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ELI LILLY STRATEGIC AUDIT

An Undergraduate Honors Thesis
Submitted in Partial fulfillment of
University Honors Program Requirements
University of Nebraska-Lincoln

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Executive Summary

Eli Lilly & Company, referred to as Eli Lilly or simply Lilly in this report, is a brand-name pharmaceutical manufacturer founded in Indianapolis, Indiana by Eli Lilly in 1876. Lilly now operates in 7 countries, markets products in over 110 countries, and employs 41,000 people globally with almost 25 percent engaged in research and development activities. Guided by the values of integrity, excellence, and respect for people, Lilly has developed and produced over 100 medicines, including the first commercial insulin, commercial penicillin, Polio vaccine, Prozac, and other life changing drugs. The company stands by the founder's statement of, "Take what you find here and make it better and better," to continuously innovate and build new treatments.

Lilly's greatest strength and core competency is the Research and Development capability that drives its business. With thousands of employees, several locations, and billions in spending, Lilly heavily invests in the research and development stage of drug production, creating unique health solutions for its key customers. Intellectual property protections give Lilly the ability to manufacture drugs without generic competitors for a set number of years.

Lilly pursues a focused differentiation business-level strategy. While Lilly produces drugs in over ten therapeutic areas, the company specializes in diabetes, oncology, immunology, and neuroscience. Over half of Lilly's US revenues result from diabetes medications. Driven by its research and development capabilities, Lilly is able to innovate in focused areas of care. On a corporate-level, Lilly pursues a related diversification strategy, focusing on invention and innovation over a cost-leadership strategy. Lilly operates an international strategy, using its own manufacturing facilities to produce similar drugs both in the US and internationally, with its top sales areas being the US, Europe, Japan, and China.

In 2023, Lilly's diabetes-turned-weight loss drug, Mounjaro, gained popularity. In 2021, competitor Novo Nordisk's Ozempic, originally a diabetes drug, gained popularity for its weight loss capabilities. Lilly took advantage of the booming weight loss market, introducing Mounjaro in 2022, which is now projected to become the market leader. Mounjaro has recently been proven to be more effective for weight loss than Ozempic. Driven by its research and development abilities, Lilly is able to quickly adapt to market needs, further increasing its revenue.

This strategic audit assesses both internal and external landscapes affecting Eli Lilly; financial, qualitative, and competitive performance; strategy and governance; and recent strategic decisions. All information has been gathered from news reports, industry analyst reports, and Lilly's investor reports, financial statements, and notes to investors. The purpose of this strategic audit is to showcase Lilly's success in the brand name pharmaceutical industry based on the strategic decisions made in its 147 year history.

History and Overview

History of Lilly

Eli Lilly opened his pharmacy in Indianapolis, Indiana, in May 1876 (Blake). His relatively small business boomed due to successful sales of quinine and innovations such as sugar and gelatin-coated pill capsules. This led to the formal incorporation and issuance of stock for Eli Lilly and Company in 1881. In the early 1900s, Lilly revolutionized pharmaceutical manufacturing with state-of-the-art production facilities that refined raw materials into their products using straight-line production. Lilly had its most significant breakthrough in 1923, becoming the first commercial insulin manufacturer in the United States (Blake). Since then, Lilly has continued to research and develop successful medications and has remained one of the largest players in the US brand name pharmaceutical manufacturing industry.

Principal Business Model

Like most other pharmaceutical companies, Lilly's main business is in the research & development and subsequent manufacturing of human pharmaceutical products. Before anything else, Lilly identifies what illnesses are affecting the global community, and from those illnesses, finds those that Lilly would be best suited to research. Next, Lilly performs research and development in four steps: phases 1-3 and the final review stage. The phases are marked by administering the drug to certain types of patients. Phase 1 starts when the first human gets a dose of the drug. Phase 2 starts when the medicine is given to the first human who has the disease the medicine is targeting. Phase 3 starts when the pharmaceutical is administered in a large-scale clinical study, and the final review stage is when regulatory bodies are given samples. Through this process, Lilly hopes to have their medicine approved for the general population and can register for patents and other intellectual property rights, with which it can then move to manufacture and distribute the drug. The manufacturing and distribution of Lilly's pharmaceutical products is mainly based in the United States but has branched out to other countries, including France and China, to assist with global sales (Eli Lilly and Company, "Lilly Announces Significant..."). The efforts to help with global distribution are especially important, as Lilly's products are sold in 110 countries (Eli Lilly and Company, *2022 Annual Report* 5).

After manufacturing the drugs, Lilly works closely with wholesalers around the globe to supply pharmacies. While supplying pharmacies, Lilly partners with sales agents to connect directly with physicians, helping educate them about the benefits of Lilly's products. Additionally, Lilly directly advertises to end consumers with advertisements across television, online platforms, and physical media.

With the successful release and reception of each pharmaceutical product, Lilly takes the opportunity to analyze the impact of their medication. Then, Lilly uses that feedback to determine what to research next, starting the process of bringing new drugs to the market.

Currently, Lilly's products are primarily focused on a few key diseases such as diabetes and cancer, but they also span some rarer illnesses such as schizophrenia and osteoporosis. Diabetes medications are Lilly's main revenue drivers. Trulicity, Jardiance, Humalog, Humulin, and a few other drugs Lilly offers brought in over \$1 billion each in 2022 (Eli Lilly and Company, *2022 Annual Report* 30). Additionally, there are other very profitable medications like Verzenio for breast cancer and Taltz for arthritis that also bring in at least \$1 billion annually.

Mission, Vision, & Values

Lilly's purpose statement is "to unite caring with discovery to create medicines that make life better for people around the world." Lilly also has three core values: integrity, excellence, and respect for people (Eli Lilly and Company, *2022 Annual Report* 5).

Lilly has a code of business conduct called "The Red Book" which sets expectations for ethical behavior. It contains commitments to respect privacy and confidentiality, the accuracy of financial records, scientific excellence, and appropriate management of company assets (Eli Lilly and Company, *The Red Book*). They also have a supplemental code of conduct for the financial management team, including the CEO, that addresses issues such as financial stewardship and proper internal controls (Eli Lilly and Company, *Notice of 2023 Annual Meeting* 6).

Lilly also has an "ethics and compliance program" designed to promote ethical conduct. It has teams focused on anti-corruption, bioethics and privacy, and education and training initiatives, which perform audits, monitor, and respond to potential violations (Eli Lilly and Company, "Operate Ethically and Responsibly").

Looking at Lilly's business model, their purpose statement is aligned with both the industry it is in and its target market. The first step in its business model is to identify illnesses that are affecting the global community. After research and development are completed and Lilly is able to manufacture the drug, it distributes the drug around the globe. Lilly's purpose statement explicitly mentions making life better for people around the globe, so by identifying illnesses it believes it can impact lives with, it is fulfilling its mission. Lilly also fulfills the global element by distributing worldwide. Lilly's final business step of analyzing the impact of their medication after it is released shows that they want the drug to be successful in improving lives. Its post-release analysis also targets its core value of excellence because the company conducts analysis to ensure the drug is performing as expected.

Lilly's Management

Lilly's top management team is known as the Executive Committee. The Executive Committee is comprised of 15 members (Eli Lilly and Company, "Leadership"). The chair of the committee, David A. Ricks, holds the positions of President and CEO. Ricks, an employee of Lilly for 26 years, spent much of his early career in marketing and sales before incrementally taking on more responsibilities as the general manager of operations in Canada and China. He returned to Lilly USA (the company's largest affiliate) to become the president of Lilly Bio-Medicines (the company's largest business unit at the time) before being promoted to his current role in 2017 (Eli Lilly and Company, *Notice of 2023 Annual Meeting* 15). In addition to Ricks, there are seven other corporate members of the Executive team.

Anat Ashkenazi is the Chief Financial Officer of Lilly. While she has an extensive background in accounting and finance, she brings experience leading the corporate strategic planning team and the business transformation office (Eli Lilly and Company, "Leadership").

The current executive vice president of human resources and diversity, Eric Dozier, has held officer positions in ethics, compliance, and marketing for multiple business units. In addition, Dozier has served as the general manager for Lilly in Puerto Rico (Eli Lilly and Company, "Leadership").

Johna L. Norton started at Lilly in an analytical chemist role in 1990. As her responsibilities increased, she worked in quality assurance and quality control to support manufacturing and process development. Today, she acts as Lilly's executive vice president of Global Quality (Eli Lilly and Company, "Leadership").

Leigh Ann Pusey is a relative newcomer to Lilly. Pusey was hired as the executive vice president of corporate affairs and communications in 2017. Pusey brings leadership experience as the former CEO of the American Insurance Association (AIA) and served in many leadership roles en route to being the CEO. Pusey also held key roles as director of communications for the Office of the Speaker of the U.S. House of Representatives, deputy director of communications for the Republican National Committee, and deputy assistant in the White House Office of Public Liaison (Eli Lilly and Company, "Leadership").

Diogo Rau, who began at Lilly in 2021, leads Lilly's IT, cybersecurity, digital health, advanced analytics, and data science teams. Diogo holds a master's degree in engineering management (Eli Lilly and Company, "Leadership"). Before joining Lilly, Rau was instrumental in the success of retail and online stores for Apple. At Apple, he led in developing and implementing software for the Apple online store and the Apple Store App (Eli Lilly and Company, "Leadership"). Now at Lilly, Diogo Rau's official title is Chief Information and Digital Officer.

The executive vice president of ERM and Chief Ethics and Compliance Officer, Alonzo Weems, began his career at Lilly as an attorney in 1997 (Eli Lilly and Company, "Leadership"). Weems led the legal team in the majority of business lines throughout his career. He also oversaw a revamp of Lilly's diversity and inclusion strategy from 2006-2008 (Eli Lilly and Company, "Leadership").

In addition to Weems, Anat Hakim, executive vice president, general counsel and secretary of Lilly, also has an extensive law background (Eli Lilly and Company, "Leadership"). Her highest expertise is in litigation of global matters (Eli Lilly and Company, "Leadership"). Before joining Lilly in 2020, she was a top member of two global law firms.

The remaining seven members of the Executive Committee all hold the title of Executive Vice President. They also serve as the President of their Business units.

Major Goals

Lilly has identified multiple long-term technical goals and sociopolitical goals.

Related to technology, Lilly has stated an effort to advance gene therapy to treat and prevent diseases inaccessible via traditional medicines, with over 25 percent of its early-stage pipeline consisting of gene therapy innovations. One action towards this goal includes acquiring the genetic medicine company Akuous in 2022. Additionally, Lilly announced investments in real assets in manufacturing and supply chains in order to support the demand for new medicines. Over the past three years, Lilly has invested \$6.4 billion in manufacturing sites, including the most recent announcement of developing new facilities in North Carolina, Indiana, and Ireland in March 2023 (Eli Lilly and Company, *2022 Letter to Shareholders* pp. 4-5).

In terms of socially-driven goals, Lilly is focused on community and environment. Lilly has stated its commitment to providing competitive employee compensation, initiating the largest compensation increase of Lilly's history in 2022 in order to attract and retain talent. In 2022, Lilly announced the expansion of its Insulin Value Program, first introduced in 2020. In March 2023, Lilly cut insulin prices by 70 percent and capped monthly insulin cost to \$35 per month out of pocket (Eli Lilly and Company, "Insulin Affordability Solutions"). Additionally, Lilly announced its progress with its Racial Justice Commitment via grants to nonprofits, investment in startups, and hiring talent (Eli Lilly and Company, "Racial Justice Commitment"). Lastly, the company is advancing its green initiatives to hit its environmental goals. By 2030, Lilly plans to source all electricity from renewable sources and achieve carbon neutrality in its own facilities. Lilly also has plans to minimize waste and create a water management plan (Eli Lilly and Company, "Minimize Our Environmental Impact").

External Analysis

PESTEL-DG Analysis

Political/Legal

Intellectual property laws have gone through significant changes over the years to protect individuals and corporations around the world. However, a counter-movement has recently begun to push for shorter or even no intellectual property protections. Many people believe that intellectual property stifles creativity by giving one person or one corporation complete control over an idea (Yu). While the U.S. has yet to alter its laws around patent protections for drugs, the growing sentiment is a clear threat to Lilly. This is because Lilly already relies on strong IP laws to protect the superior brand name versions of their medications (Eli Lilly and Company, *2022 Annual Report* pp. 9-10). If Lilly were to lose those protections, anyone could begin manufacturing them, cutting Lilly out of business.

Economic

Since the pandemic, consumers everywhere have gradually felt the effects of rising inflation. At the same time, consumers are noticing that companies continuously post record profits year in and year out. This mismatch in consumer harm with corporate benefit is most apparent as 2023 closes out and inflation compounds to one of its highest peaks in recent history (Palazzo). While consumers are forced to cut back on things like dining and vacations, they can't cut back on life-saving medications without risking serious harm to themselves. This fact that consumers are trapped in paying higher rates for the same basket of goods just to live doesn't escape them and may come back to haunt Lilly if they aren't careful. Already, Lilly has been pressured into cutting the price of insulin medication to \$35 a month (Eli Lilly and Company, "Insulin Affordability Solutions"). If Lilly doesn't get ahead of this threat, then it has the potential to be dangerous, cutting into Lilly's profits and even its market share.

Social

Every generation in the U.S. likes to see themselves represented in the companies they interact with. However, with Gen-Z being the most diverse generation yet, they like to see themselves represented in both the leadership of companies and in the interactions those same companies have in the community (Parker). This doesn't come at a time too soon, as fights for equality break out across the U.S. This is a perfect opportunity for Lilly to showcase both its diverse executive team from around the world and its programs like the Social Impact Venture Capital Fund to prove that they are dedicated to equal

opportunities for minority communities (Eli Lilly and Company, “Leadership”). The Social Impact Venture Capital Fund, in particular, sits at a staggering \$300 million, set aside to help fund minority groups interested in pursuing advancements in healthcare, an industry that is still working to bring in minority groups (Eli Lilly and Company, “Racial Justice Commitment”).

Technological

The emergence of Artificial Intelligence as an accessible and viable tool has disrupted many industries in the early 2020s. One of the most expensive and painstaking parts of drug manufacturing is R&D, especially determining which drugs are safe to take to human trials. Animal trials have traditionally been used to determine the viability of drugs before use in clinical trials with humans, but a staggering 89% of drugs that pass animal testing fail in clinical trials. This failure can be incredibly costly, with R&D on a drug costing \$2.6 billion on average (Bentwich). There are a handful of AI-Pharma companies that are using machine learning to improve the targeting of various drugs when used in clinical trials. Recently, AlphaFold– an AI engine created by Alphabet– solved protein-folding, an issue that had stumped developers for years. The applications of AI and machine learning in taking drugs to market faster and cheaper are very promising for Lilly.

Environmental

The pharmaceutical industry operates in a paradoxical state– it relies on supply chains that can be greatly affected by climate change, but the emissions associated with the industry account for much of that change. The movement of medications and vaccines around the world is incredibly volatile, often involving long hauls and temperature control. With weather events becoming increasingly extreme and unpredictable, supply chains can be easily disrupted (Barrell). While many large players in the industry have announced net-zero carbon emissions goals (Lilly promises to be by 2030), the industry still produces more greenhouse gases than the automotive industry and accounts for 23% of global water usage. The production of injectable medicines requires large quantities of quality water, but Lilly has taken steps to reduce their water usage, including using reclaimed water to cool equipment when possible (Eli Lilly and Company, “Minimize Our Environmental Impact”). Reducing emissions in order to reduce the risk of broken supply chains is important, and, in the meantime, it is essential to understand the risks associated with sourcing materials at a global scale.

Demographic

The United States is getting older and has been for some time. The Census Bureau estimates that approximately 75% of people in the U.S. are at least 18 years old and that nearly 20% of the population is already at least 65 years old, pushing the median age in the U.S. to approximately 40 years old (U.S. Census Bureau). This trend has some alarming impacts for the U.S., as an aging population is more susceptible to illnesses such as Alzheimer’s. While this may be an unfortunate scenario, it is also a substantial opportunity for Lilly to capitalize, as it has been focusing its efforts on a drug designed to help solve this exact issue. Donanemab, Lilly’s Alzheimer’s medication, is blazing through the R&D phases, showing actual impacts on slowing down the effects of Alzheimer’s, and will soon be sent to the FDA for approval (Eli Lilly and Company, “Donanemab Efficacy”).

Global

According to a 2023 study, adults with post-COVID-19 condition have an elevated risk for adverse health outcomes (Rosenberg). While this is obviously not good, it is an opportunity that Lilly can capitalize on. A population that is, in large part, less healthy than they were pre-pandemic may allow Lilly to develop drugs to improve their quality of life.

One threat facing Lilly and the pharmaceutical industry as a whole is the unreliability of global supply chains. While material shortages existed prior to the COVID-19 pandemic, they have only gotten worse since. The pandemic caused almost 80% of pharmaceutical manufacturers in China and India to suspend operations, which caused shortages that are being felt to this day (Marrone, et al.). It is important for Lilly and the industry at large to focus on securing domestic supply chains for ingredients and equipment that are essential to the drug manufacturing process.

Porter's Five Forces

Threat of New Entrants

The threat of new entrants is relatively low in the Brand Name Pharmaceutical Manufacturers industry due to high barriers of entry. One large barrier to entry is the extensive research and development process for new medications, which involves high expenditures, long lengths of time, and relatively low success rates. According to Lilly, "...from the discovery phase to market can take over a decade and often costs in excess of \$2 billion" (2022 Annual Report 24). Also, failure can occur at any point in the process, and the IBIS World Report details that only one in 5,000 new drugs in preclinical testing will make it to human testing (Moreno Zambrano). The industry is also highly regulated, especially in terms of intellectual property. Pharmaceutical manufacturers are exposed to litigation costs related to their products, especially with patent challenges through litigation. New entrants must have the resources to pay skilled lawyers and any awarded damages as a result of this process. There is also a moderate capital barrier, as lab equipment, production facilities, and other costly resources are necessary to enter the drug production industry (Moreno Zambrano). One final barrier to entry is labor wages, as this industry requires highly skilled research scientists and lab technicians to be successful (Moreno Zambrano).

Threat of Substitution

There is a moderately high threat of substitution. The biggest Brand Name Pharmaceutical Manufacturer industry competitor is generic drug manufacturers. Generic drug manufacturers are especially a threat with patent expirations that result in a loss of drug exclusivity. Patents are enforced for 20 years after the date of application, but with the time-intensive discovery and approval phase, new drugs only have an effective protection period of approximately 12 years (Moreno Zambrano). Once a drug loses patent protection, generic drug manufacturers can replicate it without having to invest in research and development. This makes their costs significantly lower, so they offer the drug at substantially lower prices, reducing demand and profit significantly for the brand name pharmaceutical company (Moreno Zambrano). With large research and development costs and a large percentage of total revenue earned by only a few products due to low success rates on drug effectiveness and approval (Eli Lilly and Company, 2022 Annual Report 30), companies like Lilly depend on exclusive intellectual property rights to generate revenues high enough to turn a profit and invest in further innovation. Therefore, key patent expirations result in a high threat of substitution from generic drug competitors.

Power of Suppliers

According to the IBIS World Report for Brand Name Pharmaceutical Manufacturers, primary suppliers are composed of chemical manufacturing, industrial machinery, and medical supplies industries. Companies in supplier industries have the ability to control the cost of its equipment and chemical inputs to pharmaceutical companies, which in turn drives the price of drugs to buyers. Purchases account for 25.7% of revenue use for pharmaceutical manufacturers like Lilly, but companies do not need to replace equipment on an annual basis. This may cause industrial machinery companies to set especially high prices for equipment, considering they will see purchases infrequently. Additionally, there are few suppliers for raw and intermediate materials in the market (Eli Lilly and Company, *2022 Annual Report* 18). Companies like Lilly try to keep sufficient stock of supplies, but if something happened to a supplier, it would cause a severe interruption for pharmaceutical companies. The power of suppliers is moderately high in this industry.

Power of Buyers

Primary buyers for brand-name pharmaceuticals include drug wholesalers, drug stores, hospitals, nursing care facilities, dentists, and psychiatric centers (Moreno Zambrano pp. 16-17). Demand is dependent on disease rates, chronic illness pervasiveness, availability of substitutes, and healthcare policies. One specific determinant of whether a buyer selects a brand-name drug is the user's insurance coverage. Insurers have the power to control costs by negotiating with pharmaceutical companies, giving the company the status of "preferred brand" in return for lower prices. The power of buyers is less significant in this industry.

Intensity of Competitive Rivalry

Interindustry, there are frequent acquisitions of pharmaceutical companies entering the space. Patent laws significantly impact company revenue, and can shift the competitive landscape after major patents expire. Success factors for each company include establishing brands, R&D capabilities, degree of globalization, supply chain capabilities, and ability to adjust to customer needs. The high limitations to entry keep the brand name pharmaceutical competition limited to large corporations like Merck, Johnson & Johnson, Pfizer, Abbvie, Lilly, and other pharma giants. A significant weakness in the industry, according to the IBIS World Report, is high competition between companies (Moreno Zambrano 8). There is high intensity of competitive rivalry in the brand name pharmaceutical manufacturing industry.

Potential Value

According to the IBIS World Report, the profit potential for the Brand Name Pharmaceutical industry in the United States is projected to be just under \$19 billion in 2023. Overall, in the next five years, this industry is projected to grow at a Compound Annual Growth Rate (CAGR) of 2.3%. The limited growth in this industry results from the offsetting effect of positive and negative factors (Moreno Zambrano 13).

The increase in overall industry profit can be attributed to the increased spending on orphan drugs. These drugs, developed to treat rare medical conditions, are subsidized due to the low natural profitability of drugs serving small populations (FDA). On top of government financial support, orphan drug development has less oversight, resulting in lower development costs. As firms continue to lean into this expanding market, an estimated \$100 billion in additional sales are expected by 2026 (Moreno Zambrano 13).

Additionally, the increase in worldwide population is advantageous for the industry as a whole, even with the average number of diagnoses per 1000 people decreasing across diseases, including type 1 diabetes. The total number of diagnoses has increased, creating a more extensive consumer base for pharmaceutical companies (Moreno Zambrano 15).

While the industry has a positive outlook, there are some significant threats industry-wide that could lead to a slowing of the profit growth within the industry. One reason for a decrease in both overall profit is the expiration of key patents within the next year. Most notably, the patent on the drug Humira made by AbbVie will start facing copycats (Buglewicz). AbbVie has taken steps in the form of contracts and price drops to maintain sales, but without intellectual property protections, profit potential will inevitably decrease. Other drugs in a similar situation to Humira include Bristol-Myers Squibb's Revlimid, Regeneron and Bayer's Eylea, and Merck & Co.'s Keytruda (Moreno Zambrano 11).

The second reason can be derived from the increase of the imports share of domestic demand, while the market share of exports from this industry are decreasing worldwide. First, because of the appreciation of the US dollar, the trade deficit will continue to widen, which will negatively impact U.S. pharmaceutical companies trying to compete with foreign pharmaceutical companies. Additionally, exports in the pharmaceutical industry are expected to decline in the next five years as they return to normal levels after a spike from COVID-19 in the years 2020-2022 (Moreno Zambrano 11).

Degree of Concentration

The top four firms hold 47.81% of the entire market share in the brand-name pharmaceutical manufacturing industry (Moreno Zambrano). From this statistic, it can be deduced that this industry is moderately concentrated (Kenton). In this case, this means that there is high competition across firms, with no one firm controlling an overpowering majority. This results from a wide range of drugs being developed, each of which has high research and development costs where no one firm can be the leader in each part of the industry.

Internal Analysis

Resources and Capabilities

Since its founding 147 years ago, Lilly has worked tirelessly to achieve its mission of helping people live longer, healthier, and more active lives, creating a strong reputation for itself. To support that mission, it has built numerous administrative buildings, research and development labs, and manufacturing plants around the globe. Along the way Lilly has also developed the necessary capabilities to discover new types of pharmaceuticals and distribute the ones that it already makes.

Lilly is headquartered in Indianapolis, Indiana, in a building that houses over 12,000 employees engaged in every kind of job, from research and development, to administrative duties, financial analysis, and even legal services like filing patents for newly developed drugs. Looking specifically at research and development, Lilly has invested in 7 countries, such as the U.S., Ireland, and Australia to build modern research & development labs to facilitate the different trials new drugs will go through while being developed. In those labs, nearly 10,000 employees across the globe are working with cutting-edge

medical equipment (Eli Lilly and Company, “Key Facts”). This massive workforce allows Lilly to test many drugs at the same time, a capability that smaller pharmaceutical companies can’t match.

Once a new medication passes its various trials it’s then tested in clinical trials in any number of the 55 countries Lilly has access to through past R&D work. After being proven safe for the general public in clinical trials, a small force of legal experts work to get the medicines approved in the 110 countries Lilly has direct markets in. At the same time, lawyers will work to patent the drug, giving Lilly exclusive rights to use it, as they have done for the nearly 50 drugs it already holds patents for.

After securing the intellectual property rights, Lilly can begin to manufacture the pharmaceuticals in the 7 countries where it has developed manufacturing plants (Eli Lilly and Company, “Manufacturing Quality”). From there, Lilly will work with its established global supply chain to deliver the drugs to wholesalers. Although Lilly doesn’t directly ship to doctors and pharmacies, it still utilizes those relationships by marketing to the doctors and explaining why the doctors should prescribe Lilly’s medications over competitors. This last relationship is underrated, because although an international supply chain system is important, it doesn’t mean much unless a firm has the ability to actually move those products to the final consumers, which is done by doctors.

In addition to these independent resources, Lilly also relies heavily on strategic partnerships. By spending more than two billion dollars over the last 20 years, it has managed to build more than 180 partnerships across the globe. These partnerships have become integral to the way Lilly performs research, as 15 of the last 20 medications Lilly has released came out of a partnership (Partner with Lilly). The reason that these partnerships are so important is that they allow Lilly to both work directly with companies who have expertise in niche fields that Lilly doesn’t and it helps Lilly gain access to cutting edge equipment and methods without having to pay to completely acquire them. For example, Lilly recently partnered with ProQR to gain access to its RNA editing technology, which will allow Lilly to pursue research in new fields like the RNA vaccinations used for the COVID-19 Pandemic (Lilly and ProQR...).

Core Competencies

Lilly’s top core competency is its research and development capabilities. One of its biggest efforts in R&D currently is its gene therapy medicines, which makes up 25 percent of the Company’s active pipeline (Eli Lilly and Company, “Research and Scientific Discovery”). Daniel Skovronsky, Lilly’s Chief Scientific and Medical Officer, shared with the Washington Post details about Alzheimer’s breakthroughs in July 2023. In this interview, he stated that Lilly’s investment in R&D over the past decade has allowed the company to lead the industry. Ten years ago, Lilly didn’t even make the top ten ranking for pharma companies by market cap (Jarvis). Skovronsky said that speed and rigor of new efforts has been the most significant factor in increasing R&D productivity, emphasizing the company’s effort to “pursue sound science.”

Eli Lilly also has spent significant amounts on R&D. According to Statista, the Company spent \$7.2 billion in 2022 on R&D alone, an annual increase of over \$2 billion since 2018 (Mikulic). In order to produce at such speed indicated by Skovronsky, Lilly had to significantly increase spending.

More specifically, Lilly's R&D efforts are focused towards its diabetes and oncology medicines. Lilly's leadership in the diabetes market has allowed the Company to lower costs through its Insulin Value Program, where consumers pay no more than \$35 out of pocket for insulin. In 2022, Lilly released a new, successful Type 2 Diabetes and weight loss medication, Mounjaro, which earned nearly \$1 billion for the Company in Q2 2023 (Murphy). In an attempt to replicate Lilly's success, generic brand pharmaceutical companies are releasing drugs similar to Mounjaro, which Lilly is currently litigating as of September 2023, supporting its inimitability (Eli Lilly and Company, "Investor News Release"). In oncology, Lilly has reached a solution before competitors. In 2020, the oncology medicine market required a new development for breast cancer patients. Via the Company's R&D efforts, Lilly was able to beat Pfizer to the market in introducing Retevmo for tumor treatment (Eli Lilly and Company, "Investor News Release"). Through its success in oncology, Lilly supports programs like its Oncology Support Center and Oncology on Canvas art program.

VRIO Framework

The profitability of the U.S. Brand Name Pharmaceutical Manufacturing Industry is closely linked to the legal protection of drugs. Patents allow for the originators of the drugs to have high profit margins until expiration, which greatly decays the future profit potential for the products of brand-name companies like Lilly. Once a patent expires, most potential future revenues are spread to generic manufacturers who produce and sell a biosimilar formula at a fraction of the cost (Moreno Zambrano). Patent protection is an essential component of making Lilly's competitive advantage, research and development, viable (Eli Lilly and Company *Annual Report 29*).

An essential piece of producing innovative drugs worthy of patents is the resources allocated to expand the firm's capability to research and develop new drugs.

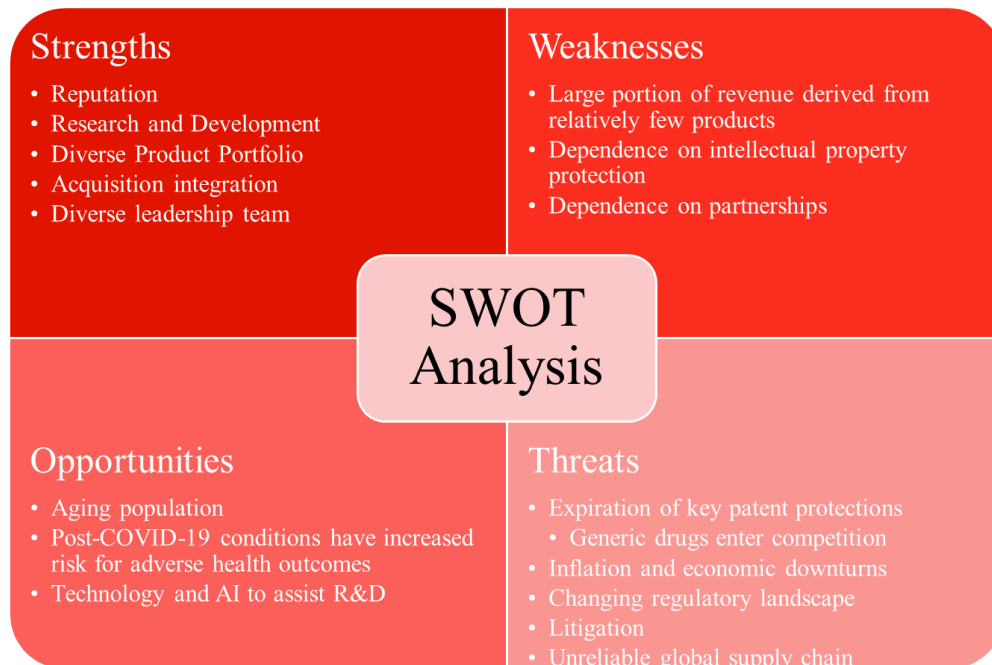
While the current products are valuable to consumers, Lilly's research and development is equally valuable as it gives Lilly the opportunity to create future products that will create value for customers (Blankenagel et al.).

The scarcity of products in this industry is, again, time-based. Research and development allows Lilly (and other brand-name pharmaceutical companies) to be the first to bring drugs to market which peaks the scarcity of a market leading to profitability (Blankenagel et al.). As other companies develop biosimilars and patent protection runs out, scarcity is found in the continued advancement of drug research and the development of new products (Moreno Zambrano).

Imitations of name-brand drugs have led to entire other industries. However, Lilly and other major firms have such prowess in R&D that competing in this space is too costly for other firms, especially in the breadth of research that Lilly does leaving only the generic market for competition (Eli Lilly and Company *Annual Report 39*).

Lilly has a worldwide footprint of R&D locations in 60 countries. This allows Lilly to develop medicines where consumers are reducing time from manufacturing to patients while also being better equipped to manage regional differences (Eli Lilly and Company, *2022 Annual Report 5*).

SWOT Analysis



The SWOT matrix summarizes the internal and external analysis reported above. As such, strengths are covered in the internal analysis section, and opportunities and threats are covered in the PESTEL and Five Forces sections.

A diverse portfolio of products is a strength of Eli Lilly's. Lilly has medicines in several areas such as diabetes, oncology, immunology, and neuroscience (Eli Lilly and Company, *2022 Annual Report* 5). This is a strength because a competitor's innovation in one area does not make the entire company's line of business obsolete.

While Lilly does find strength in its diverse portfolio, there is some cause for concern. Lilly has drugs that treat a variety of conditions and illnesses, but they have just a handful of products that account for a large portion of their sales, which is a weakness. Out of the nineteen drugs listed on Lilly's 10K, five of them—Trulicity, Jardiance, Humalog, Verzenio, and Taltz—accounted for nearly 63% of all U.S. sales in 2022 (Eli Lilly and Company, *2022 Annual Report* 66). When the patents and protections on these drugs expire, revenue may suffer.

Another weakness is Lilly's dependence on partnerships. One example is that Lilly outsources oversight duties of some clinical trials to research organizations. Outsources such as this come with several risks such as not meeting performance standards, failing to meet deadlines, or a partner backing out that has few alternative providers (Eli Lilly and Company, *2022 Annual Report* 30).

Adverse health occurrences that have come about alongside COVID-19 and an aging population are opportunities that Lilly can capitalize on by developing treatments in demand. Advancing technology is

also an opportunity Lilly can exploit by leveraging artificial intelligence in its research and development processes, helping both financially and with speed to market.

A significant threat to Lilly is the expiration of protections on its intellectual property, which Lilly recently experienced when the patent for Alimta expired in 2022 (Eli Lilly and Company, *2022 Annual Report* 25). Alimta was not an incredibly significant source of revenue, but when patents expire on hallmark products such as Trulicity and Jardiance, Lilly will likely see a large decrease in revenue.

Inflation and general economic downturns in the United States have led to some decreased utilization of Lilly’s products. This is not only a threat with the individual consumer, but governments and other entities that contract Lilly to manufacture drugs may not be able to pay in a timely manner, causing an increase in late collections (Eli Lilly and Company, *2022 Annual Report* 25).

When countries place tariffs on one another or are in open conflict, it may be difficult for Lilly to sell their products in foreign countries. Currently, tariffs and restrictions placed on China by the U.S. have made it difficult and expensive to import materials for manufacturing, and the Russia-Ukraine war has led to increased energy costs and other financial pressures (Eli Lilly and Company, *2022 Annual Report* 25).

Firm Performance

Firm Performance Expectations

Lilly tends to perform in line with investor expectations. Compared to other firms in the market and the S&P 500 Index, Lilly outperforms financially. The Company’s stock value has grown exponentially in comparison to a Peer Group and the Index since 2017. Below, Figures A and B from Lilly’s 10k reflect the value of \$100 invested in 2017 as a cumulative shareholder return over the past five years:

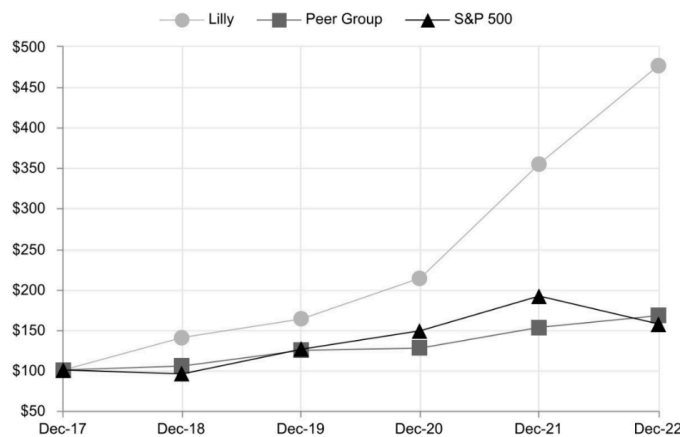


Figure A: Line Chart Reflecting Lilly’s Return Relative to the Market

	Lilly	Peer Group	S&P 500
Dec-17	\$ 100.00	\$ 100.00	\$ 100.00
Dec-18	140.45	104.95	95.62
Dec-19	163.13	124.15	125.72
Dec-20	213.80	126.98	148.85
Dec-21	355.08	152.56	191.58
Dec-22	476.65	167.09	156.88

Figure B: A Data Table Reflecting the Information Found in Figure A

Lilly’s stock performs significantly better than market expectations for Brand Name US Pharmaceutical companies, and better than the general market based on the index (Eli Lilly and Company, *2022 Annual Report* 36).

In 2022, Lilly earned a record \$28.5 billion in revenue. The company attributed its revenue primarily to 10 different products released since 2014, the most significant of which being diabetes medication Mounjaro released in 2022. Lilly had a 12 percent volume growth rate in 2022, and increased its dividends by 15 percent. Lilly finds its 2022 performance successful. Due to record revenue, its fifth year of dividend increases, and increased growth rate, Lilly views its success as positive momentum continued from past years, according to its Letter to Shareholders.

Key Performance Indicators

In its 2022 Letter to Shareholders, Lilly states, “Our purpose [is] to make new medicines for mankind’s biggest health challenges” (2). Lilly’s primary focus is to develop and bring to market drugs that are used for the treatment of serious and challenging illnesses; last year, Lilly’s drugs were used to treat over 51 million people.

Lilly has a strong focus on financial metrics. Lilly reported their highest revenue in company history last year, and it focuses on heavy reinvestment of this revenue into R&D– \$7 billion in 2022, about a quarter of revenue. These metrics, along with the above metrics relating to impact and consumer satisfaction, are Lilly’s primary focus (Eli Lilly and Company *2022 Letter to Shareholders* pp. 2-5).

Research and development are incredibly important for pharmaceutical companies, so a major key performance indicator is return on research capital (RORC), which compares gross profit to R&D expense (Maverick). Operating margin is a measure of profitability after a drug goes to market, and it is taken by comparing EBIT to revenues. Finally, return on equity (ROE) is an important KPI that measures the profitability of a firm for equity investors by comparing net income and shareholder’s equity. Below, Figure C exhibits how Lilly’s KPIs compare to those of the industry at large.

Pharma KPIs	RORC	OP Margin	ROE
Industry Benchmark	\$1.18	25.80%	24.54%
Eli Lilly & Co	\$3.05	29.01%	63.06%

Figure C: Comparing Lilly’s Relevant KPIs to Industry Averages

Cited: Eli Lilly *Annual Report on Form 10K*, GuruFocus, Mikulic, *NYU Stern*

Across these three KPIs, Lilly outperforms the pharmaceutical industry at large. Lilly’s focus on developing quality drugs for the consumer and its reinvestment of capital into effective R&D efforts has granted Lilly success in many performance areas.

Competitive Advantage

Eli Lilly and Company has recently gained a competitive advantage in the brand name pharmaceutical industry, overcoming high competition from other major brand names such as AbbVie Inc., Merck, Johnson & Johnson, and Pfizer.

One perspective to analyze competitive advantage from is shareholder value creation. One metric used to analyze shareholder value is Total Shareholder Return (TSR), a value that captures a stock’s performance considering growth and distributions like dividends. For 2022, Lilly’s TSR was 34%, while its compensation peer group’s TSR was approximately 10% (Eli Lilly and Company, *Notice of 2023 Annual Meeting* 5). This means that Lilly greatly outperformed its competitors on average. However, there was one company, Merck, that had a TSR of 48% in 2022, indicating it has an advantage over Lilly (Trefis).

Another metric to evaluate competitive advantage is market capitalization, calculated as the number of outstanding shares times share price (Fernando). Among all U.S. pharmaceutical companies, Lilly has the highest market cap at \$509.89 billion (Yahoo! Finance). Compared to other companies, Lilly holds a staggering competitive advantage in this category. Johnson & Johnson and AbbVie Inc. hold the second and third-highest market cap at \$375.597 billion and \$263.328 billion, respectively (Yahoo! Finance).

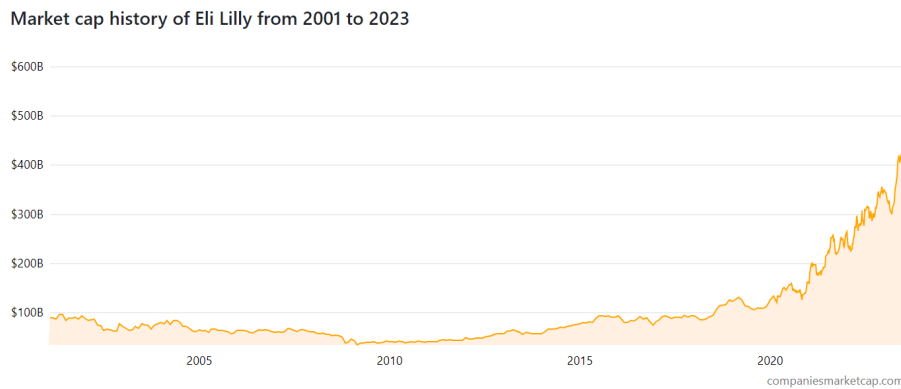


Figure D: Market Cap History of Eli Lilly from 2001 to 2023

Cited: Companiesmarketcap.com “Eli Lilly (LLY) - Market Capitalization”

Because research and development has been identified as an advantageous positional choice of Lilly, the metrics that help depict where Lilly stacks up in this area of competitive advantage are RORC and market cap (Maverick). Lilly’s RORC metric shows that the company is the most effective in generating a return from the research capital, which depicts how R&D and the company’s success are correlated (Frankenfield). This coupled with, by far, the highest market cap gives Lilly the largest base in the industry for expanding this competitive advantage (Fernando).

As seen by the graph of market capitalization, Lilly has become more competitive in recent years, with a massive uptick in market cap specifically in the last three years (Yahoo! Finance). This can further be seen by the uptick of RORC and an annual revenue growth of 9.8% in the last three years (Gurufocus).

Competitive Dynamics

Comparison to Merck

Merck & Co, Inc. (“Merck”) is a major competitor in the Brand Name Pharmaceutical industry. Merck's vision statement is "To discover, develop and provide innovative products and services that save and improve lives around the world" (Merck, “About Us”). Merck also has four core values: patients, respect, ethics/integrity, and scientific innovation. These two things are extremely close to Lilly, however Merck's statement simply adds the goal of saving people's lives where Lilly focuses on improving them. Lilly shares the same values as Merck, but Merck has an additional value, patients, that states Merck should be conscious of who is receiving their medicines. While it is helpful to explicitly mention this as a value, Lilly dedicates part of its customer service team to provide live support for similar issues while publishing online materials underscoring the importance of patient safety (Eli Lilly and Company, “Patient Safety”). Overall, Lilly's and Merck's Missions are very similar, achieving the same message albeit through different avenues.

Merck, originally part of Merck Group's American conglomerate, split from the larger company in 1891 and established itself in Rahway, New Jersey. Since, Merck has grown to employ 69,000 people across the globe, with approximately 12,000 in R&D roles (Merck, “About Us”). Merck is much larger than Lilly, with Merck having approximately 30,000 more employees overall and 2,000 more engaged in R&D. Merck is also more spread out than Lilly, maintaining offices across the globe in more than 70 countries, while Lilly is only physically present in approximately 60 countries (Merck, “Worldwide Locations”).

Merck, like Lilly, has realized the importance of strategic partnerships to continuously innovate, but has also heavily engaged in acquiring upcoming companies. Over the last five years, Merck has acquired 13 smaller firms and collaborated with over 50 firms (News - MSD Licensing). However, only 11 of the last 20 medications Merck created were the result of partnerships, compared to Lilly's 15. Due to development time, this does not indicate that Lilly possesses a permanent lead. In five to ten years, Merck may produce more drugs than Lilly resulting from partnerships thanks to its recent and massive investment.

Merck is a well diversified pharmaceutical company, maintaining a lineup of various medications, vaccines, and even animal healthcare products. Merck medications treat a wide array of illnesses, such as tuberculosis, skin infections, a number of cancers, and even diabetes. Merck has also ventured into the vaccine market, creating products to prevent illnesses ranging from HPV to Ebola (Merck, “Product List”). Merck is also a major player in the animal health market, mainly creating products for commercial farms (Merck, “Animal Health”). This means that Merck's products are quite different from Lilly's, as Lilly doesn't readily make vaccines, focusing more on diabetes and oncology medication which are small parts of Merck's medication list. Additionally, while Lilly used to compete in the animal healthcare market through its subsidiary Elanco, it completely divested in 2019 to focus on human healthcare

(Elanco, “Our History”). So, while Merck and Lilly used to compete in this market, they haven’t for approximately four years.

Geographically, Lilly and Merck are much closer than with their product lines. While Lilly sells its products in 110 countries, Merck sells its pharmaceuticals in 140 countries, meaning the two firms are competing in a vast majority of the same countries (Merck, “Global Markets”). Considering that Lilly and Merck are competing for largely the same customer base, it is accurate to say they are direct competitors for their oncology and diabetes medications. However, they are not direct competitors in vaccine and animal health care products regardless of location, as Lilly simply isn’t part of those markets.

Figure I illustrates how Merck compares to the industry benchmarks across RORC, Operating Margin, and ROE.

Pharma KPIs	RORC	OP Margin	ROE
Industry Benchmark	\$1.18	25.80%	24.54%
Merck	\$3.09	27.74%	31.52%

Figure I: Comparing Merck’s Relevant KPIs to Industry Averages

Merck outperforms the industry at large across all of these KPIs. Arguably the most important figure is Merck’s RORC; for every dollar it spends on research and development, it earns \$3.09. This is a strong figure that emphasizes Merck’s success in the research, development, and protection of new drugs.

In 2022, Merck invested nearly twice as much into R&D as Lilly, putting approximately \$13.5 billion towards new drugs against Lilly’s \$7 billion (Merck & Co, *2022 Annual Report* 71; Eli Lilly and Company, *2022 Annual Report* 56). Additionally, as stated previously, Merck employs nearly 2,000 more employees in R&D (Merck, “About Us”). R&D is one of the most important facets of the pharmaceutical industry, and success for a firm in the industry depends on the success of its R&D efforts. Lilly has a RORC of \$3.05 to Merck’s \$3.09, which are similar figures, but since Merck invests almost twice as much into R&D, it yields almost twice as much revenue as Lilly— approximately \$58 billion to Lilly’s \$28 billion in 2022 (Merck & Co, *2022 Annual Report* 71; Eli Lilly and Company, *2022 Annual Report* 56). On a per-unit basis, Lilly and Merck perform similarly in RORC, but if one looks at their competition from a volume-based perspective, Merck outperforms Lilly. Merck’s larger investment in R&D is likely a primary reason that it holds a larger market share than Lilly— 9.3% to Lilly’s 7.9% (Moreno Zambrano 31).

While Lilly and Merck are similar performers on a per-unit basis, in order for Lilly to match Merck’s volume, one of the most important factors would be a larger investment in R&D. If Lilly were to focus on increasing the volume of its research, Lilly would have to be careful to stick to its current guiding principles— keeping the quality of drugs and customer value at the forefront of its efforts. External factors that could lead Lilly to reach Merck’s volume and market share could include a shift in public health that leans in Lilly’s favor. Another possible factor that could favor Lilly is if Merck were to lose patents or protections for one of its hallmark drugs.

Strategic Decisions by Industry Leaders

One strategic decision by brand-name pharmaceutical companies in the US is entering the weight loss space after the Ozempic boom. Originally introduced in 2017, diabetes medication Ozempic by Novo Nordisk has gained popularity this year as a weight loss drug, creating a multi-billion dollar market for pharmaceutical companies. Other drug makers, both established name brands and startups, are now entering the weight loss medication space, making a combined \$1.4 billion of deals this year alone. The weight loss drug market is valued to reach \$54 billion by 2030, according to Morgan Stanley (Hopkins).

Lilly reacted by introducing diabetes and weight loss drug Mounjaro in 2022 and acquiring Versanis Bio, an obesity drug developer, for \$2 billion. Mounjaro is now expected to overtake Ozempic and its sister drug, Wegovy, in annual revenues of over \$25 billion. Additionally, Mounjaro's development challenged Lilly's historical go-to-market timelines by speeding up R&D processes. Despite Ozempic's popularity, Mounjaro has been dubbed the "King Kong" of weight loss drugs and is projected to become the new market leader (Loftus).

A second strategic decision brand-name pharmaceutical companies in the US made was researching and developing a vaccine for COVID-19. The rapid spread of a new disease provided a huge opportunity for pharmaceutical companies, which led to an intense race to a vaccine. When vaccines first became available, there were a few big names that people in the US had to choose from: Pfizer-BioNTech, Moderna, and Johnson & Johnson. Now, Johnson & Johnson is no longer available in the US, but Novavax and Spikevax have entered the market ("COVID-19 Vaccines"). Further evidence of the strategic decision followed by Pfizer-BioNTech and Moderna was that they both were developing an mRNA vaccine, a novel technology that had yet to receive full FDA approval (MoneyShow).

Many companies in the pharmaceutical industry had to dramatically shift their research and development efforts to COVID-19 to exploit the new opportunity. Also, the traditional eight to fifteen year timeframe from research to implementation would not suffice in this circumstance. Strategic management played a large role in speeding up the production process and coordinating overlapping stages (Klobucista).

One strategy some companies choose is to focus on COVID-19 treatments rather than vaccinations. Eli Lilly partnered with AbCellera to develop a monoclonal antibody therapy to treat mild-to-moderate COVID-19 cases (Eli Lilly and Company, "Lilly Begins World's First..."). Lilly and partner Incyte also got FDA approval for use of Olumiant to treat COVID-19 for emergency use in November 2020 and full approval in May 2022. Olumiant was originally an oral drug approved to treat rheumatoid arthritis (Eli Lilly and Company, "FDA Approves Lilly..."). In December 2021, Merck's molnupiravir pill was given emergency use authorization to treat mild-to-moderate COVID-19 cases. Pfizer's Paxlovid pill was also authorized for emergency use in December 2021 as an oral antiviral treatment for COVID-19 (Klobucista). In the COVID-19 landscape, Pfizer is someone who thrived because of the COVID-19 pandemic opportunity between its 2022 record revenues of \$100 billion and increased brand recognition (Kimball).

Business-Level Strategy

Differentiation

Lilly differentiates its products through the company's research and development sector. In most cases, the differentiation from competition lasts only as long as the drug's patent does. Patents sustain the differentiation in the market past the natural length of time it would take for competitors to develop biosimilars and generic versions of a drug. Lilly's focus on research and development is exemplified by the largest percentage of revenue being spent on research and development (Bayer).

While intellectual property rights create a blueprint for all name-brand pharmaceutical companies to follow a similar differentiation process as described above, Lilly further differentiates from other name-brand pharmaceuticals through quality assurance at every step in the manufacturing process. Lilly Global Quality is an independent branch within Lilly that includes over 2,000 employees with their sole focus on maximizing quality from early stages to end consumers. This quality assurance stretches outside Lilly's walls and monitors and audits inputs and products from vendors. Even further, this organization within Lilly works to maximize supply chain security. Lastly, Lilly Global Quality helped develop an Alliance for Safe Online Pharmacies (ASOP) (Eli Lilly and Company, "Lilly Global Quality Fact Sheet").

Cost Strategy

Lilly does not pursue a cost-leadership position for its pharmaceutical products. This is because as a developer, Lilly faces the exorbitant costs related to researching and developing pharmaceuticals. The capital requirements are partially high because of the rare materials being used and the cost of educated talent, but they are also high because research does not guarantee a viable pharmaceutical. In fact, only about 10% of drugs that are researched actually make it all the way to FDA approval, which means that for every one successful drug, Lilly has to make up for the costs of nine failed drugs (Sun). This is an especially dangerous fact as oncology and diabetes medications rank among the most expensive medications to develop, two areas that are Lilly's bread and butter (Wouters).

Further, while legal protections, such as patents, guard Lilly and other brand name pharmaceutical companies while they recover their research and development costs, smaller companies freely use the drugs' formulas once the protections expire. These generic drug companies are actual cost-leaders, as they avoid any development costs, paying only what's required to manufacture them. While Lilly doesn't stop manufacturing their brand name pharmaceuticals once generic forms become available, they do scale back production, as many insurance companies require their policyholders to use generics when available. While Lilly does make generic versions of some of its drugs to capture that market, it is often too costly to retool existing or develop new machinery for this, whereas generic companies are focused on doing so.

Product Line and Strategy

While creating products to treat a variety of conditions, Lilly's focus is concentrated on oncology, diabetes, immunology, and neuroscience. Its most recognizable products include Prozac, Iletin, Zyprexa, Trulicity, and Jardiance.

According to the IBIS World Report, demand for type 1 diabetes medication is growing substantially due to a significant increase in diagnoses since 2009. The type 1 diabetes insulin market is dominated by Lilly, Sanofi, and Novo Nordisk; sales have grown substantially over the past decade (Moreno Zambrano 15).

Additionally, oncology medications have grown due to a growing population. While established companies take a wide spread of the market share, emerging biopharma companies account for nearly 70 percent of oncology products in development. Trends display large pharmaceutical manufacturers like Lilly are continuing to lose market share in oncology medications (Moreno Zambrano pp. 15-16).

Lilly's direct customers are drug wholesalers, drug stores, and hospitals. However, individuals with illnesses and physicians are the key customers who drive buying trends for these firms. Lilly's selling factors include establishment, marketing advertisements, and ability to alter products in favor of market conditions. Firstly, Lilly was founded in 1876 and has a significant brand image (Lilly "Who We Are"). Secondly, advertisements influence customer demand and prescribing practices among physicians. These ads typically reach the consumer as TV commercials, and Lilly has most recently released a series of commercials for Mounjaro due to its blockbuster potential (Coey). Thirdly, altering products already in the market can boost sales. Examples of this include Mounjaro, a diabetes medication recently gaining popularity for weight loss, and Olumiant, a rheumatoid arthritis drug used for COVID-19 oxygen support treatments (Lilly).

Based on the above research, Lilly is pursuing a focused differentiation business-level strategy. A differentiated business-level strategy also closely aligns with their purpose statement of "uniting caring with discovery to create medicines that make life better for people around the world." Lilly strives to create high quality medicines that solve problems for people. By identifying illnesses to research, they are staking out unique positions that will provide value for customers.

Lilly's differentiation strategy is focused because of their targeted scope on certain diseases. Lilly's business segment is human pharmaceutical products, but as mentioned above, they concentrate on diabetes, oncology, immunology and neuroscience, which shows a focused differentiation strategy. Of Lilly's top five selling drugs in the second quarter of 2023, three were diabetes medications (Jagielski). According to Lilly's 2022 annual report, 54.5% of revenues in the United States came from diabetes products (66). Diabetes, oncology, and immunology products account for a combined 82.6% of Lilly's revenues in the United States.

Advantages and Disadvantages of Focused Diversification

Lilly is leveraging value drivers that strengthen their business-level differentiation strategy. The first of which are R&D and product innovation, which allow Lilly to have unique product offerings. Patents are also a value driver, as they legally give Lilly the right to their unique product for a certain amount of time. Lilly's scientists are key value drivers as they power R&D, making product innovation and patent protection possible. Long-term relationships with suppliers and brand recognition are additional value drivers for Lilly. Overall, Lilly is creating new and unique products that improve quality of life, therefore appealing to characteristics that customers value.

Lilly's business strategy and its competitive advantage hinge on the success of its research and development efforts. When R&D is successful, patents and legal protections allow Lilly to maintain a competitive advantage by protecting its intellectual property. Lilly invests heavily in its R&D efforts, both financially and by hiring premier staff and scientists. This heavy financial investment, paired with an emphasis on R&D and quality assurance as core competencies, is what drives Lilly's success. Lilly's customer base (people with diabetes, neurodegeneration, and cancer) should not disappear anytime soon,

so as long as Lilly's R&D efforts continue to be successful, Lilly is able to develop differentiated products that contribute to their competitive advantage.

If Lilly is able to continue developing and patenting new drugs as protection for when old drugs expire, it is set up well to execute its strategy of focused differentiation. However, if Lilly fails to develop new drugs to replace old ones, it will be at a distinct disadvantage. Lilly's strategy lives and dies by the success of its R&D efforts, and because Lilly places such a strong focus on R&D as a core competency, it is likely that Lilly will maintain its advantage for years to come.

Corporate-Level Strategy

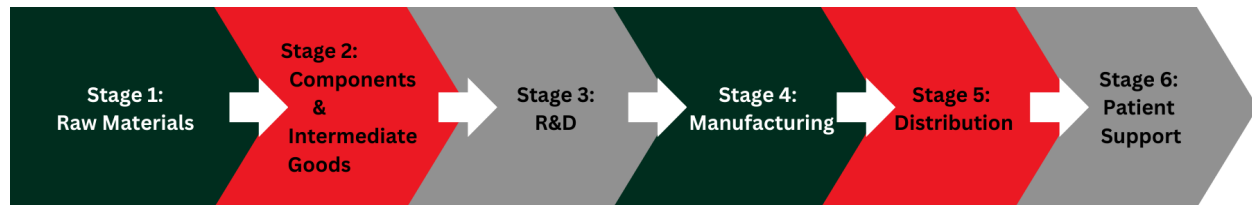


Figure J: Pharmaceutical Industry Value Chain

Cited: *Understanding the Pharmaceutical Value Chain*, Aitken, IMS Institute for Healthcare Informatics

Lilly operates in multiple stages of the value chain such as research and development, manufacturing, and patient support.

Even though Lilly operates in multiple stages of the value chain, it is not fully vertically integrated. It primarily operates in stages 3 and 4, R&D and Manufacturing, but pursues taper integration with stages 5 and 6, Distribution and Patient Support. It relies on outsourcing most of its shipping and support needs, but offers some direct-to-customer shipping options for a select number of drugs and maintains a limited live support phone line for customer questions and concerns.

Lilly has developed R&D labs and manufacturing facilities across the globe to help achieve the highest value for their customers. By placing R&D labs around the world, Lilly is better able to account for regional differences and ensure effectiveness. Next, by controlling the manufacturing stage, Lilly can guarantee it delivers high quality products by making sure that it has facilities in major countries. With those global manufacturing plants, Lilly can ensure freshness by reducing shipping time. This is especially important because many drugs lose their potency over time or from exposure to different temperatures (Nedelcu).

Lilly recognizes the amount of work required to ship its drugs to countless pharmacies around the world and to provide support for those using their medications, which is why it outsources these last two stages. However, some customers prefer buying directly from firms and asking questions from the source. Lilly mostly works with wholesalers who then ship to individual pharmacies where customers can pick up their prescriptions; however, Lilly recently introduced LillyDirect to ship straight to customers. Currently, LillyDirect only supports a few medications, like those for diabetes and migraines (Eli Lilly and Company, "Lilly Medicine Online..."). Lilly allows patients to take charge of their own care, as these diseases can be debilitating. For the final stage, patient support, Lilly mostly relies on prescribers to

provide care as the doctors best understand their patients' health. Yet, Lilly's customers may not be able to reach their doctors, so Lilly set up phone and online chat lines (Eli Lilly and Company, "Contact Us"). Together, these two stages show that Lilly engages in taper integration because it helps satisfy customer needs that wouldn't be possible with either full outsourcing or full forward integration.

Lilly pursues a related diversification corporate strategy. Rather than creating drugs for one specialty, Lilly focuses on several. Lilly's focus surrounds invention and innovation, specifically in its R&D processes, rather than a cost-based strategy. Lilly operates in oncology, diabetes, immunology, and neuroscience. All of these drug varieties can be considered different product lines, while operating within the same drug industry as a related-constrained strategy. Globally, Lilly pursues an international strategy, selling similar drugs in both the U.S. and international markets. Lilly lacks pressure for both cost reduction and local responsiveness. Lilly primarily operates in the US, earning about 64 percent of its revenue from the US. Lilly generates fifteen percent of its revenue from Europe, six percent from Japan, five percent from China, and ten percent from other regions (Statista, "Eli Lilly's Revenues by Region...").

Lilly's diversification across different therapeutic areas reduces the reliance on the revenue of one single product or product group. Using a related-constrained diversification strategy, Lilly can invest in R&D efforts across their multiple lines of products. Diversifying product groups makes the dependence on breakthroughs in R&D less dependent on one lab or process. This allows Lilly to adopt an open innovation framework and remain at the cutting-edge of the industry. In markets outside of the U.S., Lilly's international strategy aims at selling the same products regardless of where they are being sold (Rothaermel 396). Lilly is committed to offering the highest quality drugs around the world, enhancing the lives of people internationally in the same way as their U.S. patients.

Lilly Mergers and Acquisitions

Lilly has completed 30 acquisitions dating back to 1978, with six in the last five years (SDC Platinum Database). The most recent of which was Sigilon Therapeutics, completed on August 14, 2023. Acquiring Sigilon Therapeutics assists Lilly with R&D efforts as they relate to encapsulated cell therapies for treating type 1 diabetes. On the acquisition announcement date of June 29, 2023, Sigilon's stock price jumped 438.17% ("Sigilon Therapeutics..."). Lilly's stock price increased 1.26% the day of the announcement (Yahoo! Finance).

On August 9, 2023, Lilly acquired DICE Therapeutics for \$2.4 billion (SDC Platinum Database). Acquiring DICE expands Lilly's immunology portfolio by adding its oral therapeutic candidates for treatment of chronic immunology diseases, further increasing its R&D pipeline ("Lilly...DICE Therapeutics"). Upon the June 20, 2023 announcement, DICE's stock price rose 37.19% ("Dice Therapeutics..."). Lilly paid a premium for DICE's stock at \$48 per share, while the day before the announcement it was trading at \$33.85 per share. Lilly's stock increased 0.95% the day it was announced (Yahoo! Finance).

Lilly acquired Akouos, a company researching hearing loss gene therapy treatment, on December 1, 2022 (“Lilly...Akouos...”). Akouos’ stock price jumped 88.16% upon the October 18, 2022 announcement (“Akouos...”). Lilly’s stock increased 0.69% upon announcement (Yahoo! Finance).

Prevail Therapeutics was acquired by Lilly on January 22, 2021, with the transaction valued at \$1.04 billion. This acquisition established a gene therapy program for Lilly, opening a new line of discovery and development for neurodegenerative diseases, such as Parkinson’s (“Lilly... Prevail Therapeutics”). Upon the December 15, 2020 announcement, Prevail’s stock price rose 82% (“Prevail Therapeutics...”). Lilly’s stock price rose 6% (Yahoo! Finance).

On February 20, 2020, Lilly acquired Dermira for \$1.1 billion to support its immunology and dermatology medicine pipeline (SDC Platinum Database). Dermira’s stock price increased only 4.47% on the announcement date (“Dermira...”). Lilly’s stock rose 1.5% (Yahoo! Finance).

Lilly acquired Loxo Oncology on February 15, 2019 for approximately \$8.0 billion (SDC Platinum Database). This acquisition allowed Lilly to expand its cancer treatment efforts with Loxo Oncology’s precision medicines that target cancers caused by gene abnormalities (“Lilly... Loxo Oncology”). Loxo Oncology’s stock rose 66.33% on the acquisition announcement date (“Loxo Oncology...”). Lilly’s stock price rose 0.54% on the announcement date (Yahoo! Finance).

Lilly’s acquisition strategy has been widely successful and has proven to be a strength it possesses. The firm has a goal of launching 20 new medicines in the ten year period starting in 2014 and ending in 2023, and acquisitions have bolstered its pipeline when R&D faced lulls (“Lilly Highlights Innovation-Based...”). The acquisitions strengthened its focus on treatments for diabetes, immunology, and oncology while providing opportunities to expand into new development areas.

Corporate Governance, Organizational Structure and Controls

Board of Directors

Lilly’s Board of Directors has twelve members. Eleven of these directors are members with the last member being the chair of the Board. Within the Board of Directors, there are five subcommittees: Audit, Talent and Compensation, Directors and Corporate Governance, Ethics and Compliance, and Science and Technology. Members of the Board hold roles on exactly two of the five subcommittees, while the Chair of the Board of Directors does not serve on any subcommittee. Subcommittees contain four to five directors, and each subcommittee has a designated Chairperson as its lead (Eli Lilly and Company, “Governance”).

The Board of Directors consists of a very diverse group of leaders. Lilly’s Board of Directors includes professionals with experience in a range of industries such as investing, agricultural science, automotive, economics, microbiology, and medicine to name a few. The Board of Directors also holds a diverse set of leadership positions in addition to being board members. Lastly, Lilly’s Board of Directors consists of diverse people, an essential aspect of advising a global company (Eli Lilly and Company, “Board of Directors”).

Out of the twelve active board members, eleven of them are independent members. The only internal director is David A. Ricks, who serves as the Chair of the Board and Lilly’s CEO– this practice is known as CEO duality (Eli Lilly and Company, “Governance”).

To present a strong independent voice, Lilly recognizes a Lead Independent Director. Currently, Juan R. Luciano holds this position. Luciano is tasked with leading an annual assessment of each director and the Board’s performance as a whole to evaluate performance and enhance the effectiveness of the Board’s activities (Eli Lilly and Company, 2022 DEF 14A iii).

Below is a figure illustrating the membership to the five subcommittees that comprise the overall Board of Directors for Lilly. The committees are structured to assist the board on the oversight of their respective topics (Eli Lilly and Company, “Governance”).

	Board of Directors	Audit Committee	Talent and Compensation Committee	Directors and Corporate Governance Committee	Ethics and Compliance Committee	Science and Technology Committee
David A. Ricks	Chair					
Ralph Alvarez	Member	Member	Chair			
Katherine Baicker, Ph.D.	Member				Chair	Member
J. Erik Fyrwald	Member		Member			Member
Mary Lynne Hedley, Ph.D	Member				Member	Member
Jamere Jackson, CPA	Member	Chair		Member		
Kimberly H. Johnson	Member		Member		Member	
William G. Kaelin, Jr., M.D.	Member			Member		Chair
Juan R. Luciano	Member		Member	Chair		
Marschall S. Runge, M.D., Ph.D.	Member				Member	Member
Gabrielle Sulzberger	Member	Member		Member		
Karen Walker	Member	Member	Member			

Figure K: Eli Lilly & Co Board of Directors

Majority Investors

Exhibit L displays the institutional stockholders owning more than three percent of Lilly’s shares outstanding. Over 80 percent of Lilly shares are held by institutional investors, with 0.15 percent held by insiders, including directors and officers, equivalent to approximately 1.4 million shares valued at a total of \$840.14 million (Yahoo! Finance, “Eli Lilly and Company”). Considering this, Lilly has a low degree of employee ownership and a high degree of institutional ownership.

Lilly Endowment holds the largest proportion of shares. The Endowment was founded to promote and support religious, educational, and charitable causes (Lilly Endowment). Lilly Endowment is one of the largest endowments in the US, and one of the largest private philanthropies in the world. However, Lilly Endowment, despite being founded by the same individuals, is independent of Eli Lilly and Co.

Stockholder	Percent of shares outstanding
Lilly Endowment, Inc	10.53
Vanguard Group Inc	7.43
Blackrock Inc	6.92
PNC Financial Services Group, Inc	5.46
State Street Corporation	3.52
FMR, LLC	3.39

Figure L: Eli Lilly’s Largest Institutional Shareholders

Executive Compensation

Lilly’s executives receive a complex compensation package that contains both guaranteed and performance-based amounts. In 2022, the guaranteed amounts were awarded as a base salary ranging from \$750,000 to \$1,500,000 based on the officer’s role (Eli Lilly and Company, 2022 DEF 14A 46). Below, Figure D lists salaries for Lilly’s top executives.

Officer	Base Salary
David Ricks	\$1,500,000
Anat Ashkenaz	\$950,000
Daniel Skovronsky	\$1,250,000
Anat Hakim	\$900,000
Patrik Jonsson	\$750,000

Figure E: 2022 Salaries For Lilly’s Top Executives

The performance-based compensation Lilly offers has more components than the guaranteed compensation. The four performance-based pieces are one annual cash bonus and three equity incentives (Eli Lilly and Company, 2022 DEF 14A 47). The annual cash bonus is calculated through the formula:

$$\text{Total Bonus} = \text{Base Salary} \times \text{Individual Bonus Target} \times \text{Bonus Multiplier}$$

The Individual Bonus Target is set individually for every executive by Lilly's Talent and Compensation Committee based on job performance and market data. The Bonus Multiplier is made up of several weighted components. For 2022, Lilly's Talent and Compensation Committee determined that the Bonus Multiplier is 25% of target revenue growth, 50% of earnings per share (EPS) growth, and 25% from a factor called Pipeline. Target Revenue and EPS growth are, simply, the actual year-end values divided by the target determined in the previous year. However, the Pipeline factor measures how much progress the company has made in researching and developing new drugs. In 2022, the Actual Revenue was 133% of the target, the actual EPS was 90% of the target, and the actual Pipeline factor was 168% of the target, for a total Bonus Multiple of 1.20 (Eli Lilly and Company, 2022 DEF 14A 49).

Officer	Base Salary	Target Cash Bonus	Cash Bonus
David Ricks	\$1,500,000	150%	\$2,700,000
Anat Ashkenaz	\$950,000	100%	\$1,128,462
Daniel Skovronsky	\$1,250,000	100%	\$1,442,308
Anat Hakim	\$900,000	100%	\$1,051,154
Patrik Jonsson	\$750,000	100%	\$888,462

Figure F: 2022 Variable Officer Compensation - Cash Bonus

The three types of equity incentives are performance awards, shareholder value awards, and relative value awards. The performance award is based on Lilly's EPS, but the calculation differs from the one used to calculate the bonus multiplier in the annual cash bonus. The bonus multiplier is measured as the one-year EPS performance compared to internal EPS targets, but for the performance award, it is the two-year EPS performance compared to external EPS targets based on other pharmaceutical companies. The shareholder value award is determined by comparing Lilly's three-year total shareholder return (TSR) to the TSR a regular investor would expect when investing in a basket of other large-cap U.S. companies. The relative value award is similar to the shareholder award but instead compares Lilly's TSR to the median TSR for its peer group, other pharmaceutical companies. While the shareholder value and relative value awards are awarded with general stock, the performance award is given through restricted stock. Additionally, after being awarded the stock, the executives must hold the stock for at least a year before being completely vested. Again, each award varies mostly on the officer's role.

Officer	Target Performance Award	Actual Performance Award	Target SV Award	Actual SV Award	Target RV Award	Actual RV Award	Total Equity Incentives
David Ricks	21,151	29,611	33,750	59,063	24,319	42,558	131,232
Anat Ashkenaz	5,540	7,756	1,317	2,305	1,042	1,824	11,885
Daniel Skovronsky	7,101	9,941	11,070	19,373	7,977	13,960	43,274
Anat Hakim	3,173	4,442	5,400	9,450	3,891	6,809	20,701
Patrik Jonsson	2,946	4,124	4,725	8,269	3,405	5,959	18,352

Figure G: 2022 Variable Officer Compensation - Equity Incentives

While Lilly's executives also have some other general benefits such as golden parachutes and retirement plans, their total compensation is mostly earned through their salary and the four types of variable compensation plans. For David Ricks, CEO, 7% of his \$21 Million compensation came from his guaranteed salary, while about 93% came from variable compensation. While Ricks' compensation may seem skewed for executives, the average compensation for all of Lilly's executives doesn't fall far, with about 18% coming from their salary, and 82% of their compensation coming from variable pay (Eli Lilly and Company, 2022 DEF 14A 44). This undoubtedly shows that Lilly ties its executive compensation to firm growth, a fact that shareholders can relish.

Officer	Base Salary	Cash Bonus	Total Equity Incentives (Shares)	Total Compensation	Guaranteed Compensation Weight	Variable Compensation Weight
David Ricks	\$1,500,000	\$2,700,000	131,232	\$21,181,250	7%	93%
Anat Ashkenaz	\$950,000	\$1,128,462	11,885	\$5,203,847	18%	82%
Daniel Skovronsky	\$1,250,000	\$1,442,308	43,274	\$8,391,731	15%	85%
Anat Hakim	\$900,000	\$1,051,154	20,701	\$5,379,305	17%	83%
Patrik Jonsson	\$750,000	\$888,462	18,352	\$3,878,842	19%	81%

Figure H: Total 2022 Officer Compensation

Shareholder Vote

In Lilly's 2023 Proxy Statement, there were thirteen items to be voted upon by shareholders at the next shareholder meeting. Lilly split these items into five categories: governance, compensation, audit matters, management proposals, and shareholder proposals. A comprehensive list of these issues can be seen below in Figure M.

GOVERNANCE	Item 1	Election of each of the four director nominees to serve three-year terms
COMPENSATION	Item 2	Approval, on an advisory basis, of the compensation paid to the company's named executive officers
AUDIT MATTERS	Item 3	Advisory vote on frequency of future advisory votes on named executive officer compensation
MANAGEMENT PROPOSALS	Item 4	Ratification of the appointment of Ernst & Young LLP as the independent auditor for 2022
	Item 5	Approval of amendments to the company's articles of incorporation to eliminate the classified board structure
SHAREHOLDER PROPOSALS	Item 6	Approval of amendments to the company's articles of incorporation to eliminate supermajority voting provisions
	Item 7	Shareholder proposal to publish an annual report disclosing lobbying activities
	Item 8	Shareholder proposal to eliminate supermajority voting requirements
	Item 9	Shareholder proposal to establish and report on a process by which the impact of extended patent exclusivities on product access would be considered in deciding whether to apply for secondary and tertiary patents
	Item 10	Shareholder proposal to report on risks of supporting abortion
	Item 11	Shareholder proposal to disclose lobbying activities and alignment with public policy positions and statements
	Item 12	Shareholder proposal to report on effectiveness of the company's diversity, equity, and inclusion efforts
	Item 13	Shareholder proposal to adopt a policy to require certain third-party organizations to annually report expenditures for political activities before Lilly contributes to an organization

Figure M: Lilly 2023 Shareholder Ballot

There are a few items listed that concern the governance of the firm. Item 1 is a vote to ratify the four nominees up for appointment to Lilly’s board of directors. This is a regular vote that happens for each position after the previous director reaches the end of their three-year term. Another issue that is voted on each year is Item 2, which is approval for the compensation structure of executive officers. These two items are regularly voted upon and not highly contested, but Item 5 is of large consequence for Lilly’s governance. Item 5 proposes that Lilly scrap its current classified board structure in which directors serve staggered three-year terms in favor of a structure that uses concurrent, one-year terms. Lilly believes that changing its board structure will increase the accountability that directors have to shareholders because directors will be up for election on an annual basis (Eli Lilly and Company, *2022 DEF 14A* pp. 88-89). If passed, this proposed change in structure will have long-lasting effects on the dynamics of Lilly’s governance.

Organizational Structure

Lilly operates under a multidivisional organizational structure in a single business segment: human pharmaceutical products. Lilly’s CEO oversees the executive committee that is made up of corporate officers and strategic business unit (SBU) presidents. All members of the team, except the CEO, have the title of Executive Vice President. The corporate officer titles include Chief Financial Officer, Human Resources and Diversity, General Counsel and Secretary, Chief Customer Officer, Corporate Affairs and Communications, Chief Information and Digital Officer, Chief Scientific and Medical Officer, and Enterprise Risk Management & Chief Ethics and Compliance Officer. These positions support all SBUs (Eli Lilly and Company, “Leadership”).

There are four SBUs that each have their own president who reports to the CEO: Diabetes, Oncology, Immunology, and Neuroscience. Each SBU is responsible for its own revenues (Eli Lilly and Company, *2022 Annual Report* 66).

There is also a layer in between the CEO and the SBUs. The positions are EVP of Manufacturing Operations, Lilly USA, Lilly International, Global Quality, and Lilly Research Laboratories. These positions support all four SBUs while reporting directly to the CEO (Eli Lilly and Company, “Leadership”).

Lilly’s multidivisional organizational structure aligns with its strategies. M-form structure supports a related diversification corporate-level strategy, which is what Lilly pursues. Lilly’s M-form structure loosely correlates with its differentiation business-level strategy. With differentiation, an organic organization with decentralization is beneficial to foster innovation. M-form is not necessarily well suited for decentralization because projects must often get approval from the SBU president and the corporate CEO. Lilly’s international global strategy somewhat aligns with its M-form structure. Generally, firms using an international strategy use a functional organizational structure; however, given Lilly’s distinct SBUs, the M-form structure is more fitting (Rothaermel 438).

Lilly uses a mix of input and output control systems to help monitor firm performance. It focuses on using input controls for things like R&D because drug development has a nearly 90% failure rate, so trying to evaluate outputs here could skew the control systems (Sun).

Specifically, Lilly has established checks that balance research progress with the time taken to progress to different levels of the pipeline against the company’s investment (Eli Lilly and Company, *2022 Annual Report* 24). If the research for a specific drug doesn’t progress as quickly as expected or it requires more resources than usual, Lilly reevaluates whether they want to continue pursuing that drug.

Lilly also uses output controls for metrics it can better predict, like sales. For these sales controls, Lilly watches gross sales figures, both volume and year-to-year trends, to determine if the company as a whole is performing as it should and what products may be over or underperforming compared to expectations (Eli Lilly and Company, *2022 Annual Report* 25). If a medication is underperforming, Lilly then uses this control to evaluate whether it’s worth maintaining production for the drug or if Lilly should begin to phase it out. Typically, drugs start underperforming closer to the patent expiration, which makes it easier for Lilly to decide to phase them out, as the medications will continue to underperform once the patent expires. The most recent example of this is Lilly’s Alimta, a lung cancer medication whose patents expired in 2022. From 2021 to 2022, Lilly saw Alimta’s sales drop nearly 60%, proving that the company should stop supporting the drug (Eli Lilly and Company, *2022 Annual Report* 42).

Recent Strategic Decision

As described previously, one of the recent strategic actions that name-brand pharmaceutical companies have taken is researching and developing weight loss drugs. Lilly’s response was swift, repurposing one of its diabetes medications, Mounjaro, for weight loss. At the same time, it developed Zepbound, but

specifically for weight loss. This was a fantastic decision as it has seized many of the opportunities the external environment provided while relying on key strengths internally.

Externally, Lilly's decision to pursue weight loss drugs makes perfect sense. In the U.S. alone, there are over 110 million obese adults, a number that is only predicted to increase (NHANES). While not every one of those individuals is trying to lose weight, a majority are. In fact, nearly 70% of obese individuals will try to lose weight, citing mental or physical health reasons (Nicklas). This presents a massive market for Lilly despite the existing weight loss drugs. Currently, the two biggest competing weight loss drugs, Ozempic and Wegovy, were created by Novo Nordisk. However, Lilly's solution has a competitive advantage over Novo Nordisk due to ease of use and efficacy. Wegovy, the stronger of the two drugs, requires 68 weekly injections to, at best, cause a 16% weight reduction (Wadden). Zepbound, Lilly's new weight loss drug, was able to cause a staggering 26.6% weight reduction over 84 weeks (Eli Lilly and Company, "Lilly's tirzepatide..."), showing that Lilly's medicine is 66% more effective, while only taking about 24% longer to work than Novo Nordisk's. While Novo Nordisk, the leading competitor, may currently have had a hold on the market, Lilly will soon blow them out of the water.

Internally, this decision was also a great choice. Because Lilly mainly operates in the R&D and Manufacturing stages of the value chain, it has been able to rely on many of the core competencies it has developed to speed up this switch. For R&D, Lilly saved time in its pipeline process because it started with Mounjaro, which had already been approved by the FDA, among other drug safety agencies, for public use. This let Lilly skip past many of the procedural roadblocks and move straight into testing the efficacy of Mounjaro for weight loss purposes. Ultimately, this led to Zepbound's development in record time (Eli Lilly and Company, "FDA Approves..."). Lilly will also use its manufacturing resources for this decision. As a derivative of Mounjaro, Lilly can use the knowledge from Mounjaro manufacturing to build infrastructure for Zepbound more quickly or alter the facilities used for Mounjaro. Either way, Lilly will be able to get off to a faster start manufacturing Zepbound thanks to its experience with Mounjaro.

It is too early to see many of the financial impacts that this decision will have, but based on the historical performance of Mounjaro as solely a diabetes medication and the massive weight loss market, it is nearly guaranteed to have a positive impact. For quarter three of 2023, Lilly posted an astonishing \$1.41 Billion in sales for Mounjaro alone (...(LLY) Q3 2023 Earnings call Transcript) . This was before its approval for weight loss treatment, so the sales numbers are sure to rapidly increase in the incoming quarters as it begins to be prescribed. Additionally, on November 8th, 2023, the day that the FDA approved Mounjaro and Zepbound for weight loss treatments, Lilly's stock price shot up from \$601.94 to \$625.87, an approximate 4% increase in a single day because of the announcement (Yahoo! Finance). If Zepbound sees Mounjaro's success, it will increase Lilly's stock price further.

Works Cited

- “Akouos Inc Historical Price Data (AKUS).” *Investing.com*, 30 Nov. 2022,
www.investing.com/equities/akouos-inc-historical-data. Accessed 22 Nov. 2023.
- Barrel, Amanda. “Pharma’s climate change vulnerability and opportunity.” *pharmaphorum*, 9
September, 2022. [https://pharmaphorum.com/views-and-analysis/pharmas-climate
-change- vulnerability-and-opportunity](https://pharmaphorum.com/views-and-analysis/pharmas-climate-change-vulnerability-and-opportunity)
- Bayer, M. (2023, March 27). Top 10 pharma R&D budgets in 2022. *Fierce Biotech*.
<https://www.fiercebitech.com/biotech/top-10-pharma-rd-budgets-2022>
- Bentwich, Isaac. “Pharma’s Bio-AI Revolution.” *Drug Discovery Today*, vol. 28, no. 5, 2023.
<https://doi-org.libproxy.unl.edu/10.1016/j.drudis.2023.103515>.
- Blake, Hannah. “A History of Eli Lilly and Co.” *pharmaphorum*, 29 July, 2013. [https://pharma
phorum.com/views-and-analysis/a-history-of-eli-lilly-co](https://pharmaphorum.com/views-and-analysis/a-history-of-eli-lilly-co)
- Blankenagel, Michael, et al. “Value Creation, Valuation and Business Models in the Pharmaceutical
Sector.” *SpringerLink*, Springer International Publishing, [https://link.springer.com/chapter/
10.1007/978-3-031-11814-2_1#Sec2](https://link.springer.com/chapter/10.1007/978-3-031-11814-2_1#Sec2).
- Buglewicz, Joe. “Blockbuster Arthritis Drug Humira Faces Competition from First Lower-Price Copycat
in U.S.” *The Wall Street Journal*, Dow Jones & Company, 5 June 2023,
[www.wsj.com/articles/blockbuster-arthritis-drug-humira-faces-competition-from-first-lower-price
-copycat-in-u-s-11675146649](http://www.wsj.com/articles/blockbuster-arthritis-drug-humira-faces-competition-from-first-lower-price-copycat-in-u-s-11675146649).
- Companiesmarketcap.com. “Eli Lilly (LLY) - Market Capitalization.” *CompaniesMarketCap.Com* -
Companies Ranked by Market Capitalization, companiesmarketcap.com/eli-lilly/marketcap/.
Accessed 2 Oct. 2023.
- Contact us | Eli Lilly and co. (n.d.). <https://www.lilly.com/contact-us>
- “COVID-19 Vaccines.” *U.S. Food and Drug Administration*, 2023,
[www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-1
9-vaccines#authorized-vaccines](http://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines#authorized-vaccines). Accessed 22 Nov. 2023.

- “Dermira Historical Price Data (DERM_old).” *Investing.com*, 19 Feb. 2020,
www.investing.com/equities/dermira-historical-data. Accessed 22 Nov. 2023.
- “Dice Therapeutics Historical Price Data (DICE).” *Investing.com*, 8 Aug. 2023,
www.investing.com/equities/dice-molecules-holdings-llc-historical-data. Accessed 22 Nov. 2023.
- Elanco. “Our journey.” @Elanco. (n.d.). <https://www.elanco.com/en-us/about-us/our-journey>
- Eli Lilly and Company. 2022 Annual Report on Form 10-K. *Eli Lilly and Company*, 2022,
investor.lilly.com/static-files/2f9b7bb1-f955-448d-baa2-c4343d39ee62.
- . 2022 DEF 14A - Eli Lilly. *Eli Lilly and Company*, 29 Sept. 2023, investor.lilly.com/static-files/
36eb6ad1-494d-4981-913e-8ec46733446f.
- . “About Us.” *Lilly Endowment*, Lilly Endowment, Inc., 2023, lillyendowment.org/.
- . “Board of Directors.” *Lilly.com*, 2023. www.lilly.com/leadership/board-of-directors. Accessed 1 Oct.
2023.
- . “Development Pipeline.” *Lilly.Com*, 2023. www.lilly.com/discovery/clinical-development-pipeline.
Accessed 1 Oct. 2023.
- . “Donanemab Efficacy.” *Eli Lilly and Company*, 3 May 2023, investor.lilly.com/news-release
s/news-release-details/lillys-donanemab-significantly-slowed-cognitive-and-functional.
- . “FDA Approves Lilly and Incyte’s OLUMIANT® (Baricitinib) for the Treatment of Certain
Hospitalized Patients with COVID-19.” *Eli Lilly and Company*, 11 May 2022,
investor.lilly.com/news-releases/news-release-details/fda-approves-lilly-and-incytes-olumiantr-ba
ricitinib-treatment. Accessed 22 Nov. 2023.
- . “FDA Approves Lilly’s Zepbound™ (tirzepatide) for Chronic Weight Management, a Powerful New
Option for the Treatment of Obesity or Overweight with Weight-Related Medical Problems” | Eli
Lilly and Company. (n.d.). *Eli Lilly and Company*. [https://investor.lilly.com/news-releases
/news-release-details/fda-approves-lillys-zepboundtm-tirzepatide-chronic-weight](https://investor.lilly.com/news-releases/news-release-details/fda-approves-lillys-zepboundtm-tirzepatide-chronic-weight)
- . “Governance.” *Lilly.com*, 2023. www.lilly.com/leadership/governance. Accessed 1 Oct. 2023.

- . "Insulin Affordability." *Lilly.com*, 2023. www.lilly.com/resources/insulin-affordability. Accessed 1 Oct. 2023.
- . "Key Facts." *Lilly.com*, 2023. www.lilly.com/who-we-are/about-lilly/key-facts. Accessed 1 Oct. 2023.
- . "Leadership." *Lilly.com*, 2023, www.lilly.com/leadership/executive-committee. Accessed 1 Oct. 2023.
- . Lilly and ProQR to expand RNA editing collaboration | Eli Lilly and company. (n.d.). *Eli Lilly and Company*.
<https://investor.lilly.com/news-releases/news-release-details/lilly-and-proqr-expand-rna-editing-collaboration>
- . "Lilly Announces Agreement to Acquire Loxo Oncology." *Eli Lilly and Company*, 7 Jan. 2019, investor.lilly.com/news-releases/news-release-details/lilly-announces-agreement-acquire-loxo-oncology. Accessed 22 Nov. 2023.
- . "Lilly Announces Significant Global Insulin Manufacturing Capacity Investments in Response to Growing Diabetes Epidemic." *Lilly.com*, 14 Nov. 2013, investor.lilly.com/news-releases/news-release-details/lilly-announces-significant-global-insulin-manufacturing.
- . "Lilly Begins World's First Study of a Potential COVID-19 Antibody Treatment in Humans." *Eli Lilly and Company*, 1 June 2020, investor.lilly.com/news-releases/news-release-details/lilly-begins-worlds-first-study-potential-covid-19-antibody. Accessed 22 Nov. 2023.
- . "Lilly Completes Acquisition of Akouos Expanding Efforts to Help People with Genetic Diseases." *Eli Lilly and Company*, 1 Dec. 2022, investor.lilly.com/news-releases/news-release-details/lilly-completes-acquisition-akouos-expanding-efforts-help-people. Accessed 22 Nov. 2023.
- . "Lilly Completes Acquisition of DICE Therapeutics." *Eli Lilly and Company*, 9 Aug. 2023, investor.lilly.com/news-releases/news-release-details/lilly-completes-acquisition-dice-therapeutics. Accessed 22 Nov. 2023.

- . "Lilly Completes Acquisition of Prevail Therapeutics." *Eli Lilly and Company*, 22 Jan. 2021, investor.lilly.com/news-releases/news-release-details/lilly-completes-acquisition-prevail-therapeutics. Accessed 22 Nov. 2023.
- . "Lilly Global Quality Fact Sheet." *Lilly.com*, 2023. Accessed 28 Oct. 2023. https://assets.ctfassets.net/srys4ukjcerm/6Omx9nmjbfRjZq8M6rXw8a/d55664dd096cb28ba62c433002de6c42/Lilly_Global_Quality_Fact_Sheet.pdf
- . "Lilly Medicine Online Pharmacy Solutions & Focused Telehealth | LillyDirect™." *Lilly.com*, 2023, lillydirect.lilly.com/. Accessed 29 Nov. 2023.
- . "Lilly's Social Impact Venture Capital Portfolio Poised to Grow to \$300 Million with New \$50 Million Allocation." *Lilly.com*, 9 May 2023, investor.lilly.com/news-releases/news-release-details/lillys-social-impact-venture-capital-portfolio-poised-grow-300.
- . "Lilly's tirzepatide shows additional 21.1% weight loss after 12 weeks of intensive lifestyle intervention, for a total mean weight loss of 26.6% from study entry over 84 weeks" | Eli Lilly and Company. (n.d.). *Eli Lilly and Company*. <https://investor.lilly.com/news-releases/news-release-details/lillys-tirzepatide-shows-additional-211-weight-loss-after-12>
- . "Manufacturing Quality." *Lilly.com*, 2023. www.lilly.com/our-medicines/manufacturing-quality. Accessed 1 Oct. 2023.
- . "Minimize Our Environmental Impact." *Lilly.com*, 2023. <https://www.lilly.com/impact/minimizing-our-environmental-impact>
- . Notice of 2023 Annual Meeting of Shareholders and Proxy Statement. *Eli Lilly and Company*, 17 Mar. 2023, investor.lilly.com/static-files/6b3c1f82-da3c-4705-b1eb-1ff761220fc9.
- . "Operate Ethically and Responsibly." *Lilly.com*, 2023, www.lilly.com/impact/operating-ethically-and-responsibly.
- . Partner With Lilly | Eli Lilly and Company. www.lilly.com/partners.
- . "Patient Safety." *Lilly.com*, 2023, www.lilly.com/safety/patient-safety. Accessed 29 Nov. 2023.

- . Q2 2023 Earnings Call - Eli Lilly and Company. *Eli Lilly and Company*, 2023. investor.lilly.com/static-files/11722172-e15b-4d68-91b9-8ec4d9762702. Accessed 1 Oct. 2023.
- . "Racial Justice." *Lilly.com*, 2023. www.lilly.com/news/stories/racial-justice-initiative-confronts-inequities.
- . The Red Book: Code of Business Conduct. *Eli Lilly and Company*, 2023, assets.ctfassets.net/srys4ukjcerm/1qQpQLkbc44bqPqLqR2pij/9342917719cdcdb8147749b2ac97a14/The_Red_Book_2023_Lilly_Code_of_Business_Conduct_English.pdf. Accessed 2023.
- . "Who We Are." *Lilly.com*, 2023, www.lilly.com/who-we-are/about-lilly.
- FDA. "Designating an Orphan Drug or Biologic." *U.S. Food and Drug Administration*, FDA, www.fda.gov/industry/medical-products-rare-diseases-and-conditions/designating-orphan-product-drugs-and-biological-products. Accessed 2 Oct. 2023.
- Fernando, Jason. "Market Capitalization: How Is It Calculated and What Does It Tell Investors?" *Investopedia*, Investopedia, www.investopedia.com/terms/m/marketcapitalization.asp. Accessed 2 Oct. 2023.
- Frankenfield, Jake. "Return on Research Capital (RORC): What It Is, How It Works." *Investopedia*, Investopedia, [www.investopedia.com/terms/r/return-on-research-capital.asp#:~:text=Return%20on%20research%20capital%20\(RORC\)%20measures%20a%20firm's%20revenues%20generated,the%20prior%20year's%20R%26D%20expenditures](https://www.investopedia.com/terms/r/return-on-research-capital.asp#:~:text=Return%20on%20research%20capital%20(RORC)%20measures%20a%20firm's%20revenues%20generated,the%20prior%20year's%20R%26D%20expenditures). Accessed 2 Oct. 2023.
- GuruFocus. "Eli Lilly and Co (LLY) Stock Price, Trades & News." *GuruFocus*, 2023, www.gurufocus.com/stock/LLY/summary?search=lilly.
- Jagielski, David. "3 of Eli Lilly's Top Drugs Grew by over 40% in Q2. Trulicity Wasn't One of Them." *The Motley Fool*, The Motley Fool, 17 Aug. 2023, www.fool.com/investing/2023/08/17/3-of-eli-lillys-top-drugs-grew-by-over-40-in-q2/#:~:text=Trulicity%20remains%20the%20company's%20top%20drug%20%2D%2D%20for%20now,line%2C%20which%20totaled%20%2428.5%20billion. Accessed 22 Nov. 2023.

- Jastreboff, A. M., Aronne, L. J., Ahmad, N., Wharton, S., Connery, L., Alves, B. E. S., Kiyosue, A., Zhang, S., Liu, B., Bunck, M. C., & Stefański, A. (2022). Tirzepatide once weekly for the treatment of obesity. *The New England Journal of Medicine*, 387(3), 205–216.
<https://doi.org/10.1056/nejmoa2206038>
- Jarvis, Lisa. “Analysis | How Eli Lilly Turned around R&D and Dominated 2023.” *The Washington Post*, WP Company, 1 Aug. 2023, www.washingtonpost.com/business/2023/07/31/drugs-for-obesity-and-alzheimer-s-propelled-eli-lilly-to-the-top/6334ceb4-2f9d-11ee-85dd-5c3c97d6acda_story.html.
- Kenton, Will. “Concentration Ratio Definition, How to Calculate with Formula.” *Investopedia*, Investopedia, 2020, www.investopedia.com/terms/c/concentrationratio.asp.
- Kimball, Spencer. “The Covid Pandemic Drives Pfizer’s 2022 Revenue to a Record \$100 Billion.” *CNBC*, CNBC, 31 Jan. 2023, www.cnbc.com/2023/01/31/the-covid-pandemic-drives-pfizers-2022-revenue-to-a-record-100-billion.html. Accessed 22 Nov. 2023.
- Klobucista, Claire. “A Guide to Global COVID-19 Vaccine Efforts.” *Council on Foreign Relations*, 2020, www.cfr.org/backgroundunder/guide-global-covid-19-vaccine-efforts. Accessed 22 Nov. 2023.
- “Lilly Highlights Innovation-Based Growth Strategy and Pipeline Developments; Announces 2022 Financial Guidance at Investment Community Meeting.” *PR Newswire*, 15 Dec. 2021, www.prnewswire.com/news-releases/lilly-highlights-innovation-based-growth-strategy-and-pipeline-developments-announces-2022-financial-guidance-at-investment-community-meeting-301444845.html. Accessed 22 Nov. 2023.
- “Loxo Oncology Inc Historical Price Data (LOXO).” *Investing.com*, 14 Feb. 2019, www.investing.com/equities/loxo-ongy-inc-historical-data. Accessed 22 Nov. 2023.
- Marrone, Patrícia Vêras, et al. “Decision Criteria for Partial Nationalization of Pharmaceutical Supply Chain: A Scoping Review.” *Economies*, vol. 11, no. 1, 2023, p. 25. Crossref, <https://doi.org/10.3390/economies11010025>.

Maverick, J.B. "Key Financial Ratios for Pharmaceutical Companies." *Investopedia*, 2021.

<https://www.investopedia.com/articles/financial-analysis/090616/key-financial-ratios-pharmaceutical-companies.asp>

Merck - About Us. *Merck.com*. (2023, August 9). <https://www.merck.com/company-overview/>

---. Animal Health. *Merck Animal Health*. (2021, December 16).

<https://www.merck-animal-health.com/species/>

---. Global Markets. *Merck.Com*, 21 Oct. 2023,

www.merck.com/news/merck-hosts-organon-investor-day-outlining-new-companys-vision-focus-and-business-model-for-sustained-growth/.

---. Product List. *Merck.Com*, 8 July 2022, www.merck.com/products/.

---. Worldwide Locations. *MSD*, 3 May 2022, www.msd.com/contact-us/worldwide-locations/.

Merck & Co. 2022 Annual Report on Form 10-K . *Merck & Co*, 2022,

[https://s21.q4cdn.com/488056881/files/doc_financials/2022/ar/b390be48-92bf-4595-96da-ac5cd7c3d92e-\(1\).pdf](https://s21.q4cdn.com/488056881/files/doc_financials/2022/ar/b390be48-92bf-4595-96da-ac5cd7c3d92e-(1).pdf)

Mikulic, Matej. "Research and development expenditure: U.S. pharmaceutical industry

1995-2022." *Statista*, 25 August, 2023.

<https://www.statista.com/statistics/265085/research-and-development-expenditure-us-pharmaceutical-industry/>

MoneyShow. "9 Pharmaceutical Companies Racing for a COVID-19 Vaccine." *Forbes*, 16 June 2020,

www.forbes.com/sites/moneyshow/2020/06/16/9-pharmaceutical-companies-racing-for-a-covid-19-vaccine/?sh=40382ef76add. Accessed 22 Nov. 2023.

Moreno Zambrano, Alexia. Brand Name Pharmaceutical Manufacturing in the US. *IBISWorld*, Sept.

2023, my-ibisworld-com.libproxy.unl.edu/us/en/industry/32541a/at-a-glance. Accessed 29 Sept. 2023.

Murphy, Tom. "Soaring Sales of Diabetes Drug Mounjaro, Widely Used for Weight Loss, Sends Eli Lilly

to New Heights." *AP News*, 8 Aug. 2023, apnews.com/article/eli-lilly-mounjaro-weight-loss-

diabetes-3813e91810bc6eb108c95ed96cd773e3.

Nedelcu, E. (2023, January 12). Understanding the importance of temperature control in pharmaceutical stability. *Biolife Solutions*.

<https://www.biolifesolutions.com/blog/storage-services/understanding-the-importance-of-temperature-control-in-pharmaceutical-stability/>

News - *MSD licensing*. (2023, November 21). MSD Licensing. <https://www.msdlicensing.com/news/>

New York University, Stern College of Business. "Return on Equity by Sector (US)." January 2023. https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/roe.html

NHANES - Interactive Data Visualizations. (n.d.).

<https://www.cdc.gov/nchs/nhanes/visualization/index.htm>

Nicklas, J. M., Huskey, K. W., Davis, R. B., & Wee, C. C. (2012). Successful weight loss among obese U.S. adults. *American Journal of Preventive Medicine*, 42(5), 481–485.

<https://doi.org/10.1016/j.amepre.2012.01.005>

Palazzo, Berardino. "Corporate Profits in the Aftermath of Covid-19." *The Fed - Corporate Profits in the Aftermath of COVID-19*, 9 Aug. 2023, [www.federalreserve.gov/econres/notes/](http://www.federalreserve.gov/econres/notes/feds-notes/corporate-profits-in-the-aftermath-of-covid-19-20230908.html)

[feds-notes/corporate-profits-in-the-aftermath-of-covid-19-20230908.html](http://www.federalreserve.gov/econres/notes/feds-notes/corporate-profits-in-the-aftermath-of-covid-19-20230908.html).

Parker, Kim. "On the Cusp of Adulthood and Facing an Uncertain Future: What We Know about Gen Z so Far." Pew Research Center's Social & Demographic Trends Project, *Pew Research Center*, 14 May 2020, www.pewresearch.org/social-trends/2020/05/14/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far-2/.

"Prevail Therapeutics Inc Historical Price Data (PRVL)." *Investing.com*, 21 Jan. 2021,

www.investing.com/equities/prevail-therapeutics-inc-historical-data. Accessed 22 Nov. 2023.

Rosenberg, Karen. "Increased Morbidity, Mortality in People with Post-COVID-19 Condition." *The American Journal of Nursing*, vol. 123, no. 7, 2023, p. 61. doi:10.1097/01.NAJ.0000

944944.13148.d7

Rothaermel, Frank T. *Strategic Management*. Sixth Edition, *McGraw Hill Education*, 2024.

- “Sigilon Therapeutics Inc Historical Price Data (SGTX) - Investing.com.” *Investing.com*, 10 Aug. 2023, www.investing.com/equities/sigilon-therapeutics-inc-historical-data. Accessed 22 Nov. 2023.
- Sun, D., Gao, W., Hu, H., & Zhou, S. (2022, July). Why 90% of clinical drug development fails and how to improve it?. *Acta pharmaceutica Sinica. B*.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9293739/#:~:text=Despite%20significant%20efforts%20to%20improve,%25%2C%206%2C%207>.
- Transcribing, M. F. (2023, November 2). Eli Lilly (LLY) Q3 2023 Earnings call Transcript. *The Motley Fool*.
<https://www.fool.com/earnings/call-transcripts/2023/11/02/eli-lilly-lly-q3-2023-earnings-call-transcript/>
- Trefis. “Eli Lilly and Company Total Shareholder Return (TSR): 33.9% in 2022 and 42.6% 3-Yr Returns (above Peer Average).” *Trefis*, 2022, www.trefis.com/data/companies/LLY/no-login-required/CYwuuWi/Eli-Lilly-and-Company-Total-Shareholder-Return-TSR-33-9-in-2022-and-42-6-3-yr-returns-above-peer-average-. Accessed 29 Sept. 2023.
- U.S. Census Bureau. *U.S. Census Bureau Quickfacts: United States*. 2023. www.census.gov/quickfacts/fact/table/US/AGE135222. Accessed 1 Oct. 2023.
- Wadden, T. A., Bailey, T. S., Billings, L. K., Davies, M. J., Frías, J. P., Koroleva, A., Lingvay, I., O’Neil, P. M., Rubino, D., Skovgaard, D., Wallenstein, S. O. R., Garvey, W. T., & Investigators, S. (2021). Effect of Subcutaneous Semaglutide vs Placebo as an Adjunct to Intensive Behavioral Therapy on Body Weight in Adults With Overweight or Obesity. *JAMA*, 325(14), 1403.
<https://doi.org/10.1001/jama.2021.1831>
- Wouters, O. J., McKee, M., & Luyten, J. (2020, March 3). Estimated research and development investment needed to bring a new medicine to market, 2009-2018. *JAMA*.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7054832/>
- Yahoo! Finance. “Eli Lilly and Company (LLY) Stock Price, News, Quote & History - Yahoo Finance.” *Finance.yahoo.com*, 2023, finance.yahoo.com/quote/LLY/. Accessed 29 Sept. 2023.

Yu, Ting. “How Copyrights, Patents, and Trademarks May Stifle Creativity and Progress.” *Boston University*, 16 Aug. 2022, www.bu.edu/articles/2022/how-copyrights-patents-trademarks-may-stifle-creativity-and-progress/