Hospital	675 M	Hospital
Brigham and Women's Hospital	403 M	Hospital
Boston Children's Hospital	239 M	Hospital
Boston University Medical Campus	197 M	Academic
University of Massachusetts Medical School	179 M	Academic
Harvard Medical School	175 M	Academic
Broad Institute	169 M	Academic
Dana Farber Cancer Institute	163 M	Hospital
Harvard School of Public Health	150 M	Academic
Beth Israel Deaconess Medical Center	126 M	Hospital
Top 10	**2,476 M**	
All	**3,506 M**	

1. NIH Report – all NIH awards for NC in 2023 (last accessed April 2025)