



Biostrategy Analytics
Pinpoint Strategy Solutions

Post-IPO Performance of U.S. Biotechnology Companies *By Demetris Iacovides¹*

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Abstract

This study aims at examining the post-IPO performance of U.S. biotechnology firms listed on NASDAQ for the last decade. This was achieved by collecting IPO data in the period 2004 – 2013. More specifically, the IPO data, the initial offered share price, and the use of proceeds (the intended amount of equity to raise) was obtained from the NASDAQ website. Thereafter, the stock price after certain time periods was traced using Google Finance. The average (arithmetic mean) return for the companies in the sample, excluding outliers (over 3 standard deviations), ranges between 17% and 35% up to 6 months post-IPO, while current average share price return (as of 14.01.2014) was estimated at 70%. These results suggest that post-IPO performance is largely dependent on whether a company is able to bring its clinical trial products into the market, which is then highly rewarded by investors and the stock market.

Using the available sources, we collected IPO information of U.S. biotechnology companies that were listed during the period 2004 – 2013. The sample includes companies involved in the R&D and manufacturing of biologics and pharmaceuticals and excludes companies focused on the development of over-the-counter (OTC) drugs and generics. In addition, companies with no data available in the NASDAQ website were excluded. These criteria resulted in a sample of 81 companies as shown in the **Table 1**.

Table 1: Biotechnology IPOs in NASDAQ during the Period 2004 – 2013 (Sample)

| Company | IPO Date | Offered Share Price | Use of proceeds | Use of proceeds (with underwriters) | Company | IPO Date | Offered Share Price | Use of proceeds | Use of proceeds (with underwriters) |
|----------------------------|------------|---------------------|-----------------|-------------------------------------|----------------------------------|------------|---------------------|-----------------|-------------------------------------|
| Relypsa | 15/11/2013 | 11.00 | 73.1 | 84.6 | Pacira Pharmaceuticals | 03/02/2011 | 7.00 | 37.3 | 43.1 |
| Aerie Pharmaceuticals | 25/10/2013 | 10.00 | 59.0 | 69.1 | Ventrus Biosciences | 17/12/2010 | 6.00 | 15.0 | 17.4 |
| ADMA Biologics | 17/10/2013 | 8.50 | 23.3 | 26.9 | Anacor Pharmaceuticals | 24/11/2010 | 5.00 | 64.6 | 72.9 |
| MacroGenics | 10/10/2013 | 16 | 72.6 | 83.8 | Zogenix | 22/11/2010 | 4.00 | 50.7 | 58.5 |
| Fate Therapeutics | 01/10/2013 | 6 | 34.8 | 40.4 | Pacific Biosciences | 27/10/2010 | 16.00 | 182.5 | 210.4 |
| Ophthotech | 25/09/2013 | 22 | 152.4 | 175.7 | Aegerion Pharmaceuticals | 22/10/2010 | 9.50 | 42.2 | 48.8 |
| Evoke Pharma | 25/09/2013 | 12 | 21.9 | 25.4 | NuPathe | 06/08/2010 | 10.00 | 43.2 | 50.2 |
| Acceleron Pharma | 24/09/2013 | 15.00 | 75.1 | 86.8 | CorMedix | 25/03/2010 | 6.50 | 10.3 | 12.0 |
| BLIND Therapeutics | 20/09/2013 | 15.00 | 62.7 | 72.5 | Ironwood Pharmaceuticals | 02/02/2010 | 11.25 | 175.0 | 203.1 |
| Five Prime Therapeutics | 18/09/2013 | 13.00 | 55.4 | 64.1 | Omeros | 08/10/2009 | 10.00 | 62.1 | 71.6 |
| Regado Biosciences | 22/08/2013 | 4.00 | 37.7 | 41.2 | Cumberland Pharmaceuticals | 11/08/2009 | 17.00 | 75.2 | 87.0 |
| Intrexon | 08/08/2013 | 16.00 | 146.0 | 168.3 | Transcept Pharmaceuticals | 10/05/2006 | 6.50 | 35.8 | 41.5 |
| Onconova Therapeutics | 25/07/2013 | 15.00 | 68.8 | 79.6 | Bioheart | 19/02/2008 | 5.25 | 1.5 | 2.3 |
| Agius Pharmaceuticals | 24/07/2013 | 18.00 | 96.3 | 111.1 | Jazz Pharmaceuticals | 01/06/2007 | 18.00 | 137.2 | 158.1 |
| Heat Biologics | 24/07/2013 | 10.00 | 22.5 | 26.0 | Amicus Therapeutics | 31/05/2007 | 15.00 | 67.9 | 78.3 |
| OncoMed Pharmaceuticals | 18/07/2013 | 17.00 | 72.0 | 83.4 | Synta Pharmaceuticals | 06/02/2007 | 10.00 | 44.7 | 51.7 |
| Esperion Therapeutics | 26/06/2013 | 14.00 | 63.1 | 72.8 | Affymax | 14/12/2006 | 25.00 | 83.1 | 96.0 |
| PTC Therapeutics | 20/06/2013 | 15.00 | 114.2 | 131.7 | Emergent BioSolutions | 15/11/2006 | 12.50 | 54.7 | 57.8 |
| bluebird bio | 19/06/2013 | 17.00 | 66.8 | 77.2 | Catalyst Pharmaceutical Partners | 08/11/2006 | 6.00 | 17.7 | 20.5 |
| Epizyme | 31/05/2013 | 15.00 | 69.1 | 79.8 | Achillion Pharmaceuticals | 25/10/2006 | 11.50 | 46.2 | 53.4 |
| Portola Pharmaceuticals | 28/05/2013 | 14.50 | 109.5 | 126.5 | Osiris Therapeutics | 09/08/2006 | 11.00 | 34.2 | 39.6 |
| Ambit Biosciences | 16/05/2013 | 8.00 | 82.7 | 91.7 | Alexza Pharmaceuticals | 09/03/2006 | 8.00 | 38.7 | 44.9 |
| Receptos | 14/05/2013 | 14.00 | 65.5 | 75.7 | Acorda Therapeutics | 09/02/2006 | 6.00 | 28.6 | 33.2 |
| Insys Therapeutics | 07/05/2013 | 8.00 | 26.5 | 31.0 | Zaliscus | 09/11/2005 | 7.00 | 38.4 | 44.3 |
| Chimerix | 11/04/2013 | 14.00 | 93.2 | 107.4 | Accentia Biopharmaceuticals | 27/10/2005 | 8.00 | 14.1 | 16.8 |
| Enanta Pharmaceuticals | 21/03/2013 | 14.00 | 48.1 | 56.0 | Sunesis Pharmaceuticals | 27/09/2005 | 7.00 | 37.3 | 43.2 |
| Tetraphase Pharmaceuticals | 20/03/2013 | 7.00 | 67.4 | 77.8 | XenoPort | 02/06/2005 | 10.50 | 46.9 | 54.2 |
| Stemline Therapeutics | 31/01/2013 | 10.00 | 27.8 | 32.4 | Threshold Pharmaceuticals | 04/02/2005 | 7.00 | 32.8 | 38.1 |
| KYTHERA Biopharmaceuticals | 16/10/2012 | 16.00 | 62.8 | 72.6 | Theravance | 05/10/2004 | 16.00 | 89.0 | 102.7 |
| Regulus Therapeutics | 04/10/2012 | 4.00 | 39.4 | 45.7 | Alnylam Pharmaceuticals | 30/06/2004 | 6.00 | 26.0 | 30.2 |
| Hyperion Therapeutics | 26/07/2012 | 10.00 | 44.3 | 51.2 | Momenta Pharmaceuticals | 22/06/2004 | 6.50 | 30.9 | 35.8 |
| Durata Therapeutics | 19/07/2012 | 9.00 | 62.3 | 71.8 | Comerstone Therapeutics | 27/05/2004 | 7.00 | 37.4 | 43.3 |
| TESARO | 28/06/2012 | 13.50 | 72.8 | 84.1 | ACADIA Pharmaceuticals | 26/05/2004 | 7.00 | 31.3 | 36.1 |
| Supernus Pharmaceuticals | 01/05/2012 | 5.00 | 45.5 | 52.4 | Cytokinetics | 30/04/2004 | 13.00 | 81.5 | 88.5 |
| Merrimack Pharmaceuticals | 29/03/2012 | 7.00 | 93.5 | 107.5 | Santarus | 30/04/2004 | 9.00 | 48.3 | 55.9 |
| Verastem | 27/01/2012 | 10.00 | 49.1 | 56.7 | Corcept Therapeutics | 30/04/2004 | 12.00 | 49.1 | 56.7 |
| Clovis Oncology | 16/11/2011 | 13.00 | 121.3 | 139.4 | Cyclacel Pharmaceuticals | 16/03/2004 | 8.00 | 29.9 | 34.6 |
| NewLink Genetics | 11/11/2011 | 7.00 | 37.5 | 43.5 | Dynavax Technologies | 19/02/2004 | 7.50 | 40.3 | 46.6 |
| Synageva BioPharma | 02/11/2011 | 12.00 | 29.9 | 34.5 | GTx | 06/02/2004 | 14.50 | 70.5 | 81.4 |
| Horizon Pharma | 28/07/2011 | 9.00 | 41.9 | 48.8 | | | | | |
| AcelRx Pharmaceuticals | 10/02/2011 | 5.00 | 35.6 | 41.2 | | | | | |
| Endocyte | 04/02/2011 | 6.00 | 68.3 | 78.8 | | | | | |

Source: NASDAQ website

For each company in the sample the share price was found, using Google Finance, for the following time periods:

- 1 week post-IPO
- 2 weeks post-IPO
- 4 weeks post-IPO
- 8 weeks post-IPO
- 4 weeks after “lock-up period” (a period of usually 180 days, in which, major shareholders or insiders are forbidden to sell any of their shares)

Table 2a and **Table 2b** present the returns in the aforementioned time periods:

Table 2a: Share Price Returns of Biotechnology Companies since IPO

| Company | Offered Share Price | Share price + 1 week | Share price + 2 weeks | Share price + 4 weeks | Share price + 8 weeks | Share price + 4 weeks post-lock up period | Current Share Price (14/01/2014) | Return + 1 week | Return + 2 weeks | Return + 4 weeks | Return + 8 weeks | Return + 4 weeks post-lock up period | Current Return (As of 14/01/2014) |
|----------------------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|---|----------------------------------|-----------------|------------------|------------------|------------------|--------------------------------------|-----------------------------------|
| Relyspa | 11.00 | 13 | 17.00 | 24.00 | n/a | n/a | n/a | 18% | 55% | 118% | N/A | N/A | N/A |
| Aerie Pharmaceuticals | 10.00 | 10.5 | 10.90 | 11.60 | 16.40 | n/a | n/a | 5% | 9% | 16% | 64% | N/A | N/A |
| ADMA Biologics | 8.50 | 8.4 | 8.30 | 8.40 | 7.20 | n/a | n/a | -1% | -2% | -1% | -15% | N/A | N/A |
| MacroGenics | 16 | 25.00 | 28.00 | 26.00 | 25.80 | n/a | n/a | 56% | 75% | 63% | 61% | N/A | N/A |
| Fate Therapeutics | 6 | 8.00 | 7.20 | 6.30 | 5.25 | n/a | n/a | 33% | 20% | 5% | -13% | N/A | N/A |
| Ophthotech | 22 | 33.00 | 28.00 | 33.00 | 24.62 | n/a | n/a | 50% | 27% | 50% | 12% | N/A | N/A |
| Evoke Pharma | 12 | 12.00 | 12.00 | 11.30 | 9.30 | n/a | n/a | 0% | 0% | -6% | -23% | N/A | N/A |
| Accelaron Pharma | 15.00 | 22.50 | 23.20 | 22.75 | 19.77 | n/a | n/a | 50% | 55% | 52% | 32% | N/A | N/A |
| BIND Therapeutics | 15.00 | 14.65 | 15.00 | 15.00 | 8.70 | n/a | n/a | -2% | 0% | 0% | -42% | N/A | N/A |
| Five Prime Therapeutics | 13.00 | 13.95 | 13.80 | 13.46 | 9.28 | n/a | n/a | 7% | 6% | 4% | -29% | N/A | N/A |
| Celator Pharmaceuticals | 5.00 | 5.60 | 5.75 | 5.40 | 3.15 | n/a | n/a | 12% | 15% | 8% | -37% | N/A | N/A |
| Regado Biosciences | 4.00 | 4.78 | 4.83 | 7.89 | 5.66 | n/a | n/a | 20% | 21% | 97% | 42% | N/A | N/A |
| Intrexon | 16.00 | 25.80 | 22.92 | 24.29 | 25.10 | n/a | n/a | 61% | 43% | 52% | 57% | N/A | N/A |
| Onconova Therapeutics | 15.00 | 21.80 | 28.87 | 25.76 | 25.19 | n/a | n/a | 45% | 92% | 72% | 68% | N/A | N/A |
| Agius Pharmaceuticals | 18.00 | 29.16 | 29.67 | 24.79 | 27.12 | n/a | n/a | 62% | 65% | 38% | 51% | N/A | N/A |
| Heat Biologics | 10.00 | 9.93 | 10.00 | 10.07 | 13.39 | n/a | n/a | -1% | 0% | 1% | 34% | N/A | N/A |
| OncoMed Pharmaceuticals | 17.00 | 20.13 | 20.18 | 18.89 | 16.66 | n/a | n/a | 18% | 19% | 11% | -2% | N/A | N/A |
| Esperion Therapeutics | 14.00 | 14.61 | 16.05 | 16.96 | 16.64 | n/a | n/a | 4% | 15% | 21% | 19% | N/A | N/A |
| PTC Therapeutics | 15.00 | 13.63 | 15.20 | 18.40 | 15.55 | 20.30 | n/a | -9% | 1% | 23% | 4% | 35% | N/A |
| bluebird bio | 17.00 | 25.07 | 30.05 | 34.78 | 30.04 | 21.65 | n/a | 47% | 77% | 105% | 77% | 27% | N/A |
| Epizyme | 15.00 | 26.00 | 22.33 | 28.13 | 32.84 | 21.03 | 39.24 | 73% | 49% | 88% | 119% | 40% | 162% |
| Portola Pharmaceuticals | 14.50 | 19.75 | 21.83 | 21.23 | 24.03 | 23.60 | 27.99 | 36% | 51% | 46% | 66% | 63% | 93% |
| Ambit Biosciences | 8.00 | 7.17 | 6.92 | 7.65 | 9.54 | 8.16 | 11.99 | -10% | -14% | -4% | 19% | 2% | 50% |
| Receptos | 14.00 | 14.33 | 14.40 | 18.97 | 18.63 | 27.01 | 38.34 | 2% | 3% | 36% | 33% | 93% | 174% |
| Insys Therapeutics | 8.00 | 10.89 | 10.40 | 11.00 | 14.93 | 44.10 | 45.7 | 36% | 30% | 38% | 87% | 451% | 471% |
| Chimerix | 14.00 | 18.87 | 19.10 | 19.60 | 22.07 | 14.88 | 17.12 | 35% | 36% | 40% | 58% | 6% | 22% |
| Enanta Pharmaceuticals | 14.00 | 19.93 | 19.84 | 20.64 | 20.85 | 19.61 | 32.64 | 42% | 42% | 47% | 49% | 40% | 133% |
| Tetraphase Pharmaceuticals | 7.00 | 7.03 | 7.19 | 8.75 | 7.94 | 12.53 | 15.9 | 0% | 3% | 25% | 13% | 79% | 127% |
| Stemline Therapeutics | 10.00 | 10.47 | 13.51 | 12.10 | 11.41 | 34.03 | 19.53 | 5% | 35% | 21% | 14% | 240% | 95% |
| KYTHERA Biopharmaceuticals | 16.00 | 23.30 | 24.05 | 21.97 | 25.50 | 22.50 | 39.48 | 46% | 50% | 37% | 59% | 41% | 147% |
| Regulus Therapeutics | 4.00 | 4.24 | 4.72 | 4.76 | 4.75 | 6.83 | 7.2 | 6% | 18% | 19% | 19% | 71% | 80% |
| Hyperion Therapeutics | 10.00 | 10.25 | 10.35 | 10.30 | 10.24 | 18.95 | 23.6 | 3% | 4% | 3% | 2% | 90% | 136% |
| Durata Therapeutics | 9.00 | 8.50 | 8.47 | 8.50 | 8.67 | 7.70 | 12.3 | -6% | -6% | -6% | -4% | -14% | 37% |
| TESARO | 13.50 | 13.89 | 13.74 | 13.59 | 12.36 | 18.14 | 28.97 | 3% | 2% | 1% | -8% | 34% | 115% |
| Supernus Pharmaceuticals | 5.00 | 6.50 | 6.50 | 5.94 | 9.36 | 7.99 | 8.11 | 30% | 30% | 19% | 87% | 60% | 62% |
| Merrimack Pharmaceuticals | 7.00 | 6.06 | 6.47 | 7.26 | 6.85 | 6.93 | 6.21 | -13% | 21% | 4% | -2% | -1% | -11% |
| Verastem | 10.00 | 11.14 | 10.90 | 10.86 | 10.93 | 8.74 | 13.02 | 11% | 9% | 9% | 9% | -13% | 30% |
| Clovis Oncology | 13.00 | 13.01 | 12.67 | 12.40 | 14.54 | 19.75 | 75.69 | 0% | -3% | -5% | 12% | 52% | 482% |
| NewLink Genetics | 7.00 | 7.10 | 7.01 | 7.00 | 7.12 | 12.93 | 26.6 | 1% | 0% | 0% | 2% | 85% | 280% |
| Synageva BioPharma | 12.00 | 15.55 | 16.45 | 18.00 | 26.63 | 37.84 | 80 | 30% | 37% | 50% | 122% | 215% | 567% |
| Horizon Pharma | 9.00 | 8.95 | 8.16 | 8.10 | 8.09 | 3.36 | 8.39 | -1% | -9% | -10% | -10% | -63% | -7% |
| AcelRx Pharmaceuticals | 5.00 | 3.65 | 3.59 | 3.17 | 3.22 | 3.25 | 12.72 | -27% | -28% | -37% | -36% | -35% | 154% |
| Endocyte | 6.00 | 7.13 | 7.06 | 7.29 | 8.53 | 10.86 | 12.85 | 19% | 18% | 22% | 42% | 81% | 114% |

Source: NASDAQ website, Google Finance, Authors' Analysis

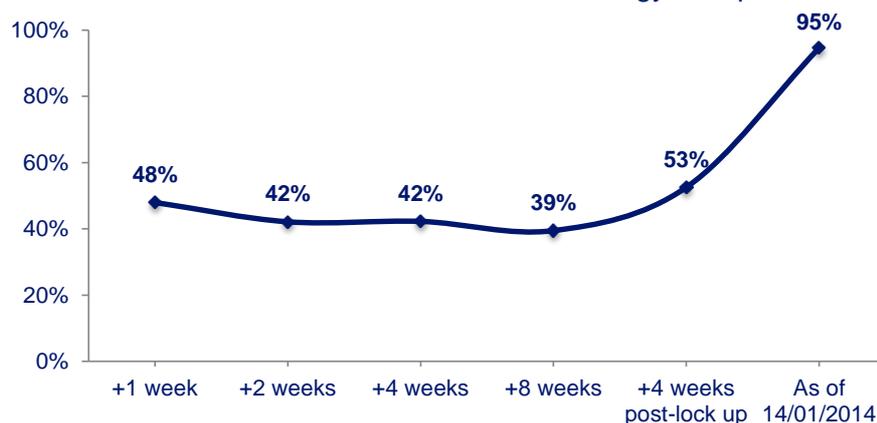
Table 2b: Share Price Returns of Biotechnology Companies since IPO (Continued)

| Company | Offered Share Price | Share price + 1 week | Share price + 2 weeks | Share price + 4 weeks | Share price + 8 weeks | Share price + 4 weeks post-lock up period | Current Share Price (14/01/2014) | Return + 1 week | Return + 2 weeks | Return + 4 weeks | Return + 8 weeks | Return + 4 weeks post-lock up period | Current Return (As of 14/01/2014) |
|----------------------------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|---|----------------------------------|-----------------|------------------|------------------|------------------|--------------------------------------|-----------------------------------|
| Pacira Pharmaceuticals | 7.00 | 6.92 | 6.45 | 6.93 | 7.05 | 8.68 | 64.03 | -1% | -8% | -1% | 1% | 24% | 815% |
| Ventrus Biosciences | 6.00 | 6.30 | 6.62 | 6.40 | 6.45 | 13.47 | 3.94 | 5% | 10% | 7% | 8% | 125% | -34% |
| Anacor Pharmaceuticals | 5.00 | 5.09 | 5.30 | 4.98 | 7.26 | 5.97 | 18.31 | 2% | 6% | 0% | 45% | 19% | 266% |
| Zogenix | 4.00 | 4.00 | 5.95 | 5.81 | 4.80 | 3.77 | 4.45 | 0% | 49% | 45% | 20% | -6% | 11% |
| Pacific Biosciences | 16.00 | 14.56 | 12.25 | 11.53 | 15.60 | 11.80 | 5.12 | -9% | -23% | -28% | -3% | -26% | -68% |
| Aegerion Pharmaceuticals | 9.50 | 10.90 | 10.09 | 9.79 | 13.96 | 17.52 | 59.89 | 15% | 6% | 3% | 47% | 84% | 530% |
| NuPathe | 10.00 | 8.30 | 7.87 | 7.91 | 7.10 | 7.76 | 4.32 | -17% | -21% | -21% | -29% | -22% | -57% |
| CorMedix | 6.50 | 2.46 | 2.60 | 2.69 | 2.45 | 1.42 | 2.2 | -62% | -60% | -59% | -62% | -78% | -66% |
| Ironwood Pharmaceuticals | 11.25 | 11.50 | 13.10 | 13.14 | 13.89 | 9.50 | 12.59 | 2% | 16% | 17% | 23% | -16% | 12% |
| Omeros | 10.00 | 6.88 | 6.58 | 6.85 | 7.07 | 6.36 | 12.25 | -31% | -34% | -32% | -29% | -36% | 23% |
| Cumberland Pharmaceuticals | 17.00 | 17.01 | 16.75 | 15.91 | 15.36 | 11.50 | 5.01 | 0% | -1% | -6% | -10% | -32% | -71% |
| Transcept Pharmaceuticals | 6.50 | 6.72 | 6.77 | 6.32 | 9.44 | 6.80 | 3.45 | 3% | 4% | -3% | 45% | 5% | -47% |
| Bioheart | 5.25 | 4.53 | 4.67 | 3.74 | 4.17 | 2.97 | 0.01 | -14% | -11% | -29% | -21% | -43% | -100% |
| Jazz Pharmaceuticals | 18.00 | 17.25 | 17.58 | 16.00 | 13.85 | 14.79 | 143.30 | -4% | -2% | -11% | -23% | -18% | 696% |
| Amicus Therapeutics | 15.00 | 14.19 | 13.93 | 11.50 | 11.53 | 10.71 | 2.31 | -5% | -7% | -23% | -23% | -29% | -85% |
| Synta Pharmaceuticals | 10.00 | 9.26 | 8.80 | 8.82 | 8.51 | 6.40 | 6.24 | -7% | -12% | -12% | -15% | -36% | -38% |
| Affymax | 25.00 | 34.20 | 34.04 | 32.90 | 40.25 | 26.89 | 0.93 | 37% | 36% | 32% | 61% | 8% | -96% |
| Emergent BioSolutions | 12.50 | 10.81 | 10.85 | 5.00 | 7.69 | 10.80 | 26.03 | -14% | -13% | -60% | -38% | -14% | 108% |
| Catalyst Pharmaceutical Partners | 6.00 | 5.87 | 6.00 | 5.30 | 4.20 | 4.30 | 2.01 | -2% | 0% | -12% | -30% | -28% | -67% |
| Achillion Pharmaceuticals | 11.50 | 14.25 | 13.76 | 14.00 | 15.40 | 5.20 | 3.70 | 24% | 20% | 22% | 34% | -55% | -68% |
| Osiris Therapeutics | 11.00 | 9.98 | 10.19 | 10.80 | 11.18 | 13.15 | 16.96 | -9% | -7% | -2% | 2% | 20% | 54% |
| Alexza Pharmaceuticals | 8.00 | 91.10 | 98.40 | 96.10 | 90.20 | 81.40 | 5.34 | 1039% | 1130% | 1101% | 1028% | 918% | -33% |
| Acorda Therapeutics | 6.00 | 6.22 | 6.16 | 6.05 | 5.39 | 2.22 | 29.92 | 4% | 3% | 1% | -10% | -63% | 399% |
| Zalicus | 7.00 | 7.25 | 7.69 | 8.23 | 9.10 | 8.35 | 1.55 | 4% | 10% | 18% | 30% | 19% | -78% |
| Accentia Biopharmaceuticals | 8.00 | 7.17 | 6.92 | 6.70 | 5.55 | 5.20 | 0.01 | -10% | -14% | -16% | -31% | -35% | -100% |
| Sunesis Pharmaceuticals | 7.00 | 37.50 | 37.44 | 36.00 | 31.50 | 38.70 | 4.59 | 436% | 435% | 414% | 350% | 453% | -34% |
| XenoPort | 10.50 | 10.25 | 10.50 | 10.67 | 12.45 | 17.95 | 6.75 | -2% | 0% | 2% | 19% | 71% | -36% |
| Threshold Pharmaceuticals | 7.00 | 42.60 | 40.80 | 41.35 | 35.22 | 66.24 | 4.89 | 509% | 483% | 491% | 403% | 846% | -30% |
| Theravance | 16.00 | 18.14 | 17.64 | 16.58 | 17.40 | 17.70 | 38.30 | 13% | 10% | 4% | 9% | 11% | 139% |
| Ainylam Pharmaceuticals | 6.00 | 7.35 | 6.98 | 7.00 | 5.15 | 5.61 | 89.92 | 23% | 16% | 17% | -14% | -6% | 1399% |
| Momenta Pharmaceuticals | 6.50 | 8.40 | 8.63 | 8.14 | 7.25 | 7.29 | 19.55 | 29% | 33% | 25% | 12% | 12% | 201% |
| Cornerstone Therapeutics | 7.00 | 71.20 | 7.00 | 7.10 | 6.94 | 7.85 | 9.59 | 917% | 0% | 1% | -1% | 12% | 37% |
| ACADIA Pharmaceuticals | 7.00 | 6.61 | 6.02 | 6.10 | 6.00 | 6.31 | 23.69 | -6% | -14% | -13% | -14% | -10% | 238% |
| Cytokinetics | 13.00 | 101.46 | 95.40 | 92.10 | 88.62 | 52.50 | 9.41 | 680% | 634% | 608% | 582% | 304% | -28% |
| Santarus | 9.00 | 12.00 | 12.30 | 14.10 | 14.73 | 9.76 | 31.96 | 33% | 37% | 57% | 64% | 8% | 255% |
| Corcept Therapeutics | 12.00 | 11.40 | 10.25 | 11.20 | 8.64 | 4.47 | 3.09 | -5% | -15% | -7% | -28% | -63% | -74% |
| Cyclacel Pharmaceuticals | 8.00 | 6.50 | 4.50 | 4.10 | 6.00 | 5.20 | 8.84 | -19% | -44% | -49% | -25% | -35% | 11% |
| Dynavax Technologies | 7.50 | 8.40 | 8.24 | 7.55 | 7.15 | 5.20 | 1.94 | 12% | 10% | 1% | -5% | -31% | -74% |
| GTx | 14.50 | 12.70 | 11.95 | 11.00 | 9.99 | 11.00 | 1.97 | -12% | -18% | -24% | -31% | -24% | -86% |

Source: NASDAQ website, Google Finance, Authors' Analysis

Using the date in the tables above, we have calculated the cumulative returns of the total number of stocks. This was done by summing the offered share prices of all companies as well as the share prices in specific time periods (**Figure 3**).

Figure 3: Cumulative Share Price Return of Biotechnology Companies since IPO



The following tables present the number of companies by return range. The percentage of companies experiencing negative stock return ranges between 28% and 42% while the rest experiences a positive stock return. It is impressive that as of 14/01/2014, 29 out of 81 (36%) demonstrate over 100% return in their stock price. The mean stock return excluding outliers ranges between 17% – 35%, while the mean stock return including outliers ranges between 43% – 61% up to the 4 weeks post-lock up period. As of 14.01.2014 (current share price) mean stock return excluding outliers sky rocketed to 70%, while mean stock return including outliers was estimated at 104%.

| Share Price + 1 week | |
|----------------------|-------|
| Return Range | Count |
| <0% | 27 |
| 0 | 5 |
| 1% to 10% | 9 |
| 11% to 20% | 7 |
| 21% to 40% | 12 |
| 41% to 100% | 10 |
| >100% | 5 |

Average Return 22%
St. Dev 181%
Average Return (including outliers) 53%

| Share Price + 2 weeks | |
|-----------------------|-------|
| Return Range | Count |
| <0% | 23 |
| 0 | 7 |
| 1% to 10% | 16 |
| 11% to 20% | 9 |
| 21% to 40% | 11 |
| 41% to 100% | 12 |
| >100% | 4 |

Average Return 17%
St. Dev 158%
Average Return (including outliers) 44%

| Share Price + 4 weeks | |
|-----------------------|-------|
| Return Range | Count |
| <0% | 27 |
| 0 | 2 |
| 1% to 10% | 15 |
| 11% to 20% | 7 |
| 21% to 40% | 13 |
| 41% to 100% | 12 |
| >100% | 6 |

Average Return 18%
St. Dev 155%
Average Return (including outliers) 44%

| Share Price + 8 weeks | |
|-----------------------|-------|
| Return Range | Count |
| <0% | 32 |
| 0 | 0 |
| 1% to 10% | 8 |
| 11% to 20% | 10 |
| 21% to 40% | 6 |
| 41% to 100% | 19 |
| >100% | 6 |

Average Return 23%
St. Dev 144%
Average Return (including outliers) 43%

| Share Price + 4 weeks Post-Lock Up | |
|------------------------------------|-------|
| Return Range | Count |
| <0% | 27 |
| 0 | 0 |
| 1% to 10% | 5 |
| 11% to 20% | 6 |
| 21% to 40% | 6 |
| 41% to 100% | 12 |
| >100% | 8 |

Average Return 35%
St. Dev 180%
Average Return (including outliers) 61%

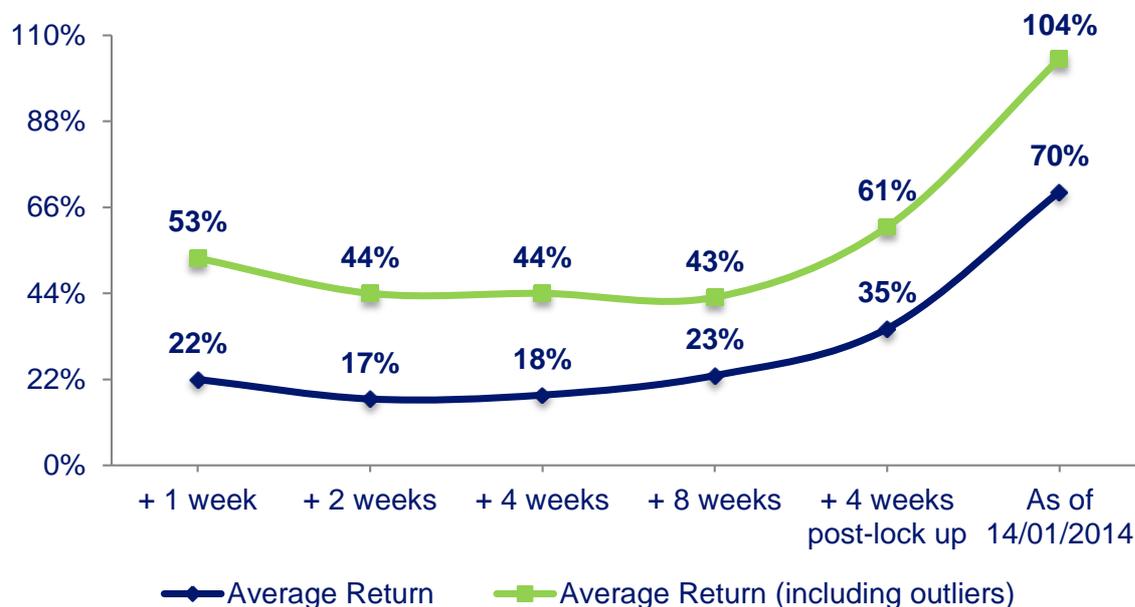
| Share Price as of 14/01/2014 | |
|------------------------------|-------|
| Return Range | Count |
| <0% | 29 |
| 0 | 0 |
| 1% to 10% | 2 |
| 11% to 20% | 3 |
| 21% to 40% | 6 |
| 41% to 100% | 12 |
| >100% | 29 |

Average Return 70%
St. Dev 104%
Average Return (including outliers) 104%

Source: NASDAQ website, Google Finance, Authors' Analysis

Figure 4 presents diagrammatically the results from the analysis above.

Figure 4: Post-IPO Average Share Price Return of Biotechnology Companies



Source: NASDAQ website, Google Finance, Authors' Analysis

Table 5 below summarizes the results from both the cumulative analysis and the average return analysis above.

Table 5: Summary of Results

| Return Period | Average | Standard Deviation | Average (including outliers) | Cumulative Return |
|------------------------|---------|--------------------|------------------------------|-------------------|
| + 1 week | 22% | 181% | 53% | 48% |
| + 2 weeks | 17% | 158% | 44% | 42% |
| + 4 weeks | 18% | 155% | 44% | 42% |
| + 8 weeks | 23% | 144% | 43% | 39% |
| + 4 weeks post-lock up | 35% | 180% | 61% | 53% |
| As of 14/01/2014 | 70% | 104% | 104% | 95% |

The results suggest that there are huge returns involved for U.S. Biotechnology companies that entered the stock market the past decade. The driver for such impressive rewards from the stock market is mainly the increased expectations of investors. Although biotechnology companies' financial performance is negative in the first few years of their establishment, in the long-term they are able to develop products successfully by leveraging their technical know-how, scientific expertise and technological base. These are potentially the primary factors that biotechnology companies have won the trust of the investment community which is partially demonstrated by the results of this analysis.