# Biotech Brings Life Into Broad-Based Equities:
## The S&P Biotechnology Select Industry Index

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## INTRODUCTION

Developed in 1999 and jointly managed by S&P Dow Jones Indices and MSCI, the Global Industry Classification Standard® (GICS®) assigns companies to a single classification at the sub-industry level according to its principal business activity using quantitative and qualitative factors, including revenues, earnings, and market perception. The sub-industry is the most specific level of the four-tiered, hierarchical industry classification system that includes 11 sectors, 24 industry groups, 69 industries, and 158 sub-industries.

The companies primarily engaged in the research, development, manufacturing, or marketing of products based on genetic analysis and genetic engineering are classified in the Biotechnology sub-industry, the only sub-industry in the Biotechnology industry. It includes companies primarily engaged in the research, development, manufacturing and/or marketing of products based on genetic analysis and genetic engineering. Included are those specializing in protein-based therapeutics to treat human diseases and excluded are companies manufacturing products using biotechnology without a health care application.

## COMPOSITION

As of Sept. 28, 2018, there are 124 companies with a total float-adjusted market capitalization of USD 879,614.95 million in the S&P Biotechnology Select Industry Index. The largest company in the index is AbbVie Inc (ABBV), with a float-adjusted market cap of USD 143,219.94 million. The index is modified equal-weighted, and the largest company weight in the index is ACADIA Pharmaceuticals Inc (ACAD), at 1.9%. Approximately 11.8% of the index weight is from large-cap stocks in the S&P 500®, with 2.6% from the S&P MidCap 400® and 11.0% from the S&P SmallCap 600®. The mean market cap is USD 7,092.90 million, the median market cap is USD 1.299.83 million, and the minimum market cap is USD 323.17 million. Nearly 75% of the index weight is considered micro cap and therefore is not in the S&P Composite 1500®, but is in the S&P Total Market Index (TMI). The top 10 holdings sum to 14.8% of the S&P Biotechnology Select Industry Index (see Exhibit 1).

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*The top ten holdings sum to 14.8% of the S&P Biotechnology Select Industry Index.*

**Exhibit 1: Snapshot of the Top 10 Holdings in the S&P Biotechnology Select Industry Index**

| CONSTITUENT NAME | TICKER | INDEX WEIGHT (%) |
|---|---|---|
| ACADIA Pharmaceuticals Inc | ACAD | 1.88 |
| Viking Therapeutics, Inc. | VKTX | 1.70 |
| Alexion Pharmaceuticals Inc | ALXN | 1.48 |
| Sangamo Therapeutics, Inc | SGMO | 1.43 |
| Ionis Pharmaceuticals Inc | IONS | 1.41 |
| TESARO Inc | TSRO | 1.40 |
| AnaptysBio, Inc | ANAB | 1.38 |
| Array Biopharma Inc | ARRY | 1.38 |
| Ligand Pharmaceutical Inc. | LGND | 1.35 |
| Vertex Pharmaceuticals Incorporated | VRTX | 1.35 |
| **Total** | | **14.76** |

Source: S&P Dow Jones Indices LLC. Data as of Sept. 28, 2018. Table is provided for illustrative purposes.

## The Sector

*In the S&P TMI, the Health Care sector represented 14.6% with a market cap of USD 4,368,790.77 million…*

The Biotechnology, Pharmaceuticals, and Life Sciences Tools & Services industries comprise the Pharmaceuticals, Biotechnology & Life Sciences industry group. This industry group, combined with the Health Care Equipment & Services industry group, complete the Health Care sector. In the S&P TMI, the Health Care sector represents 14.6% with a market cap of USD 4,368,790.77 million, and the Biotechnology industry represents 20.7% of the Health Care sector, as of Sept. 28, 2018 (see Exhibit 2).

*…and the Biotechnology industry represented 20.7% of the Health Care sector, as of Sept. 28, 2018.*

**Exhibit 2: Breakdown of the S&P TMI Health Care Sector**

| GICS CLASSIFICATION | WEIGHT (%) | MARKET CAP (USD Millions) |
|---|---|---|
| Health Care Equipment & Services (Industry Group) | 44.6 | 1,949,001.12 |
| Health Care Equipment & Supplies (Industry) | 22.2 | 968,521.81 |
| Health Care Providers & Services (Industry) | 20.9 | 913,830.81 |
| Health Care Technology (Industry) | 1.5 | 66,648.50 |
| Pharmaceuticals, Biotechnology & Life Sciences (Industry Group) | 55.4 | 2,419,789.66 |
| **Biotechnology (Industry)** | **20.7** | **905,652.18** |
| Life Sciences Tools & Services (Industry) | 6.4 | 279,974.05 |
| Pharmaceuticals (Industry) | 28.2 | 1,234,163.43 |
| **S&P TMI Health Care Sector** | **100** | **4,368,790.77** |

Source: S&P Dow Jones Indices LLC. Data as of Sept. 28, 2018. Table is provided for illustrative purposes.

## Index Construction

*The eligibility criteria for a stock to be included in the index is largely based on if the stock is a member of the S&P TMI, meets liquidity…*

*…and market cap requirements, and is classified as Biotechnology according to GICS.*

The eligibility criteria for a stock to be included in the S&P Biotechnology Select Industry Index is largely based on if the stock is a member of the S&P TMI, meets liquidity and market cap requirements, and is classified as Biotechnology according to GICS. The liquidity ratio is defined as the U.S. dollar value traded over the previous 12 months divided by the FMC as of the rebalancing reference date. The stocks included must meet one of the following float-adjusted market capitalization (FMC) and float-adjusted liquidity ratio (FALR) requirements.

1) Current constituents must have an FMC greater than or equal to USD 300 million, and have a FALR greater than or equal to 50%.
2) New constituents must have an FMC greater than or equal to USD 500 million and a FALR greater than or equal to 90% to be added to the index.
3) New constituents must have an FMC greater than or equal to USD 400 million and a FALR greater than or equal to 150% to be added to the index.

*It also follows a modified equal-weight methodology to determine the weights of each stock in the index.*

The S&P Biotechnology Select Industry Index also follows a modified equal-weight methodology to determine the weights of each stock in the index. This method adjusts individual constituent weights to ensure concentration and liquidity requirements. At each quarterly rebalancing, stocks are initially equally weighted, then adjustments are made to ensure that there are no individual constituents with a weight exceeding the value that can be traded in a single day for a given theoretical portfolio, valued currently at USD 2 billion and reviewed annually. If necessary, a final adjustment is made to ensure that no stock in the index has a weight greater that 4.5%.

*One of the potential benefits of adding the index to a portfolio of other select industries, broad markets, or single countries…*

## PERFORMANCE

*…is that the Biotechnology industry has had relatively low correlation to every other industry and country.*

One of the potential benefits of adding the S&P Biotechnology Select Industry Index to a portfolio of other select industries, broad markets, or single countries is that the index has had relatively low correlation to every other S&P Select Industry Index as well as low correlation to country indices. Since it is predominately composed of small and micro-cap, U.S. stocks, it is more correlated (at 0.56) to the S&P SmallCap 600 than to any other segment of the U.S. market by size or to any other country (see Exhibit 3). The index had significantly low correlation to countries outside of the U.S., with a correlation of nearly zero to China. Also, the S&P Biotechnology Select Industry Index had low correlation to other S&P Select Industry Indices, with near zero correlation to commodity producers, like Oil & Gas Exploration & Production and Metals & Mining. The index had the highest correlation to Health Care Equipment at 0.63 and

Semiconductor at 0.60. Generally, any correlation below 0.3 can be considered low, and between 0.3 and 0.7 is moderate.

*Lastly, the S&P Biotechnology Select Industry Index can offer return potential with its diversification, returning 8.8% annualized over the period studied.*

*It outperformed every major country, (except China) over the period, while underperforming the S&P SmallCap 600 and S&P MidCap 400.*

**Exhibit 3: Correlations of the S&P Biotechnology Select Industry Index**

| INDEX | CORRELATION | S&P SELECT INDUSTRY INDEX (TR) | CORRELATION |
|---|---|---|---|
| S&P China BMI | 0.15 | Oil & Gas Exploration & Production | 0.14 |
| S&P Korea BMI | 0.25 | Metals & Mining | 0.20 |
| S&P Japan BMI | 0.28 | Retail | 0.24 |
| S&P Switzerland BMI | 0.28 | Transportation | 0.24 |
| S&P United Kingdom BMI | 0.29 | Homebuilders | 0.25 |
| S&P Emerging BMI | 0.32 | Oil & Gas Equipment & Services | 0.27 |
| S&P Australia BMI | 0.33 | Aerospace & Defense | 0.29 |
| S&P France BMI | 0.36 | Health Care Services | 0.35 |
| S&P Canada BMI | 0.36 | Insurance | 0.41 |
| S&P Global Ex-U.S. BMI | 0.38 | Banks | 0.42 |
| S&P Developed Ex-U.S. BMI | 0.39 | Regional Banks | 0.43 |
| S&P 500 (TR) | 0.39 | Telecom | 0.51 |
| S&P Germany BMI | 0.43 | Internet | 0.55 |
| S&P Global BMI | 0.43 | Capital Markets | 0.56 |
| S&P Developed BMI | 0.44 | Pharmaceuticals | 0.57 |
| S&P/ASX 200 (TR) | 0.45 | Software & Services | 0.59 |
| S&P United States BMI | 0.46 | Technology Hardware | 0.59 |
| S&P MidCap 400 (TR) | 0.49 | Semiconductor | 0.60 |
| S&P SmallCap 600 (TR) | 0.56 | Health Care Equipment | 0.63 |

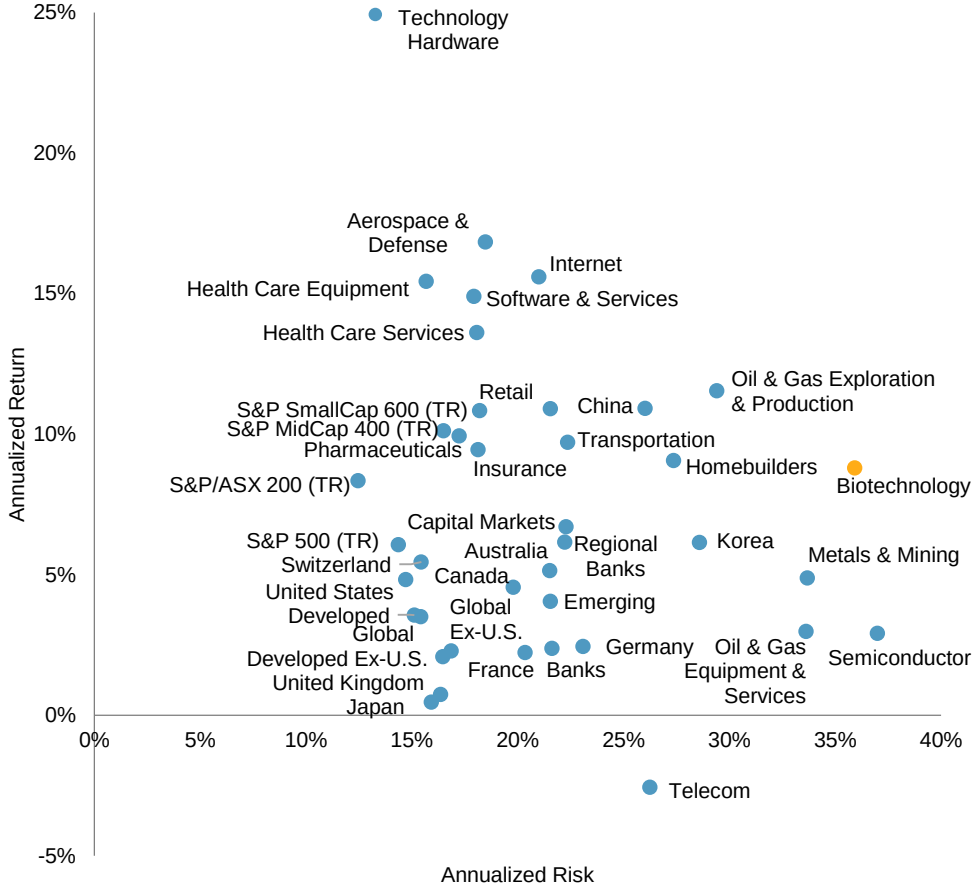
Source: S&P Dow Jones Indices LLC. Correlations based on monthly data from January 2000 to September 2018; except the S&P/ASX 200 (TR) is from April 2000; the S&P Banks Select Industry Index (TR), S&P Capital Markets Select Industry Index (TR), S&P Insurance Select Industry Index (TR), S&P Regional Banks Select Industry Index (TR), and S&P Software & Services Select Industry Index (TR) are from July 2003; the S&P Internet Select Industry Index (TR) is from July 2005; and the S&P Technology Hardware Select Industry Index (TR) is from June 2016. Table is provided for illustrative purposes.

*It outperformed Oil & Gas Exploration & Production and Metals & Mining significantly, returning 4.9% and 3.0%, respectively.*

Lastly, the S&P Biotechnology Select Industry Index can offer return potential with its diversification. From January 2000 to September 2018, it returned 8.8% annualized (see Exhibit 4). It outperformed every major country except China, which returned 10.9% annualized over the period, and it underperformed the S&P SmallCap 600 and S&P MidCap 400, which had annualized returns 10.8% and 10.1%, respectively. Also, not only did the index have low correlation with Oil & Gas Exploration & Production and Metals & Mining, it outperformed the S&P Metals & Mining Select Industry Index significantly.

*The S&P Biotechnology Select Industry Index had the highest beta (of about 1.4) of any of the S&P Select Industry Indices…*

**Exhibit 4: Risk/Return – S&P Select Industry Indices and S&P BMI Countries**




Source: S&P Dow Jones Indices LLC. Risk/return based on monthly data from January 2000 to September 2018; except the S&P/ASX 200 (TR) is from April 2000, the S&P Banks Select Industry Index (TR), S&P Capital Markets Select Industry Index (TR), S&P Insurance Select Industry Index (TR), S&P Regional Banks Select Industry Index (TR), and S&P Software & Services Select Industry Index (TR) are from July 2003, the S&P Internet Select Industry Index (TR) is from July 2005, and the S&P Technology Hardware Select Industry Index (TR) is from June 2016. Chart is provided for illustrative purposes.

## CONCLUSION

*…and offers a chance for higher returns against some of the industries it is mostly lowly correlated with, making its higher volatility potentially worth the risk.*

The S&P Biotechnology Select Industry Index has the highest beta (of about 1.4) of any of the S&P Select Industry Indices and offers a chance for higher returns against some of the industries it is the least correlated with, making its higher volatility potentially worth the risk. Also, the industry is predominantly micro cap and U.S. focused, insulating it from many factors that may affect other industries that comprise larger-cap and more global companies.

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