



Health Care Sector Spotlight: Obesity

Artisan Partners Growth Team

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Health Care Sector Spotlight: Obesity

Our Team’s Approach to Biotechnology and Pharmaceutical Investing

Health care has always been an important area of opportunity for our team. Within the sector, we tend to find the pharmaceutical and biotechnology industries particularly interesting given the continuous innovation. However, investing in these new innovative therapies can be risky with binary outcomes driven by clinical trial results and Federal Drug Administration (FDA) approvals. This necessitates a disciplined and selective process.

To us, being selective means looking for companies with: 1) a de-risked asset, in other words, a drug that is already FDA approved or we have confidence it will be approved; 2) a multi-drug pipeline building upon an approved asset or platform technology; and 3) a balance sheet allowing the company to navigate the tricky drug approval environment. There are over 350 public pharmaceutical and biotechnology companies within the Russell 3000 and MSCI All Country World ex USA indices, yet we only own 14 companies across our four portfolios as of 9/30/2023.

What We Look for in Pharma/Biotech Companies



Source: Artisan Partners.

The Obesity Epidemic and Emergence of GLP-1 Treatments

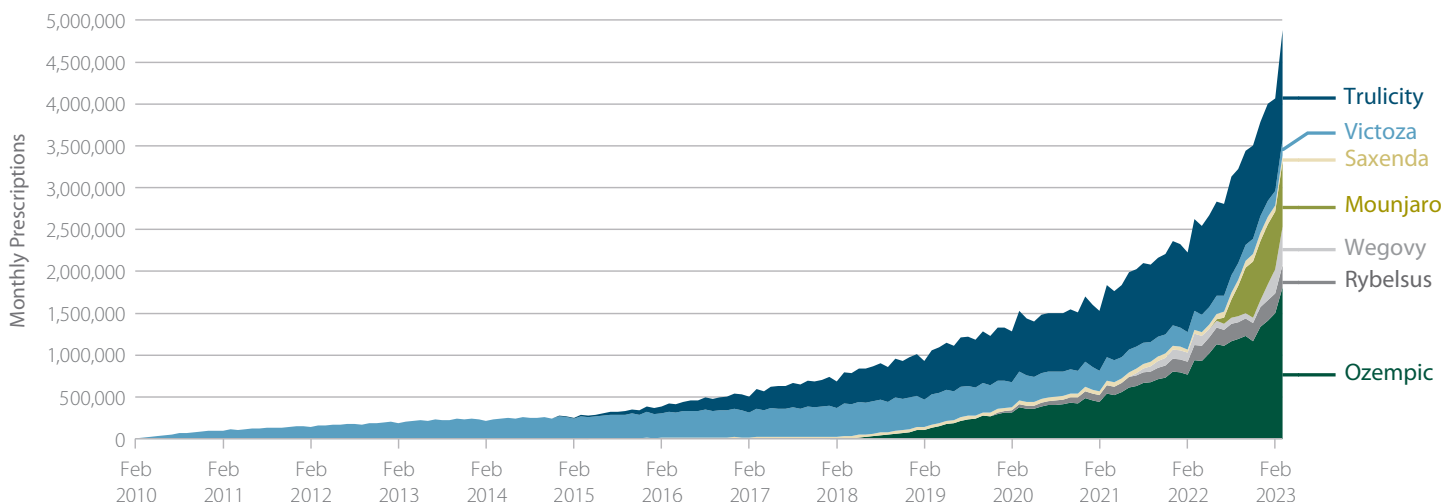
One of the exciting areas our team has been researching is the emergence of obesity therapies. The global obesity epidemic is worsening.

For example, 40% of Americans have a body mass index of 30 or above, due to factors including poor diet, lack of physical activity and sedentary lifestyles. The Centers for Disease Control and Prevention estimates obesity led to medical costs of \$173bn in 2019 given its link to multiple physical and mental health issues, including high blood pressure, diabetes, heart disease, stroke, depression and anxiety disorders.

While other industries have capitalized on the obesity opportunity through products and services promoting healthier lifestyles, such as low-calorie food products and fitness trackers, the biotechnology and pharmaceutical industries have also recognized the potential. In recent years, the introduction of Glucagon-like peptide 1 (GLP-1) treatments has been gaining momentum. GLP-1 is an incretin hormone that helps regulate glucose levels and slows food absorption into the bloodstream. It is a potential therapeutic option for those with weight issues as these drugs allow people to feel full quicker and eat fewer calories without feeling hungry.

While challenges must be overcome before these medications become more widely available on the market—including logistical issues—their efficacy when taken correctly has been proven to lead to weight loss of 15%-20%. In comparison, bariatric surgery, which can lead to ~30% weight loss, requires an invasive procedure that is unappealing to many.

Exhibit 1: US Monthly GLP-1 Prescription Volumes

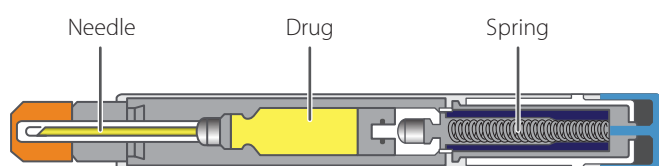


Source: Bloomberg, as of 31 Mar 2023.

Prescription volumes for top GLP-1 therapies have been ramping up in recent years, and there are estimates that this category could reach \$50bn in annual sales by 2030, versus \$2bn in 2021. The competitive landscape for GLP-1 treatments is intensifying, but we believe **Novo Nordisk**, a CropSM position within our Global Opportunities Fund, is best positioned with multiple leading therapies: Ozempic, Saxenda and Wegovy.

Other Companies Exposed to This Secular Driver

We are always interested in the broader supply chain implications from big new secular trends. In the case of new obesity therapies, we believe they will create major opportunities for certain biomanufacturing suppliers. These drugs are administered as weekly injections done by the patient at home using “pen” devices common to insulin therapy. We believe the growth of this category represents an excellent opportunity for the companies who supply these pens, and we own two of them: **West Pharmaceutical Services** and **Gerresheimer**.



For illustrative purposes only.

Both companies are adding manufacturing capacity to support future obesity drug volumes, and our research indicates these suppliers are securing attractive terms with pharmaceutical companies worried about keeping up with future demand.

We are excited about both the potential volume growth and the margin expansion opportunity. For example, approximately 80% of West’s volumes are basic components that cost a few pennies and carry ~25% gross margins, while the other 20% of its volumes are from higher-value parts. These higher-value components are made of better-quality materials, may be pre-sterilized so they arrive at the customer’s manufacturing line ready to be used, and may also be inspected by machine vision cameras to avoid defects. These types of components are in demand from biotech and pharma companies that are launching new high-value biologic drugs (such as GLP-1s) to ensure there aren’t any packaging or storage problems. As a result, West can charge 50 cents or more and earn ~60% gross margins. The mix shift toward higher priced, higher margin products—a strategy also being pursued on the glass components side by Gerresheimer—is what makes the company such a compelling long-term investment. We think the volume potential of obesity drugs should accelerate that trend.

The growth of the GLP-1 market also further strengthens the already attractive long-term outlook for bioprocessing companies who provide products and services to help pharmaceutical companies produce and refine complex injectable therapies, such as biologics and peptides. While the hangover from the COVID-19 vaccine boom-bust cycle is making 2023 challenging for bioprocessing companies such as **Danaher**, **Repligen** and **Lonza**, we expect a return to strong growth in 2024 for these franchises driven by innovative injectable therapies.

The following stocks are sample holdings in each of the four portfolios Artisan Partners Growth Team manages, highlighting investment opportunities the team believes should benefit from the emergence of obesity therapies.

Holding	Description	Global Opportunities	Global Discovery	Mid Cap	Small Cap
West Pharmaceutical Services	A leading supplier of packaging components for injectable pharmaceuticals, including rubber stoppers, seals, and plungers.	■	■	■	
Gerresheimer	A leading producer of specialty glass and plastic products made for pharmaceutical companies.		■	■	
Lonza	One of the largest manufacturers and producers of active pharmaceutical ingredients for biologic and small molecule drugs as well as cell and gene therapies.	■			
Repligen	A leading supplier of equipment, consumables and services for biologic manufacturing needs.			■	■
Danaher	A science and technology company with sales from multiple strategic platforms, including bioprocessing.	■			

Holdings information as of 31 Dec 2023.

Artisan Partners Growth Team

The following team members contributed to this report



Matt Kamm, CFA
Portfolio Manager



Martin Jochmann
Associate Portfolio Manager



Ryan Tochiara
Analyst

Investment Process Highlights

We seek to invest in companies with franchise characteristics that are benefiting from an accelerating profit cycle and are trading at a discount to private market value.

Security Selection

We seek to identify companies with franchise characteristics that are selling at attractive valuations and are benefiting from an accelerating profit cycle. We look for companies that are well positioned for long-term growth, driven by demand for their products and services, at an early enough stage in their profit cycle to benefit from the increased cash flows produced by the emerging profit cycle.

Capital Allocation

Based on our fundamental analysis of a company's profit cycle, we divide the portfolio into three parts. GardenSM investments are small positions in the early part of their profit cycle that will warrant a more sizeable allocation once their profit cycle accelerates. CropSM investments are positions that are being increased to a full weight because they are moving through the strongest part of their profit cycle. HarvestSM investments are positions

that are being reduced as they near our estimate of full valuation or their profit cycle begins to decelerate. We believe that adhering to this process increases the likelihood of delivering upside participation with downside protection.

Broad Knowledge

We overlay security selection and capital allocation with the capability to invest opportunistically across the entire global equity spectrum. It is our goal to have broad knowledge of the global economy to ensure that we are able to find growth wherever it occurs. This capability extends from the design of our team, which leverages the broad experience of the portfolio managers and the deep expertise of the analysts on the team.

Team Overview

We believe deep industry expertise, broad investment knowledge, a highly collaborative decision-making process and individual accountability are a powerful combination. Since the inception of the team in 1997, we have been committed to building a team of growth investors that retains these attributes and is solely dedicated to our process and approach.

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Carefully consider the Fund's investment objective, risks and charges and expenses. This and other important information is contained in the Fund's prospectus and summary prospectus, which can be obtained by calling 800.344.1770. Read carefully before investing.

Current and future portfolio holdings are subject to risk. The value of portfolio securities selected by the investment team may rise or fall in response to company, market, economic, political, regulatory or other news, at times greater than the market or benchmark index. A portfolio's environmental, social and governance ("ESG") considerations may limit the investment opportunities available and, as a result, the portfolio may forgo certain investment opportunities and underperform portfolios that do not consider ESG factors. International investments involve special risks, including currency fluctuation, lower liquidity, different accounting methods and economic and political systems, and higher transaction costs. These risks typically are greater in emerging and less developed markets, including frontier markets. Securities of small- and medium-sized companies tend to have a shorter history of operations, be more volatile and less liquid and may have underperformed securities of large companies during some periods. Growth securities may underperform other asset types during a given period.

This summary represents the views of the portfolio managers as of 30 Jun 2023. Those views may change, and the Funds disclaim any obligation to advise investors of such changes. For the purpose of determining the Funds' holdings, securities of the same issuer are aggregated to determine the weight in the Funds. The holdings mentioned above comprise the following percentages of the Funds' total net assets as of 31 Dec 2023: Artisan Global Opportunities Fund: West Pharmaceuticals Services Inc 1.3%, Novo Nordisk A/S 4.9%, Lonza Group AG 1.6%, Danaher Corp 2.0%, Artisan Mid Cap Fund: West Pharmaceutical Services Inc 2.9%, Gerresheimer AG 1.6%, Repligen Corp 1.6%, Artisan Global Discovery Fund: Gerresheimer AG 3.1%, West Pharmaceutical Services Inc 2.2%, Artisan Small Cap Fund: Repligen Corp 2.1%. Portfolio holdings are subject to change without notice and are not intended as recommendations of individual securities. Securities named in the commentary but not listed here are not held in the portfolio as of the date of this report.

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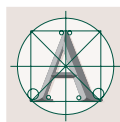
Our capital allocation process is designed to build position size according to our conviction. Portfolio holdings develop through three stages: GardenSM, CropSM and HarvestSM. GardenSM investments are situations where we believe we are right, but there is not clear evidence that the profit cycle has taken hold, so positions are small. CropSM investments are holdings where we have gained conviction in the company's profit cycle, so positions are larger. HarvestSM investments are holdings that have exceeded our estimate of intrinsic value or holdings where there is a deceleration in the company's profit cycle. HarvestSM investments are generally being reduced or sold from the portfolios.

This material is provided for informational purposes without regard to your particular investment needs and shall not be construed as investment or tax advice on which you may rely for your investment decisions. Investors should consult their financial and tax adviser before making investments in order to determine the appropriateness of any investment product discussed herein.

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