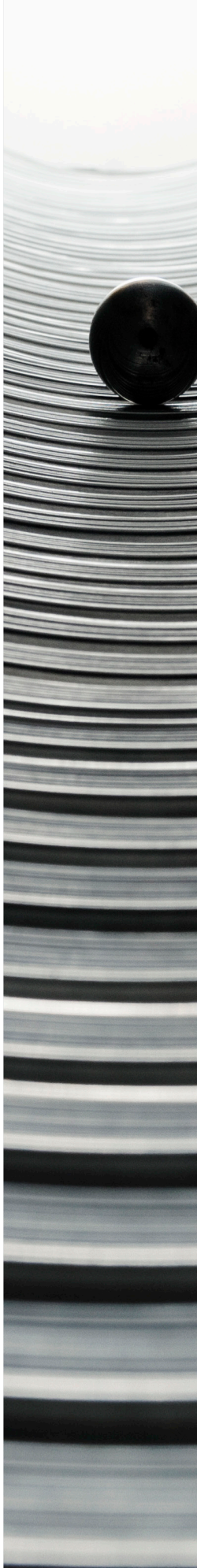
Morgan Stanley

INVESTMENT MANAGEMENT



Counterpoint Global Insights

Case Study: CRISPR

EDGE | JANUARY 2017

WELCOME TO THE EDGE.
Morgan Stanley Investment Management's Counterpoint Global shares their proprietary views on a big idea that has the potential to trigger far-reaching consequences—ideas such as autonomous vehicles, artificial intelligence, robotics and bioengineering.

Counterpoint Global's long-term ownership mindset emphasizes perspective, insight and thinking across categories, while our investment process focuses on identifying unique companies with sustainable competitive advantages. Through The EDGE, we share our framework for thinking about change and our process for recognizing patterns that may drastically alter the investment landscape over the longer term.

This work complements our team's more traditional, fundamental research to create a framework for long-term investing that is grounded in intellectual curiosity and flexibility, perspective, self-awareness and partnership.

Clustered regularly interspaced short palindromic repeats (CRISPR) is a new tool for genetic research that allows scientists to locate specific segments of DNA and then replace or delete those segments. It enables scientists to alter organisms for either therapeutic or research purposes, both before and after they have developed. For investors, it has the potential to birth new industries and disrupt existing medical treatments.

CRISPR is a string of DNA that was originally discovered as part of a bacterium's immune system. Using this simple string of DNA, bioengineers figured out how to repurpose the immune system to have it target select strands of human, animal or plant DNA instead of the natural threats to bacteria. They can thus locate specific portions of a human genome—the blueprint of the human body. Cells use DNA, which is the language of the blueprint, to construct organs and enable the various functions of the body. CRISPR allows scientists to read, write and edit this blueprint. ▶

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This breakthrough creates an opportunity for innovations to flourish. Some of the first applications of CRISPR have been in agriculture, where genetic modifications are being made to crops. Imagine an apple that doesn't brown or crops that are mildew resistant. For diseases caused by known faulty mutations—"typos" in the three-billion letter sequence of the human genome—such as cystic fibrosis, hemophilia and Tay-Sachs disease, CRISPR offers therapeutic opportunities. Once the "typos" are located, they can either be excised or altered. This treatment could radically disrupt existing therapeutics, many of which treat symptoms rather than underlying causes. The technology can even be used to target viruses, such as HIV. Such disruption would be a detriment to the annuity streams of many pharmaceutical companies. More utopian or dystopian is the possibility of "designer babies"—allowing parents to choose the traits and qualities they want in their children.

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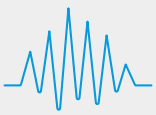
To be sure, there are a number of causes for doubt. Ethical questions could bring on regulatory scrutiny. There is also legal uncertainty over the intellectual property; the Supreme Court and Congress may have to clarify the patentability of CRISPR. Finally, science is generally incremental, and there are few paradigm shifts that change things overnight.

CRISPR is still in its early stages, with the first clinical trial receiving approval in June 2016. Short of some miracle breakthrough, it could be years before treatments are approved. Other segments, like agriculture, may move faster.

We will continue to monitor the scientific and clinical research that is being conducted and are mindful of the tremendous potential here.



OTHER DISRUPTORS

Other themes the team is currently researching include

- Blockchain
- Machine Learning
- Autonomous Vehicles

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