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Pharma R&D Spending 2026: R&D as % of Revenue, Top 25 Drugmakers

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Pharma R&D Spending 2026: R&D as % of Revenue, Top 25 Drugmakers

Executive Summary

Reported consolidated R&D spending among the 25 companies included in this selected comparable ranking totaled approximately \$185 billion in the most recent fiscal year reported as of July 2026 (IntuitionLabs analysis of company disclosures). Bayer's Pharmaceuticals division is displayed separately in Table 1 but excluded from this consolidated-company aggregate and ranking. R&D intensity, R&D expense as a share of revenue, ranges from roughly 5.9% at Teva Pharmaceutical Industries to approximately 163% at Moderna. Moderna is an outlier because its 2025 R&D expense exceeded revenue; excluding Moderna, Regeneron Pharmaceuticals has the highest ratio, at approximately 41% ([sec.gov](#)) ([sec.gov](#)). By absolute dollar spend, Merck & Co. leads the industry at \$15.8 billion, followed by Johnson & Johnson (\$14.7 billion), AstraZeneca (\$14,232 million), Roche (CHF 12.243 billion), and Eli Lilly (\$13,337 million) ([merck.com](#)) ([sec.gov](#)). These figures place pharma far above the typical cross-industry benchmark: the Congressional Budget Office (CBO) found pharmaceutical R&D intensity exceeded 25% in 2018 and 2019, versus a 2% to 3% average across all US industries, and PhRMA (Pharmaceutical Research and Manufacturers of America) describes its member companies as having invested over \$1 trillion in R&D since 2000 ([cbo.gov](#)) ([phrma.org](#)).

Dollar rank and intensity rank diverge sharply across the dataset. Large, diversified originators such as Johnson & Johnson (15.6% of revenue) and Pfizer (approximately 16.7%) post middling R&D intensity despite leading on absolute spend, while narrower-revenue-base biotechnology companies such as Regeneron

(approximately 41%, as the company itself states) and Vertex Pharmaceuticals (approximately 32.5%) post the industry's highest ratios ([sec.gov](#)). Two structural forces explain most of the variation across the report's 25-company dataset. The GLP-1 (glucagon-like peptide-1) obesity and diabetes drug boom has driven both revenue and R&D sharply higher at Eli Lilly (revenue up 45% to \$65,179 million in 2025, R&D up 21% to \$13,337 million) and Novo Nordisk (sales up 6% in Danish kroner to DKK 309.1 billion, R&D at 16.8% of sales), while the Humira patent cliff forced AbbVie to defend R&D investment even as legacy revenue eroded, with the company's GAAP R&D expense and separately disclosed "adjusted R&D investment" of \$13.8 billion diverging by roughly \$4.7 billion in 2025, the largest such discrepancy identified in this report ([sec.gov](#)) ([sec.gov](#)) ([sec.gov](#)).

Industry-wide benchmarks corroborate the company-level data. Deloitte's annual pharmaceutical innovation returns series found the top-20 biopharma cohort's forecast internal rate of return (IRR) rose to 7.0% in 2025, a third consecutive year of improvement, with average R&D cost per approved asset reaching \$2.23 billion in 2024 and \$2,671 million in 2025 ([deloitte.com](#)) ([prnewswire.com](#)). The Tufts Center for the Study of Drug Development's widely cited estimate of \$2.558 billion (2013 dollars) [to develop and win approval for a new drug](#), and a subsequent JAMA study's substantially lower median of \$1.1417 billion, illustrate how much cost-per-drug estimates vary by methodology ([globenewswire.com](#)) ([jamanetwork.com](#)).

Artificial intelligence is the most significant forward-looking variable in pharmaceutical R&D economics. McKinsey estimates [generative AI could generate \\$60 billion to \\$110 billion a year in economic value](#) for the pharmaceutical and medical-product industries, and BCG projects the healthcare generative AI market will grow from roughly \$1 billion today to \$22 billion by 2027 ([mckinsey.com](#)) ([bcg.com](#)). Large, disclosed AI-pharma R&D collaborations, including [Isomorphic Labs' deals with Novartis and Eli Lilly](#) (worth nearly \$3 billion combined excluding royalties) and AstraZeneca's collaboration with CSPC Pharmaceutical (up to \$5.3 billion in potential value), signal that [AI partnerships are moving from experimental to core pipeline strategy](#) ([isomorphiclabs.com](#)) ([biospace.com](#)). Yet [Deloitte's mid-2026 life sciences survey](#) found only 45% of executives report measurable AI performance gains despite 71% reporting deployment progress, indicating the technology's financial payoff remains only partially realized even as adoption accelerates ([prnewswire.com](#)). This report provides a selected 25-company consolidated comparison, a separately identified Bayer Pharmaceuticals division row, industry benchmark data, five detailed case studies, and a methodology for reconciling currency, fiscal-year, and GAAP-versus-adjusted discrepancies that complicate any straightforward comparison of pharmaceutical R&D spending in 2026.

Introduction and Background

Pharmaceutical research and development (R&D) intensity, the share of revenue a drugmaker reinvests into discovering and testing new medicines, remains one of the most closely watched metrics in life sciences. As of fiscal year 2025 results reported through mid-2026, the 25 companies in the selected consolidated comparison show combined annual reported R&D spending of roughly \$185 billion (IntuitionLabs analysis of company disclosures, approximate US dollar equivalents). Table 1 also displays Bayer Pharmaceuticals separately, but that division-only figure is not included in the consolidated comparison. Individual company R&D intensity

ranges from under 6% of revenue at generics-heavy Teva Pharmaceutical Industries to approximately 163% at Moderna, whose 2025 R&D expense exceeded its revenue; Regeneron's approximately 41% is the highest ratio excluding that outlier, as detailed in Table 1 below.

The pharmaceutical sector has long been an outlier in corporate R&D behavior. The Congressional Budget Office (CBO) found that pharmaceutical R&D intensity, spending as a share of net revenues, exceeded 25% in 2018 and 2019, the highest levels the industry had recorded since at least 2000, versus an average R&D intensity across all US industries of only 2% to 3% ([cbo.gov](https://www.cbo.gov)) ([cbo.gov](https://www.cbo.gov)). PhRMA (the Pharmaceutical Research and Manufacturers of America), the industry's leading US trade association, has similarly described roughly one in five dollars of its member companies' revenue as devoted to R&D, with cumulative member investment exceeding \$1 trillion since 2000 ([phrma.org](https://www.phrma.org)) ([phrma.org](https://www.phrma.org)).

This report answers, with figures verified directly against company filings, investor relations disclosures, and named research organizations, the questions that matter most for anyone benchmarking pharmaceutical R&D in 2026: which companies spend the most on R&D in absolute dollar terms, which have the highest R&D intensity relative to revenue, how the industry's aggregate R&D spending has trended in recent years, and how artificial intelligence (AI) is beginning to reshape the economics of drug discovery and development. The analysis draws on fiscal year 2025 results (the most recent full-year data available for nearly every company as of the July 31, 2026 publication date of this report) for 25 companies spanning the United States, Europe, and Asia, supplemented by industry-wide benchmark data from PhRMA, the IQVIA Institute for Human Data Science, Deloitte, the Tufts Center for the Study of Drug Development (Tufts CSDD), the Organisation for Economic Co-operation and Development (OECD), and the European Commission's Joint Research Centre.

Two structural forces dominate the 2025 to 2026 picture. First, the GLP-1 (glucagon-like peptide-1) receptor agonist boom, the class of drugs including Eli Lilly's tirzepatide and Novo Nordisk's semaglutide, has driven both revenue and R&D spending sharply higher at the companies best positioned in obesity and diabetes care, while manufacturers further from the category have leaned on cost discipline and portfolio reprioritization. Second, a wave of patent expirations (commonly called "patent cliffs"), most visibly AbbVie's loss of US exclusivity on Humira in 2023, has forced several of the largest drugmakers to defend R&D investment even as legacy product revenue erodes. Layered on top of both trends is the accelerating, but still unevenly realized, integration of AI into early discovery and clinical development, a theme this report examines in detail using data from McKinsey, Boston Consulting Group (BCG), and Deloitte's most recent life sciences surveys.

Methodology and Data Scope

Company-level figures in this report are drawn directly from each drugmaker's most recently reported full fiscal year results as of July 2026, primarily fourth-quarter and full-year earnings releases, US Securities and Exchange Commission (SEC) filings (10-K and 20-F annual reports, and 8-K earnings exhibits), and equivalent statutory annual reports for non-US filers. For the majority of companies, this means the fiscal year ended December 31, 2025. Two Japanese filers, Takeda Pharmaceutical and Daiichi Sankyo, report on an April-to-March fiscal year; their most recent full-year results cover the twelve months ended March 31, 2026, which each company labels FY2025 or Fiscal 2025, respectively ([takeda.com](https://www.takeda.com)) ([daiichisankyo.com](https://www.daiichisankyo.com)). These labeling

conventions are preserved in Table 1 to avoid misattributing a company's data to the wrong calendar period. Daiichi Sankyo's row uses the year ended March 31, 2026; Takeda's row still shows its prior fiscal year (ended March 31, 2025, core basis) and is therefore one year older than the other rows.

Because the 25 companies report in at least six different currencies (US dollars, Swiss francs, euros, British pounds, Danish kroner, and Japanese yen), this report presents each company's revenue and R&D expense in its native reporting currency alongside an approximate US dollar equivalent for cross-company ranking purposes. Except where a company discloses its own US dollar convenience translation (GSK, for example, publishes an official pound-to-dollar translation of its results), US dollar equivalents in this report are IntuitionLabs analyst approximations calculated using representative average 2025 to 2026 exchange rates and are intended only for relative ranking, not as audited figures ([gsk.com](https://www.gsk.com)).

R&D intensity (R&D expense divided by revenue) is reported as stated directly by the company wherever a company discloses that ratio itself, which several companies do as a standard disclosure line; where a company does not publish the ratio, this report computes it from the company's own disclosed reported revenue and reported R&D expense figures, consistent with the approach the CBO and PhRMA use in their own industry-wide intensity calculations ([cbo.gov](https://www.cbo.gov)). The ranking and aggregate use reported consolidated group figures. Bayer Pharmaceuticals is retained as a clearly labelled division-only reference row, but is excluded from both because it is not comparable with consolidated group figures. A further complication involves the distinction between Generally Accepted Accounting Principles (GAAP) R&D expense and non-GAAP "adjusted" or "core" R&D investment figures that several companies also disclose; where these diverge meaningfully, such as at AbbVie, this report flags the discrepancy explicitly rather than silently picking one figure. Readers should treat every ratio in this report as a measure of accounting R&D expense relative to reported revenue, not as a measure of R&D productivity, cost per approved drug, or probability of clinical success, which are distinct metrics addressed separately in the Data Analysis and Evidence section below.

R&D Spending and R&D Intensity: 25 Consolidated Drugmakers

Table 1 compares 25 selected drugmakers by reported consolidated R&D expense (approximate US dollar equivalent), alongside reported consolidated revenue and R&D intensity. Bayer Pharmaceuticals is shown as a division-only reference row and is excluded from the rank and aggregate. For diversified groups in the ranking, the figures include non-pharmaceutical operations.

Table 1: 25 Selected Consolidated Drugmakers by R&D Spending and R&D Intensity, Plus Bayer Pharmaceuticals Reference Row, Most Recent Fiscal Year (as of July 2026)

Rank	Company	Fiscal Year	Reported Revenue (native currency)	Reported R&D Expense (native currency)	R&D as % of Revenue	Approx. R&D (USD, IntuitionLabs analysis)
1	Merck & Co. (MSD)	FY2025	\$65.0B (merck.com)	\$15.8B	~24.3% (calc.)	~\$15.8B (merck.com)

Rank	Company	Fiscal Year	Reported Revenue (native currency)	Reported R&D Expense (native currency)	R&D as % of Revenue	Approx. R&D (USD, IntuitionLabs analysis)
2	Johnson & Johnson	FY2025	\$94.2B (s203.q4cdn.com)	\$14.7B	15.6% (stated)	~\$14.7B (sec.gov)
3	AstraZeneca	FY2025	\$58,739M (astrazeneca.com)	\$14,232M	~24.2% (calc., reported basis)	~\$14.2B (sec.gov)
4	Roche	FY2025	CHF 61.5B (roche.com)	CHF 12.243B	19.9% (stated)	~\$13.7B (assets.roche.com)
5	Eli Lilly	FY2025	\$65,179M	\$13,337M	~20.5% (calc.)	~\$13.3B (sec.gov)
6	Novartis	FY2025	\$54,532M (novartis.com)	\$11,200M	~20.5% (calc.)	~\$11.2B (novartis.com)
7	Pfizer	FY2025	\$62,579M	\$10,437M	~16.7% (calc.)	~\$10.4B (sec.gov)
8	Bristol Myers Squibb	FY2025	\$48.2B	~\$10.0B	~20.7% (calc.)	~\$10.0B (sec.gov)
9	GSK	FY2025	£32,667M (gsk.com)	£7,525M	~23.0% (calc.)	~\$9.9B (gsk.com)
10	AbbVie	FY2025	\$61.160B (prnewswire.com)	\$9.096B (GAAP)*	~14.9% (calc., GAAP)	~\$9.1B (prnewswire.com)
11	Sanofi	FY2025	€43,626M (sanofi.com)	€7,842M	~18.0% (calc.)	~\$8.5B (sec.gov)
12	Novo Nordisk	FY2025	DKK 309.1B	DKK 52,039M	16.8% (stated)	~\$7.5B (sec.gov)
13	Amgen	FY2025	\$36.8B (prnewswire.com)	\$7,272M	~19.8% (calc.)	~\$7.3B (prnewswire.com)
14	Boehringer Ingelheim	FY2025	€27.8B (kommunikasjon.ntb.no)	€6.4B	22.9% (stated)	~\$6.9B (kommunikasjon.ntb.no)
15	Regeneron Pharmaceuticals	FY2025	\$14.3B	\$5.85B	~41% (stated)	~\$5.9B (sec.gov)
16	Gilead Sciences	FY2025	\$29.4B (gilead.com)	\$5,799M	~19.7% (calc.)	~\$5.8B (gilead.com)

Rank	Company	Fiscal Year	Reported Revenue (native currency)	Reported R&D Expense (native currency)	R&D as % of Revenue	Approx. R&D (USD, IntuitionLabs analysis)
17	Takeda	FY ended Mar 2025 (prior year)***	JPY 4,579.8B (core) (assets-dam.takeda.com)	JPY 730.4B (core)	~15.9% (calc.)	~\$4.9B (assets-dam.takeda.com)
18	Vertex Pharmaceuticals	FY2025	\$12.0B	\$3,909.5M	~32.5% (calc.)	~\$3.9B (sec.gov)
—	Bayer (Pharmaceuticals; division-only reference row, excluded from ranking and aggregate)	FY2025	€17,829M (reports.bayer.com)	€3,456M	~19.4% (calc.)	~\$3.7B (reports.bayer.com)
19	Moderna	FY2025	\$1.9B	\$3.1B	~163% (calc., outlier)**	~\$3.1B (sec.gov)
20	Daiichi Sankyo	FY ended Mar 2026	JPY 2,123,045M (daiichisankyo.com)	JPY 462.1B	21.8% (stated)	~\$3.1B (daiichisankyo.com)
21	Merck KGaA	FY2025	€21,102M (reports.emdgroup.com)	€2,415M	~11.4% (calc.)	~\$2.6B (reports.emdgroup.com)
22	UCB	FY2025	€7,741M (ucb.com)	€1,822M	~23.5% (calc.)	~\$2.0B (ucb.com)
23	Biogen	FY2025	\$9,890.6M (investors.biogen.com)	\$1,778.6M	~18.0% (calc.)	~\$1.8B (investors.biogen.com)
24	Teva Pharmaceutical	FY2025	\$17,258M	\$1,013M	~5.9% (calc.)	~\$1.0B (sec.gov)
25	Viatis	FY2025	\$14,299.9M	\$965.9M	~6.8% (calc.)	~\$1.0B (sec.gov)

* AbbVie separately discloses an "adjusted R&D investment" figure of \$13.8 billion for 2025, roughly \$4.7 billion higher than its GAAP R&D expense line, reflecting acquired in-process R&D and milestone payments booked outside the GAAP R&D expense line; see discussion below. ** Moderna's ratio exceeds 100% because its 2025 R&D expense exceeded revenue while the company continued R&D investment in its respiratory and oncology pipelines; see Analysis of Key Segments. *** Takeda's row shows its fiscal year ended March 31, 2025 (core basis), one year older than the other rows; its FY2025 results for the year ended March 31, 2026 are not reflected in this table.

Ranked by R&D expense in approximate US dollar terms, Merck & Co. (known as MSD outside the United States and Canada), Johnson & Johnson, AstraZeneca, Roche, and Eli Lilly occupy the top five positions, together accounting for roughly \$72 billion of the approximately \$185 billion in combined reported R&D spending IntuitionLabs calculated across the 25 selected consolidated companies (IntuitionLabs analysis). Notably, the ranking by absolute R&D dollars diverges sharply from the ranking by R&D intensity: several of the largest R&D spenders, including Johnson & Johnson (15.6%) and Pfizer (approximately 16.7%), sit in the middle of the pack on intensity, while comparatively smaller-revenue, pipeline-heavy biotechnology companies such as Regeneron (approximately 41%) and Vertex Pharmaceuticals (approximately 32.5%) post the highest ratios in the entire dataset ([sec.gov](#)). This divergence is the central analytical fact this report returns to throughout: dollar rank and intensity rank measure different things, and conflating them produces misleading conclusions about which companies are "most committed" to R&D.

At the other end of the intensity spectrum, Teva Pharmaceutical Industries (approximately 5.9%) and Viartis (approximately 6.8%) post the lowest R&D intensity among the 25 consolidated companies compared, consistent with their business models as generics and off-patent specialty medicine manufacturers rather than innovator-driven originators. AbbVie presents the dataset's most conspicuous methodological wrinkle: the company's GAAP R&D expense fell from \$12,791 million in 2024 to \$9,096 million in 2025 even as revenue grew, yet AbbVie's 2025 annual report separately states \$13.8 billion in "adjusted R&D investment" for the same year, implying the company's own preferred non-GAAP measure of R&D commitment is roughly 50% higher than the GAAP expense line most directly comparable across the other 24 companies in this table. This is discussed further in the Case Studies section below.

Analysis of Key Segments

Grouping the 25 selected consolidated companies in the comparison, with Bayer Pharmaceuticals discussed separately as a division-only reference, clarifies why R&D intensity varies so widely even among companies of comparable scale. Four segments stand out in the fiscal year 2025 data.

The GLP-1 and metabolic-disease cohort. Eli Lilly and Novo Nordisk, the two companies most associated with the GLP-1 obesity and diabetes drug boom, both posted double-digit revenue growth in 2025 alongside substantial R&D increases. Lilly's full-year 2025 revenue rose 45% to \$65,179 million while R&D expense rose 21% to \$13,337 million ([sec.gov](#)), and the company disclosed in May 2024 that since 2020 it had committed more than \$18 billion to build, upgrade, and acquire manufacturing facilities in the United States and Europe to support tirzepatide (branded as Mounjaro and Zepbound) and pipeline production, separate from its R&D expense line ([investor.lilly.com](#)). Novo Nordisk's sales rose 6% in Danish kroner (10% at constant exchange rates) to DKK 309.1 billion in 2025, with R&D costs rising 8% (10% at constant exchange rates) to DKK 52,039 million, equal to 16.8% of sales ([sec.gov](#)). Notably, Novo Nordisk's R&D intensity (16.8%) sits below the median for the 25-company dataset despite the company's rapid growth, illustrating that a surging top line can mechanically depress R&D intensity even while absolute R&D dollars climb.

The patent-cliff and reprioritization cohort. AbbVie, Pfizer, and Bristol Myers Squibb each spent 2023 to 2025 defending earnings against major patent expirations (Humira for AbbVie, the post-pandemic normalization of COVID-19 vaccine and treatment demand for Pfizer, and an aging cardiovascular and oncology base for Bristol Myers Squibb). All three pursued a similar playbook: disciplined cost realignment

paired with selective, often M&A-driven, R&D reinvestment rather than across-the-board R&D expansion, as detailed in the Case Studies section below, where Pfizer's GAAP R&D expense decline from \$10,822 million in 2024 to \$10,437 million in 2025 and Bristol Myers Squibb's 11% GAAP R&D decline to approximately \$10.0 billion are both examined alongside their balance-sheet-funded acquisitions, including Bristol Myers Squibb's \$14.0 billion purchase of Karuna Therapeutics (news.bms.com).

The R&D-intensive specialty and rare-disease biotechnology cohort. Regeneron, Vertex, and, in an unusual post-pandemic configuration, Moderna, post the highest R&D intensity in the dataset because their revenue bases are narrower and more concentrated than diversified Big Pharma peers, even though their absolute R&D dollar figures are smaller. Regeneron explicitly frames this in its own annual report, stating it invested \$5.9 billion in R&D in 2025, representing approximately 41% of that year's revenue (sec.gov). Moderna is a special case: full-year 2025 revenue was \$1.9 billion, down sharply from the company's pandemic-era peak, while R&D expenses were \$3.1 billion, still nearly 1.6 times revenue, reflecting continued investment in the company's respiratory vaccine and oncology pipeline even as COVID-19 vaccine demand normalized (sec.gov). Moderna's ratio primarily reflects the relationship between its 2025 revenue and R&D expense rather than a direct measure of R&D productivity. Biogen, another specialty biotech in this broader cohort, has moved in the opposite direction: the company states its 2025 cost-savings initiative included a 27% reduction in R&D spending, pulling its R&D intensity down to approximately 18.0% even as peers such as Regeneron and Vertex expanded investment (investors.biogen.com).

The diversified conglomerate and generics-adjacent cohort. Bayer, Merck KGaA, Teva, and Viatris all post R&D intensity below the dataset median, for different structural reasons. Bayer's and Merck KGaA's pharmaceutical R&D is diluted, at the consolidated group level, by non-pharmaceutical divisions (Bayer's Crop Science and Consumer Health businesses; Merck KGaA's Life Science and Electronics segments), which is why this report presents Bayer's Pharmaceuticals division figures separately (€3,456 million R&D on €17,829 million division sales, approximately 19.4%) rather than group-wide totals; Bayer's group-wide R&D expense across all divisions totaled €5,769 million in 2025, underscoring how much of the company's total research investment sits outside the pharmaceuticals business (bayer.com). Teva and Viatris, by contrast, are structurally low-R&D-intensity because their portfolios skew toward generic and off-patent branded medicines, which require far less R&D investment per dollar of revenue than an innovator pipeline; Teva's R&D expense was just \$1,013 million against \$17,258 million in net revenue in 2025, as shown in Table 1 above.

Data Analysis and Evidence

Beyond individual company disclosures, several independent and industry-body benchmarks quantify pharmaceutical R&D spending and productivity at the aggregate level. *Table 2* below summarizes the most authoritative figures identified for this report.

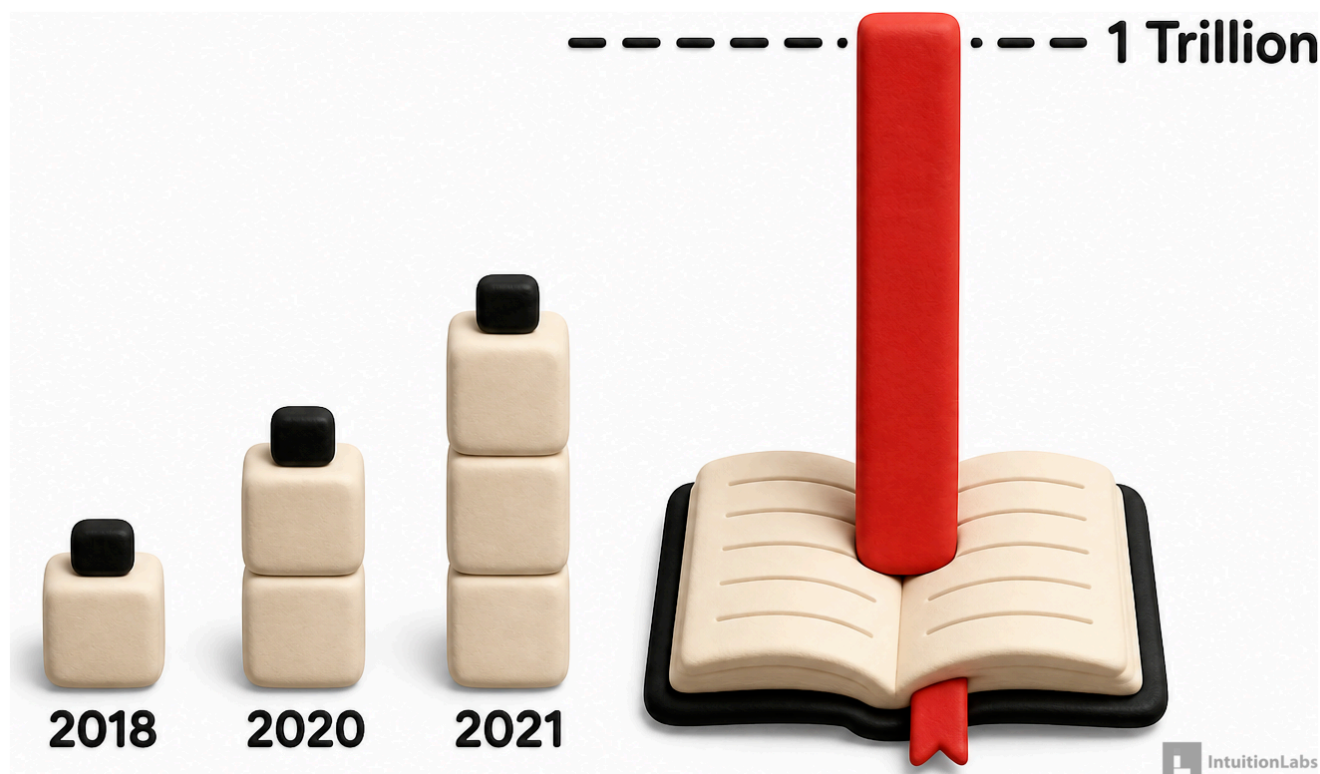


Table 2: Industry-Wide Pharmaceutical R&D Benchmarks

Metric	Figure	Originator	As of
PhRMA member company R&D investment (record year cited)	\$102.3 billion	PhRMA	2021 (phrma.org)
PhRMA member company R&D investment (prior record year)	\$79.6 billion	PhRMA	2018 (phrma.org)
Entire US biopharmaceutical industry R&D spend (PhRMA members plus non-members)	\$122.2 billion	PhRMA	2020 (phrma.org)
Cumulative PhRMA member R&D investment since 2000	over \$1 trillion	PhRMA	current, as of 2025 to 2026 (phrma.org)
Share of total US biopharma R&D spending accounted for by PhRMA members	75% to 85%	CBO	since 2008 (cbo.gov)
Global biopharma "funding" (deal and financing inflows, a 10-year high)	\$102 billion	IQVIA Institute	2024 (iqvia.com)
Top 20 global biopharma companies' combined R&D spend	\$145 billion	Deloitte	2022 to 2023 (deloitte.com)
Forecast internal rate of return (IRR) on R&D, top 20 biopharma	7.0% (up from 5.9% in 2024 and 4.3% in 2023)	Deloitte	2025 (deloitte.com)

Metric	Figure	Originator	As of
Forecast IRR excluding GLP-1 assets	2.9%	Deloitte	2025 (prnewswire.com)
Average R&D cost per approved drug asset (discovery to launch)	US\$2.23 billion (2024); US\$2,671 million (2025)	Deloitte	2024 to 2025 (deloitte.com)
Average cost to develop and win marketing approval for a new drug (peer-reviewed)	\$2.558 billion (2013 dollars); \$2.870 billion including post-approval R&D	Tufts CSDD, Journal of Health Economics	study data 1995 to 2007, published 2014 to 2016 (globenewswire.com)
Median capitalized R&D investment per approved drug	\$1.1417 billion	JAMA (Wouters, McKee, Luyten)	drugs approved 2009 to 2018, published 2020 (jamanetwork.com)
Global pharmaceutical industry R&D spend	US\$129 billion	OECD	2021 (oecd.org)
Government health-related R&D budgets, 35 OECD countries	US\$69 billion	OECD	2021 (oecd.org)
Worldwide prescription drug sales forecast (2024 edition)	topping \$1.7 trillion by 2030, 7.7% growth	Evaluate (World Preview 2024)	published July 2024 (evaluate.com)
Worldwide prescription drug sales forecast (2026 edition)	to surpass \$2 trillion by 2032, CAGR over 7% (2025 to 2032)	Evaluate (World Preview 2026)	published June 2026 (evaluate.com)
EU-headquartered health-sector R&D investment growth	+13% (versus +7.1% US, +9.1% Japan, +0.1% China)	European Commission Joint Research Centre, EU Industrial R&D Investment Scoreboard	2024, published December 2025 (joint-research-centre.ec.europa.eu)
EU-headquartered companies' total R&D investment (all sectors)	€233.8 billion, up 2.9%	European Commission Joint Research Centre	2024, published December 2025 (joint-research-centre.ec.europa.eu)
World's top 2,000 corporate R&D investors, all sectors, combined spend	€1,446 billion (over 90% of global business-funded R&D)	European Commission Joint Research Centre, EU Industrial R&D Investment Scoreboard	2024, published December 2025 (iri.jrc.ec.europa.eu)
Pharma industry R&D budget growth versus software industry	pharma +6% to \$194 billion vs. software \$117 billion	Schonfeld & Associates industry benchmarking	fiscal year 2024, published September 2025 (prlog.org)

The most important pattern in Table 2 is the steady rise in pharmaceutical R&D returns after a prolonged decline. Deloitte's annual "Measuring the Return from Pharmaceutical Innovation" series, now in its 16th edition, found the top-20 biopharma cohort's forecast internal rate of return climbed to 7.0% in 2025, the third consecutive year of improvement after a long stretch of declining returns that had bottomed out earlier in the decade (deloitte.com). That rebound, however, is heavily concentrated: Deloitte's own May 2026 release found that excluding GLP-1 assets, the same cohort's projected IRR falls to just 2.9%, and GLP-1 medicines alone now account for an estimated 38% of projected commercial inflows from the 2025 late-stage pipeline, with

obesity displacing oncology as the largest single contributor to forecast pipeline value for the first time in 16 years ([prnewswire.com](#)). Notably, Deloitte's 2024 edition (covering 2023 data) explicitly stated that "AI is yet to become a 'game-changer' in pharma R&D," a finding this report revisits in the Implications section below given how quickly AI-related deal activity has accelerated since that assessment ([deloitte.com](#)).

A second important pattern is the persistent gap between headline "cost to develop a drug" figures depending on methodology and vintage. Tufts CSDD's widely cited 2014 estimate of \$2.558 billion (2013 dollars) rises to \$2.870 billion once post-approval R&D is included, while a subsequent JAMA analysis using a different cohort (drugs approved 2009 to 2018) and different capitalization assumptions produced a substantially lower median estimate of \$1.1417 billion, with the same paper noting that estimates across the broader literature range as widely as \$314 million to \$2.8 billion ([jamanetwork.com](#)). Deloitte's own year-over-year tracking shows the same directional trend: average cost per approved asset rose from \$2.23 billion in 2024 to \$2,671 million in 2025 ([prnewswire.com](#)). This range should caution readers against treating any single "cost per approved drug" figure as a precise, universally applicable constant; the true figure depends heavily on therapeutic area, company size, success-rate assumptions, and whether the estimate captures out-of-pocket cost only or a fully capitalized cost including the opportunity cost of capital and the expense of failed candidates. At the macro level, government funding remains a meaningful complement to industry R&D: the OECD found that governments across 35 member countries collectively budgeted USD 69 billion for health-related R&D in 2021, about two-thirds of it spent in the United States, while the IQVIA Institute's 2025 Global Trends report separately found that total large-pharma R&D spending continued to increase in 2024 even as deal financing fluctuated ([oecd.org](#)) ([iqvia.com](#)).

Case Studies and Real-World Examples

The following five cases illustrate how specific strategic events at major drugmakers have shaped R&D spending trajectories between 2023 and 2026.

Pfizer's Enterprise-Wide Cost Realignment Program

Facing the post-pandemic normalization of COVID-19 vaccine and treatment revenue, Pfizer announced in December 2023 that its Enterprise-Wide Cost Realignment Program was expected to deliver at least \$4.0 billion in annual net cost savings by the end of 2024, an increase of \$500 million from prior guidance ([sec.gov](#)). Pfizer chief financial officer Dave Denton indicated that roughly 70% of the savings would come from R&D and 30% from sales, information, and administrative (SI&A) expense, identifying R&D as a primary component of the cost program ([mmm-online.com](#)). Pfizer simultaneously set full-year 2024 adjusted R&D expense guidance (including the newly acquired Seagen oncology business) at \$11.0 billion to \$12.0 billion ([sec.gov](#)), and Denton characterized the resulting spend levels as higher than the pre-pandemic 2018 to 2019 baseline but below the peak reached during the pandemic years, describing the adjustment as a scale-back from the "downdraft" in COVID-era investment rather than a retreat from R&D altogether ([mmm-online.com](#)). By fiscal year 2025, Pfizer's GAAP R&D expense had settled at \$10,437 million, down modestly from \$10,822 million in 2024, consistent with the program's stated trajectory ([sec.gov](#)).

Novartis's R&D reprioritization following the Sandoz spin-off

Novartis completed the full spin-off of Sandoz, its generics and biosimilars business, on October 4, 2023, describing the move as the final step in its transformation into a focused innovative-medicines company concentrated on cardiovascular, renal and metabolic disease, immunology, neuroscience, and oncology, with three next-generation platforms, cell and gene therapy, radioligand therapy, and RNA-based medicines, being prioritized across the leaner post-spin-off pipeline ([novartis.com](https://www.novartis.com)). Months earlier, in April 2023, the company had cut its clinical pipeline by roughly 10% following a comprehensive R&D review, leaving 136 clinical-stage programs ([endpoints.news](https://www.endpoints.news)). Novartis chief executive Vas Narasimhan explained that the company had benchmarked itself against peers and found it was running more R&D projects than comparable pharma companies, which resulted in less investment per project than at rival firms, a rationale that directly links portfolio breadth to R&D intensity per program ([endpoints.news](https://www.endpoints.news)). By fiscal year 2025, with the leaner post-Sandoz portfolio fully in place, Novartis's GAAP R&D expense had risen to \$11,200 million from \$10,022 million in 2024, even as the company continued to prioritize fewer, larger-scale programs ([novartis.com](https://www.novartis.com)).

Bristol Myers Squibb's Karuna Therapeutics acquisition

In December 2023, Bristol Myers Squibb agreed to acquire Karuna Therapeutics, a neuroscience-focused biotechnology company, for \$330 per share in cash, a total equity value of \$14.0 billion, or \$12.7 billion net of estimated cash acquired ([news.bms.com](https://www.news.bms.com)); the deal closed on March 18, 2024 ([news.bms.com](https://www.news.bms.com)). Reuters characterized the acquisition, which followed roughly two months after Bristol Myers Squibb's agreement to buy Mirati Therapeutics for as much as \$5.8 billion, as an attempt to power growth as patents on the company's older therapies (including blockbusters Revlimid and Eliquis) expire later this decade ([reuters.com](https://www.reuters.com)) ([reuters.com](https://www.reuters.com)). Bristol Myers Squibb chief executive Chris Boerner told Reuters the company retained "considerable financial power" for further business development even after the Karuna and Mirati deals ([reuters.com](https://www.reuters.com)), illustrating a pattern common among the patent-cliff cohort: replenishing pipelines through targeted, balance-sheet-funded acquisitions rather than expanding organic R&D budgets, even as GAAP R&D expense (\$10.0 billion in 2025, an 11% decline) continued to fall ([sec.gov](https://www.sec.gov)).

AbbVie's R&D trajectory through the Humira patent cliff

AbbVie's flagship immunology drug Humira lost US patent exclusivity in 2023, triggering a 6.4% decline in full-year net revenue to \$54.318 billion that year, even as the company stated it "meaningfully increased R&D investment" to bolster its post-Humira pipeline ([sec.gov](https://www.sec.gov)). AbbVie's GAAP R&D expense rose from \$6.510 billion in 2022 to \$7.675 billion in 2023 despite the revenue decline ([sec.gov](https://www.sec.gov)). By 2025, the second full year following the Humira loss of exclusivity, AbbVie reported adjusted R&D investment of \$13.8 billion and total net revenues of a record \$61.2 billion, with the company stating it had surpassed its previous peak revenue by more than \$3 billion "in just the second full year following the U.S. Humira loss of exclusivity" ([sec.gov](https://www.sec.gov)). The gap between this \$13.8 billion adjusted figure and the GAAP R&D expense line of \$9,096 million reported for the same year is the most significant single reporting discrepancy identified across this report's 25-company dataset, and underscores why comparing R&D figures across companies requires care about which accounting convention each company applies ([sec.gov](https://www.sec.gov)).

Eli Lilly's manufacturing and R&D surge tied to the GLP-1 boom

Eli Lilly's tirzepatide franchise (marketed as Mounjaro for diabetes and Zepbound for obesity) drove the steepest revenue and R&D growth of any company in this report's dataset. Fourth-quarter 2024 R&D expense increased 18% year over year to \$3.02 billion, equal to 22.3% of quarterly revenue, which Lilly attributed to continued investment across its early and late-stage portfolio (lilly.mediaroom.com). Chief executive David Ricks said the company had "invested billions more in expanding our manufacturing capacity" during 2024 (lilly.mediaroom.com), and in May 2024 Lilly more than doubled its investment in its Lebanon, Indiana manufacturing site with a new \$5.3 billion commitment, raising the site's total planned investment from \$3.7 billion to \$9 billion, which the company described as the largest active pharmaceutical ingredient manufacturing investment for synthetic medicines in US history (investor.lilly.com). By mid-2026, Lilly's head of corporate development, Jacob Van Naarden, told CNBC that the company's financial strength, "driven mostly by the weight loss business," gave Lilly a "generational opportunity to redeploy that capital" into mergers and acquisitions across other disease areas, suggesting the GLP-1 windfall is beginning to fund R&D diversification beyond metabolic disease (cnbc.com).

Implications and Future Directions

Artificial intelligence is increasingly discussed as the next major lever on pharmaceutical R&D economics, though the evidence as of mid-2026 suggests adoption is real but its financial payoff remains partially realized. McKinsey estimates that generative AI could generate \$60 billion to \$110 billion a year in economic value across the pharmaceutical and medical-product industries, with \$15 billion to \$28 billion of that value concentrated in research and early discovery alone and a further \$13 billion to \$25 billion in clinical development specifically (mckinsey.com) (mckinsey.com). McKinsey also notes that investors have poured over \$50 billion into more than 500 AI-driven R&D companies since 2015, and that typical per-patient costs for pivotal clinical trials often exceed \$40,000, a cost base that AI-enabled trial design and site selection increasingly target (mckinsey.com) (mckinsey.com). McKinsey documents concrete efficiency gains as well: one biopharma company used real-world data analytics to cut expected clinical trial duration by 5% to 10% without lowering the probability of success, while AI-enabled endpoint optimization cut trial length by 15% to 30% in another documented case (mckinsey.com).

Boston Consulting Group's research reaches similarly aggressive conclusions, estimating that AI-first biopharma companies can achieve a 5% to 15% revenue uplift and reporting that AI-first industry leaders have compressed early candidate identification from four or five years down to roughly eight months, building on BCG's earlier 2022 analysis, which found AI-fueled biotech pipelines expanding at an annual rate of almost 40% (bcg.com) (bcg.com) (mkt-bcg-com-public-pdfs.s3.amazonaws.com). BCG projects the healthcare generative AI market will grow from roughly \$1 billion today to \$22 billion by 2027, an 85% compound annual growth rate, and found that roughly 25% of biopharma companies already report AI-driven cost reductions and revenue increases of at least 5% (bcg.com) (bcg.com). Yet Deloitte's mid-2026 life sciences confidence survey injects an important caveat: while 71% of life sciences executives report progress on AI deployment over the prior six months, only 45% report measurable performance gains, and 61% of leaders cite external partnerships as especially important for accessing AI capabilities they cannot build alone (prnewswire.com) (prnewswire.com) (prnewswire.com). The same Deloitte survey found that AI and digital investments are now

growing at the same rate as core R&D spend, suggesting AI is being absorbed into, rather than substituted for, existing R&D budgets ([prnewswire.com](https://www.prnewswire.com)). A Deloitte life sciences leader summarized the tension directly: "as competitive dynamics are likely to continue to intensify and costs continue to escalate, it's important that companies employ a capital allocation strategy that preserves sufficient investment for long-term innovation" ([prnewswire.com](https://www.prnewswire.com)).

That partnership dynamic is already visible in a wave of large, disclosed AI-pharma R&D collaborations. *Table 3* below summarizes the most significant deals identified for this report.

Table 3: Notable AI-Pharma R&D Collaborations, 2024 to 2026

Parties	Announced	Upfront Payment	Potential Milestones	Notes
Isomorphic Labs (Alphabet) & Novartis	January 2024	\$37.5 million	up to \$1.2 billion plus royalties	small-molecule drug discovery collaboration (storage.googleapis.com) (storage.googleapis.com)
Isomorphic Labs & Eli Lilly	January 2024	\$45 million	up to \$1.7 billion (excluding royalties)	multi-target drug discovery collaboration (storage.googleapis.com) (storage.googleapis.com)
Isomorphic Labs & Johnson & Johnson	January 2026	not disclosed	not disclosed	cross-modality, multi-target research collaboration (isomorphiclabs.com)
Sanofi, Formation Bio & OpenAI	May 2024	not disclosed	not disclosed	described by Sanofi as "a first collaboration of its kind" on AI-powered drug development software (sanofi.com)
Eli Lilly & OpenAI	June 2024	not disclosed	not disclosed	generative AI discovery of novel antimicrobials for drug-resistant pathogens (investor.lilly.com)
AstraZeneca & CSPC Pharmaceutical	June 2025	\$110 million	up to \$1.62 billion (development) plus \$3.6 billion (sales)	AI-enabled chronic-disease small-molecule research collaboration (astrazeneca.com) (astrazeneca.com)
AstraZeneca & Algen Biotechnologies	October 2025	not disclosed separately	up to \$555 million total	AI-driven gene-editing and gene-therapy licensing deal (reuters.com)

Taken together, the Isomorphic Labs deals with Novartis and Lilly alone carry a combined potential value of nearly \$3 billion excluding royalties, according to Isomorphic Labs' own announcement, illustrating the scale of capital now flowing into AI-native drug discovery partnerships even before accounting for the larger AstraZeneca-CSPC agreement (isomorphiclabs.com). Isomorphic Labs' January 2026 collaboration with Johnson & Johnson, described as a cross-modality, multi-target research partnership, extends this pattern to a fourth major pharma partner in just over two years (isomorphiclabs.com), while Sanofi's collaboration with Formation Bio and OpenAI, which Sanofi itself called "a first collaboration of its kind" in the pharma and life sciences industries, shows the trend extending beyond pure drug-discovery deals into AI-powered development software more broadly (sanofi.com). Evaluate's 2026 World Preview separately found that Chinese pharmaceutical assets are forecast to make up more than two-thirds of total industry deal value in 2026, up from about half in 2025, underscoring that AI-enabled discovery deal flow is increasingly global rather

than concentrated in the United States and Europe alone ([evaluate.com](https://www.evaluate.com)). Regulators are moving in parallel: the US Food and Drug Administration (FDA) issued draft guidance in January 2025 proposing a risk-based credibility assessment framework for evaluating AI model outputs used to support regulatory submissions in drug and biological product development, signaling that AI-derived evidence is beginning to enter, not just accelerate, the formal regulatory review process ([fda.gov](https://www.fda.gov)).

For life sciences and pharmaceutical organizations navigating this environment, the practical challenge is less about whether to adopt AI in R&D, most large drugmakers already have some form of AI initiative underway, and more about how to operationalize it inside regulated, compliance-heavy environments where data governance, validated systems, and commercial execution must move in lockstep with the science. IntuitionLabs, a life sciences and AI consultancy that works with pharmaceutical and life science organizations on AI, data, and Veeva-ecosystem implementations, cites Deloitte research indicating that AI-enhanced drug discovery and development can accelerate timelines by up to 60%, and cites McKinsey's estimate that AI could generate over \$100 billion in annual value for the pharmaceutical industry, noting that adoption since 2024 has tracked ahead of that curve ([intuitionlabs.ai](https://www.intuitionlabs.ai)) ([intuitionlabs.ai](https://www.intuitionlabs.ai)). Those are IntuitionLabs' own summaries of third-party estimates rather than figures verified for this report, and they should be read alongside the broader evidence assembled here: the dollar figures attached to AI's potential impact on pharmaceutical R&D are large and growing, but as Deloitte's own executive survey shows, the gap between deploying AI and measuring its financial return remains wide as of mid-2026, which is itself a reason many drugmakers are turning to specialized partners rather than attempting every integration in-house.

Looking ahead, three trends are likely to shape pharmaceutical R&D spending through the remainder of the decade. First, R&D returns, per Deloitte's IRR series, appear to have entered a genuine multi-year recovery after a decade of decline, aided substantially by the commercial success of GLP-1 medicines, though the same data show that recovery is narrowly concentrated in a handful of therapeutic categories rather than broad-based. Second, the widening gap between GAAP and adjusted R&D disclosures, most visible at AbbVie in this report's dataset, is likely to persist and may complicate cross-company benchmarking further as more companies pursue bolt-on M&A funded partly through R&D-adjacent accounting lines. Third, AI-native drug discovery partnerships, exemplified by the Isomorphic Labs, OpenAI, and CSPC deals catalogued in Table 3, are shifting from experimental collaborations toward core pipeline strategy at several of the world's largest drugmakers, a trend this report expects to accelerate through 2027 as more of these partnerships reach clinical proof-of-concept milestones.

Frequently Asked Questions (FAQs)

What percentage of revenue do pharmaceutical companies spend on R&D? Among the 25 consolidated drugmakers compared in this report, R&D intensity for fiscal year 2025 ranges from approximately 5.9% (Teva Pharmaceutical) to approximately 163% (Moderna). Bayer Pharmaceuticals is shown separately as a division-only reference row. Moderna is an outlier because its 2025 R&D expense exceeded its sharply reduced revenue; excluding Moderna, the highest ratio is approximately 41% at Regeneron Pharmaceuticals. Most large, diversified originator companies cluster between 15% and 25%, as detailed in Table 1 above. PhRMA

describes its member companies' aggregate figure as roughly one in five dollars of revenue, or about 20% (phrma.org), while the CBO found the broader US pharmaceutical industry's R&D intensity exceeded 25% in 2018 and 2019 ([cbo.gov](https://.cbo.gov)).

Which pharmaceutical company spends the most on R&D in absolute dollar terms? Based on fiscal year 2025 disclosures, Merck & Co. leads with \$15.8 billion in R&D expense, followed by Johnson & Johnson (\$14.7 billion), AstraZeneca (\$14,232 million), Roche (CHF 12.243 billion, approximately \$13.7 billion), and Eli Lilly (\$13,337 million); see Table 1 for the full ranking of 25 companies (merck.com).

Why do smaller biotechnology companies have higher R&D intensity than Big Pharma? Companies like Regeneron and Vertex Pharmaceuticals report high R&D-to-revenue ratios primarily because their commercial revenue base is narrower and more concentrated than diversified Big Pharma companies with dozens of marketed products; a large R&D budget divided by a comparatively smaller revenue base produces a higher ratio even when the absolute R&D dollar figure is smaller than a Big Pharma peer's (sec.gov).

Is pharmaceutical R&D spending increasing or decreasing in 2026? The direction varies substantially by company and depends heavily on individual portfolio and patent-cliff dynamics. GLP-1-exposed companies like Eli Lilly and Novo Nordisk have grown R&D spending alongside revenue, while several patent-cliff-affected companies such as Pfizer, Bristol Myers Squibb, and Merck & Co. reported GAAP R&D expense declines in 2025 versus 2024, reflecting cost realignment rather than a broad industry-wide pullback, as detailed in the Case Studies section above. At the industry level, Deloitte's IRR benchmark suggests aggregate returns on pharmaceutical R&D investment have been rising for three consecutive years through 2025 even where individual company R&D budgets have been flat or declining (deloitte.com).

How is artificial intelligence affecting pharma R&D spending and productivity? AI is not yet a large, separately reported line item in most pharma R&D budgets; Deloitte's mid-2026 survey found AI and digital investments are growing at roughly the same rate as core R&D spend rather than substituting for it, and only 45% of surveyed life sciences executives report measurable performance gains from AI deployment despite 71% reporting deployment progress (prnewswire.com). Where measurable, McKinsey and BCG both document meaningful discovery-timeline compressions, in some documented cases cutting early candidate identification from four to five years down to roughly eight months (bcg.com).

What is the average cost to develop a new drug? Published estimates vary widely by methodology: Tufts CSDD's frequently cited figure is \$2.558 billion in 2013 dollars (\$2.870 billion including post-approval costs), Deloitte's 2025 industry average was \$2,671 million per approved asset, and a 2020 JAMA analysis of drugs approved 2009 to 2018 produced a substantially lower median of \$1.1417 billion, underscoring that no single number should be treated as definitive (globenewswire.com) (jamanetwork.com).

Conclusion

Pharmaceutical R&D spending in 2026 defies any single narrative. Across the 25 selected drugmakers compared in this report, absolute R&D dollars and R&D intensity tell different, often contradictory, stories: Merck & Co., Johnson & Johnson, AstraZeneca, Roche, and Eli Lilly lead on dollar spend, while Regeneron, Vertex Pharmaceuticals, and, for idiosyncratic reasons, Moderna post the highest ratios of R&D to revenue.

Structural forces, the GLP-1 boom lifting Lilly and Novo Nordisk, the Humira patent cliff reshaping AbbVie's cost structure, and disciplined cost realignment at Pfizer and Bristol Myers Squibb, explain most of the variation better than any simple "innovation commitment" story.

At the industry level, the aggregate data assembled from PhRMA, IQVIA, Deloitte, the OECD, and the European Commission's Joint Research Centre confirms that pharmaceutical R&D intensity remains multiples higher than the typical cross-industry average, and that returns on that investment, measured by Deloitte's internal rate of return series, have been recovering for three consecutive years through 2025 after a prolonged prior decline, even though that recovery is heavily concentrated in GLP-1 assets rather than broad-based. Artificial intelligence sits at the center of the forward-looking conversation, with McKinsey and BCG projecting tens of billions of dollars in annual value creation and several major, well-documented AI-pharma partnerships already carrying billions of dollars in disclosed deal value, even as Deloitte's own survey data shows most life sciences executives have not yet converted AI deployment into measurable financial results, and as the FDA's own draft guidance on AI-derived regulatory evidence signals that oversight is still catching up to adoption ([fda.gov](https://www.fda.gov)).

For organizations benchmarking their own R&D investment against this landscape, the most useful takeaway from this report's data is methodological as much as numerical: R&D intensity comparisons across companies are only meaningful when the underlying reported accounting basis, corporate scope, fiscal-year timing, and currency conversion are made explicit, as illustrated by AbbVie, Bayer, UCB, and the two Japanese filers. As AI-driven drug discovery partnerships mature from experimental collaborations into core pipeline strategy over the next several years, that same discipline, verifying figures against primary filings rather than secondary aggregation, will only become more important for anyone trying to separate genuine R&D productivity gains from accounting artifacts or one-time portfolio events.

Source links

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Our AI enablement services cover readiness assessments, use-case selection, governance and policies, team workshops, adoption measurement and ongoing advisory support. We help organizations structure the information layer behind AI: source material, context, permissions and maintained knowledge that make generated answers useful and reviewable. Private LLM inference and hosted AI options support teams evaluating how to operate AI with appropriate control over their data and infrastructure.

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