



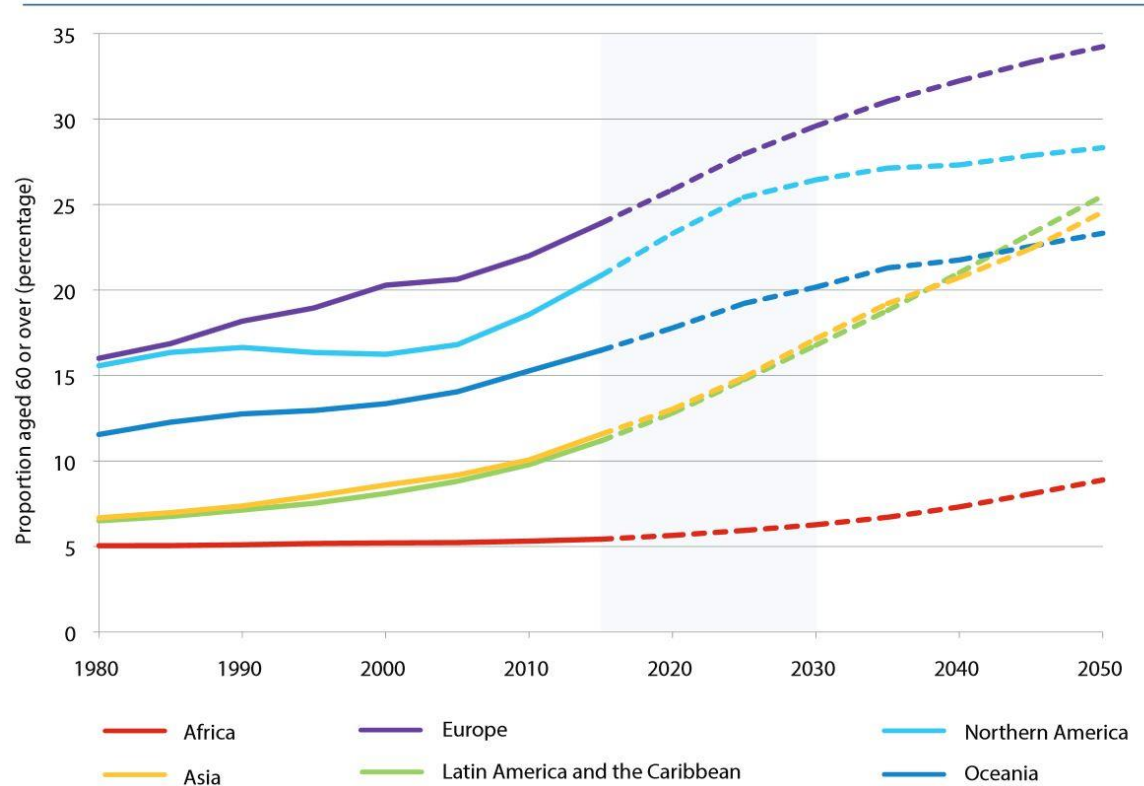
The S-Network Healthcare Innovation Index (PHIX)

Q2 2019

Demographics Drive Demand for Healthcare:

- ❑ Aging Population (More Than 1.4 Billion Over 60 by 2030)
- ❑ Increase in Life Expectancy
- ❑ Increase in Rate of Chronic Illness Globally
- ❑ Half of All Lifetime Care Expenditures are from 65 On

Percentage aged 60 years or over by region, 1980-2050

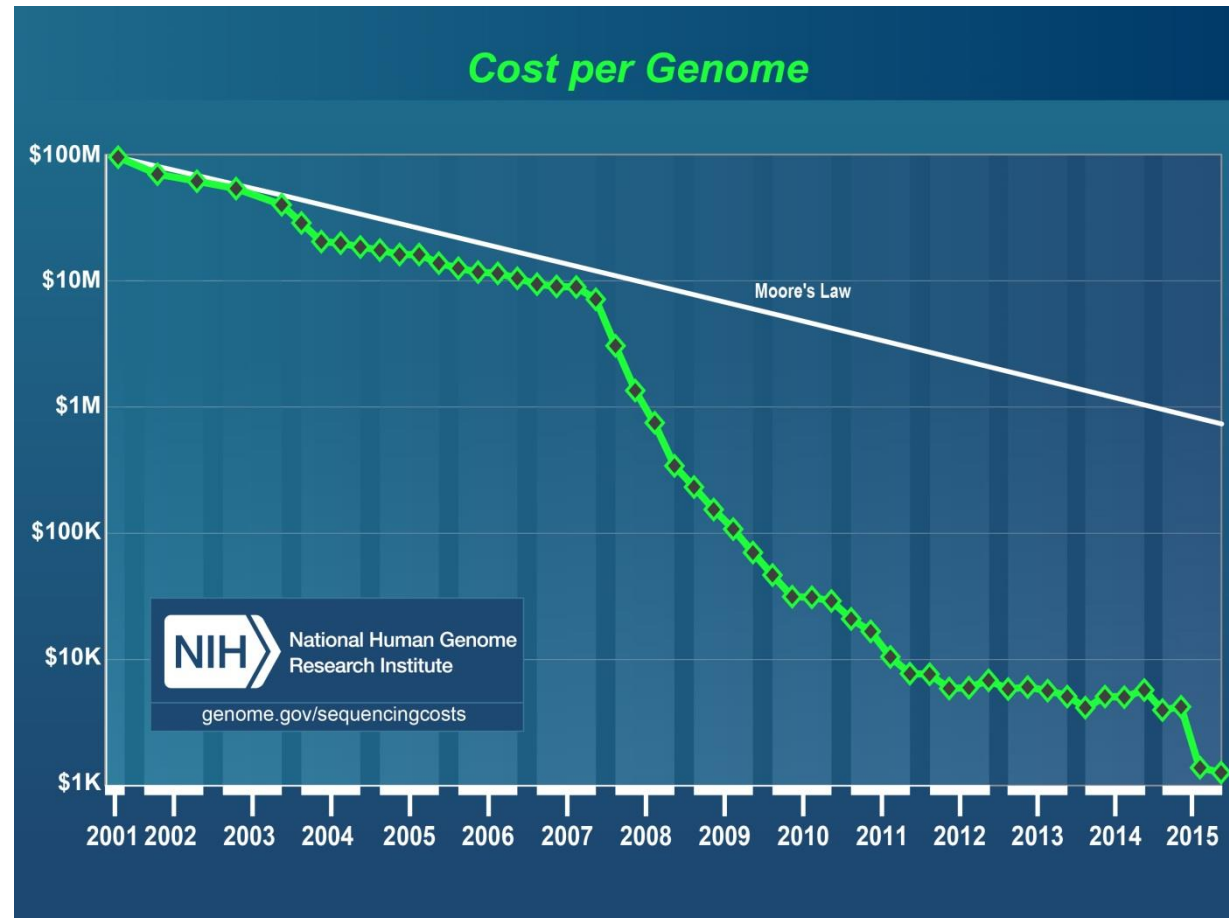


Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Ageing 2015 - Highlights (ST/ESA/SER.A/368).



Scientific Innovations Driving Opportunities:

- ❑ Increasing Understanding of Disease Mechanism
- ❑ Genomics Enabling Precision Medicine
- ❑ Better Therapeutics Increasing Investor Opportunity



Evolution of the S-Network Healthcare Innovation Index

❑ S-Network Biopharma Merger & Acquisition Index (PBMA)

- Liquid Stocks With Market Cap Between \$1 Billion and \$15 Billion
- Includes All Companies Meeting Screening Criteria as Attractive Potential Acquisition Targets
- 94 Companies as of June 30, 2019



❑ S-Network Healthcare Innovation Index (PHIX)

- 30 Companies Selected from PBMA Index
- Additional Screening Criteria Used to Pinpoint Innovative Companies Especially Likely to Be Targeted Within the Next 24 Months



Rationale for S-Network Medical Index Family

S-Network's Focus is on Innovation and Biotech, Not Big Pharma

- ❑ **Pharma Drugs Historically Target Symptoms of Diseases**
- ❑ **Conversely, Biotech Drugs Target the Underlying Diseases Themselves**
- ❑ **Biotech Drugs Are Viewed as “Disruptive” to Big Pharma**
 - Big Pharma Therefore Slow to Conduct Primary Biotech R&D
- ❑ **Big Pharma's Preferred Approach to Biotech Is Through Acquisition**
- ❑ **Pharma Acquisition Policies Accelerated by “Patent Cliff”**
 - Large Numbers of Pharmaceuticals Going Off Patent In Coming Years
 - M&A Key Driver in Revenue Growth



Rationale for S-Network Biopharma M&A Index (PBMA)

- ❑ **Mergers and Acquisitions in Biotechnology and Pharmaceutical (“Biopharma”) Industry Driven By Constant Expiration of Patent Exclusivity on Marketed Drugs and Lack of Productivity in Internal Development Programs**
- ❑ **The Loss of Pharmaceutical Patent Exclusivity for 2014 was \$34 billion and Estimated to Approach \$66 Billion in 2015**
- ❑ **\$219.4 Billion Worldwide Biopharma M&A Transaction Volume (Including Completed and Announced Deals, Asset Deals, Acquisitions of Divisions)**
- ❑ **S-Network Identifies Criteria for Liquid Biotech Stocks Ready for Acquisition By Larger Industry Players**
- ❑ **94 Companies Met These Criteria as of June 30, 2019**



Rationale for S-Network Healthcare Innovation Index (PHIX)

Criterion	Rationale
Constituent of S-Network Biopharma M&A Index	First Step of Selection, Encompassing Screens of PBMA
At Least One Drug in Phase II or III	A Drug in Phase II Testing Has a 48% Probability of Advancing to Phase III Making the Odds of At Least Six Successes in 30 Trials Very High
Catalyst Date Within 24 Months	Catalyst Events (i.e., Decision Points) for Drugs That Have Already Passed the Early Tests Often Trigger Higher Valuations
Drug Designation of Breakthrough, Fast Track or Orphan	Prospective M & A Likelihood Increases with FDA Status Designations of Breakthrough, Fast Track, or Orphan
Qualifying Drug Must Not Be Under Partnership	Companies Without Large Distribution Partners More Likely to Accept M & A Overtures
Ratio of Peak Economic Revenue Forecast to Market Cap	Increases Attractiveness of Company to Potential Acquirers



PHIX Index Description

- ❑ **Equity Index Designed to Isolate US Biotechnology Companies That Are Potential Takeover Targets**
- ❑ **Comprised of Three Main Business Segments**
 - ❑ Biotechnology
 - ❑ Pharmaceuticals
 - ❑ Life Sciences Tools & Services
- ❑ **Inclusion Criteria**
 - ❑ Constituents Must Be Principally Engaged in the Biotechnology Industry
 - ❑ Listed on Recognized Exchange
 - ❑ Minimum Capitalization USD 1 Billion
 - ❑ Maximum Capitalization USD 15 Billion
 - ❑ Minimum Average Daily Trading Volume Greater Than 1 Million USD
 - ❑ Existing Constituents Remain in Index Until Market Capitalization Exceeds USD 50 Billion
- ❑ **Weighting Methodology**
 - ❑ All Stocks are Equally Weighted

The S-Network Healthcare Innovation Index Embraces Companies That Mainly Participate in the Biotechnology Industry in the US.

PHIX Index Highlights

❑ Companies Conducting R&D

- Antisense Technology
- Chimeric Antigen Receptor T-cell Immunotherapy
- RNA Interference (RNAi)
- Recombinant Human Proteins

❑ Targeting Cure/Mitigation of Significant Diseases

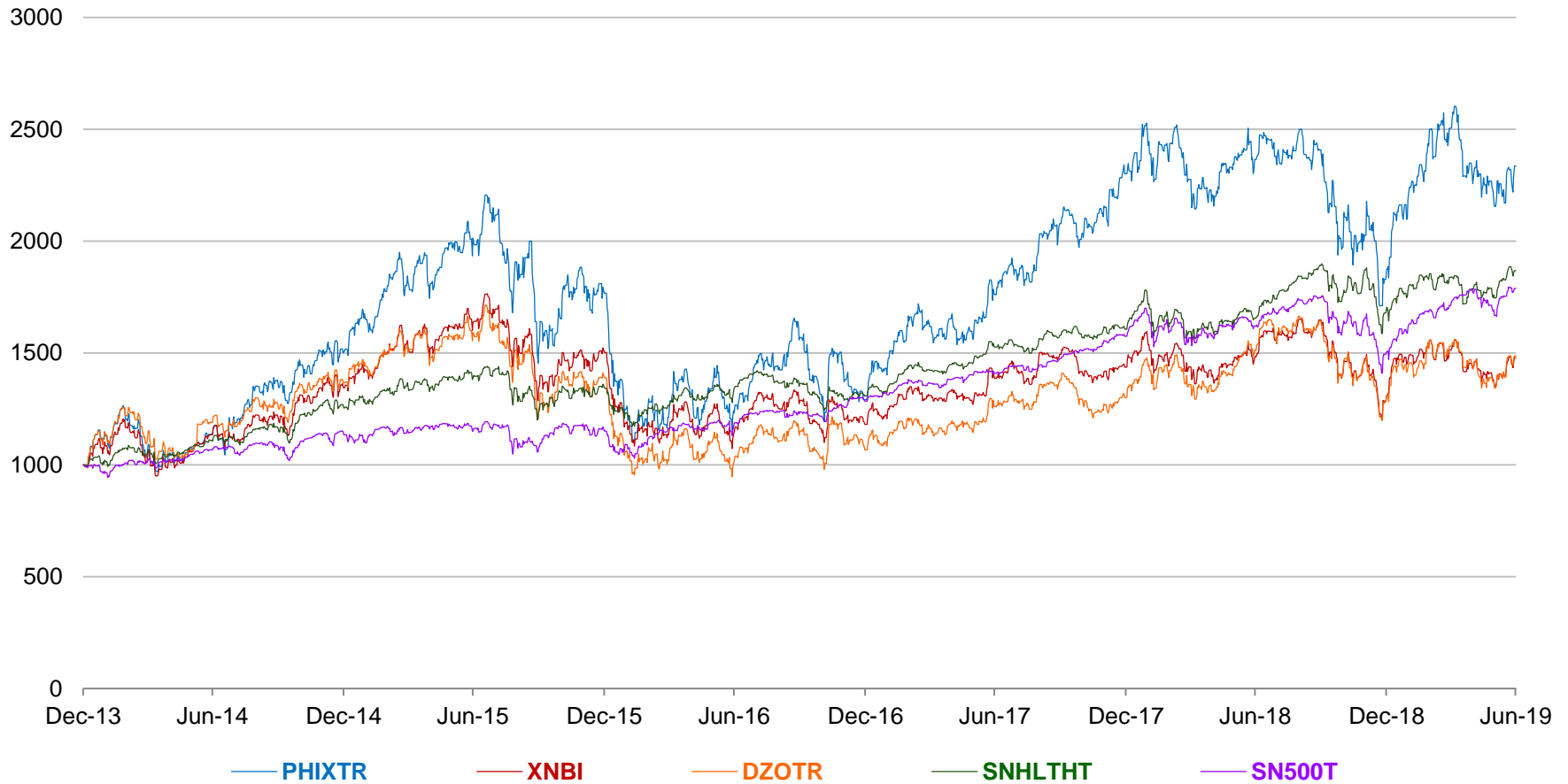
- Alzheimer's
- Parkinson's
- Cancer
- Muscular Dystrophy
- Multiple Sclerosis
- Cardiovascular Disease
- Schizophrenia
- Diabetes

❑ This Research & Development Not Widely Conducted by Big Pharma



Historical Performance

S-Network Healthcare Innovation Total Return Index vs. Benchmarks*
(12/31/2013–6/30/2019)



*To ensure fair comparisons, all of the starting index values are normalized to 1,000 as of December 31, 2013.

Source: Bloomberg, as of 6/30/2019

Calendar Year Price Appreciation

Year	PHIXTR	XNBI	DZOTR	SNHLTHT	SN500T
12/31/2014	50.81%	34.40%	36.56%	25.42%	13.43%
12/31/2015	17.15%	11.77%	1.65%	7.09%	1.45%
12/31/2016	-26.87%	-21.35%	-23.17%	-2.66%	11.65%
12/31/2017	78.15%	21.63%	22.04%	22.91%	22.56%
12/31/2018	-18.53%	-8.86%	0.55%	6.00%	-4.33%

Source: Bloomberg, as of 6/30/2019



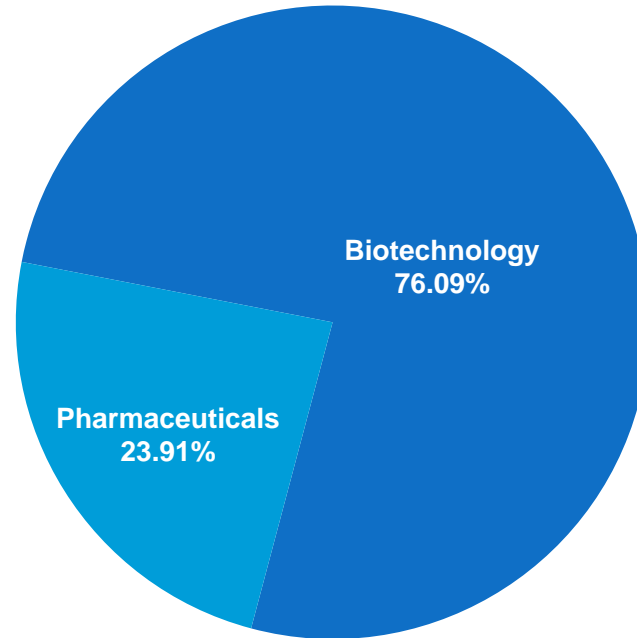
Market Capitalization Profile

Market Capitalization Profile	
Number of Constituents	30
Total Market Capitalization	73.50 Billion USD
Largest Market Capitalization	7.48 Billion USD
Smallest Market Capitalization	916.72 Million USD
Average Market Capitalization	2.45 Billion USD
Median Market Capitalization	2.05 Billion USD

Source: Thomson Reuters Eikon, as of 6/30/2019



S-Network Healthcare Innovation Index



Source: S-Network, as of 3/31/2019



Historical Acquisitions

Year	Total Acquisitions
2014	4
2015	7
2016	2
2017	1
2018	1
2019	1
Total	16

Source: Bloomberg, as of 6/30/2019



Top Ten Constituents

Company	Ticker	Country	Weight
APELLIS PHARMACEUTICALS INC	APLS US	Health Care	3.83%
Reata Pharmaceuticals Inc-A	RETA US	Health Care	3.70%
Tricida, Inc.	TCDA US	Health Care	3.66%
Immunomedics Inc	IMMU US	Health Care	3.59%
Athenex Inc	ATNX US	Health Care	3.56%
Fibrogen Inc	FGEN US	Health Care	3.56%
Acadia Pharmaceuticals Inc	ACAD US	Health Care	3.53%
Gossamer Bio Inc	GOSS US	Health Care	3.51%
Mirati Therapeutics Inc	MRTX US	Health Care	3.50%
Acceleron Pharma Inc.	XLRN US	Health Care	3.50%

Source: Bloomberg, as of 6/30/2019



Statistical Profile I

Total Return Appreciation

	PHIXTR	XNBI	DZOTR	SNHLTHT	SN500T
Since Inception*	133.54%	47.93%	48.74%	86.84%	78.81%
3 Year	89.54%	29.15%	46.52%	39.18%	50.73%
1 Year	-1.26%	-0.20%	-1.66%	12.87%	10.36%

Compound Annual Growth Rate

	PHIXTR	XNBI	DZOTR	SNHLTHT	SN500T
Since Inception	16.67%	7.38%	7.49%	12.04%	11.14%
3 Year	23.76%	8.90%	13.58%	11.65%	14.66%
1 Year	-1.26%	-0.20%	-1.66%	12.87%	10.36%

*Inception Date of 12/31/2013

Source: Bloomberg, as of 6/30/2019

Statistical Profile II

Annualized Monthly Standard Deviation

	PHIXTR	XNBI	DZOTR	SNHLTHT	SN500T
Since Inception*	31.74%	23.39%	25.13%	13.32%	11.89%
3 Year	29.88%	22.11%	22.79%	13.95%	12.35%
1 Year	33.62%	28.70%	27.72%	18.91%	19.25%

Sharpe Ratio

	PHIXTR	XNBI	DZOTR	SNHLTHT	SN500T
Since Inception	0.6271	0.3889	0.3832	0.8616	0.8818
3 Year	0.8181	0.4305	0.6101	0.7587	1.0581
1 Year	0.0492	0.0466	-0.0138	0.6091	0.4842

*Inception Date of 12/31/2013

Source: Bloomberg, as of 6/30/2019



Statistical Profile III

Correlation (vs. SN500T Index)

	PHIXTR	XNBI	DZOTR	SNHLTHT
Since Inception*	0.5773	0.6677	0.6359	0.7959
3 Year	0.6255	0.7659	0.7388	0.8070
1 Year	0.7758	0.8872	0.8964	0.8372

Beta (vs. SN500T Index)

	PHIXTR	XNBI	DZOTR	SNHLTHT
Since Inception	1.5412	1.3136	1.3439	0.8915
3 Year	1.5131	1.3709	1.3634	0.9116
1 Year	1.3552	1.3229	1.2908	0.8224

*Inception Date of 12/31/2013

Source: Bloomberg, as of 6/30/2019



Statistical Profile IV

R-Squared (vs. SN500T Index)

	PHIXTR	XNBI	DZOTR	SNHLTHT
Since Inception	0.3333	0.4458	0.4043	0.6334
3 Year	0.3913	0.5865	0.5459	0.6513
1 Year	0.6019	0.7872	0.8034	0.7008

*Inception Date of 12/31/2013

Source: Bloomberg, as of 6/30/2019



PHIX Index Methodology

❑ Eligibility Criteria

- ❑ Market Capitalization > \$1 Billion and < \$15 Billion
- ❑ ADTV > \$1 Million
- ❑ Must Be Principally Engaged in Biotechnology/Pharmaceutical Industry
- ❑ Fundamental Screens
 - Must Have At Least One Drug in Phase II or Phase III FDA Clinical Trials Without a Partnership
 - Must Have A Drug Designated as Breakthrough, Fast Track, or Orphan OR Have a Catalyst Date in the Next 24 Months
 - To Narrow Down to 30 Companies, the Ratio of Peak Economic Revenue Forecast to Market Capitalization is Used

❑ Weighting Methodology

- ❑ All Stocks Equal Weighted

Complete data availability and index transparency facilitate more effective benchmarking and investment analytics.

PHIX Index Details & Data Distribution

- ❑ **Index Values Distributed EOD in USD and EUR**
- ❑ **Total Return Index Calculated Daily in USD and EUR**
- ❑ **Index Values Distributed via Consolidated Tape**

- ❑ **Comprehensive Historic Data (including simulated back-tests from 12/29/2006)**
 - ❑ Daily Prices for Price-Only + TR Indexes in USD + EURO
 - ❑ Quarterly Portfolio Snapshots (Historic Constituents and Weights)
- ❑ **Extensive Analytic support**
 - ❑ Quarterly Reports (“Index Insights”)
 - ❑ Industry Overviews
 - ❑ Extensive Statistical Data
- ❑ **Comprehensive website**
- ❑ **Broad data distribution via third party vendors**
 - ❑ S&P/Bloomberg/Yahoo, etc.
 - ❑ S-Network contribution page on Bloomberg: SNET

