



Biotech ~ Investing Beyond the Hype

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The emergence and subsequent adoption or rejection of new technologies is a process investors must remain keenly aware of. Every VC investor at some point faces tough timing questions such as: When is it “too early” to invest? Is the technology over-hyped and overpriced? Has this technology reached or extended beyond its maturity? Answering these questions, and more importantly, answering them with some degree of accuracy, requires an intimate knowledge of the technology’s industry, a clear identification of the key market drivers, and sometimes...just a little bit of luck.

The biotechnology industry has had its share of technologies that were over-hyped and under-delivered. Over the past few years there has been unprecedented anticipation followed by disappointment in market bubbles, in industries such as gene therapy and stem cells.

As these technologies emerged, the industry and popular media have touted the impact that such technologies would have on the drug development cycle and their potential to rid society of many diseases. Words such as “paradigm shift” and “holy grail” were used liberally, as stock prices soared and expectations reached stratospheric heights. Unfortunately, the promise of these technologies was never fully realized and the expectations, along with much of the money chasing them, came back to reality.

Gene Therapy

In the case of gene therapy, the proposition was a compelling one. Many diseases such as cancer, immunodeficiencies, cystic fibrosis, and sickle cell anemia are caused by mutations of certain genes that normally create important biological proteins. Gene therapy proposes delivering functional copies of these “defective” genes to the appropriate cells in the body, thus creating the appropriate proteins and hopefully curing the symptoms of the disease.

This approach, however, has faced several setbacks to potential commercialization of the technology. For example, despite years of research, gene therapy has failed to deliver any practical advances in treating cystic fibrosis. Due to problems in delivering the “corrected” gene and “expressing,” or copying, enough of the gene to cure the disease, research on this disease has stagnated.

In other cases, there has been tragic loss of life in experimental treatments that has undermined the regulatory and financial environment necessary to incubate companies in

this field. In 1999, a teenager under treatment of the University of Pennsylvania died of a massive immune reaction to the gene treatment for a rare metabolic disorder. Less than five years later, two French children undergoing successful treatment for an immune disorder often known as “bubble boy disease” (patients must live sheltered in large plastic bubbles to avoid infection), developed leukemia as a byproduct of the treatment. Because of these cases and the uncertainty surrounding the efficacy and safety of gene therapy, companies have had a difficult time raising money, despite early enthusiasm about gene therapy’s promise.

Stem Cell Therapy

The use of stem cell therapy as a novel mechanism for treating disease has also gone through cycles of inflationary expectations and reactionary disappointments. In the 1990’s dozens of stem cell companies emerged in the public markets based on the belief that cell-based therapies were a “safe bet.” For example, PPL Therapeutics approached a \$1 billion market cap in 1997 after gaining international exposure for cloning Dolly the sheep. By 2003, however, the company shut down because it failed to commercialize its scientific advances.

Today the market for stem cell companies seeking financing remains challenging. Because of scientific and political roadblocks to the development of this technology, venture capitalists have remained cautious in backing stem cell based companies. The recent disclosure of South Korean scientist Hwang Woo-Suk’s fabricated stem cell research (omit reference to where it’s published, or else spell out the name of the publication? in the Wall Street Journal / or “a major medical journal” or wherever it was published. . .) reflects the difficulty researchers and companies have faced in progressing scientifically in this field.

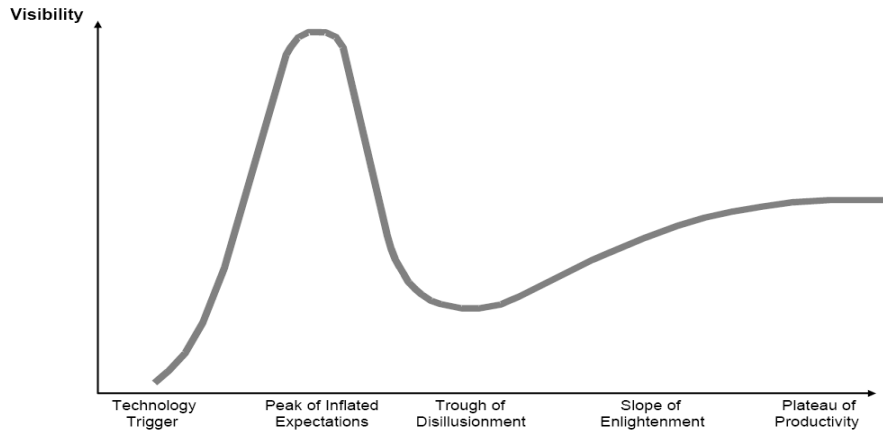
Meanwhile, the ethical implications of embryonic stem cell research have triggered a political firestorm in the United States that has cooled investor enthusiasm for related companies. In an interview with *Red Herring* magazine, William Caldwell, CEO of the human embryonic stem cell company Advanced Cell Technology noted that “venture capitalists are willing to take financial risks, market risks, management risks, but the one thing they are not happy to do is to take political risks.”

Seeing Beyond the Hype

Although fields such as gene therapy and stem cell technology may ultimately become scientifically validated and achieve commercial success in the future, several companies have failed and many investors have lost money because of mistimed financing along the technology adoption cycle. After technologies emerge, they often go through a phase of inflated expectations followed by disillusionment when the technology fails to deliver on unrealistic projections. As businesses begin to understand the benefits and practical applicability of the technology, they often eventually reach a plateau of productivity.

This “Hype Cycle” illustrated below, depicts many technologies including potentially revolutionary advances in the biotech industry. To remain successful, investors must be

able to separate reality from hype and select optimal entry points with the right companies that can survive this cycle. Ways of separating the grounded from the hyped companies include ... (watching for companies that fail to commercialize their technology? and ...)Without weeding through the hype, VCs run a serious risk of paying inflated prices for inflated expectations.



Source: Gartner 2005