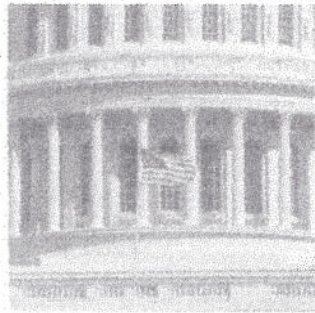


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## Biotechnology: A Strategic Asset in our Arsenal to Preserve National Security.

Deshan S. Govender, Senior Biotechnology Analyst - DBGI

President George W. Bush, our Commander and Chief, has allocated \$1.5 billion (a 30 fold increase from 2001) for biodefense in a proposed budget for fiscal 2003 that includes a 13.6% or \$3.7 billion increase for the National Institutes of Health (NIH). The tragic events of September 11, 2001 have propelled the government to take action in the form of enlisting the biotechnology industry to develop the necessary defenses against biological warfare.



The Institute for Allergy and infectious diseases (NIAID) will primarily manage the additional funds for biowarfare and bioterrorism and will invest in projects to sequence the full genomes of many pathogens, including the bacteria that cause anthrax and brucellosis. The US government has asked national drug and biotech companies to produce and speed-test new smallpox vaccines. New vaccines usually spend several years in trials but Health and Human Services Secretary Tommy Thompson wants the process to take just one year. In addition, the US government has reportedly promised to legally indemnify manufacturers, in the event of any court cases over vaccine side effects.

Currently, there are over two dozen companies involved in the development of biodefense vaccines and therapeutics; noteworthy examples include Acambis (ACAM), a U.K. company that supplies the US with smallpox vaccines, Genelabs (GNLB), of California, works on a broad-spectrum of antimicrobial and antiviral drugs and Luminex (LMNX) screens for biodetection systems.

## Stem Cell Technology - Incremental Improvement or Disruptive Paradigm Change?

Steven Abernathy, Principal & Founder – The Abernathy Group

All industries go through significant changes over their lifecycle. Most often it is incremental change, but sometimes something revolutionary takes place and causes disruptive change, meaning it could literally change everything. Stem cells have the potential to destroy the pharmaceutical and medical industries as we know them today, and create a new form of therapeutic healing and general medicine. This technology has the ability to create disruptive change in every segment of the industry from pharmaceuticals to hospitals.

Stem cell technology has the ability to be disruptive if it lives up to even half of its promise. Treatment would no longer be a responsive therapy delivered at the onset of a disease. A disease would be diagnosed before it begins to manifest itself. Patients will be treated proactively by replacing defective genes in affected cells. In short, we could create real, organic, living tissue that is disease free. Cloning organs and body parts would signal the demise of the pharmaceutical industry as we know it today.

**Incremental Change:**  
Sustaining innovation;  
evolutionary change

**Disruptive Change:**  
Disruptive innovation;  
revolutionary change

This, if true, changes everything.

Over time, research and therapies for treating disease would find less demand as diseases become eradicated or reversed by stem cell technology. From an investor's perspective, this

could be the "next big thing". How do we prepare for this potentially disruptive change and make intelligent investment decisions? How soon will this industry evolve? We can't know this today, and until we know how this new industry will evolve, we can't invest.

Each time a product or service is faster, cheaper or of higher quality, over time, the industry continues to improve until something revolutionary takes place. This revolution changes everything often destroying the former industry and creating a new industry. This is disruptive change. Will it be measured in years or decades? Who knows today, but the fundamental strategy of intelligent investing remains the same. Conduct thorough research and understand the companies in which you are investing. Understand the ramifications that the technology or product may cause on other industries, public policy, and even on culture.

The Abernathy Group's response is to monitor stem cell technology evolution closely, while observing the medical industry's response to this potentially disruptive change. And for now, that is the strategy we will take until the real application of stem cell technology takes hold.

It really could change everything.