



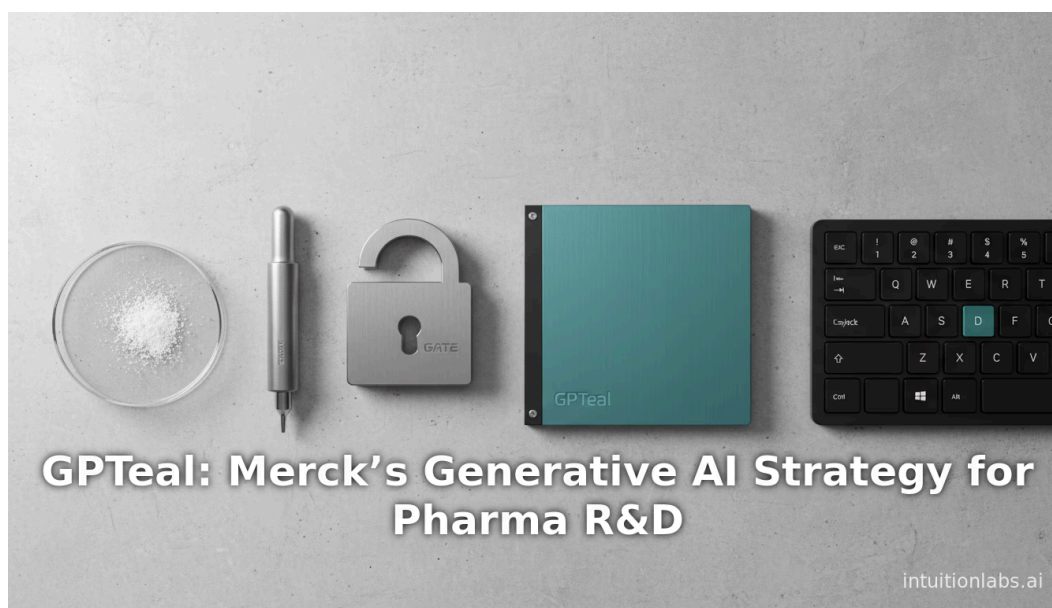
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GPTeal: Merck's Generative AI Strategy for Pharma R&D

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GPTeal: Merck's Generative AI Strategy for Pharma R&D

Executive Summary

Merck & Co. (known as MSD outside North America) has launched an ambitious internal AI initiative centered on a proprietary platform called **GPTeal**, designed to bring the power of generative AI into its pharmaceutical R&D processes. GPTeal is essentially a “[gated](#)” [large-language-model \(LLM\) interface](#) that allows Merck scientists and staff to interact with advanced AI models (such as OpenAI's ChatGPT, Meta's Llama, and Anthropic's Claude) from within a secure corporate environment ([www.businessinsider.nl](#)). By enabling safe access to these powerful tools, Merck aims to accelerate routine tasks (e.g. drafting emails, summarizing documents, composing regulatory text) and free researchers to focus on higher-value activities ([www.businessinsider.nl](#)). Merck has reported material gains from a separate clinical-authoring application co-developed with McKinsey's QuantumBlack. That application, which Merck did not identify as GPTeal, produces draft clinical study reports (CSRs) in 3–4 days instead of the usual 2–3 weeks ([www.mckinsey.com](#)). Human-reviewed drafting hours fell from about 180 to 80 per report ([www.mckinsey.com](#)), and error rates in those drafts were cut roughly in half ([www.mckinsey.com](#)). Internally, more than **50,000** Merck employees (out of ~75,000 total) now use GPTeal regularly for various tasks ([www.businessinsider.nl](#)) ([www.merck.com](#)). In June 2025, Merck announced that the first live AI-assisted CSRs using its clinical-authoring platform had been submitted and that it was in the process of scaling that platform across its late-phase pipeline by the end of 2025 ([www.merck.com](#)). Since then, Merck has further deepened its AI strategy: in December 2025, the company partnered with NVIDIA to release **KERMT**, an open-source small-molecule drug discovery model

pretrained on over 11 million molecules ([healthcare-brew.com](https://www.healthcare-brew.com)), and in February 2026, Merck announced a landmark collaboration with **Mayo Clinic** to apply AI, advanced analytics, and multimodal clinical data to drug discovery and precision medicine (www.merck.com).

This report provides an in-depth examination of Merck's GPTeal platform and its context. We begin with background on the high costs and long timelines of traditional pharma R&D (often 10+ years and over \$1 billion per drug (www.mckinsey.com)) and the rapid emergence of generative AI (e.g. ChatGPT) as a promising accelerating force. We then describe GPTeal's design, capabilities, and deployment, using primary sources and reported metrics. Detailed case analyses — such as Merck's separate AI-driven CSR-authoring platform — illustrate how the company is transforming workflows with generative AI. We compare Merck's approach with those of other pharma leaders (e.g. J&J and Eli Lilly) and describe how Merck is training and governing AI use across its organization (www.businessinsider.nl) (www.businessinsider.nl) (www.businessinsider.nl). We analyze data on time-savings, error reduction, and employee adoption, and we cite a Harvard Business School study in which GPT-4 raised consultants' quality of work by more than 40% (aibusiness.com). Finally, we discuss challenges and future directions: **privacy and regulatory risks** ([guidehouse.com](https://www.guidehouse.com)), the need for human oversight (www.mckinsey.com), and evolving AI models (e.g. domain-specific "PharmaGPT" models) and how Merck (and the industry) might integrate them. Throughout, cited sources distinguish between reported facts and forward-looking possibilities.

Introduction and Background

Bringing a new medicine to market has long been one of the most demanding endeavors in science and business. On average, **drug development** takes roughly **ten years** and well over **\$1 billion** per medicine (www.mckinsey.com). Despite this investment, the industry faces mounting pressures: R&D pipelines have only grown busier (the number of new molecules in development has *doubled* over the past decade (www.mckinsey.com)), and the complexity of biology yields high failure rates. In this environment, pharmaceutical companies are urgently seeking innovations to **accelerate every phase of R&D** — from target discovery and candidate optimization through clinical trials and regulatory filings.

In 2022–2024, a new class of AI tools arrived that promised exactly such acceleration. Generative AI — exemplified by OpenAI's ChatGPT and similar LLM-based chatbots — can create high-quality text, code, and even images from user prompts. Within months of ChatGPT's public launch in late 2022, businesses worldwide recognized its potential to automate routine cognitive tasks. Corporate leaders noted that AI could assist with literature review, data summarization, report drafting, coding, and more. A Harvard Business School study, for instance, reported that using GPT-4 raised knowledge workers' quality of work by **over 40%** on average (aibusiness.com) (compared to no-AI controls), when used intelligently. However, companies also raised deep concerns about privacy, accuracy, and compliance: generative AI models hosted by external providers could inadvertently expose sensitive data or produce misleading "hallucinations" if left unchecked. For heavily regulated sectors like pharma and healthcare, simply allowing open use of ChatGPT was deemed too risky without safeguards ([guidehouse.com](https://www.guidehouse.com)) (www.businessinsider.nl).

Enter gated, enterprise AI solutions. Rather than banning AI altogether, many R&D-driven companies have moved to deploy controlled AI systems on their networks. The goal is to *enable* employees to benefit from generative AI, while ensuring that confidential chemical structures, patient data, and proprietary research do

not leak externally. In banking and tech, analogous approaches have emerged (e.g. [customized ChatGPT instances behind corporate firewalls](#)). In pharma, the trend is clear: leaders like Johnson & Johnson, Eli Lilly, Pfizer, and Merck are all pushing generative AI initiatives. These range from massive employee upskilling programs (e.g. J&J trained **56,000** of its 138,000 employees on generative AI tools ([www.businessinsider.nl](#))) to custom AI applications for drug design and regulatory work. In this wave, Merck's program — anchored on the internal GPT-based platform **GPTeal** — stands out as a comprehensive enterprise solution.

What is GPTeal? As reported in a March 2025 industry news piece, Merck describes GPTeal as “a *proprietary platform*” developed to give its staff secured access to leading LLMs ([www.businessinsider.nl](#)). The name appears to be a play on “GPT” (Generative Pretrained Transformer) and Merck's corporate color (teal). GPTeal is reported to give employees secured access to leading LLMs. Public reporting says the platform keeps company data secure from external exposures, but does not establish its precise architecture or controls for prompts and outputs ([www.businessinsider.nl](#)).

GPTeal is part of Merck's broader effort to use AI across its business. By 2025, Merck reported approximately ~75,000 employees worldwide ([www.merck.com](#)). Public reporting supports GPTeal's broad employee use and its secured-access purpose, but does not establish its user-interface design, technical controls, development partners, deployment timeline, or company-wide rollout date. This report examines the reported platform, adoption figures, use cases, and related AI initiatives.

Merck's Generative AI Strategy

Company Profile and R&D Context

Merck & Co. is a leading global biopharmaceutical company (ticker MRK) with more than a century of drug development history ([www.merck.com](#)). Its best-known products include vaccines (e.g. Gardasil for HPV) and therapies such as the immunotherapy Keytruda and diabetes drugs. As of late 2024, Merck's headcount was about **75,000 employees worldwide** ([www.merck.com](#)), spanning R&D researchers, clinical operations, manufacturing, and commercial staff. Its R&D budget runs in the billions annually, as it invests in a broad pipeline of new molecular entities (it was projected to be one of the top spenders by 2026 ([www.statista.com](#))). In July 2025, Merck announced a major restructuring program targeting \$3 billion in annual cost savings by 2027, including the elimination of approximately 6,000 positions (about 8% of the workforce) across administrative, sales, and R&D roles ([www.pharmexec.com](#)). The savings are being redirected toward R&D and up to 20 new product launches. Despite this scale, Merck faces industry-wide challenges: decade-long development cycles (often ~10–12 years per novel drug) and enormous costs mean that any efficiency gain can have immense value.

By 2024, Merck's leadership recognized that AI could be a key enabler of faster drug development. The sudden hype around ChatGPT in late 2022 served as a catalyst: Merck IT leaders, including CTO Ron Kim, have described LLM uses such as drafting and summarizing ([www.businessinsider.nl](#)). (A LinkedIn post on ChatGPT's impact ([www.linkedin.com](#)) comes from Merck KGaA of Darmstadt, Germany, a separate company that shares the Merck name and is not part of Merck & Co.) However, they also understood that simply telling staff to use ChatGPT openly would violate confidentiality of clinical and proprietary data. The solution was to

create an **enterprise-controlled environment**: hence GPTeal. As one news report summarized, Merck's "early generative AI investments included development of [GPTeal]" which "gives employees access to large language models... while keeping company data secure" (www.businessinsider.nl). This aligns with broader industry moves: for example, Merck's competitor Eli Lilly likewise instructed employees to use ChatGPT prudently (akin to Google Search), and is even mandating AI certifications for managers in 2024 (www.businessinsider.nl) (www.businessinsider.nl). Similarly, Johnson & Johnson rolled out mandatory generative-AI training before any employee could use such tools (www.businessinsider.nl).

In sum, Merck's strategy is triple-pronged: **(1)** build internal AI tools (like GPTeal) that work within the corporate data governance and security framework, **(2)** incorporate AI into critical workflows (as seen in clinical authoring), and **(3)** educate and upskill the workforce. We examine each of these elements below, focusing first on GPTeal itself.

The GPTeal Platform: Design and Deployment

According to Merck's own descriptions (www.businessinsider.nl) and related reporting, **GPTeal is a proprietary, self-service generative-AI platform for Merck employees**. It functions roughly like an internal ChatGPT, but it is tightly controlled by Merck's IT systems. Key attributes reported include:

- **Secure Gateway:** GPTeal mediates all AI requests. Public reporting says GPTeal keeps company data secure from external exposures (www.businessinsider.nl) ([guidehouse.com](https://www.guidehouse.com)), but Merck has not publicly described how prompts are routed, filtered, or logged.
- **Multiple LLM Backends:** The platform is integrated with several major LLM offerings. BusinessInsider reports that GPTeal "allows employees to access... OpenAI's ChatGPT, Meta's Llama, and Anthropic's Claude" (www.businessinsider.nl). Presumably Merck can choose which model is used for a given query (e.g. a user might pick ChatGPT-4 or another model depending on needs). This multi-model approach guards against reliance on any single vendor.
- **Web Interface and Tools:** GPTeal likely provides a chat-like interface, along with controls for context and domain. Although detailed UI info is not public, Merck's CTO Ron Kim says employees use it for drafting emails, memos, and regulatory documents (www.businessinsider.nl).
- **Integration with Data Resources:** While not officially detailed, one would expect GPTeal to connect with Merck's own knowledge bases. In many companies, generative AI assistants are augmented with company-specific data (e.g. indexed documents, knowledge graphs). Even if GPTeal primarily uses public models, Merck has the infrastructure (from its cloud migration) to add Retrieval-Augmented Generation (RAG) capabilities in the future. This would allow GPTeal to answer questions about Merck products or research by fetching from internal databases.

In practice, GPTeal quickly became widely adopted. As of early 2025, **more than 50,000 Merck employees were using GPTeal** (www.businessinsider.nl). Given Merck's ~75,000 total staff, this is roughly two-thirds of the company. Use cases began with lower-level tasks: for example, staff used GPTeal to draft routine communications (emails, memos, briefing notes) and to iterate on regulatory text templates

(www.businessinsider.nl). These are tasks that do not require domain expertise but do consume researchers' time. Merck's stated aim is to free scientists from such chores so they can focus on higher-value work. The sections below also cover Merck's other generative-AI applications.

Merck has supported generative-AI adoption with self-service digital courses, monthly webcast seminars, and specialized developer bootcamps, according to reporting (www.businessinsider.nl). Public reporting does not establish a GPTeal-specific training prerequisite for access. Ron Kim notes that by coupling the platform with education, "*we encourage all our employees to be curious, experiment, [and] become proficient with data and AI*" (www.businessinsider.nl). (Merck KGaA, a separate Darmstadt-based company that shares the Merck name, has also discussed ChatGPT's effect on AI awareness (www.linkedin.com); its executives do not speak for Merck & Co.) Merck's public clinical-authoring announcement says that its separate CSR platform operates with rigorous oversight by qualified medical writers. Public reporting does not establish an equivalent review policy for every GPTeal output.

In June 2025, Merck announced a separate internal generative-AI-powered platform for clinical authoring. Dave Williams, Merck's Chief Information and Digital Officer, stated that the initiative "puts AI in the hands of our medical writers" and creates efficiencies across R&D teams. The announcement said the first live CSRs using that proprietary platform had been submitted and that Merck was scaling the platform across its late-phase pipeline by the end of 2025; it did not identify the platform as GPTeal (www.merck.com).

In summary, **GPTeal** is a reported proprietary generative-AI platform for Merck employees. Public reporting supports its broad use and secure-access purpose, but does not establish the specific technical controls described above. Merck's documented CSR efficiency and quality metrics apply to its separately announced clinical-authoring platform, not to GPTeal by name.

Merck Generative AI Use Cases and Results

Merck is integrating generative AI (via GPTeal and other tools) across multiple stages of R&D and clinical development. Here, we detail several key applications and their outcomes:

1. Clinical Study Report Generation (Case Study)

One of Merck's most impactful applications has been automating the drafting of **Clinical Study Reports (CSRs)**. CSRs are lengthy documents (often thousands of pages) summarizing the methodology and results of a clinical trial. They are required by regulatory authorities to approve a new drug. Traditionally, writing a CSR was a painstaking, manual process: teams of medical writers spend weeks compiling data tables, analyzing results, and writing narrative text in precise regulatory language. Merck partnered with McKinsey's AI group QuantumBlack to tackle this with generative AI (www.mckinsey.com).

The collaborative solution combined Merck's data pipelines with a generative-AI authoring app. Merck and McKinsey co-developed a tool that preprocesses trial data tables and feeds them into an LLM, producing a first draft of the CSR text. The results were dramatic: where a CSR first draft used to take "two to three weeks," the new system produces a draft in only three to four days (www.mckinsey.com). In practical terms, Merck reports that the *authoring hours* required have dropped from about **180 hours** to **80 hours** per CSR.

(www.mckinsey.com) (a ~56% reduction). Moreover, automated checks show the AI-generated drafts contained roughly **50% fewer errors** (in data tables, citations, terminology, etc.) than pre-AI drafts (www.mckinsey.com).

Anecdotally, Merck's staff have been stunned by the speed. A Merck principal scientist remarked, *"We co-wrote a CSR that took months of preparatory work and weeks of authoring. To see a CSR pop up on your screen in eight minutes is amazing. We can work so much smarter with this."* (www.mckinsey.com). Crucially, medical writers still review and revise the AI draft before final submission, so the output meets regulatory standards. This AI-assisted workflow has already been used in live studies: McKinsey reports that over 80 data scientists, medical experts, and AI engineers (across 3 continents) collaborated to deliver Merck's first AI-assisted CSRs (www.mckinsey.com). Merck's June 2025 press release further clarified that the platform integrates "advanced table pre-processing with gen AI authoring" and can deliver a high-quality first draft within **five minutes**, handling table mapping, data extraction, styling, and validation automatically (www.merck.com). By June 2025, Merck said the first live CSRs using the platform had been submitted and that it was in the process of scaling the platform across its late-phase pipeline by the end of 2025.

The CSR case illustrates two points. First, it shows that generative AI **can significantly accelerate an R&D bottleneck**. Cutting report-writing time by 70–80% means New Drug Applications can proceed to regulators faster. Second, it underscores that successful AI in pharma requires combining technology with new processes: Merck integrated AI tools into a reviewed writing process (the "human in the loop" model (www.mckinsey.com)) to achieve these gains. In effect, the separately announced CSR platform shows how Merck is applying AI to a critical-path drug-development workflow.

2. Routine Communications and Documentation

Beyond major reports, Merck employees use GPTeal for everyday writing tasks. According to Merck's CTO Ron Kim, scientists and staff routinely prompt GPTeal to draft **emails, meeting summaries, briefing documents, and the like**. The generative AI provides a first-pass draft that the employee edits, saving time on spelling, formatting, and basic phrasing (www.businessinsider.nl). This has become a de facto part of the workflow. Merck reports that by offloading these "copyediting" chores to AI, their highly-trained scientists can spend more hours on experimental design and data analysis – exactly the tasks they were hired for (www.businessinsider.nl).

For example, Merck noted that *"some of our scientists were taking time being copyeditors — that's not what they trained for,"* and with GPTeal this bottleneck is relieved (www.businessinsider.nl). In practice, an experimental result that might have taken a day to write up can now be summarized by AI in minutes. All drafts are later checked for technical accuracy, of course – the human scientist remains responsible for correctness. But even partial automation here contributes to measurable productivity. (If a scientist saves even 30 minutes per day of writing time, multiplied across thousands of researchers and years of development, the efficiency compound is enormous.)

3. Regulatory and Technical Writing

Business press has reported that pharma companies, including Merck's peer Eli Lilly, use generative AI to help create materials for regulatory submissions (www.businessinsider.nl); Merck has not publicly reported GPTeal-specific regulatory-writing uses. While detailed metrics here have not been reported, the company's strategy is clear: any heavy-text process (protocols, informed consent forms, safety summaries, etc.) is a candidate for AI augmentation. Each such application still requires domain experts to certify the content, but with the AI handling initial drafting, the overall turnaround is much faster.

A related application is in **scientific literature review and hypothesis generation**. Although not publicly quantified for Merck specifically, generative AIs like ChatGPT have been used in pharma research labs to quickly summarize the latest papers on a target or to propose experiment ideas. We expect GPTeal to be used for querying internal research databases in a similar fashion: scientists can ask it questions in natural language ("What were Keytruda's response rates in Trial X?") and get synthesized answers. Merck has not publicly reported such GPTeal uses; its published generative-AI performance metrics concern clinical authoring (www.mckinsey.com).

4. Drug Discovery and Design (Experimental)

GPTeal focuses on text, but Merck is also piloting generative AI for molecular design. In early 2024, Merck was reported as an "early user" of a startup's generative chemistry platform called Enki (by Variational AI) (www.fiercebiotech.com). Enki uses AI (inspired by DALL·E for molecules) to generate novel small-molecule structures that meet specified target-product profiles.

More significantly, in December 2025, Merck partnered with **NVIDIA** to release **KERMT**, an open-source small-molecule drug discovery model pretrained on more than 11 million molecules and fine-tuned for industrial drug discovery workflows (healthcare-brew.com). KERMT (a Muppet-themed nod to its underlying GROVER architecture) helps scientists better predict how a given molecule will behave in the body — specifically its absorption, distribution, metabolism, excretion, and toxicity (ADMET) properties — potentially catching problems before researchers invest months of physical testing. With NVIDIA's infrastructure help, Merck reported faster calculation and lower memory use than the baseline GROVER model, according to Healthcare Brew. Both KERMT and Merck's genomics-focused foundation model **TEDDY** are open-source, and versions of both have been deployed directly to scientists' desktops.

Then in February 2026, Merck announced a landmark **collaboration with Mayo Clinic** to apply AI, advanced analytics, and multimodal clinical data to drug discovery and precision medicine (www.merck.com). The partnership integrates Mayo Clinic's Platform_Orchestrate program — providing access to de-identified clinical and genomic datasets, biorepositories, and advanced AI tools — with Merck's AI-enabled virtual cell technologies. Initial research efforts focus on inflammatory bowel disease, atopic dermatitis, and multiple sclerosis, where multimodal data integration may accelerate precision medicine strategies. This marks Mayo Clinic's first strategic collaboration of this scale with a global biopharmaceutical company.

These developments show that Merck's AI agenda extends well beyond GPTeal's text capabilities — from lab bench to regulatory writing to molecular design and clinical data analytics.

Adoption and Upskilling

Merck's GPTeal initiative is underpinned by a major cultural shift: enabling broad employee use of generative AI. As of early 2025, more than **50,000** Merck employees were using GPTeal (www.businessinsider.nl). This scale of adoption required significant training and change management. According to Business Insider, Merck offers **self-serve digital courses**, regular **AI-focused webcasts**, and optional **developer bootcamps** lasting from half a day to ten days (www.businessinsider.nl). Public reporting does not detail the curriculum.

The broader upskilling context is worth noting. Industry surveys show pharma giants are making AI training a company priority. For example, Johnson & Johnson has required generative-AI training for any employee who wants to use these tools (www.businessinsider.nl). In 2024, Eli Lilly also required its managers and senior leaders to obtain an AI certification (www.businessinsider.nl). Merck's reported approach pairs GPTeal access with optional learning resources, and there is no public report of a formal "AI certification" mandate. Instead, Merck has embraced an ethos of *"learn by doing"* – encouraging employees to experiment with GPTeal under guidance. As CTO Ron Kim put it: *"We aim to encourage all our employees to be curious, experiment, [and] become proficient with data and AI."* (www.businessinsider.nl).

Public reporting does not describe whether Merck has changed performance reviews or workflow checklists to reflect AI use (www.businessinsider.nl).

Comparison with industry peers: Table 1 below summarizes how Merck's GPTeal initiative compares with other leading pharma players' strategies and metrics.

Company	AI Initiative / Platform	Use Cases	Adoption / Training	Sources
Merck & Co.	GPTeal – proprietary internal LLM portal (ChatGPT/Llama/Claude) (www.businessinsider.nl)	Drafting emails, memos, regulatory documents; R&D Q&A	~50,000 employees using GPTeal (www.businessinsider.nl); digital courses/webcasts (www.businessinsider.nl)	BusinessInsider (www.businessinsider.nl) (www.businessinsider.nl)
Johnson & Johnson	Company-wide gen-AI upskilling program (using licensed LLMs via internal tools)	Data summarization, sales genAI (Copilot-type tools)	>56,000 of 138,000 employees trained on gen-AI (www.businessinsider.nl); mandatory before use	BusinessInsider (www.businessinsider.nl)
Eli Lilly	Mandated ChatGPT/LLM use; requiring leaders' AI certification (www.businessinsider.nl)	Support for small/large molecule research; doc drafting (www.businessinsider.nl)	Encouraged all employees to use AI in work; senior leaders to get certified (www.businessinsider.nl)	BusinessInsider (www.businessinsider.nl) (www.businessinsider.nl)
Pfizer	Under evaluation (partnering with creative AI firms for design)	(Exploring AI for design/discovery)	Not publicly detailed	— (No specific source cited)
Others	(e.g. Roche, AstraZeneca) Invested in custom AI/DD tools; internal policies on gen-AI usage	Varies – chemistry design, clinical operations	Various upskilling initiatives (not GPTeal-like)	Industry press

Table 1. Selected pharmaceutical companies' generative AI initiatives and workforce adoption (as of early 2025). Sources as cited.

This comparison highlights Merck's emphasis on an internal chat-based platform and broad deployment. J&J's approach has focused on mandatory training and specific productivity tools (e.g. AI copilots for sales), whereas Lilly has combined aggressive encouragement of ChatGPT with formal certification. Merck's reported pairing of broad GPTeal access with optional training resources places it somewhat between J&J's top-down mandate and Lilly's free-at-will model (www.businessinsider.nl) (www.businessinsider.nl).

Quantitative Outcomes and Productivity

The business case for GPTeal rests on measurable productivity improvements. We have already seen the dramatic efficiency gains in CSR authoring at Merck (www.mckinsey.com). In addition, general workplace studies suggest that knowledgeable use of tools like GPT-4 provides roughly a **40% increase in work quality** for tasks like writing and analysis (aibusiness.com). (Notably, that Harvard study found that consultants using GPT-4 consistently outperformed those who did not (aibusiness.com).) Though Merck has not publicly released firm ROI figures, we can infer order-of-magnitude impacts:

- **Documented CSR authoring improvement:** In multiple studies using Merck's clinical-authoring platform, the time to create a fully human-reviewed CSR first draft fell from an average of 180 hours to 80 hours, while the number of draft errors fell by 50%. Merck has not published an enterprise-wide estimate of GPTeal hours saved. (www.merck.com)
- **Error reduction:** Cutting errors by 50% in drafts translates to fewer cycles of review and revision. This improves quality and may reduce regulatory rework. In highly regulated filings, even small typos or missed references can trigger costly delays; fewer errors accelerate timelines.
- **Accelerated decision-making:** By liberating scientists from paperwork, Merck hopes to speed up discovery cycles. If GPTeal helps a project team finalize a protocol or analyze data faster, it can compress study timelines by weeks or months. Over the many parallel programs in Merck's pipeline, these time gains could be equivalent to launching products many months earlier, with correspondingly huge revenue impact.
- **Workforce productivity:** Merck has not published an enterprise-wide productivity estimate for GPTeal. Business Insider places Merck's program within a wider industry effort to apply generative AI across drug development and commercialization (www.businessinsider.nl) (www.businessinsider.nl)).

Ron Kim has said Merck's journey is to identify, implement, track, and measure use cases with dramatic business impact (www.businessinsider.nl). Publicly, the CSR example provides concrete metrics; Merck has not disclosed the complete set of internal measures used for GPTeal or other workflows.

Table 2 (below) summarizes selected reported figures for Merck's generative-AI initiatives. The CSR measures apply to Merck's separately announced clinical-authoring platform, not to GPTeal by name.

Process / Metric	Before (Traditional)	After (With Merck AI)	Impact	Source
CSR first-draft authoring time	~180 hours (human writing)	~80 hours (AI-assisted draft)	–56% time (100+ hours saved)	Merck/QuantumBlack collaboration (www.mckinsey.com)
CSR first-draft timeline	2–3 weeks	3–4 days	Reported reduction from weeks to days	Merck (www.merck.com) and McKinsey (www.mckinsey.com)
CSR draft error rate	Baseline	–50% errors in AI draft	Improved quality	Merck/QuantumBlack (www.mckinsey.com)
Employees using AI tools	0 (no corporate AI tool)	~50,000 using GPTeal regularly	Company-wide adoption (~67% staff)	BusinessInsider (www.businessinsider.nl)
AI learning resources	Not specified	Digital courses, webcasts, and developer bootcamps reported	Training support	BusinessInsider (www.businessinsider.nl)

Table 2. Selected outcomes from Merck's generative-AI adoption. Sources as indicated.

The table combines reported adoption and training information for GPTeal with results reported for Merck's separate clinical-authoring platform. It does not establish that GPTeal itself caused the CSR measures or that either initiative has shortened a medicine's regulatory-review or launch timeline.

Risk Management, Ethics, and Governance

Introducing generative AI in pharma carries risks as well as rewards. Merck's GPTeal is reported to keep company data secure from external exposures, which addresses **privacy/leakage risks** that prompted regulators to scrutinize AI. For instance, in March 2023 Italy temporarily banned ChatGPT over GDPR worries (guidehouse.com). Merck has not publicly described the technical controls that keep personal health information (PHI) or proprietary data away from external model providers, and user error (for example, pasting confidential patient data into a prompt) remains a risk that usage policies and training are generally meant to address. The company also must navigate compliance regimes (HIPAA in the U.S., GDPR in Europe, the forthcoming EU AI Act which imposes standards on high-risk AI systems (guidehouse.com)). A centralized platform can, in principle, be easier to monitor than ad hoc tool use by individual departments.

Another concern is **accuracy/hallucination**. LLMs sometimes generate plausible but incorrect statements. In the context of drug development and medicine, such errors could be critical. Merck has publicly described human review by qualified medical writers for its clinical-authoring platform (www.mckinsey.com); it has not published an equivalent rule for every GPTeal output. In the CSR case, medical writers painstakingly edit the AI text; if the AI makes a mistake in a data table, the human process uncovers it. This "human-in-the-loop" design is essential: as McKinsey notes, the AI annotates but does not replace expert judgment (www.mckinsey.com). It is an explicit risk mitigation strategy. The principal scientist's quote ("co-wrote a CSR... in eight minutes... now we can work smarter" (www.mckinsey.com)) implies that human researchers remain integral to validating results.

Merck's public announcement for its clinical-authoring platform emphasizes rigorous oversight by qualified medical writers. Beyond that use case, Merck has not publicly detailed GPTeal-specific audit logging, licensing terms, red-team practices, or output-attribution requirements. (www.merck.com)

Finally, **legal and regulatory review** remains part of any AI-assisted drafting workflow. For instance, if GPTeal is used to generate a protocol, the regulatory affairs team must still certify the final text. Merck's CIO or legal could also be reviewing industry guidelines (e.g. FDA's emerging AI guidance) to update corporate policy. These guardrails are crucial because any misstep (e.g. a hallucinated claim in a regulatory filing) could have serious consequences. Merck's public statements on human oversight concern its clinical-authoring platform rather than GPTeal specifically (www.mckinsey.com) (guidehouse.com).

Industry and Expert Perspectives

Merck's use of GPTeal fits into a larger industry transformation, with multiple perspectives emerging:

- **Pharma Experts:** Industry analysts see Merck's strategy as bold and forward-looking. A Forbes-like analysis (Klover.ai) notes that Merck is "constructing a comprehensive strategic AI response" through initiatives like GPTeal (www.klover.ai). Consulting firms highlight Merck as a leader deploying generative AI at scale in R&D. The Harvard study mentioned earlier frames this as akin to having AI "co-pilots" for researchers, substantially boosting output (aibusiness.com).
- **Competitor Benchmarks:** Other large pharma see Merck as a benchmark. J&J's Chief Information Officer has publicly commented on AI investments, and generative AI has become a boardroom topic at many drug companies. Lilly's CIO, Diogo Rau, emphasized going "opposite" to Silicon Valley firms by *embracing* ChatGPT aggressively (www.businessinsider.nl). Such contrasts highlight divergent approaches: Merck's is controlled but enabling, Lilly's is permissive, J&J's is training-driven. Published reports (e.g. Business Insider's "AI in Action" series) often cite Merck and Lilly together as exemplars of pharma's AI push (www.businessinsider.nl) (www.businessinsider.nl).
- **Regulatory View:** Health authorities globally have signaled openness to AI in pharma but with increasing specificity. The FDA issued draft guidance on AI/ML in medical devices and, in January 2025, released draft guidance on the use of AI in drug development, followed by guiding principles in January 2026. The EU AI Act's compliance deadlines are now being enforced on a staggered basis: prohibited practices took effect in February 2025, general-purpose AI obligations in August 2025, transparency obligations apply from 2 August 2026, and high-risk-system rules apply from 2 December 2027 (Annex III) and 2 August 2028 (Annex I products) (gardner.law). AI medical devices that require third-party conformity assessment under EU device law are classed as high-risk, and penalties for prohibited practices can reach €35 million or 7% of global annual turnover. Regulators have also discussed "regulatory sandboxes" for AI (guidehouse.com). By using AI *before* submitting material to regulators (inside Merck's walls), the actual regulatory submission is unchanged in format, just drafted faster. This sidesteps many regulatory unknowns.
- **Academic Research:** Researchers are also building domain-specific models. For instance, the idea of "PharmaGPT" (a custom LLM trained on biochemical text) is already being explored on arXiv (arxiv.org). Merck's approach – using general LLMs via a secure interface – may evolve toward such specialized

models. The Business Insider report quotes Merck executives on real-world corporate adoption (www.businessinsider.nl).

Future Directions and Implications

Looking ahead, Merck's GPTeal initiative is likely to expand in capability and integration. Possible future developments include:

- **Model Improvements and Customization:** Merck may fine-tune or train custom LLMs on internal data (e.g. Merck's 1000s of past trial documents, publications, patents). This would make GPTeal outputs more accurate for Merck's domain. Indeed, the generative AI community is moving toward specialized foundation models for chemistry and biology (arxiv.org). Merck could leverage this by having GPTeal route certain queries to a "BioGPT"-style engine for biochemical questions, while using ChatGPT-4 for general writing.
- **Deeper R&D Applications:** GPTeal might eventually handle structured data tasks, not just text. For example, Merck could integrate imaging or sequence data (e.g. ask an AI to highlight concerns in genomic data) if multi-modal models mature. Generative AI is also advancing in code generation: tools like GPTeal could help draft data-analysis code snippets and might translate analytics formulas or research protocols into machine code.
- **Enterprise Integration:** GPTeal could become part of a larger "AI CoE" (Center of Excellence) that spans all business units. For instance, marketing and field teams may get access to tailored generative AI tools. An AWS Industries blog post discusses generative AI use in commercial pharma teams (aws.amazon.com). Cross-domain learning (research informing marketing and vice versa) might occur via shared AI infrastructure.
- **Economic and Social Impact:** If tools like GPTeal fully mature, the nature of R&D jobs could change. Routine drafting and analysis tasks will diminish, while skills in AI supervision and interpretation will rise. Deloitte's innovation head Deborah Golden has noted this shift: future pharma roles may need less rote chemistry knowledge and more proficiency in AI and data science (www.businessinsider.nl). Merck's long-term workforce strategy will need to emphasize these AI-centric skills.
- **Regulatory Environment:** The EU **AI Act** is in force, but obligations depend on the system's classification and use. Transparency requirements apply from 2 August 2026, Annex III high-risk-system rules from 2 December 2027, and Annex I product-embedded high-risk-system rules from 2 August 2028 ([AI Act Service Desk](#)). GPTeal's reported role as an internal R&D assistant does not by itself establish that it is a high-risk system. Merck has not publicly detailed GPTeal-specific logging, testing, or other controls, so its compliance measures cannot be assessed from public reporting.
- **Ethical and Public Perception:** As AI-generated content becomes common, Merck must manage transparency. For example, if AI helped write a scientific paper or press release, how should that be acknowledged? Likewise, patients may react to learning that their trial protocols or consent forms were drafted by an AI (even if carefully reviewed). Although not unique to Merck, these human factors will gain prominence as usage grows.

Case Study Summary

The real-world impact of GPTeal and allied AI tools can be summarized in a few examples:

- **Accelerated CSR Authoring:** As detailed, Merck's CSR drafting time collapsed from weeks to days (www.mckinsey.com). This is perhaps the most concrete example of AI effect on R&D deliverables.
- **Increased R&D Staff Output:** Even the eight-minute CSR quotation (www.mckinsey.com) speaks volumes. Previously, one principal scientist's work could take months; now, combined AI-human effort yields usable drafts in minutes. If each Merck researcher saves even one full day per month by using GPTeal on routine tasks, the aggregate yearly saving could be tens of thousands of researcher-days across the organization.
- **Up to 50,000 Users:** This sheer adoption rate is itself a case: it shows that a large scientific workforce can embrace AI when it is made safe and useful. Few regulated industries have seen such rapid and widespread uptake of new technology.
- **Quality Improvements:** Fewer errors and more polished communication internally mean that science teams spend less time on back-and-forth edits. Over multiple projects, this smooths collaboration between chemists, biologists, statisticians, and clinicians.

Anecdotal case studies also illustrate the human dimension. For example, Lilly's CIO recounted teams "stopping by his office, emailing him excitedly about the ways they were applying AI to daily tasks" (www.businessinsider.nl). While an analogous Merck anecdote has not been publicized, the fact that GPTeal usage is high suggests similar grassroots enthusiasm.

Conclusion

Merck's GPTeal platform represents a pioneering effort to harness generative AI within pharmaceutical R&D. By building a secure, enterprise-scale interface to ChatGPT and related models, Merck has given most of its workforce sanctioned access to generative AI. Early evidence shows that GPTeal (in concert with targeted AI applications) can yield **dramatic efficiency gains**: CSR first drafts in days instead of weeks, broad employee adoption of GPTeal, and measurable improvements in CSR draft quality (www.mckinsey.com) (aibusiness.com).

Of course, challenges remain. The fidelity of AI outputs, the evolving regulatory regime, and the need for skilled oversight are all active issues that Merck continues to address. But by emphasizing a "human-in-the-loop" process and investing in training, Merck has put guardrails in place. In doing so, it has not only improved current workflows but also seeded a culture shift: more than 50,000 employees reportedly use GPTeal.

Looking forward, Merck continues to expand its AI capabilities aggressively. The December 2025 release of the open-source KERMT model (with NVIDIA) for molecular property prediction and the February 2026 Mayo Clinic partnership for AI-enabled precision medicine demonstrate that Merck's AI strategy has evolved well beyond GPTeal's text-generation roots. The company is now deploying specialized foundation models — including KERMT for small molecules and TEDDY for genomics — directly into scientists' workflows, while simultaneously building deep partnerships to integrate real-world clinical data with AI-driven discovery. For the

pharmaceutical industry, Merck's approach stands as a concrete example of generative AI moving from abstract hype to a practical, multi-layered tool — transforming how champions of medical innovation "save and improve lives," in Merck's words (www.merck.com).

Reported figures above come from cited sources – Merck and McKinsey announcements (www.mckinsey.com) (www.mckinsey.com), respected business press (www.businessinsider.nl) (aibusiness.com), and analysis by consulting and media experts (www.businessinsider.nl) (guidehouse.com). Where this report infers or projects beyond those sources, it says so. In sum, Merck's GPTeal exemplifies the cutting edge of AI in pharma R&D, and its development heralds significant changes in the speed, scale, and intelligence of drug discovery.

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