

The relative importance of Biotech versus Broad-based indices

Biotech companies naturally take a keen interest in the leading indices that measure the performance of their industry segment. That includes the indices used by passive ETFs such as the ICE Biotechnology and S&P Biotechnology Select Industry indices, as well as the Nasdaq Biotechnology Index, which is used by a number of actively managed funds. But an analysis of fund investments shows that it is the major broad-based indices produced by S&P, Russell and others that matter most to Biotech companies.

Key takeaways

- **A growing number of indices are tracking the Biotech industry**
Funds using Biotech and Life Sciences indices have gathered close to \$54bn in assets. Of the 58 indices used by these funds, five account for more than half of the assets: three published by ICE, one by Nasdaq and one by S&P.
- **Despite their growth, Biotech indices have a small market share**
\$54bn is significant pool of assets, but it accounts for a negligible 0.1% share of the equity fund market. Conversely, the major broad-based indices, including those produced by S&P and Russell, capture more than half of the market.
- **Biotech companies are well represented in leading broad-market indices**
88% of companies in the leading Biotech indices are also in one of the three major broad-market U.S. index families (i.e., S&P 500/400/600/1500, Russell 1000/2000/3000 and CRSP US Total Market) and 83% are included in two or more of those families.
- **Top broad-based indices capture 35% of fund investments in NBI stocks**
Funds benchmarked to the top broad indices account for 35% of investments in NBI constituent companies, or 24 times the 1.5% allocation to funds benchmarked to NBI itself.
- **Biotech companies should be most concerned with broad-index inclusion**
The overwhelming amount of assets invested in funds that use the major broad-based indices mean that those funds hold a significant share of Biotech stocks, while funds tracking Biotech indices hold a relatively small share of those stocks.

How important are Biotech indices?

Oddly enough, Biotech indices are not the most important indices for the Biotech companies they track.

In “An intro to the world of Biotech/Life Science indices” we highlighted the preeminent benchmarks covering the Biotech/Life Sciences industry. These indices are the underlying for several very successful investment products and for that reason are of interest to Biotech companies. However, though it may seem counter-intuitive, Biotech indices are not the most important indices for the companies they track.

To understand why that is the case, we must consider the primary ways in which an index can benefit the companies that comprise its constituency. First, indices focus attention on the market segments that they seek to measure, whether large or small cap companies, growth or value companies or a specific industry group such as Biotech companies. On the premise that a rising tide lifts all boats, the degree to which that attention attracts investment dollars to the segment is a positive. The Biotech indices certainly appear to fit the bill on that count.

But a second, more direct benefit accrues to the specific companies that are included in a popular index. Inclusion in the index draws immediate attention from the funds that are benchmarked to that index. That is particularly true for large, indexed funds whose objective is to replicate their underlying index and who will more than likely own the company’s stock in proportion to its weight in the index.

A growing number of indices are tracking the Biotech industry.

There are a growing number of indices that track the Biotechnology industry, which reflects the growing number of companies in that segment and the investment dollars they are attracting. Biotech indices have helped focus attention on the sector and have led to the creation of successful investment products such as the iShares Biotechnology ETF (IBB). As of March 2023, funds using Biotech and Life Sciences indices have gathered close to \$54bn in assets (Exhibit 1).

Of the 58 indices used by these funds, five account for more than half of the assets: three published by ICE, one by Nasdaq and one by S&P. The ICE indices account for the largest share of indexed Biotech funds (\$9.8bn vs. \$7.6bn replicating the S&P Biotechnology Select Industry index). The ICE indices also capture the largest share of total assets across all active and indexed funds (\$9.8bn vs \$9.6bn in funds using the Nasdaq Biotechnology index).

Exhibit 1: Global Equity Investment Portfolio AUM (USD in millions)

Index	Index Ticker	Active AUM	Indexed AUM	Total AUM	% Biotech funds	% total market	% Active	% Indexed
ICE Biotechnology	ICEBIO		8,032	8,032	14.9%	0.02%	0.0%	100.0%
NYSE Arca Biotechnology	BTK		1,483	1,483	2.7%	0.00%	0.0%	100.0%
Dynamic Biotech & Genome Intellidex	DZO		253	253	0.5%	0.00%	0.0%	100.0%
ICE Total			9,767	9,767	18.1%	0.03%	0.0%	100.0%
Nasdaq Biotechnology	NBI	8,290	1,294	9,584	17.8%	0.03%	86.5%	13.5%
S&P Biotechnology Select Industry	SPSIBI	1,583	7,617	9,200	17.1%	0.02%	17.2%	82.8%
All other (53 indices)		23,915	1,457	25,372	47.1%	0.07%	94.3%	5.7%
Total Biotech AUM		33,788	20,136	53,925	100.0%	0.14%	62.7%	37.3%

Source: Morningstar as of March 2023

Biotech indices are not as established as broad indices.

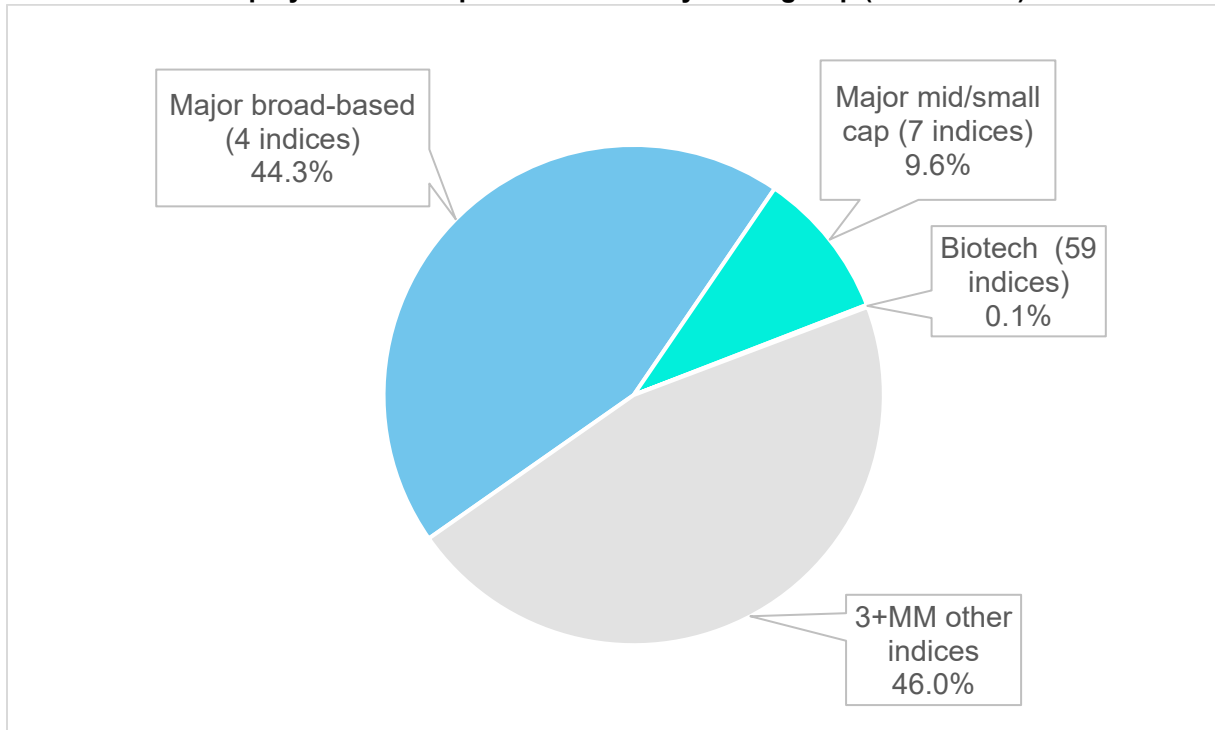
Despite their growth, Biotech focused indices have a comparatively small market share.

No doubt, the development of a robust and growing set of Biotech indices has helped to shine a light on the industry. But while \$54bn is significant pool of assets, it pales in comparison to the overall equity fund market. An analysis of the benchmarks used by \$37 trillion in equity assets globally shows that Biotech indices account for a negligible 0.1% share of the market.

Conversely, the top four indices – all of which have broad representation across all industry sectors – capture a 44.3% share of the market (Appendix 1). This group is heavily skewed toward large cap companies and includes the S&P 500, Russell 1000, CRSP US Total Market and MSCI ACWI indices. All the top flagship indices also include broad-based representation across all industry segments.

A second group of well-recognized indices with broad sector representation that is more focused on mid and small cap companies captures a hefty 9.6% share of the market. This group is dominated by several Russell U.S. indices, including the Russell Midcap, 2000, 2500 and 3000. It also includes the S&P MidCap 400 and SmallCap 600, as well as the MSCI ACWI IMI (Large, Mid & Small Cap). Compared to these two groups of flagship market indices, the Biotech indices barely register on the chart (Exhibit 2).

Exhibit 2: Global equity investment portfolio assets by index group (March 2023)



Source: Morningstar, NYSE

More investment dollars go to small constituents in big indices than the reverse.

Is it better to be a big fish in the comparatively small Biotech index pond or a small fish in the much larger broad-based index pond?

The Biotech index 0.1% share of the equity fund market may pale in comparison to the combined 53.9% share amassed by the major broad-based large and mid/small cap indices, but that alone should not rule out its relative importance. Sometimes it can be better to be a big fish in a small index pond than a small fish in a big flagship index pond. At the end of the day, what should matter most is the dollars invested in the individual companies that make up these indices.

Individual Biotech companies carry a much larger weight in the Biotech indices than they do in the flagship broad-based indices. Therefore, they capture a much larger share of every investor

dollar committed to the Biotech funds that use those indices. For example, the five largest companies in the Nasdaq Biotechnology Index (VRTX, GILD, AMGN, REGN and MRNA) have an average weight of 7.10%. The average weight of those same five companies in the S&P 500 is just 0.24%¹ and their average weight in the Russell 1000 index is just 0.21%. Consequently, the five companies collectively capture more than 30 times as much of every dollar invested in a Nasdaq Biotechnology Index tracking fund as they do for every dollar invested in an S&P 500 or a Russell 1000 Index tracking fund.

The big major market indices have enough AUM clout to cause them to have a greater impact on investment dollars that might be directed to constituent Biotech companies.

On the surface, a 30x multiple sounds overwhelming. However, the big pond in this case – the broad-based major market indices – has gathered over 370 times the assets that the comparatively smaller Biotech pond has managed to accumulate (over \$20 trillion vs. \$54 billion). That ultimately tips the scales toward the broad-based major market indices in terms of the potential impact they can have on investment dollars that might be directed to constituent Biotech companies.

This holds true even for the largest constituents in NBI. Using our prior example, with a 7.10% average share of NBI, and with \$9.6bn in fund assets benchmarked to that index, that translates into a \$680mn average potential investment per company. Conversely, with a 0.24% average weight in the S&P 500, and with \$7.9 trillion in fund assets benchmarked to that index, their average share of the S&P 500 benchmarked assets is \$19.0 billion. Likewise, with a 0.21% average weight in the Russell 1000, and with \$3.3 trillion in fund assets benchmarked to that index, their average share of the Russell 1000 benchmarked assets is \$6.9 billion. The combined \$25.9bn attributed to those two indices is 38 times the potential investment attributed to NBI benchmarked funds.

Biotech companies have strong representation in the broad indices.

Biotech index constituents generally have strong representation across the leading U.S. broad-market indices.

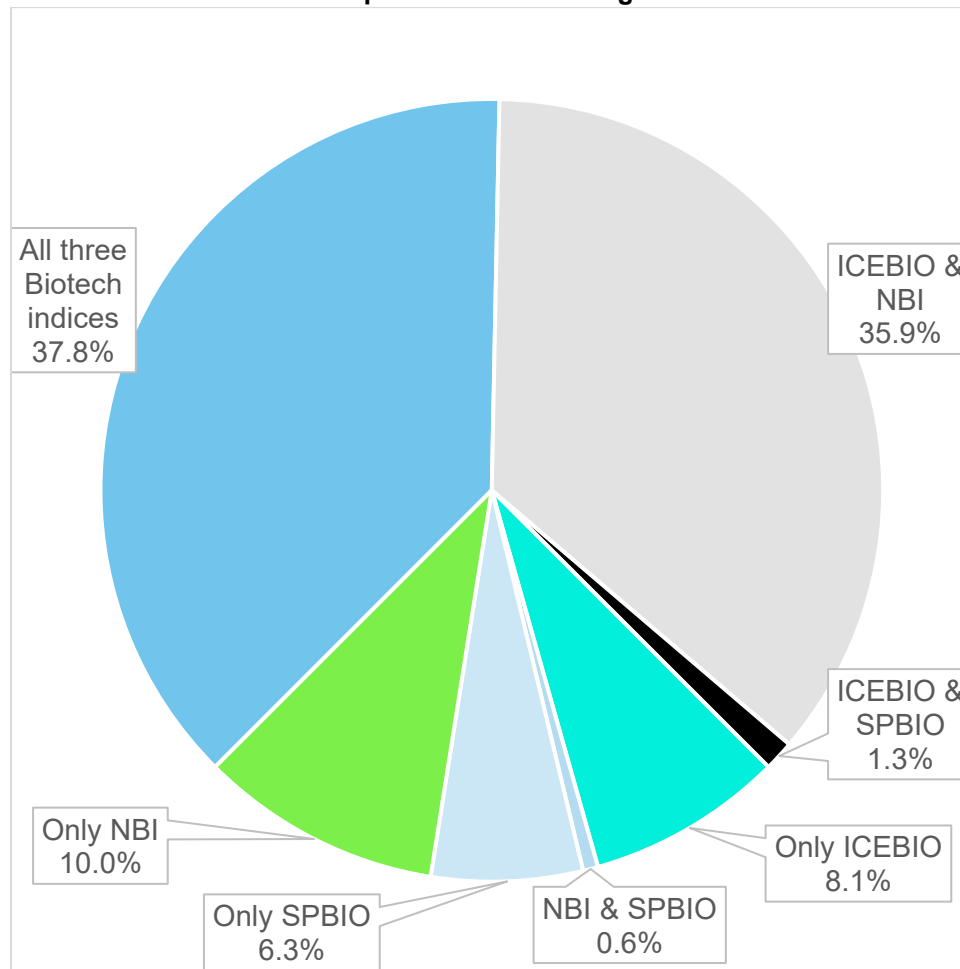
The five largest NBI constituents have meaningful representation in the S&P 500 and Russell 1000 indices but how about the rest of the Biotech community? To answer that question, we analyzed a population of companies culled from the combined constituencies of the ICE

¹ Weights for the Nasdaq and S&P indices are based on the holdings of the largest ETFs tracking each index.

Biotechnology, S&P Biotechnology Select Industry and Nasdaq Biotechnology indices – a collection of 320 companies.

Even though the leading Biotechnology indices have different inclusion rules, there is significant overlap across their constituencies (Exhibit 3). Of the 320 companies, 38% are included in all three of the indices and an additional 36% are included in both the ICE and Nasdaq indices. Only 24% are included in just one of the three: Nasdaq (10%); ICE (8%); S&P (6%).

Exhibit 3: Cross membership of the three leading Biotech indices

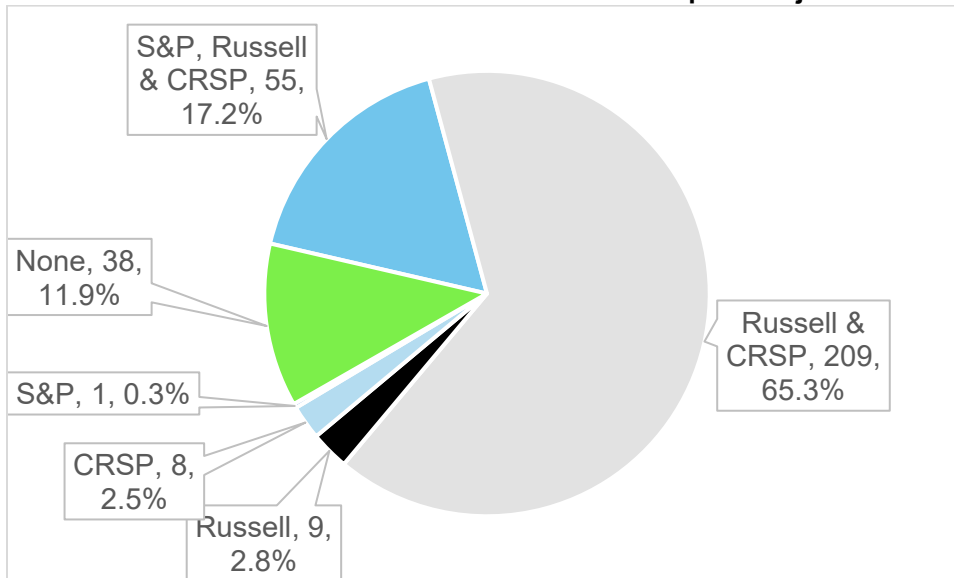


Source: Index providers; ETF holdings

Next, we looked at representation of these same 320 Biotech companies across the leading U.S. major market indices: S&P 1500 (including the 500, MidCap 400 and SmallCap 600), Russell 3000 (including the 1000 and 2000) and CRSP US Total Markets (Exhibit 4). This comparison shows that the Biotech index constituents have strong representation across the leading U.S. broad-market indices. In fact, 88% of the 320 companies are included in one of the

three major broad-market index families and 83% are included in two or more of the families. Of the 32 Biotech companies that are only included in NBI, 84% are included in at least one of the three major U.S. broad-based indices, and 75% are included in two of the three.

Exhibit 4: Biotech index constituent cross memberships in major U.S. index families



Source: Index providers; ETF holdings

Investments in NBI companies are skewed toward funds using broad indices.

The four major broad-based indices account for 35.4% of fund investments in NBI companies, or almost 24 times the 1.5% allocation to funds benchmarked to NBI.

As a final step we examined the benchmarks used by funds that hold the companies that are included in NBI to see whether actual shareholdings of the broad group exhibited the same bias toward the major broad-based indices as our initial analysis based on the average index weights of the top five NBI constituents.

Where available, the institutional shareholder positions in the 270 companies that make up NBI were mapped to the institution’s chosen benchmark. These institutional investors include ETFs, funds and other institutional portfolios that are indexed to an underlying benchmark (i.e., seek to replicate the index performance). They also include ETFs, funds and other institutional

portfolios that measure their performance versus a benchmark, but do not seek to replicate its returns. Rather, this group of investors (i.e., active managers) try to outperform the index. Results, shown in Exhibit 5 below, are aggregated by index with each line item representing holdings of multiple funds benchmarked to that index.

Funds holding one or more of the 270 companies in NBI are benchmarked to a diverse set of 3,357 indices. However, more than two-thirds of the investments are concentrated in funds benchmarked to 25 indices. Not surprisingly, the top four indices used by equity investors globally are also the top four used by funds that hold NBI constituent companies. These four indices account for 35.4% of fund investments in NBI constituent companies, or almost 24 times the 1.5% allocation to funds benchmarked to NBI itself and ten times the combined 3.5% allocation to the three Biotech indices.

In addition to the top four, the list is dominated by 16 other broad-based indices from S&P, Russell, MSCI and CRSP. Together, the 20 broad based indices produced by these four index providers hold a commanding 63% share of fund investments in NBI constituent companies.

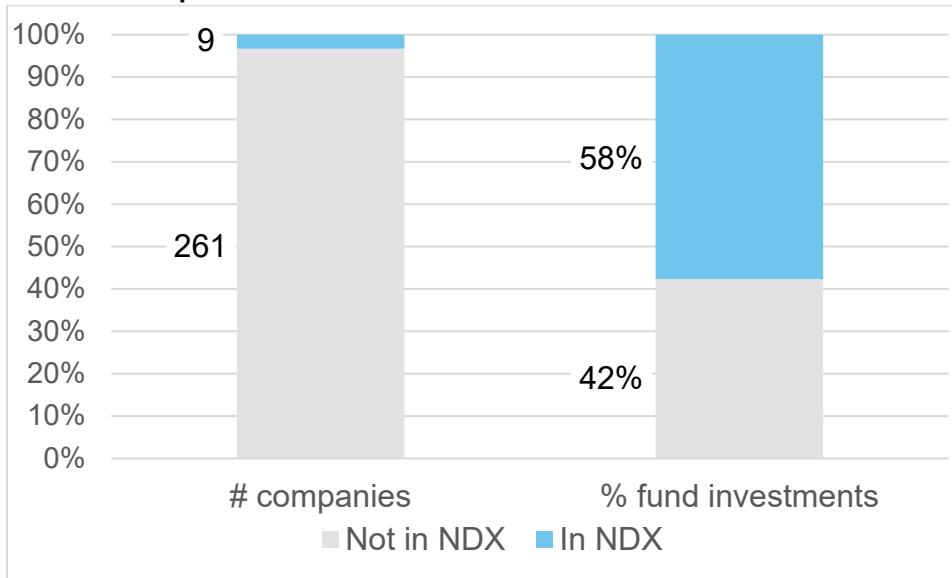
At #17 on the list, funds benchmarked to NBI rank highest among the three Biotech indices with a 1.5% share of total investments versus 1.1% and 1.0% for funds benchmarked to the ICE and S&P Biotechnology indices, respectively. But most of the NBI money is actively managed (93%), while all the ICE and S&P biotech money is indexed. As a result, when ranked based on index funds alone, ICE Biotech ranks first among the three with a 2.6% share of index money, followed by S&P Biotech (2.3%) and Nasdaq Biotech (0.2%).

Exhibit 5: Top 25 benchmarks for funds holding any NDX constituents

	Investment (\$MM)	% total	% active	% indexed	% total indexed
1 S&P 500	149,658	23.2%	70.4%	29.6%	16.9%
2 MSCI ACWI	30,189	4.7%	92.5%	7.5%	0.9%
3 CRSP US Total Mkt	29,350	4.6%	0.0%	100.0%	11.2%
4 Russell 1000 Growth	18,793	2.9%	90.2%	9.8%	0.7%
5 MSCI World	17,751	2.8%	80.4%	19.6%	1.3%
6 Russell 2000	16,639	2.6%	44.7%	55.3%	3.5%
7 MSCI World Health Care	15,324	2.4%	96.6%	3.4%	0.2%
8 MSCI ACWI ex US	14,240	2.2%	93.1%	6.9%	0.4%
9 MSCI EAFE	14,185	2.2%	70.0%	30.0%	1.6%
10 MSCI ACWI Health Care	14,047	2.2%	99.8%	0.2%	0.0%
11 Russell 3000 Growth	13,793	2.1%	99.9%	0.1%	0.0%
12 Russell 1000 Value	12,668	2.0%	85.5%	14.5%	0.7%
13 Russell 2000 Growth	11,323	1.8%	89.9%	10.1%	0.4%
14 Nasdaq 100	11,207	1.7%	1.1%	98.9%	4.2%
15 Russell Mid Cap Growth	10,343	1.6%	95.0%	5.0%	0.2%
16 FTSE All Share	9,747	1.5%	54.9%	45.1%	1.7%
17 Nasdaq Biotechnology	9,460	1.5%	93.1%	6.9%	0.2%
18 Russell 3000	6,821	1.1%	60.9%	39.1%	1.0%
19 ICE Biotechnology	6,810	1.1%	0.0%	100.0%	2.6%
20 MSCI Europe	6,724	1.0%	78.7%	21.3%	0.5%
21 S&P Biotechnology Select Industry	6,130	1.0%	0.0%	100.0%	2.3%
22 FTSE Global All Cap ex US	5,379	0.8%	0.0%	100.0%	2.0%
23 CRSP US Small Cap	5,307	0.8%	0.0%	100.0%	2.0%
24 S&P Completion	5,291	0.8%	0.0%	100.0%	2.0%
25 Russell 1000	4,377	0.7%	73.1%	26.9%	0.4%
Top 25 benchmarks	445,555	69.2%	66.3%	33.7%	57.1%
All other benchmarks (3,332 indices)	198,461	30.8%	43.1%	56.9%	42.9%
Total held by funds	644,016	100.0%	59.2%	40.8%	100.0%

Even the Nasdaq 100 index ranks higher than the Nasdaq Biotechnology index with a 1.7% share of fund investments in NBI stocks. However, that is driven by a small group of nine large cap NBI companies that are also in the Nasdaq 100. Given their size, those nine hold a disproportionate 58% share of the NBI market capitalization (Exhibit 6). They alone were enough to elevate the Nasdaq 100 to #14 on the list of benchmarks used by funds holding NBI stocks. Notably, the Nasdaq 100 index is not used by any funds holding any of the other 261 companies in NBI.

Exhibit 6: Proportion of NBI constituents that are also in NDX



Source: QQQ ETF holdings

After stripping out the nine companies that are also included in NDX, we find that funds holding one or more of the remaining 261 companies in NBI are benchmarked to an equally diverse set of 2,735 indices (Exhibit 7). As was the case with the analysis based on all 270 companies, more than two-thirds of the investments are concentrated in funds benchmarked to 25 indices and the top four benchmarks used by the fund shareholders remain the same. These four indices account for 27.5% of fund investments in NBI companies, or almost 15 times the 1.9% allocation to funds benchmarked to NBI itself.

Exhibit 7: Top 25 benchmarks for funds holding any NBI constituents that are not in NDX

	Index	Investment (\$MM)	% total	% active	% indexed	% total indexed
1	S&P 500	35,458	12.9%	90.3%	9.7%	3.3%
2	Russell 2000	16,160	5.9%	43.0%	57.0%	8.8%
3	MSCI ACWI	11,990	4.4%	94.4%	5.6%	0.6%
4	CRSP US Total Mkt	11,949	4.3%	0.0%	100.0%	11.4%
5	Russell 2000 Growth	11,323	4.1%	89.9%	10.1%	1.1%
6	Russell 3000 Growth	10,035	3.6%	100.0%	0.0%	0.0%
7	MSCI World Health Care	7,927	2.9%	98.7%	1.3%	0.1%
8	MSCI EAFE	7,728	2.8%	76.3%	23.7%	1.7%
9	MSCI World	7,445	2.7%	86.6%	13.4%	1.0%
10	Russell Mid Cap Growth	7,375	2.7%	94.5%	5.5%	0.4%
11	MSCI ACWI Health Care	5,988	2.2%	99.7%	0.3%	0.0%
12	S&P Biotechnology Select Industry	5,663	2.1%	0.0%	100.0%	5.4%
13	MSCI ACWI ex US	5,465	2.0%	91.7%	8.3%	0.4%
14	CRSP US Small Cap	5,307	1.9%	0.0%	100.0%	5.1%
15	Nasdaq Biotechnology	5,135	1.9%	93.6%	6.4%	0.3%
16	S&P Completion	4,920	1.8%	0.0%	100.0%	4.7%
17	Russell 1000 Growth	4,876	1.8%	87.8%	12.2%	0.6%
18	S&P MidCap 400	3,951	1.4%	24.1%	75.9%	2.9%
19	Russell 1000 Value	3,378	1.2%	88.9%	11.1%	0.4%
20	ICE Biotechnology	3,266	1.2%	0.0%	100.0%	3.1%
21	MSCI Europe	3,052	1.1%	79.6%	20.4%	0.6%
22	Russell 2500 Growth	2,959	1.1%	100.0%	0.0%	0.0%
23	S&P SmallCap 600	2,677	1.0%	9.6%	90.4%	2.3%
24	Russell 2000 Value	2,660	1.0%	61.4%	38.6%	1.0%
25	Russell 3000	2,552	0.9%	57.2%	42.8%	1.0%
	Top 25 benchmarks	189,239	68.8%	68.9%	31.1%	56.1%
	All other benchmarks (2,710 indices)	85,722	31.2%	46.4%	53.6%	43.9%
	Total held by funds	274,961	100.0%	61.9%	38.1%	100.0%

Inclusion in broad indices is what should matter most to Biotech companies.

Biotech companies should be more concerned with their potential inclusion in the major broad indices than the narrowly focused Biotech indices.

The relative importance of an index to its constituent companies is a function of the company's weight in the index and the total investment dollars in funds that use that index as a benchmark. The data shows that while Biotech indices may be of particular interest to the Biotech industry, they are not nearly as important to their constituent companies as other major broad-based indices that have attracted significantly more investment dollars. The overwhelming amount of assets invested in funds that use the major broad-based indices mean that those funds hold a significant share of Biotech stocks. Conversely, funds tracking Biotech indices hold a relatively small share of those stocks. A summary of the main inclusionary criteria for the flagship broad-based indices is provided in Appendix 2.

Appendix 1: Major indices used by global equity investment portfolios

Global equity investment portfolio assets by benchmark index (USD in millions)

Index (including variants and sub-indices)	Active	Indexed	Total	% of total	% Active	% Indexed
Top four indices:						
S&P 500	4,608,317	3,305,775	7,914,093	21.2%	58.2%	41.8%
MSCI ACWI	3,140,350	165,939	3,306,289	8.8%	95.0%	5.0%
Russell 1000	2,966,221	323,098	3,289,319	8.8%	90.2%	9.8%
CRSP US Total Market	204	2,028,188	2,028,393	5.4%	0.0%	100.0%
Top four	10,715,093	5,823,000	16,538,093	44.3%	64.8%	35.2%
Major Mid/Small cap indices:						
Russell 2000	964,594	167,562	1,132,155	3.0%	85.2%	14.8%
Russell MidCap	852,370	86,782	939,152	2.5%	90.8%	9.2%
Russell 3000	616,639	125,976	742,615	2.0%	83.0%	17.0%
Russell 2500	241,028	3,026	244,054	0.7%	98.8%	1.2%
S&P 400	52,645	156,832	209,477	0.6%	25.1%	74.9%
MSCI ACWI IMI	51,300	132,325	183,625	0.5%	27.9%	72.1%
S&P 600	12,042	120,970	133,011	0.4%	9.1%	90.9%
Major Mid/Small Cap	2,790,617	793,472	3,584,090	9.6%	77.9%	22.1%
Biotech indices	33,788	20,136	53,925	0.1%	62.7%	37.3%
All other	9,962,878	7,230,845	17,193,723	46.0%	57.9%	42.1%
Total	23,502,377	13,867,453	37,369,830	100.0%	62.9%	37.1%

Source: Morningstar, March 2023

Appendix 2: Summary of U.S. broad-based flagship index key eligibility criteria²

S&P 1500 Index and sub-index eligibility highlights

- Must be a U.S. company, which requires:
 - Company is subject to U.S. Securities Exchange Act reporting obligations for domestic issuers, including requirements to file periodic reports such as, but not limited to, Form 10-K annual reports, Form 10-Q quarterly reports, and Form 8-K current reports
 - U.S. portion of fixed assets and revenues constitutes a plurality of the total, but need not exceed 50% (if assets and revenues are different defer to assets)
 - Primary listing must be on an eligible U.S. exchange
- Minimum market cap to enter: \$14.6bn (500); \$3.7bn (MidCap 400); \$850mn (SmallCap 600)
- ADRs are excluded
- Sum of most recent four quarters earnings must be positive
- Various investability/liquidity tests
- Attempt made to keep sector weights in line with corresponding size segment of the S&P Total Market Index
- Note: effective April 17, 2023, companies with multiple share classes are once again eligible for inclusion
- **Final decisions reside with the Index Committee**

Russell 3000 Index and sub-index eligibility highlights

- Must be a U.S. company, which requires:
 - Incorporated/Headquartered/Traded in U.S. If not...
 - Assets primarily in U.S. (by 20% margin vs #2 ranked country) AND Incorporation, Headquarters or most liquid exchange in U.S. If not...
 - Revenues primarily in U.S. (by 20% margin vs #2 ranked country) AND Incorporation, Headquarters or most liquid exchange in U.S. If not...
 - Headquarters in U.S.
- Price \geq \$1.00
- Market cap \geq \$30mn
- Free float \geq 5%
- ADRs are excluded
- If dual class shares: voting rights ratio \geq 5%
- Average Daily Dollar Trading Value must exceed the global median

² Note: the information in this Appendix represents a summary of the key criteria for index inclusion. Refer to index provider methodology documents for a complete listing of requirements.

CRSP US Total Market Index and sub-index eligibility highlights

- Must be a U.S. company, which requires:
 - Incorporated and Headquartered in U.S.
 - If only one of the two is in the U.S. other factors might be considered
- ADRs are excluded
- Total market cap \geq \$15mn
- Free float \geq 12.5%
- Average daily split-adjusted consolidated trading volume over the last 125 trading days divided by the float shares outstanding \geq 0.001.

MSCI ACWI & ACWI IMI Index and sub-index eligibility highlights

- Qualifying listings must be in the company's home country (i.e., only local listings) with few exceptions
 - Home country is generally country of incorporation and primary listing if the same
- Minimum market cap reset annually based on global market coverage targets
 - MSCI ACWI (Large + Mid Cap)
 - Target = 85% market coverage
 - Nov 2022 total market cap threshold \$7,063mn
 - The free float must be \geq 50% of the above threshold
 - MSCI ACWI IMI (Large + Mid + Small Cap)
 - Target = 99% market coverage
 - Nov 2022 total market cap threshold = \$607mn
 - The free float must be \geq 50% of the above threshold
- A variety of minimum liquidity tests are performed