

Tuberculosis Research Funding Trends 2005-2023

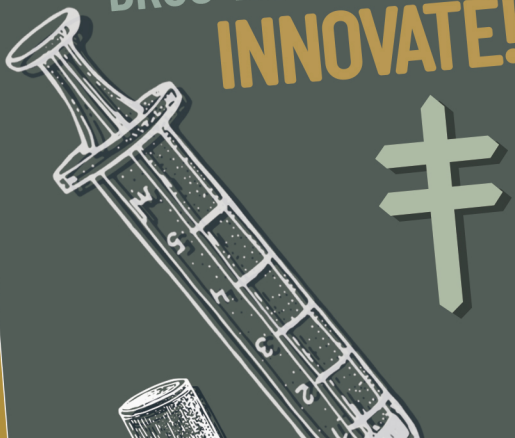
TB VACCINE RESEARCH
TAKE PART!
NEEDS ALL OF US



TO STAY AHEAD OF
DRUG-RESISTANT TB
INNOVATE!



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ABOUT TAG

TAG is an independent, activist, and community-based research and policy think tank committed to racial, gender, and LGBTQ+ equity; social justice; and liberation; fighting to end HIV, tuberculosis (TB), and hepatitis C virus (HCV).

TAG catalyzes open collective action by affected communities, scientists, and policymakers to ensure that all people living with or impacted by HIV, TB, or HCV — especially communities of color and other marginalized communities experiencing inequities — receive life-saving prevention, diagnosis, treatment, care, and information.

We are science-based activists working to expand and accelerate vital research and effective community engagement with research and policy institutions for an end to the HIV, TB, and HCV pandemics.

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Tuberculosis Research Funding Trends, 2005–2023

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Executive Summary

World leaders have set a goal to increase funding for tuberculosis (TB) research to \$5 billion annually. The \$5 billion goal, which was adopted at the 2023 United Nations High-Level Meeting (UN HLM) on TB, replaces an earlier funding target of \$2 billion established during the 2018 UN HLM on TB. The annual TB research and development (R&D) funding target was substantially raised to compensate for the historical neglect of TB research funding, which has hampered scientific progress against TB and, consequently, delayed the development and delivery of new tools urgently needed to end the epidemic.

Global leaders' resolve to increase funding for TB research is heartening, but the stark reality is that actual spending remains far below commitments on paper. In 2023, total spending on TB R&D reached only a quarter of the new funding target at \$1.2 billion. While this is more than has been spent on TB research in any other year since Treatment Action Group (TAG) began tracking spending in 2005, it remains far below what is needed to meet global funding commitments and turn the tide on TB. And it is far less than what communities affected by TB deserve.

The promise world leaders made to increase TB research funding to \$5 billion annually recognizes that the Sustainable Development Goal to end the TB epidemic by 2030 will only be met if TB research is properly funded. The year 2023 brought mixed tidings. On the one hand, total expenditure of \$1.2 billion is the highest level recorded by TAG and extends the recent streak of funding exceeding \$1 billion to three years – long enough to set a new minimum expectation. Advocacy for TB research has produced real material gains in a tough fiscal climate marked by international conflict, sagging multilateralism, economic uncertainty, and pandemic fatigue. Yet on the other hand, TB research remains greatly underresourced and highly dependent on the continued giving of a small group of funders. The top two funders of TB research in 2023 – the U.S. National Institutes of Health (U.S. NIH) and the Bill & Melinda Gates Foundation (Gates Foundation) – gave 53% of all funds, while the 20 top funders comprised 86% of total spending.

The heavy reliance on a limited number of “megafunders” remains a threat to the sustainability of TB research. Large donors may shift their focus abruptly or exert outsized influence on where and how resources are allocated. It is therefore encouraging to see multiple new funders entering the TB research space. In 2023, 194 entities gave money to TB research, compared with only 173 in 2022. And while only 58 organizations spent over \$1 million on TB research in 2022, 66 spent more than \$1 million in 2023.

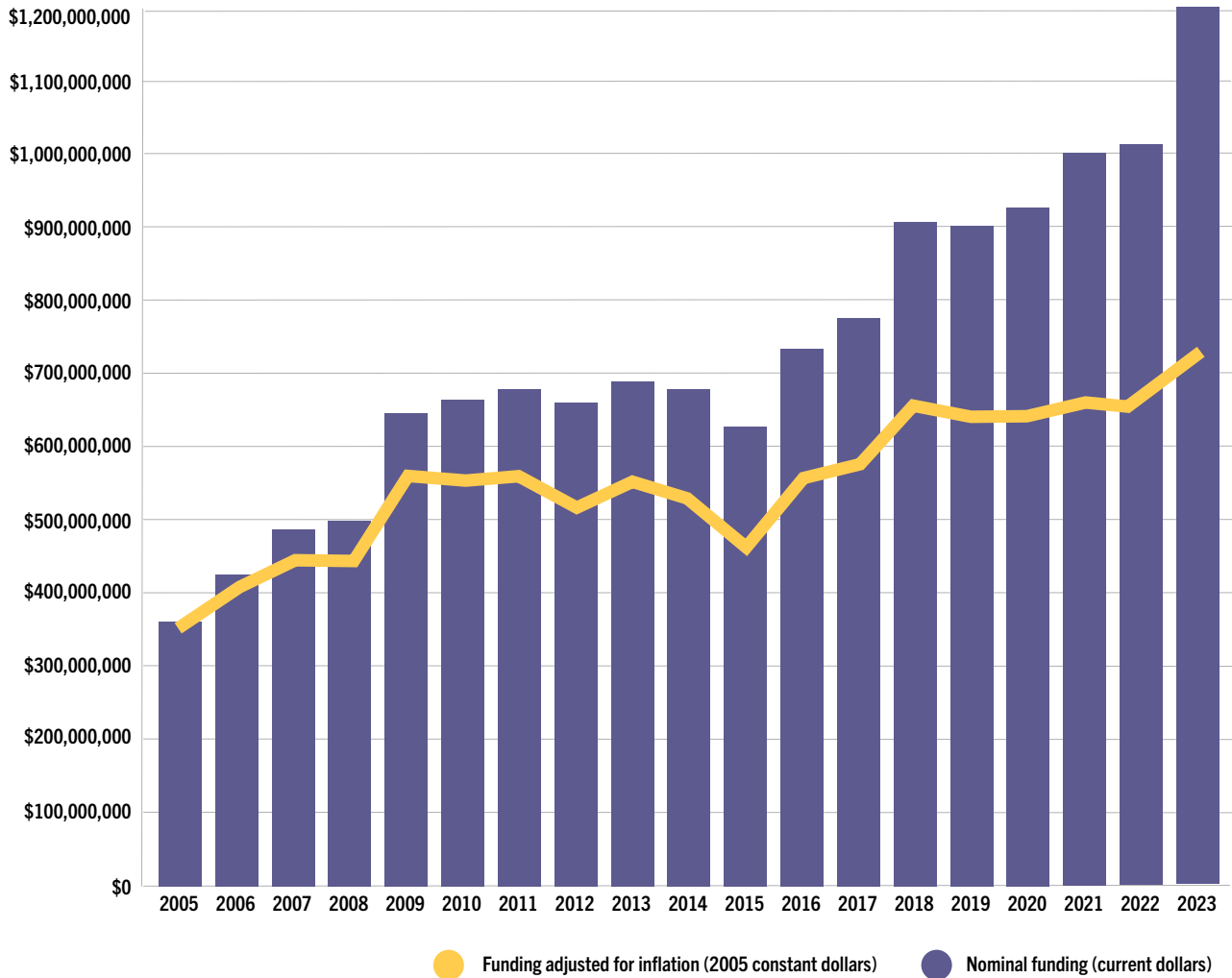
The largest new funder of TB research was the European Investment Bank, which reported to TAG for the first time this year: an investment of \$8 million to advance TB drugs research. Half of the new funders identified in 2023 were private-sector companies whose investments largely focused on diagnostics research.

While the arrival of new funders in the TB research arena is an exciting and overdue development, spending by these groups is insufficient to break the entrenched dependency of TB research on known megafunders. In fact, this dependency may have deepened in 2023 as top funders gave more than ever to TB R&D.

The largest increase in dollar spending came from the Gates Foundation, which spent \$75 million more on TB research in 2023 than in 2022. This increase alone was more than what any other funder spent on TB research in 2023 with the exception of the U.S. NIH.

FIGURE 1

Total TB R&D Funding, 2005–2023



Year	Nominal funding (current dollars)	Year	Nominal funding (current dollars)
2005	\$358,476,537	2015	\$620,600,596
2006	\$418,928,300	2016	\$725,726,643
2007	\$478,343,421	2017	\$771,839,742
2008	\$494,576,235	2018	\$906,445,319
2009	\$636,979,349	2019	\$900,964,590
2010	\$643,360,390	2020	\$915,325,165
2011	\$675,328,887	2021	\$1,000,326,531
2012	\$638,783,272	2022	\$1,034,967,036
2013	\$686,303,295	2023	\$1,202,756,670
2014	\$674,036,492		

In total, the Gates Foundation gave \$229 million to TB research in 2023. The Gates Foundation and its research affiliate, the Gates Medical Research Institute (Gates MRI), also attracted large donations from other charitable foundations – namely Open Philanthropy and Wellcome – who contributed funding to TB vaccine development projects led by the Gates Foundation and Gates MRI.

In a new Gilded Age of TB research spending, philanthropic donors outspent public funders on research to develop new TB vaccines. As TB vaccine candidates have moved through the research and development pipeline – requiring larger, more costly, later-stage clinical trials – philanthropies have stood up to cover the bulk of costs. During 2023, the Gates Foundation and Wellcome made the historic pledge to jointly give \$550 million to support a phase III trial of the M72/AS01E vaccine.¹ Initial spending on this pledge is tracked in this year’s report alongside spending on other vaccine candidates, including MTBVAC. Open Philanthropy released the first \$18 million of the \$40 million it will give to the Gates Foundation over the coming years to support MTBVAC clinical development.²

Investments in TB vaccines by major philanthropies will not stop here: in 2024, the Gates Foundation and Wellcome teamed up with Novo Nordisk Foundation to announce a new \$300 million initiative to accelerate scientific research in three areas of health: climate/sustainability, infectious diseases, and “interactions” between nutrition and immunity. Based on publicly available information, the infectious diseases pillar will focus on antimicrobial resistance and developing vaccines for respiratory infections (TB is mentioned specifically).³ TAG will document the money this initiative invests in TB vaccines in future reports.

While large funders deserve recognition for their stepped-up contributions to advance critical vaccines research, the TB field must reduce dependency on these funders to secure the sustainability of the TB funding landscape. To do this, other funders – particularly those from the public sector, including from TB-high-burden countries – need to give more, and new funders need to be persuaded to invest in TB. If large investments by charities go unanswered by governments, there is a real risk of TB research entering a dysfunctional Gilded Age dynamic in which lavish spending by billionaires and tax-exempt charitable endowments sets an innovation agenda that should be owned by and accountable to the public.

A reliance on a few large charities in the United States, United Kingdom, and Denmark also runs counter to the democratic spirit that catalyzed TB research in the twentieth century. In 1907, a post office in Delaware sold the first Christmas Seals, or special stamps, to raise money for the work of the National Association for the Study and Prevention of Tuberculosis (today known as the American Lung Association). In a funny parallel to the geographic orientations of TB philanthropy today, the idea of raising money by selling TB stamps came to the United States from the famed photographer of American tenement life Jacob Riis – who had lost six family members to TB – when he wrote about a similar practice in his native Denmark. The Christmas Seals not only generated millions of dollars for TB research and care, they “produced a revolution in philanthropy” by “demonstrat[ing] the collective power of the American public” at a moment best remembered for the establishment of legacy foundations by billionaires such as Rockefeller, Ford, Carnegie, and Frick.⁴ The program became a model for other grassroots fundraising campaigns, including the March of Dimes, which was inaugurated by President Franklin D. Roosevelt to support polio vaccine development.⁵

Philanthropy has been a sturdy ballast for TB research, and the pledges made by the Gates Foundation, Wellcome, Open Philanthropy, and Novo Nordisk Foundation should be celebrated. But these investments would be more powerful, and ultimately more reflective of the needs of people with and at risk of TB, if they were accompanied by commensurate investments by the

public sector. Philanthropy should be a tool to unlock additional resources, not the sum total in itself. With such ambitious goals to end TB by the end of the decade, accelerating TB innovation requires giving by many rather than gifts from a few. TB research needs solidarity, not charity.

While governments have promised to increase TB research financing to \$5 billion annually, few countries are contributing resources at the scale required to reach this target. TAG, Stop TB Partnership, and advocacy partners have called for governments to commit their fair share to TB research by allocating 0.15% of their total research spending to TB. Spending at this level is necessary to achieve the \$5 billion UN target. Yet, during 2023, only two countries – South Africa and India – met this target by giving their fair share.

More spending by private-sector companies is also urgently needed to advance TB research. The dearth of investment from this sector remains an impediment to the delivery of critically needed health technologies to combat TB. While it is encouraging to see more companies investing in TB research than in prior years, the overall contribution of this sector to TB research remains small. In 2023, private-sector companies spent less on TB R&D than they did in 2011, and only two companies spent more than \$15 million on TB research.

With the 2030 deadline for ending TB now visible on the horizon, the window of opportunity to end the epidemic in this decade is closing. Governments must rise to the challenge by meeting their funding promises, while also fostering greater investment from other sectors.

Importantly, game-changing tools to combat TB, including new vaccines and diagnostics, are already in the R&D pipeline – some at advanced stages of development. The delivery of these tools to health programs can be sped up through multilateral, multisectoral, mission-driven investment. The global rally around COVID-19 science provides a blueprint for this type of investment, while also highlighting the imperative to establish affordability and accessibility safeguards as prerequisites for public financing.

Key findings from this year's report

1. 2023 marks the third year that spending on TB research has exceeded \$1 billion. After holding at \$1 billion in 2021 and 2022, spending rose to \$1.2 billion in 2023. This growth was driven by increased spending on TB vaccines, drugs, and diagnostics research.
2. Following adoption of the political declaration of the 2023 UN HLM, TAG is now assessing progress against the \$5 billion annual TB research funding target endorsed by UN member states. At \$1.2 billion, total TB research spending satisfied just under a quarter (24%) of the \$5 billion target. Spending on basic science, drugs, diagnostics, and vaccines research also fell below the annual funding targets set for these research areas in the 2023–2023 *Global Plan to End TB*.
3. This is the first year that TAG is measuring country funding for TB research against the new fair share target (defined as 0.15% of total national expenditures on research and development going to TB research). Only two countries – South Africa and India – achieved their fair share targets in 2023.
4. Funders spent more on TB drugs, diagnostics, and vaccines research in 2023 than in any previous year. Spending on basic science, operational and epidemiological research, and research infrastructure remained below peak spending levels achieved in prior years.

5. Spending on TB basic science reached only 20% of the annual funding target for this area. Spending on basic science declined from \$170 million in 2022 to \$158 million in 2023. Basic science funding also declined as a proportion of total research spending – from 16% in 2022 to 13% in 2023.
6. Drugs research spending increased by 21% between 2022 and 2023, reaching a new high of \$425 million. Despite this increase, spending on TB drug development satisfied only 21% of the annual spending target.
7. Diagnostics research spending remained on an upward trajectory, achieving a new high of \$167 million in 2023. Yet, despite gains, only 17% of the annual diagnostics research spending target was met.
8. Vaccines research spending grew by 58% between 2022 and 2023, achieving a new high of \$227 million. This is the first time funding for TB vaccine development has surpassed \$200 million since TAG started tracking expenditures in 2005. Yet, total spending on vaccines research reached only 18% of the annual spending target.
9. Pediatric TB research achieved a new funding high of \$109 million, but this accounted for only nine percent of total research spending, which is less than the burden of disease experienced in this population (an estimated 12% of new TB cases each year occur in children 0–14 years old).
10. The public sector remained the largest source of financing for TB research in 2023. Of every dollar spent on TB research in 2023, \$0.62 came from public funders, \$0.24 came from philanthropies, \$0.09 came from private-sector companies, and \$0.04 came from multilateral organizations.
11. Philanthropies gave almost a quarter (24%) of all funding in 2023 (up from 19% in 2022) and just over half (51%) of all vaccine research spending (up from 38% in 2022). Philanthropies eclipsed public funders as the greatest source of vaccine research funding in 2023. Seventy-two percent of philanthropic funding for vaccines R&D came from the Gates Foundation.
12. Philanthropic spending grew by 47% between 2022 and 2023 – from \$192 million to \$284 million. The growth in philanthropic funding was driven by increased spending by the Gates Foundation, whose spending reached a new high at \$229 million. Almost half of this supported vaccine and drug development at the Gates MRI. In addition to spending its own resources, Gates Foundation investments drew other charitable expenditures, particularly in the TB vaccine field. Wellcome gave \$14 million to Gates MRI and Open Philanthropy gave \$18 million to the Gates Foundation to support vaccines research.
13. The U.S. NIH remained the largest individual funder of TB research in 2023, accounting for 34% of all funds. The U.S. NIH spent more on TB research in 2023 than in any previous year. At \$412 million, the U.S. NIH's investments into TB research exceeded \$400 million for the first time in 2023.
14. The top 20 funders gave 86% of all funding in 2023, while the remaining 14% came from an additional 174 organizations.
15. Although funding for TB research remains highly concentrated among the 20 largest donors, more funders contributed to TB research in 2023 than in all prior years. In 2023, 194 unique entities gave money to TB research compared with 173 entities in 2022. Sixty-six of the organizations supporting TB research in 2023 spent over \$1 million, compared with only 58 in 2022.

The Big Picture

Spending on TB research exceeded \$1 billion for the third consecutive year. After holding at \$1 billion in 2021 and 2022, total spending grew by 16% to reach \$1.2 billion in 2023. This increase was largely driven by increased spending by philanthropies, which raised their spending by 47% above 2022 levels. By comparison, multilateral funders, public funders, and private-sector companies increased their spending above 2022 levels by 13%, 10%, and 2%, respectively.

The growth in spending supported greater investments into vaccines, drugs and diagnostics research. Vaccines research spending grew the most between 2022 and 2023: by 58% from \$144 million to \$227 million. Drugs research spending grew by 21% (from \$352 million to \$425 million) and diagnostics R&D spending grew by 15% (from \$145 million to \$167 million).

Yet, despite the growth in overall spending, performance against the global funding targets for TB research was worse in 2023 than in 2022. This is because U.N. member states agreed to raise the annual target for TB research funding from \$2 billion to \$5 billion. Only 24% of the \$5 billion target was achieved in 2023, compared with 50% of the \$2 billion target in 2022. Spending by research area also fell short of the funding targets. Spending on TB drugs, vaccines, and diagnostics research, respectively, reached only 21%, 18%, and 17% of the funding targets for these research areas. Spending on basic science research met only 20% of the target.

The U.S. NIH and the Gates Foundation remained unrivalled as the two largest funders of TB research – jointly contributing over half (53%) of all funds. The top 20 funders continued to provide the bulk (86%) of all expenditures.

While TB funding remains highly reliant on the continued giving of the largest donors, it is encouraging that more organizations are funding TB research than ever before. In 2023, 194 unique entities gave money to TB research, including 111 public agencies, 45 companies, 29 philanthropies, and nine multilateral organizations. By comparison, in 2022, 173 unique entities gave money to TB research, including 106 public agencies, 35 private companies, 25 philanthropies, and seven multilateral organizations. Sixty-six of the entities supporting TB research in 2023 spent over \$1 million, compared with only 58 in 2022.

TABLE 1

Annual Funding versus Annual Funding Targets

RESEARCH AREA	2023 FUNDING	2023–30 GLOBAL PLAN ANNUAL TARGET	PERCENTAGE OF ANNUAL TARGET MET
Drugs	\$425,503,249	\$2,007,500,000	21%
Vaccines	\$227,509,635	\$1,250,000,000	18%
Diagnostics	\$167,680,124	\$965,000,000	17%
Basic Science	\$158,867,058	\$800,000,000	20%
Operational Research & Epidemiology	\$129,749,210	–	--
Research Infrastructure	\$87,229,647	–	–
Unspecified	\$6,217,746	–	–
Total	\$1,202,756,670	\$5,022,500,000	24%

TABLE 2

Top 20 Funders of TB Research, 2023

RANK	FUNDER	FUNDER TYPE	2023 FUNDING	2022 FUNDING
1	U.S. National Institutes of Health (U.S. NIH)	P	\$412,180,492	\$376,925,735
2	Bill & Melinda Gates Foundation	F	\$229,997,077	\$154,020,527
3	U.S. Agency for International Development (USAID)	P	\$41,638,390	\$37,435,817
4	Unitaid	M	\$38,345,049	\$40,200,000
5	AMR Accelerator/Innovative Health Initiative	P	\$34,703,333	\$32,475,079
6	Company X	C	\$30,958,144	\$37,151,321
7	Otsuka Pharmaceutical	C	\$30,261,310	\$27,643,679
8	European and Developing Countries Clinical Trials Partnership (EDCTP)	P	\$27,898,453	\$17,516,947
9	European Commission	P	\$24,933,166	\$23,928,183
10	Wellcome	F	\$23,435,899	\$26,452,024
11	Indian Council of Medical Research (ICMR)	P	\$20,891,393	\$20,411,604
12	Open Philanthropy	F	\$20,443,966	\$1,101,360
13	U.S. Centers for Disease Control and Prevention (U.S. CDC)	P	\$19,636,961	\$17,420,159
14	U.K. Foreign, Commonwealth and Development Office (FCDO)	P	\$15,430,256	\$14,868,102
15	German Federal Ministry of Education and Research (BMBF)	P	\$13,919,713	\$11,513,871
16	Anhui Zhifei Longcom Biopharmaceutical Co.	C	\$13,900,016	\$15,766,810
17	Korea Ministry of Health and Welfare	P	\$11,283,613	\$12,610,681
18	Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)	M	\$10,894,175	\$4,189,516
19	U.K. Medical Research Council (U.K. MRC)	P	\$10,474,797	\$7,999,909
20	European Investment Bank	P	\$8,110,800	NA

C = Corporation/Private Sector; F = Foundation/Philanthropy; M = Multilateral; P = Public-Sector R&D Agency

NA = Not Available

Public-Sector Funding

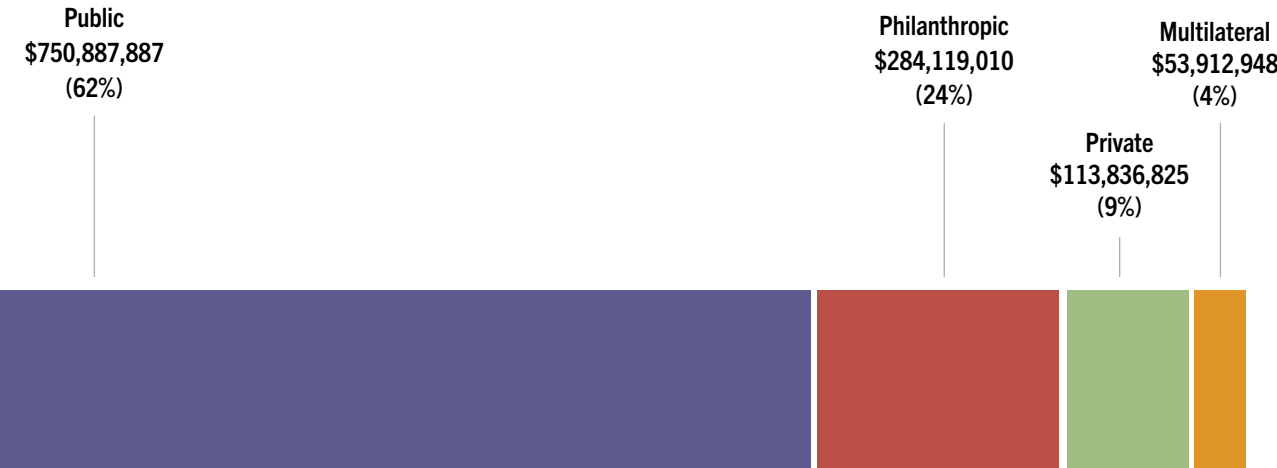
Public funders invested \$750 million in TB research in 2023, a 10% increase over 2022 spending levels (\$682 million). While public spending increased to a new high in 2023, the proportion of total TB research funding comprised by the public sector declined from 66% in 2022 to 62% in 2023.

Over 110 public-sector entities across 30 countries reported investments in TB research in 2023. The allocation of public expenditures across research areas resembled previous years. Of every public dollar put into TB research in 2023, \$0.29 went towards drugs research, \$0.20 went to basic science, \$0.15 went to operational and epidemiological research, \$0.14 went to vaccines research, \$0.11 went to diagnostics research, and \$0.11 went to research infrastructure. Ten percent of overall public spending was directed toward pediatric TB research.

The largest public funder of TB research, the U.S. NIH, spent \$412 million in 2023 – up from \$376 million in 2022. The U.S. NIH contributed 54% of all public spending on TB research in 2023. Of every dollar spent by the U.S. NIH, \$0.27 went to basic science, \$0.21 went to drugs research, \$0.18 went to vaccines research, \$0.12 went to diagnostic research, \$0.12 went to research infrastructure, and \$0.10 went to operational and epidemiological research.

USAID held its position as the second largest public funder of TB research in 2023, with an investment of \$41 million. Of every dollar spent by USAID, \$0.36 went to drugs research, \$0.20 went to operational and epidemiological research, \$0.16 went to research infrastructure, \$0.15 went to diagnostics research, \$0.10 went to unspecified research, and \$0.04 went to vaccines research. Fifteen million dollars (36%) of USAID’s spending supported research undertaken by the SMART4TB project led by Johns Hopkins University. Representing USAID’s flagship investment in TB research, SMART4TB is a consortium of partners seeking to transform TB service delivery by identifying better ways to prevent, diagnose, and treat TB through clinical trials, operational research, policy translation, and local and civil society engagement.⁶

FIGURE 2
TB R&D Funding by Funder Type, 2023
Total: \$1,202,756,670



The third largest public funder of TB research in 2023, the AMR Accelerator, spent \$34 million, all of which supported drug development. The AMR Accelerator is a program of the Innovative Health Initiative (formerly the Innovative Medicines Initiative) working to develop new drugs to treat and prevent drug-resistant bacterial infections. The Innovative Health Initiative is a public-private partnership between the European Union and the European pharmaceutical industry. As in previous years, only public funding committed to TB research through the AMR Accelerator was reported to TAG and captured in this report.

The fourth and fifth largest public funders of TB R&D in 2023, the European and Developing Countries Clinical Trials Partnership (EDCTP) and the European Commission, respectively invested \$27 and \$24 million. Of every dollar spent by the EDCTP in 2023, \$0.43 went to diagnostics research, \$0.39 went to drugs research, and \$0.15 went to vaccines research. The remaining \$0.03 went to research infrastructure and operational research. Of every dollar spent by the European Commission, \$0.23 went to basic science, \$0.23 went to drugs research, \$0.19 went to vaccines research, \$0.17 went to research infrastructure, \$0.10 went to diagnostics research, and \$0.08 went to operational research.

The only other public funder that gave more than \$20 million to TB research in 2023 was the Indian Council of Medical Research (ICMR). Five other public funders contributed more than \$10 million to TB research in 2023: the U.S. Centers for Disease Control and Prevention (U.S. CDC), the U.K. Foreign, Commonwealth and Development Office (U.K. FCDO), the German Federal Ministry of Education and Research (BMBF), the Korean Ministry of Health and Welfare, and the U.K. Medical Research Council (U.K. MRC).

The European Investment Bank (EIB), which reported on its spending to TAG for the first time this year, invested \$8 million in TB drugs research. TAG profiled the EIB and its potential to contribute to TB R&D in last year's report (see, "Closer Look: European Investment Bank").⁷

Fair Share Targets

This year's report marks the first year that TAG is measuring how much public funders in different countries spend on TB R&D against the new fair share targets. TAG and Stop TB Partnership revised the fair share targets in 2023 to reflect the higher annual TB research spending goal of \$5 billion committed to by countries at the 2023 UN HLM on TB.⁸

The \$5 billion target replaces the earlier \$2 billion target committed to by countries at the 2018 UN HLM on TB and reflects that larger investments are now needed to put the world on track to end the TB epidemic by 2030 following years of underinvestment. Funding needs have also grown as the field has matured by advancing promising technologies to later, more costly stages of development.

The fair share targets advocate for countries to invest a common percentage (0.15%) of their gross expenditure on research and development (GERD) into TB research. These targets were developed by TAG, Stop TB Partnership, and advocacy partners to promote solidarity in the global scientific response to TB, to link country-level spending targets to countries' ability to pay, and to provide a mechanism for evaluating countries' investments against their financing commitments.

The revised targets also set a public financing goal within the overall \$5 billion target. Public funders have historically contributed around 70% of TB research funds. In line with historical contributions, TAG and partners have called on public funders to cumulatively contribute 70% of the \$5 billion target, which amounts to \$3.5 billion annually. To support attainment of the \$3.5 billion goal (within the larger \$5 billion target), the fair share target was revised in 2023 to 0.15% of gross expenditure on R&D (GERD) into TB research. The 0.15% target replaces the 0.1% target in place from 2018 through 2022.

For most countries, the introduction of the new fair share targets in 2023 resulted in poorer performance against targeted spending levels. For example, the United States achieved only 39% of its 2023 fair share target, compared with 98% of its 2022 fair share target, while Ireland reached only 52% of the 2023 target, compared with 99% of the 2022 target.

Only two countries met the amended targets in 2023: South Africa and India. 2023 marks the third time that South Africa has met the fair share target (the country also met its target in 2018 and 2021). India met its fair share target for the first time in 2023.

South African president Cyril Ramaphosa, who assumed the G20 presidency on December 1, 2024, has called on G20 countries to double down on investments to enable achievement of the SDG goals. "The pace of mobilising the necessary resources to ensure that countries with developing economies meet the SDGs doesn't just have to be accelerated, it has to be indeed turbo-charged," said Ramaphosa during the September 2024 G20 High Level Opening Session.⁹ South Africa is the fourth high-TB-burden country to hold the G20 presidency, following Brazil (2023), India (2022), and Indonesia (2021).

The updated fair share targets and countries' progress toward them are presented in US\$PPP. US\$PPP, or U.S. dollar purchasing power parity, removes the differences in the costs of goods and services across countries, allowing cross-country comparisons of TB research and GERD spending. Outside of fair share target comparisons, all other spending data in this report are shown in regular U.S. dollars.

TABLE 3

Progress Toward Fair Share Funding Targets in 2023

Fair Share = spending at least 0.15% of overall R&D expenditures on TB R&D

RANK	COUNTRY	2023 FUNDING (USD)	2023 FUNDING (US\$PPP)	FAIR SHARE TARGET (US\$PPP)	PERCENTAGE OF FAIR SHARE TARGET MET
1	United States	\$476,156,415	\$476,156,415	\$1,209,019,500	39%
2	Germany*	\$40,624,795	\$53,396,275	\$229,848,390	23%
3	United Kingdom	\$34,909,065	\$42,058,140	\$135,141,551	31%
4	India	\$26,878,050	\$97,001,581	\$88,082,100	110%
5	France*	\$25,646,008	\$35,271,300	\$115,428,470	31%
6	South Korea	\$21,119,074	\$34,481,701	\$179,425,934	19%
7	Australia	\$13,305,279	\$14,397,268	\$36,085,950	40%
8	Canada	\$12,692,405	\$14,640,557	\$51,678,755	28%
9	Switzerland	\$7,961,912	\$7,401,000	\$29,838,551	25%
10	Japan	\$7,032,756	\$10,415,249	\$265,442,184	4%
11	Brazil	\$6,417,842	\$12,404,610	\$54,473,250	23%
12	Sweden*	\$6,243,213	\$7,782,738	\$31,461,153	25%
13	Spain*	\$5,979,788	\$9,656,989	\$41,324,967	23%
14	Netherlands*	\$4,715,240	\$5,896,488	\$37,621,472	16%
15	South Africa	\$3,945,905	\$9,996,097	\$7,721,810	129%
16	Taiwan	\$3,827,895	\$8,586,665	\$83,093,524	10%
17	Denmark*	\$3,637,718	\$4,104,810	\$16,028,201	26%
18	Ireland*	\$3,612,134	\$4,445,426	\$8,494,199	52%
19	Philippines	\$2,089,673	\$6,036,115	NA	NA
20	New Zealand	\$1,269,468	\$1,415,548	\$4,816,424	29%
21	Singapore	\$467,657	\$781,148	\$18,554,686	4%
22	Norway	\$443,714	\$526,536	\$12,867,956	4%
23	Chile	\$303,006	\$588,984	\$2,418,789	24%
24	Peru	\$264,615	\$573,225	NA	NA
25	Argentina	\$149,403	\$282,020	\$7,347,568	4%
26	Thailand	\$141,154	\$461,200	NA	NA
27	Malaysia	\$110,525	\$353,289	\$13,875,000	3%
28	Ethiopia	\$90,000	\$221,474	NA	NA
29	Mexico	\$62,938	\$115,425	\$10,375,989	1%
30	Paraguay	\$52,628	\$149,250	NA	NA
Unranked territories					
	Europe Combined (EU-led Instruments and Member States)**	\$131,196,508	\$195,460,129	\$706,095,690	28%
	EU-led Instruments	\$98,590,542	\$146,882,873		
	EU Member States	\$32,605,966	\$48,577,256		

Countries that met or exceeded fair share target in 2023 NA = Not Available

* 2023 funding for EU Member States includes a proportional share of total TB R&D spending by EU-led Instruments (EDCTP, EC, AMR | IHI, EIB) equal to the member state's "share in total national contributions" of the EU budget.

** The Europe Combined funding total includes spending by EU-led Instruments (EDCTP, EC, AMR | IHI, EIB) plus spending reported by individual EU member states.

A fair share target for the European Union

The revised fair share targets include spending targets for the European Union (EU), as well as country-level targets for EU member states. The European Union's fair share target is set at 0.15% of the European Union's GERD, consistent with country-level targets. This amounts to US\$PPP 706,095,690 for TB research annually.

At the EU level, TB research spending is calculated as the cumulative total spend by both EU-led instruments (e.g., European Commission, EDCTP, European Investment Bank, AMR Accelerator | Innovative Health Initiative) and EU member states (e.g., France, Germany, the Netherlands). This combined figure represents the European Union's combined contribution to TB R&D. The EU met only 28% of its fair share spending target in 2023. TAG also calculated spending on TB R&D by EU-led instruments alone without factoring in money spent on the national level by individual member states. EU institutional funding added up to US\$PPP 147 million, or 21% of the European Union's fair share target.

At a country level, the spending figures for EU member states include both national-level contributions to TB research and well as countries' proportional contributions to funding disbursed by the EU-led instruments. Countries' proportional contributions are calculated according to the share of each country's national contribution to the overall European Union budget (as provided for each fiscal year in the *Definitive Adoption of the European Union's Annual Budget for the Financial Year 2023*).¹⁰

Closer Look: South Africa

South Africa was one of only two countries to meet the new fair share targets introduced in 2023 by directing more than 0.15% of the country's gross expenditure on R&D to TB research. This is the third year that South Africa has met its fair share target, having also met the target in 2018 and 2021. While South Africa's attainment of the new fair share target reflects a prioritization of TB research within the country's national research agenda, it is also a consequence of the country's relatively low overall research spending.

South Africa spends less than one percent of its GDP on research, despite repeatedly committing alongside other African countries to spend at least this share of GDP on innovation.¹¹ While the South African government has promised to increase its GERD spending to 1.5% of the country's GDP by 2030, the country currently only spends around 0.62% of its GDP on research and development.^{12,13}

Tuberculosis is identified as a priority health condition for research in South Africa's 2023–2032 *Science, Technology and Innovation Decadal Plan*¹⁴ and 2021–2024 *National Health Research Strategy*.¹⁵ South Africa's overall investment into TB research declined from \$4.2 million to \$3.9 million between 2022 and 2023. This decline was driven by a drop in the value of the South African rand against the US dollar, rather than a decrease in local investment.

South Africa's Department of Science and Innovation (DSI), Medical Research Council (SA MRC), National Research Foundation (SA NRF), Council of Scientific and Industrial Research (CSIR), Technology Innovation Agency (TIA), and National Health Laboratory Services (NHLS) all reported their 2023 TB research spending to TAG.

The \$3.9 million spent by South African public funders in 2023 included \$1.85 million from the SA MRC, \$1.8 million from the DSI, \$250,000 from North-West University (NWU), \$16,000 from Gauteng province's Innovation Hub, and \$7,000 from the NHLS.

The \$1.85 million given to TB research by the SA MRC supported universities and research units conducting TB research. The SA MRC disbursed this funding across 38 grants ranging from \$3,500 to \$320,000.

The \$1.8 million given to TB research from the DSI was mostly disbursed by the SA MRC and the SA NRF to universities (\$27,000 went to the CSIR). The SA MRC disbursed \$814,000 in funding from the DSI across seven grants, and the SA NRF disbursed \$975,000 in DSI funding across 61 grants. The SA MRC's grants typically support research projects and units, while the SA NRF grants typically support individual researchers.

Grants given by the SA MRC and SA NRF supported a broad range of TB research endeavors in 2023, including research to identify novel drug targets, studies to improve understanding of drug resistance and sequence the genome of drug-resistant TB strains, efforts to identify biomarkers of TB disease, and preclinical and clinical assessments of TB vaccine candidates.

Two new South African public funders supporting TB research were identified for the first time this year: NWU and the Gauteng province's Innovation Hub. NWU, a state-subsidized university, spent \$250,000 on a preclinical trial of a locally developed combination DNA/RNA TB vaccine candidate.¹⁶ The preclinical vaccine trial was jointly conducted by NWU and Walter Sisulu University. The Gauteng province's Innovation Hub awarded its GAP Medical Award (\$16,000) to AI Diagnostics for the company's development of AI-assisted TB diagnostics technology.¹⁷

Of every dollar invested in TB research by South African public funders in 2023, \$0.49 went to basic science, \$0.19 went to drugs research, \$0.16 went to vaccines research, \$0.13 went to diagnostics research, \$0.02 went to operational and epidemiological research, and \$0.01 went to research infrastructure. Nineteen percent of South Africa's overall investments in TB R&D supported pediatric TB research.

When converted to US\$PPP to account for the differences in the costs of goods and services across countries, South Africa's 2023 spending rose from \$3.9 million to US\$PPP 9.9 million – suggesting that every dollar invested in TB research in South Africa goes more than twice as far as spending in the United States.

Despite being one of only two countries to meet the 2023 fair share targets, South Africa ranked fifteenth in terms of overall spending by country. Twelve high-income countries, as well as the middle-income countries India and Brazil, outspent South Africa in TB research.

Philanthropic Funding

Philanthropic spending on TB research increased by 47% between 2022 and 2023 – reaching a new high of \$284 million. Spending by philanthropies accounted for 24% of all TB research spending in 2023 – up from 19% in 2022 and around 14% from 2019 through 2021.

Twenty-nine philanthropies contributed to TB research in 2023, with investments ranging from \$5,000 to \$229 million. Of every dollar spent on TB research by philanthropic donors in 2023, \$0.42 went to drugs research, \$0.41 went to vaccines research, \$0.11 went to diagnostics research, \$0.03 went to basic science, \$0.02 went to research infrastructure, and \$0.01% went to operational and epidemiological research. Only two percent of overall spending by philanthropies supported pediatric TB research.

The Gates Foundation remained far and away the largest philanthropic funder of TB research in 2023, contributing 81% of all funds given by this sector. The Gates Foundation's investments in TB research grew by 49% between 2022 and 2023, reaching a new high in 2023 at \$229 million. Half of the Gates Foundation's 2023 TB research investments went to the Gates MRI – including \$62 million for vaccines research and \$54 million for drugs research.

Of every dollar spent by the Gates Foundation on TB research in 2023, \$0.50 went to drugs research, \$0.36 went to vaccines research, and \$0.11 went to diagnostics research. The remaining \$0.03 went to research infrastructure, operational research, and basic science. The Gates Foundation's spending on TB diagnostic research increased by 89% between 2022 and 2023, while the Foundation's spending on vaccines and drugs research grew by 53% over this period.

Wellcome was the second largest philanthropic funder of TB research in 2023, with an investment of \$23 million. This is the second year in a row that Wellcome gave over \$20 million to TB research. Sixty percent (\$14 million) of Wellcome's total spending was given to the Gates MRI to support advancement of the vaccine candidate M72/AS01E. Of every dollar contributed by Wellcome in 2023, \$0.63 went to vaccines research, \$0.19 went to basic science, \$0.07 went to drugs research, \$0.07 went to research infrastructure, and \$0.04 went to operational research and epidemiology.

Only one other philanthropic donor gave over \$20 million to TB research in 2023: Open Philanthropy. Investments in TB research by Open Philanthropy have increased rapidly since the charity began reporting to TAG: from \$460,000 in 2021 to \$1 million in 2022 to \$20 million in 2023. Eighteen million of the \$20 million spent by Open Philanthropy in 2023 was given to the Gates Foundation to support TB vaccines research, specifically work on the MTBVAC vaccine candidate. This project is described in greater detail in the section titled "Spotlight: Spending by Vaccine Candidate."

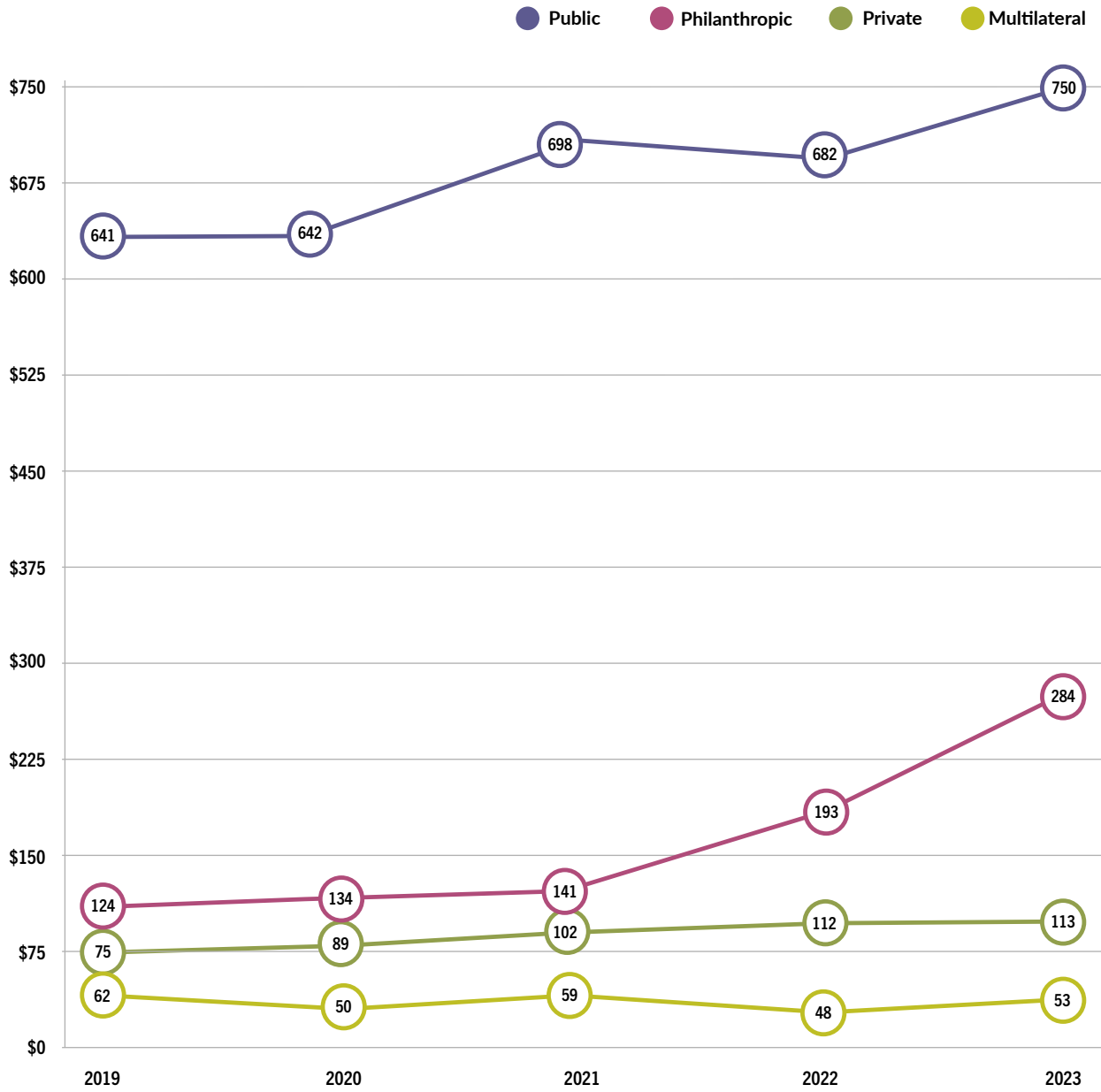
Only three other philanthropies invested more than \$1 million in TB research in 2023: Médecins Sans Frontières (\$2 million), LifeArc (\$2 million), and the Cystic Fibrosis Foundation, which gave \$1 million to the TB Alliance.

New philanthropic funders of TB identified in this year's report included the Cystic Fibrosis Foundation and the J.P. Bickell Foundation. The AIDS Healthcare Foundation and amfAR, the Foundation for AIDS Research, also gave to TB research in 2023.

The Novo Nordisk Foundation – which committed \$260 million to the establishment of a new vaccines development initiative focused on respiratory diseases, including tuberculosis – is expected to appear in next year's report on 2024 funding when spending on this multiyear initiative starts.¹⁸

FIGURE 3

TB R&D Funding by Funder Type, 2019–2023 (in Millions)



Note: Data for years 2005–2018 not shown.

Private-Sector Funding

Forty-five private-sector companies reported investments in TB research in 2023 (up from 35 in 2022). Spending by companies ranged from \$10,000 to \$30 million and totaled \$113 million. Although TAG identified more private-sector funders this year, industry spending remained below the peak of \$144 million seen in 2011, and the private sector's share of total TB research funding dropped from 11% in 2022 to 9% in 2023.

Of the 45 companies that invested in TB R&D, 27 reported investments in diagnostics research, 10 reported investments in drugs research, 4 reported investments in vaccines research, 4 reported investments in basic science, 3 reported investments in operational and epidemiological research, and 1 reported investment in research infrastructure. Of every dollar spent by industry on TB research in 2023, \$0.62 went to drugs research, \$0.30 went to diagnostics research, and \$0.08 went to vaccines research.

The two largest private-sector spenders – Otsuka and Company X – each spent \$30 million on TB research in 2023. Investments by Company X and Otsuka accounted for 53% of all private-sector spending. Otsuka's spending rose from \$27 million in 2022 to \$30 million in 2023, while Company X's expenditures fell from \$37 million in 2022 to \$30 million in 2023. All of Otsuka's and Company X's spending (\$60 million in total) supported TB drugs R&D.

The Chinese pharmaceutical company Anhui Zhifei Longcom remained the third largest private-sector funder of TB research in 2023, with an investment of \$13 million. Anhui Zhifei Longcom's spending was split between TB vaccines and diagnostics research.

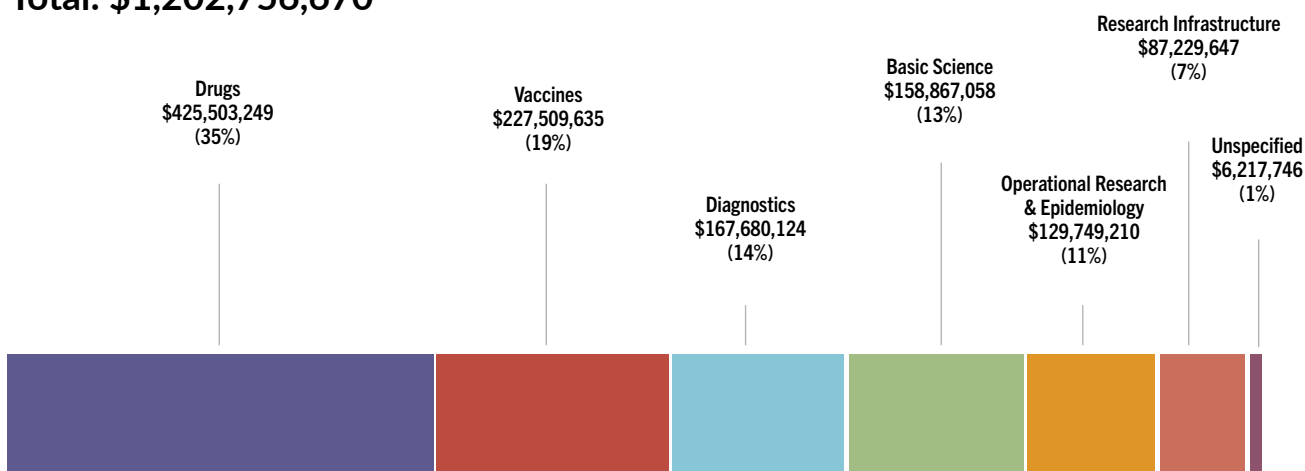
Only two other companies, Macleods Pharmaceuticals and BATM, spent over \$5 million on TB research in 2023.

Ten of the new funders identified in this year's report were private-sector companies, whose investments largely focused on diagnostics research, including AI Diagnostics, Jiangsu MicroDiag Biomedicine Technology Co., OTOM Co., and Sansure Biotech.

FIGURE 4

TB R&D Funding by Research Area, 2023

Total: \$1,202,756,670



Multilateral Funding

Nine multilateral organizations funded TB research in 2023, with investments ranging from \$33,000 to \$38 million. Totalling \$53 million, multilateral investments accounted for 4% of total TB research spending in 2023 and remained below the high of \$62 million that multilateral organizations contributed in 2019.

Unitaid spent more on TB R&D than all other multilateral organizations combined. Unitaid gave \$38 million to TB research in 2023, which amounted to 73% of all spending by this sector, but fell below its peak spending of \$51 million in 2021. Of every dollar invested in TB research by Unitaid in 2023, \$0.49 went to drugs research, \$0.45 went to diagnostics research, and \$0.06 went to operational and epidemiological research. Unitaid directed 63% of its spending toward pediatric-related research efforts.

The Global Fund was the second largest multilateral funder. The Global Fund grants contributed \$10 million to TB research in 2023, returning to spending levels last seen in 2019. As in previous years, the Global Fund's spending figure represents expenditures on interventions classed as "surveys" in its TB, HIV/TB, resilient and sustainable systems for health, and multicomponent grants.

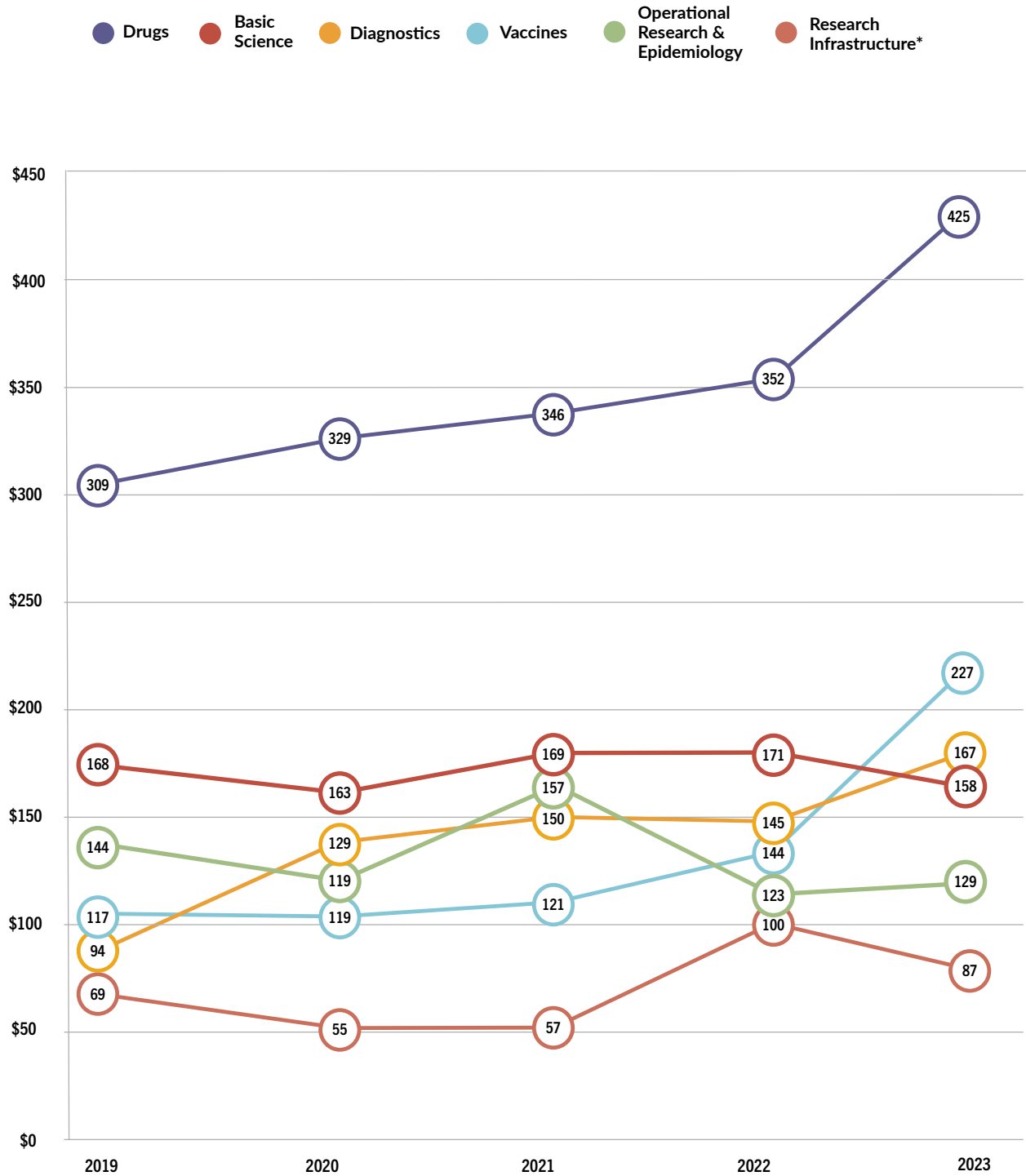
Only two other multilateral organizations reported spending more than \$1 million on TB research in 2023: the RIGHT Foundation in South Korea and TDR (the Special Programme for Research and Training in Tropical Diseases), hosted by the World Health Organization.

Of every dollar invested in TB research by multilateral organizations in 2023, \$0.37 went to diagnostics research, \$0.35 went to drugs research, and \$0.28 went to operational and epidemiological research. Notably, no multilateral organization reported funding TB vaccine research. Advocates have called out the lack of multilateral funding as a striking absence and a critical impediment to financing TB vaccine development.¹⁹

The two new multilateral funders appearing in this year's report are the Millenium Alliance, as well as the International Centre for Genetic Engineering and Biotechnology (ICGEB), which resumed reporting on its TB research investments to TAG.

FIGURE 5

TB R&D Funding by Research Area, 2019–2023 (in Millions)



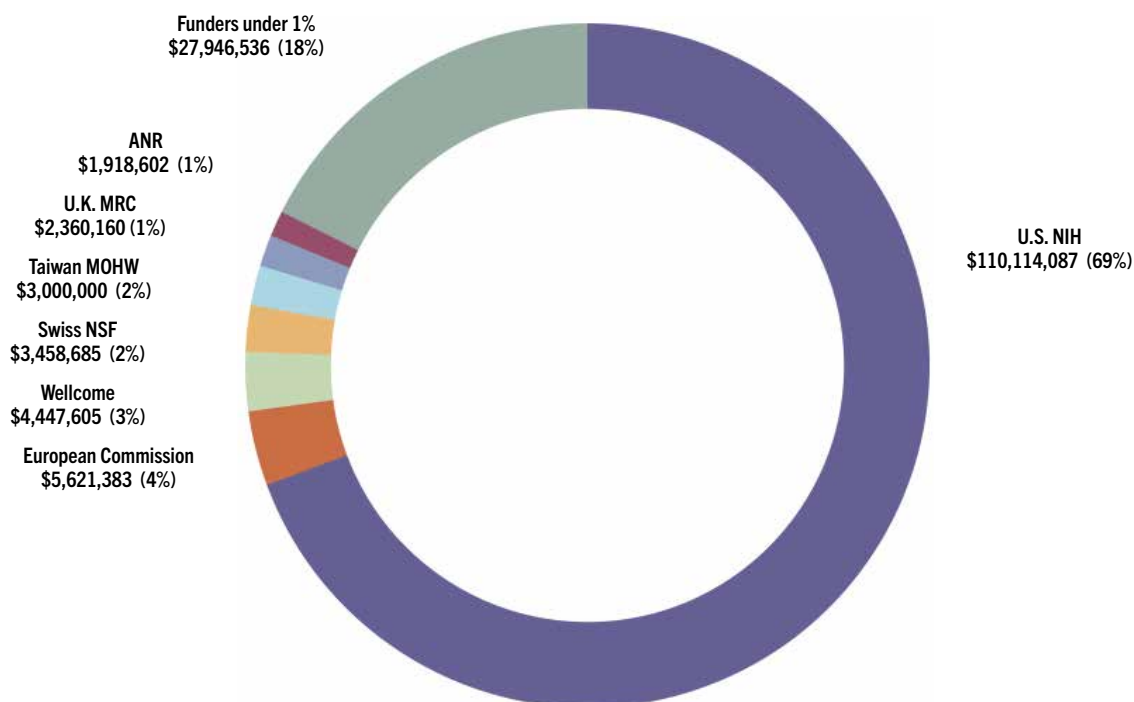
Note: Data for years 2005–2018 not shown.

*TAG began separating “research infrastructure” and “unspecified research” funding in 2023; the line for prior years includes both categories combined.

Basic Science

FIGURE 6

Basic Science: \$158,867,058



Other funders with investments under 1%

Australia National Health and Medical Research Council (NHMRC)	\$1,859,935	Bill & Melinda Gates Foundation	\$796,731
German Federal Ministry of Education and Research (BMBF)	\$1,754,744	Spain Ministry of Science, Innovation and Universities	\$776,312
India Department of Biotechnology	\$1,743,005	U.S. National Science Foundation (NSF)	\$714,914
Korea Ministry of Science and ICT	\$1,575,880	South Africa Medical Research Council	\$664,650
Canadian Institutes of Health Research	\$1,498,131	Korea Disease Control and Prevention Agency	\$554,068
Japan Agency for Medical Research and Development (AMED)	\$1,441,541	Swedish Heart-Lung Foundation	\$546,778
Independent Research Fund Denmark	\$1,287,090	Fundació "La Caixa"	\$536,749
South Africa Department of Science and Innovation	\$1,250,599	New Zealand Health Research Council	\$405,760
German Research Foundation (DFG)	\$1,085,937	Marsden Fund	\$343,553
Philippines Department of Science and Technology	\$1,082,831	Tampere Tuberculosis Foundation	\$342,168
U.K. Biotechnology and Biological Sciences Research Council	\$1,009,878	U.K. Engineering and Physical Sciences Research Council	\$341,148
Open Philanthropy	\$975,000	Indian Council of Medical Research (ICMR)	\$328,456
Swedish Research Council	\$881,868	Other funders with expenditures <\$300,000	\$4,148,809

Basic science spending in 2023 reached only 20% of the \$800 million annual target set in the 2023–2030 *Global Plan to End TB*. Basic science funding fell to \$158 million in 2023, from \$170 million in 2022. It also declined from 16% of total TB research spend in 2022 to 13% in 2023.

Seventy-four unique entities funded TB basic science research in 2023, including 57 public funders, 12 philanthropic funders, 4 companies, and 1 multilateral organization.

Public funders continued to contribute the lion's share of resources for basic science research, giving 95% of the total. Philanthropies provided 5%, and the private sector and multilateral organizations jointly contributed less than 1%.

The U.S. NIH retained its unrivaled position as the most significant source of funding for the pursuit of basic science research related to TB. The U.S. NIH contributed \$110 million to TB basic science in 2023, which accounted for 69% of spending on this research category. This money was spent over 240 grants ranging from \$10,000 to \$2.3 million, with an average grant size of \$458,000. Of the U.S. NIH's basic science spending, \$8.7 million supported intramural research undertaken at NIH labs.

The European Commission was the second largest funder of TB basic science research in 2023, contributing 4% of the total with an investment of \$5.6 million. This was spent across 18 grants, ranging from \$23,000 to \$1.5 million, with an average grant size of \$312,000.

Wellcome, the largest philanthropic funder of basic science, gave \$4 million (3% of the total).

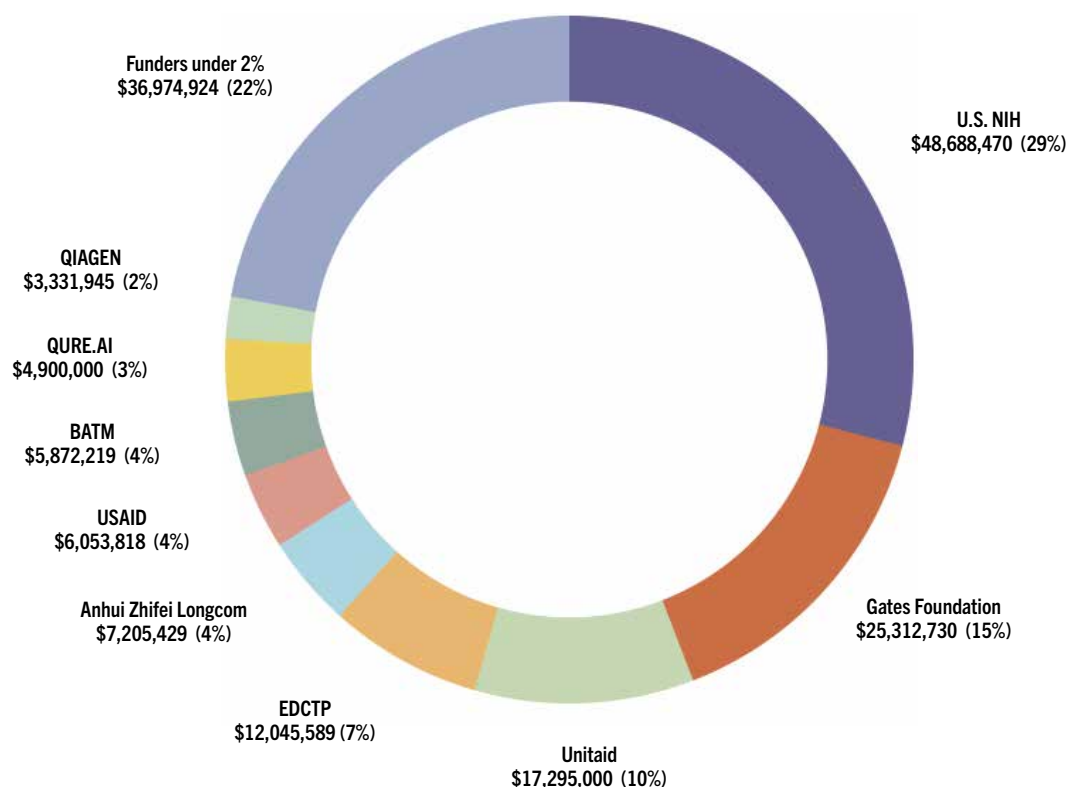
The fourth and fifth largest funders of basic science research, the Swiss National Science Foundation and the Taiwan Ministry of Health and Welfare, each contributed 2% of total funds.

Missing from these data: TAG did not receive a survey from the German Research Foundation (DFG). The amount reported as spending by DFG in this year's report was reported to TAG by recipients of DFG funding and may not include all basic science spending supported by DFG. Aside from DFG, TAG received surveys from all major known funders of TB basic science research that have participated in previous reports. If readers know of TB basic science funders not included here, they may share those suggestions with TAG (tbrdtracking@treatmentactiongroup.org) for inclusion in future reports.

Diagnostics

FIGURE 7

Diagnostics: \$167,680,124



Other funders with investments under 2%

Infervision Medical Technology Co.	\$3,000,000	U.K. Medical Research Council (U.K. MRC)	\$907,724
Company E	\$2,580,000	U.S. Uniformed Services University/Department of Defense	\$765,000
European Commission	\$2,512,508	Japan Agency for Medical Research and Development (AMED)	\$751,928
German Federal Ministry of Education and Research (BMBF)	\$2,313,506	Partners In Health	\$590,326
LifeArc	\$2,009,690	FRIZ Biochem	\$540,720
Molbio Diagnostics	\$1,951,010	Médecins Sans Frontières	\$503,470
RIGHT Foundation	\$1,666,330	Korea Disease Control and Prevention Agency	\$488,128
Company Y	\$1,510,000	Korea Ministry of Science and ICT	\$454,712
U.K. Foreign, Commonwealth and Development Office (FCDO)	\$1,492,320	Swedish Research Council	\$438,522
Indian Council of Medical Research (ICMR)	\$1,274,837	OTOM Co.	\$400,000
Korea Ministry of Health and Welfare	\$1,045,078	Genetix Biotech Asia	\$375,000
Company F	\$997,088	Canadian Institutes of Health Research	\$369,832
Gavi, the Vaccine Alliance	\$941,651	South Africa Medical Research Council	\$328,316
Swiss Agency for Development and Cooperation	\$930,248	Other funders with expenditures <\$300,000	\$4,912,099
Open Philanthropy	\$924,880		

Spending on TB diagnostics research remained on an upward trajectory in 2023, reaching a new high of \$167 million. Yet, despite these gains, spending on TB diagnostics research amounted to only 17% of the \$965 million annual target set in the 2023–2030 *Global Plan to End TB*.

Ninety-four unique entities contributed to TB diagnostics research in 2023, including 52 public funders, 27 companies, 11 philanthropies, and 4 multilateral organizations. Public funders contributed half of all money given to TB diagnostics research, while companies, philanthropies, and multilateral organizations respectively contributed 20%, 18%, and 12% of funds.

The U.S. NIH was the largest funder of diagnostics research in 2023, giving 29% of funds. The U.S. NIH contributions to TB diagnostics R&D were spent across 75 grants ranging from \$10,000 to \$3.9 million, with an average grant size of \$650,000. The largest individual grant from the U.S. NIH in this area was a \$3.9 million grant to Fend for TB – a project to evaluate early-stage TB diagnostics and novel diagnostics strategies.

The Gates Foundation was the second largest funder of TB diagnostics research in 2023 and continued to increase its spending in this area. The Gates Foundation's spending on TB diagnostics research increased from \$6.7 million in 2021 to \$13.4 million in 2022 to \$25 million in 2023. The Gates Foundation's TB diagnostics investments were spent across 32 grants ranging from \$52,000 to \$3.5 million, with an average grant size of \$790,000. The largest individual diagnostics grant given by the Gates Foundation was a \$3.5 million award to Co-Diagnostics Inc to develop affordable and accessible point-of-care TB diagnostics.

Unitaid was the third largest funder of TB diagnostics research in 2023; its \$17 million investment remained consistent with 2022 spending levels. Unitaid's support was divided across four grants of around \$4 million each, with two grants going to FIND (Drive4DxTB and Seq&Treat), one going to the Liverpool School of Tropical Medicine (Start-4-All), and one going to Clinton Health Access Initiative (supporting the inclusion of the urine-based TB LAM test in a package of care for people with advanced HIV disease).

The EDCTP, which contributed \$12 million to TB diagnostics R&D in 2023, was the fourth largest funder in this research area. The EDCTP invested in a diverse array of large diagnostic research projects, from improving diagnostics for multidrug-resistant TB, to using biomarkers to predict TB treatment duration, to evaluating host biomarker-based point-of-care tests. EDCTP-supported diagnostic projects with the most spending in 2023 included a study evaluating computer-assisted chest X-ray to optimize active case finding for TB and COVID-19 (\$1.6 million) and the TriAD study assessing the GeneXpert MTB/XDR assay for rapid triage and treatment of drug-resistant TB (\$1.4 million).

Anhui Zhifei Longcom was the fifth largest funder of TB diagnostics R&D in 2023. The company increased its investments in TB diagnostics research from \$1.5 million in 2022 to \$7 million in 2023. Anhui Zhifei Longcom markets the C-TST skin test, which belongs to a class of *Mycobacterium tuberculosis* antigen-based tests recommended by the WHO as tests for TB infection.

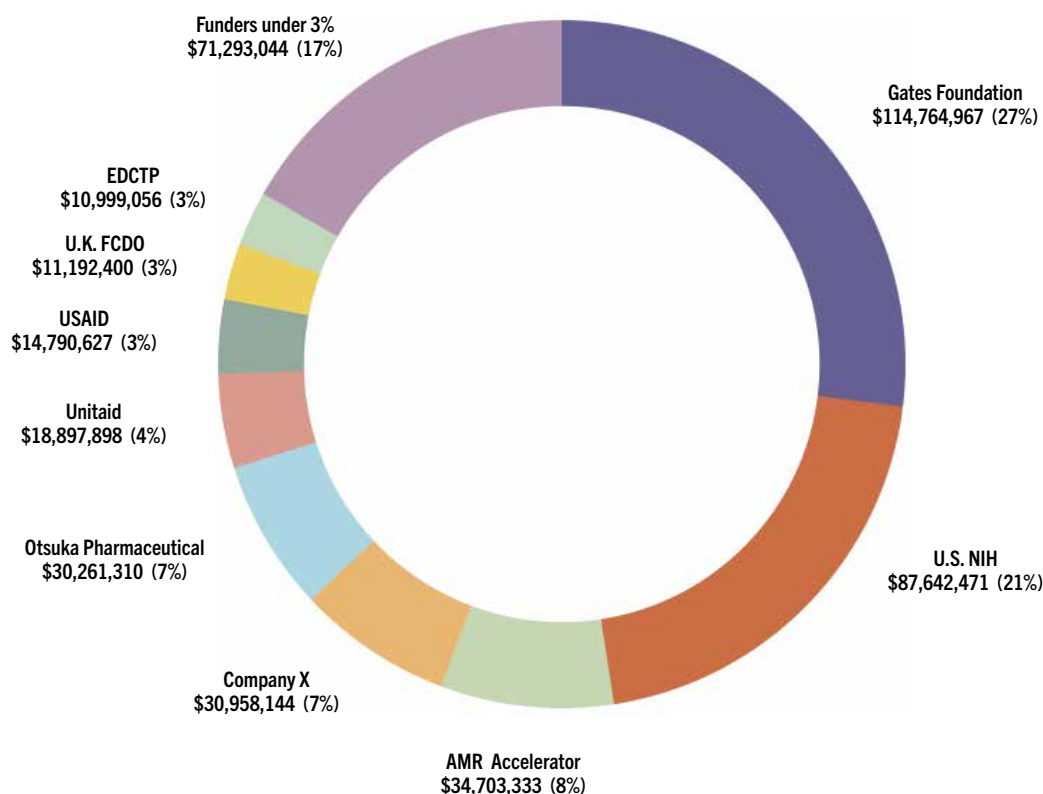
Two other entities spent over \$5 million on TB diagnostics research in 2023: USAID and BATM. USAID directed most of its support through SMART4TB, where the diagnostics workstream has two main objectives: 1) technology scouting to identify promising technologies and 2) running a platform trial – Assessing Diagnostics at Point-of-Care for Tuberculosis (ADAPT) – to assess the accuracy of diagnostics ready for evaluation in adults and children.

Missing from these data: Cepheid, Roche, and Abbott, leading providers of TB diagnostics, continued to not participate in TAG's monitoring efforts in 2023 and did not report on their research spending in this year. Oxford Immunotec, which invested over \$10 million annually in TB diagnostics research from 2020 through 2022, did not report on its research spending for 2023. Oxford Immunotec was relaunched as Revvity in 2023. The Serum Institute of India informed TAG that it invested in the commercialization of the SIILTBCY/Cy-Tb skin test during 2023 but could not disclose details of its investment. The Butterfly Network provided in-kind support for TB diagnostics research via its global health program that could not be monetized for inclusion in this year's report.

Drugs

FIGURE 8

Drugs: \$425,503,249



Other funders with investments under 3%

European Investment Bank	\$8,110,800	Cystic Fibrosis Foundation	\$1,100,000
U.S. Centers for Disease Control and Prevention (U.S. CDC)	\$8,090,719	Irish Aid	\$1,081,440
German Federal Ministry of Education and Research (BMBF)	\$6,713,230	Korea Disease Control and Prevention Agency	\$1,025,096
Macleods Pharmaceuticals	\$6,000,000	Australia National Health and Medical Research Council (NHMRC)	\$937,814
European Commission	\$5,799,191	U.K. Biotechnology and Biological Sciences Research Council	\$923,731
Australia Department of Foreign Affairs and Trade (DFAT)	\$3,985,788	ANRS MIE (Emerging Infectious Diseases)	\$834,156
U.K. Medical Research Council (U.K. MRC)	\$2,556,404	Korea International Cooperation Agency (KOICA)	\$720,000
Korea Ministry of Health and Welfare	\$2,341,452	U.S. Department of Veterans Affairs	\$593,807
French National Research Agency (ANR)	\$1,984,195	U.K. Government Horizon Europe Guarantee	\$589,491
LigaChem Biosciences	\$1,670,028	Individual donors to TB Alliance	\$583,999
Médecins Sans Frontières	\$1,660,886	Indian Council of Medical Research (ICMR)	\$567,410
Wellcome	\$1,600,686	Japan Agency for Medical Research and Development (AMED)	\$531,332
Swedish Research Council	\$1,510,239	Cadila Pharmaceuticals	\$505,361
Canadian Institutes of Health Research	\$1,501,254	Other funders with expenditures <\$500,000	\$6,432,880
Swiss National Science Foundation	\$1,341,654		

Funders spent more on TB drugs research in 2023 than in any other year. Funding for TB drug development increased by 21% between 2022 and 2023, from \$352 million to \$425 million. Despite this impressive increase, spending on TB drugs research spending reached only 21% of the \$2 billion annual target set in the 2023–2030 *Global Plan to End TB*.

Seventy unique entities supported drugs research in 2023, including 50 public funders, 10 companies, 8 philanthropies, and 2 multilateral organizations. Of every dollar spent on TB drugs R&D in 2023, \$0.51 came from public funders, \$0.28 came from philanthropies, \$0.17 came from private-sector companies, and \$0.04 came from multilateral organizations.

The Gates Foundation gave more to drugs research than any other organization and reported a large increase in spending: from \$75 million in 2022 to \$114 million in 2023. Forty-eight percent of the Gates Foundation's spending in this area supported research at the Gates MRI. The Gates Foundation gave the Gates MRI \$53.6 million for its TB drug development program, which is centered on the PAN-TB collaboration. The Gates MRI received an additional \$1 million for the "discovery of improved TB regimens." After Gates MRI, the TB Alliance received the second largest disbursement for drugs research from the Gates Foundation: \$14.9 million to discover and develop shorter, simpler, and safer TB regimens. In total, the Gates Foundation reported giving \$16.7 million to support the TB Alliance in 2023.

The U.S. NIH also increased its spending on TB drugs R&D – from \$73 million in 2022 to \$87 million in 2023. The U.S. NIH distributed its investments across 152 grants, ranging from \$1,000 to \$6.8 million, with an average grant size of \$576,000. The U.S. NIH's investments in TB drugs research included \$10 million spent by the NIH-funded Advancing Clinical Therapeutics Globally for HIV/AIDS and Other Infections trials group (ACTG) on the PHOENIX trial evaluating a six-month regimen of delamanid to prevent TB among people exposed to drug-resistant TB.

The AMR Accelerator moved from the fourth to the third largest funder of TB drugs research in 2023, with an investment of \$34 million. The AMR Accelerator's investments included a \$16 million disbursement to the European Tuberculosis Regimen Accelerator (ERA4TB) and a \$14 million disbursement to UNITE4TB.

The fourth and fifth largest investors in TB drugs research in 2023 were Company X and Otsuka Pharmaceutical, which each invested \$30 million dollars. Company X's investment in TB drugs research fell from \$37 million in 2022 to \$30 million in 2023, while Otsuka's spending increased from \$27 million in 2022 to \$30 million in 2023.

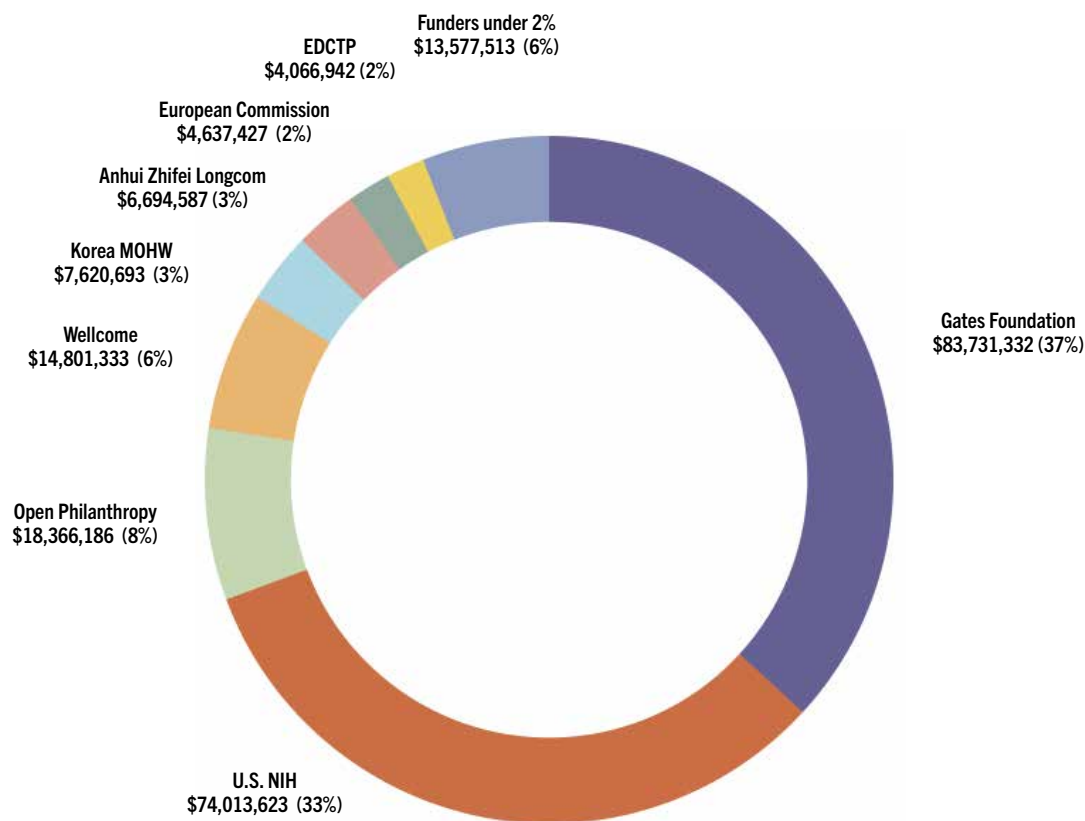
Four other funders invested more than \$10 million in TB drug development in 2023: Unitaid, USAID, the U.K. FCDO, and the EDCTP. The European Investment Bank, which reported its investments for the first time this year, gave \$8 million to a TB drug research project.

Missing from these data: Viartis, GlaxoSmithKline, and Qurient, companies that have active TB drug development projects underway, did not respond to TAG's survey. The European Federation of Pharmaceutical Industries and Associations did not respond to our survey request or provide details of any funding given to the AMR Accelerator by European pharmaceutical companies. Therefore, only the AMR Accelerator's investments from funds originating from public sources are included in this report.

Vaccines

FIGURE 9

Vaccines: \$227,509,635



Other funders with investments under 2%

CanSino Biologics	\$2,318,911	Swiss National Science Foundation	\$359,706
Japan Agency for Medical Research and Development (AMED)	\$2,118,195	São Paulo Research Foundation (FAPESP)	\$347,229
U.S. Agency for International Development (USAID)	\$1,742,080	German Federal Ministry for Economic Cooperation and Development (BMZ)	\$274,008
U.K. Medical Research Council (U.K. MRC)	\$939,180	U.S. Department of Veterans Affairs	\$264,673
Philippines Department of Science and Technology	\$917,086	North-West and Walter Sisulu Universities, South Africa	\$250,000
German Federal Ministry of Education and Research (BMBF)	\$670,493	Canadian Institutes of Health Research	\$236,468
U.K. Government Horizon Europe Guarantee	\$647,092	Korea Ministry of Food and Drug Safety	\$235,714
Indian Council of Medical Research (ICMR)	\$634,441	Korea Disease Control and Prevention Agency	\$200,414
South Africa Medical Research Council	\$395,696	Other funders with expenditures <\$200,000	\$1,026,126

Vaccines research funding grew by almost 60% between 2022 and 2023 – from \$144 million to \$227 million, setting a new record for spending on TB vaccine R&D. Yet, despite this unprecedented and promising increase, spending on vaccine research remains far below targeted spending amounts. Spending on TB vaccines research in 2023 reached only 18% of the annual \$1.25 billion goal set in the 2023–2030 *Global Plan to End TB*.

The increase in spending on vaccines R&D was largely driven by philanthropies. While public funders increased their spending on vaccines research by 18% between 2022 and 2023 (from \$86 million to \$101 million), philanthropies more than doubled their spending (from \$54 million to \$116 million). Public funders have historically been the largest supporters of TB vaccines research, but this year philanthropies outspent public funders in this area.

Annual vaccine research spending has more than tripled from what was spent in 2005 when funding for TB vaccine R&D sat at \$68 million. Between 2005 and 2017, funding for vaccine research exceeded \$100 million in only three years: 2008, 2009, and 2014. Since 2017, vaccine research spending has held at or above \$100 million but without posting substantial growth, only exceeding \$200 million for the first time this year.

While funding for TB vaccine R&D has increased – albeit slowly and with many ups and downs – since 2005, an analysis of present resource needs bears striking similarities to the past. TAG’s first report on TB research funding called out limited investment by the private sector (still true) and discussed the need to support work “to improve understanding of host immunity to TB, identify antigens, and develop improved ways to stimulate immune responses through adjuvants.” The report went on to call for “capacity building for multicentered trials of promising candidates.”²⁰ The same activities remain named scientific priorities today in documents such as the 2021 *Global TB Vaccine R&D Roadmap*.²¹ The fact that so much similarity exists between summaries of TB vaccine funding needs in 2005 and in the 2020s illustrates how a chronic lack of funding has held back transformative progress and how the victories in between were hard fought and accomplished by making the most of too little.

Thirty-seven entities reported contributing to TB vaccines research in 2023, including 30 public funders, 4 companies, and 3 philanthropies. Of every dollar spent on TB vaccines research in 2023, \$0.51 came from philanthropies, \$0.45 came from public funders, and \$0.04 came from the private sector.

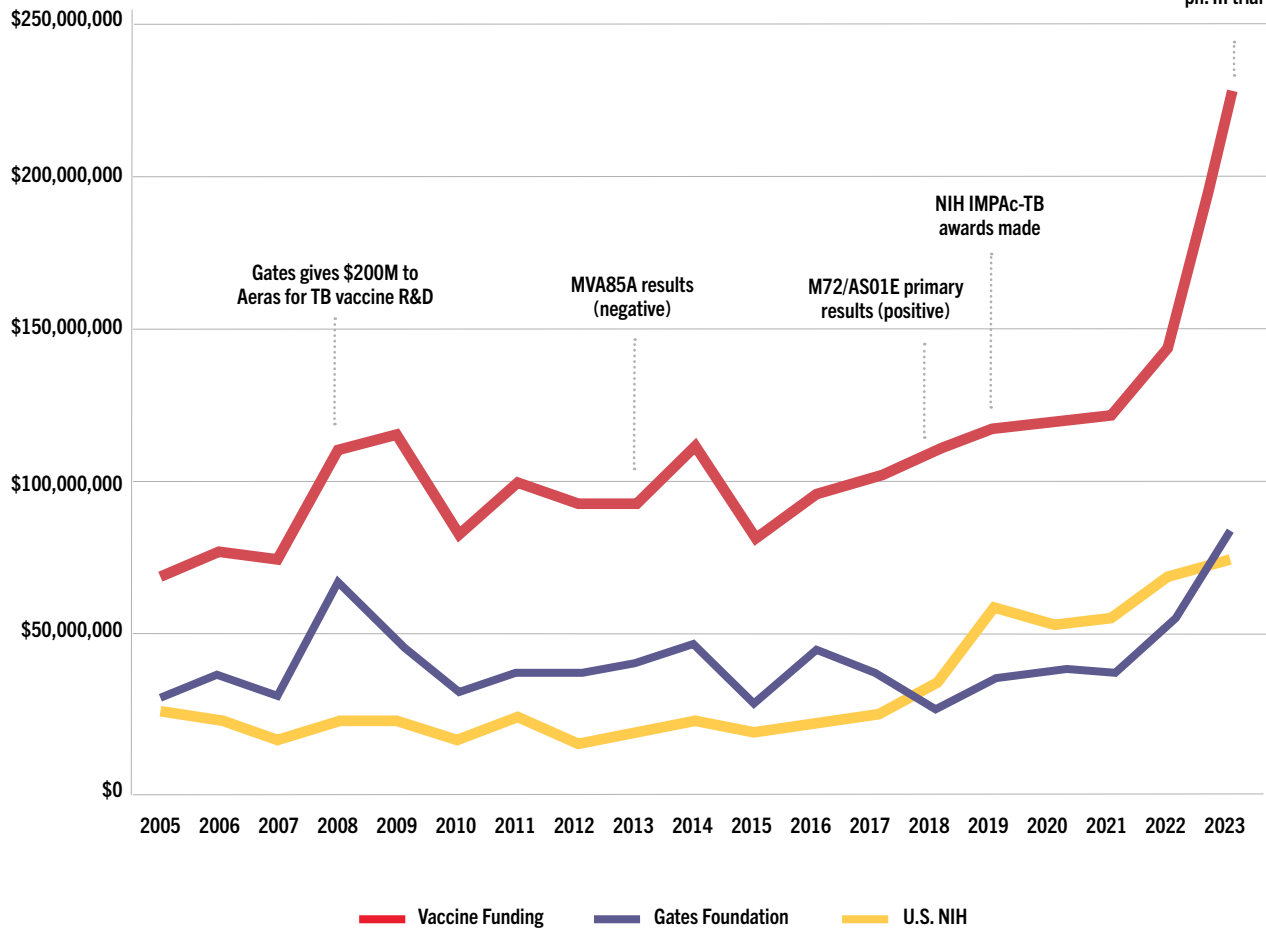
For the first time since 2017, the Gates Foundation overtook the U.S. NIH as the largest funder of TB vaccines research, with a new financing record of \$83 million. Seventy-five percent of the Gates Foundation’s spending supported TB vaccines research at the Gates MRI. Disbursements to Gates MRI included \$52 million for the advancement of the M72/AS01E vaccine candidate (currently undergoing a phase III trial) and \$12 million to evaluate revaccination with the BCG vaccine (which finished a phase II study in 2024). The next biggest expenditure by the Gates Foundation for TB vaccines research was \$6 million given to BioNTech to advance the development of mRNA vaccine candidates. In addition to the prior mentioned three projects, the Gates Foundation channeled funding through an additional 21 awards, ranging in size from \$33,000 to \$2.6 million.

The second largest funder of TB vaccines research in 2023 was the U.S. NIH, which also increased its spending compared to previous years. The U.S. NIH spent \$74 million on TB vaccines research in 2023, which marks a new high and is a modest step up from \$69 million in 2022. TB vaccines funding from the U.S. NIH was disbursed across 66 grants ranging from \$6,000 to \$12.9 million. Almost half (49%) of the U.S. NIH’s spending on TB vaccines R&D in 2023 supported the Immune Mechanisms of Protection Against *Mycobacterium tuberculosis* Centers (IMPAC-TB), which are

FIGURE 10

TB Vaccine R&D Funding, 2005–2023

Wellcome, Gates
commit funding
to M72/AS01E
ph. III trial



Year	Vaccine funding	Gates Foundation	U.S. NIH	Year	Vaccine funding	Gates Foundation	U.S. NIH
2005	\$68,351,530	\$28,677,457	\$24,204,968	2015	\$80,736,948	\$26,901,486	\$17,966,453
2006	\$76,555,111	\$36,084,667	\$21,792,115	2016	\$95,394,136	\$43,760,368	\$20,540,232
2007	\$73,620,128	\$29,700,000	\$15,689,367	2017	\$100,338,945	\$37,326,666	\$23,071,226
2008	\$109,337,224	\$66,909,941	\$21,226,170	2018	\$109,476,154	\$24,820,023	\$33,095,521
2009	\$115,741,957	\$47,569,104	\$21,400,857	2019	\$116,947,691	\$34,705,331	\$58,537,377
2010	\$81,280,821	\$30,449,862	\$14,764,230	2020	\$118,682,563	\$37,513,134	\$52,624,804
2011	\$99,183,567	\$37,225,976	\$23,023,129	2021	\$120,512,790	\$37,337,800	\$55,171,740
2012	\$92,049,229	\$37,753,518	\$13,271,004	2022	\$144,078,297	\$54,825,033	\$69,275,288
2013	\$92,373,647	\$39,599,146	\$18,237,070	2023	\$227,509,635	\$83,731,332	\$74,013,623
2014	\$111,340,797	\$46,649,769	\$21,639,775				

seeking to better understand TB immunology to guide vaccine design and development.²² This included \$27 million given to Seattle Children’s Hospital across three grants and \$8.7 million given to Harvard T.H. Chan School of Public Health. NIH funding for TB vaccines also included some notable investments in adjuvant development: the University of Sydney received \$3.7 million for the Advancing Vaccine Adjuvant Research for Tuberculosis program (AVAR-T), and the University of Montana received \$2.4 million to develop a novel synthetic adjuvant.

The third and fourth largest funders of TB vaccines research were two charities: Open Philanthropy and Wellcome respectively contributed \$18 million and \$14 million. Open Philanthropy gave \$18 million to the Gates Foundation to support development of the MTBVAC vaccine candidate. In this case, the Gates Foundation, usually a source of funding, is a recipient of money originating at Open Philanthropy and awarded to the Foundation through a “regranting challenge” designed to add resources to the grantmaking budgets of other funders with proven track records.²³ This \$18 million – which is part of a larger \$40 million award – was not spent by the Gates Foundation in 2023, but is included in the 2023 funding total because the money left the original source funder (Open Philanthropy) this year. TAG will track how the Gates Foundation spends this money over the coming years. Wellcome gave \$14 million to Gates MRI, the first piece of its landmark \$150 million investment in M72/AS01E.²⁴

After the U.S. NIH, the Korean Ministry of Health and Welfare, the European Commission, and the EDCTP were the largest public funders of TB vaccines research, with respective contributions of \$7.6 million, \$4.6 million, and \$4 million.

Anhui Zhifei Longcom was the only other entity to contribute more than \$4 million to TB vaccines R&D. The company spent \$6.6 million in 2023 – up from \$3 million in 2022. This money underwrote work on AEC/BC02, a novel subunit vaccine undergoing phase II testing, and additional work on the *M. vaccae* vaccine, which is approved for use in China.

Missing from these data: Archivel Farma, BioNTech, Quratis, GSK Biologicals, and Akagera Medicines, companies involved with TB vaccines R&D, did not respond to TAG’s FY2023 survey. Moderna informed TAG that the company did not have any externally reportable work for FY2023.

Spotlight: Spending by Vaccine Candidate

TAG conducted a keyword search to delineate vaccine research spending by candidate vaccine under development. While this approach does not provide a fully comprehensive overview of all spending on particular vaccines – as some relevant funders did not report on their spending or disaggregate spending by vaccine candidate or project – it does provide a useful impression of the scale of investments directed to different TB vaccines under development in 2023. TAG encourages readers to take the numbers in this section as a benchmark, not a definitive record or complete accounting.

M72/AS01E

Agent	Type	Major Partners and Funders	Status
M72/AS01E	Protein/adjuvant subunit vaccine	Gates MRI, Wellcome Trust, GSK Biologicals (AS01E adjuvant)	Phase III (newborns) Phase IIb (adults & adolescents)

The phase III trial of M72/AS01E began in March 2024. An earlier phase II trial showed that M72/AS01E provided 50% protection against active pulmonary TB disease among HIV-negative adults with TB infection,²⁵ a finding the phase III trial is now seeking to confirm. The Gates Foundation and Wellcome have committed to respectively give \$400 million and \$150 million to Gates MRI to undertake M72/AS01E's phase III trial.²⁶

Thirty percent of all TB vaccine research spending in 2023 (\$64.9 million) was directed toward advancing M72/AS01E. In 2023, the Gates Foundation and Wellcome respectively disbursed \$50 million and \$14 million to Gates MRI to support the M72/AS01E phase III clinical trial and development program.

MTBVAC

Agent	Type	Major Partners and Funders	Status
MTBVAC	Live, genetically attenuated MTB	Biofabri, Bharat Biotech, IAVI, TBVI, University of Zaragoza, EDCTP, U.S. NIH (ACTG/HVTN), Open Philanthropy	Phase III

MTBVAC was initially developed by the University of Zaragoza; it is now owned by the Spanish company Biofabri and is being developed together with partners such as IAVI. Biofabri is evaluating MTBVAC for two indications: 1) as a replacement for the BCG vaccine in infants and 2) as a prevention-of-disease vaccine among adolescents and adults.

A phase III trial to evaluate the safety and efficacy of MTBVAC in newborns compared with BCG started in 2022 and is funded by the EDCTP. In July 2024, the European Commission's Health Emergency Preparedness and Response Authority (HERA) announced it will invest EUR 12.5 million to accelerate this phase III trial.²⁷ This marks the first direct investment in TB research by HERA and will be tracked in future years of the report.

MTBVAC is also being evaluated in adults and adolescents. Relevant trials include a phase II safety and immunogenicity study of MTBVAC in people living with HIV funded by the U.S. NIH and conducted by the ACTG and HIV Vaccine Trials Network (HVTN), and a phase I/II study among adults in India sponsored by Bharat Biotech and Biofabri.²⁸ In addition to these efforts, IAVI has

secured funding for a phase IIb study of MTBVAC in adolescents and adults in Africa (though additional funding would allow IAVI to enlarge the study – potentially expanding it into a phase III trial – and put MTBVAC on a faster path to licensure).^{29,30}

Nine percent of all TB vaccine research spending in 2023 (\$21.6 million) supported the advancement of MTBVAC. The \$21.6 million spent on MTBVAC included \$18 million from Open Philanthropy and \$3 million from the EDCTP. The \$18 million given by Open Philanthropy went to the Gates Foundation and will eventually be given to IAVI to support the phase IIb trial of MTBVAC in adolescents and adults. Funding from the EDCTP supported the phase III trial in infants as well as follow-up work on an earlier phase IIa study in newborns.

Biofabri, which returned a survey to TAG, only reported spending funds received from EDCTP to support MTBVAC development.

VPM1002

Agent	Type	Major Partners and Funders	Status
VPM1002	Live rBCG	Serum Institute of India, Serum Life Science Europe, ICMR, EDCTP, U.S. NIH (IMPAACT/HVTN)	Phase III

The U.S. NIH, EDCTP, and ICMR gave \$1.4 million to multiple recipients to develop clinical trial capacity and advance clinical trials to evaluate the VPM1002 vaccine candidate under development by the Serum Institute of India (SII) and its partners, including Serum Life Science Europe. SII told TAG that SII co-funded manufacturing, testing, and quality control of vaccine batches for clinical trials but did not provide details of the financial costs incurred by SII. Funding from ICMR underwrote a phase III trial of VPM1002 and a second candidate vaccine called MIP among over 12,000 household contacts of people with TB disease. That study is fully enrolled, and results are anticipated soon.³¹

AEC/BC02

Agent	Type	Major Partners and Funders	Status
AEC/BC02	Protein/adjuvant subunit vaccine	Anhui Zhifei Longcom	Phase II

AEC/BC02 is undergoing a phase II safety, immunogenicity, and dosing study in China. Anhui Zhifei Longcom reported spending \$1.7 million on the advancement of AEC/BC02 in 2023.

ID93/GLA-SE (QTP101)

Agent	Type	Major Partners and Funders	Status
ID93/GLA-SE (QTP101)	Protein/adjuvant subunit vaccine	Quratis, U.S. NIH (ACTG/HVTN), AAHI	Phase IIb

ID93/GLA-SE (QTP101) is following two development pathways, targeting two different vaccine indications, and is supported by two different funders in two different countries.

In South Korea, Quratis has shared plans for a phase IIb/III study to test whether QTP101 prevents TB disease among adolescents and adults. The Korean Ministry of Health and Welfare gave \$1 million to support the phase IIb trial in 2023. Quratis itself did not report on its spending on this vaccine candidate in 2023. TAG previously shared information about a June 2023 initial

public offering (IPO) through which Quratis raised KRW14 billion (~\$11 million). At the time, the company said that “the money raised will be used to conduct [the] phase 2b/3 clinical trial of QTP101.”³² Quratis has pulled together an interesting array of partners, including Bio Farma PT in Indonesia and Shandong Lukang Hao Li You, a Chinese state-owned pharmaceutical company cofounded by Orion Holdings, which invested KRW42.7 billion (~\$32 million) in Quratis in a 2021 private equity funding round.³³

At the U.S. NIH, the ACTG and HVTN are preparing to open a phase IIa/IIb efficacy, safety, and immunogenicity study of ID93/GLA-SE given as a therapeutic vaccine to 1,500 participants with drug-sensitive TB. The trial will evaluate whether vaccination with ID93/GLA-SE improves TB treatment outcomes.

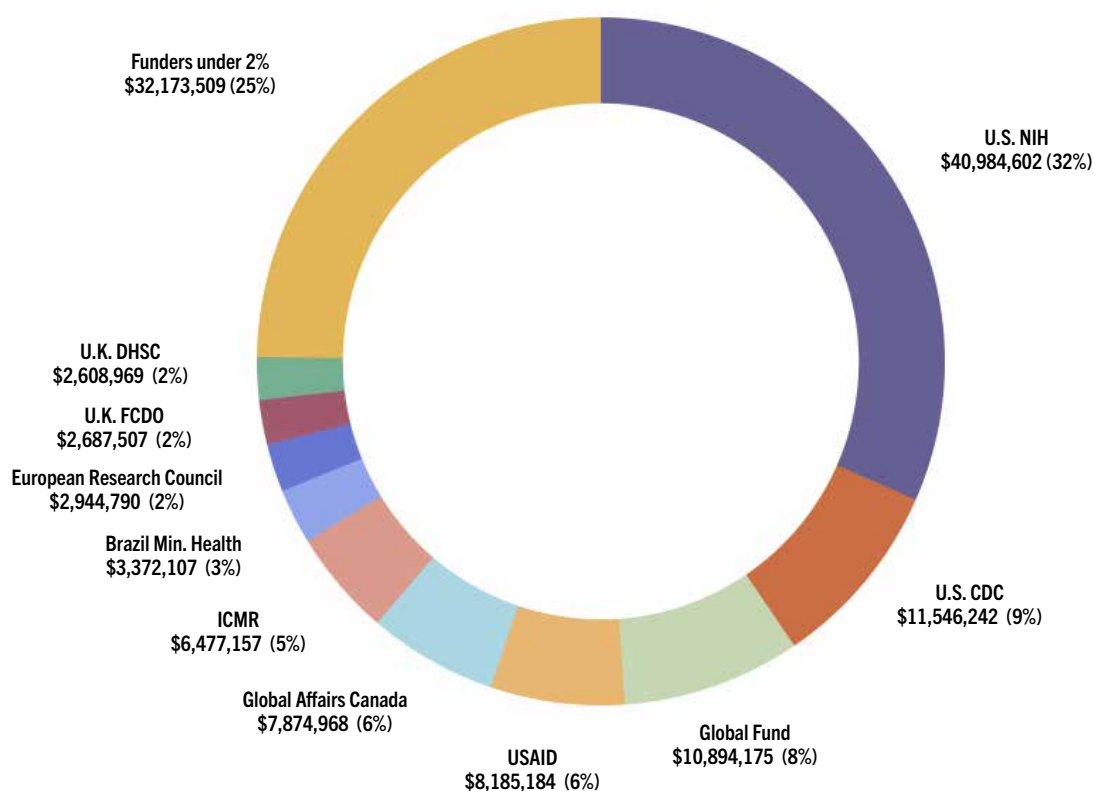
mRNA and DNA TB vaccine candidates (various)

Six percent of TB vaccine research spending in 2023 (\$13 million) supported early-stage R&D for development of next-generation mRNA and DNA TB vaccine candidates. This spending included a \$6 million grant to BioNTech from the Gates Foundation, \$2.8 million in spending by the Korean Ministry of Health and Welfare, and \$2 million in spending by the European Commission.

Operational Research & Epidemiology

FIGURE 11

Operational Research & Epidemiology: \$129,749,210



Other funders with investments under 2%

U.K. Medical Research Council (U.K. MRC)	\$2,431,218	Korea International Cooperation Agency (KOICA)	\$980,000
Australia Department of Health and Aged Care	\$2,364,985	Wellcome	\$913,952
India Ministry of Health and Family Welfare	\$2,287,713	Taiwan Centers for Disease Control	\$731,509
Unitaid	\$2,152,151	German Federal Ministry of Health (BMG)	\$667,030
Bill & Melinda Gates Foundation	\$2,041,655	European and Developing Countries Clinical Trials Partnership (EDCTP)	\$556,218
São Paulo Research Foundation (FAPESP)	\$2,024,773	Swedish Research Council	\$553,457
European Commission	\$2,021,857	ANRS MIE (Emerging Infectious Diseases)	\$450,393
Australia Department of Foreign Affairs and Trade (DFAT)	\$1,965,438	Swiss National Science Foundation	\$415,281
TDR (the Special Programme for Research and Training in Tropical Diseases), hosted by the World Health Organization	\$1,849,744	Danish International Development Agency (DANIDA)	\$290,086
Australia National Health and Medical Research Council (NHMRC)	\$1,777,093	Robert Koch Institute	\$223,509
Canadian Institutes of Health Research	\$1,203,553	EPCON	\$216,288
L'Initiative / Expertise France	\$1,174,950	Japan Ministry of Health, Labour and Welfare	\$212,889
		Other funders with expenditures <\$200,000	\$2,667,766

Operational and epidemiological research accounted for 11% of total funding in 2023. At \$129 million, spending on this research area remained below the \$157 million peak achieved in 2021.

Operational and epidemiological research spending supported a diverse array of studies, including demonstration projects seeking to eliminate TB in specific target communities, introduction and evaluation of community-based solutions to reduce TB transmission, and research to better understand transmission and infection dynamics. Spending on operational and epidemiological research also supported the U.S. NIH-funded International epidemiology Databases to Evaluate AIDS (IeDEA) consortium and IeDEA's Central Africa, East Africa, and Southern Africa regional consortiums. IeDEA collects and shares observational and epidemiological data that can be applied by researchers to investigate high-priority research questions. Each IeDEA region has a TB working group that conducts research on HIV-related TB.

The two largest disbursements given to operational and epidemiological research in 2023 were \$10.8 million from the Global Fund (described under multilateral funders and below) and \$7.8 million given by Global Affairs Canada to Stop TB Partnership for TB REACH. TB REACH is a mechanism to deliver fast-track funding to the TB community to test innovations to improve person-centered and gender-responsive TB care. In addition, the ICMR spent \$3.9 million on a project to reduce tuberculosis in the Saharia Tribe area of India. The project aimed to demonstrate a cost-effective and scalable strategic model for eliminating TB that is responsive to local needs and challenges.

Seventy-two unique entities contributed to operational and epidemiological TB research in 2023. Fifty-four public entities gave 86% of funds, 4 multilateral organizations gave 12% of funds, 11 philanthropies gave 3% of funds, and 3 companies gave less than 1% of funds.

The U.S. NIH remained the largest supporter of TB operational and epidemiological research in 2023, contributing 32% of all investments in this area. This funding was distributed across 112 grants ranging from \$2,000 to \$1.7 million, with an average grant size of \$366,000.

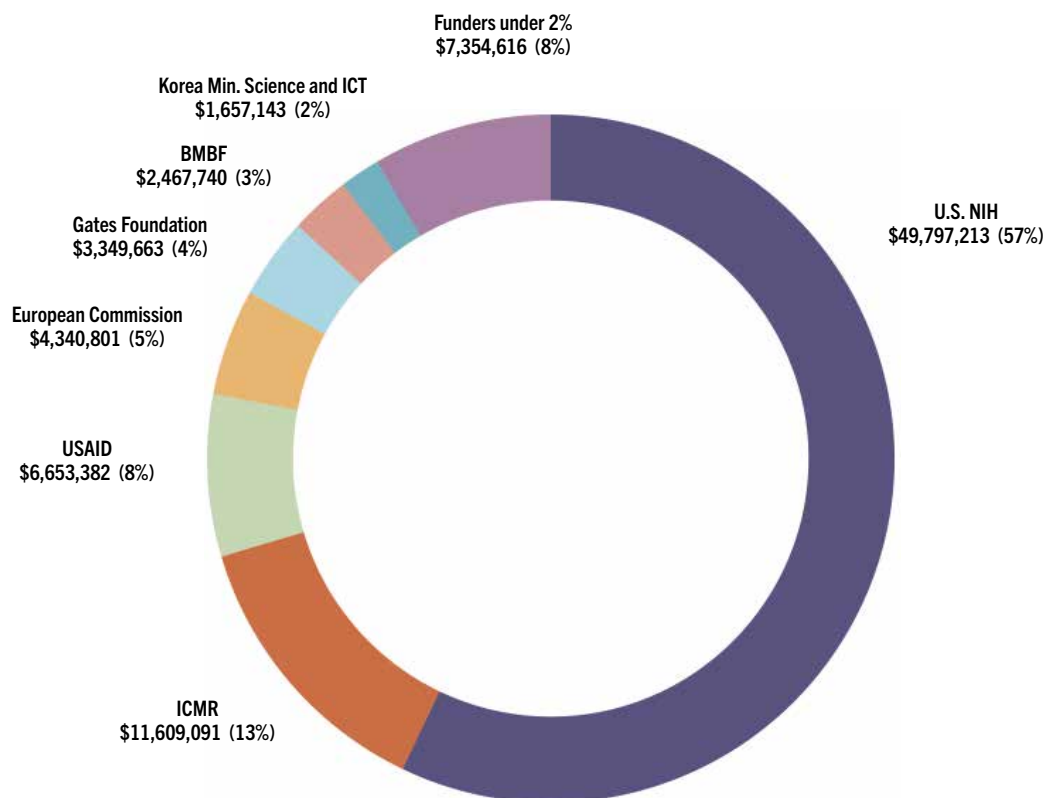
Two other funders contributed over \$10 million to operational and epidemiological research in 2023: the U.S. CDC and the Global Fund. The U.S. CDC's funding supported the TB Epidemiologic Studies Consortium and the U.S. CDC's Global HIV and TB portfolio. The Global Fund's spending supported interventions classed as "surveys," which includes operational research, in its TB, HIV/TB, resilient and sustainable systems for health, and multicomponent grants.

Three other funders gave more than \$6 million to operational and epidemiological research in 2023: USAID, Global Affairs Canada, and ICMR.

Research Infrastructure

FIGURE 12

Research Infrastructure: \$87,229,647



Other funders with investments under 2%

Wellcome	\$1,623,860	Fondation Mérieux	\$187,758
U.K. Medical Research Council (U.K. MRC)	\$1,280,111	India Department of Biotechnology	\$179,012
Japan Ministry of Health, Labour and Welfare	\$1,226,770	L'Initiative / Expertise France	\$160,612
Swiss National Science Foundation	\$1,102,217	Schleswig-Holstein Ministry of Education, Research and Culture	\$144,055
Carlos III Health Institute	\$262,249	Korea Disease Control and Prevention Agency	\$139,587
European and Developing Countries Clinical Trials Partnership (EDCTP)	\$230,647	Australia National Health and Medical Research Council (NHMRC)	\$116,083
U.K. Biotechnology and Biological Sciences Research Council	\$213,760	Brazil Ministry of Health	\$103,348
		Other funders with expenditures <\$100,000	\$384,546

Funders spent \$93 million on research infrastructure and unspecified research projects in 2023 – down from \$99 million in 2022. Ninety-four percent of this spending (\$87 million) supported the development and enhancement of infrastructure for TB research. This is the first year that TAG has asked survey respondents to separate their spending on “research infrastructure” from “unspecified research”. In previous years, spending on research infrastructure and unspecified research was grouped as a single category and jointly reported.

Thirty unique entities contributed funds to TB research infrastructure in 2023, including 25 public entities, 4 philanthropies, and 1 company. Public entities provided 94% of funds and philanthropies gave the remaining 6%.

Research infrastructure investments included spending on human resources (including, for example, training, mentoring, collaboration, and conference participation) and scientific infrastructure (including spending on laboratory equipment, imaging capacity, biocontainment facilities, and biorepositories).

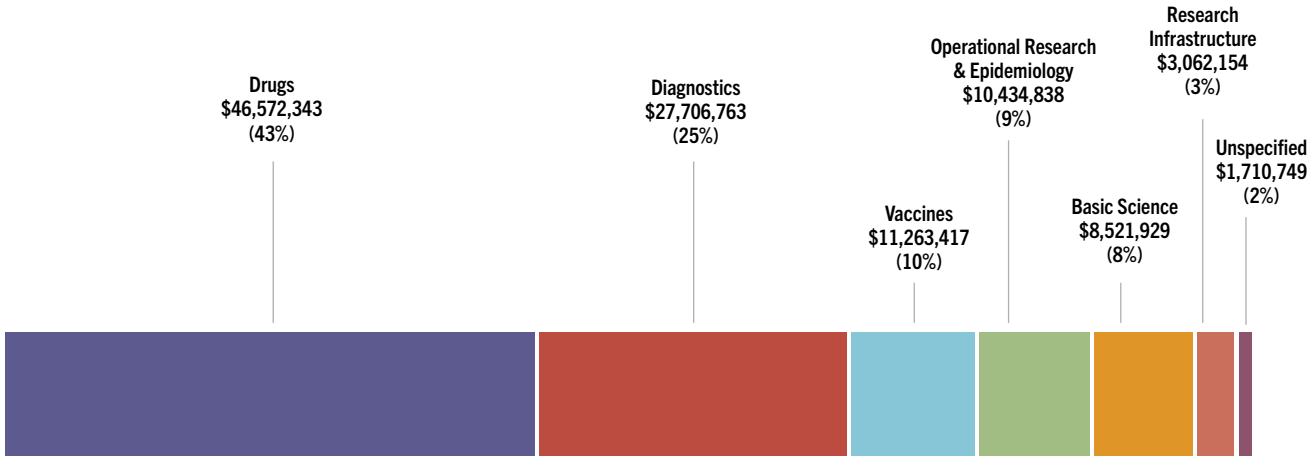
The U.S. NIH gave more to TB research infrastructure than any other funder in 2023 – contributing 57% (\$49 million) of all funds. The second largest funder of TB research infrastructure, the ICMR, gave 13% of all funds in this area (\$11.6 million). Only one other funder, USAID, spent over \$5 million on TB research infrastructure in 2023.

The largest spending disbursement for research infrastructure made in 2023 was a U.S. NIH grant of \$14.5 million to support the NIAID Global Collaborative for TB Research and Development. The second largest was an \$11.5 million disbursement from the ICMR to support salaries, infrastructure, and consumables at India’s National Institute for Research in Tuberculosis, a major TB research hub.

Pediatric TB Research

FIGURE 13

Pediatric TB R&D Funding by Research Area, 2023 Total: \$109,272,193



Twelve percent of all people that developed TB in 2023 were children (0–14 years old).³⁴ TAG has previously called for spending on pediatric TB research to be commensurate with the burden of disease faced in this population.³⁵

Nine percent of total TB research spending in 2023 was directed toward pediatric research. While this is higher than what was committed to pediatric research in 2022 (8%), it remains below the share of TB disease burden borne by children (12%).

Encouragingly, pediatric research spending is on an upward incline and reached a new high in 2023. Between 2022 and 2023, pediatric research spending rose by \$22 million, from \$87 million to \$109 million. This increase is largely attributable to increased funding from USAID and Unitaid, who jointly increased their spending by \$17.8 million between 2022 and 2023.

Forty-two unique entities contributed funds to pediatric TB research in 2023. Twenty-six public funders accounted for 68% of total funding in this area, and 24% of all funds spent on pediatric TB research in 2023 came from the U.S. NIH.

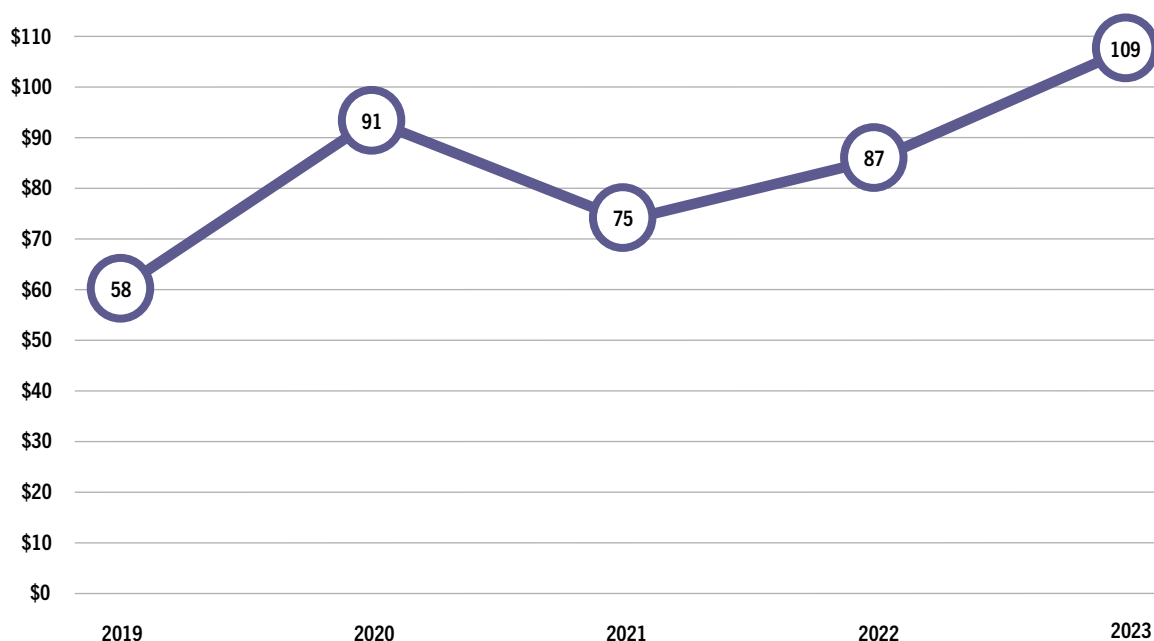
Two multilateral organizations contributed 22% of pediatric TB research funds in 2023. Ninety-nine percent of this financing came from Unitaid, which increased its spending to \$24 million in 2023 following three years of plateaued funding (at ~\$16 million) from 2020 to 2022.

Nine philanthropies contributed 5% of pediatric TB research funds in 2023. Seventy-two percent of this funding came from the Gates Foundation.

Five companies contributed 5% of pediatric research funds in 2023. Eighty-eight percent of spending by the private sector on pediatric TB research came from Company X.

FIGURE 14

Pediatric TB R&D Funding, 2019–2023 (in Millions)



Among public-sector funders of pediatric TB research:

- The U.S. NIH spent \$26 million on pediatric TB research in 2023 – remaining the largest funder of this research area. The U.S. NIH has given more than \$20 million to pediatric research in every year since 2020. This included over \$4 million spent on TB drug and vaccine clinical trials by the International Maternal, Pediatric, Adolescents AIDS Clinical Trials Network (IMPAACT) and its contracted affiliates. Most spending by IMPAACT went toward a study of the TB preventive treatment regimen 1HP in adolescents and children younger than age 13.
- USAID was the second largest funder of pediatric TB research. USAID spent \$25 million in 2023 – up from \$15.9 million in 2022. USAID last spent over \$20 million on pediatric TB research in 2020. Research addressing the needs of children with TB is a major focus of the USAID-funded SMART4TB project and also an aspect of the support USAID gave to TB Alliance.
- The fourth largest funder of TB research, EDCTP, spent \$7 million. EDCTP has increased its pediatric TB research spending since 2021, but its spending still remains below peak levels seen in 2020 (\$17 million). EDCTP funding for pediatric research supported diagnostic studies inclusive of children and young people as well as two clinical trials of TB vaccines in infants, one evaluating the MTBVAC vaccine candidate and the other evaluating VPM1002.
- Australia’s DFAT emerged as a new top funder of pediatric TB spending in 2023, spending \$3.9 million. This money went to support TB drug development at the TB Alliance.

Of every dollar spent on pediatric research efforts in 2023, \$0.43 went to drugs research, \$0.25 went to diagnostics research, \$0.10 went to vaccines research, \$0.10 went to operational and epidemiological research, \$0.08 went to basic science, \$0.03 went to research infrastructure, and \$0.02 went to unspecified research projects.

TABLE 4

Top 15 Pediatric TB R&D Funders, 2023

RANK	FUNDER	FUNDER TYPE	2023 FUNDING	PERCENTAGE OF TOTAL
1	U.S. National Institutes of Health (U.S. NIH)	P	\$26,367,326	24%
2	U.S. Agency for International Development (USAID)	P	\$25,473,983	23%
3	Unitaid	M	\$24,441,049	22%
4	European and Developing Countries Clinical Trials Partnership (EDCTP)	P	\$7,352,420	7%
5	Company X	C	\$4,300,000	4%
6	Australia Department of Foreign Affairs and Trade (DFAT)	P	\$3,985,788	4%
7	Bill & Melinda Gates Foundation	F	\$3,943,919	4%
8	European Commission	P	\$1,432,899	1%
9	U.S. Centers for Disease Control and Prevention (U.S. CDC)	P	\$1,405,181	1%
10	Irish Aid	P	\$1,081,440	1%
11	Korea Ministry of Health and Welfare	P	\$1,000,000	1%
12	Independent Research Fund Denmark	P	\$898,657	1%
13	ANRS MIE (Emerging Infectious Diseases)	P	\$834,156	1%
14	U.S. Uniformed Services University/Department of Defense	P	\$765,000	1%
15	Wellcome	F	\$732,056	1%
	Other funders with expenditures <\$700,000		\$5,258,320	5%
	Total		\$109,272,193	

C = Corporation/Private Sector; F = Foundation/Philanthropy; M = Multilateral; P = Public-Sector R&D Agency

Discussion

"While \$1.2 billion in funding for TB research this year is a step in the right direction, let's be clear: this is a drop in the bucket compared to the \$5 billion we need annually, as agreed upon at the 2023 UN High-Level Meeting on TB.

The increased support for TB vaccines is promising, but we must elevate our ambitions. It's time for a collective push to meet our commitments and save lives."

— Dr. Lucica Ditiu, Executive Director, Stop TB Partnership

Every year over 10 million people fall ill with TB, while more than 1 million people die of the disease. TB is the leading cause of death by an infectious agent globally, only ceding this ignominious title to COVID-19 from 2020 through 2022. While TB research spending rose to \$1.2 billion in 2023, the scale of spending fell far short of what is needed to put the world on track to end the TB epidemic by 2030.

TB investments came short of the \$2 billion target in every year from 2018 through 2022 (when this target was in place) and, in 2023, reached only a quarter of the newly adopted \$5 billion target. Inadequate funding holds up the delivery of urgently needed tools to combat TB, including new vaccines, drugs, and diagnostics. The long-awaited phase III trial of the M72/AS01E vaccine, for example, took five years to start after a phase II trial showed positive results. In another example, funding remains a barrier to launching a full-sized phase III trial of the MTBVAC vaccine in adolescents and adults.

COVID-19 showed what is possible when funding is not an impediment to research. The research and development of vaccines for COVID-19 moved seamlessly from phase I to phase II to phase III trials to regulatory approval, without the years-long delays often seen between trial phases for vaccines against neglected diseases. The speed and scale of COVID-19 vaccine trials was enabled by massive public spending and coordinated multicountry and multisectoral efforts.

A similar level of urgency is now needed in the fight against TB. While it is heartening to see more funders enter the TB research space and existing megafunders give more to advance pivotal vaccine trials — at a macro level, TB research remains dismally underfunded.

In addition to building a critical mass of smaller funders, more large funders and increased public investment are urgently needed. The good news is that new, potential donors and funding mechanisms already exist that could provide essential funding if convinced to expand their portfolios to TB R&D.

One such funder is the United States Biomedical Advanced Research and Development Agency (BARDA). BARDA supports biomedical research and manufacturing to address serious public health threats, including airborne respiratory infectious diseases, but has historically not focused on TB. BARDA reported investing \$65 billion in the COVID-19 response in its 2022–2026 Strategic Plan. These investments supported development and delivery of COVID-19 vaccines, therapeutics, and diagnostics.³⁶ BARDA has also funded development and procurement of vaccines against mpox³⁷ and pandemic influenza viruses, including avian flu.³⁸

“Drug-resistant TB is one of the leading killers from antimicrobial resistance. We must prioritize TB R&D within the broader AMR agenda, ensuring that new treatments, vaccines, and diagnostics reach the communities who need them most. Closing this gap is not just a financial obligation – it’s a moral imperative for the millions affected by AMR and TB.”

— Austin Obiefuna, Vice-Chair of the Stop TB Partnership & Executive Director, Afro Global Alliance

Investment by BARDA into TB R&D would provide desperately needed funds to accelerate vaccine development, delivery, and manufacturing. In addition to catalyzing TB vaccine research, BARDA can also play an important role in financing the development of therapeutics to combat TB drug resistance within its broader efforts to address antimicrobial resistance (AMR).³⁹ While the United States government provides more money for TB research than any other country, its spending in 2023 reached only 39% of its fair share. Extending BARDA’s portfolio to include TB would move the country closer to achieving its fair share target and would complement existing investments by other U.S. government agencies such as the U.S. NIH and USAID.

There is also a pressing need for more multilateral investors in the TB research arena, particularly multilateral funders that support vaccines R&D. No multilateral organizations invested in TB vaccines research between 2020 and 2023. In fact, with the exception of some small expenditures in support of TB vaccine research efforts by the WHO, no multilateral organization has ever invested in this area of R&D since TAG began tracking spending in 2005.

One potential multilateral investor that could provide essential support to TB vaccines R&D is CEPI, the Coalition for Epidemic Preparedness Innovations. CEPI is a multilateral financing mechanism seeking to develop vaccines to combat epidemic and pandemic threats. CEPI spent over \$1.5 billion to advance research and development of COVID-19 vaccines and provides support for development of vaccines against a range of priority viral pathogens.⁴⁰ Although CEPI does not currently prioritize TB or other bacterial pathogens, there are natural opportunities for CEPI to support TB research in ways that would synergize with its existing investments. For example, CEPI announced in 2024 that it would provide funding to BioNTech to support the establishment of mRNA vaccine manufacturing capacity in Africa. BioNTech is seeking to develop mRNA vaccines against TB and has registered two phase I clinical trials evaluating novel mRNA-based TB vaccine constructs.⁴¹ Similarly, CEPI funds work by Rwanda-based Akagera Medicines to develop multivalent mRNA vaccines for flu; Akagera Medicines is also pursuing preclinical development of TB mRNA vaccines. Advocates have called for CEPI to explore opportunities to co-invest in TB research by “leveraging the benefits of syndicating investments and infrastructure” with its other vaccine development programs.⁴²

In their own ways, BARDA and CEPI each offer examples of how existing mechanisms to finance research to combat AMR and neglected diseases could offer catalytic support for TB research. AMR financing mechanisms have historically provided little support to TB, despite TB’s leading role as a driver of AMR deaths.⁴³ In addition to BARDA, financing mechanisms for AMR that have not historically supported TB R&D include the AMR Action Fund, the Combating Antibiotic Resistant Bacterial Biopharmaceutical Accelerator (CARB-X), the Global Antibiotic Research and Development Partnership (GARDP), and the Global AMR R&D Hub.

The absence of TB from these initiatives stands counter to the prominent recognition TB received at the 2023 UN HLM on AMR, as evidenced by the associated political declaration, which acknowledges that “drug-resistant tuberculosis is one of the key components of the global challenge of antimicrobial resistance.”⁴⁴ The lack of TB representation in multilateral AMR research also lags the priority placed on TB within WHO policy documents on AMR research. Across multiple studies and policy papers, the message coming out of WHO is clear: the world needs new TB vaccines to get ahead of AMR. To take just a few examples: a 2022 WHO report on the pipeline of bacterial vaccines named TB among those warranting the highest-priority action.⁴⁵ A study commissioned by WHO estimated that new vaccines against TB and *Klebsiella pneumoniae* could avert 543,000 deaths associated with AMR annually.⁴⁶ And in 2024, another WHO report looking at the potential of vaccines against 24 pathogens to reduce antibiotic use found that new TB vaccines could have the greatest impact by sparing 1.2 to 1.9 billion antibiotic doses annually.⁴⁷

Catalytic funding from new sources is required to put the world on track to end TB by 2030. While large philanthropic donors are spending more to advance the development of critical health technologies, such as new TB vaccines, the urgency of the TB crisis is not reflected in the spending of public funders or multilateral organizations. Public funders have historically given around 70% of funds available for TB research. During 2023, their contributions to TB research fell to 62% of total funds. In this year, spending on TB vaccines research by philanthropies overtook spending by governments.

If left unaddressed, the failure of governments to keep pace with philanthropic spending may have negative long-term consequences for TB innovation through diminishing public ownership over the research agenda and its outputs. To prevent further entrenchment of the TB research field’s reliance on a small number of philanthropic funders and the calcification of this dependency into a new Gilded Age, it is crucial to promote greater public spending, as well as diversification of funding sources. TB advocates have an important role to play in persuading their governments to meet their fair share of TB financing through boosting their contributions to national and multilateral funding mechanisms, while also advocating for stronger protections to ensure that the outcomes of publicly funded research remain affordable and accessible to all.

Encouragingly, multiple health technologies with great potential to transform TB prevention, diagnosis, treatment, and care are already in the R&D pipeline. Delivering on the promise of these technologies by making them equitably available to health programs and people across the world within this decade is possible – but only if governments rise to the challenge of ending TB through research and innovation.

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Appendix 1: Methodology

TAG tracks global funding for TB R&D by surveying public, private, philanthropic, and multilateral organizations with known or possible investments in TB research. The survey asks recipients to report expenditures on TB research in a given fiscal year and to categorize spending by seven research areas: basic science, diagnostics, drugs, vaccines, operational research and epidemiology, research infrastructure, and unspecified research. (This is the first year that the survey asked funders to distinguish spending on “research infrastructure” from “unspecified research.” Previously these categories were counted together as “infrastructure/unspecified projects.”) Within these seven categories, recipients are asked to indicate any funding for pediatric TB research (see box). Respondents report expenditures according to how their fiscal year is defined, so the funding reported here does not align with calendar year 2023 perfectly.

TAG surveyed 342 organizations for this year’s report, more than in any other year, and received 194 responses. Of these 194 responses, 159 returned surveys reporting TB research spending in 2023, 24 reported that they did not spend any money on TB research, and 11 declined or said they were unable to participate. From returned surveys, TAG identified 194 unique entities that spent money on TB research in 2023.

Organizations report funding in local currencies, which TAG converts into U.S. dollars using the average annual interbank exchange rates published by the OANDA Corporation. All dollar figures in the report are published in U.S. dollars unless otherwise noted and are rounded to the nearest dollar. Dollar figures represent disbursements (i.e., actual transfer of funds) made in 2023, rather than commitments, pledges, or allocations for future years. The survey is designed to capture direct expenditures on TB research and so does not necessarily reflect indirect funding through salaries, overhead, or infrastructure.

Note on Pediatric Methodology

The survey asks recipients to mark research projects that address pediatric TB or otherwise delineate support for pediatric research within any funding assigned to one of the seven core research areas. TAG further identifies research related to pediatric TB by conducting a keyword search of titles and abstracts contained in returned surveys using the following search terms: pediatric, paediatric, infant, child, kid, adolescent, teen, natal, pregnant, and pregnancy. This methodology generates a reasonable estimate of pediatric TB research spending, but it does not capture research that informs the development of pediatric health technologies without studying TB in children directly. Additionally, some funders cannot disaggregate pediatric research funding from overall expenditures. TAG encourages all funders to develop ways of identifying pediatric TB research spending to enable more accurate resource tracking in this area.

TAG reviews each returned survey for completeness, taking care to avoid double-counting awards reported by more than one funder. Many organizations fund some research projects while receiving outside money for others. To minimize the risk of double counting, the survey asks recipients to note whether spending represents one of three categories: funding given to others, funding received from others, or self-funded research. Any awards listed on more than one survey enter TAG’s database as reported by the original source funder. For projects supported by more than one organization, TAG asks funders to report only their share of the total investment.

Note on Fair Share Target Methodology

How TAG calculated the updated fair share targets

The updated fair share targets were first presented in 2023 in TAG's briefing memo *New Fair Share Funding Targets for TB Research: 0.1% → 0.15%*.⁴⁸ The updated fair share targets represent 0.15% of countries' GERD spending. TAG used GERD data from the OECD to calculate national fair share targets.⁴⁹ When unavailable from the OECD, GERD data was sourced from the United States National Science Foundation.⁵⁰ At the time that the updated fair share targets were calculated, GERD spending was only available up to 2022. Therefore, GERD data from 2022, or the most recent prior year to 2022 (back to 2018), was used to calculate the new fair share targets. The source of GERD spending for each country is provided in TAG's memo on the new fair share targets.

How TAG converted spending to US\$PPPs

Spending in national currencies was converted to spending in US\$PPP (purchasing power parities) using conversion rates from the OECD's July 2024 Main Science and Technology Indicators (MSTI) Databook.⁵¹ For countries for which a conversion rate was unavailable in the OECD's July 2024 MSTI Databook, US\$PPP conversion rates were sourced from OECD's Data Explorer database or from the World Bank's Data Bank.^{52,53} Conversion rates for 2023 were used when available. When unavailable, conversion rates from the most recent year prior to 2023 were used to convert spending in national currencies to US\$PPP.

Why some countries do not have a fair share target

Updated fair share targets have not been calculated for five of the countries that reported public spending on TB research in 2023: Ethiopia, Paraguay, Peru, the Philippines, and Thailand. This is because data on GERD spending was unavailable from the sources used from 2022 back to 2018. If GERD data for these countries for a relevant year becomes available, a fair share target for these countries will be added in future reports.

Limitations to the Data

The comprehensiveness of the data in this report depends on the proportion of institutions funding TB research that participate in the survey. This proportion cannot be calculated since the true number of TB research funders worldwide is unknown. TAG makes a considerable effort to ensure a wide survey reach and yield. The survey is available in multiple languages, and TAG supports targeted Spanish-language survey outreach to funders in Spain and Latin and South America. In addition, TAG routinely updates the survey frame by adding new organizations, most of which do not have known investments in TB R&D but either fund health research generally or have a record of investing in related diseases. TAG closely monitors developments in the TB research field to identify new funders. Finally, TAG makes a particular effort to encourage the continued participation of the 30 largest funders from the previous year's report. The high degree of concentration of TB research funding means that the top 30 funders typically comprise over 90% of total spending. The composition of this group has remained remarkably stable over time. This year, 29 of the top 30 funders from 2022 participated in the survey. The missing group was Oxford Immunotec, which ranked seventeenth in 2022 with total funding of \$11.2 million in support of TB diagnostics R&D. Oxford Immunotec relaunched as a new company called Revvity in 2023.

A number of funders with known investments in TB R&D did not return surveys this year. These organizations are noted in the sections of the report that describe funding by research area. TAG received no information from entities in the Russian Federation or government agencies in China.

TAG encourages any funder not listed here to participate in future survey rounds. Funders may reach out to TAG at tbrdtracking@treatmentactiongroup.org with information or corrections to share. Any corrections submitted to TAG will enter print in next year's publication.

This report would not be possible without considerable effort by the hundreds of funding officers and administrative staff who fill out the survey each year. TAG is grateful to the 194 organizations around the world that responded to this year's survey.

Appendix 2: TB R&D Funders by Rank

TB R&D Funders by Rank, 2023

RANK	FUNDER	FUNDER TYPE	TOTAL	BASIC SCIENCE	DIAGNOSTICS	DRUGS	VACCINES	OPERATIONAL RESEARCH & EPIDEMIOLOGY	RESEARCH INFRASTRUCTURE	UNSPECIFIED
1	U.S. National Institutes of Health (U.S. NIH)	P	\$412,180,492	\$110,114,087	\$48,688,470	\$87,642,471	\$74,013,623	\$40,984,602	\$49,797,213	\$940,026
2	Bill & Melinda Gates Foundation	F	\$229,997,077	\$796,731	\$25,312,730	\$114,764,967	\$83,731,332	\$2,041,655	\$3,349,663	\$0
3	U.S. Agency for International Development (USAID)	P	\$41,638,390	\$0	\$6,053,818	\$14,790,627	\$1,742,080	\$8,185,184	\$6,653,382	\$4,213,299
4	Unitaid	M	\$38,345,049	\$0	\$17,295,000	\$18,897,898	\$0	\$2,152,151	\$0	\$0
5	AMR Accelerator/Innovative Health Initiative	P	\$34,703,333	\$0	\$0	\$34,703,333	\$0	\$0	\$0	\$0
6	Company X	C	\$30,958,144	\$0	\$0	\$30,958,144	\$0	\$0	\$0	\$0
7	Otsuka Pharmaceutical	C	\$30,261,310	\$0	\$0	\$30,261,310	\$0	\$0	\$0	\$0
8	European and Developing Countries Clinical Trials Partnership (EDCTP)	P	\$27,898,453	\$0	\$12,045,589	\$10,999,056	\$4,066,942	\$556,218	\$230,647	\$0
9	European Commission	P	\$24,933,166	\$5,621,383	\$2,512,508	\$5,799,191	\$4,637,427	\$2,021,857	\$4,340,801	\$0
10	Wellcome	F	\$23,435,899	\$4,447,605	\$48,463	\$1,600,686	\$14,801,333	\$913,952	\$1,623,860	\$0
11	Indian Council of Medical Research (ICMR)	P	\$20,891,392	\$328,456	\$1,274,837	\$567,410	\$634,441	\$6,477,157	\$11,609,091	\$0
12	Open Philanthropy	F	\$20,443,966	\$975,000	\$924,880	\$177,900	\$18,366,186	\$0	\$0	\$0
13	U.S. Centers for Disease Control and Prevention (U.S. CDC)	P	\$19,636,961	\$0	\$0	\$8,090,719	\$0	\$11,546,242	\$0	\$0
14	U.K. Foreign, Commonwealth and Development Office (FCDO)	P	\$15,430,256	\$0	\$1,492,320	\$11,192,400	\$0	\$2,687,507	\$58,029	\$0
15	German Federal Ministry of Education and Research (BMBF)	P	\$13,919,713	\$1,754,744	\$2,313,506	\$6,713,230	\$670,493	\$0	\$2,467,740	\$0
16	Anhui Zhifei Longcom Biopharmaceutical Co.	C	\$13,900,016	\$0	\$7,205,429	\$0	\$6,694,587	\$0	\$0	\$0
17	Korea Ministry of Health and Welfare	P	\$11,283,613	\$260,229	\$1,045,078	\$2,341,452	\$7,620,693	\$16,160	\$0	\$0
18	Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)	M	\$10,894,175	\$0	\$0	\$0	\$0	\$10,894,175	\$0	\$0
19	U.K. Medical Research Council (U.K. MRC)	P	\$10,474,797	\$2,360,160	\$907,724	\$2,556,404	\$939,180	\$2,431,218	\$1,280,111	\$0
20	European Investment Bank (EIB)	P	\$8,110,800	\$0	\$0	\$8,110,800	\$0	\$0	\$0	\$0
21	Global Affairs Canada	P	\$7,874,968	\$0	\$0	\$0	\$0	\$7,874,968	\$0	\$0
22	Swiss National Science Foundation	P	\$6,786,727	\$3,458,685	\$109,185	\$1,341,654	\$359,706	\$415,281	\$1,102,217	\$0
23	Macleods Pharmaceuticals	C	\$6,000,000	\$0	\$0	\$6,000,000	\$0	\$0	\$0	\$0
24	Australia Department of Foreign Affairs and Trade (DFAT)	P	\$5,951,226	\$0	\$0	\$3,985,788	\$0	\$1,965,438	\$0	\$0
25	BATM	C	\$5,872,219	\$0	\$5,872,219	\$0	\$0	\$0	\$0	\$0
26	Japan Agency for Medical Research and Development (AMED)	P	\$5,015,132	\$1,441,541	\$751,928	\$531,332	\$2,118,195	\$172,136	\$0	\$0
27	Australia National Health and Medical Research Council (NHMRC)	P	\$4,989,067	\$1,859,935	\$298,142	\$937,814	\$0	\$1,777,093	\$116,083	\$0
28	Qure.ai	C	\$4,900,000	\$0	\$4,900,000	\$0	\$0	\$0	\$0	\$0
29	Canadian Institutes of Health Research	P	\$4,809,237	\$1,498,131	\$369,832	\$1,501,254	\$236,468	\$1,203,553	\$0	\$0
30	Korea Ministry of Science and ICT	P	\$4,149,875	\$1,575,880	\$454,712	\$251,926	\$71,429	\$138,786	\$1,657,143	\$0
31	French National Research Agency (ANR)	P	\$4,144,678	\$1,918,602	\$106,340	\$1,984,195	\$135,541	\$0	\$0	\$0
32	Brazil Ministry of Health	P	\$3,548,316	\$0	\$68,727	\$0	\$4,134	\$3,372,107	\$103,348	\$0
33	Swedish Research Council	P	\$3,384,087	\$881,868	\$438,522	\$1,510,239	\$0	\$553,457	\$0	\$0
34	QIAGEN	C	\$3,331,945	\$0	\$3,331,945	\$0	\$0	\$0	\$0	\$0

C = Corporation/Private Sector; F = Foundation/Philanthropy; M = Multilateral; P = Public-Sector Agency;

Appendix 2: TB R&D Funders by Rank

TB R&D Funders by Rank, 2023 (continued)

RANK	FUNDER	FUNDER TYPE	TOTAL	BASIC SCIENCE	DIAGNOSTICS	DRUGS	VACCINES	OPERATIONAL RESEARCH & EPIDEMIOLOGY	RESEARCH INFRASTRUCTURE	UNSPECIFIED
35	U.K. Department of Health and Social Care	P	\$3,180,750	\$0	\$9,693	\$393,388	\$168,700	\$2,608,969	\$0	\$0
36	Infervision Medical Technology Co.	C	\$3,000,000	\$0	\$3,000,000	\$0	\$0	\$0	\$0	\$0
37	Taiwan Ministry of Health and Welfare	P	\$3,000,000	\$3,000,000	\$0	\$0	\$0	\$0	\$0	\$0
38	European Research Council	P	\$2,944,790	\$0	\$0	\$0	\$0	\$2,944,790	\$0	\$0
39	São Paulo Research Foundation (FAPESP)	P	\$2,769,526	\$38,721	\$30,290	\$250,168	\$347,229	\$2,024,773	\$78,345	\$0
40	Company E	C	\$2,580,000	\$0	\$2,580,000	\$0	\$0	\$0	\$0	\$0
41	Korea Disease Control and Prevention Agency	P	\$2,562,047	\$554,068	\$488,128	\$1,025,096	\$200,414	\$154,753	\$139,587	\$0
42	India Department of Biotechnology	P	\$2,539,133	\$1,743,005	\$152,081	\$328,199	\$0	\$136,836	\$179,012	\$0
43	India Ministry of Health and Family Welfare	P	\$2,398,390	\$0	\$0	\$10,876	\$0	\$2,287,713	\$0	\$99,801
44	Australia Department of Health and Aged Care	P	\$2,364,985	\$0	\$0	\$0	\$0	\$2,364,985	\$0	\$0
45	CanSino Biologics	C	\$2,318,911	\$0	\$0	\$0	\$2,318,911	\$0	\$0	\$0
46	U.K. Biotechnology and Biological Sciences Research Council	P	\$2,285,549	\$1,009,878	\$138,180	\$923,731	\$0	\$0	\$213,760	\$0
47	Médecins Sans Frontières	F	\$2,254,831	\$0	\$503,470	\$1,660,886	\$0	\$90,474	\$0	\$0
48	Philippines Department of Science and Technology	P	\$2,073,059	\$1,082,831	\$0	\$3,500	\$917,086	\$69,643	\$0	\$0
49	LifeArc	F	\$2,009,690	\$0	\$2,009,690	\$0	\$0	\$0	\$0	\$0
50	Molbio Diagnostics	C	\$1,951,010	\$0	\$1,951,010	\$0	\$0	\$0	\$0	\$0
51	ANRS MIE (Emerging Infectious Diseases)	P	\$1,906,799	\$293,104	\$253,205	\$834,156	\$75,942	\$450,393	\$0	\$0
52	South Africa Medical Research Council	P	\$1,854,335	\$664,650	\$328,316	\$414,119	\$395,696	\$19,303	\$32,250	\$0
53	TDR (the Special Programme for Research and Training in Tropical Diseases), hosted by the World Health Organization	M	\$1,849,744	\$0	\$0	\$0	\$0	\$1,849,744	\$0	\$0
54	South Africa Department of Science and Innovation	P	\$1,817,145	\$1,250,599	\$164,343	\$334,307	\$0	\$67,895	\$0	\$0
55	Korea International Cooperation Agency (KOICA)	P	\$1,700,000	\$0	\$0	\$720,000	\$0	\$980,000	\$0	\$0
56	Japan Ministry of Health, Labour and Welfare	P	\$1,688,948	\$0	\$0	\$0	\$0	\$212,889	\$1,226,770	\$249,288
57	LigaChem Biosciences	C	\$1,670,028	\$0	\$0	\$1,670,028	\$0	\$0	\$0	\$0
58	RIGHT Foundation	M	\$1,666,330	\$0	\$1,666,330	\$0	\$0	\$0	\$0	\$0
59	Company Y	C	\$1,510,000	\$0	\$1,510,000	\$0	\$0	\$0	\$0	\$0
60	L'Initiative / Expertise France	P	\$1,335,562	\$0	\$0	\$0	\$0	\$1,174,950	\$160,612	\$0
61	Independent Research Fund Denmark	P	\$1,287,090	\$1,287,090	\$0	\$0	\$0	\$0	\$0	\$0
62	U.K. Government Horizon Europe Guarantee	P	\$1,236,584	\$0	\$0	\$589,491	\$647,092	\$0	\$0	\$0
63	U.S. Department of Veterans Affairs	P	\$1,125,658	\$267,178	\$0	\$593,807	\$264,673	\$0	\$0	\$0
64	Cystic Fibrosis Foundation	F	\$1,100,000	\$0	\$0	\$1,100,000	\$0	\$0	\$0	\$0
65	German Research Foundation (DFG)	P	\$1,085,937	\$1,085,937	\$0	\$0	\$0	\$0	\$0	\$0
66	Irish Aid	P	\$1,081,440	\$0	\$0	\$1,081,440	\$0	\$0	\$0	\$0
67	Company F	C	\$997,088	\$0	\$997,088	\$0	\$0	\$0	\$0	\$0
68	Gavi, the Vaccine Alliance	M	\$941,651	\$0	\$941,651	\$0	\$0	\$0	\$0	\$0

C = Corporation/Private Sector; F = Foundation/Philanthropy; M = Multilateral; P = Public-Sector Agency;

Appendix 2: TB R&D Funders by Rank

TB R&D Funders by Rank, 2023 (continued)

RANK	FUNDER	FUNDER TYPE	TOTAL	BASIC SCIENCE	DIAGNOSTICS	DRUGS	VACCINES	OPERATIONAL RESEARCH & EPIDEMIOLOGY	RESEARCH INFRASTRUCTURE	UNSPECIFIED
69	Swiss Agency for Development and Cooperation	P	\$930,248	\$0	\$930,248	\$0	\$0	\$0	\$0	\$0
70	New Zealand Health Research Council	P	\$925,916	\$405,760	\$0	\$402,535	\$0	\$117,620	\$0	\$0
71	Taiwan Centers for Disease Control	P	\$827,895	\$0	\$96,385	\$0	\$0	\$731,509	\$0	\$0
72	U.S. National Science Foundation (NSF)	P	\$809,914	\$714,914	\$70,000	\$0	\$0	\$25,000	\$0	\$0
73	Spain Ministry of Science, Innovation and Universities	P	\$776,312	\$776,312	\$0	\$0	\$0	\$0	\$0	\$0
74	U.S. Uniformed Services University/Department of Defense	P	\$765,000	\$0	\$765,000	\$0	\$0	\$0	\$0	\$0
75	U.K. Future Leaders Fellowships	P	\$753,339	\$252,940	\$197,185	\$303,215	\$0	\$0	\$0	\$0
76	German Federal Ministry of Health (BMG)	P	\$667,030	\$0	\$0	\$0	\$0	\$667,030	\$0	\$0
77	Partners In Health	F	\$617,308	\$0	\$590,326	\$0	\$0	\$26,982	\$0	\$0
78	Swedish Heart-Lung Foundation	F	\$603,341	\$546,778	\$56,563	\$0	\$0	\$0	\$0	\$0
79	Individual donors to TB Alliance	F	\$583,999	\$0	\$0	\$583,999	\$0	\$0	\$0	\$0
80	Korea Health Industry Development Institute	P	\$561,316	\$20,279	\$51,272	\$459,154	\$0	\$0	\$30,610	\$0
81	U.K. Engineering and Physical Sciences Research Council	P	\$554,011	\$341,148	\$212,863	\$0	\$0	\$0	\$0	\$0
82	FRIZ Biochem	C	\$540,720	\$0	\$540,720	\$0	\$0	\$0	\$0	\$0
83	Research Center Borstel	P	\$540,455	\$11,822	\$96,057	\$0	\$0	\$0	\$0	\$432,576
84	Fundació "La Caixa"	F	\$536,749	\$536,749	\$0	\$0	\$0	\$0	\$0	\$0
85	Cadila Pharmaceuticals	C	\$505,361	\$0	\$0	\$505,361	\$0	\$0	\$0	\$0
86	Mueller Health Foundation	F	\$499,339	\$0	\$0	\$499,339	\$0	\$0	\$0	\$0
87	Fondation Mérieux	F	\$450,830	\$0	\$263,072	\$0	\$0	\$0	\$187,758	\$0
88	Research Council of Norway	P	\$443,714	\$157,851	\$0	\$202,966	\$0	\$0	\$82,897	\$0
89	Carlos III Health Institute	P	\$408,244	\$0	\$0	\$0	\$0	\$145,994	\$262,249	\$0
90	OTOM Co.	C	\$400,000	\$0	\$400,000	\$0	\$0	\$0	\$0	\$0
91	Innovate UK	P	\$397,306	\$0	\$18,089	\$317,262	\$61,954	\$0	\$0	\$0
92	Genetix Biotech Asia	C	\$375,000	\$0	\$375,000	\$0	\$0	\$0	\$0	\$0
93	India Ministry of Ayush	P	\$360,472	\$41,221	\$0	\$319,251	\$0	\$0	\$0	\$0
94	Foundation for Neglected Disease Research	F	\$355,090	\$0	\$0	\$355,090	\$0	\$0	\$0	\$0
95	Marsden Fund	P	\$343,553	\$343,553	\$0	\$0	\$0	\$0	\$0	\$0
96	Tampere Tuberculosis Foundation	F	\$342,168	\$342,168	\$0	\$0	\$0	\$0	\$0	\$0
97	German Federal Ministry for Economic Cooperation and Development (BMZ)	P	\$327,008	\$0	\$0	\$0	\$274,008	\$0	\$53,000	\$0
98	Robert Koch Institute	P	\$326,246	\$0	\$102,737	\$0	\$0	\$223,509	\$0	\$0
99	Leibniz Association	P	\$317,406	\$1,352	\$0	\$0	\$0	\$125,834	\$0	\$190,220
100	India Council of Scientific and Industrial Research	P	\$316,287	\$294,490	\$0	\$21,797	\$0	\$0	\$0	\$0
101	Company V	C	\$310,373	\$0	\$0	\$180,600	\$0	\$129,773	\$0	\$0
102	Chile National Research and Development Agency (ANID)	P	\$303,006	\$0	\$35,774	\$34,272	\$119,248	\$113,711	\$0	\$0
103	Danish International Development Agency (DANIDA)	P	\$290,086	\$0	\$0	\$0	\$0	\$290,086	\$0	\$0

Appendix 2: TB R&D Funders by Rank

TB R&D Funders by Rank, 2023 (continued)

RANK	FUNDER	FUNDER TYPE	TOTAL	BASIC SCIENCE	DIAGNOSTICS	DRUGS	VACCINES	OPERATIONAL RESEARCH & EPIDEMIOLOGY	RESEARCH INFRASTRUCTURE	UNSPECIFIED
104	Peru National Program for Scientific Research and Advanced Studies	P	\$264,615	\$132,308	\$0	\$0	\$0	\$132,308	\$0	\$0
105	Singapore National Medical Research Council	P	\$261,708	\$261,708	\$0	\$0	\$0	\$0	\$0	\$0
106	North-West and Walter Sisulu Universities, South Africa	P	\$250,000	\$0	\$0	\$0	\$250,000	\$0	\$0	\$0
107	Merck (known as MSD outside of the U.S. and Canada)	C	\$246,671	\$0	\$0	\$246,671	\$0	\$0	\$0	\$0
108	Innosuisse (Swiss Innovation Agency)	P	\$244,937	\$0	\$244,937	\$0	\$0	\$0	\$0	\$0
109	Korea Ministry of Food and Drug Safety	P	\$235,714	\$0	\$0	\$0	\$235,714	\$0	\$0	\$0
110	U.K. Global Challenges Research Fund	P	\$231,994	\$0	\$231,994	\$0	\$0	\$0	\$0	\$0
111	Austrianni GmbH	C	\$229,209	\$0	\$0	\$229,209	\$0	\$0	\$0	\$0
112	Project Africa GRADIENT (Glaxosmithkline and Novartis)	C	\$228,579	\$228,579	\$0	\$0	\$0	\$0	\$0	\$0
113	Sansure Biotech	C	\$226,235	\$0	\$226,235	\$0	\$0	\$0	\$0	\$0
114	India Health Fund / Tata Trusts	F	\$218,781	\$0	\$205,619	\$0	\$0	\$13,162	\$0	\$0
115	EPCON	C	\$216,288	\$0	\$0	\$0	\$0	\$216,288	\$0	\$0
116	AI DIAGNOSTICS	C	\$214,176	\$0	\$214,176	\$0	\$0	\$0	\$0	\$0
117	Korea Ministry of Education	P	\$209,071	\$209,071	\$0	\$0	\$0	\$0	\$0	\$0
118	National University of Singapore	P	\$205,949	\$205,949	\$0	\$0	\$0	\$0	\$0	\$0
119	India Department of Science and Technology	P	\$204,730	\$190,190	\$0	\$14,540	\$0	\$0	\$0	\$0
120	Irish Health Research Board	P	\$203,957	\$0	\$0	\$203,957	\$0	\$0	\$0	\$0
121	Korea Ministry of SMEs and Startups	P	\$201,189	\$0	\$201,189	\$0	\$0	\$0	\$0	\$0
	Organizations with expenditures < \$200,000		\$4,416,338	\$1,281,818	\$1,009,303	\$478,638	\$389,178	\$971,395	\$193,470	\$92,536
	TOTAL		\$1,202,756,670	\$158,867,058	\$167,680,124	\$425,503,249	\$227,509,635	\$129,749,210	\$87,229,647	\$6,217,746

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Stop TB Partnership

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