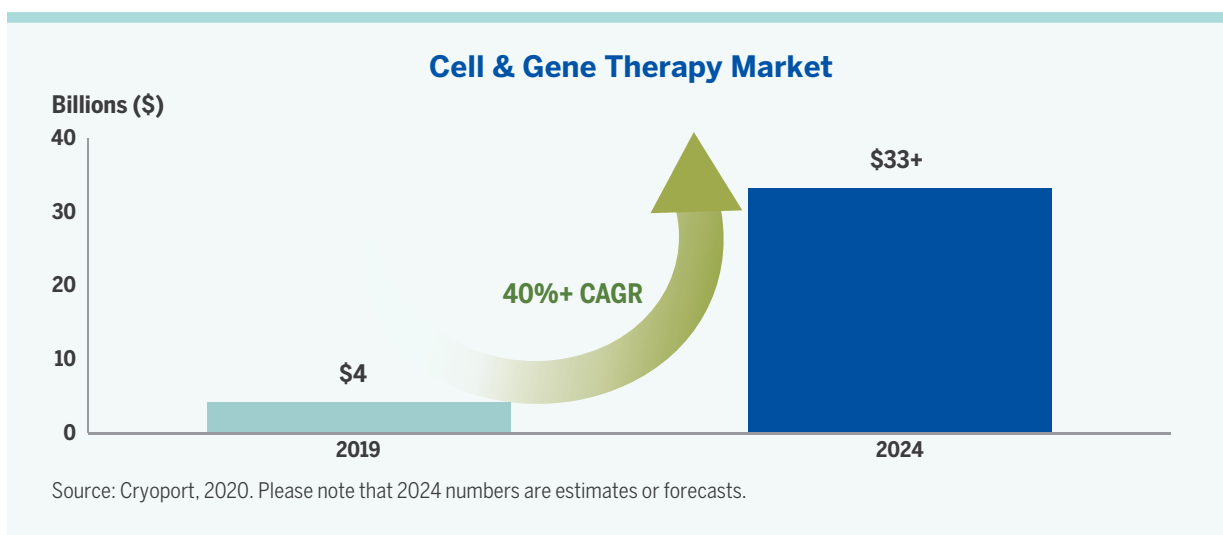


## Fixing the Building Blocks of Life

Optimism about genetic and cellular medicine has surged as vaccines utilizing messenger RNA (mRNA) rapidly curtail the Covid-19 pandemic. Yet even before Covid-19, new technologies had sparked rapid and sustainable growth of novel therapeutics and accelerating demand for companies that provide life sciences tools and other services needed to develop, manufacture and distribute innovative medical treatments.



- Revenue for cell and genetic therapeutics is forecast to grow at a 40% compound annual growth rate and reach \$33 billion by 2024. These regenerative therapies include editing genes and replacing cells such as T cells that attack cancer. While the most well-known application may be mRNA that instructs cells to create antigens that induce Covid-19 antibodies, other therapies that edit cells with CRISPR technology<sup>1</sup> are promising. Already CRISPR is being used to contain malaria in mosquitos and may ultimately be effective in treating hemophilia, cystic fibrosis and cancer. Additionally, CRISPR recently contributed to very favorable Phase I trial data for a rare genetic disorder in humans, the first such evidence that it can be deployed directly into the bloodstream to treat disease.
- Growth is being supported, in part, by technology becoming more affordable. In 2008, it cost \$1,000,000 to conduct genetic sequencing. It has since dropped to below \$1,000. The development of safer viral vectors that deliver instructions to correct problems with cells or DNA is also supporting the growth of regenerative therapy while demand for better treatments for cancer, immunodeficiencies, central nervous system disorders and other ailments is pervasive.
- Rather than focus on firms that may have their success tied to a single unproven treatment, we prefer to examine businesses with products that support multiple companies that are developing regenerative medicine. These products include materials for producing medical treatments, cloud-based technology for tracking clinical trials, specialty logistics such as refrigerated transportation, research equipment and manufacturing of medical treatments.

<sup>1</sup> CRISPR technology is a tool for editing genomes. It allows researchers to alter DNA sequences and modify gene function.



Compound annual growth rate is the rate of return that would be required for a quantity to grow from its beginning balance to its ending balance.

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